PCTEST ENGINEERING LABORATORY, INC.
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. +1.410.290.6652 / Fax +1.410.290.6654
http://www.pctest.com



SAR EVALUATION REPORT

Applicant Name:
Samsung Electronics Co., Ltd.
129, Samsung-ro, Maetan dong,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:
04/29/18 - 06/04/2018
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1804300090-01.A3L

FCC ID: **A3LSMN9600**

APPLICANT: **SAMSUNG ELECTRONICS CO., LTD.**

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: SM-N9600
Additional Model(s): SM-N9608; SM-N9600/SS

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1g Head (W/kg)	1g Body-Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.21	0.34	0.62	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	< 0.1	0.20	0.38	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.22	0.36	0.74	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.11	0.53	0.73	2.93
PCE	UMTS 1900	1852.4 - 1907.6 MHz	< 0.1	0.45	0.56	2.85
PCE	Cell. CDMA/EVDO	824.70 - 848.31 MHz	0.32	0.59	1.06	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.13	0.21	0.43	N/A
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	0.18	0.32	0.65	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.20	0.39	0.72	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.20	0.32	0.72	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.13	0.89	0.89	2.67
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	< 0.1	0.51	0.73	2.70
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	< 0.1	0.43	0.73	2.66
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.47	1.17	3.00
DTS	2.4 GHz WLAN	2412-2472 MHz	0.96	0.11	0.29	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.22	0.35	N/A	1.76
NII	U-NII-2C	5500 - 5720 MHz	0.30	0.25	N/A	1.21
NII	U-NII-3	5745 - 5825 MHz	0.30	0.22	0.35	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.95	< 0.1	0.12	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.34	1.58	1.59	3.95

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.8 of this report; for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.

Randy Ortanez
President

The SAR Tick is an initiative of the Mobile & Wireless Forum (MWF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MWF. Further details can be obtained by emailing: sartick@mwfai.info.

© 2018 PCTEST Engineering Laboratory, Inc.
REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

TABLE OF CONTENTS

1 DEVICE UNDER TEST 3

2 LTE INFORMATION 17

3 INTRODUCTION 18

4 DOSIMETRIC ASSESSMENT 19

5 DEFINITION OF REFERENCE POINTS 20

6 TEST CONFIGURATION POSITIONS 21

7 RF EXPOSURE LIMITS 25

8 FCC MEASUREMENT PROCEDURES 26

9 RF CONDUCTED POWERS 34

10 SYSTEM VERIFICATION 99

11 SAR DATA SUMMARY 105

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS 134

13 SAR MEASUREMENT VARIABILITY 151

14 ADDITIONAL TESTING PER FCC GUIDANCE 153

15 EQUIPMENT LIST 162

16 MEASUREMENT UNCERTAINTIES 163

17 CONCLUSION 164

18 REFERENCES 165

APPENDIX A: SAR TEST PLOTS

APPENDIX B: SAR DIPOLE VERIFICATION PLOTS

APPENDIX C: PROBE AND DIPOLE CALIBRATION CERTIFICATES

APPENDIX D: SAR TISSUE SPECIFICATIONS

APPENDIX E: SAR SYSTEM VALIDATION

APPENDIX F: DUT ANTENNA DIAGRAM & SAR TEST SETUP PHOTOGRAPHS

APPENDIX G: POWER REDUCTION VERIFICATION

APPENDIX H: DLCA POWER MEASUREMENT

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
Cell. CDMA/EVDO	Voice/Data	824.70 - 848.31 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412-2472 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
ANT+	Data	2402 - 2480 MHz
MST	Data	555 Hz - 8.33 kHz

1.2 Power Reduction for SAR

This device utilizes power reduction mechanism for some wireless modes and bands for SAR compliance under portable hotspot conditions and under some conditions when the device is being used in close proximity to the user's body. All hotspot SAR evaluations for this device were performed at the maximum allowed output power when hotspot is enabled. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device. Detailed descriptions of the power reduction mechanism are included in the operational description.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

This device uses an independent fixed level power reduction mechanism for WLAN operations during voice or VoIP held to ear scenarios. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528-2013. Detailed descriptions of the power reduction mechanism are included in the operational description.

1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

1.3.1 Maximum PCE Output Power

Mode / Band		Voice (dBm)	Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slot	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GSM/GPRS/EDGE 850	Maximum	**34.0**	**34.0**	**31.5**	**30.0**	**28.0**	**28.0**	**26.0**	**24.0**	**22.0**
	Nominal	**33.0**	**33.0**	**30.5**	**29.0**	**27.0**	**27.0**	**25.0**	**23.0**	**21.0**
GSM/GPRS/EDGE 1900	Maximum	**31.0**	**31.0**	**28.6**	**26.0**	**24.5**	**26.6**	**25.5**	**23.5**	**21.5**
	Nominal	**30.0**	**30.0**	**27.6**	**25.0**	**23.5**	**25.6**	**24.5**	**22.5**	**20.5**

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 5 (850 MHz)	Maximum	**25.0**	**25.0**	**25.0**	**25.0**
	Nominal	**24.0**	**24.0**	**24.0**	**24.0**
UMTS Band 4 (1750 MHz)	Maximum	**25.0**	**25.0**	**25.0**	**25.0**
	Nominal	**24.0**	**24.0**	**24.0**	**24.0**
UMTS Band 2 (1900 MHz)	Maximum	**25.0**	**25.0**	**25.0**	**25.0**
	Nominal	**24.0**	**24.0**	**24.0**	**24.0**

Mode / Band		Modulated Average (dBm)
Cell. CDMA/EVDO	Maximum	**26.5**
	Nominal	**25.5**

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**25.2**
	Nominal	**24.2**
LTE Band 17	Maximum	**25.2**
	Nominal	**24.2**
LTE Band 13	Maximum	**25.5**
	Nominal	**24.5**
LTE Band 5 (Cell)	Maximum	**25.5**
	Nominal	**24.5**
LTE Band 26 (Cell)	Maximum	**25.2**
	Nominal	**24.2**
LTE Band 66 (AWS)	Maximum	**25.3**
	Nominal	**24.3**
LTE Band 4 (AWS)	Maximum	**25.3**
	Nominal	**24.3**
LTE Band 2 (PCS)	Maximum	**25.0**
	Nominal	**24.0**
LTE Band 25 (PCS)	Maximum	**24.0**
	Nominal	**23.0**
LTE Band 41 (PC3)	Maximum	**25.0**
	Nominal	**24.0**
LTE Band 41 (PC2)	Maximum	**28.0**
	Nominal	**27.0**

1.3.2 Reduced PCE Output Power – Hotspot Mode Activated

Mode / Band		Burst Average GMSK (dBm)				Burst Average 8-PSK (dBm)			
		1 TX Slots	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*	*1 TX Slots*	*2 TX Slots*	*3 TX Slots*	*4 TX Slots*
GSM/GPRS/EDGE 1900	Maximum	**27.0**	**25.3**	**23.3**	**21.5**	**25.5**	**24.0**	**22.5**	**21.0**
	Nominal	**26.0**	**24.3**	**22.3**	**20.5**	**24.5**	**23.0**	**21.5**	**20.0**

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 4 (1750 MHz)	Maximum	**20.0**	**20.0**	**20.0**	**20.0**
	Nominal	**19.0**	**19.0**	**19.0**	**19.0**
UMTS Band 2 (1900 MHz)	Maximum	**20.0**	**20.0**	**20.0**	**20.0**
	Nominal	**19.0**	**19.0**	**19.0**	**19.0**

Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	**20.5**
	Nominal	**19.5**
LTE Band 4 (AWS)	Maximum	**20.5**
	Nominal	**19.5**
LTE Band 2 (PCS)	Maximum	**20.5**
	Nominal	**19.5**
LTE Band 25 (PCS)	Maximum	**20.5**
	Nominal	**19.5**
LTE Band 41 (PC3)	Maximum	**23.0**
	Nominal	**22.0**
LTE Band 41 (PC2)	Maximum	**23.0**
	Nominal	**22.0**

1.3.3 Reduced PCE Output Power – Grip Mode Activated

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 4 (1750 MHz)	Maximum	**21.5**	**21.5**	**21.5**	**21.5**
	Nominal	**20.5**	**20.5**	**20.5**	**20.5**
UMTS Band 2 (1900 MHz)	Maximum	**21.0**	**21.0**	**21.0**	**21.0**
	Nominal	**20.0**	**20.0**	**20.0**	**20.0**

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	**21.5**
	Nominal	**20.5**
LTE Band 4 (AWS)	Maximum	**21.5**
	Nominal	**20.5**
LTE Band 2 (PCS)	Maximum	**21.0**
	Nominal	**20.0**
LTE Band 25 (PCS)	Maximum	**21.0**
	Nominal	**20.0**
LTE Band 41 (PC3)	Maximum	**23.5**
	Nominal	**22.5**
LTE Band 41 (PC2)	Maximum	**23.5**
	Nominal	**22.5**

1.3.4 Maximum Bluetooth and WLAN Output Power

Mode / Band		Modulated Average - Antenna 1 Single Tx Chain (dBm)			
		Ch. 1,11	Ch. 2-10	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum	**21.0**		**17.0**	**16.0**
	Nominal	**20.0**		**16.0**	**15.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**	**18.0**	**14.5**	**8.5**
	Nominal	**16.0**	**17.0**	**13.5**	**7.5**
IEEE 802.11n (2.4 GHz)	Maximum	**17.0**	**18.0**	**14.5**	**8.5**
	Nominal	**16.0**	**17.0**	**13.5**	**7.5**

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Mode / Band		Modulated Average - Antenna 2 Single Tx Chain (dBm)			
		Ch. 1,11	Ch. 2-10	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum	21.0		19.5	17.0
	Nominal	20.0		18.5	16.0
IEEE 802.11g (2.4 GHz)	Maximum	17.0	18.0	15.0	10.5
	Nominal	16.0	17.0	14.0	9.5
IEEE 802.11n (2.4 GHz)	Maximum	17.0	18.0	15.0	8.5
	Nominal	16.0	17.0	14.0	7.5

Mode / Band		Modulated Average - Single Tx Chain (dBm)						
		20 MHz Bandwidth		40 MHz Bandwidth			80 MHz Bandwidth	
		Ch. 36-64	Ch. 100-165	Ch. 38	Ch. 62	Ch. 46, 54, 102-159	Ch. 42,58, 106	Ch. 122-155
IEEE 802.11a (5 GHz)	Maximum	18.0	17.5					
	Nominal	17.0	16.5					
IEEE 802.11n (5 GHz)	Maximum	18.0	17.5	16.0	15.0	17.0		
	Nominal	17.0	16.5	15.0	14.0	16.0		
IEEE 802.11ac (5 GHz)	Maximum	18.0	17.5	16.0	15.0	17.0	15.0	16.0
	Nominal	17.0	16.5	15.0	14.0	16.0	14.0	15.0

Mode / Band		Modulated Average - MIMO (dBm)			
		Ch. 1,11	Ch. 2-10	Ch. 12	Ch. 13
IEEE 802.11g (2.4 GHz)	Maximum	20.0	21.0	16.5	8.0
	Nominal	19.0	20.0	15.5	7.0
IEEE 802.11n (2.4 GHz)	Maximum	20.0	21.0	16.5	6.0
	Nominal	19.0	20.0	15.5	5.0

Mode / Band		Modulated Average - MIMO (dBm)						
		20 MHz Bandwidth		40 MHz Bandwidth			80 MHz Bandwidth	
		Ch. 36-64	Ch. 100-165	Ch. 38	Ch. 62	Ch. 46, 54, 102-159	Ch. 42,58, 106	Ch. 122-155
IEEE 802.11a (5 GHz)	Maximum	21.0	20.5					
	Nominal	20.0	19.5					
IEEE 802.11n (5 GHz)	Maximum	21.0	20.5	19.0	18.0	20.0		
	Nominal	20.0	19.5	18.0	17.0	19.0		
IEEE 802.11ac (5 GHz)	Maximum	21.0	20.5	19.0	18.0	20.0	18.0	19.0
	Nominal	20.0	19.5	18.0	17.0	19.0	17.0	18.0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Mode / Band		Modulated Average - Antenna 2 Single Tx Chain (dBm)
Bluetooth	Maximum	**16.5**
	Nominal	**15.5**
Bluetooth (EDR)	Maximum	**11.0**
	Nominal	**10.0**
Bluetooth LE	Maximum	**10.0**
	Nominal	**9.0**

1.3.5 Reduced WLAN Output Power

Mode / Band		Modulated Average - Antenna 1 Single Tx Chain (dBm)		
		Ch. 1-11	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum	**17.0**		**16.0**
	Nominal	**16.0**		**15.0**
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**	**14.5**	**8.5**
	Nominal	**16.0**	**13.5**	**7.5**
IEEE 802.11n (2.4 GHz)	Maximum	**17.0**	**14.5**	**8.5**
	Nominal	**16.0**	**13.5**	**7.5**

Mode / Band		Modulated Average - Antenna 2 Single Tx Chain (dBm)		
		Ch. 1-11	Ch. 12	Ch. 13
IEEE 802.11b (2.4 GHz)	Maximum	**17.0**		
	Nominal	**16.0**		
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**	**15.0**	**10.5**
	Nominal	**16.0**	**14.0**	**9.5**
IEEE 802.11n (2.4 GHz)	Maximum	**17.0**	**15.0**	**8.5**
	Nominal	**16.0**	**14.0**	**7.5**

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	**14.0**		
	Nominal	**13.0**		
IEEE 802.11n (5 GHz)	Maximum	**14.0**	**14.0**	
	Nominal	**13.0**	**13.0**	
IEEE 802.11ac (5 GHz)	Maximum	**14.0**	**14.0**	**14.0**
	Nominal	**13.0**	**13.0**	**13.0**

Mode / Band		Modulated Average - MIMO (dBm)		
		Ch. 1-11	**Ch. 12**	**Ch. 13**
IEEE 802.11g (2.4 GHz)	Maximum	**19.0**	**16.5**	**8.0**
	Nominal	**18.0**	**15.5**	**7.0**
IEEE 802.11n (2.4 GHz)	Maximum	**19.0**	**16.5**	**6.0**
	Nominal	**18.0**	**15.5**	**5.0**

Mode / Band		Modulated Average - MIMO (dBm)		
		20 MHz Bandwidth	40 MHz Bandwidth	80 MHz Bandwidth
IEEE 802.11a (5 GHz)	Maximum	**17.0**		
	Nominal	**16.0**		
IEEE 802.11n (5 GHz)	Maximum	**17.0**	**17.0**	
	Nominal	**16.0**	**16.0**	
IEEE 802.11ac (5 GHz)	Maximum	**17.0**	**17.0**	**17.0**
	Nominal	**16.0**	**16.0**	**16.0**

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

1.3.6 Maximum Output Power During Conditions with Simultaneous 2.4 GHz WLAN and 5 GHz WLAN

	# Tx	5 GHz WIFI [dBm]		2.4 GHz WIFI [dBm]		802.11 Modes
		Ant1	Ant2	Ant1	Ant2	
2.4 GHz + 5 GHz	2	A	-	-	B	2.4 GHz: b,g,n 5 GHz: a,n,ac
	2	-	A	B	-	
	2	A	-	B	-	
	2	-	A	-	B	
	3	A	A	B	-	2.4 GHz: b, g, n 5 GHz: n, ac, a (CDD + STBC only)
	3	A	A	-	B	
	3	A	-	B	B	2.4 GHz: n, g (CDD + STBC only) 5 GHz: a, n, ac
	3	-	A	B	B	
	4	A	A	B	B	2.4 GHz: n, g (CDD + STBC only) 5 GHz: n, ac, a (CDD + STBC only)

A = 13 dBm
B = 16 dBm
2.4 GHz WLAN Channel 12 will operate with Single Tx target power of 12.5 dBm
2.4 GHz WLAN Channel 13 will operate with Single Tx target power of 2.0 dBm
(Upper tolerance: target + 1.0 dB)

1.3.7 Reduced Output Power During Conditions with Simultaneous 2.4 GHz WLAN and 5 GHz WLAN

	# Tx	5 GHz WIFI [dBm]		2.4 GHz WIFI [dBm]		802.11 Modes
		Ant1	Ant2	Ant1	Ant2	
2.4 GHz + 5 GHz	2	A	-	-	B	2.4 GHz: b,g,n 5 GHz: a,n,ac
	2	-	A	B	-	
	2	A	-	B	-	
	2	-	A	-	B	
	3	A	A	B	-	2.4 GHz: b, g, n 5 GHz: n, ac, a (CDD + STBC only)
	3	A	A	-	B	
	3	A	-	B	B	2.4 GHz: n, g (CDD + STBC only) 5 GHz: a, n, ac
	3	-	A	B	B	
	4	A	A	B	B	2.4 GHz: n, g (CDD + STBC only) 5 GHz: n, ac, a (CDD + STBC only)

A = 12 dBm
B = 13 dBm
2.4 GHz WLAN Channel 12 will operate with Single Tx target power of 12.5 dBm
2.4 GHz WLAN Channel 13 will operate with Single Tx target power of 2.0 dBm
(Upper tolerance: target + 1.0 dB)

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in Appendix F. Since the diagonal dimension of this device is > 160 mm and <200 mm, it is considered a "phablet."

Table 1-1
Device Edges/Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	Yes	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Yes	Yes	No	Yes	Yes	Yes
UMTS 1900	Yes	Yes	No	Yes	Yes	Yes
Cell. EVDO	Yes	Yes	No	Yes	Yes	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes	Yes
LTE Band 5 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 66 (AWS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 2 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
5 GHz WLAN Ant 2	Yes	Yes	Yes	No	No	Yes
Bluetooth	Yes	Yes	Yes	No	No	Yes

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-1, U-NII-2A, U-NII-2C operations are disabled.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in Appendix F.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 4.3.2 procedures.

Table 1-2
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Body-Worn Accessory	Wireless Router	Phablet	Notes
1	1x CDMA voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
2	1x CDMA voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
3	1x CDMA voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
4	1x CDMA voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
5	1x CDMA voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
6	1x CDMA voice + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
7	1x CDMA voice + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
8	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
9	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
10	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
11	GSM voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
12	GSM voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
13	GSM voice + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
14	GSM voice + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
15	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
16	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
17	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
18	UMTS + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
19	UMTS + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
20	UMTS + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
21	UMTS + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
22	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
23	LTE + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
24	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
25	LTE + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
26	LTE + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
27	LTE + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
28	LTE + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
29	CDMA/EVDO data + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
30	CDMA/EVDO data + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
31	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
32	CDMA/EVDO data + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
33	CDMA/EVDO data + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
34	CDMA/EVDO data + 2.4 GHz WI-FI + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
35	CDMA/EVDO data + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
36	GPRS/EDGE + 2.4 GHz WI-FI	N/A	N/A	Yes	Yes	
37	GPRS/EDGE + 5 GHz WI-FI	N/A	N/A	Yes	Yes	
38	GPRS/EDGE + 2.4 GHz Bluetooth	N/A	N/A	Yes^	Yes	^ Bluetooth Tethering is considered
39	GPRS/EDGE + 2.4 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
40	GPRS/EDGE + 5 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	
41	GPRS/EDGE + 2.4 GHz WI-FI + 5 GHz WI-FI	N/A	N/A	Yes	Yes	
42	GPRS/EDGE + 2.4 GHz WI-FI MIMO + 5 GHz WI-FI MIMO	N/A	N/A	Yes	Yes	

1. Bluetooth cannot transmit simultaneously with WLAN.
2. All licensed modes share the same antenna path and cannot transmit simultaneously.
3. When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.
4. Per the manufacturer, WIFI Direct is not expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.
5. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII2A, and U-NII2C were not evaluated for wireless router conditions.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

6. This device supports 2x2 MIMO Tx for WLAN. 802.11a/g/n/ac supports CDD and STBC and 802.11 n/ac additionally supports SDM.
7. This device supports VOLTE.
8. This device supports VoWIFI.
9. This device supports Bluetooth Tethering.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, SAR is not required for U-NII-1 band according to FCC KDB Publication 248227 D01v02r02.

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-1, U-NII-2A & U-NII-2C WIFI, only 2.4 GHz and U-NII-3 WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v02r01.

This device supports IEEE 802.11ac with the following features:
a) Up to 80 MHz Bandwidth only
b) No aggregate channel configurations
c) 2 Tx antenna output
d) 256 QAM is supported
e) TDWR and Band gap channels are supported

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-1, U-NII-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

This device supports channel 1-13 for 2.4 GHz WLAN. However, due to the reduced output power for channels 12 and 13, channels 1, 6, and 11 were considered for SAR testing per KDB 248227 D01v02r02.

(B) Licensed Transmitter(s)

GSM/GPRS/EDGE DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r04.

CDMA 1X Advanced technology was not required for SAR since the maximum allowed output powers for 1x Advanced was not more than 0.25 dB higher than the maximum powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg per FCC KDB Publication 941225 D01v03r01.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

This device supports LTE Carrier Aggregation (CA) in the downlink. All uplink communications are identical to Release 8 specifications. Per FCC KDB Publication 941225 D05A v01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is greater than 160mm and less than 200mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.

This device supports 64QAM on the uplink and 256QAM on the downlink for LTE Operations. Conducted powers for 64QAM uplink configurations were measured per Section 5.1 of FCC KDB Publication 941225 D05v02r05. SAR was not required for 64QAM since the highest maximum output power for 64 QAM is $\leq \frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is $\leq$ 1.45 W/kg, per Section 5.2.4 of FCC KDB Publication 941225 D05v02r05.

This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Guidance, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive.

This device supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

This device supports both Power Class 2 (PC2) and Power Class 3 (PC3) for LTE Band 41. Per May 2017 TCB Workshop Notes, SAR tests were performed with Power Class 3 (given the specific UL/DL limitations for Power Class 2). Additionally, SAR testing for the power class condition was evaluated for the highest configuration in Power Class 3 for each test configuration to confirm the results were scalable linearly (See Section 14).

This device supports LTE Carrier Aggregation (CA) for LTE Band 41 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per 2017 Fall TCB Workshop Notes.

1.8 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- FCC KDB Publication 616217 D04v01r02 (Proximity Sensor)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO, LTE Band 41 Power Class 2/3)
- April 2018 TCB Workshop Notes (DL LTE CA exclusion)

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

1.9 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 11.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

2 LTE INFORMATION

LTE Information					
FCC ID	**A3LSMN9600**				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)	715.3 (23173)	
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)	714.5 (23165)	
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)	713.5 (23155)	
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)	711 (23130)	
LTE Band 17: 5 MHz	706.5 (23755)		710 (23790)	713.5 (23825)	
LTE Band 17: 10 MHz	709 (23780)		710 (23790)	711 (23800)	
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)	784.5 (23255)	
LTE Band 13: 10 MHz	N/A		782 (23230)	N/A	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)	
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	DL UE Cat 18 (QPSK, 16QAM, 64 QAM, 256 QAM), UL UE Cat 13 (QPSK, 16 QAM, 64 QAM)				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 14. It supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20 MHz component carriers. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 14 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, WIFI Offloading, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

3 INTRODUCTION

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1
SAR Mathematical Equation

$$SAR = \frac{d}{dt}\left(\frac{dU}{dm}\right) = \frac{d}{dt}\left(\frac{dU}{\rho dv}\right)$$

SAR is expressed in units of Watts per Kilogram (W/kg).

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

where:

σ = conductivity of the tissue-simulating material (S/m)
ρ = mass density of the tissue-simulating material (kg/m^3)
E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

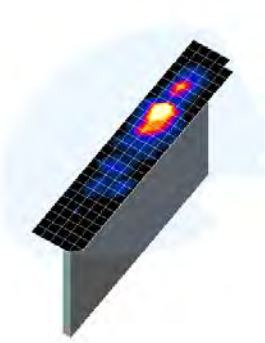


Figure 4-1
Sample SAR Area Scan

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

   a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).

   b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

Table 4-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

Frequency	Maximum Area Scan Resolution (mm) (Δx_{area}, Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom}, Δy_{zoom})	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)$*	$\Delta z_{zoom}(n>1)$*	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

5 DEFINITION OF REFERENCE POINTS

5.1 EAR REFERENCE POINT

Figure 5-2 shows the front, back and side views of the SAM Twin Phantom. The point "M" is the reference point for the center of the mouth, "LE" is the left ear reference point (ERP), and "RE" is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (see Figure 5-1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].

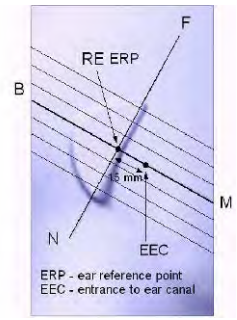


Figure 5-1
Close-Up Side view of ERP

5.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the acoustic output located along the "vertical centerline" on the front of the device aligned to the "ear reference point" (See Figure 5-3). The acoustic output was than located at the same level as the center of the ear reference point. The test device was positioned so that the "vertical centerline" was bisecting the front surface of the handset at its top and bottom edges, positioning the "ear reference point" on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 5-2
Front, back and side view of SAM Twin Phantom

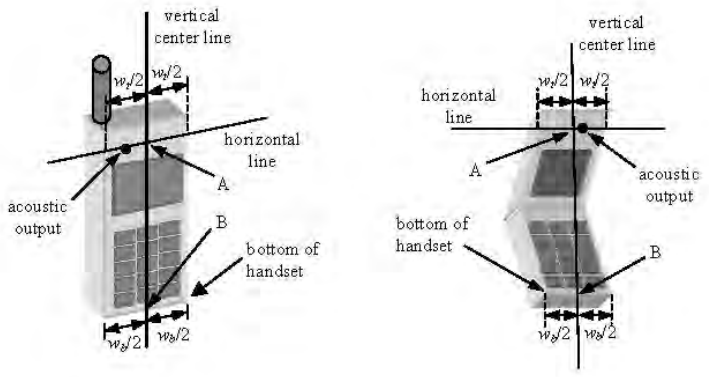


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

6 TEST CONFIGURATION POSITIONS

6.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02.

6.2 Positioning for Cheek

1. The test device was positioned with the device close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6-1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.



Figure 6-1 Front, Side and Top View of Cheek Position

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the pinna.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the reference plane.
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical was respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the device contact with the ear, the device was rotated about the NF line until any point on the handset made contact with a phantom point below the ear (cheek) (See Figure 6-2).

6.3 Positioning for Ear / 15º Tilt

With the test device aligned in the “Cheek Position”:

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15degrees.
2. The phone was then rotated around the horizontal line by 15 degrees.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the handset touched the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. In this situation, the tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 6-2).

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

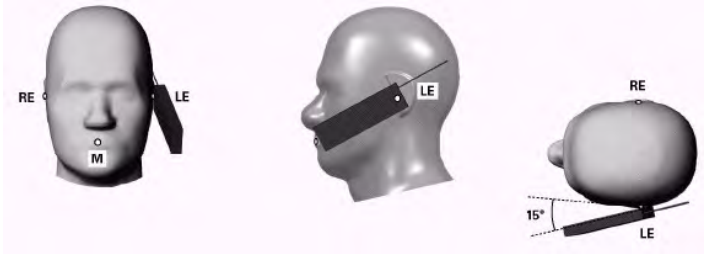


Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

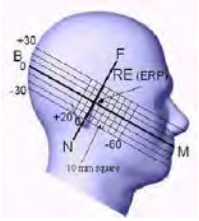


Figure 6-3
Side view w/ relevant markings

6.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones. Per IEEE 1528-2013, a rotated SAM phantom is necessary to allow probe access to such regions. Both SAM heads of the TwinSAM-Chin20 are rotated 20 degrees around the NF line. Each head can be removed from the table for emptying and cleaning.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR location identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

6.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01r03, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

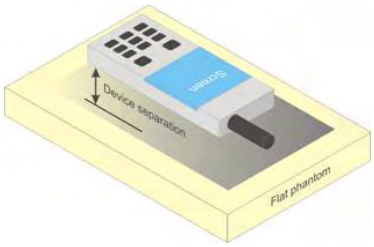


Figure 6-4
Sample Body-Worn Diagram

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.
Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1g body and 10g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v06 should be applied to determine SAR test requirements.

Per KDB Publication 447498 D01v06, Cell phones (handsets) are not normally designed to be used on extremities or operated in extremity only exposure conditions. The maximum output power levels of handsets generally do not require extremity SAR testing to show compliance. Therefore, extremity SAR was not evaluated for this device.

6.7 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

6.8 Phablet Configurations

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 mm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna <=25 mm from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR > 1.2 W/kg.

6.9 Additional Test Positions due to Proximity Conditions

This device uses a sensor to reduce voice and data powers in extremity (hand-held) use conditions.

When the sensor detects a user is touching the device on or near to the antenna the device reduces the maximum allowed output power However, the proximity sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, an additional exposure condition is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level.

The proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional test positions. Sensor triggering distance summary data is included in Appendix G.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 7-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

8 FCC MEASUREMENT PROCEDURES

Power measurements for licensed transmitters are performed using a base station simulator under digital average power.

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

8.2 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03r01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is $\leq$ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is $\leq$ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

8.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

The device is placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test are evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device is tested throughout the SAR test at maximum output power, the SAR measurement system measures a “point SAR” at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviates by more than 5%, the SAR test and drift measurements are repeated.

8.4 SAR Measurement Conditions for CDMA2000

The following procedures were performed according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

8.4.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.” Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the “All Up” condition.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 8-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH_0 and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 8-2 was applied.

Table 8-1
Parameters for Max. Power for RC1

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-104
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-7.4

Table 8-2
Parameters for Max. Power for RC3

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-86
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-7.4

5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

8.4.2 Head SAR Measurements

SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at fullrate in SO55. The 3G SAR test reduction procedure is applied to RC1 with RC3 as the primary mode; otherwise, SAR is required for the channel with maximum measured output in RC1 using the head exposure configuration that results in the highest reported SAR in RC3.

Head SAR is additionally evaluated using EVDO Rev. A to support compliance for VoIP operations. See Section 8.4.5 for EVDO Rev. A configuration parameters.

8.4.3 Body-worn SAR Measurements

SAR for body-worn exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCHn), with FCH only as the primary mode. Otherwise, SAR is required for multiple code channel configuration (FCH + SCHn), with FCH at full rate and SCH0 enabled at 9600 bps, using the highest reported SAR configuration for FCH only. When multiple code channels are enabled, the transmitter output can shift by more than 0.5 dB and may lead to higher SAR drifts and SCH dropouts.

The 3G SAR test reduction procedure is applied to body-worn accessory SAR in RC1 with RC3 as the primary mode. Otherwise, SAR is required for RC1, with SO55 and full rate, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

8.4.4 Body-worn SAR Measurements for EVDO Devices

For handsets with EVDO capabilities, the 3G SAR test reduction procedure is applied to EVDO Rev. 0 with 1x RTT RC3 as the primary mode to determine body-worn accessory test requirements. Otherwise, body-worn accessory SAR is required for Rev. 0, at 153.6 kbps, using the highest reported SAR configuration for body-worn accessory exposure in RC3.

The 3G SAR test reduction procedure is applied to Rev. A, with Rev. 0 as the primary mode to determine body-worn accessory SAR test requirements. When SAR is not required for Rev. 0, the 3G SAR test reduction is applied with 1x RTT RC3 as the primary mode.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

When SAR is required for EVDO Rev. A, SAR is measured with a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations, using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0 or 1x RTT RC3, as appropriate.

8.4.5 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode; otherwise, SAR is measured for Rev. A using the highest reported SAR configuration for body-worn accessory exposure in Rev. 0. The AT is tested with a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations.

For EVDO data devices that also support 1x RTT voice and/or data operations, the 3G SAR test reduction procedure is applied to 1x RTT RC3 and RC1 with EVDO Rev. 0 and Rev. A as the respective primary modes. Otherwise, the 'Body-Worn Accessory SAR' procedures in the '3GPP2 CDMA 2000 1x Handsets' section are applied.

8.4.6 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers are measured using SO75 with RC8 on the uplink and RC11 on the downlink per FCC KDB Publication 941225 D01v03r01. Smart blanking is disabled for all measurements. The EUT is configured with forward power control Mode 000 and reverse power control at 400 bps. Conducted powers are measured on an Agilent 8960 Series 10 Wireless Communications Test Set, Model E5515C using the CDMA2000 1x Advanced application, Option E1962B-410.

The 3G SAR test reduction procedure is applied to the 1x-Advanced transmission mode with 1x RTT RC3 as the primary mode. When SAR measurement is required, the 1x-Advanced power measurement configurations are used. The1x Advanced SAR procedures are applied separately to head, body-worn accessory and other exposure conditions.

8.5 SAR Measurement Conditions for UMTS

8.5.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.5.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

8.5.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s". The 3G SAR test reduction procedure is applied to other spreading codes and multiple $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or $DPDCH_n$, for the highest reported SAR configuration in 12.2 kbps RMC.

8.5.4 SAR Measurements with Rel 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

8.5.5 SAR Measurements with Rel 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

8.5.6 SAR Measurement Conditions for DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

8.6 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r04 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.6.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

8.6.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

8.6.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

8.6.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
    i. The required channel and offset combination with the highest maximum output power is required for SAR.
    ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
    iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.

8.6.5 TDD

LTE TDD testing is performed using the SAR test guidance provided in FCC KDB 941225 D05v02r04. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05v02r04. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

8.6.6 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. For every supported combination of downlink only carrier aggregation, additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.7 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

8.7.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

8.7.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.7.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.5 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is › 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.6 OFDM Transmission Mode and SAR Test Channel Selection

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.7.7 Initial Test Configuration Procedure

For OFDM, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order IEEE 802.11 mode. The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 8.7.6). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

8.7.8 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.7.9 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

Table 9-1
Maximum Conducted Power

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	824.7	25.86	25.83	25.80	25.80	25.81	25.84	25.83
	384	836.52	25.88	25.81	25.77	25.78	25.83	25.99	25.84
	777	848.31	25.66	25.63	25.63	25.62	25.61	25.85	25.65

Note:
1. RC1 is only applicable for IS-95 compatibility.



Figure 9-1
Power Measurement Setup

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.2 GSM Conducted Powers

Table 9-2
Maximum Conducted Power

Maximum Burst-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	33.38	33.42	30.61	**28.91**	27.24	27.27	25.01	23.29	21.28
	190	33.18	33.26	30.56	**29.13**	27.22	27.33	25.28	23.32	21.32
	251	33.26	33.30	30.38	**28.92**	26.82	27.29	24.91	23.08	21.19
GSM 1900	512	30.20	30.26	**26.38**	23.70	22.48	25.66	24.66	22.47	20.54
	661	30.35	30.43	**26.60**	24.05	22.67	25.90	24.82	22.92	20.61
	810	30.16	30.23	**26.28**	24.03	22.83	25.99	24.47	22.61	20.72

Calculated Maximum Frame-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	24.35	24.39	24.59	**24.65**	24.23	18.24	18.99	19.03	18.27
	190	24.15	24.23	24.54	**24.87**	24.21	18.30	19.26	19.06	18.31
	251	24.23	24.27	24.36	**24.66**	23.81	18.26	18.89	18.82	18.18
GSM 1900	512	21.17	21.23	**20.36**	19.44	19.47	16.63	18.64	18.21	17.53
	661	21.32	21.40	**20.58**	19.79	19.66	16.87	18.80	18.66	17.60
	810	21.13	21.20	**20.26**	19.77	19.82	16.96	18.45	18.35	17.71

GSM 850	**Frame Avg.Targets:**	23.97	23.97	24.48	**24.74**	23.99	17.97	18.98	18.74	17.99
GSM 1900		20.97	20.97	**21.58**	20.74	20.49	16.57	18.48	18.24	17.49

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-3
Reduced Conducted Power – Hotspot Mode Active

Maximum Burst-Averaged Output Power									
		GPRS/EDGE Data (GMSK)				*EDGE Data (8-PSK)*			
Band	**Channel**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	26.32	24.31	**22.16**	20.53	24.88	22.97	21.36	19.62
	661	26.43	24.36	**22.34**	20.68	24.96	23.11	21.42	19.61
	810	26.11	24.47	**22.52**	20.64	24.98	23.36	21.63	19.91

Calculated Maximum Frame-Averaged Output Power									
		GPRS/EDGE Data (GMSK)				*EDGE Data (8-PSK)*			
Band	**Channel**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 1900	512	17.29	18.29	**17.90**	17.52	15.85	16.95	17.10	16.61
	661	17.40	18.34	**18.08**	17.67	15.93	17.09	17.16	16.60
	810	17.08	18.45	**18.26**	17.63	15.95	17.34	17.37	16.90
GSM 1900	**Frame Avg.Targets:**	16.97	18.28	**18.04**	17.49	15.47	16.98	17.24	16.99

Note:

1. Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
2. GPRS/EDGE (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.
3. EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

GSM Class: B
GPRS Multislot class: 33 (Max 4 Tx uplink slots)
EDGE Multislot class: 33 (Max 4 Tx uplink slots)
DTM Multislot Class: N/A



Figure 9-2
Power Measurement Setup

9.3 UMTS Conducted Powers

Table 9-4
Maximum Conducted Power

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	24.38	24.42	24.37	24.20	24.18	24.39	24.26	24.42	24.33	-
99		12.2 kbps AMR	24.40	24.42	24.35	24.14	24.17	24.36	24.23	24.41	24.31	-
6	HSDPA	Subtest 1	23.38	23.42	23.27	23.03	23.11	23.34	23.29	23.43	23.25	0
6		Subtest 2	23.45	23.45	23.33	23.04	23.13	23.29	23.27	23.41	23.29	0
6		Subtest 3	22.93	22.98	22.83	22.55	22.68	22.88	22.82	22.92	22.70	0.5
6		Subtest 4	22.95	22.97	22.83	22.55	22.64	22.83	22.81	22.90	22.74	0.5
6	HSUPA	Subtest 1	23.42	23.45	23.31	23.04	23.14	23.36	23.32	23.44	23.24	0
6		Subtest 2	21.41	21.37	21.31	21.06	21.26	21.40	21.31	21.44	21.27	2
6		Subtest 3	22.42	22.44	22.31	22.05	22.16	22.41	22.31	22.45	22.27	1
6		Subtest 4	21.39	21.42	21.29	21.05	21.15	21.39	21.30	21.42	21.24	2
6		Subtest 5	23.44	23.41	23.33	23.06	23.18	23.38	23.31	23.44	23.28	0
8	DC-HSDPA	Subtest 1	23.43	23.39	23.26	23.08	23.18	23.34	23.31	23.49	23.30	0
8		Subtest 2	23.41	23.43	23.30	23.04	23.16	23.39	23.25	23.38	23.28	0
8		Subtest 3	22.91	22.99	22.72	22.54	22.67	22.82	22.80	22.91	22.73	0.5
8		Subtest 4	22.89	22.93	22.85	22.51	22.65	22.83	22.80	22.89	22.76	0.5

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-5
Reduced Conducted Power – Hotspot Mode Active

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	19.05	19.14	19.44	19.19	19.34	19.27	-
99		12.2 kbps AMR	19.06	19.10	19.45	19.20	19.32	19.31	-
6	HSDPA	Subtest 1	18.74	18.86	19.18	18.81	19.01	18.93	0
6		Subtest 2	18.73	18.83	19.19	18.84	19.00	18.95	0
6		Subtest 3	18.25	18.36	18.68	18.31	18.50	18.38	0.5
6		Subtest 4	18.23	18.32	18.71	18.34	18.48	18.44	0.5
6	HSUPA	Subtest 1	18.81	18.94	19.27	18.93	19.06	19.04	0
6		Subtest 2	16.81	16.89	17.22	16.90	17.05	17.01	2
6		Subtest 3	17.80	17.90	18.22	17.88	18.03	18.00	1
6		Subtest 4	16.83	16.94	17.25	16.93	17.06	17.04	2
6		Subtest 5	18.83	18.95	19.29	18.93	19.09	19.05	0
8	DC-HSDPA	Subtest 1	18.83	18.97	19.28	18.93	19.08	19.04	0
8		Subtest 2	18.87	18.94	19.26	18.90	19.05	19.03	0
8		Subtest 3	18.32	18.42	18.76	18.40	18.55	18.53	0.5
8		Subtest 4	18.33	18.43	18.79	18.42	18.56	18.52	0.5

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-6
Reduced Conducted Power – Grip Sensor Mode Active

3GPP Release Version	Mode	3GPP 34.121 Subtest	AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	20.27	20.51	20.63	20.18	20.33	20.21	-
99		12.2 kbps AMR	20.28	20.53	20.60	20.16	20.32	20.23	-
6	HSDPA	Subtest 1	20.32	20.57	20.71	20.10	20.20	20.03	0
6		Subtest 2	20.33	20.55	20.72	20.08	20.21	20.02	0
6		Subtest 3	19.82	20.06	20.20	19.56	19.70	19.51	0.5
6		Subtest 4	19.83	20.08	20.22	19.58	19.69	19.53	0.5
6	HSUPA	Subtest 1	20.35	20.55	20.69	20.06	20.18	20.02	0
6		Subtest 2	18.30	18.52	18.65	18.06	18.16	17.99	2
6		Subtest 3	19.32	19.53	19.65	19.05	19.17	19.00	1
6		Subtest 4	18.33	18.59	18.71	18.12	18.22	18.04	2
6		Subtest 5	20.33	20.55	20.74	20.12	20.23	20.04	0
8	DC-HSDPA	Subtest 1	20.27	20.57	20.72	20.09	20.22	20.03	0
8		Subtest 2	20.34	20.55	20.70	20.07	20.19	20.02	0
8		Subtest 3	19.83	20.04	20.17	19.55	19.67	19.52	0.5
8		Subtest 4	19.81	20.03	20.19	19.56	19.68	19.50	0.5

DC-HSDPA considerations

- 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance
- H-Set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements
- The DUT supports UE category 24 for HSDPA

It is expected by the manufacturer that MPR for some HSPA subtests may be up to 2 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model.

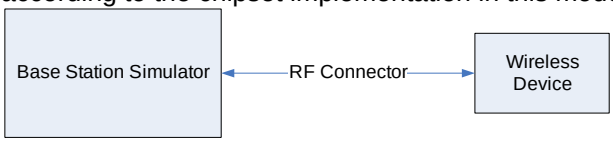


Figure 9-3
Power Measurement Setup

© 2018 PCTEST Engineering Laboratory, Inc.
REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4 LTE Conducted Powers

9.4.1 LTE Band 12

Table 9-7
LTE Band 12 Conducted Powers - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	**RB Size**	**RB Offset**	**Mid Channel** **23095** **(707.5 MHz)** **Conducted Power [dBm]**	**MPR Allowed per 3GPP [dB]**	**MPR [dB]**
QPSK	1	0	**24.03**	0	0
	1	25	24.01		0
	1	49	23.92		0
	25	0	**23.14**	0-1	1
	25	12	23.08		1
	25	25	23.02		1
	50	0	23.06		1
16QAM	1	0	23.26	0-1	1
	1	25	23.32		1
	1	49	23.21		1
	25	0	22.14	0-2	2
	25	12	22.15		2
	25	25	22.04		2
	50	0	22.14		2
64QAM	1	0	22.20	0-2	2
	1	25	22.25		2
	1	49	22.13		2
	25	0	21.16	0-3	3
	25	12	21.16		3
	25	25	21.09		3
	50	0	21.16		3

Note: LTE Band 12 at 10 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-8
LTE Band 12 Conducted Powers - 5 MHz Bandwidth

LTE Band 12 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.75	23.82	23.77	0	0
	1	12	23.74	23.81	23.84		0
	1	24	23.85	23.83	23.84		0
	12	0	22.82	22.91	22.82	0-1	1
	12	6	22.83	22.91	22.92		1
	12	13	22.91	22.86	22.89		1
	25	0	22.94	22.89	22.82		1
16QAM	1	0	23.13	23.16	23.11	0-1	1
	1	12	23.09	23.15	23.19		1
	1	24	23.14	23.13	23.12		1
	12	0	21.90	22.04	21.91	0-2	2
	12	6	21.93	22.01	22.03		2
	12	13	22.04	22.00	21.99		2
	25	0	22.01	21.94	21.89		2
64QAM	1	0	22.04	22.12	22.07	0-2	2
	1	12	22.02	22.10	22.13		2
	1	24	22.13	22.08	22.09		2
	12	0	20.93	21.04	20.92	0-3	3
	12	6	20.94	21.01	21.03		3
	12	13	21.00	20.97	20.98		3
	25	0	21.03	20.97	20.91		3

Table 9-9
LTE Band 12 Conducted Powers - 3 MHz Bandwidth

LTE Band 12 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23025 (700.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23165 (714.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.77	23.82	23.83	0	0
	1	7	23.85	23.89	23.93		0
	1	14	23.74	23.81	23.81		0
	8	0	22.79	22.85	22.87	0-1	1
	8	4	22.84	22.87	22.90		1
	8	7	22.79	22.85	22.88		1
	15	0	22.80	22.88	22.90		1
16QAM	1	0	23.12	23.17	23.15	0-1	1
	1	7	23.21	23.25	23.24		1
	1	14	23.09	23.17	23.12		1
	8	0	21.92	21.99	21.98	0-2	2
	8	4	21.96	22.01	22.01		2
	8	7	21.91	21.97	21.99		2
	15	0	21.88	21.91	21.94		2
64QAM	1	0	22.05	22.09	22.13	0-2	2
	1	7	22.13	22.20	22.19		2
	1	14	22.03	22.10	22.07		2
	8	0	20.91	20.94	20.95	0-3	3
	8	4	20.93	20.99	20.99		3
	8	7	20.90	20.95	20.96		3
	15	0	20.89	20.94	20.97		3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-10
LTE Band 12 Conducted Powers -1.4 MHz Bandwidth

LTE Band 12 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23017 (699.7 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23173 (715.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.71	23.76	23.74	0	0
	1	2	23.78	23.80	23.82		0
	1	5	23.70	23.74	23.74		0
	3	0	23.75	23.79	23.71		0
	3	2	23.78	23.82	23.75		0
	3	3	23.74	23.76	23.65		0
	6	0	22.76	22.81	22.82	0-1	1
16QAM	1	0	23.09	23.12	23.07	0-1	1
	1	2	23.14	23.17	23.11		1
	1	5	23.07	23.09	23.02		1
	3	0	22.96	22.99	22.93		1
	3	2	22.99	23.04	22.99		1
	3	3	22.94	22.98	22.87		1
	6	0	21.90	21.95	21.93	0-2	2
64QAM	1	0	21.97	22.01	21.99	0-2	2
	1	2	22.05	22.07	22.07		2
	1	5	21.96	22.01	22.01		2
	3	0	21.94	21.98	21.97		2
	3	2	21.97	21.99	21.99		2
	3	3	21.93	21.95	21.92		2
	6	0	20.85	20.91	20.88	0-3	3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.2 LTE Band 13

Table 9-11
LTE Band 13 Conducted Powers - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.78**	0	0
	1	25	24.74		0
	1	49	24.68		0
	25	0	**23.88**	0-1	1
	25	12	23.87		1
	25	25	23.81		1
	50	0	23.85		1
16QAM	1	0	23.94	0-1	1
	1	25	24.07		1
	1	49	24.01		1
	25	0	22.96	0-2	2
	25	12	22.99		2
	25	25	22.90		2
	50	0	22.86		2
64QAM	1	0	22.73	0-2	2
	1	25	22.86		2
	1	49	22.77		2
	25	0	21.79	0-3	3
	25	12	21.77		3
	25	25	21.73		3
	50	0	21.81		3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-12
LTE Band 13 Conducted Powers - 5 MHz Bandwidth

LTE Band 13 5 MHz Bandwidth					
Modulation	**RB Size**	**RB Offset**	**Mid Channel** **23230 (782.0 MHz)** **Conducted Power [dBm]**	**MPR Allowed per 3GPP [dB]**	**MPR [dB]**
QPSK	1	0	24.78	0	0
	1	12	24.70		0
	1	24	24.67		0
	12	0	23.90	0-1	1
	12	6	23.87		1
	12	13	23.83		1
	25	0	23.87		1
16QAM	1	0	24.28	0-1	1
	1	12	24.25		1
	1	24	24.23		1
	12	0	23.00	0-2	2
	12	6	22.99		2
	12	13	22.94		2
	25	0	22.96		2
64QAM	1	0	23.05	0-2	2
	1	12	22.93		2
	1	24	22.88		2
	12	0	21.93	0-3	3
	12	6	21.90		3
	12	13	21.88		3
	25	0	21.86		3

Note: LTE Band 13 at 5 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.3 LTE Band 5 (Cell)

Table 9-13
LTE Band 5 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20525 (836.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.54**	0	0
	1	25	24.53		0
	1	49	24.48		0
	25	0	**23.62**	0-1	1
	25	12	23.61		1
	25	25	23.51		1
	50	0	23.59		1
16QAM	1	0	23.86	0-1	1
	1	25	23.84		1
	1	49	23.78		1
	25	0	22.68	0-2	2
	25	12	22.66		2
	25	25	22.59		2
	50	0	22.65		2
64QAM	1	0	22.79	0-2	2
	1	25	22.76		2
	1	49	22.68		2
	25	0	21.74	0-3	3
	25	12	21.70		3
	25	25	21.61		3
	50	0	21.69		3

Note: LTE Band 5 (Cell) at 10 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-14
LTE Band 5 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 5 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20425 (826.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20625 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.21	24.40	24.40	0	0
	1	12	24.20	24.32	24.35		0
	1	24	24.29	24.33	24.34		0
	12	0	23.28	23.40	23.42	0-1	1
	12	6	23.38	23.42	23.43		1
	12	13	23.35	23.40	23.39		1
	25	0	23.37	23.39	23.39		1
16QAM	1	0	23.63	23.77	23.77	0-1	1
	1	12	23.59	23.69	23.73		1
	1	24	23.67	23.64	23.67		1
	12	0	22.43	22.53	22.54	0-2	2
	12	6	22.53	22.53	22.55		2
	12	13	22.48	22.50	22.48		2
	25	0	22.47	22.48	22.49		2
64QAM	1	0	22.53	22.70	22.70	0-2	2
	1	12	22.54	22.63	22.66		2
	1	24	22.61	22.58	22.61		2
	12	0	21.37	21.56	21.53	0-3	3
	12	6	21.52	21.55	21.55		3
	12	13	21.48	21.49	21.50		3
	25	0	21.47	21.49	21.51		3

Table 9-15
LTE Band 5 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 5 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20415 (825.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20635 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.23	24.37	24.36	0	0
	1	7	24.29	24.44	24.43		0
	1	14	24.19	24.32	24.34		0
	8	0	23.25	23.38	23.38	0-1	1
	8	4	23.28	23.42	23.39		1
	8	7	23.24	23.38	23.36		1
	15	0	23.25	23.38	23.37		1
16QAM	1	0	23.56	23.72	23.73	0-1	1
	1	7	23.69	23.78	23.80		1
	1	14	23.57	23.66	23.66		1
	8	0	22.39	22.51	22.52	0-2	2
	8	4	22.42	22.52	22.53		2
	8	7	22.39	22.50	22.49		2
	15	0	22.32	22.44	22.43		2
64QAM	1	0	22.51	22.66	22.65	0-2	2
	1	7	22.61	22.74	22.73		2
	1	14	22.51	22.59	22.59		2
	8	0	21.35	21.47	21.50	0-3	3
	8	4	21.38	21.53	21.52		3
	8	7	21.35	21.47	21.47		3
	15	0	21.35	21.49	21.48		3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-16
LTE Band 5 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 5 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20407 (824.7 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20643 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.20	24.26	24.25	0	0
	1	2	24.20	24.33	24.32		0
	1	5	24.12	24.27	24.25		0
	3	0	24.19	24.32	24.30		0
	3	2	24.22	24.34	24.34		0
	3	3	24.20	24.30	24.30		0
	6	0	23.20	23.31	23.31	0-1	1
16QAM	1	0	23.50	23.62	23.62	0-1	1
	1	2	23.58	23.70	23.70		1
	1	5	23.51	23.58	23.60		1
	3	0	23.41	23.55	23.54		1
	3	2	23.45	23.56	23.57		1
	3	3	23.40	23.51	23.50		1
	6	0	22.36	22.48	22.48	0-2	2
64QAM	1	0	22.45	22.55	22.56	0-2	2
	1	2	22.52	22.64	22.63		2
	1	5	22.42	22.54	22.52		2
	3	0	22.38	22.51	22.49		2
	3	2	22.42	22.54	22.53		2
	3	3	22.37	22.49	22.49		2
	6	0	21.30	21.45	21.44	0-3	3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.4 LTE Band 26 (Cell)

Table 9-17
LTE Band 26 (Cell) Conducted Powers - 15 MHz Bandwidth

LTE Band 26 (Cell) 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.31**	0	0
	1	36	24.23		0
	1	74	24.16		0
	36	0	**23.30**	0-1	1
	36	18	23.25		1
	36	37	23.16		1
	75	0	23.20		1
16QAM	1	0	23.64	0-1	1
	1	36	23.52		1
	1	74	23.49		1
	36	0	22.39	0-2	2
	36	18	22.36		2
	36	37	22.27		2
	75	0	22.32		2
64QAM	1	0	22.59	0-2	2
	1	36	22.49		2
	1	74	22.44		2
	36	0	21.41	0-3	3
	36	18	21.38		3
	36	37	21.27		3
	75	0	21.32		3

Note: LTE Band 26 (Cell) at 15 MHz bandwidth does not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-18
LTE Band 26 (Cell) Conducted Powers - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.01	24.05	24.08	0	0
	1	25	23.96	23.99	24.09		0
	1	49	24.01	24.03	24.00		0
	25	0	23.04	23.04	23.05	0-1	1
	25	12	23.12	23.07	23.17		1
	25	25	23.09	22.97	23.08		1
	50	0	23.11	23.03	23.03		1
16QAM	1	0	23.36	23.40	23.37	0-1	1
	1	25	23.33	23.37	23.45		1
	1	49	23.38	23.40	23.39		1
	25	0	22.12	22.15	22.16	0-2	2
	25	12	22.21	22.14	22.26		2
	25	25	22.12	22.08	22.17		2
	50	0	22.18	22.10	22.12		2
64QAM	1	0	22.30	22.34	22.31	0-2	2
	1	25	22.25	22.30	22.39		2
	1	49	22.30	22.32	22.29		2
	25	0	21.13	21.14	21.16	0-3	3
	25	12	21.20	21.15	21.25		3
	25	25	21.14	21.07	21.17		3
	50	0	21.20	21.12	21.12		3

Table 9-19
LTE Band 26 (Cell) Conducted Powers - 5 MHz Bandwidth

LTE Band 26 (Cell) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26715 (816.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27015 (846.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.01	24.05	24.11	0	0
	1	12	23.96	23.97	24.05		0
	1	24	23.98	24.10	24.04		0
	12	0	23.07	23.02	23.12	0-1	1
	12	6	23.05	23.05	23.14		1
	12	13	23.03	23.03	23.10		1
	25	0	23.04	23.00	23.11		1
16QAM	1	0	23.37	23.39	23.47	0-1	1
	1	12	23.35	23.36	23.43		1
	1	24	23.32	23.44	23.41		1
	12	0	22.18	22.18	22.23	0-2	2
	12	6	22.20	22.16	22.25		2
	12	13	22.16	22.11	22.17		2
	25	0	22.12	22.13	22.17		2
64QAM	1	0	22.32	22.32	22.40	0-2	2
	1	12	22.27	22.26	22.35		2
	1	24	22.25	22.36	22.31		2
	12	0	21.18	21.14	21.24	0-3	3
	12	6	21.18	21.16	21.22		3
	12	13	21.13	21.11	21.20		3
	25	0	21.14	21.13	21.18		3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-20
LTE Band 26 (Cell) Conducted Powers - 3 MHz Bandwidth

LTE Band 26 (Cell) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26705 (815.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27025 (847.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.99	24.02	24.08	0	0
	1	7	24.09	24.07	24.15		0
	1	14	23.97	24.08	24.03		0
	8	0	23.01	23.01	23.08	0-1	1
	8	4	23.03	23.03	23.09		1
	8	7	23.00	22.99	23.07		1
	15	0	23.02	23.01	23.06		1
16QAM	1	0	23.34	23.38	23.42	0-1	1
	1	7	23.45	23.43	23.48		1
	1	14	23.31	23.43	23.36		1
	8	0	22.16	22.12	22.21	0-2	2
	8	4	22.16	22.15	22.20		2
	8	7	22.12	22.12	22.17		2
	15	0	22.09	22.07	22.13		2
64QAM	1	0	22.28	22.30	22.36	0-2	2
	1	7	22.37	22.37	22.45		2
	1	14	22.29	22.36	22.29		2
	8	0	21.14	21.11	21.17	0-3	3
	8	4	21.15	21.14	21.20		3
	8	7	21.11	21.11	21.15		3
	15	0	21.13	21.10	21.15		3

Table 9-21
LTE Band 26 (Cell) Conducted Powers -1.4 MHz Bandwidth

LTE Band 26 (Cell) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26697 (814.7 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27033 (848.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.92	23.95	23.99	0	0
	1	2	24.00	23.99	24.04		0
	1	5	23.93	23.91	23.97		0
	3	0	23.97	23.97	24.01		0
	3	2	23.99	23.99	24.05		0
	3	3	23.97	23.95	24.00		0
	6	0	22.99	22.96	23.02	0-1	1
16QAM	1	0	23.31	23.31	23.33	0-1	1
	1	2	23.39	23.35	23.38		1
	1	5	23.26	23.26	23.30		1
	3	0	23.16	23.17	23.23		1
	3	2	23.20	23.21	23.25		1
	3	3	23.18	23.15	23.20		1
	6	0	22.12	22.11	22.15	0-2	2
64QAM	1	0	22.17	22.17	22.24	0-2	2
	1	2	22.25	22.23	22.29		2
	1	5	22.14	22.16	22.20		2
	3	0	22.14	22.15	22.20		2
	3	2	22.20	22.18	22.23		2
	3	3	22.16	22.12	22.18		2
	6	0	21.08	21.07	21.10	0-3	3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.5 Maximum LTE Band 66 (AWS)

Table 9-22
LTE Band 66 (AWS) Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.73	**24.05**	23.91	0	0
	1	50	23.62	23.86	23.78		0
	1	99	23.68	23.94	23.82		0
	50	0	22.80	**23.02**	22.98	0-1	1
	50	25	22.84	22.97	22.92		1
	50	50	22.78	22.85	22.86		1
	100	0	22.83	22.95	22.92		1
16QAM	1	0	22.99	23.24	23.29	0-1	1
	1	50	22.91	23.14	23.09		1
	1	99	22.98	23.17	23.16		1
	50	0	21.90	22.09	22.04	0-2	2
	50	25	21.89	22.02	21.99		2
	50	50	21.86	21.98	21.93		2
	100	0	21.90	22.03	21.98		2
64QAM	1	0	21.97	22.19	22.25	0-2	2
	1	50	21.89	22.06	22.04		2
	1	99	21.94	22.11	22.10		2
	50	0	20.89	21.09	21.09	0-3	3
	50	25	20.91	21.04	21.03		3
	50	50	20.88	20.98	20.94		3
	100	0	20.90	21.01	21.03		3

Table 9-23
LTE Band 66 (AWS) Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.92	24.17	24.24	0	0
	1	36	23.86	24.06	24.19		0
	1	74	23.90	24.01	24.13		0
	36	0	23.01	23.22	23.21	0-1	1
	36	18	22.96	23.18	23.14		1
	36	37	22.99	23.11	23.17		1
	75	0	22.95	23.17	23.14		1
16QAM	1	0	23.26	23.51	23.63	0-1	1
	1	36	23.22	23.40	23.54		1
	1	74	23.26	23.37	23.51		1
	36	0	22.09	22.34	22.28	0-2	2
	36	18	22.03	22.24	22.26		2
	36	37	22.09	22.17	22.28		2
	75	0	22.00	22.22	22.20		2
64QAM	1	0	22.21	22.44	22.52	0-2	2
	1	36	22.14	22.34	22.46		2
	1	74	22.19	22.27	22.40		2
	36	0	21.08	21.32	21.29	0-3	3
	36	18	21.02	21.24	21.25		3
	36	37	21.10	21.17	21.26		3
	75	0	21.01	21.25	21.22		3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-24
LTE Band 66 (AWS) Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.85	24.07	24.14	0	0
	1	25	23.85	24.05	24.15		0
	1	49	23.82	23.99	24.07		0
	25	0	22.96	23.23	23.16	0-1	1
	25	12	22.92	23.18	23.20		1
	25	25	22.90	23.09	23.17		1
	50	0	22.92	23.17	23.10		1
16QAM	1	0	23.15	23.39	23.49	0-1	1
	1	25	23.18	23.38	23.51		1
	1	49	23.18	23.35	23.47		1
	25	0	22.06	22.25	22.21	0-2	2
	25	12	22.00	22.23	22.31		2
	25	25	21.96	22.20	22.25		2
	50	0	21.99	22.23	22.17		2
64QAM	1	0	22.14	22.33	22.42	0-2	2
	1	25	22.13	22.33	22.46		2
	1	49	22.10	22.28	22.39		2
	25	0	21.05	21.30	21.24	0-3	3
	25	12	21.00	21.24	21.31		3
	25	25	20.96	21.21	21.26		3
	50	0	21.02	21.24	21.20		3

Table 9-25
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.00	24.03	24.15	0	0
	1	12	23.94	24.01	24.09		0
	1	24	23.91	23.96	24.08		0
	12	0	23.05	23.09	23.15	0-1	1
	12	6	23.03	23.05	23.20		1
	12	13	22.98	23.02	23.10		1
	25	0	23.02	23.05	23.11		1
16QAM	1	0	23.16	23.18	23.35	0-1	1
	1	12	23.12	23.12	23.26		1
	1	24	23.08	23.14	23.27		1
	12	0	22.10	22.21	22.22	0-2	2
	12	6	22.08	22.27	22.24		2
	12	13	22.05	22.20	22.21		2
	25	0	22.08	22.21	22.19		2
64QAM	1	0	22.23	22.35	22.41	0-2	2
	1	12	22.15	22.35	22.34		2
	1	24	22.17	22.33	22.35		2
	12	0	21.17	21.29	21.26	0-3	3
	12	6	21.16	21.30	21.30		3
	12	13	21.09	21.24	21.25		3
	25	0	21.11	21.27	21.23		3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-26
LTE Band 66 (AWS) Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131987 (1711.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132657 (1778.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.76	24.06	24.17	0	0
	1	7	23.82	24.11	24.21		0
	1	14	23.70	24.01	24.11		0
	8	0	22.80	23.14	23.14	0-1	1
	8	4	22.80	23.13	23.18		1
	8	7	22.79	23.11	23.11		1
	15	0	22.80	23.10	23.14		1
16QAM	1	0	23.07	23.42	23.47	0-1	1
	1	7	23.17	23.47	23.55		1
	1	14	23.03	23.38	23.45		1
	8	0	21.90	22.25	22.25	0-2	2
	8	4	21.94	22.25	22.29		2
	8	7	21.92	22.23	22.26		2
	15	0	21.84	22.17	22.21		2
64QAM	1	0	22.00	22.31	22.45	0-2	2
	1	7	22.09	22.42	22.51		2
	1	14	21.99	22.29	22.39		2
	8	0	20.88	21.21	21.24	0-3	3
	8	4	20.90	21.24	21.28		3
	8	7	20.90	21.21	21.25		3
	15	0	20.87	21.21	21.25		3

Table 9-27
LTE Band 66 (AWS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131979 (1710.7 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132665 (1779.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.65	23.94	24.06	0	0
	1	2	23.70	24.01	24.11		0
	1	5	23.64	23.94	24.03		0
	3	0	23.66	23.98	24.07		0
	3	2	23.71	24.01	24.10		0
	3	3	23.67	23.98	24.08		0
	6	0	22.71	23.04	23.09	0-1	1
16QAM	1	0	22.99	23.31	23.44	0-1	1
	1	2	23.05	23.38	23.47		1
	1	5	22.99	23.29	23.37		1
	3	0	22.87	23.21	23.31		1
	3	2	22.94	23.25	23.34		1
	3	3	22.87	23.20	23.31		1
	6	0	21.87	22.19	22.23	0-2	2
64QAM	1	0	21.94	22.25	22.33	0-2	2
	1	2	22.00	22.32	22.40		2
	1	5	21.91	22.24	22.29		2
	3	0	21.87	22.19	22.28		2
	3	2	21.92	22.23	22.33		2
	3	3	21.86	22.17	22.28		2
	6	0	20.83	21.18	21.21	0-3	3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.6 Hotspot Mode Reduced LTE Band 66 (AWS)

Table 9-28
LTE Band 66 (AWS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.00	19.40	**19.61**	0	0
	1	50	18.95	19.30	19.41		0
	1	99	18.99	19.37	19.48		0
	50	0	19.20	19.59	**19.60**	0-1	0
	50	25	19.12	19.46	19.50		0
	50	50	19.17	19.41	19.40		0
	100	0	19.32	19.50	19.59		0
16QAM	1	0	19.63	19.90	20.00	0-1	0
	1	50	19.52	19.79	19.88		0
	1	99	19.67	19.95	20.02		0
	50	0	19.43	19.76	19.79	0-2	0
	50	25	19.47	19.67	19.81		0
	50	50	19.50	19.64	19.75		0
	100	0	19.51	19.70	19.83		0
64QAM	1	0	19.62	19.84	19.98	0-2	0
	1	50	19.44	19.74	20.07		0
	1	99	19.57	19.71	19.94		0
	50	0	19.45	19.74	19.81	0-3	0
	50	25	19.47	19.70	19.87		0
	50	50	19.53	19.62	19.78		0
	100	0	19.40	19.71	19.81		0

Table 9-29
LTE Band 66 (AWS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.23	19.54	19.68	0	0
	1	36	19.11	19.40	19.44		0
	1	74	19.18	19.49	19.52		0
	36	0	19.28	19.54	19.64	0-1	0
	36	18	19.22	19.52	19.55		0
	36	37	19.25	19.44	19.46		0
	75	0	19.30	19.50	19.54		0
16QAM	1	0	19.53	19.85	20.05	0-1	0
	1	36	19.44	19.74	19.81		0
	1	74	19.56	19.83	19.85		0
	36	0	19.31	19.62	19.71	0-2	0
	36	18	19.27	19.58	19.60		0
	36	37	19.39	19.52	19.57		0
	75	0	19.40	19.61	19.64		0
64QAM	1	0	19.47	19.77	19.93	0-2	0
	1	36	19.38	19.66	19.72		0
	1	74	19.45	19.72	19.76		0
	36	0	19.36	19.62	19.68	0-3	0
	36	18	19.28	19.57	19.63		0
	36	37	19.33	19.51	19.54		0
	75	0	19.38	19.55	19.62		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-30
LTE Band 66 (AWS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.16	19.42	19.55	0	0
	1	25	19.12	19.39	19.54		0
	1	49	19.10	19.36	19.47		0
	25	0	19.22	19.54	19.55	0-1	0
	25	12	19.19	19.47	19.50		0
	25	25	19.15	19.45	19.58		0
	50	0	19.18	19.47	19.51		0
16QAM	1	0	19.43	19.75	19.90	0-1	0
	1	25	19.45	19.75	19.89		0
	1	49	19.43	19.69	19.83		0
	25	0	19.29	19.64	19.66	0-2	0
	25	12	19.28	19.57	19.61		0
	25	25	19.23	19.53	19.66		0
	50	0	19.25	19.54	19.61		0
64QAM	1	0	19.41	19.69	19.83	0-2	0
	1	25	19.40	19.66	19.79		0
	1	49	19.35	19.62	19.77		0
	25	0	19.32	19.58	19.67	0-3	0
	25	12	19.30	19.57	19.60		0
	25	25	19.26	19.54	19.61		0
	50	0	19.31	19.58	19.61		0

Table 9-31
LTE Band 66 (AWS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.08	19.46	19.58	0	0
	1	12	19.01	19.36	19.50		0
	1	24	19.12	19.36	19.51		0
	12	0	19.09	19.47	19.59	0-1	0
	12	6	19.12	19.47	19.62		0
	12	13	19.15	19.43	19.55		0
	25	0	19.19	19.45	19.57		0
16QAM	1	0	19.40	19.79	19.95	0-1	0
	1	12	19.35	19.74	19.84		0
	1	24	19.41	19.70	19.84		0
	12	0	19.16	19.58	19.69	0-2	0
	12	6	19.16	19.58	19.69		0
	12	13	19.16	19.57	19.69		0
	25	0	19.25	19.54	19.66		0
64QAM	1	0	19.35	19.70	19.85	0-2	0
	1	12	19.28	19.64	19.76		0
	1	24	19.37	19.60	19.75		0
	12	0	19.19	19.57	19.66	0-3	0
	12	6	19.21	19.58	19.65		0
	12	13	19.20	19.58	19.66		0
	25	0	19.27	19.55	19.64		0

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-32
LTE Band 66 (AWS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131987 (1711.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132657 (1778.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.04	19.38	19.50	0	0
	1	7	19.10	19.45	19.59		0
	1	14	18.98	19.32	19.47		0
	8	0	19.07	19.40	19.55	0-1	0
	8	4	19.06	19.44	19.56		0
	8	7	19.06	19.41	19.53		0
	15	0	19.06	19.42	19.55		0
16QAM	1	0	19.34	19.74	19.84	0-1	0
	1	7	19.43	19.82	19.91		0
	1	14	19.31	19.71	19.82		0
	8	0	19.13	19.57	19.66	0-2	0
	8	4	19.19	19.57	19.66		0
	8	7	19.14	19.52	19.65		0
	15	0	19.10	19.48	19.58		0
64QAM	1	0	19.29	19.62	19.75	0-2	0
	1	7	19.37	19.72	19.85		0
	1	14	19.25	19.59	19.72		0
	8	0	19.16	19.52	19.62	0-3	0
	8	4	19.17	19.53	19.65		0
	8	7	19.15	19.49	19.62		0
	15	0	19.13	19.49	19.61		0

Table 9-33
LTE Band 66 (AWS) Reduced Conducted Powers -1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131979 (1710.7 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132665 (1779.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.90	19.24	19.39	0	0
	1	2	18.95	19.30	19.43		0
	1	5	18.90	19.23	19.34		0
	3	0	18.92	19.29	19.41		0
	3	2	18.94	19.31	19.44		0
	3	3	18.91	19.28	19.39		0
	6	0	18.94	19.31	19.43	0-1	0
16QAM	1	0	19.23	19.60	19.72	0-1	0
	1	2	19.27	19.66	19.77		0
	1	5	19.17	19.60	19.68		0
	3	0	19.12	19.51	19.62		0
	3	2	19.16	19.55	19.66		0
	3	3	19.11	19.50	19.62		0
	6	0	19.07	19.47	19.57	0-2	0
64QAM	1	0	19.17	19.50	19.63	0-2	0
	1	2	19.22	19.56	19.68		0
	1	5	19.13	19.49	19.59		0
	3	0	19.11	19.45	19.57		0
	3	2	19.14	19.50	19.64		0
	3	3	19.09	19.44	19.57		0
	6	0	19.06	19.42	19.53	0-3	0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.7 Grip Sensor Mode Reduced LTE Band 66 (AWS)

Table 9-34
LTE Band 66 (AWS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	20.31	20.49	**20.63**	0	0
	1	50	20.25	20.37	20.44		0
	1	99	20.33	20.52	20.49		0
	50	0	20.36	20.56	**20.61**	0-1	0
	50	25	20.39	20.51	20.57		0
	50	50	20.40	20.48	20.47		0
	100	0	20.37	20.52	20.56		0
16QAM	1	0	20.56	20.83	20.98	0-1	0
	1	50	20.48	20.76	20.71		0
	1	99	20.59	20.83	20.78		0
	50	0	20.38	20.69	20.67	0-2	0
	50	25	20.42	20.59	20.61		0
	50	50	20.49	20.53	20.55		0
	100	0	20.44	20.61	20.61		0
64QAM	1	0	20.52	20.75	20.86	0-2	0
	1	50	20.40	20.71	20.63		0
	1	99	20.58	20.72	20.73		0
	50	0	20.39	20.69	20.72	0-3	0
	50	25	20.47	20.63	20.65		0
	50	50	20.51	20.59	20.58		0
	100	0	20.44	20.59	20.60		0

Table 9-35
LTE Band 66 (AWS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 66 (AWS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132047 (1717.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132597 (1772.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	20.14	20.48	20.54	0	0
	1	36	20.07	20.34	20.41		0
	1	74	20.19	20.31	20.36		0
	36	0	20.20	20.50	20.46	0-1	0
	36	18	20.20	20.45	20.42		0
	36	37	20.23	20.40	20.44		0
	75	0	20.29	20.44	20.39		0
16QAM	1	0	20.48	20.75	20.89	0-1	0
	1	36	20.39	20.68	20.75		0
	1	74	20.45	20.65	20.69		0
	36	0	20.27	20.59	20.58	0-2	0
	36	18	20.21	20.52	20.48		0
	36	37	20.29	20.45	20.52		0
	75	0	20.32	20.50	20.45		0
64QAM	1	0	20.41	20.73	20.82	0-2	0
	1	36	20.34	20.62	20.67		0
	1	74	20.41	20.58	20.63		0
	36	0	20.29	20.59	20.58	0-3	0
	36	18	20.25	20.53	20.50		0
	36	37	20.28	20.47	20.52		0
	75	0	20.33	20.54	20.50		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-36
LTE Band 66 (AWS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 66 (AWS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132022 (1715.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132622 (1775.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	20.02	20.40	20.42	0	0
	1	25	20.07	20.34	20.39		0
	1	49	20.03	20.29	20.35		0
	25	0	20.19	20.44	20.41	0-1	0
	25	12	20.17	20.42	20.47		0
	25	25	20.09	20.36	20.42		0
	50	0	20.15	20.40	20.39		0
16QAM	1	0	20.36	20.67	20.74	0-1	0
	1	25	20.39	20.66	20.72		0
	1	49	20.36	20.61	20.70		0
	25	0	20.23	20.55	20.48	0-2	0
	25	12	20.21	20.48	20.57		0
	25	25	20.15	20.48	20.53		0
	50	0	20.19	20.47	20.45		0
64QAM	1	0	20.31	20.62	20.70	0-2	0
	1	25	20.32	20.62	20.66		0
	1	49	20.26	20.55	20.61		0
	25	0	20.25	20.56	20.53	0-3	0
	25	12	20.22	20.52	20.57		0
	25	25	20.22	20.47	20.52		0
	50	0	20.23	20.52	20.47		0

Table 9-37
LTE Band 66 (AWS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	20.02	20.42	20.45	0	0
	1	12	19.91	20.32	20.35		0
	1	24	20.05	20.30	20.37		0
	12	0	20.00	20.41	20.43	0-1	0
	12	6	20.01	20.42	20.45		0
	12	13	20.10	20.37	20.41		0
	25	0	20.11	20.39	20.41		0
16QAM	1	0	20.32	20.69	20.74	0-1	0
	1	12	20.28	20.66	20.67		0
	1	24	20.37	20.64	20.67		0
	12	0	20.12	20.52	20.56	0-2	0
	12	6	20.12	20.49	20.58		0
	12	13	20.12	20.53	20.58		0
	25	0	20.18	20.45	20.50		0
64QAM	1	0	20.24	20.65	20.70	0-2	0
	1	12	20.20	20.59	20.63		0
	1	24	20.29	20.57	20.59		0
	12	0	20.10	20.55	20.55	0-3	0
	12	6	20.11	20.54	20.56		0
	12	13	20.10	20.55	20.56		0
	25	0	20.21	20.49	20.53		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-38
LTE Band 66 (AWS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 66 (AWS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131987 (1711.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132657 (1778.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.92	20.32	20.39	0	0
	1	7	20.01	20.39	20.43		0
	1	14	19.87	20.29	20.31		0
	8	0	19.97	20.36	20.41	0-1	0
	8	4	19.99	20.38	20.41		0
	8	7	19.96	20.37	20.37		0
	15	0	19.98	20.35	20.40		0
16QAM	1	0	20.25	20.63	20.70	0-1	0
	1	7	20.36	20.74	20.78		0
	1	14	20.23	20.64	20.68		0
	8	0	20.09	20.47	20.51	0-2	0
	8	4	20.12	20.49	20.53		0
	8	7	20.08	20.46	20.50		0
	15	0	20.05	20.41	20.44		0
64QAM	1	0	20.20	20.60	20.62	0-2	0
	1	7	20.29	20.68	20.70		0
	1	14	20.16	20.53	20.57		0
	8	0	20.08	20.47	20.50	0-3	0
	8	4	20.11	20.49	20.52		0
	8	7	20.08	20.45	20.48		0
	15	0	20.07	20.47	20.49		0

Table 9-39
LTE Band 66 (AWS) Reduced Conducted Powers – 1.4 MHz Bandwidth

LTE Band 66 (AWS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131979 (1710.7 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132665 (1779.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.88	20.27	20.28	0	0
	1	2	19.91	20.30	20.33		0
	1	5	19.87	20.20	20.27		0
	3	0	19.88	20.27	20.33		0
	3	2	19.92	20.31	20.36		0
	3	3	19.87	20.26	20.29		0
	6	0	19.90	20.29	20.34	0-1	0
16QAM	1	0	20.20	20.56	20.62	0-1	0
	1	2	20.25	20.64	20.68		0
	1	5	20.17	20.53	20.58		0
	3	0	20.07	20.47	20.50		0
	3	2	20.11	20.51	20.56		0
	3	3	20.07	20.46	20.51		0
	6	0	20.05	20.44	20.47	0-2	0
64QAM	1	0	20.12	20.51	20.53	0-2	0
	1	2	20.18	20.57	20.62		0
	1	5	20.10	20.47	20.51		0
	3	0	20.06	20.45	20.49		0
	3	2	20.11	20.49	20.53		0
	3	3	20.06	20.43	20.48		0
	6	0	20.02	20.42	20.45	0-3	0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.8 Maximum LTE Band 2 (PCS)

Table 9-40
LTE Band 2 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18700 (1860.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19100 (1900.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.01	24.11	**24.23**	0	0
	1	50	23.71	23.83	24.01		0
	1	99	23.82	23.95	23.91		0
	50	0	22.88	23.01	**23.18**	0-1	1
	50	25	22.87	22.95	23.09		1
	50	50	22.79	22.88	23.03		1
	100	0	22.88	22.94	23.11		1
16QAM	1	0	23.27	23.38	23.47	0-1	1
	1	50	22.97	23.15	23.36		1
	1	99	23.11	23.27	23.23		1
	50	0	22.00	22.11	22.25	0-2	2
	50	25	21.99	22.02	22.17		2
	50	50	21.87	21.96	22.11		2
	100	0	21.95	22.04	22.18		2
64QAM	1	0	22.27	22.31	22.43	0-2	2
	1	50	21.95	22.10	22.26		2
	1	99	22.09	22.18	22.19		2
	50	0	20.99	21.16	21.24	0-3	3
	50	25	21.01	21.06	21.18		3
	50	50	20.94	21.01	21.13		3
	100	0	20.97	21.05	21.18		3

Table 9-41
LTE Band 2 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18675 (1857.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19125 (1902.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.86	23.83	24.12	0	0
	1	36	23.70	23.73	23.89		0
	1	74	23.63	23.71	23.84		0
	36	0	22.80	22.89	23.06	0-1	1
	36	18	22.74	22.85	23.01		1
	36	37	22.72	22.75	22.91		1
	75	0	22.74	22.82	22.98		1
16QAM	1	0	23.07	23.17	23.40	0-1	1
	1	36	22.97	23.07	23.26		1
	1	74	22.93	23.02	23.20		1
	36	0	21.89	21.97	22.12	0-2	2
	36	18	21.83	21.94	22.12		2
	36	37	21.83	21.83	22.01		2
	75	0	21.81	21.93	22.07		2
64QAM	1	0	22.02	22.11	22.37	0-2	2
	1	36	21.90	22.00	22.19		2
	1	74	21.93	21.99	22.14		2
	36	0	20.94	21.01	21.15	0-3	3
	36	18	20.83	20.93	21.11		3
	36	37	20.86	20.88	21.04		3
	75	0	20.83	20.94	21.08		3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-42
LTE Band 2 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18650 (1855.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19150 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.92	23.97	24.01	0	0
	1	25	23.56	23.74	23.88		0
	1	49	23.80	23.91	23.80		0
	25	0	22.70	22.87	23.00	0-1	1
	25	12	22.77	22.83	22.97		1
	25	25	22.70	22.78	22.89		1
	50	0	22.74	22.84	22.95		1
16QAM	1	0	23.22	23.30	23.36	0-1	1
	1	25	22.90	23.09	23.25		1
	1	49	23.16	23.26	23.17		1
	25	0	21.79	21.98	22.07	0-2	2
	25	12	21.83	21.91	22.07		2
	25	25	21.79	21.88	21.99		2
	50	0	21.86	21.93	22.05		2
64QAM	1	0	22.16	22.20	22.27	0-2	2
	1	25	21.83	22.00	22.18		2
	1	49	22.07	22.18	22.09		2
	25	0	20.79	20.96	21.12	0-3	3
	25	12	20.84	20.93	21.07		3
	25	25	20.81	20.89	21.01		3
	50	0	20.87	20.90	21.05		3

Table 9-43
LTE Band 2 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18625 (1852.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19175 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.73	23.84	23.94	0	0
	1	12	23.68	23.74	23.83		0
	1	24	23.63	23.74	23.81		0
	12	0	22.65	22.81	22.92	0-1	1
	12	6	22.62	22.80	22.94		1
	12	13	22.61	22.79	22.88		1
	25	0	22.61	22.79	22.92		1
16QAM	1	0	22.91	23.19	23.27	0-1	1
	1	12	22.90	23.08	23.19		1
	1	24	22.90	23.07	23.16		1
	12	0	21.76	21.92	22.03	0-2	2
	12	6	21.76	21.89	22.06		2
	12	13	21.71	21.88	21.98		2
	25	0	21.70	21.88	22.01		2
64QAM	1	0	21.90	22.09	22.19	0-2	2
	1	12	21.83	22.02	22.14		2
	1	24	21.83	21.99	22.08		2
	12	0	20.78	20.94	21.03	0-3	3
	12	6	20.79	20.95	21.04		3
	12	13	20.79	20.94	21.04		3
	25	0	20.71	20.87	21.00		3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-44
LTE Band 2 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18615 (1851.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19185 (1908.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.59	23.73	23.84	0	0
	1	7	23.64	23.82	23.91		0
	1	14	23.53	23.69	23.78		0
	8	0	22.63	22.79	22.86	0-1	1
	8	4	22.62	22.77	22.87		1
	8	7	22.60	22.74	22.84		1
	15	0	22.59	22.77	22.86		1
16QAM	1	0	22.83	23.07	23.18	0-1	1
	1	7	23.01	23.17	23.27		1
	1	14	22.89	23.07	23.13		1
	8	0	21.73	21.90	21.98	0-2	2
	8	4	21.74	21.90	22.00		2
	8	7	21.70	21.85	21.93		2
	15	0	21.65	21.82	21.93		2
64QAM	1	0	21.81	22.02	22.14	0-2	2
	1	7	21.92	22.13	22.23		2
	1	14	21.82	22.01	22.06		2
	8	0	20.71	20.88	20.99	0-3	3
	8	4	20.72	20.88	21.00		3
	8	7	20.71	20.89	21.00		3
	15	0	20.70	20.89	20.96		3

Table 9-45
LTE Band 2 (PCS) Conducted Powers -1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18607 (1850.7 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19193 (1909.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.49	23.66	23.72	0	0
	1	2	23.55	23.71	23.79		0
	1	5	23.48	23.63	23.74		0
	3	0	23.54	23.70	23.77		0
	3	2	23.58	23.73	23.79		0
	3	3	23.50	23.70	23.76		0
	6	0	22.55	22.71	22.79	0-1	1
16QAM	1	0	22.82	22.99	23.12	0-1	1
	1	2	22.86	23.08	23.16		1
	1	5	22.79	23.00	23.06		1
	3	0	22.76	22.88	22.99		1
	3	2	22.79	22.95	23.03		1
	3	3	22.73	22.89	22.97		1
	6	0	21.70	21.84	21.94	0-2	2
64QAM	1	0	21.83	21.92	22.02	0-2	2
	1	2	21.90	21.99	22.06		2
	1	5	21.83	21.91	21.99		2
	3	0	21.96	21.86	22.00		2
	3	2	21.95	21.86	22.00		2
	3	3	21.97	21.84	21.99		2
	6	0	20.66	20.82	20.90	0-3	3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.9 Hotspot Mode Reduced LTE Band 2 (PCS)

Table 9-46
LTE Band 2 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18700 (1860.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19100 (1900.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.23	19.49	**19.67**	0	0
	1	50	19.06	19.28	19.53		0
	1	99	19.29	19.48	19.48		0
	50	0	19.13	19.47	19.61	0-1	0
	50	25	19.18	19.39	**19.62**		0
	50	50	19.17	19.34	19.59		0
	100	0	19.17	19.42	19.53		0
16QAM	1	0	19.57	19.73	19.93	0-1	0
	1	50	19.16	19.59	19.81		0
	1	99	19.44	19.73	19.80		0
	50	0	19.22	19.57	19.66	0-2	0
	50	25	19.23	19.46	19.70		0
	50	50	19.28	19.43	19.66		0
	100	0	19.22	19.42	19.62		0
64QAM	1	0	19.48	19.71	19.84	0-2	0
	1	50	19.11	19.54	19.67		0
	1	99	19.41	19.73	19.75		0
	50	0	19.18	19.58	19.63	0-3	0
	50	25	19.22	19.49	19.67		0
	50	50	19.26	19.46	19.62		0
	100	0	19.21	19.49	19.56		0

Table 9-47
LTE Band 2 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18675 (1857.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19125 (1902.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.03	19.26	19.53	0	0
	1	36	18.90	19.13	19.36		0
	1	74	18.93	19.13	19.34		0
	36	0	19.05	19.28	19.52	0-1	0
	36	18	19.02	19.23	19.45		0
	36	37	19.06	19.18	19.39		0
	75	0	18.99	19.24	19.45		0
16QAM	1	0	19.35	19.52	19.92	0-1	0
	1	36	19.26	19.47	19.72		0
	1	74	19.30	19.46	19.67		0
	36	0	19.18	19.39	19.58	0-2	0
	36	18	19.12	19.33	19.54		0
	36	37	19.12	19.27	19.52		0
	75	0	19.11	19.33	19.51		0
64QAM	1	0	19.28	19.54	19.78	0-2	0
	1	36	19.20	19.39	19.60		0
	1	74	19.22	19.39	19.60		0
	36	0	19.18	19.36	19.58	0-3	0
	36	18	19.12	19.30	19.53		0
	36	37	19.13	19.25	19.47		0
	75	0	19.09	19.31	19.51		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-48
LTE Band 2 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18650 (1855.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19150 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.14	19.35	19.42	0	0
	1	25	18.90	19.11	19.31		0
	1	49	19.04	19.28	19.26		0
	25	0	19.03	19.25	19.41	0-1	0
	25	12	19.01	19.24	19.38		0
	25	25	18.94	19.17	19.36		0
	50	0	18.99	19.22	19.41		0
16QAM	1	0	19.46	19.65	19.76	0-1	0
	1	25	19.25	19.44	19.64		0
	1	49	19.41	19.63	19.60		0
	25	0	19.17	19.32	19.53	0-2	0
	25	12	19.11	19.30	19.48		0
	25	25	19.05	19.25	19.46		0
	50	0	19.12	19.29	19.45		0
64QAM	1	0	19.40	19.61	19.65	0-2	0
	1	25	19.19	19.37	19.57		0
	1	49	19.36	19.56	19.54		0
	25	0	19.17	19.33	19.52	0-3	0
	25	12	19.13	19.30	19.49		0
	25	25	19.07	19.26	19.43		0
	50	0	19.14	19.30	19.50		0

Table 9-49
LTE Band 2 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18625 (1852.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19175 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.90	19.16	19.35	0	0
	1	12	18.81	19.11	19.26		0
	1	24	18.81	19.12	19.24		0
	12	0	18.92	19.19	19.37	0-1	0
	12	6	18.90	19.19	19.37		0
	12	13	18.87	19.14	19.31		0
	25	0	18.87	19.17	19.34		0
16QAM	1	0	19.17	19.54	19.71	0-1	0
	1	12	19.11	19.45	19.63		0
	1	24	19.16	19.45	19.62		0
	12	0	19.02	19.31	19.45	0-2	0
	12	6	19.02	19.31	19.47		0
	12	13	18.99	19.26	19.39		0
	25	0	18.97	19.26	19.44		0
64QAM	1	0	19.16	19.45	19.57	0-2	0
	1	12	19.10	19.37	19.54		0
	1	24	19.10	19.36	19.53		0
	12	0	19.03	19.30	19.44	0-3	0
	12	6	19.03	19.30	19.44		0
	12	13	19.03	19.30	19.44		0
	25	0	18.98	19.24	19.41		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-50
LTE Band 2 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18615 (1851.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19185 (1908.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.86	19.14	19.26	0	0
	1	7	18.91	19.19	19.34		0
	1	14	18.82	19.10	19.20		0
	8	0	18.89	19.15	19.33	0-1	0
	8	4	18.89	19.18	19.32		0
	8	7	18.84	19.15	19.28		0
	15	0	18.86	19.13	19.31		0
16QAM	1	0	19.07	19.48	19.61	0-1	0
	1	7	19.21	19.56	19.73		0
	1	14	19.10	19.43	19.60		0
	8	0	19.01	19.28	19.44	0-2	0
	8	4	19.01	19.30	19.46		0
	8	7	19.01	19.27	19.43		0
	15	0	18.93	19.20	19.39		0
64QAM	1	0	19.11	19.39	19.52	0-2	0
	1	7	19.18	19.47	19.62		0
	1	14	19.06	19.35	19.48		0
	8	0	18.99	19.25	19.41	0-3	0
	8	4	18.99	19.25	19.41		0
	8	7	19.00	19.25	19.41		0
	15	0	18.96	19.23	19.39		0

Table 9-51
LTE Band 2 (PCS) Reduced Conducted Powers - 1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18607 (1850.7 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19193 (1909.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.75	19.03	19.18	0	0
	1	2	18.81	19.09	19.24		0
	1	5	18.73	19.01	19.13		0
	3	0	18.78	19.05	19.19		0
	3	2	18.81	19.08	19.23		0
	3	3	18.77	19.01	19.20		0
	6	0	18.81	19.10	19.24	0-1	0
16QAM	1	0	19.05	19.39	19.50	0-1	0
	1	2	19.09	19.45	19.59		0
	1	5	19.03	19.33	19.50		0
	3	0	18.93	19.27	19.42		0
	3	2	18.98	19.30	19.46		0
	3	3	18.92	19.28	19.41		0
	6	0	18.96	19.21	19.38	0-2	0
64QAM	1	0	19.03	19.33	19.45	0-2	0
	1	2	19.11	19.36	19.49		0
	1	5	19.02	19.28	19.42		0
	3	0	19.20	19.23	19.41		0
	3	2	19.22	19.22	19.41		0
	3	3	19.21	19.21	19.41		0
	6	0	18.91	19.18	19.31	0-3	0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.10 Grip Sensor Mode Reduced LTE Band 2 (PCS)

Table 9-52
LTE Band 2 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 2 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18700 (1860.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19100 (1900.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.96	20.03	**20.14**	0	0
	1	50	19.63	19.73	19.93		0
	1	99	19.79	19.89	19.86		0
	50	0	19.81	19.92	**20.11**	0-1	0
	50	25	19.89	19.88	20.07		0
	50	50	19.74	19.84	20.01		0
	100	0	19.81	19.88	20.06		0
16QAM	1	0	20.23	20.31	20.27	0-1	0
	1	50	19.91	20.07	20.22		0
	1	99	20.08	20.26	20.21		0
	50	0	19.89	20.05	20.19	0-2	0
	50	25	19.94	19.97	20.13		0
	50	50	19.80	19.94	20.06		0
	100	0	19.89	20.01	20.14		0
64QAM	1	0	20.18	20.24	20.29	0-2	0
	1	50	19.90	20.03	20.16		0
	1	99	20.08	20.16	20.16		0
	50	0	19.92	20.06	20.25	0-3	0
	50	25	19.87	19.97	20.13		0
	50	50	19.81	19.98	20.09		0
	100	0	19.89	19.97	20.14		0

Table 9-53
LTE Band 2 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 2 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18675 (1857.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19125 (1902.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.65	19.71	19.95	0	0
	1	36	19.47	19.65	19.75		0
	1	74	19.56	19.60	19.69		0
	36	0	19.68	19.78	19.90	0-1	0
	36	18	19.58	19.76	19.82		0
	36	37	19.65	19.71	19.77		0
	75	0	19.60	19.72	19.84		0
16QAM	1	0	19.96	20.09	20.28	0-1	0
	1	36	19.85	19.97	20.11		0
	1	74	19.82	19.94	20.06		0
	36	0	19.79	19.91	20.01	0-2	0
	36	18	19.69	19.83	19.91		0
	36	37	19.71	19.78	19.86		0
	75	0	19.66	19.80	19.91		0
64QAM	1	0	19.89	19.99	20.21	0-2	0
	1	36	19.75	19.94	20.02		0
	1	74	19.84	19.93	19.98		0
	36	0	19.74	19.89	19.99	0-3	0
	36	18	19.68	19.84	19.93		0
	36	37	19.73	19.81	19.88		0
	75	0	19.67	19.83	19.92		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-54
LTE Band 2 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 2 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18650 (1855.0 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19150 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.74	19.83	19.81	0	0
	1	25	19.40	19.60	19.68		0
	1	49	19.65	19.79	19.62		0
	25	0	19.56	19.74	19.81	0-1	0
	25	12	19.59	19.73	19.77		0
	25	25	19.56	19.68	19.74		0
	50	0	19.60	19.72	19.77		0
16QAM	1	0	20.08	20.18	20.13	0-1	0
	1	25	19.76	19.97	20.05		0
	1	49	20.01	20.15	19.99		0
	25	0	19.64	19.85	19.91	0-2	0
	25	12	19.71	19.81	19.87		0
	25	25	19.66	19.77	19.82		0
	50	0	19.69	19.82	19.84		0
64QAM	1	0	20.01	20.10	20.08	0-2	0
	1	25	19.68	19.91	19.99		0
	1	49	19.94	20.09	19.93		0
	25	0	19.65	19.87	19.93	0-3	0
	25	12	19.70	19.85	19.90		0
	25	25	19.65	19.80	19.86		0
	50	0	19.69	19.85	19.89		0

Table 9-55
LTE Band 2 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 2 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18625 (1852.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19175 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.53	19.72	19.71	0	0
	1	12	19.43	19.62	19.66		0
	1	24	19.40	19.63	19.63		0
	12	0	19.53	19.72	19.76	0-1	0
	12	6	19.52	19.72	19.75		0
	12	13	19.48	19.65	19.69		0
	25	0	19.50	19.69	19.73		0
16QAM	1	0	19.87	20.08	20.10	0-1	0
	1	12	19.78	19.98	20.04		0
	1	24	19.75	19.98	19.96		0
	12	0	19.64	19.84	19.88	0-2	0
	12	6	19.62	19.82	19.87		0
	12	13	19.57	19.80	19.81		0
	25	0	19.57	19.79	19.82		0
64QAM	1	0	19.79	19.98	20.05	0-2	0
	1	12	19.69	19.92	19.94		0
	1	24	19.68	19.88	19.93		0
	12	0	19.62	19.86	19.89	0-3	0
	12	6	19.63	19.86	19.91		0
	12	13	19.63	19.86	19.88		0
	25	0	19.57	19.81	19.85		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-56
LTE Band 2 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 2 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18615 (1851.5 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19185 (1908.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.60	19.63	19.82	0	0
	1	7	19.64	19.69	19.86		0
	1	14	19.54	19.58	19.73		0
	8	0	19.62	19.64	19.82	0-1	0
	8	4	19.67	19.68	19.86		0
	8	7	19.62	19.65	19.84		0
	15	0	19.65	19.66	19.85		0
16QAM	1	0	19.81	19.96	20.00	0-1	0
	1	7	19.85	20.04	20.09		0
	1	14	19.73	19.93	19.97		0
	8	0	19.61	19.77	19.82	0-2	0
	8	4	19.62	19.78	19.83		0
	8	7	19.55	19.78	19.78		0
	15	0	19.52	19.73	19.77		0
64QAM	1	0	19.87	19.95	19.95	0-2	0
	1	7	19.80	20.00	20.05		0
	1	14	19.87	19.86	19.91		0
	8	0	19.73	19.79	19.83	0-3	0
	8	4	19.77	19.79	19.83		0
	8	7	19.70	19.80	19.83		0
	15	0	19.72	19.77	19.80		0

Table 9-57
LTE Band 2 (PCS) Reduced Conducted Powers - 1.4 MHz Bandwidth

LTE Band 2 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 18607 (1850.7 MHz)	Mid Channel 18900 (1880.0 MHz)	High Channel 19193 (1909.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.58	19.70	19.69	0	0
	1	2	19.59	19.75	19.79		0
	1	5	19.51	19.64	19.70		0
	3	0	19.52	19.69	19.75		0
	3	2	19.61	19.73	19.81		0
	3	3	19.56	19.70	19.75		0
	6	0	19.60	19.70	19.79	0-1	0
16QAM	1	0	19.80	19.89	19.90	0-1	0
	1	2	19.74	19.94	19.97		0
	1	5	19.75	19.84	19.86		0
	3	0	19.70	19.78	19.80		0
	3	2	19.72	19.80	19.82		0
	3	3	19.70	19.74	19.79		0
	6	0	19.72	19.73	19.76	0-2	0
64QAM	1	0	19.83	19.83	19.85	0-2	0
	1	2	19.70	19.87	19.91		0
	1	5	19.63	19.78	19.81		0
	3	0	19.77	19.76	19.83		0
	3	2	19.78	19.75	19.81		0
	3	3	19.78	19.75	19.81		0
	6	0	19.49	19.71	19.73	0-3	0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.11 Maximum LTE Band 25 (PCS)

Table 9-58
LTE Band 25 (PCS) Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.01	23.18	**23.29**	0	0
	1	50	22.80	22.84	23.06		0
	1	99	22.95	23.03	23.01		0
	50	0	21.90	22.00	**22.26**	0-1	1
	50	25	21.93	21.91	22.16		1
	50	50	21.91	21.85	22.06		1
	100	0	21.92	21.90	22.18		1
16QAM	1	0	22.22	22.42	22.54	0-1	1
	1	50	22.07	22.14	22.35		1
	1	99	22.26	22.28	22.29		1
	50	0	20.99	21.07	21.33	0-2	2
	50	25	21.01	20.98	21.24		2
	50	50	21.02	20.90	21.15		2
	100	0	20.99	21.00	21.21		2
64QAM	1	0	21.23	21.38	21.50	0-2	2
	1	50	20.99	21.04	21.33		2
	1	99	21.18	21.24	21.29		2
	50	0	20.00	20.10	20.36	0-3	3
	50	25	20.02	20.02	20.29		3
	50	50	20.03	19.96	20.16		3
	100	0	20.00	19.99	20.25		3

Table 9-59
LTE Band 25 (PCS) Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.63	22.82	23.06	0	0
	1	36	22.53	22.65	22.92		0
	1	74	22.55	22.72	22.83		0
	36	0	21.68	21.79	21.99	0-1	1
	36	18	21.70	21.74	21.93		1
	36	37	21.66	21.68	21.94		1
	75	0	21.71	21.72	21.93		1
16QAM	1	0	21.98	22.12	22.39	0-1	1
	1	36	21.84	21.99	22.21		1
	1	74	21.87	22.04	22.17		1
	36	0	20.78	20.91	21.12	0-2	2
	36	18	20.84	20.81	21.02		2
	36	37	20.73	20.79	21.01		2
	75	0	20.83	20.81	21.01		2
64QAM	1	0	20.92	21.07	21.33	0-2	2
	1	36	20.81	20.93	21.16		2
	1	74	20.82	21.00	21.12		2
	36	0	19.77	19.86	20.10	0-3	3
	36	18	19.84	19.84	20.01		3
	36	37	19.78	19.78	20.04		3
	75	0	19.82	19.84	20.02		3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-60
LTE Band 25 (PCS) Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.75	22.94	23.00	0	0
	1	25	22.54	22.63	22.84		0
	1	49	22.68	22.92	22.77		0
	25	0	21.64	21.73	22.01	0-1	1
	25	12	21.62	21.72	21.94		1
	25	25	21.55	21.67	21.88		1
	50	0	21.61	21.69	21.93		1
16QAM	1	0	22.08	22.27	22.32	0-1	1
	1	25	21.82	21.95	22.18		1
	1	49	21.95	22.27	22.14		1
	25	0	20.76	20.84	21.07	0-2	2
	25	12	20.71	20.80	21.05		2
	25	25	20.67	20.79	20.97		2
	50	0	20.71	20.79	21.00		2
64QAM	1	0	21.05	21.23	21.25	0-2	2
	1	25	20.81	20.90	21.12		2
	1	49	20.98	21.19	21.07		2
	25	0	19.78	19.85	20.08	0-3	3
	25	12	19.73	19.80	20.03		3
	25	25	19.67	19.78	19.96		3
	50	0	19.71	19.82	20.04		3

Table 9-61
LTE Band 25 (PCS) Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.52	22.69	22.89	0	0
	1	12	22.44	22.61	22.78		0
	1	24	22.54	22.61	22.80		0
	12	0	21.52	21.70	21.89	0-1	1
	12	6	21.61	21.67	21.90		1
	12	13	21.59	21.65	21.84		1
	25	0	21.60	21.64	21.86		1
16QAM	1	0	21.84	22.02	22.21	0-1	1
	1	12	21.77	21.96	22.12		1
	1	24	21.80	21.97	22.12		1
	12	0	20.66	20.82	20.99	0-2	2
	12	6	20.74	20.78	20.97		2
	12	13	20.69	20.79	20.97		2
	25	0	20.68	20.76	20.95		2
64QAM	1	0	20.81	20.99	21.16	0-2	2
	1	12	20.72	20.91	21.08		2
	1	24	20.81	20.90	21.05		2
	12	0	19.67	19.83	20.10	0-3	3
	12	6	19.67	19.83	20.09		3
	12	13	19.66	19.84	20.09		3
	25	0	19.70	19.77	19.98		3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-62
LTE Band 25 (PCS) Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.48	22.64	22.80	0	0
	1	7	22.55	22.71	22.86		0
	1	14	22.41	22.59	22.74		0
	8	0	21.46	21.63	21.81	0-1	1
	8	4	21.51	21.66	21.85		1
	8	7	21.47	21.63	21.80		1
	15	0	21.48	21.66	21.91		1
16QAM	1	0	21.76	22.00	22.12	0-1	1
	1	7	21.86	22.06	22.21		1
	1	14	21.73	21.93	22.10		1
	8	0	20.61	20.77	20.94	0-2	2
	8	4	20.63	20.77	20.97		2
	8	7	20.61	20.75	20.96		2
	15	0	20.56	20.70	20.91		2
64QAM	1	0	20.74	20.90	21.07	0-2	2
	1	7	20.80	20.99	21.17		2
	1	14	20.68	20.86	21.03		2
	8	0	19.61	19.79	20.06	0-3	3
	8	4	19.60	19.79	20.04		3
	8	7	19.60	19.79	20.06		3
	15	0	19.58	19.76	19.93		3

Table 9-63
LTE Band 25 (PCS) Conducted Powers - 1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.39	22.78	22.71	0	0
	1	2	22.43	22.84	22.75		0
	1	5	22.37	22.77	22.69		0
	3	0	22.41	22.82	22.73		0
	3	2	22.44	22.86	22.78		0
	3	3	22.40	22.81	22.74		0
	6	0	21.43	21.83	21.77	0-1	1
16QAM	1	0	21.72	22.14	22.05	0-1	1
	1	2	21.78	22.18	22.11		1
	1	5	21.68	22.10	22.02		1
	3	0	21.60	22.02	21.96		1
	3	2	21.66	22.07	22.00		1
	3	3	21.60	22.03	21.95		1
	6	0	20.58	20.97	20.93	0-2	2
64QAM	1	0	20.65	21.04	20.97	0-2	2
	1	2	20.70	21.10	21.02		2
	1	5	20.62	21.03	20.94		2
	3	0	20.81	20.78	21.03		2
	3	2	20.81	20.79	21.03		2
	3	3	20.80	20.77	21.03		2
	6	0	19.54	19.94	19.88	0-3	3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.12 Hotspot Mode Reduced LTE Band 25 (PCS)

Table 9-64
LTE Band 25 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.42	19.56	**19.84**	0	0
	1	50	19.28	19.23	19.68		0
	1	99	19.29	19.45	19.66		0
	50	0	19.32	19.39	**19.82**	0-1	0
	50	25	19.34	19.26	19.71		0
	50	50	19.27	19.29	19.73		0
	100	0	19.30	19.28	19.70		0
16QAM	1	0	19.60	19.87	20.08	0-1	0
	1	50	19.42	19.57	20.02		0
	1	99	19.56	19.79	19.95		0
	50	0	19.39	19.43	19.85	0-2	0
	50	25	19.40	19.37	19.76		0
	50	50	19.31	19.43	19.80		0
	100	0	19.41	19.39	19.78		0
64QAM	1	0	19.65	19.79	20.07	0-2	0
	1	50	19.36	19.44	19.94		0
	1	99	19.53	19.69	19.87		0
	50	0	19.41	19.42	19.86	0-3	0
	50	25	19.42	19.40	19.79		0
	50	50	19.35	19.41	19.77		0
	100	0	19.42	19.36	19.74		0

Table 9-65
LTE Band 25 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.07	19.18	19.57	0	0
	1	36	18.96	19.06	19.47		0
	1	74	19.01	19.19	19.50		0
	36	0	19.14	19.16	19.57	0-1	0
	36	18	19.07	19.07	19.61		0
	36	37	19.09	19.15	19.48		0
	75	0	19.06	19.08	19.59		0
16QAM	1	0	19.42	19.55	19.93	0-1	0
	1	36	19.28	19.41	19.81		0
	1	74	19.36	19.54	19.84		0
	36	0	19.23	19.26	19.61	0-2	0
	36	18	19.16	19.20	19.66		0
	36	37	19.18	19.23	19.57		0
	75	0	19.14	19.19	19.65		0
64QAM	1	0	19.38	19.44	19.83	0-2	0
	1	36	19.23	19.32	19.74		0
	1	74	19.29	19.45	19.74		0
	36	0	19.22	19.23	19.60	0-3	0
	36	18	19.16	19.20	19.63		0
	36	37	19.21	19.23	19.56		0
	75	0	19.16	19.16	19.63		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-66
LTE Band 25 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.21	19.30	19.57	0	0
	1	25	18.99	19.06	19.42		0
	1	49	19.13	19.23	19.46		0
	25	0	19.12	19.10	19.60	0-1	0
	25	12	19.08	19.16	19.52		0
	25	25	19.03	19.12	19.45		0
	50	0	19.08	19.09	19.51		0
16QAM	1	0	19.55	19.64	19.91	0-1	0
	1	25	19.34	19.42	19.78		0
	1	49	19.49	19.63	19.80		0
	25	0	19.23	19.22	19.66	0-2	0
	25	12	19.20	19.29	19.61		0
	25	25	19.13	19.24	19.53		0
	50	0	19.18	19.18	19.60		0
64QAM	1	0	19.50	19.57	19.83	0-2	0
	1	25	19.26	19.33	19.70		0
	1	49	19.42	19.53	19.70		0
	25	0	19.23	19.19	19.63	0-3	0
	25	12	19.18	19.28	19.59		0
	25	25	19.14	19.22	19.54		0
	50	0	19.20	19.17	19.60		0

Table 9-67
LTE Band 25 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.96	19.13	19.43	0	0
	1	12	18.90	19.06	19.46		0
	1	24	18.99	19.08	19.44		0
	12	0	18.99	19.14	19.47	0-1	0
	12	6	18.98	19.14	19.54		0
	12	13	19.05	19.11	19.48		0
	25	0	19.06	19.13	19.42		0
16QAM	1	0	19.30	19.51	19.82	0-1	0
	1	12	19.22	19.40	19.81		0
	1	24	19.30	19.41	19.76		0
	12	0	19.10	19.27	19.59	0-2	0
	12	6	19.08	19.27	19.67		0
	12	13	19.18	19.24	19.60		0
	25	0	19.13	19.22	19.54		0
64QAM	1	0	19.26	19.41	19.73	0-2	0
	1	12	19.21	19.33	19.72		0
	1	24	19.27	19.31	19.67		0
	12	0	19.09	19.20	19.65	0-3	0
	12	6	19.09	19.17	19.64		0
	12	13	19.09	19.16	19.66		0
	25	0	19.17	19.21	19.52		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-68
LTE Band 25 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.90	19.05	19.46	0	0
	1	7	18.98	19.14	19.51		0
	1	14	18.85	19.04	19.39		0
	8	0	18.93	19.11	19.50	0-1	0
	8	4	18.96	19.12	19.51		0
	8	7	18.92	19.10	19.46		0
	15	0	18.93	19.04	19.49		0
16QAM	1	0	19.15	19.39	19.78	0-1	0
	1	7	19.33	19.52	19.86		0
	1	14	19.14	19.39	19.74		0
	8	0	19.05	19.26	19.61	0-2	0
	8	4	19.11	19.25	19.64		0
	8	7	19.04	19.22	19.58		0
	15	0	19.00	19.18	19.56		0
64QAM	1	0	19.19	19.31	19.70	0-2	0
	1	7	19.27	19.41	19.78		0
	1	14	19.15	19.29	19.64		0
	8	0	19.06	19.13	19.59	0-3	0
	8	4	19.07	19.12	19.59		0
	8	7	19.07	19.13	19.58		0
	15	0	19.06	19.21	19.58		0

Table 9-69
LTE Band 25 (PCS) Reduced Conducted Powers -1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	18.84	19.21	19.35	0	0
	1	2	18.88	19.26	19.40		0
	1	5	18.85	19.20	19.34		0
	3	0	18.85	19.23	19.37		0
	3	2	18.89	19.27	19.41		0
	3	3	18.83	19.21	19.36		0
	6	0	18.87	19.26	19.40	0-1	0
16QAM	1	0	19.14	19.56	19.71	0-1	0
	1	2	19.15	19.63	19.76		0
	1	5	19.08	19.54	19.66		0
	3	0	19.07	19.45	19.58		0
	3	2	19.06	19.49	19.62		0
	3	3	19.00	19.44	19.57		0
	6	0	19.02	19.42	19.57	0-2	0
64QAM	1	0	19.12	19.46	19.58	0-2	0
	1	2	19.18	19.53	19.66		0
	1	5	19.08	19.46	19.59		0
	3	0	19.28	19.11	19.58		0
	3	2	19.28	19.10	19.58		0
	3	3	19.28	19.10	19.58		0
	6	0	18.99	19.37	19.51	0-3	0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.13 Grip Sensor Mode Reduced LTE Band 25 (PCS)

Table 9-70
LTE Band 25 (PCS) Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	20.05	20.11	**20.26**	0	0
	1	50	19.79	19.83	20.04		0
	1	99	19.86	19.96	20.01		0
	50	0	19.89	19.94	**20.24**	0-1	0
	50	25	19.91	19.84	20.16		0
	50	50	19.79	19.91	20.10		0
	100	0	19.92	19.88	20.18		0
16QAM	1	0	20.28	20.43	20.65	0-1	0
	1	50	19.97	20.23	20.32		0
	1	99	20.11	20.26	20.28		0
	50	0	19.99	20.01	20.31	0-2	0
	50	25	20.03	19.94	20.21		0
	50	50	19.95	20.02	20.12		0
	100	0	20.02	19.97	20.22		0
64QAM	1	0	20.31	20.33	20.55	0-2	0
	1	50	19.93	20.06	20.34		0
	1	99	20.15	20.26	20.23		0
	50	0	19.98	19.99	20.34	0-3	0
	50	25	20.02	19.90	20.27		0
	50	50	19.91	20.03	20.17		0
	100	0	19.97	20.00	20.26		0

Table 9-71
LTE Band 25 (PCS) Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 25 (PCS) 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1857.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26615 (1907.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.70	19.80	20.06	0	0
	1	36	19.59	19.60	19.86		0
	1	74	19.65	19.68	19.92		0
	36	0	19.75	19.76	20.02	0-1	0
	36	18	19.69	19.71	20.00		0
	36	37	19.73	19.65	19.89		0
	75	0	19.66	19.68	19.98		0
16QAM	1	0	20.06	20.15	20.41	0-1	0
	1	36	19.91	19.94	20.24		0
	1	74	19.92	20.03	20.22		0
	36	0	19.85	19.84	20.12	0-2	0
	36	18	19.78	19.79	20.04		0
	36	37	19.81	19.84	19.97		0
	75	0	19.74	19.77	20.01		0
64QAM	1	0	19.98	20.06	20.34	0-2	0
	1	36	19.84	19.83	20.15		0
	1	74	19.90	19.97	20.18		0
	36	0	19.80	19.83	20.11	0-3	0
	36	18	19.76	19.76	20.07		0
	36	37	19.76	19.84	19.97		0
	75	0	19.77	19.77	20.05		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-72
LTE Band 25 (PCS) Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 25 (PCS) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1855.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26640 (1910.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.82	19.92	19.97	0	0
	1	25	19.61	19.72	19.93		0
	1	49	19.77	19.88	19.87		0
	25	0	19.74	19.73	19.97	0-1	0
	25	12	19.71	19.71	19.91		0
	25	25	19.66	19.76	19.94		0
	50	0	19.70	19.67	19.91		0
16QAM	1	0	20.14	20.25	20.31	0-1	0
	1	25	19.94	20.04	20.26		0
	1	49	20.10	20.22	20.19		0
	25	0	19.85	19.81	20.06	0-2	0
	25	12	19.79	19.78	20.00		0
	25	25	19.74	19.85	20.03		0
	50	0	19.80	19.77	19.97		0
64QAM	1	0	20.11	20.18	20.23	0-2	0
	1	25	19.87	19.99	20.20		0
	1	49	20.03	20.18	20.14		0
	25	0	19.84	19.80	20.06	0-3	0
	25	12	19.79	19.77	20.01		0
	25	25	19.74	19.87	20.04		0
	50	0	19.79	19.78	20.00		0

Table 9-73
LTE Band 25 (PCS) Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 25 (PCS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26065 (1852.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26665 (1912.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.63	19.65	19.95	0	0
	1	12	19.52	19.71	19.89		0
	1	24	19.61	19.70	19.86		0
	12	0	19.62	19.67	19.99	0-1	0
	12	6	19.60	19.70	19.97		0
	12	13	19.67	19.73	19.91		0
	25	0	19.69	19.66	19.93		0
16QAM	1	0	19.96	20.03	20.30	0-1	0
	1	12	19.87	20.07	20.20		0
	1	24	19.94	20.06	20.17		0
	12	0	19.75	19.77	20.08	0-2	0
	12	6	19.72	19.79	20.07		0
	12	13	19.78	19.85	20.04		0
	25	0	19.75	19.74	20.02		0
64QAM	1	0	19.87	19.94	20.23	0-2	0
	1	12	19.79	19.99	20.14		0
	1	24	19.88	20.00	20.13		0
	12	0	19.71	19.79	20.06	0-3	0
	12	6	19.71	19.78	20.07		0
	12	13	19.70	19.77	20.06		0
	25	0	19.76	19.75	20.02		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-74
LTE Band 25 (PCS) Reduced Conducted Powers - 3 MHz Bandwidth

LTE Band 25 (PCS) 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26055 (1851.5 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26675 (1913.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.57	19.61	19.90	0	0
	1	7	19.60	19.79	19.93		0
	1	14	19.47	19.68	19.82		0
	8	0	19.57	19.62	19.89	0-1	0
	8	4	19.58	19.67	19.92		0
	8	7	19.54	19.73	19.90		0
	15	0	19.57	19.67	19.90		0
16QAM	1	0	19.86	19.93	20.16	0-1	0
	1	7	19.97	20.14	20.25		0
	1	14	19.83	20.00	20.13		0
	8	0	19.69	19.76	20.00	0-2	0
	8	4	19.72	19.78	20.03		0
	8	7	19.69	19.87	20.01		0
	15	0	19.62	19.70	19.95		0
64QAM	1	0	19.80	19.86	20.12	0-2	0
	1	7	19.88	20.07	20.22		0
	1	14	19.75	19.95	20.10		0
	8	0	19.65	19.76	20.02	0-3	0
	8	4	19.67	19.75	20.01		0
	8	7	19.68	19.76	20.01		0
	15	0	19.66	19.71	19.98		0

Table 9-75
LTE Band 25 (PCS) Reduced Conducted Powers - 1.4 MHz Bandwidth

LTE Band 25 (PCS) 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26047 (1850.7 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26683 (1914.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	19.43	19.73	19.78	0	0
	1	2	19.49	19.79	19.83		0
	1	5	19.41	19.85	19.75		0
	3	0	19.48	19.77	19.80		0
	3	2	19.50	19.81	19.84		0
	3	3	19.43	19.89	19.79		0
	6	0	19.49	19.81	19.82	0-1	0
16QAM	1	0	19.79	20.09	20.10	0-1	0
	1	2	19.84	20.14	20.14		0
	1	5	19.77	20.15	20.10		0
	3	0	19.70	19.98	19.98		0
	3	2	19.74	20.04	20.03		0
	3	3	19.69	20.09	19.98		0
	6	0	19.64	19.94	19.96	0-2	0
64QAM	1	0	19.69	19.97	20.05	0-2	0
	1	2	19.76	20.03	20.13		0
	1	5	19.67	20.08	20.03		0
	3	0	19.88	19.73	20.01		0
	3	2	19.88	19.71	20.00		0
	3	3	19.86	19.70	20.01		0
	6	0	19.59	19.89	19.93	0-3	0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.14 Maximum LTE Band 41 (PC3)

Table 9-76
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.81	23.78	23.93	23.92	23.83	0	0
	1	50	23.82	23.42	23.62	23.66	23.68		0
	1	99	**23.94**	23.24	23.56	23.64	23.56		0
	50	0	**23.00**	22.66	22.84	22.84	22.74	0-1	1
	50	25	22.91	22.53	22.71	22.77	22.64		1
	50	50	22.80	22.39	22.63	22.66	22.69		1
	100	0	22.92	22.53	22.74	22.79	22.68		1
16QAM	1	0	23.24	22.98	23.12	23.10	22.99	0-1	1
	1	50	22.96	22.61	22.80	22.85	22.84		1
	1	99	22.87	22.42	22.72	22.85	22.73		1
	50	0	22.08	21.78	21.95	21.98	21.84	0-2	2
	50	25	21.97	21.63	21.81	21.91	21.77		2
	50	50	21.91	21.47	21.73	21.76	21.76		2
	100	0	22.03	21.66	21.87	21.90	21.80		2
64QAM	1	0	22.11	21.85	21.99	21.97	21.88	0-2	2
	1	50	21.83	21.48	21.67	21.74	21.69		2
	1	99	21.72	21.29	21.58	21.75	21.61		2
	50	0	21.10	20.77	20.95	20.99	20.89	0-3	3
	50	25	21.01	20.63	20.83	20.90	20.78		3
	50	50	20.92	20.48	20.75	20.79	20.82		3
	100	0	20.97	20.61	20.82	20.86	20.75		3

Table 9-77
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.68	23.43	23.92	23.90	23.89	0	0
	1	36	23.60	23.22	23.82	23.78	23.90		0
	1	74	23.59	23.06	23.70	23.66	23.91		0
	36	0	23.10	22.32	22.96	22.82	22.95	0-1	1
	36	18	23.21	22.28	22.90	22.88	22.98		1
	36	37	23.06	22.19	22.81	22.68	22.95		1
	75	0	23.14	22.23	22.86	22.71	22.92		1
16QAM	1	0	23.40	22.88	23.11	23.01	23.10	0-1	1
	1	36	23.24	22.51	23.15	23.07	23.19		1
	1	74	23.01	22.39	23.04	22.95	23.15		1
	36	0	22.14	21.39	22.02	21.93	22.18	0-2	2
	36	18	22.05	21.37	21.99	21.92	22.10		2
	36	37	21.93	21.25	21.90	21.86	22.12		2
	75	0	22.09	21.30	21.97	21.81	22.06		2
64QAM	1	0	21.98	21.39	21.82	21.72	21.87	0-2	2
	1	36	21.75	21.16	21.65	21.60	21.90		2
	1	74	21.62	21.06	21.56	21.50	21.76		2
	36	0	21.16	20.41	21.04	20.93	21.12	0-3	3
	36	18	21.10	20.34	20.99	20.92	21.11		3
	36	37	20.95	20.27	20.93	20.86	21.04		3
	75	0	21.08	20.34	21.00	20.85	21.06		3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-78
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.06	23.35	23.67	23.73	23.77	0	0
	1	25	23.99	23.27	23.63	23.72	23.76		0
	1	49	23.95	23.14	23.54	23.73	23.71		0
	25	0	22.99	22.32	22.63	22.74	22.72	0-1	1
	25	12	22.98	22.26	22.65	22.74	22.80		1
	25	25	22.94	22.21	22.58	22.65	22.76		1
	50	0	22.98	22.28	22.64	22.70	22.70		1
16QAM	1	0	23.18	22.57	22.62	22.88	22.90	0-1	1
	1	25	23.08	22.37	22.72	22.79	22.89		1
	1	49	22.96	22.26	22.69	22.85	22.82		1
	25	0	22.05	21.40	21.74	21.78	21.78	0-2	2
	25	12	22.02	21.31	21.69	21.78	21.86		2
	25	25	21.97	21.22	21.64	21.73	21.78		2
	50	0	22.00	21.36	21.73	21.82	21.77		2
64QAM	1	0	22.11	21.45	21.75	21.83	21.85	0-2	2
	1	25	21.89	21.34	21.71	21.78	21.84		2
	1	49	21.75	21.22	21.66	21.81	21.78		2
	25	0	21.16	20.47	20.81	20.91	20.87	0-3	3
	25	12	21.18	20.42	20.85	20.87	21.00		3
	25	25	21.06	20.32	20.78	20.83	20.92		3
	50	0	21.08	20.39	20.76	20.83	20.83		3

Table 9-79
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	24.00	23.28	23.59	23.68	23.76	0	0
	1	12	23.98	23.27	23.63	23.69	23.77		0
	1	24	23.89	23.19	23.58	23.62	23.68		0
	12	0	22.97	22.25	22.62	22.68	22.75	0-1	1
	12	6	23.00	22.30	22.66	22.72	22.76		1
	12	13	22.93	22.19	22.61	22.64	22.76		1
	25	0	22.97	22.26	22.63	22.69	22.74		1
16QAM	1	0	23.14	22.53	22.74	22.83	22.89	0-1	1
	1	12	23.09	22.36	22.73	22.80	22.86		1
	1	24	23.02	22.29	22.70	22.75	22.80		1
	12	0	22.11	21.41	21.75	21.80	21.89	0-2	2
	12	6	22.09	21.38	21.75	21.82	21.89		2
	12	13	22.03	21.32	21.71	21.77	21.82		2
	25	0	22.00	21.32	21.65	21.73	21.82		2
64QAM	1	0	22.07	21.42	21.74	21.79	21.85	0-2	2
	1	12	22.02	21.33	21.71	21.80	21.84		2
	1	24	21.94	21.28	21.65	21.74	21.79		2
	12	0	21.01	20.28	20.65	20.71	20.83	0-3	3
	12	6	21.03	20.32	20.67	20.75	20.82		3
	12	13	20.97	20.23	20.62	20.70	20.75		3
	25	0	21.12	20.39	20.82	20.89	20.93		3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.15 Hotspot Mode Reduced LTE Band 41 (PC3)

Table 9-80
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	**22.56**	21.72	22.23	21.88	22.09	0	0
	1	50	22.19	21.39	21.92	21.56	21.83		0
	1	99	22.02	21.17	21.73	21.54	21.75		0
	50	0	**22.43**	21.58	22.13	21.74	22.01	0-1	0
	50	25	22.27	21.43	22.03	21.63	21.93		0
	50	50	22.18	21.28	21.90	21.54	21.81		0
	100	0	22.38	21.44	22.02	21.64	21.92		0
16QAM	1	0	22.69	21.86	22.34	22.03	22.24	0-1	0
	1	50	22.31	21.42	22.09	21.71	21.98		0
	1	99	22.17	21.34	21.93	21.72	21.92		0
	50	0	22.50	21.66	22.21	21.85	22.07	0-2	0
	50	25	22.36	21.52	22.07	21.73	22.03		0
	50	50	22.29	21.41	21.99	21.63	21.94		0
	100	0	22.46	21.51	22.13	21.76	22.04		0
64QAM	1	0	22.32	21.48	22.03	21.65	21.86	0-2	0
	1	50	21.93	21.13	21.72	21.35	21.63		0
	1	99	21.78	20.89	21.57	21.34	21.53		0
	50	0	21.49	20.69	21.23	20.85	21.11	0-3	1
	50	25	21.34	20.50	21.12	20.74	21.03		1
	50	50	21.30	20.38	20.96	20.63	20.92		1
	100	0	21.42	20.52	21.10	20.71	21.03		1

Table 9-81
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.23	21.68	22.02	21.92	21.98	0	0
	1	36	22.07	21.45	21.91	21.84	21.86		0
	1	74	22.03	21.32	21.88	21.87	21.75		0
	36	0	22.15	21.56	21.95	21.93	21.95	0-1	0
	36	18	22.14	21.50	21.96	21.86	21.91		0
	36	37	22.05	21.40	21.91	21.82	21.82		0
	75	0	22.16	21.44	21.95	21.86	21.90		0
16QAM	1	0	22.34	21.77	22.16	22.07	22.11	0-1	0
	1	36	22.15	21.50	22.01	21.92	21.96		0
	1	74	22.12	21.32	21.96	21.98	21.89		0
	36	0	22.25	21.63	22.01	21.94	22.02	0-2	0
	36	18	22.16	21.57	22.03	21.95	21.99		0
	36	37	22.07	21.44	21.96	21.94	21.93		0
	75	0	22.27	21.52	22.01	21.93	21.98		0
64QAM	1	0	22.29	21.73	22.11	22.03	22.08	0-2	0
	1	36	22.09	21.49	21.98	21.90	21.94		0
	1	74	22.08	21.38	21.98	21.97	21.83		0
	36	0	21.23	20.62	21.08	20.95	21.02	0-3	1
	36	18	21.18	20.55	21.02	20.95	20.99		1
	36	37	21.12	20.47	20.98	20.92	20.94		1
	75	0	21.26	20.57	21.05	20.96	20.99		1

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-82
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.14	21.56	21.95	21.87	21.92	0	0
	1	25	22.05	21.44	21.92	21.84	21.84		0
	1	49	21.92	21.28	21.85	21.83	21.78		0
	25	0	22.09	21.47	21.91	21.84	21.86	0-1	0
	25	12	22.09	21.46	21.93	21.84	21.86		0
	25	25	22.03	21.36	21.86	21.77	21.81		0
	50	0	22.06	21.44	21.93	21.83	21.86		0
16QAM	1	0	22.24	21.66	22.07	21.95	22.04	0-1	0
	1	25	22.13	21.51	22.01	21.92	21.93		0
	1	49	22.02	21.41	21.95	21.95	21.92		0
	25	0	22.14	21.54	21.96	21.87	21.95	0-2	0
	25	12	22.10	21.50	21.98	21.90	21.91		0
	25	25	22.05	21.39	21.92	21.82	21.86		0
	50	0	22.13	21.51	21.99	21.91	21.96		0
64QAM	1	0	22.16	21.60	22.02	21.94	22.01	0-2	0
	1	25	22.09	21.48	21.99	21.90	21.91		0
	1	49	21.97	21.38	21.93	21.95	21.84		0
	25	0	21.25	20.65	21.08	21.01	21.07	0-3	1
	25	12	21.21	20.59	21.07	20.99	21.03		1
	25	25	21.15	20.53	21.00	20.97	21.00		1
	50	0	21.15	20.54	21.02	20.95	21.01		1

Table 9-83
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.06	21.48	21.89	21.84	21.81	0	0
	1	12	22.06	21.46	21.94	21.90	21.83		0
	1	24	21.97	21.35	21.89	21.85	21.74		0
	12	0	22.07	21.46	21.92	21.80	21.81	0-1	0
	12	6	22.10	21.47	21.93	21.84	21.86		0
	12	13	22.05	21.41	21.89	21.78	21.82		0
	25	0	22.08	21.45	21.93	21.82	21.80		0
16QAM	1	0	22.25	21.58	22.03	21.96	21.94	0-1	0
	1	12	22.12	21.51	22.00	21.95	21.94		0
	1	24	22.05	21.45	21.96	21.91	21.88		0
	12	0	22.13	21.55	22.00	21.95	21.95	0-2	0
	12	6	22.15	21.54	22.01	21.98	21.96		0
	12	13	22.09	21.49	22.00	21.92	21.91		0
	25	0	22.07	21.47	21.92	21.87	21.87		0
64QAM	1	0	22.09	21.54	22.01	21.94	21.94	0-2	0
	1	12	22.08	21.49	21.98	21.93	21.92		0
	1	24	22.00	21.40	21.93	21.88	21.85		0
	12	0	21.06	20.47	20.92	20.86	20.89	0-3	1
	12	6	21.06	20.45	20.96	20.87	20.89		1
	12	13	21.03	20.40	20.89	20.82	20.83		1
	25	0	21.18	20.55	21.03	20.98	20.97		1

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.16 Grip Mode Reduced LTE Band 41 (PC3)

Table 9-84
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	**22.92**	22.28	22.07	22.14	22.58	0	0
	1	50	22.61	21.97	21.78	22.02	22.31		0
	1	99	22.49	21.86	21.82	22.04	22.19		0
	50	0	**22.79**	22.25	22.06	22.10	22.54	0-1	0
	50	25	22.61	21.98	21.86	22.01	22.33		0
	50	50	22.44	21.83	21.71	22.06	22.29		0
	100	0	22.66	21.99	21.69	22.00	22.32		0
16QAM	1	0	23.16	22.26	22.00	22.30	22.57	0-1	0
	1	50	22.85	22.03	21.79	22.18	22.48		0
	1	99	22.68	21.92	21.86	22.27	22.37		0
	50	0	21.91	21.17	20.88	21.15	21.42	0-2	1
	50	25	21.75	21.06	20.77	21.16	21.36		1
	50	50	21.54	20.94	20.72	21.15	21.39		1
	100	0	21.78	21.03	20.82	21.05	21.41		1
64QAM	1	0	21.73	20.87	20.62	20.92	21.21	0-2	1
	1	50	21.54	20.61	20.39	20.82	21.11		1
	1	99	21.24	20.45	20.39	20.90	21.02		1
	50	0	20.93	20.16	19.94	20.25	20.45	0-3	1.5
	50	25	20.71	20.03	19.78	20.14	20.37		1.5
	50	50	20.67	19.87	19.70	20.19	20.42		1.5
	100	0	20.74	20.05	19.82	20.10	20.39		1.5

Table 9-85
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.98	22.13	21.92	22.28	22.63	0	0
	1	36	22.81	22.04	21.85	22.31	22.62		0
	1	74	22.61	21.93	21.90	22.26	22.55		0
	36	0	22.90	22.13	21.91	22.30	22.59	0-1	0
	36	18	22.83	22.09	21.89	22.24	22.59		0
	36	37	22.74	21.97	21.86	22.32	22.64		0
	75	0	22.78	22.06	21.86	22.22	22.57		0
16QAM	1	0	23.00	22.28	22.07	22.42	22.77	0-1	0
	1	36	22.90	22.14	21.95	22.40	22.74		0
	1	74	22.73	22.05	22.04	22.40	22.67		0
	36	0	21.96	21.24	21.00	21.33	21.69	0-2	1
	36	18	21.93	21.15	20.98	21.31	21.66		1
	36	37	21.82	21.08	20.96	21.35	21.67		1
	75	0	21.89	21.14	20.96	21.32	21.64		1
64QAM	1	0	22.08	21.21	21.05	21.40	21.74	0-2	1
	1	36	21.85	21.10	20.92	21.36	21.70		1
	1	74	21.11	21.01	21.02	21.35	21.61		1
	36	0	20.98	20.22	19.95	20.31	20.70	0-3	1.5
	36	18	20.93	20.14	19.96	20.34	20.66		1.5
	36	37	20.84	20.03	19.90	20.39	20.69		1.5
	75	0	20.90	20.16	19.96	20.32	20.64		1.5

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-86
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.88	22.02	21.88	22.22	22.58	0	0
	1	25	22.79	22.03	21.82	22.30	22.62		0
	1	49	22.63	21.92	21.76	22.25	22.56		0
	25	0	22.83	22.08	21.84	22.23	22.54	0-1	0
	25	12	22.82	22.07	21.87	22.30	22.52		0
	25	25	22.74	21.95	21.83	22.27	22.59		0
	50	0	22.81	22.04	21.86	22.21	22.53		0
16QAM	1	0	23.02	22.16	21.99	22.39	22.70	0-1	0
	1	25	22.90	22.14	21.96	22.41	22.71		0
	1	49	22.78	22.04	21.92	22.37	22.67		0
	25	0	21.91	21.14	20.88	21.29	21.59	0-2	1
	25	12	21.86	21.10	20.93	21.39	21.57		1
	25	25	21.81	21.04	20.88	21.34	21.64		1
	50	0	21.87	21.13	20.96	21.29	21.61		1
64QAM	1	0	21.96	21.15	20.97	21.34	21.70	0-2	1
	1	25	21.87	21.13	20.93	21.39	21.68		1
	1	49	21.21	21.01	20.87	21.33	21.67		1
	25	0	21.02	20.23	20.00	20.38	20.75	0-3	1.5
	25	12	20.98	20.22	20.05	20.50	20.73		1.5
	25	25	20.92	20.17	19.95	20.40	20.76		1.5
	50	0	20.94	20.16	19.96	20.34	20.69		1.5

Table 9-87
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.81	22.01	21.82	22.29	22.51	0	0
	1	12	22.77	22.00	21.83	22.28	22.60		0
	1	24	22.69	21.96	21.78	22.23	22.55		0
	12	0	22.85	22.03	21.82	22.32	22.57	0-1	0
	12	6	22.82	22.07	21.85	22.33	22.55		0
	12	13	22.75	21.98	21.82	22.28	22.58		0
	25	0	22.78	22.02	21.83	22.28	22.51		0
16QAM	1	0	22.90	22.20	22.00	22.40	22.65	0-1	0
	1	12	22.87	22.14	21.93	22.40	22.72		0
	1	24	22.78	22.07	21.91	22.39	22.68		0
	12	0	21.93	21.14	20.94	21.43	21.65	0-2	1
	12	6	21.91	21.15	20.98	21.43	21.63		1
	12	13	21.87	21.07	20.93	21.36	21.68		1
	25	0	21.84	21.09	20.89	21.33	21.57		1
64QAM	1	0	21.90	21.17	20.92	21.39	21.59	0-2	1
	1	12	21.84	21.10	20.90	21.37	21.67		1
	1	24	21.27	21.00	20.90	21.33	21.62		1
	12	0	20.80	20.09	19.86	20.34	20.54	0-3	1.5
	12	6	20.80	20.07	19.88	20.34	20.55		1.5
	12	13	20.75	20.00	19.85	20.31	20.62		1.5
	25	0	20.96	20.19	20.01	20.48	20.69		1.5

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.17 Maximum LTE Band 41 (PC2)

Table 9-88
LTE Band 41 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.78	26.43	26.85	26.82	**26.93**	0	0
	1	50	26.69	26.16	26.65	26.75	26.90		0
	1	99	26.65	26.08	26.71	26.73	26.49		0
	50	0	25.55	25.37	25.83	25.82	**25.96**	0-1	1
	50	25	25.52	25.25	25.77	25.87	25.91		1
	50	50	25.43	25.16	25.71	25.84	25.89		1
	100	0	25.69	25.27	25.79	25.78	25.79		1
16QAM	1	0	26.09	25.77	26.14	26.13	26.31	0-1	1
	1	50	26.06	25.52	26.01	26.09	26.19		1
	1	99	25.95	25.44	26.03	26.05	25.51		1
	50	0	24.81	24.42	24.89	24.89	25.05	0-2	2
	50	25	24.78	24.34	24.83	24.97	24.99		2
	50	50	24.73	24.24	24.79	24.90	24.98		2
	100	0	24.89	24.42	24.90	24.88	25.00		2
64QAM	1	0	25.06	24.63	25.04	25.01	25.16	0-2	2
	1	50	25.00	24.34	24.81	24.95	25.05		2
	1	99	24.79	24.24	24.90	24.90	24.49		2
	50	0	23.88	23.45	23.91	23.90	24.05	0-3	3
	50	25	23.85	23.38	23.85	23.97	24.01		3
	50	50	23.74	23.25	23.79	23.91	24.06		3
	100	0	23.86	23.35	23.88	23.84	23.99		3

Table 9-89
LTE Band 41 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.71	26.29	26.77	26.79	26.93	0	0
	1	36	26.56	26.12	26.63	26.79	26.90		0
	1	74	26.59	26.05	26.59	26.78	26.72		0
	36	0	25.56	25.20	25.71	25.77	25.96	0-1	1
	36	18	25.56	25.21	25.74	25.87	25.89		1
	36	37	25.50	25.10	25.66	25.82	25.99		1
	75	0	25.48	25.17	25.67	25.74	25.89		1
16QAM	1	0	25.92	25.63	26.08	26.10	26.25	0-1	1
	1	36	25.72	25.45	25.95	26.09	26.19		1
	1	74	25.84	25.37	25.89	26.03	25.96		1
	36	0	24.68	24.35	24.83	24.88	25.03	0-2	2
	36	18	24.66	24.27	24.79	24.96	24.97		2
	36	37	24.58	24.21	24.74	24.92	25.04		2
	75	0	24.46	24.27	24.79	24.83	24.97		2
64QAM	1	0	24.96	24.53	25.01	25.06	25.20	0-2	2
	1	36	24.66	24.36	24.86	25.01	25.15		2
	1	74	24.77	24.26	24.83	24.98	25.05		2
	36	0	23.74	23.32	23.82	23.88	24.05	0-3	3
	36	18	23.73	23.30	23.81	24.01	23.97		3
	36	37	23.68	23.22	23.76	23.90	24.05		3
	75	0	23.61	23.27	23.82	23.86	24.00		3

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-90
LTE Band 41 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.54	26.41	26.68	26.77	26.83	0	0
	1	25	26.62	26.23	26.64	26.73	26.84		0
	1	49	26.64	26.05	26.56	26.67	26.78		0
	25	0	25.42	25.23	25.72	25.79	25.84	0-1	1
	25	12	25.44	25.18	25.71	25.78	25.94		1
	25	25	25.39	25.13	25.67	25.73	25.87		1
	50	0	25.26	25.15	25.70	25.77	25.83		1
16QAM	1	0	25.86	25.55	25.98	26.05	26.12	0-1	1
	1	25	25.65	25.48	25.95	26.00	26.11		1
	1	49	25.74	25.40	25.90	25.94	26.04		1
	25	0	24.53	24.29	24.74	24.86	24.87	0-2	2
	25	12	24.52	24.26	24.74	24.85	25.01		2
	25	25	24.46	24.17	24.71	24.78	24.93		2
	50	0	24.45	24.29	24.76	24.86	24.89		2
64QAM	1	0	24.84	24.43	24.95	25.07	25.14	0-2	2
	1	25	24.78	24.35	24.89	25.03	25.14		2
	1	49	24.77	24.25	24.81	24.96	25.04		2
	25	0	23.79	23.37	23.88	24.04	24.10	0-3	3
	25	12	23.76	23.34	23.87	24.02	24.16		3
	25	25	23.69	23.28	23.83	23.99	24.10		3
	50	0	23.60	23.29	23.79	23.96	23.97		3

Table 9-91
LTE Band 41 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	26.55	26.11	26.61	26.71	26.82	0	0
	1	12	26.31	26.10	26.62	26.73	26.83		0
	1	24	26.33	26.05	26.59	26.69	26.77		0
	12	0	25.48	25.14	25.63	25.80	25.91	0-1	1
	12	6	25.50	25.18	25.68	25.77	25.92		1
	12	13	25.47	25.08	25.65	25.72	25.90		1
	25	0	25.39	25.11	25.65	25.76	25.89		1
16QAM	1	0	25.78	25.45	25.95	26.00	26.12	0-1	1
	1	12	25.92	25.44	25.94	25.99	26.11		1
	1	24	25.92	25.39	25.88	25.95	26.06		1
	12	0	24.70	24.28	24.77	24.88	25.02	0-2	2
	12	6	24.72	24.27	24.83	24.90	25.03		2
	12	13	24.69	24.23	24.77	24.89	25.02		2
	25	0	24.51	24.20	24.69	24.79	24.94		2
64QAM	1	0	24.79	24.39	24.87	25.01	25.11	0-2	2
	1	12	24.76	24.35	24.85	25.03	25.11		2
	1	24	24.67	24.29	24.81	24.96	25.04		2
	12	0	23.66	23.22	23.71	23.89	24.00	0-3	3
	12	6	23.68	23.22	23.77	23.90	24.05		3
	12	13	23.64	23.17	23.71	23.82	23.98		3
	25	0	23.71	23.31	23.81	23.97	24.14		3

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.18 Hotspot Mode Reduced LTE Band 41 (PC2)

Table 9-92
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	**22.31**	21.80	22.03	22.03	22.00	0	0
	1	50	22.05	21.43	21.85	21.85	21.82		0
	1	99	22.01	21.31	21.84	21.85	21.72		0
	50	0	**22.22**	21.66	22.01	21.95	21.99	0-1	0
	50	25	22.17	21.52	21.98	21.90	21.93		0
	50	50	22.17	21.39	21.93	21.84	21.83		0
	100	0	22.20	21.56	21.98	21.90	21.88		0
16QAM	1	0	22.65	22.13	22.38	22.34	22.39	0-1	0
	1	50	22.38	21.69	22.21	22.13	22.15		0
	1	99	22.34	21.52	22.20	22.21	22.06		0
	50	0	22.30	21.73	22.11	22.04	22.08	0-2	0
	50	25	22.24	21.60	22.04	22.01	21.99		0
	50	50	22.22	21.48	22.00	21.94	21.91		0
	100	0	22.38	21.66	22.08	22.04	22.03		0
64QAM	1	0	22.46	21.97	22.24	22.18	22.22	0-2	0
	1	50	22.22	21.63	22.07	22.01	22.01		0
	1	99	22.19	21.48	22.04	22.07	21.91		0
	50	0	22.33	21.75	22.13	22.06	22.10	0-3	0
	50	25	22.22	21.65	22.08	22.03	22.04		0
	50	50	22.25	21.51	22.05	21.96	21.96		0
	100	0	22.33	21.63	22.06	22.00	22.02		0

Table 9-93
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.22	21.65	22.01	21.92	21.92	0	0
	1	36	22.03	21.41	21.89	21.80	21.81		0
	1	74	21.99	21.30	21.89	21.83	21.71		0
	36	0	22.17	21.55	21.96	21.92	21.94	0-1	0
	36	18	22.13	21.49	21.98	21.85	21.90		0
	36	37	22.03	21.37	21.92	21.84	21.79		0
	75	0	22.16	21.46	21.93	21.82	21.87		0
16QAM	1	0	22.53	21.99	22.35	22.25	22.30	0-1	0
	1	36	22.32	21.73	22.20	22.12	22.14		0
	1	74	22.35	21.53	22.19	22.19	22.06		0
	36	0	22.22	21.65	22.05	21.99	22.01	0-2	0
	36	18	22.15	21.58	22.02	21.93	21.98		0
	36	37	22.11	21.45	21.96	21.90	21.91		0
	75	0	22.29	21.52	22.03	21.92	21.94		0
64QAM	1	0	22.42	21.89	22.26	22.16	22.19	0-2	0
	1	36	22.21	21.64	22.12	22.04	22.05		0
	1	74	22.22	21.49	22.10	22.11	21.98		0
	36	0	22.23	21.64	22.10	22.02	22.02	0-3	0
	36	18	22.15	21.57	22.03	21.96	21.99		0
	36	37	22.08	21.49	22.02	21.90	21.90		0
	75	0	22.26	21.55	22.05	21.98	21.99		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-94
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.10	21.51	21.93	21.84	21.88	0	0
	1	25	22.00	21.41	21.89	21.82	21.79		0
	1	49	21.91	21.27	21.82	21.82	21.78		0
	25	0	22.14	21.49	21.94	21.86	21.90	0-1	0
	25	12	22.06	21.48	21.96	21.88	21.88		0
	25	25	22.02	21.36	21.90	21.82	21.83		0
	50	0	22.08	21.46	21.95	21.83	21.86		0
16QAM	1	0	22.43	21.86	22.27	22.18	22.25	0-1	0
	1	25	22.36	21.73	22.25	22.16	22.15		0
	1	49	22.21	21.61	22.17	22.16	22.11		0
	25	0	22.15	21.56	21.99	21.95	21.95	0-2	0
	25	12	22.12	21.52	22.01	21.94	21.92		0
	25	25	22.09	21.43	21.96	21.86	21.87		0
	50	0	22.14	21.53	22.00	21.92	21.94		0
64QAM	1	0	22.30	21.78	22.18	22.13	22.15	0-2	0
	1	25	22.22	21.65	22.15	22.08	22.07		0
	1	49	22.14	21.56	22.10	22.10	22.01		0
	25	0	22.25	21.68	22.14	22.07	22.11	0-3	0
	25	12	22.25	21.64	22.10	22.04	22.08		0
	25	25	22.16	21.56	22.06	22.01	22.00		0
	50	0	22.15	21.57	22.08	21.99	22.03		0

Table 9-95
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.02	21.43	21.89	21.82	21.82	0	0
	1	12	22.04	21.43	21.86	21.81	21.78		0
	1	24	21.95	21.35	21.85	21.81	21.77		0
	12	0	22.11	21.46	21.94	21.87	21.87	0-1	0
	12	6	22.06	21.46	21.94	21.85	21.86		0
	12	13	22.00	21.42	21.88	21.83	21.79		0
	25	0	22.06	21.44	21.90	21.84	21.83		0
16QAM	1	0	22.38	21.79	22.22	22.19	22.17	0-1	0
	1	12	22.34	21.72	22.20	22.15	22.14		0
	1	24	22.25	21.65	22.16	22.10	22.10		0
	12	0	22.20	21.57	22.02	21.99	21.96	0-2	0
	12	6	22.19	21.58	22.06	21.98	21.98		0
	12	13	22.12	21.51	22.01	21.93	21.95		0
	25	0	22.10	21.48	21.94	21.91	21.91		0
64QAM	1	0	22.23	21.68	22.13	22.09	22.04	0-2	0
	1	12	22.22	21.64	22.09	22.07	22.02		0
	1	24	22.14	21.57	22.07	21.99	21.98		0
	12	0	22.12	21.49	21.94	21.90	21.88	0-3	0
	12	6	22.06	21.48	21.99	21.92	21.90		0
	12	13	22.04	21.41	21.92	21.85	21.85		0
	25	0	22.20	21.59	22.04	21.99	22.00		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.19 Grip Sensor Mode Reduced LTE Band 41 (PC2)

Table 9-96
LTE Band 41 Reduced Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.49	22.02	21.76	22.08	**22.59**	0	0
	1	50	22.24	21.79	21.52	21.94	22.37		0
	1	99	22.09	21.68	21.56	22.01	22.31		0
	50	0	22.43	21.98	21.70	22.03	**22.49**	0-1	0
	50	25	22.39	21.89	21.63	22.00	22.39		0
	50	50	22.24	21.79	21.52	22.01	22.41		0
	100	0	22.42	21.91	21.62	21.98	22.40		0
16QAM	1	0	22.89	22.31	22.06	22.53	22.93	0-1	0
	1	50	22.67	22.20	21.92	22.39	22.78		0
	1	99	22.51	22.08	21.97	22.48	22.71		0
	50	0	22.63	22.14	21.83	22.18	22.57	0-2	0
	50	25	22.49	22.01	21.76	22.12	22.51		0
	50	50	22.36	21.90	21.65	22.13	22.53		0
	100	0	22.51	22.01	21.78	22.13	22.54		0
64QAM	1	0	22.73	22.11	21.83	22.20	22.63	0-2	0
	1	50	22.36	21.96	21.61	22.12	22.47		0
	1	99	22.21	21.79	21.66	22.18	22.41		0
	50	0	22.63	22.11	21.80	22.16	22.58	0-3	0
	50	25	22.50	22.02	21.70	22.13	22.52		0
	50	50	22.34	21.92	21.64	22.15	22.54		0
	100	0	22.48	22.01	21.74	22.11	22.51		0

Table 9-97
LTE Band 41 Reduced Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.96	22.11	21.92	22.29	22.61	0	0
	1	36	22.75	21.98	21.78	22.26	22.59		0
	1	74	22.58	21.89	21.89	22.23	22.50		0
	36	0	22.88	22.16	21.87	22.28	22.63	0-1	0
	36	18	22.85	22.10	21.88	22.25	22.58		0
	36	37	22.71	22.00	21.82	22.30	22.61		0
	75	0	22.82	22.01	21.86	22.23	22.52		0
16QAM	1	0	23.09	22.46	22.25	22.64	22.99	0-1	0
	1	36	23.09	22.34	22.15	22.61	22.94		0
	1	74	22.93	22.24	22.25	22.57	22.85		0
	36	0	23.03	22.24	22.03	22.39	22.70	0-2	0
	36	18	22.93	22.21	22.00	22.38	22.67		0
	36	37	22.85	22.06	21.99	22.40	22.75		0
	75	0	22.91	22.14	22.01	22.37	22.67		0
64QAM	1	0	23.00	22.34	22.16	22.49	22.87	0-2	0
	1	36	22.97	22.24	22.05	22.52	22.83		0
	1	74	22.80	22.14	22.14	22.47	22.74		0
	36	0	22.97	22.24	21.98	22.32	22.72	0-3	0
	36	18	22.92	22.18	21.98	22.33	22.65		0
	36	37	22.80	22.06	21.94	22.41	22.67		0
	75	0	22.90	22.18	21.97	22.32	22.71		0

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-98
LTE Band 41 Reduced Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.88	22.04	21.83	22.18	22.58	0	0
	1	25	22.75	21.99	21.81	22.27	22.57		0
	1	49	22.62	21.88	21.75	22.18	22.50		0
	25	0	22.89	22.07	21.87	22.19	22.59	0-1	0
	25	12	22.85	22.03	21.89	22.35	22.58		0
	25	25	22.75	21.98	21.84	22.27	22.61		0
	50	0	22.79	22.02	21.82	22.30	22.49		0
16QAM	1	0	23.00	22.37	22.17	22.58	22.83	0-1	0
	1	25	23.08	22.30	22.11	22.57	22.89		0
	1	49	23.01	22.27	22.13	22.56	22.88		0
	25	0	22.97	22.16	21.98	22.43	22.64	0-2	0
	25	12	22.93	22.18	22.01	22.44	22.65		0
	25	25	22.85	22.15	21.95	22.38	22.69		0
	50	0	22.84	22.11	21.90	22.35	22.55		0
64QAM	1	0	23.03	22.28	22.05	22.52	22.72	0-2	0
	1	25	22.99	22.24	22.02	22.51	22.79		0
	1	49	22.89	22.16	22.01	22.49	22.77		0
	25	0	22.84	22.11	21.89	22.38	22.59	0-3	0
	25	12	22.85	22.08	21.92	22.39	22.58		0
	25	25	22.80	22.02	21.85	22.36	22.61		0
	50	0	22.95	22.22	22.03	22.49	22.68		0

Table 9-99
LTE Band 41 Reduced Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.75	22.01	21.79	22.24	22.44	0	0
	1	12	22.73	21.97	21.76	22.23	22.55		0
	1	24	22.64	21.89	21.75	22.23	22.49		0
	12	0	22.75	22.02	21.85	22.28	22.48	0-1	0
	12	6	22.76	22.01	21.83	22.28	22.50		0
	12	13	22.71	21.95	21.79	22.23	22.57		0
	25	0	22.76	22.02	21.83	22.26	22.48		0
16QAM	1	0	23.08	22.35	22.13	22.58	22.82	0-1	0
	1	12	23.07	22.32	22.11	22.56	22.87		0
	1	24	22.98	22.28	22.10	22.56	22.84		0
	12	0	22.90	22.20	21.96	22.42	22.64	0-2	0
	12	6	22.93	22.16	22.01	22.43	22.63		0
	12	13	22.89	22.13	21.98	22.41	22.71		0
	25	0	22.85	22.09	21.91	22.35	22.58		0
64QAM	1	0	23.02	22.27	22.04	22.50	22.72	0-2	0
	1	12	22.96	22.22	22.01	22.49	22.77		0
	1	24	22.89	22.16	22.01	22.45	22.75		0
	12	0	22.87	22.09	21.89	22.35	22.58	0-3	0
	12	6	22.81	22.09	21.91	22.35	22.58		0
	12	13	22.75	22.05	21.88	22.31	22.64		0
	25	0	22.94	22.22	21.99	22.48	22.67		0

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.4.20 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-100
Maximum LTE Uplink Carrier Aggregation Conducted Powers

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41	20	39750	2506.0	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.18	23.94

Table 9-101
Hotspot Mode Reduced LTE Uplink Carrier Aggregation Conducted Powers

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41	20	40620	2593.0	QPSK	1	0	LTE B41	20	40422	2573.2	QPSK	1	99	22.18	22.23

Table 9-102
Grip Sensor Mode Reduced LTE Uplink Carrier Aggregation Conducted Powers

	PCC							SCC							Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx.Power with UL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_41C	LTE B41	20	40620	2593.0	QPSK	50	0	LTE B41	20	40422	2573.2	QPSK	50	50	22.10	22.06

Notes:

1. This device supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20 MHz component carriers. For intraband contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when non-contiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.
2. Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
3. Uplink carrier aggregation is only possible when the device is operating with Power Class 3 for LTE Band 41.



Figure 9-4
Power Measurement Setup

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.5 WLAN Conducted Powers

Table 9-103
2.4 GHz WLAN Maximum Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	20.18	16.80	16.77
2417	2	N/A	17.43	17.41
2437	6	**20.77**	17.42	17.41
2457	10	N/A	17.54	17.51
2462	11	20.15	15.82	15.84

Table 9-104
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	20.19	16.83	16.65
2417	2	N/A	17.37	17.98
2437	6	**20.24**	17.93	17.91
2457	10	N/A	17.82	17.64
2462	11	20.08	15.98	15.74

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-105
5 GHz WLAN Maximum Average RF Power – Ant 1

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	17.24	17.14	17.27
5200	40	17.24	17.23	17.24
5220	44	17.28	17.26	17.19
5240	48	17.31	17.29	17.34
5260	52	17.08	17.05	17.04
5280	56	17.04	17.11	17.08
5300	60	**17.15**	17.04	17.06
5320	64	17.15	17.21	17.04
5500	100	16.35	16.29	16.33
5600	120	16.54	16.38	16.42
5620	124	16.36	16.54	16.59
5720	144	**16.62**	16.46	16.54
5745	149	16.65	16.62	16.48
5785	157	**16.70**	16.64	16.69
5825	165	16.68	16.51	16.52

Table 9-106
5 GHz WLAN Maximum Average RF Power – Ant 2

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	16.87	16.82	16.84
5200	40	16.88	16.79	16.83
5220	44	16.84	16.77	16.81
5240	48	16.83	16.89	16.76
5260	52	**16.95**	16.88	16.84
5280	56	16.92	16.83	16.92
5300	60	16.92	16.91	16.96
5320	64	16.93	16.89	16.76
5500	100	17.13	17.14	17.21
5600	120	17.22	17.23	17.30
5620	124	17.34	17.33	17.20
5720	144	**17.35**	17.29	17.22
5745	149	17.20	17.13	17.10
5785	157	**17.26**	17.21	17.21
5825	165	17.25	17.15	17.16

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-107
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11n Conducted Power [dBm]				
Freq [MHz]	**Channel**	**ANT1**	**ANT2**	**MIMO**
5180	36	17.14	16.82	19.99
5200	40	17.23	16.79	20.03
5220	44	17.26	16.77	20.03
5240	48	17.29	16.89	20.10
5260	52	17.05	16.88	19.98
5280	56	17.11	16.83	19.98
5300	60	17.04	16.91	19.99
5320	64	**17.21**	**16.89**	**20.06**
5500	100	15.94	16.02	18.99
5600	120	**15.97**	**16.40**	**19.20**
5620	124	16.00	16.23	19.13
5720	144	15.89	16.42	19.17
5745	149	**15.99**	**16.25**	**19.13**
5785	157	15.94	16.24	19.10
5825	165	15.85	16.32	19.10

Table 9-108
Maximum Output Powers During Conditions with 2.4 GHz and 5 GHz WLAN

2.4GHz 802.11n Conducted Power [dBm]			
Freq [MHz]	**Channel**	**ANT1**	**ANT2**
2412	1	16.55	16.69
2437	6	16.11	16.86
2462	11	**16.41**	**16.83**
5GHz (80MHz) 802.11 ac Conducted Power [dBm]			
Freq [MHz]	**Channel**	**ANT1**	**ANT2**
5210	42	13.84	13.59
5290	58	13.59	13.69
5530	106	13.98	13.53
5610	122	13.93	13.47
5690	138	13.99	13.55
5775	155	**13.53**	**13.43**

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-109
2.4 GHz WLAN Reduced Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	16.09	16.34	16.55
2437	6	15.97	16.27	16.11
2462	11	**16.37**	16.45	16.41

Table 9-110
2.4 GHz WLAN Reduced Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
2412	1	16.58	16.86	16.69
2437	6	16.65	16.97	16.86
2462	11	**16.89**	16.95	16.83

Table 9-111
2.4 GHz WLAN Reduced Average RF Power – MIMO

2.4GHz 802.11n Conducted Power [dBm]			
Freq [MHz]	Channel	ANT1	ANT2
2412	1	15.37	15.51
2437	6	15.61	15.41
2462	11	**15.36**	**15.89**

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 9-112
5 GHz WLAN Reduced Average RF Power – Ant 1

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	13.84
5290	58	**13.59**
5530	106	13.98
5610	122	13.93
5690	138	**13.99**
5775	155	**13.53**

Table 9-113
5 GHz WLAN Reduced Average RF Power – Ant 2

5GHz (80MHz) Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11ac
5210	42	13.59
5290	58	**13.69**
5530	106	13.53
5610	122	13.47
5690	138	**13.55**
5775	155	**13.43**

Table 9-114
Reduced Output Powers During Conditions with 2.4 GHz and 5 GHz WLAN

2.4GHz 802.11n Conducted Power [dBm]			
Freq [MHz]	Channel	ANT1	ANT2
2412	1	**13.56**	**13.95**
2437	6	13.29	13.69
2462	11	13.35	13.98

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.
- The bolded data rate and channel above were tested for SAR.

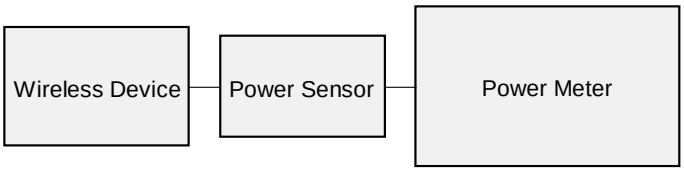


Figure 9-5
Power Measurement Setup

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

9.6 Bluetooth Conducted Powers

Table 9-115
Bluetooth Average RF Power

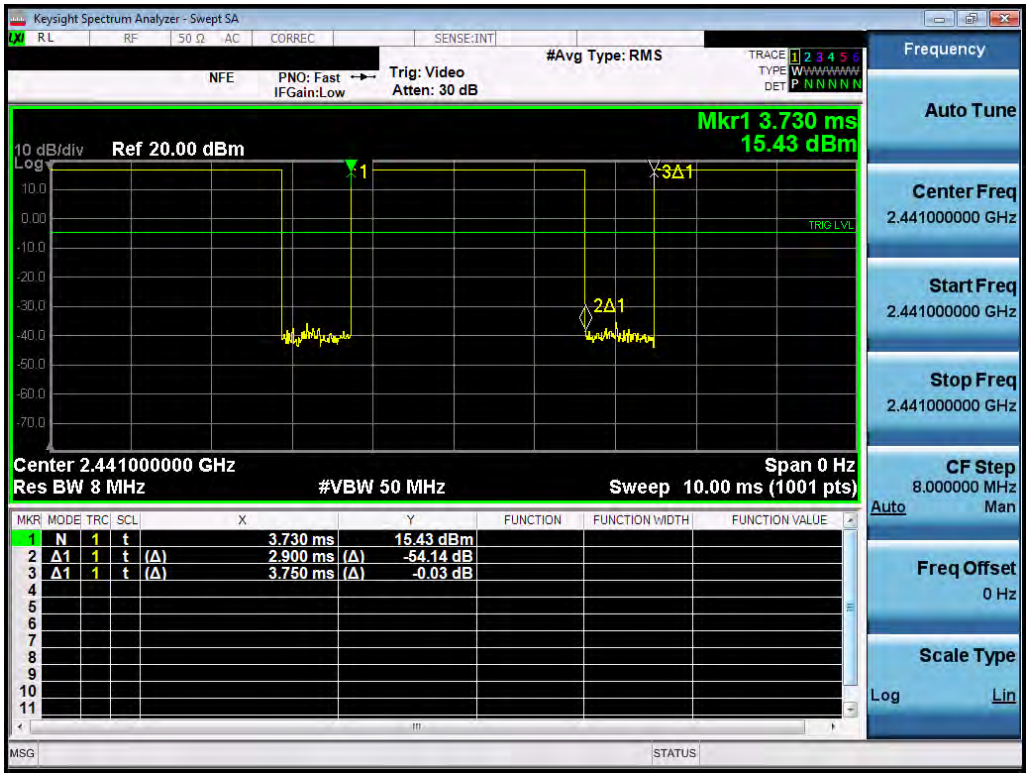
Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	16.14	41.079
2441	1.0	39	16.47	44.357
2480	1.0	78	**16.50**	44.637
2402	2.0	0	9.56	9.042
2441	2.0	39	9.15	8.226
2480	2.0	78	9.50	8.919
2402	3.0	0	9.99	9.980
2441	3.0	39	9.54	8.991
2480	3.0	78	9.39	8.682

Note: The bolded data rates and channel above were tested for SAR.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Figure 9-6
Bluetooth Transmission Plot



Equation 9-1
Bluetooth Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.9\ ms}{3.75ms} * 100\% = 77.3\%$$

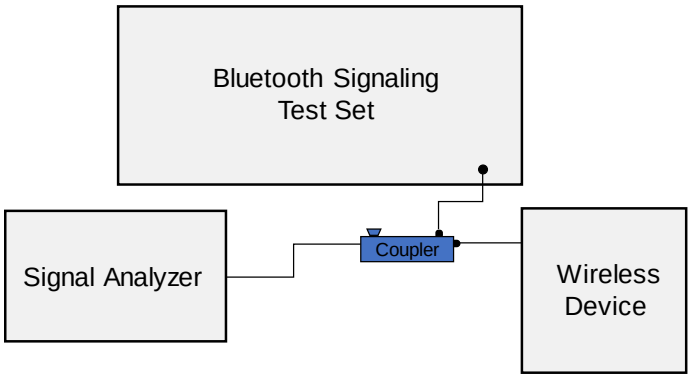


Figure 9-7
Power Measurement Setup

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

10 SYSTEM VERIFICATION

10.1 Tissue Verification

Table 10-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
5/9/2018	750 H	21.6	700	0.895	41.824	0.889	42.201	*0.67%*	*-0.89%*
			710	0.898	41.796	0.890	42.149	*0.90%*	*-0.84%*
			740	0.908	41.715	0.893	41.994	*1.68%*	*-0.66%*
			755	0.913	41.653	0.894	41.916	*2.13%*	*-0.63%*
			770	0.919	41.600	0.895	41.838	*2.68%*	*-0.57%*
			785	0.925	41.549	0.896	41.760	*3.24%*	*-0.51%*
5/31/2018	750H	21.7	700	0.881	41.736	0.889	42.201	*-0.90%*	*-1.10%*
			710	0.887	41.762	0.890	42.149	*-0.34%*	*-0.92%*
			740	0.896	41.660	0.893	41.994	*0.34%*	*-0.80%*
			755	0.902	41.629	0.894	41.916	*0.89%*	*-0.68%*
			770	0.907	41.565	0.895	41.838	*1.34%*	*-0.65%*
			785	0.911	41.528	0.896	41.760	*1.67%*	*-0.56%*
5/7/2018	835H	20.2	820	0.908	40.668	0.899	41.578	*1.00%*	*-2.19%*
			835	0.913	40.649	0.900	41.500	*1.44%*	*-2.05%*
			850	0.919	40.626	0.916	41.500	*0.33%*	*-2.11%*
5/9/2018	1750H	21.6	1710	1.347	39.645	1.348	40.142	*-0.07%*	*-1.24%*
			1750	1.370	39.600	1.371	40.079	*-0.07%*	*-1.20%*
			1790	1.389	39.522	1.394	40.016	*-0.36%*	*-1.23%*
5/8/2018	1900H	22.8	1850	1.367	39.637	1.400	40.000	*-2.36%*	*-0.91%*
			1880	1.399	39.515	1.400	40.000	*-0.07%*	*-1.21%*
			1910	1.430	39.369	1.400	40.000	*2.14%*	*-1.58%*
5/22/2018	1900H	21.1	1850	1.416	38.968	1.400	40.000	*1.14%*	*-2.58%*
			1880	1.435	38.938	1.400	40.000	*2.50%*	*-2.65%*
			1910	1.453	38.894	1.400	40.000	*3.79%*	*-2.77%*
5/3/2018	2450H	22.1	2400	1.784	38.949	1.756	39.289	*1.59%*	*-0.87%*
			2450	1.839	38.781	1.800	39.200	*2.17%*	*-1.07%*
			2500	1.895	38.588	1.855	39.136	*2.16%*	*-1.40%*
5/17/2018	2450H	22.0	2400	1.815	39.270	1.756	39.289	*3.36%*	*-0.05%*
			2450	1.870	39.093	1.800	39.200	*3.89%*	*-0.27%*
			2500	1.930	38.893	1.855	39.136	*4.04%*	*-0.62%*
5/21/2018	2450H	22.1	2400	1.798	38.855	1.756	39.289	*2.39%*	*-1.10%*
			2450	1.850	38.673	1.800	39.200	*2.78%*	*-1.34%*
			2500	1.909	38.479	1.855	39.136	*2.91%*	*-1.68%*
			2550	1.965	38.297	1.909	39.073	*2.93%*	*-1.99%*
			2600	2.020	38.088	1.964	39.009	*2.85%*	*-2.36%*

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 10-2
Measured Head Tissue Properties Cont.

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
05/07/2018	5200H-5800H	21.0	5240	4.527	34.702	4.696	35.940	-3.60%	-3.44%
			5260	4.548	34.680	4.717	35.917	-3.58%	-3.44%
			5280	4.563	34.647	4.737	35.894	-3.67%	-3.47%
			5300	4.585	34.607	4.758	35.871	-3.64%	-3.52%
			5320	4.604	34.553	4.778	35.849	-3.64%	-3.62%
			5500	4.781	34.332	4.963	35.643	-3.67%	-3.68%
			5520	4.799	34.294	4.983	35.620	-3.69%	-3.72%
			5540	4.829	34.273	5.004	35.597	-3.50%	-3.72%
			5560	4.837	34.228	5.024	35.574	-3.72%	-3.78%
			5580	4.863	34.214	5.045	35.551	-3.61%	-3.76%
			5600	4.885	34.194	5.065	35.529	-3.55%	-3.76%
			5620	4.908	34.155	5.086	35.506	-3.50%	-3.80%
			5640	4.938	34.101	5.106	35.483	-3.29%	-3.89%
			5660	4.950	34.093	5.127	35.460	-3.45%	-3.86%
			5680	4.962	34.076	5.147	35.437	-3.59%	-3.84%
			5700	4.984	34.065	5.168	35.414	-3.56%	-3.81%
			5745	5.030	34.003	5.214	35.363	-3.53%	-3.85%
			5765	5.048	33.973	5.234	35.340	-3.55%	-3.87%
			5785	5.064	33.932	5.255	35.317	-3.63%	-3.92%
			5800	5.078	33.915	5.270	35.300	-3.64%	-3.92%
			5805	5.084	33.914	5.275	35.294	-3.62%	-3.91%
			5825	5.109	33.896	5.296	35.271	-3.53%	-3.90%

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 10-3
Measured Body Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
5/11/2018	750B	21.8	700	0.945	54.252	0.959	55.726	-1.46%	-2.65%
			710	0.948	54.245	0.960	55.687	-1.25%	-2.59%
			740	0.960	54.203	0.963	55.570	-0.31%	-2.46%
			755	0.966	54.167	0.964	55.512	0.21%	-2.42%
			770	0.972	54.120	0.965	55.453	0.73%	-2.40%
			785	0.978	54.080	0.966	55.395	1.24%	-2.37%
5/14/2018	750B	21.2	700	0.935	54.432	0.959	55.726	-2.50%	-2.32%
			710	0.938	54.413	0.960	55.687	-2.29%	-2.29%
			740	0.950	54.347	0.963	55.570	-1.35%	-2.20%
			755	0.955	54.314	0.964	55.512	-0.93%	-2.16%
			770	0.961	54.273	0.965	55.453	-0.41%	-2.13%
			785	0.966	54.233	0.966	55.395	0.00%	-2.10%
6/4/2018	750B	20.0	700	0.913	54.764	0.959	55.726	-4.80%	-1.73%
			710	0.917	54.734	0.960	55.687	-4.48%	-1.71%
			720	0.921	54.709	0.961	55.648	-4.16%	-1.69%
			725	0.923	54.699	0.961	55.629	-3.95%	-1.67%
			740	0.929	54.670	0.963	55.570	-3.53%	-1.62%
			755	0.934	54.636	0.964	55.512	-3.11%	-1.58%
5/10/2018	835B	22.3	820	0.945	53.180	0.969	55.258	-2.48%	-3.76%
			835	0.960	53.039	0.970	55.200	-1.03%	-3.91%
			850	0.975	52.906	0.988	55.154	-1.32%	-4.08%
5/13/2018	835B	21.9	820	0.950	54.326	0.969	55.258	-1.96%	-1.69%
			835	0.966	54.190	0.970	55.200	-0.41%	-1.83%
			850	0.980	54.050	0.988	55.154	-0.81%	-2.00%
5/13/2018	835B	20.5	820	0.987	54.127	0.969	55.258	1.86%	-2.05%
			835	1.002	53.993	0.970	55.200	3.30%	-2.19%
			850	1.016	53.848	0.988	55.154	2.83%	-2.37%
5/26/2018	835B	20.0	820	0.967	54.495	0.969	55.258	-0.21%	-1.38%
			835	0.973	54.458	0.970	55.200	0.31%	-1.34%
			850	0.978	54.404	0.988	55.154	-1.01%	-1.36%
5/9/2018	1750B	21.2	1710	1.456	52.207	1.463	53.537	-0.48%	-2.48%
			1750	1.503	52.043	1.488	53.432	1.01%	-2.60%
			1790	1.545	51.844	1.514	53.326	2.05%	-2.78%
5/11/2018	1750B	21.4	1710	1.445	52.794	1.463	53.537	-1.23%	-1.39%
			1750	1.494	52.672	1.488	53.432	0.40%	-1.42%
			1790	1.540	52.500	1.514	53.326	1.72%	-1.55%
5/14/2018	1750B	20.7	1710	1.471	52.804	1.463	53.537	0.55%	-1.37%
			1750	1.516	52.662	1.488	53.432	1.88%	-1.44%
			1790	1.558	52.505	1.514	53.326	2.91%	-1.54%
5/7/2018	1900B	22.0	1850	1.506	53.315	1.520	53.300	-0.92%	0.03%
			1880	1.539	53.226	1.520	53.300	1.25%	-0.14%
			1910	1.574	53.110	1.520	53.300	3.55%	-0.36%
5/7/2018	2450B	22.2	2400	1.965	51.462	1.902	52.767	3.31%	-2.47%
			2450	2.027	51.335	1.950	52.700	3.95%	-2.59%
			2500	2.081	51.187	2.021	52.636	2.97%	-2.75%
			2550	2.144	51.033	2.092	52.573	2.49%	-2.93%
			2600	2.204	50.883	2.163	52.509	1.90%	-3.10%
			2650	2.265	50.702	2.234	52.445	1.39%	-3.32%
			2700	2.325	50.555	2.305	52.382	0.87%	-3.49%
5/15/2018	2450B	22.3	2400	1.971	51.171	1.902	52.767	3.63%	-3.02%
			2450	2.026	51.043	1.950	52.700	3.90%	-3.14%
			2500	2.083	50.872	2.021	52.636	3.07%	-3.35%
			2550	2.142	50.741	2.092	52.573	2.39%	-3.48%
			2600	2.197	50.606	2.163	52.509	1.57%	-3.62%
			2650	2.257	50.450	2.234	52.445	1.03%	-3.80%
			2700	2.316	50.301	2.305	52.382	0.48%	-3.97%
6/4/2018	2450B	22.1	2400	1.972	52.030	1.902	52.767	3.68%	-1.40%
			2450	2.032	51.912	1.950	52.700	4.21%	-1.50%
			2500	2.090	51.718	2.021	52.636	3.41%	-1.74%
			2550	2.151	51.550	2.092	52.573	2.82%	-1.95%
			2600	2.217	51.425	2.163	52.509	2.50%	-2.06%
			2600	2.217	51.425	2.163	52.509	2.50%	-2.06%
			2650	2.274	51.262	2.234	52.445	1.79%	-2.26%
			2700	2.337	51.087	2.305	52.382	1.39%	-2.47%

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 10-4
Measured Body Tissue Properties Cont.

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
04/29/2018	5200B-5800B	21.6	5240	5.505	48.000	5.346	48.960	2.97%	-1.96%
			5260	5.532	47.965	5.369	48.933	3.04%	-1.98%
			5280	5.548	47.960	5.393	48.906	2.87%	-1.93%
			5300	5.583	47.881	5.416	48.879	3.08%	-2.04%
			5320	5.610	47.871	5.439	48.851	3.14%	-2.01%
			5500	5.854	47.537	5.650	48.607	3.61%	-2.20%
			5520	5.873	47.523	5.673	48.580	3.53%	-2.18%
			5540	5.906	47.486	5.696	48.553	3.69%	-2.20%
			5560	5.938	47.439	5.720	48.526	3.81%	-2.24%
			5580	5.965	47.412	5.743	48.499	3.87%	-2.24%
			5600	5.992	47.387	5.766	48.471	3.92%	-2.24%
			5620	6.005	47.367	5.790	48.444	3.71%	-2.22%
			5640	6.043	47.278	5.813	48.417	3.96%	-2.35%
			5660	6.079	47.255	5.837	48.390	4.15%	-2.35%
			5680	6.103	47.234	5.860	48.363	4.15%	-2.33%
			5700	6.127	47.216	5.883	48.336	4.15%	-2.32%
			5745	6.196	47.131	5.936	48.275	4.38%	-2.37%
			5765	6.215	47.103	5.959	48.248	4.30%	-2.37%
			5785	6.245	47.052	5.982	48.220	4.40%	-2.42%
			5800	6.269	47.016	6.000	48.200	4.48%	-2.46%
			5805	6.279	46.992	6.006	48.193	4.55%	-2.49%
			5825	6.308	46.968	6.029	48.166	4.63%	-2.49%
05/07/2018	5200B-5800B	22.5	5240	5.463	48.331	5.346	48.960	2.19%	-1.28%
			5260	5.486	48.285	5.369	48.933	2.18%	-1.32%
			5280	5.512	48.255	5.393	48.906	2.21%	-1.33%
			5300	5.544	48.216	5.416	48.879	2.36%	-1.36%
			5320	5.562	48.191	5.439	48.851	2.26%	-1.35%
			5500	5.809	47.892	5.650	48.607	2.81%	-1.47%
			5520	5.834	47.841	5.673	48.580	2.84%	-1.52%
			5540	5.862	47.831	5.696	48.553	2.91%	-1.49%
			5560	5.900	47.752	5.720	48.526	3.15%	-1.60%
			5580	5.921	47.745	5.743	48.499	3.10%	-1.55%
			5600	5.957	47.699	5.766	48.471	3.31%	-1.59%
			5620	5.983	47.694	5.790	48.444	3.33%	-1.55%
			5640	6.005	47.649	5.813	48.417	3.30%	-1.59%
			5660	6.034	47.618	5.837	48.390	3.38%	-1.60%
			5680	6.064	47.575	5.860	48.363	3.48%	-1.63%
			5700	6.096	47.522	5.883	48.336	3.62%	-1.68%
			5745	6.164	47.417	5.936	48.275	3.84%	-1.78%
			5765	6.199	47.408	5.959	48.248	4.03%	-1.74%
			5785	6.223	47.394	5.982	48.220	4.03%	-1.71%
			5800	6.245	47.345	6.000	48.200	4.08%	-1.77%
			5805	6.253	47.346	6.006	48.193	4.11%	-1.76%
			5825	6.271	47.316	6.029	48.166	4.01%	-1.76%

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

10.2 Test System Verification

Prior to SAR assessment, the system is verified to ±10% of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix E.

Table 10-5
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{1g} (W/kg)	1 W Target SAR_{1g} (W/kg)	1 W Normalized SAR_{1g} (W/kg)	$Deviation_{1g}$ (%)
E	750	HEAD	05/09/2018	21.3	21.6	0.200	1161	3213	1.610	8.170	8.050	-1.47%
E	750	HEAD	05/31/2018	21.6	21.7	0.200	1161	3213	1.590	8.170	7.950	-2.69%
E	835	HEAD	05/07/2018	21.1	20.2	0.200	4d119	3213	1.940	9.530	9.700	1.78%
E	1750	HEAD	05/09/2018	21.3	21.6	0.100	1148	3213	3.590	36.400	35.900	-1.37%
G	1900	HEAD	05/08/2018	23.1	23.0	0.100	5d080	3332	3.870	39.300	38.700	-1.28%
E	1900	HEAD	05/22/2018	24.3	21.1	0.100	5d141	3213	4.220	39.300	42.200	7.38%
G	2450	HEAD	05/03/2018	21.1	21.5	0.100	797	3332	5.050	52.700	50.500	-4.17%
G	2450	HEAD	05/17/2018	22.6	21.1	0.100	882	3332	5.210	52.200	52.100	-0.19%
G	2450	HEAD	05/21/2018	21.0	22.0	0.100	882	3332	5.360	52.200	53.600	2.68%
H	5250	HEAD	05/07/2018	20.9	21.0	0.050	1191	3589	3.820	78.900	76.400	-3.17%
H	5600	HEAD	05/07/2018	20.9	21.0	0.050	1191	3589	4.120	83.600	82.400	-1.44%
H	5750	HEAD	05/07/2018	20.9	21.0	0.050	1191	3589	3.860	79.100	77.200	-2.40%
H	750	BODY	05/11/2018	20.9	21.8	0.200	1054	7410	1.760	8.610	8.800	2.21%
H	750	BODY	05/14/2018	21.9	21.2	0.200	1003	7410	1.710	8.580	8.550	-0.35%
J	750	BODY	06/04/2018	21.0	20.0	0.200	1054	3347	1.680	8.610	8.400	-2.44%
G	835	BODY	05/10/2018	22.9	21.6	0.200	4d047	3332	1.980	9.570	9.900	3.45%
G	835	BODY	05/13/2018	22.2	21.4	0.050	4d047	3332	1.960	9.570	9.800	2.40%
I	835	BODY	05/13/2018	22.2	20.8	0.200	4d047	3287	2.020	9.570	10.100	5.54%
J	835	BODY	05/26/2018	20.1	20.0	0.200	4d047	3347	2.010	9.570	10.050	5.02%
I	1750	BODY	05/09/2018	23.0	21.0	0.100	1148	3287	3.880	37.000	38.800	4.86%
I	1750	BODY	05/11/2018	22.0	20.9	0.100	1051	3287	3.890	37.200	38.900	4.57%
J	1900	BODY	05/07/2018	21.5	22.0	0.100	5d148	3347	4.050	39.600	40.500	2.27%
K	2450	BODY	05/07/2018	22.4	22.0	0.100	797	3319	5.270	51.100	52.700	3.13%
K	2600	BODY	05/07/2018	22.4	22.0	0.100	1126	3319	5.540	54.300	55.400	2.03%
K	2600	BODY	06/04/2018	22.0	21.5	0.100	1004	3319	5.790	54.800	57.900	5.66%
D	5250	BODY	04/29/2018	22.3	21.6	0.050	1237	7308	3.660	76.900	73.200	-4.81%
D	5600	BODY	04/29/2018	22.3	21.6	0.050	1237	7308	3.860	78.500	77.200	-1.66%
D	5750	BODY	04/29/2018	22.3	21.6	0.050	1237	7308	3.600	77.100	72.000	-6.61%

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 10-6
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System #	Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Source SN	Probe SN	Measured SAR_{10g} (W/kg)	1 W Target SAR_{10g} (W/kg)	1 W Normalized SAR_{10g} (W/kg)	$Deviation_{10g}$ (%)
J	1750	BODY	05/14/2018	20.8	20.7	0.100	1148	3347	2.060	19.800	20.600	4.04%
J	1900	BODY	05/07/2018	21.5	22.0	0.100	5d148	3347	2.090	20.900	20.900	0.00%
K	2450	BODY	05/15/2018	22.5	22.3	0.100	797	3319	2.380	24.200	23.800	-1.65%
K	2600	BODY	05/15/2018	22.5	22.3	0.100	1126	3319	2.370	24.400	23.700	-2.87%
D	5250	BODY	05/07/2018	23.3	21.4	0.050	1237	7308	1.040	21.500	20.800	-3.26%
D	5600	BODY	05/07/2018	23.3	21.4	0.050	1237	7308	1.040	22.100	20.800	-5.88%
D	5750	BODY	05/07/2018	23.3	21.4	0.050	1237	7308	0.995	21.400	19.900	-7.01%

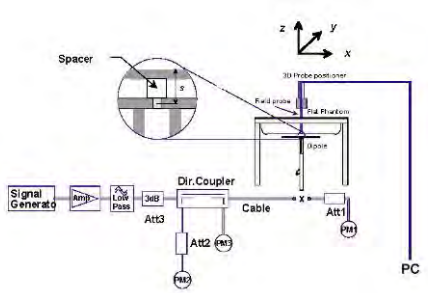


Figure 10-1
System Verification Setup Diagram



Figure 10-2
System Verification Setup Photo

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
GSM 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.0	33.18	0.00	Right	Cheek	D2395	1:8.3	0.170	1.208	0.205	A1
836.60	190	GSM 850	GSM	34.0	33.18	0.03	Right	Tilt	D2395	1:8.3	0.091	1.208	0.110	
836.60	190	GSM 850	GSM	34.0	33.18	0.00	Left	Cheek	D2395	1:8.3	0.137	1.208	0.165	
836.60	190	GSM 850	GSM	34.0	33.18	-0.03	Left	Tilt	D2395	1:8.3	0.072	1.208	0.087	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-2
GSM 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	31.0	30.35	-0.08	Right	Cheek	D2211	1:8.3	0.031	1.161	0.036	
1880.00	661	GSM 1900	GSM	31.0	30.35	0.03	Right	Tilt	D2211	1:8.3	0.010	1.161	0.012	
1880.00	661	GSM 1900	GSM	31.0	30.35	0.12	Left	Cheek	D2211	1:8.3	0.042	1.161	0.049	A2
1880.00	661	GSM 1900	GSM	31.0	30.35	0.06	Left	Tilt	D2211	1:8.3	0.012	1.161	0.014	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-3
UMTS 850 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	25.0	24.42	2	0.03	Right	Cheek	D2395	1:1	0.189	1.143	0.216	A3
836.60	4183	UMTS 850	RMC	25.0	24.42	2	-0.03	Right	Tilt	D2395	1:1	0.101	1.143	0.115	
836.60	4183	UMTS 850	RMC	25.0	24.42	2	0.00	Left	Cheek	D2395	1:1	0.160	1.143	0.183	
836.60	4183	UMTS 850	RMC	25.0	24.42	2	-0.05	Left	Tilt	D2395	1:1	0.086	1.143	0.098	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-4
UMTS 1750 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	25.0	24.18	77	0.03	Right	Cheek	D2211	1:1	0.061	1.208	0.074	
1732.40	1412	UMTS 1750	RMC	25.0	24.18	77	0.07	Right	Tilt	D2211	1:1	0.073	1.208	0.088	
1732.40	1412	UMTS 1750	RMC	25.0	24.18	77	0.05	Left	Cheek	D2211	1:1	0.089	1.208	0.108	A4
1732.40	1412	UMTS 1750	RMC	25.0	24.18	77	-0.07	Left	Tilt	D2211	1:1	0.073	1.208	0.088	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-5
UMTS 1900 Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	0.14	Right	Cheek	D2211	1:1	0.056	1.143	0.064	
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	0.05	Right	Tilt	D2211	1:1	0.028	1.143	0.032	
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	0.04	Left	Cheek	D2211	1:1	0.077	1.143	0.088	A5
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	0.10	Left	Tilt	D2211	1:1	0.031	1.143	0.035	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram							

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-6
Cell. CDMA Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
836.52	384	Cell. CDMA	RC3 / SO55	26.5	25.81	0.00	Right	Cheek	D2395	1:1	0.272	1.172	**0.319**	A6
836.52	384	Cell. CDMA	RC3 / SO55	26.5	25.81	-0.16	Right	Tilt	D2395	1:1	0.142	1.172	0.166	
836.52	384	Cell. CDMA	RC3 / SO55	26.5	25.81	0.01	Left	Cheek	D2395	1:1	0.220	1.172	0.258	
836.52	384	Cell. CDMA	RC3 / SO55	26.5	25.81	-0.04	Left	Tilt	D2395	1:1	0.111	1.172	0.130	
836.52	384	Cell. CDMA	EVDO Rev. A	26.5	25.84	0.00	Right	Cheek	D2395	1:1	0.235	1.164	0.274	
836.52	384	Cell. CDMA	EVDO Rev. A	26.5	25.84	-0.15	Right	Tilt	D2395	1:1	0.123	1.164	0.143	
836.52	384	Cell. CDMA	EVDO Rev. A	26.5	25.84	-0.03	Left	Cheek	D2395	1:1	0.188	1.164	0.219	
836.52	384	Cell. CDMA	EVDO Rev. A	26.5	25.84	0.04	Left	Tilt	D2395	1:1	0.139	1.164	0.162	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Head** **1.6 W/kg (mW/g)** averaged over 1 gram							

Table 11-7
LTE Band 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	0.08	0	Right	Cheek	QPSK	1	0	D2211	1:1	0.101	1.309	0.132	A7
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	-0.04	1	Right	Cheek	QPSK	25	0	D2211	1:1	0.076	1.276	0.097	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	0.01	0	Right	Tilt	QPSK	1	0	D2211	1:1	0.055	1.309	0.072	
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	0.05	1	Right	Tilt	QPSK	25	0	D2211	1:1	0.042	1.276	0.054	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	0.06	0	Left	Cheek	QPSK	1	0	D2211	1:1	0.082	1.309	0.107	
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	0.02	1	Left	Cheek	QPSK	25	0	D2211	1:1	0.075	1.276	0.096	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	0.05	0	Left	Tilt	QPSK	1	0	D2211	1:1	0.062	1.309	0.081	
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	0.08	1	Left	Tilt	QPSK	25	0	D2211	1:1	0.059	1.276	0.075	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**										**Head** **1.6 W/kg (mW/g)** averaged over 1 gram										

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-8
LTE Band 13 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	0.02	0	Right	Cheek	QPSK	1	0	N0185	1:1	0.152	1.180	0.179	A8
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	0.02	1	Right	Cheek	QPSK	25	0	N0185	1:1	0.120	1.153	0.138	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	0.10	0	Right	Tilt	QPSK	1	0	N0185	1:1	0.049	1.180	0.058	
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	0.00	1	Right	Tilt	QPSK	25	0	N0185	1:1	0.035	1.153	0.040	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	0.02	0	Left	Cheek	QPSK	1	0	N0185	1:1	0.092	1.180	0.109	
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	0.01	1	Left	Cheek	QPSK	25	0	N0185	1:1	0.064	1.153	0.074	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	0.05	0	Left	Tilt	QPSK	1	0	N0185	1:1	0.075	1.180	0.089	
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	0.01	1	Left	Tilt	QPSK	25	0	N0185	1:1	0.061	1.153	0.070	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-9
LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	0.00	0	Right	Cheek	QPSK	1	0	D2395	1:1	0.163	1.247	0.203	A9
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	-0.01	1	Right	Cheek	QPSK	25	0	D2395	1:1	0.149	1.225	0.183	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	0.00	0	Right	Tilt	QPSK	1	0	D2395	1:1	0.083	1.247	0.104	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	0.07	1	Right	Tilt	QPSK	25	0	D2395	1:1	0.070	1.225	0.086	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	0.01	0	Left	Cheek	QPSK	1	0	D2395	1:1	0.140	1.247	0.175	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	0.01	1	Left	Cheek	QPSK	25	0	D2395	1:1	0.111	1.225	0.136	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	0.04	0	Left	Tilt	QPSK	1	0	D2395	1:1	0.103	1.247	0.128	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	-0.02	1	Left	Tilt	QPSK	25	0	D2395	1:1	0.084	1.225	0.103	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-10
LTE Band 26 (Cell) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	3	0.01	0	Right	Cheek	QPSK	1	0	D2395	1:1	0.161	1.227	0.198	A10
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	3	0.06	1	Right	Cheek	QPSK	36	0	D2395	1:1	0.128	1.230	0.157	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	3	-0.05	0	Right	Tilt	QPSK	1	0	D2395	1:1	0.089	1.227	0.109	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	3	0.00	1	Right	Tilt	QPSK	36	0	D2395	1:1	0.071	1.230	0.087	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	3	-0.04	0	Left	Cheek	QPSK	1	0	D2395	1:1	0.104	1.227	0.128	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	3	0.05	1	Left	Cheek	QPSK	36	0	D2395	1:1	0.088	1.230	0.108	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	3	0.07	0	Left	Tilt	QPSK	1	0	D2395	1:1	0.100	1.227	0.123	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	3	0.05	1	Left	Tilt	QPSK	36	0	D2395	1:1	0.086	1.230	0.106	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-11
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	17	0.14	0	Right	Cheek	QPSK	1	0	D2211	1:1	0.062	1.334	0.083	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	17	0.13	1	Right	Cheek	QPSK	50	0	D2211	1:1	0.045	1.343	0.060	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	17	0.01	0	Right	Tilt	QPSK	1	0	D2211	1:1	0.070	1.334	0.093	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	17	0.09	1	Right	Tilt	QPSK	50	0	D2211	1:1	0.052	1.343	0.070	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	17	-0.01	0	Left	Cheek	QPSK	1	0	D2211	1:1	0.099	1.334	0.132	A11
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	17	0.10	1	Left	Cheek	QPSK	50	0	D2211	1:1	0.070	1.343	0.094	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	17	-0.19	0	Left	Tilt	QPSK	1	0	D2211	1:1	0.093	1.334	0.124	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	17	0.07	1	Left	Tilt	QPSK	50	0	D2211	1:1	0.065	1.343	0.087	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-12
LTE Band 2 (PCS) Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	17	0.03	0	Right	Cheek	QPSK	1	0	D2211	1:1	0.068	1.194	0.081	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	17	-0.06	1	Right	Cheek	QPSK	50	0	D2211	1:1	0.049	1.208	0.059	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	17	0.03	0	Right	Tilt	QPSK	1	0	D2211	1:1	0.025	1.194	0.030	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	17	0.04	1	Right	Tilt	QPSK	50	0	D2211	1:1	0.017	1.208	0.021	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	17	0.00	0	Left	Cheek	QPSK	1	0	D2211	1:1	0.073	1.194	0.087	A12
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	17	0.06	1	Left	Cheek	QPSK	50	0	D2211	1:1	0.052	1.208	0.063	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	17	-0.10	0	Left	Tilt	QPSK	1	0	D2211	1:1	0.023	1.194	0.027	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	17	0.03	1	Left	Tilt	QPSK	50	0	D2211	1:1	0.016	1.208	0.019	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-13
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																			
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	17	0.16	0	Right	Cheek	QPSK	1	0	D2211	1:1	0.046	1.178	0.054	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	17	-0.02	1	Right	Cheek	QPSK	50	0	D2211	1:1	0.044	1.186	0.052	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	17	0.12	0	Right	Tilt	QPSK	1	0	D2211	1:1	0.018	1.178	0.021	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	17	-0.02	1	Right	Tilt	QPSK	50	0	D2211	1:1	0.014	1.186	0.017	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	17	-0.06	0	Left	Cheek	QPSK	1	0	D2211	1:1	0.063	1.178	0.074	A13
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	17	0.19	1	Left	Cheek	QPSK	50	0	D2211	1:1	0.043	1.186	0.051	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	17	0.03	0	Left	Tilt	QPSK	1	0	D2211	1:1	0.017	1.178	0.020	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	17	-0.07	1	Left	Tilt	QPSK	50	0	D2211	1:1	0.014	1.186	0.017	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-14
LTE Band 41 Head SAR

MEASUREMENT RESULTS																					
1 CC Uplink | 2 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g) (W/kg)	Scaling Factor	Reported SAR (1g) (W/kg)	Plot #
		MHz	Ch.																		
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	25.0	23.94	0.08	0	Right	Cheek	QPSK	1	99	D2211	1:1.58	0.039	1.276	0.050	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.00	0.07	1	Right	Cheek	QPSK	50	0	D2211	1:1.58	0.032	1.259	0.040	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	25.0	23.94	0.02	0	Right	Tilt	QPSK	1	99	D2211	1:1.58	0.048	1.276	0.061	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.00	0.04	1	Right	Tilt	QPSK	50	0	D2211	1:1.58	0.034	1.259	0.043	
1 CC Uplink - Power Class 2	N/A	2506.00	39750	Low	LTE Band 41	20	28.0	26.65	0.03	0	Right	Tilt	QPSK	1	99	D2211	1:2.31	0.058	1.365	0.079	A14
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	LTE Band 41	20	25.0	24.18	0.07	0	Right	Tilt	QPSK	1	99	D2211	1:1.58	0.054	1.208	0.065	
2 CC Uplink - Power Class 3	SCC	2525.80	39948	Low	LTE Band 41	20	25.0						QPSK	1	0						
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	25.0	23.94	-0.19	0	Left	Cheek	QPSK	1	99	D2211	1:1.58	0.042	1.276	0.054	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.00	0.03	1	Left	Cheek	QPSK	50	0	D2211	1:1.58	0.027	1.259	0.034	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	25.0	23.94	0.04	0	Left	Tilt	QPSK	1	99	D2211	1:1.58	0.022	1.276	0.028	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.00	-0.03	1	Left	Tilt	QPSK	50	0	D2211	1:1.58	0.019	1.259	0.024	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram											

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-15
DTS Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	17.0	16.37	0.04	Right	Cheek	1	D2297	1	99.0	0.487	0.406	1.156	1.010	0.474	
2462	11	802.11b	DSSS	22	17.0	16.37	0.04	Right	Tilt	1	D2297	1	99.0	0.455	0.380	1.156	1.010	0.444	
2462	11	802.11b	DSSS	22	17.0	16.37	-0.04	Left	Cheek	1	D2297	1	99.0	0.176	-	1.156	1.010	-	
2462	11	802.11b	DSSS	22	17.0	16.37	0.14	Left	Tilt	1	D2297	1	99.0	0.211	-	1.156	1.010	-	
2412	1	802.11b	DSSS	22	17.0	16.58	-0.02	Right	Cheek	2	D2297	1	99.0	0.925	0.847	1.102	1.010	0.943	
2437	6	802.11b	DSSS	22	17.0	16.65	0.02	Right	Cheek	2	D2297	1	99.0	0.863	0.860	1.084	1.010	0.942	
2462	11	802.11b	DSSS	22	17.0	16.89	0.01	Right	Cheek	2	D2297	1	99.0	0.920	0.922	1.026	1.010	**0.955**	A15
2437	6	802.11b	DSSS	22	17.0	16.65	-0.04	Right	Tilt	2	D2297	1	99.0	0.878	0.878	1.084	1.010	**0.961**	
2462	11	802.11b	DSSS	22	17.0	16.89	0.17	Right	Tilt	2	D2297	1	99.0	0.875	0.838	1.026	1.010	0.868	
2462	11	802.11b	DSSS	22	17.0	16.89	0.04	Left	Cheek	2	D2297	1	99.0	0.400	0.267	1.026	1.010	0.277	
2462	11	802.11b	DSSS	22	17.0	16.89	0.12	Left	Tilt	2	D2297	1	99.0	0.272	-	1.026	1.010	-	
2462	11	802.11b	DSSS	22	17.0	16.89	0.05	Right	Cheek	2	D2297	1	99.0	0.887	0.904	1.026	1.010	0.937	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**								**Head** **1.6 W/kg (mW/g)** averaged over 1 gram											

Note: Blue entries represent variability measurements.

Table 11-16
DTS MIMO Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2412	1	802.11n	OFDM	20	16.0	15.37	16.0	15.51	0.02	Right	Cheek	MIMO	D2297	13	98.6	0.849	0.795	1.156	1.014	0.932	
2437	6	802.11n	OFDM	20	16.0	15.61	16.0	15.41	0.08	Right	Cheek	MIMO	D2297	13	98.6	0.764	0.673	1.146	1.014	0.782	
2462	11	802.11n	OFDM	20	16.0	15.36	16.0	15.89	0.19	Right	Cheek	MIMO	D2297	13	98.6	0.998	0.839	1.159	1.014	0.986	
2437	6	802.11n	OFDM	20	16.0	15.61	16.0	15.41	0.13	Right	Tilt	MIMO	D2297	13	98.6	0.774	0.657	1.146	1.014	0.763	
2462	11	802.11n	OFDM	20	16.0	15.36	16.0	15.89	0.02	Right	Tilt	MIMO	D2297	13	98.6	0.890	0.743	1.159	1.014	0.873	
2462	11	802.11n	OFDM	20	16.0	15.36	16.0	15.89	-0.12	Left	Cheek	MIMO	D2297	13	98.6	0.314	0.302	1.159	1.014	0.355	
2462	11	802.11n	OFDM	20	16.0	15.36	16.0	15.89	0.01	Left	Tilt	MIMO	D2297	13	98.6	0.248	-	1.159	1.014	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**										**Head** **1.6 W/kg (mW/g)** averaged over 1 gram										

To achieve the 19.0 dBm maximum allowed MIMO power shown in the documentation tune-up, each antenna transmits at a maximum allowed power of 16.0 dBm

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-17
DTS MIMO Head SAR for Conditions with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2412	1	802.11n	OFDM	20	14.0	13.56	14.0	13.95	0.19	Right	Cheek	MIMO	D2297	13	98.6	0.573	0.555	1.107	1.014	0.623	
2437	6	802.11n	OFDM	20	14.0	13.29	14.0	13.69	0.05	Right	Cheek	MIMO	D2297	13	98.6	0.494	0.465	1.178	1.014	0.555	
2462	11	802.11n	OFDM	20	14.0	13.35	14.0	13.98	0.03	Right	Cheek	MIMO	D2297	13	98.6	0.640	0.582	1.161	1.014	0.685	
2412	1	802.11n	OFDM	20	14.0	13.56	14.0	13.95	0.16	Right	Tilt	MIMO	D2297	13	98.6	0.597	0.514	1.107	1.014	0.577	
2412	1	802.11n	OFDM	20	14.0	13.56	14.0	13.95	-0.05	Left	Cheek	MIMO	D2297	13	98.6	0.224	-	1.107	1.014	-	
2412	1	802.11n	OFDM	20	14.0	13.56	14.0	13.95	0.03	Left	Tilt	MIMO	D2297	13	98.6	0.190	-	1.107	1.014	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram											

DTS MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI was not transmitting during the above evaluations.

Table 11-18
NII Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5290	58	802.11ac	OFDM	80	14.0	13.59	0.10	Right	Cheek	1	D2145	29.3	94.6	0.059	0.021	1.099	1.057	0.024	
5290	58	802.11ac	OFDM	80	14.0	13.59	0.00	Right	Tilt	1	D2145	29.3	94.6	0.057	-	1.099	1.057	-	
5290	58	802.11ac	OFDM	80	14.0	13.59	0.12	Left	Cheek	1	D2145	29.3	94.6	0.038	-	1.099	1.057	-	
5290	58	802.11ac	OFDM	80	14.0	13.59	0.03	Left	Tilt	1	D2145	29.3	94.6	0.034	-	1.099	1.057	-	
5290	58	802.11ac	OFDM	80	14.0	13.69	0.07	Right	Cheek	2	D2145	29.3	94.5	0.372	0.193	1.074	1.058	0.219	
5290	58	802.11ac	OFDM	80	14.0	13.69	0.09	Right	Tilt	2	D2145	29.3	94.5	0.339	-	1.074	1.058	-	
5290	58	802.11ac	OFDM	80	14.0	13.69	0.05	Left	Cheek	2	D2145	29.3	94.5	0.212	-	1.074	1.058	-	
5290	58	802.11ac	OFDM	80	14.0	13.69	0.20	Left	Tilt	2	D2145	29.3	94.5	0.169	-	1.074	1.058	-	
5690	138	802.11ac	OFDM	80	14.0	13.99	0.08	Right	Cheek	1	D2145	29.3	94.6	0.079	-	1.002	1.057	-	
5690	138	802.11ac	OFDM	80	14.0	13.99	-0.05	Right	Tilt	1	D2145	29.3	94.6	0.093	0.036	1.002	1.057	0.038	
5690	138	802.11ac	OFDM	80	14.0	13.99	-0.02	Left	Cheek	1	D2145	29.3	94.6	0.055	-	1.002	1.057	-	
5690	138	802.11ac	OFDM	80	14.0	13.99	-0.06	Left	Tilt	1	D2145	29.3	94.6	0.072	-	1.002	1.057	-	
5690	138	802.11ac	OFDM	80	14.0	13.55	0.03	Right	Cheek	2	D2145	29.3	94.5	0.423	0.256	1.109	1.058	**0.300**	A16
5690	138	802.11ac	OFDM	80	14.0	13.55	0.11	Right	Tilt	2	D2145	29.3	94.5	0.294	-	1.109	1.058	-	
5690	138	802.11ac	OFDM	80	14.0	13.55	0.03	Left	Cheek	2	D2145	29.3	94.5	0.229	-	1.109	1.058	-	
5690	138	802.11ac	OFDM	80	14.0	13.55	0.03	Left	Tilt	2	D2145	29.3	94.5	0.178	-	1.109	1.058	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	0.10	Right	Cheek	1	D2145	29.3	94.6	0.049	-	1.114	1.057	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	-0.20	Right	Tilt	1	D2145	29.3	94.6	0.065	-	1.114	1.057	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	0.14	Left	Cheek	1	D2145	29.3	94.6	0.044	-	1.114	1.057	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	-0.14	Left	Tilt	1	D2145	29.3	94.6	0.074	0.026	1.114	1.057	0.031	
5775	155	802.11ac	OFDM	80	14.0	13.43	0.06	Right	Cheek	2	D2145	29.3	94.5	0.483	0.250	1.140	1.058	**0.302**	
5775	155	802.11ac	OFDM	80	14.0	13.43	0.05	Right	Tilt	2	D2145	29.3	94.5	0.343	-	1.140	1.058	-	
5775	155	802.11ac	OFDM	80	14.0	13.43	0.02	Left	Cheek	2	D2145	29.3	94.5	0.262	-	1.140	1.058	-	
5775	155	802.11ac	OFDM	80	14.0	13.43	0.03	Left	Tilt	2	D2145	29.3	94.5	0.204	-	1.140	1.058	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram									

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-19
DSS Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	Duty Cycle %	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402.00	0	Bluetooth	FHSS	16.5	16.14	0.03	Right	Cheek	D2297	1	77.3	0.670	1.086	1.294	0.942	
2441.00	39	Bluetooth	FHSS	16.5	16.47	-0.07	Right	Cheek	D2297	1	77.3	0.730	1.007	1.294	**0.951**	A17
2480.00	78	Bluetooth	FHSS	16.5	16.50	0.11	Right	Cheek	D2297	1	77.3	0.675	1.000	1.294	0.873	
2480.00	78	Bluetooth	FHSS	16.5	16.50	0.11	Right	Tilt	D2297	1	77.3	0.611	1.000	1.294	0.791	
2480.00	78	Bluetooth	FHSS	16.5	16.50	0.14	Left	Cheek	D2297	1	77.3	0.156	1.000	1.294	0.202	
2480.00	78	Bluetooth	FHSS	16.5	16.50	0.16	Left	Tilt	D2297	1	77.3	0.174	1.000	1.294	0.225	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**							**Head** **1.6 W/kg (mW/g)** averaged over 1 gram									

11.2 Standalone Body-Worn SAR Data

Table 11-20
GSM/UMTS/CDMA Body-Worn SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.0	33.18	N/A	-0.12	15 mm	D2211	1:8.3	back	0.280	1.208	0.338	A18
1880.00	661	GSM 1900	GSM	31.0	30.35	N/A	0.05	15 mm	D2211	1:8.3	back	0.173	1.161	0.201	A20
836.60	4183	UMTS 850	RMC	25.0	24.42	2	-0.01	15 mm	D2395	1:1	back	0.318	1.143	0.363	A22
1732.40	1412	UMTS 1750	RMC	25.0	24.18	16	0.01	15 mm	D2395	1:1	back	0.436	1.208	0.527	A24
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	0.02	15 mm	D2211	1:1	back	0.394	1.143	0.450	A26
836.52	384	Cell. CDMA	TDSO / SO32	26.5	25.83	N/A	-0.02	15 mm	D2395	1:1	back	0.507	1.167	0.592	A28
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**								**Body** **1.6 W/kg (mW/g)** averaged over 1 gram							

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-21
LTE Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	-0.02	0	D2395	QPSK	1	0	15 mm	back	1:1	0.163	1.309	0.213	A30
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	0.02	1	D2395	QPSK	25	0	15 mm	back	1:1	0.140	1.276	0.179	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	0.05	0	D2395	QPSK	1	0	15 mm	back	1:1	0.267	1.180	0.315	A32
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	-0.02	1	D2395	QPSK	25	0	15 mm	back	1:1	0.220	1.153	0.254	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	-0.02	0	D2211	QPSK	1	0	15 mm	back	1:1	0.311	1.247	0.388	A34
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	-0.02	1	D2211	QPSK	25	0	15 mm	back	1:1	0.257	1.225	0.315	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	4	-0.01	0	D2211	QPSK	1	0	15 mm	back	1:1	0.258	1.227	0.317	A36
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	4	-0.05	1	D2211	QPSK	36	0	15 mm	back	1:1	0.214	1.230	0.263	
1720.00	132072	Low	LTE Band 66 (AWS)	20	25.3	23.73	16	-0.02	0	D2395	QPSK	1	0	15 mm	back	1:1	0.614	1.435	0.881	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	16	-0.04	0	D2395	QPSK	1	0	15 mm	back	1:1	0.665	1.334	**0.887**	A38
1770.00	132572	High	LTE Band 66 (AWS)	20	25.3	23.91	16	0.02	0	D2395	QPSK	1	0	15 mm	back	1:1	0.579	1.377	0.797	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	16	-0.01	1	D2395	QPSK	50	0	15 mm	back	1:1	0.521	1.343	0.700	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	22.95	16	0.04	1	D2395	QPSK	100	0	15 mm	back	1:1	0.498	1.365	0.680	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	16	0.05	0	D2296	QPSK	1	0	15 mm	back	1:1	0.430	1.194	0.513	A40
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	16	-0.03	1	D2296	QPSK	50	0	15 mm	back	1:1	0.342	1.208	0.413	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	16	-0.02	0	D2296	QPSK	1	0	15 mm	back	1:1	0.367	1.178	0.432	A42
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	16	0.02	1	D2296	QPSK	50	0	15 mm	back	1:1	0.288	1.186	0.342	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**																	**Body** **1.6 W/kg (mW/g)** averaged over 1 gram			

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-22
LTE Band 41 Body-Worn SAR

MEASUREMENT RESULTS																						
1 CC Uplink | 2 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	25.0	23.94	0.02	0	D2393	QPSK	1	99	15 mm	back	1:1.58	0.266	1.276	0.339	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.00	0.01	1	D2393	QPSK	50	0	15 mm	back	1:1.58	0.211	1.259	0.266	
1 CC Uplink - Power Class 2	N/A	2506.00	39750	Low	LTE Band 41	20	28.0	26.65	0.00	0	D2393	QPSK	1	99	15 mm	back	1:2.31	0.344	1.365	0.470	A44
2 CC Uplink - Power Class 3	PCC	2506.00	39750	Low	LTE Band 41	20	25.0	24.18	0.05	0	D2393	QPSK	1	99	15 mm	back	1:1.58	0.269	1.208	0.325	
2 CC Uplink - Power Class 3	SCC	2525.80	39948	Low								QPSK	1	0							
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-23
DTS Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2437	6	802.11b	DSSS	22	21.0	20.77	0.09	15 mm	1	D2145	1	back	99.0	0.108	0.092	1.054	1.010	0.098	A46
2437	6	802.11b	DSSS	22	21.0	20.24	-0.05	15 mm	2	D2145	1	back	99.0	0.108	0.090	1.191	1.010	**0.108**	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-24
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5300	60	802.11a	OFDM	20	18.0	17.15	0.16	15 mm	1	D2145	6	back	98.7	0.226	0.101	1.216	1.013	0.124	
5260	52	802.11a	OFDM	20	18.0	16.95	-0.03	15 mm	2	D2145	6	back	98.8	0.606	0.268	1.274	1.012	**0.346**	A48
5720	144	802.11a	OFDM	20	17.5	16.62	0.02	15 mm	1	D2145	6	back	98.7	0.240	0.113	1.225	1.013	0.140	
5720	144	802.11a	OFDM	20	17.5	17.35	0.03	15 mm	2	D2145	6	back	98.8	0.599	0.236	1.035	1.012	0.247	
5785	157	802.11a	OFDM	20	17.5	16.70	-0.03	15 mm	1	D2145	6	back	98.7	0.219	0.082	1.202	1.013	0.100	
5785	157	802.11a	OFDM	20	17.5	17.26	0.16	15 mm	2	D2145	6	back	98.8	0.449	0.205	1.057	1.012	0.219	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-25
DSS Body-Worn SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2480	78	Bluetooth	FHSS	16.5	16.50	0.09	15 mm	D2145	1	back	77.3	0.037	1.000	1.294	**0.048**	A50
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

11.3 Standalone Hotspot SAR Data

Table 11-26
GPRS Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of GPRS Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
824.20	128	GSM 850	GPRS	30.0	28.91	-0.09	10 mm	D2211	3	1:2.76	back	0.454	1.285	0.583	
836.60	190	GSM 850	GPRS	30.0	29.13	-0.06	10 mm	D2211	3	1:2.76	back	0.507	1.222	0.620	A19
848.80	251	GSM 850	GPRS	30.0	28.92	0.00	10 mm	D2211	3	1:2.76	back	0.463	1.282	0.594	
836.60	190	GSM 850	GPRS	30.0	29.13	0.02	10 mm	D2211	3	1:2.76	front	0.389	1.222	0.475	
836.60	190	GSM 850	GPRS	30.0	29.13	0.00	10 mm	D2211	3	1:2.76	bottom	0.331	1.222	0.404	
836.60	190	GSM 850	GPRS	30.0	29.13	0.06	10 mm	D2211	3	1:2.76	right	0.264	1.222	0.323	
836.60	190	GSM 850	GPRS	30.0	29.13	0.03	10 mm	D2211	3	1:2.76	left	0.102	1.222	0.125	
1880.00	661	GSM 1900	GPRS	23.3	22.34	0.01	10 mm	D2296	3	1:2.76	back	0.156	1.247	0.195	
1880.00	661	GSM 1900	GPRS	23.3	22.34	0.05	10 mm	D2296	3	1:2.76	front	0.134	1.247	0.167	
1880.00	661	GSM 1900	GPRS	23.3	22.34	0.01	10 mm	D2296	3	1:2.76	bottom	0.308	1.247	0.384	A21
1880.00	661	GSM 1900	GPRS	23.3	22.34	-0.13	10 mm	D2296	3	1:2.76	right	0.028	1.247	0.035	
1880.00	661	GSM 1900	GPRS	23.3	22.34	-0.07	10 mm	D2296	3	1:2.76	left	0.020	1.247	0.025	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram							

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-27
UMTS Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
826.40	4132	UMTS 850	RMC	25.0	24.38	2	0.04	10 mm	D2395	1:1	back	0.560	1.153	0.646	
836.60	4183	UMTS 850	RMC	25.0	24.42	2	0.00	10 mm	D2395	1:1	back	0.615	1.143	0.703	
846.60	4233	UMTS 850	RMC	25.0	24.37	2	0.00	10 mm	D2395	1:1	back	0.640	1.156	0.740	A23
836.60	4183	UMTS 850	RMC	25.0	24.42	2	-0.03	10 mm	D2395	1:1	front	0.418	1.143	0.478	
836.60	4183	UMTS 850	RMC	25.0	24.42	2	-0.06	10 mm	D2395	1:1	bottom	0.325	1.143	0.371	
836.60	4183	UMTS 850	RMC	25.0	24.42	2	-0.01	10 mm	D2395	1:1	right	0.261	1.143	0.298	
836.60	4183	UMTS 850	RMC	25.0	24.42	2	-0.07	10 mm	D2395	1:1	left	0.132	1.143	0.151	
1732.40	1412	UMTS 1750	RMC	20.0	19.14	16	-0.01	10 mm	D2296	1:1	back	0.350	1.219	0.427	
1732.40	1412	UMTS 1750	RMC	20.0	19.14	16	0.00	10 mm	D2296	1:1	front	0.289	1.219	0.352	
1712.40	1312	UMTS 1750	RMC	20.0	19.05	16	-0.02	10 mm	D2296	1:1	bottom	0.581	1.245	0.723	
1732.40	1412	UMTS 1750	RMC	20.0	19.14	16	-0.02	10 mm	D2296	1:1	bottom	0.602	1.219	0.734	A25
1752.60	1513	UMTS 1750	RMC	20.0	19.44	16	-0.01	10 mm	D2296	1:1	bottom	0.591	1.138	0.673	
1732.40	1412	UMTS 1750	RMC	20.0	19.14	16	0.03	10 mm	D2296	1:1	right	0.053	1.219	0.065	
1732.40	1412	UMTS 1750	RMC	20.0	19.14	16	0.03	10 mm	D2296	1:1	left	0.069	1.219	0.084	
1880.00	9400	UMTS 1900	RMC	20.0	19.34	16	0.06	10 mm	D2296	1:1	back	0.258	1.164	0.300	
1880.00	9400	UMTS 1900	RMC	20.0	19.34	16	-0.02	10 mm	D2296	1:1	front	0.212	1.164	0.247	
1880.00	9400	UMTS 1900	RMC	20.0	19.34	16	0.00	10 mm	D2296	1:1	bottom	0.479	1.164	0.558	A27
1880.00	9400	UMTS 1900	RMC	20.0	19.34	16	-0.03	10 mm	D2296	1:1	right	0.041	1.164	0.048	
1880.00	9400	UMTS 1900	RMC	20.0	19.34	16	-0.08	10 mm	D2296	1:1	left	0.031	1.164	0.036	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram							

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-28
CDMA Hotspot SAR Data

MEASUREMENT RESULTS														
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
824.70	1013	Cell. CDMA	EVDO Rev. 0	26.5	25.84	-0.01	10 mm	D2395	1:1	back	0.823	1.164	0.958	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.99	-0.01	10 mm	D2395	1:1	back	0.943	1.125	1.061	A29
848.31	777	Cell. CDMA	EVDO Rev. 0	26.5	25.85	0.00	10 mm	D2395	1:1	back	0.916	1.161	1.063	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.99	-0.05	10 mm	D2395	1:1	front	0.682	1.125	0.767	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.99	-0.08	10 mm	D2395	1:1	bottom	0.494	1.125	0.556	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.99	-0.03	10 mm	D2395	1:1	right	0.393	1.125	0.442	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.99	0.06	10 mm	D2395	1:1	left	0.092	1.125	0.104	
836.52	384	Cell. CDMA	EVDO Rev. 0	26.5	25.99	0.01	10 mm	D2395	1:1	back	0.940	1.125	1.058	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: Blue entries represent variability measurement.

Table 11-29
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	-0.03	0	N0185	QPSK	1	0	10 mm	back	1:1	0.331	1.309	0.433	A31
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	-0.03	1	N0185	QPSK	25	0	10 mm	back	1:1	0.284	1.276	0.362	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	-0.02	0	N0185	QPSK	1	0	10 mm	front	1:1	0.184	1.309	0.241	
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	0.01	1	N0185	QPSK	25	0	10 mm	front	1:1	0.159	1.276	0.203	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	-0.04	0	N0185	QPSK	1	0	10 mm	bottom	1:1	0.159	1.309	0.208	
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	-0.05	1	N0185	QPSK	25	0	10 mm	bottom	1:1	0.134	1.276	0.171	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	-0.05	0	N0185	QPSK	1	0	10 mm	right	1:1	0.239	1.309	0.313	
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	-0.03	1	N0185	QPSK	25	0	10 mm	right	1:1	0.204	1.276	0.260	
707.50	23095	Mid	LTE Band 12	10	25.2	24.03	9	0.10	0	N0185	QPSK	1	0	10 mm	left	1:1	0.098	1.309	0.128	
707.50	23095	Mid	LTE Band 12	10	24.2	23.14	9	0.06	1	N0185	QPSK	25	0	10 mm	left	1:1	0.083	1.276	0.106	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-30
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	-0.01	0	D2395	QPSK	1	0	10 mm	back	1:1	0.554	1.180	0.654	A33
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	-0.03	1	D2395	QPSK	25	0	10 mm	back	1:1	0.458	1.153	0.528	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	-0.01	0	D2395	QPSK	1	0	10 mm	front	1:1	0.417	1.180	0.492	
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	0.00	1	D2395	QPSK	25	0	10 mm	front	1:1	0.347	1.153	0.400	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	-0.01	0	D2395	QPSK	1	0	10 mm	bottom	1:1	0.283	1.180	0.334	
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	0.00	1	D2395	QPSK	25	0	10 mm	bottom	1:1	0.222	1.153	0.256	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	0.01	0	D2395	QPSK	1	0	10 mm	right	1:1	0.204	1.180	0.241	
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	-0.01	1	D2395	QPSK	25	0	10 mm	right	1:1	0.187	1.153	0.216	
782.00	23230	Mid	LTE Band 13	10	25.5	24.78	2	0.00	0	D2395	QPSK	1	0	10 mm	left	1:1	0.071	1.180	0.084	
782.00	23230	Mid	LTE Band 13	10	24.5	23.88	2	0.01	1	D2395	QPSK	25	0	10 mm	left	1:1	0.056	1.153	0.065	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-31
LTE Band 5 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	-0.04	0	D2211	QPSK	1	0	10 mm	back	1:1	0.579	1.247	0.722	A35
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	-0.05	1	D2211	QPSK	25	0	10 mm	back	1:1	0.480	1.225	0.588	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	-0.04	0	D2211	QPSK	1	0	10 mm	front	1:1	0.477	1.247	0.595	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	0.01	1	D2211	QPSK	25	0	10 mm	front	1:1	0.400	1.225	0.490	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	-0.04	0	D2211	QPSK	1	0	10 mm	bottom	1:1	0.346	1.247	0.431	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	-0.02	1	D2211	QPSK	25	0	10 mm	bottom	1:1	0.289	1.225	0.354	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	-0.07	0	D2211	QPSK	1	0	10 mm	right	1:1	0.286	1.247	0.357	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	-0.02	1	D2211	QPSK	25	0	10 mm	right	1:1	0.233	1.225	0.285	
836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	24.54	2	-0.07	0	D2211	QPSK	1	0	10 mm	left	1:1	0.070	1.247	0.087	
836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	23.62	2	0.02	1	D2211	QPSK	25	0	10 mm	left	1:1	0.052	1.225	0.064	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-32
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	4	-0.08	0	D2211	QPSK	1	0	10 mm	back	1:1	0.585	1.227	0.718	A37
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	4	-0.07	1	D2211	QPSK	36	0	10 mm	back	1:1	0.426	1.230	0.524	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	4	-0.02	0	D2211	QPSK	1	0	10 mm	front	1:1	0.413	1.227	0.507	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	4	-0.07	1	D2211	QPSK	36	0	10 mm	front	1:1	0.344	1.230	0.423	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	4	-0.01	0	D2211	QPSK	1	0	10 mm	bottom	1:1	0.329	1.227	0.404	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	4	-0.04	1	D2211	QPSK	36	0	10 mm	bottom	1:1	0.269	1.230	0.331	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	4	0.02	0	D2211	QPSK	1	0	10 mm	right	1:1	0.251	1.227	0.308	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	4	0.01	1	D2211	QPSK	36	0	10 mm	right	1:1	0.208	1.230	0.256	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.2	24.31	4	-0.13	0	D2211	QPSK	1	0	10 mm	left	1:1	0.071	1.227	0.087	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.2	23.30	4	-0.03	1	D2211	QPSK	36	0	10 mm	left	1:1	0.051	1.230	0.063	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-33
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.61	16	0.02	0	D2296	QPSK	1	0	10 mm	back	1:1	0.365	1.227	0.448	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.60	16	-0.02	0	D2296	QPSK	50	0	10 mm	back	1:1	0.357	1.230	0.439	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.61	16	0.00	0	D2296	QPSK	1	0	10 mm	front	1:1	0.282	1.227	0.346	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.60	16	-0.01	0	D2296	QPSK	50	0	10 mm	front	1:1	0.273	1.230	0.336	
1720.00	132072	Low	LTE Band 66 (AWS)	20	20.5	19.00	16	-0.03	0	D2296	QPSK	1	0	10 mm	bottom	1:1	0.629	1.413	0.889	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	20.5	19.40	16	-0.03	0	D2296	QPSK	1	0	10 mm	bottom	1:1	0.657	1.288	0.846	A39
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.61	16	-0.03	0	D2296	QPSK	1	0	10 mm	bottom	1:1	0.626	1.227	0.768	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.60	16	-0.01	0	D2296	QPSK	50	0	10 mm	bottom	1:1	0.616	1.230	0.758	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.59	16	-0.02	0	D2296	QPSK	100	0	10 mm	bottom	1:1	0.595	1.233	0.734	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.61	16	0.01	0	D2296	QPSK	1	0	10 mm	right	1:1	0.049	1.227	0.060	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.60	16	0.03	0	D2296	QPSK	50	0	10 mm	right	1:1	0.048	1.230	0.059	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.61	16	0.02	0	D2296	QPSK	1	0	10 mm	left	1:1	0.063	1.227	0.077	
1770.00	132572	High	LTE Band 66 (AWS)	20	20.5	19.60	16	0.00	0	D2296	QPSK	50	0	10 mm	left	1:1	0.059	1.230	0.073	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-34
LTE Band 2 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.67	16	-0.01	0	D2296	QPSK	1	0	10 mm	back	1:1	0.286	1.211	0.346	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.62	16	-0.03	0	D2296	QPSK	50	25	10 mm	back	1:1	0.294	1.225	0.360	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.67	16	-0.03	0	D2296	QPSK	1	0	10 mm	front	1:1	0.215	1.211	0.260	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.62	16	-0.03	0	D2296	QPSK	50	25	10 mm	front	1:1	0.218	1.225	0.267	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.67	16	-0.09	0	D2296	QPSK	1	0	10 mm	bottom	1:1	0.565	1.211	0.684	
1860.00	18700	Low	LTE Band 2 (PCS)	20	20.5	19.18	16	-0.02	0	D2296	QPSK	50	25	10 mm	bottom	1:1	0.459	1.355	0.622	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	20.5	19.47	16	-0.02	0	D2296	QPSK	50	0	10 mm	bottom	1:1	0.481	1.268	0.610	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.62	16	-0.03	0	D2296	QPSK	50	25	10 mm	bottom	1:1	0.599	1.225	0.734	A41
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.67	16	-0.04	0	D2296	QPSK	1	0	10 mm	right	1:1	0.050	1.211	0.061	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.62	16	-0.02	0	D2296	QPSK	50	25	10 mm	right	1:1	0.050	1.225	0.061	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.67	16	0.10	0	D2296	QPSK	1	0	10 mm	left	1:1	0.035	1.211	0.042	
1900.00	19100	High	LTE Band 2 (PCS)	20	20.5	19.62	16	0.06	0	D2296	QPSK	50	25	10 mm	left	1:1	0.035	1.225	0.043	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11-35
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.84	16	-0.05	0	D2296	QPSK	1	0	10 mm	back	1:1	0.282	1.164	0.328	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.82	16	-0.03	0	D2296	QPSK	50	0	10 mm	back	1:1	0.278	1.169	0.325	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.84	16	-0.04	0	D2296	QPSK	1	0	10 mm	front	1:1	0.253	1.164	0.294	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.82	16	-0.04	0	D2296	QPSK	50	0	10 mm	front	1:1	0.247	1.169	0.289	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.84	16	-0.05	0	D2296	QPSK	1	0	10 mm	bottom	1:1	0.622	1.164	0.724	
1860.00	26140	Low	LTE Band 25 (PCS)	20	20.5	19.34	16	0.02	0	D2296	QPSK	50	25	10 mm	bottom	1:1	0.474	1.306	0.619	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	20.5	19.39	16	-0.02	0	D2296	QPSK	50	0	10 mm	bottom	1:1	0.505	1.291	0.652	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.82	16	-0.01	0	D2296	QPSK	50	0	10 mm	bottom	1:1	0.625	1.169	0.731	A43
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.84	16	-0.05	0	D2296	QPSK	1	0	10 mm	right	1:1	0.052	1.164	0.061	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.82	16	-0.02	0	D2296	QPSK	50	0	10 mm	right	1:1	0.053	1.169	0.062	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.84	16	-0.02	0	D2296	QPSK	1	0	10 mm	left	1:1	0.037	1.164	0.043	
1905.00	26590	High	LTE Band 25 (PCS)	20	20.5	19.82	16	-0.01	0	D2296	QPSK	50	0	10 mm	left	1:1	0.037	1.169	0.043	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram						

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-36
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																						
1 CC Uplink | 2 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.56	0.01	0	D2296	QPSK	1	0	10 mm	back	1:1.58	0.358	1.107	0.396	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.43	0.00	0	D2296	QPSK	50	0	10 mm	back	1:1.58	0.356	1.140	0.406	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.56	0.00	0	D2296	QPSK	1	0	10 mm	front	1:1.58	0.271	1.107	0.300	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.43	-0.06	0	D2296	QPSK	50	0	10 mm	front	1:1.58	0.268	1.140	0.306	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.56	0.19	0	D2296	QPSK	1	0	10 mm	bottom	1:1.58	0.646	1.107	0.715	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	21.72	-0.02	0	D2296	QPSK	1	0	10 mm	bottom	1:1.58	0.614	1.343	0.825	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.0	22.23	-0.05	0	D2296	QPSK	1	0	10 mm	bottom	1:1.58	0.983	1.194	**1.174**	A45
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.0	21.88	0.00	0	D2296	QPSK	1	0	10 mm	bottom	1:1.58	0.888	1.294	1.149	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.0	22.09	0.13	0	D2296	QPSK	1	0	10 mm	bottom	1:1.58	0.719	1.233	0.887	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.43	-0.01	0	D2296	QPSK	50	0	10 mm	bottom	1:1.58	0.650	1.140	0.741	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	21.58	-0.03	0	D2296	QPSK	50	0	10 mm	bottom	1:1.58	0.637	1.387	0.884	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.0	22.13	0.02	0	D2296	QPSK	50	0	10 mm	bottom	1:1.58	0.930	1.222	1.136	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.0	21.74	0.06	0	D2296	QPSK	50	0	10 mm	bottom	1:1.58	0.857	1.337	1.146	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.0	22.01	0.02	0	D2296	QPSK	50	0	10 mm	bottom	1:1.58	0.683	1.256	0.858	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.38	-0.06	0	D2296	QPSK	100	0	10 mm	bottom	1:1.58	0.633	1.153	0.730	
1 CC Uplink - Power Class 2	N/A	2593.00	40620	Mid	LTE Band 41	20	23.0	22.03	0.10	0	D2296	QPSK	1	0	10 mm	bottom	1:2.31	0.686	1.250	0.858	
2 CC Uplink - Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	23.0	22.18	0.07	0	D2296	QPSK	1	0	10 mm	bottom	1:1.58	0.945	1.208	1.142	
2 CC Uplink - Power Class 3	SCC	2573.20	40422	Mid								QPSK	1	99							
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.56	0.02	0	D2296	QPSK	1	0	10 mm	left	1:1.58	0.073	1.107	0.081	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.0	22.43	-0.16	0	D2296	QPSK	50	0	10 mm	left	1:1.58	0.070	1.140	0.080	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.0	22.23	0.04	0	D2296	QPSK	1	0	10 mm	bottom	1:1.58	0.964	1.194	1.151	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram									

Note: Blue entries represent variability measurement.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-37
WLAN Hotspot SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan W/kg	SAR (1g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g) (W/kg)	Plot #
MHz	Ch.																		
2437	6	802.11b	DSSS	22	21.0	20.77	0.06	10 mm	1	D2145	1	back	99.0	0.276	-	1.054	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.77	0.03	10 mm	1	D2145	1	front	99.0	0.126	-	1.054	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.77	0.11	10 mm	1	D2145	1	top	99.0	0.302	0.226	1.054	1.010	0.241	
2437	6	802.11b	DSSS	22	21.0	20.77	0.12	10 mm	1	D2145	1	left	99.0	0.152	-	1.054	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.24	0.04	10 mm	2	D2145	1	back	99.0	0.234	-	1.191	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.24	0.04	10 mm	2	D2145	1	front	99.0	0.308	0.238	1.191	1.010	**0.286**	A47
2437	6	802.11b	DSSS	22	21.0	20.24	0.12	10 mm	2	D2145	1	top	99.0	0.297	-	1.191	1.010	-	
2437	6	802.11b	DSSS	22	21.0	20.24	0.05	10 mm	2	D2145	1	left	99.0	0.245	-	1.191	1.010	-	
5785	157	802.11a	OFDM	20	17.5	16.70	0.15	10 mm	1	D2145	6	back	98.7	0.379	0.143	1.202	1.013	0.174	
5785	157	802.11a	OFDM	20	17.5	16.70	0.00	10 mm	1	D2145	6	front	98.7	0.028	-	1.202	1.013	-	
5785	157	802.11a	OFDM	20	17.5	16.70	0.04	10 mm	1	D2145	6	top	98.7	0.201	-	1.202	1.013	-	
5785	157	802.11a	OFDM	20	17.5	16.70	0.00	10 mm	1	D2145	6	left	98.7	0.018	-	1.202	1.013	-	
5785	157	802.11a	OFDM	20	17.5	17.26	0.05	10 mm	2	D2145	6	back	98.8	0.761	0.323	1.057	1.012	**0.346**	A49
5785	157	802.11a	OFDM	20	17.5	17.26	0.10	10 mm	2	D2145	6	front	98.8	0.135	-	1.057	1.012	-	
5785	157	802.11a	OFDM	20	17.5	17.26	0.19	10 mm	2	D2145	6	top	98.8	0.173	-	1.057	1.012	-	
5785	157	802.11a	OFDM	20	17.5	17.26	0.00	10 mm	2	D2145	6	left	98.8	0.116	-	1.057	1.012	-	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT	**Body**
Spatial Peak	**1.6 W/kg (mW/g)**
Uncontrolled Exposure/General Population	averaged over 1 gram

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact **INFO@PCTEST.COM**.

Table 11-38
DTS MIMO Hotspot SAR for Conditions with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
2462	11	802.11n	OFDM	20	17.0	16.41	17.0	16.83	0.04	10 mm	MIMO	D2145	13	back	98.6	0.190	0.168	1.146	1.014	0.195	
2462	11	802.11n	OFDM	20	17.0	16.41	17.0	16.83	0.02	10 mm	MIMO	D2145	13	front	98.6	0.166	-	1.146	1.014	-	
2462	11	802.11n	OFDM	20	17.0	16.41	17.0	16.83	0.05	10 mm	MIMO	D2145	13	top	98.6	0.182	-	1.146	1.014	-	
2462	11	802.11n	OFDM	20	17.0	16.41	17.0	16.83	-0.02	10 mm	MIMO	D2145	13	left	98.6	0.126	-	1.146	1.014	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram											

DTS MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI was not transmitting during the above evaluations.

Table 11-39
NII MIMO Hotspot SAR for Conditions with 2.4 GHz and 5 GHz WLAN SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5775	155	802.11ac	OFDM	80	14.0	13.53	14.0	13.43	0.10	10 mm	MIMO	D2145	58.5	back	94.0	0.502	0.258	1.140	1.064	0.313	
5775	155	802.11ac	OFDM	80	14.0	13.53	14.0	13.43	0.10	10 mm	MIMO	D2145	58.5	front	94.0	0.065	-	1.140	1.064	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	14.0	13.43	0.07	10 mm	MIMO	D2145	58.5	top	94.0	0.166	-	1.140	1.064	-	
5775	155	802.11ac	OFDM	80	14.0	13.53	14.0	13.43	0.01	10 mm	MIMO	D2145	58.5	left	94.0	0.078	-	1.140	1.064	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram											

NII MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 2.4 GHz WIFI was not transmitting during the above evaluations.

Table 11-40
DSS Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2480	78	Bluetooth	FHSS	16.5	16.50	0.04	10 mm	D2145	1	back	77.3	0.090	1.000	1.294	**0.116**	A51
2480	78	Bluetooth	FHSS	16.5	16.50	0.04	10 mm	D2145	1	front	77.3	0.085	1.000	1.294	0.110	
2480	78	Bluetooth	FHSS	16.5	16.50	-0.03	10 mm	D2145	1	top	77.3	0.089	1.000	1.294	**0.115**	
2480	78	Bluetooth	FHSS	16.5	16.50	0.01	10 mm	D2145	1	left	77.3	0.063	1.000	1.294	0.082	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

11.4 Standalone Phablet SAR Data

Table 11-41
UMTS Phablet SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	Spacing	Device Serial Number	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1732.40	1412	UMTS 1750	RMC	25.0	24.18	16	0.02	7 mm	D2211	1:1	back	0.771	1.208	0.931	
1732.40	1412	UMTS 1750	RMC	25.0	24.18	16	-0.02	5 mm	D2211	1:1	front	0.917	1.208	1.108	
1732.40	1412	UMTS 1750	RMC	25.0	24.18	16	-0.02	10 mm	D2211	1:1	bottom	0.958	1.208	1.157	
1732.40	1412	UMTS 1750	RMC	25.0	24.18	16	-0.01	0 mm	D2211	1:1	right	0.245	1.208	0.296	
1732.40	1412	UMTS 1750	RMC	25.0	24.18	16	-0.14	0 mm	D2211	1:1	left	0.409	1.208	0.494	
1732.40	1412	UMTS 1750	RMC	21.5	20.51	16	-0.02	0 mm	D2278	1:1	back	1.450	1.256	1.821	
1732.40	1412	UMTS 1750	RMC	21.5	20.51	16	-0.01	0 mm	D2278	1:1	front	1.230	1.256	1.545	
1712.40	1312	UMTS 1750	RMC	21.5	20.27	16	-0.06	0 mm	D2278	1:1	bottom	2.210	1.327	2.933	A52
1732.40	1412	UMTS 1750	RMC	21.5	20.51	16	-0.07	0 mm	D2278	1:1	bottom	2.070	1.256	2.600	
1752.60	1513	UMTS 1750	RMC	21.5	20.63	16	-0.06	0 mm	D2278	1:1	bottom	2.100	1.222	2.566	
1712.40	1312	UMTS 1750	RMC	21.5	20.27	16	-0.16	0 mm	D2278	1:1	bottom	2.130	1.327	2.827	
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	0.00	7 mm	D2278	1:1	back	0.683	1.143	0.781	
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	0.01	5 mm	D2278	1:1	front	0.731	1.143	0.836	
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	-0.03	10 mm	D2278	1:1	bottom	0.819	1.143	0.936	
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	-0.02	0 mm	D2278	1:1	right	0.280	1.143	0.320	
1880.00	9400	UMTS 1900	RMC	25.0	24.42	16	-0.06	0 mm	D2278	1:1	left	0.319	1.143	0.365	
1880.00	9400	UMTS 1900	RMC	21.0	20.33	16	-0.02	0 mm	D2278	1:1	back	1.150	1.167	1.342	
1880.00	9400	UMTS 1900	RMC	21.0	20.33	16	-0.06	0 mm	D2278	1:1	front	0.940	1.167	1.097	
1852.40	9262	UMTS 1900	RMC	21.0	20.18	16	-0.18	0 mm	D2278	1:1	bottom	1.670	1.208	2.017	
1880.00	9400	UMTS 1900	RMC	21.0	20.33	16	-0.06	0 mm	D2278	1:1	bottom	1.980	1.167	2.311	
1907.60	9538	UMTS 1900	RMC	21.0	20.21	16	0.01	0 mm	D2278	1:1	bottom	2.380	1.199	2.854	A53
1907.60	9538	UMTS 1900	RMC	21.0	20.21	16	0.01	0 mm	D2278	1:1	bottom	2.350	1.199	2.818	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Phablet 4.0 W/kg (mW/g) averaged over 10 grams						

Note: Blue entries represent variability measurements.

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-42
LTE Band 66 (AWS) Phablet SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g) (W/kg)	Scaling Factor	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																			
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	16	0.00	0	D2211	QPSK	1	0	7 mm	back	1:1	0.861	1.334	1.149	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	16	-0.02	1	D2211	QPSK	50	0	7 mm	back	1:1	0.667	1.343	0.896	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	16	-0.01	0	D2211	QPSK	1	0	5 mm	front	1:1	0.956	1.334	1.275	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	16	-0.03	1	D2211	QPSK	50	0	5 mm	front	1:1	0.746	1.343	1.002	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	16	-0.07	0	D2211	QPSK	1	0	10 mm	bottom	1:1	0.879	1.334	1.173	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	16	0.00	1	D2211	QPSK	50	0	10 mm	bottom	1:1	0.702	1.343	0.943	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	16	-0.04	0	D2211	QPSK	1	0	0 mm	right	1:1	0.239	1.334	0.319	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	16	0.03	1	D2211	QPSK	50	0	0 mm	right	1:1	0.184	1.343	0.247	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.3	24.05	16	-0.01	0	D2211	QPSK	1	0	0 mm	left	1:1	0.436	1.334	0.582	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	24.3	23.02	16	-0.06	1	D2211	QPSK	50	0	0 mm	left	1:1	0.342	1.343	0.459	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.63	16	0.03	0	D2278	QPSK	1	0	0 mm	back	1:1	1.270	1.222	1.552	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.61	16	-0.07	0	D2278	QPSK	50	0	0 mm	back	1:1	1.240	1.227	1.521	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.63	16	0.00	0	D2278	QPSK	1	0	0 mm	front	1:1	1.220	1.222	1.491	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.61	16	-0.02	0	D2278	QPSK	50	0	0 mm	front	1:1	1.200	1.227	1.472	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.33	16	0.04	0	D2278	QPSK	1	99	0 mm	bottom	1:1	1.950	1.309	2.553	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.5	20.52	16	-0.03	0	D2278	QPSK	1	99	0 mm	bottom	1:1	1.740	1.253	2.180	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.63	16	-0.04	0	D2278	QPSK	1	0	0 mm	bottom	1:1	1.850	1.222	2.261	
1720.00	132072	Low	LTE Band 66 (AWS)	20	21.5	20.40	16	0.06	0	D2278	QPSK	50	50	0 mm	bottom	1:1	2.070	1.288	2.666	A54
1745.00	132322	Mid	LTE Band 66 (AWS)	20	21.5	20.56	16	0.02	0	D2278	QPSK	50	0	0 mm	bottom	1:1	1.990	1.242	2.472	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.61	16	-0.05	0	D2278	QPSK	50	0	0 mm	bottom	1:1	1.840	1.227	2.258	
1770.00	132572	High	LTE Band 66 (AWS)	20	21.5	20.56	16	-0.01	0	D2278	QPSK	100	0	0 mm	bottom	1:1	1.830	1.242	2.273	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Phablet 4.0 W/kg (mW/g) averaged over 10 grams						

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-43
LTE Band 2 (PCS) Phablet SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	16	-0.04	0	D2296	QPSK	1	0	7 mm	back	1:1	0.719	1.194	0.858	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	16	-0.02	1	D2296	QPSK	50	0	7 mm	back	1:1	0.573	1.208	0.692	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	16	0.00	0	D2296	QPSK	1	0	5 mm	front	1:1	0.808	1.194	0.965	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	16	-0.01	1	D2296	QPSK	50	0	5 mm	front	1:1	0.649	1.208	0.784	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	16	-0.08	0	D2296	QPSK	1	0	10 mm	bottom	1:1	0.888	1.194	1.060	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	16	0.00	1	D2296	QPSK	50	0	10 mm	bottom	1:1	0.729	1.208	0.881	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	16	-0.09	0	D2296	QPSK	1	0	0 mm	right	1:1	0.286	1.194	0.341	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	16	-0.08	1	D2296	QPSK	50	0	0 mm	right	1:1	0.226	1.208	0.273	
1900.00	19100	High	LTE Band 2 (PCS)	20	25.0	24.23	16	0.01	0	D2296	QPSK	1	0	0 mm	left	1:1	0.316	1.194	0.377	
1900.00	19100	High	LTE Band 2 (PCS)	20	24.0	23.18	16	-0.01	1	D2296	QPSK	50	0	0 mm	left	1:1	0.273	1.208	0.330	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.14	16	0.01	0	D2278	QPSK	1	0	0 mm	back	1:1	1.210	1.219	1.475	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.11	16	-0.02	0	D2278	QPSK	50	0	0 mm	back	1:1	1.230	1.227	1.509	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.14	16	-0.01	0	D2278	QPSK	1	0	0 mm	front	1:1	0.976	1.219	1.190	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.11	16	-0.02	0	D2278	QPSK	50	0	0 mm	front	1:1	1.000	1.227	1.227	
1860.00	18700	Low	LTE Band 2 (PCS)	20	21.0	19.96	16	-0.07	0	D2278	QPSK	1	0	0 mm	bottom	1:1	1.470	1.271	1.868	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.0	20.03	16	-0.04	0	D2278	QPSK	1	0	0 mm	bottom	1:1	1.650	1.250	2.063	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.14	16	-0.05	0	D2278	QPSK	1	0	0 mm	bottom	1:1	2.050	1.219	2.499	
1860.00	18700	Low	LTE Band 2 (PCS)	20	21.0	19.89	16	-0.06	0	D2278	QPSK	50	25	0 mm	bottom	1:1	1.500	1.291	1.937	
1880.00	18900	Mid	LTE Band 2 (PCS)	20	21.0	19.92	16	-0.09	0	D2278	QPSK	50	0	0 mm	bottom	1:1	1.690	1.282	2.167	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.11	16	-0.06	0	D2278	QPSK	50	0	0 mm	bottom	1:1	2.150	1.227	2.638	
1900.00	19100	High	LTE Band 2 (PCS)	20	21.0	20.06	16	-0.07	0	D2278	QPSK	100	0	0 mm	bottom	1:1	2.170	1.242	2.695	A55
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Phablet 4.0 W/kg (mW/g) averaged over 10 grams						

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-44
LTE Band 25 (PCS) Phablet SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Ant State	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g) (W/kg)	Scaling Factor	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																			
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	16	-0.06	0	D2296	QPSK	1	0	7 mm	back	1:1	0.606	1.178	0.714	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	16	-0.04	1	D2296	QPSK	50	0	7 mm	back	1:1	0.477	1.186	0.566	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	16	-0.01	0	D2296	QPSK	1	0	5 mm	front	1:1	0.664	1.178	0.782	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	16	0.08	1	D2296	QPSK	50	0	5 mm	front	1:1	0.552	1.186	0.655	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	16	-0.02	0	D2296	QPSK	1	0	10 mm	bottom	1:1	0.765	1.178	0.901	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	16	-0.01	1	D2296	QPSK	50	0	10 mm	bottom	1:1	0.621	1.186	0.737	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	16	-0.05	0	D2296	QPSK	1	0	0 mm	right	1:1	0.237	1.178	0.279	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	16	-0.04	1	D2296	QPSK	50	0	0 mm	right	1:1	0.195	1.186	0.231	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.0	23.29	16	-0.13	0	D2296	QPSK	1	0	0 mm	left	1:1	0.292	1.178	0.344	
1905.00	26590	High	LTE Band 25 (PCS)	20	23.0	22.26	16	-0.15	1	D2296	QPSK	50	0	0 mm	left	1:1	0.229	1.186	0.272	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.26	16	0.02	0	D2278	QPSK	1	0	0 mm	back	1:1	1.270	1.186	1.506	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.24	16	-0.03	0	D2278	QPSK	50	0	0 mm	back	1:1	1.300	1.191	1.548	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.26	16	-0.01	0	D2278	QPSK	1	0	0 mm	front	1:1	1.060	1.186	1.257	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.24	16	-0.10	0	D2278	QPSK	50	0	0 mm	front	1:1	1.080	1.191	1.286	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.0	20.05	16	-0.06	0	D2278	QPSK	1	0	0 mm	bottom	1:1	1.520	1.245	1.892	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	20.11	16	-0.04	0	D2278	QPSK	1	0	0 mm	bottom	1:1	1.730	1.227	2.123	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.26	16	-0.07	0	D2278	QPSK	1	0	0 mm	bottom	1:1	2.090	1.186	2.479	
1860.00	26140	Low	LTE Band 25 (PCS)	20	21.0	19.91	16	-0.05	0	D2278	QPSK	50	25	0 mm	bottom	1:1	1.540	1.285	1.979	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	21.0	19.94	16	-0.07	0	D2278	QPSK	50	0	0 mm	bottom	1:1	1.720	1.276	2.195	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.24	16	-0.09	0	D2278	QPSK	50	0	0 mm	bottom	1:1	2.180	1.191	2.596	
1905.00	26590	High	LTE Band 25 (PCS)	20	21.0	20.18	16	-0.05	0	D2278	QPSK	100	0	0 mm	bottom	1:1	2.200	1.208	2.658	A56
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Phablet 4.0 W/kg (mW/g) averaged over 10 grams						

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-45
LTE Band 41 Phablet SAR

MEASUREMENT RESULTS																					
1 CC Uplink | 2 CC Uplink	Component Carrier	FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	25.0	23.94	-0.01	0	D2395	QPSK	1	99	7 mm	back	1:1.58	0.331	1.276	0.422	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.00	0.00	1	D2395	QPSK	50	0	7 mm	back	1:1.58	0.260	1.259	0.327	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	25.0	23.94	-0.04	0	D2395	QPSK	1	99	5 mm	front	1:1.58	0.420	1.276	0.536	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.00	-0.09	1	D2395	QPSK	50	0	5 mm	front	1:1.58	0.329	1.259	0.414	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	25.0	23.94	-0.03	0	D2395	QPSK	1	99	10 mm	bottom	1:1.58	0.465	1.276	0.593	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.00	-0.04	1	D2395	QPSK	50	0	10 mm	bottom	1:1.58	0.370	1.259	0.466	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	25.0	23.94	-0.03	0	D2395	QPSK	1	99	0 mm	left	1:1.58	0.344	1.276	0.439	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	24.0	23.00	-0.02	1	D2395	QPSK	50	0	0 mm	left	1:1.58	0.267	1.259	0.336	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.92	-0.07	0	D2278	QPSK	1	0	0 mm	back	1:1.58	0.753	1.143	0.861	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.5	22.28	-0.06	0	D2278	QPSK	1	0	0 mm	back	1:1.58	0.789	1.324	1.045	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.5	22.07	-0.07	0	D2278	QPSK	1	0	0 mm	back	1:1.58	1.020	1.390	1.418	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.14	-0.05	0	D2278	QPSK	1	0	0 mm	back	1:1.58	1.190	1.368	1.628	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.58	-0.05	0	D2278	QPSK	1	0	0 mm	back	1:1.58	1.500	1.236	1.854	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.79	-0.05	0	D2278	QPSK	50	0	0 mm	back	1:1.58	0.727	1.178	0.856	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.5	22.25	-0.05	0	D2278	QPSK	50	0	0 mm	back	1:1.58	0.795	1.334	1.061	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.5	22.06	-0.06	0	D2278	QPSK	50	0	0 mm	back	1:1.58	1.040	1.393	1.449	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.10	-0.10	0	D2278	QPSK	50	0	0 mm	back	1:1.58	1.210	1.380	1.670	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.54	-0.05	0	D2278	QPSK	50	0	0 mm	back	1:1.58	1.500	1.247	1.871	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.66	-0.06	0	D2278	QPSK	100	0	0 mm	back	1:1.58	0.718	1.213	0.871	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.92	-0.10	0	D2278	QPSK	1	0	0 mm	front	1:1.58	1.050	1.143	1.200	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.79	0.11	0	D2278	QPSK	50	0	0 mm	front	1:1.58	1.030	1.178	1.213	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.92	-0.05	0	D2278	QPSK	1	0	0 mm	bottom	1:1.58	2.290	1.143	2.617	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.5	22.28	-0.20	0	D2278	QPSK	1	0	0 mm	bottom	1:1.58	2.180	1.324	2.886	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.5	22.07	-0.02	0	D2278	QPSK	1	0	0 mm	bottom	1:1.58	2.150	1.390	2.989	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.14	-0.18	0	D2278	QPSK	1	0	0 mm	bottom	1:1.58	2.110	1.368	2.886	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.58	-0.02	0	D2278	QPSK	1	0	0 mm	bottom	1:1.58	2.030	1.236	2.509	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.79	-0.02	0	D2278	QPSK	50	0	0 mm	bottom	1:1.58	2.320	1.178	2.733	A57
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.5	22.25	-0.02	0	D2278	QPSK	50	0	0 mm	bottom	1:1.58	2.240	1.334	2.988	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	23.5	22.06	-0.19	0	D2278	QPSK	50	0	0 mm	bottom	1:1.58	2.150	1.393	**2.995**	
1 CC Uplink - Power Class 3	N/A	2636.50	41055	Mid-High	LTE Band 41	20	23.5	22.10	-0.09	0	D2278	QPSK	50	0	0 mm	bottom	1:1.58	2.100	1.380	2.898	
1 CC Uplink - Power Class 3	N/A	2680.00	41490	High	LTE Band 41	20	23.5	22.54	-0.03	0	D2278	QPSK	50	0	0 mm	bottom	1:1.58	2.020	1.247	2.519	
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.66	-0.03	0	D2278	QPSK	100	0	0 mm	bottom	1:1.58	2.240	1.213	2.717	
1 CC Uplink - Power Class 2	N/A	2593.00	40620	Mid	LTE Band 41	20	23.5	21.70	-0.03	0	D2278	QPSK	50	0	0 mm	bottom	1:2.31	1.410	1.514	2.135	
2 CC Uplink - Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	23.5	22.10	-0.10	0	D2278	QPSK	50	0	0 mm	bottom	1:1.58	2.160	1.380	2.981	
2 CC Uplink - Power Class 3	SCC	2573.20	40422	Mid								QPSK	50	50							
1 CC Uplink - Power Class 3	N/A	2506.00	39750	Low	LTE Band 41	20	23.5	22.79	-0.03	0	D2278	QPSK	50	0	0 mm	bottom	1:1.58	2.230	1.178	2.627	
1 CC Uplink - Power Class 3	N/A	2549.50	40185	Low-Mid	LTE Band 41	20	23.5	22.25	-0.03	0	D2278	QPSK	50	0	0 mm	bottom	1:1.58	2.180	1.334	2.908	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT	Phablet
Spatial Peak	4.0 W/kg (mW/g)
Uncontrolled Exposure/General Population	averaged over 10 grams

Note: Blue entries represent variability measurements.

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 11-46
WLAN Phablet SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5300	60	802.11a	OFDM	20	18.0	17.15	0.04	0 mm	1	D2145	6	back	98.7	5.348	0.776	1.216	1.013	0.956	
5300	60	802.11a	OFDM	20	18.0	17.15	0.19	0 mm	1	D2145	6	front	98.7	0.359	-	1.216	1.013	-	
5300	60	802.11a	OFDM	20	18.0	17.15	0.10	0 mm	1	D2145	6	top	98.7	0.798	-	1.216	1.013	-	
5300	60	802.11a	OFDM	20	18.0	17.15	0.05	0 mm	1	D2145	6	left	98.7	0.236	-	1.216	1.013	-	
5260	52	802.11a	OFDM	20	18.0	16.95	0.03	0 mm	2	D2145	6	back	98.8	12.631	1.320	1.274	1.012	1.702	
5300	60	802.11a	OFDM	20	18.0	16.92	-0.03	0 mm	2	D2145	6	back	98.8	9.574	1.320	1.282	1.012	1.713	
5320	64	802.11a	OFDM	20	18.0	16.93	-0.03	0 mm	2	D2145	6	back	98.8	8.671	1.360	1.279	1.012	**1.760**	
5260	52	802.11a	OFDM	20	18.0	16.95	-0.10	0 mm	2	D2145	6	front	98.8	3.384	0.320	1.274	1.012	0.413	
5260	52	802.11a	OFDM	20	18.0	16.95	0.02	0 mm	2	D2145	6	top	98.8	2.739	-	1.274	1.012	-	
5260	52	802.11a	OFDM	20	18.0	16.95	0.10	0 mm	2	D2145	6	left	98.8	0.871	-	1.274	1.012	-	
5720	144	802.11a	OFDM	20	17.5	16.62	-0.10	0 mm	1	D2145	6	back	98.7	2.804	0.618	1.225	1.013	0.767	
5720	144	802.11a	OFDM	20	17.5	16.62	0.03	0 mm	1	D2145	6	front	98.7	0.407	-	1.225	1.013	-	
5720	144	802.11a	OFDM	20	17.5	16.62	-0.10	0 mm	1	D2145	6	top	98.7	1.000	-	1.225	1.013	-	
5720	144	802.11a	OFDM	20	17.5	16.62	0.05	0 mm	1	D2145	6	left	98.7	0.135	-	1.225	1.013	-	
5720	144	802.11a	OFDM	20	17.5	17.35	-0.08	0 mm	2	D2145	6	back	98.8	8.405	1.150	1.035	1.012	1.205	
5720	144	802.11a	OFDM	20	17.5	17.35	0.05	0 mm	2	D2145	6	front	98.8	4.099	0.402	1.035	1.012	0.421	
5720	144	802.11a	OFDM	20	17.5	17.35	0.02	0 mm	2	D2145	6	top	98.8	2.814	-	1.035	1.012	-	
5720	144	802.11a	OFDM	20	17.5	17.35	0.10	0 mm	2	D2145	6	left	98.8	0.751	-	1.035	1.012	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**														**Phablet** **4.0 W/kg (mW/g)** averaged over 10 grams					

Table 11-47
WLAN MIMO Phablet SAR

MEASUREMENT RESULTS																					
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (10g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g)	Plot #
MHz	Ch.															W/kg	(W/kg)			(W/kg)	
5260	52	802.11n	OFDM	20	18.0	17.05	18.0	16.88	0.06	0 mm	MIMO	D2145	13	back	98.6	11.832	2.200	1.294	1.014	2.887	
5300	60	802.11n	OFDM	20	18.0	17.04	18.0	16.91	0.03	0 mm	MIMO	D2145	13	back	98.6	29.348	2.250	1.285	1.014	2.932	
5320	64	802.11n	OFDM	20	18.0	17.21	18.0	16.89	0.08	0 mm	MIMO	D2145	13	back	98.6	27.878	1.980	1.291	1.014	2.592	
5320	64	802.11n	OFDM	20	18.0	17.21	18.0	16.89	0.10	0 mm	MIMO	D2145	13	front	98.6	3.248	0.368	1.291	1.014	0.482	
5320	64	802.11n	OFDM	20	18.0	17.21	18.0	16.89	0.15	0 mm	MIMO	D2145	13	top	98.6	2.834	-	1.291	1.014	-	
5320	64	802.11n	OFDM	20	18.0	17.21	18.0	16.89	0.05	0 mm	MIMO	D2145	13	left	98.6	1.138	-	1.291	1.014	-	
5500	100	802.11n	OFDM	20	17.5	15.94	17.5	16.02	0.08	0 mm	MIMO	D2145	13	back	98.6	28.049	1.980	1.432	1.014	2.875	
5600	120	802.11n	OFDM	20	17.5	15.97	17.5	16.40	0.10	0 mm	MIMO	D2145	13	back	98.6	19.869	2.270	1.422	1.014	3.273	A58
5720	144	802.11n	OFDM	20	17.5	15.89	17.5	16.42	-0.11	0 mm	MIMO	D2145	13	back	98.6	27.195	1.840	1.449	1.014	2.703	
5600	120	802.11n	OFDM	20	17.5	15.97	17.5	16.40	0.04	0 mm	MIMO	D2145	13	front	98.6	5.186	0.468	1.422	1.014	0.675	
5600	120	802.11n	OFDM	20	17.5	15.97	17.5	16.40	0.09	0 mm	MIMO	D2145	13	top	98.6	2.625	-	1.422	1.014	-	
5600	120	802.11n	OFDM	20	17.5	15.97	17.5	16.40	0.05	0 mm	MIMO	D2145	13	left	98.6	0.990	-	1.422	1.014	-	
5300	60	802.11n	OFDM	20	18.0	17.04	18.0	16.91	0.03	0 mm	MIMO	D2145	13	back	98.6	28.392	2.030	1.285	1.014	2.645	
5600	120	802.11n	OFDM	20	17.5	15.97	17.5	16.40	-0.03	0 mm	MIMO	D2145	13	back	98.6	25.975	2.270	1.422	1.014	3.273	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**																**Phablet** **4.0 W/kg (mW/g)** averaged over 10 grams					

Note: Blue entries represent variability measurements.

To achieve the 21.0 dBm (Ch. 52-64) and 20.5 dBm (Ch. 100-144) maximum allowed MIMO power shown in the documentation tune-up, each antenna transmits at a maximum allowed power of 18.0 dBm (Ch. 52-64) and 17.5 dBm (Ch. 100-144) respectively.

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

11.5 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 13 for variability analysis.
9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the diagonal dimension is > 160 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
11. This device supports dynamic antenna tuning for some bands. Per FCC Guidance, SAR was measured according to the normally required SAR measurement configurations with tuner active. The auto-tune state determined by the device was verified before and after each SAR measurement and is listed in tables above. Please see Section 14 for supplemental data.
12. This device utilizes power reduction for some wireless modes and technologies, as outlined in Section 1.3. The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous transmission scenarios.
13. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.

GSM Test Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
3. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per FCC KDB Publication 941225 D01v03r01.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. EVDO Rev0 and RevA and TDSO / SO32 FCH+SCH SAR tests were not required per the 3G SAR Test Reduction Procedure in FCC KDB Publication 941225 D01v03r01.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01v03r01 procedures for data devices. Wireless Router SAR tests for Subtype 2 of Rev.A and 1x RTT configurations were not required per the 3G SAR Test Reduction Policy in KDB Publication 941225 D01v03r01.
4. Head SAR was additionally evaluated using EVDO Rev. A to determine compliance for VoIP operations.
5. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.
6. CDMA 1X Advanced technology was not required for SAR since the maximum allowed output powers for 1X Advanced was not more than 0.25 dB higher than the maximum powers for 1X.

UMTS Notes:

1. UMTS mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.6.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. Per KDB Publication 941225 D05Av01r02, SAR for downlink only LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.
7. This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with power class 2 at the available

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

duty factor was additionally performed for the power class 3 configuration with the highest SAR configuration for each exposure conditions. Please see Section 14 for linearity results.

8. For LTE Band 41, per FCC guidance, SAR was first measured with only a single carrier active in the uplink (carrier aggregation not active). For each exposure condition, the uplink CA scenario with two component carriers was additionally tested for the configuration with the highest SAR when carrier aggregation was not active. The SCC was configured with the closest available contiguous channel. The two component carriers were configured so the resource blocks are physically allocated side by side to achieve the maximum output power.

WLAN Notes:

1. For held-to-ear, hotspot, and phablet operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g evaluations or ≤ 1.0 W/kg for 10g evaluations, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg for 1 g evaluations or ≤ 0.8 W/kg for 10 g evaluations or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.7.5 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.7.6 for more information.
4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Section 12 for complete analysis.
5. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
7. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Bluetooth Notes

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. See Section 9.6 for the time domain plot and calculation for the duty factor of the device.
2. Head and hotspot Bluetooth SAR were evaluated for BT BR tethering applications.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to devices with built-in unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D01v06 4.3.2 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤1.6 W/kg. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1g or 10g SAR.

(*) For test positions that were not required to be evaluated for WLAN SAR per FCC KDB Publication 248227, the worst case WLAN SAR result for the applicable exposure condition was used for simultaneous transmission analysis.

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR ("-").

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

12.3 Head SAR Simultaneous Transmission Analysis

Table 12-1
Simultaneous Transmission Scenario with 2.4 GHz WLAN SISO (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Head SAR	GSM 850	0.205	0.474	0.961	0.679	1.166
	GSM 1900	0.049	0.474	0.961	0.523	1.010
	UMTS 850	0.216	0.474	0.961	0.690	1.177
	UMTS 1750	0.108	0.474	0.961	0.582	1.069
	UMTS 1900	0.088	0.474	0.961	0.562	1.049
	Cell. CDMA/EVDO	0.319	0.474	0.961	0.793	**1.280**
	LTE Band 12	0.132	0.474	0.961	0.606	1.093
	LTE Band 13	0.179	0.474	0.961	0.653	1.140
	LTE Band 5 (Cell)	0.203	0.474	0.961	0.677	1.164
	LTE Band 26 (Cell)	0.198	0.474	0.961	0.672	1.159
	LTE Band 66 (AWS)	0.132	0.474	0.961	0.606	1.093
	LTE Band 2 (PCS)	0.087	0.474	0.961	0.561	1.048
	LTE Band 25 (PCS)	0.074	0.474	0.961	0.548	1.035
	LTE Band 41	0.079	0.474	0.961	0.553	1.040

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 12-2
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM 850	0.205	0.986	1.191
	GSM 1900	0.049	0.986	1.035
	UMTS 850	0.216	0.986	1.202
	UMTS 1750	0.108	0.986	1.094
	UMTS 1900	0.088	0.986	1.074
	Cell. CDMA/EVDO	0.319	0.986	**1.305**
	LTE Band 12	0.132	0.986	1.118
	LTE Band 13	0.179	0.986	1.165
	LTE Band 5 (Cell)	0.203	0.986	1.189
	LTE Band 26 (Cell)	0.198	0.986	1.184
	LTE Band 66 (AWS)	0.132	0.986	1.118
	LTE Band 2 (PCS)	0.087	0.986	1.073
	LTE Band 25 (PCS)	0.074	0.986	1.060
	LTE Band 41	0.079	0.986	1.065

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 12-3
Simultaneous Transmission Scenario with 5 GHz WLAN (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	GSM 850	0.205	0.038	0.302	0.243	0.507	0.545
	GSM 1900	0.049	0.038	0.302	0.087	0.351	0.389
	UMTS 850	0.216	0.038	0.302	0.254	0.518	0.556
	UMTS 1750	0.108	0.038	0.302	0.146	0.410	0.448
	UMTS 1900	0.088	0.038	0.302	0.126	0.390	0.428
	Cell. CDMA/EVDO	0.319	0.038	0.302	0.357	0.621	**0.659**
	LTE Band 12	0.132	0.038	0.302	0.170	0.434	0.472
	LTE Band 13	0.179	0.038	0.302	0.217	0.481	0.519
	LTE Band 5 (Cell)	0.203	0.038	0.302	0.241	0.505	0.543
	LTE Band 26 (Cell)	0.198	0.038	0.302	0.236	0.500	0.538
	LTE Band 66 (AWS)	0.132	0.038	0.302	0.170	0.434	0.472
	LTE Band 2 (PCS)	0.087	0.038	0.302	0.125	0.389	0.427
	LTE Band 25 (PCS)	0.074	0.038	0.302	0.112	0.376	0.414
	LTE Band 41	0.079	0.038	0.302	0.117	0.381	0.419

Table 12-4
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO at 13 dBm SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	1+2+3+4
Head SAR	GSM 850	0.205	0.685	0.038	0.302	1.230
	GSM 1900	0.049	0.685	0.038	0.302	1.074
	UMTS 850	0.216	0.685	0.038	0.302	1.241
	UMTS 1750	0.108	0.685	0.038	0.302	1.133
	UMTS 1900	0.088	0.685	0.038	0.302	1.113
	Cell. CDMA/EVDO	0.319	0.685	0.038	0.302	**1.344**
	LTE Band 12	0.132	0.685	0.038	0.302	1.157
	LTE Band 13	0.179	0.685	0.038	0.302	1.204
	LTE Band 5 (Cell)	0.203	0.685	0.038	0.302	1.228
	LTE Band 26 (Cell)	0.198	0.685	0.038	0.302	1.223
	LTE Band 66 (AWS)	0.132	0.685	0.038	0.302	1.157
	LTE Band 2 (PCS)	0.087	0.685	0.038	0.302	1.112
	LTE Band 25 (PCS)	0.074	0.685	0.038	0.302	1.099
	LTE Band 41	0.079	0.685	0.038	0.302	1.104

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 12-5
Simultaneous Transmission Scenario with Bluetooth (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	GSM 850	0.205	0.951	1.156
	GSM 1900	0.049	0.951	1.000
	UMTS 850	0.216	0.951	1.167
	UMTS 1750	0.108	0.951	1.059
	UMTS 1900	0.088	0.951	1.039
	Cell. CDMA/EVDO	0.319	0.951	**1.270**
	LTE Band 12	0.132	0.951	1.083
	LTE Band 13	0.179	0.951	1.130
	LTE Band 5 (Cell)	0.203	0.951	1.154
	LTE Band 26 (Cell)	0.198	0.951	1.149
	LTE Band 66 (AWS)	0.132	0.951	1.083
	LTE Band 2 (PCS)	0.087	0.951	1.038
	LTE Band 25 (PCS)	0.074	0.951	1.025
	LTE Band 41	0.079	0.951	1.030

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

12.4 Body-Worn Simultaneous Transmission Analysis

Table 12-6
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	0.338	0.098	0.108	0.436	0.446	0.544
	GSM 1900	0.201	0.098	0.108	0.299	0.309	0.407
	UMTS 850	0.363	0.098	0.108	0.461	0.471	0.569
	UMTS 1750	0.527	0.098	0.108	0.625	0.635	0.733
	UMTS 1900	0.450	0.098	0.108	0.548	0.558	0.656
	Cell. CDMA	0.592	0.098	0.108	0.690	0.700	0.798
	LTE Band 12	0.213	0.098	0.108	0.311	0.321	0.419
	LTE Band 13	0.315	0.098	0.108	0.413	0.423	0.521
	LTE Band 5 (Cell)	0.388	0.098	0.108	0.486	0.496	0.594
	LTE Band 26 (Cell)	0.317	0.098	0.108	0.415	0.425	0.523
	LTE Band 66 (AWS)	0.887	0.098	0.108	0.985	0.995	**1.093**
	LTE Band 2 (PCS)	0.513	0.098	0.108	0.611	0.621	0.719
	LTE Band 25 (PCS)	0.432	0.098	0.108	0.530	0.540	0.638
	LTE Band 41	0.470	0.098	0.108	0.568	0.578	0.676

Table 12-7
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	GSM 850	0.338	0.140	0.346	0.478	0.684	0.824
	GSM 1900	0.201	0.140	0.346	0.341	0.547	0.687
	UMTS 850	0.363	0.140	0.346	0.503	0.709	0.849
	UMTS 1750	0.527	0.140	0.346	0.667	0.873	1.013
	UMTS 1900	0.450	0.140	0.346	0.590	0.796	0.936
	Cell. CDMA	0.592	0.140	0.346	0.732	0.938	1.078
	LTE Band 12	0.213	0.140	0.346	0.353	0.559	0.699
	LTE Band 13	0.315	0.140	0.346	0.455	0.661	0.801
	LTE Band 5 (Cell)	0.388	0.140	0.346	0.528	0.734	0.874
	LTE Band 26 (Cell)	0.317	0.140	0.346	0.457	0.663	0.803
	LTE Band 66 (AWS)	0.887	0.140	0.346	1.027	1.233	**1.373**
	LTE Band 2 (PCS)	0.513	0.140	0.346	0.653	0.859	0.999
	LTE Band 25 (PCS)	0.432	0.140	0.346	0.572	0.778	0.918
	LTE Band 41	0.470	0.140	0.346	0.610	0.816	0.956

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 12-8
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	4	5	1+2+3+4+5
Body-Worn	GSM 850	0.338	0.098	0.108	0.140	0.346	1.030
	GSM 1900	0.201	0.098	0.108	0.140	0.346	0.893
	UMTS 850	0.363	0.098	0.108	0.140	0.346	1.055
	UMTS 1750	0.527	0.098	0.108	0.140	0.346	1.219
	UMTS 1900	0.450	0.098	0.108	0.140	0.346	1.142
	Cell. CDMA	0.592	0.098	0.108	0.140	0.346	1.284
	LTE Band 12	0.213	0.098	0.108	0.140	0.346	0.905
	LTE Band 13	0.315	0.098	0.108	0.140	0.346	1.007
	LTE Band 5 (Cell)	0.388	0.098	0.108	0.140	0.346	1.080
	LTE Band 26 (Cell)	0.317	0.098	0.108	0.140	0.346	1.009
	LTE Band 66 (AWS)	0.887	0.098	0.108	0.140	0.346	**1.579**
	LTE Band 2 (PCS)	0.513	0.098	0.108	0.140	0.346	1.205
	LTE Band 25 (PCS)	0.432	0.098	0.108	0.140	0.346	1.124
	LTE Band 41	0.470	0.098	0.108	0.140	0.346	1.162

Table 12-9
Simultaneous Transmission Scenario with Bluetooth (Body-Worn at 1.5 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Body-Worn	GSM 850	0.338	0.048	0.386
	GSM 1900	0.201	0.048	0.249
	UMTS 850	0.363	0.048	0.411
	UMTS 1750	0.527	0.048	0.575
	UMTS 1900	0.450	0.048	0.498
	Cell. CDMA	0.592	0.048	0.640
	LTE Band 12	0.213	0.048	0.261
	LTE Band 13	0.315	0.048	0.363
	LTE Band 5 (Cell)	0.388	0.048	0.436
	LTE Band 26 (Cell)	0.317	0.048	0.365
	LTE Band 66 (AWS)	0.887	0.048	**0.935**
	LTE Band 2 (PCS)	0.513	0.048	0.561
	LTE Band 25 (PCS)	0.432	0.048	0.480
	LTE Band 41	0.470	0.048	0.518

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

12.5 Hotspot SAR Simultaneous Transmission Analysis

Table 12-10
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.620	0.241	0.286	0.861	0.906	1.147
	GPRS 1900	0.384	0.241	0.286	0.625	0.670	0.911
	UMTS 850	0.740	0.241	0.286	0.981	1.026	1.267
	UMTS 1750	0.734	0.241	0.286	0.975	1.020	1.261
	UMTS 1900	0.558	0.241	0.286	0.799	0.844	1.085
	Cell. EVDO	1.063	0.241	0.286	1.304	1.349	**1.590**
	LTE Band 12	0.433	0.241	0.286	0.674	0.719	0.960
	LTE Band 13	0.654	0.241	0.286	0.895	0.940	1.181
	LTE Band 5 (Cell)	0.722	0.241	0.286	0.963	1.008	1.249
	LTE Band 26 (Cell)	0.718	0.241	0.286	0.959	1.004	1.245
	LTE Band 66 (AWS)	0.889	0.241	0.286	1.130	1.175	1.416
	LTE Band 2 (PCS)	0.734	0.241	0.286	0.975	1.020	1.261
	LTE Band 25 (PCS)	0.731	0.241	0.286	0.972	1.017	1.258
	LTE Band 41	1.174	0.241	0.286	1.415	1.460	See Table Below

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.406	0.241*	0.286*	0.647	0.692	0.933
	Front	0.306	0.241*	0.286	0.547	0.592	0.833
	Top	-	0.241	0.286*	0.241	0.286	0.527
	Bottom	1.174	-	-	**1.174**	**1.174**	**1.174**
	Left	0.081	0.241*	0.286*	0.322	0.367	0.608

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 12-11
Simultaneous Transmission Scenario with 5 GHz WLAN (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.620	0.174	0.346	0.794	0.966	1.140
	GPRS 1900	0.384	0.174	0.346	0.558	0.730	0.904
	UMTS 850	0.740	0.174	0.346	0.914	1.086	1.260
	UMTS 1750	0.734	0.174	0.346	0.908	1.080	1.254
	UMTS 1900	0.558	0.174	0.346	0.732	0.904	1.078
	Cell. EVDO	1.063	0.174	0.346	1.237	1.409	**1.583**
	LTE Band 12	0.433	0.174	0.346	0.607	0.779	0.953
	LTE Band 13	0.654	0.174	0.346	0.828	1.000	1.174
	LTE Band 5 (Cell)	0.722	0.174	0.346	0.896	1.068	1.242
	LTE Band 26 (Cell)	0.718	0.174	0.346	0.892	1.064	1.238
	LTE Band 66 (AWS)	0.889	0.174	0.346	1.063	1.235	1.409
	LTE Band 2 (PCS)	0.734	0.174	0.346	0.908	1.080	1.254
	LTE Band 25 (PCS)	0.731	0.174	0.346	0.905	1.077	1.251
	LTE Band 41	1.174	0.174	0.346	1.348	1.520	See Table Below

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.406	0.174	0.346	0.580	0.752	0.926
	Front	0.306	0.174*	0.346*	0.480	0.652	0.826
	Top	-	0.174*	0.346*	0.174	0.346	0.520
	Bottom	1.174	-	-	**1.174**	**1.174**	**1.174**
	Left	0.081	0.174*	0.346*	0.255	0.427	0.601

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 12-12
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO and 5 GHz WLAN MIMO (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN MIMO at 16 dBm SAR (W/kg)	5 GHz WLAN MIMO at 13 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	GPRS 850	0.620	0.195	0.313	0.815	0.933	1.128
	GPRS 1900	0.384	0.195	0.313	0.579	0.697	0.892
	UMTS 850	0.740	0.195	0.313	0.935	1.053	1.248
	UMTS 1750	0.734	0.195	0.313	0.929	1.047	1.242
	UMTS 1900	0.558	0.195	0.313	0.753	0.871	1.066
	Cell. EVDO	1.063	0.195	0.313	1.258	1.376	**1.571**
	LTE Band 12	0.433	0.195	0.313	0.628	0.746	0.941
	LTE Band 13	0.654	0.195	0.313	0.849	0.967	1.162
	LTE Band 5 (Cell)	0.722	0.195	0.313	0.917	1.035	1.230
	LTE Band 26 (Cell)	0.718	0.195	0.313	0.913	1.031	1.226
	LTE Band 66 (AWS)	0.889	0.195	0.313	1.084	1.202	1.397
	LTE Band 2 (PCS)	0.734	0.195	0.313	0.929	1.047	1.242
	LTE Band 25 (PCS)	0.731	0.195	0.313	0.926	1.044	1.239
	LTE Band 41	1.174	0.195	0.313	1.369	1.487	See Table Below

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN MIMO at 16 dBm SAR (W/kg)	5 GHz WLAN MIMO at 13 dBm SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.406	0.195	0.313	0.601	0.719	0.914
	Front	0.306	0.195*	0.313*	0.501	0.619	0.814
	Top	-	0.195*	0.313*	0.195	0.313	0.508
	Bottom	1.174	-	-	**1.174**	**1.174**	**1.174**
	Left	0.081	0.195*	0.313*	0.276	0.394	0.589

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 12-13
Simultaneous Transmission Scenario with Bluetooth (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	GPRS 850	0.620	0.116	0.736
	GPRS 1900	0.384	0.116	0.500
	UMTS 850	0.740	0.116	0.856
	UMTS 1750	0.734	0.116	0.850
	UMTS 1900	0.558	0.116	0.674
	Cell. EVDO	1.063	0.116	1.179
	LTE Band 12	0.433	0.116	0.549
	LTE Band 13	0.654	0.116	0.770
	LTE Band 5 (Cell)	0.722	0.116	0.838
	LTE Band 26 (Cell)	0.718	0.116	0.834
	LTE Band 66 (AWS)	0.889	0.116	1.005
	LTE Band 2 (PCS)	0.734	0.116	0.850
	LTE Band 25 (PCS)	0.731	0.116	0.847
	LTE Band 41	1.174	0.116	**1.290**

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

12.6 Phablet Simultaneous Transmission Analysis

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1 g SAR (scaled to the maximum output power, including tolerance) < 1.2 W/kg. Therefore, no further analysis beyond the tables included in this section was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

For SAR summation, the highest reported SAR across all test distances was used as the most conservative evaluation for simultaneous transmission analysis for each device edge.

Table 12-14
Simultaneous Transmission Scenario with 5 GHz WLAN SISO (Phablet)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	
		1	2	3	1+2	1+3
Phablet SAR	UMTS 1750	2.933	0.956	1.760	3.889	See Table Below
	UMTS 1900	2.854	0.956	1.760	3.810	See Table Below
	LTE Band 66 (AWS)	2.666	0.956	1.760	3.622	See Table Below
	LTE Band 2 (PCS)	2.695	0.956	1.760	3.651	See Table Below
	LTE Band 25 (PCS)	2.658	0.956	1.760	3.614	See Table Below
	LTE Band 41	2.995	0.956	1.760	**3.951**	See Table Below

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	1.821	1.760	**3.581**
	Front	1.545	0.421	1.966
	Top	-	1.760*	1.760
	Bottom	2.933	-	2.933
	Right	0.296	-	0.296
	Left	0.494	1.760*	2.254

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	1.342	1.760	**3.102**
	Front	1.097	0.421	1.518
	Top	-	1.760*	1.760
	Bottom	2.854	-	2.854
	Right	0.320	-	0.320
	Left	0.365	1.760*	2.125

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	1.552	1.760	**3.312**
	Front	1.491	0.421	1.912
	Top	-	1.760*	1.760
	Bottom	2.666	-	2.666
	Right	0.319	-	0.319
	Left	0.582	1.760*	2.342

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	1.509	1.760	**3.269**
	Front	1.227	0.421	1.648
	Top	-	1.760*	1.760
	Bottom	2.695	-	2.695
	Right	0.341	-	0.341
	Left	0.377	1.760*	2.137

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	1.548	1.760	**3.308**
	Front	1.286	0.421	1.707
	Top	-	1.760*	1.760
	Bottom	2.658	-	2.658
	Right	0.279	-	0.279
	Left	0.344	1.760*	2.104

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	1.871	1.760	**3.631**
	Front	1.213	0.421	1.634
	Top	-	1.760*	1.760
	Bottom	2.995	-	2.995
	Left	0.439	1.760*	2.199

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 12-15
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Phablet)

Simult Tx	Configuration	UMTS 1750 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.821	3.273	See Note 1	0.07
	Front	1.545	0.675	2.220	N/A
	Top	-	3.273*	3.273	N/A
	Bottom	2.933	-	2.933	N/A
	Right	0.296	-	0.296	N/A
	Left	0.494	3.273*	**3.767**	N/A

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.342	3.273	See Note 1	0.06
	Front	1.097	0.675	1.772	N/A
	Top	-	3.273*	3.273	N/A
	Bottom	2.854	-	2.854	N/A
	Right	0.320	-	0.320	N/A
	Left	0.365	3.273*	**3.638**	N/A

Simult Tx	Configuration	LTE Band 66 (AWS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.552	3.273	See Note 1	0.07
	Front	1.491	0.675	2.166	N/A
	Top	-	3.273*	3.273	N/A
	Bottom	2.666	-	2.666	N/A
	Right	0.319	-	0.319	N/A
	Left	0.582	3.273*	**3.855**	N/A

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.509	3.273	See Note 1	0.07
	Front	1.227	0.675	1.902	N/A
	Top	-	3.273*	3.273	N/A
	Bottom	2.695	-	2.695	N/A
	Right	0.341	-	0.341	N/A
	Left	0.377	3.273*	**3.650**	N/A

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.548	3.273	See Note 1	0.07
	Front	1.286	0.675	1.961	N/A
	Top	-	3.273*	3.273	N/A
	Bottom	2.658	-	2.658	N/A
	Right	0.279	-	0.279	N/A
	Left	0.344	3.273*	**3.617**	N/A

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Phablet SAR	Back	1.871	3.273	See Note 1	0.07
	Front	1.213	0.675	1.888	N/A
	Top	-	3.273*	3.273	N/A
	Bottom	2.995	-	2.995	N/A
	Left	0.439	3.273*	**3.712**	N/A

Note 1 – No evaluation was performed to determine the aggregate 10g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.10 per FCC KDB 447498 D01v06. See Section 12.7 for detailed SPLS ratio analysis.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

12.7 SPLSR Evaluation and Analysis

Per FCC KDB Publication 447498 D01v06, when the sum of the standalone transmitters is more than 1.6 W/kg for 1g and 4 W/kg for 10g, the SAR sum to peak locations can be analyzed to determine SAR distribution overlaps. When the SAR peak to location ratio (shown below) for each pair of antennas is ≤ 0.04 for 1g and ≤ 0.10 for 10g, simultaneous SAR evaluation is not required. The distance between the transmitters was calculated using the following formula.

$$\text{Distance}_{Tx1-Tx2} = R_i = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

$$\text{SPLS Ratio} = \frac{(SAR_1 + SAR_2)^{1.5}}{R_i}$$

12.7.1 Phablet Back Side SPLSR Evaluation and Analysis

Table 12-16
Peak SAR Locations for Phablet Back Side

Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
5 GHz Phablet MIMO	0.00	78.00	3.273
UMTS 1750	-17.50	-79.50	1.821
UMTS 1900	-34.00	-79.50	1.342
LTE B66	-20.50	-76.50	1.552
LTE B2	-32.50	-79.50	1.509
LTE B25	-32.50	-79.50	1.548
LTE B41	1.30	-78.20	1.871

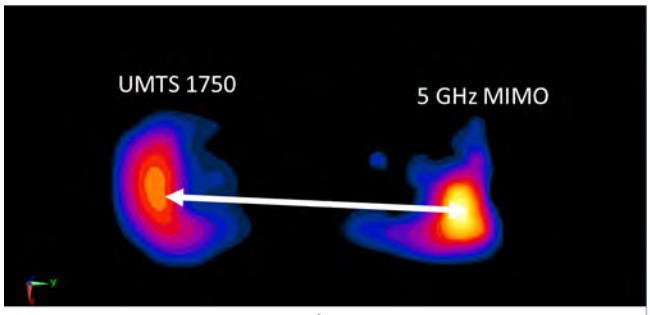
Table 12-17
Phablet Back Side SAR to Peak Location Separation Ratio Calculations

Antenna Pair		Standalone SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$	
5 GHz Phablet MIMO	UMTS 1750	3.273	1.821	5.094	158.47	0.07	1
5 GHz Phablet MIMO	UMTS 1900	3.273	1.342	4.615	161.13	0.06	2
5 GHz Phablet MIMO	LTE B66	3.273	1.552	4.825	155.85	0.07	3
5 GHz Phablet MIMO	LTE B2	3.273	1.509	4.782	160.82	0.07	4
5 GHz Phablet MIMO	LTE B25	3.273	1.548	4.821	160.82	0.07	5
5 GHz Phablet MIMO	LTE B41	3.273	1.871	5.144	156.21	0.07	6

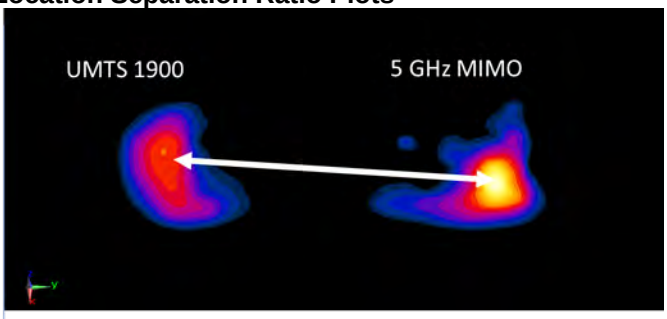
© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

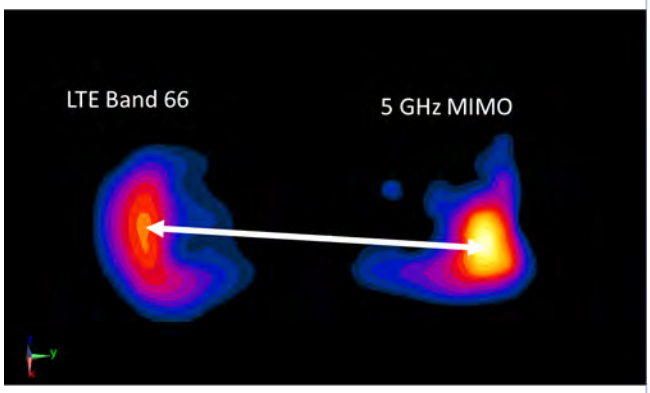
Table 12-18
Phablet Back Side SAR to Peak Location Separation Ratio Plots



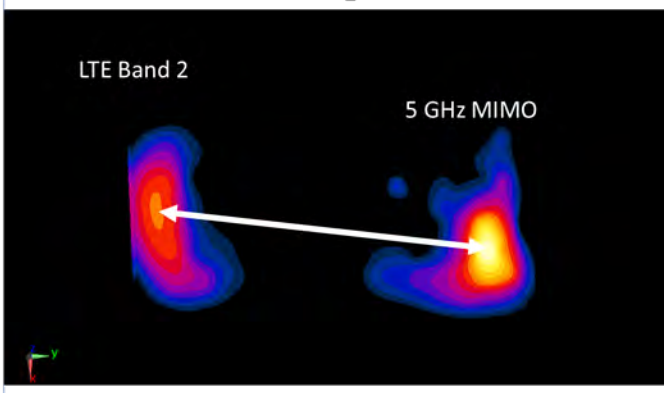
1



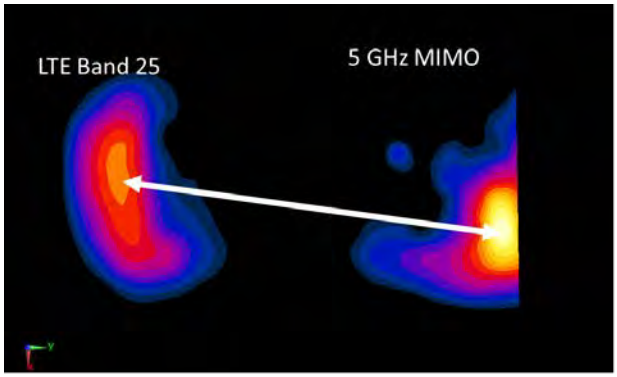
2



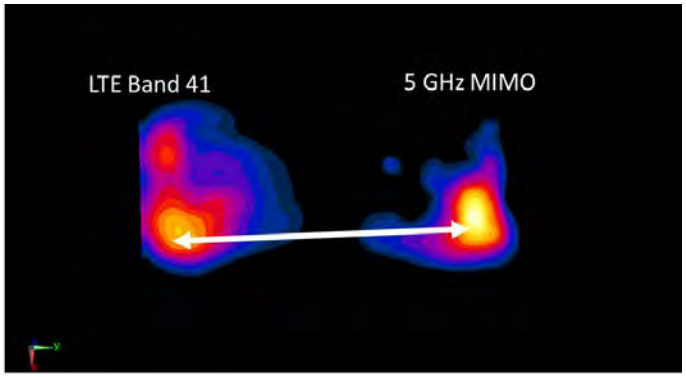
3



4



5



6

12.8 Simultaneous Transmission Conclusion

The above numerical summed SAR results and SPLSR analysis are sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528- 2013 Section 6.3.4.1.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

13 SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
5) When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Table 13-1
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS														
Band	FREQUENCY		Mode/Band	Service	Side	Test Position	Data Rate (Mbps)	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
2450	2462.00	11	802.11b, 22 MHz Bandwidth	DSSS , ANT 2	Right	Cheek	1	0.922	0.904	1.02	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population					Head 1.6 W/kg (mW/g) averaged over 1 gram									

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 13-2
Body SAR Measurement Variability Results

BODY VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
835	836.52	384	Cell. CDMA	EVDO Rev. 0	back	10 mm	0.943	0.940	1.00	N/A	N/A	N/A	N/A
2600	2593.00	40620	LTE Band 41, 20 MHz Bandwidth	QPSK, 1 RB, 0 RB Offset	bottom	10 mm	0.983	0.964	1.02	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 13-3
Phablet SAR Measurement Variability Results

PHABLET VARIABILITY RESULTS														
Band	FREQUENCY		Mode	Service	Data Rate (Mbps)	Side	Spacing	Measured SAR (10g)	1st Repeated SAR (10g)	Ratio	2nd Repeated SAR (10g)	Ratio	3rd Repeated SAR (10g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1750	1712.40	1312	UMTS 1750	RMC	N/A	bottom	0 mm	2.210	2.130	1.04	N/A	N/A	N/A	N/A
1900	1907.60	9538	UMTS 1900	RMC	N/A	bottom	0 mm	2.380	2.350	1.01	N/A	N/A	N/A	N/A
2450	2506.00	39750	LTE Band 41, 20 MHz Bandwidth	QPSK, 50 RB, 0 RB Offset	N/A	bottom	0 mm	2.320	2.230	1.04	N/A	N/A	N/A	N/A
2600	2549.50	40185	LTE Band 41, 20 MHz Bandwidth	QPSK, 50 RB, 0 RB Offset	N/A	bottom	0 mm	2.240	2.180	1.03	N/A	N/A	N/A	N/A
5250	5300.00	60	802.11n, 20 MHz Bandwidth	OFDM, MIMO	13	back	0 mm	2.250	2.030	1.11	N/A	N/A	N/A	N/A
5600	5600.00	120	802.11n, 20 MHz Bandwidth	OFDM, MIMO	13	back	0 mm	2.270	2.270	1.00	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Phablet 4.0 W/kg (mW/g) averaged over 10 grams						

13.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for 1g and <3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

14 ADDITIONAL TESTING PER FCC GUIDANCE

14.1 Tuner Testing

The following test procedures were followed to demonstrate that the SAR results in Section 11 represented the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR was measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements were evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.

To evaluate all of the tuner states, the 80 tuner states were divided among the aggregate band, mode and exposure combinations so that each combination was evaluated for at least 20 tuner states and also so that at least 3 single point SAR measurements were made for every available tuner state. Single point time-sweep measurements were performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination. When the single point SAR or 1g SAR was > 1.2 W/kg for a particular band/mode/exposure condition, point SAR measurements were made for all 80 states.

Per FCC Guidance, several bands/modes were combined to be treated as a single aggregate band. For the LTE Band 2 and 25 pair, the highest reported SAR configuration per exposure condition was evaluated. Additionally, LTE bands 12/17 and 13 were considered as an aggregated band to select single point measurement configurations. The wireless configuration and exposure condition combinations were divided evenly among three bands (i.e. the number of required single point measurements (at least 20) apply to the aggregated band). All other bands were treated independently.

The operational description contains more information about the design and implementation of the dynamic antenna tuning.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 14-1
UMTS Supplemental Head SAR Data

Supplemental Head SAR Data					
UMTS 850		UMTS 1750		UMTS 1900	
RMC		RMC		RMC	
Test Position	Right Cheek	Test Position	Left Cheek	Test Position	Left Cheek
Frequency (MHz)	836.60	Frequency (MHz)	1732.40	Frequency (MHz)	1880.00
Channel	4183	Channel	1412	Channel	9400
Measured 1g SAR (W/kg)	0.189	Measured 1g SAR (W/kg)	0.089	Measured 1g SAR (W/kg)	0.077
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 2)	0.210	Auto-tune (State 77)	0.124	Auto-tune (State 16)	0.105
Default (State 2)	0.210	Default (State 16)	0.123	Default (State 16)	0.103
State 1	0.196	State 0	0.087	State 4	0.076
State 2	0.210	State 1	0.088	State 6	0.068
State 5	0.207	State 8	0.068	State 9	0.059
State 13	0.081	State 11	0.049	State 11	0.045
State 15	0.038	State 16	0.123	State 14	0.024
State 18	0.098	State 18	0.118	State 16	0.103
State 22	0.099	State 24	0.112	State 24	0.083
State 25	0.090	State 27	0.096	State 29	0.045
State 28	0.037	State 30	0.068	State 32	0.024
State 32	0.184	State 36	0.013	State 42	0.010
State 33	0.184	State 42	0.008	State 44	0.005
State 35	0.167	State 45	0.003	State 47	0.001
State 38	0.154	State 49	0.032	State 52	0.029
State 40	0.141	State 52	0.026	State 57	0.021
State 43	0.076	State 55	0.022	State 61	0.007
State 49	0.112	State 58	0.018	State 66	0.015
State 53	0.134	State 64	0.079	State 70	0.023
State 68	0.199	State 70	0.017	State 72	0.088
State 71	0.113	State 76	0.087	State 75	0.031
State 76	0.198	State 77	0.120	State 78	0.024

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 14-2
LTE Supplemental Head SAR Data

Supplemental Head SAR Data												
LTE Band 12		LTE Band 13		LTE Band 5		LTE Band 26		LTE Band 66		LTE Band 2	
QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 15MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20MHz Bandwidth, 1 RB, 0 RB Offsets	
Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Left Cheek	Test Position	Left Cheek
Frequency (MHz)	707.50	Frequency (MHz)	782.00	Frequency (MHz)	836.50	Frequency (MHz)	831.50	Frequency (MHz)	1745.00	Frequency (MHz)	1900.00
Channel	23095	Channel	23230	Channel	20525	Channel	26865	Channel	132322	Channel	19100
Measured 1g SAR (W/kg)	0.101	Measured 1g SAR (W/kg)	0.152	Measured 1g SAR (W/kg)	0.163	Measured 1g SAR (W/kg)	0.161	Measured 1g SAR (W/kg)	0.099	Measured 1g SAR (W/kg)	0.073
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 9)	0.134	Auto-tune (State 2)	0.174	Auto-tune (State 2)	0.198	Auto-tune (State 3)	0.175	Auto-tune (State 17)	0.123	Auto-tune (State 17)	0.098
Default (State 2)	0.100	Default (State 0)	0.156	Default (State 2)	0.191	Default (State 2)	0.171	Default (State 16)	0.122	Default (State 16)	0.101
State 0	0.073	State 0	0.156	State 2	0.191	State 2	0.171	State 1	0.091	State 0	0.093
State 2	0.100	State 1	0.155	State 4	0.192	State 3	0.176	State 5	0.075	State 3	0.075
State 7	0.117	State 2	0.176	State 5	0.194	State 6	0.174	State 15	0.021	State 10	0.054
State 9	0.128	State 8	0.158	State 7	0.189	State 10	0.166	State 16	0.122	State 14	0.023
State 10	0.129	State 16	0.053	State 12	0.123	State 13	0.111	State 17	0.121	State 17	0.100
State 12	0.097	State 17	0.052	State 15	0.049	State 19	0.061	State 19	0.117	State 23	0.080
State 22	0.027	State 21	0.069	State 20	0.085	State 30	0.013	State 20	0.113	State 28	0.053
State 30	0.001	State 24	0.070	State 22	0.085	State 37	0.133	State 21	0.113	State 34	0.019
State 34	0.084	State 33	0.140	State 28	0.033	State 38	0.124	State 25	0.105	State 35	0.017
State 36	0.080	State 40	0.109	State 29	0.023	State 41	0.106	State 31	0.055	State 38	0.014
State 40	0.073	State 49	0.071	State 34	0.152	State 44	0.061	State 37	0.013	State 46	0.002
State 50	0.034	State 50	0.089	State 40	0.128	State 51	0.089	State 39	0.010	State 51	0.030
State 54	0.036	State 55	0.093	State 44	0.058	State 54	0.092	State 43	0.006	State 56	0.026
State 62	0.002	State 60	0.052	State 47	0.023	State 58	0.080	State 48	0.033	State 60	0.010
State 68	0.073	State 67	0.071	State 54	0.115	State 60	0.049	State 53	0.026	State 62	0.004
				State 61	0.042	State 65	0.046	State 56	0.023	State 64	0.074
				State 68	0.182	State 66	0.154	State 59	0.014	State 66	0.015
				State 71	0.093	State 69	0.047	State 65	0.109	State 69	0.100
				State 75	0.092	State 72	0.151	State 71	0.033	State 74	0.017
				State 77	0.070	State 79	0.070	State 77	0.123	State 79	0.038

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 14-3
UMTS Supplemental Body SAR Data

Supplemental Body SAR Data					
UMTS 850		UMTS 1750		UMTS 1900	
RMC		RMC		RMC	
Test Position	Back Side	Test Position	Bottom	Test Position	Bottom
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	846.60	Frequency (MHz)	1732.40	Frequency (MHz)	1880.00
Channel	4233	Channel	1412	Channel	9400
Measured 1g SAR (W/kg)	0.640	Measured 1g SAR (W/kg)	0.602	Measured 1g SAR (W/kg)	0.479
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 2)	0.865	Auto-tune (State 16)	0.918	Auto-tune (State 16)	0.674
Default (State 2)	0.871	Default (State 16)	0.877	Default (State 16)	0.693
State 2	0.871	State 3	0.606	State 3	0.511
State 4	0.867	State 7	0.553	State 5	0.497
State 7	0.836	State 9	0.513	State 10	0.371
State 11	0.596	State 12	0.367	State 15	0.142
State 14	0.278	State 16	0.877	State 16	0.693
State 17	0.391	State 23	0.877	State 18	0.641
State 24	0.414	State 27	0.843	State 21	0.620
State 27	0.261	State 29	0.767	State 25	0.548
State 31	0.065	State 35	0.118	State 36	0.110
State 33	0.853	State 41	0.090	State 39	0.093
State 34	0.829	State 43	0.067	State 41	0.086
State 42	0.576	State 45	0.043	State 42	0.077
State 45	0.307	State 51	0.221	State 49	0.227
State 48	0.518	State 52	0.217	State 51	0.190
State 52	0.571	State 57	0.175	State 53	0.183
State 55	0.552	State 63	0.051	State 58	0.130
State 59	0.370	State 67	0.218	State 60	0.084
State 62	0.154	State 69	0.868	State 64	0.505
State 70	0.861	State 73	0.845	State 67	0.172
State 73	0.390	State 75	0.243	State 76	0.600

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 14-4
LTE Supplemental Body SAR Data

Supplemental Body SAR Data												
LTE Band 12		LTE Band 13		LTE Band 5		LTE Band 26		LTE Band 66		LTE Band 2	
QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 15MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20MHz Bandwidth, 1 RB, 0 RB Offsets		QPSK, 20MHz Bandwidth, 50 RB, 25 RB Offsets	
Test Position	Back Side	Test Position	Back Side	Test Position	Back Side	Test Position	Back Side	Test Position	Bottom Edge	Test Position	Bottom Edge
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	707.50	Frequency (MHz)	782.00	Frequency (MHz)	836.50	Frequency (MHz)	831.50	Frequency (MHz)	1720.00	Frequency (MHz)	1900.00
Channel	23095	Channel	23230	Channel	20525	Channel	26865	Channel	132072	Channel	19100
Measured 1g SAR (W/kg)	0.331	Measured 1g SAR (W/kg)	0.554	Measured 1g SAR (W/kg)	0.579	Measured 1g SAR (W/kg)	0.585	Measured 1g SAR (W/kg)	0.629	Measured 1g SAR (W/kg)	0.599
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 9)	0.434	Auto-tune (State 2)	0.723	Auto-tune (State 2)	0.826	Auto-tune (State 4)	0.765	Auto-tune (State 16)	0.927	Auto-tune (State 16)	0.822
Default (State 2)	0.357	Default (State 0)	0.748	Default (State 2)	0.800	Default (State 2)	0.783	Default (State 16)	0.935	Default (State 16)	0.830
State 1	0.274	State 0	0.748	State 2	0.800	State 2	0.783	State 8	0.614	State 6	0.563
State 2	0.357	State 2	0.752	State 9	0.762	State 4	0.765	State 14	0.301	State 11	0.393
State 7	0.410	State 6	0.754	State 17	0.287	State 9	0.780	State 16	0.935	State 13	0.273
State 9	0.434	State 11	0.538	State 19	0.340	State 12	0.563	State 17	0.933	State 16	0.830
State 21	0.126	State 13	0.329	State 23	0.333	State 18	0.284	State 20	0.937	State 19	0.756
State 23	0.116	State 21	0.414	State 25	0.305	State 20	0.289	State 22	0.940	State 26	0.616
State 31	0.003	State 26	0.313	State 27	0.213	State 26	0.223	State 28	0.848	State 30	0.370
State 41	0.207	State 31	0.049	State 30	0.077	State 29	0.095	State 31	0.646	State 32	0.170
State 47	0.051	State 32	0.737	State 35	0.661	State 33	0.735	State 37	0.128	State 37	0.133
State 50	0.162	State 34	0.689	State 39	0.589	State 36	0.650	State 38	0.118	State 39	0.112
State 55	0.164	State 44	0.255	State 41	0.517	State 47	0.145	State 46	0.036	State 46	0.033
State 59	0.054	State 51	0.518	State 43	0.388	State 48	0.342	State 56	0.225	State 48	0.286
State 61	0.018	State 61	0.179	State 45	0.249	State 50	0.406	State 63	0.057	State 54	0.202
State 66	0.309	State 72	0.747	State 46	0.193	State 56	0.415	State 65	0.863	State 58	0.157
State 73	0.083	State 78	0.738	State 50	0.461	State 57	0.394	State 68	0.751	State 61	0.081
				State 53	0.471	State 59	0.299	State 70	0.157	State 63	0.042
				State 57	0.440	State 60	0.217	State 71	0.293	State 65	0.723
				State 62	0.135	State 64	0.701	State 74	0.138	State 72	0.714
				State 69	0.288	State 74	0.732	State 77	0.938	State 74	0.128
				State 73	0.284	State 78	0.735	State 79	0.158	State 77	0.824

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

14.2 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per May 2017 TCB Workshop Notes based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR for each exposure condition. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear. Per May 2017 TCB Workshop, no additional SAR measurements were required since the linearity between power classes as < 10% and all reported SAR values were < 1.4 W/kg for 1g and < 3.5 W/kg for 10g.

LTE Band 41 SAR testing with power class 2 at the highest power and available duty factor was additionally performed for the power class 3 configuration with the highest SAR for each exposure condition.

Table 14-5
LTE Band 41 Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25	28
Measured Output Power (dBm)	23.94	26.65
Measured SAR (W/kg)	0.048	0.058
Measured Power (mW)	247.74	462.38
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	156.82	200.21
% deviation from expected linearity		-5.35%

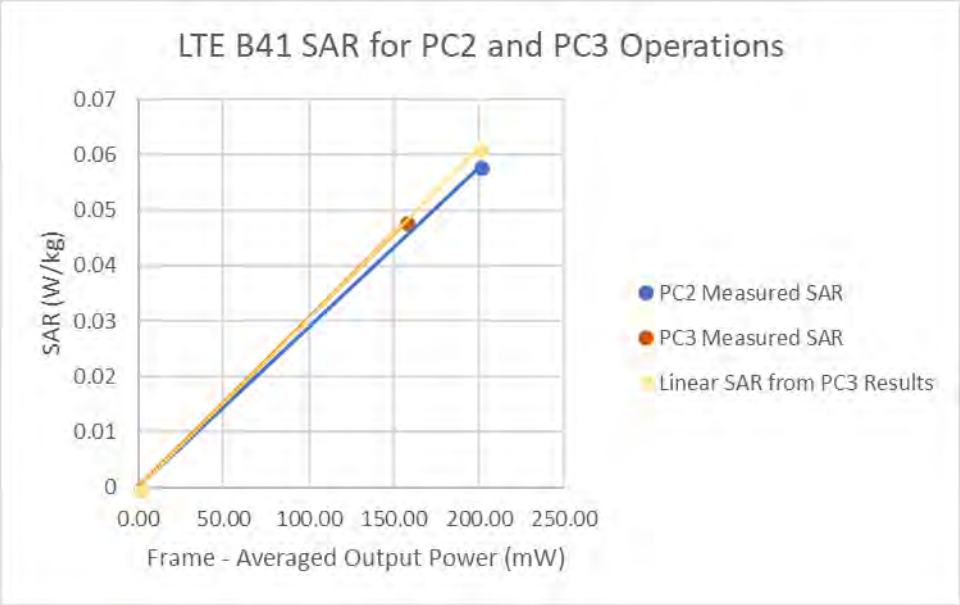


Figure 14-1
LTE Band 41 Head Linearity

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 14-6
LTE Band 41 Body-Worn Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25	28
Measured Output Power (dBm)	23.94	26.65
Measured SAR (W/kg)	0.266	0.344
Measured Power (mW)	247.74	462.38
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	156.82	200.21
% deviation from expected linearity		1.30%

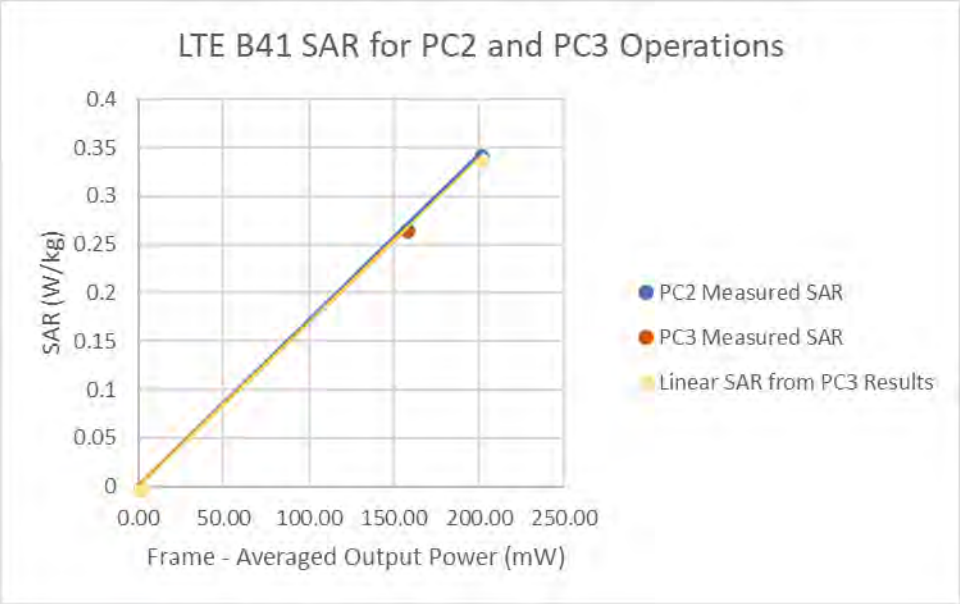


Figure 14-2
LTE Band 41 Body-Worn Linearity

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 14-7
LTE Band 41 Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	23	23
Measured Output Power (dBm)	22.23	22.03
Measured SAR (W/kg)	0.964	0.686
Measured Power (mW)	167.11	159.59
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	105.78	69.10
% deviation from expected linearity		8.93%

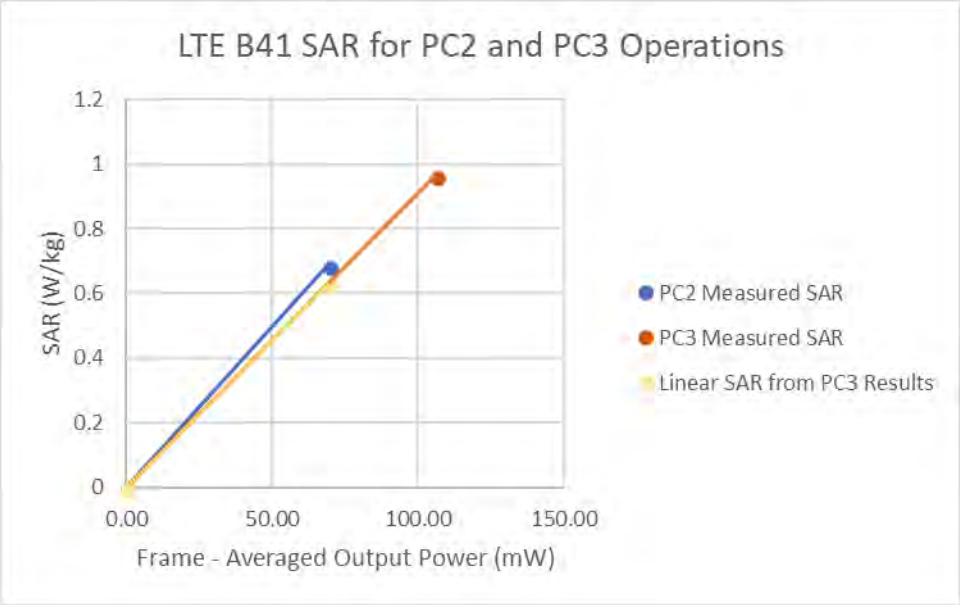


Figure 14-3
LTE Band 41 Hotspot Linearity

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Table 14-8
LTE Band 41 Phablet Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	23.5	23.5
Measured Output Power (dBm)	22.06	21.7
Measured SAR (W/kg)	2.15	1.41
Measured Power (mW)	160.69	147.91
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	101.72	64.05
% deviation from expected linearity		4.16%

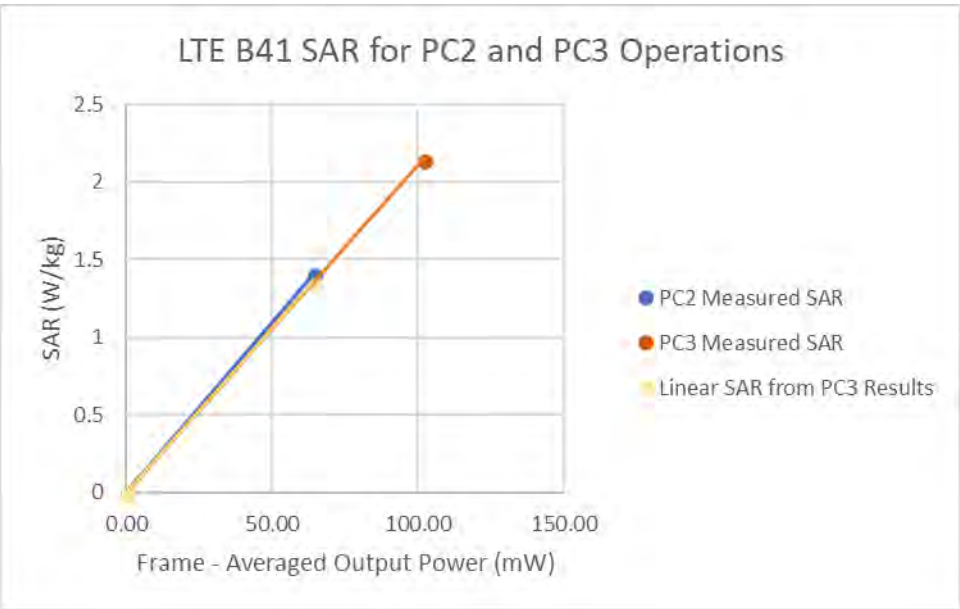


Figure 14-4
LTE Band 41 Phablet Linearity

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	8648D	(9kHz-4GHz) Signal Generator	N/A	N/A	N/A	3629U00687
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	11/15/2017	Annual	11/15/2018	GB42230325
Agilent	E4438C	ESG Vector Signal Generator	3/21/2017	Biennial	3/21/2019	MY45090700
Agilent	E4432B	ESG-D Series Signal Generator	4/19/2018	Annual	4/19/2019	US40053896
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	US46470561
Agilent	N5182A	MXG Vector Signal Generator	11/1/2017	Annual	11/1/2018	MY47420603
Agilent	8753ES	S-Parameter Network Analyzer	9/14/2017	Annual	9/14/2018	US39170118
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/17/2017	Annual	8/17/2018	MY40003841
Agilent	E5515C	Wireless Communications Test Set	5/31/2017	Annual	5/31/2018	GB43304278
Agilent	E5515C	Wireless Communications Test Set	3/29/2018	Triennial	3/29/2021	GB43163447
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	150A100C	DC Amplifier	CBT	N/A	CBT	348812
Anritsu	ML2495A	Power Meter	10/22/2017	Annual	10/22/2018	941001
Anritsu	ML2496A	Power Meter	10/9/2017	Annual	10/9/2018	1138001
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1207364
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1207364
Anritsu	MT8820C	Radio Communication Analyzer	1/5/2018	Annual	1/5/2019	6201144418
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1244524
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1244512
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
Control Company	4040	Therm./ Clock/ Humidity Monitor	1/8/2018	Annual	1/8/2019	160473909
Control Company	4352	Ultra Long Stem Thermometer	1/8/2018	Annual	1/8/2019	160508097
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMW500	Radio Communication Tester	8/2/2017	Annual	8/2/2018	116743
Rohde & Schwarz	CMW500	Radio Communication Tester	9/15/2017	Annual	9/15/2018	109366
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	7/20/2017	Annual	7/20/2018	132885
Seekonk	NC-100	Torque Wrench (8" lb)	8/30/2016	Biennial	8/30/2018	N/A
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	1/22/2018	Annual	1/22/2019	N/A
SPEAG	D1750V2	1750 MHz SAR Dipole	4/19/2018	Annual	4/19/2019	1051
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Biennial	5/9/2019	1148
SPEAG	D1900V2	1900 MHz SAR Dipole	2/7/2018	Annual	2/7/2019	5d148
SPEAG	D1900V2	1900 MHz SAR Dipole	8/16/2017	Annual	8/16/2018	5d180
SPEAG	D1900V2	1900 MHz SAR Dipole	4/12/2018	Annual	4/12/2019	5d141
SPEAG	D2450V2	2450 MHz SAR Dipole	9/11/2017	Annual	9/11/2018	797
SPEAG	D2450V2	2450 MHz SAR Dipole	2/7/2018	Annual	2/7/2019	882
SPEAG	D2600V2	2600 MHz SAR Dipole	7/10/2017	Annual	7/10/2018	1126
SPEAG	D2600V2	2600 MHz SAR Dipole	4/11/2018	Annual	4/11/2019	1004
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Biennial	9/21/2018	1191
SPEAG	D5GHzV2	5 GHz SAR Dipole	8/15/2017	Annual	8/15/2018	1237
SPEAG	D750V3	750 MHz SAR Dipole	1/15/2018	Annual	1/15/2019	1003
SPEAG	D750V3	750 MHz SAR Dipole	7/13/2016	Biennial	7/13/2018	1161
SPEAG	D750V3	750 MHz SAR Dipole	3/7/2017	Biennial	3/7/2019	1054
SPEAG	D835V2	835 MHz SAR Dipole	7/13/2016	Biennial	7/13/2018	4d047
SPEAG	D835V2	835 MHz SAR Dipole	4/10/2018	Annual	4/10/2019	4d119
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/14/2017	Annual	6/14/2018	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/21/2017	Annual	6/21/2018	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/13/2017	Annual	7/13/2018	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/9/2017	Annual	8/9/2018	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2018	Annual	2/9/2019	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/7/2018	Annual	3/7/2019	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/9/2017	Annual	11/9/2018	1450
SPEAG	DAK-3.5	Dielectric Assessment Kit	9/12/2017	Annual	9/12/2018	1091
SPEAG	ES3DV3	SAR Probe	8/14/2017	Annual	8/14/2018	3332
SPEAG	ES3DV3	SAR Probe	2/13/2018	Annual	2/13/2019	3213
SPEAG	ES3DV3	SAR Probe	3/13/2018	Annual	3/13/2019	3319
SPEAG	EX3DV4	SAR Probe	7/17/2017	Annual	7/17/2018	7410
SPEAG	ES3DV3	SAR Probe	9/18/2017	Annual	9/18/2018	3287
SPEAG	ES3DV3	SAR Probe	3/27/2018	Annual	3/27/2019	3347
SPEAG	EX3DV4	SAR Probe	8/16/2017	Annual	8/16/2018	7308
SPEAG	EX3DV4	SAR Probe	1/16/2018	Annual	1/16/2019	3589

Note:

1. CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.
2. All equipment was used within its calibration period.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

16 MEASUREMENT UNCERTAINTIES

a	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i 1gm**	**c_i 10 gms**	**1gm u_i (± %)**	**10gms u_i (± %)**	**v_i**
Measurement System								
Probe Calibration	6.55	N	1	1.0	1.0	6.6	6.6	∞
Axial Isotropy	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	2.0	R	1.73	1.0	1.0	1.2	1.2	∞
Linearity	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	0.25	R	1.73	1.0	1.0	0.1	0.1	∞
Readout Electronics	0.3	N	1	1.0	1.0	0.3	0.3	∞
Response Time	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions - Noise	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
RF Ambient Conditions - Reflections	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	6.7	R	1.73	1.0	1.0	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Test Sample Related								
Test Sample Positioning	2.7	N	1	1.0	1.0	2.7	2.7	35
Device Holder Uncertainty	1.67	N	1	1.0	1.0	1.7	1.7	5
Output Power Variation - SAR drift measurement	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
SAR Scaling	0.0	R	1.73	1.0	1.0	0.0	0.0	∞
Phantom & Tissue Parameters								
Phantom Uncertainty (Shape & Thickness tolerances)	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	4.2	N	1	0.78	0.71	3.3	3.0	10
Liquid Permittivity - measurement uncertainty	4.1	N	1	0.23	0.26	1.0	1.1	10
Liquid Conductivity - Temperature Uncertainty	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)		RSS				11.5	11.3	60
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				23.0	22.6	

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.09 M
03/16/2018

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

17 CONCLUSION

17.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

18 REFERENCES

[1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.

[2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.

[3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.

[4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.

[5] IEEE Standards Coordinating Committee 39 –Standards Coordinating Committee 34 – IEEE Std. 1528-2013, IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.

[6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.

[7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.

[8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 1 -124.

[9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.

[10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.

[11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.

[12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.

[13] G. Hartsgrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.

[14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.

[15] W. Gander, Computermathematick, Birkhaeuser, Basel, 1992.

[16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.

[17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

[18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.

[19] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hoschschule Zürich, Dosimetric Evaluation of the Cellular Phone.

[20] IEC 62209-1, Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz), July 2016.

[21] Innovation, Science, Economic Development Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 5, March 2015.

[22] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz – 300 GHz, 2015

[23] FCC SAR Test Procedures for 2G-3G Devices, Mobile Hotspot and UMPC Devices KDB Publications 941225, D01-D07

[24] SAR Measurement Guidance for IEEE 802.11 Transmitters, KDB Publication 248227 D01

[25] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publications 648474 D03-D04

[26] FCC SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers, FCC KDB Publication 616217 D04

[27] FCC SAR Measurement and Reporting Requirements for 100MHz – 6 GHz, KDB Publications 865664 D01-D02

[28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D02

[29] Anexo à Resolução No. 533, de 10 de Septembro de 2009.

[30] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.

© 2018 PCTEST Engineering Laboratory, Inc.

© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

APPENDIX A: SAR TEST DATA

© 2018 PCTEST Engineering Laboratory, Inc.

PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

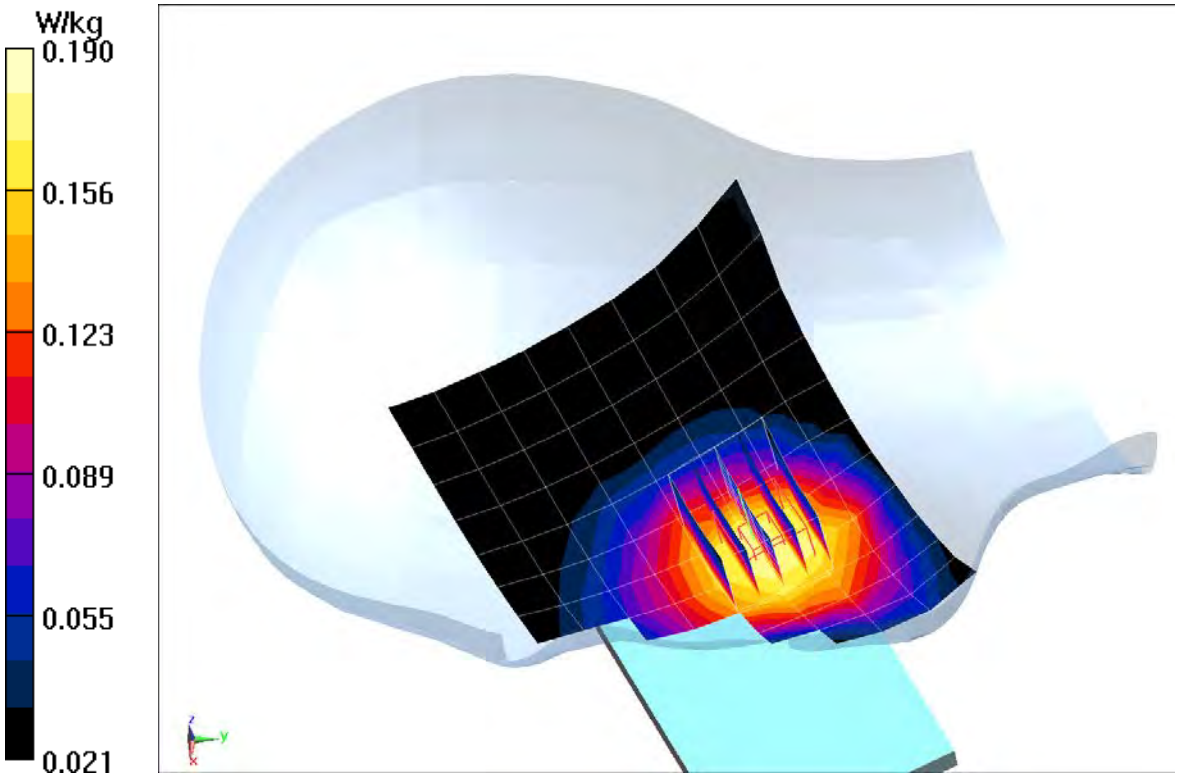
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
$f = 836.6$ MHz; $\sigma = 0.914$ S/m; $\varepsilon_r = 40.647$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 05-07-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GSM 850, Right Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.17 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.220 W/kg
SAR(1 g) = 0.170 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

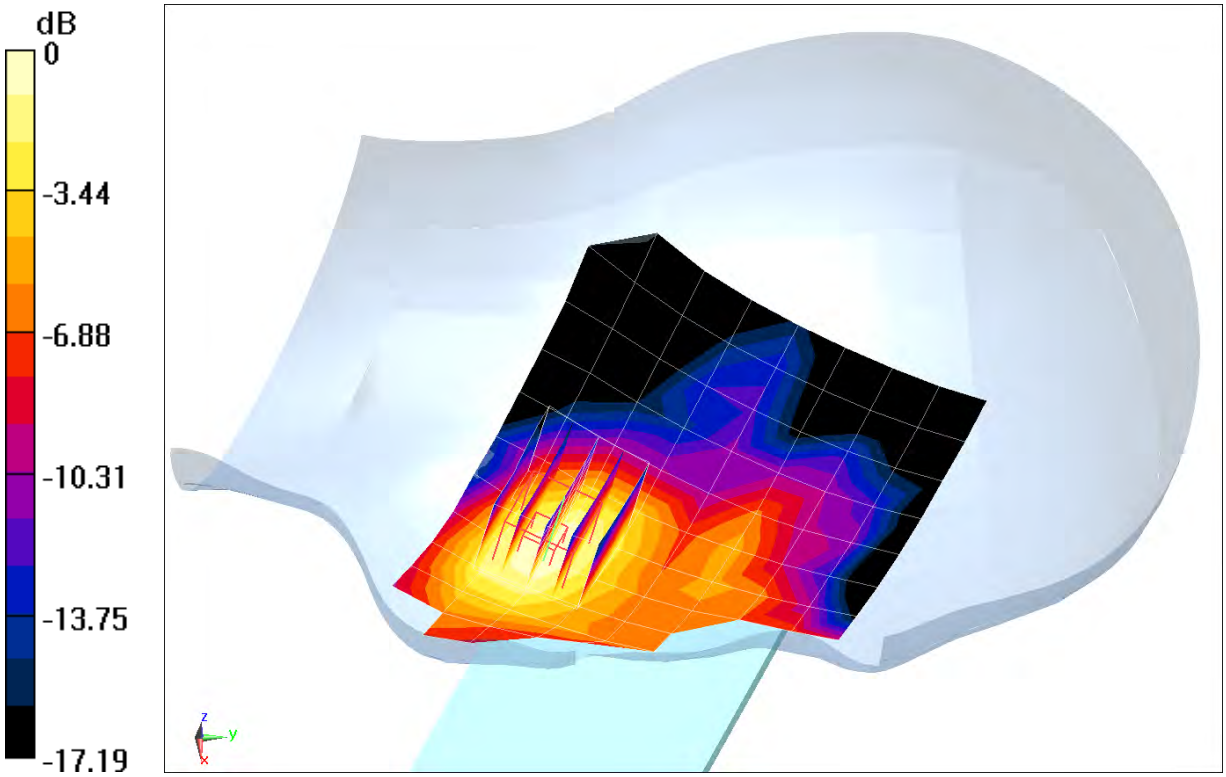
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.399 S/m; ε_r = 39.515; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 05-08-2018; Ambient Temp: 23.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GSM 1900, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.679 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.0670 W/kg
SAR(1 g) = 0.042 W/kg



0 dB = 0.0476 W/kg = -13.22 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

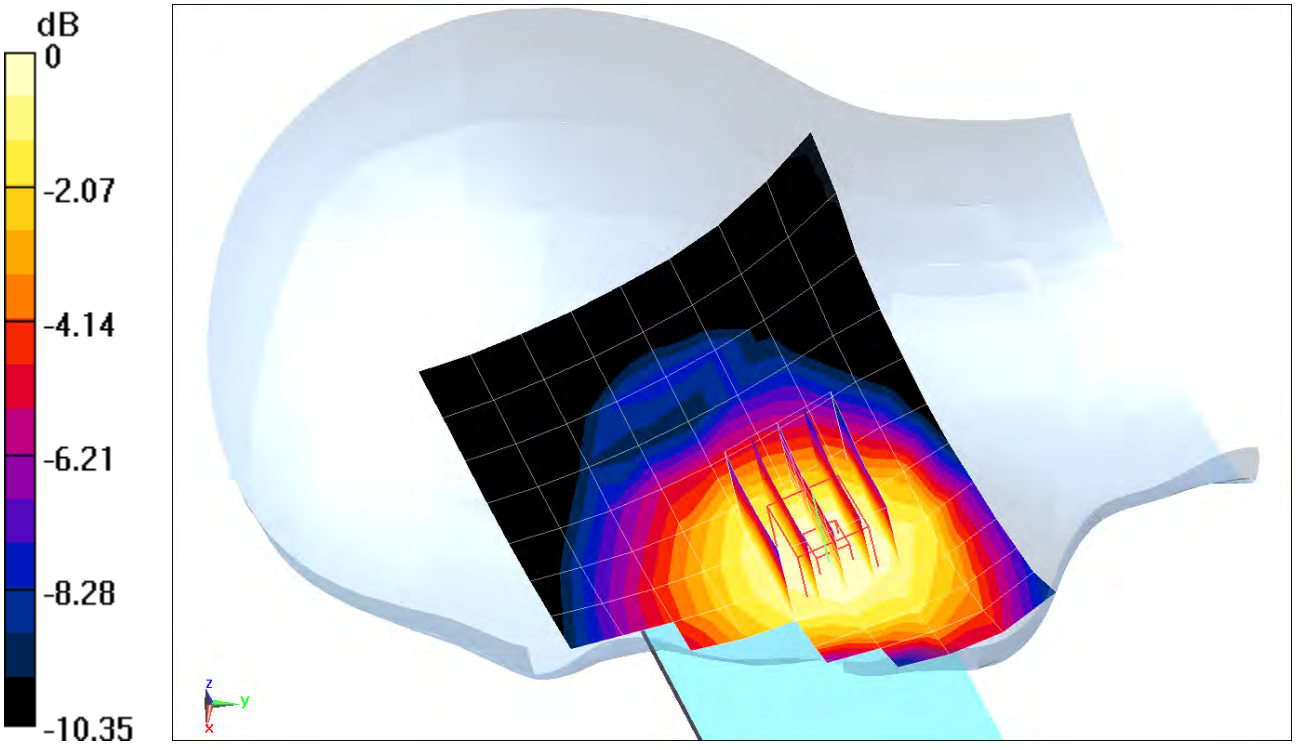
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.914 S/m; ε_r = 40.647; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 05-07-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Right Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.72 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.242 W/kg
SAR(1 g) = 0.189 W/kg



0 dB = 0.207 W/kg = -6.84 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

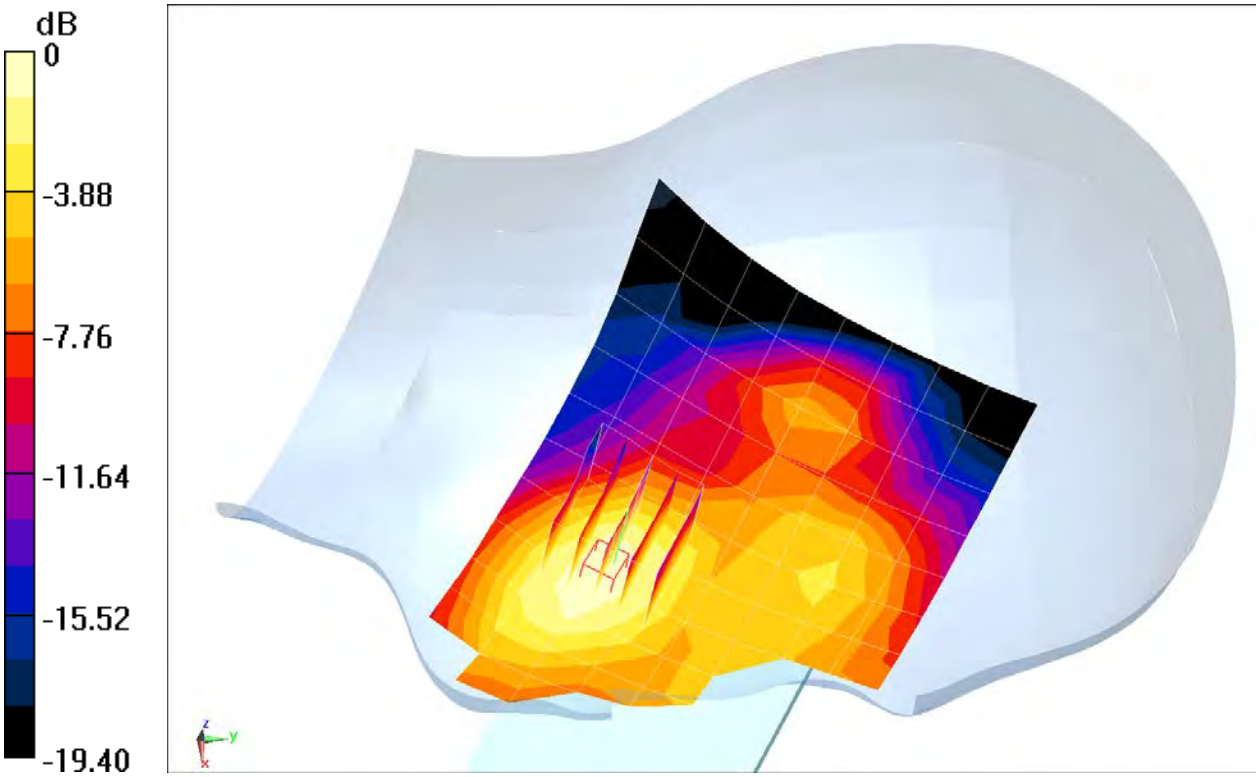
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.36 S/m; ε_r = 39.62; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 05-09-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(5.45, 5.45, 5.45); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.510 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.133 W/kg
SAR(1 g) = 0.089 W/kg



0 dB = 0.103 W/kg = -9.87 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

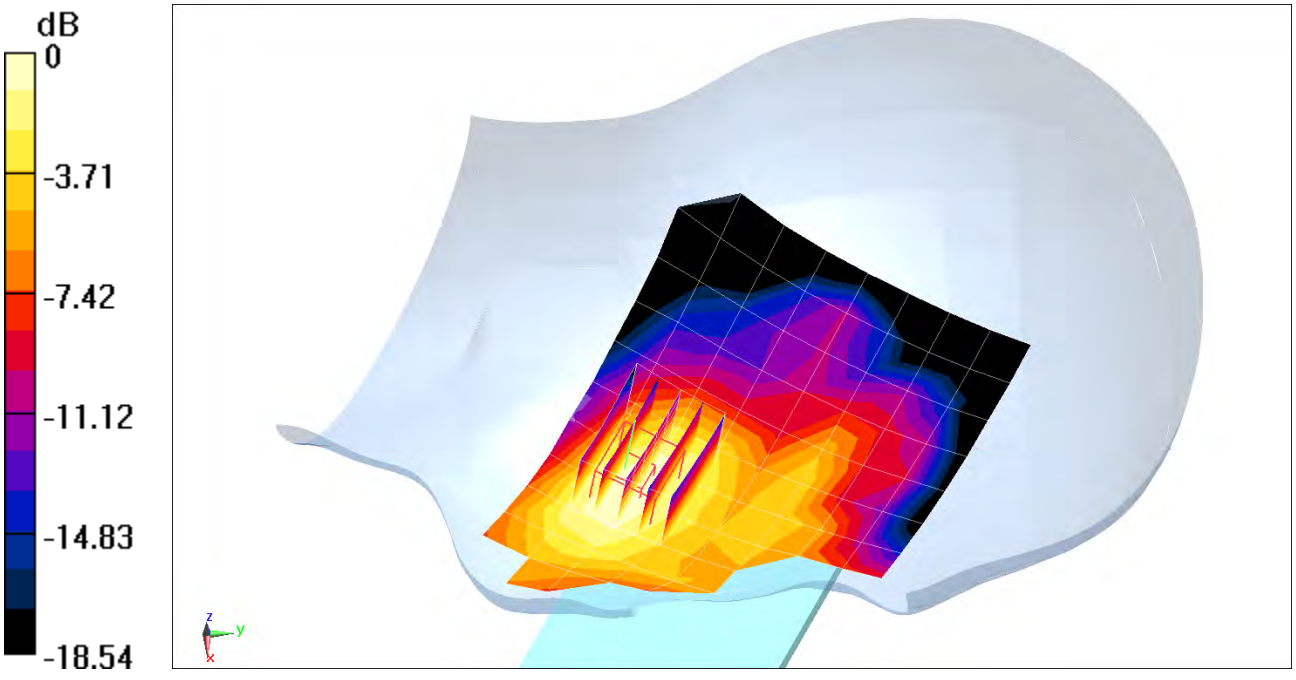
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.399 S/m; ε_r = 39.515; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 05-08-2018; Ambient Temp: 23.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Left Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.697 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.123 W/kg
SAR(1 g) = 0.077 W/kg



0 dB = 0.0871 W/kg = -10.60 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

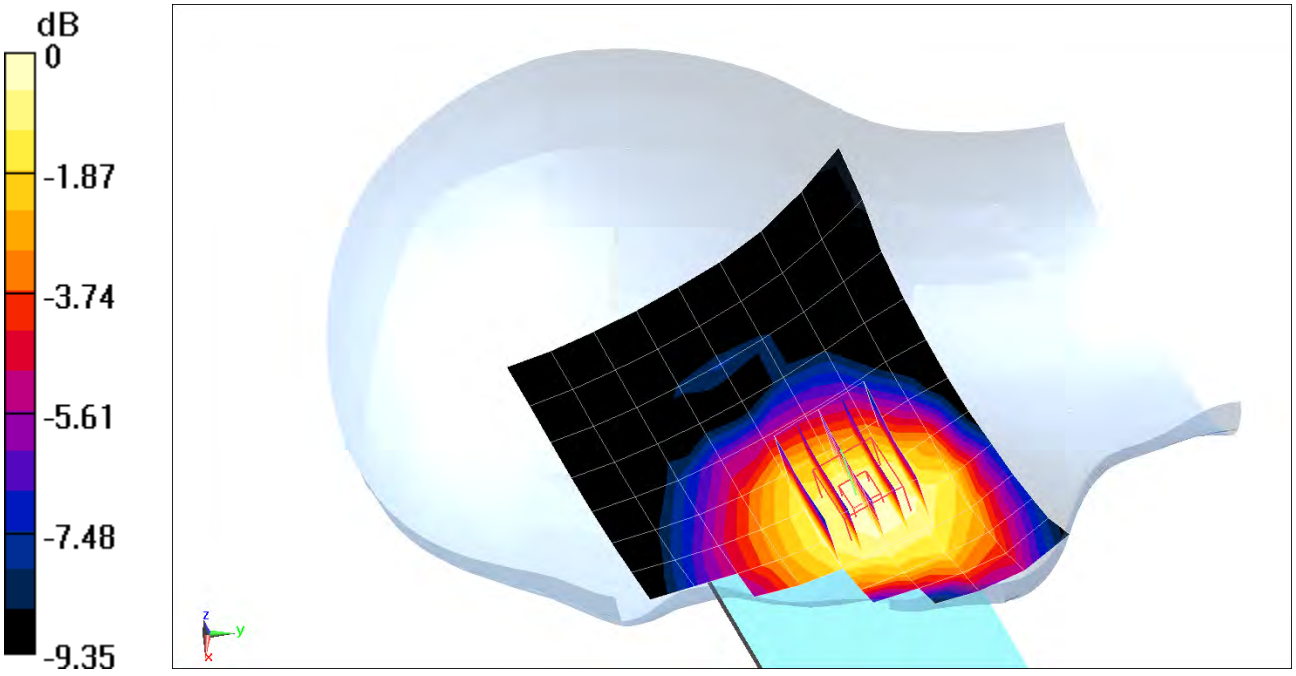
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.914 S/m; ε_r = 40.647; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 05-07-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. CDMA, Rule Part 22H, Right Head, Cheek, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.06 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.349 W/kg
SAR(1 g) = 0.272 W/kg



0 dB = 0.304 W/kg = -5.17 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

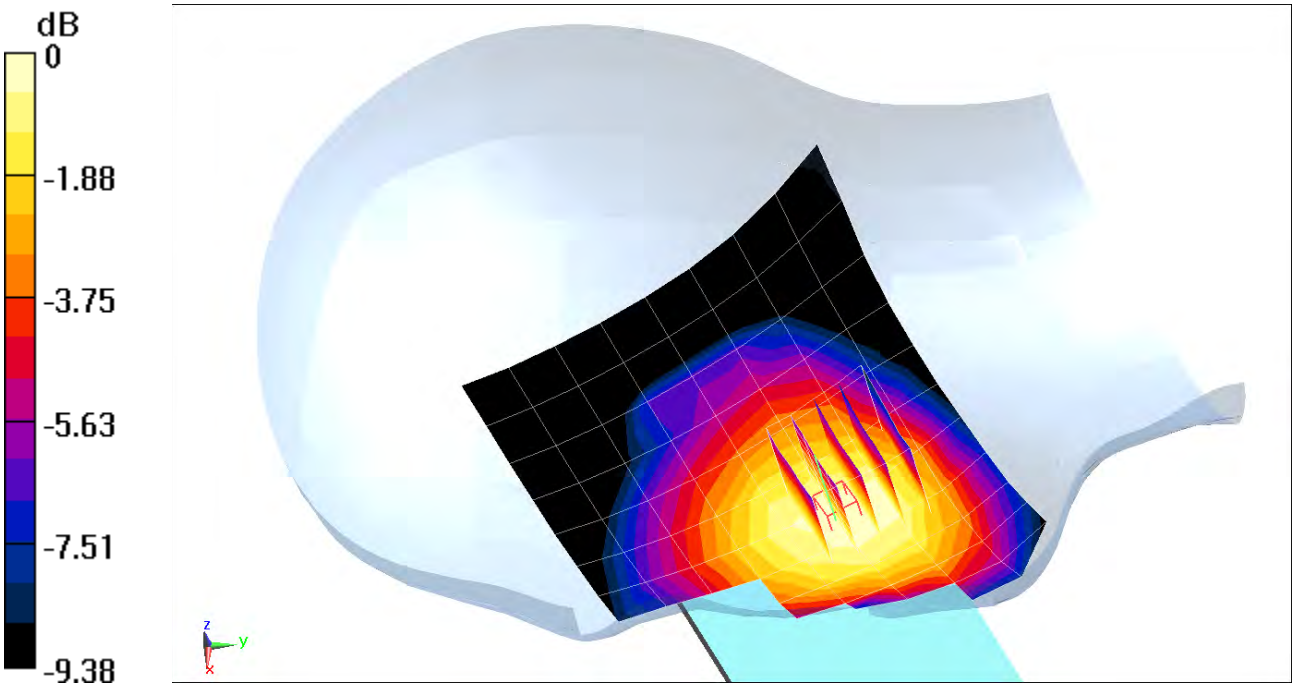
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.897 S/m; ε_r = 41.803; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 05-09-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 12, Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.31 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.128 W/kg
SAR(1 g) = 0.101 W/kg



0 dB = 0.110 W/kg = -9.59 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: N0185

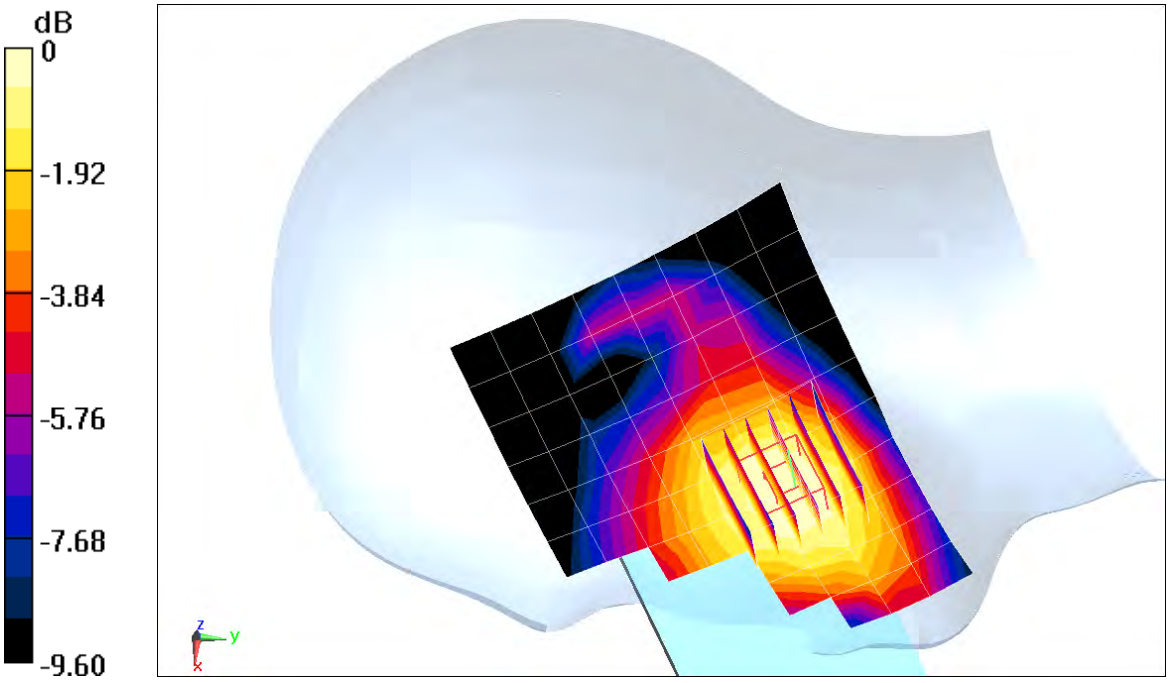
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.91 S/m; ε_r = 41.535; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 05-31-2018; Ambient Temp: 21.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 13, Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.80 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.193 W/kg
SAR(1 g) = 0.152 W/kg



0 dB = 0.164 W/kg = -7.85 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

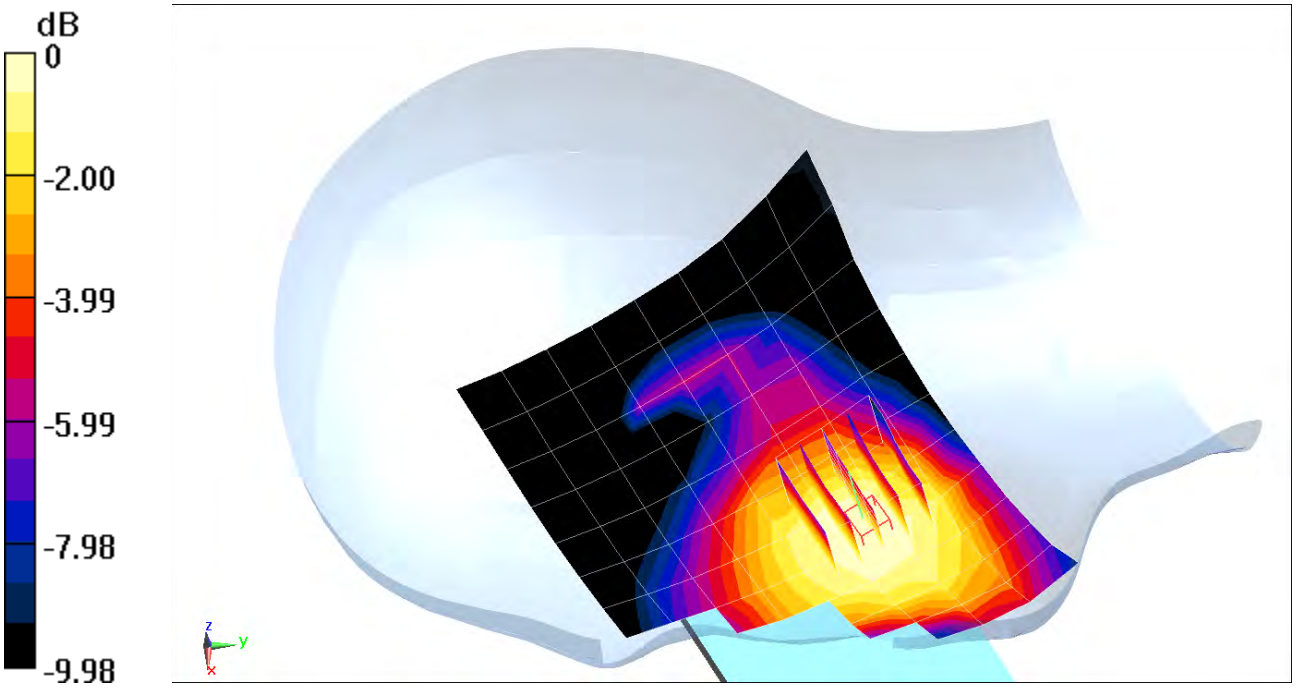
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.914 S/m; ε_r = 40.647; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 05-07-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 5 (Cell.), Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.52 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.213 W/kg
SAR(1 g) = 0.163 W/kg



0 dB = 0.180 W/kg = -7.45 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

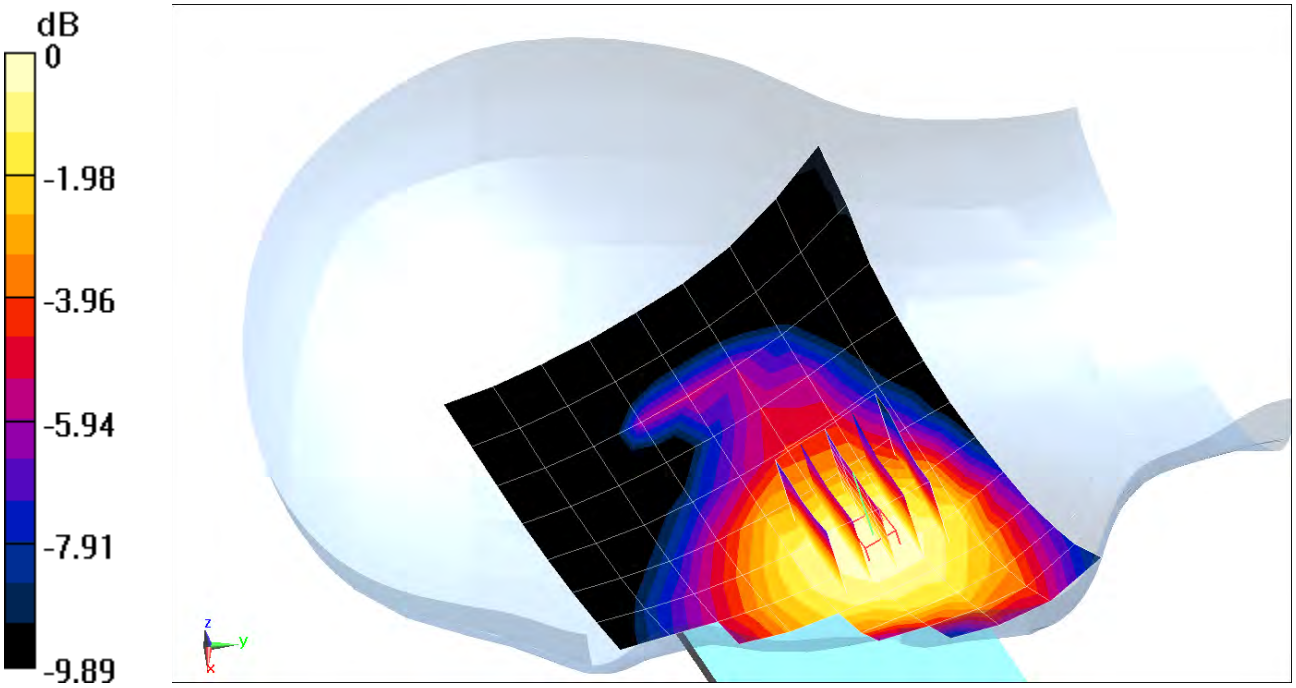
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.912 S/m; ε_r = 40.653; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 05-07-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 26 (Cell.), Right Head, Cheek, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.46 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.209 W/kg
SAR(1 g) = 0.161 W/kg



0 dB = 0.179 W/kg = -7.47 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

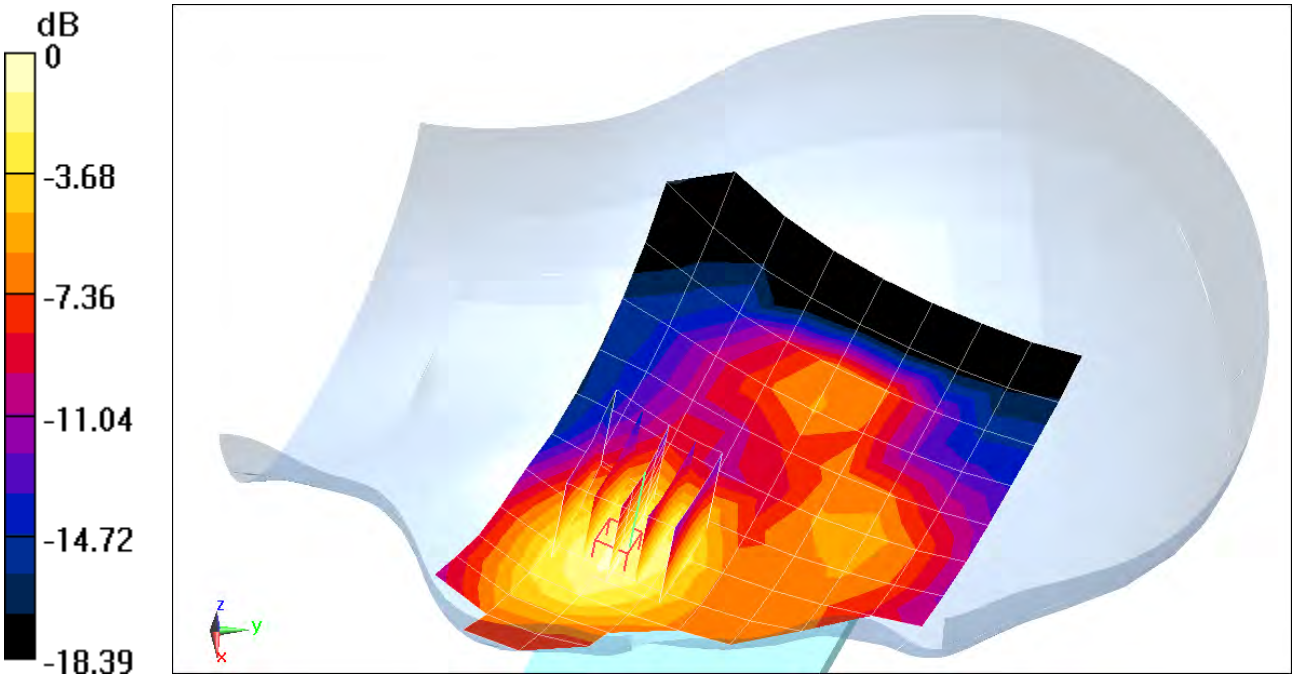
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.367 S/m; ε_r = 39.606; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 05-09-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(5.45, 5.45, 5.45); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Left Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.589 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.147 W/kg
SAR(1 g) = 0.099 W/kg



0 dB = 0.114 W/kg = -9.43 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

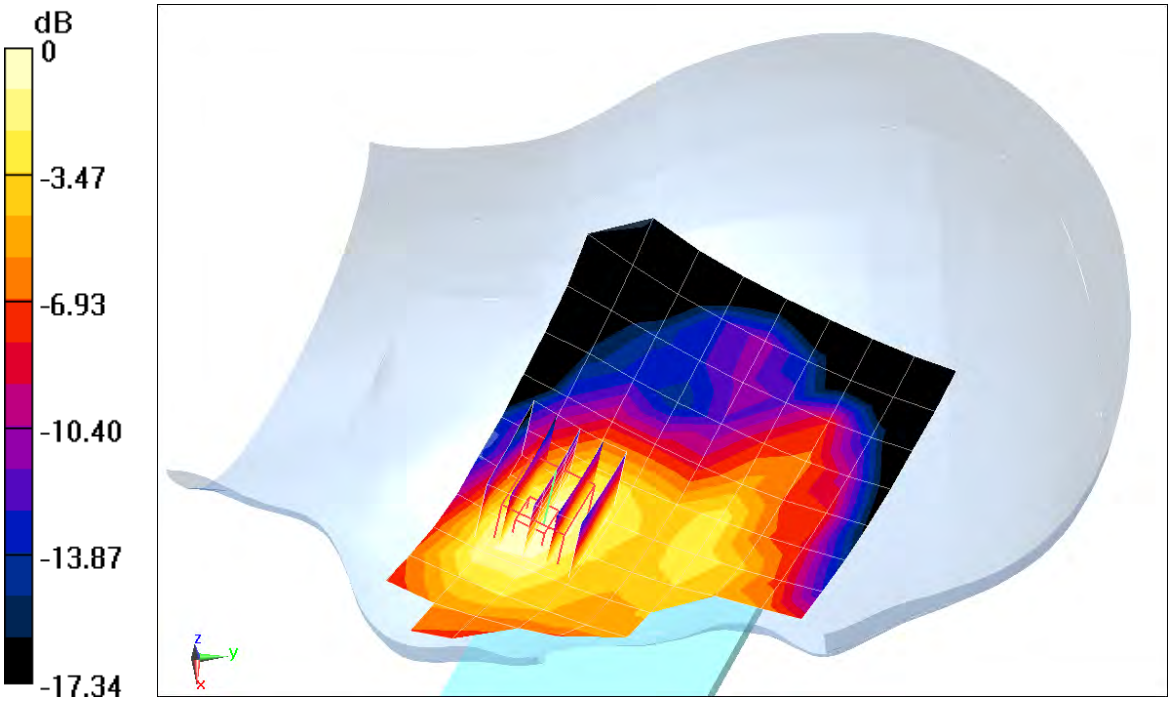
Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.42 S/m; ε_r = 39.418; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 05-08-2018; Ambient Temp: 23.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 2 (PCS), Left Head, Cheek, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.963 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.112 W/kg
SAR(1 g) = 0.073 W/kg



0 dB = 0.0836 W/kg = -10.78 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

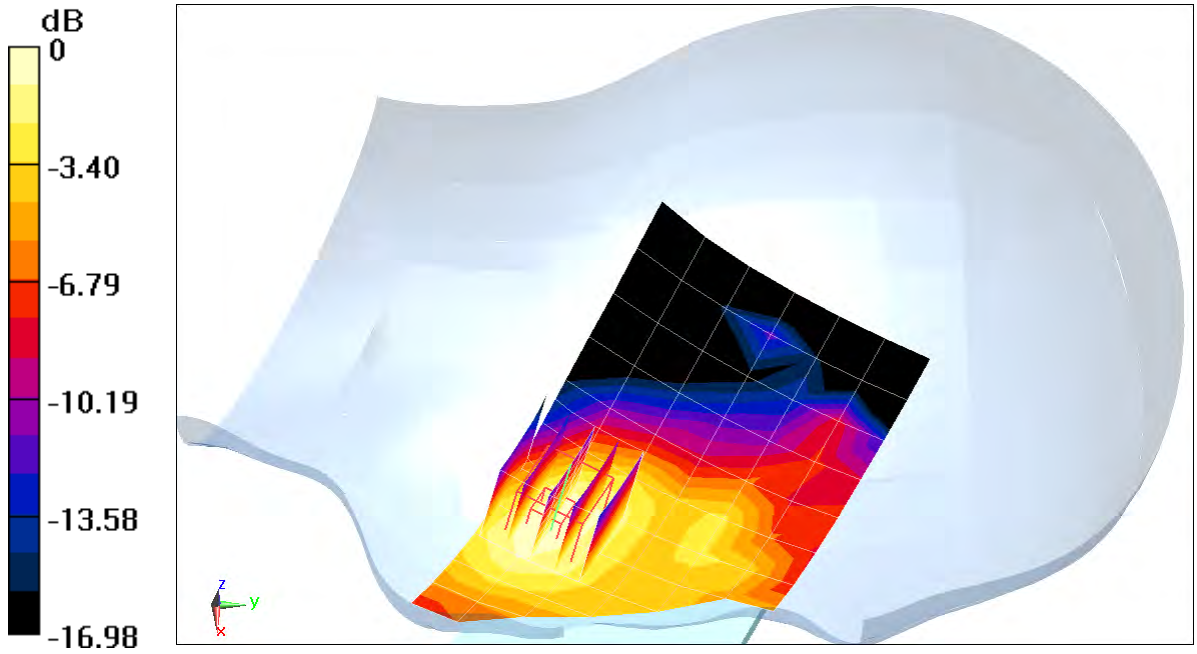
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.45 S/m; ε_r = 38.901; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 05-22-2018; Ambient Temp: 24.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(5.3, 5.3, 5.3); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Left Head, Cheek, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.373 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.0960 W/kg
SAR(1 g) = 0.063 W/kg



0 dB = 0.0713 W/kg = -11.47 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

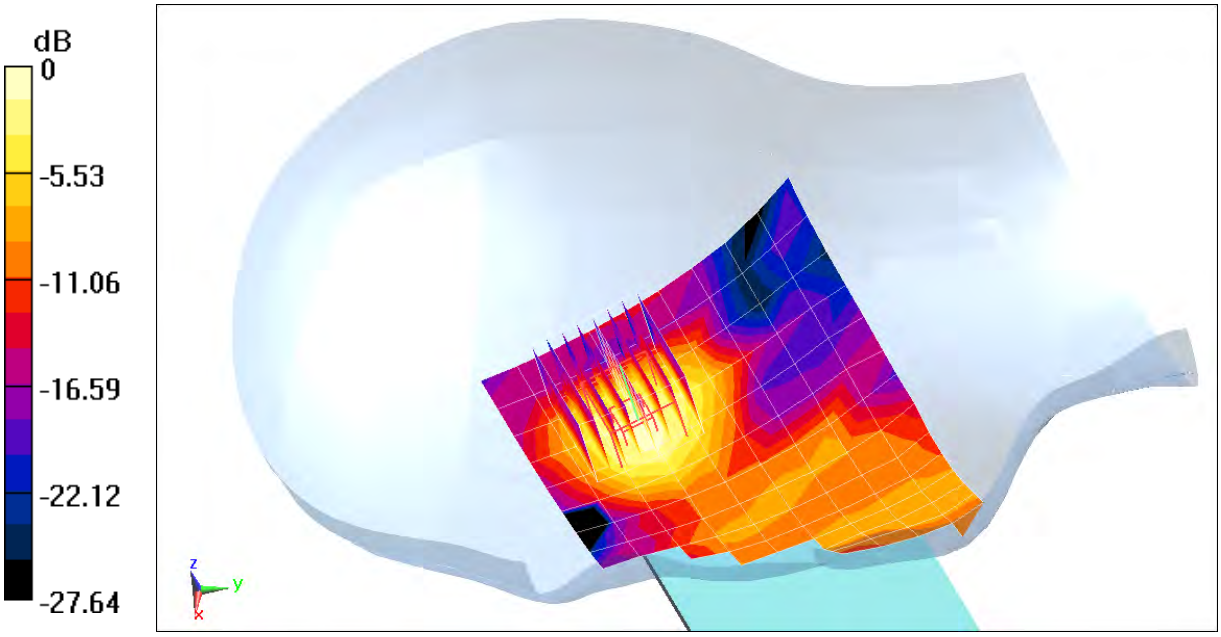
Communication System: UID 0, _LTE Band 41 (Class 2); Frequency: 2506 MHz; Duty Cycle: 1:2.31
Medium: 2450 Head Medium parameters used (interpolated):
f = 2506 MHz; σ = 1.916 S/m; ε_r = 38.457; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 05-21-2018; Ambient Temp: 21.0°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 41 (PC2), Right Head, Tilt, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.957 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.112 W/kg
SAR(1 g) = 0.058 W/kg



0 dB = 0.0729 W/kg = -11.37 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2297

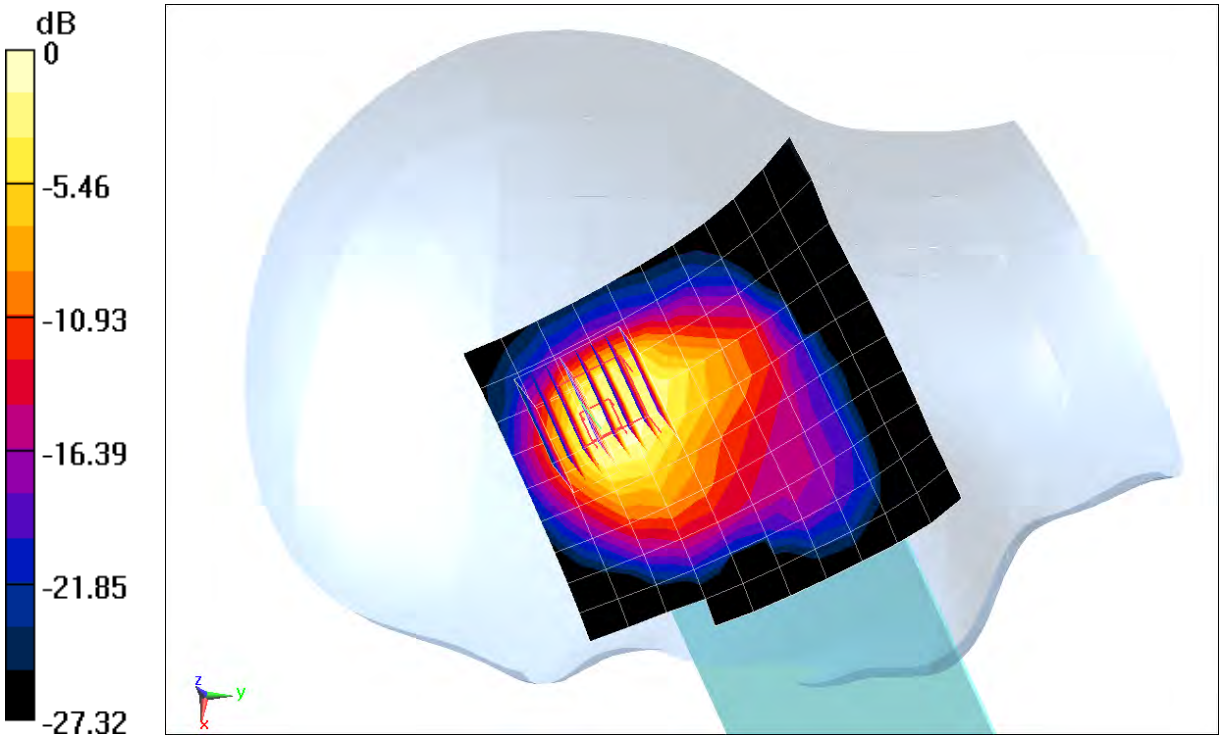
Communication System: UID 0, _IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.852 S/m; ε_r = 38.735; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 05-03-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Right Head, Cheek, Antenna 2 Ch 11, 1 Mbps

Area Scan (11x11x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.28 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 0.922 W/kg



0 dB = 1.23 W/kg = 0.90 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2145

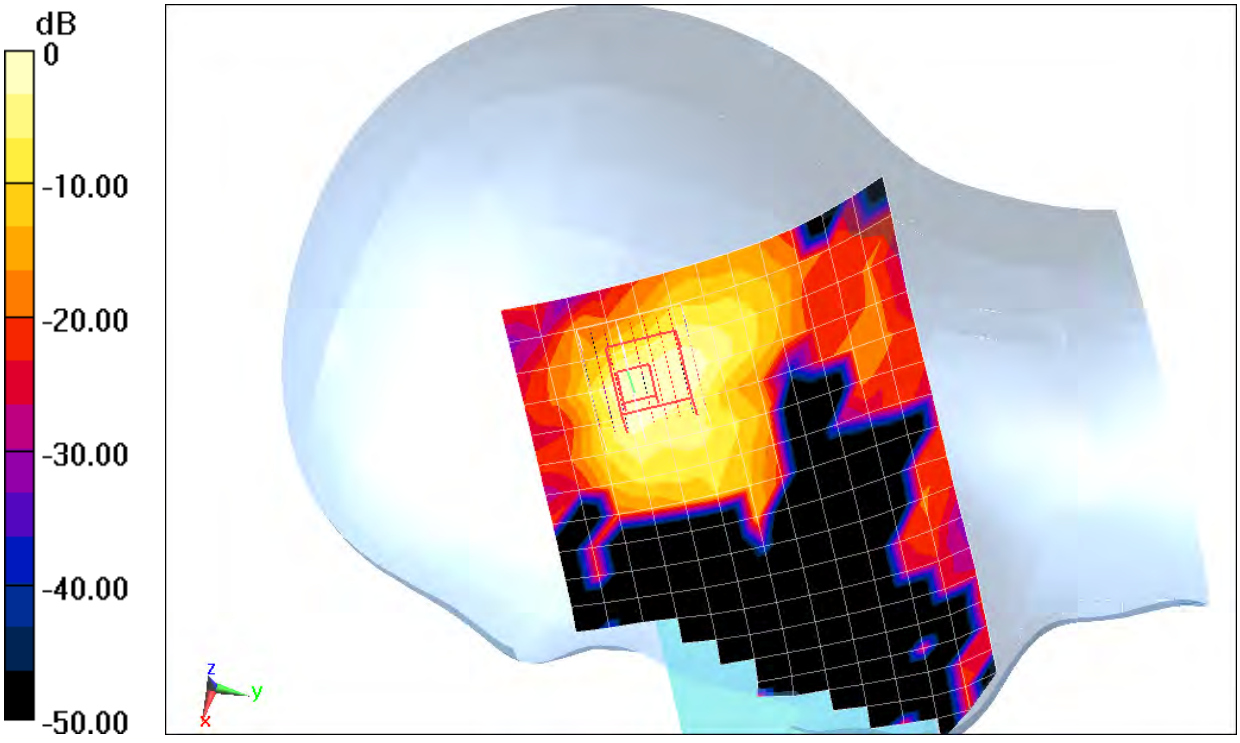
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5690 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5690 MHz; σ = 4.973 S/m; ε_r = 34.07; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 5-7-2018; Ambient Temp: 20.9°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3589; ConvF(4.42, 4.42, 4.42); Calibrated: 1/16/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11ac, U-NII-2C, 80 MHz Bandwidth,
Right Head, Cheek, Antenna 2, Ch 138, 29.3 Mbps

Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 1.218 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.256 W/kg



0 dB = 0.835 W/kg = -0.78 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2297

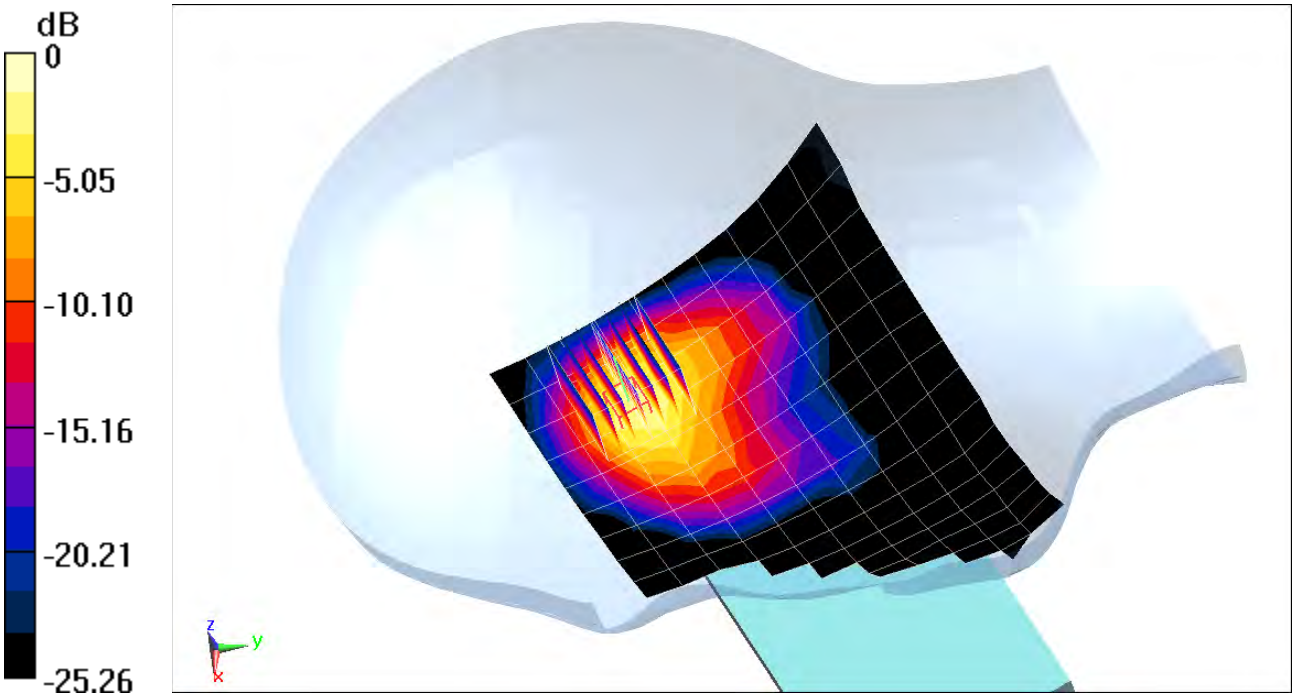
Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.294
Medium: 2450 Head Medium parameters used (interpolated):
$f = 2441$ MHz; $\sigma = 1.86$ S/m; $\varepsilon_r = 39.125$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

Test Date: 05-17-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Right Head, Cheek, Ch 39, 1 Mbps

Area Scan (11x19x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.78 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.72 W/kg
SAR(1 g) = 0.730 W/kg



0 dB = 0.999 W/kg = 0.00 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

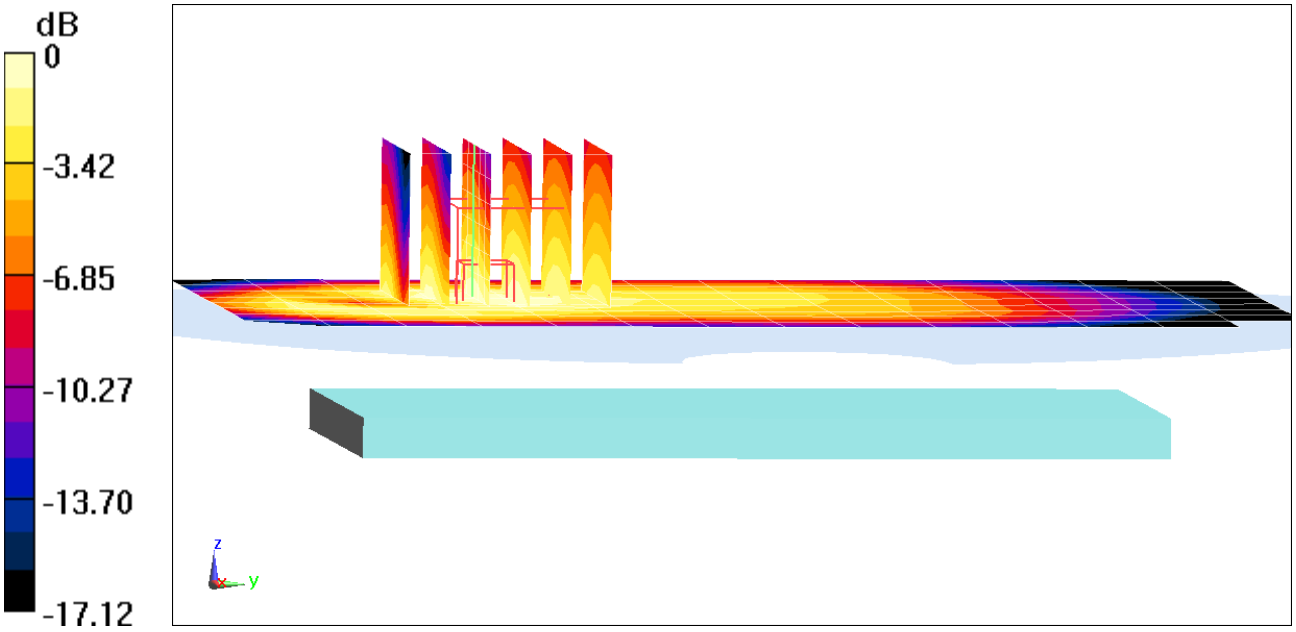
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.962 S/m; ε_r = 53.025; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-10-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GSM 850, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.95 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.387 W/kg
SAR(1 g) = 0.280 W/kg



0 dB = 0.317 W/kg = -4.99 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

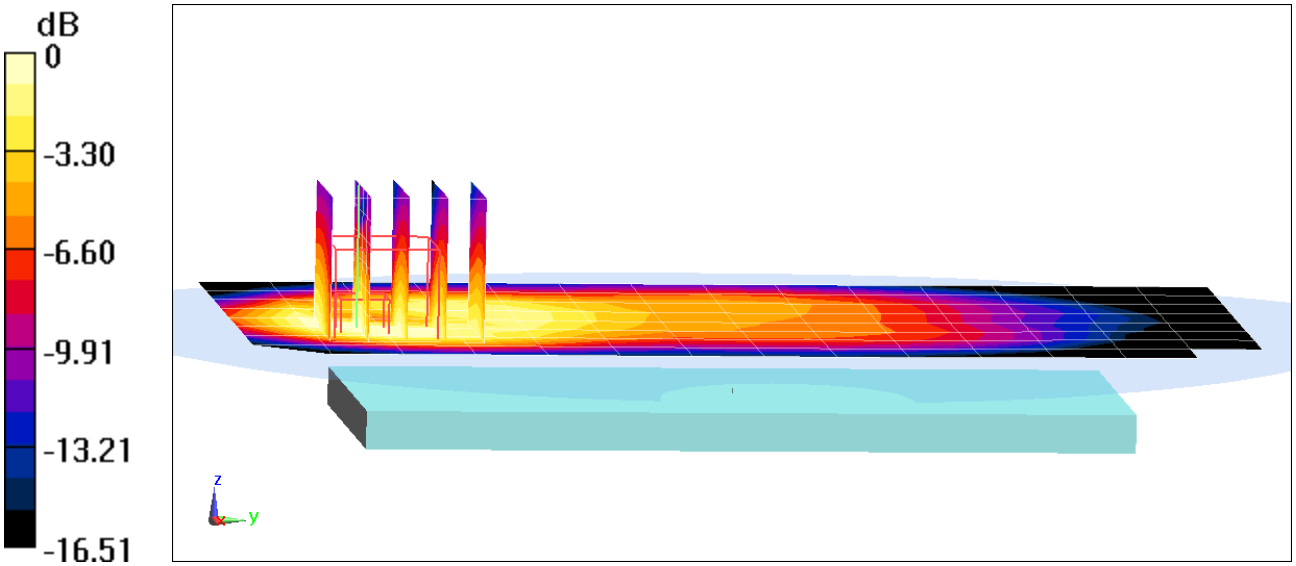
Communication System: UID 0, _GSM GPRS; 3 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.76
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.962 S/m; ε_r = 53.025; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-10-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 3 Tx Slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.93 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.827 W/kg
SAR(1 g) = 0.507 W/kg



0 dB = 0.601 W/kg = -2.21 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

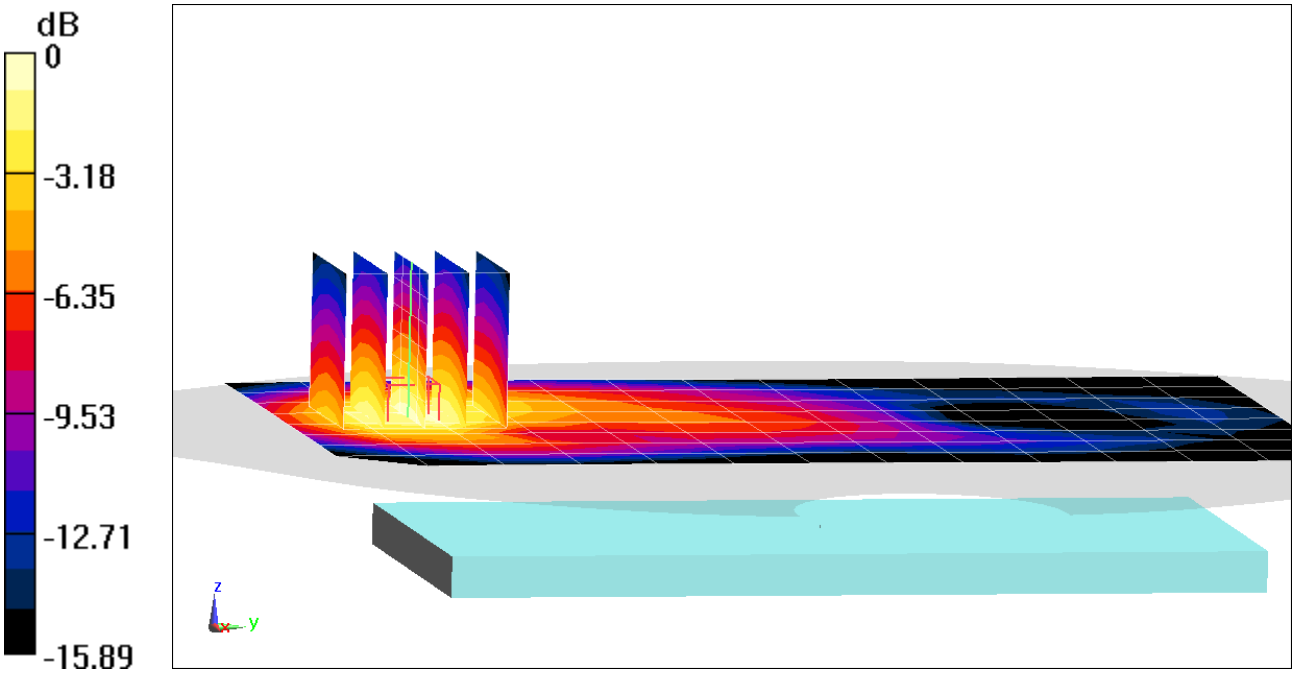
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.539 S/m; ε_r = 53.226; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GSM 1900, Body SAR, Back side, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.26 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.281 W/kg
SAR(1 g) = 0.173 W/kg



0 dB = 0.210 W/kg = -6.78 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2296

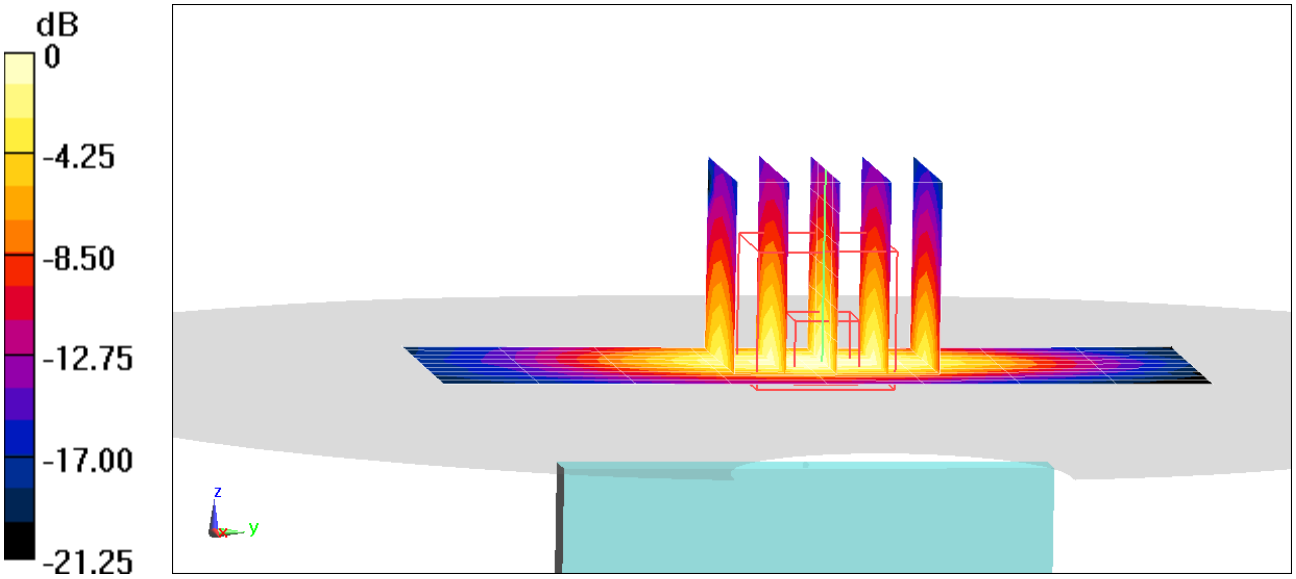
Communication System: UID 0, GSM GPRS; 3 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.76
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.539 S/m; ε_r = 53.226; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 1900, Body SAR, Bottom Edge, Mid.ch, 3 Tx Slots

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.26 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.530 W/kg
SAR(1 g) = 0.308 W/kg



0 dB = 0.385 W/kg = -4.15 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

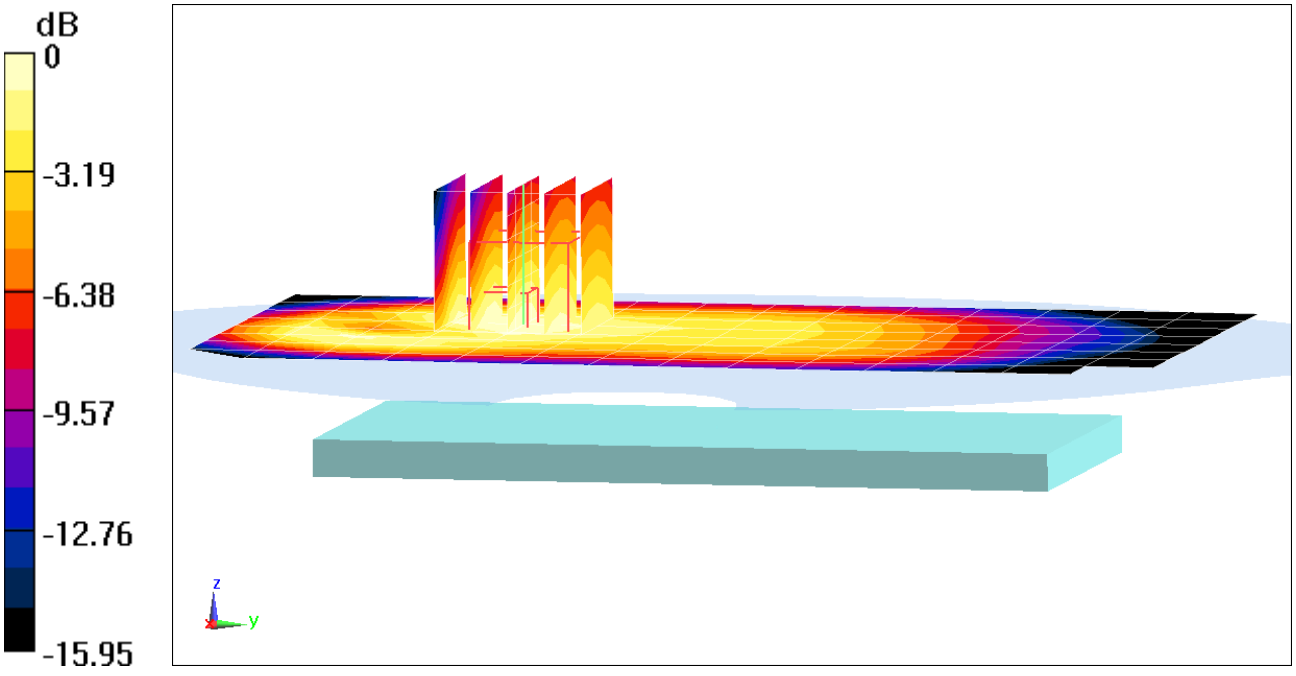
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.967 S/m; ε_r = 54.175; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-13-2018; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.85 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.426 W/kg
SAR(1 g) = 0.318 W/kg



0 dB = 0.350 W/kg = -4.56 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

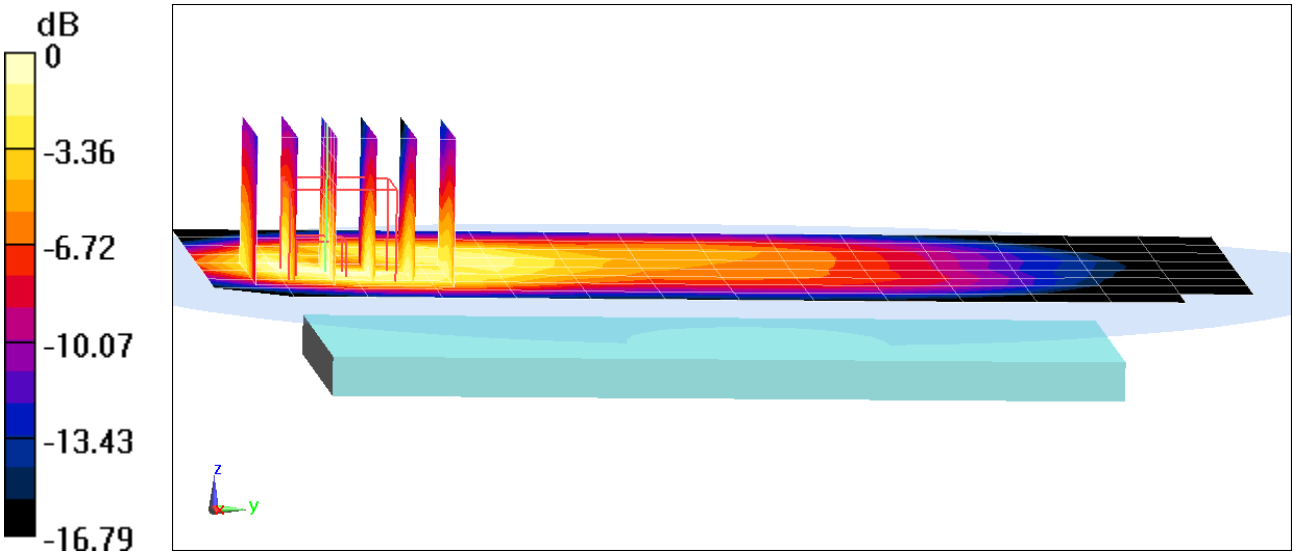
Communication System: UID 0, UMTS; Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 846.6 MHz; σ = 0.977 S/m; ε_r = 54.082; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-13-2018; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Body SAR, Back side, High ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.30 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.640 W/kg



0 dB = 0.754 W/kg = -1.23 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

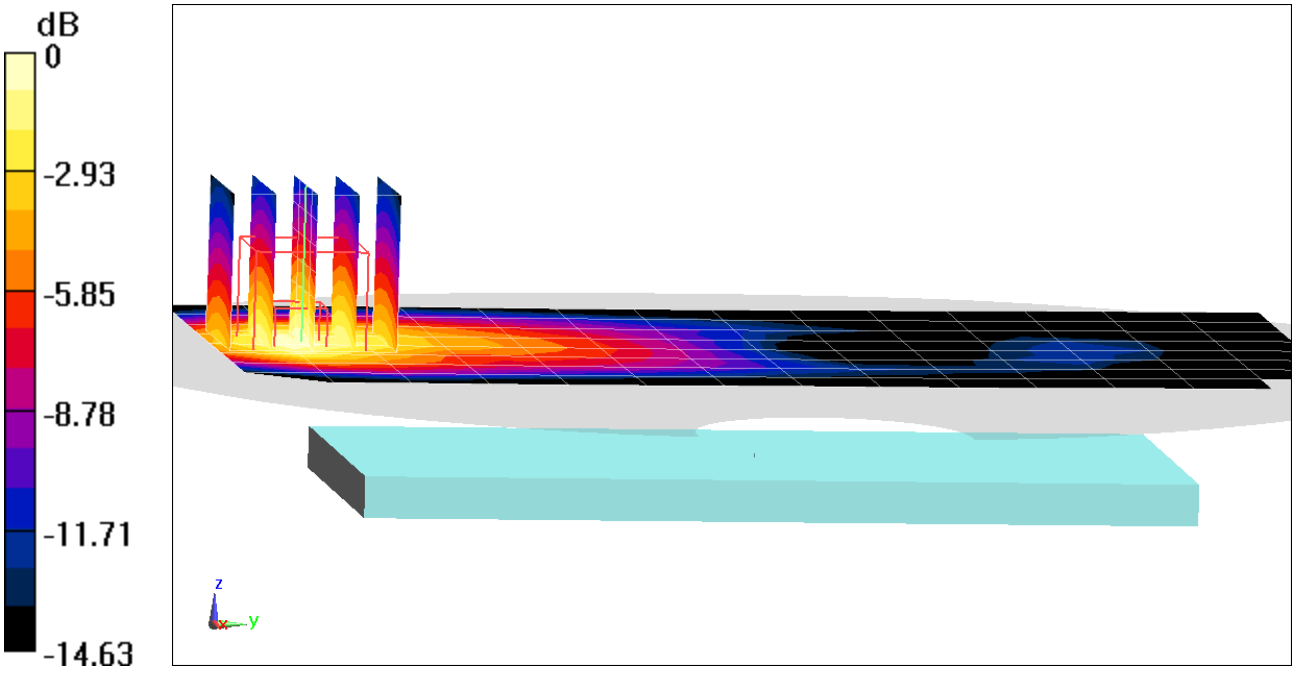
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.472 S/m; ε_r = 52.726; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-11-2018; Ambient Temp: 22.0°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3287; ConvF(5.19, 5.19, 5.19); Calibrated: 9/18/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 6/21/2017
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.32 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.669 W/kg
SAR(1 g) = 0.436 W/kg



0 dB = 0.521 W/kg = -2.83 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2296

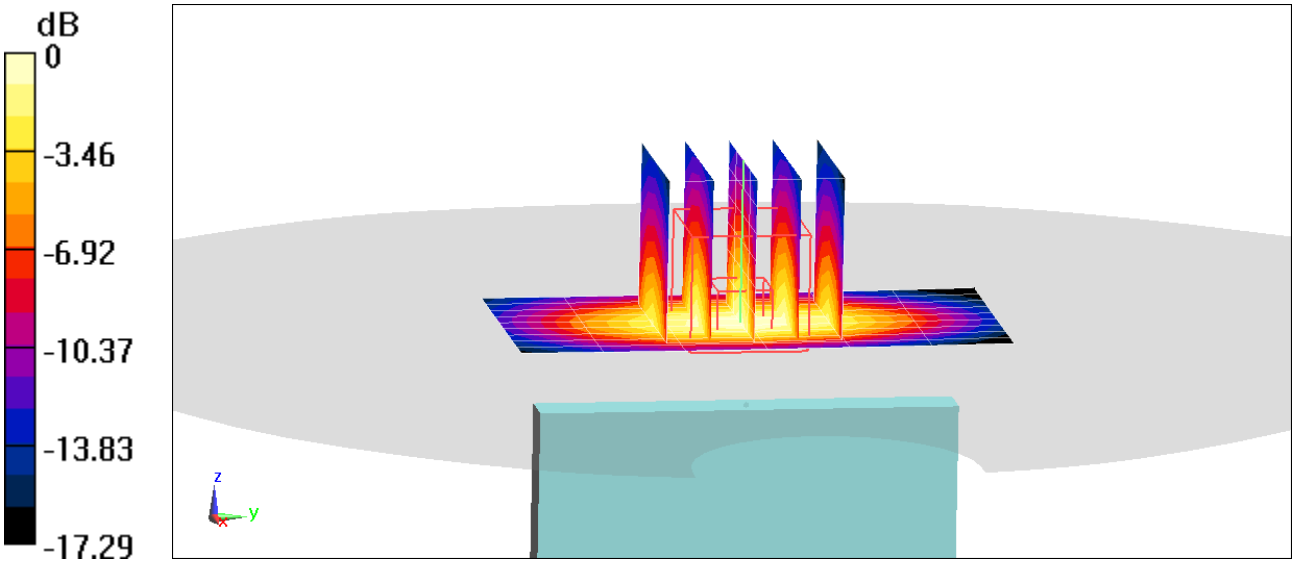
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.482 S/m; ε_r = 52.115; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-09-2018; Ambient Temp: 23.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3287; ConvF(5.19, 5.19, 5.19); Calibrated: 9/18/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 6/21/2017
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Body SAR, Bottom Edge, Mid.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.76 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.997 W/kg
SAR(1 g) = 0.602 W/kg



0 dB = 0.744 W/kg = -1.28 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

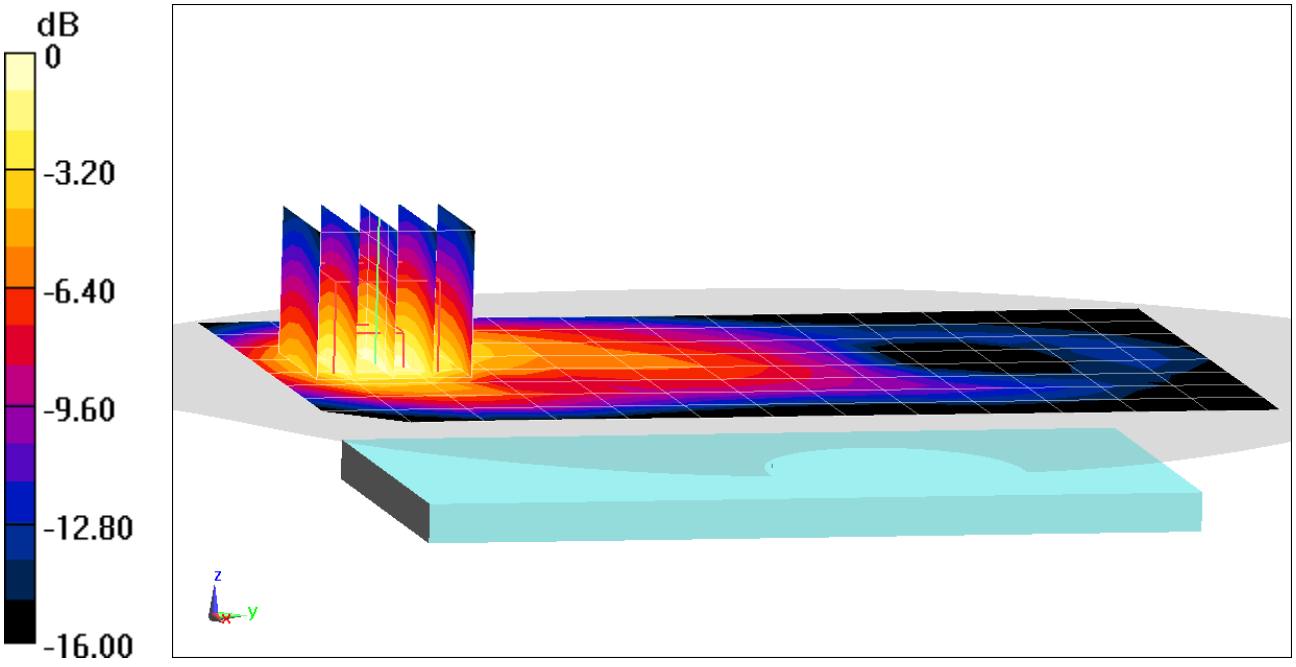
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.539 S/m; ε_r = 53.226; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Body SAR, Back side, Mid.ch

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.04 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.634 W/kg
SAR(1 g) = 0.394 W/kg



0 dB = 0.475 W/kg = -3.23 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2296

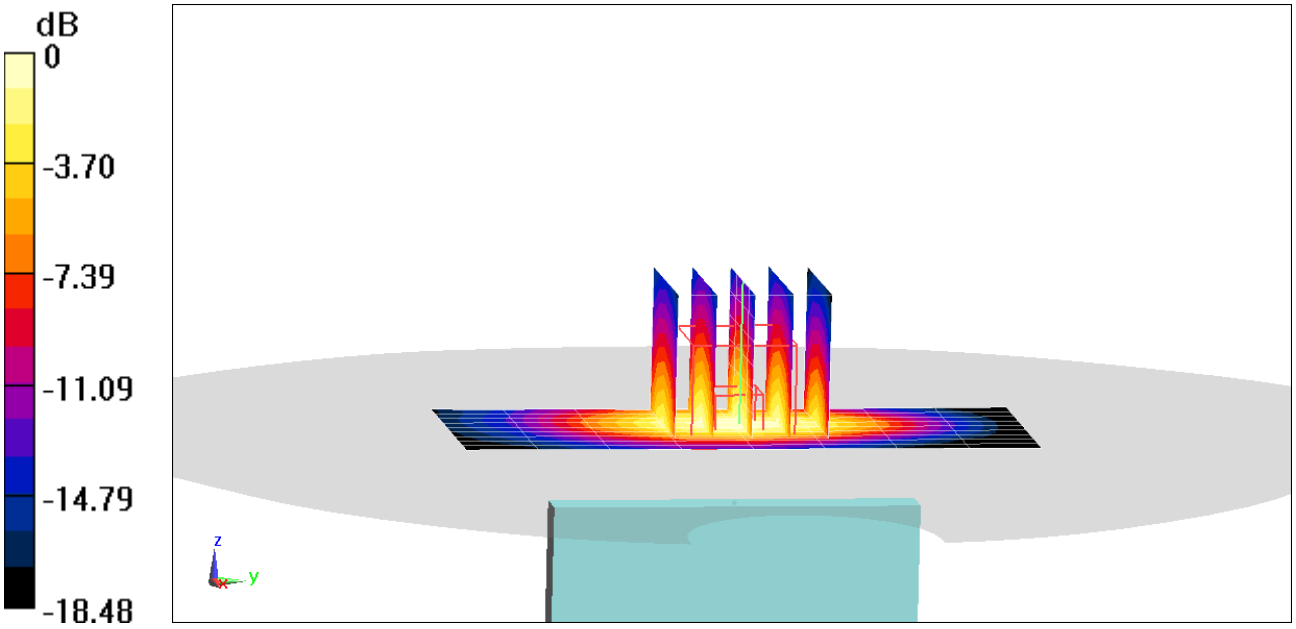
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.539 S/m; ε_r = 53.226; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Body SAR, Bottom Edge, Mid.ch

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.06 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.827 W/kg
SAR(1 g) = 0.479 W/kg



0 dB = 0.599 W/kg = -2.23 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

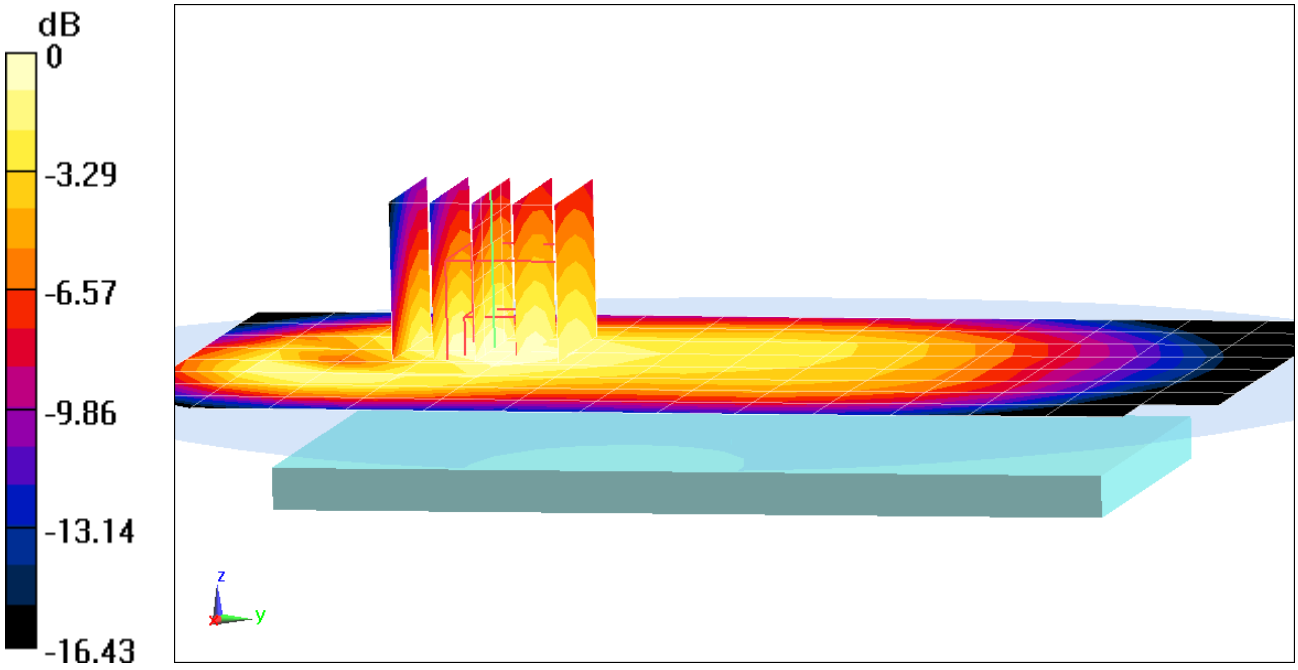
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.967 S/m; ε_r = 54.176; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-13-2018; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. CDMA, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.05 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.685 W/kg
SAR(1 g) = 0.507 W/kg



0 dB = 0.575 W/kg = -2.40 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

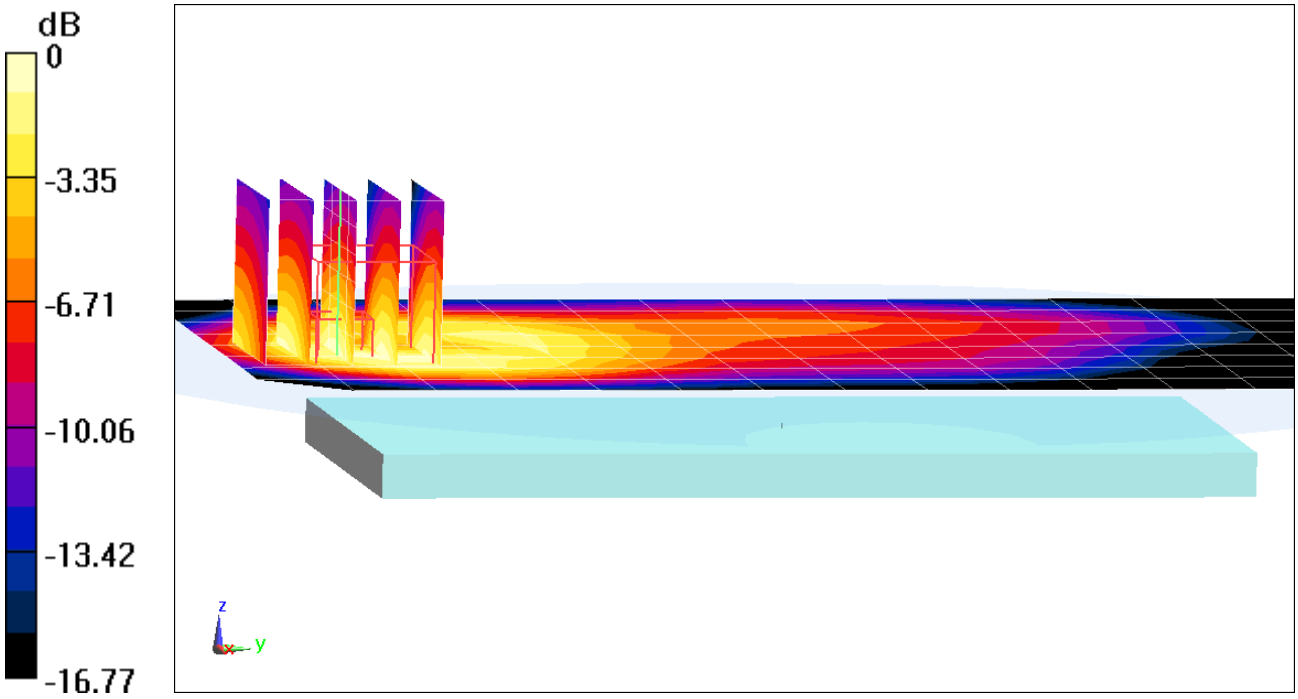
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 1.003 S/m; ε_r = 53.978; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-13-2018; Ambient Temp: 22.2°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3287; ConvF(6.56, 6.56, 6.56); Calibrated: 9/18/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 6/21/2017
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. EVDO, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.98 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 0.943 W/kg



0 dB = 1.11 W/kg = 0.45 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

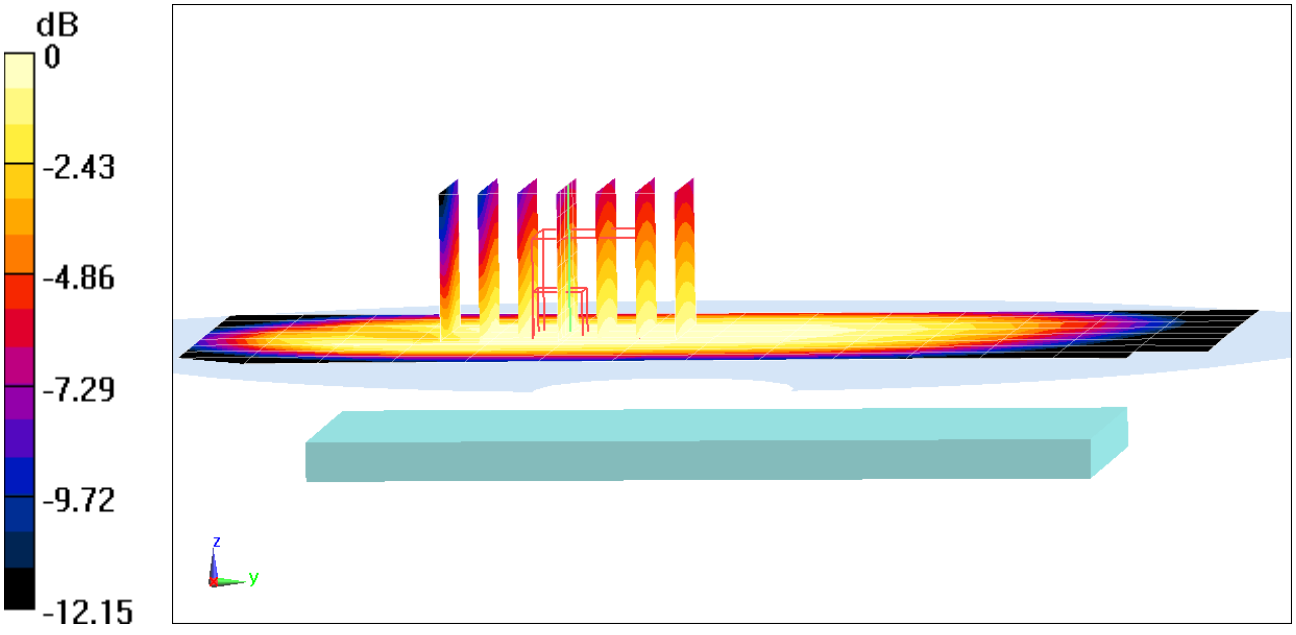
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 MHz Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.937 S/m; ε_r = 54.418; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 5-14-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7410; ConvF(10.19, 10.19, 10.19); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 12, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.41 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.215 W/kg
SAR(1 g) = 0.163 W/kg



0 dB = 0.196 W/kg = -7.08 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: N0185

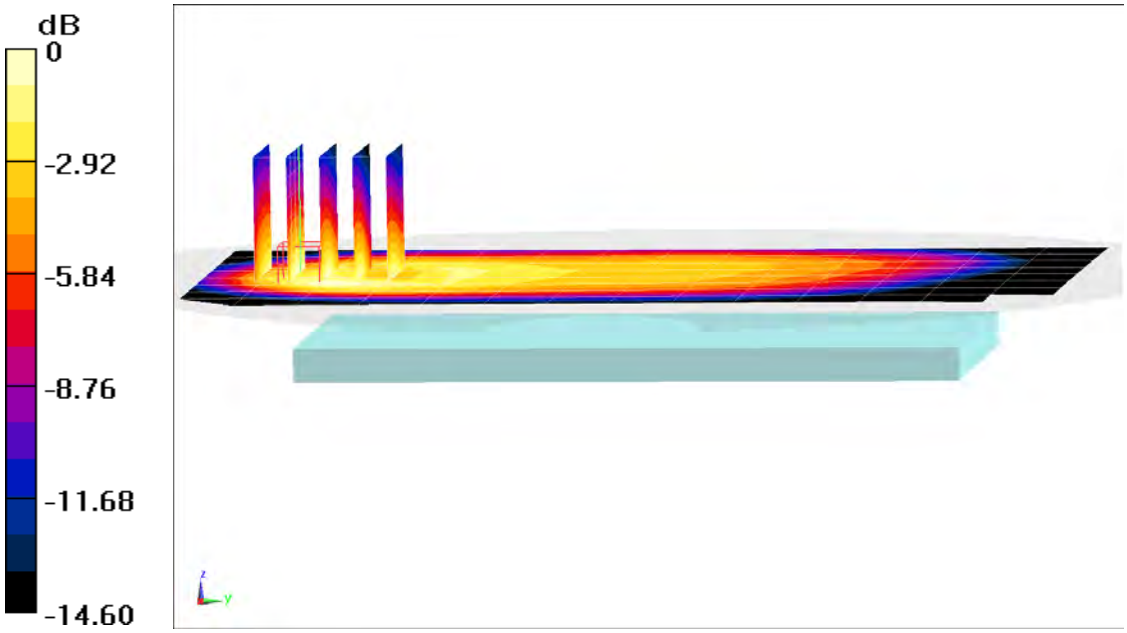
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.916 S/m; ε_r = 54.741; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-04-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.0°C

Probe: ES3DV3 - SN3347; ConvF(6.59, 6.59, 6.59); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 12, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.61 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.569 W/kg
SAR(1 g) = 0.331 W/kg



0 dB = 0.402 W/kg = -3.96 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

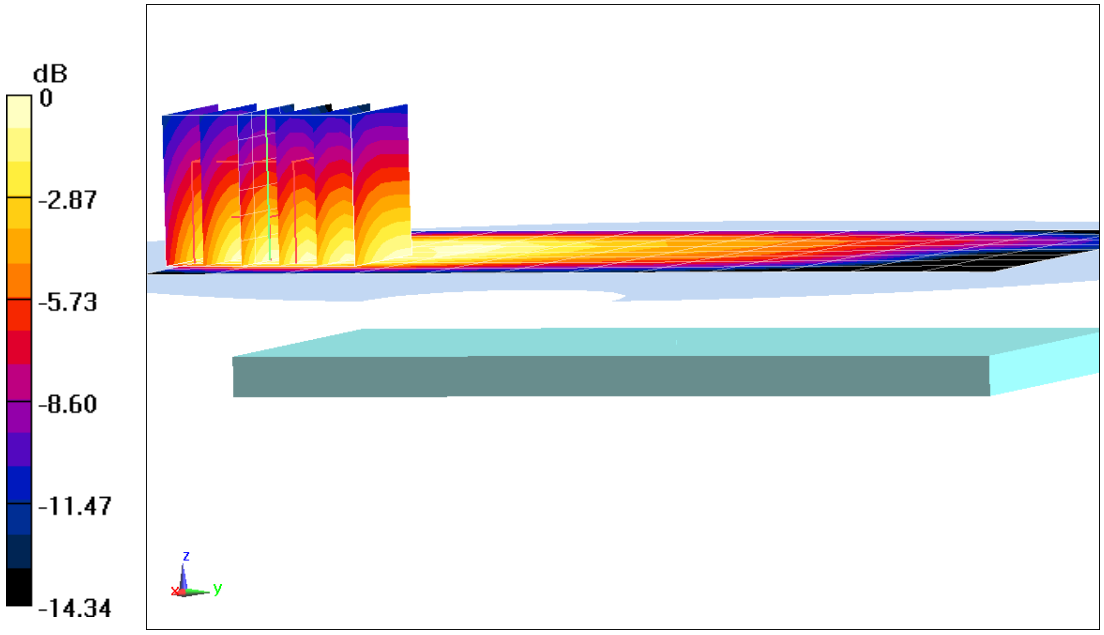
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.977 S/m; ε_r = 54.088; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 5-11-2018; Ambient Temp: 20.9°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7410; ConvF(10.19, 10.19, 10.19); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 13, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.69 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.427 W/kg
SAR(1 g) = 0.267 W/kg



0 dB = 0.367 W/kg = -4.35 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

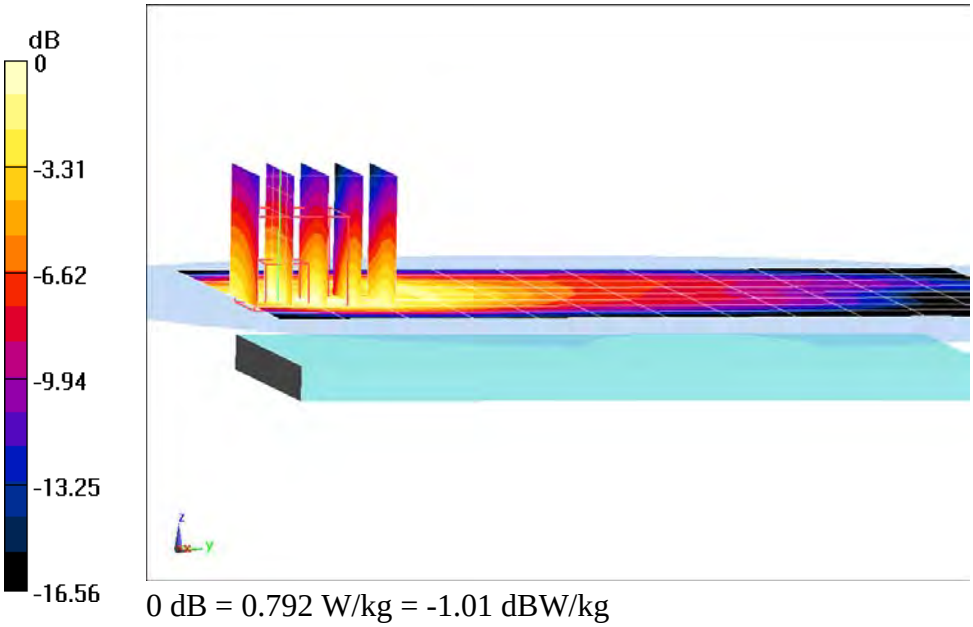
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.977 S/m; ε_r = 54.088; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 5-11-2018; Ambient Temp: 20.9°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7410; ConvF(10.19, 10.19, 10.19); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 13, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.27 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.947 W/kg
SAR(1 g) = 0.554 W/kg



0 dB = 0.792 W/kg = -1.01 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

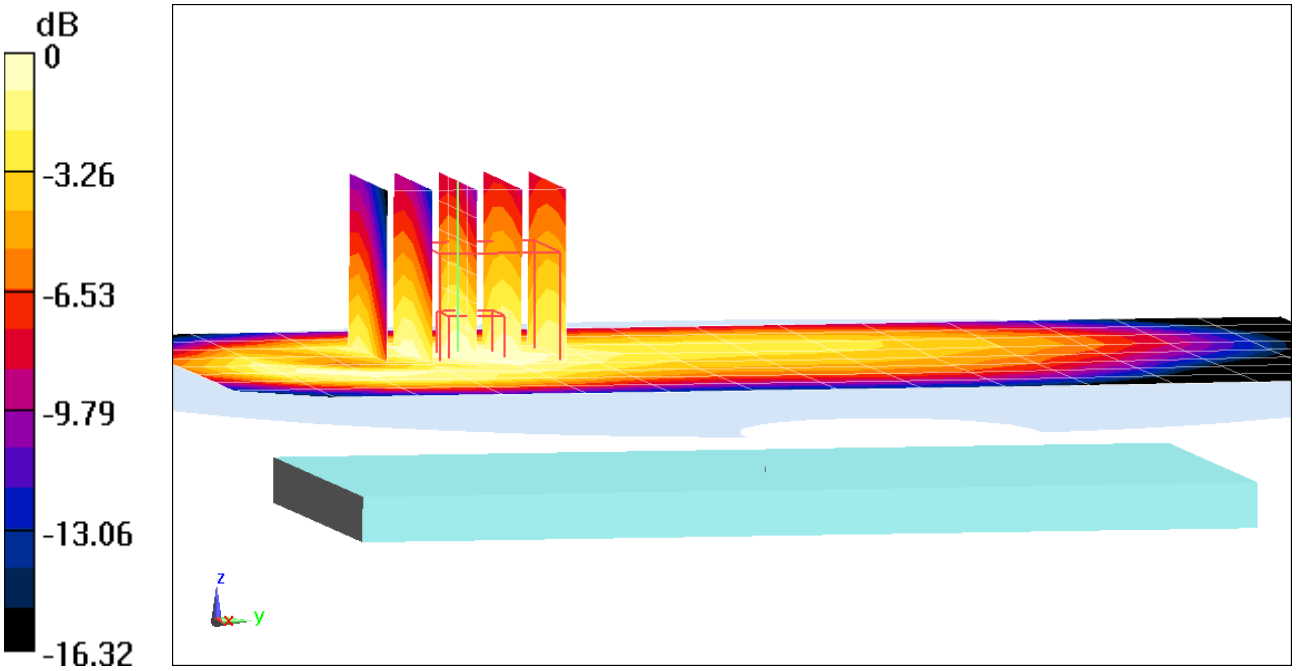
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.961 S/m; ε_r = 53.026; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-10-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 5 (Cell.), Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.86 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.423 W/kg
SAR(1 g) = 0.311 W/kg



0 dB = 0.352 W/kg = -4.53 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

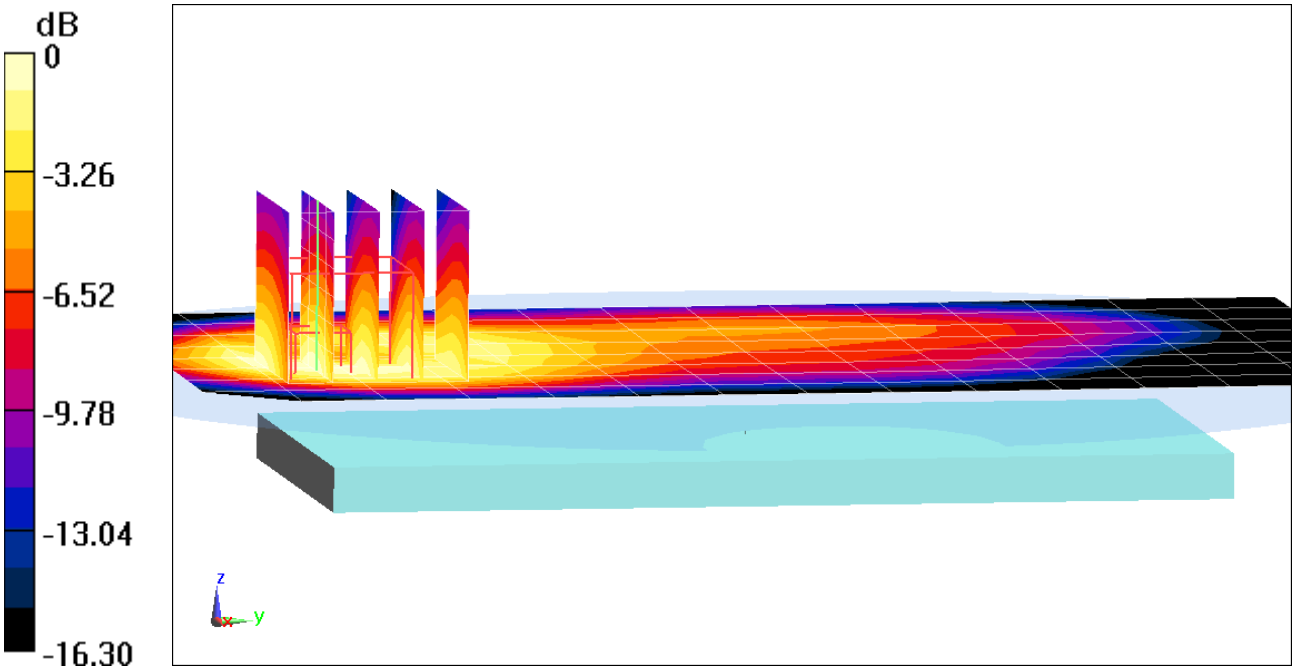
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.961 S/m; ε_r = 53.026; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-10-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 5 (Cell.), Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.44 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.941 W/kg
SAR(1 g) = 0.579 W/kg



0 dB = 0.671 W/kg = -1.73 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

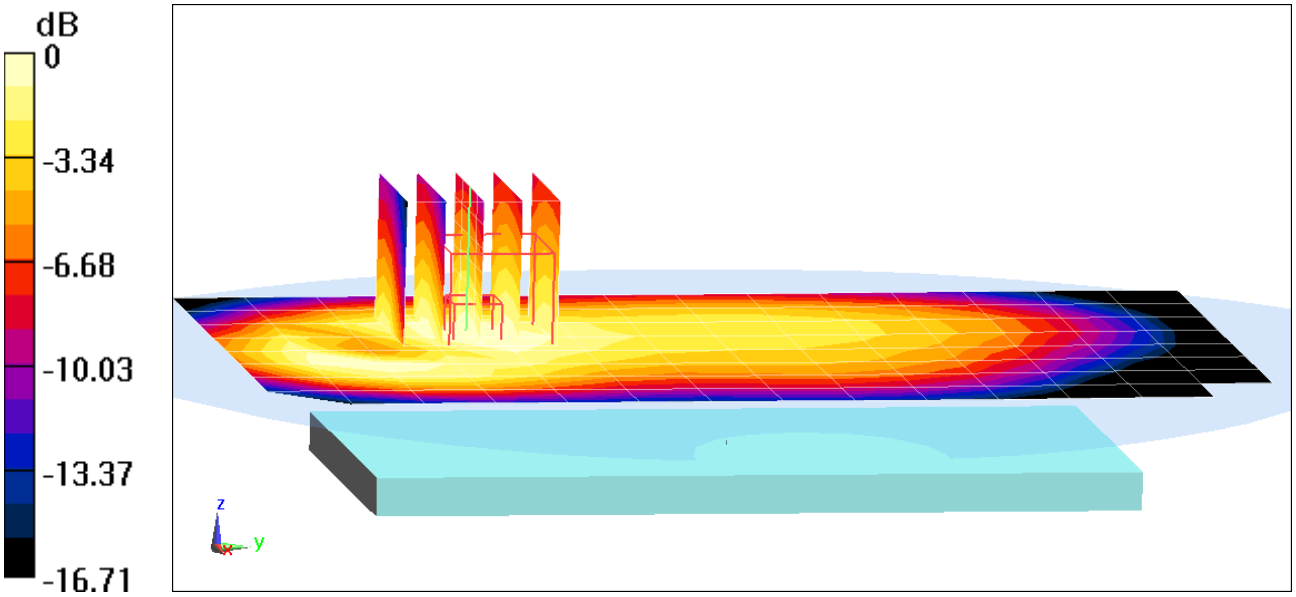
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.956 S/m; ε_r = 53.072; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-10-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 26 (Cell.), Body SAR, Back side, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.17 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.349 W/kg
SAR(1 g) = 0.258 W/kg



0 dB = 0.290 W/kg = -5.38 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2211

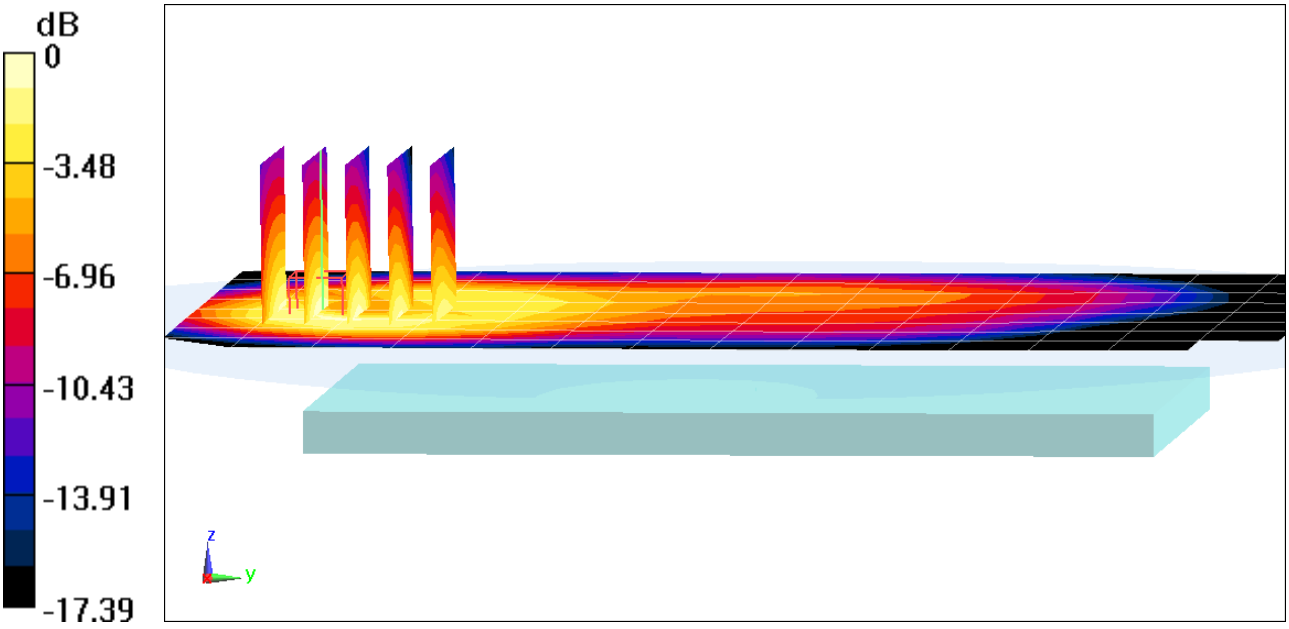
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.972 S/m; ε_r = 54.467; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-26-2018; Ambient Temp: 20.1°C; Tissue Temp: 20.0°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 26 (Cell.), Body SAR, Back side, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.21 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.989 W/kg
SAR(1 g) = 0.585 W/kg



0 dB = 0.706 W/kg = -1.51 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2395

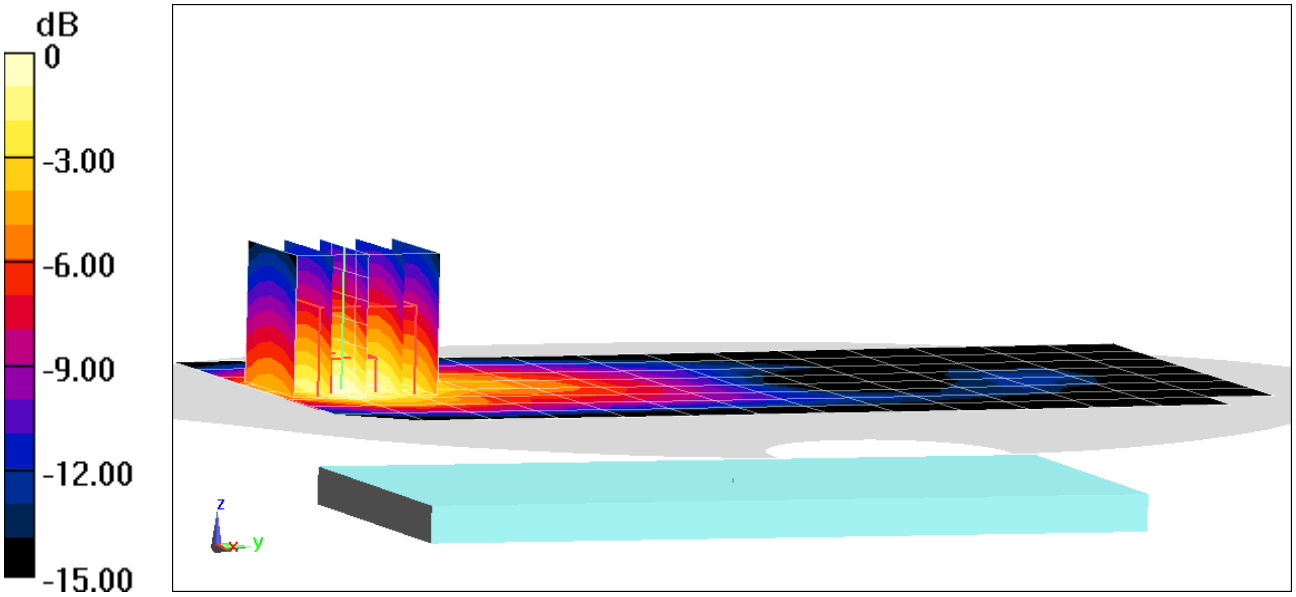
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.488 S/m; ε_r = 52.687; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-11-2018; Ambient Temp: 22.0°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3287; ConvF(5.19, 5.19, 5.19); Calibrated: 9/18/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 6/21/2017
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.59 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.665 W/kg



0 dB = 0.791 W/kg = -1.02 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2296

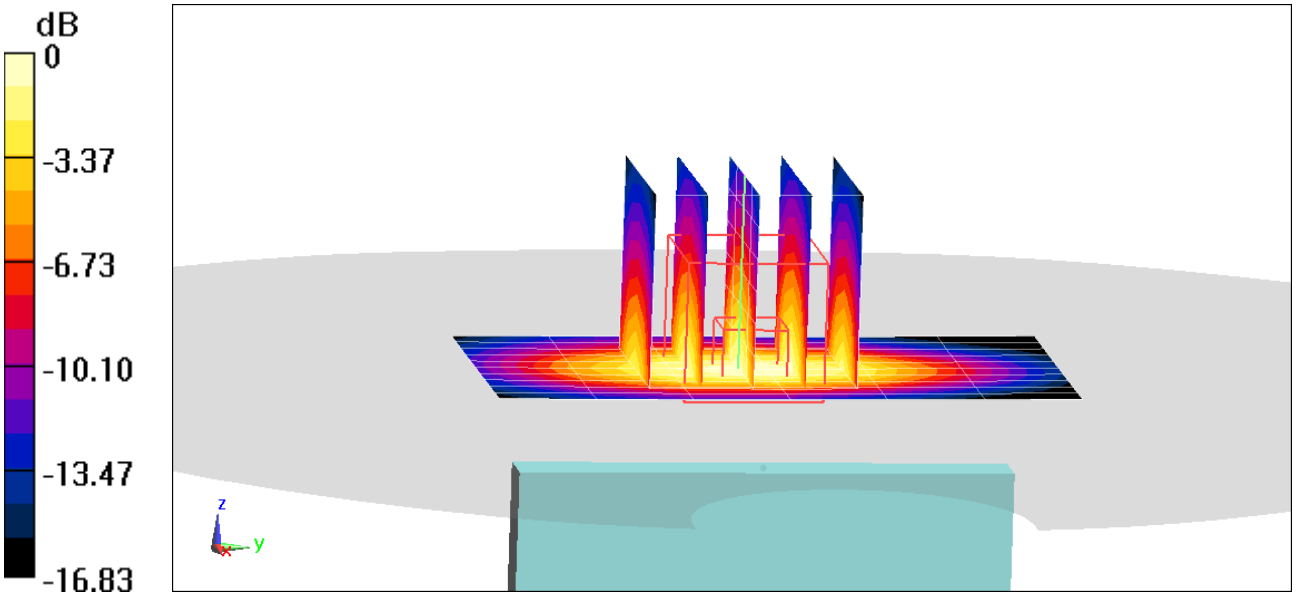
Communication System: UID 0, _LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.497 S/m; ε_r = 52.063; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-09-2018; Ambient Temp: 23.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3287; ConvF(5.19, 5.19, 5.19); Calibrated: 9/18/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 6/21/2017
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (11x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.59 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.657 W/kg



0 dB = 0.808 W/kg = -0.93 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2296

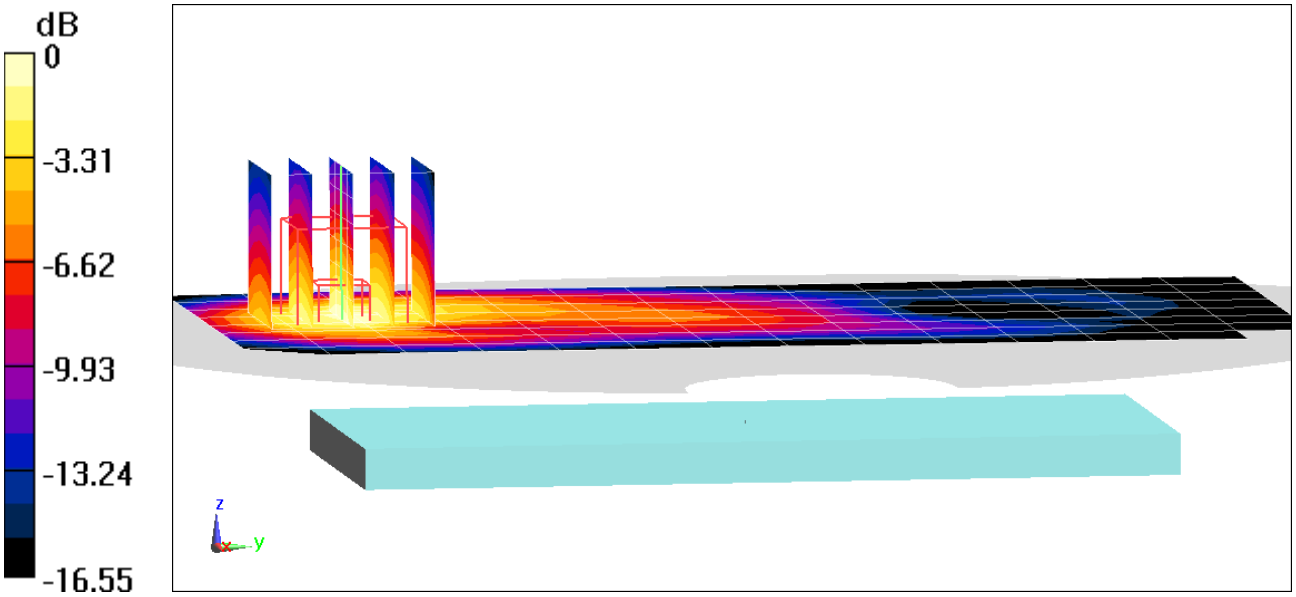
Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.562 S/m; ε_r = 53.149; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode; LTE Band 2 (PCS), Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.71 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.691 W/kg
SAR(1 g) = 0.430 W/kg



0 dB = 0.517 W/kg = -2.87 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2296

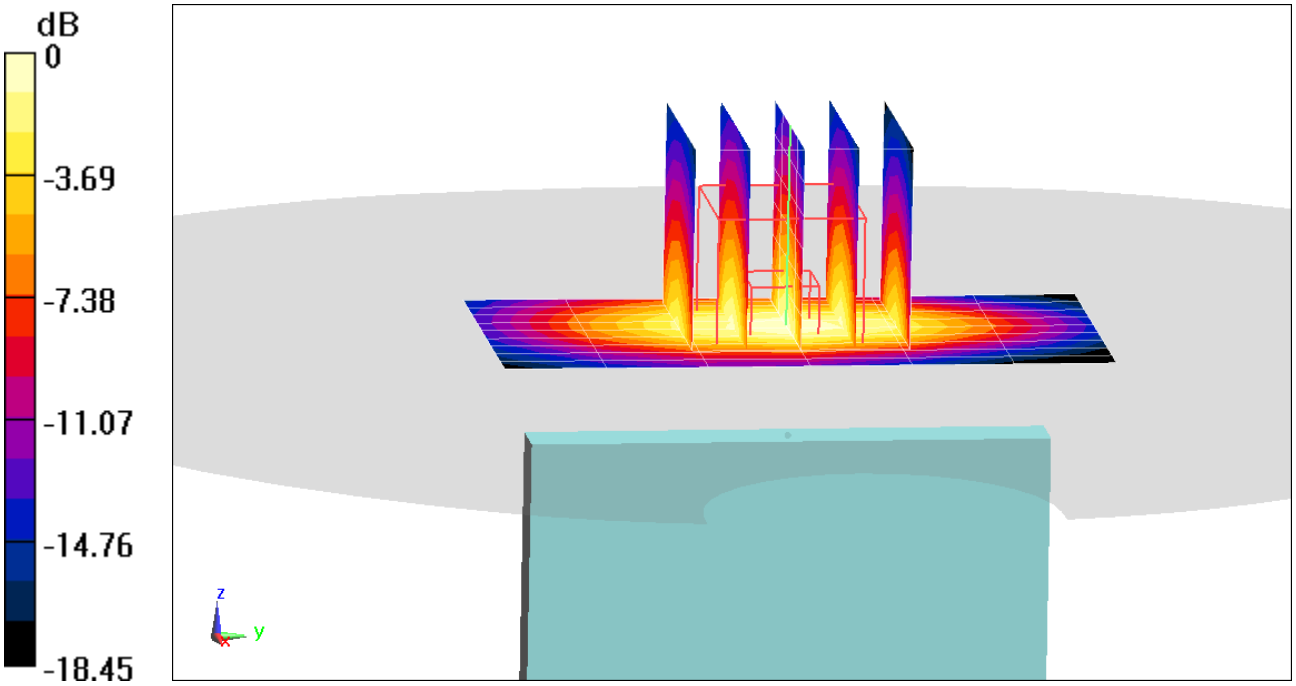
Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.562 S/m; ε_r = 53.149; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 2 (PCS), Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 50 RB, 25 RB Offset

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.18 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.599 W/kg



0 dB = 0.749 W/kg = -1.26 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2296

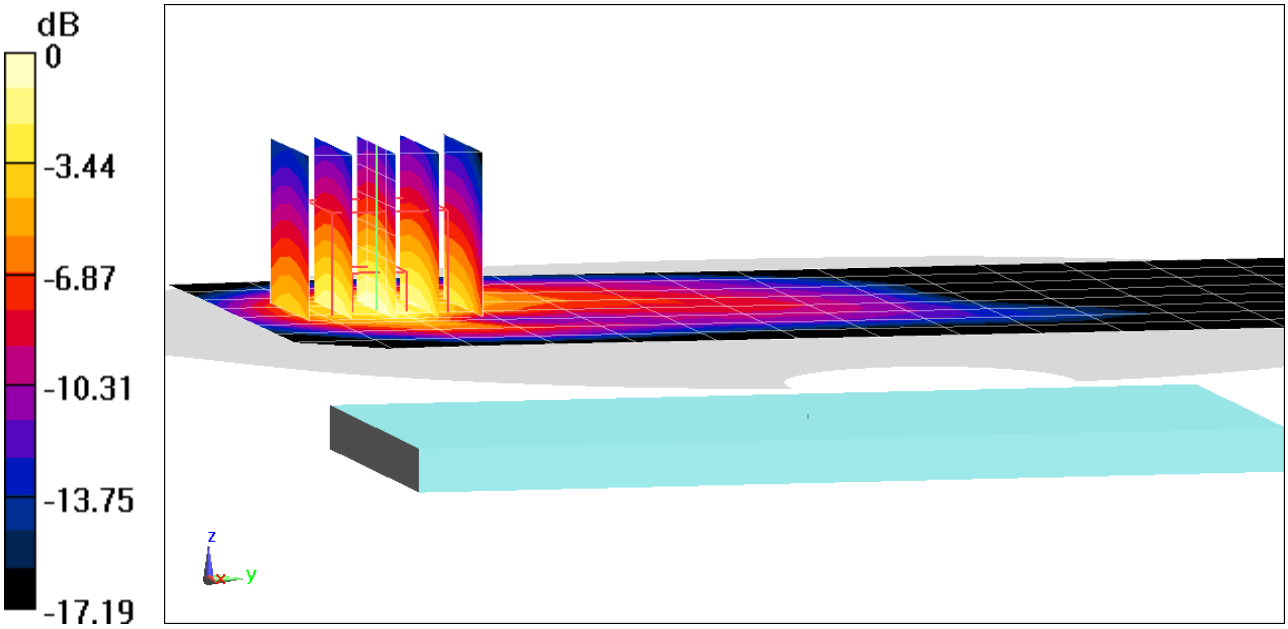
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.568 S/m; ε_r = 53.129; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.34 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.591 W/kg
SAR(1 g) = 0.367 W/kg



0 dB = 0.441 W/kg = -3.56 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2296

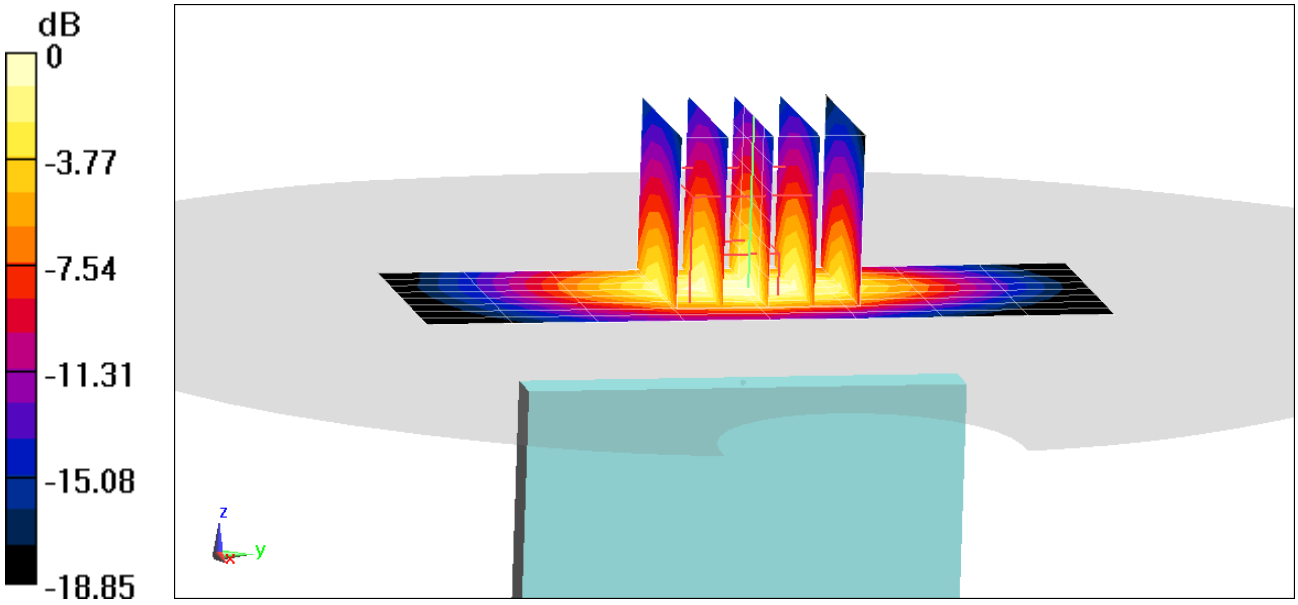
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.568 S/m; ε_r = 53.129; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset

Area Scan (9x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.54 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.625 W/kg



0 dB = 0.778 W/kg = -1.09 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2393

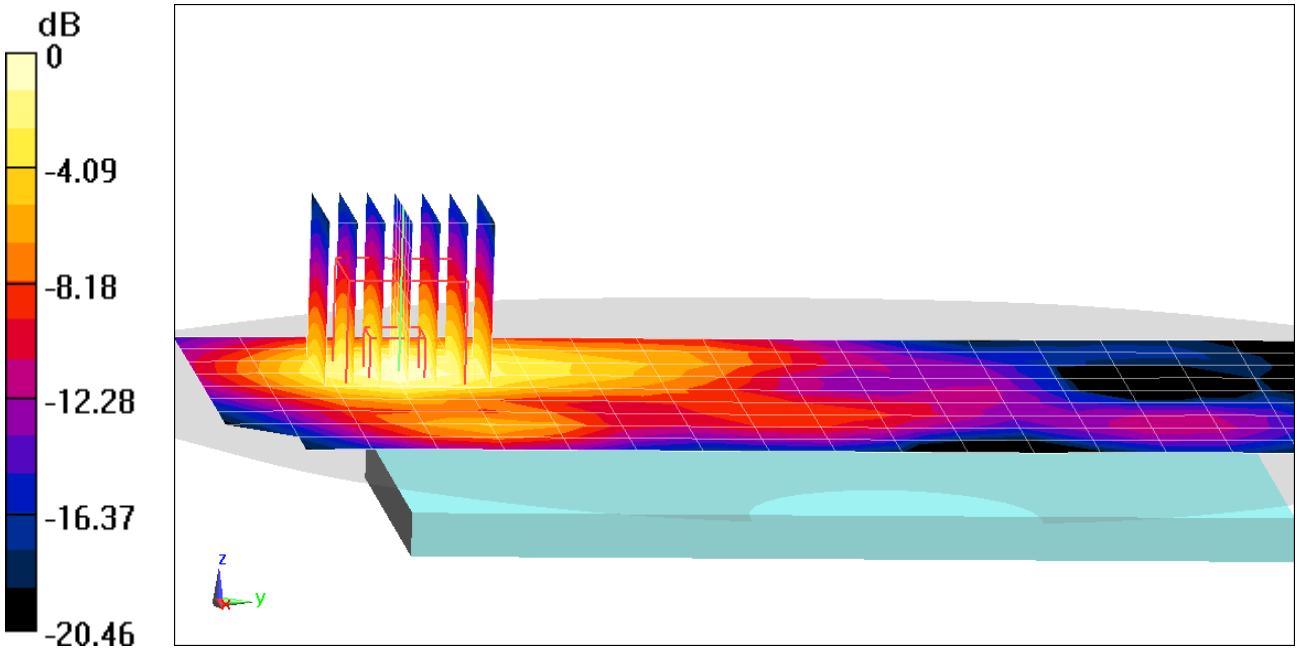
Communication System: UID 0, LTE Band 41 (Class 2); Frequency: 2506 MHz; Duty Cycle: 1:2.31
Medium: 2450 Body Medium parameters used (interpolated):
f = 2506 MHz; σ = 2.089 S/m; ε_r = 51.169; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-07-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 41 (PC2), Body SAR, Back side, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

Area Scan (10x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.69 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.633 W/kg
SAR(1 g) = 0.344 W/kg



0 dB = 0.427 W/kg = -3.70 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2296

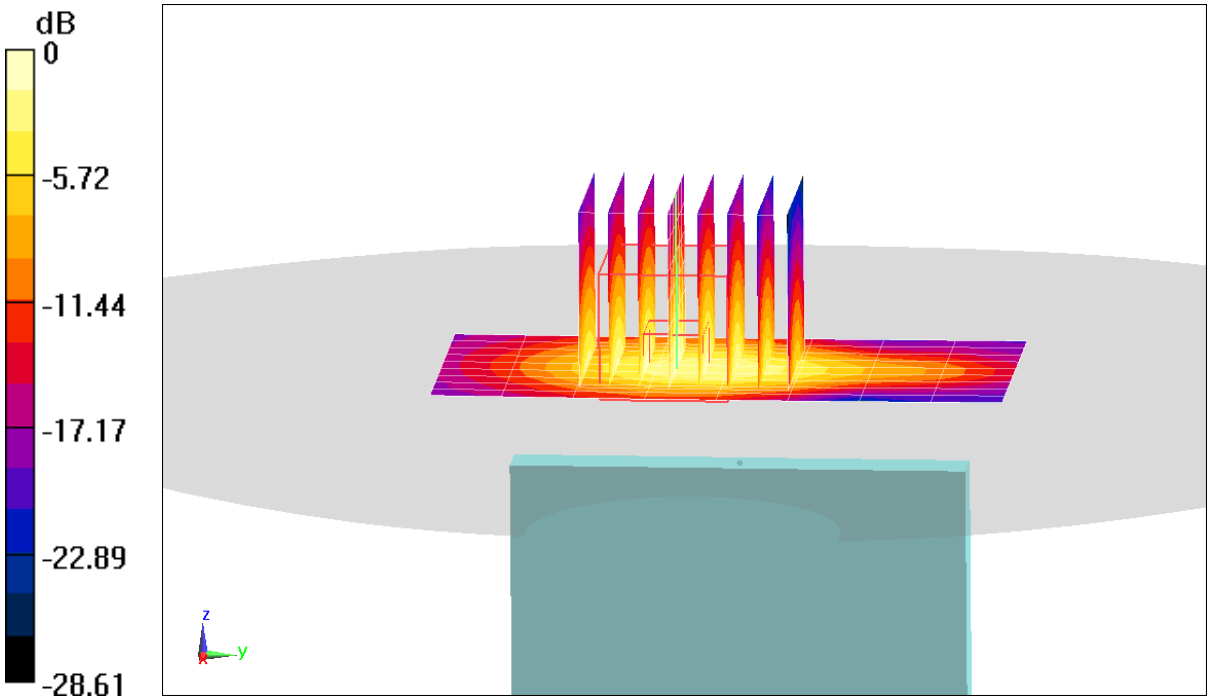
Communication System: UID 0, _LTE Band 41; Frequency: 2593 MHz; Duty Cycle: 1:1.58
Medium: 2450 Body Medium parameters used (interpolated):
$f = 2593$ MHz; $\sigma = 2.196$ S/m; $\varepsilon_r = 50.904$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 41 (PC3), Body SAR, Bottom Edge, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.11 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.96 W/kg
SAR(1 g) = 0.983 W/kg



0 dB = 1.27 W/kg = 1.04 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2145

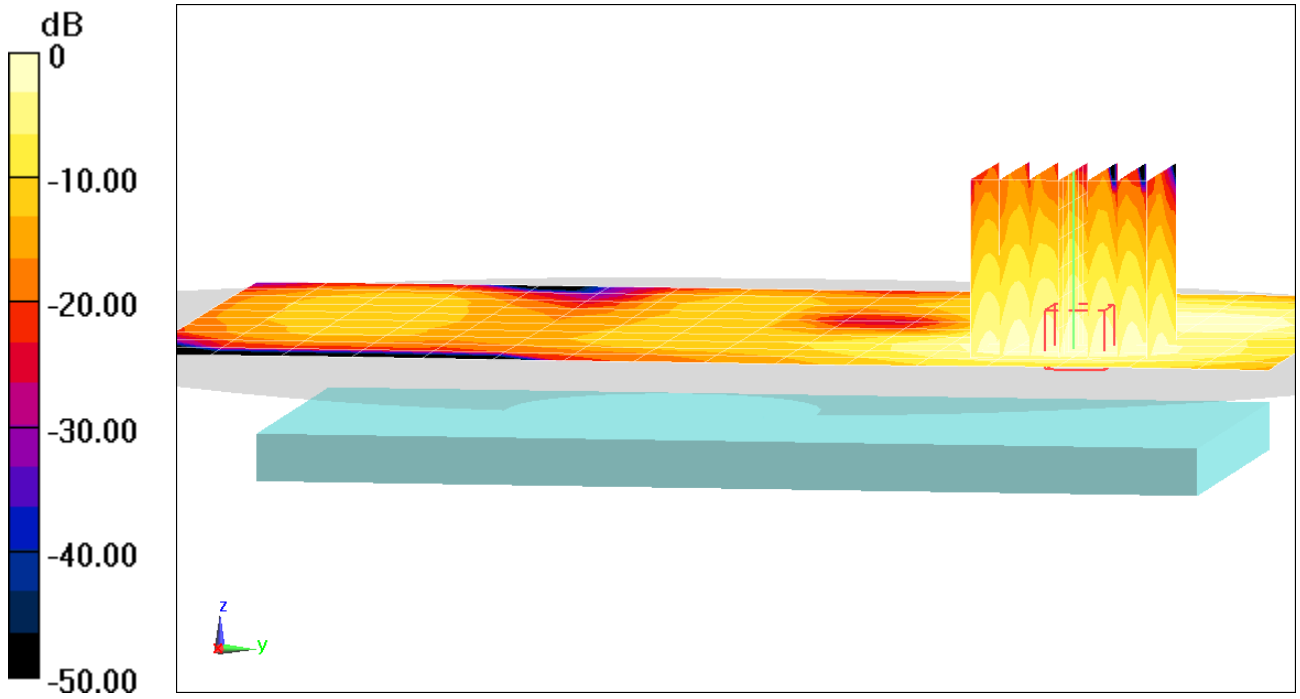
Communication System: UID 0, _IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.011 S/m; ε_r = 51.368; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-07-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR, Antenna 1, Ch 6, 1 Mbps, Back Side

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.237 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.174 W/kg
SAR(1 g) = 0.092 W/kg



0 dB = 0.115 W/kg = -9.39 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2145

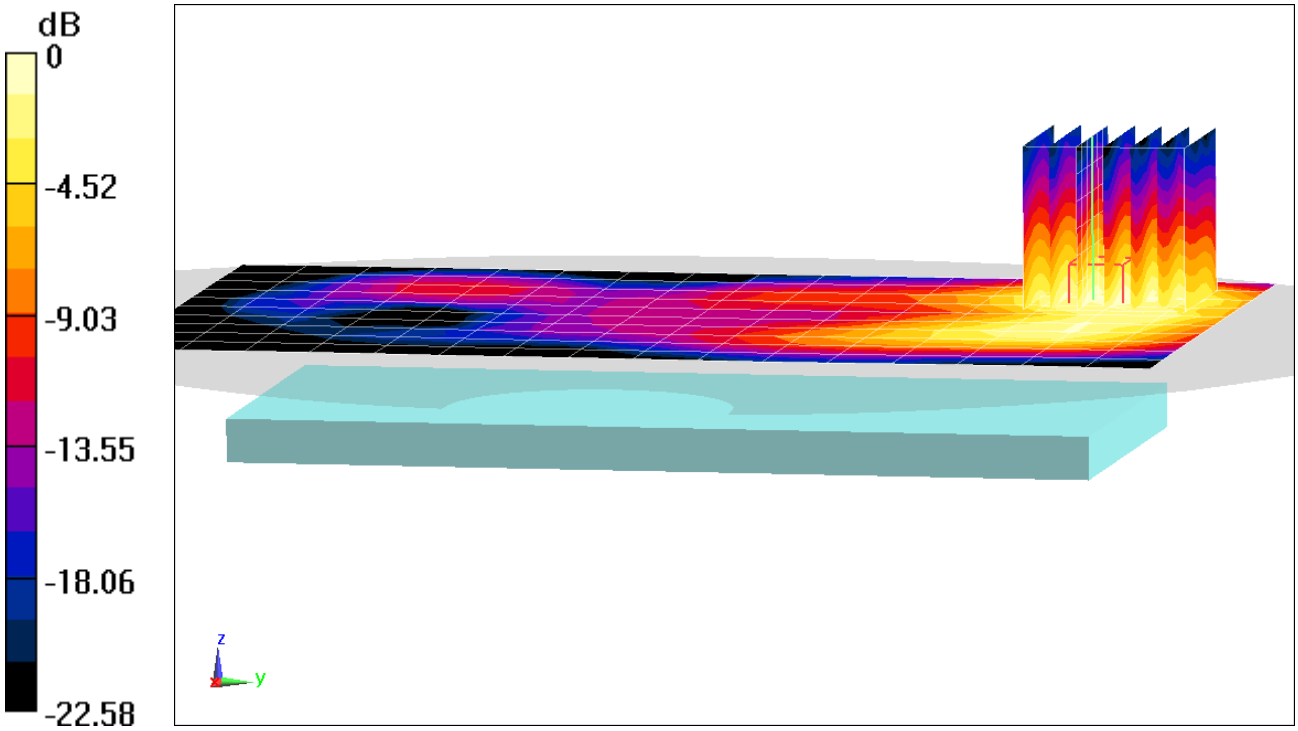
Communication System: UID 0, _IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2437 MHz; σ = 2.011 S/m; ε_r = 51.368; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth, Body SAR, Antenna 2, Ch 6, 1 Mbps, Front Side

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.754 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.490 W/kg
SAR(1 g) = 0.238 W/kg



0 dB = 0.307 W/kg = -5.13 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2145

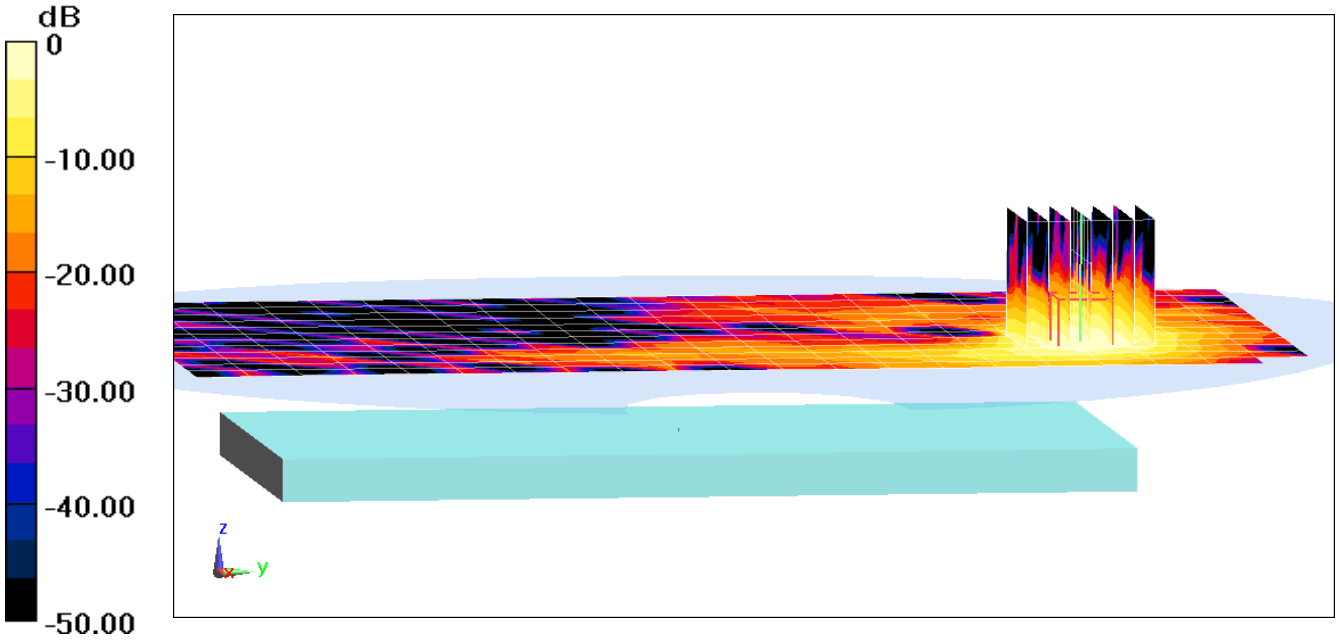
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5260 MHz; σ = 5.532 S/m; ε_r = 47.965; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 04-29-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7308; ConvF(4.84, 4.84, 4.84); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, UNII-2A, 20 MHz Bandwidth,
Body SAR, Antenna 2, Ch 52, 6 Mbps, Back Side

Area Scan (13x11x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 7.242 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.268 W/kg



0 dB = 0.610 W/kg = -2.15 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2145

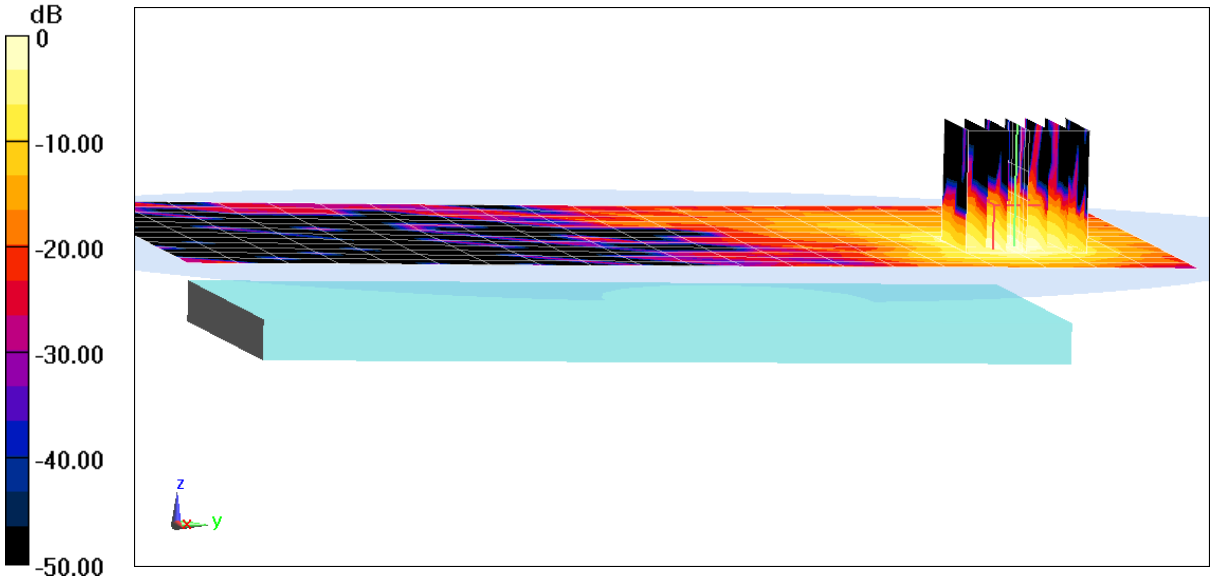
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5785 MHz; σ = 6.245 S/m; ε_r = 47.052; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-29-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, UNII-3, 20 MHz Bandwidth, Body SAR, Antenna 2, Ch 157, 6 Mbps, Back Side

Area Scan (11x11x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 7.467 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.323 W/kg



0 dB = 0.834 W/kg = -0.79 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2145

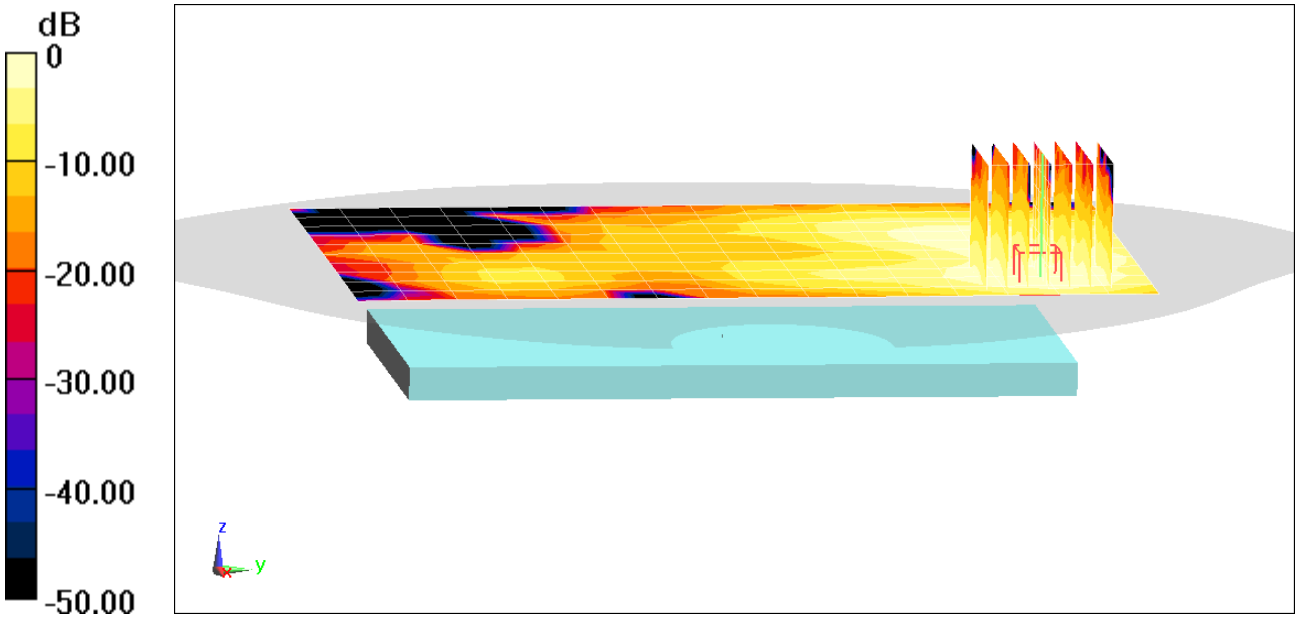
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Body Medium parameters used (interpolated):
f = 2480 MHz; σ = 2.059 S/m; ε_r = 51.246; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-07-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 78, 1 Mbps, Back Side

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.515 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.0740 W/kg
SAR(1 g) = 0.037 W/kg



0 dB = 0.0475 W/kg = -13.23 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2145

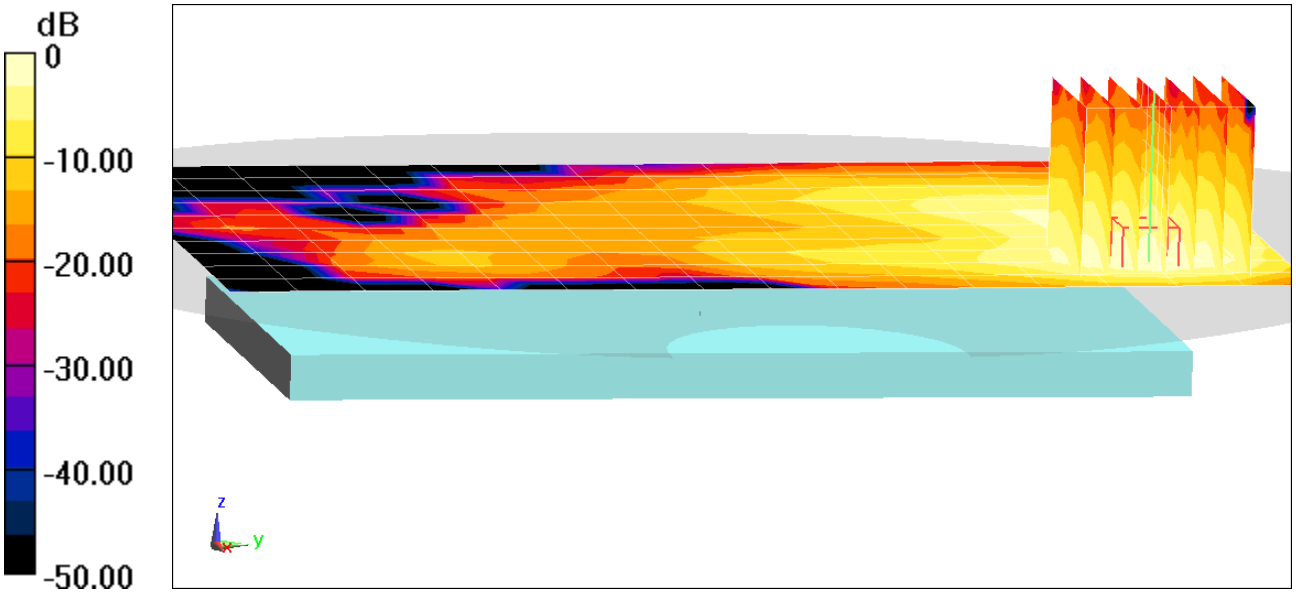
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Body Medium parameters used (interpolated):
f = 2480 MHz; σ = 2.059 S/m; ε_r = 51.246; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 78, 1 Mbps, Back Side

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.162 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.187 W/kg
SAR(1 g) = 0.090 W/kg



0 dB = 0.117 W/kg = -9.32 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2278

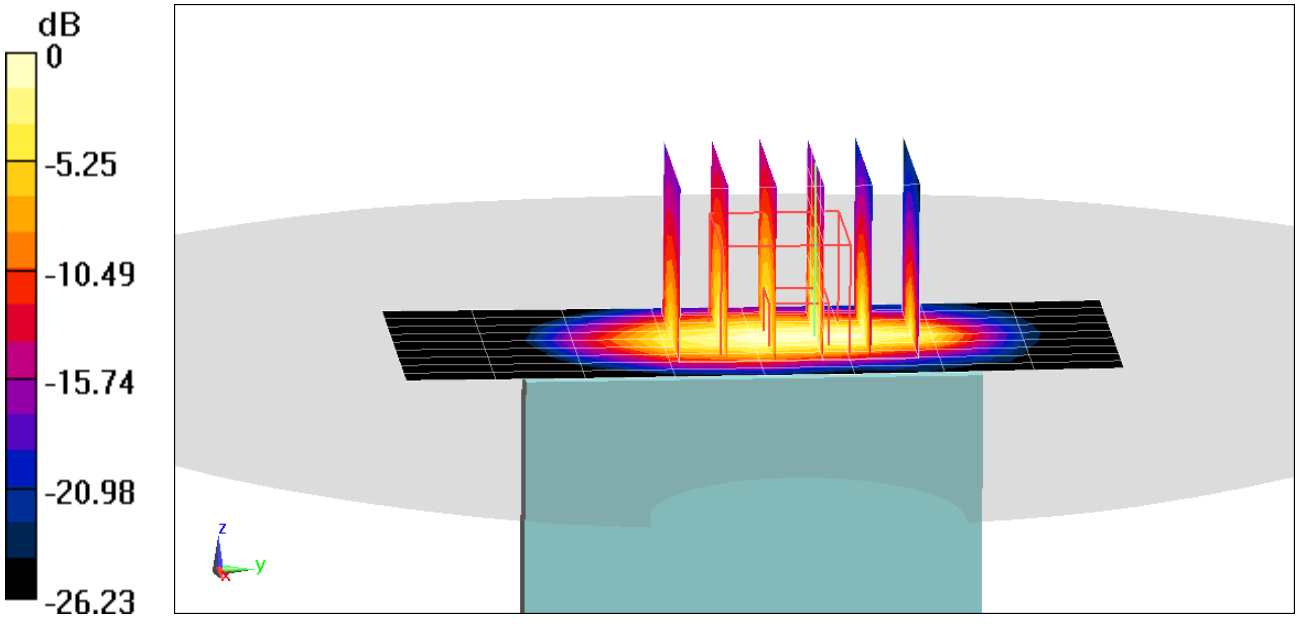
Communication System: UID 0, UMTS, Frequency: 1712.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1712.4 MHz; σ = 1.474 S/m; ε_r = 52.795; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 05-14-2018; Ambient Temp: 20.8°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3347; ConvF(5.17, 5.17, 5.17); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 left; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Phablet SAR, Bottom Edge, Low.ch

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 63.18 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 9.90 W/kg
SAR(10 g) = 2.21 W/kg



0 dB = 6.78 W/kg = 8.31 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2278

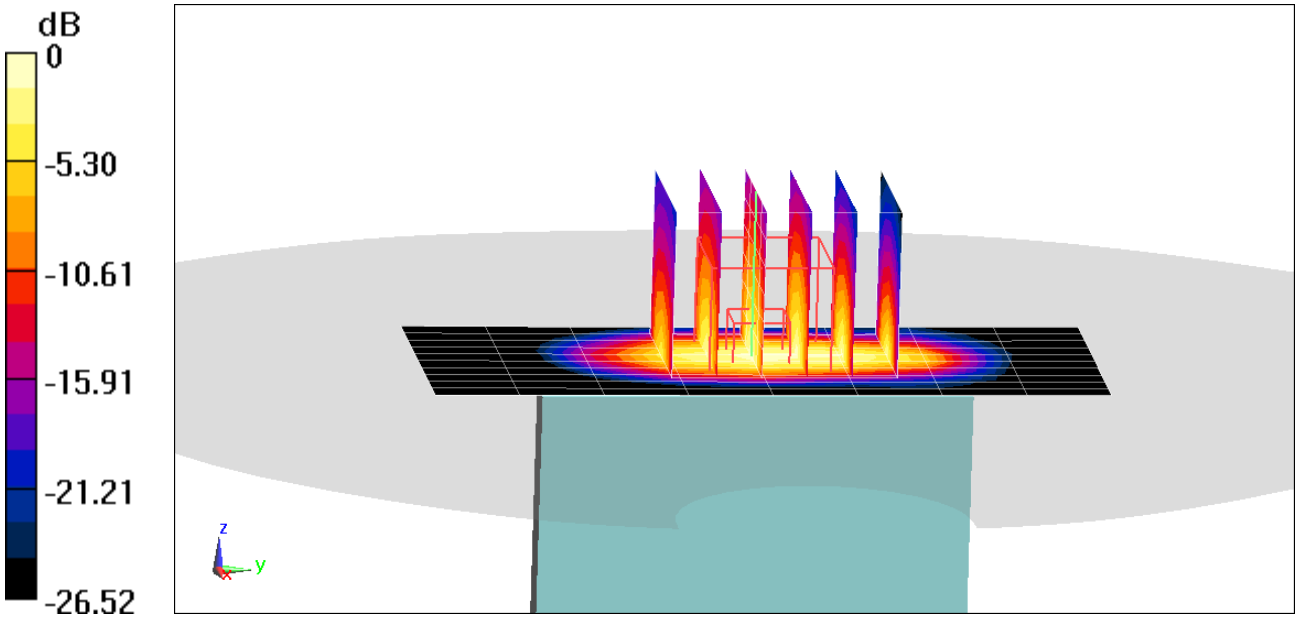
Communication System: UID 0, UMTS, Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.571 S/m; ε_r = 53.119; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Phablet SAR, Bottom Edge, High.ch

Area Scan (11x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 62.41 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 10.8 W/kg
SAR(10 g) = 2.38 W/kg



0 dB = 7.37 W/kg = 8.67 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2278

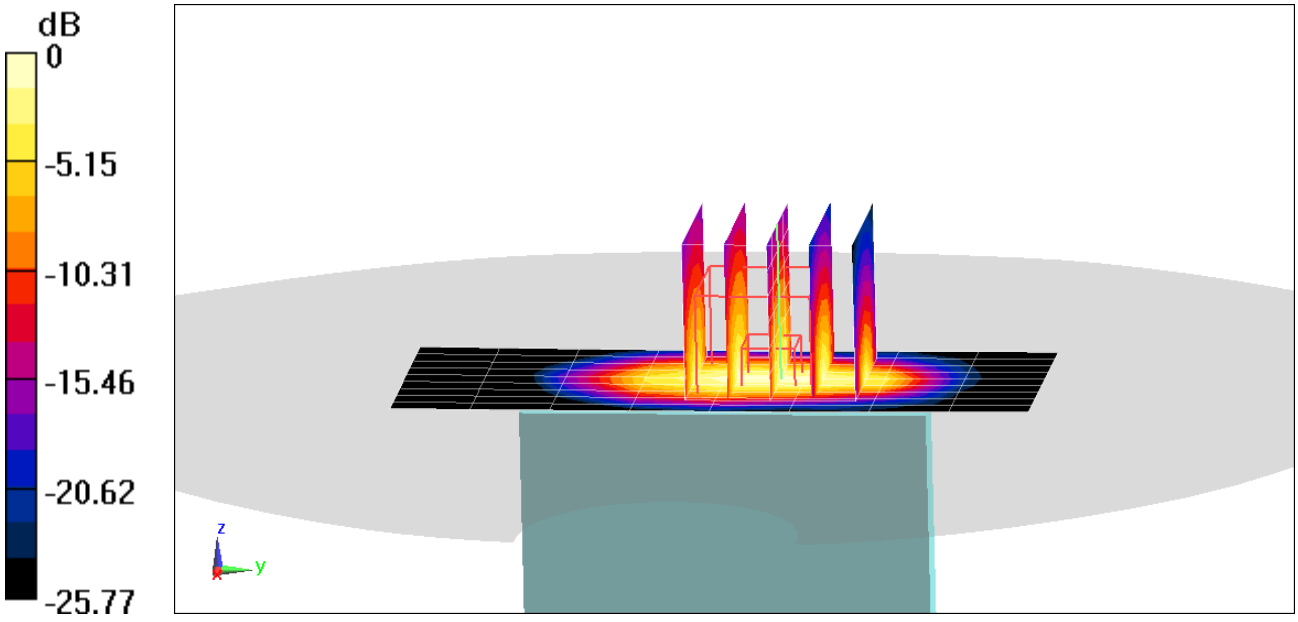
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium Medium parameters used (interpolated):
$f = 1720$ MHz; $\sigma = 1.482$ S/m; $\varepsilon_r = 52.769$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 05-14-2018; Ambient Temp: 20.8°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3347; ConvF(5.17, 5.17, 5.17); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 left; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Phablet SAR, Bottom Edge, Low.ch, 20 MHz Bandwidth, QPSK, 50 RB, 50 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 60.96 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 9.16 W/kg
SAR(10 g) = 2.07 W/kg



0 dB = 6.38 W/kg = 8.05 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2278

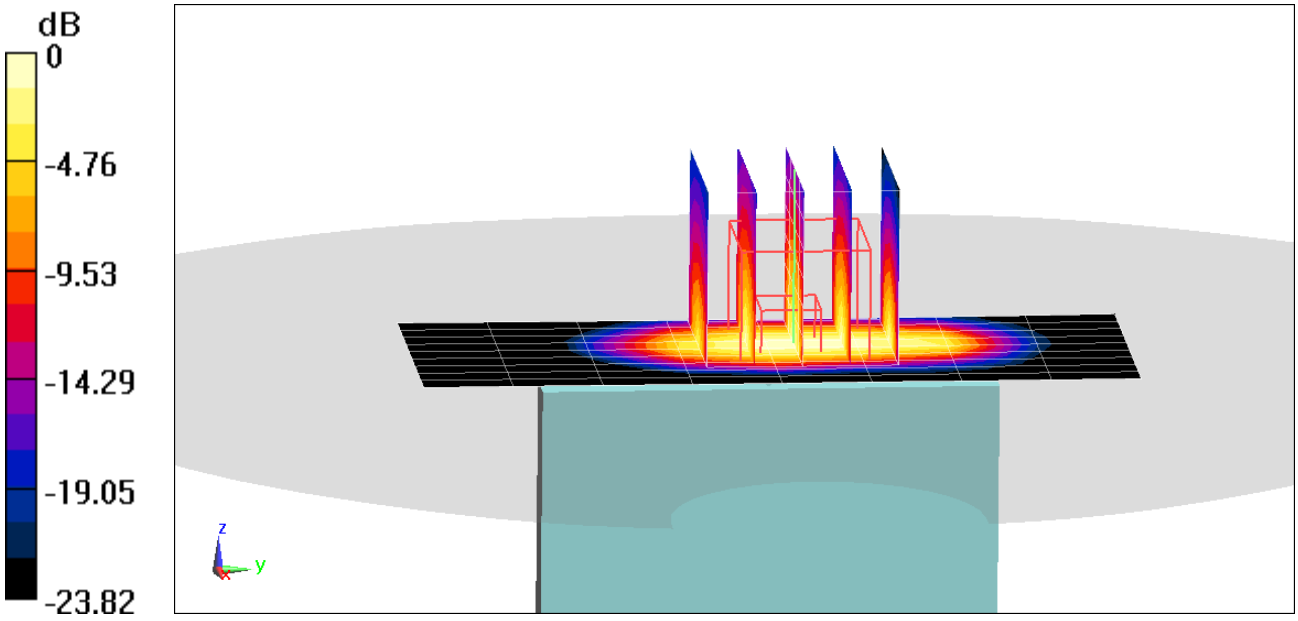
Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.562 S/m; ε_r = 53.149; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 2 (PCS), Phablet SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 100 RB, 0 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 62.16 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 9.94 W/kg
SAR(10 g) = 2.17 W/kg



0 dB = 6.76 W/kg = 8.30 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2278

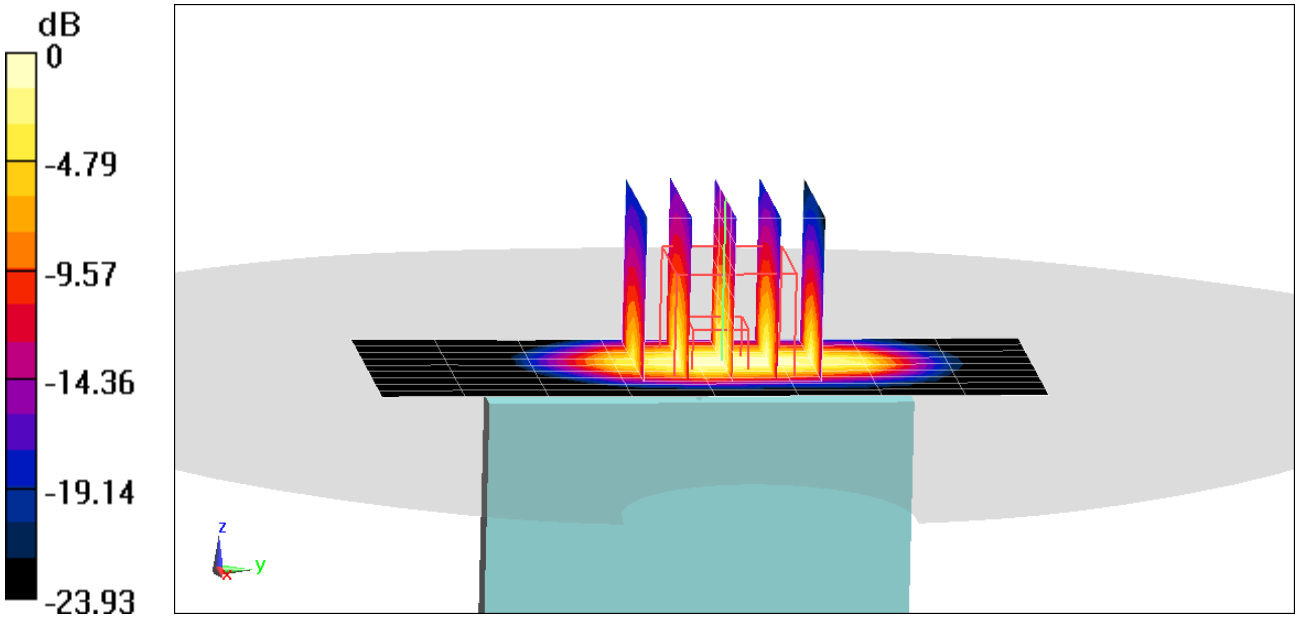
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.568 S/m; ε_r = 53.129; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Phablet SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 100 RB, 0 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 62.52 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 10.3 W/kg
SAR(10 g) = 2.2 W/kg



0 dB = 6.91 W/kg = 8.39 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2278

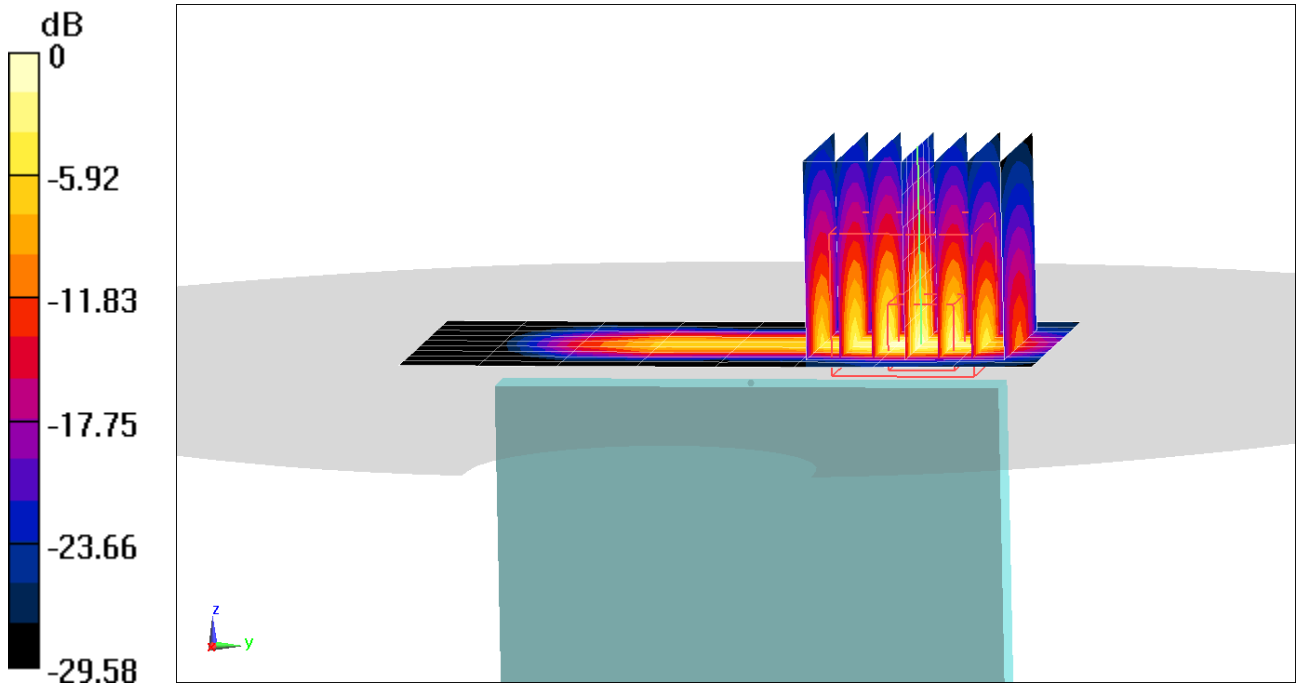
Communication System: UID 0, _LTE Band 41; Frequency: 2506 MHz; Duty Cycle: 1:1.58
Medium: 2450 Body Medium parameters used (interpolated):
f = 2506 MHz; σ = 2.09 S/m; ε_r = 50.856; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 05-15-2018; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 41, Phablet SAR, Bottom Edge, Low.ch,
20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset**

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 68.88 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 26.2 W/kg
SAR(10 g) = 2.32 W/kg



0 dB = 11.9 W/kg = 10.76 dBW/kg

DUT: A3LSMN9600; Type: Portable Handset; Serial: D2145

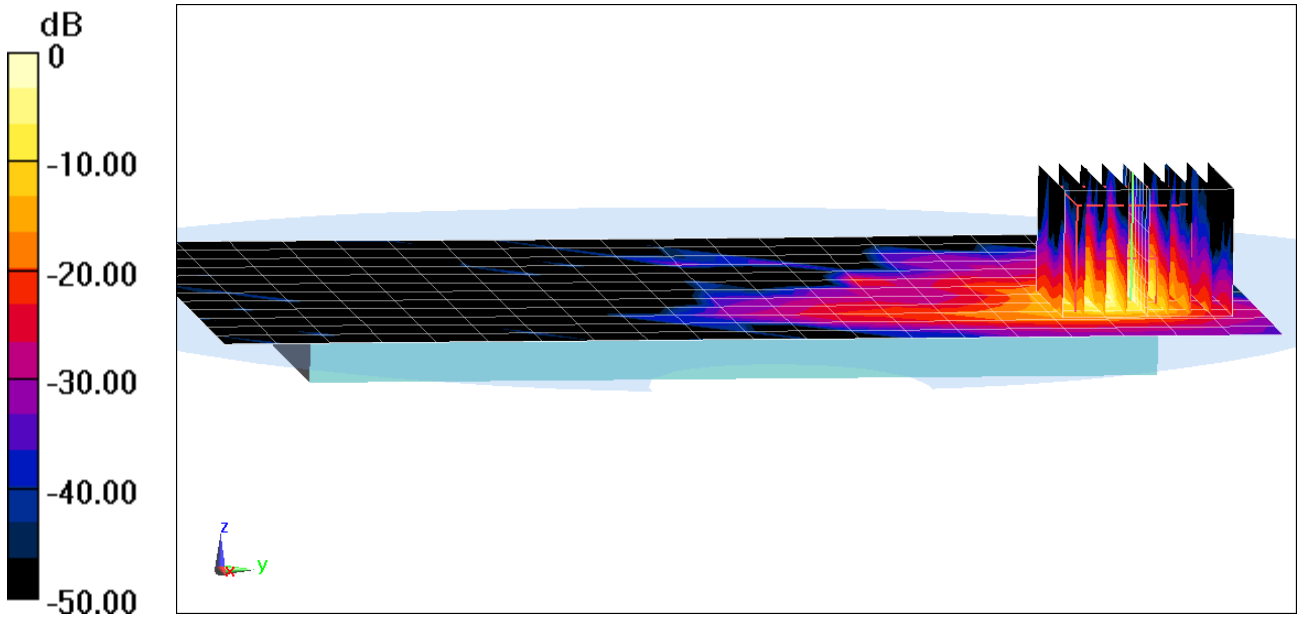
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; σ = 5.957 S/m; ε_r = 47.699; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 05-07-2018; Ambient Temp: 23.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7308; ConvF(4.23, 4.23, 4.23); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11n, U-NII-2C, 20 MHz Bandwidth,
Phablet SAR, MIMO, Ch 120, 13.0 Mbps, Back Side

Area Scan (13x21x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 0 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 111 W/kg
SAR(10 g) = 2.27 W/kg



0 dB = 47.0 W/kg = 16.72 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

© 2018 PCTEST Engineering Laboratory, Inc.

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161

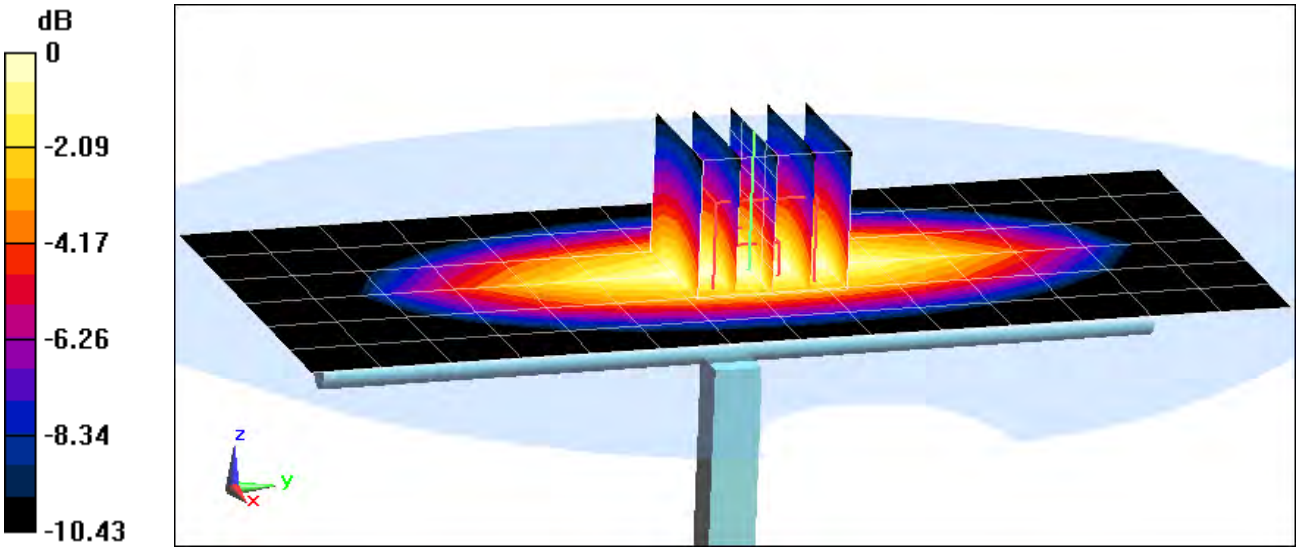
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.9 S/m; ε_r = 41.639; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-31-2018; Ambient Temp: 21.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.37 W/kg
SAR(1 g) = 1.59 W/kg
Deviation(1 g) = -2.69%



0 dB = 1.86 W/kg = 2.70 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d119

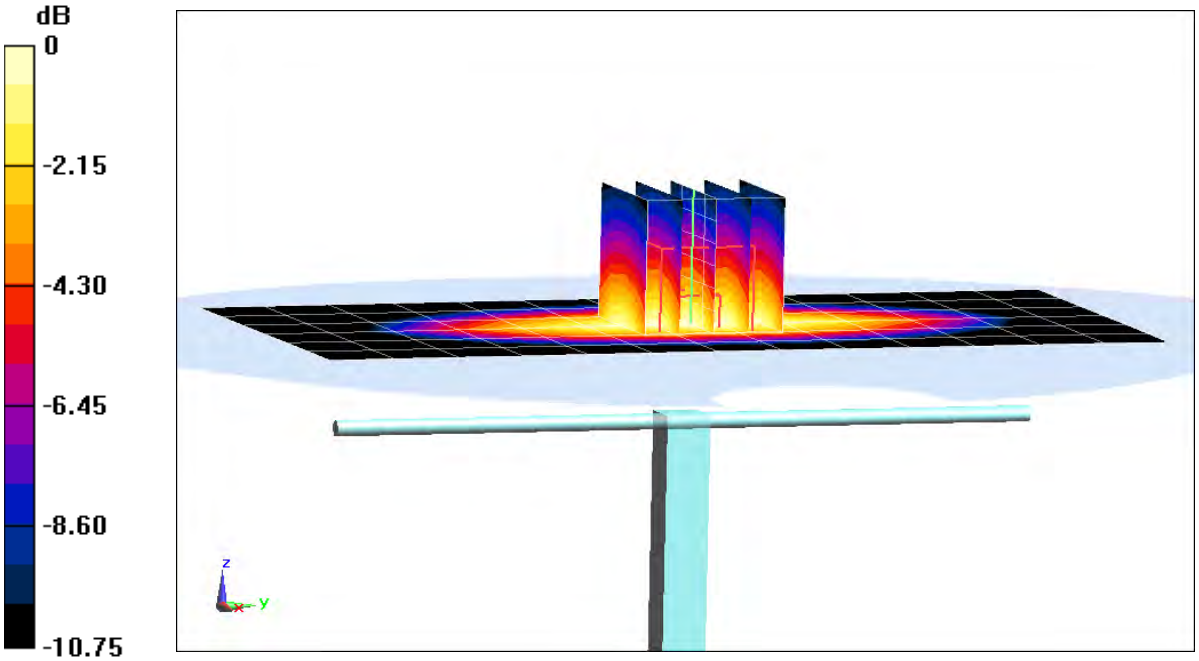
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.913 S/m; ε_r = 40.649; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-07-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.2°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.87 W/kg
SAR(1 g) = 1.94 W/kg
Deviation(1 g) = 1.78%



0 dB = 2.27 W/kg = 3.56 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

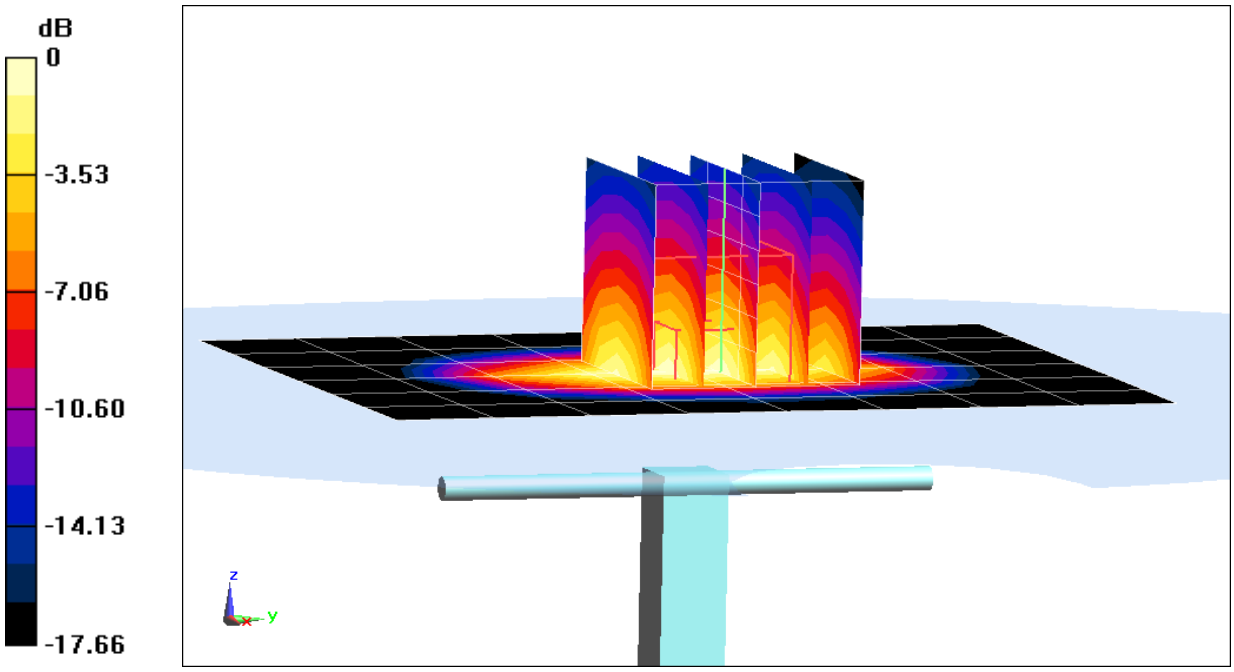
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.37 S/m; ε_r = 39.6; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-09-2018; Ambient Temp: 21.3°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(5.45, 5.45, 5.45); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.45 W/kg
SAR(1 g) = 3.59 W/kg
Deviation(1 g) = -1.37%



0 dB = 4.44 W/kg = 6.47 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

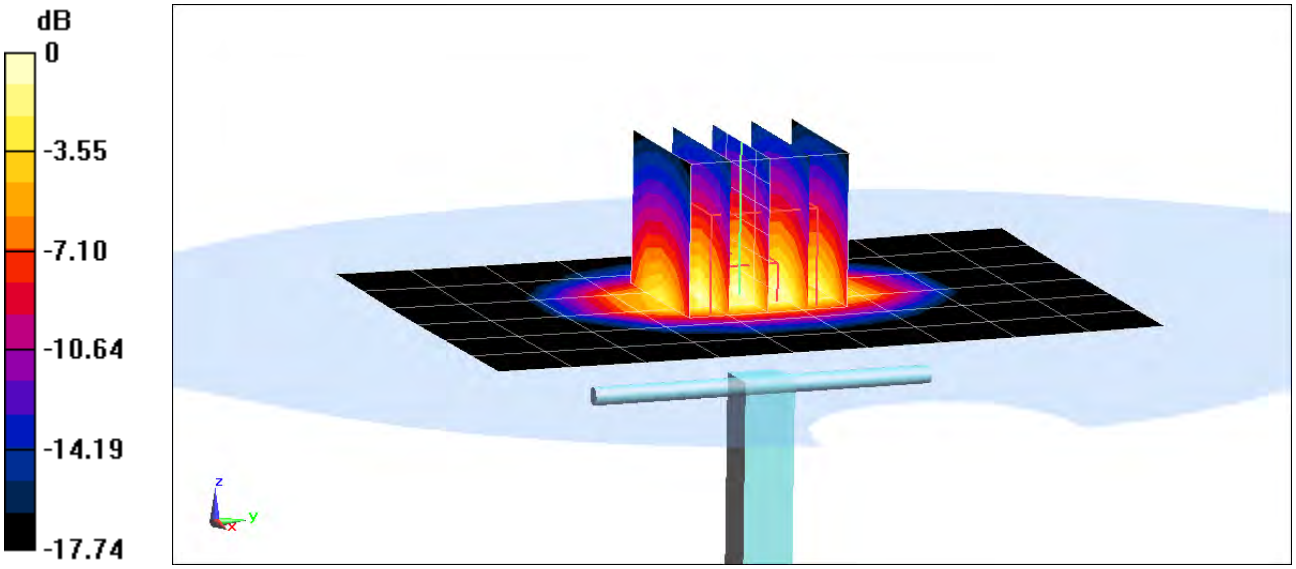
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.42 S/m; ε_r = 39.418; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-08-2018; Ambient Temp: 23.1°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.97 W/kg
SAR(1 g) = 3.87 W/kg
Deviation(1 g) = -1.28%



0 dB = 4.90 W/kg = 6.90 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d141

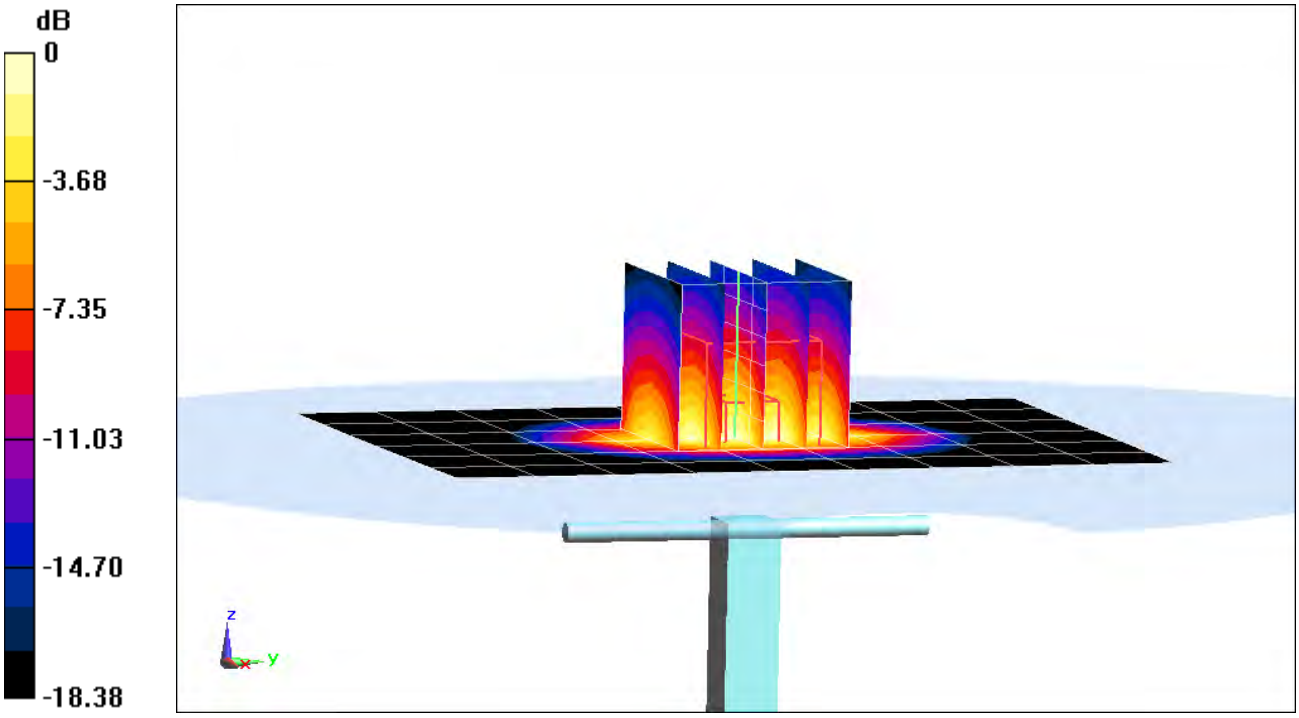
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.447 S/m; ε_r = 38.909; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-22-2018; Ambient Temp: 24.3°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3213; ConvF(5.3, 5.3, 5.3); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.80 W/kg
SAR(1 g) = 4.22 W/kg
Deviation(1 g) = 7.38%



0 dB = 5.34 W/kg = 7.28 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

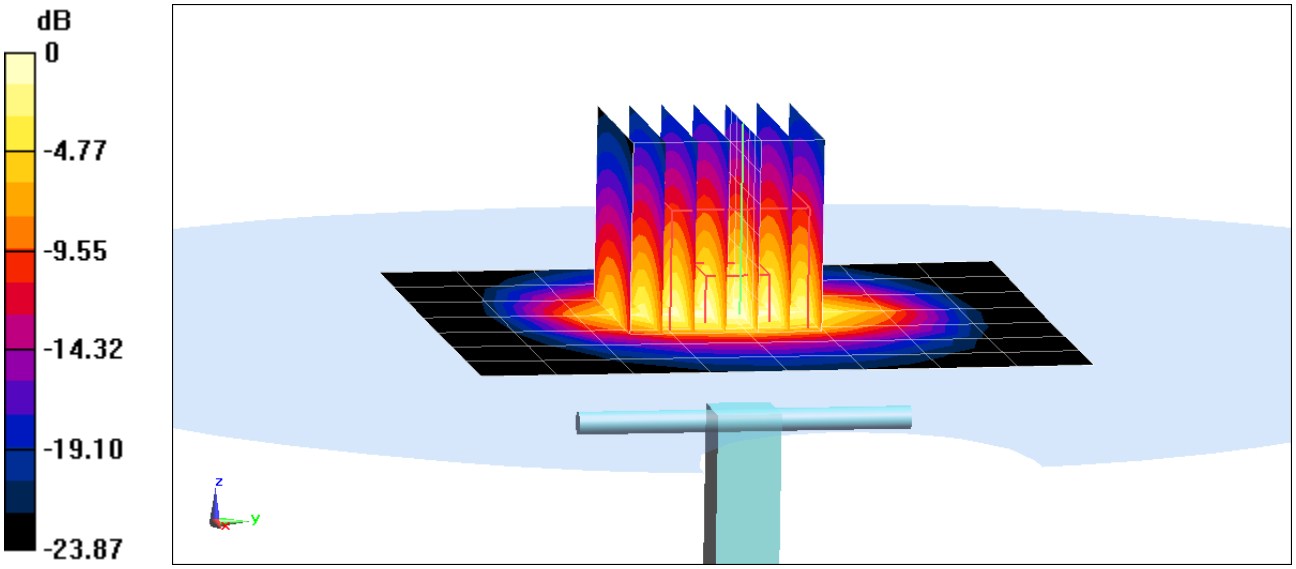
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.839 S/m; ε_r = 38.781; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-03-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.5 W/kg
SAR(1 g) = 5.05 W/kg
Deviation(1 g) = -4.17%



0 dB = 6.68 W/kg = 8.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 882

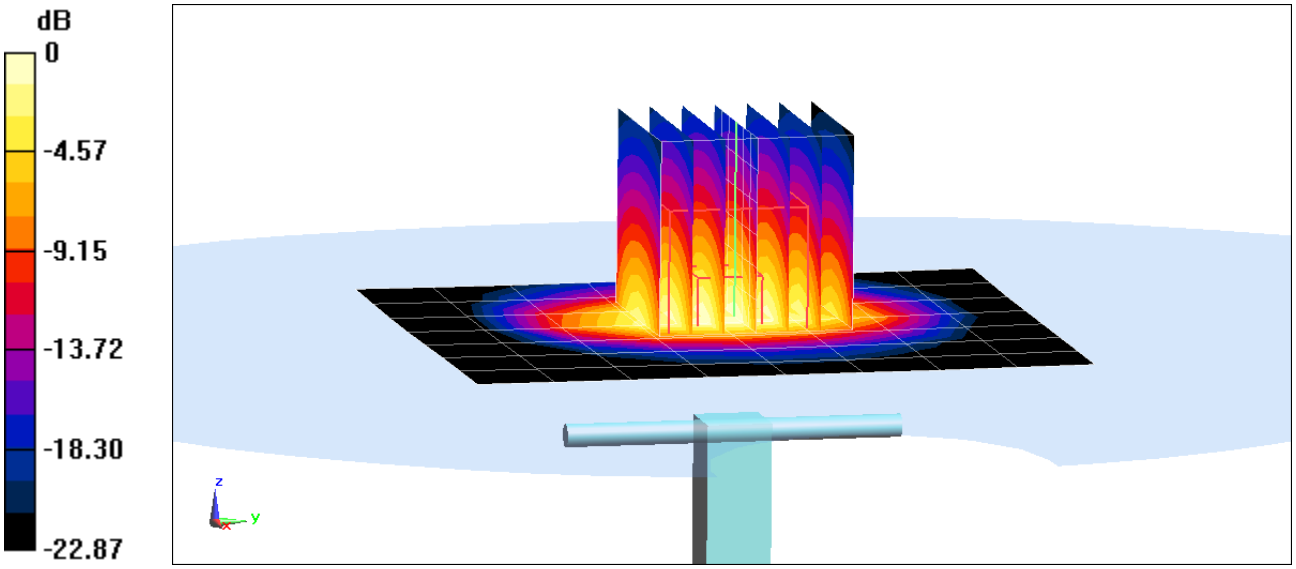
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.85 S/m; ε_r = 38.673; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-21-2018; Ambient Temp: 21.0°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.1 W/kg
SAR(1 g) = 5.36 W/kg
Deviation(1 g) = 2.68%



0 dB = 7.07 W/kg = 8.49 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

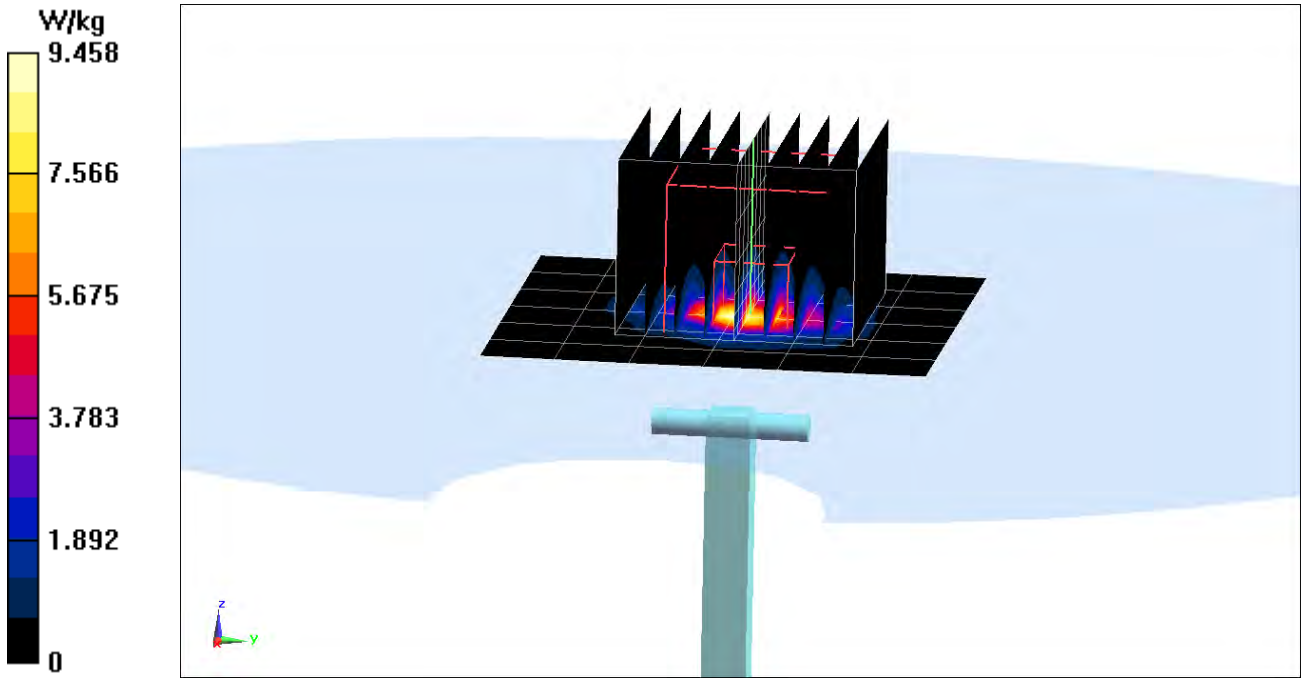
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
$f = 5250$ MHz; $\sigma = 4.537$ S/m; $\varepsilon_r = 34.691$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 5-7-2018; Ambient Temp: 20.9°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3589; ConvF(4.69, 4.69, 4.69); Calibrated: 1/16/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 3.82 W/kg
Deviation(1 g) = -3.17%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

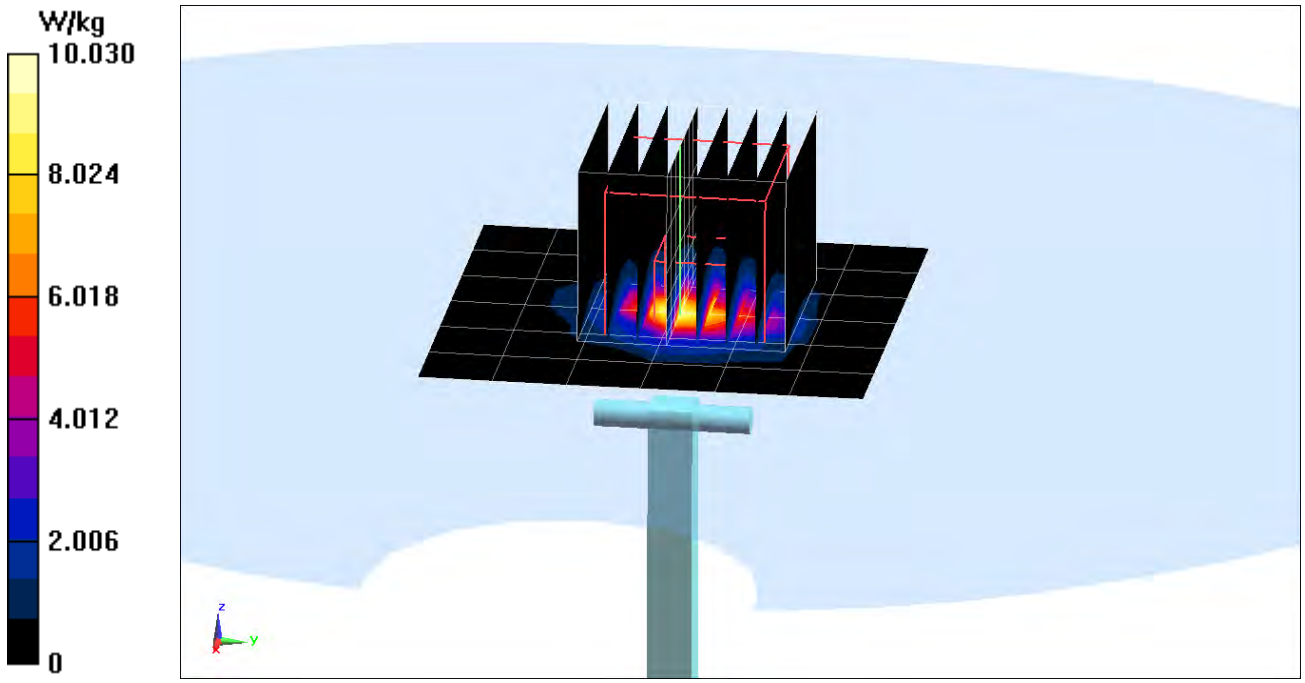
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used:
f = 5600 MHz; σ = 4.885 S/m; ε_r = 34.194; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 5-7-2018; Ambient Temp: 20.9°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3589; ConvF(4.17, 4.17, 4.17); Calibrated: 1/16/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 4.12 W/kg
Deviation(1 g) = -1.44%



DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

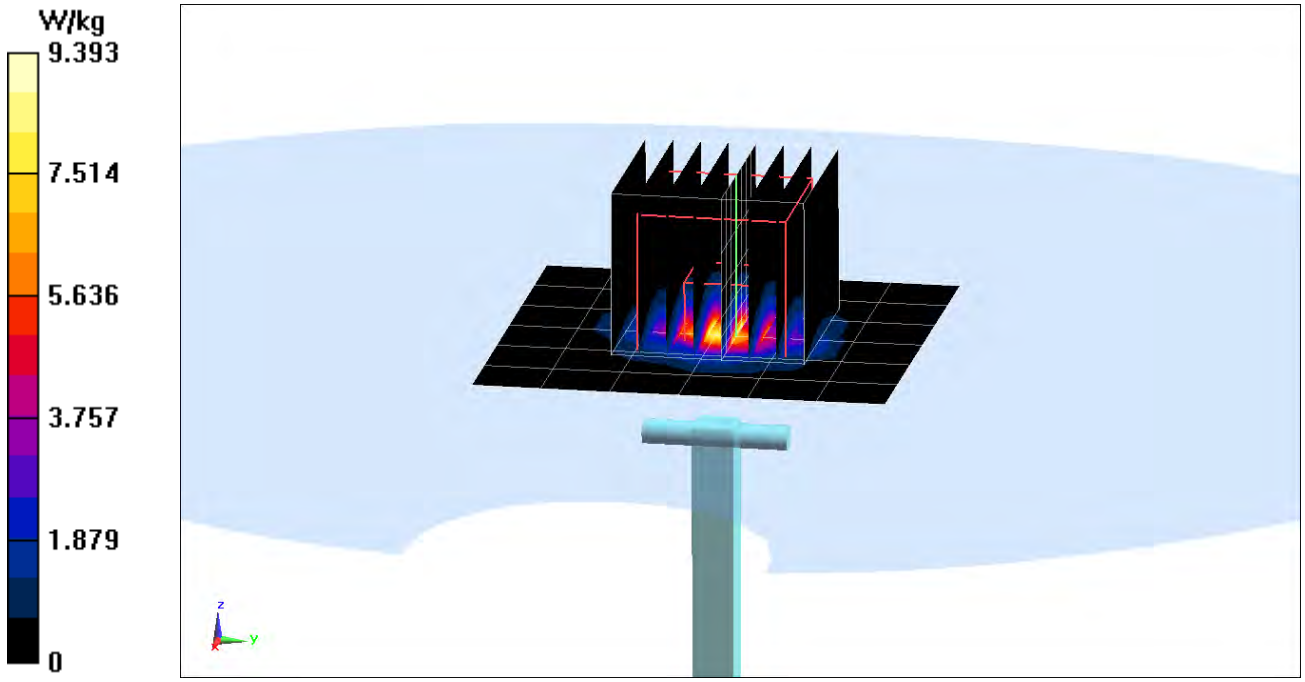
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5750 MHz; σ = 5.034 S/m; ε_r = 33.996; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 5-7-2018; Ambient Temp: 20.9°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN3589; ConvF(4.42, 4.42, 4.42); Calibrated: 1/16/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 3.86 W/kg
Deviation(1 g) = -2.40%



DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

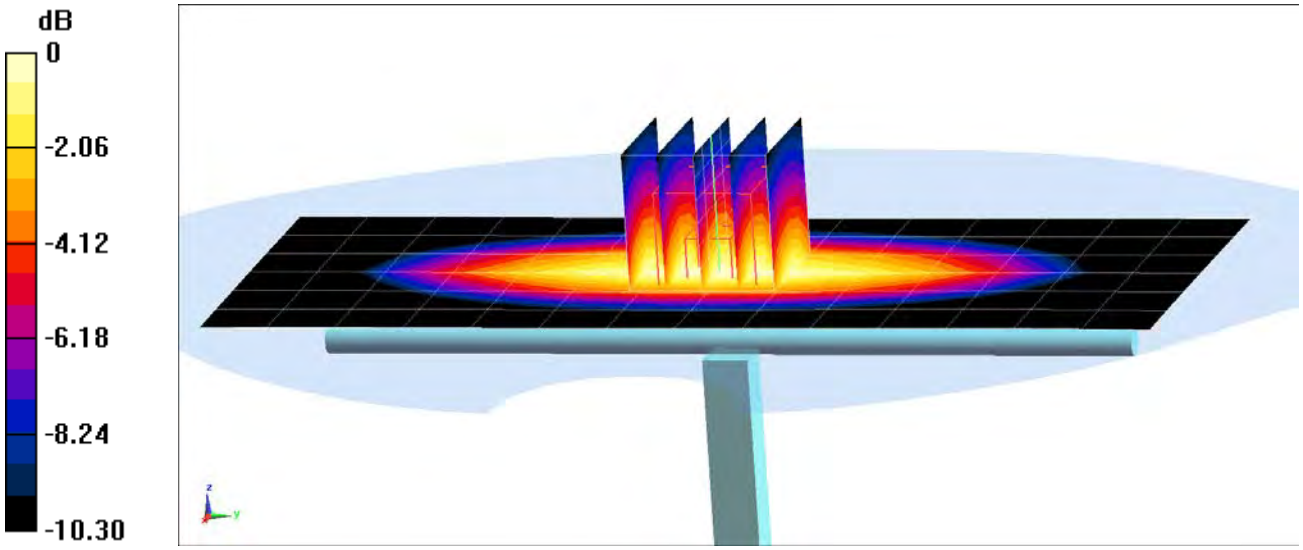
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.964 S/m; ε_r = 54.179; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 5-11-2018; Ambient Temp: 20.9°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7410; ConvF(10.19, 10.19, 10.19); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.68 W/kg
SAR(1 g) = 1.76 W/kg
Deviation(1 g) = 2.21%



0 dB = 2.36 W/kg = 3.73 dBW/kg

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

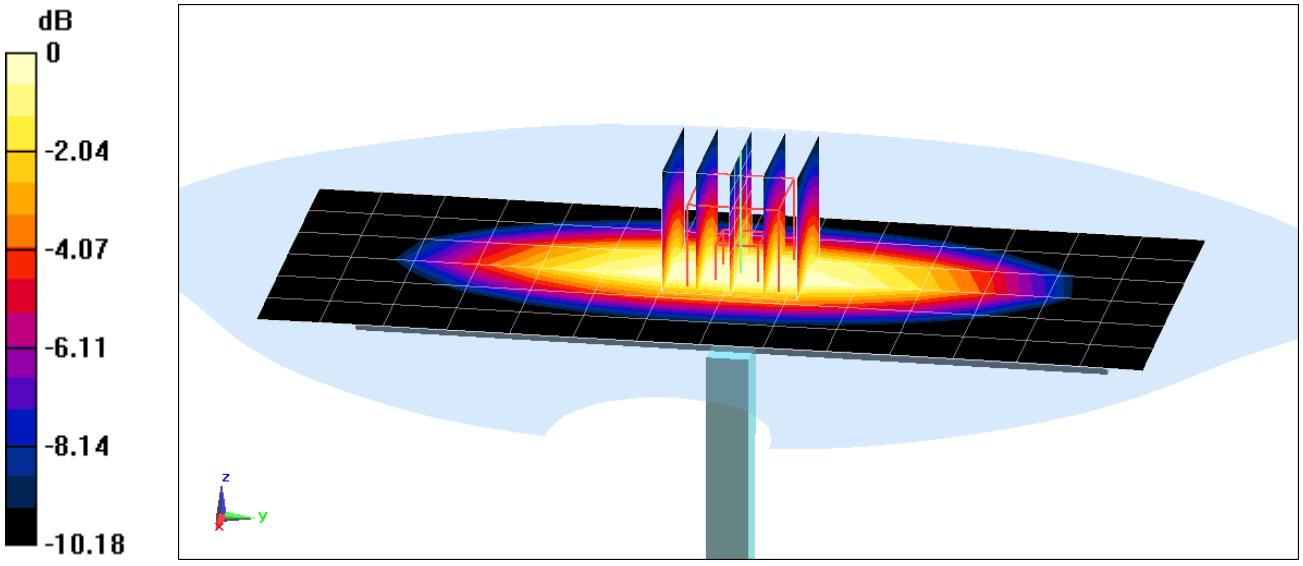
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 MHz Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.953 S/m; ε_r = 54.325; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 5-14-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7410; ConvF(10.19, 10.19, 10.19); Calibrated: 7/17/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1322; Calibrated: 7/13/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.53 W/kg
SAR(1 g) = 1.71 W/kg
Deviation(1 g) = -0.35%



0 dB = 2.25 W/kg = 3.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

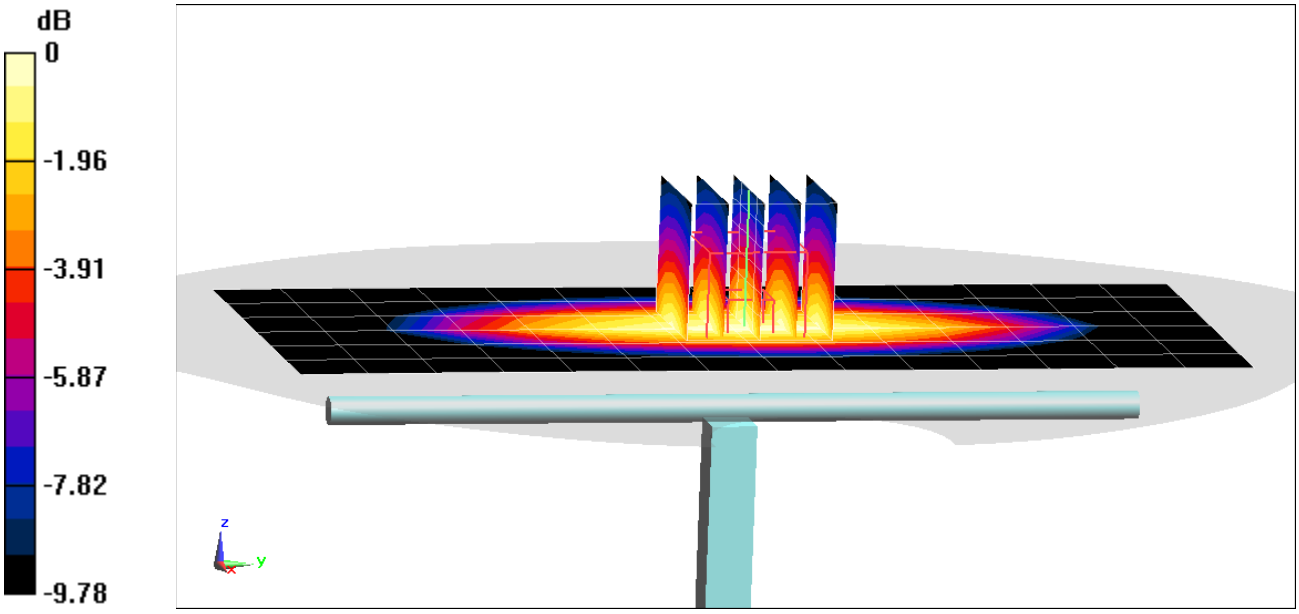
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.932 S/m; ε_r = 54.647; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-04-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.0°C

Probe: ES3DV3 - SN3347; ConvF(6.59, 6.59, 6.59); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

750 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.44 W/kg
SAR(1 g) = 1.68 W/kg
Deviation(1 g) = -2.44%;



0 dB = 1.95 W/kg = 2.90 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

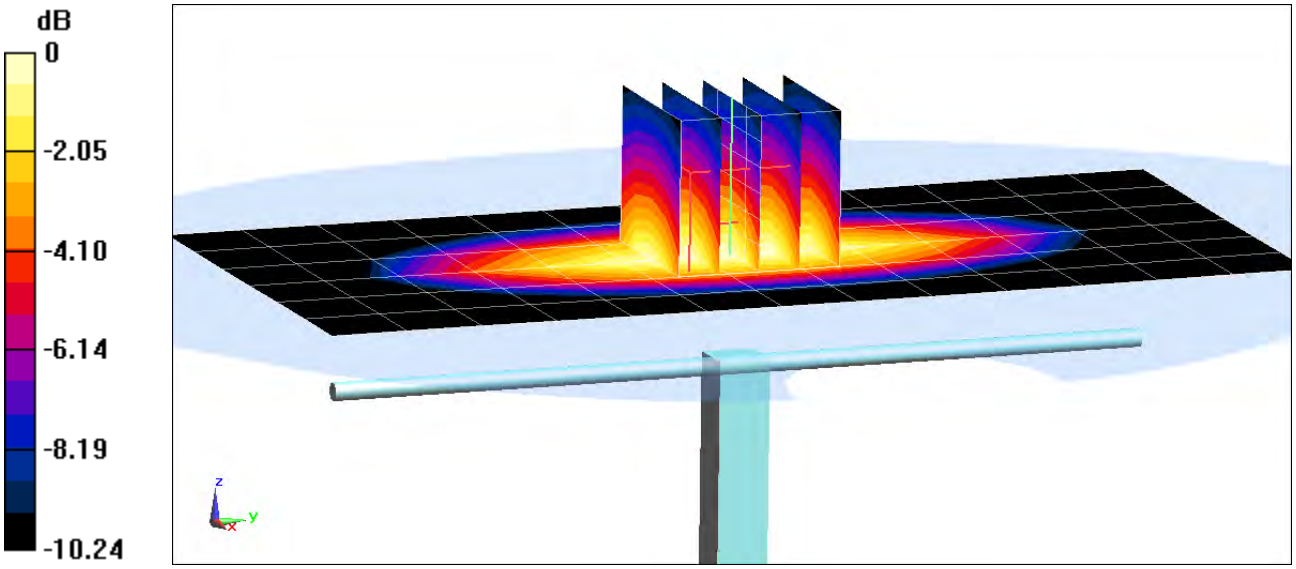
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.96 S/m; ε_r = 53.039; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-10-2018; Ambient Temp: 22.9°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.89 W/kg
SAR(1 g) = 1.98 W/kg
Deviation(1 g) = 3.45%



0 dB = 2.31 W/kg = 3.64 dBW/kg

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

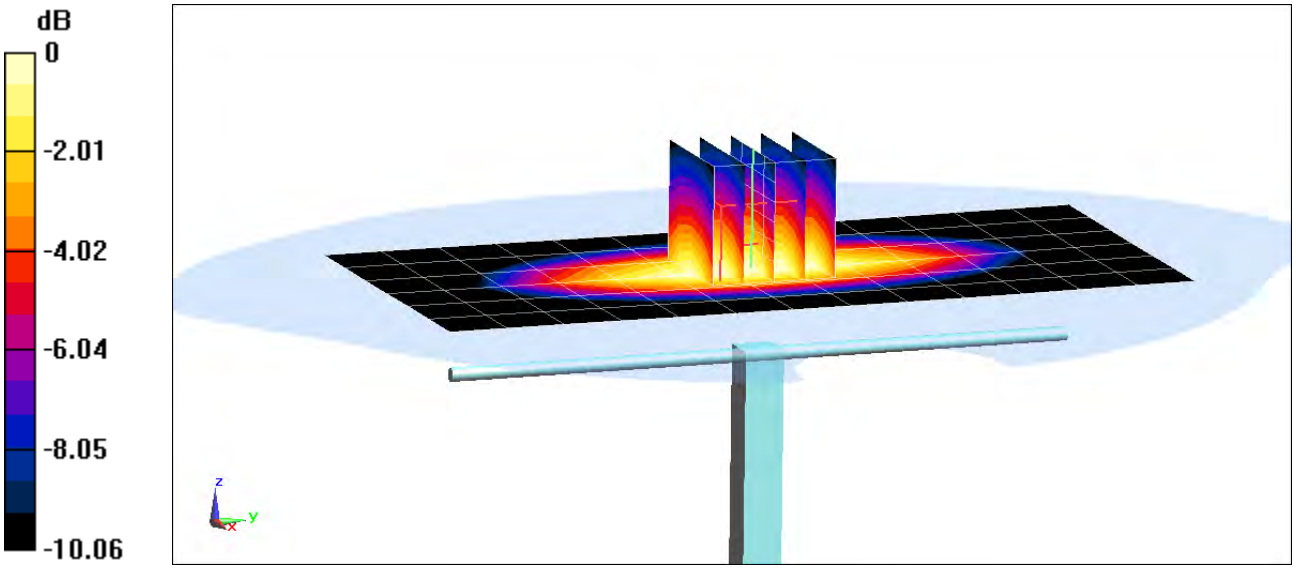
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.966 S/m; ε_r = 54.19; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-13-2018; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3332; ConvF(6.47, 6.47, 6.47); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.82 W/kg
SAR(1 g) = 1.96 W/kg
Deviation(1 g) = 2.40%



0 dB = 2.27 W/kg = 3.56 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

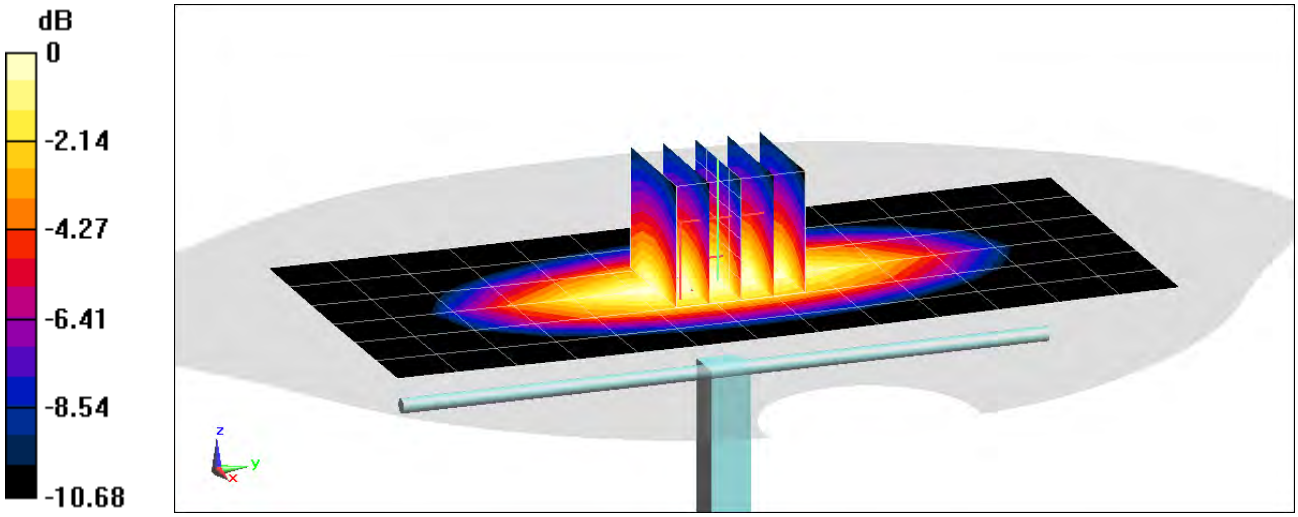
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 1.002 S/m; ε_r = 53.993; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-13-2018; Ambient Temp: 22.2°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3287; ConvF(6.56, 6.56, 6.56); Calibrated: 9/18/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 6/21/2017
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.98 W/kg
SAR(1 g) = 2.02 W/kg
Deviation(1 g) = 5.54%



0 dB = 2.32 W/kg = 3.65 dBW/kg

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

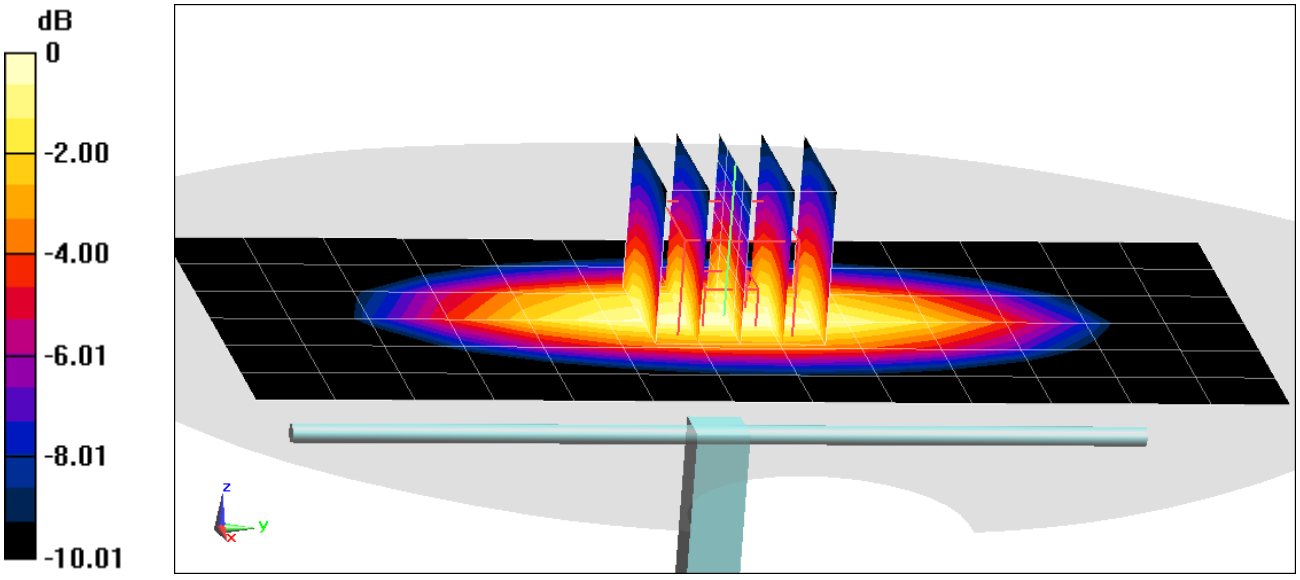
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.973 S/m; ε_r = 54.458; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 05-26-2018; Ambient Temp: 20.1°C; Tissue Temp: 20.0°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.92 W/kg
SAR(1 g) = 2.01 W/kg
Deviation(1 g) = 5.02%



0 dB = 2.34 W/kg = 3.69 dBW/kg

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

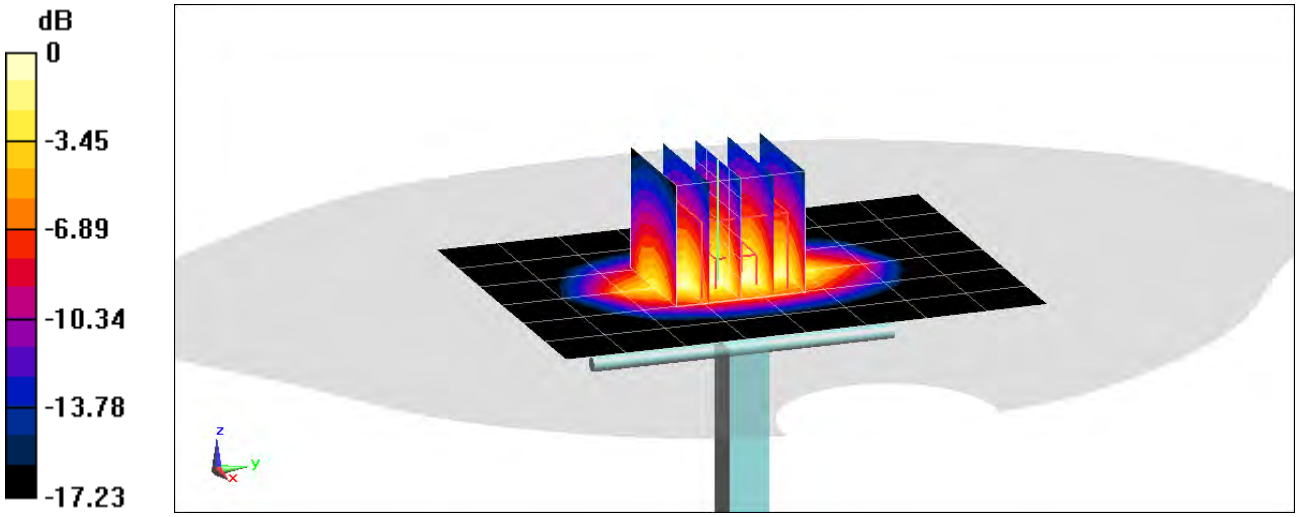
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.503 S/m; ε_r = 52.043; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-09-2018; Ambient Temp: 23.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3287; ConvF(5.19, 5.19, 5.19); Calibrated: 9/18/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 6/21/2017
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.83 W/kg
SAR(1 g) = 3.88 W/kg
Deviation(1 g) = 4.86%



0 dB = 4.85 W/kg = 6.86 dBW/kg

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1051

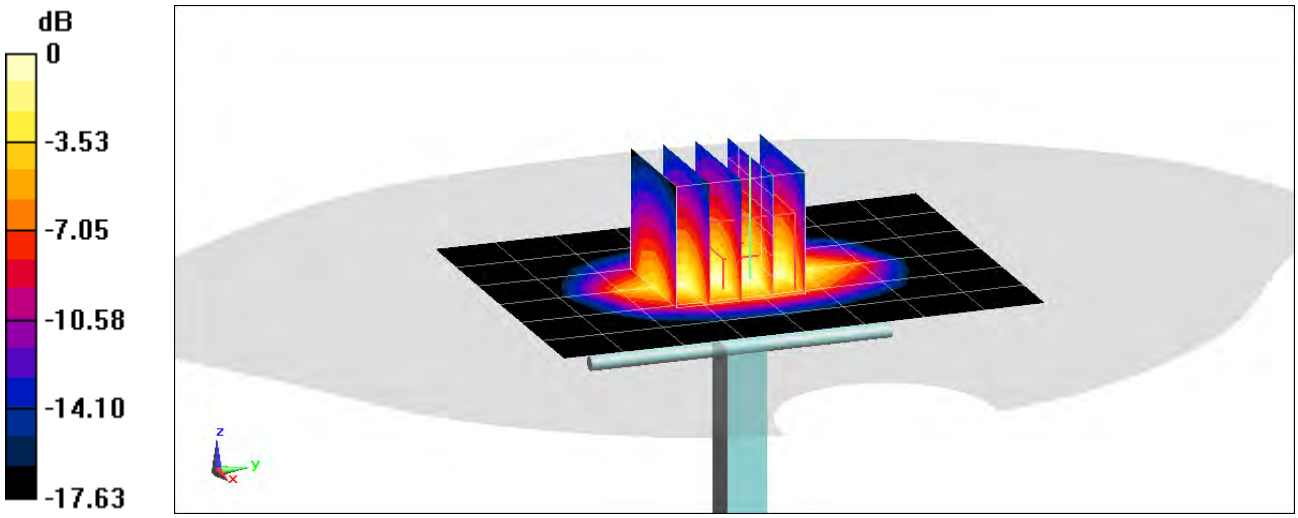
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.494 S/m; ε_r = 52.672; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-11-2018; Ambient Temp: 22.0°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3287; ConvF(5.19, 5.19, 5.19); Calibrated: 9/18/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1333; Calibrated: 6/21/2017
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.87 W/kg
SAR(1 g) = 3.89 W/kg
Deviation(1 g) = 4.57%



0 dB = 4.83 W/kg = 6.84 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

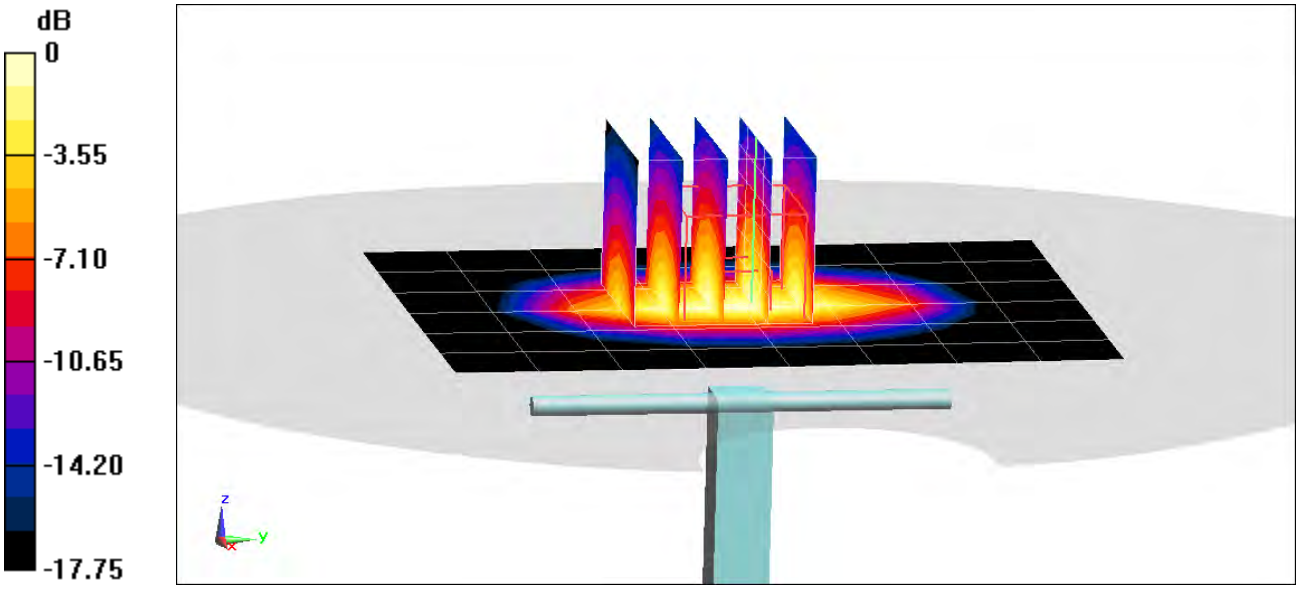
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.516 S/m; ε_r = 52.662; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-14-2018; Ambient Temp: 20.8°C; Tissue Temp: 20.7°C

Probe: ES3DV3 - SN3347; ConvF(5.17, 5.17, 5.17); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 left; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.81 W/kg
SAR(10 g) = 2.06 W/kg
Deviation(10 g) = 4.04%



0 dB = 4.85 W/kg = 6.86 dBW/kg

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

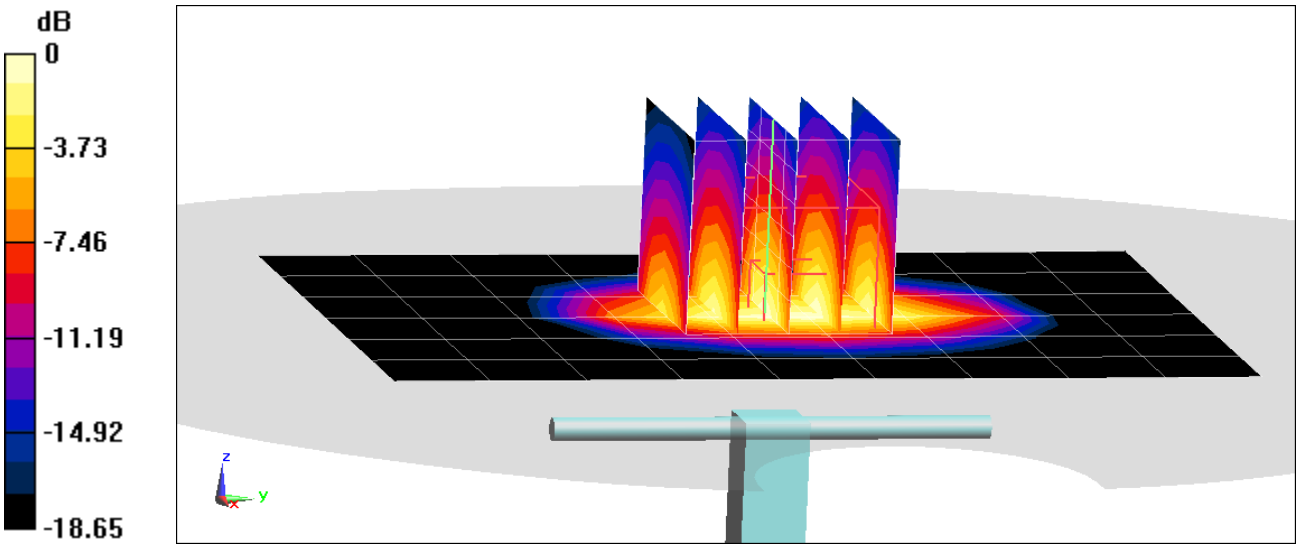
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.562 S/m; ε_r = 53.149; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 21.5°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3347; ConvF(4.94, 4.94, 4.94); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

1900 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x10x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.41 W/kg
SAR(1 g) = 4.05 W/kg; SAR(10 g) = 2.09 W/kg
Deviation(1 g) = 2.27%; Deviation(10 g) = 0.00%



0 dB = 5.06 W/kg = 7.04 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

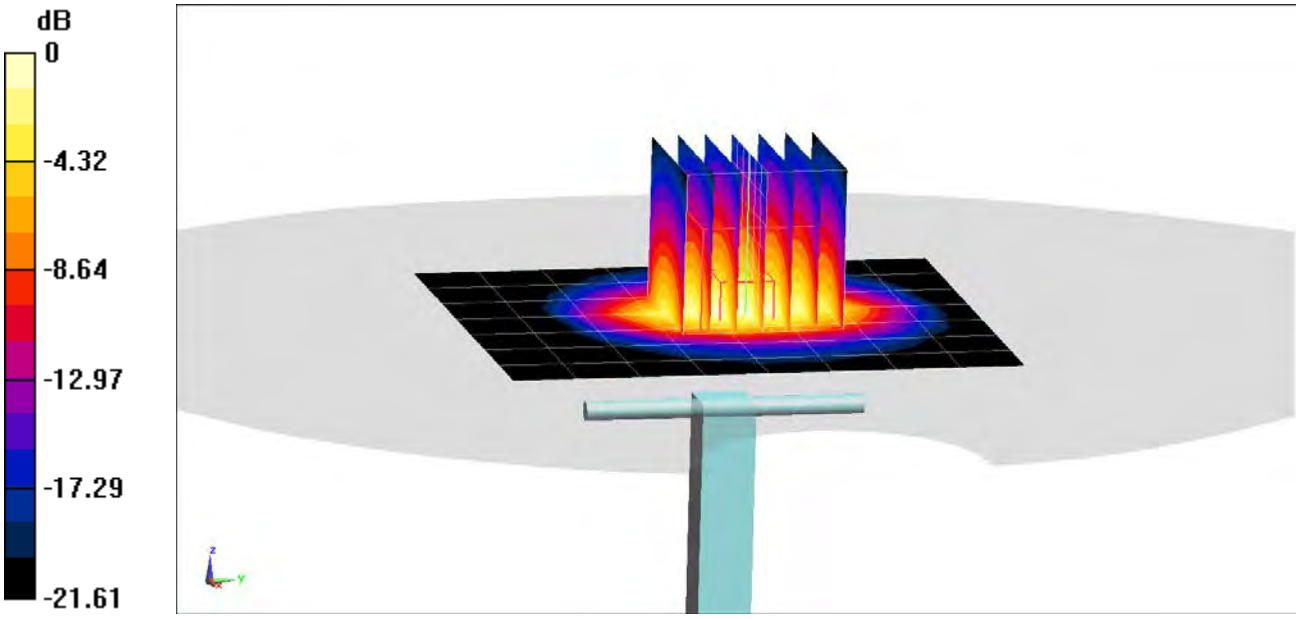
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.027 S/m; ε_r = 51.335; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.8 W/kg
SAR(1 g) = 5.27 W/kg
Deviation(1 g) = 3.13%



0 dB = 6.98 W/kg = 8.44 dBW/kg

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

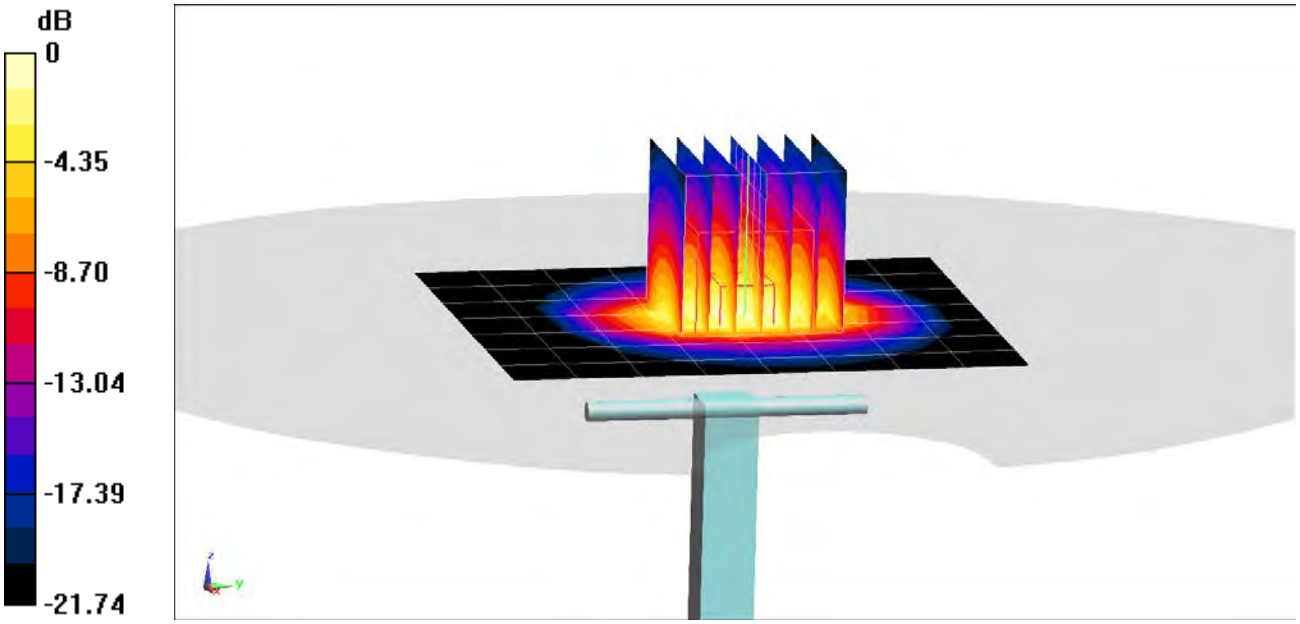
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 2.026 S/m; ε_r = 51.043; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-15-2018; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.7 W/kg
SAR(10 g) = 2.38 W/kg
Deviation(10 g) = -1.65%



0 dB = 6.84 W/kg = 8.35 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1126

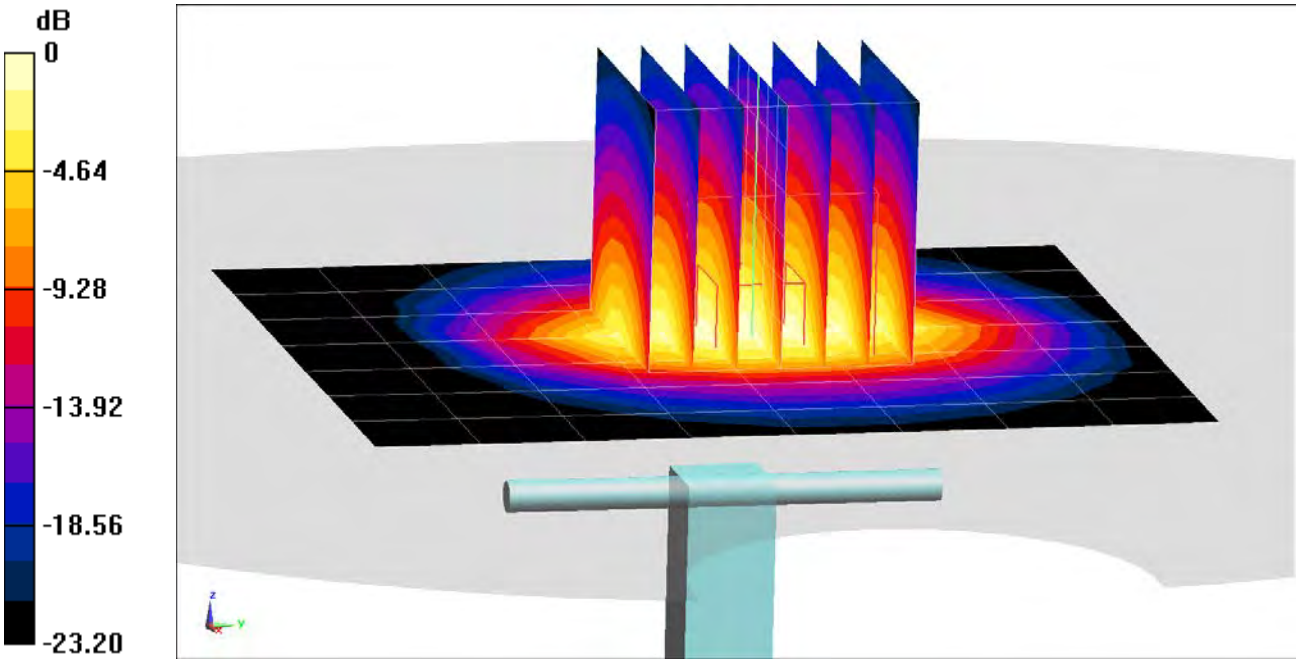
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2600 MHz; σ = 2.204 S/m; ε_r = 50.883; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.8 W/kg
SAR(1 g) = 5.54 W/kg
Deviation(1 g) = 2.03%



0 dB = 7.23 W/kg = 8.59 dBW/kg

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1126

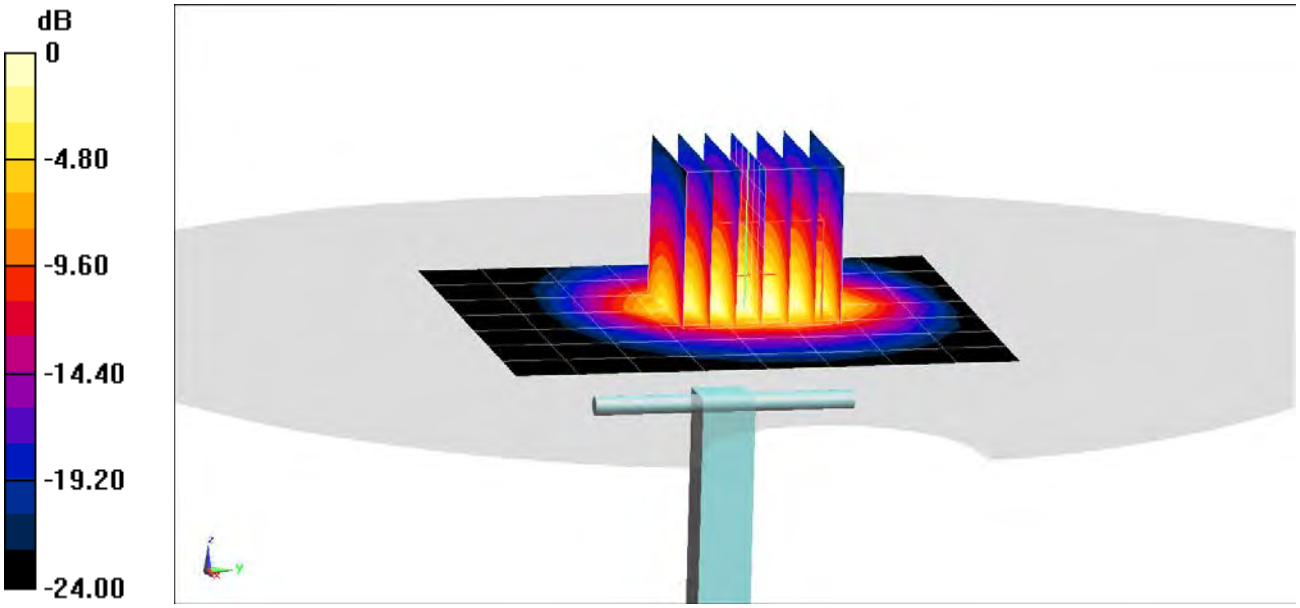
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2600 MHz; σ = 2.197 S/m; ε_r = 50.606; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-15-2018; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.7 W/kg
SAR(10 g) = 2.37 W/kg
Deviation(10 g) = -2.87%



0 dB = 7.00 W/kg = 8.45 dBW/kg

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1004

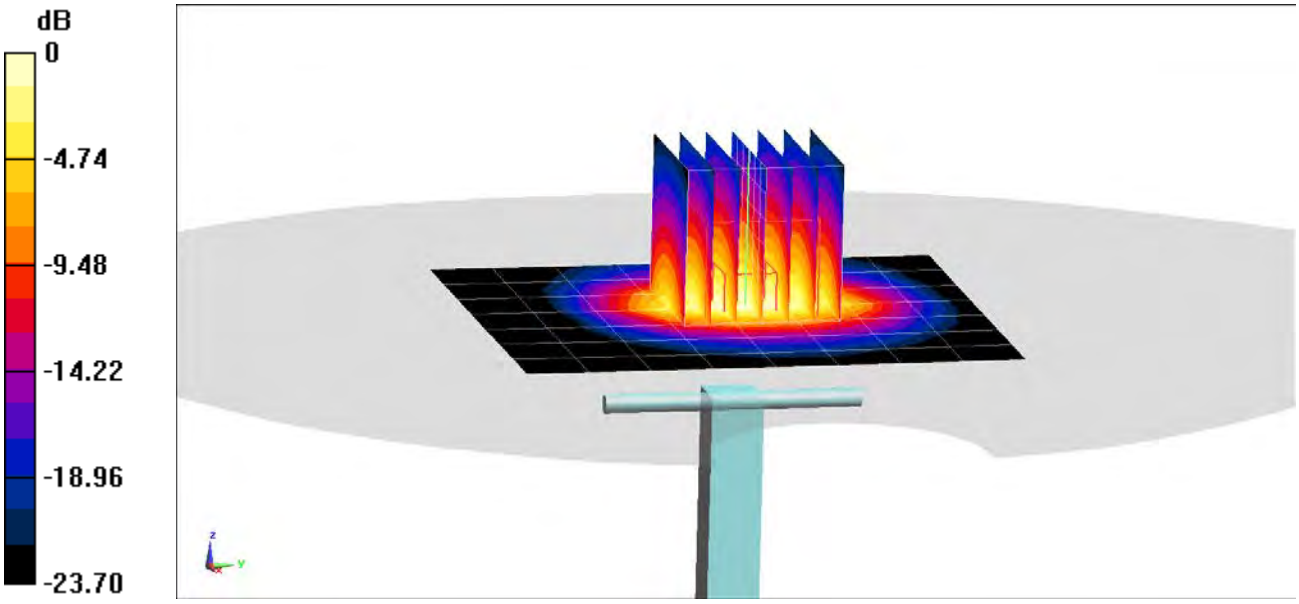
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2600 MHz; σ = 2.217 S/m; ε_r = 51.425; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-04-2018; Ambient Temp: 22.0°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.7 W/kg
SAR(1 g) = 5.79 W/kg
Deviation(1 g) = 5.66%



0 dB = 7.80 W/kg = 8.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

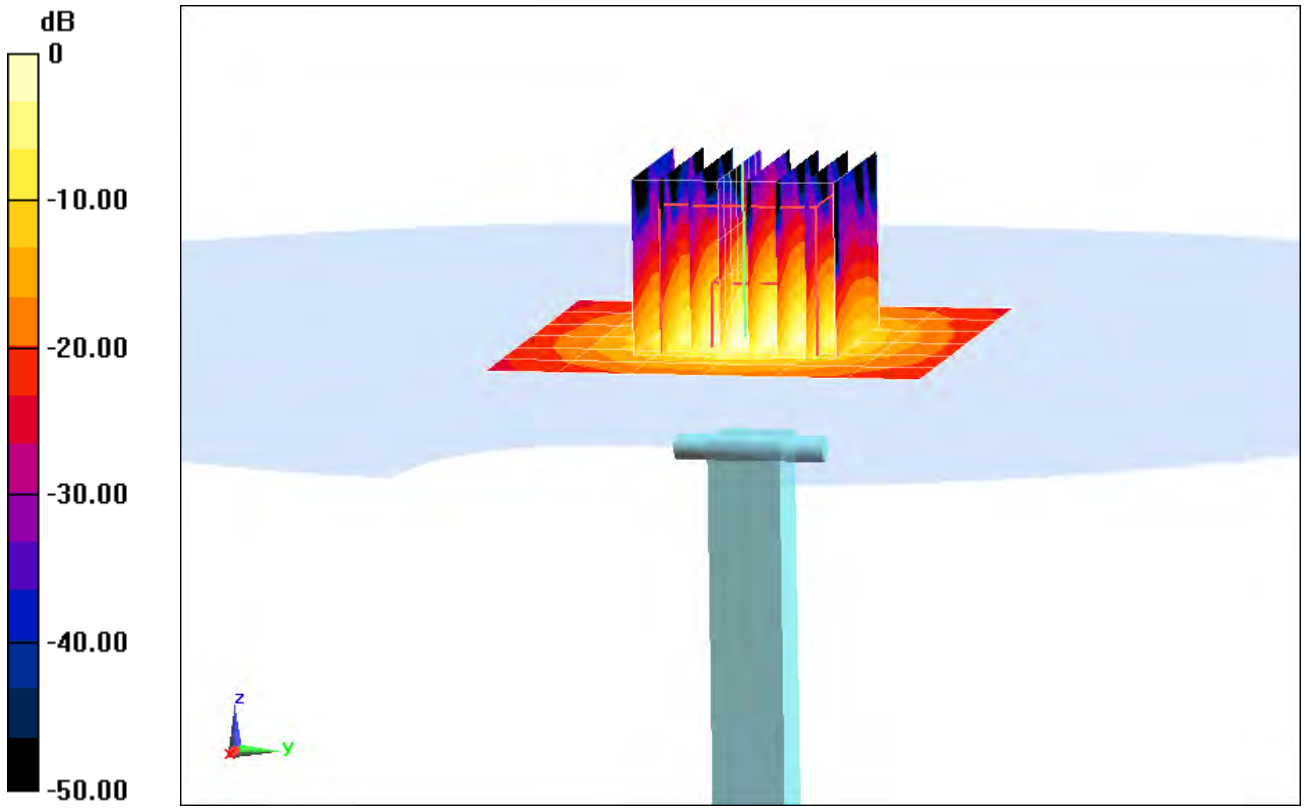
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.518 S/m; ε_r = 47.983; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-29-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7308; ConvF(4.84, 4.84, 4.84); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 3.66 W/kg
Deviation(1 g) = -4.81%



0 dB = 8.63 W/kg = 9.36 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

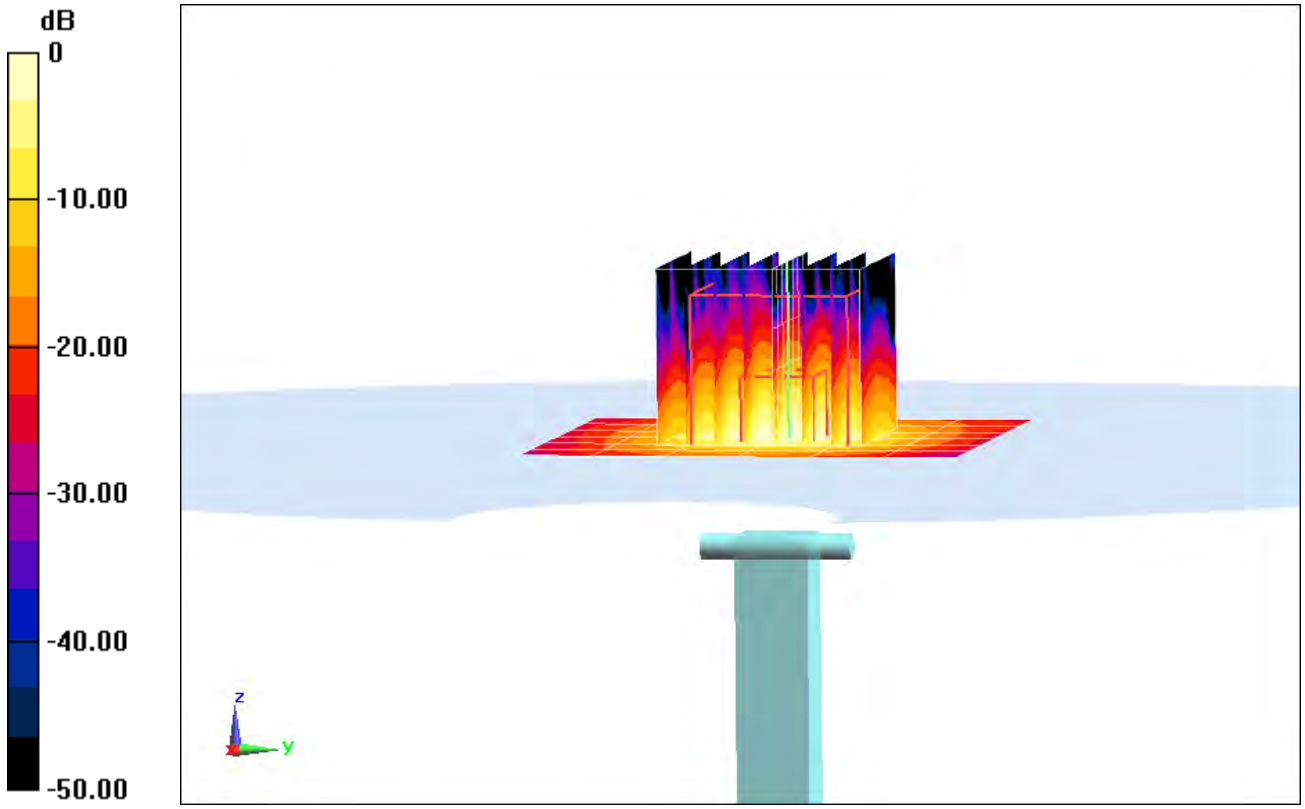
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; σ = 5.992 S/m; ε_r = 47.387; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-29-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7308; ConvF(4.23, 4.23, 4.23); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.5 W/kg
SAR(1 g) = 3.86 W/kg
Deviation(1 g) = -1.66%



0 dB = 9.44 W/kg = 9.75 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

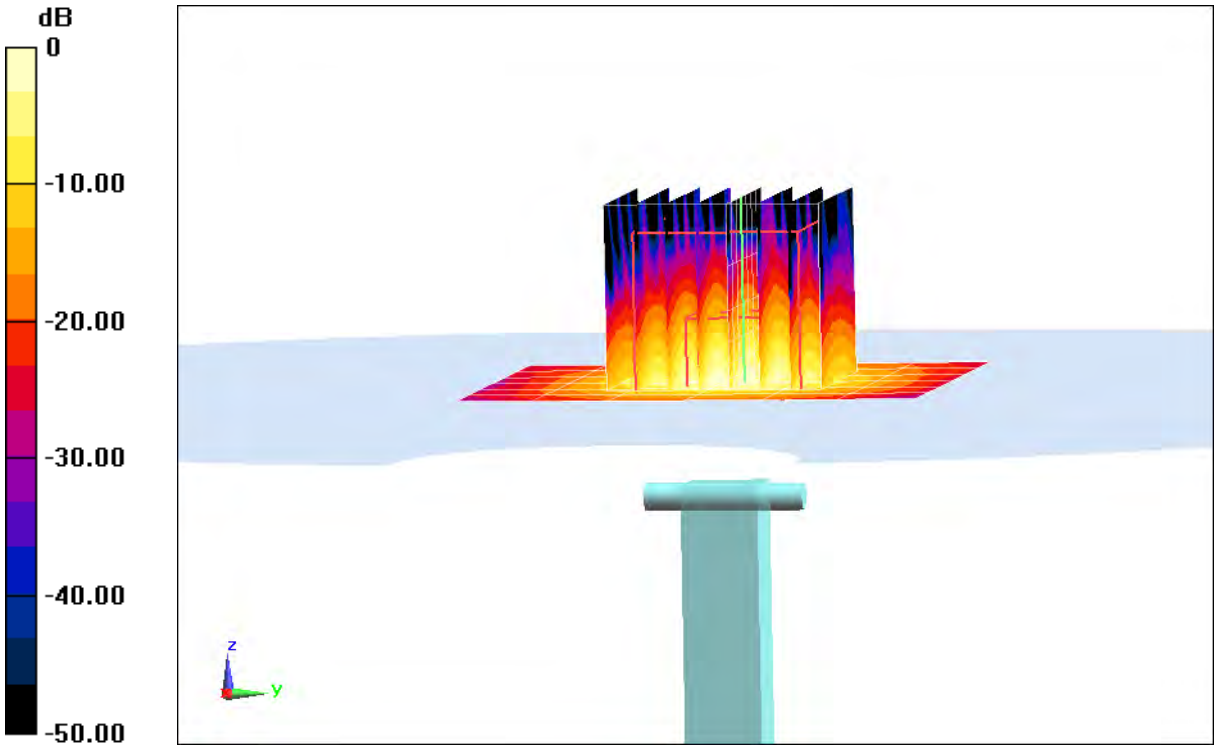
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5750 MHz; σ = 6.201 S/m; ε_r = 47.124; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 04-29-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 3.6 W/kg
Deviation(1 g) = -6.61%



0 dB = 8.81 W/kg = 9.45 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

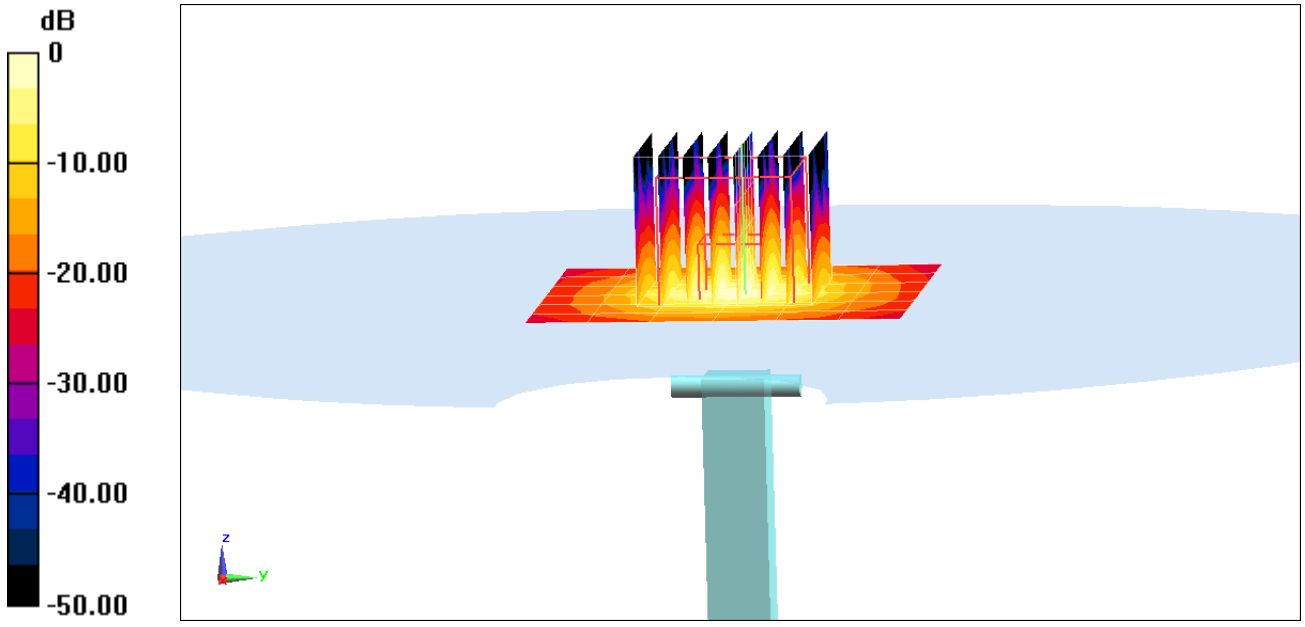
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.475 S/m; ε_r = 48.308; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 23.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7308; ConvF(4.84, 4.84, 4.84); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.1 W/kg
SAR(10 g) = 1.04 W/kg
Deviation(10 g) = -3.26%



0 dB = 8.95 W/kg = 9.52 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

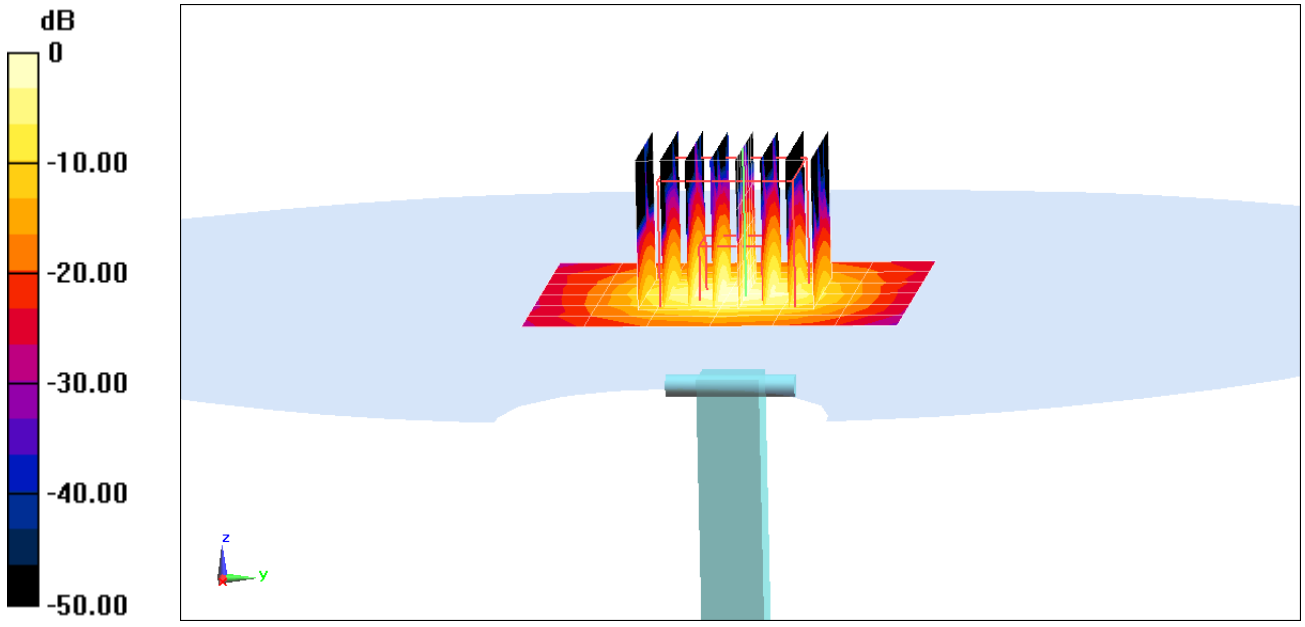
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; σ = 5.957 S/m; ε_r = 47.699; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 23.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7308; ConvF(4.23, 4.23, 4.23); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.4 W/kg
SAR(10 g) = 1.04 W/kg
Deviation(10 g) = -5.88%



0 dB = 9.17 W/kg = 9.62 dBW/kg

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237

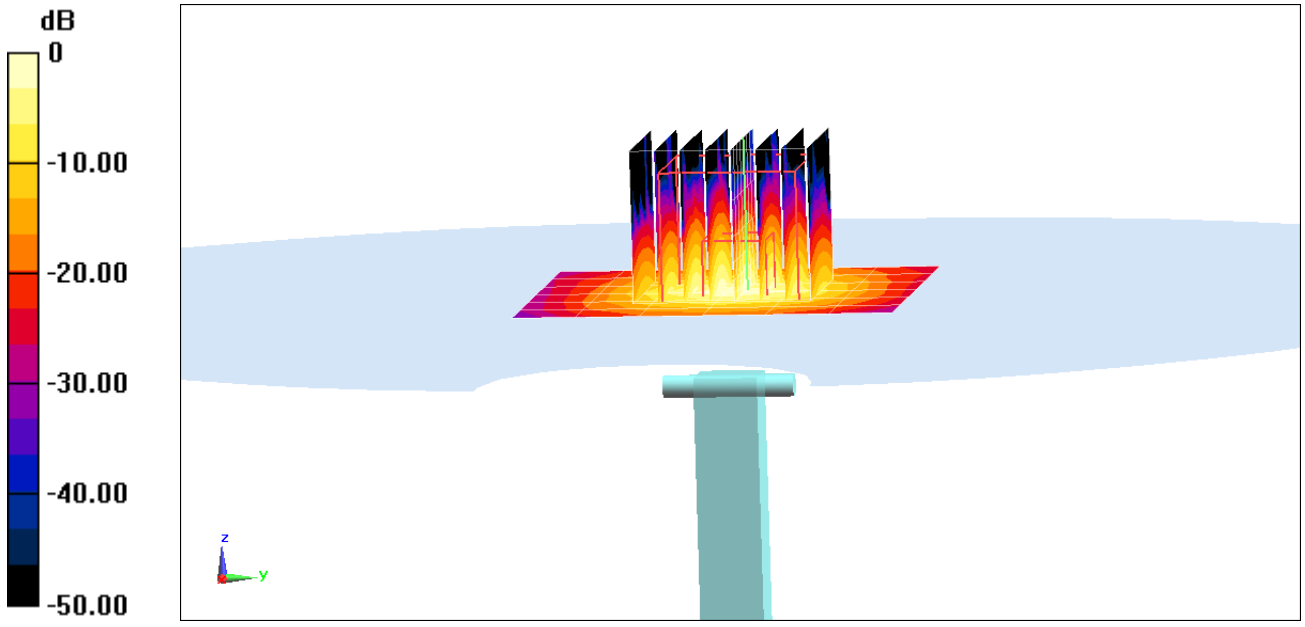
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5750 MHz; σ = 6.173 S/m; ε_r = 47.415; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 05-07-2018; Ambient Temp: 23.3°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7308; ConvF(4.5, 4.5, 4.5); Calibrated: 8/16/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/14/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.8 W/kg
SAR(10 g) = 0.995 W/kg
Deviation(10 g) = -7.01%



0 dB = 8.95 W/kg = 9.52 dBW/kg

APPENDIX C: PROBE CALIBRATION

© 2018 PCTEST Engineering Laboratory, Inc.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **PC Test**

Certificate No: D750V3-1161_Jul16

CALIBRATION CERTIFICATE

Object	D750V3 - SN:1161
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	July 13, 2016

√PN
8/9/16
Extended
7/2017
SC

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 13, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.9 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.17 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.39 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.1 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.16 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.43 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.41 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.53 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.6 Ω - 0.9 jΩ
Return Loss	- 25.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.2 Ω - 4.0 jΩ
Return Loss	- 28.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.033 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 19, 2015

DASY5 Validation Report for Head TSL

Date: 13.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1161

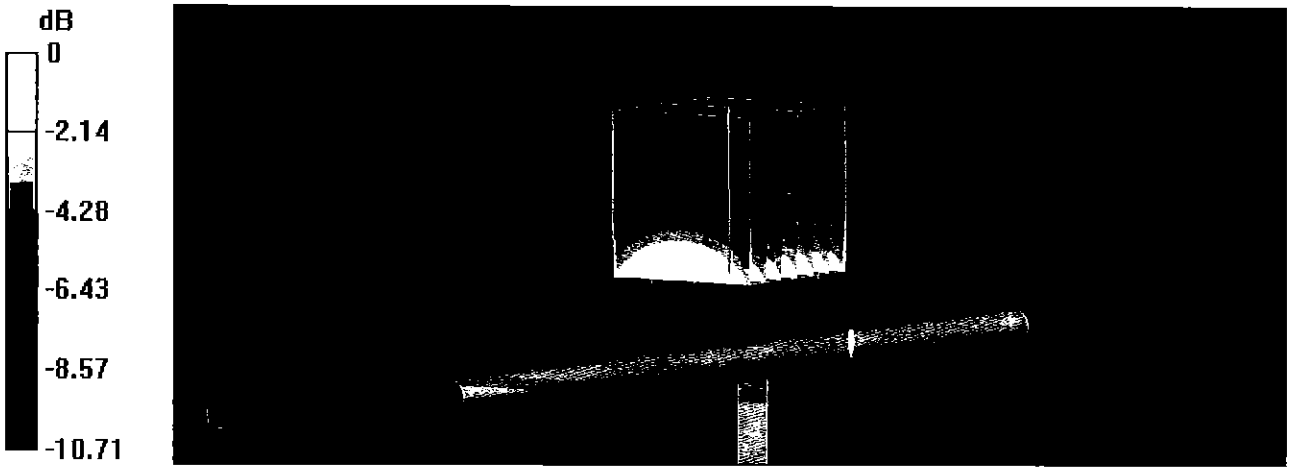
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.91 S/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.07, 10.07, 10.07); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

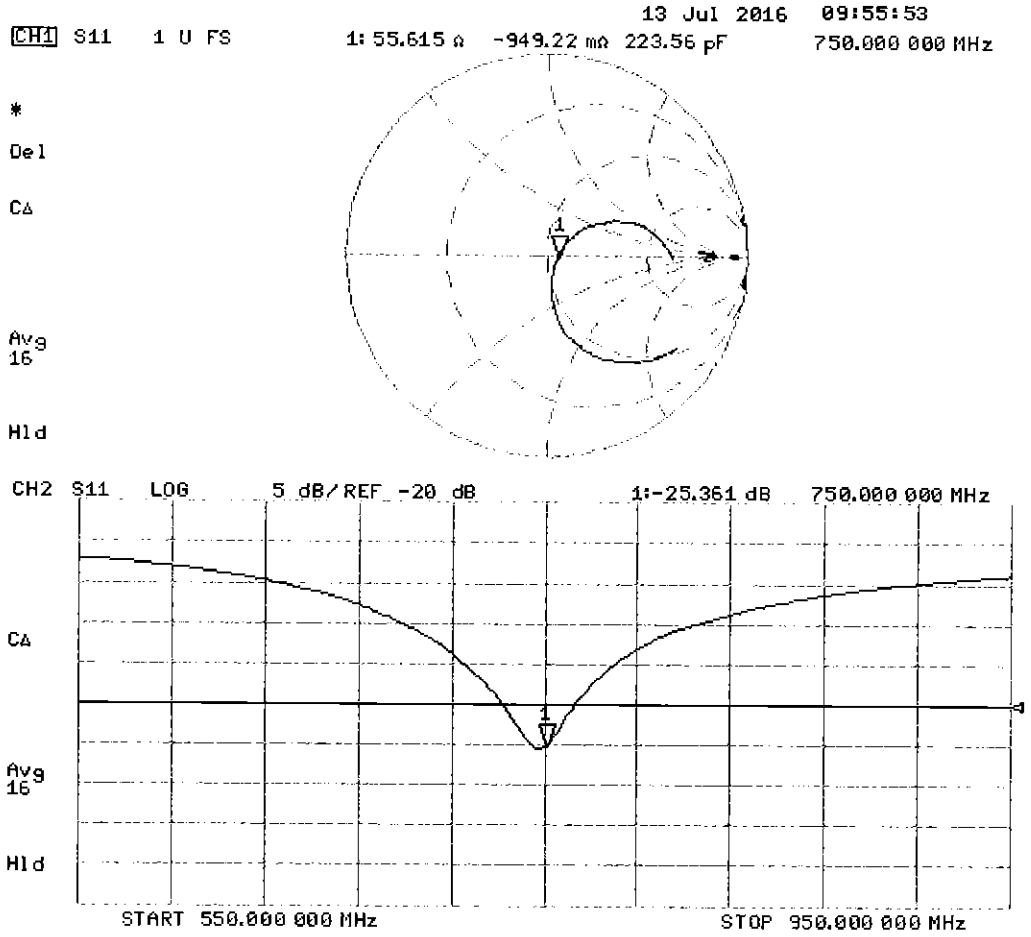
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.07 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.13 W/kg
SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.37 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 13.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1161

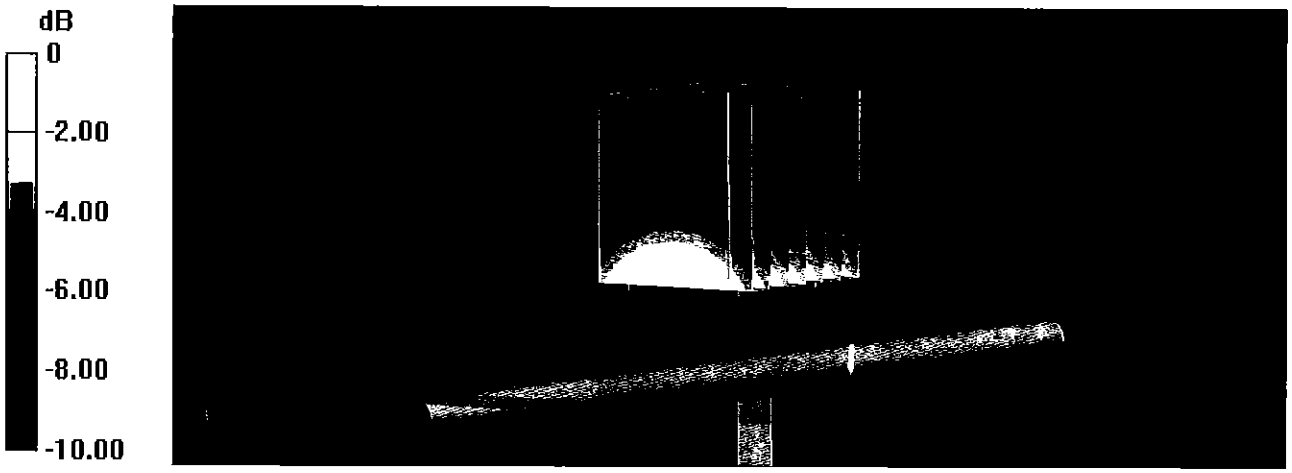
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.99 S/m; ε_r = 55.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

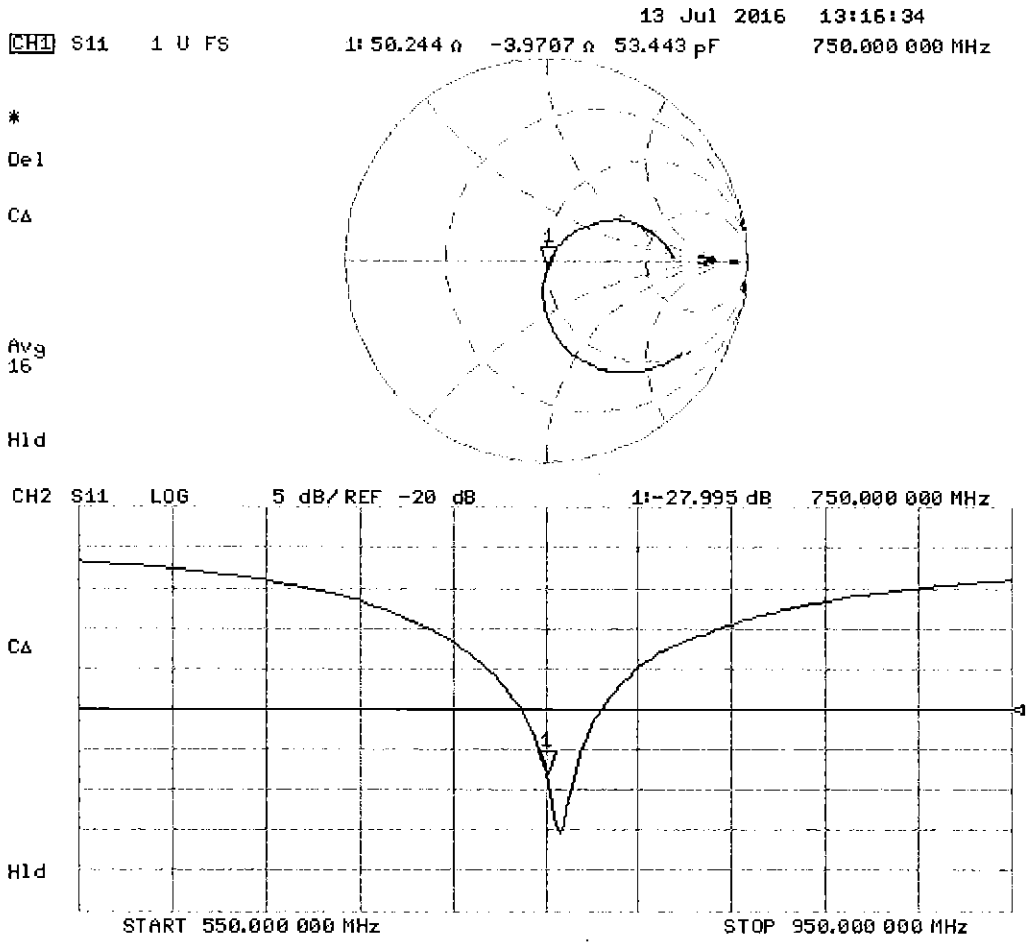
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.33 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.22 W/kg
SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.41 W/kg
Maximum value of SAR (measured) = 2.87 W/kg



0 dB = 2.87 W/kg = 4.58 dBW/kg

Impedance Measurement Plot for Body TSL



Certification of Calibration

Object	D750V3 – SN: 1161
Calibration procedure(s)	Procedure for Calibration Extension for SAR Dipoles.
Calibration date:	July 12, 2017
Description:	SAR Validation Dipole at 750 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/1/2017	Annual	6/1/2018	MY53401181
Agilent	8753ES	S-Parameter Network Analyzer	10/26/2016	Annual	10/26/2017	US39170118
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/8/2017	Annual	3/8/2018	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/14/2017	Annual	6/14/2018	1334
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2017	Annual	5/10/2018	1070
SPEAG	ES3DV3	SAR Probe	11/15/2016	Annual	11/15/2017	3334
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3319
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1207364
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Seekonk	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A

Measurement Uncertainty = ±23% (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halbfoster	Test Engineer	BRODIE HALBFOSTER
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	KOK

DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

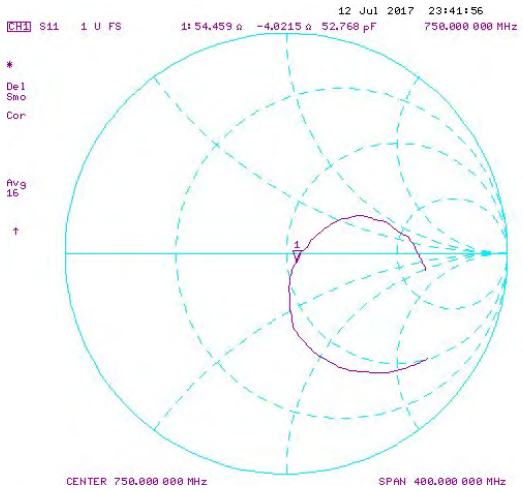
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

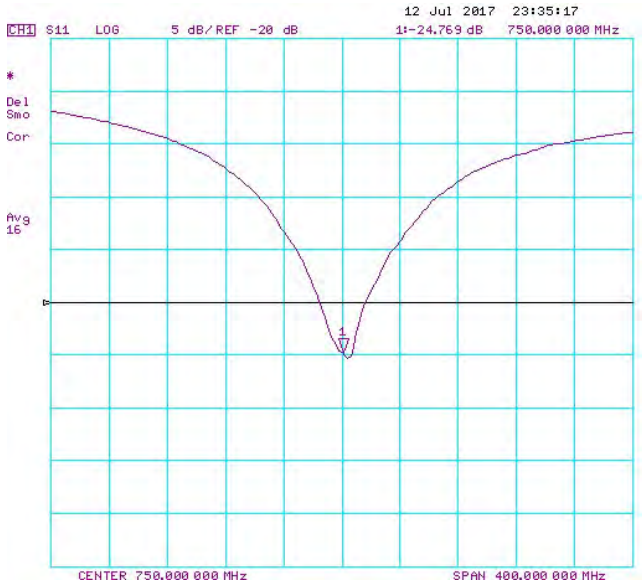
The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 23.0 dBm	Measured Head SAR (1g) W/kg @ 23.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 23.0 dBm	Measured Head SAR (10g) W/kg @ 23.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
7/13/2016	7/12/2017	1.033	1.63	1.65	0.98%	1.08	1.09	1.11%	55.6	54.5	1.1	-0.9	-4.0	3.1	-25.4	-24.8	2.40%	PASS

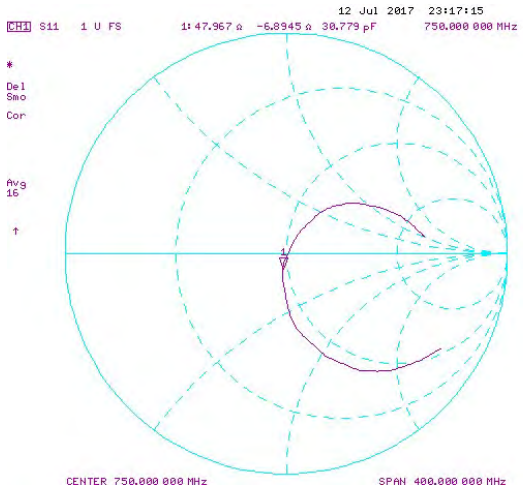
Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 23.0 dBm	Measured Body SAR (1g) W/kg @ 23.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 23.0 dBm	Measured Body SAR (10g) W/kg @ 23.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
7/13/2016	7/12/2017	1.033	1.69	1.75	3.80%	1.11	1.17	5.79%	50.2	48.0	2.2	-4.0	-6.9	2.9	-28.0	-23.9	14.60%	PASS

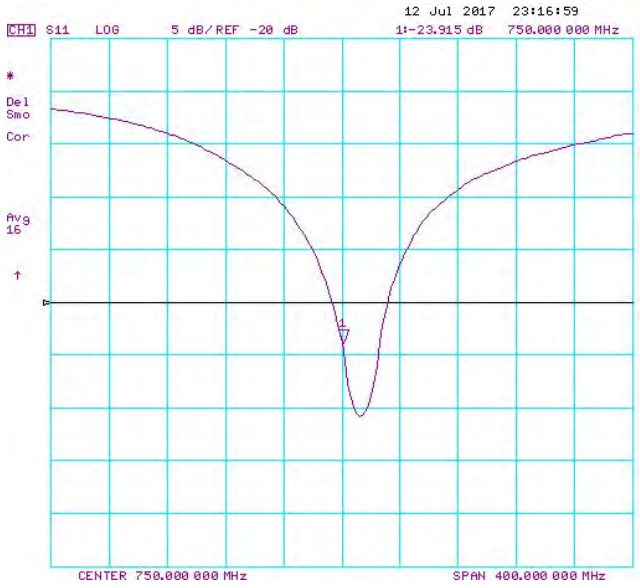
Impedance & Return-Loss Measurement Plot for Head TSL





Impedance & Return-Loss Measurement Plot for Body TSL





Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client PC Test

Certificate No: D835V2-4d119_Apr18

CALIBRATION CERTIFICATE

Object: D835V2 - SN:4d119

Calibration procedure(s): QA CAL-05.v10
Calibration procedure for dipole validation kits above 700 MHz
BN ✓
05.04.2018

Calibration date: April 10, 2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M.Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 11, 2018

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.9 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.43 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.53 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.57 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.19 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.8 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.44 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.56 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.59 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.26 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.0 Ω + 0.6 jΩ
Return Loss	- 38.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.1 Ω - 3.3 jΩ
Return Loss	- 26.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.389 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 29, 2010

DASY5 Validation Report for Head TSL

Date: 10.04.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d119

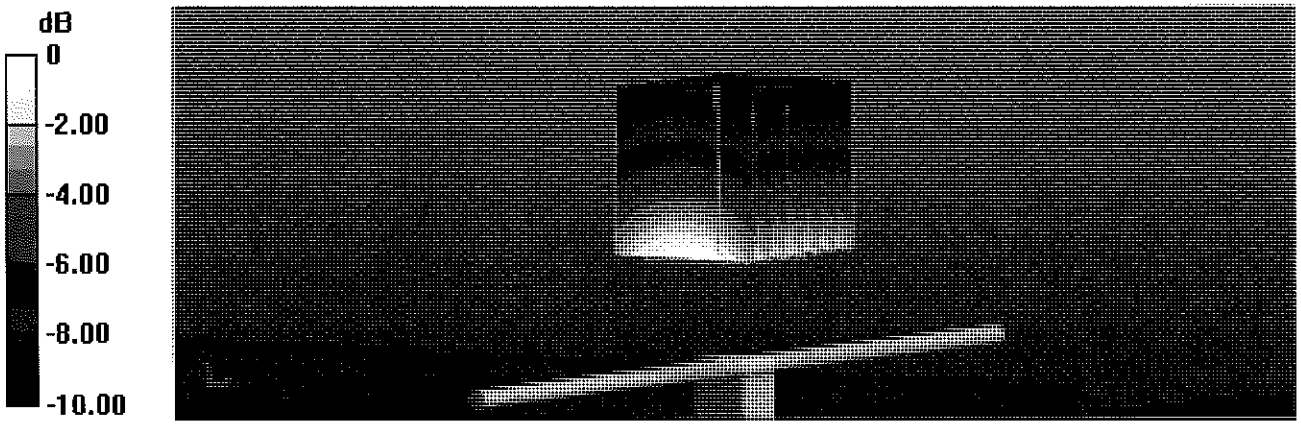
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.9, 9.9, 9.9); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

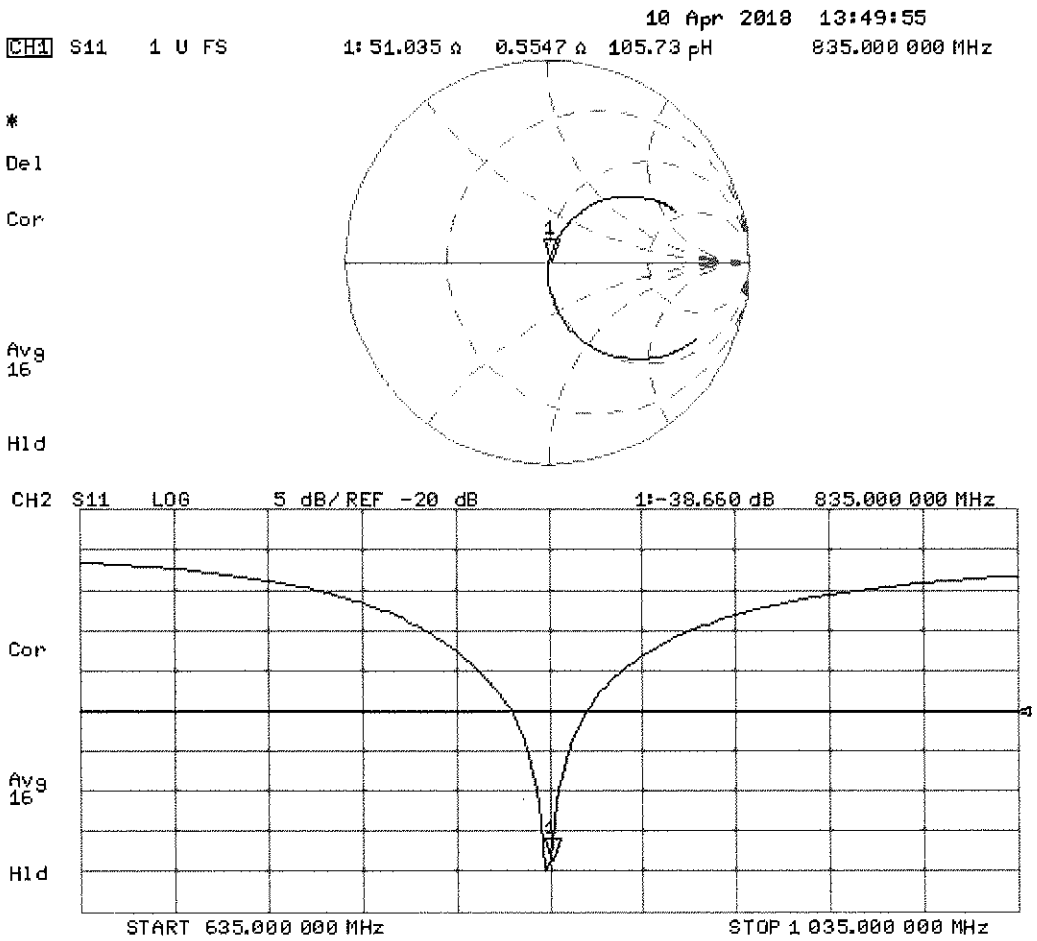
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 62.85 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.74 W/kg
SAR(1 g) = 2.43 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 3.29 W/kg



0 dB = 3.29 W/kg = 5.17 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 10.04.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d119

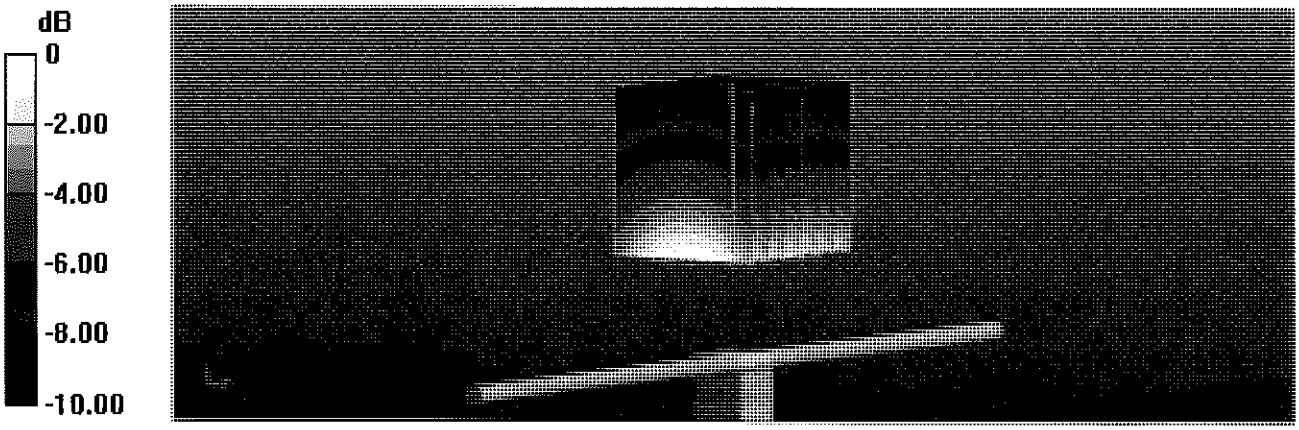
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.99 S/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.05, 10.05, 10.05); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

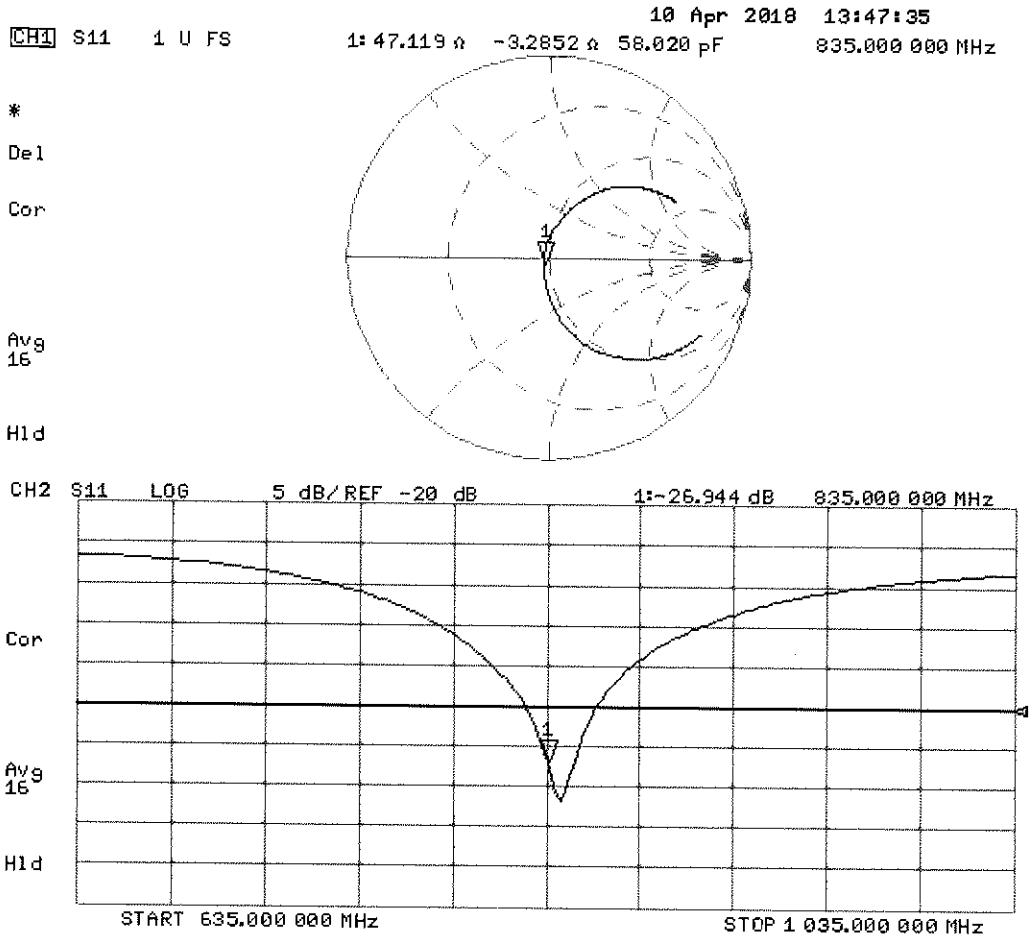
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.52 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 3.24 W/kg



0 dB = 3.24 W/kg = 5.11 dBW/kg

Impedance Measurement Plot for Body TSL



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **PC Test** Certificate No: **D1750V2-1148_May17**

CALIBRATION CERTIFICATE

Object D1750V2 - SN:1148

Calibration procedure(s) QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

BN ✓
05-23-2017

Calibration date: May 09, 2017

BN ✓
05-09-2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 11, 2017

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.0 ± 6 %	1.36 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.83 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.3 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.7 ± 6 %	1.47 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.17 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**37.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.93 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**19.8 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.8 Ω - 0.7 jΩ
Return Loss	- 42.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.7 Ω - 0.5 jΩ
Return Loss	- 26.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.223 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 30, 2014

DASY5 Validation Report for Head TSL

Date: 09.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1148

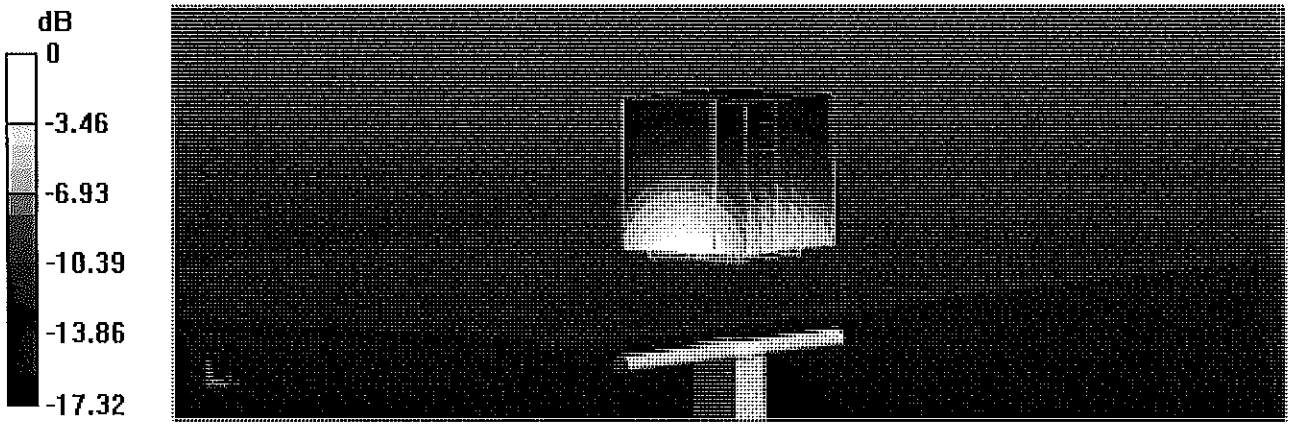
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.36 S/m; ε_r = 39; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.46, 8.46, 8.46); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.0(1442); SEMCAD X 14.6.10(7413)

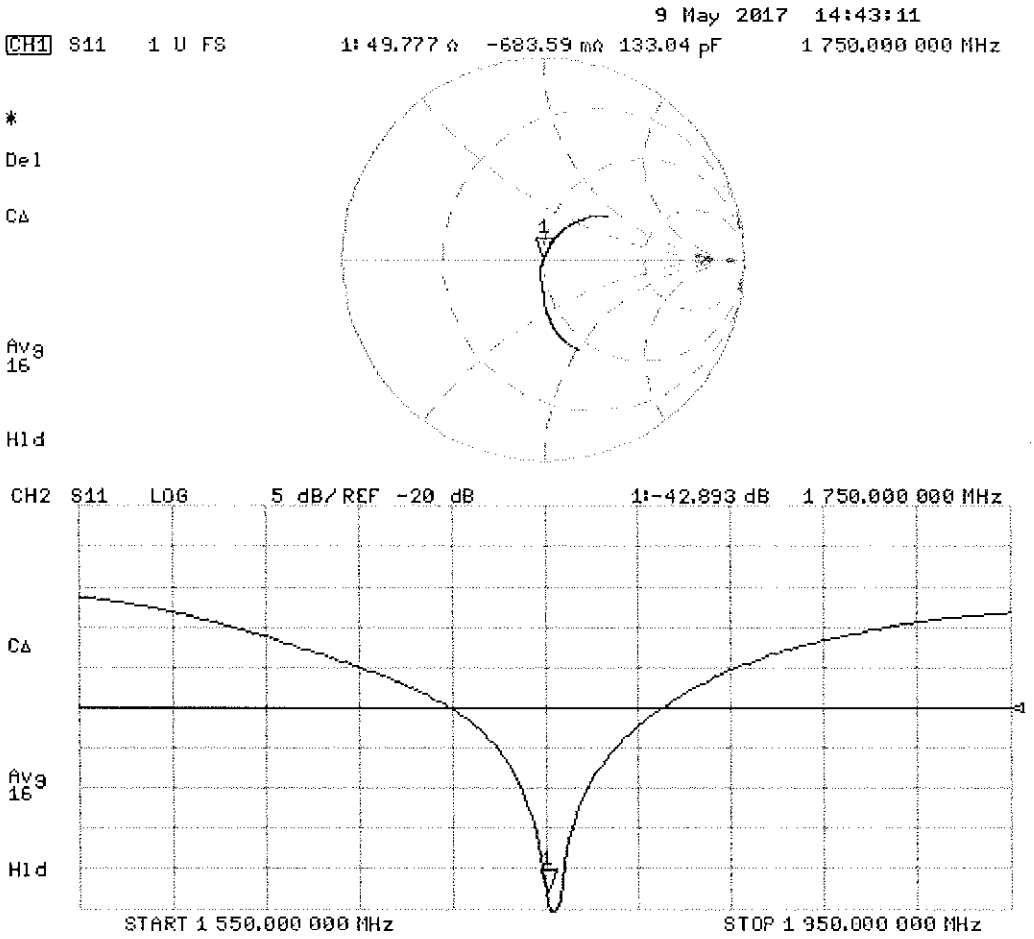
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.4 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 16.5 W/kg
SAR(1 g) = 9.11 W/kg; SAR(10 g) = 4.83 W/kg
Maximum value of SAR (measured) = 13.9 W/kg



0 dB = 13.9 W/kg = 11.43 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 09.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1148

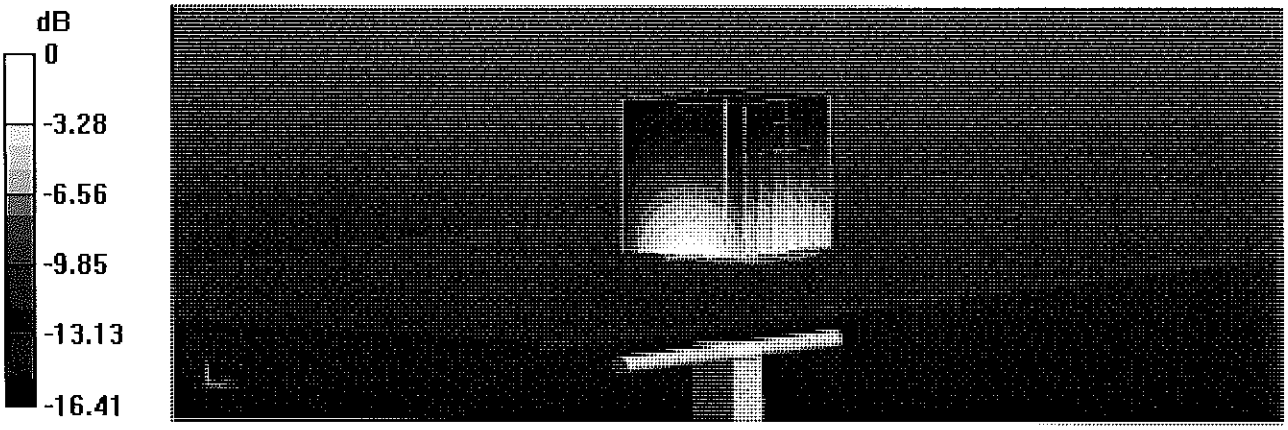
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.47 S/m; ε_r = 53.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.25, 8.25, 8.25); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1442); SEMCAD X 14.6.10(7413)

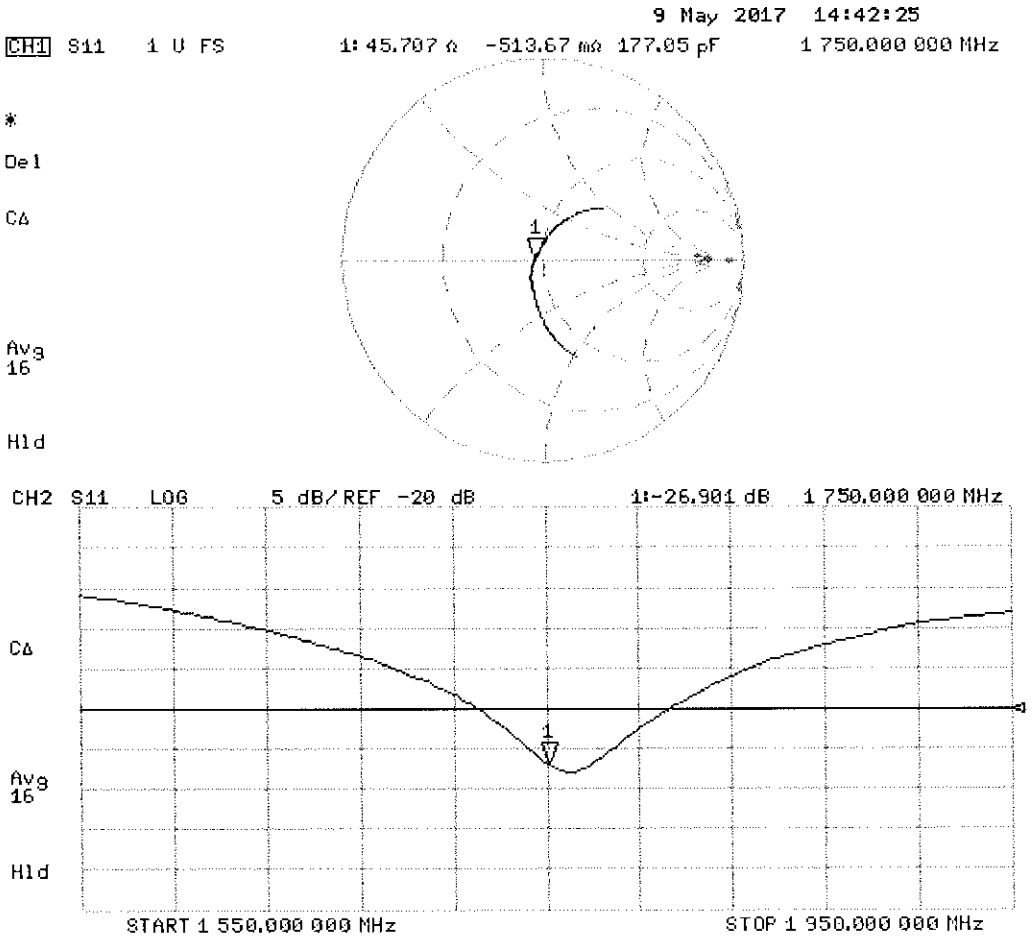
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.49 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 15.9 W/kg
SAR(1 g) = 9.17 W/kg; SAR(10 g) = 4.93 W/kg
Maximum value of SAR (measured) = 13.1 W/kg



0 dB = 13.1 W/kg = 11.17 dBW/kg

Impedance Measurement Plot for Body TSL



Certification of Calibration

Object	D1750V2 – SN: 1148
Calibration procedure(s)	Procedure for Calibration Extension for SAR Dipoles.
Extended Calibration date:	May 09, 2018
Description:	SAR Validation Dipole at 1750 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/1/2017	Annual	6/1/2018	MY53401181
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2018	Annual	2/9/2019	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/21/2017	Annual	6/21/2018	1333
SPEAG	DAK-3.5	Dielectric Assessment Kit	9/12/2017	Annual	9/12/2018	1091
SPEAG	ES3DV3	SAR Probe	9/18/2017	Annual	9/18/2018	3287
SPEAG	ES3DV3	SAR Probe	2/13/2018	Annual	2/13/2019	3213
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1207364
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1339018
Agilent	N5182A	MXG Vector Signal Generator	4/18/2018	Annual	4/18/2019	MY47420800
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Agilent	8753ES	S-Parameter Network Analyzer	9/14/2017	Annual	9/14/2018	US39170118
Pasternack	NC-100	Torque Wrench	4/18/2018	Annual	4/18/2019	1445
Anritsu	ML2495A	Power Meter	10/22/2017	Annual	10/22/2018	941001

Measurement Uncertainty = ±23% (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halbfoster	Test Engineer	BRODIE HALBFOSTER
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	

DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

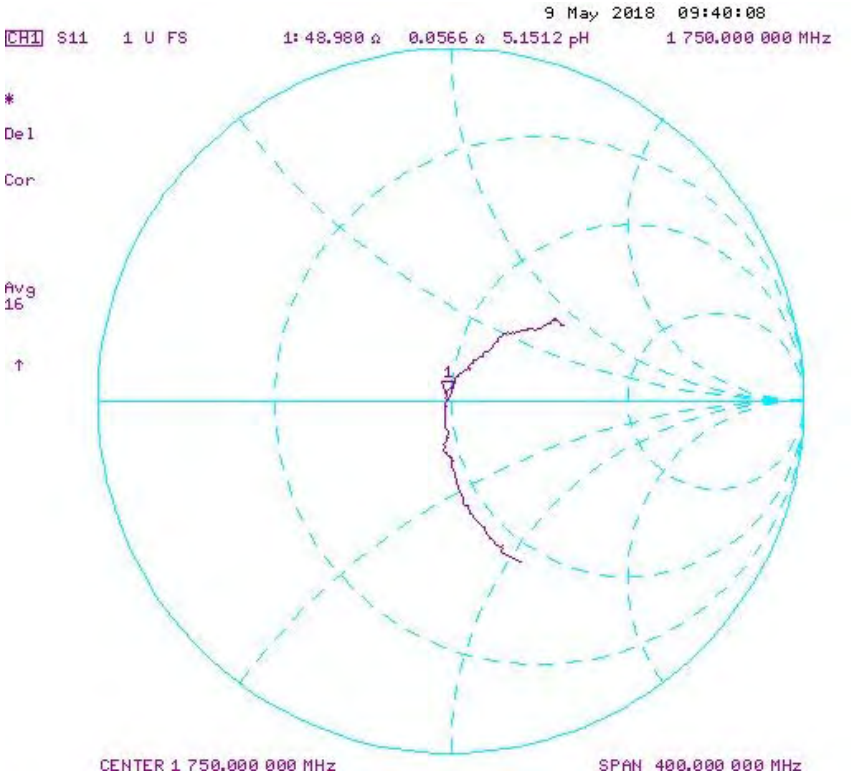
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

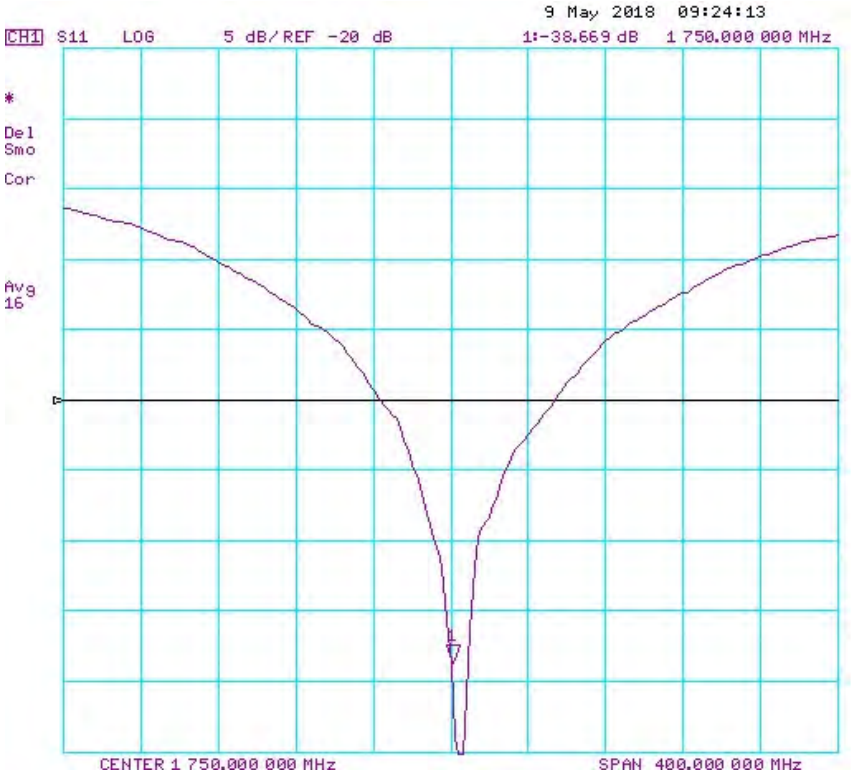
The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 20.0 dBm	Measured Head SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 20.0 dBm	Measured Head SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
5/9/2017	5/9/2018	1.223	3.64	3.59	-1.37%	1.93	1.91	-1.04%	49.8	49.0	0.8	-0.7	0.1	0.8	-42.9	-38.7	9.90%	PASS

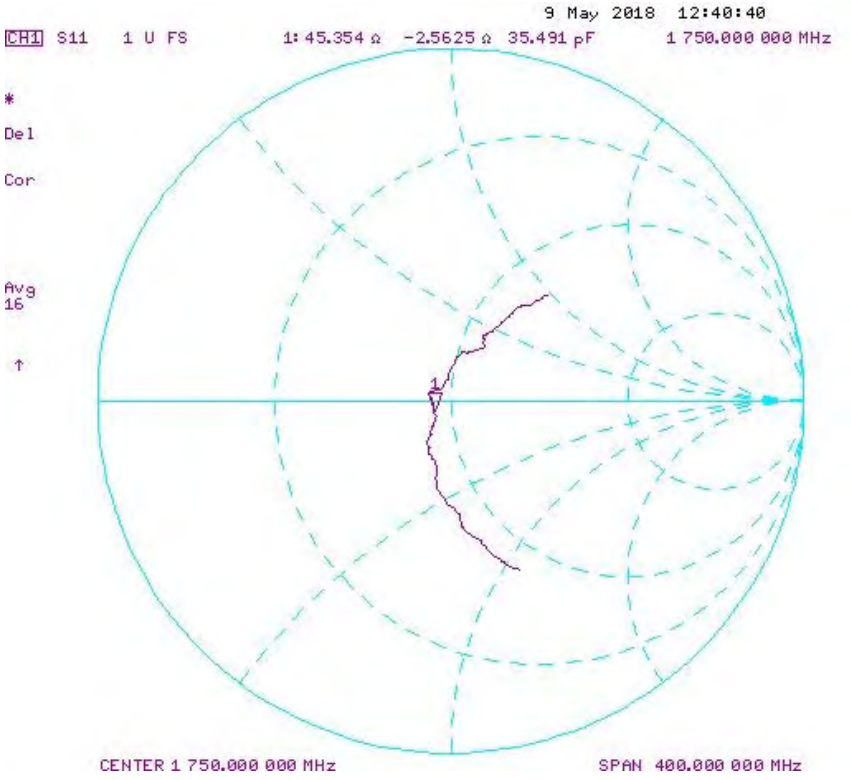
Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 20.0 dBm	Measured Body SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 20.0 dBm	Measured Body SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
5/9/2017	5/9/2018	1.223	3.7	3.88	4.86%	1.98	2.06	4.04%	45.7	45.4	0.3	-0.5	-2.6	2.1	-26.9	-25.0	7.20%	PASS

Impedance & Return-Loss Measurement Plot for Head TSL





Impedance & Return-Loss Measurement Plot for Body TSL





Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client PC Test

Certificate No: D1900V2-5d080_Jul16

CALIBRATION CERTIFICATE

Object: D1900V2 - SN:5d080

Calibration procedure(s): QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

BN ✓
7/16/2016
Extended
7/2017
SL ✓

Calibration date: July 08, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 13, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.8 ± 6 %	1.38 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.76 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**39.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.5 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.7 ± 6 %	1.51 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.75 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**39.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.17 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.7 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.1 Ω + 5.3 jΩ
Return Loss	- 25.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.4 Ω + 6.8 jΩ
Return Loss	- 22.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.192 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 28, 2006

DASY5 Validation Report for Head TSL

Date: 08.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d080

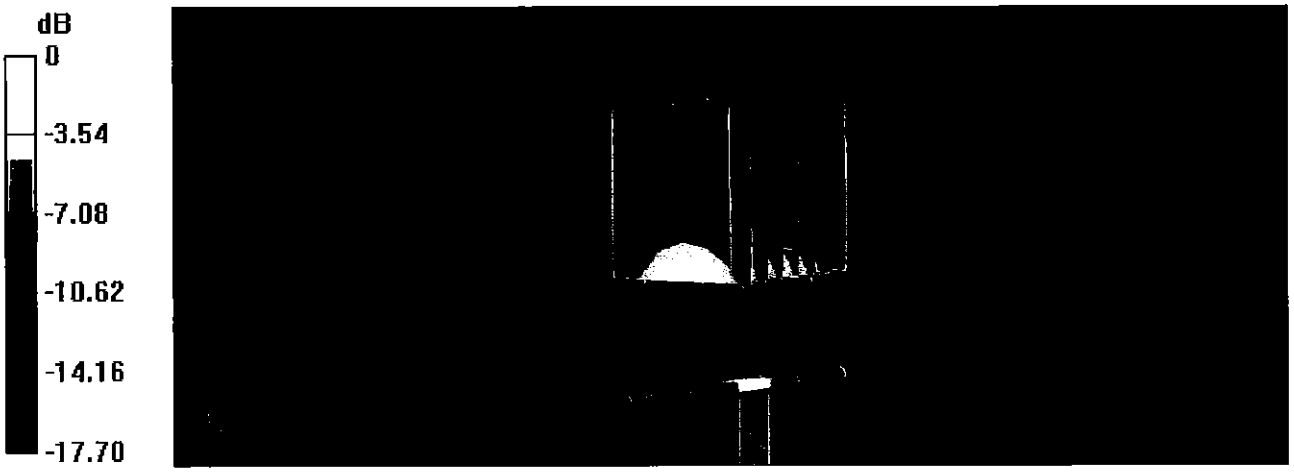
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.38 S/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.99, 7.99, 7.99); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

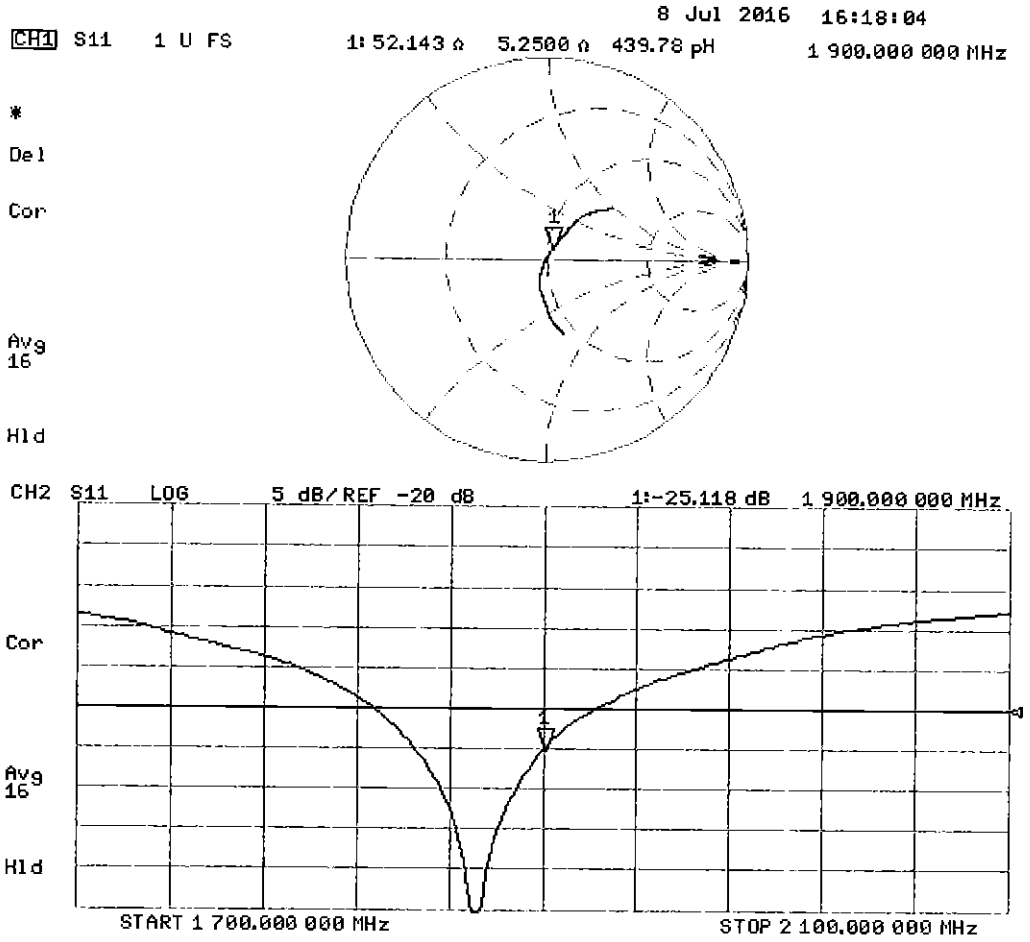
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.6 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 18.4 W/kg
SAR(1 g) = 9.76 W/kg; SAR(10 g) = 5.1 W/kg
Maximum value of SAR (measured) = 15.0 W/kg



0 dB = 15.0 W/kg = 11.76 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 08.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d080

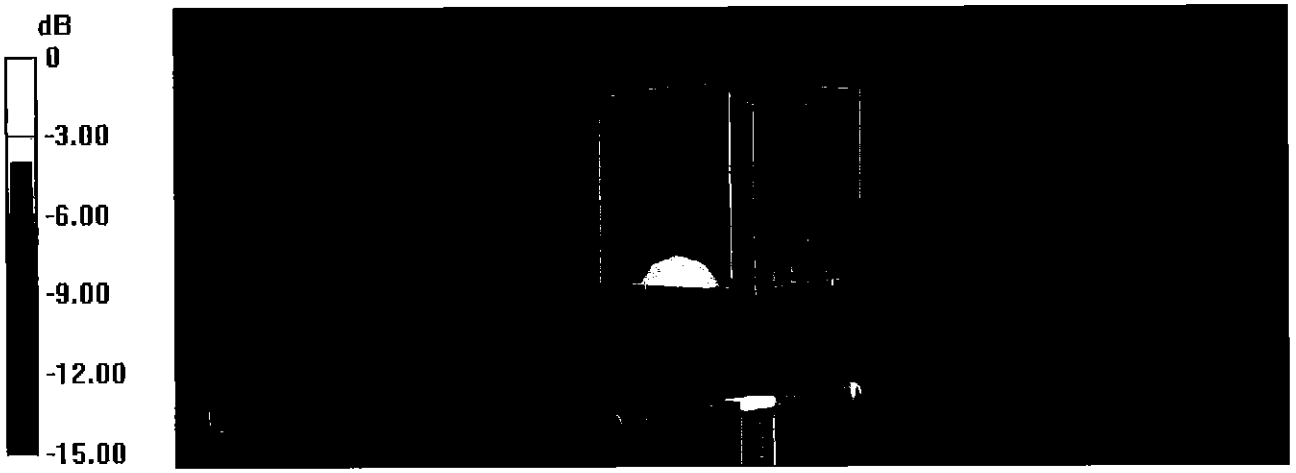
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.51 S/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.03, 8.03, 8.03); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

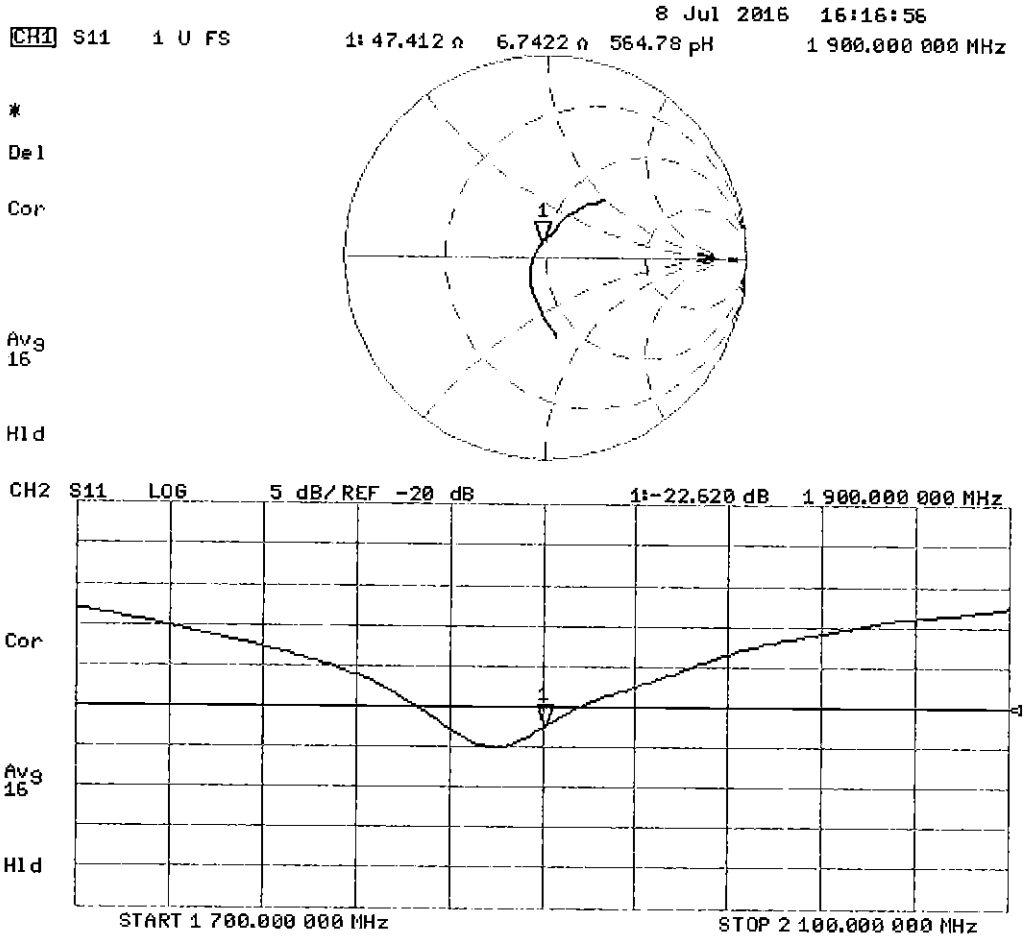
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 103.1 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.75 W/kg; SAR(10 g) = 5.17 W/kg
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.67 dBW/kg

Impedance Measurement Plot for Body TSL



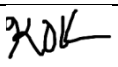
Certification of Calibration

Object	D1900V2 – SN: 5d080
Calibration procedure(s)	Procedure for Calibration Extension for SAR Dipoles.
Calibration date:	July 06, 2017
Description:	SAR Validation Dipole at 1900 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	3/31/2017	Biennial	3/31/2019	170232394
Control Company	4352	Ultra Long Stem Thermometer	5/2/2017	Biennial	5/2/2019	170330156
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/1/2017	Annual	6/1/2018	MY53401181
Agilent	8753ES	S-Parameter Network Analyzer	10/26/2016	Annual	10/26/2017	US39170118
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2017	Annual	3/13/2018	1415
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2017	Annual	5/10/2018	1070
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3209
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1207364
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Seekonk	NC-100	Torque Wrench	11/6/2015	Biennial	11/6/2017	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A

Measurement Uncertainty = ±23% (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halbfoster	Test Engineer	
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	

DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 20.0 dBm	Measured Head SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 20.0 dBm	Measured Head SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
7/8/2016	7/6/2017	1.192	3.93	3.86	-1.78%	2.05	2	-2.44%	52.1	52.9	0.8	5.3	4.7	0.6	-25.1	-25.6	-2.00%	PASS

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 20.0 dBm	Measured Body SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 20.0 dBm	Measured Body SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
7/8/2016	7/6/2017	1.192	3.91	4.05	3.58%	2.07	2.11	1.93%	47.4	48.5	1.1	6.8	5.1	1.7	-22.6	-25.5	-12.80%	PASS

Impedance & Return-Loss Measurement Plot for Head TSL

