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:
LG Electronics U.S.A., Inc.
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
United States

Date of Testing:
06/19/18 - 07/16/18
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1806200130-01.ZNF

FCC ID: **ZNFV405UA**

APPLICANT: **LG ELECTRONICS U.S.A., INC.**

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: LM-V405UA
Additional Model(s): LMV405UA, LM-V405TA, LMV405TA, LM-V405MA, LMV405MA, LM-V405QA, LMV405QA, LM-V405QA5, LMV405QA5, LM-V405QA6, LMV405QA6

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	CDMA/EVDO BC10 (§90S)	817.90 - 823.10 MHz	0.14	0.77	0.81	N/A
PCE	CDMA/EVDO BC0 (§22H)	824.70 - 848.31 MHz	0.14	0.91	0.94	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.13	0.46	0.93	2.72
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	< 0.1	0.32	0.31	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.11	0.36	0.46	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.11	0.83	0.83	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.11	0.27	0.35	1.44
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.16	0.72	1.20	2.89
PCE	LTE Band 71	665.5 - 695.5 MHz	< 0.1	0.78	0.78	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.11	0.68	0.68	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	0.10	0.79	0.79	N/A
PCE	LTE Band 14	790.5 - 795.5 MHz	< 0.1	0.52	0.52	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	0.11	0.75	0.75	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.10	0.68	0.68	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.10	0.27	0.34	1.08
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.15	0.63	1.14	2.80
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 30	2307.5 - 2312.5 MHz	0.37	0.58	0.64	N/A
PCE	LTE Band 7	2502.5 - 2567.5 MHz	0.31	0.34	0.46	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.45	0.50	0.53	N/A
DTS	2.4 GHz WLAN	2412 - 2462 MHz	0.37	0.79	0.79	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.49	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.15	0.64	N/A	1.93
NII	U-NII-2C	5500 - 5720 MHz	0.57	0.50	N/A	1.22
NII	U-NII-3	5745 - 5825 MHz	0.58	0.45	0.45	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.30	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.40	1.59	1.59	3.88

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.

© 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 15

3 INTRODUCTION 16

4 DOSIMETRIC ASSESSMENT 17

5 DEFINITION OF REFERENCE POINTS 18

6 TEST CONFIGURATION POSITIONS 19

7 RF EXPOSURE LIMITS 23

8 FCC MEASUREMENT PROCEDURES 24

9 RF CONDUCTED POWERS 32

10 SYSTEM VERIFICATION 80

11 SAR DATA SUMMARY 84

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS 107

13 SAR MEASUREMENT VARIABILITY 126

14 ADDITIONAL TESTING PER FCC GUIDANCE 128

15 EQUIPMENT LIST 131

16 MEASUREMENT UNCERTAINTIES 132

17 CONCLUSION 133

18 REFERENCES 134

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: DOWNLINK LTE CA RF CONDUCTED POWERS

© 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
CDMA/EVDO BC10 (§90S)	Voice/Data	817.90 - 823.10 MHz
CDMA/EVDO BC0 (§22H)	Voice/Data	824.70 - 848.31 MHz
PCS CDMA/EVDO	Voice/Data	1851.25 - 1908.75 MHz
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
LTE Band 71	Voice/Data	665.5 - 695.5 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 14	Voice/Data	790.5 - 795.5 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 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 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
WMC	Data	500 Hz - 4 kHz

© 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.

1.2 Power Reduction for SAR

This device uses a power reduction mechanism for SAR compliance. The power reduction mechanism is activated when the device is used in close proximity to the user's body. 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.

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 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	**34.2**	**34.2**	**30.0**	**28.0**	**27.0**	**27.0**	**27.0**	**26.0**	**25.0**
	Nominal	**33.7**	**33.7**	**29.5**	**27.5**	**26.5**	**26.5**	**26.5**	**25.5**	**24.5**
GSM/GPRS/EDGE 1900	Maximum	**31.7**	**31.7**	**27.5**	**26.5**	**25.5**	**26.0**	**26.0**	**25.5**	**24.5**
	Nominal	**31.2**	**31.2**	**27.0**	**26.0**	**25.0**	**25.5**	**25.5**	**25.0**	**24.0**

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 5 (850 MHz)	Maximum	**25.5**	**25.5**	**25.5**	**25.5**
	Nominal	**25.0**	**25.0**	**25.0**	**25.0**
UMTS Band 4 (1750 MHz)	Maximum	**25.2**	**25.2**	**25.2**	**25.2**
	Nominal	**24.7**	**24.7**	**24.7**	**24.7**
UMTS Band 2 (1900 MHz)	Maximum	**25.2**	**25.2**	**25.2**	**25.2**
	Nominal	**24.7**	**24.7**	**24.7**	**24.7**

© 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)
CDMA/EVDO BC10 (§90S)	Maximum	**25.5**
	Nominal	**25.0**
CDMA/EVDO BC0 (§22H)	Maximum	**25.5**
	Nominal	**25.0**
PCS CDMA/EVDO	Maximum	**25.2**
	Nominal	**24.7**

Mode / Band		Modulated Average (dBm)
LTE Band 71	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 12	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 17	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 13	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 14	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 5 (Cell)	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 26 (Cell)	Maximum	**25.5**
	Nominal	**25.0**
LTE Band 66 (AWS)	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 4 (AWS)	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 25 (PCS)	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 2 (PCS)	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 30	Maximum	**23.7**
	Nominal	**23.2**
LTE Band 7	Maximum	**23.7**
	Nominal	**23.2**
LTE Band 41 (PC3)	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 41 (PC2)	Maximum	**27.7**
	Nominal	**27.2**

© 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.

1.3.2 Reduced PCE Power

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 4 (1750 MHz)	Maximum	**24.2**	**24.2**	**24.2**	**24.2**
	Nominal	**23.7**	**23.7**	**23.7**	**23.7**
UMTS Band 2 (1900 MHz)	Maximum	**24.2**	**24.2**	**24.2**	**24.2**
	Nominal	**23.7**	**23.7**	**23.7**	**23.7**

Mode / Band		Modulated Average (dBm)
PCS CDMA/EVDO	Maximum	**24.2**
	Nominal	**23.7**

Mode / Band		Modulated Average (dBm)
LTE Band 66 (AWS)	Maximum	**24.2**
	Nominal	**23.7**
LTE Band 4 (AWS)	Maximum	**24.2**
	Nominal	**23.7**
LTE Band 25 (PCS)	Maximum	**24.2**
	Nominal	**23.7**
LTE Band 2 (PCS)	Maximum	**24.2**
	Nominal	**23.7**

© 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.

1.3.3 Maximum Bluetooth and SISO and MIMO WLAN Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
		Ch. 1-2	Ch. 3-9	Ch. 10-11
IEEE 802.11b (2.4 GHz)	Maximum	**20.5**		
	Nominal	**19.5**		
IEEE 802.11g (2.4 GHz)	Maximum	**18.5**	**19.0**	**17.0**
	Nominal	**17.5**	**18.0**	**16.0**
IEEE 802.11n (2.4 GHz)	Maximum	**17.5**	**18.0**	**16.0**
	Nominal	**16.5**	**17.0**	**15.0**
IEEE 802.11ac (2.4 GHz)	Maximum	**17.5**	**18.0**	**16.0**
	Nominal	**16.5**	**17.0**	**15.0**

Mode / Band		Modulated Average - MIMO (dBm)		
		Ch. 1-2	Ch. 3-9	Ch. 10-11
IEEE 802.11b (2.4 GHz)	Maximum	**23.5**		
	Nominal	**22.5**		
IEEE 802.11g (2.4 GHz)	Maximum	**21.5**	**22.0**	**20.0**
	Nominal	**20.5**	**21.0**	**19.0**
IEEE 802.11n (2.4 GHz)	Maximum	**20.5**	**21.0**	**19.0**
	Nominal	**19.5**	**20.0**	**18.0**
IEEE 802.11ac (2.4 GHz)	Maximum	**20.5**	**21.0**	**19.0**
	Nominal	**19.5**	**20.0**	**18.0**

Mode / Band		Modulated Average - Single Tx Chain (dBm)
Bluetooth	Maximum	**13.0**
	Nominal	**12.0**
Bluetooth LE	Maximum	**7.0**
	Nominal	**6.0**

© 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		
		Ch. 36-165	Ch. 38	Ch. 62, 102	Ch. 46-54, 110-159	Ch. 42	Ch. 58	Ch. 106-155
IEEE 802.11a (5 GHz)	Maximum	**18.0**						
	Nominal	**17.0**						
IEEE 802.11n (5 GHz)	Maximum	**16.0**	**13.0**	**12.5**	**16.0**			
	Nominal	**15.0**	**12.0**	**11.5**	**15.0**			
IEEE 802.11ac (5 GHz)	Maximum	**16.0**	**13.0**	**12.5**	**16.0**	**13.5**	**10.5**	**13.5**
	Nominal	**15.0**	**12.0**	**11.5**	**15.0**	**12.5**	**9.5**	**12.5**

Mode / Band		Modulated Average - MIMO (dBm)						
		20 MHz Bandwidth	40 MHz Bandwidth			80 MHz Bandwidth		
		Ch. 36-165	Ch. 38	Ch. 62, 102	Ch. 46-54, 110-159	Ch. 42	Ch. 58	Ch. 106-155
IEEE 802.11a (5 GHz)	Maximum	**21.0**						
	Nominal	**20.0**						
IEEE 802.11n (5 GHz)	Maximum	**19.0**	**16.0**	**15.5**	**19.0**			
	Nominal	**18.0**	**15.0**	**14.5**	**18.0**			
IEEE 802.11ac (5 GHz)	Maximum	**19.0**	**16.0**	**15.5**	**19.0**	**16.5**	**13.5**	**16.5**
	Nominal	**18.0**	**15.0**	**14.5**	**18.0**	**15.5**	**12.5**	**15.5**

© 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.

1.3.4 Reduced SISO WLAN Power

Mode / Band		Modulated Average - Single Tx Chain (dBm)		
		Ch. 1-2	Ch. 3-9	Ch. 10-11
IEEE 802.11b (2.4 GHz)	Maximum	**17.0**		
	Nominal	**16.0**		
IEEE 802.11g (2.4 GHz)	Maximum	**17.0**		
	Nominal	**16.0**		
IEEE 802.11n (2.4 GHz)	Maximum	**17.0**		**16.0**
	Nominal	**16.0**		**15.0**
IEEE 802.11ac (2.4 GHz)	Maximum	**17.0**		**16.0**
	Nominal	**16.0**		**15.0**

Mode / Band		Modulated Average - MIMO (dBm)		
		Ch. 1-2	Ch. 3-9	Ch. 10-11
IEEE 802.11b (2.4 GHz)	Maximum	**20.0**		
	Nominal	**19.0**		
IEEE 802.11g (2.4 GHz)	Maximum	**20.0**		
	Nominal	**19.0**		
IEEE 802.11n (2.4 GHz)	Maximum	**20.0**		**19.0**
	Nominal	**19.0**		**18.0**
IEEE 802.11ac (2.4 GHz)	Maximum	**20.0**		**19.0**
	Nominal	**19.0**		**18.0**

© 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
EVDO BC10 (§90S)	Yes	Yes	No	Yes	Yes	No
EVDO BC0 (§22H)	Yes	Yes	No	Yes	Yes	No
PCS EVDO	Yes	Yes	No	Yes	No	Yes
GPRS 850	Yes	Yes	No	Yes	Yes	No
GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	No
UMTS 1750	Yes	Yes	No	Yes	No	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
LTE Band 71	Yes	Yes	No	Yes	Yes	No
LTE Band 12	Yes	Yes	No	Yes	Yes	No
LTE Band 13	Yes	Yes	No	Yes	Yes	No
LTE Band 14	Yes	Yes	No	Yes	Yes	No
LTE Band 5 (Cell)	Yes	Yes	No	Yes	Yes	No
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	No
LTE Band 66 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 25 (PCS)	Yes	Yes	No	Yes	No	Yes
LTE Band 30	Yes	Yes	No	Yes	Yes	No
LTE Band 7	Yes	Yes	No	Yes	Yes	No
LTE Band 41	Yes	Yes	No	Yes	Yes	No
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-2A and 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. 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 Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	N/A	Yes	
7	GSM voice + 2.4 GHz WI-FI	Yes	Yes	N/A	Yes	
8	GSM voice + 5 GHz WI-FI	Yes	Yes	N/A	Yes	
9	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
10	GSM voice + 2.4 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
11	GSM voice + 5 GHz WI-FI MIMO	Yes	Yes	N/A	Yes	
12	GSM voice + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	N/A	Yes	
13	UMTS + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
14	UMTS + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
15	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
16	UMTS + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
17	UMTS + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
18	UMTS + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	Yes	Yes	
19	LTE + 2.4 GHz WI-FI	Yes	Yes	Yes	Yes	
20	LTE + 5 GHz WI-FI	Yes	Yes	Yes	Yes	
21	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
22	LTE + 2.4 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
23	LTE + 5 GHz WI-FI MIMO	Yes	Yes	Yes	Yes	
24	LTE + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes	Yes	Yes	Yes	
25	CDMA/EVDO data + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
26	CDMA/EVDO data + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
27	CDMA/EVDO data + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
28	CDMA/EVDO data + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
29	CDMA/EVDO data + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
30	CDMA/EVDO data + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
31	GPRS/EDGE + 2.4 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
32	GPRS/EDGE + 5 GHz WI-FI	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
33	GPRS/EDGE + 2.4 GHz Bluetooth	Yes*^	Yes*	Yes^	Yes	* Pre-installed VOIP applications are considered ^ Bluetooth Tethering is considered
34	GPRS/EDGE + 2.4 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
35	GPRS/EDGE + 5 GHz WI-FI MIMO	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered
36	GPRS/EDGE + 2.4 GHz WI-FI Ant 1 + 5 GHz WI-FI Ant 2	Yes*	Yes*	Yes	Yes	* Pre-installed VOIP applications are considered

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 expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Therefore, the simultaneous transmission scenarios involving WIFI are listed in the above table.

© 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. 5 GHz Wireless Router is only supported for the U-NII-1 and U-NII-3 by S/W, therefore U-NII2A and U-NII2C were not evaluated for wireless router conditions.
6. This device supports 2x2 MIMO Tx for WLAN. 802.11a/g/n/ac modes support CDD, 802.11b mode supports TDD operations only, and 802.11n/ac modes additionally support SDM. Each WLAN antenna can transmit independently or together when operating with MIMO.
7. This device supports BT Tethering.
8. This device supports VOLTE.
9. This device supports VoWIFI.

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-2A & U-NII-2C WIFI, only 2.4 GHz, U-NII-1 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-2A & U-NII-2C WLAN, phablet SAR tests were performed. Phablet SAR was not evaluated for Bluetooth, 2.4 GHz, U-NII-1, and U-NII-3 WLAN operations since wireless router 1g SAR was <1.2 W/kg.

(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. 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 downlink only LTE CA operations was not needed since the maximum average output power in downlink only LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive. Downlink LTE CA conducted powers are included in Appendix H.

This device supports 64QAM on the uplink for LTE Operations. Conducted powers for 64QAM 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.

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 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 14.1).

This device supports LTE Carrier Aggregation (CA) in the uplink for LTE Band 41 and LTE Band 5 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per 2017 Fall TCB Workshop Notes.

Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information)

© 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.

1.8 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 (LTE Carrier Aggregation)

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. 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	**ZNFV405UA**				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 71 (665.5 - 695.5 MHz)				
	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 14 (790.5 - 795.5 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 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 30 (2307.5 - 2312.5 MHz)				
	LTE Band 7 (2502.5 - 2567.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 71: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	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 14: 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 25 (PCS): 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 30: 5 MHz, 10 MHz				
	LTE Band 7: 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 71: 5 MHz	665.5 (133147)		680.5 (133297)	695.5 (133447)	
LTE Band 71: 10 MHz	668 (133172)		680.5 (133297)	693 (133422)	
LTE Band 71: 15 MHz	670.5 (133197)		680.5 (133297)	690.5 (133397)	
LTE Band 71: 20 MHz	673 (133222)		680.5 (133297)	688 (133372)	
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 14: 5 MHz	790.5 (23305)		793 (23330)	795.5 (23355)	
LTE Band 14: 10 MHz	N/A		793 (23330)	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 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 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 30: 5 MHz	2307.5 (27685)		2310 (27710)	2312.5 (27735)	
LTE Band 30: 10 MHz	N/A		2310 (27710)	N/A	
LTE Band 7: 5 MHz	2502.5 (20775)		2535 (21100)	2567.5 (21425)	
LTE Band 7: 10 MHz	2505 (20800)		2535 (21100)	2565 (21400)	
LTE Band 7: 15 MHz	2507.5 (20825)		2535 (21100)	2562.5 (21375)	
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)	2560 (21350)	
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, 16 QAM, 64 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 12. It supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20MHz component carriers and LTE CA_5B with a maximum of two 10MHz component carriers. All other uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC unless otherwise specified. The following LTE Release 12 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SCFDMA.				

© 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.

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. 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:

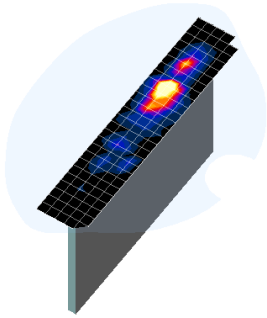


Figure 4-1
Sample SAR Area Scan

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. 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].

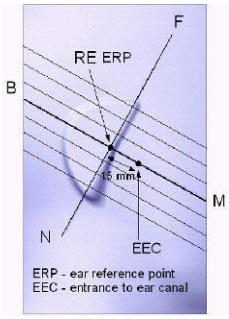


Figure 5-1
Close-Up Side view of ERP

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.

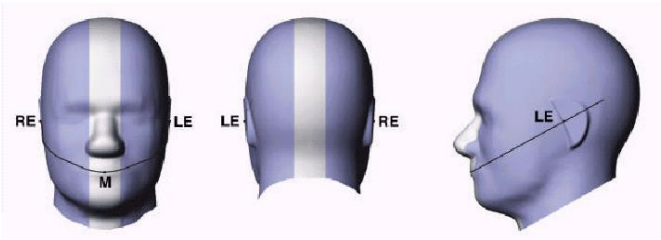


Figure 5-2
Front, back and side view of SAM Twin Phantom

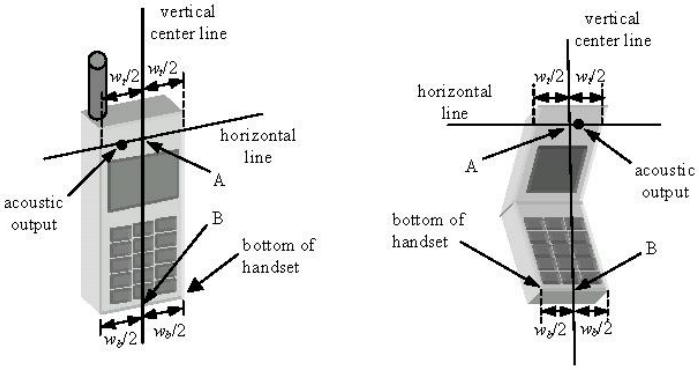


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

© 2018 PCTEST Engineering Laboratory, Inc. 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. 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.

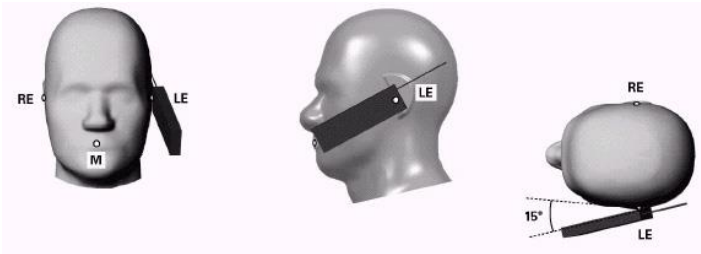


Figure 6-2 Front, Side and Top View of Ear/15º Tilt Position

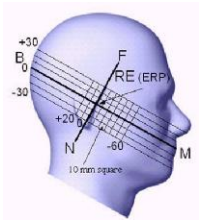


Figure 6-3
Side view w/ relevant markings

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.

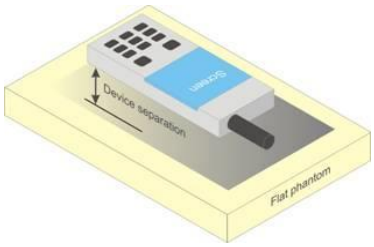


Figure 6-4
Sample Body-Worn Diagram

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. 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 Considerations

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. 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. 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 ≤ 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 ≤ 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. 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. 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

© 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.

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.

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. 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. 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 downlink only carrier aggregation configurations when the average output

© 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.

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. 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. 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. 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	Rule Part	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	564	90S	820.1	25.23	25.23	25.35	25.23	25.39	25.28	25.32
Cellular	1013	22H	824.7	25.47	25.28	25.45	25.49	25.33	25.26	25.35
	384	22H	836.52	25.24	25.18	25.24	25.37	25.34	25.31	25.43
	777	22H	848.31	25.36	25.27	25.19	25.33	25.20	25.39	25.25
PCS	25	24E	1851.25	24.94	24.98	24.96	25.17	25.00	25.14	25.10
	600	24E	1880	25.12	25.11	24.99	25.07	25.10	25.06	25.09
	1175	24E	1908.75	24.96	24.94	25.08	25.06	25.08	25.01	25.05

Table 9-2
Reduced Conducted Power

Band	Channel	Rule Part	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)
PCS	25	24E	1851.25	23.96	24.11	24.04	23.95	24.12	24.02	24.06
	600	24E	1880	24.15	24.08	23.95	23.89	24.09	24.05	24.10
	1175	24E	1908.75	23.94	24.06	24.06	23.95	24.18	24.09	24.09

Note: RC1 is only applicable for IS-95 compatibility. For FCC Rule Part 90S, Per FCC KDB Publication 447498 D01v06 4.1.g), only one channel is required since the device operates within the transmission range of 817.90 – 823.10 MHz.

Figure 9-1
Power Measurement Setup

© 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 9-3
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	34.04	**34.08**	29.84	27.93	26.98	26.89	26.89	25.94	24.87
	190	34.08	**34.19**	29.95	27.87	26.98	26.87	26.77	25.99	24.96
	251	34.08	**34.19**	29.92	27.84	26.90	26.99	26.86	25.96	24.98
GSM 1900	512	31.66	31.69	27.36	26.33	**25.48**	25.84	25.72	25.25	24.42
	661	31.61	31.65	27.40	26.24	**25.37**	25.58	25.61	25.13	24.35
	810	31.66	31.65	27.49	26.48	**25.49**	25.97	25.88	25.45	24.48

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	25.01	**25.05**	23.82	23.67	23.97	17.86	20.87	21.68	21.86
	190	25.05	**25.16**	23.93	23.61	23.97	17.84	20.75	21.73	21.95
	251	25.05	**25.16**	23.90	23.58	23.89	17.96	20.84	21.70	21.97
GSM 1900	512	22.63	22.66	21.34	22.07	**22.47**	16.81	19.70	20.99	21.41
	661	22.58	22.62	21.38	21.98	**22.36**	16.55	19.59	20.87	21.34
	810	22.63	22.62	21.47	22.22	**22.48**	16.94	19.86	21.19	21.47

GSM 850	**Frame Avg.Targets:**	24.67	**24.67**	23.48	23.24	23.49	17.47	20.48	21.24	21.49
GSM 1900		22.17	22.17	20.98	21.74	**21.99**	16.47	19.48	20.74	20.99

© 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.

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.

GSM Class: B
GPRS Multislot class: 12 (Max 4 Tx uplink slots)
EDGE Multislot class: 12 (Max 4 Tx uplink slots)
DTM Multislot Class: N/A

Figure 9-2
Power Measurement Setup

© 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.

9.3 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	25.26	25.30	25.40	25.15	25.06	25.18	24.93	24.89	25.18	-
99		12.2 kbps AMR	25.29	25.32	25.43	25.13	25.16	25.12	25.10	25.02	25.16	-
6	HSDPA	Subtest 1	25.21	25.43	25.44	25.11	25.18	25.05	25.17	25.08	25.16	0
6		Subtest 2	25.35	25.45	25.44	25.05	25.08	25.08	25.10	25.02	25.19	0
6		Subtest 3	24.70	24.84	24.57	24.70	24.66	24.56	24.57	24.69	24.60	0.5
6		Subtest 4	24.66	24.80	24.81	24.55	24.47	24.67	24.58	24.62	24.61	0.5
6	HSUPA	Subtest 1	25.34	25.22	25.42	24.45	24.57	24.71	24.49	24.60	24.69	0
6		Subtest 2	23.25	23.34	23.36	22.95	23.14	23.12	22.89	22.97	23.03	2
6		Subtest 3	24.35	24.16	24.36	24.00	24.10	24.18	23.94	23.96	24.20	1
6		Subtest 4	23.32	23.27	23.41	23.07	23.13	23.15	23.11	23.20	23.12	2
6		Subtest 5	25.31	25.25	25.39	24.36	24.46	24.67	24.29	24.52	24.62	0
8	DC-HSDPA	Subtest 1	25.29	25.43	25.41	25.20	25.18	24.98	25.16	25.19	25.17	0
8		Subtest 2	25.21	25.50	25.44	25.01	25.05	25.13	25.12	24.96	25.06	0
8		Subtest 3	24.59	24.82	24.55	24.60	24.61	24.46	24.63	24.63	24.61	0.5
8		Subtest 4	24.74	24.85	24.72	24.47	24.48	24.59	24.64	24.57	24.60	0.5

Table 9-5
Reduced Conducted Power

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	24.16	23.95	24.14	23.99	23.79	24.12	-
99		12.2 kbps AMR	24.16	24.20	24.19	24.11	23.98	24.14	-
6	HSDPA	Subtest 1	24.08	24.20	24.06	24.15	24.08	24.13	0
6		Subtest 2	24.05	24.01	24.10	24.19	24.03	24.19	0
6		Subtest 3	23.63	23.69	23.54	23.70	23.61	23.58	0.5
6		Subtest 4	23.60	23.58	23.70	23.70	23.67	23.51	0.5
6	HSUPA	Subtest 1	23.49	23.60	23.75	23.54	23.60	23.65	0
6		Subtest 2	21.83	22.18	22.14	21.90	21.95	21.96	2
6		Subtest 3	23.02	23.06	23.16	22.98	22.95	23.20	1
6		Subtest 4	22.00	22.01	22.05	22.07	22.16	21.98	2
6		Subtest 5	23.49	23.48	23.75	23.34	23.46	23.64	0
8	DC-HSDPA	Subtest 1	24.10	24.19	24.05	24.13	24.11	24.04	0
8		Subtest 2	24.10	24.02	24.15	24.12	24.01	24.14	0
8		Subtest 3	23.57	23.70	23.46	23.53	23.70	23.49	0.5
8		Subtest 4	23.37	23.58	23.47	23.60	23.58	23.55	0.5

© 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.

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

Figure 9-3
Power Measurement Setup

© 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 71

Table 9-6
LTE Band 71 Conducted Powers - 20 MHz Bandwidth

LTE Band 71 20 MHz Bandwidth					
Modulation	**RB Size**	**RB Offset**	**Mid Channel 133297 (680.5 MHz) Conducted Power [dBm]**	**MPR Allowed per 3GPP [dB]**	**MPR [dB]**
QPSK	1	0	25.46	0	0
	1	50	**25.49**		0
	1	99	25.40		0
	50	0	24.46	0-1	1
	50	25	**24.47**		1
	50	50	24.37		1
	100	0	24.40		1
16QAM	1	0	24.46	0-1	1
	1	50	24.46		1
	1	99	24.37		1
	50	0	23.49	0-2	2
	50	25	23.47		2
	50	50	23.37		2
	100	0	23.48		2
64QAM	1	0	23.40	0-2	2
	1	50	23.46		2
	1	99	23.37		2
	50	0	22.40	0-3	3
	50	25	22.49		3
	50	50	22.27		3
	100	0	22.43		3

Note: LTE Band 71 at 20 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. 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 9-7
LTE Band 71 Conducted Powers - 15 MHz Bandwidth

LTE Band 71 15 MHz Bandwidth					
Modulation	**RB Size**	**RB Offset**	**Mid Channel** **133297** **(680.5 MHz)** **Conducted Power [dBm]**	**MPR Allowed per 3GPP [dB]**	**MPR [dB]**
QPSK	1	0	25.34	0	0
	1	36	25.40		0
	1	74	25.22		0
	36	0	24.45	0-1	1
	36	18	24.43		1
	36	37	24.38		1
	75	0	24.47		1
16QAM	1	0	24.43	0-1	1
	1	36	24.47		1
	1	74	24.36		1
	36	0	23.42	0-2	2
	36	18	23.40		2
	36	37	23.46		2
	75	0	23.45		2
64QAM	1	0	23.35	0-2	2
	1	36	23.47		2
	1	74	23.30		2
	36	0	22.44	0-3	3
	36	18	22.43		3
	36	37	22.35		3
	75	0	22.34		3

Note: LTE Band 71 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. 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 71 Conducted Powers - 10 MHz Bandwidth

LTE Band 71 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 133172 (668.0 MHz)	Mid Channel 133297 (680.5 MHz)	High Channel 133422 (693.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.02	25.37	25.33	0	0
	1	25	25.26	25.33	25.30		0
	1	49	25.27	25.32	25.30		0
	25	0	24.35	24.48	24.39	0-1	1
	25	12	24.48	24.46	24.42		1
	25	25	24.43	24.39	24.33		1
	50	0	24.42	24.43	24.36		1
16QAM	1	0	24.44	24.43	24.47	0-1	1
	1	25	24.36	24.44	24.38		1
	1	49	24.40	24.46	24.33		1
	25	0	23.46	23.48	23.47	0-2	2
	25	12	23.49	23.45	23.46		2
	25	25	23.45	23.48	23.38		2
	50	0	23.49	23.41	23.47		2
64QAM	1	0	23.32	23.50	23.33	0-2	2
	1	25	23.19	23.32	23.45		2
	1	49	23.44	23.43	23.25		2
	25	0	22.30	22.32	22.33	0-3	3
	25	12	22.34	22.49	22.43		3
	25	25	22.41	22.35	22.40		3
	50	0	22.47	22.23	22.49		3

Table 9-9
LTE Band 71 Conducted Powers - 5 MHz Bandwidth

LTE Band 71 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 133147 (665.5 MHz)	Mid Channel 133297 (680.5 MHz)	High Channel 133447 (695.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	25.10	25.49	25.33	0	0
	1	12	25.13	25.47	25.49		0
	1	24	25.31	25.44	25.27		0
	12	0	24.30	24.48	24.38	0-1	1
	12	6	24.32	24.49	24.36		1
	12	13	24.33	24.45	24.40		1
	25	0	24.27	24.42	24.34		1
16QAM	1	0	24.27	24.47	24.38	0-1	1
	1	12	24.34	24.40	24.47		1
	1	24	24.31	24.39	24.41		1
	12	0	23.36	23.49	23.46	0-2	2
	12	6	23.45	23.49	23.44		2
	12	13	23.36	23.48	23.48		2
	25	0	23.35	23.49	23.44		2
64QAM	1	0	23.33	23.30	23.38	0-2	2
	1	12	23.27	23.37	23.31		2
	1	24	23.38	23.27	23.35		2
	12	0	22.34	22.33	22.45	0-3	3
	12	6	22.39	22.49	22.45		3
	12	13	22.36	22.48	22.44		3
	25	0	22.28	22.41	22.46		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 12

Table 9-10
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	**25.40**	0	0
	1	25	25.38		0
	1	49	25.26		0
	25	0	**24.46**	0-1	1
	25	12	24.44		1
	25	25	24.33		1
	50	0	24.41		1
16QAM	1	0	24.05	0-1	1
	1	25	24.02		1
	1	49	24.16		1
	25	0	23.47	0-2	2
	25	12	23.48		2
	25	25	23.43		2
	50	0	23.48		2
64QAM	1	0	22.98	0-2	2
	1	25	22.89		2
	1	49	23.06		2
	25	0	22.44	0-3	3
	25	12	22.45		3
	25	25	22.48		3
	50	0	22.49		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. 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 9-11
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	25.46	25.49	25.31	0	0
	1	12	25.48	25.46	25.40		0
	1	24	25.39	25.44	25.02		0
	12	0	24.45	24.42	24.34	0-1	1
	12	6	24.48	24.41	24.29		1
	12	13	24.41	24.37	24.25		1
	25	0	24.45	24.41	24.33		1
16QAM	1	0	24.27	24.34	24.26	0-1	1
	1	12	24.43	24.22	24.13		1
	1	24	24.23	24.20	24.44		1
	12	0	23.43	23.49	23.46	0-2	2
	12	6	23.43	23.44	23.43		2
	12	13	23.50	23.46	23.45		2
	25	0	23.43	23.49	23.36		2
64QAM	1	0	23.23	23.27	23.17	0-2	2
	1	12	23.28	23.16	23.07		2
	1	24	23.26	23.18	23.50		2
	12	0	22.32	22.30	22.40	0-3	3
	12	6	22.45	22.43	22.49		3
	12	13	22.39	22.40	22.33		3
	25	0	22.31	22.42	22.33		3

Table 9-12
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	25.33	25.43	25.43	0	0
	1	7	25.48	25.48	25.46		0
	1	14	25.39	25.38	24.79		0
	8	0	24.42	24.41	24.38	0-1	1
	8	4	24.43	24.42	24.40		1
	8	7	24.38	24.32	24.19		1
	15	0	24.43	24.41	24.34		1
16QAM	1	0	24.19	24.01	24.01	0-1	1
	1	7	24.42	24.03	24.18		1
	1	14	24.01	24.24	24.33		1
	8	0	23.37	23.34	23.45	0-2	2
	8	4	23.37	23.33	23.31		2
	8	7	23.36	23.34	23.36		2
	15	0	23.43	23.49	23.46		2
64QAM	1	0	23.25	22.97	22.91	0-2	2
	1	7	23.50	23.06	23.14		2
	1	14	22.99	23.15	23.32		2
	8	0	22.37	22.25	22.38	0-3	3
	8	4	22.32	22.40	22.38		3
	8	7	22.35	22.34	22.41		3
	15	0	22.46	22.43	22.44		3

© 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 9-13
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	25.26	25.26	25.12	0	0
	1	2	25.48	25.29	25.04		0
	1	5	25.32	25.32	25.11		0
	3	0	25.38	25.23	25.16		0
	3	2	25.40	25.25	25.17		0
	3	3	25.39	25.21	25.12		0
	6	0	24.38	24.20	24.22	0-1	1
16QAM	1	0	24.09	24.28	24.32	0-1	1
	1	2	24.20	24.35	24.12		1
	1	5	24.46	24.35	24.12		1
	3	0	24.21	24.14	24.17		1
	3	2	24.37	24.25	24.09		1
	3	3	24.28	24.16	24.09		1
	6	0	23.49	23.23	23.12	0-2	2
64QAM	1	0	23.08	23.16	23.27	0-2	2
	1	2	23.12	23.28	23.09		2
	1	5	23.48	23.30	23.20		2
	3	0	23.13	23.14	23.09		2
	3	2	23.39	23.28	23.08		2
	3	3	23.17	23.02	22.99		2
	6	0	22.44	22.30	22.06	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.

9.4.3 LTE Band 13

Table 9-14
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	25.45	0	0
	1	25	25.43		0
	1	49	**25.48**		0
	25	0	24.42	0-1	1
	25	12	**24.45**		1
	25	25	24.33		1
	50	0	24.37		1
16QAM	1	0	24.26	0-1	1
	1	25	24.30		1
	1	49	24.33		1
	25	0	23.47	0-2	2
	25	12	23.48		2
	25	25	23.43		2
	50	0	23.35		2
64QAM	1	0	23.31	0-2	2
	1	25	23.25		2
	1	49	23.24		2
	25	0	22.21	0-3	3
	25	12	22.13		3
	25	25	22.16		3
	50	0	22.30		3

© 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 9-15
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	25.43	0	0
	1	12	25.35		0
	1	24	25.40		0
	12	0	24.45	0-1	1
	12	6	24.47		1
	12	13	24.40		1
	25	0	24.40		1
16QAM	1	0	24.46	0-1	1
	1	12	24.48		1
	1	24	24.45		1
	12	0	23.44	0-2	2
	12	6	23.50		2
	12	13	23.49		2
	25	0	23.46		2
64QAM	1	0	23.36	0-2	2
	1	12	23.25		2
	1	24	23.29		2
	12	0	22.40	0-3	3
	12	6	22.41		3
	12	13	22.31		3
	25	0	22.11		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. 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 14

Table 9-16
LTE Band 14 Conducted Powers - 10 MHz Bandwidth

LTE Band 14 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23330 (793.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.33	0	0
	1	25	**25.40**		0
	1	49	25.05		0
	25	0	24.39	0-1	1
	25	12	**24.39**		1
	25	25	24.28		1
	50	0	24.36		1
16QAM	1	0	24.34	0-1	1
	1	25	24.36		1
	1	49	23.98		1
	25	0	23.41	0-2	2
	25	12	23.43		2
	25	25	23.38		2
	50	0	23.46		2
64QAM	1	0	23.36	0-2	2
	1	25	23.25		2
	1	49	23.14		2
	25	0	22.15	0-3	3
	25	12	22.13		3
	25	25	22.08		3
	50	0	22.16		3

© 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 9-17
LTE Band 14 Conducted Powers - 5 MHz Bandwidth

LTE Band 14 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channe 23330 (793.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.49	0	0
	1	12	25.49		0
	1	24	25.40		0
	12	0	24.47	0-1	1
	12	6	24.49		1
	12	13	24.44		1
	25	0	24.43		1
16QAM	1	0	24.22	0-1	1
	1	12	24.17		1
	1	24	24.13		1
	12	0	23.41	0-2	2
	12	6	23.46		2
	12	13	23.42		2
	25	0	23.39		2
64QAM	1	0	23.29	0-2	2
	1	12	23.25		2
	1	24	23.22		2
	12	0	22.16	0-3	3
	12	6	22.18		3
	12	13	22.14		3
	25	0	22.13		3

Note: LTE Band 14 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. 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 LTE Band 5 (Cell)

Table 9-18
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	**25.40**	0	0
	1	25	25.23		0
	1	49	25.22		0
	25	0	**24.37**	0-1	1
	25	12	24.30		1
	25	25	24.17		1
	50	0	24.22		1
16QAM	1	0	24.33	0-1	1
	1	25	24.30		1
	1	49	24.36		1
	25	0	23.47	0-2	2
	25	12	23.30		2
	25	25	23.44		2
	50	0	23.41		2
64QAM	1	0	23.41	0-2	2
	1	25	23.36		2
	1	49	23.22		2
	25	0	22.45	0-3	3
	25	12	22.38		3
	25	25	22.25		3
	50	0	22.25		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. 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 9-19
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	25.40	25.40	25.35	0	0
	1	12	25.39	25.22	25.21		0
	1	24	25.44	25.14	25.23		0
	12	0	24.38	24.27	24.13	0-1	1
	12	6	24.30	24.37	24.29		1
	12	13	24.23	24.17	24.16		1
	25	0	24.50	24.29	24.18		1
16QAM	1	0	24.46	24.47	24.35	0-1	1
	1	12	24.49	24.42	24.45		1
	1	24	24.25	24.39	24.12		1
	12	0	23.43	23.28	23.23	0-2	2
	12	6	23.47	23.34	23.17		2
	12	13	23.39	23.27	23.17		2
	25	0	23.45	23.30	23.16		2
64QAM	1	0	23.26	23.38	23.32	0-2	2
	1	12	23.43	23.40	23.40		2
	1	24	23.42	23.08	23.17		2
	12	0	22.36	22.21	22.06	0-3	3
	12	6	22.40	22.30	22.29		3
	12	13	22.48	22.12	21.97		3
	25	0	22.26	22.14	22.04		3

Table 9-20
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	25.39	25.24	25.24	0	0
	1	7	25.46	25.37	25.33		0
	1	14	25.38	25.09	25.24		0
	8	0	24.39	24.35	24.28	0-1	1
	8	4	24.43	24.29	24.36		1
	8	7	24.29	24.27	24.14		1
	15	0	24.49	24.36	24.21		1
16QAM	1	0	24.39	24.45	24.48	0-1	1
	1	7	24.40	24.41	24.43		1
	1	14	24.35	24.30	24.15		1
	8	0	23.45	23.39	23.19	0-2	2
	8	4	23.26	23.35	23.24		2
	8	7	23.29	23.30	23.11		2
	15	0	23.41	23.25	23.22		2
64QAM	1	0	23.39	23.37	23.38	0-2	2
	1	7	23.40	23.02	23.31		2
	1	14	23.40	23.03	23.19		2
	8	0	22.33	22.38	22.02	0-3	3
	8	4	22.06	22.37	22.31		3
	8	7	22.41	22.25	22.16		3
	15	0	22.50	22.29	22.35		3

© 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 9-21
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	25.45	25.34	25.17	0	0
	1	2	25.49	25.27	25.28		0
	1	5	25.32	25.19	25.18		0
	3	0	25.28	25.34	25.28		0
	3	2	25.30	25.36	25.22		0
	3	3	25.30	25.29	25.19		0
	6	0	24.37	24.29	24.24	0-1	1
16QAM	1	0	24.29	24.26	24.15	0-1	1
	1	2	24.41	24.38	24.12		1
	1	5	24.30	24.31	24.25		1
	3	0	24.25	24.09	24.12		1
	3	2	24.18	24.32	24.01		1
	3	3	24.20	24.15	24.12		1
	6	0	23.32	23.48	23.42	0-2	2
64QAM	1	0	23.41	23.22	23.11	0-2	2
	1	2	23.43	23.43	23.02		2
	1	5	23.35	23.39	23.19		2
	3	0	23.19	23.06	23.06		2
	3	2	23.22	23.12	23.01		2
	3	3	22.89	23.03	23.00		2
	6	0	22.21	22.41	22.22	0-3	3

© 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 LTE Band 26 (Cell)

Table 9-22
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	**25.34**	0	0
	1	36	25.32		0
	1	74	25.10		0
	36	0	24.47	0-1	1
	36	18	**24.49**		1
	36	37	24.43		1
	75	0	24.45		1
16QAM	1	0	24.47	0-1	1
	1	36	24.45		1
	1	74	24.20		1
	36	0	23.35	0-2	2
	36	18	23.38		2
	36	37	23.22		2
	75	0	23.28		2
64QAM	1	0	23.48	0-2	2
	1	36	23.48		2
	1	74	23.16		2
	36	0	22.23	0-3	3
	36	18	22.36		3
	36	37	22.15		3
	75	0	22.26		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. 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 9-23
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	25.37	25.41	25.27	0	0
	1	25	25.35	25.31	25.16		0
	1	49	25.23	25.17	25.11		0
	25	0	24.44	24.31	24.14	0-1	1
	25	12	24.44	24.27	24.16		1
	25	25	24.34	24.22	24.09		1
	50	0	24.33	24.22	24.09		1
16QAM	1	0	24.49	24.46	24.36	0-1	1
	1	25	24.49	24.35	24.19		1
	1	49	24.33	24.28	24.11		1
	25	0	23.50	23.40	23.22	0-2	2
	25	12	23.47	23.40	23.25		2
	25	25	23.38	23.29	23.11		2
	50	0	23.44	23.35	23.17		2
64QAM	1	0	23.45	23.44	23.38	0-2	2
	1	25	23.40	23.35	23.21		2
	1	49	23.33	23.22	23.09		2
	25	0	22.43	22.48	22.23	0-3	3
	25	12	22.47	22.31	22.29		3
	25	25	22.39	22.21	22.12		3
	50	0	22.41	22.22	22.20		3

Table 9-24
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	25.39	25.38	25.30	0	0
	1	12	25.37	25.26	25.18		0
	1	24	25.50	25.09	25.18		0
	12	0	24.33	24.25	24.16	0-1	1
	12	6	24.43	24.30	24.18		1
	12	13	24.42	24.24	24.17		1
	25	0	24.41	24.27	24.11		1
16QAM	1	0	24.48	24.44	24.31	0-1	1
	1	12	24.42	24.36	24.35		1
	1	24	24.49	24.26	24.23		1
	12	0	23.42	23.32	23.11	0-2	2
	12	6	23.40	23.27	23.23		2
	12	13	23.37	23.23	23.10		2
	25	0	23.40	23.20	23.02		2
64QAM	1	0	23.42	23.40	23.33	0-2	2
	1	12	23.35	23.36	23.42		2
	1	24	23.42	23.15	23.13		2
	12	0	22.46	22.19	22.06	0-3	3
	12	6	22.37	22.32	22.31		3
	12	13	22.41	22.20	22.01		3
	25	0	22.42	22.21	21.93		3

© 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 9-25
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	25.36	25.23	25.24	0	0
	1	7	25.42	25.34	25.31		0
	1	14	25.35	25.08	25.17		0
	8	0	24.40	24.37	24.25	0-1	1
	8	4	24.44	24.35	24.29		1
	8	7	24.35	24.29	24.19		1
	15	0	24.41	24.38	24.24		1
16QAM	1	0	24.40	24.37	24.42	0-1	1
	1	7	24.44	24.44	24.38		1
	1	14	24.37	24.22	24.19		1
	8	0	23.38	23.37	23.25	0-2	2
	8	4	23.31	23.38	23.26		2
	8	7	23.35	23.30	23.12		2
	15	0	23.33	23.26	23.16		2
64QAM	1	0	23.47	23.41	23.42	0-2	2
	1	7	23.50	23.13	23.30		2
	1	14	23.31	23.07	23.22		2
	8	0	22.24	22.32	22.10	0-3	3
	8	4	22.15	22.28	22.33		3
	8	7	22.38	22.17	22.07		3
	15	0	22.44	22.26	22.25		3

Table 9-26
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	25.36	25.23	25.14	0	0
	1	2	25.40	25.29	25.18		0
	1	5	25.34	25.15	25.08		0
	3	0	25.31	25.26	25.16		0
	3	2	25.37	25.31	25.16		0
	3	3	25.32	25.26	25.11		0
	6	0	24.32	24.27	24.20	0-1	1
16QAM	1	0	24.34	24.29	24.21	0-1	1
	1	2	24.45	24.35	24.21		1
	1	5	24.37	24.18	24.22		1
	3	0	24.19	24.10	24.04		1
	3	2	24.11	24.19	24.09		1
	3	3	24.10	24.10	24.01		1
	6	0	23.30	23.46	23.35	0-2	2
64QAM	1	0	23.41	23.28	23.04	0-2	2
	1	2	23.48	23.43	23.11		2
	1	5	23.44	23.24	23.11		2
	3	0	23.15	22.93	23.06		2
	3	2	23.12	23.15	23.01		2
	3	3	22.92	23.10	23.02		2
	6	0	22.28	22.35	22.23	0-3	3

© 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 LTE Band 66 (AWS)

Table 9-27
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	25.15	**25.19**	25.10	0	0
	1	50	25.11	25.09	24.85		0
	1	99	24.86	24.99	24.74		0
	50	0	24.17	24.18	24.01	0-1	1
	50	25	**24.19**	24.13	23.92		1
	50	50	24.11	24.02	23.88		1
	100	0	24.07	24.13	23.89		1
16QAM	1	0	24.14	24.16	24.12	0-1	1
	1	50	24.15	24.13	23.83		1
	1	99	24.00	24.10	23.76		1
	50	0	23.13	23.18	23.11	0-2	2
	50	25	23.15	23.15	22.97		2
	50	50	23.12	23.18	22.97		2
	100	0	23.17	23.14	23.03		2
64QAM	1	0	23.05	23.15	23.04	0-2	2
	1	50	23.17	23.16	22.83		2
	1	99	23.03	23.04	22.60		2
	50	0	22.04	22.02	22.06	0-3	3
	50	25	22.11	22.18	21.86		3
	50	50	22.18	22.10	22.01		3
	100	0	22.11	22.09	22.12		3

Table 9-28
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	25.13	25.20	25.15	0	0
	1	36	25.03	24.94	24.94		0
	1	74	24.95	24.97	24.93		0
	36	0	24.01	24.11	24.10	0-1	1
	36	18	24.04	24.11	24.04		1
	36	37	24.11	24.05	23.98		1
	75	0	24.03	24.11	23.99		1
16QAM	1	0	24.12	24.11	24.19	0-1	1
	1	36	24.11	23.85	24.14		1
	1	74	23.85	23.91	24.15		1
	36	0	23.11	23.18	23.11	0-2	2
	36	18	23.18	23.13	23.07		2
	36	37	23.15	23.14	23.10		2
	75	0	23.13	23.11	23.13		2
64QAM	1	0	23.01	23.13	23.19	0-2	2
	1	36	23.16	22.66	23.04		2
	1	74	22.82	22.95	23.18		2
	36	0	22.05	22.04	22.11	0-3	3
	36	18	22.12	22.13	22.04		3
	36	37	22.16	22.08	22.10		3
	75	0	22.01	22.08	21.97		3

© 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 9-29
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	25.03	25.03	25.12	0	0
	1	25	24.87	24.92	24.91		0
	1	49	25.05	24.98	24.85		0
	25	0	24.05	24.05	24.01	0-1	1
	25	12	23.96	24.13	23.99		1
	25	25	24.02	24.03	23.96		1
	50	0	24.05	24.08	24.00		1
16QAM	1	0	23.89	23.80	23.76	0-1	1
	1	25	24.07	23.65	23.73		1
	1	49	23.78	23.72	24.03		1
	25	0	23.15	23.14	23.11	0-2	2
	25	12	23.08	23.11	23.14		2
	25	25	23.08	23.17	23.10		2
	50	0	23.18	23.12	23.07		2
64QAM	1	0	22.80	22.79	22.64	0-2	2
	1	25	22.98	22.73	22.67		2
	1	49	22.72	22.73	22.89		2
	25	0	22.10	22.10	22.13	0-3	3
	25	12	22.09	22.13	22.08		3
	25	25	21.99	22.02	22.00		3
	50	0	22.00	21.96	22.01		3

Table 9-30
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	25.03	25.11	25.13	0	0
	1	12	24.91	25.01	25.00		0
	1	24	25.02	25.08	24.93		0
	12	0	23.95	23.99	23.97	0-1	1
	12	6	23.99	24.03	23.96		1
	12	13	23.90	24.07	23.95		1
	25	0	23.98	24.12	24.02		1
16QAM	1	0	24.18	24.05	24.01	0-1	1
	1	12	23.97	23.94	24.15		1
	1	24	23.95	24.06	23.97		1
	12	0	23.15	23.15	23.10	0-2	2
	12	6	23.12	23.10	23.10		2
	12	13	23.10	23.15	23.08		2
	25	0	23.13	23.13	23.04		2
64QAM	1	0	23.15	23.06	22.85	0-2	2
	1	12	22.82	22.79	23.15		2
	1	24	22.83	22.97	22.88		2
	12	0	22.18	21.97	22.15	0-3	3
	12	6	22.03	22.07	22.05		3
	12	13	22.00	22.12	22.03		3
	25	0	22.11	22.20	22.02		3

© 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 9-31
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	24.90	24.95	24.99	0	0
	1	7	24.97	25.01	25.00		0
	1	14	24.89	24.94	24.86		0
	8	0	23.92	23.93	23.92	0-1	1
	8	4	23.99	23.96	23.98		1
	8	7	23.95	23.91	23.91		1
	15	0	23.97	23.93	23.90		1
16QAM	1	0	23.88	23.79	23.72	0-1	1
	1	7	24.06	23.83	23.90		1
	1	14	23.85	23.89	24.14		1
	8	0	23.03	23.14	23.09	0-2	2
	8	4	23.14	23.16	23.06		2
	8	7	23.13	23.13	23.06		2
	15	0	23.03	23.08	23.04		2
64QAM	1	0	22.87	22.63	22.81	0-2	2
	1	7	23.00	22.84	22.91		2
	1	14	22.87	22.73	23.14		2
	8	0	21.99	22.16	22.05	0-3	3
	8	4	22.15	22.05	22.07		3
	8	7	22.12	21.98	21.91		3
	15	0	22.03	22.08	22.05		3

Table 9-32
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	24.92	24.92	24.84	0	0
	1	2	24.96	24.94	24.88		0
	1	5	24.81	24.90	24.83		0
	3	0	24.89	24.91	24.81		0
	3	2	24.92	24.94	24.94		0
	3	3	24.81	24.86	24.81		0
	6	0	23.81	23.86	23.83	0-1	1
16QAM	1	0	23.90	24.11	24.06	0-1	1
	1	2	23.84	24.16	23.89		1
	1	5	24.10	24.12	23.74		1
	3	0	23.80	23.96	23.85		1
	3	2	24.01	23.99	23.80		1
	3	3	23.90	23.93	23.87		1
	6	0	23.12	22.87	22.86	0-2	2
64QAM	1	0	22.82	23.07	23.12	0-2	2
	1	2	22.82	23.07	22.88		2
	1	5	23.02	22.98	22.59		2
	3	0	22.73	22.84	22.85		2
	3	2	23.01	22.82	22.70		2
	3	3	22.88	22.93	22.86		2
	6	0	22.15	21.81	21.89	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.

Table 9-33
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	**24.20**	24.04	24.06	0	0
	1	50	23.95	24.00	23.95		0
	1	99	24.13	23.99	24.19		0
	50	0	24.05	24.01	23.93	0-1	0
	50	25	**24.16**	24.00	24.04		0
	50	50	24.11	24.11	23.88		0
	100	0	23.96	23.87	24.14		0
16QAM	1	0	24.20	24.04	24.12	0-1	0
	1	50	24.06	24.07	23.94		0
	1	99	24.02	24.01	24.18		0
	50	0	23.01	22.94	23.00	0-2	1
	50	25	23.18	23.11	22.93		1
	50	50	23.00	22.95	23.18		1
	100	0	23.10	23.16	23.10		1
64QAM	1	0	23.06	23.08	23.02	0-2	1
	1	50	23.16	22.95	22.92		1
	1	99	22.89	22.96	22.96		1
	50	0	21.95	21.99	22.06	0-3	2
	50	25	21.89	22.15	21.92		2
	50	50	21.90	21.96	21.97		2
	100	0	22.10	21.92	21.98		2

Table 9-34
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	24.16	24.09	23.96	0	0
	1	36	24.03	24.14	23.93		0
	1	74	24.20	23.98	23.98		0
	36	0	24.08	24.00	23.87	0-1	0
	36	18	24.15	23.96	23.93		0
	36	37	24.00	23.93	24.19		0
	75	0	24.18	23.96	24.17		0
16QAM	1	0	24.12	24.08	23.95	0-1	0
	1	36	24.01	23.91	23.87		0
	1	74	24.02	24.17	24.12		0
	36	0	22.90	22.88	23.11	0-2	1
	36	18	23.04	23.00	23.09		1
	36	37	23.07	22.93	22.94		1
	75	0	23.02	22.87	22.97		1
64QAM	1	0	22.99	23.05	22.97	0-2	1
	1	36	23.14	23.16	22.90		1
	1	74	23.10	22.94	23.02		1
	36	0	21.88	22.02	21.89	0-3	2
	36	18	22.08	22.15	22.04		2
	36	37	22.18	21.98	22.03		2
	75	0	21.91	22.02	22.05		2

© 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 9-35
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	24.18	24.19	23.88	0	0
	1	25	23.89	24.04	24.16		0
	1	49	24.00	24.12	24.12		0
	25	0	24.14	24.11	23.92	0-1	0
	25	12	24.06	24.09	23.94		0
	25	25	24.18	23.88	23.98		0
	50	0	23.95	24.14	23.95		0
16QAM	1	0	24.16	24.04	23.97	0-1	0
	1	25	24.15	23.98	23.89		0
	1	49	24.11	24.04	24.05		0
	25	0	23.03	22.97	23.01	0-2	1
	25	12	23.04	23.12	23.12		1
	25	25	23.02	23.10	22.90		1
	50	0	22.90	22.98	22.96		1
64QAM	1	0	22.98	23.05	23.15	0-2	1
	1	25	22.91	23.07	23.06		1
	1	49	23.20	23.07	22.98		1
	25	0	22.10	21.98	22.01	0-3	2
	25	12	22.07	21.92	21.95		2
	25	25	22.15	22.04	22.13		2
	50	0	21.91	21.90	22.03		2

Table 9-36
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	24.12	23.97	24.13	0	0
	1	12	23.90	24.09	24.11		0
	1	24	24.17	24.11	23.93		0
	12	0	24.02	24.05	23.98	0-1	0
	12	6	24.00	24.14	23.98		0
	12	13	24.14	24.13	23.98		0
	25	0	23.89	23.97	24.08		0
16QAM	1	0	24.14	24.04	24.06	0-1	0
	1	12	24.00	23.98	24.12		0
	1	24	24.11	24.03	24.17		0
	12	0	23.12	23.18	22.94	0-2	1
	12	6	22.90	23.16	23.06		1
	12	13	22.99	22.92	23.07		1
	25	0	23.14	23.14	23.02		1
64QAM	1	0	23.19	23.04	22.93	0-2	1
	1	12	23.00	22.97	23.04		1
	1	24	23.12	22.89	22.90		1
	12	0	21.90	21.92	22.07	0-3	2
	12	6	22.04	21.88	22.16		2
	12	13	22.16	21.97	22.10		2
	25	0	21.91	21.91	21.95		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.

Table 9-37
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	24.13	24.07	23.92	0	0
	1	7	24.19	24.07	23.99		0
	1	14	24.05	23.98	24.00		0
	8	0	24.12	24.11	23.93	0-1	0
	8	4	24.19	24.06	23.90		0
	8	7	24.07	24.04	23.89		0
	15	0	24.12	24.07	23.93		0
16QAM	1	0	24.20	24.14	24.10	0-1	0
	1	7	24.15	24.05	23.95		0
	1	14	24.15	24.10	24.02		0
	8	0	23.17	23.11	22.88	0-2	1
	8	4	22.91	23.14	22.98		1
	8	7	22.96	23.19	22.98		1
	15	0	23.18	23.14	22.95		1
64QAM	1	0	23.06	23.04	23.10	0-2	1
	1	7	22.98	22.94	23.06		1
	1	14	22.92	23.17	23.08		1
	8	0	21.98	21.98	22.12	0-3	2
	8	4	22.13	22.16	22.18		2
	8	7	22.07	21.97	22.11		2
	15	0	21.92	21.88	22.02		2

Table 9-38
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	24.08	24.20	24.14	0	0
	1	2	24.00	24.11	23.88		0
	1	5	23.92	23.87	24.05		0
	3	0	24.13	24.14	24.09		0
	3	2	24.03	24.09	24.15		0
	3	3	24.07	23.97	24.04		0
	6	0	24.11	23.91	24.03	0-1	0
16QAM	1	0	24.17	23.92	23.98	0-1	0
	1	2	23.90	24.16	23.99		0
	1	5	24.14	24.18	24.07		0
	3	0	24.07	23.88	23.97		0
	3	2	24.11	23.97	24.05		0
	3	3	24.01	23.95	23.90		0
	6	0	23.12	23.04	22.92	0-2	1
64QAM	1	0	23.04	23.06	23.00	0-2	1
	1	2	22.93	23.20	23.06		1
	1	5	22.87	23.12	23.19		1
	3	0	22.88	22.91	23.06		1
	3	2	23.20	23.06	23.11		1
	3	3	22.94	23.15	23.15		1
	6	0	21.92	21.87	22.10	0-3	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.

9.4.8 LTE Band 25 (PCS)

Table 9-39
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	25.11	24.98	**25.20**	0	0
	1	50	24.88	24.91	25.01		0
	1	99	24.72	24.70	24.98		0
	50	0	23.99	24.05	**24.16**	0-1	1
	50	25	23.92	23.94	24.05		1
	50	50	23.87	23.82	23.98		1
	100	0	23.93	23.95	24.04		1
16QAM	1	0	24.01	24.09	24.19	0-1	1
	1	50	23.85	24.03	23.96		1
	1	99	23.79	23.83	23.98		1
	50	0	23.03	23.16	23.19	0-2	2
	50	25	23.04	23.03	23.10		2
	50	50	22.98	22.96	23.04		2
	100	0	23.01	23.05	23.13		2
64QAM	1	0	23.08	23.00	23.02	0-2	2
	1	50	22.70	22.94	23.02		2
	1	99	22.71	22.91	22.94		2
	50	0	21.99	22.02	22.13	0-3	3
	50	25	22.08	22.01	22.15		3
	50	50	22.03	21.89	22.12		3
	100	0	21.95	22.03	22.10		3

Table 9-40
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	25.08	25.11	25.20	0	0
	1	36	24.93	24.78	24.92		0
	1	74	24.81	24.76	25.02		0
	36	0	23.95	23.97	24.05	0-1	1
	36	18	23.92	23.92	24.00		1
	36	37	23.87	23.79	23.95		1
	75	0	23.88	23.89	24.01		1
16QAM	1	0	23.99	23.81	24.19	0-1	1
	1	36	23.74	23.74	23.77		1
	1	74	23.76	23.81	23.95		1
	36	0	23.01	23.07	23.13	0-2	2
	36	18	23.06	22.97	23.07		2
	36	37	22.97	22.95	23.05		2
	75	0	23.00	23.03	23.08		2
64QAM	1	0	22.91	22.88	23.10	0-2	2
	1	36	22.72	22.74	22.71		2
	1	74	22.78	22.65	22.85		2
	36	0	22.02	22.04	22.13	0-3	3
	36	18	22.09	21.99	22.10		3
	36	37	21.94	21.99	21.92		3
	75	0	21.90	22.03	21.93		3

© 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 9-41
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	24.96	24.97	25.07	0	0
	1	25	24.84	24.86	24.90		0
	1	49	24.81	24.78	24.94		0
	25	0	23.88	23.91	23.98	0-1	1
	25	12	23.92	23.93	23.97		1
	25	25	23.83	23.84	23.93		1
	50	0	23.92	23.86	23.94		1
16QAM	1	0	23.93	23.86	24.18	0-1	1
	1	25	24.01	23.75	23.79		1
	1	49	23.86	23.83	23.91		1
	25	0	23.05	23.00	23.10	0-2	2
	25	12	23.03	22.99	23.06		2
	25	25	22.94	22.93	23.11		2
	50	0	23.00	22.95	23.05		2
64QAM	1	0	22.81	22.92	23.11	0-2	2
	1	25	22.94	22.74	22.81		2
	1	49	22.91	22.81	22.75		2
	25	0	21.93	22.00	22.12	0-3	3
	25	12	21.86	21.89	22.05		3
	25	25	21.91	21.83	22.14		3
	50	0	22.11	21.85	21.99		3

Table 9-42
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	25.02	24.89	25.01	0	0
	1	12	24.91	24.92	25.01		0
	1	24	24.83	24.88	25.05		0
	12	0	23.89	23.78	23.92	0-1	1
	12	6	23.89	23.89	23.95		1
	12	13	23.87	23.82	23.93		1
	25	0	23.89	23.90	23.96		1
16QAM	1	0	23.89	23.85	24.05	0-1	1
	1	12	24.06	23.86	23.85		1
	1	24	23.86	23.83	24.17		1
	12	0	22.99	22.94	23.06	0-2	2
	12	6	23.08	23.05	23.05		2
	12	13	23.00	22.95	23.10		2
	25	0	22.93	22.94	22.99		2
64QAM	1	0	22.83	22.86	23.03	0-2	2
	1	12	22.92	22.80	22.81		2
	1	24	22.74	22.82	23.16		2
	12	0	21.96	21.88	21.95	0-3	3
	12	6	21.96	22.01	21.96		3
	12	13	21.96	21.95	21.99		3
	25	0	21.79	21.89	21.88		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 9-43
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	24.84	24.81	24.94	0	0
	1	7	24.90	24.94	25.06		0
	1	14	24.84	24.80	24.94		0
	8	0	23.86	23.82	23.89	0-1	1
	8	4	23.86	23.82	24.05		1
	8	7	23.85	23.78	24.01		1
	15	0	23.84	23.81	23.92		1
16QAM	1	0	23.85	23.71	23.80	0-1	1
	1	7	24.19	23.71	23.94		1
	1	14	23.58	23.76	24.17		1
	8	0	22.98	23.04	23.05	0-2	2
	8	4	23.02	23.04	23.15		2
	8	7	23.05	22.98	23.11		2
	15	0	22.89	22.92	23.03		2
64QAM	1	0	22.80	22.66	22.83	0-2	2
	1	7	23.06	22.73	22.87		2
	1	14	22.48	22.76	23.00		2
	8	0	22.02	22.00	22.11	0-3	3
	8	4	21.95	22.12	22.16		3
	8	7	21.97	21.97	22.07		3
	15	0	21.95	21.92	21.89		3

Table 9-44
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	24.90	24.96	24.94	0	0
	1	2	24.81	25.00	25.01		0
	1	5	24.81	25.04	24.87		0
	3	0	24.75	24.88	24.94		0
	3	2	24.84	25.02	24.97		0
	3	3	24.82	24.95	24.92		0
	6	0	23.87	24.01	23.98	0-1	1
16QAM	1	0	23.88	23.86	23.89	0-1	1
	1	2	24.07	23.93	23.85		1
	1	5	23.77	23.97	24.11		1
	3	0	23.80	23.78	23.83		1
	3	2	23.93	23.97	24.04		1
	3	3	23.74	23.90	23.95		1
	6	0	23.07	23.00	23.19	0-2	2
64QAM	1	0	22.82	22.94	22.88	0-2	2
	1	2	23.06	22.78	22.87		2
	1	5	22.59	22.90	23.03		2
	3	0	22.86	22.70	22.79		2
	3	2	22.95	22.85	23.02		2
	3	3	22.64	22.75	22.92		2
	6	0	22.08	21.82	22.20	0-3	3

© 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 9-45
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	23.93	**24.18**	23.91	0	0
	1	50	23.96	24.05	24.02		0
	1	99	23.98	23.99	23.87		0
	50	0	24.08	24.11	23.95	0-1	0
	50	25	24.10	**24.15**	23.94		0
	50	50	24.12	24.14	24.10		0
	100	0	24.11	24.13	24.07		0
16QAM	1	0	24.05	24.06	23.96	0-1	0
	1	50	24.17	24.02	23.87		0
	1	99	23.88	24.02	23.92		0
	50	0	22.96	23.08	22.97	0-2	1
	50	25	22.98	23.08	22.95		1
	50	50	23.13	23.10	22.90		1
	100	0	23.18	22.96	23.00		1
64QAM	1	0	23.08	22.95	23.16	0-2	1
	1	50	22.88	23.19	23.07		1
	1	99	23.18	23.19	23.12		1
	50	0	21.96	21.96	21.89	0-3	2
	50	25	22.07	22.09	22.11		2
	50	50	22.08	22.10	21.93		2
	100	0	22.02	22.05	22.11		2

Table 9-46
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	24.00	24.17	24.12	0	0
	1	36	24.01	24.00	24.12		0
	1	74	24.05	24.18	24.02		0
	36	0	24.16	23.98	23.93	0-1	0
	36	18	23.90	23.95	24.02		0
	36	37	24.20	23.99	24.04		0
	75	0	24.09	24.18	24.02		0
16QAM	1	0	24.10	23.99	23.88	0-1	0
	1	36	23.95	24.10	23.97		0
	1	74	24.19	24.13	23.98		0
	36	0	23.10	23.11	22.99	0-2	1
	36	18	22.95	23.10	23.08		1
	36	37	23.07	22.98	22.96		1
	75	0	22.91	23.06	23.19		1
64QAM	1	0	23.18	22.96	23.05	0-2	1
	1	36	22.95	23.01	22.92		1
	1	74	22.94	22.96	23.12		1
	36	0	21.92	21.94	22.02	0-3	2
	36	18	21.92	22.04	22.05		2
	36	37	22.11	21.98	21.94		2
	75	0	22.17	22.00	22.13		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.

Table 9-47
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	24.17	24.15	24.03	0	0
	1	25	24.09	24.08	24.12		0
	1	49	24.09	23.96	23.87		0
	25	0	24.17	24.13	23.91	0-1	0
	25	12	24.07	23.96	24.04		0
	25	25	23.87	24.09	24.00		0
	50	0	23.95	23.94	24.10		0
16QAM	1	0	24.13	24.15	24.13	0-1	0
	1	25	24.16	23.99	24.02		0
	1	49	24.19	24.19	24.13		0
	25	0	22.92	23.06	23.18	0-2	1
	25	12	22.96	23.18	23.14		1
	25	25	23.06	22.90	23.15		1
	50	0	23.10	23.16	23.02		1
64QAM	1	0	22.89	23.19	23.13	0-2	1
	1	25	23.05	23.05	22.95		1
	1	49	23.09	23.19	23.20		1
	25	0	22.05	22.19	22.01	0-3	2
	25	12	22.13	22.08	21.90		2
	25	25	21.88	21.89	22.05		2
	50	0	22.14	21.99	22.04		2

Table 9-48
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	24.18	24.20	24.17	0	0
	1	12	24.15	23.90	23.89		0
	1	24	24.01	24.14	24.06		0
	12	0	23.89	24.08	24.06	0-1	0
	12	6	24.03	24.14	24.01		0
	12	13	24.18	24.20	24.14		0
	25	0	24.00	23.92	24.02		0
16QAM	1	0	23.99	23.93	24.02	0-1	0
	1	12	23.90	24.13	24.17		0
	1	24	24.04	23.91	24.04		0
	12	0	23.03	23.12	23.11	0-2	1
	12	6	22.89	23.14	23.15		1
	12	13	23.14	22.88	22.91		1
	25	0	22.95	23.16	23.06		1
64QAM	1	0	22.87	23.09	23.07	0-2	1
	1	12	23.06	23.09	22.93		1
	1	24	22.93	22.88	23.13		1
	12	0	21.97	21.90	22.07	0-3	2
	12	6	22.13	21.87	22.03		2
	12	13	22.02	21.98	22.19		2
	25	0	22.12	22.13	22.17		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.

Table 9-49
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	24.10	23.99	24.16	0	0
	1	7	24.06	24.06	23.95		0
	1	14	24.00	23.96	24.07		0
	8	0	24.08	24.11	24.08	0-1	0
	8	4	23.94	23.91	24.11		0
	8	7	24.01	23.92	24.07		0
	15	0	24.09	24.04	24.10		0
16QAM	1	0	24.08	23.99	24.17	0-1	0
	1	7	24.18	24.01	24.08		0
	1	14	24.11	23.97	23.97		0
	8	0	23.09	22.98	22.92	0-2	1
	8	4	22.94	23.00	23.09		1
	8	7	23.01	22.98	23.05		1
	15	0	23.15	23.16	23.08		1
64QAM	1	0	23.11	22.97	23.16	0-2	1
	1	7	22.92	23.18	23.01		1
	1	14	23.04	23.04	23.18		1
	8	0	21.92	22.10	22.03	0-3	2
	8	4	22.03	22.01	22.16		2
	8	7	21.95	21.94	22.13		2
	15	0	22.19	21.88	22.18		2

Table 9-50
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	23.97	24.01	24.07	0	0
	1	2	24.00	24.11	24.20		0
	1	5	24.08	24.04	23.96		0
	3	0	24.20	24.08	24.09		0
	3	2	24.03	24.11	24.06		0
	3	3	24.02	23.88	24.05		0
	6	0	23.96	23.93	23.92	0-1	0
16QAM	1	0	23.98	24.04	24.01	0-1	0
	1	2	23.88	23.97	24.06		0
	1	5	24.17	24.03	23.96		0
	3	0	23.99	23.90	24.02		0
	3	2	24.10	24.11	24.03		0
	3	3	24.16	24.13	24.14		0
	6	0	23.10	23.18	22.93	0-2	1
64QAM	1	0	22.98	22.90	23.19	0-2	1
	1	2	23.17	22.98	22.91		1
	1	5	23.15	23.03	23.18		1
	3	0	23.11	22.87	23.10		1
	3	2	23.08	23.03	23.15		1
	3	3	22.98	23.18	23.13		1
	6	0	22.15	21.87	22.02	0-3	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.

9.4.9 LTE Band 30

Table 9-51
LTE Band 30 Conducted Powers - 10 MHz Bandwidth

LTE Band 30 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 27710 (2310.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**23.61**	0	0
	1	25	23.51		0
	1	49	23.55		0
	25	0	22.55	0-1	1
	25	12	**22.61**		1
	25	25	22.61		1
	50	0	22.57		1
16QAM	1	0	22.59	0-1	1
	1	25	22.49		1
	1	49	22.51		1
	25	0	21.60	0-2	2
	25	12	21.66		2
	25	25	21.66		2
	50	0	21.57		2
64QAM	1	0	21.40	0-2	2
	1	25	21.26		2
	1	49	21.33		2
	25	0	20.36	0-3	3
	25	12	20.39		3
	25	25	20.40		3
	50	0	20.35		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 9-52
LTE Band 30 Conducted Powers - 5 MHz Bandwidth

LTE Band 30 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 27710 (2310.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.61	0	0
	1	12	23.59		0
	1	24	23.55		0
	12	0	22.50	0-1	1
	12	6	22.52		1
	12	13	22.57		1
	25	0	22.56		1
16QAM	1	0	22.62	0-1	1
	1	12	22.60		1
	1	24	22.59		1
	12	0	21.67	0-2	2
	12	6	21.69		2
	12	13	21.69		2
	25	0	21.63		2
64QAM	1	0	21.36	0-2	2
	1	12	21.33		2
	1	24	21.45		2
	12	0	20.30	0-3	3
	12	6	20.33		3
	12	13	20.41		3
	25	0	20.21		3

Note: LTE Band 30 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. 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 LTE Band 7

Table 9-53
LTE Band 7 Conducted Powers - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.69	**23.70**	23.68	0	0
	1	50	23.50	23.51	23.55		0
	1	99	23.36	23.36	23.39		0
	50	0	22.59	**22.62**	22.61	0-1	1
	50	25	22.55	22.51	22.54		1
	50	50	22.44	22.45	22.48		1
	100	0	22.50	22.51	22.54		1
16QAM	1	0	22.60	22.64	22.69	0-1	1
	1	50	22.66	22.61	22.65		1
	1	99	22.64	22.66	22.62		1
	50	0	21.62	21.64	21.62	0-2	2
	50	25	21.60	21.62	21.58		2
	50	50	21.51	21.53	21.56		2
	100	0	21.57	21.57	21.65		2
64QAM	1	0	21.51	21.60	21.69	0-2	2
	1	50	21.62	21.53	21.56		2
	1	99	21.63	21.59	21.56		2
	50	0	20.57	20.59	20.54	0-3	3
	50	25	20.56	20.64	20.45		3
	50	50	20.62	20.58	20.61		3
	100	0	20.62	20.53	20.62		3

Table 9-54
LTE Band 7 Conducted Powers - 15 MHz Bandwidth

LTE Band 7 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20825 (2507.5 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21375 (2562.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.70	23.65	23.69	0	0
	1	36	23.50	23.46	23.51		0
	1	74	23.37	23.38	23.45		0
	36	0	22.51	22.57	22.61	0-1	1
	36	18	22.50	22.51	22.55		1
	36	37	22.42	22.44	22.47		1
	75	0	22.49	22.45	22.52		1
16QAM	1	0	22.68	22.30	22.34	0-1	1
	1	36	22.56	22.33	22.65		1
	1	74	22.33	22.29	22.56		1
	36	0	21.59	21.62	21.69	0-2	2
	36	18	21.62	21.58	21.58		2
	36	37	21.52	21.49	21.61		2
	75	0	21.57	21.56	21.63		2
64QAM	1	0	21.69	21.27	21.25	0-2	2
	1	36	21.53	21.38	21.66		2
	1	74	21.32	21.27	21.52		2
	36	0	20.59	20.68	20.58	0-3	3
	36	18	20.55	20.51	20.50		3
	36	37	20.48	20.42	20.50		3
	75	0	20.51	20.42	20.65		3

© 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 9-55
LTE Band 7 Conducted Powers - 10 MHz Bandwidth

LTE Band 7 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20800 (2505.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21400 (2565.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.61	23.58	23.67	0	0
	1	25	23.43	23.49	23.53		0
	1	49	23.45	23.41	23.41		0
	25	0	22.49	22.58	22.57	0-1	1
	25	12	22.55	22.52	22.59		1
	25	25	22.47	22.50	22.49		1
	50	0	22.53	22.50	22.52		1
16QAM	1	0	22.48	22.37	22.30	0-1	1
	1	25	22.57	22.37	22.29		1
	1	49	22.39	22.25	22.58		1
	25	0	21.69	21.63	21.63	0-2	2
	25	12	21.61	21.62	21.70		2
	25	25	21.54	21.54	21.62		2
	50	0	21.60	21.53	21.62		2
64QAM	1	0	21.53	21.29	21.30	0-2	2
	1	25	21.55	21.40	21.35		2
	1	49	21.33	21.18	21.47		2
	25	0	20.68	20.64	20.70	0-3	3
	25	12	20.56	20.57	20.61		3
	25	25	20.57	20.55	20.56		3
	50	0	20.49	20.59	20.50		3

Table 9-56
LTE Band 7 Conducted Powers - 5 MHz Bandwidth

LTE Band 7 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20775 (2502.5 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21425 (2567.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.65	23.54	23.57	0	0
	1	12	23.57	23.51	23.50		0
	1	24	23.46	23.50	23.57		0
	12	0	22.53	22.53	22.55	0-1	1
	12	6	22.54	22.54	22.58		1
	12	13	22.47	22.52	22.52		1
	25	0	22.54	22.51	22.56		1
16QAM	1	0	22.55	22.62	22.59	0-1	1
	1	12	22.36	22.65	22.43		1
	1	24	22.68	22.64	22.39		1
	12	0	21.60	21.70	21.64	0-2	2
	12	6	21.66	21.62	21.69		2
	12	13	21.68	21.66	21.61		2
	25	0	21.59	21.60	21.64		2
64QAM	1	0	21.46	21.64	21.54	0-2	2
	1	12	21.27	21.62	21.28		2
	1	24	21.55	21.60	21.44		2
	12	0	20.56	20.57	20.49	0-3	3
	12	6	20.62	20.56	20.62		3
	12	13	20.70	20.62	20.60		3
	25	0	20.56	20.62	20.68		3

© 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 LTE Band 41 PC3

Table 9-57
LTE Band 41 PC3 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	25.13	25.04	**25.14**	25.01	25.04	0	0
	1	50	24.86	24.93	24.94	24.89	24.92		0
	1	99	24.91	24.77	24.82	24.65	24.82		0
	50	0	24.01	23.90	**24.05**	23.94	24.04	0-1	1
	50	25	23.90	23.96	23.88	23.87	23.92		1
	50	50	23.80	23.83	23.80	23.78	23.82		1
	100	0	23.91	23.82	23.90	23.87	23.94		1
16QAM	1	0	24.14	24.15	24.08	24.10	24.18	0-1	1
	1	50	24.09	24.14	24.10	24.04	24.12		1
	1	99	23.76	23.87	23.97	23.83	23.72		1
	50	0	23.09	22.96	23.06	23.02	23.13	0-2	2
	50	25	23.04	23.04	23.00	22.97	23.01		2
	50	50	22.86	22.92	22.92	22.88	22.86		2
	100	0	22.99	22.92	22.98	22.94	22.98		2
64QAM	1	0	23.11	23.16	23.17	23.00	23.20	0-2	2
	1	50	22.95	23.17	23.15	22.99	23.12		2
	1	99	22.70	22.90	22.95	22.86	22.76		2
	50	0	22.04	22.06	22.07	21.96	22.04	0-3	3
	50	25	22.11	21.97	21.95	22.00	21.92		3
	50	50	21.98	21.86	21.89	21.80	21.76		3
	100	0	21.91	21.83	22.02	21.99	21.94		3

Table 9-58
LTE Band 41 PC3 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	24.84	25.10	25.08	25.04	24.93	0	0
	1	36	24.79	24.97	24.91	24.85	24.93		0
	1	74	24.79	24.95	24.79	24.83	24.77		0
	36	0	24.02	23.95	23.88	23.78	23.86	0-1	1
	36	18	23.86	24.03	23.85	23.85	23.85		1
	36	37	23.83	23.93	23.81	23.75	23.87		1
	75	0	23.85	23.94	23.82	23.88	23.88		1
16QAM	1	0	24.17	24.17	24.13	24.16	24.15	0-1	1
	1	36	24.18	24.19	24.15	24.10	24.12		1
	1	74	24.00	24.10	24.16	24.10	24.07		1
	36	0	23.15	23.04	22.97	22.95	23.10	0-2	2
	36	18	22.95	23.12	22.98	22.90	23.04		2
	36	37	22.92	23.02	22.91	22.86	22.92		2
	75	0	22.99	23.03	22.94	22.95	22.98		2
64QAM	1	0	23.10	23.11	23.08	23.14	23.07	0-2	2
	1	36	23.16	23.10	23.05	23.01	23.08		2
	1	74	22.90	23.01	23.20	23.13	22.98		2
	36	0	22.09	22.02	21.96	21.94	21.92	0-3	3
	36	18	21.87	22.02	21.82	21.86	22.04		3
	36	37	21.98	21.87	21.97	21.75	21.85		3
	75	0	21.86	22.04	22.02	21.95	21.94		3

© 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 9-59
LTE Band 41 PC3 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	24.99	24.93	24.99	24.90	24.95	0	0
	1	25	24.99	24.83	24.89	24.86	24.91		0
	1	49	24.85	24.85	24.84	24.72	24.92		0
	25	0	24.03	23.85	23.94	23.91	23.98	0-1	1
	25	12	24.02	23.94	23.88	23.86	23.99		1
	25	25	23.85	23.89	23.82	23.80	23.86		1
	50	0	23.90	23.80	23.86	23.84	23.91		1
16QAM	1	0	24.01	23.70	23.92	23.89	23.96	0-1	1
	1	25	23.96	23.84	23.84	23.80	23.87		1
	1	49	23.82	23.83	23.77	23.84	23.86		1
	25	0	23.15	23.00	22.97	22.96	23.06	0-2	2
	25	12	23.12	23.08	23.00	22.91	23.00		2
	25	25	22.96	22.95	22.94	22.93	22.95		2
	50	0	23.02	22.87	22.95	22.92	23.02		2
64QAM	1	0	22.95	22.59	22.89	22.88	22.79	0-2	2
	1	25	22.84	22.87	22.79	22.87	22.74		2
	1	49	22.75	22.86	22.78	22.74	22.90		2
	25	0	22.10	21.91	21.95	21.84	22.00	0-3	3
	25	12	21.99	22.02	22.03	21.80	21.99		3
	25	25	21.95	22.01	21.86	22.03	21.76		3
	50	0	21.87	21.87	21.93	21.86	21.98		3

Table 9-60
LTE Band 41 PC3 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	25.01	25.02	24.88	24.81	24.88	0	0
	1	12	24.93	25.00	24.85	24.78	24.83		0
	1	24	24.94	24.95	24.82	24.76	24.85		0
	12	0	24.00	24.07	23.87	23.80	23.95	0-1	1
	12	6	23.98	24.03	23.87	23.88	23.88		1
	12	13	23.98	23.99	23.85	23.82	23.87		1
	25	0	23.98	24.02	23.84	23.84	23.92		1
16QAM	1	0	23.98	24.07	24.06	24.01	23.94	0-1	1
	1	12	24.11	23.98	24.03	23.84	24.07		1
	1	24	23.93	24.14	24.00	23.77	23.91		1
	12	0	23.08	23.15	23.08	23.03	23.03	0-2	2
	12	6	23.14	23.19	23.06	22.88	23.08		2
	12	13	23.05	23.18	23.03	22.93	22.97		2
	25	0	23.05	23.09	22.94	22.90	23.02		2
64QAM	1	0	23.06	23.10	23.00	22.89	22.81	0-2	2
	1	12	23.05	22.96	23.03	22.82	23.02		2
	1	24	22.81	23.03	22.87	22.78	22.75		2
	12	0	21.99	22.17	22.01	22.09	22.12	0-3	3
	12	6	22.04	22.07	22.14	21.76	22.01		3
	12	13	21.88	22.03	21.88	21.90	21.84		3
	25	0	22.02	22.03	21.97	21.87	22.01		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.

9.4.12 LTE Band 41 PC2

Table 9-61
LTE Band 41 PC2 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	27.40	**27.67**	27.62	27.42	27.22	0	0
	1	50	27.38	27.48	27.43	27.35	27.39		0
	1	99	27.32	27.36	27.26	27.33	27.21		0
	50	0	26.48	26.49	26.47	26.46	26.24	0-1	1
	50	25	26.33	**26.55**	26.36	26.34	26.44		1
	50	50	26.35	26.46	26.32	26.28	26.21		1
	100	0	26.45	26.41	26.36	26.35	26.31		1
16QAM	1	0	26.53	26.59	26.50	26.42	26.20	0-1	1
	1	50	26.33	26.61	26.32	26.36	26.25		1
	1	99	26.47	26.31	26.30	26.34	26.21		1
	50	0	25.63	25.56	25.54	25.49	25.55	0-2	2
	50	25	25.56	25.68	25.48	25.42	25.50		2
	50	50	25.37	25.52	25.37	25.38	25.26		2
	100	0	25.53	25.49	25.47	25.48	25.28		2
64QAM	1	0	25.45	25.55	25.46	25.38	25.18	0-2	2
	1	50	25.25	25.70	25.29	25.39	25.15		2
	1	99	25.44	25.24	25.33	25.26	25.28		2
	50	0	24.60	24.53	24.62	24.46	24.63	0-3	3
	50	25	24.56	24.63	24.52	24.45	24.46		3
	50	50	24.31	24.36	24.21	24.38	24.21		3
	100	0	24.50	24.43	24.32	24.50	24.22		3

Table 9-62
LTE Band 41 PC2 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	27.22	27.61	27.54	27.49	27.28	0	0
	1	36	27.21	27.39	27.39	27.33	27.41		0
	1	74	27.27	27.37	27.28	27.36	27.21		0
	36	0	26.49	26.46	26.41	26.36	26.26	0-1	1
	36	18	26.37	26.47	26.36	26.35	26.42		1
	36	37	26.30	26.41	26.27	26.24	26.21		1
	75	0	26.31	26.35	26.35	26.32	26.25		1
16QAM	1	0	26.65	26.52	26.64	26.70	26.58	0-1	1
	1	36	26.58	26.57	26.58	26.30	26.49		1
	1	74	26.28	26.62	26.48	26.26	26.26		1
	36	0	25.60	25.55	25.53	25.46	25.59	0-2	2
	36	18	25.46	25.66	25.51	25.42	25.49		2
	36	37	25.41	25.53	25.43	25.42	25.29		2
	75	0	25.49	25.52	25.45	25.42	25.23		2
64QAM	1	0	25.66	25.45	25.49	25.63	25.57	0-2	2
	1	36	25.62	25.57	25.50	25.17	25.43		2
	1	74	25.30	25.54	25.44	25.32	25.18		2
	36	0	24.56	24.53	24.40	24.40	24.53	0-3	3
	36	18	24.44	24.65	24.57	24.49	24.45		3
	36	37	24.22	24.54	24.54	24.50	24.23		3
	75	0	24.46	24.46	24.35	24.33	24.18		3

© 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 9-63
LTE Band 41 PC2 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	27.51	27.53	27.50	27.42	27.35	0	0
	1	25	27.44	27.43	27.40	27.35	27.30		0
	1	49	27.26	27.37	27.35	27.26	27.21		0
	25	0	26.33	26.44	26.41	26.37	26.24	0-1	1
	25	12	26.53	26.51	26.39	26.34	26.29		1
	25	25	26.34	26.47	26.34	26.31	26.21		1
	50	0	26.28	26.40	26.35	26.35	26.25		1
16QAM	1	0	26.47	26.29	26.47	26.41	26.42	0-1	1
	1	25	26.40	26.48	26.36	26.33	26.38		1
	1	49	26.27	26.45	26.36	26.28	26.22		1
	25	0	25.66	25.55	25.50	25.43	25.54	0-2	2
	25	12	25.64	25.67	25.53	25.42	25.51		2
	25	25	25.45	25.57	25.45	25.42	25.38		2
	50	0	25.52	25.51	25.48	25.46	25.21		2
64QAM	1	0	25.40	25.32	25.36	25.39	25.40	0-2	2
	1	25	25.23	25.45	25.29	25.33	25.44		2
	1	49	25.23	25.51	25.25	25.21	25.16		2
	25	0	24.55	24.48	24.42	24.44	24.46	0-3	3
	25	12	24.64	24.65	24.49	24.49	24.40		3
	25	25	24.43	24.47	24.35	24.33	24.31		3
	50	0	24.54	24.42	24.45	24.54	24.29		3

Table 9-64
LTE Band 41 PC2 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel 39750 (2506.0 MHz)	Low-Mid Channel 40185 (2549.5 MHz)	Mid Channel 40620 (2593.0 MHz)	Mid-High Channel 41055 (2636.5 MHz)	High Channel 41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]						
QPSK	1	0	27.46	27.53	27.38	27.28	27.22	0	0
	1	12	27.46	27.48	27.33	27.29	27.23		0
	1	24	27.41	27.46	27.28	27.25	27.27		0
	12	0	26.51	26.59	26.45	26.28	26.22	0-1	1
	12	6	26.50	26.55	26.39	26.36	26.22		1
	12	13	26.52	26.48	26.36	26.29	26.24		1
	25	0	26.46	26.54	26.38	26.27	26.21		1
16QAM	1	0	26.60	26.57	26.44	26.35	26.49	0-1	1
	1	12	26.49	26.69	26.42	26.29	26.38		1
	1	24	26.38	26.51	26.38	26.42	26.26		1
	12	0	25.69	25.69	25.50	25.39	25.39	0-2	2
	12	6	25.62	25.62	25.49	25.44	25.38		2
	12	13	25.64	25.58	25.46	25.47	25.45		2
	25	0	25.60	25.60	25.48	25.44	25.34		2
64QAM	1	0	25.49	25.46	25.31	25.29	25.55	0-2	2
	1	12	25.48	25.68	25.38	25.26	25.40		2
	1	24	25.39	25.52	25.26	25.40	25.20		2
	12	0	24.60	24.61	24.46	24.30	24.32	0-3	3
	12	6	24.64	24.68	24.51	24.43	24.31		3
	12	13	24.47	24.59	24.52	24.42	24.50		3
	25	0	24.58	24.46	24.54	24.45	24.17		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.

9.4.13 LTE Uplink Carrier Aggregation Conducted Powers

Table 9-65
LTE Band 5 Uplink Carrier Aggregation Conducted Powers

	PCC									SCC									Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC UL Channel	PCC UL Frequency [MHz]	PCC DL Channel	PCC DL Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC UL Channel	SCC UL Frequency [MHz]	SCC DL Channel	SCC 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_5B	LTE B5	10	20525	836.5	2525	881.5	QPSK	1	0	LTE B5	5	20453	829.3	2453	874.3	QPSK	1	24	25.15	25.40

Table 9-66
LTE Band 41 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 (1)	LTE B41	20	40620	2593.0	QPSK	1	0	LTE B41	20	40422	2573.2	QPSK	1	99	24.97	25.14

Notes:

1. This device supports uplink carrier aggregation for LTE CA_41C with a maximum of two 20 MHz component carriers and LTE CA_5B with a maximum of two 10 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. 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 9-67
2.4 GHz WLAN Maximum Average RF Power – Ant 1

2.4GHz Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11b
2412	1	19.83
2437	6	19.75
2462	11	**19.88**

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11g	802.11n	802.11ac
2422	3	18.25	17.21	17.16
2437	6	18.13	17.06	17.09
2452	9	18.35	17.10	17.12

Table 9-68
2.4 GHz WLAN Maximum Average RF Power – Ant 2

2.4GHz Conducted Power [dBm]		
Freq [MHz]	Channel	IEEE Transmission Mode
		802.11b
2412	1	**20.16**
2437	6	20.00
2462	11	19.98

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11g	802.11n	802.11ac
2422	3	18.38	17.10	17.13
2437	6	18.27	17.07	17.02
2452	9	18.24	17.16	17.19

© 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 9-69
2.4 GHz WLAN Maximum Average RF Power – MIMO

2.4GHz 802.11g Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
2422	3	**18.25**	**18.38**	**21.33**
2437	6	18.13	18.27	21.21
2452	9	18.35	18.24	21.31

Table 9-70
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	17.02	15.72	15.81
5200	40	17.94	15.81	15.80
5220	44	**17.96**	15.70	15.71
5240	48	17.91	15.93	15.83
5260	52	17.05	15.79	15.82
5280	56	17.10	15.83	15.78
5300	60	**17.98**	15.87	15.83
5320	64	17.14	15.85	15.81
5500	100	17.10	15.03	15.90
5600	120	**17.16**	15.17	15.18
5620	124	17.12	15.02	15.02
5720	144	17.12	15.13	15.05
5745	149	17.13	15.06	15.97
5785	157	17.25	15.19	15.14
5825	165	**17.37**	15.26	15.19

© 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 9-71
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	17.26	15.02	15.17
5200	40	17.25	15.23	15.19
5220	44	17.32	15.34	15.26
5240	48	**17.41**	15.34	15.30
5260	52	17.27	15.21	15.25
5280	56	17.30	15.17	15.19
5300	60	17.27	15.19	15.17
5320	64	**17.34**	15.22	15.26
5500	100	17.35	15.29	15.31
5600	120	17.01	15.01	15.02
5620	124	17.16	15.07	15.06
5720	144	**17.53**	15.55	15.58
5745	149	17.47	15.42	15.45
5785	157	**17.48**	15.56	15.53
5825	165	17.43	15.45	15.50

Table 9-72
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz (20MHz) 802.11a Conducted Power [dBm]				
Freq [MHz]	Channel	ANT1	ANT2	MIMO
5180	36	17.02	17.26	20.15
5200	40	17.94	17.25	20.62
5220	44	17.96	17.32	20.66
5240	48	17.91	17.41	20.68
5260	52	17.05	17.27	20.17
5280	56	17.10	17.30	20.21
5300	60	**17.98**	**17.27**	**20.65**
5320	64	17.14	17.34	20.25
5500	100	17.10	17.35	20.24
5600	120	17.16	17.01	20.10
5620	124	17.12	17.16	20.15
5720	144	**17.12**	**17.53**	**20.34**
5745	149	17.13	17.47	20.31
5785	157	17.25	17.48	20.38
5825	165	17.37	17.43	20.41

© 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 9-73
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	802.11ac
2412	1	16.52	16.29	16.10	16.06
2437	6	16.39	16.12	16.01	16.01
2462	11	**16.62**	16.25	15.07	15.06

Table 9-74
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	802.11ac
2412	1	**16.74**	16.48	16.28	16.29
2437	6	16.41	16.24	16.04	16.04
2462	11	16.48	16.12	15.10	15.11

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.

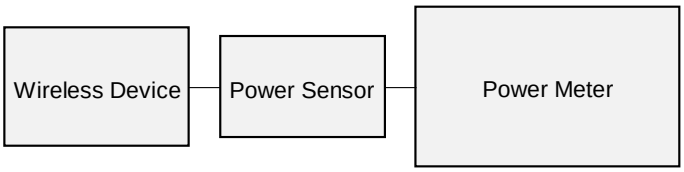


Figure 9-5
Power Measurement Setup

© 2018 PCTEST Engineering Laboratory, Inc. 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 9-75
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	11.40	13.808
2441	1.0	39	9.99	9.970
2480	1.0	78	**12.19**	16.568
2402	2.0	0	10.74	11.853
2441	2.0	39	9.37	8.657
2480	2.0	78	11.60	14.469
2402	3.0	0	10.80	12.009
2441	3.0	39	9.43	8.764
2480	3.0	78	11.62	14.534

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

© 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.

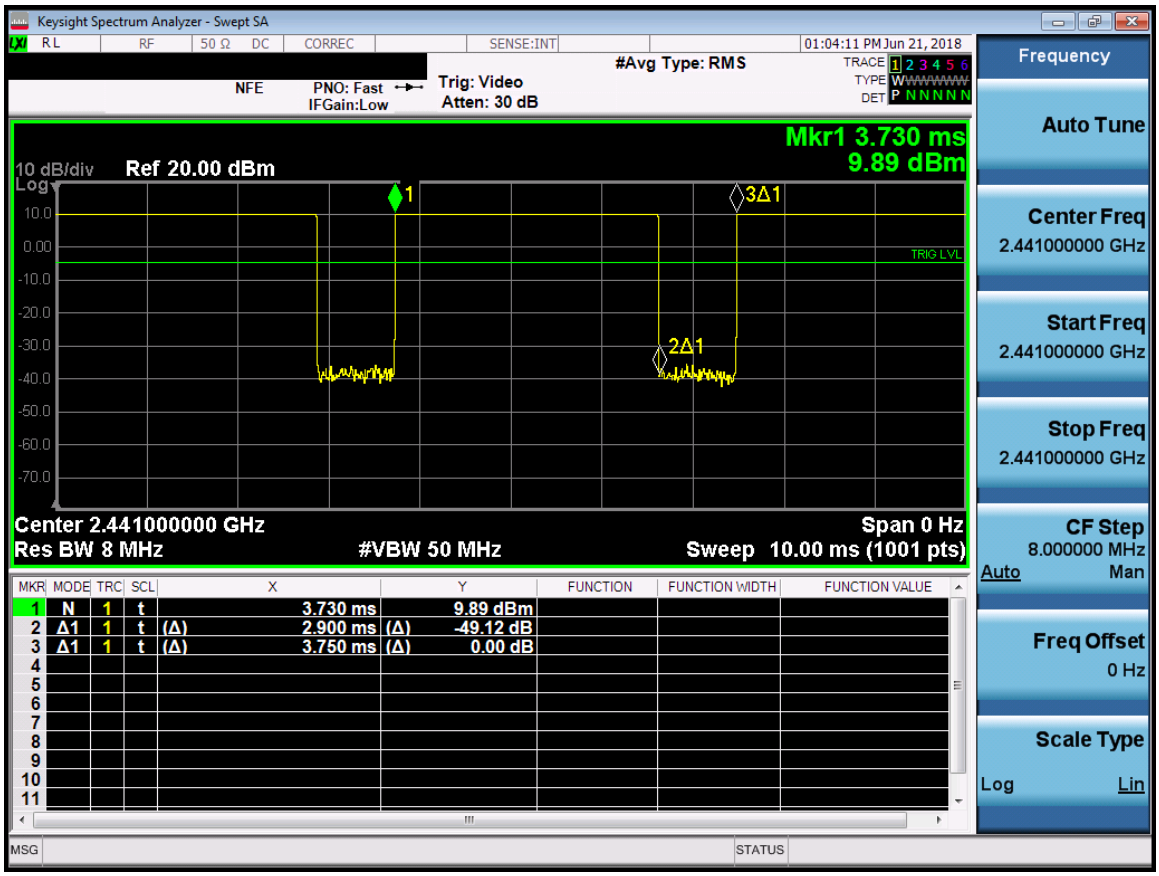


Figure 9-6
Bluetooth Transmission Plot

Equation 9-1
Bluetooth Duty Cycle Calculation

$$\boldsymbol{Duty\ Cycle} = \frac{\boldsymbol{Pulse\ Width}}{\boldsymbol{Period}} * \mathbf{100\%} = \frac{\mathbf{2.900}\boldsymbol{ms}}{\mathbf{3.750}\boldsymbol{ms}} * \mathbf{100\%} = \mathbf{77.3\%}$$

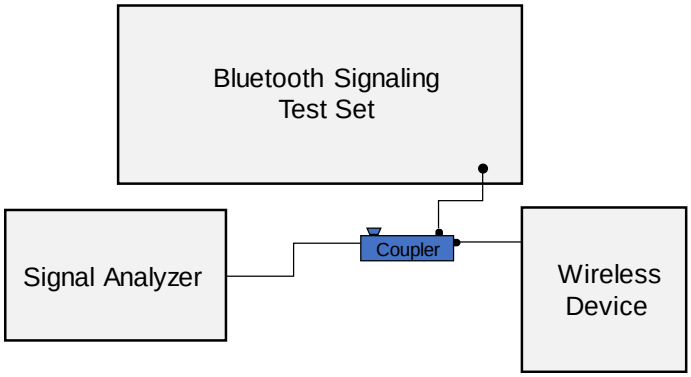


Figure 9-7
Power Measurement Setup

© 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
6/25/2018	750H	21.8	680	0.905	43.871	0.888	42.305	1.91%	3.70%
			695	0.909	43.843	0.889	42.227	2.25%	3.83%
			700	0.911	43.837	0.889	42.201	2.47%	3.88%
			710	0.915	43.825	0.890	42.149	2.81%	3.98%
			740	0.924	43.757	0.893	41.994	3.47%	4.20%
			755	0.929	43.705	0.894	41.916	3.91%	4.27%
			770	0.934	43.661	0.895	41.838	4.36%	4.36%
			785	0.940	43.615	0.896	41.760	4.91%	4.44%
6/30/2018	750H	23.0	740	0.918	43.060	0.893	41.994	2.80%	2.54%
			755	0.923	43.018	0.894	41.916	3.24%	2.63%
			785	0.934	42.923	0.896	41.760	4.24%	2.78%
			800	0.939	42.872	0.897	41.682	4.68%	2.85%
6/27/2018	835H	22.1	820	0.939	43.266	0.899	41.578	4.45%	4.06%
			835	0.944	43.235	0.900	41.500	4.89%	4.18%
			850	0.950	43.190	0.916	41.500	3.71%	4.07%
7/9/2018	835H	19.9	820	0.912	42.855	0.899	41.578	1.45%	3.07%
			835	0.917	42.813	0.900	41.500	1.89%	3.16%
			850	0.923	42.773	0.916	41.500	0.76%	3.07%
6/21/2018	1750H	22.0	1710	1.330	39.163	1.348	40.142	-1.34%	-2.44%
			1750	1.371	38.986	1.371	40.079	0.00%	-2.73%
			1790	1.411	38.820	1.394	40.016	1.22%	-2.99%
6/25/2018	1900H	21.8	1850	1.420	41.798	1.400	40.000	1.43%	4.50%
			1880	1.440	41.774	1.400	40.000	2.86%	4.44%
			1910	1.460	41.747	1.400	40.000	4.29%	4.37%
6/27/2018	1900H	22.1	1850	1.419	41.448	1.400	40.000	1.36%	3.62%
			1880	1.439	41.426	1.400	40.000	2.79%	3.57%
			1910	1.460	41.409	1.400	40.000	4.29%	3.52%
7/12/2018	1900H	22.8	1850	1.432	40.058	1.400	40.000	2.29%	0.15%
			1880	1.446	40.050	1.400	40.000	3.29%	0.12%
			1910	1.469	40.000	1.400	40.000	4.93%	0.00%
7/9/2018	2450H	22.6	2300	1.695	39.081	1.670	39.500	1.50%	-1.06%
			2310	1.706	39.048	1.679	39.480	1.61%	-1.09%
			2320	1.716	39.025	1.687	39.460	1.72%	-1.10%
			2400	1.806	38.664	1.756	39.289	2.85%	-1.59%
			2450	1.856	38.490	1.800	39.200	3.11%	-1.81%
			2500	1.916	38.298	1.855	39.136	3.29%	-2.14%
			2550	1.971	38.129	1.909	39.073	3.25%	-2.42%
			2600	2.025	37.900	1.964	39.009	3.11%	-2.84%
7/11/2018	2450H	22.4	2400	1.792	38.140	1.756	39.289	2.05%	-2.92%
			2450	1.842	37.957	1.800	39.200	2.33%	-3.17%
			2500	1.903	37.745	1.855	39.136	2.59%	-3.55%
07/02/2018	5200H-5800H	20.8	5240	4.531	35.426	4.696	35.940	-3.51%	-1.43%
			5260	4.538	35.303	4.717	35.917	-3.79%	-1.71%
			5300	4.578	35.404	4.758	35.871	-3.78%	-1.30%
			5320	4.599	35.329	4.778	35.849	-3.75%	-1.45%
			5600	4.860	34.870	5.065	35.529	-4.05%	-1.85%
			5700	4.991	34.766	5.168	35.414	-3.42%	-1.83%
			5745	5.039	34.738	5.214	35.363	-3.36%	-1.77%
			5765	5.054	34.721	5.234	35.340	-3.44%	-1.75%
			5785	5.067	34.639	5.255	35.317	-3.58%	-1.92%
			5825	5.111	34.596	5.296	35.271	-3.49%	-1.91%

© 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 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
7/11/2018	750B	21.8	680	0.940	54.279	0.958	55.804	-1.88%	-2.73%
			695	0.945	54.224	0.959	55.745	-1.46%	-2.73%
			700	0.947	54.202	0.959	55.726	-1.25%	-2.73%
			710	0.952	54.172	0.960	55.687	-0.83%	-2.72%
			740	0.962	54.145	0.963	55.570	-0.10%	-2.56%
			755	0.966	54.137	0.964	55.512	0.21%	-2.48%
			770	0.974	54.049	0.965	55.453	0.93%	-2.53%
			785	0.979	54.018	0.966	55.395	1.35%	-2.49%
			800	0.987	53.956	0.967	55.336	2.07%	-2.49%
7/2/2018	835B	20.3	820	0.975	54.021	0.969	55.258	0.62%	-2.24%
			835	0.980	53.985	0.970	55.200	1.03%	-2.20%
			850	0.985	53.937	0.988	55.154	-0.30%	-2.21%
7/11/2018	835B	20.5	820	0.995	53.673	0.969	55.258	2.68%	-2.87%
			835	1.002	53.529	0.970	55.200	3.30%	-3.03%
			850	1.006	53.531	0.988	55.154	1.82%	-2.94%
6/19/2018	1750B	22.1	1710	1.446	53.130	1.463	53.537	-1.16%	-0.76%
			1750	1.478	53.073	1.488	53.432	-0.67%	-0.67%
			1790	1.501	53.058	1.514	53.326	-0.86%	-0.50%
6/25/2018	1750B	21.5	1710	1.466	51.875	1.463	53.537	0.21%	-3.10%
			1750	1.510	51.719	1.488	53.432	1.48%	-3.21%
			1790	1.552	51.568	1.514	53.326	2.51%	-3.30%
6/27/2018	1750B	22.1	1710	1.444	52.827	1.463	53.537	-1.30%	-1.33%
			1750	1.486	52.686	1.488	53.432	-0.13%	-1.40%
			1790	1.528	52.552	1.514	53.326	0.92%	-1.45%
6/25/2018	1900B	22.0	1850	1.519	51.310	1.520	53.300	-0.07%	-3.73%
			1880	1.554	51.239	1.520	53.300	2.24%	-3.87%
			1910	1.586	51.163	1.520	53.300	4.34%	-4.01%
6/28/2018	1900B	22.0	1850	1.519	51.681	1.520	53.300	-0.07%	-3.04%
			1880	1.553	51.643	1.520	53.300	2.17%	-3.11%
			1910	1.586	51.538	1.520	53.300	4.34%	-3.31%
7/2/2018	1900B	22.3	1850	1.500	51.413	1.520	53.300	-1.32%	-3.54%
			1880	1.535	51.307	1.520	53.300	0.99%	-3.74%
			1910	1.568	51.198	1.520	53.300	3.16%	-3.94%
7/5/2018	1900B	22.1	1850	1.497	53.392	1.520	53.300	-1.51%	0.17%
			1880	1.529	53.307	1.520	53.300	0.59%	0.01%
			1910	1.562	53.206	1.520	53.300	2.76%	-0.18%
7/8/2018	1900B	22.2	1850	1.506	52.525	1.520	53.300	-0.92%	-1.45%
			1880	1.541	52.499	1.520	53.300	1.38%	-1.50%
			1910	1.578	52.368	1.520	53.300	3.82%	-1.75%
7/16/2018	1900B	21.4	1850	1.509	51.758	1.520	53.300	-0.72%	-2.89%
			1880	1.541	51.653	1.520	53.300	1.38%	-3.09%
			1910	1.579	51.555	1.520	53.300	3.88%	-3.27%
6/20/2018	2450B	23.0	2400	1.955	50.963	1.902	52.767	2.79%	-3.42%
			2450	2.013	50.825	1.950	52.700	3.23%	-3.56%
			2500	2.074	50.676	2.021	52.636	2.62%	-3.72%
			2550	2.131	50.556	2.092	52.573	1.86%	-3.84%
			2600	2.190	50.386	2.163	52.509	1.25%	-4.04%
7/5/2018	2450B	22.5	2300	1.864	51.631	1.809	52.900	3.04%	-2.40%
			2310	1.876	51.610	1.816	52.887	3.30%	-2.41%
			2320	1.887	51.582	1.826	52.873	3.34%	-2.44%
			2500	2.093	51.025	2.021	52.636	3.56%	-3.06%
			2550	2.153	50.860	2.092	52.573	2.92%	-3.26%
			2600	2.212	50.714	2.163	52.509	2.27%	-3.42%
7/9/2018	2450B	22.8	2400	1.934	51.497	1.902	52.767	1.68%	-2.41%
			2450	1.984	51.351	1.950	52.700	1.74%	-2.56%
			2500	2.053	51.215	2.021	52.636	1.58%	-2.70%
07/02/2018	5200B-5800B	21.8	5220	5.455	48.300	5.323	48.987	2.48%	-1.40%
			5240	5.485	48.261	5.346	48.960	2.60%	-1.43%
			5260	5.503	48.255	5.369	48.933	2.50%	-1.39%
			5280	5.541	48.218	5.393	48.906	2.74%	-1.41%
			5300	5.556	48.198	5.416	48.879	2.58%	-1.39%
			5320	5.588	48.157	5.439	48.851	2.74%	-1.42%
			5600	5.956	47.625	5.766	48.471	3.30%	-1.75%
			5700	6.108	47.519	5.883	48.336	3.82%	-1.69%
			5745	6.167	47.441	5.936	48.275	3.89%	-1.73%
			5765	6.193	47.374	5.959	48.248	3.93%	-1.81%
			5785	6.228	47.363	5.982	48.220	4.11%	-1.78%
			5825	6.267	47.304	6.029	48.166	3.95%	-1.79%
07/09/2018	5200B-5800B	21.8	5240	5.453	48.252	5.346	48.960	2.00%	-1.45%
			5260	5.481	48.187	5.369	48.933	2.09%	-1.52%
			5280	5.504	48.182	5.393	48.906	2.06%	-1.48%
			5300	5.529	48.153	5.416	48.879	2.09%	-1.49%
			5320	5.567	48.128	5.439	48.851	2.35%	-1.48%
			5600	5.941	47.649	5.766	48.471	3.04%	-1.70%
			5700	6.073	47.473	5.883	48.336	3.23%	-1.79%
			5745	6.150	47.377	5.936	48.275	3.61%	-1.86%
			5765	6.176	47.352	5.959	48.248	3.64%	-1.86%

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. 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 10-3
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	06/25/2018	23.5	21.8	0.200	1161	3213	1.620	8.170	8.100	-0.86%
E	750	HEAD	06/30/2018	24.5	23.0	0.200	1161	3213	1.580	8.170	7.900	-3.30%
E	835	HEAD	06/27/2018	23.9	22.2	0.200	4d047	3213	1.940	9.130	9.700	6.24%
E	835	HEAD	07/09/2018	20.9	19.9	0.200	4d047	3213	1.890	9.130	9.450	3.50%
G	1750	HEAD	06/21/2018	22.4	22.1	0.100	1150	3332	3.470	36.100	34.700	-3.88%
E	1900	HEAD	06/25/2018	23.5	21.8	0.100	5d148	3213	4.020	40.100	40.200	0.25%
E	1900	HEAD	06/27/2018	23.9	22.2	0.100	5d148	3213	4.030	40.100	40.300	0.50%
E	1900	HEAD	07/12/2018	24.0	22.8	0.100	5d148	3213	4.130	40.100	41.300	2.99%
G	2300	HEAD	07/09/2018	22.0	21.4	0.100	1008	3332	4.970	49.600	49.700	0.20%
G	2450	HEAD	07/09/2018	22.0	21.4	0.100	882	3332	5.200	52.200	52.000	-0.38%
G	2450	HEAD	07/11/2018	21.9	21.4	0.100	882	3332	5.270	52.200	52.700	0.96%
G	2600	HEAD	07/09/2018	22.0	21.4	0.100	1004	3332	5.870	55.900	58.700	5.01%
H	5250	HEAD	07/02/2018	21.3	20.4	0.050	1191	3589	3.900	78.900	78.000	-1.14%
H	5600	HEAD	07/02/2018	21.3	20.4	0.050	1191	3589	4.360	83.600	87.200	4.31%
H	5750	HEAD	07/02/2018	21.3	20.4	0.050	1191	3589	3.730	79.100	74.600	-5.69%
H	750	BODY	07/11/2018	23.8	21.3	0.200	1161	7409	1.740	8.430	8.700	3.20%
J	835	BODY	07/02/2018	20.3	20.3	0.200	4d132	3914	2.010	9.710	10.050	3.50%
J	835	BODY	07/11/2018	20.5	20.5	0.200	4d133	3347	2.030	9.410	10.150	7.86%
G	1750	BODY	06/19/2018	22.6	21.7	0.100	1150	3332	3.670	36.500	36.700	0.55%
G	1750	BODY	06/27/2018	22.7	22.1	0.100	1051	3332	3.710	37.200	37.100	-0.27%
I	1900	BODY	06/25/2018	21.1	21.2	0.100	5d148	7406	4.190	39.600	41.900	5.81%
I	1900	BODY	06/28/2018	22.6	22.0	0.100	5d141	7406	4.140	40.000	41.400	3.50%
I	1900	BODY	07/02/2018	22.4	22.3	0.100	5d141	7406	4.130	40.000	41.300	3.25%
I	1900	BODY	07/05/2018	23.5	22.1	0.100	5d141	7406	4.180	40.000	41.800	4.50%
I	1900	BODY	07/08/2018	20.3	21.1	0.100	5d080	7406	4.110	39.100	41.100	5.12%
I	1900	BODY	07/16/2018	21.3	21.3	0.100	5d080	7406	4.090	39.100	40.900	4.60%
K	2300	BODY	07/05/2018	22.4	21.9	0.100	1073	3319	5.010	48.100	50.100	4.16%
K	2450	BODY	06/20/2018	23.3	22.2	0.100	882	3319	5.130	50.200	51.300	2.19%
K	2450	BODY	07/09/2018	22.2	22.0	0.100	797	3319	5.270	51.100	52.700	3.13%
K	2600	BODY	06/20/2018	23.3	22.2	0.100	1004	3319	5.680	54.800	56.800	3.65%
K	2600	BODY	07/05/2018	22.4	21.9	0.100	1126	3319	5.680	54.300	56.800	4.60%
D	5250	BODY	07/02/2018	22.4	21.1	0.050	1237	7357	3.600	76.900	72.000	-6.37%
D	5600	BODY	07/02/2018	22.4	21.1	0.050	1237	7357	4.000	78.500	80.000	1.91%
D	5750	BODY	07/02/2018	22.4	21.1	0.050	1237	7357	3.840	77.100	76.800	-0.39%

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.11 M
06/19/2018

© 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
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)	$Deviation_{10g}$ (%)
G	1750	BODY	06/25/2018	23.1	21.3	0.100	1051	3332	2.070	19.900	20.700	4.02%
I	1900	BODY	06/25/2018	21.1	21.2	0.100	5d148	7406	2.130	20.900	21.300	1.91%
I	1900	BODY	07/02/2018	22.4	22.3	0.100	5d141	7406	2.120	21.200	21.200	0.00%
D	5250	BODY	07/09/2018	21.5	20.8	0.050	1237	7357	1.010	21.500	20.200	-6.05%
D	5600	BODY	07/09/2018	21.5	20.8	0.050	1237	7357	1.090	22.100	21.800	-1.36%
D	5750	BODY	07/09/2018	21.5	20.8	0.050	1237	7357	1.020	21.400	20.400	-4.67%

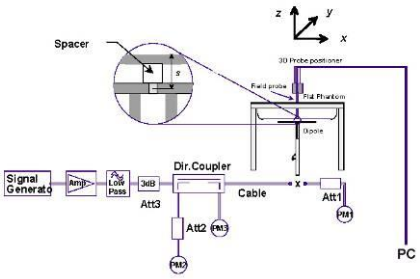


Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

© 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
CDMA BC10 (§90S) 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)	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.23	0.01	Right	Cheek	00765	1:1	0.089	1.064	0.095	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.23	0.01	Right	Tilt	00765	1:1	0.066	1.064	0.070	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.23	-0.02	Left	Cheek	00765	1:1	0.129	1.064	0.137	A1
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.5	25.23	-0.01	Left	Tilt	00765	1:1	0.061	1.064	0.065	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.32	0.04	Right	Cheek	00765	1:1	0.103	1.042	0.107	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.32	0.07	Right	Tilt	00765	1:1	0.057	1.042	0.059	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.32	-0.04	Left	Cheek	00765	1:1	0.118	1.042	0.123	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.5	25.32	0.05	Left	Tilt	00765	1:1	0.053	1.042	0.055	
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
CDMA BC0 (§22H) 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	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.18	0.01	Right	Cheek	00765	1:1	0.102	1.076	0.110	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.18	0.03	Right	Tilt	00765	1:1	0.068	1.076	0.073	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.18	0.01	Left	Cheek	00765	1:1	0.134	1.076	0.144	A2
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.5	25.18	0.03	Left	Tilt	00765	1:1	0.064	1.076	0.069	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.43	0.04	Right	Cheek	00765	1:1	0.119	1.016	0.121	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.43	0.02	Right	Tilt	00765	1:1	0.066	1.016	0.067	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.43	0.11	Left	Cheek	00765	1:1	0.132	1.016	0.134	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.5	25.43	-0.01	Left	Tilt	00765	1:1	0.068	1.016	0.069	
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
PCS 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)	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	25.11	0.07	Right	Cheek	00765	1:1	0.123	1.021	0.126	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	25.11	0.08	Right	Tilt	00765	1:1	0.069	1.021	0.070	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	25.11	0.01	Left	Cheek	00765	1:1	0.098	1.021	0.100	
1880.00	600	PCS CDMA	RC3 / SO55	25.2	25.11	0.04	Left	Tilt	00765	1:1	0.069	1.021	0.070	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	25.09	0.06	Right	Cheek	00765	1:1	0.131	1.026	0.134	A3
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	25.09	0.09	Right	Tilt	00765	1:1	0.068	1.026	0.070	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	25.09	0.05	Left	Cheek	00765	1:1	0.111	1.026	0.114	
1880.00	600	PCS CDMA	EVDO Rev. A	25.2	25.09	0.03	Left	Tilt	00765	1:1	0.067	1.026	0.069	
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
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	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	190	GSM 850	GSM	34.2	34.08	0.08	Right	Cheek	00757	1	1:8.3	0.032	1.028	0.033	
836.60	190	GSM 850	GSM	34.2	34.08	-0.06	Right	Tilt	00757	1	1:8.3	0.025	1.028	0.026	
836.60	190	GSM 850	GSM	34.2	34.08	0.08	Left	Cheek	00757	1	1:8.3	0.048	1.028	0.049	A4
836.60	190	GSM 850	GSM	34.2	34.08	0.07	Left	Tilt	00757	1	1:8.3	0.024	1.028	0.025	
836.60	190	GSM 850	GPRS	34.2	34.19	0.16	Right	Cheek	00757	1	1:8.3	0.032	1.002	0.032	
836.60	190	GSM 850	GPRS	34.2	34.19	0.15	Right	Tilt	00757	1	1:8.3	0.023	1.002	0.023	
836.60	190	GSM 850	GPRS	34.2	34.19	-0.01	Left	Cheek	00757	1	1:8.3	0.044	1.002	0.044	
836.60	190	GSM 850	GPRS	34.2	34.19	-0.07	Left	Tilt	00757	1	1:8.3	0.023	1.002	0.023	
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. 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 11-5
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	# of Time Slots	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
1880.00	661	GSM 1900	GSM	31.7	31.61	0.04	Right	Cheek	00757	1	1:8.3	0.111	1.021	0.113	A5
1880.00	661	GSM 1900	GSM	31.7	31.61	0.00	Right	Tilt	00757	1	1:8.3	0.072	1.021	0.074	
1880.00	661	GSM 1900	GSM	31.7	31.61	0.15	Left	Cheek	00757	1	1:8.3	0.076	1.021	0.078	
1880.00	661	GSM 1900	GSM	31.7	31.61	-0.01	Left	Tilt	00757	1	1:8.3	0.071	1.021	0.072	
1880.00	661	GSM 1900	GPRS	25.5	25.37	-0.02	Right	Cheek	00757	4	1:2.076	0.094	1.030	0.097	
1880.00	661	GSM 1900	GPRS	25.5	25.37	0.12	Right	Tilt	00757	4	1:2.076	0.061	1.030	0.063	
1880.00	661	GSM 1900	GPRS	25.5	25.37	0.07	Left	Cheek	00757	4	1:2.076	0.065	1.030	0.067	
1880.00	661	GSM 1900	GPRS	25.5	25.37	0.19	Left	Tilt	00757	4	1:2.076	0.057	1.030	0.059	
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 11-6
UMTS 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	4183	UMTS 850	RMC	25.5	25.30	-0.13	Right	Cheek	00757	1:1	0.069	1.047	0.072	
836.60	4183	UMTS 850	RMC	25.5	25.30	0.11	Right	Tilt	00757	1:1	0.059	1.047	0.062	
836.60	4183	UMTS 850	RMC	25.5	25.30	-0.01	Left	Cheek	00757	1:1	0.103	1.047	0.108	A6
836.60	4183	UMTS 850	RMC	25.5	25.30	0.17	Left	Tilt	00757	1:1	0.055	1.047	0.058	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-7
UMTS 1750 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)	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	0.07	Right	Cheek	00716	1:1	0.102	1.033	0.105	A7
1732.40	1412	UMTS 1750	RMC	25.2	25.06	0.12	Right	Tilt	00716	1:1	0.038	1.033	0.039	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	0.06	Left	Cheek	00716	1:1	0.076	1.033	0.079	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	-0.09	Left	Tilt	00716	1:1	0.043	1.033	0.044	
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. 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
UMTS 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	9400	UMTS 1900	RMC	25.2	24.89	0.04	Right	Cheek	00757	1:1	0.151	1.074	0.162	A8
1880.00	9400	UMTS 1900	RMC	25.2	24.89	0.15	Right	Tilt	00757	1:1	0.103	1.074	0.111	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	0.08	Left	Cheek	00757	1:1	0.106	1.074	0.114	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	-0.04	Left	Tilt	00757	1:1	0.112	1.074	0.120	
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 71 Head SAR

MEASUREMENT RESULTS																			
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
680.50	133297	Mid	LTE Band 71	20	25.5	25.49	0.03	0	Right	Cheek	QPSK	1	50	00716	1:1	0.077	1.002	0.077	A9
680.50	133297	Mid	LTE Band 71	20	24.5	24.47	0.05	1	Right	Cheek	QPSK	50	25	00716	1:1	0.064	1.007	0.064	
680.50	133297	Mid	LTE Band 71	20	25.5	25.49	0.05	0	Right	Tilt	QPSK	1	50	00716	1:1	0.045	1.002	0.045	
680.50	133297	Mid	LTE Band 71	20	24.5	24.47	0.04	1	Right	Tilt	QPSK	50	25	00716	1:1	0.037	1.007	0.037	
680.50	133297	Mid	LTE Band 71	20	25.5	25.49	0.05	0	Left	Cheek	QPSK	1	50	00716	1:1	0.076	1.002	0.076	
680.50	133297	Mid	LTE Band 71	20	24.5	24.47	0.04	1	Left	Cheek	QPSK	50	25	00716	1:1	0.057	1.007	0.057	
680.50	133297	Mid	LTE Band 71	20	25.5	25.49	0.11	0	Left	Tilt	QPSK	1	50	00716	1:1	0.033	1.002	0.033	
680.50	133297	Mid	LTE Band 71	20	24.5	24.47	0.04	1	Left	Tilt	QPSK	50	25	00716	1:1	0.026	1.007	0.026	
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 11-10
LTE Band 12 Head SAR

MEASUREMENT RESULTS																			
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.5	25.40	0.02	0	Right	Cheek	QPSK	1	0	00716	1:1	0.103	1.023	0.105	A10
707.50	23095	Mid	LTE Band 12	10	24.5	24.46	0.01	1	Right	Cheek	QPSK	25	0	00716	1:1	0.096	1.009	0.097	
707.50	23095	Mid	LTE Band 12	10	25.5	25.40	0.11	0	Right	Tilt	QPSK	1	0	00716	1:1	0.041	1.023	0.042	
707.50	23095	Mid	LTE Band 12	10	24.5	24.46	0.08	1	Right	Tilt	QPSK	25	0	00716	1:1	0.040	1.009	0.040	
707.50	23095	Mid	LTE Band 12	10	25.5	25.40	0.03	0	Left	Cheek	QPSK	1	0	00716	1:1	0.103	1.023	0.105	
707.50	23095	Mid	LTE Band 12	10	24.5	24.46	0.05	1	Left	Cheek	QPSK	25	0	00716	1:1	0.098	1.009	0.099	
707.50	23095	Mid	LTE Band 12	10	25.5	25.40	-0.01	0	Left	Tilt	QPSK	1	0	00716	1:1	0.046	1.023	0.047	
707.50	23095	Mid	LTE Band 12	10	24.5	24.46	0.07	1	Left	Tilt	QPSK	25	0	00716	1:1	0.042	1.009	0.042	
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. 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 11-11
LTE Band 13 Head SAR

MEASUREMENT RESULTS																				
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	25.5	25.48	-0.01	0	Right	Cheek	QPSK	1	49	00716	1:1	0.082	1.005	0.082	
782.00	23230	Mid	LTE Band 13	10	24.5	24.45	0.06	1	Right	Cheek	QPSK	25	12	00716	1:1	0.068	1.012	0.069	
782.00	23230	Mid	LTE Band 13	10	25.5	25.48	-0.01	0	Right	Tilt	QPSK	1	49	00716	1:1	0.054	1.005	0.054	
782.00	23230	Mid	LTE Band 13	10	24.5	24.45	0.01	1	Right	Tilt	QPSK	25	12	00716	1:1	0.045	1.012	0.046	
782.00	23230	Mid	LTE Band 13	10	25.5	25.48	0.04	0	Left	Cheek	QPSK	1	49	00716	1:1	0.095	1.005	0.095	A11
782.00	23230	Mid	LTE Band 13	10	24.5	24.45	0.05	1	Left	Cheek	QPSK	25	12	00716	1:1	0.079	1.012	0.080	
782.00	23230	Mid	LTE Band 13	10	25.5	25.48	0.08	0	Left	Tilt	QPSK	1	49	00716	1:1	0.042	1.005	0.042	
782.00	23230	Mid	LTE Band 13	10	24.5	24.45	0.05	1	Left	Tilt	QPSK	25	12	00716	1:1	0.034	1.012	0.034	
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 14 Head SAR

MEASUREMENT RESULTS																				
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
793.00	23330	Mid	LTE Band 14	10	25.5	25.40	0.01	0	Right	Cheek	QPSK	1	25	00716	1:1	0.054	1.023	0.055	
793.00	23330	Mid	LTE Band 14	10	24.5	24.39	0.01	1	Right	Cheek	QPSK	25	12	00716	1:1	0.047	1.026	0.048	
793.00	23330	Mid	LTE Band 14	10	25.5	25.40	-0.18	0	Right	Tilt	QPSK	1	25	00716	1:1	0.038	1.023	0.039	
793.00	23330	Mid	LTE Band 14	10	24.5	24.39	0.04	1	Right	Tilt	QPSK	25	12	00716	1:1	0.034	1.026	0.035	
793.00	23330	Mid	LTE Band 14	10	25.5	25.40	0.06	0	Left	Cheek	QPSK	1	25	00716	1:1	0.063	1.023	0.064	A12
793.00	23330	Mid	LTE Band 14	10	24.5	24.39	0.05	1	Left	Cheek	QPSK	25	12	00716	1:1	0.052	1.026	0.053	
793.00	23330	Mid	LTE Band 14	10	25.5	25.40	0.07	0	Left	Tilt	QPSK	1	25	00716	1:1	0.028	1.023	0.029	
793.00	23330	Mid	LTE Band 14	10	24.5	24.39	0.08	1	Left	Tilt	QPSK	25	12	00716	1:1	0.022	1.026	0.023	
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 11-13
LTE Band 5 (Cell) 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)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	0.01	0	Right	Cheek	QPSK	1	0	00716	1:1	0.089	1.023	0.091	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.37	-0.03	1	Right	Cheek	QPSK	25	0	00716	1:1	0.068	1.030	0.070	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	0.02	0	Right	Tilt	QPSK	1	0	00716	1:1	0.049	1.023	0.050	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.37	0.01	1	Right	Tilt	QPSK	25	0	00716	1:1	0.039	1.030	0.040	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	0.01	0	Left	Cheek	QPSK	1	0	00716	1:1	0.099	1.023	0.101	A13
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	-0.01	0	Left	Cheek	QPSK	1	0	00716	1:1	0.098	1.084	0.106	
2 CC Uplink	SCC	829.30	20453	Mid		5							QPSK	1	24						
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.37	0.02	1	Left	Cheek	QPSK	25	0	00716	1:1	0.083	1.030	0.085	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	0.02	0	Left	Tilt	QPSK	1	0	00716	1:1	0.048	1.023	0.049	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.37	0.04	1	Left	Tilt	QPSK	25	0	00716	1:1	0.037	1.030	0.038	
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. 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 11-14
LTE Band 26 (Cell) Head SAR

MEASUREMENT RESULTS																				
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	-0.04	0	Right	Cheek	QPSK	1	0	00716	1:1	0.083	1.038	0.086	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.01	1	Right	Cheek	QPSK	36	18	00716	1:1	0.068	1.002	0.068	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.02	0	Right	Tilt	QPSK	1	0	00716	1:1	0.046	1.038	0.048	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.49	0.03	1	Right	Tilt	QPSK	36	18	00716	1:1	0.042	1.002	0.042	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.02	0	Left	Cheek	QPSK	1	0	00716	1:1	0.100	1.038	0.104	A14
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.49	0.02	1	Left	Cheek	QPSK	36	18	00716	1:1	0.084	1.002	0.084	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.18	0	Left	Tilt	QPSK	1	0	00716	1:1	0.047	1.038	0.049	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.49	0.03	1	Left	Tilt	QPSK	36	18	00716	1:1	0.038	1.002	0.038	
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 11-15
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																				
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	0.17	0	Right	Cheek	QPSK	1	0	00716	1:1	0.100	1.002	0.100	A15
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	0.04	1	Right	Cheek	QPSK	50	25	00716	1:1	0.083	1.002	0.083	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	0.07	0	Right	Tilt	QPSK	1	0	00716	1:1	0.041	1.002	0.041	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	-0.03	1	Right	Tilt	QPSK	50	25	00716	1:1	0.038	1.002	0.038	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	-0.11	0	Left	Cheek	QPSK	1	0	00716	1:1	0.076	1.002	0.076	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	-0.10	1	Left	Cheek	QPSK	50	25	00716	1:1	0.075	1.002	0.075	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	0.13	0	Left	Tilt	QPSK	1	0	00716	1:1	0.044	1.002	0.044	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	0.17	1	Left	Tilt	QPSK	50	25	00716	1:1	0.040	1.002	0.040	
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 11-16
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																				
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	-0.10	0	Right	Cheek	QPSK	1	0	00716	1:1	0.152	1.000	0.152	A16
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	-0.07	1	Right	Cheek	QPSK	50	0	00716	1:1	0.120	1.009	0.121	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.09	0	Right	Tilt	QPSK	1	0	00716	1:1	0.083	1.000	0.083	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	0.02	1	Right	Tilt	QPSK	50	0	00716	1:1	0.056	1.009	0.057	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.04	0	Left	Cheek	QPSK	1	0	00716	1:1	0.133	1.000	0.133	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	-0.01	1	Left	Cheek	QPSK	50	0	00716	1:1	0.104	1.009	0.105	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.00	0	Left	Tilt	QPSK	1	0	00716	1:1	0.076	1.000	0.076	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	0.07	1	Left	Tilt	QPSK	50	0	00716	1:1	0.057	1.009	0.058	
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. 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
LTE Band 30 Head SAR

MEASUREMENT RESULTS																				
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.61	0.06	0	Right	Cheek	QPSK	1	0	00732	1:1	0.365	1.021	0.373	A17
2310.00	27710	Mid	LTE Band 30	10	22.7	22.61	-0.12	1	Right	Cheek	QPSK	25	12	00732	1:1	0.289	1.021	0.295	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.61	0.06	0	Right	Tilt	QPSK	1	0	00732	1:1	0.079	1.021	0.081	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.61	-0.06	1	Right	Tilt	QPSK	25	12	00732	1:1	0.063	1.021	0.064	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.61	0.12	0	Left	Cheek	QPSK	1	0	00732	1:1	0.153	1.021	0.156	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.61	0.05	1	Left	Cheek	QPSK	25	12	00732	1:1	0.118	1.021	0.120	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.61	0.10	0	Left	Tilt	QPSK	1	0	00732	1:1	0.090	1.021	0.092	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.61	0.05	1	Left	Tilt	QPSK	25	12	00732	1:1	0.070	1.021	0.071	
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 11-18
LTE Band 7 Head SAR

MEASUREMENT RESULTS																				
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)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)		(W/kg)	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.70	-0.02	0	Right	Cheek	QPSK	1	0	00732	1:1	0.308	1.000	0.308	A18
2535.00	21100	Mid	LTE Band 7	20	22.7	22.62	-0.03	1	Right	Cheek	QPSK	50	0	00732	1:1	0.253	1.019	0.258	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.70	0.13	0	Right	Tilt	QPSK	1	0	00732	1:1	0.066	1.000	0.066	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.62	0.01	1	Right	Tilt	QPSK	50	0	00732	1:1	0.053	1.019	0.054	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.70	0.15	0	Left	Cheek	QPSK	1	0	00732	1:1	0.126	1.000	0.126	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.62	0.15	1	Left	Cheek	QPSK	50	0	00732	1:1	0.095	1.019	0.097	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.70	0.18	0	Left	Tilt	QPSK	1	0	00732	1:1	0.095	1.000	0.095	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.62	0.07	1	Left	Tilt	QPSK	50	0	00732	1:1	0.073	1.019	0.074	
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 11-19
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)	Scaling Factor	Reported SAR (1g)	Plot #
		MHz	Ch.															(W/kg)		(W/kg)	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.14	-0.02	0	Right	Cheek	QPSK	1	0	00732	1:1.58	0.355	1.014	0.360	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.05	-0.10	1	Right	Cheek	QPSK	50	0	00732	1:1.58	0.220	1.035	0.228	
1 CC Uplink - Power Class 2	N/A	2593.00	40620	Mid	LTE Band 41	20	27.7	27.62	-0.07	0	Right	Cheek	QPSK	1	0	00732	1:2.31	0.446	1.019	0.454	A19
2 CC Uplink - Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	25.2	24.97	0.01	0	Right	Cheek	QPSK	1	0	00732	1:1.58	0.349	1.054	0.368	
2 CC Uplink - Power Class 3	SCC	2573.20	40422	Mid									QPSK	1	99						
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.14	-0.09	0	Right	Tilt	QPSK	1	0	00732	1:1.58	0.069	1.014	0.070	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.05	0.06	1	Right	Tilt	QPSK	50	0	00732	1:1.58	0.053	1.035	0.055	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.14	0.07	0	Left	Cheek	QPSK	1	0	00732	1:1.58	0.138	1.014	0.140	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.05	0.15	1	Left	Cheek	QPSK	50	0	00732	1:1.58	0.104	1.035	0.108	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.14	0.15	0	Left	Tilt	QPSK	1	0	00732	1:1.58	0.113	1.014	0.115	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.05	0.07	1	Left	Tilt	QPSK	50	0	00732	1:1.58	0.090	1.035	0.093	
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. 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 11-20
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	16.62	0.07	Right	Cheek	1	00914	1	99.1	0.399	-	1.091	1.009	-	
2462	11	802.11b	DSSS	22	17.0	16.62	0.19	Right	Tilt	1	00914	1	99.1	0.419	0.332	1.091	1.009	**0.365**	A20
2462	11	802.11b	DSSS	22	17.0	16.62	0.01	Left	Cheek	1	00914	1	99.1	0.169	-	1.091	1.009	-	
2462	11	802.11b	DSSS	22	17.0	16.62	0.11	Left	Tilt	1	00914	1	99.1	0.183	-	1.091	1.009	-	
2412	1	802.11b	DSSS	22	17.0	16.74	0.13	Right	Cheek	2	00914	1	99.2	0.128	0.108	1.062	1.008	0.116	
2412	1	802.11b	DSSS	22	17.0	16.74	0.15	Right	Tilt	2	00914	1	99.2	0.064	-	1.062	1.008	-	
2412	1	802.11b	DSSS	22	17.0	16.74	0.10	Left	Cheek	2	00914	1	99.2	0.050	-	1.062	1.008	-	
2412	1	802.11b	DSSS	22	17.0	16.74	0.16	Left	Tilt	2	00914	1	99.2	0.040	-	1.062	1.008	-	
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 11-21
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)	
5300	60	802.11a	OFDM	20	18.0	17.98	0.19	Right	Cheek	1	00906	6	98.2	0.383	0.145	1.005	1.018	0.148	
5300	60	802.11a	OFDM	20	18.0	17.98	0.16	Right	Tilt	1	00906	6	98.2	0.327	-	1.005	1.018	-	
5300	60	802.11a	OFDM	20	18.0	17.98	0.01	Left	Cheek	1	00906	6	98.2	0.158	-	1.005	1.018	-	
5300	60	802.11a	OFDM	20	18.0	17.98	0.12	Left	Tilt	1	00906	6	98.2	0.133	-	1.005	1.018	-	
5320	64	802.11a	OFDM	20	18.0	17.34	0.10	Right	Cheek	2	00906	6	98.3	0.324	0.118	1.164	1.017	0.140	
5320	64	802.11a	OFDM	20	18.0	17.34	0.10	Right	Tilt	2	00906	6	98.3	0.083	-	1.164	1.017	-	
5320	64	802.11a	OFDM	20	18.0	17.34	0.17	Left	Cheek	2	00906	6	98.3	0.041	-	1.164	1.017	-	
5320	64	802.11a	OFDM	20	18.0	17.34	0.10	Left	Tilt	2	00906	6	98.3	0.041	-	1.164	1.017	-	
5600	120	802.11a	OFDM	20	18.0	17.16	-0.12	Right	Cheek	1	00906	6	98.2	0.305	0.105	1.213	1.018	0.130	
5600	120	802.11a	OFDM	20	18.0	17.16	0.18	Right	Tilt	1	00906	6	98.2	0.277	-	1.213	1.018	-	
5600	120	802.11a	OFDM	20	18.0	17.16	0.13	Left	Cheek	1	00906	6	98.2	0.107	-	1.213	1.018	-	
5600	120	802.11a	OFDM	20	18.0	17.16	0.10	Left	Tilt	1	00906	6	98.2	0.100	-	1.213	1.018	-	
5720	144	802.11a	OFDM	20	18.0	17.53	0.14	Right	Cheek	2	00906	6	98.3	1.499	0.500	1.114	1.017	0.566	
5720	144	802.11a	OFDM	20	18.0	17.53	0.12	Right	Tilt	2	00906	6	98.3	0.570	0.301	1.114	1.017	0.341	
5720	144	802.11a	OFDM	20	18.0	17.53	0.13	Left	Cheek	2	00906	6	98.3	0.330	-	1.114	1.017	-	
5720	144	802.11a	OFDM	20	18.0	17.53	0.15	Left	Tilt	2	00906	6	98.3	0.344	-	1.114	1.017	-	
5825	165	802.11a	OFDM	20	18.0	17.37	0.13	Right	Cheek	1	00906	6	98.2	0.798	-	1.156	1.018	-	
5825	165	802.11a	OFDM	20	18.0	17.37	0.19	Right	Tilt	1	00906	6	98.2	0.842	0.286	1.156	1.018	0.337	
5825	165	802.11a	OFDM	20	18.0	17.37	0.14	Left	Cheek	1	00906	6	98.2	0.324	-	1.156	1.018	-	
5825	165	802.11a	OFDM	20	18.0	17.37	0.10	Left	Tilt	1	00906	6	98.2	0.311	-	1.156	1.018	-	
5785	157	802.11a	OFDM	20	18.0	17.48	-0.12	Right	Cheek	2	00906	6	98.3	1.727	0.508	1.127	1.017	**0.582**	A21
5785	157	802.11a	OFDM	20	18.0	17.48	0.13	Right	Tilt	2	00906	6	98.3	0.581	0.345	1.127	1.017	0.395	
5785	157	802.11a	OFDM	20	18.0	17.48	0.18	Left	Cheek	2	00906	6	98.3	0.398	-	1.127	1.017	-	
5785	157	802.11a	OFDM	20	18.0	17.48	0.19	Left	Tilt	2	00906	6	98.3	0.433	-	1.127	1.017	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								**Head 1.6 W/kg (mW/g)** averaged over 1 gram											

© 2018 PCTEST Engineering Laboratory, Inc.

REV 20.11 M
06/19/2018

© 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
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)	
2480.00	78	Bluetooth	FHSS	13.0	12.19	0.11	Right	Cheek	00898	1	77.3	0.191	1.205	1.294	**0.298**	A22
2480.00	78	Bluetooth	FHSS	13.0	12.19	0.15	Right	Tilt	00898	1	77.3	0.182	1.205	1.294	0.284	
2480.00	78	Bluetooth	FHSS	13.0	12.19	0.16	Left	Cheek	00898	1	77.3	0.100	1.205	1.294	0.156	
2480.00	78	Bluetooth	FHSS	13.0	12.19	-0.05	Left	Tilt	00898	1	77.3	0.117	1.205	1.294	0.182	
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 11-23
GSM/UMTS/CDMA Body-Worn SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	# of Time Slots	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
820.10	564	CDMA BC10 (§90S)	TDSO / SO32	25.5	25.39	0.00	10 mm	00765	N/A	1:1	back	0.750	1.026	0.770	A23
824.70	1013	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.33	0.03	10 mm	00765	N/A	1:1	back	0.772	1.040	0.803	
836.52	384	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.34	0.03	10 mm	00765	N/A	1:1	back	0.879	1.038	**0.912**	A25
848.31	777	CDMA BC0 (§22H)	TDSO / SO32	25.5	25.20	-0.01	10 mm	00765	N/A	1:1	back	0.851	1.072	**0.912**	
1880.00	600	PCS CDMA	TDSO / SO32	25.2	25.10	0.09	10 mm	00765	N/A	1:1	back	0.447	1.023	0.457	A27
836.60	190	GSM 850	GSM	34.2	34.08	0.04	10 mm	00757	1	1:8.3	back	0.310	1.028	0.319	
836.60	190	GSM 850	GPRS	34.2	34.19	0.01	10 mm	00757	1	1:8.3	back	0.312	1.002	0.313	A29
1880.00	661	GSM 1900	GSM	31.7	31.61	-0.02	10 mm	00757	1	1:8.3	back	0.351	1.021	0.358	A30
1880.00	661	GSM 1900	GPRS	25.5	25.37	-0.09	10 mm	00757	4	1:2.076	back	0.305	1.030	0.314	
826.40	4132	UMTS 850	RMC	25.5	25.26	0.02	10 mm	00757	N/A	1:1	back	0.714	1.057	0.755	
836.60	4183	UMTS 850	RMC	25.5	25.30	0.00	10 mm	00757	N/A	1:1	back	0.791	1.047	0.828	A32
846.60	4233	UMTS 850	RMC	25.5	25.40	0.02	10 mm	00757	N/A	1:1	back	0.785	1.023	0.803	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	-0.01	10 mm	00757	N/A	1:1	back	0.261	1.033	0.270	A33
1852.40	9262	UMTS 1900	RMC	25.2	24.93	-0.04	10 mm	00757	N/A	1:1	back	0.528	1.064	0.562	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	0.00	10 mm	00757	N/A	1:1	back	0.634	1.074	0.681	
1907.60	9538	UMTS 1900	RMC	25.2	25.18	0.00	10 mm	00757	N/A	1:1	back	0.712	1.005	0.716	A35
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. 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 11-24
LTE FDD Body-Worn SAR

MEASUREMENT RESULTS																				
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)	
680.50	133297	Mid	LTE Band 71	20	25.5	25.49	-0.03	0	00781	QPSK	1	50	10 mm	back	1:1	0.775	1.002	0.777	A37
680.50	133297	Mid	LTE Band 71	20	24.5	24.47	0.00	1	00781	QPSK	50	25	10 mm	back	1:1	0.659	1.007	0.664	
707.50	23095	Mid	LTE Band 12	10	25.5	25.40	-0.04	0	00781	QPSK	1	0	10 mm	back	1:1	0.669	1.023	0.684	A38
707.50	23095	Mid	LTE Band 12	10	24.5	24.46	0.03	1	00781	QPSK	25	0	10 mm	back	1:1	0.546	1.009	0.551	
782.00	23230	Mid	LTE Band 13	10	25.5	25.48	0.03	0	00781	QPSK	1	49	10 mm	back	1:1	0.787	1.005	0.791	A39
782.00	23230	Mid	LTE Band 13	10	24.5	24.45	-0.01	1	00781	QPSK	25	12	10 mm	back	1:1	0.735	1.012	0.744	
793.00	23330	Mid	LTE Band 14	10	25.5	25.40	0.00	0	00781	QPSK	1	25	10 mm	back	1:1	0.507	1.023	0.519	A40
793.00	23330	Mid	LTE Band 14	10	24.5	24.39	0.01	1	00781	QPSK	25	12	10 mm	back	1:1	0.435	1.026	0.446	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	-0.14	0	00716	QPSK	1	0	10 mm	back	1:1	0.654	1.038	0.679	A42
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.12	1	00716	QPSK	36	18	10 mm	back	1:1	0.506	1.002	0.507	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	0.00	0	00724	QPSK	1	0	10 mm	back	1:1	0.270	1.002	0.271	A43
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	0.03	1	00724	QPSK	50	25	10 mm	back	1:1	0.204	1.002	0.204	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.11	0.10	0	00716	QPSK	1	0	10 mm	back	1:1	0.528	1.021	0.539	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	24.98	0.09	0	00716	QPSK	1	0	10 mm	back	1:1	0.577	1.052	0.607	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.05	0	00716	QPSK	1	0	10 mm	back	1:1	0.634	1.000	0.634	A45
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	0.04	1	00716	QPSK	50	0	10 mm	back	1:1	0.501	1.009	0.506	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.61	0.07	0	00732	QPSK	1	0	10 mm	back	1:1	0.568	1.021	0.580	A47
2310.00	27710	Mid	LTE Band 30	10	22.7	22.61	-0.03	1	00732	QPSK	25	12	10 mm	back	1:1	0.450	1.021	0.459	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.70	-0.01	0	00740	QPSK	1	0	10 mm	back	1:1	0.335	1.000	0.335	A49
2535.00	21100	Mid	LTE Band 7	20	22.7	22.62	-0.07	1	00740	QPSK	50	0	10 mm	back	1:1	0.265	1.019	0.270	
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
LTE FDD Band 5 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	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	0.03	0	00716	QPSK	1	0	10 mm	back	1:1	0.729	1.023	0.746	A41
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	-0.08	0	00716	QPSK	1	0	10 mm	back	1:1	0.695	1.084	0.753	
2 CC Uplink	SCC	829.30	20453	Mid		5						QPSK	1	24							
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.37	0.04	1	00716	QPSK	25	0	10 mm	back	1:1	0.592	1.030	0.610	
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 11-26
LTE TDD 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	2593.00	40620	Mid	LTE Band 41	20	25.2	25.14	0.00	0	00724	QPSK	1	0	10 mm	back	1:1.58	0.415	1.014	0.421	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.05	-0.09	1	00724	QPSK	50	0	10 mm	back	1:1.58	0.306	1.035	0.317	
1 CC Uplink - Power Class 2	N/A	2593.00	40620	Mid	LTE Band 41	20	27.7	27.62	-0.06	0	00724	QPSK	1	0	10 mm	back	1:2.31	0.490	1.019	0.499	A51
2 CC Uplink - Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	25.2	24.97	-0.11	0	00724	QPSK	1	0	10 mm	back	1:1.58	0.431	1.054	0.454	
2 CC Uplink - Power Class 3	SCC	2573.20	40422	Mid								QPSK	1	99							
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
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)	
2462	11	802.11b	DSSS	22	20.5	19.88	-0.02	10 mm	1	00906	1	back	99.1	0.246	0.236	1.153	1.009	0.275	
2412	1	802.11b	DSSS	22	20.5	20.16	-0.16	10 mm	2	00906	1	back	99.2	0.869	0.707	1.081	1.008	0.770	A53
2437	6	802.11b	DSSS	22	20.5	20.00	0.19	10 mm	2	00906	1	back	99.2	0.910	0.701	1.122	1.008	0.793	
2462	11	802.11b	DSSS	22	20.5	19.98	0.01	10 mm	2	00906	1	back	99.2	0.768	0.635	1.127	1.008	0.721	
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 11-28
DTS MIMO Body-Worn 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)	
2422	3	802.11g	OFDM	20	19.0	18.25	19.0	18.38	0.07	10 mm	MIMO	00898	6	back	98.2	0.384	0.417	1.189	1.018	0.505	
2437	6	802.11g	OFDM	20	19.0	18.13	19.0	18.27	-0.01	10 mm	MIMO	00898	6	back	98.2	0.501	0.511	1.222	1.018	0.636	
2452	9	802.11g	OFDM	20	19.0	18.35	19.0	18.24	0.12	10 mm	MIMO	00898	6	back	98.2	0.731	0.520	1.191	1.018	0.630	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram											

To achieve the 2.4 GHz WLAN 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm.

Table 11-29
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	17.98	0.12	10 mm	1	00906	6	back	98.2	0.092	0.031	1.005	1.018	0.032	
5260	52	802.11a	OFDM	20	18.0	17.27	0.12	10 mm	2	00906	6	back	98.3	1.020	0.422	1.183	1.017	0.508	
5280	56	802.11a	OFDM	20	18.0	17.30	0.11	10 mm	2	00906	6	back	98.3	0.888	0.435	1.175	1.017	0.520	
5320	64	802.11a	OFDM	20	18.0	17.34	0.17	10 mm	2	00906	6	back	98.3	1.114	0.536	1.164	1.017	0.635	A54
5600	120	802.11a	OFDM	20	18.0	17.16	0.16	10 mm	1	00906	6	back	98.2	0.098	0.042	1.213	1.018	0.052	
5720	144	802.11a	OFDM	20	18.0	17.53	0.16	10 mm	2	00906	6	back	98.3	0.888	0.444	1.114	1.017	0.503	
5825	165	802.11a	OFDM	20	18.0	17.37	0.14	10 mm	1	00906	6	back	98.2	0.263	0.105	1.156	1.018	0.124	
5785	157	802.11a	OFDM	20	18.0	17.48	0.14	10 mm	2	00906	6	back	98.3	0.944	0.391	1.127	1.017	0.448	
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 11-30
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	13.0	12.19	0.12	10 mm	00906	1	back	77.3	0.033	1.205	1.294	0.051	A56
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. 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 11-31
GPRS/UMTS/CDMA 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)	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.28	0.04	10 mm	00765	N/A	1:1	back	0.774	1.052	0.814	A24
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.28	-0.05	10 mm	00765	N/A	1:1	front	0.602	1.052	0.633	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.28	0.05	10 mm	00765	N/A	1:1	bottom	0.235	1.052	0.247	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.5	25.28	0.05	10 mm	00765	N/A	1:1	right	0.368	1.052	0.387	
824.70	1013	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.26	0.02	10 mm	00765	N/A	1:1	back	0.803	1.057	0.849	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.31	0.05	10 mm	00765	N/A	1:1	back	0.903	1.045	0.944	A26
848.31	777	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.39	-0.02	10 mm	00765	N/A	1:1	back	0.875	1.026	0.898	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.31	0.05	10 mm	00765	N/A	1:1	front	0.669	1.045	0.699	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.31	0.00	10 mm	00765	N/A	1:1	bottom	0.265	1.045	0.277	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.31	-0.09	10 mm	00765	N/A	1:1	right	0.384	1.045	0.401	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.5	25.31	0.17	10 mm	00765	N/A	1:1	back	0.902	1.045	0.943	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.06	-0.01	10 mm	00765	N/A	1:1	back	0.464	1.033	0.479	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.06	0.06	10 mm	00765	N/A	1:1	front	0.416	1.033	0.430	
1851.25	25	PCS CDMA	EVDO Rev. 0	25.2	25.14	0.02	10 mm	00765	N/A	1:1	bottom	0.529	1.014	0.536	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.06	0.02	10 mm	00765	N/A	1:1	bottom	0.690	1.033	0.713	
1908.75	1175	PCS CDMA	EVDO Rev. 0	25.2	25.01	-0.01	10 mm	00765	N/A	1:1	bottom	0.886	1.045	0.926	A28
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.06	-0.01	10 mm	00765	N/A	1:1	left	0.199	1.033	0.206	
836.60	190	GSM 850	GPRS	34.2	34.19	0.01	10 mm	00757	1	1:8.3	back	0.312	1.002	0.313	A29
836.60	190	GSM 850	GPRS	34.2	34.19	-0.02	10 mm	00757	1	1:8.3	front	0.225	1.002	0.225	
836.60	190	GSM 850	GPRS	34.2	34.19	-0.03	10 mm	00757	1	1:8.3	bottom	0.130	1.002	0.130	
836.60	190	GSM 850	GPRS	34.2	34.19	-0.06	10 mm	00757	1	1:8.3	right	0.143	1.002	0.143	
1880.00	661	GSM 1900	GPRS	25.5	25.37	-0.09	10 mm	00757	4	1:2.076	back	0.305	1.030	0.314	
1880.00	661	GSM 1900	GPRS	25.5	25.37	-0.08	10 mm	00757	4	1:2.076	front	0.210	1.030	0.216	
1880.00	661	GSM 1900	GPRS	25.5	25.37	0.02	10 mm	00757	4	1:2.076	bottom	0.447	1.030	0.460	A31
1880.00	661	GSM 1900	GPRS	25.5	25.37	-0.03	10 mm	00757	4	1:2.076	left	0.119	1.030	0.123	
826.40	4132	UMTS 850	RMC	25.5	25.26	0.02	10 mm	00757	N/A	1:1	back	0.714	1.057	0.755	
836.60	4183	UMTS 850	RMC	25.5	25.30	0.00	10 mm	00757	N/A	1:1	back	0.791	1.047	0.828	A32
846.60	4233	UMTS 850	RMC	25.5	25.40	0.02	10 mm	00757	N/A	1:1	back	0.785	1.023	0.803	
836.60	4183	UMTS 850	RMC	25.5	25.30	-0.02	10 mm	00757	N/A	1:1	front	0.471	1.047	0.493	
836.60	4183	UMTS 850	RMC	25.5	25.30	-0.02	10 mm	00757	N/A	1:1	bottom	0.214	1.047	0.224	
836.60	4183	UMTS 850	RMC	25.5	25.30	-0.08	10 mm	00757	N/A	1:1	right	0.315	1.047	0.330	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	-0.01	10 mm	00757	N/A	1:1	back	0.261	1.033	0.270	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	0.06	10 mm	00757	N/A	1:1	front	0.245	1.033	0.253	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	0.01	10 mm	00757	N/A	1:1	bottom	0.338	1.033	0.349	A34
1732.40	1412	UMTS 1750	RMC	25.2	25.06	0.03	10 mm	00757	N/A	1:1	left	0.150	1.033	0.155	
1852.40	9262	UMTS 1900	RMC	25.2	24.93	-0.04	10 mm	00757	N/A	1:1	back	0.528	1.064	0.562	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	0.00	10 mm	00757	N/A	1:1	back	0.634	1.074	0.681	
1907.60	9538	UMTS 1900	RMC	25.2	25.18	0.00	10 mm	00757	N/A	1:1	back	0.712	1.005	0.716	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	0.01	10 mm	00757	N/A	1:1	front	0.459	1.074	0.493	
1852.40	9262	UMTS 1900	RMC	25.2	24.93	-0.02	10 mm	00757	N/A	1:1	bottom	0.675	1.064	0.718	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	0.02	10 mm	00757	N/A	1:1	bottom	0.894	1.074	0.960	
1907.60	9538	UMTS 1900	RMC	25.2	25.18	-0.03	10 mm	00757	N/A	1:1	bottom	1.190	1.005	**1.196**	A36
1880.00	9400	UMTS 1900	RMC	25.2	24.89	0.01	10 mm	00757	N/A	1:1	left	0.246	1.074	0.264	
1907.60	9538	UMTS 1900	RMC	25.2	25.18	0.01	10 mm	00757	N/A	1:1	bottom	1.110	1.005	1.116	
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 entry represents 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 11-32
LTE Band 71 Hotspot SAR

MEASUREMENT RESULTS																				
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)	
680.50	133297	Mid	LTE Band 71	20	25.5	25.49	-0.03	0	00781	QPSK	1	50	10 mm	back	1:1	0.775	1.002	0.777	A37
680.50	133297	Mid	LTE Band 71	20	24.5	24.47	0.00	1	00781	QPSK	50	25	10 mm	back	1:1	0.659	1.007	0.664	
680.50	133297	Mid	LTE Band 71	20	25.5	25.49	0.00	0	00781	QPSK	1	50	10 mm	front	1:1	0.526	1.002	0.527	
680.50	133297	Mid	LTE Band 71	20	24.5	24.47	0.02	1	00781	QPSK	50	25	10 mm	front	1:1	0.442	1.007	0.445	
680.50	133297	Mid	LTE Band 71	20	25.5	25.49	-0.01	0	00781	QPSK	1	50	10 mm	bottom	1:1	0.144	1.002	0.144	
680.50	133297	Mid	LTE Band 71	20	24.5	24.47	-0.02	1	00781	QPSK	50	25	10 mm	bottom	1:1	0.122	1.007	0.123	
680.50	133297	Mid	LTE Band 71	20	25.5	25.49	-0.03	0	00781	QPSK	1	50	10 mm	right	1:1	0.353	1.002	0.354	
680.50	133297	Mid	LTE Band 71	20	24.5	24.47	0.00	1	00781	QPSK	50	25	10 mm	right	1:1	0.315	1.007	0.317	
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 12 Hotspot SAR

MEASUREMENT RESULTS																				
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)	
707.50	23095	Mid	LTE Band 12	10	25.5	25.40	-0.04	0	00781	QPSK	1	0	10 mm	back	1:1	0.669	1.023	0.684	A38
707.50	23095	Mid	LTE Band 12	10	24.5	24.46	0.03	1	00781	QPSK	25	0	10 mm	back	1:1	0.546	1.009	0.551	
707.50	23095	Mid	LTE Band 12	10	25.5	25.40	0.00	0	00781	QPSK	1	0	10 mm	front	1:1	0.496	1.023	0.507	
707.50	23095	Mid	LTE Band 12	10	24.5	24.46	0.01	1	00781	QPSK	25	0	10 mm	front	1:1	0.401	1.009	0.405	
707.50	23095	Mid	LTE Band 12	10	25.5	25.40	0.17	0	00781	QPSK	1	0	10 mm	bottom	1:1	0.141	1.023	0.144	
707.50	23095	Mid	LTE Band 12	10	24.5	24.46	-0.03	1	00781	QPSK	25	0	10 mm	bottom	1:1	0.131	1.009	0.132	
707.50	23095	Mid	LTE Band 12	10	25.5	25.40	-0.10	0	00781	QPSK	1	0	10 mm	right	1:1	0.218	1.023	0.223	
707.50	23095	Mid	LTE Band 12	10	24.5	24.46	0.05	1	00781	QPSK	25	0	10 mm	right	1:1	0.191	1.009	0.193	
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 11-34
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																				
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)	
782.00	23230	Mid	LTE Band 13	10	25.5	25.48	0.03	0	00781	QPSK	1	49	10 mm	back	1:1	0.787	1.005	0.791	A39
782.00	23230	Mid	LTE Band 13	10	24.5	24.45	-0.01	1	00781	QPSK	25	12	10 mm	back	1:1	0.735	1.012	0.744	
782.00	23230	Mid	LTE Band 13	10	25.5	25.48	0.06	0	00781	QPSK	1	49	10 mm	front	1:1	0.642	1.005	0.645	
782.00	23230	Mid	LTE Band 13	10	24.5	24.45	0.02	1	00781	QPSK	25	12	10 mm	front	1:1	0.588	1.012	0.595	
782.00	23230	Mid	LTE Band 13	10	25.5	25.48	-0.04	0	00781	QPSK	1	49	10 mm	bottom	1:1	0.200	1.005	0.201	
782.00	23230	Mid	LTE Band 13	10	24.5	24.45	0.01	1	00781	QPSK	25	12	10 mm	bottom	1:1	0.181	1.012	0.183	
782.00	23230	Mid	LTE Band 13	10	25.5	25.48	-0.01	0	00781	QPSK	1	49	10 mm	right	1:1	0.260	1.005	0.261	
782.00	23230	Mid	LTE Band 13	10	24.5	24.45	-0.03	1	00781	QPSK	25	12	10 mm	right	1:1	0.125	1.012	0.127	
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 20.11 M
06/19/2018

© 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 11-35
LTE Band 14 Hotspot SAR

MEASUREMENT RESULTS																				
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)	
793.00	23330	Mid	LTE Band 14	10	25.5	25.40	0.00	0	00781	QPSK	1	25	10 mm	back	1:1	0.507	1.023	0.519	A40
793.00	23330	Mid	LTE Band 14	10	24.5	24.39	0.01	1	00781	QPSK	25	12	10 mm	back	1:1	0.435	1.026	0.446	
793.00	23330	Mid	LTE Band 14	10	25.5	25.40	-0.02	0	00781	QPSK	1	25	10 mm	front	1:1	0.440	1.023	0.450	
793.00	23330	Mid	LTE Band 14	10	24.5	24.39	0.01	1	00781	QPSK	25	12	10 mm	front	1:1	0.376	1.026	0.386	
793.00	23330	Mid	LTE Band 14	10	25.5	25.40	-0.03	0	00781	QPSK	1	25	10 mm	bottom	1:1	0.124	1.023	0.127	
793.00	23330	Mid	LTE Band 14	10	24.5	24.39	0.06	1	00781	QPSK	25	12	10 mm	bottom	1:1	0.106	1.026	0.109	
793.00	23330	Mid	LTE Band 14	10	25.5	25.40	0.13	0	00781	QPSK	1	25	10 mm	right	1:1	0.113	1.023	0.116	
793.00	23330	Mid	LTE Band 14	10	24.5	24.39	-0.12	1	00781	QPSK	25	12	10 mm	right	1:1	0.089	1.026	0.091	
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 11-36
LTE Band 5 (Cell) 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	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	0.03	0	00716	QPSK	1	0	10 mm	back	1:1	0.729	1.023	0.746	A41
2 CC Uplink	PCC	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.15	-0.08	0	00716	QPSK	1	0	10 mm	back	1:1	0.695	1.084	0.753	
2 CC Uplink	SCC	829.30	20453	Mid		5						QPSK	1	24							
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.37	0.04	1	00716	QPSK	25	0	10 mm	back	1:1	0.592	1.030	0.610	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	-0.03	0	00716	QPSK	1	0	10 mm	front	1:1	0.539	1.023	0.551	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.37	-0.04	1	00716	QPSK	25	0	10 mm	front	1:1	0.438	1.030	0.451	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	0.02	0	00716	QPSK	1	0	10 mm	bottom	1:1	0.186	1.023	0.190	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.37	0.08	1	00716	QPSK	25	0	10 mm	bottom	1:1	0.153	1.030	0.158	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	25.5	25.40	-0.04	0	00716	QPSK	1	0	10 mm	right	1:1	0.325	1.023	0.332	
1 CC Uplink	N/A	836.50	20525	Mid	LTE Band 5 (Cell)	10	24.5	24.37	-0.04	1	00716	QPSK	25	0	10 mm	right	1:1	0.272	1.030	0.280	
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 11-37
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																				
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)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	-0.14	0	00716	QPSK	1	0	10 mm	back	1:1	0.654	1.038	0.679	A42
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.49	-0.12	1	00716	QPSK	36	18	10 mm	back	1:1	0.506	1.002	0.507	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	-0.03	0	00716	QPSK	1	0	10 mm	front	1:1	0.461	1.038	0.479	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.49	0.00	1	00716	QPSK	36	18	10 mm	front	1:1	0.360	1.002	0.361	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	0.08	0	00716	QPSK	1	0	10 mm	bottom	1:1	0.182	1.038	0.189	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.49	0.02	1	00716	QPSK	36	18	10 mm	bottom	1:1	0.140	1.002	0.140	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.5	25.34	-0.19	0	00716	QPSK	1	0	10 mm	right	1:1	0.322	1.038	0.334	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.5	24.49	0.04	1	00716	QPSK	36	18	10 mm	right	1:1	0.253	1.002	0.254	
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. 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
LTE Band 66 (AWS) Hotspot SAR

MEASUREMENT RESULTS																				
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)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	0.00	0	00724	QPSK	1	0	10 mm	back	1:1	0.270	1.002	0.271	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	0.03	1	00724	QPSK	50	25	10 mm	back	1:1	0.204	1.002	0.204	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	-0.02	0	00724	QPSK	1	0	10 mm	front	1:1	0.293	1.002	0.294	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	0.00	1	00724	QPSK	50	25	10 mm	front	1:1	0.200	1.002	0.200	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	0.01	0	00724	QPSK	1	0	10 mm	bottom	1:1	0.337	1.002	0.338	A44
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	-0.06	1	00724	QPSK	50	25	10 mm	bottom	1:1	0.251	1.002	0.252	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	0.01	0	00724	QPSK	1	0	10 mm	left	1:1	0.144	1.002	0.144	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	-0.02	1	00724	QPSK	50	25	10 mm	left	1:1	0.100	1.002	0.100	
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 11-39
LTE Band 25 (PCS) Hotspot SAR

MEASUREMENT RESULTS																				
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)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.11	0.10	0	00716	QPSK	1	0	10 mm	back	1:1	0.528	1.021	0.539	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	24.98	0.09	0	00716	QPSK	1	0	10 mm	back	1:1	0.577	1.052	0.607	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.05	0	00716	QPSK	1	0	10 mm	back	1:1	0.634	1.000	0.634	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	0.04	1	00716	QPSK	50	0	10 mm	back	1:1	0.501	1.009	0.506	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.06	0	00716	QPSK	1	0	10 mm	front	1:1	0.613	1.000	0.613	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	0.03	1	00716	QPSK	50	0	10 mm	front	1:1	0.493	1.009	0.497	
1860.00	26140	Low	LTE Band 25 (PCS)	20	25.2	25.11	-0.02	0	00716	QPSK	1	0	10 mm	bottom	1:1	0.713	1.021	0.728	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	25.2	24.98	0.02	0	00716	QPSK	1	0	10 mm	bottom	1:1	0.914	1.052	0.962	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	-0.01	0	00716	QPSK	1	0	10 mm	bottom	1:1	1.140	1.000	1.140	A46
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	23.99	0.00	1	00716	QPSK	50	0	10 mm	bottom	1:1	0.616	1.050	0.647	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.05	0.02	1	00716	QPSK	50	0	10 mm	bottom	1:1	0.751	1.035	0.777	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	0.03	1	00716	QPSK	50	0	10 mm	bottom	1:1	0.912	1.009	0.920	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.04	0.00	1	00716	QPSK	100	0	10 mm	bottom	1:1	0.914	1.038	0.949	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.03	0	00716	QPSK	1	0	10 mm	left	1:1	0.288	1.000	0.288	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	0.05	1	00716	QPSK	50	0	10 mm	left	1:1	0.220	1.009	0.222	
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 11-40
LTE Band 30 Hotspot SAR

MEASUREMENT RESULTS																				
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)	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.61	0.07	0	00732	QPSK	1	0	10 mm	back	1:1	0.568	1.021	0.580	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.61	-0.03	1	00732	QPSK	25	12	10 mm	back	1:1	0.450	1.021	0.459	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.61	0.00	0	00732	QPSK	1	0	10 mm	front	1:1	0.394	1.021	0.402	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.61	-0.03	1	00732	QPSK	25	12	10 mm	front	1:1	0.307	1.021	0.313	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.61	-0.06	0	00732	QPSK	1	0	10 mm	bottom	1:1	0.062	1.021	0.063	
2310.00	27710	Mid	LTE Band 30	10	22.7	22.61	0.00	1	00732	QPSK	25	12	10 mm	bottom	1:1	0.053	1.021	0.054	
2310.00	27710	Mid	LTE Band 30	10	23.7	23.61	-0.02	0	00732	QPSK	1	0	10 mm	right	1:1	0.622	1.021	0.635	A48
2310.00	27710	Mid	LTE Band 30	10	22.7	22.61	0.02	1	00732	QPSK	25	12	10 mm	right	1:1	0.495	1.021	0.505	
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 11-41
LTE Band 7 Hotspot SAR

MEASUREMENT RESULTS																				
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)	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.70	-0.01	0	00740	QPSK	1	0	10 mm	back	1:1	0.335	1.000	0.335	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.62	-0.07	1	00740	QPSK	50	0	10 mm	back	1:1	0.265	1.019	0.270	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.70	0.00	0	00740	QPSK	1	0	10 mm	front	1:1	0.368	1.000	0.368	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.62	-0.03	1	00740	QPSK	50	0	10 mm	front	1:1	0.287	1.019	0.292	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.70	-0.04	0	00740	QPSK	1	0	10 mm	bottom	1:1	0.098	1.000	0.098	
2535.00	21100	Mid	LTE Band 7	20	22.7	22.62	-0.03	1	00740	QPSK	50	0	10 mm	bottom	1:1	0.083	1.019	0.085	
2535.00	21100	Mid	LTE Band 7	20	23.7	23.70	0.01	0	00740	QPSK	1	0	10 mm	right	1:1	0.462	1.000	0.462	A50
2535.00	21100	Mid	LTE Band 7	20	22.7	22.62	0.02	1	00740	QPSK	50	0	10 mm	right	1:1	0.362	1.019	0.369	
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 11-42
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	2593.00	40620	Mid	LTE Band 41	20	25.2	25.14	0.00	0	00724	QPSK	1	0	10 mm	back	1:1.58	0.415	1.014	0.421	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.05	-0.09	1	00724	QPSK	50	0	10 mm	back	1:1.58	0.306	1.035	0.317	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.14	0.03	0	00724	QPSK	1	0	10 mm	front	1:1.58	0.313	1.014	0.317	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.05	-0.05	1	00724	QPSK	50	0	10 mm	front	1:1.58	0.248	1.035	0.257	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.14	-0.19	0	00724	QPSK	1	0	10 mm	bottom	1:1.58	0.112	1.014	0.114	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.05	-0.16	1	00724	QPSK	50	0	10 mm	bottom	1:1.58	0.094	1.035	0.097	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	25.2	25.14	-0.06	0	00724	QPSK	1	0	10 mm	right	1:1.58	0.420	1.014	0.426	
1 CC Uplink - Power Class 3	N/A	2593.00	40620	Mid	LTE Band 41	20	24.2	24.05	-0.14	1	00724	QPSK	50	0	10 mm	right	1:1.58	0.323	1.035	0.334	
1 CC Uplink - Power Class 2	N/A	2593.00	40620	Mid	LTE Band 41	20	27.7	27.62	-0.03	0	00724	QPSK	1	0	10 mm	right	1:2.31	0.517	1.019	0.527	A52
2 CC Uplink - Power Class 3	PCC	2593.00	40620	Mid	LTE Band 41	20	25.2	24.97	-0.12	0	00724	QPSK	1	0	10 mm	right	1:1.58	0.413	1.054	0.435	
2 CC Uplink - Power Class 3	SCC	2573.20	40422	Mid		20						QPSK	1	99							
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 11-43
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	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	20.5	19.88	-0.02	10 mm	1	00906	1	back	99.1	0.246	0.236	1.153	1.009	0.275	
2462	11	802.11b	DSSS	22	20.5	19.88	0.16	10 mm	1	00906	1	front	99.1	0.143	-	1.153	1.009	-	
2462	11	802.11b	DSSS	22	20.5	19.88	-0.01	10 mm	1	00906	1	top	99.1	0.254	0.185	1.153	1.009	0.215	
2462	11	802.11b	DSSS	22	20.5	19.88	0.20	10 mm	1	00906	1	left	99.1	0.144	-	1.153	1.009	-	
2412	1	802.11b	DSSS	22	20.5	20.16	-0.16	10 mm	2	00906	1	back	99.2	0.869	0.707	1.081	1.008	0.770	A53
2437	6	802.11b	DSSS	22	20.5	20.00	0.19	10 mm	2	00906	1	back	99.2	0.910	0.701	1.122	1.008	**0.793**	
2462	11	802.11b	DSSS	22	20.5	19.98	0.01	10 mm	2	00906	1	back	99.2	0.768	0.635	1.127	1.008	0.721	
2412	1	802.11b	DSSS	22	20.5	20.16	0.13	10 mm	2	00906	1	front	99.2	0.050	-	1.081	1.008	-	
2412	1	802.11b	DSSS	22	20.5	20.16	0.15	10 mm	2	00906	1	top	99.2	0.059	-	1.081	1.008	-	
2412	1	802.11b	DSSS	22	20.5	20.16	0.16	10 mm	2	00906	1	left	99.2	0.246	0.189	1.081	1.008	0.206	
5220	44	802.11a	OFDM	20	18.0	17.96	0.19	10 mm	1	00906	6	back	98.2	0.112	0.059	1.009	1.018	0.061	
5220	44	802.11a	OFDM	20	18.0	17.96	0.10	10 mm	1	00906	6	front	98.2	0.013	-	1.009	1.018	-	
5220	44	802.11a	OFDM	20	18.0	17.96	0.10	10 mm	1	00906	6	top	98.2	0.070	-	1.009	1.018	-	
5220	44	802.11a	OFDM	20	18.0	17.96	-0.10	10 mm	1	00906	6	left	98.2	0.061	-	1.009	1.018	-	
5240	48	802.11a	OFDM	20	18.0	17.41	0.15	10 mm	2	00906	6	back	98.3	0.930	0.421	1.146	1.017	**0.491**	A55
5240	48	802.11a	OFDM	20	18.0	17.41	0.10	10 mm	2	00906	6	front	98.3	0.018	-	1.146	1.017	-	
5240	48	802.11a	OFDM	20	18.0	17.41	0.10	10 mm	2	00906	6	top	98.3	0.037	-	1.146	1.017	-	
5240	48	802.11a	OFDM	20	18.0	17.41	0.10	10 mm	2	00906	6	left	98.3	0.207	0.094	1.146	1.017	0.110	
5825	165	802.11a	OFDM	20	18.0	17.37	0.14	10 mm	1	00906	6	back	98.2	0.263	0.105	1.156	1.018	0.124	
5825	165	802.11a	OFDM	20	18.0	17.37	0.00	10 mm	1	00906	6	front	98.2	0.056	-	1.156	1.018	-	
5825	165	802.11a	OFDM	20	18.0	17.37	0.11	10 mm	1	00906	6	top	98.2	0.276	0.100	1.156	1.018	0.118	
5825	165	802.11a	OFDM	20	18.0	17.37	0.00	10 mm	1	00906	6	left	98.2	0.244	-	1.156	1.018	-	
5785	157	802.11a	OFDM	20	18.0	17.48	0.14	10 mm	2	00906	6	back	98.3	0.944	0.391	1.127	1.017	0.448	
5785	157	802.11a	OFDM	20	18.0	17.48	0.10	10 mm	2	00906	6	front	98.3	0.130	0.047	1.127	1.017	0.054	
5785	157	802.11a	OFDM	20	18.0	17.48	0.10	10 mm	2	00906	6	top	98.3	0.023	-	1.127	1.017	-	
5785	157	802.11a	OFDM	20	18.0	17.48	0.16	10 mm	2	00906	6	left	98.3	0.113	-	1.127	1.017	-	

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

Table 11-44
WLAN MIMO Hotspot 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)	
2422	3	802.11g	OFDM	20	19.0	18.25	19.0	18.38	0.07	10 mm	MIMO	00898	6	back	98.2	0.384	0.417	1.189	1.018	0.505	
2437	6	802.11g	OFDM	20	19.0	18.13	19.0	18.27	-0.01	10 mm	MIMO	00898	6	back	98.2	0.501	0.511	1.222	1.018	0.636	
2452	9	802.11g	OFDM	20	19.0	18.35	19.0	18.24	0.12	10 mm	MIMO	00898	6	back	98.2	0.731	0.520	1.191	1.018	0.630	
2422	3	802.11g	OFDM	20	19.0	18.25	19.0	18.38	0.15	10 mm	MIMO	00898	6	front	98.2	0.171	-	1.189	1.018	-	
2422	3	802.11g	OFDM	20	19.0	18.25	19.0	18.38	0.11	10 mm	MIMO	00898	6	top	98.2	0.276	0.239	1.189	1.018	0.289	
2422	3	802.11g	OFDM	20	19.0	18.25	19.0	18.38	-0.06	10 mm	MIMO	00898	6	left	98.2	0.231	-	1.189	1.018	-	

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

To achieve the 2.4 GHz WLAN 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm.

© 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
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	13.0	12.19	0.12	10 mm	00906	1	back	77.3	0.033	1.205	1.294	**0.051**	A56
2480	78	Bluetooth	FHSS	13.0	12.19	0.15	10 mm	00906	1	front	77.3	0.012	1.205	1.294	0.019	
2480	78	Bluetooth	FHSS	13.0	12.19	0.10	10 mm	00906	1	top	77.3	0.025	1.205	1.294	0.039	
2480	78	Bluetooth	FHSS	13.0	12.19	0.10	10 mm	00906	1	left	77.3	0.013	1.205	1.294	0.020	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram									

11.4 Standalone Phablet SAR Data

Table 11-46
UMTS/CDMA Phablet 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 (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.										(W/kg)		(W/kg)	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.06	-0.04	3 mm	00765	1:1	back	0.992	1.033	1.025	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.06	-0.05	2 mm	00765	1:1	front	1.180	1.033	1.219	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.06	-0.06	4 mm	00765	1:1	bottom	1.370	1.033	1.415	
1880.00	600	PCS CDMA	EVDO Rev. 0	25.2	25.06	0.03	0 mm	00765	1:1	left	0.670	1.033	0.692	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.2	24.05	0.01	0 mm	00765	1:1	back	1.370	1.035	1.418	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.2	24.05	0.02	0 mm	00765	1:1	front	1.520	1.035	1.573	
1851.25	25	PCS CDMA	EVDO Rev. 0	24.2	24.02	-0.06	0 mm	00765	1:1	bottom	2.260	1.042	2.355	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.2	24.05	-0.07	0 mm	00765	1:1	bottom	2.510	1.035	2.598	
1908.75	1175	PCS CDMA	EVDO Rev. 0	24.2	24.09	-0.07	0 mm	00765	1:1	bottom	2.650	1.026	2.719	A57
1732.40	1412	UMTS 1750	RMC	25.2	25.06	-0.17	3 mm	00757	1:1	back	0.644	1.033	0.665	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	-0.17	2 mm	00757	1:1	front	0.647	1.033	0.668	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	-0.06	4 mm	00757	1:1	bottom	0.495	1.033	0.511	
1732.40	1412	UMTS 1750	RMC	25.2	25.06	0.11	0 mm	00757	1:1	left	0.362	1.033	0.374	
1732.40	1412	UMTS 1750	RMC	24.2	23.95	-0.08	0 mm	00757	1:1	back	1.360	1.059	1.440	A58
1732.40	1412	UMTS 1750	RMC	24.2	23.95	-0.20	0 mm	00757	1:1	front	0.946	1.059	1.002	
1732.40	1412	UMTS 1750	RMC	24.2	23.95	-0.07	0 mm	00757	1:1	bottom	1.060	1.059	1.123	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	0.02	3 mm	00757	1:1	back	0.984	1.074	1.057	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	0.02	2 mm	00757	1:1	front	0.973	1.074	1.045	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	-0.02	4 mm	00757	1:1	bottom	1.330	1.074	1.428	
1880.00	9400	UMTS 1900	RMC	25.2	24.89	-0.01	0 mm	00757	1:1	left	0.610	1.074	0.655	
1880.00	9400	UMTS 1900	RMC	24.2	23.79	-0.01	0 mm	00757	1:1	back	1.770	1.099	1.945	
1880.00	9400	UMTS 1900	RMC	24.2	23.79	0.01	0 mm	00757	1:1	front	1.230	1.099	1.352	
1852.40	9262	UMTS 1900	RMC	24.2	23.99	0.04	0 mm	00757	1:1	bottom	2.310	1.050	2.426	
1880.00	9400	UMTS 1900	RMC	24.2	23.79	0.00	0 mm	00757	1:1	bottom	2.550	1.099	2.802	
1907.60	9538	UMTS 1900	RMC	24.2	24.12	0.02	0 mm	00757	1:1	bottom	2.840	1.019	**2.894**	A59
1907.60	9538	UMTS 1900	RMC	24.2	24.12	-0.02	0 mm	00757	1:1	bottom	2.740	1.019	2.792	
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 entry represents variability measurement.

© 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 11-47
LTE Phablet SAR

MEASUREMENT RESULTS																			
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)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	-0.01	0	00724	QPSK	1	0	3 mm	back	1:1	0.658	1.002	0.659	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	-0.05	1	00724	QPSK	50	25	3 mm	back	1:1	0.476	1.002	0.477	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	-0.16	0	00724	QPSK	1	0	2 mm	front	1:1	0.562	1.002	0.563	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	-0.18	1	00724	QPSK	50	25	2 mm	front	1:1	0.399	1.002	0.400	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	-0.06	0	00724	QPSK	1	0	4 mm	bottom	1:1	0.516	1.002	0.517	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	-0.08	1	00724	QPSK	50	25	4 mm	bottom	1:1	0.384	1.002	0.385	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	25.2	25.19	-0.10	0	00724	QPSK	1	0	0 mm	left	1:1	0.353	1.002	0.354	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.19	-0.15	1	00724	QPSK	50	25	0 mm	left	1:1	0.265	1.002	0.266	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	0.01	0	00724	QPSK	1	0	0 mm	back	1:1	0.891	1.000	0.891	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.16	-0.03	0	00724	QPSK	50	25	0 mm	back	1:1	0.911	1.009	0.919	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.21	0	00724	QPSK	1	0	0 mm	front	1:1	0.813	1.000	0.813	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.16	-0.21	0	00724	QPSK	50	25	0 mm	front	1:1	0.843	1.009	0.851	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.05	0	00724	QPSK	1	0	0 mm	bottom	1:1	1.010	1.000	1.010	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.16	-0.07	0	00724	QPSK	50	25	0 mm	bottom	1:1	1.070	1.009	1.080	A60
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	-0.11	0	00740	QPSK	1	0	3 mm	back	1:1	1.040	1.000	1.040	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	-0.10	1	00740	QPSK	50	0	3 mm	back	1:1	0.831	1.009	0.838	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.11	0	00740	QPSK	1	0	2 mm	front	1:1	1.170	1.000	1.170	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	0.08	1	00740	QPSK	50	0	2 mm	front	1:1	0.939	1.009	0.947	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.00	0	00740	QPSK	1	0	4 mm	bottom	1:1	1.440	1.000	1.440	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	-0.02	1	00740	QPSK	50	0	4 mm	bottom	1:1	1.170	1.009	1.181	
1905.00	26590	High	LTE Band 25 (PCS)	20	25.2	25.20	0.02	0	00740	QPSK	1	0	0 mm	left	1:1	0.744	1.000	0.744	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.16	0.03	1	00740	QPSK	50	0	0 mm	left	1:1	0.588	1.009	0.593	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.18	0.00	0	00716	QPSK	1	0	0 mm	back	1:1	1.520	1.005	1.528	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.15	-0.05	0	00716	QPSK	50	25	0 mm	back	1:1	1.520	1.012	1.538	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.18	0.03	0	00716	QPSK	1	0	0 mm	front	1:1	1.430	1.005	1.437	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.15	0.00	0	00716	QPSK	50	25	0 mm	front	1:1	1.420	1.012	1.437	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	23.98	-0.02	0	00716	QPSK	1	99	0 mm	bottom	1:1	2.310	1.052	2.430	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.18	0.00	0	00716	QPSK	1	0	0 mm	bottom	1:1	2.450	1.005	2.462	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.02	-0.03	0	00716	QPSK	1	50	0 mm	bottom	1:1	2.690	1.042	2.803	A61
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.12	0.02	0	00716	QPSK	50	50	0 mm	bottom	1:1	2.370	1.019	2.415	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.15	-0.02	0	00716	QPSK	50	25	0 mm	bottom	1:1	2.520	1.012	2.550	
1905.00	26590	High	LTE Band 25 (PCS)	20	24.2	24.10	0.00	0	00716	QPSK	50	50	0 mm	bottom	1:1	2.640	1.023	2.701	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	24.2	24.13	0.01	0	00716	QPSK	100	0	0 mm	bottom	1:1	2.520	1.016	2.560	
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. 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 11-48
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	17.98	0.17	0 mm	1	00906	6	back	98.2	4.927	0.349	1.005	1.018	0.357	
5300	60	802.11a	OFDM	20	18.0	17.98	0.12	0 mm	1	00906	6	front	98.2	0.913	-	1.005	1.018	-	
5300	60	802.11a	OFDM	20	18.0	17.98	0.13	0 mm	1	00906	6	top	98.2	0.928	-	1.005	1.018	-	
5300	60	802.11a	OFDM	20	18.0	17.98	0.16	0 mm	1	00906	6	left	98.2	0.418	-	1.005	1.018	-	
5260	52	802.11a	OFDM	20	18.0	17.27	-0.02	0 mm	2	00906	6	back	98.3	13.875	1.500	1.183	1.017	1.805	
5280	56	802.11a	OFDM	20	18.0	17.30	0.02	0 mm	2	00906	6	back	98.3	12.480	1.500	1.175	1.017	1.792	
5320	64	802.11a	OFDM	20	18.0	17.34	0.17	0 mm	2	00906	6	back	98.3	17.380	1.630	1.164	1.017	**1.930**	
5320	64	802.11a	OFDM	20	18.0	17.34	0.10	0 mm	2	00906	6	front	98.3	0.439	0.054	1.164	1.017	0.064	
5320	64	802.11a	OFDM	20	18.0	17.34	0.13	0 mm	2	00906	6	top	98.3	0.305	-	1.164	1.017	-	
5320	64	802.11a	OFDM	20	18.0	17.34	0.12	0 mm	2	00906	6	left	98.3	1.868	0.180	1.164	1.017	0.213	
5600	120	802.11a	OFDM	20	18.0	17.16	0.15	0 mm	1	00906	6	back	98.2	5.880	0.469	1.213	1.018	0.579	
5600	120	802.11a	OFDM	20	18.0	17.16	0.10	0 mm	1	00906	6	front	98.2	0.459	-	1.213	1.018	-	
5600	120	802.11a	OFDM	20	18.0	17.16	0.17	0 mm	1	00906	6	top	98.2	0.687	-	1.213	1.018	-	
5600	120	802.11a	OFDM	20	18.0	17.16	0.12	0 mm	1	00906	6	left	98.2	0.514	-	1.213	1.018	-	
5720	144	802.11a	OFDM	20	18.0	17.53	0.09	0 mm	2	00906	6	back	98.3	7.026	1.080	1.114	1.017	1.224	
5720	144	802.11a	OFDM	20	18.0	17.53	0.19	0 mm	2	00906	6	front	98.3	2.162	0.218	1.114	1.017	0.247	
5720	144	802.11a	OFDM	20	18.0	17.53	0.19	0 mm	2	00906	6	top	98.3	0.178	-	1.114	1.017	-	
5720	144	802.11a	OFDM	20	18.0	17.53	0.10	0 mm	2	00906	6	left	98.3	1.368	-	1.114	1.017	-	
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 11-49
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	802.11a	OFDM	20	18.0	17.05	18.0	17.27	0.04	0 mm	MIMO	00906	6	back	98.1	22.302	1.590	1.245	1.019	2.017	
5300	60	802.11a	OFDM	20	18.0	17.98	18.0	17.27	0.08	0 mm	MIMO	00906	6	back	98.1	13.577	1.720	1.183	1.019	2.073	
5320	64	802.11a	OFDM	20	18.0	17.14	18.0	17.34	0.06	0 mm	MIMO	00906	6	back	98.1	13.679	1.800	1.219	1.019	2.236	A62
5300	60	802.11a	OFDM	20	18.0	17.98	18.0	17.27	0.12	0 mm	MIMO	00906	6	front	98.1	0.917	-	1.183	1.019	-	
5300	60	802.11a	OFDM	20	18.0	17.98	18.0	17.27	0.19	0 mm	MIMO	00906	6	top	98.1	1.313	-	1.183	1.019	-	
5300	60	802.11a	OFDM	20	18.0	17.98	18.0	17.27	0.10	0 mm	MIMO	00906	6	left	98.1	1.462	0.175	1.183	1.019	0.211	
5720	144	802.11a	OFDM	20	18.0	17.12	18.0	17.53	0.16	0 mm	MIMO	00906	6	back	98.1	7.545	1.250	1.225	1.019	1.560	
5720	144	802.11a	OFDM	20	18.0	17.12	18.0	17.53	0.12	0 mm	MIMO	00906	6	front	98.1	1.804	-	1.225	1.019	-	
5720	144	802.11a	OFDM	20	18.0	17.12	18.0	17.53	-0.10	0 mm	MIMO	00906	6	top	98.1	1.817	0.149	1.225	1.019	0.186	
5720	144	802.11a	OFDM	20	18.0	17.12	18.0	17.53	0.10	0 mm	MIMO	00906	6	left	98.1	1.313	-	1.225	1.019	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Phablet 4.0 W/kg (mW/g) averaged over 10 grams										

To achieve the 5GHz WLAN 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 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.

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 10 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 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.
12. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.
13. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).

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.
4. GPRS was additionally evaluated for head and body-worn exposure conditions to address possible VoIP scenarios.

© 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.

CDMA Notes:

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

© 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. 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 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 and LTE Band 5, 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 and hotspot 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, 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 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.

© 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 applicable exposure conditions was used for simultaneous transmission analysis.

12.3 Head SAR Simultaneous Transmission Analysis

Table 12-1
Simultaneous Transmission Scenario with 2.4 GHz WLAN (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	1+2+3
Head SAR	CDMA/EVDO BC10 (§90S)	0.137	0.365	0.116	0.502	0.253	0.618
	CDMA/EVDO BC0 (§22H)	0.144	0.365	0.116	0.509	0.260	0.625
	PCS CDMA/EVDO	0.134	0.365	0.116	0.499	0.250	0.615
	GSM/GPRS 850	0.049	0.365	0.116	0.414	0.165	0.530
	GSM/GPRS 1900	0.113	0.365	0.116	0.478	0.229	0.594
	UMTS 850	0.108	0.365	0.116	0.473	0.224	0.589
	UMTS 1750	0.105	0.365	0.116	0.470	0.221	0.586
	UMTS 1900	0.162	0.365	0.116	0.527	0.278	0.643
	LTE Band 71	0.077	0.365	0.116	0.442	0.193	0.558
	LTE Band 12	0.105	0.365	0.116	0.470	0.221	0.586
	LTE Band 13	0.095	0.365	0.116	0.460	0.211	0.576
	LTE Band 14	0.064	0.365	0.116	0.429	0.180	0.545
	LTE Band 5 (Cell)	0.106	0.365	0.116	0.471	0.222	0.587
	LTE Band 26 (Cell)	0.104	0.365	0.116	0.469	0.220	0.585
	LTE Band 66 (AWS)	0.100	0.365	0.116	0.465	0.216	0.581
	LTE Band 25 (PCS)	0.152	0.365	0.116	0.517	0.268	0.633
	LTE Band 30	0.373	0.365	0.116	0.738	0.489	0.854
	LTE Band 7	0.308	0.365	0.116	0.673	0.424	0.789
	LTE Band 41	0.454	0.365	0.116	0.819	0.570	**0.935**

© 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 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	CDMA/EVDO BC10 (§90S)	0.137	0.337	0.582	0.474	0.719	1.056
	CDMA/EVDO BC0 (§22H)	0.144	0.337	0.582	0.481	0.726	1.063
	PCS CDMA/EVDO	0.134	0.337	0.582	0.471	0.716	1.053
	GSM/GPRS 850	0.049	0.337	0.582	0.386	0.631	0.968
	GSM/GPRS 1900	0.113	0.337	0.582	0.450	0.695	1.032
	UMTS 850	0.108	0.337	0.582	0.445	0.690	1.027
	UMTS 1750	0.105	0.337	0.582	0.442	0.687	1.024
	UMTS 1900	0.162	0.337	0.582	0.499	0.744	1.081
	LTE Band 71	0.077	0.337	0.582	0.414	0.659	0.996
	LTE Band 12	0.105	0.337	0.582	0.442	0.687	1.024
	LTE Band 13	0.095	0.337	0.582	0.432	0.677	1.014
	LTE Band 14	0.064	0.337	0.582	0.401	0.646	0.983
	LTE Band 5 (Cell)	0.106	0.337	0.582	0.443	0.688	1.025
	LTE Band 26 (Cell)	0.104	0.337	0.582	0.441	0.686	1.023
	LTE Band 66 (AWS)	0.100	0.337	0.582	0.437	0.682	1.019
	LTE Band 25 (PCS)	0.152	0.337	0.582	0.489	0.734	1.071
	LTE Band 30	0.373	0.337	0.582	0.710	0.955	1.292
	LTE Band 7	0.308	0.337	0.582	0.645	0.890	1.227
	LTE Band 41	0.454	0.337	0.582	0.791	1.036	**1.373**

Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Held to Ear)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	CDMA/EVDO BC10 (§90S)	0.137	0.365	0.582	1.084
	CDMA/EVDO BC0 (§22H)	0.144	0.365	0.582	1.091
	PCS CDMA/EVDO	0.134	0.365	0.582	1.081
	GSM/GPRS 850	0.049	0.365	0.582	0.996
	GSM/GPRS 1900	0.113	0.365	0.582	1.060
	UMTS 850	0.108	0.365	0.582	1.055
	UMTS 1750	0.105	0.365	0.582	1.052
	UMTS 1900	0.162	0.365	0.582	1.109
	LTE Band 71	0.077	0.365	0.582	1.024
	LTE Band 12	0.105	0.365	0.582	1.052
	LTE Band 13	0.095	0.365	0.582	1.042
	LTE Band 14	0.064	0.365	0.582	1.011
	LTE Band 5 (Cell)	0.106	0.365	0.582	1.053
	LTE Band 26 (Cell)	0.104	0.365	0.582	1.051
	LTE Band 66 (AWS)	0.100	0.365	0.582	1.047
	LTE Band 25 (PCS)	0.152	0.365	0.582	1.099
	LTE Band 30	0.373	0.365	0.582	1.320
	LTE Band 7	0.308	0.365	0.582	1.255
	LTE Band 41	0.454	0.365	0.582	**1.401**

© 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 12-4
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	CDMA/EVDO BC10 (§90S)	0.137	0.298	0.435
	CDMA/EVDO BC0 (§22H)	0.144	0.298	0.442
	PCS CDMA/EVDO	0.134	0.298	0.432
	GSM/GPRS 850	0.049	0.298	0.347
	GSM/GPRS 1900	0.113	0.298	0.411
	UMTS 850	0.108	0.298	0.406
	UMTS 1750	0.105	0.298	0.403
	UMTS 1900	0.162	0.298	0.460
	LTE Band 71	0.077	0.298	0.375
	LTE Band 12	0.105	0.298	0.403
	LTE Band 13	0.095	0.298	0.393
	LTE Band 14	0.064	0.298	0.362
	LTE Band 5 (Cell)	0.106	0.298	0.404
	LTE Band 26 (Cell)	0.104	0.298	0.402
	LTE Band 66 (AWS)	0.100	0.298	0.398
	LTE Band 25 (PCS)	0.152	0.298	0.450
	LTE Band 30	0.373	0.298	0.671
	LTE Band 7	0.308	0.298	0.606
	LTE Band 41	0.454	0.298	**0.752**

© 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 12-5
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Body-Worn 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)		SPLSR	
		1	2	3	1+2	1+3	1+2	1+3
Body-Worn	CDMA BC10 (§90S)	0.770	0.275	0.793	1.045	1.563	N/A	N/A
	CDMA BC0 (§22H)	0.912	0.275	0.793	1.187	See Note 1	N/A	0.02
	PCS CDMA	0.457	0.275	0.793	0.732	1.250	N/A	N/A
	GSM/GPRS 850	0.319	0.275	0.793	0.594	1.112	N/A	N/A
	GSM/GPRS 1900	0.358	0.275	0.793	0.633	1.151	N/A	N/A
	UMTS 850	0.828	0.275	0.793	1.103	See Note 1	N/A	0.02
	UMTS 1750	0.270	0.275	0.793	0.545	1.063	N/A	N/A
	UMTS 1900	0.716	0.275	0.793	0.991	1.509	N/A	N/A
	LTE Band 71	0.777	0.275	0.793	1.052	1.570	N/A	N/A
	LTE Band 12	0.684	0.275	0.793	0.959	1.477	N/A	N/A
	LTE Band 13	0.791	0.275	0.793	1.066	**1.584**	N/A	N/A
	LTE Band 14	0.519	0.275	0.793	0.794	1.312	N/A	N/A
	LTE Band 5 (Cell)	0.753	0.275	0.793	1.028	1.546	N/A	N/A
	LTE Band 26 (Cell)	0.679	0.275	0.793	0.954	1.472	N/A	N/A
	LTE Band 66 (AWS)	0.271	0.275	0.793	0.546	1.064	N/A	N/A
	LTE Band 25 (PCS)	0.634	0.275	0.793	0.909	1.427	N/A	N/A
	LTE Band 30	0.580	0.275	0.793	0.855	1.373	N/A	N/A
	LTE Band 7	0.335	0.275	0.793	0.610	1.128	N/A	N/A
	LTE Band 41	0.499	0.275	0.793	0.774	1.292	N/A	N/A

Table 12-6
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Body-Worn at 1.0 cm)

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
Body-Worn	CDMA BC10 (§90S)	0.770	0.636	1.406
	CDMA BC0 (§22H)	0.912	0.636	**1.548**
	PCS CDMA	0.457	0.636	1.093
	GSM/GPRS 850	0.319	0.636	0.955
	GSM/GPRS 1900	0.358	0.636	0.994
	UMTS 850	0.828	0.636	1.464
	UMTS 1750	0.270	0.636	0.906
	UMTS 1900	0.716	0.636	1.352
	LTE Band 71	0.777	0.636	1.413
	LTE Band 12	0.684	0.636	1.320
	LTE Band 13	0.791	0.636	1.427
	LTE Band 14	0.519	0.636	1.155
	LTE Band 5 (Cell)	0.753	0.636	1.389
	LTE Band 26 (Cell)	0.679	0.636	1.315
	LTE Band 66 (AWS)	0.271	0.636	0.907
	LTE Band 25 (PCS)	0.634	0.636	1.270
	LTE Band 30	0.580	0.636	1.216
	LTE Band 7	0.335	0.636	0.971
	LTE Band 41	0.499	0.636	1.135

© 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 12-7
Simultaneous Transmission Scenario with 5 GHz WLAN (Body-Worn 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)			SPLSR		
		1	2	3	1+2	1+3	1+2+3	1+2	1+3	2+3
Body-Worn	CDMA BC10 (§90S)	0.770	0.124	0.635	0.894	1.405	1.529	N/A	N/A	N/A
	CDMA BC0 (§22H)	0.912	0.124	0.635	1.036	1.547	See Note 1	0.01	0.02	0.02
	PCS CDMA	0.457	0.124	0.635	0.581	1.092	1.216	N/A	N/A	N/A
	GSM/GPRS 850	0.319	0.124	0.635	0.443	0.954	1.078	N/A	N/A	N/A
	GSM/GPRS 1900	0.358	0.124	0.635	0.482	0.993	1.117	N/A	N/A	N/A
	UMTS 850	0.828	0.124	0.635	0.952	1.463	**1.587**	N/A	N/A	N/A
	UMTS 1750	0.270	0.124	0.635	0.394	0.905	1.029	N/A	N/A	N/A
	UMTS 1900	0.716	0.124	0.635	0.840	1.351	1.475	N/A	N/A	N/A
	LTE Band 71	0.777	0.124	0.635	0.901	1.412	1.536	N/A	N/A	N/A
	LTE Band 12	0.684	0.124	0.635	0.808	1.319	1.443	N/A	N/A	N/A
	LTE Band 13	0.791	0.124	0.635	0.915	1.426	1.550	N/A	N/A	N/A
	LTE Band 14	0.519	0.124	0.635	0.643	1.154	1.278	N/A	N/A	N/A
	LTE Band 5 (Cell)	0.753	0.124	0.635	0.877	1.388	1.512	N/A	N/A	N/A
	LTE Band 26 (Cell)	0.679	0.124	0.635	0.803	1.314	1.438	N/A	N/A	N/A
	LTE Band 66 (AWS)	0.271	0.124	0.635	0.395	0.906	1.030	N/A	N/A	N/A
	LTE Band 25 (PCS)	0.634	0.124	0.635	0.758	1.269	1.393	N/A	N/A	N/A
	LTE Band 30	0.580	0.124	0.635	0.704	1.215	1.339	N/A	N/A	N/A
	LTE Band 7	0.335	0.124	0.635	0.459	0.970	1.094	N/A	N/A	N/A
	LTE Band 41	0.499	0.124	0.635	0.623	1.134	1.258	N/A	N/A	N/A

Table 12-8
Simultaneous Transmission Scenario with 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Body-Worn at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
		1	2	3	1+2+3	1+2	1+3	2+3
Body-Worn	CDMA BC10 (§90S)	0.770	0.275	0.635	See Note 1	0.01	0.01	0.03
	CDMA BC0 (§22H)	0.912	0.275	0.635	See Note 1	0.01	0.02	0.03
	PCS CDMA	0.457	0.275	0.635	1.367	N/A	N/A	N/A
	GSM/GPRS 850	0.319	0.275	0.635	1.229	N/A	N/A	N/A
	GSM/GPRS 1900	0.358	0.275	0.635	1.268	N/A	N/A	N/A
	UMTS 850	0.828	0.275	0.635	See Note 1	0.01	0.02	0.03
	UMTS 1750	0.270	0.275	0.635	1.180	N/A	N/A	N/A
	UMTS 1900	0.716	0.275	0.635	See Note 1	0.01	0.01	0.03
	LTE Band 71	0.777	0.275	0.635	See Note 1	0.01	0.02	0.03
	LTE Band 12	0.684	0.275	0.635	**1.594**	N/A	N/A	N/A
	LTE Band 13	0.791	0.275	0.635	See Note 1	0.01	0.02	0.03
	LTE Band 14	0.519	0.275	0.635	1.429	N/A	N/A	N/A
	LTE Band 5 (Cell)	0.753	0.275	0.635	See Note 1	0.01	0.01	0.03
	LTE Band 26 (Cell)	0.679	0.275	0.635	1.589	N/A	N/A	N/A
	LTE Band 66 (AWS)	0.271	0.275	0.635	1.181	N/A	N/A	N/A
	LTE Band 25 (PCS)	0.634	0.275	0.635	1.544	N/A	N/A	N/A
	LTE Band 30	0.580	0.275	0.635	1.490	N/A	N/A	N/A
	LTE Band 7	0.335	0.275	0.635	1.245	N/A	N/A	N/A
	LTE Band 41	0.499	0.275	0.635	1.409	N/A	N/A	N/A

© 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 12-9
Simultaneous Transmission Scenario with Bluetooth (Body-Worn 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
Body-Worn	CDMA BC10 (§90S)	0.770	0.051	0.821
	CDMA BC0 (§22H)	0.912	0.051	**0.963**
	PCS CDMA	0.457	0.051	0.508
	GSM/GPRS 850	0.319	0.051	0.370
	GSM/GPRS 1900	0.358	0.051	0.409
	UMTS 850	0.828	0.051	0.879
	UMTS 1750	0.270	0.051	0.321
	UMTS 1900	0.716	0.051	0.767
	LTE Band 71	0.777	0.051	0.828
	LTE Band 12	0.684	0.051	0.735
	LTE Band 13	0.791	0.051	0.842
	LTE Band 14	0.519	0.051	0.570
	LTE Band 5 (Cell)	0.753	0.051	0.804
	LTE Band 26 (Cell)	0.679	0.051	0.730
	LTE Band 66 (AWS)	0.271	0.051	0.322
	LTE Band 25 (PCS)	0.634	0.051	0.685
	LTE Band 30	0.580	0.051	0.631
	LTE Band 7	0.335	0.051	0.386
	LTE Band 41	0.499	0.051	0.550

Note 1: No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. See Section 12.7 for detailed SPLS ratio analysis.

© 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

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 ("-").

(*) 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 applicable exposure conditions was used for 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
Hotspot SAR	EVDO BC10 (§90S)	0.814	0.275	0.793	1.089	See Table Below
	EVDO BC0 (§22H)	0.944	0.275	0.793	1.219	See Table Below
	PCS EVDO	0.926	0.275	0.793	1.201	See Table Below
	GPRS 850	0.313	0.275	0.793	0.588	1.106
	GPRS 1900	0.460	0.275	0.793	0.735	1.253
	UMTS 850	0.828	0.275	0.793	1.103	See Table Below
	UMTS 1750	0.349	0.275	0.793	0.624	1.142
	UMTS 1900	1.196	0.275	0.793	1.471	See Table Below
	LTE Band 71	0.777	0.275	0.793	1.052	1.570
	LTE Band 12	0.684	0.275	0.793	0.959	1.477
	LTE Band 13	0.791	0.275	0.793	1.066	**1.584**
	LTE Band 14	0.519	0.275	0.793	0.794	1.312
	LTE Band 5 (Cell)	0.753	0.275	0.793	1.028	1.546
	LTE Band 26 (Cell)	0.679	0.275	0.793	0.954	1.472
	LTE Band 66 (AWS)	0.338	0.275	0.793	0.613	1.131
	LTE Band 25 (PCS)	1.140	0.275	0.793	1.415	See Table Below
	LTE Band 30	0.635	0.275	0.793	0.910	1.428
	LTE Band 7	0.462	0.275	0.793	0.737	1.255
	LTE Band 41	0.527	0.275	0.793	0.802	1.320

Simult Tx	Configuration	EVDO BC10 (§90S) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Hotspot SAR	Back	0.814	0.793	See Note 1	0.02
	Front	0.633	0.793*	1.426	N/A
	Top	-	0.793*	0.793	N/A
	Bottom	0.247	-	0.247	N/A
	Right	0.387	-	0.387	N/A
	Left	-	0.206	0.206	N/A

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Hotspot SAR	Back	0.944	0.793	See Note 1	0.02
	Front	0.699	0.793*	1.492	N/A
	Top	-	0.793*	0.793	N/A
	Bottom	0.277	-	0.277	N/A
	Right	0.401	-	0.401	N/A
	Left	-	0.206	0.206	N/A

© 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	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Back	0.479	0.793	**1.272**
	Front	0.430	0.793*	1.223
	Top	-	0.793*	0.793
	Bottom	0.926	-	0.926
	Right	-	-	-
	Left	0.206	0.206	0.412

Simult Tx	Configuration	UMTS 850 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR
		1	2	1+2	1+2
Hotspot SAR	Back	0.828	0.793	See Note 1	0.02
	Front	0.493	0.793*	1.286	N/A
	Top	-	0.793*	0.793	N/A
	Bottom	0.224	-	0.224	N/A
	Right	0.330	-	0.330	N/A
	Left	-	0.206	0.206	N/A

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Back	0.716	0.793	**1.509**
	Front	0.493	0.793*	1.286
	Top	-	0.793*	0.793
	Bottom	1.196	-	1.196
	Right	-	-	-
	Left	0.264	0.206	0.470

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Hotspot SAR	Back	0.634	0.793	**1.427**
	Front	0.613	0.793*	1.406
	Top	-	0.793*	0.793
	Bottom	1.140	-	1.140
	Right	-	-	-
	Left	0.288	0.206	0.494

Table 12-11
Simultaneous Transmission Scenario with 2.4 GHz WLAN MIMO (Hotspot at 1.0 cm)

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
Hotspot SAR	EVDO BC10 (§90S)	0.814	0.636	1.450
	EVDO BC0 (§22H)	0.944	0.636	**1.580**
	PCS EVDO	0.926	0.636	1.562
	GPRS 850	0.313	0.636	0.949
	GPRS 1900	0.460	0.636	1.096
	UMTS 850	0.828	0.636	1.464
	UMTS 1750	0.349	0.636	0.985
	UMTS 1900	1.196	0.636	See Table Below
	LTE Band 71	0.777	0.636	1.413
	LTE Band 12	0.684	0.636	1.320
	LTE Band 13	0.791	0.636	1.427
	LTE Band 14	0.519	0.636	1.155
	LTE Band 5 (Cell)	0.753	0.636	1.389
	LTE Band 26 (Cell)	0.679	0.636	1.315
	LTE Band 66 (AWS)	0.338	0.636	0.974
	LTE Band 25 (PCS)	1.140	0.636	See Table Below
	LTE Band 30	0.635	0.636	1.271
	LTE Band 7	0.462	0.636	1.098
	LTE Band 41	0.527	0.636	1.163

© 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	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2			1	2	1+2
Hotspot SAR	Back	0.716	0.636	**1.352**	Hotspot SAR	Back	0.634	0.636	**1.270**
	Front	0.493	0.636*	1.129		Front	0.613	0.636*	1.249
	Top	-	0.289	0.289		Top	-	0.289	0.289
	Bottom	1.196	-	1.196		Bottom	1.140	-	1.140
	Right	-	-	-		Right	-	-	-
	Left	0.264	0.636*	0.900		Left	0.288	0.636*	0.924

Table 12-12
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	EVDO BC10 (§90S)	0.814	0.124	0.491	0.938	1.305	1.429
	EVDO BC0 (§22H)	0.944	0.124	0.491	1.068	1.435	**1.559**
	PCS EVDO	0.926	0.124	0.491	1.050	1.417	1.541
	GPRS 850	0.313	0.124	0.491	0.437	0.804	0.928
	GPRS 1900	0.460	0.124	0.491	0.584	0.951	1.075
	UMTS 850	0.828	0.124	0.491	0.952	1.319	1.443
	UMTS 1750	0.349	0.124	0.491	0.473	0.840	0.964
	UMTS 1900	1.196	0.124	0.491	1.320	See Table Below	See Table Below
	LTE Band 71	0.777	0.124	0.491	0.901	1.268	1.392
	LTE Band 12	0.684	0.124	0.491	0.808	1.175	1.299
	LTE Band 13	0.791	0.124	0.491	0.915	1.282	1.406
	LTE Band 14	0.519	0.124	0.491	0.643	1.010	1.134
	LTE Band 5 (Cell)	0.753	0.124	0.491	0.877	1.244	1.368
	LTE Band 26 (Cell)	0.679	0.124	0.491	0.803	1.170	1.294
	LTE Band 66 (AWS)	0.338	0.124	0.491	0.462	0.829	0.953
	LTE Band 25 (PCS)	1.140	0.124	0.491	1.264	See Table Below	See Table Below
	LTE Band 30	0.635	0.124	0.491	0.759	1.126	1.250
	LTE Band 7	0.462	0.124	0.491	0.586	0.953	1.077
	LTE Band 41	0.527	0.124	0.491	0.651	1.018	1.142

Simult Tx	Configuration	UMTS 1900 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	0.716	0.124	0.491	0.840	1.207	**1.331**
	Front	0.493	0.124*	0.054	0.617	0.547	0.671
	Top	-	0.118	0.491*	0.118	0.491	0.609
	Bottom	1.196	-	-	1.196	1.196	1.196
	Right	-	-	-	0.000	0.000	0.000
	Left	0.264	0.124*	0.110	0.388	0.374	0.498

Simult Tx	Configuration	LTE Band 25 (PCS) 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	0.634	0.124	0.491	0.758	1.125	**1.249**
	Front	0.613	0.124*	0.054	0.737	0.667	0.791
	Top	-	0.118	0.491*	0.118	0.491	0.609
	Bottom	1.140	-	-	1.140	1.140	1.140
	Right	-	-	-	0.000	0.000	0.000
	Left	0.288	0.124*	0.110	0.412	0.398	0.522

© 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 2.4 GHz WLAN Ant 1 and 5 GHz WLAN Ant 2 (Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	EVDO BC10 (§90S)	0.814	0.275	0.491	1.580
	EVDO BC0 (§22H)	0.944	0.275	0.491	See Table Below
	PCS EVDO	0.926	0.275	0.491	See Table Below
	GPRS 850	0.313	0.275	0.491	1.079
	GPRS 1900	0.460	0.275	0.491	1.226
	UMTS 850	0.828	0.275	0.491	**1.594**
	UMTS 1750	0.349	0.275	0.491	1.115
	UMTS 1900	1.196	0.275	0.491	See Table Below
	LTE Band 71	0.777	0.275	0.491	1.543
	LTE Band 12	0.684	0.275	0.491	1.450
	LTE Band 13	0.791	0.275	0.491	1.557
	LTE Band 14	0.519	0.275	0.491	1.285
	LTE Band 5 (Cell)	0.753	0.275	0.491	1.519
	LTE Band 26 (Cell)	0.679	0.275	0.491	1.445
	LTE Band 66 (AWS)	0.338	0.275	0.491	1.104
	LTE Band 25 (PCS)	1.140	0.275	0.491	See Table Below
	LTE Band 30	0.635	0.275	0.491	1.401
	LTE Band 7	0.462	0.275	0.491	1.228
	LTE Band 41	0.527	0.275	0.491	1.293

Simult Tx	Configuration	EVDO BC0 (§22H) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)	SPLSR		
		1	2	3	1+2+3	1+2	1+3	2+3
Hotspot SAR	Back	0.944	0.275	0.491	See Note 1	0.01	0.01	0.02
	Front	0.699	0.275*	0.054	1.028	N/A	N/A	N/A
	Top	-	0.215	0.491*	0.706	N/A	N/A	N/A
	Bottom	0.277	-	-	0.277	N/A	N/A	N/A
	Right	0.401	-	-	0.401	N/A	N/A	N/A
	Left	-	0.275*	0.110	0.385	N/A	N/A	N/A

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.479	0.275	0.491	**1.245**
	Front	0.430	0.275*	0.054	0.759
	Top	-	0.215	0.491*	0.706
	Bottom	0.926	-	-	0.926
	Right	-	-	-	-
	Left	0.206	0.275*	0.110	0.591

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.716	0.275	0.491	**1.482**
	Front	0.493	0.275*	0.054	0.822
	Top	-	0.215	0.491*	0.706
	Bottom	1.196	-	-	1.196
	Right	-	-	-	-
	Left	0.264	0.275*	0.110	0.649

© 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 25 (PCS) SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Hotspot SAR	Back	0.634	0.275	0.491	**1.400**
	Front	0.613	0.275*	0.054	0.942
	Top	-	0.215	0.491*	0.706
	Bottom	1.140	-	-	1.140
	Right	-	-	-	-
	Left	0.288	0.275*	0.110	0.673

Table 12-14
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	EVDO BC10 (§90S)	0.814	0.051	0.865
	EVDO BC0 (§22H)	0.944	0.051	0.995
	PCS EVDO	0.926	0.051	0.977
	GPRS 850	0.313	0.051	0.364
	GPRS 1900	0.460	0.051	0.511
	UMTS 850	0.828	0.051	0.879
	UMTS 1750	0.349	0.051	0.400
	UMTS 1900	1.196	0.051	**1.247**
	LTE Band 71	0.777	0.051	0.828
	LTE Band 12	0.684	0.051	0.735
	LTE Band 13	0.791	0.051	0.842
	LTE Band 14	0.519	0.051	0.570
	LTE Band 5 (Cell)	0.753	0.051	0.804
	LTE Band 26 (Cell)	0.679	0.051	0.730
	LTE Band 66 (AWS)	0.338	0.051	0.389
	LTE Band 25 (PCS)	1.140	0.051	1.191
	LTE Band 30	0.635	0.051	0.686
	LTE Band 7	0.462	0.051	0.513
	LTE Band 41	0.527	0.051	0.578

Note 1: No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. See Section 12.7 for detailed SPLS ratio analysis.

© 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 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for 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 applicable exposure conditions was used for simultaneous transmission analysis.

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1g 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 12-15
Simultaneous Transmission Scenario with 5 GHz WLAN (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	PCS EVDO	2.719	0.579	1.930	3.298	See Table Below
	UMTS 1750	1.440	0.579	1.930	2.019	3.370
	UMTS 1900	2.894	0.579	1.930	**3.473**	See Table Below
	LTE Band 66 (AWS)	1.080	0.579	1.930	1.659	3.010
	LTE Band 25 (PCS)	2.803	0.579	1.930	3.382	See Table Below

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	1.418	1.930	**3.348**
	Front	1.573	0.247	1.820
	Top	-	1.930*	1.930
	Bottom	2.719	-	2.719
	Right	-	-	-
	Left	0.692	0.213	0.905

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	1.945	1.930	**3.875**
	Front	1.352	0.247	1.599
	Top	-	1.930*	1.930
	Bottom	2.894	-	2.894
	Right	-	-	-
	Left	0.655	0.213	0.868

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	1.538	1.930	**3.468**
	Front	1.437	0.247	1.684
	Top	-	1.930*	1.930
	Bottom	2.803	-	2.803
	Right	-	-	-
	Left	0.744	0.213	0.957

© 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 12-16
Simultaneous Transmission Scenario with 5 GHz WLAN MIMO (Phablet)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	PCS EVDO	2.719	2.236	See Table Below
	UMTS 1750	1.440	2.236	**3.676**
	UMTS 1900	2.894	2.236	See Table Below
	LTE Band 66 (AWS)	1.080	2.236	3.316
	LTE Band 25 (PCS)	2.803	2.236	See Table Below

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	1.418	2.236	3.654
	Front	1.573	2.236*	**3.809**
	Top	-	0.186	0.186
	Bottom	2.719	-	2.719
	Right	-	-	-
	Left	0.692	0.211	0.903

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	1.945	2.236	See Note 1	0.07
	Front	1.352	2.236*	**3.588**	N/A
	Top	-	0.186	0.186	N/A
	Bottom	2.894	-	2.894	N/A
	Right	-	-	-	N/A
	Left	0.655	0.211	0.866	N/A

Simult Tx	Configuration	LTE Band 25 (PCS) SAR (W/kg)	5 GHz WLAN MIMO SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Phablet SAR	Back	1.538	2.236	**3.774**
	Front	1.437	2.236*	3.673
	Top	-	0.186	0.186
	Bottom	2.803	-	2.803
	Right	-	-	-
	Left	0.744	0.211	0.955

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. 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 or more than 4.0 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 Body-Worn Back Side SPLSR Evaluation and Analysis

Table 12-17
Peak SAR Locations for Body-Worn Back Side

Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
2.4 GHz WLAN Ant 1	-8.80	74.60	0.275
2.4 GHz WLAN Ant 2	0.20	69.60	0.793
5 GHz WLAN Ant 1	16.00	78.00	0.124
5 GHz WLAN Ant 2	12.00	48.00	0.635
CDMA BC10	-55.00	-48.00	0.770
CDMA BC0	-55.00	-48.00	0.912
UMTS 850	-53.50	-43.50	0.828
UMTS 1900	-11.50	-80.00	0.716
LTE Band 71	-44.00	-40.50	0.777
LTE Band 13	-44.00	-43.50	0.791
LTE Band 5 (Cell)	-64.00	-49.50	0.753

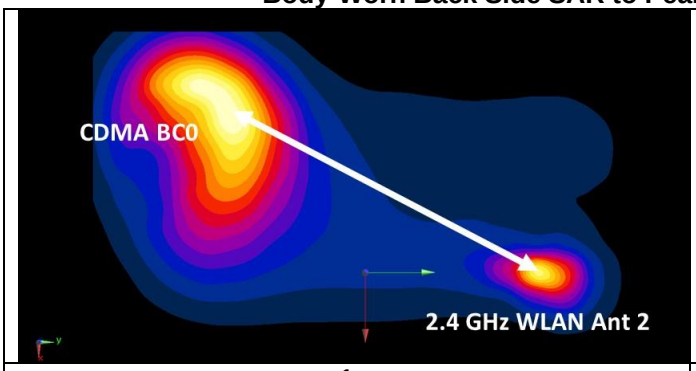
© 2018 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, 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
Body-Worn Back Side SAR to Peak Location Separation Ratio Calculations

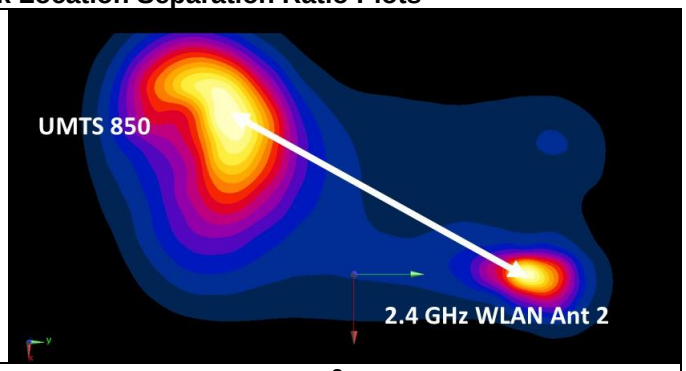
Antenna Pair		Standalone SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$	
CDMA BC0	2.4 GHz WLAN Ant 2	0.912	0.793	1.705	129.91	0.02	1
UMTS 850	2.4 GHz WLAN Ant 2	0.828	0.793	1.621	125.20	0.02	2
5 GHz WLAN Ant 1	5 GHz WLAN Ant 2	0.124	0.635	0.759	30.27	0.02	3
CDMA BC0	5 GHz WLAN Ant 1	0.912	0.124	1.036	144.63	0.01	
CDMA BC0	5 GHz WLAN Ant 2	0.912	0.635	1.547	117.07	0.02	
2.4 GHz WLAN Ant 1	5 GHz WLAN Ant 2	0.275	0.635	0.910	33.77	0.03	4
CDMA BC10	2.4 GHz WLAN Ant 1	0.770	0.275	1.045	131.02	0.01	
CDMA BC10	5 GHz WLAN Ant 2	0.770	0.635	1.405	117.07	0.01	
2.4 GHz WLAN Ant 1	5 GHz WLAN Ant 2	0.275	0.635	0.910	33.77	0.03	5
CDMA BC0	2.4 GHz WLAN Ant 1	0.912	0.275	1.187	131.02	0.01	
CDMA BC0	5 GHz WLAN Ant 2	0.912	0.635	1.547	117.07	0.02	
2.4 GHz WLAN Ant 1	5 GHz WLAN Ant 2	0.275	0.635	0.910	33.77	0.03	6
UMTS 850	2.4 GHz WLAN Ant 1	0.828	0.275	1.103	126.28	0.01	
UMTS 850	5 GHz WLAN Ant 2	0.828	0.635	1.463	112.53	0.02	
2.4 GHz WLAN Ant 1	5 GHz WLAN Ant 2	0.275	0.635	0.910	33.77	0.03	7
UMTS 1900	2.4 GHz WLAN Ant 1	0.716	0.275	0.991	154.62	0.01	
UMTS 1900	5 GHz WLAN Ant 2	0.716	0.635	1.351	130.14	0.01	
2.4 GHz WLAN Ant 1	5 GHz WLAN Ant 2	0.275	0.635	0.910	33.77	0.03	8
LTE Band 71	2.4 GHz WLAN Ant 1	0.777	0.275	1.052	120.36	0.01	
LTE Band 71	5 GHz WLAN Ant 2	0.777	0.635	1.412	104.73	0.02	
2.4 GHz WLAN Ant 1	5 GHz WLAN Ant 2	0.275	0.635	0.910	33.77	0.03	9
LTE Band 13	2.4 GHz WLAN Ant 1	0.791	0.275	1.066	123.23	0.01	
LTE Band 13	5 GHz WLAN Ant 2	0.791	0.635	1.426	107.28	0.02	
2.4 GHz WLAN Ant 1	5 GHz WLAN Ant 2	0.275	0.635	0.910	33.77	0.03	10
LTE Band 5 (Cell)	2.4 GHz WLAN Ant 1	0.753	0.275	1.028	135.82	0.01	
LTE Band 5 (Cell)	5 GHz WLAN Ant 2	0.753	0.635	1.388	123.62	0.01	

© 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.

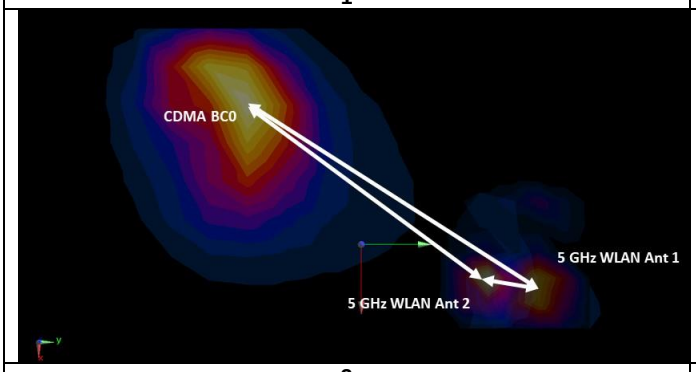
Table 12-19
Body-Worn Back Side SAR to Peak Location Separation Ratio Plots



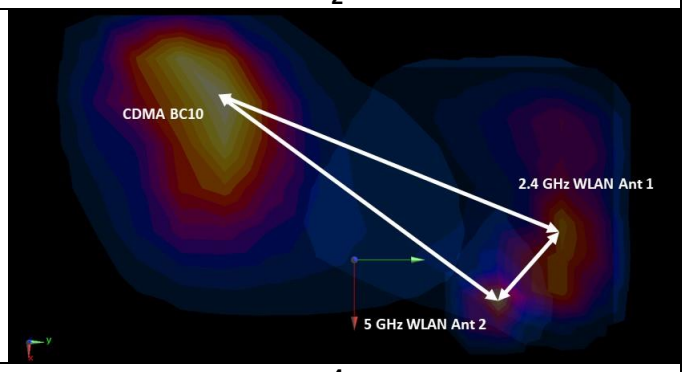
1



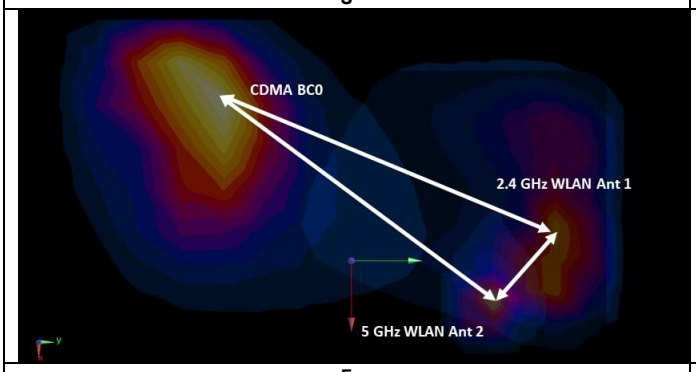
2



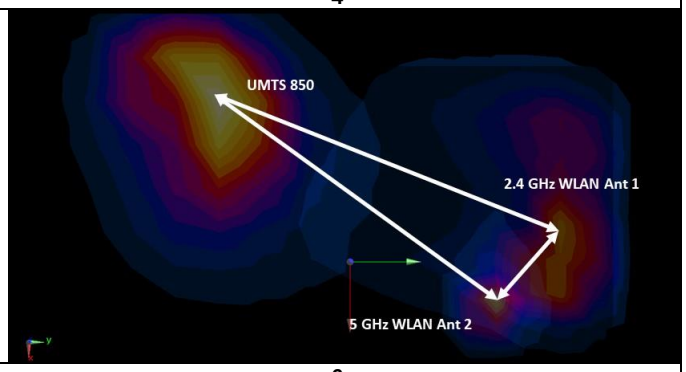
3



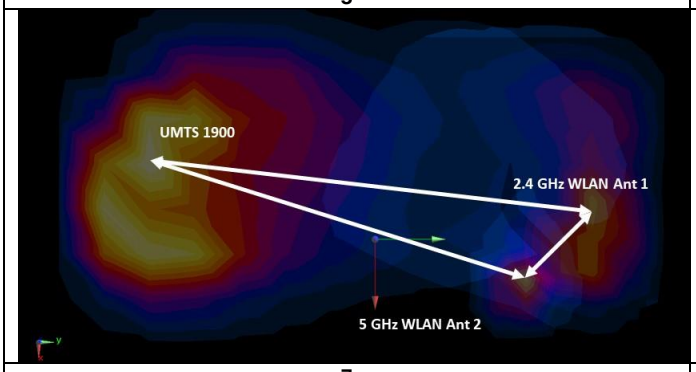
4



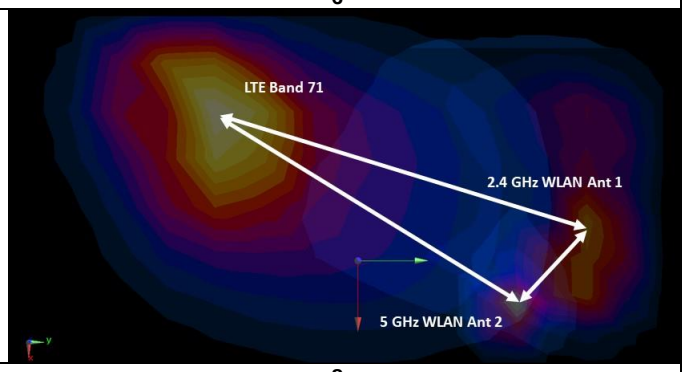
5



6



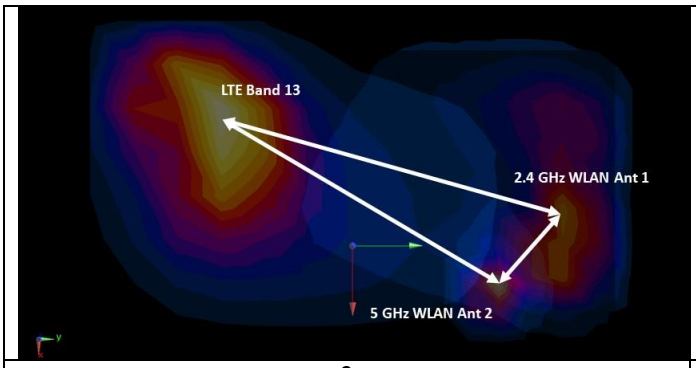
7



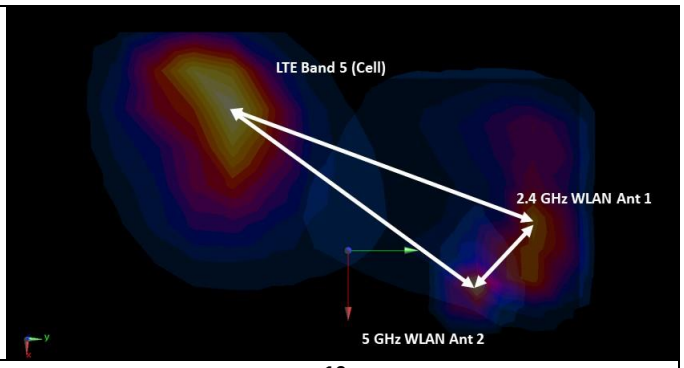
8

© 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



10

12.7.2 Hotspot Back Side SPLSR Evaluation and Analysis

Table 12-20
Peak SAR Locations for Hotspot Back Side

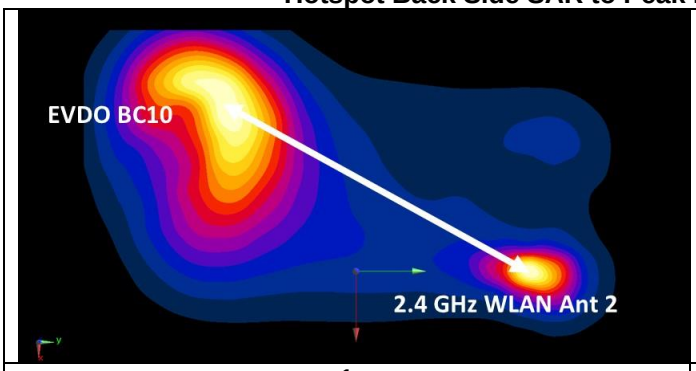
Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
2.4 GHz WLAN Ant 1	-8.80	74.60	0.275
2.4 GHz WLAN Ant 2	0.20	69.60	0.793
5 GHz WLAN Ant 2	12.00	48.00	0.491
EVDO BC10	-63.00	-45.00	0.814
EVDO BC0	-63.00	-45.00	0.944
UMTS 850	-53.50	-43.50	0.828

Table 12-21
Hotspot Back Side SAR to Peak Location Separation Ratio Calculations

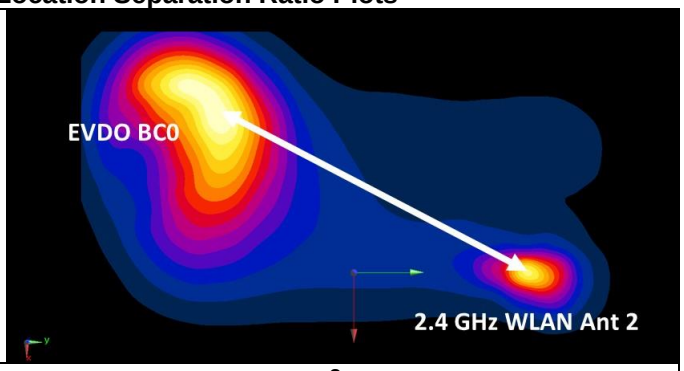
Antenna Pair		Standalone SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	D_{a-b}	$(a+b)^{1.5}/D_{a-b}$	
EVDO BC10	2.4 GHz WLAN Ant 2	0.814	0.793	1.607	130.87	0.02	1
EVDO BC0	2.4 GHz WLAN Ant 2	0.944	0.793	1.737	130.87	0.02	2
UMTS 850	2.4 GHz WLAN Ant 2	0.828	0.793	1.621	125.20	0.02	3
2.4 GHz WLAN Ant 1	5 GHz WLAN Ant 2	0.275	0.491	0.766	33.77	0.02	4
EVDO BC0	2.4 GHz WLAN Ant 1	0.944	0.275	1.219	131.31	0.01	
EVDO BC0	5 GHz WLAN Ant 2	0.944	0.491	1.435	119.47	0.01	

© 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.

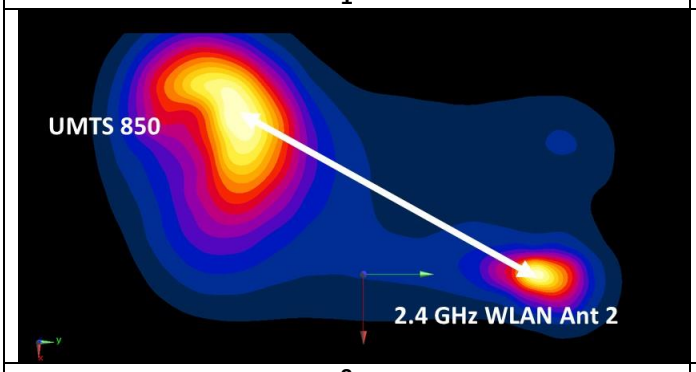
Table 12-22
Hotspot Back Side SAR to Peak Location Separation Ratio Plots



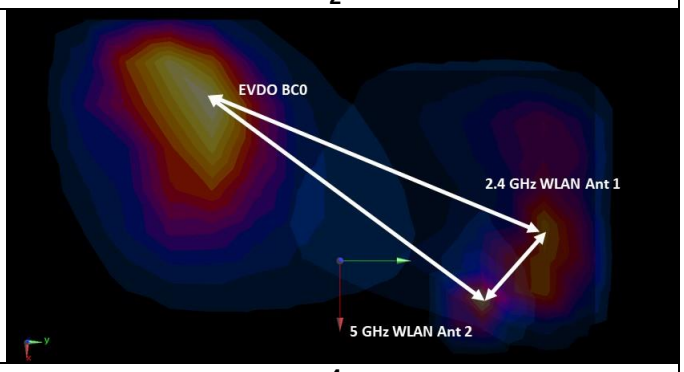
1



2



3



4

© 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.

12.7.3 Phablet Back Side SPLSR Evaluation and Analysis

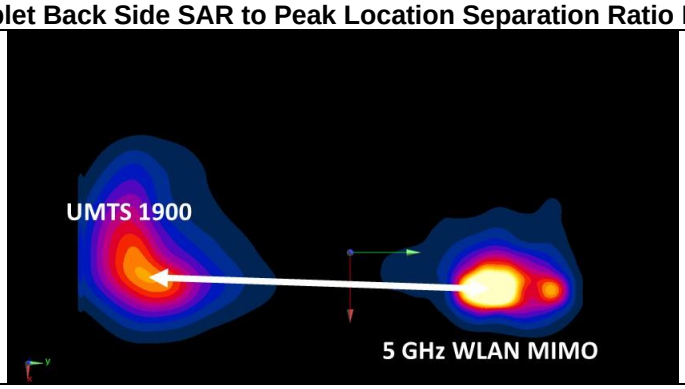
Table 12-23
Peak SAR Locations for Phablet Back Side

Mode/Band	x (mm)	y (mm)	Reported SAR (W/kg)
5 GHz WLAN MIMO	16.00	43.00	2.236
UMTS 1900	-7.50	-83.50	1.945

Table 12-24
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 WLAN MIMO	UMTS 1900	2.236	1.945	4.181	128.66	0.07	1

Table 12-25
Phablet Back Side SAR to Peak Location Separation Ratio Plots



1

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. 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 preformed 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
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	CDMA BC0 (§22H)	EVDO Rev. 0	back	10 mm	0.903	0.902	1.00	N/A	N/A	N/A	N/A
1900	1907.60	9538	UMTS 1900	RMC	bottom	10 mm	1.190	1.110	1.07	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 13-2
Phablet SAR Measurement Variability Results

PHABLET VARIABILITY RESULTS													
Band	FREQUENCY		Mode	Service	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)	
1900	1907.60	9538	UMTS 1900	RMC	bottom	0 mm	2.840	2.740	1.04	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							

© 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.

13.2 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. 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 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 14-1
LTE Band 41 Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.20	27.70
Measured Output Power (dBm)	25.14	27.62
Measured SAR (W/kg)	0.355	0.446
Measured Power (mW)	326.59	578.10
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	206.73	250.32
% deviation from expected linearity		3.76%

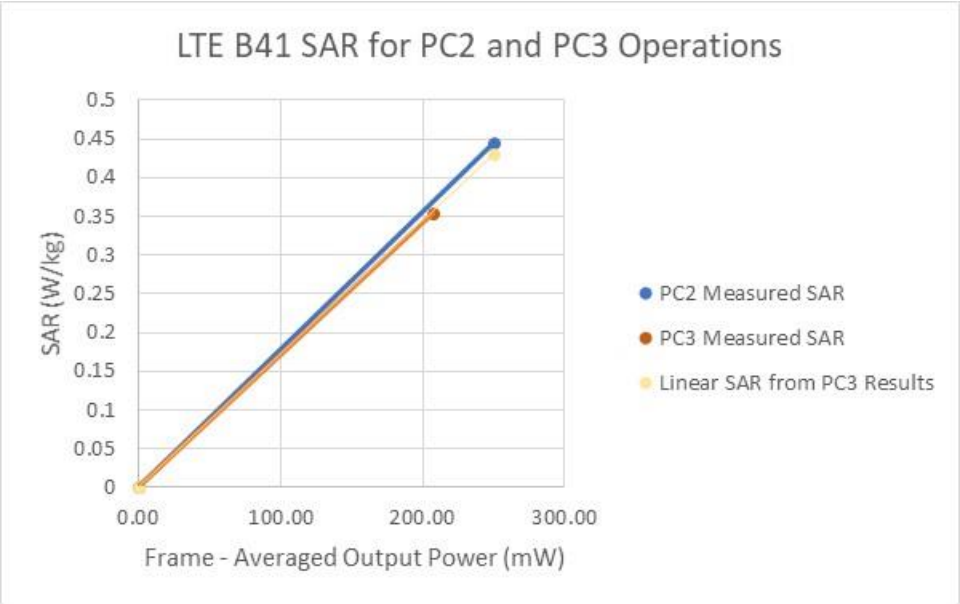


Figure 14-1
LTE Band 41 Head Linearity

© 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 14-2
LTE Band 41 Body-Worn Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.20	27.70
Measured Output Power (dBm)	25.14	27.62
Measured SAR (W/kg)	0.415	0.490
Measured Power (mW)	326.59	578.10
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	206.73	250.32
% deviation from expected linearity		-2.49%

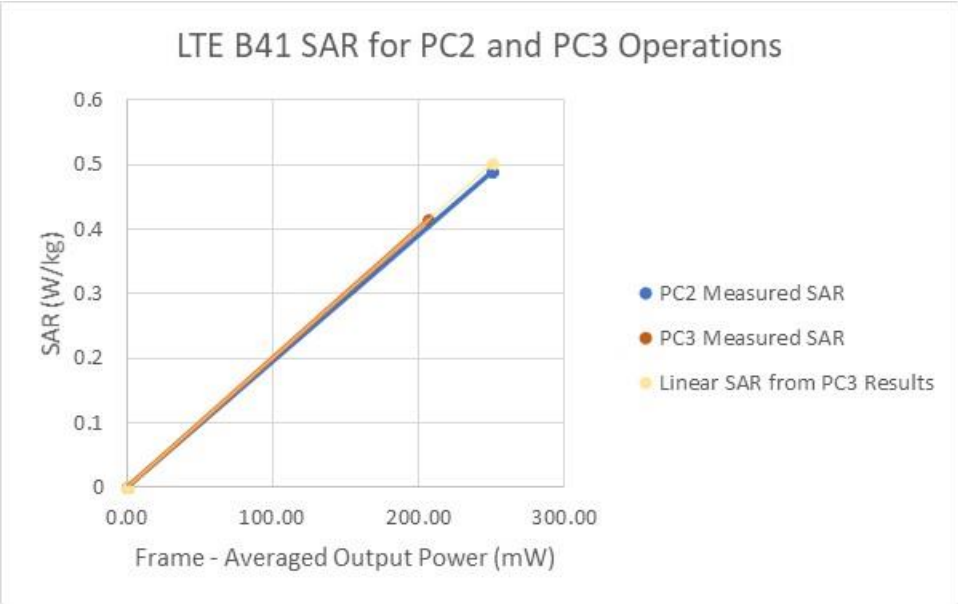


Figure 14-2
LTE Band 41 Body-Worn Linearity

© 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
LTE Band 41 Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.20	27.70
Measured Output Power (dBm)	25.14	27.62
Measured SAR (W/kg)	0.420	0.517
Measured Power (mW)	326.59	578.10
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	206.73	250.32
% deviation from expected linearity		1.66%

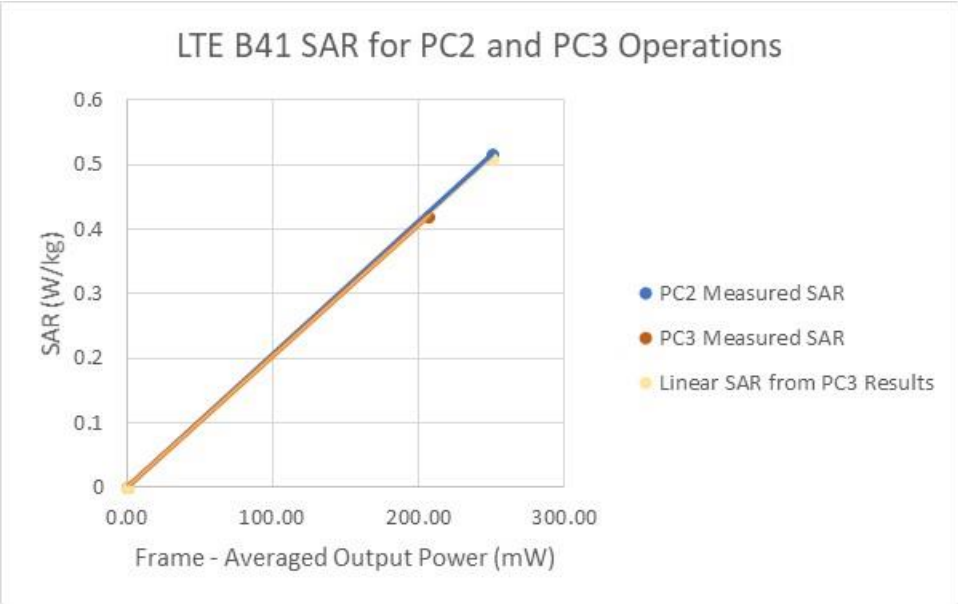


Figure 14-3
LTE Band 41 Hotspot Linearity

© 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	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
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	E4438C	ESG Vector Signal Generator	3/23/2017	Biennial	3/23/2019	MY42082659
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-506	MXG Vector Signal	6/19/2018	Annual	6/19/2019	MY48180366
Agilent	N5182A	MXG Vector Signal Generator	11/1/2017	Annual	11/1/2018	MY47420603
Agilent	N5182A	MXG Vector Signal Generator	1/24/2018	Annual	1/24/2019	MY47420651
Agilent	8753ES	Network Analyzer	2/21/2018	Annual	2/21/2019	MY40001472
Agilent	8753ES	S-Parameter Network Analyzer	9/14/2017	Annual	9/14/2018	US39170118
Agilent	8753ES	S-Parameter Network Analyzer	2/8/2018	Annual	2/8/2019	US39170122
Agilent	8753ES	S-Parameter Vector Network Analyzer	8/17/2017	Annual	8/17/2018	MY40003841
Agilent	E5515C	Wireless Communications Test Set	1/24/2018	Annual	1/24/2019	GB44400860
Agilent	E5515C	Wireless Communications Test Set	2/28/2018	Biennial	2/28/2020	GB41450275
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Amplifier Research	150A100C	Amplifier	CBT	N/A	CBT	350132
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Anritsu	ML2496A	Power Meter	10/9/2017	Annual	10/9/2018	1138001
Anritsu	ML2495A	Power Meter	10/22/2017	Annual	10/22/2018	941001
Anritsu	MA2411B	Pulse Power Sensor	11/15/2017	Annual	11/15/2018	1339007
Anritsu	MA2411B	Pulse Power Sensor	3/2/2018	Annual	3/2/2019	1207364
Anritsu	MT8821C	Radio Communication Analyzer	8/15/2017	Annual	8/15/2018	6200901190
Anritsu	MT8821C	Radio Communication Analyzer	7/25/2017	Annual	7/25/2018	6201664756
Anritsu	MT8820C	Radio Communication Analyzer	3/20/2018	Annual	3/20/2019	6201144419
Anritsu	MA24106A	USB Power Sensor	11/14/2017	Annual	11/14/2018	1344545
Anritsu	MA24106A	USB Power Sensor	11/14/2017	Annual	11/14/2018	1344559
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
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	6/4/2018	Annual	6/4/2019	MY53401181
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini Circuits	PWR-4GHS	USB Power Sensor	1/20/2018	Annual	1/20/2019	11710030063
Mini Circuits	PWR-4GHS	USB Power Sensor	1/22/2018	Annual	1/22/2019	11710030062
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
Mitutoyo	CD-6"CSX	Digital Caliper	4/18/2018	Biennial	4/18/2020	13264165
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
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	NC-100	Torque Wrench	4/18/2018	Annual	4/18/2019	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
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	1/19/2018	Annual	1/19/2019	164948
Seekonk	NC-100	Torque Wrench	4/18/2018	Biennial	4/18/2020	N/A
Seekonk	NC-100	Torque Wrench (8" lb)	8/30/2016	Biennial	8/30/2018	N/A
SPEAG	D1750V2	1750 MHz SAR Dipole	7/14/2016	Biennial	7/14/2018	1150
SPEAG	D1750V2	1750 MHz SAR Dipole	4/19/2018	Annual	4/19/2019	1051
SPEAG	D1900V2	1900 MHz SAR Dipole	7/8/2016	Triennial	7/8/2019	5d080
SPEAG	D1900V2	1900 MHz SAR Dipole	2/7/2018	Annual	2/7/2019	5d148
SPEAG	D1900V2	1900 MHz SAR Dipole	4/12/2018	Annual	4/12/2019	5d141
SPEAG	D2300V2	2300 MHz SAR Dipole	7/25/2016	Biennial	7/25/2018	1073
SPEAG	D2300V2	2300 MHz SAR Dipole	2/7/2018	Annual	2/7/2019	1008
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	8/15/2017	Annual	8/15/2018	1237
SPEAG	D5GHzV2	5 GHz SAR Dipole	9/21/2016	Biennial	9/21/2018	1191
SPEAG	D750V3	750 MHz SAR Dipole	7/13/2016	Biennial	7/13/2018	1161
SPEAG	D835V2	835 MHz SAR Dipole	7/11/2017	Biennial	7/11/2019	4d133
SPEAG	D835V2	835 MHz SAR Dipole	7/13/2016	Biennial	7/13/2018	4d047
SPEAG	D835V2	835 MHz SAR Dipole	1/15/2018	Annual	1/15/2019	4d132
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/9/2017	Annual	8/9/2018	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/9/2017	Annual	11/9/2018	1450
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2018	Annual	2/9/2019	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2018	Annual	2/15/2019	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/7/2018	Annual	3/7/2019	1368
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2018	Annual	4/11/2019	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/13/2017	Annual	7/13/2018	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	6/18/2018	Annual	6/18/2019	1334
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/22/2018	Annual	5/22/2019	859
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	EX3DV4	SAR Probe	1/16/2018	Annual	1/16/2019	3589
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	ES3DV3	SAR Probe	3/27/2018	Annual	3/27/2019	3347
SPEAG	EX3DV4	SAR Probe	4/18/2018	Annual	4/18/2019	7357
SPEAG	EX3DV4	SAR Probe	5/22/2018	Annual	5/22/2019	7406
SPEAG	EX3DV4	SAR Probe	2/14/2018	Annual	2/14/2019	3914
SPEAG	EX3DV4	SAR Probe	6/25/2018	Annual	6/25/2019	7409

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. Each equipment item was used solely within its respective calibration period.

© 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 20.11 M
06/19/2018

© 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. 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. 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. 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: ZNFV405UA; Type: Portable Handset; Serial: 00765

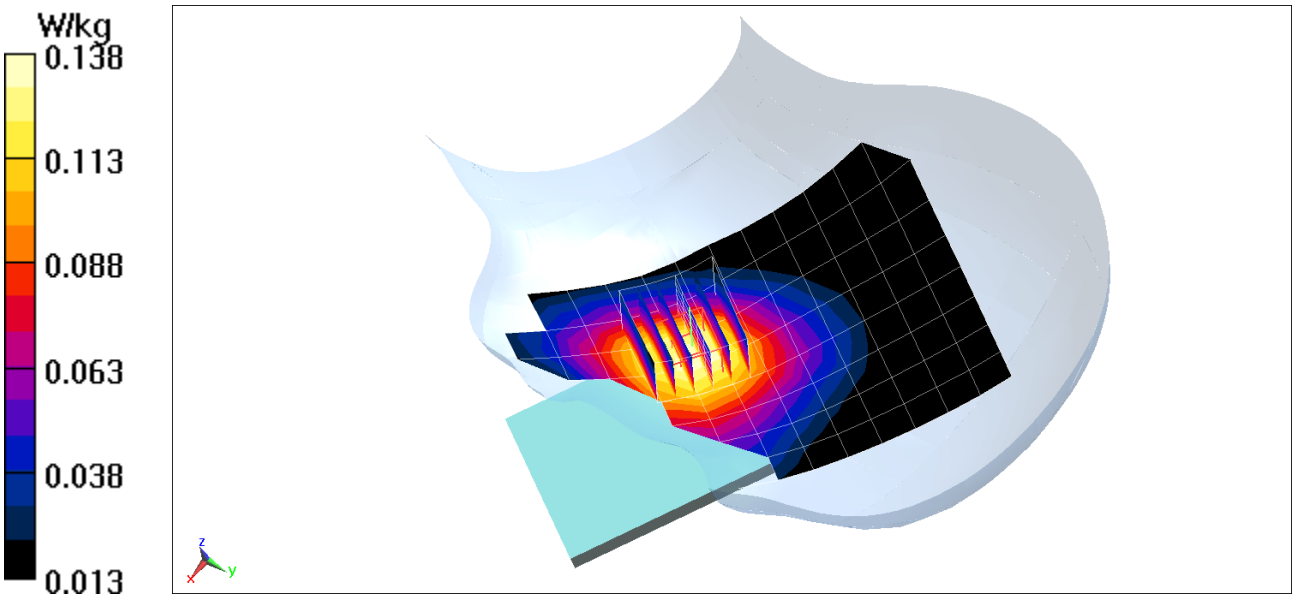
Communication System: UID 0, Cellular CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.912 S/m; ε_r = 42.855; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 07-09-2018; Ambient Temp: 20.9°C; Tissue Temp: 19.9°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 90S, Left Head, Cheek, 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 = 12.29 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.158 W/kg
SAR(1 g) = 0.129 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00765

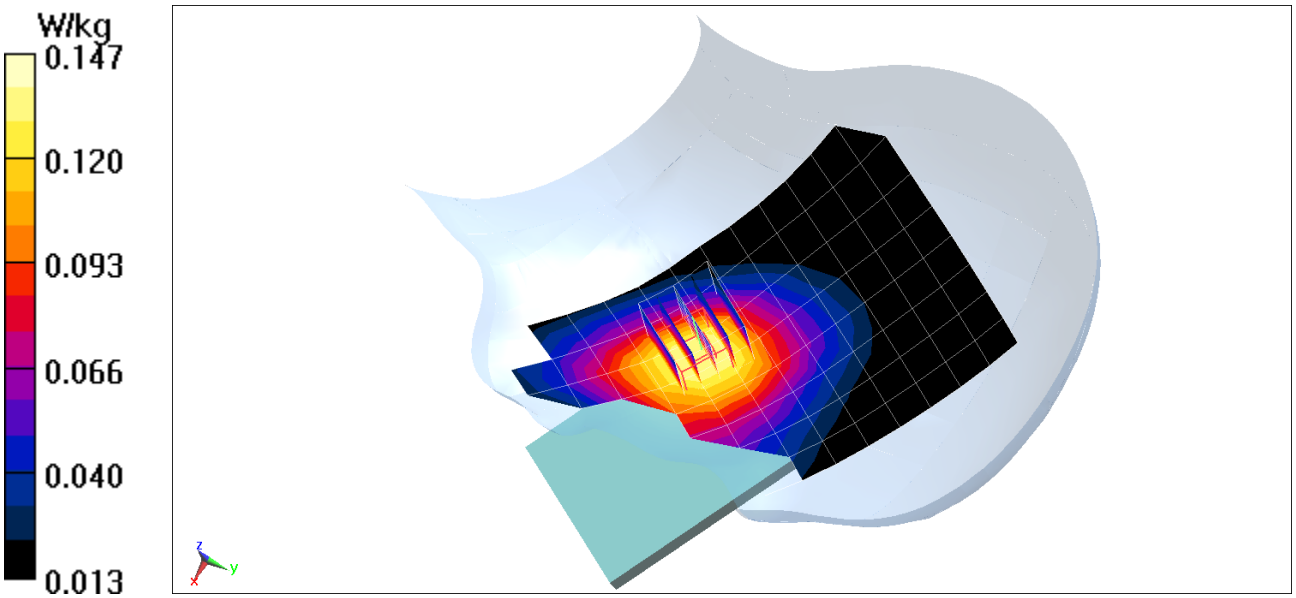
Communication System: UID 0, Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.918 S/m; ε_r = 42.809; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 07-09-2018; Ambient Temp: 20.9°C; Tissue Temp: 19.9°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, 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 = 12.53 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.168 W/kg
SAR(1 g) = 0.134 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00765

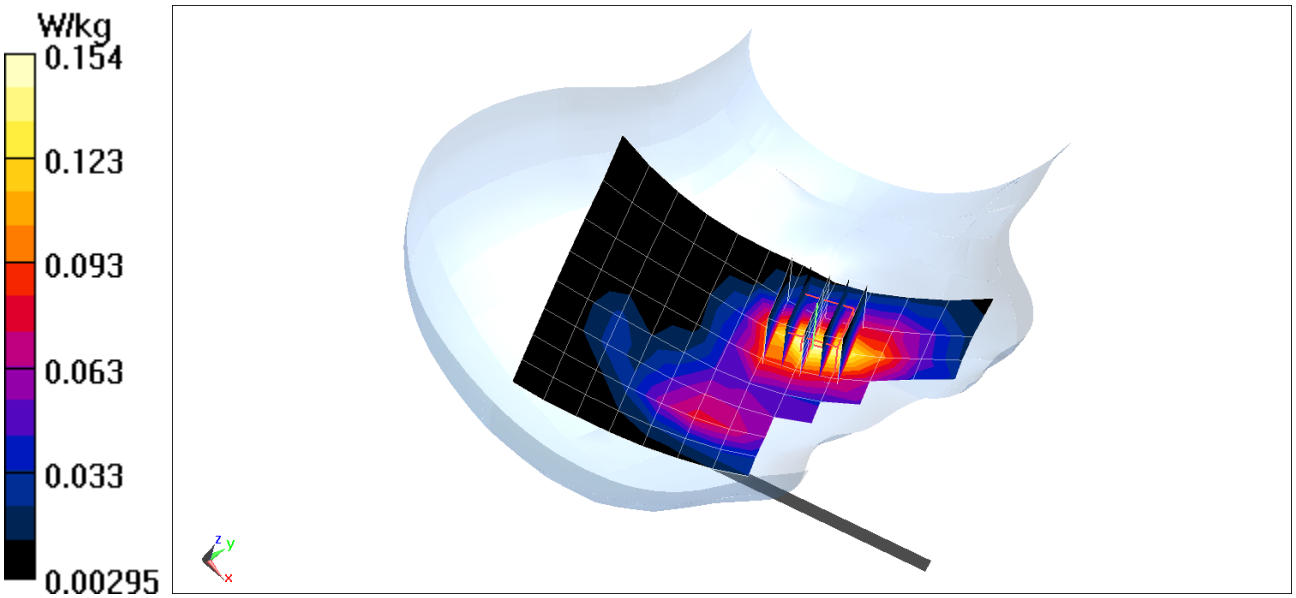
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.446 S/m; ε_r = 40.05; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-12-2018; Ambient Temp: 24.0°C; Tissue Temp: 22.8°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: PCS EVDO Rev A, Right 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 = 10.07 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.201 W/kg
SAR(1 g) = 0.131 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

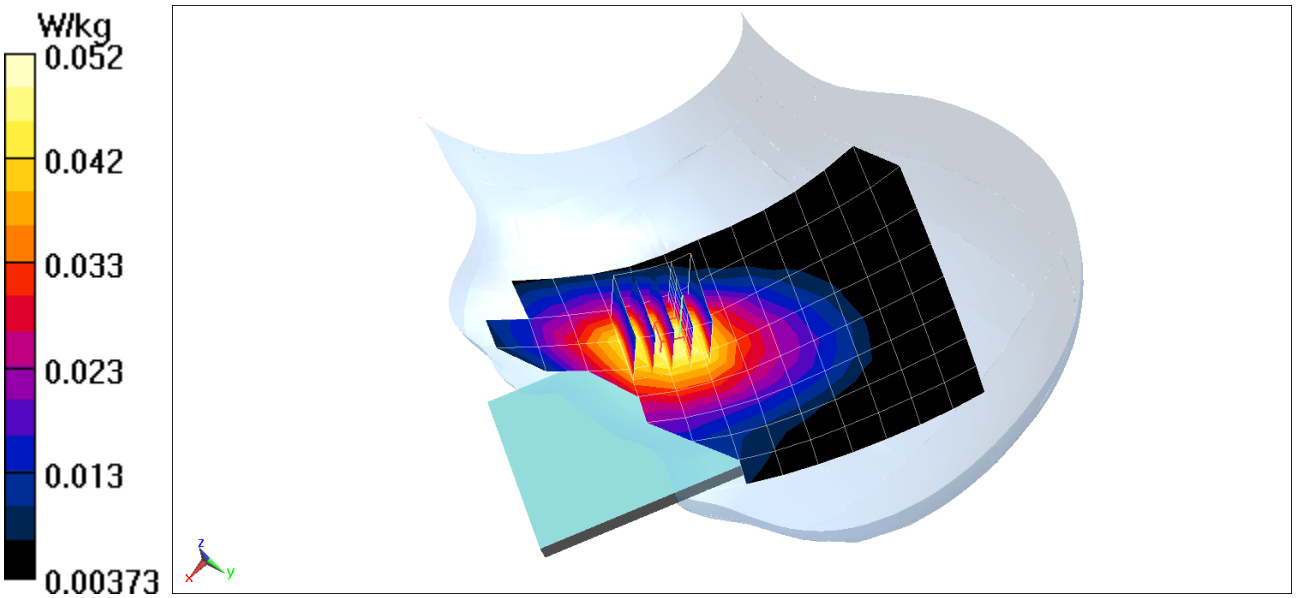
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.945 S/m; ε_r = 43.23; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-27-2018; Ambient Temp: 23.9°C; Tissue Temp: 22.2°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, 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 = 7.277 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.0610 W/kg
SAR(1 g) = 0.048 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

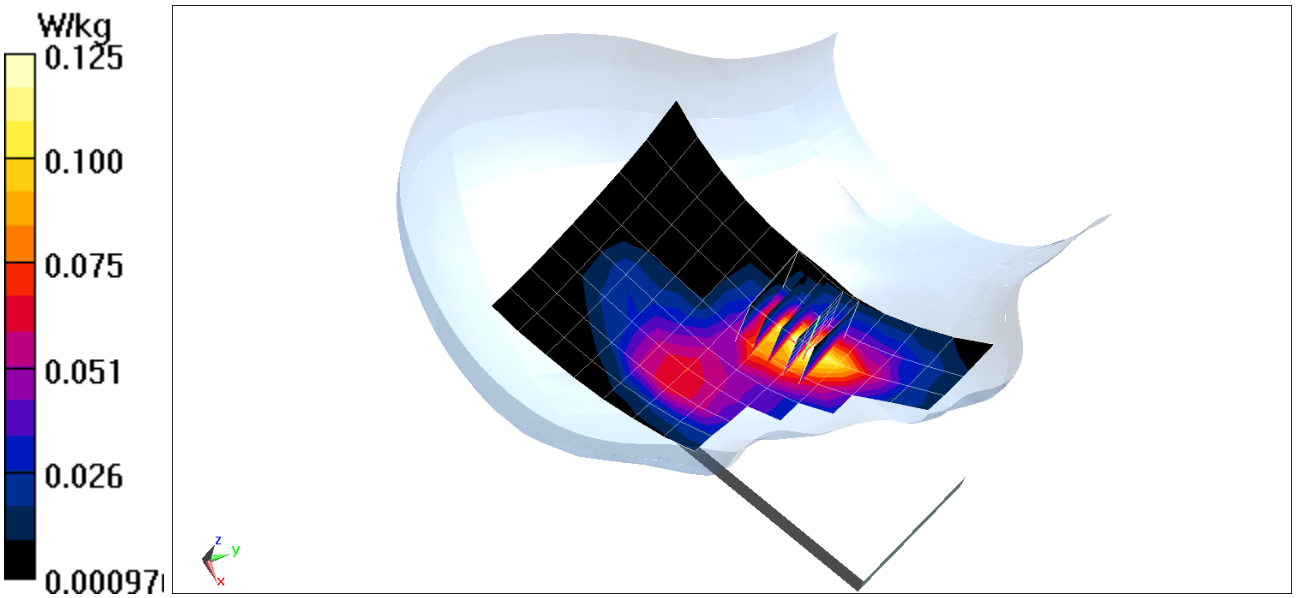
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.439 S/m; ε_r = 41.426; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-27-2018; Ambient Temp: 23.9°C; Tissue Temp: 22.2°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: GSM 1900, Right 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 = 9.101 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.166 W/kg
SAR(1 g) = 0.111 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

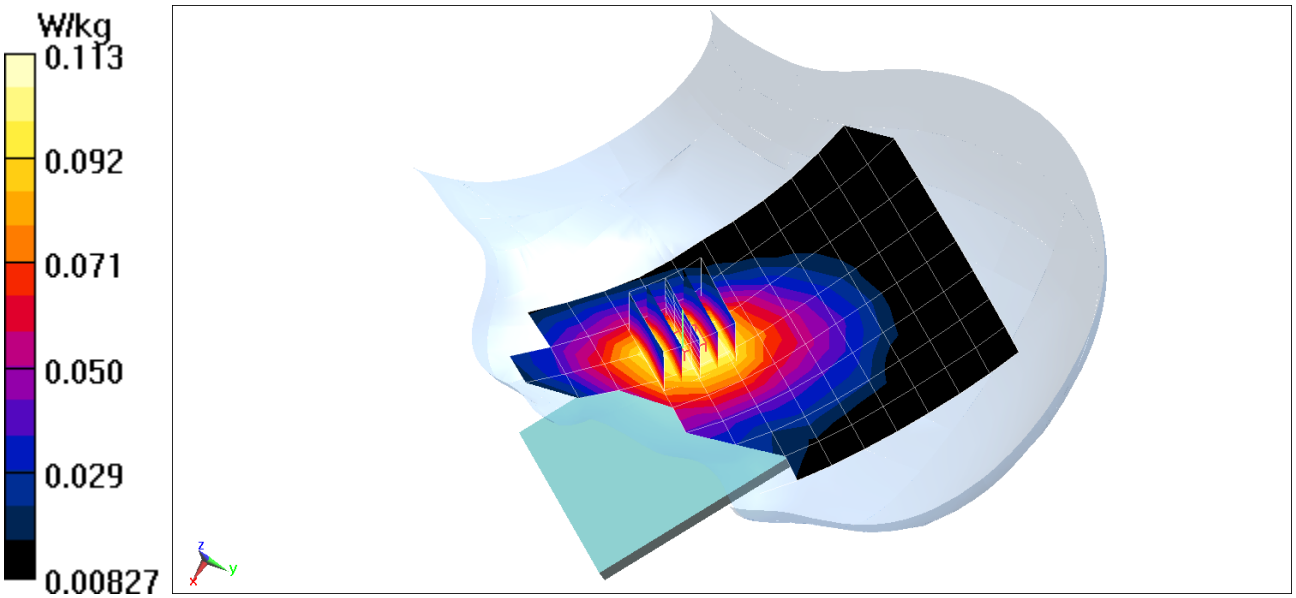
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.945 S/m; ε_r = 43.23; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-27-2018; Ambient Temp: 23.9°C; Tissue Temp: 22.2°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, 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 = 10.90 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.131 W/kg
SAR(1 g) = 0.103 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

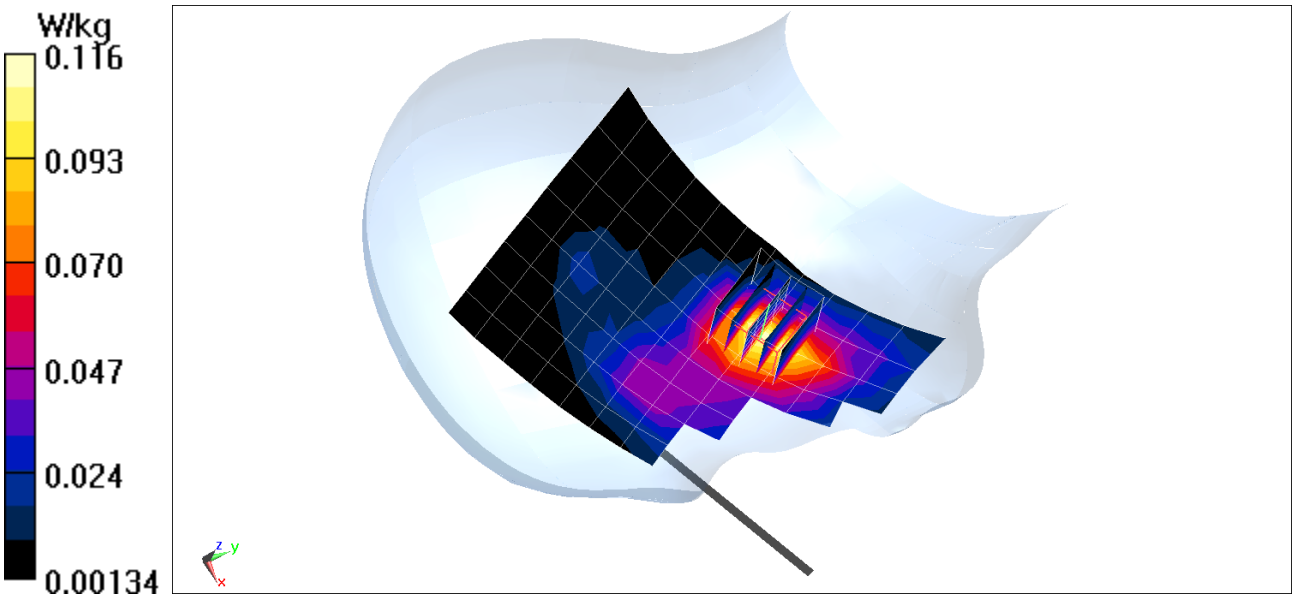
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.353 S/m; ε_r = 39.064; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-21-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(5.56, 5.56, 5.56); 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 1750, Right 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 = 9.089 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.144 W/kg
SAR(1 g) = 0.102 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

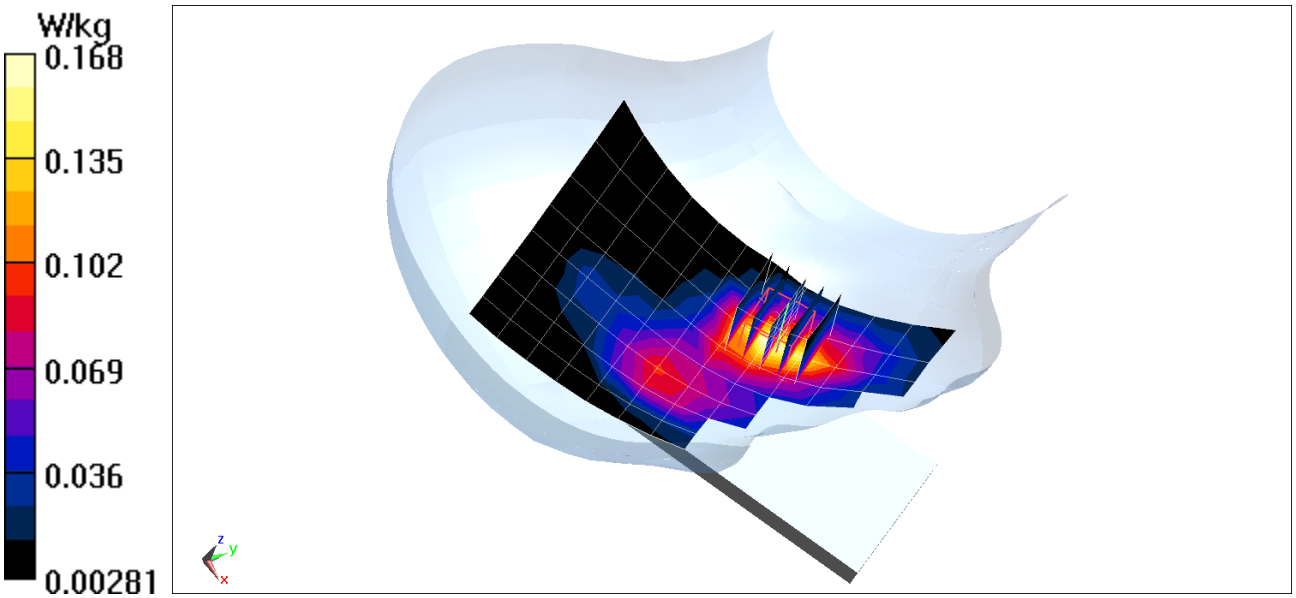
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.44 S/m; ε_r = 41.774; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°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: UMTS 1900, Right 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 = 10.66 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.226 W/kg
SAR(1 g) = 0.151 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

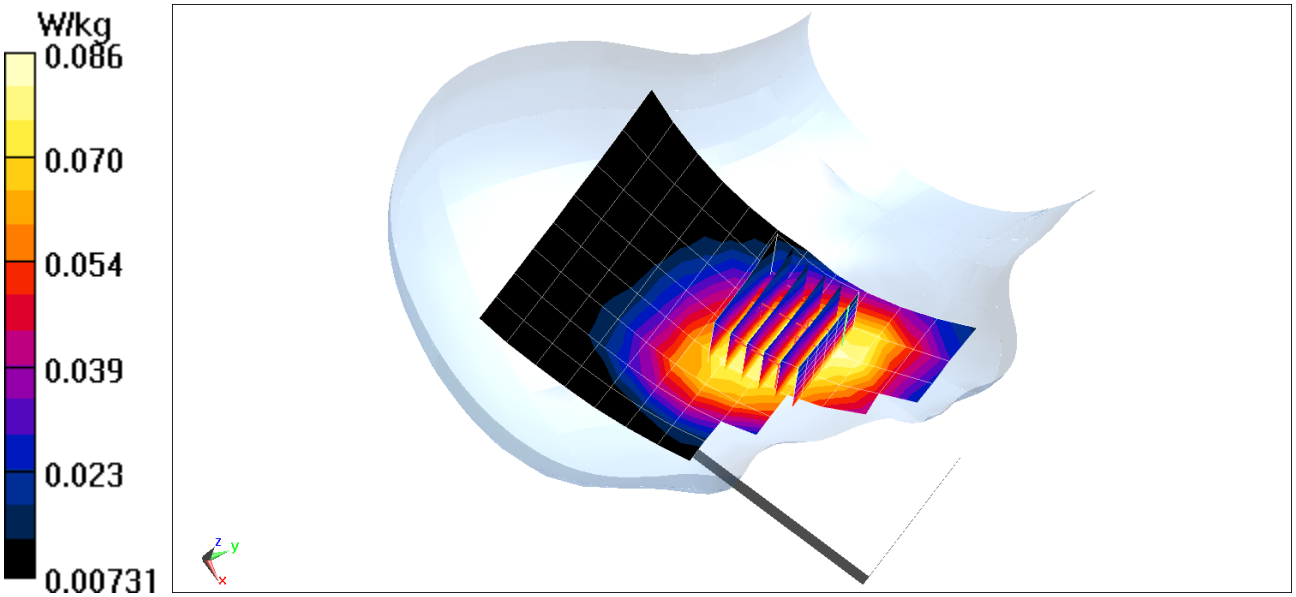
Communication System: UID 0, LTE Band 71; Frequency: 680.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 680.5 MHz; σ = 0.905 S/m; ε_r = 43.87; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°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 71, Right Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.980 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.101 W/kg
SAR(1 g) = 0.077 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

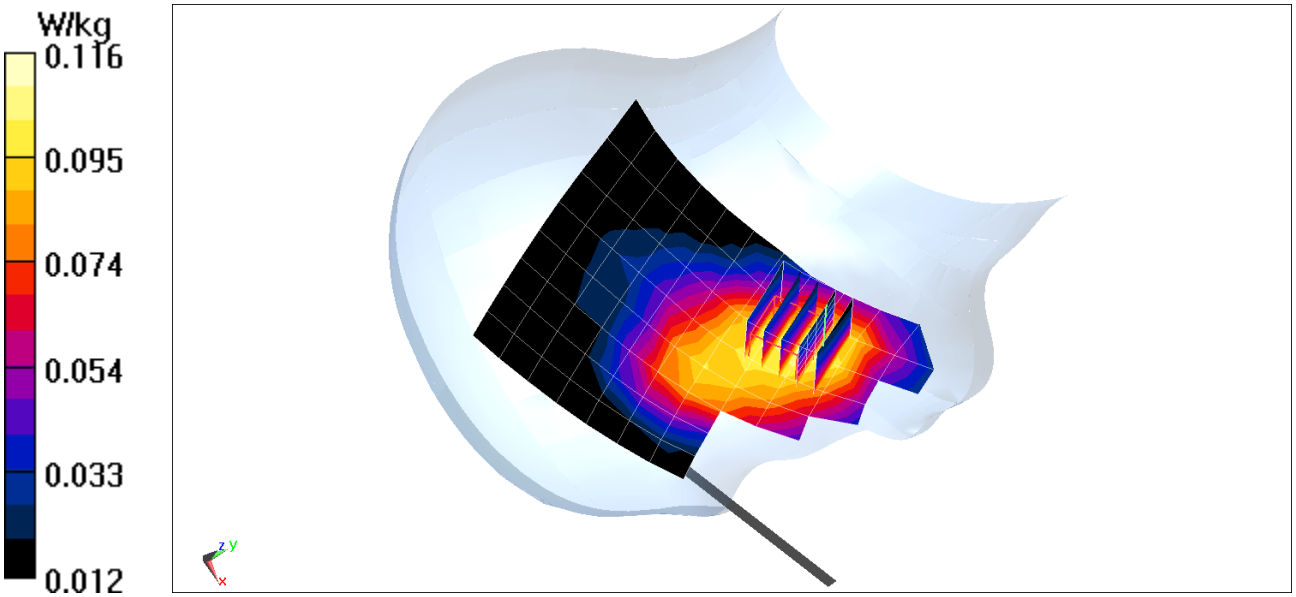
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.914 S/m; ε_r = 43.828; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°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 = 11.41 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.142 W/kg
SAR(1 g) = 0.103 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

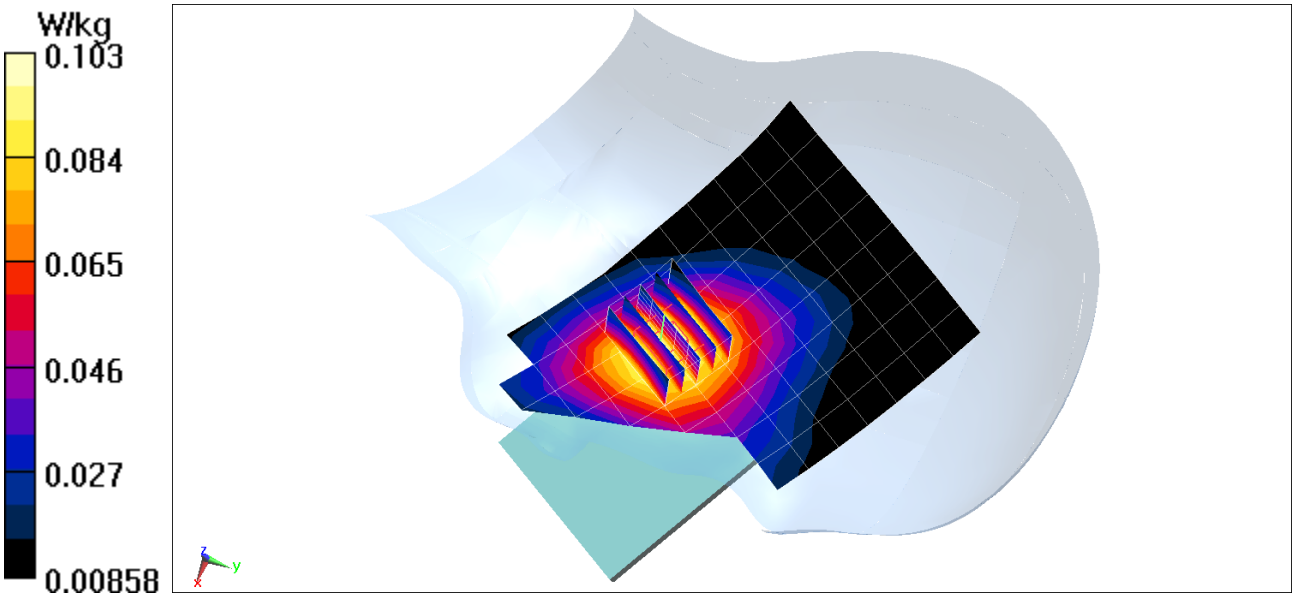
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.939 S/m; ε_r = 43.624; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°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, Left Head, Cheek, Mid.ch, QPSK,
10 MHz Bandwidth, 1 RB, 49 RB Offset

Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.83 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.119 W/kg
SAR(1 g) = 0.095 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

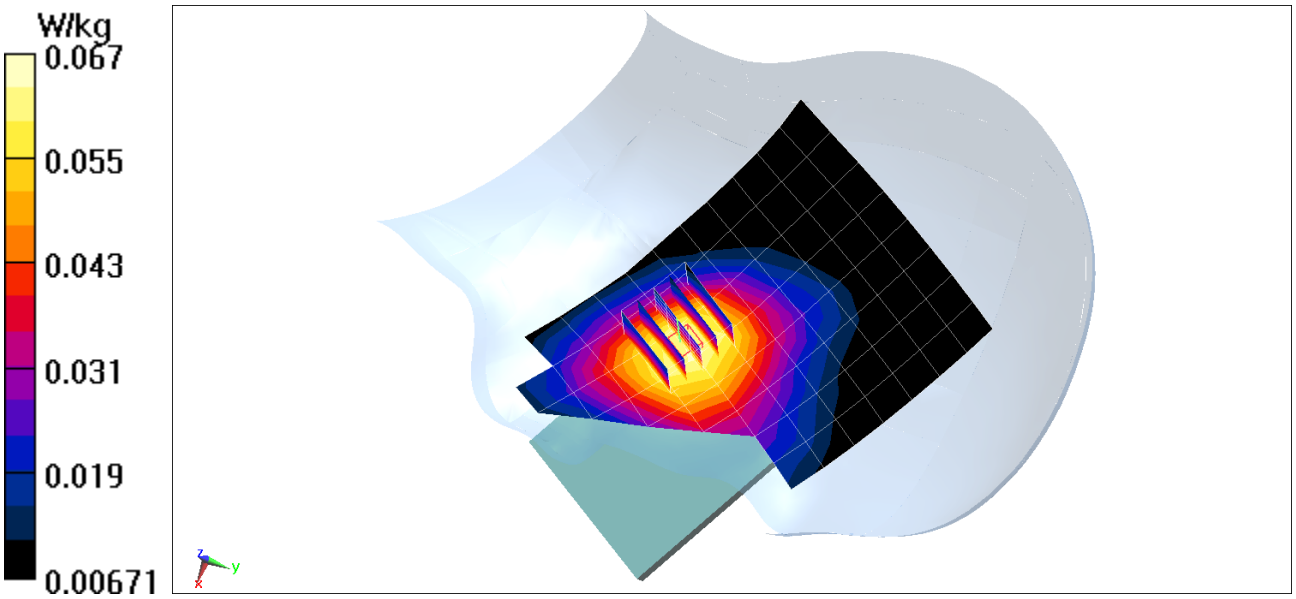
Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 793 MHz; σ = 0.937 S/m; ε_r = 42.896; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 06-30-2018; Ambient Temp: 24.5°C; Tissue Temp: 23.0°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 14, Left Head, Cheek, Mid.ch, QPSK,
10 MHz Bandwidth, 1 RB, 25 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 = 8.747 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.0770 W/kg
SAR(1 g) = 0.063 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

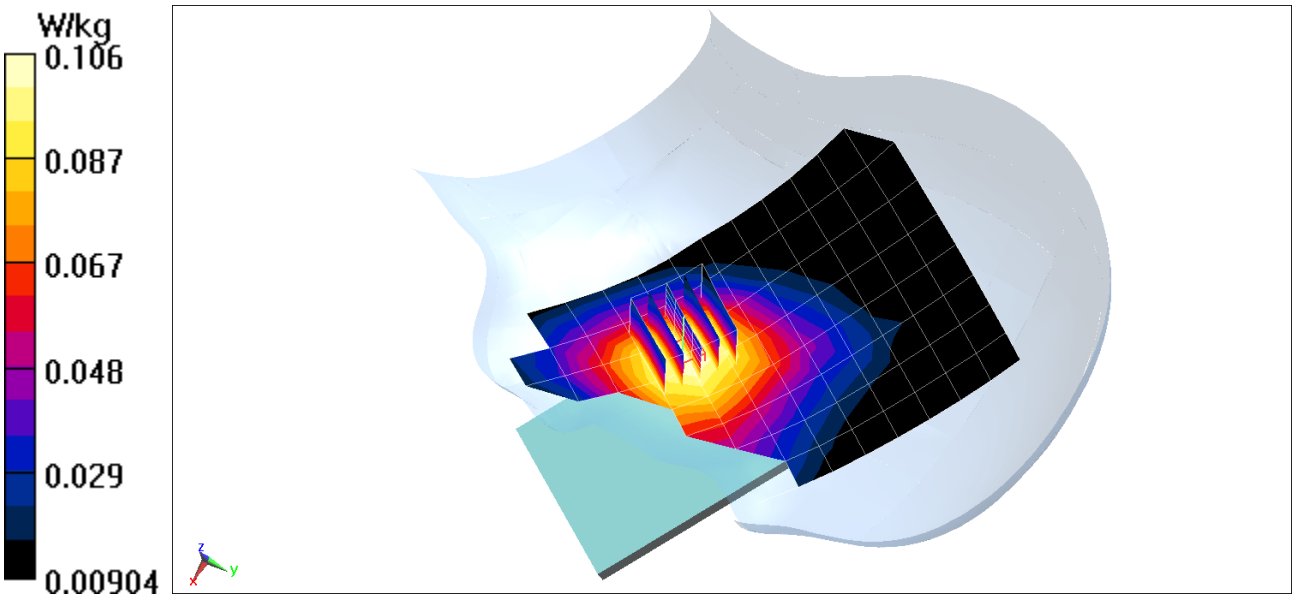
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.5 MHz; σ = 0.918 S/m; ε_r = 42.809; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 07-09-2018; Ambient Temp: 20.9°C; Tissue Temp: 19.9°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.), Left 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 = 11.10 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.121 W/kg
SAR(1 g) = 0.099 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

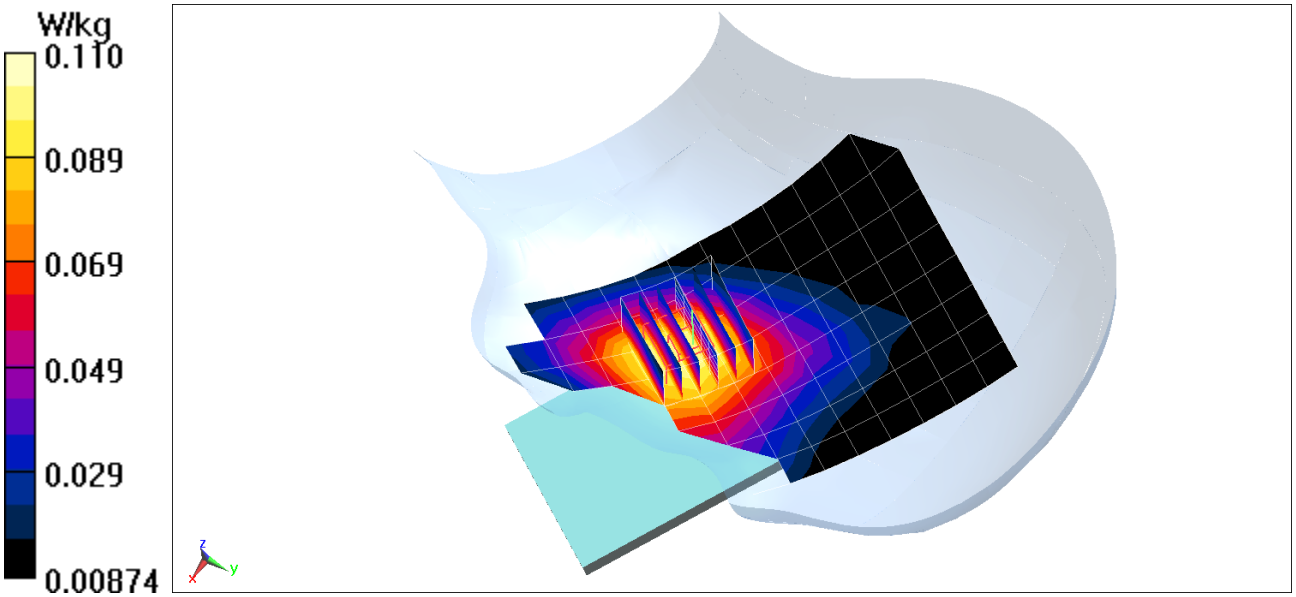
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.916 S/m; ε_r = 42.823; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 07-09-2018; Ambient Temp: 20.9°C; Tissue Temp: 19.9°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.), Left Head, Cheek, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.19 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.126 W/kg
SAR(1 g) = 0.100 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

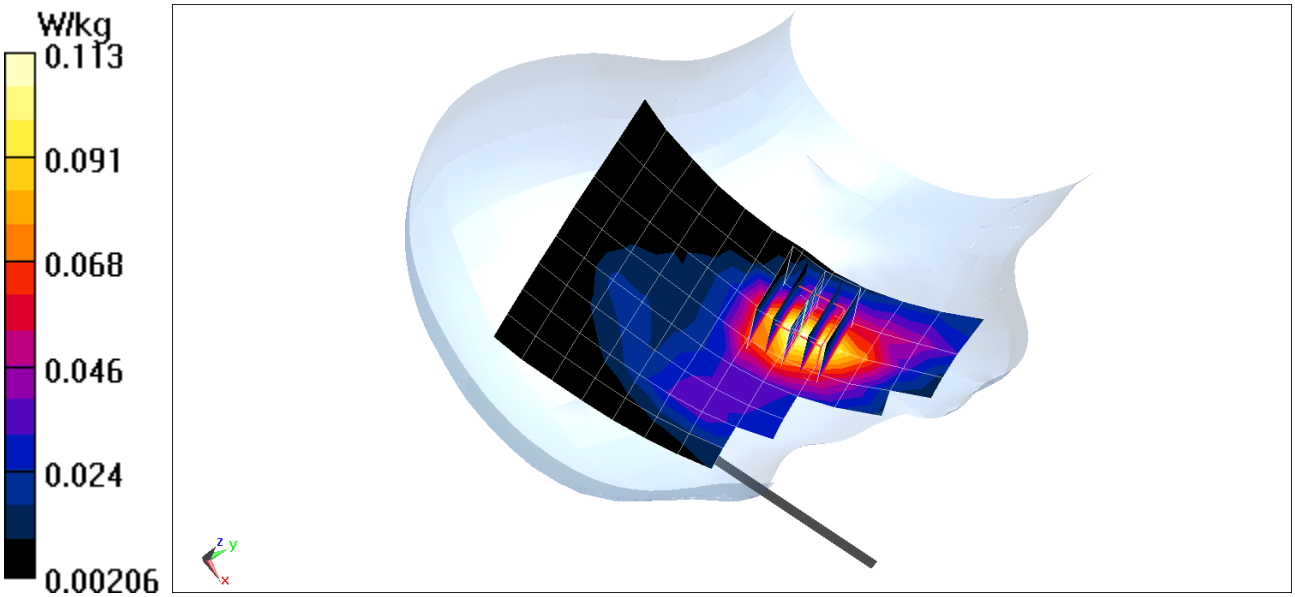
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.366 S/m; ε_r = 39.008; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-21-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(5.56, 5.56, 5.56); 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 66 (AWS), Right 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 = 9.276 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.143 W/kg
SAR(1 g) = 0.100 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

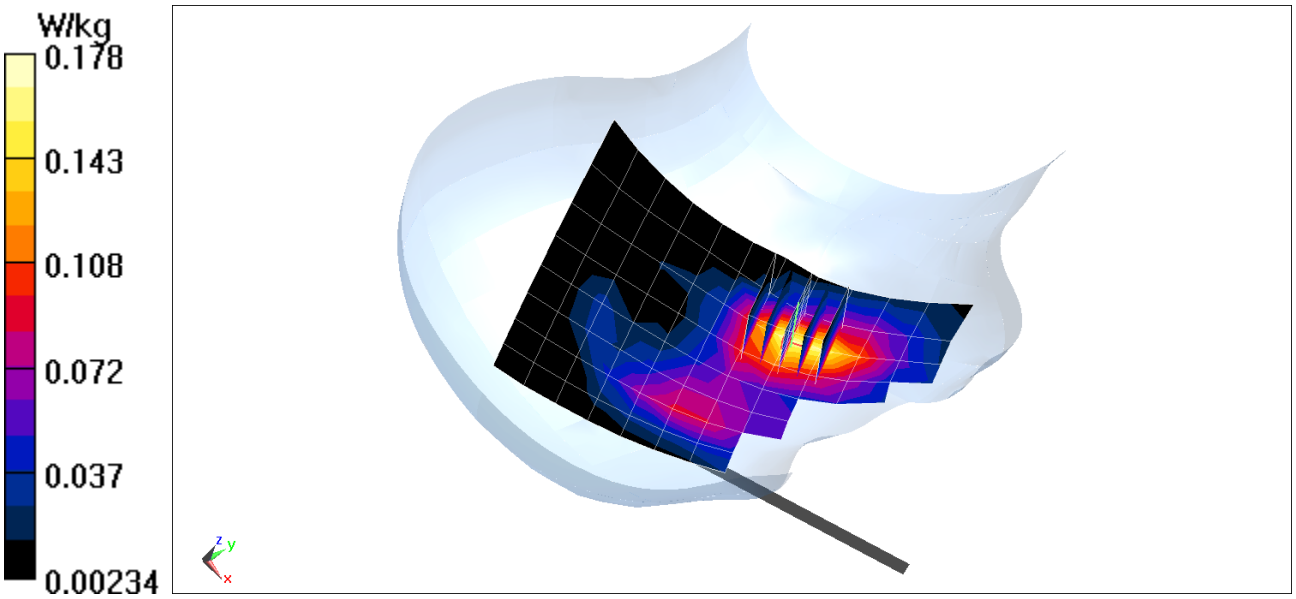
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.457 S/m; ε_r = 41.752; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°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), Right Head, Cheek, High.ch,
20 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 = 11.30 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.234 W/kg
SAR(1 g) = 0.152 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00732

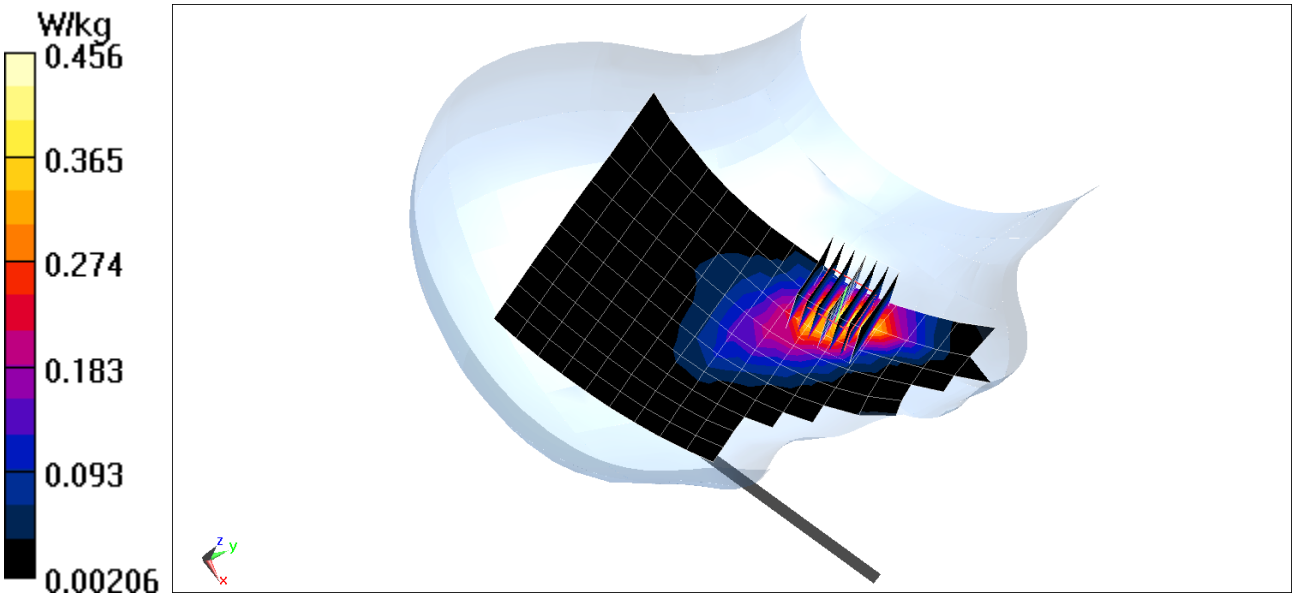
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2310 MHz; σ = 1.706 S/m; ε_r = 39.048; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-09-2018; Ambient Temp: 22.0°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3332; ConvF(4.99, 4.99, 4.99); 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 30, Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.87 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.651 W/kg
SAR(1 g) = 0.365 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00732

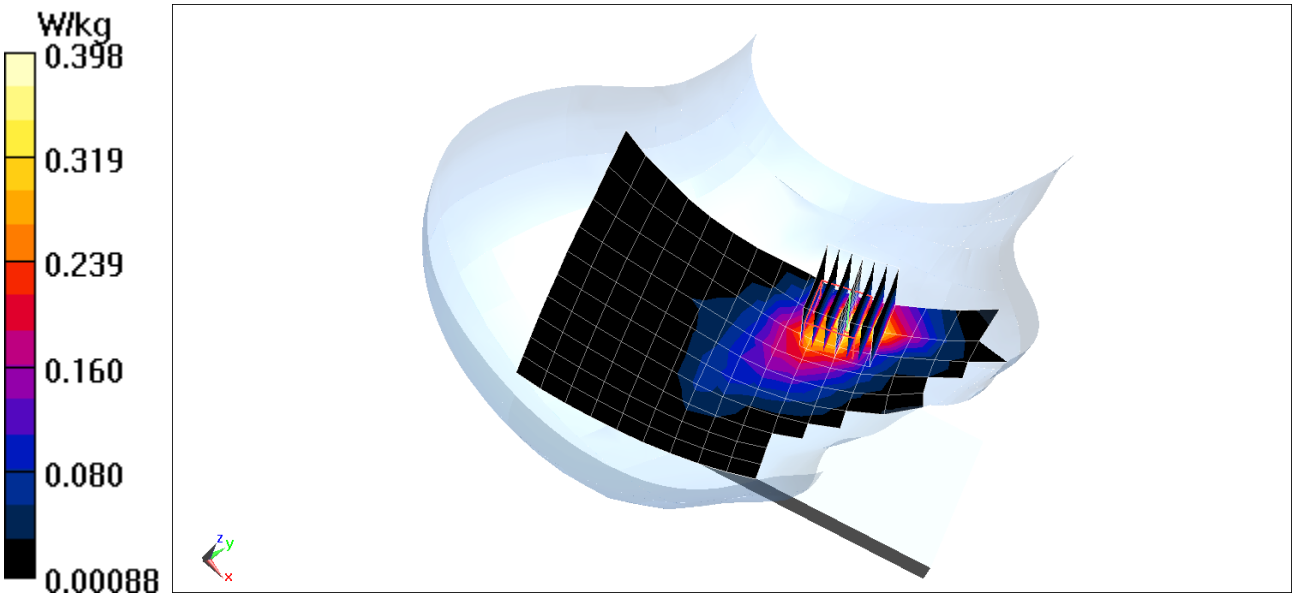
Communication System: UID 0, _LTE Band 7; Frequency: 2535 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2535 MHz; σ = 1.954 S/m; ε_r = 38.18; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-09-2018; Ambient Temp: 22.0°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); 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 7, Right Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.73 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.619 W/kg
SAR(1 g) = 0.308 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00732

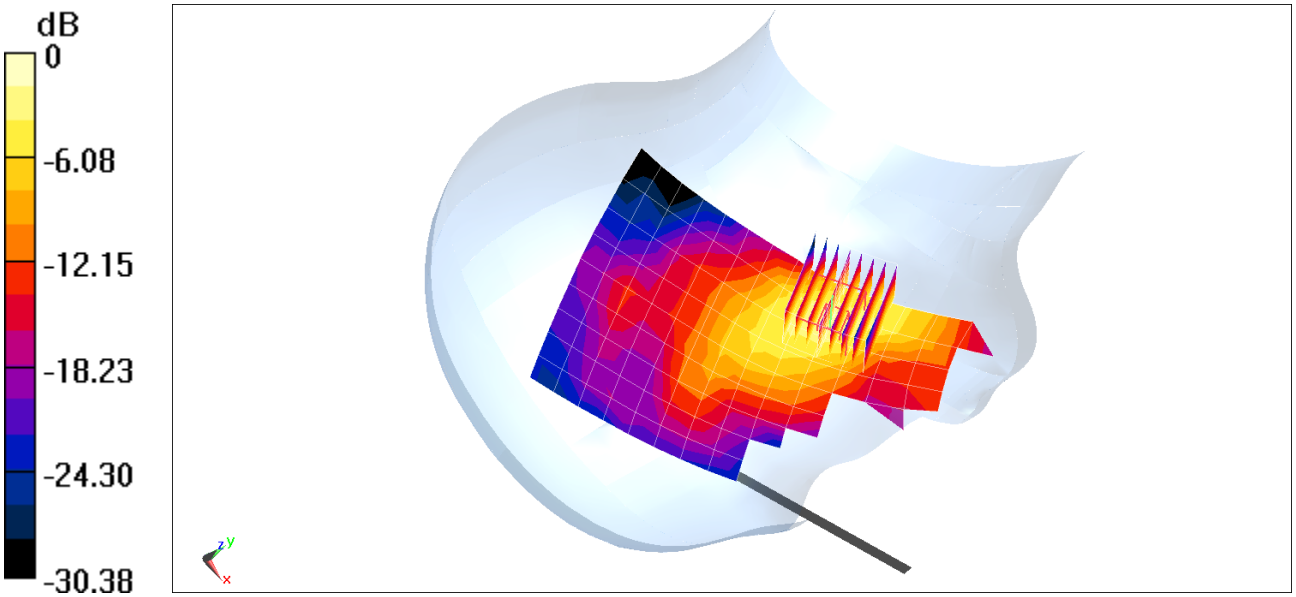
Communication System: UID 0, LTE Band 41 (Class 2); Frequency: 2593 MHz; Duty Cycle: 1:2.31
Medium: 2450 Head Medium parameters used (interpolated):
f = 2593 MHz; σ = 2.017 S/m; ε_r = 37.932; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-09-2018; Ambient Temp: 22.0°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); 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 41 PC2, Right Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 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 = 16.93 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.902 W/kg
SAR(1 g) = 0.446 W/kg



0 dB = 0.564 W/kg = -2.49 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00914

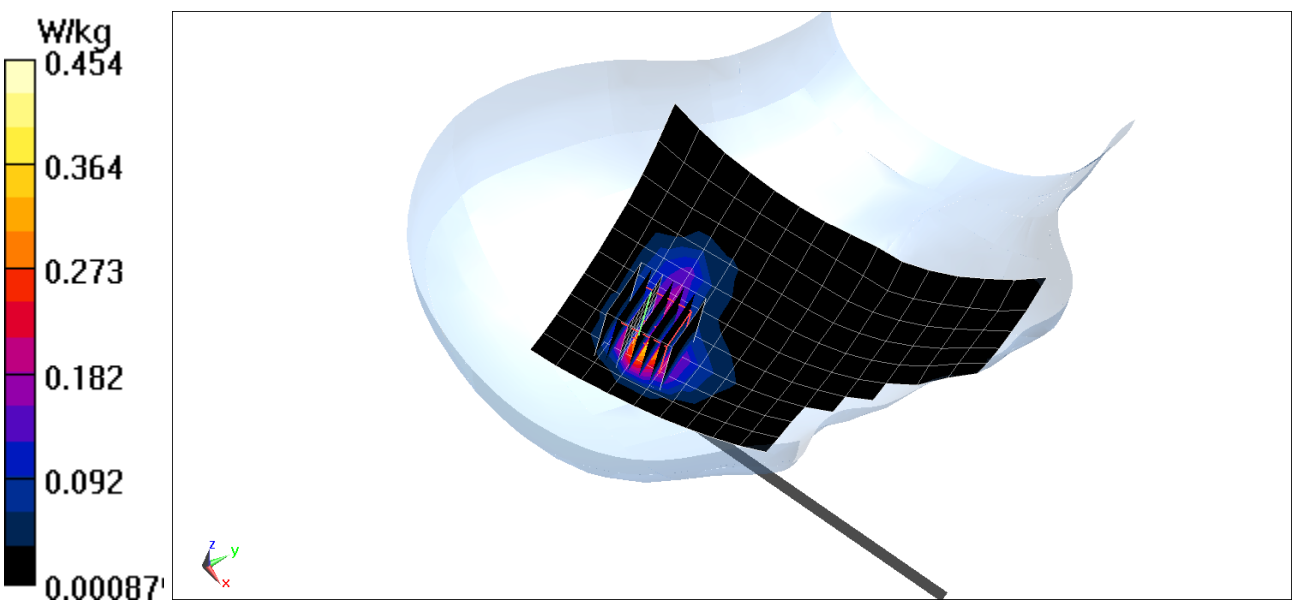
Communication System: UID 0, _IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.87 S/m; ε_r = 38.444; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-09-2018; Ambient Temp: 22.0°C; Tissue Temp: 21.4°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, Tilt, Ch 11, 1 Mbps, Ant 1

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.264 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.875 W/kg
SAR(1 g) = 0.332 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00906

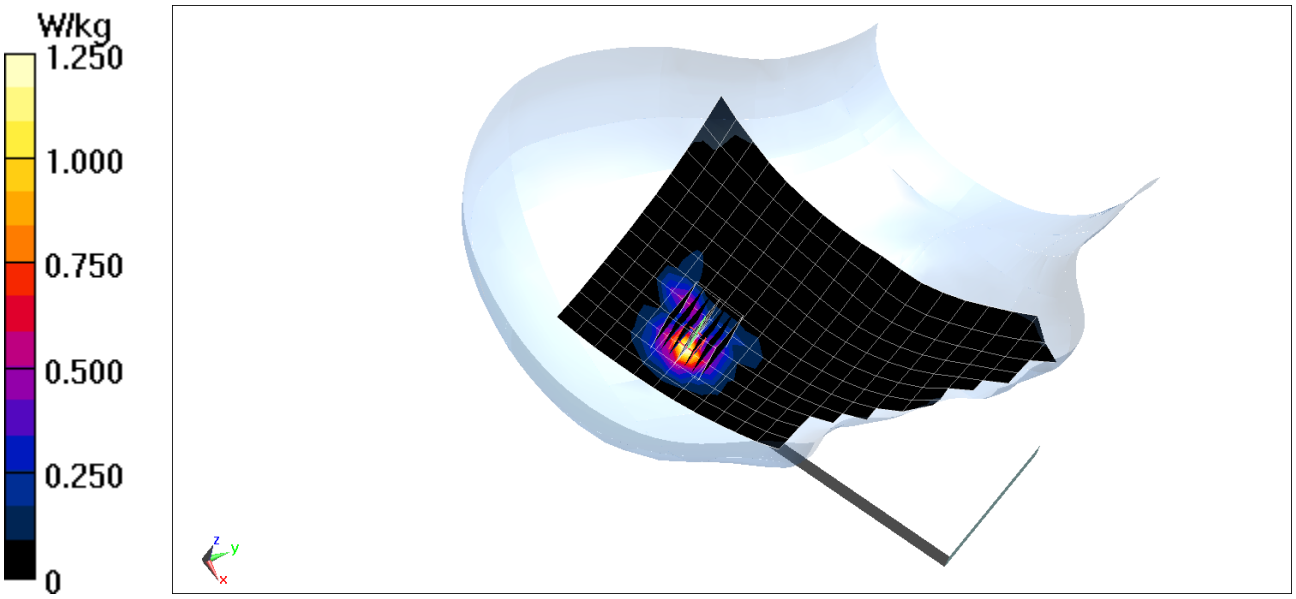
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used:
f = 5785 MHz; σ = 5.067 S/m; ε_r = 34.639; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-02-2018; Ambient Temp: 21.3°C; Tissue Temp: 20.4°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 802.11a, U-NII-3, 20 MHz Bandwidth,
Right Head, Cheek, Ch 157, 6 Mbps, Ant 2

Area Scan (13x22x1): 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 = 4.171 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 3.26 W/kg
SAR(1 g) = 0.508 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00898

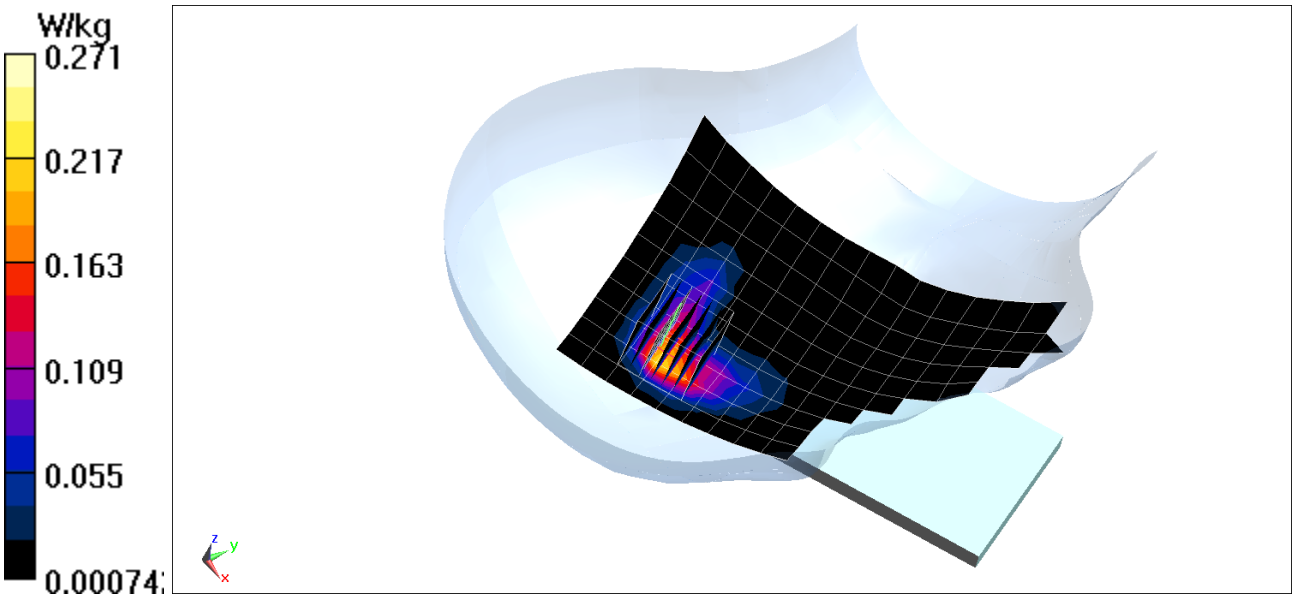
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Head Medium parameters used (interpolated):
f = 2480 MHz; σ = 1.879 S/m; ε_r = 37.83; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 07-11-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.4°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: Bluetooth, Right Head, Cheek, Ch 78, 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 = 10.70 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.469 W/kg
SAR(1 g) = 0.191 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00765

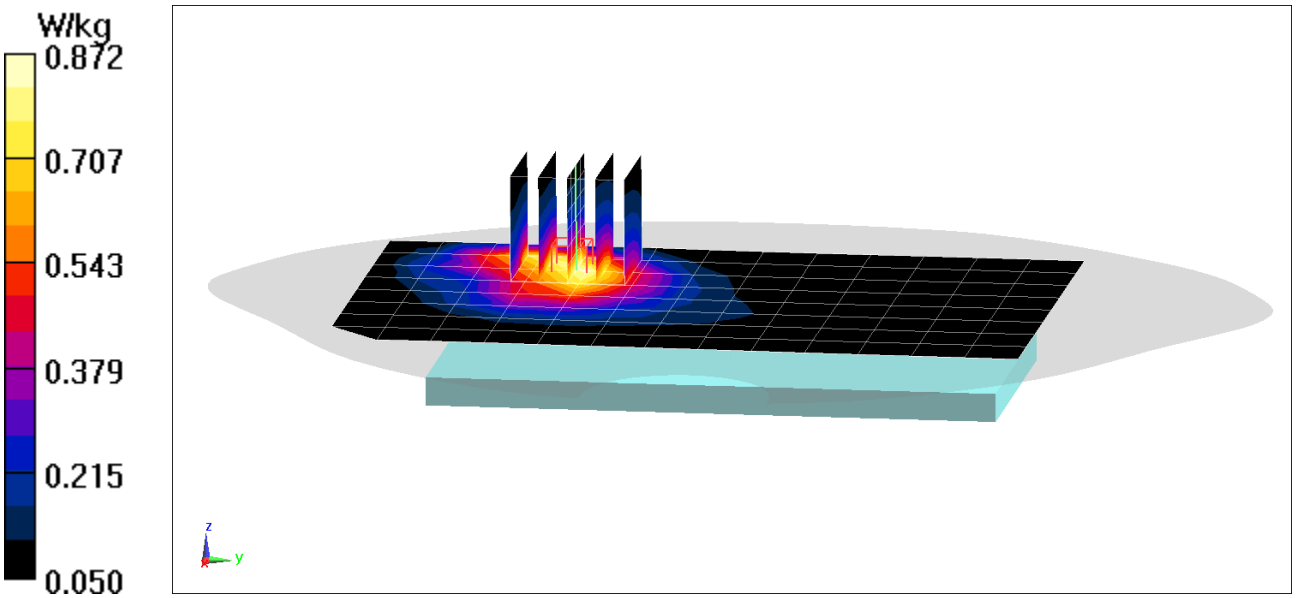
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.995 S/m; ε_r = 53.672; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.5°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: Cell. CDMA, Rule Part 90S, 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 = 28.33 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.750 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00765

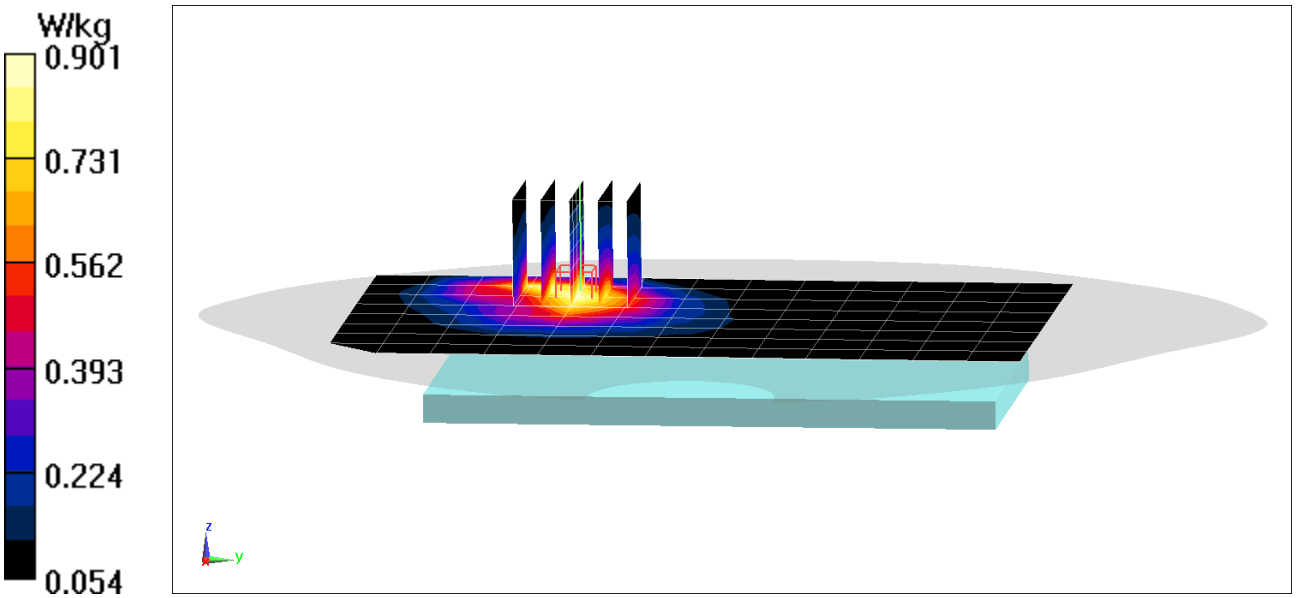
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.995 S/m; ε_r = 53.672; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.5°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: Cell. EVDO Rev.0, Rule Part 90S, 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 = 28.98 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.774 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00765

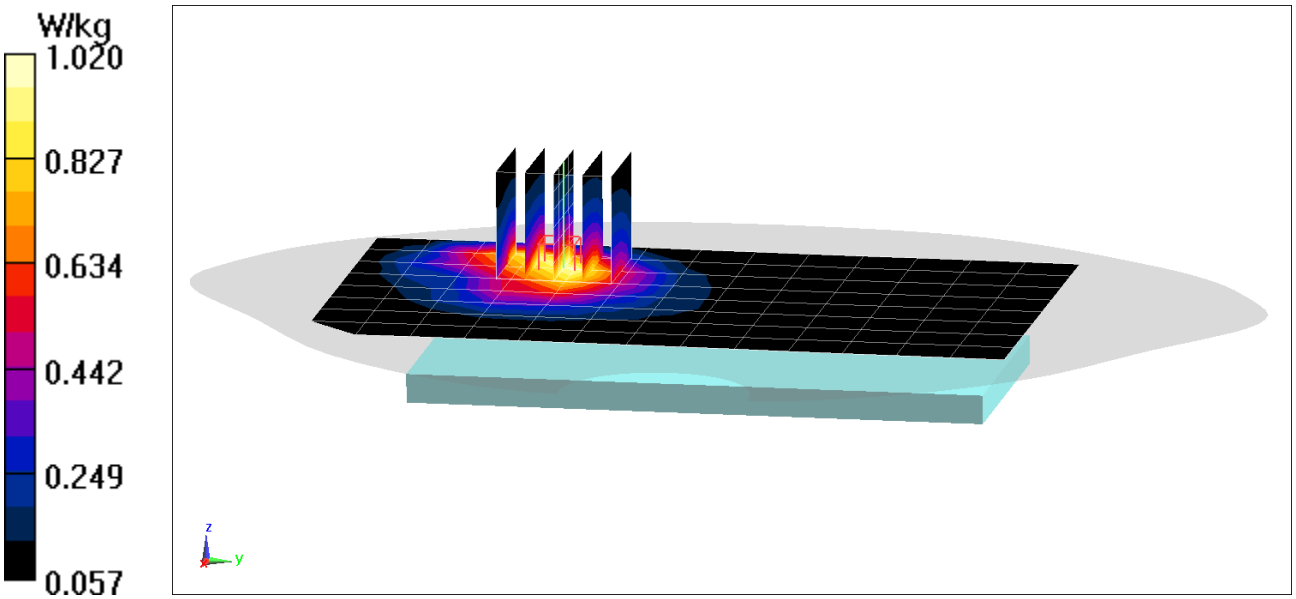
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 1.002 S/m; ε_r = 53.529; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.5°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: Cell. CDMA, Rule Part 22H, 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 = 30.89 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.40 W/kg
SAR(1 g) = 0.879 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00765

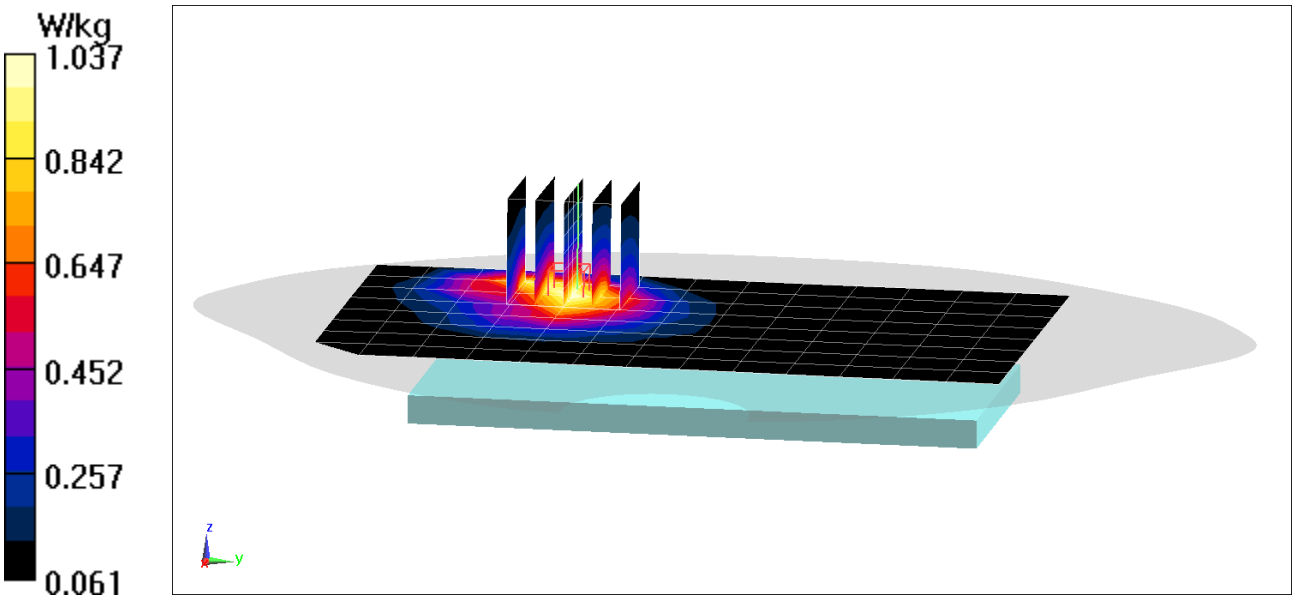
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 1.002 S/m; ε_r = 53.529; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.5°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: Cell. EVDO Rev.0, Rule Part 22H, 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 = 31.19 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 0.903 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00765

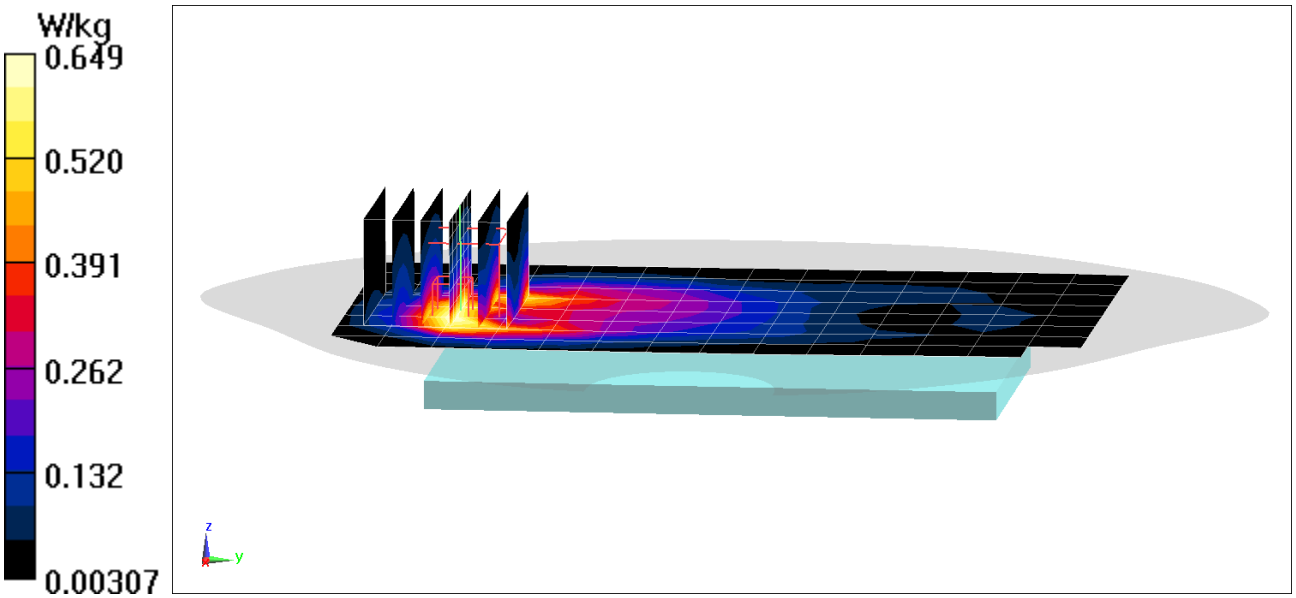
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.553 S/m; ε_r = 51.643; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-28-2018; Ambient Temp: 22.6°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: PCS CDMA, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.22 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.784 W/kg
SAR(1 g) = 0.447 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00765

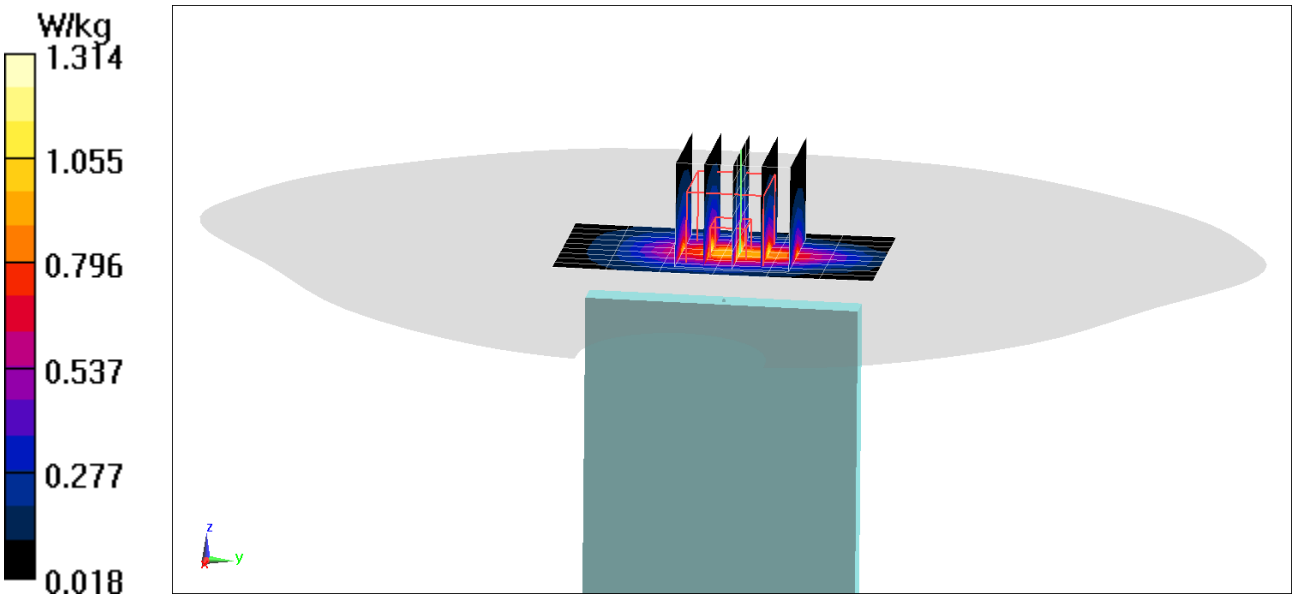
Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1908.75 MHz; σ = 1.585 S/m; ε_r = 51.542; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-28-2018; Ambient Temp: 22.6°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: PCS EVDO Rev.0, Body SAR, Bottom Edge, High.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 = 24.72 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 0.886 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

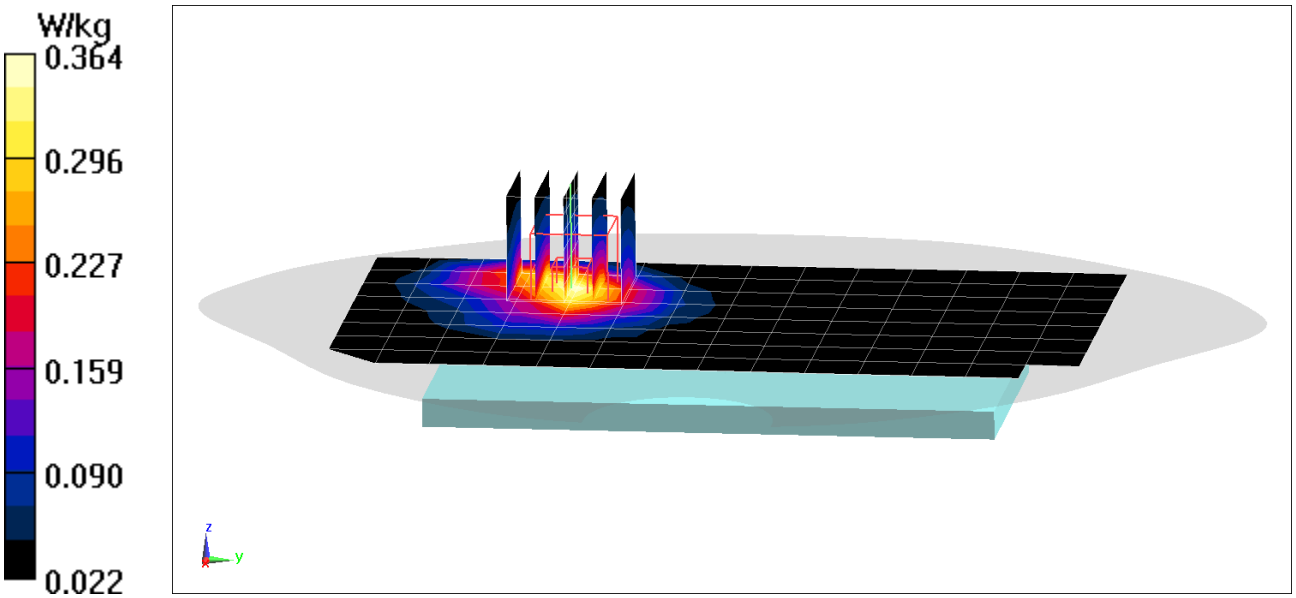
Communication System: UID 0, GSM GPRS; 1 Tx slot; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 1.002 S/m; ε_r = 53.529; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.5°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: GPRS 850, Body SAR, Back side, Mid.ch, 1 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 = 18.54 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.479 W/kg
SAR(1 g) = 0.312 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

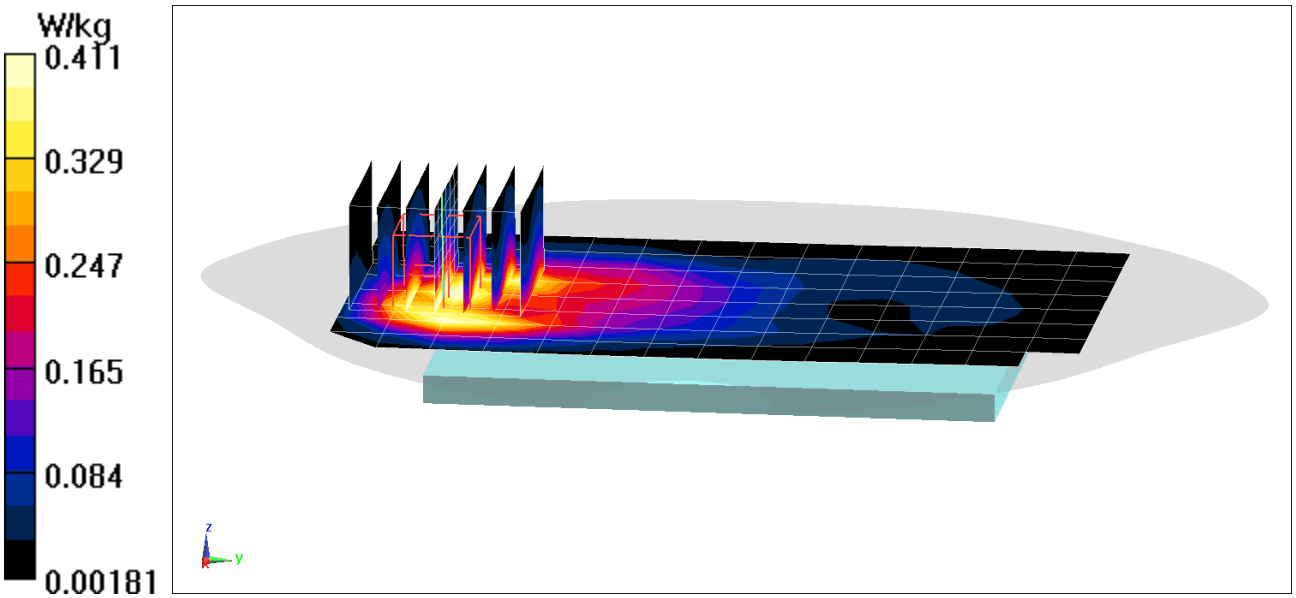
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.535 S/m; ε_r = 51.307; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: GSM 1900, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.49 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.612 W/kg
SAR(1 g) = 0.351 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

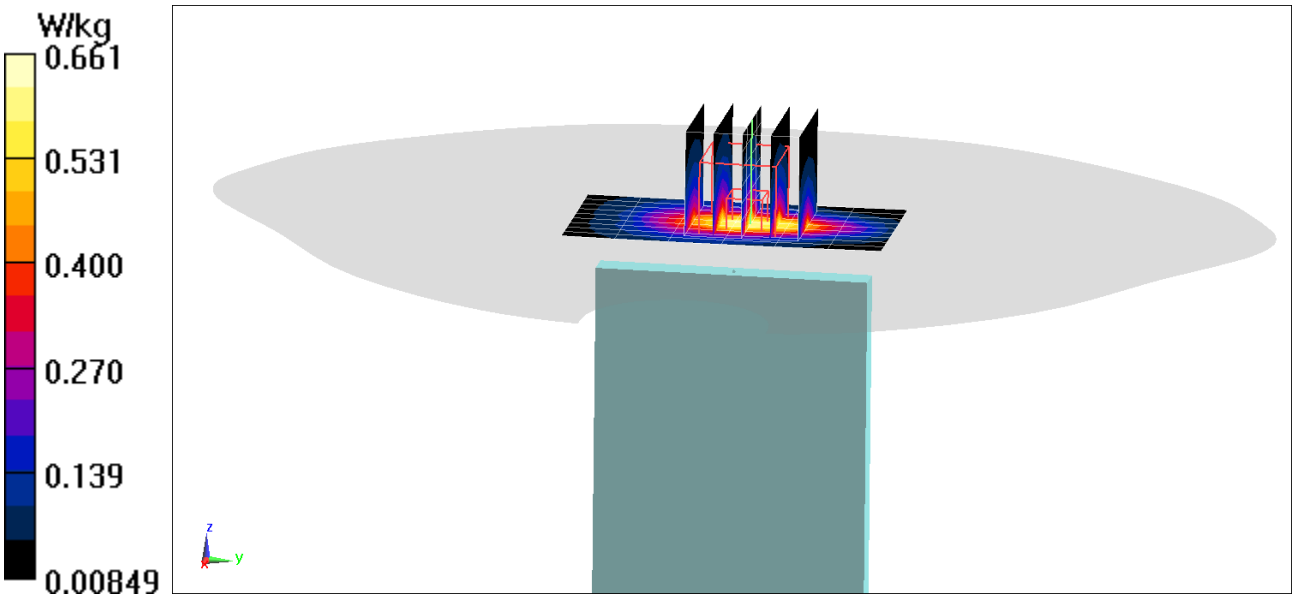
Communication System: UID 0, _GSM GPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.535 S/m; ε_r = 51.307; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: GPRS 1900, Body SAR, Bottom Edge, Mid.ch, 4 Tx Slots

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.68 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.787 W/kg
SAR(1 g) = 0.447 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

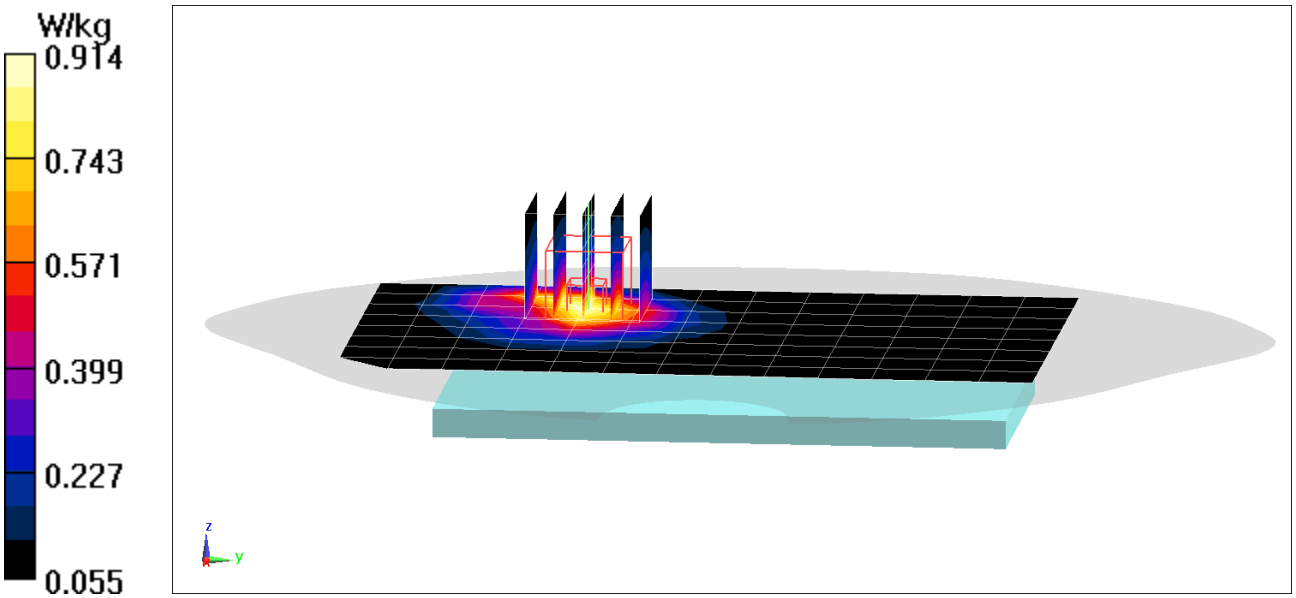
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 1.002 S/m; ε_r = 53.529; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.5°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: UMTS 850, 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 = 29.39 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.791 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

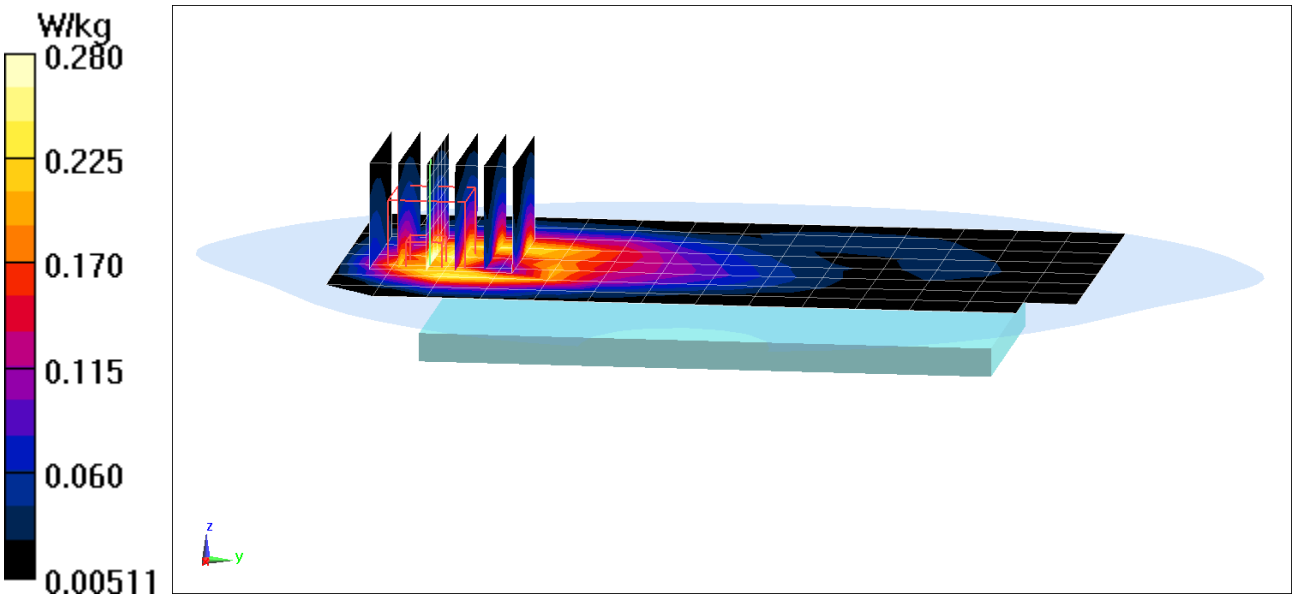
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.464 S/m; ε_r = 53.098; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); 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 1750, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.60 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.463 W/kg
SAR(1 g) = 0.261 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

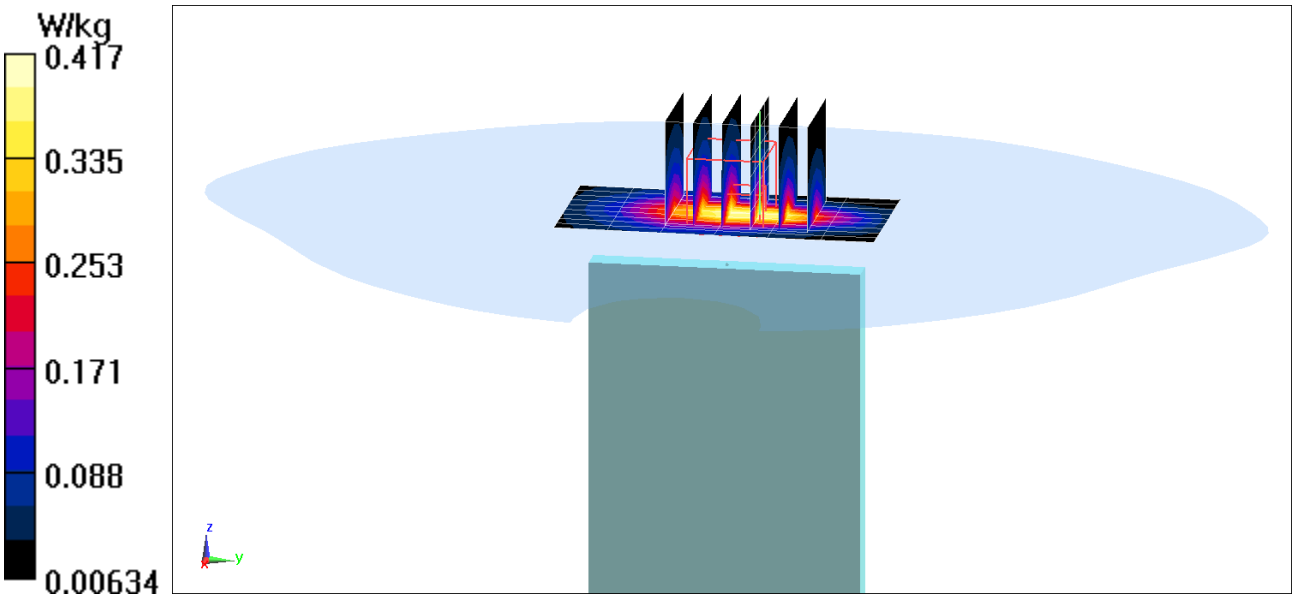
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.464 S/m; ε_r = 53.098; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-19-2018; Ambient Temp: 22.6°C; Tissue Temp: 21.7°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); 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 1750, Body SAR, Bottom Edge, Mid.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.33 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.572 W/kg
SAR(1 g) = 0.338 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

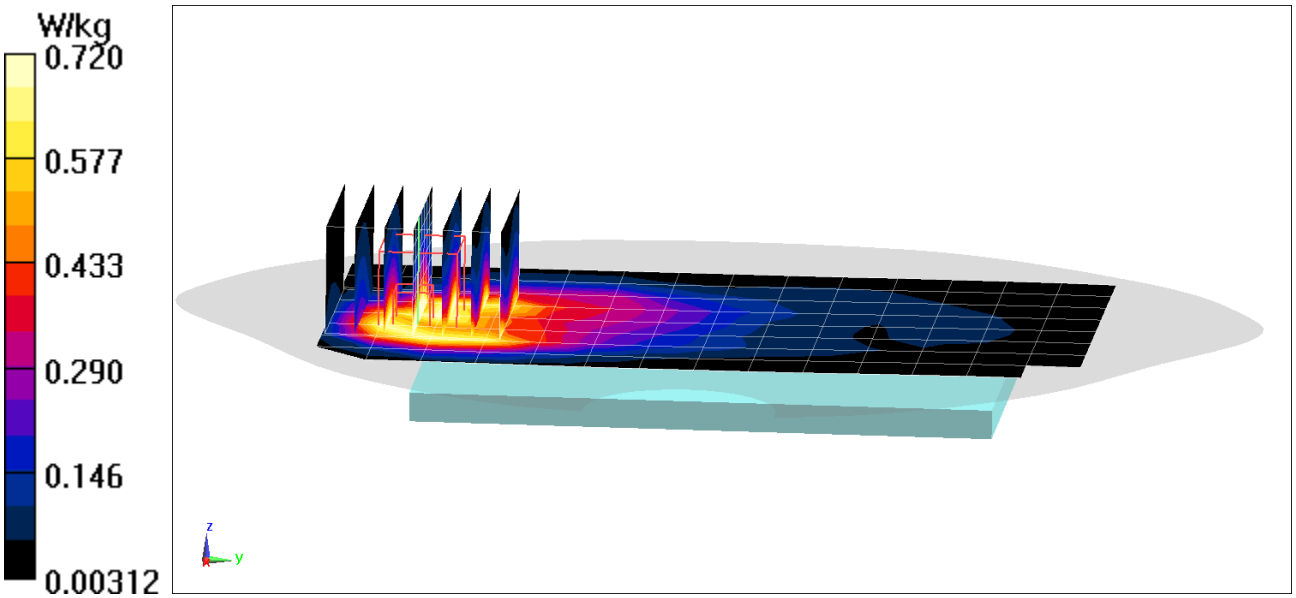
Communication System: UID 0, _UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.559 S/m; ε_r = 53.214; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2018; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: UMTS 1900, Body SAR, Back side, High.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.25 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.712 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

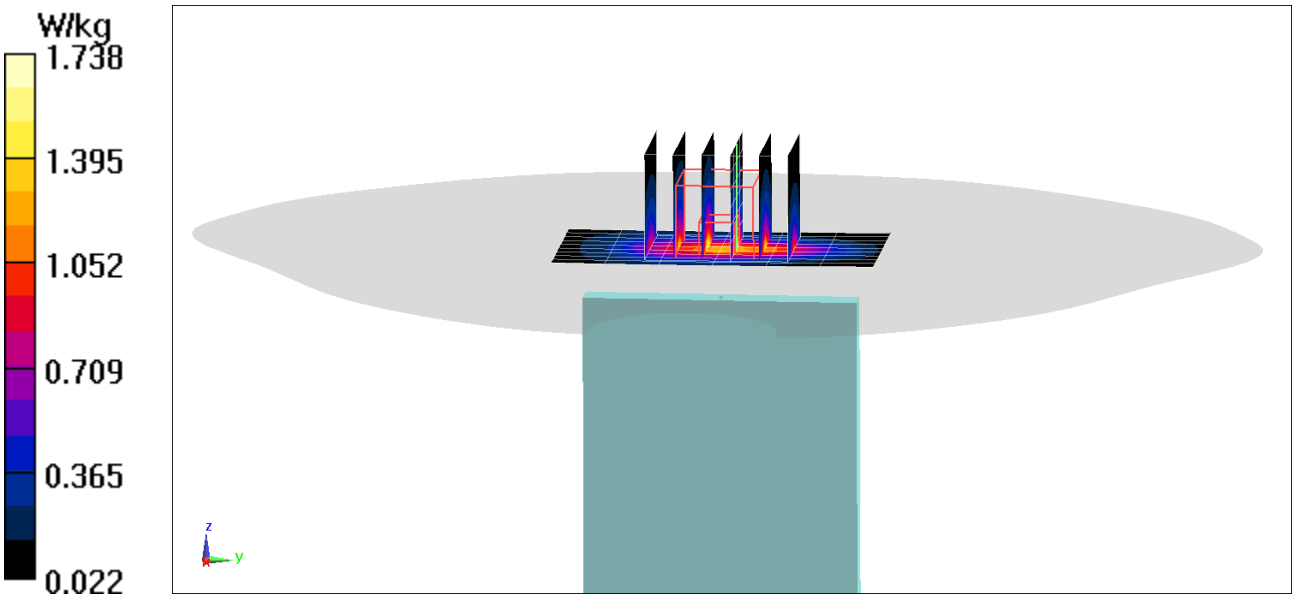
Communication System: UID 0, _UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.559 S/m; ε_r = 53.214; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2018; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: UMTS 1900, Body SAR, Bottom Edge, High.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.77 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.07 W/kg
SAR(1 g) = 1.19 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00781

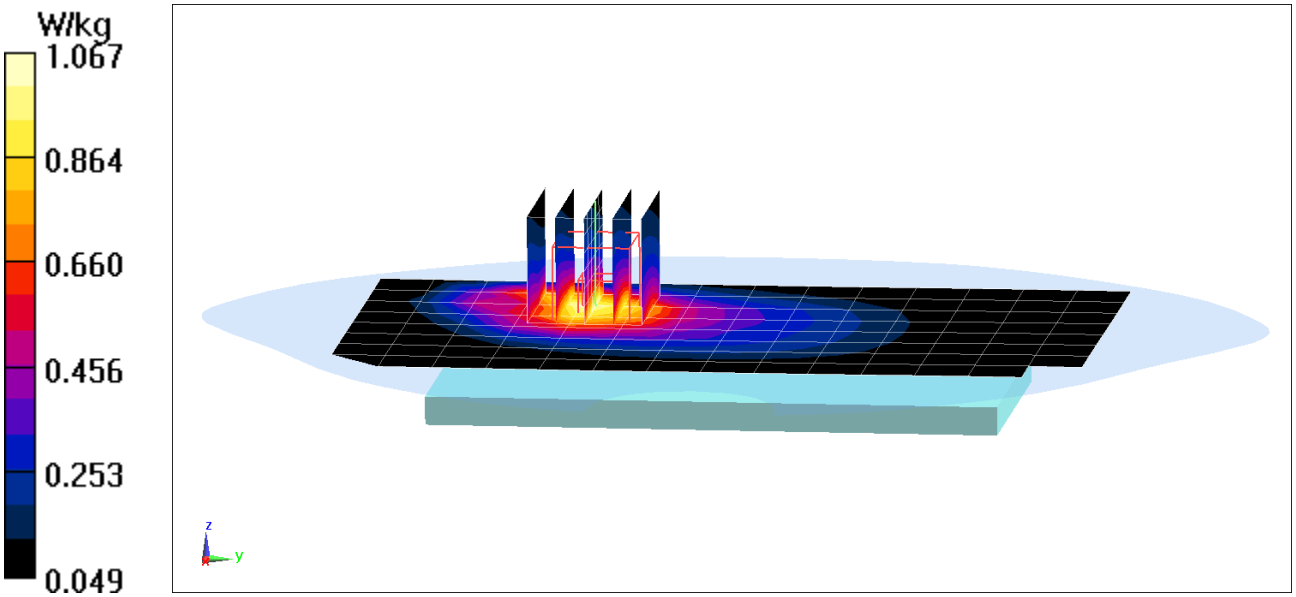
Communication System: UID 0, LTE Band 71; Frequency: 680.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 680.5 MHz; σ = 0.94 S/m; ε_r = 54.277; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7409; ConvF(9.82, 9.82, 9.82); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 71, Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.61 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.775 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00781

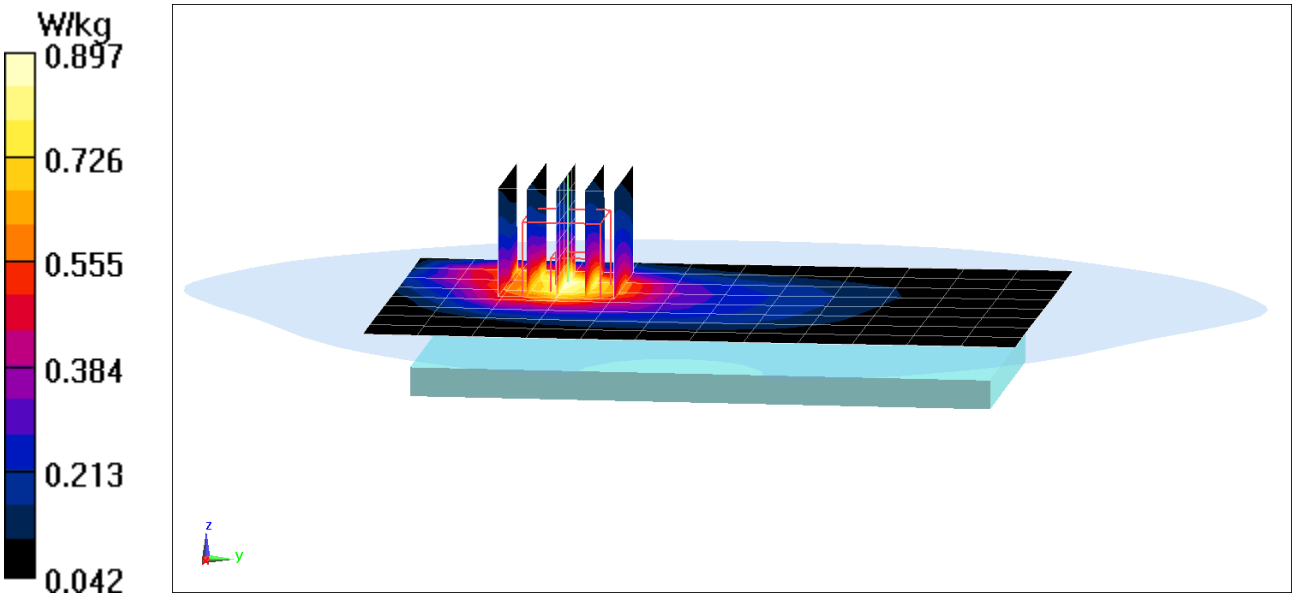
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.951 S/m; ε_r = 54.179; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7409; ConvF(9.82, 9.82, 9.82); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
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 (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.15 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.669 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00781

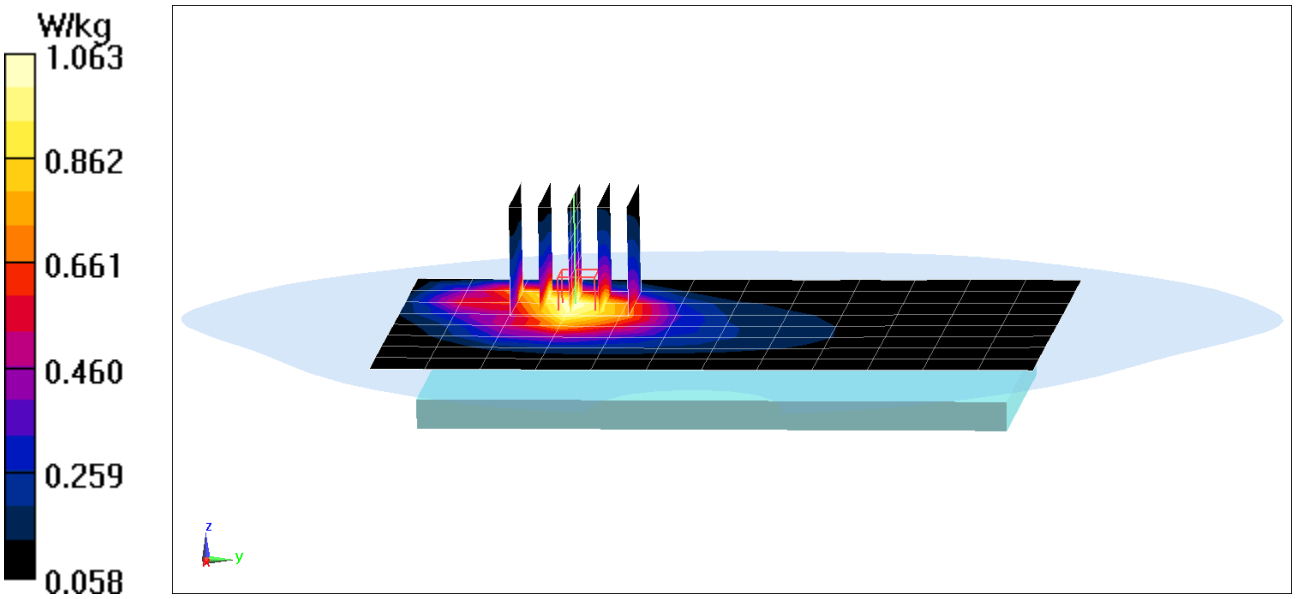
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.978 S/m; ε_r = 54.024; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7409; ConvF(9.82, 9.82, 9.82); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
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 = 29.24 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.787 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00781

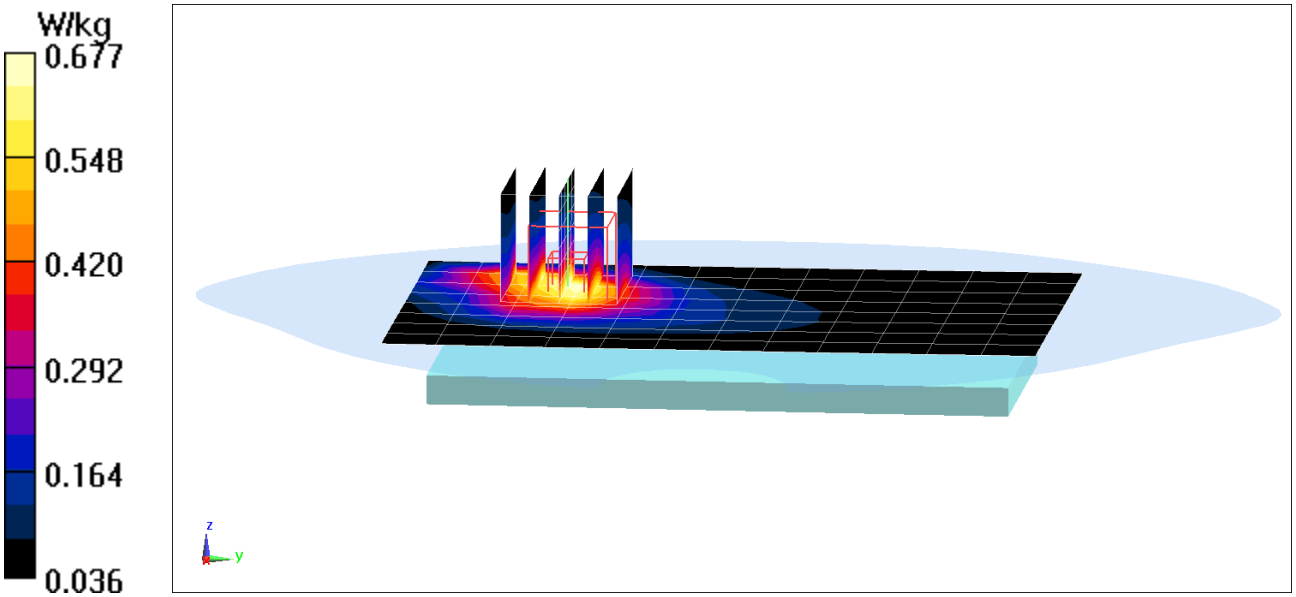
Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 793 MHz; σ = 0.983 S/m; ε_r = 53.985; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7409; ConvF(9.82, 9.82, 9.82); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP v5.0 (Right); Type: QD000P40CD; Serial: TP:1759
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 14, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.47 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.812 W/kg
SAR(1 g) = 0.507 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

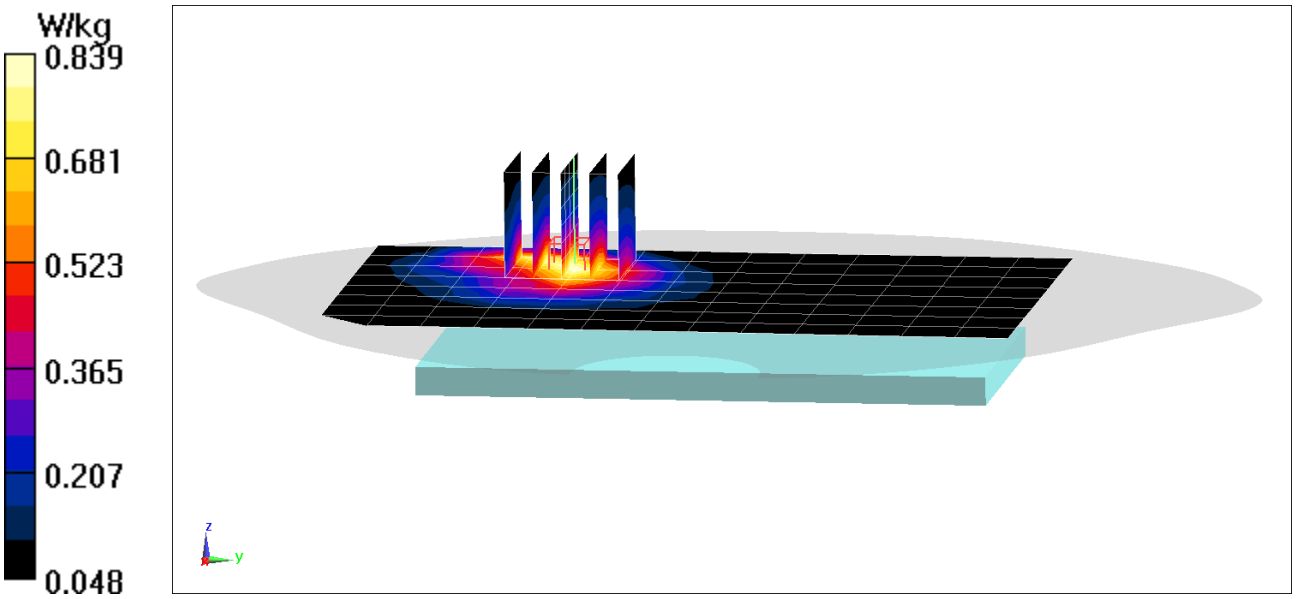
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; σ = 1.002 S/m; ε_r = 53.529; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-11-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.5°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 5 (Cell.), Body SAR, Back side, 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 = 28.08 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.729 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

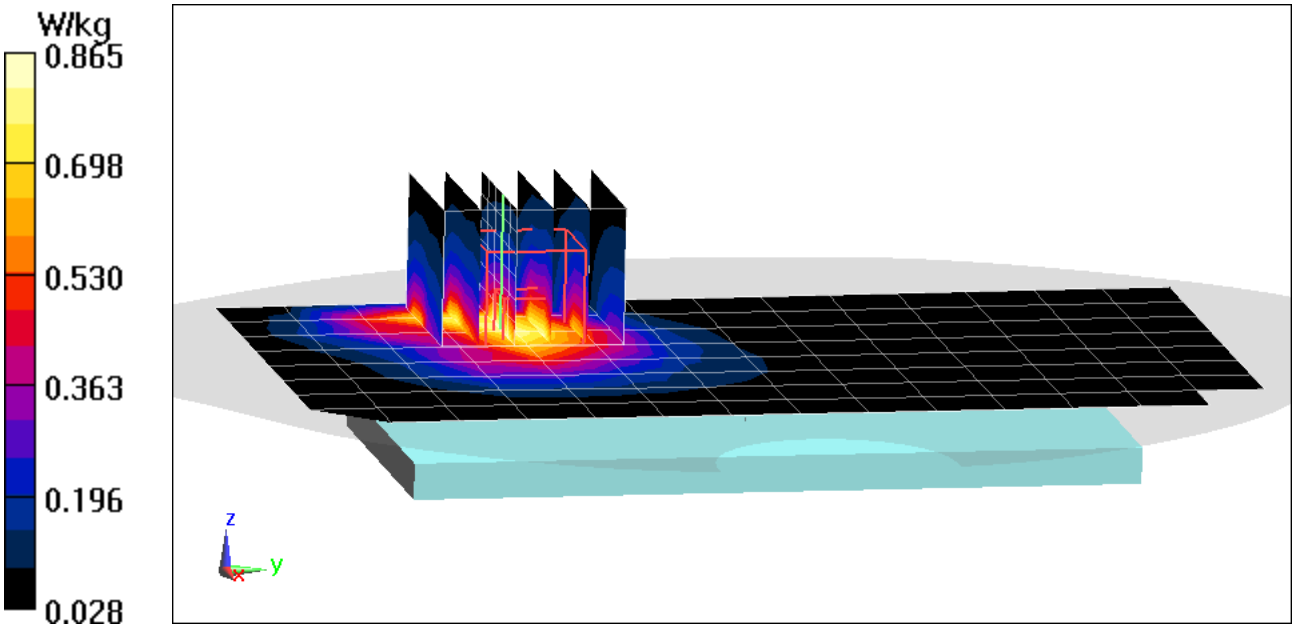
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.979 S/m; ε_r = 53.993; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 20.3°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN3914; ConvF(9.57, 9.57, 9.57); Calibrated: 2/14/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/15/2018
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 (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.16 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.654 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00724

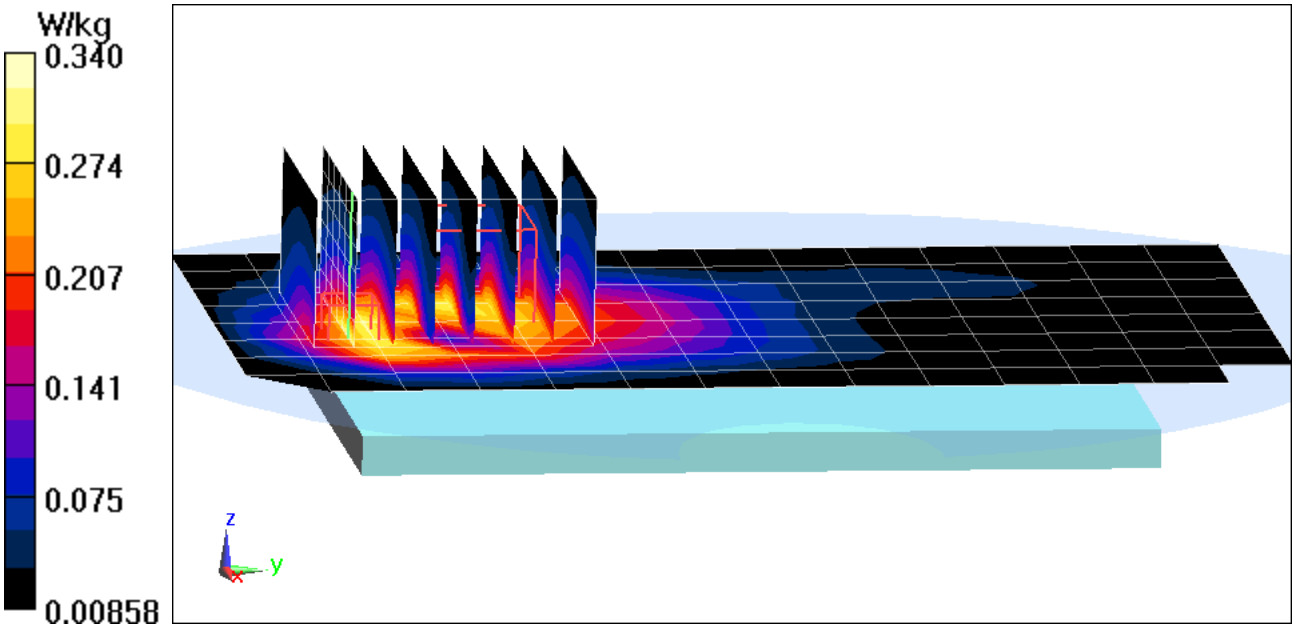
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.481 S/m; ε_r = 52.704; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2018; Ambient Temp: 22.7°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); 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 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 (7x8x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.53 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.467 W/kg
SAR(1 g) = 0.270 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00724

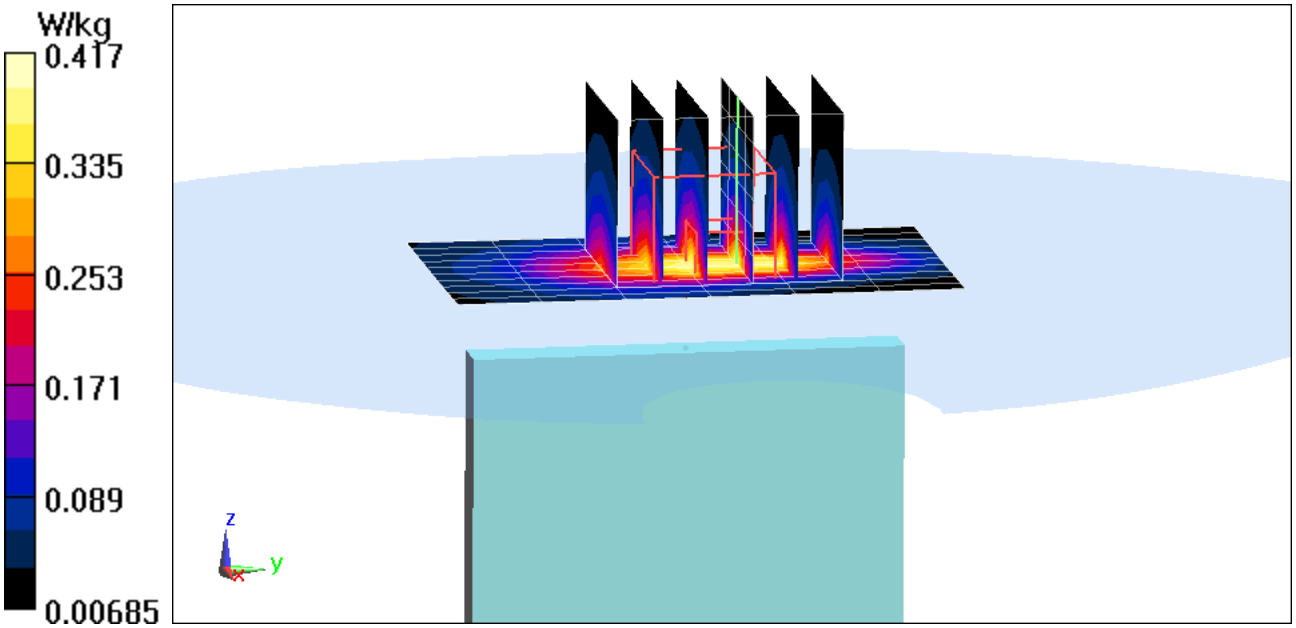
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1745 MHz; σ = 1.481 S/m; ε_r = 52.704; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2018; Ambient Temp: 22.7°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); 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 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 (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.08 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.571 W/kg
SAR(1 g) = 0.337 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

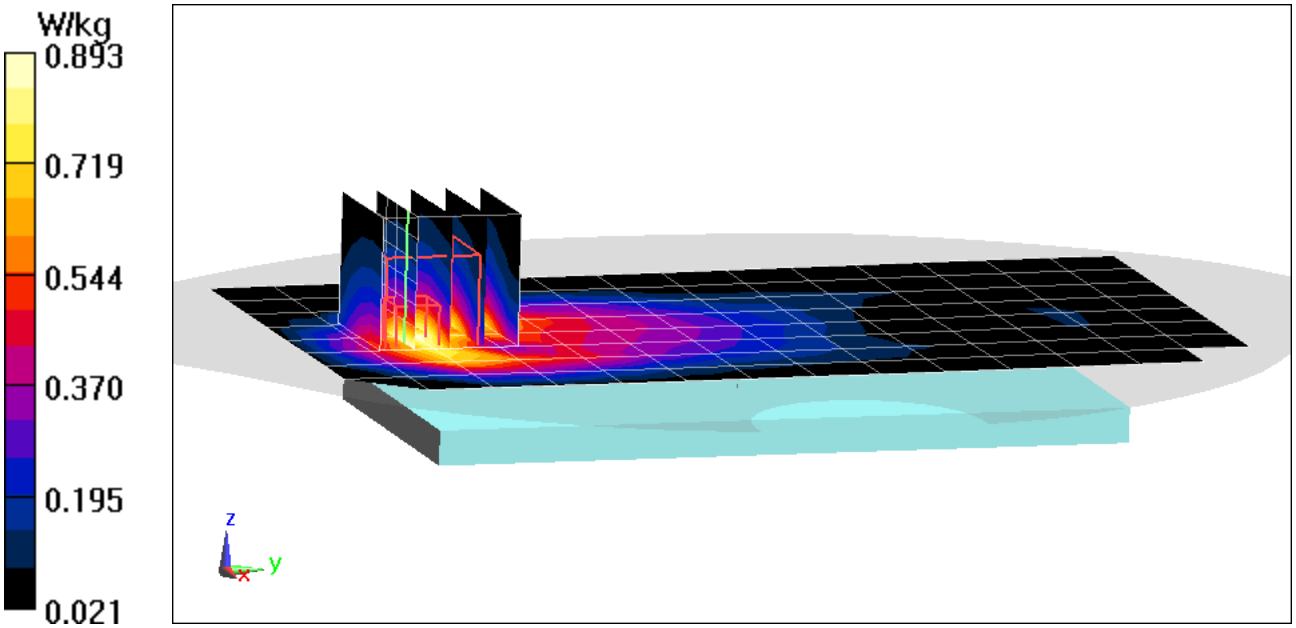
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.572 S/m; ε_r = 52.39; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-08-2018; Ambient Temp: 20.3°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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 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 = 20.34 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.634 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

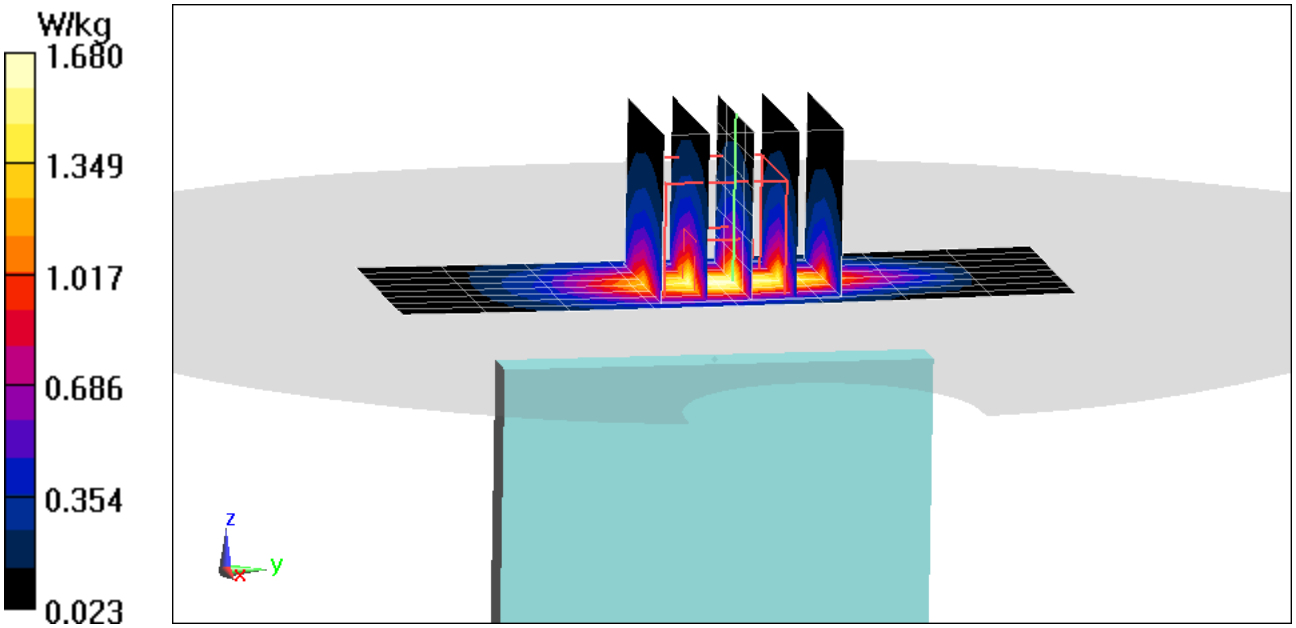
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.581 S/m; ε_r = 51.176; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: LTE Band 25 (PCS), Body SAR, Bottom Edge, High.ch,
20 MHz Bandwidth, QPSK, 1 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 = 28.13 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.00 W/kg
SAR(1 g) = 1.14 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00732

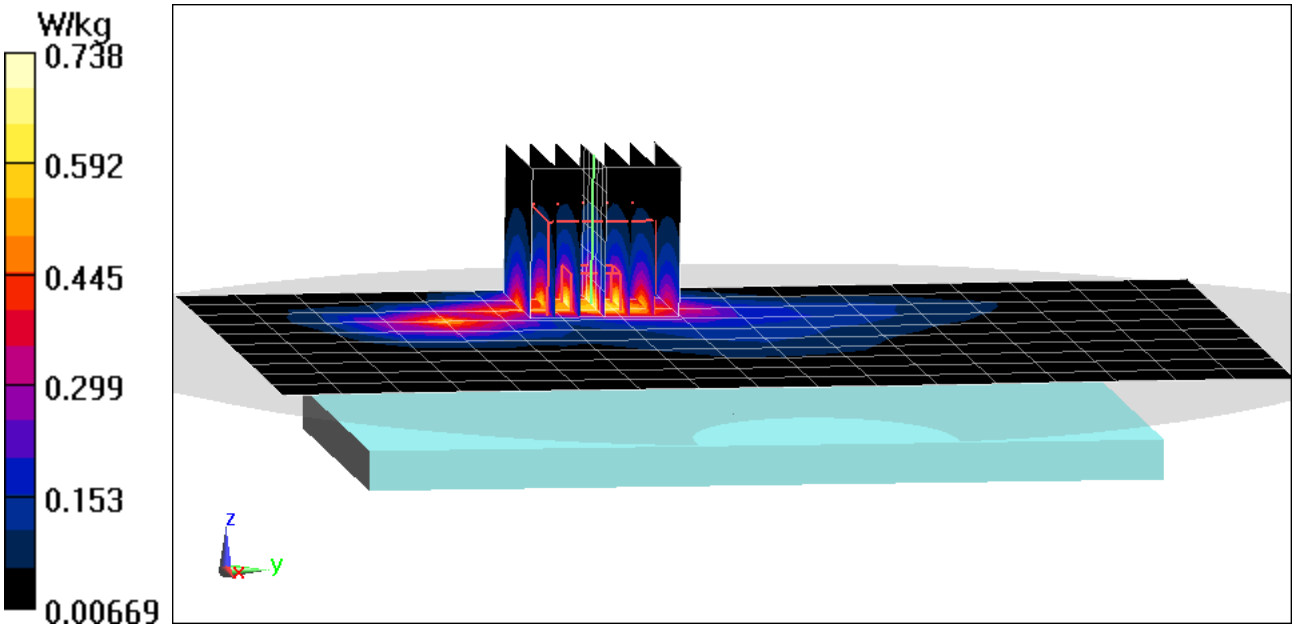
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2310 MHz; σ = 1.876 S/m; ε_r = 51.61; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3319; ConvF(4.63, 4.63, 4.63); 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 30, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.80 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.568 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00732

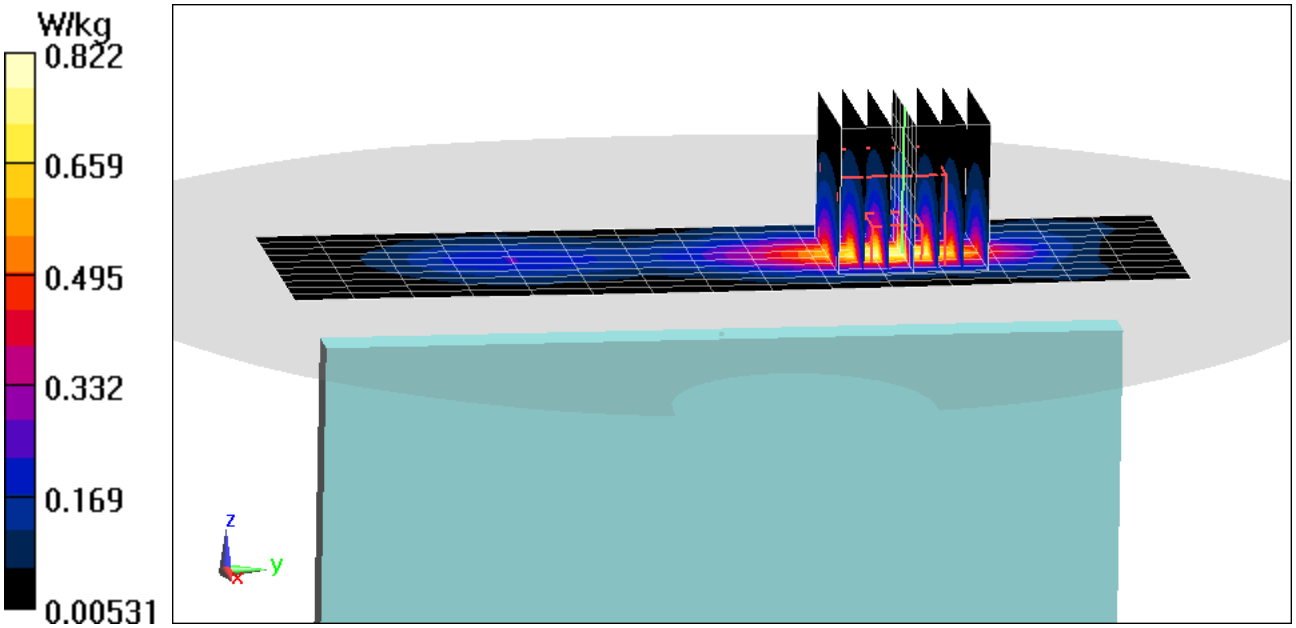
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2310 MHz; σ = 1.876 S/m; ε_r = 51.61; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3319; ConvF(4.63, 4.63, 4.63); 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 30, Body SAR, Right Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (11x16x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.91 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.622 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00740

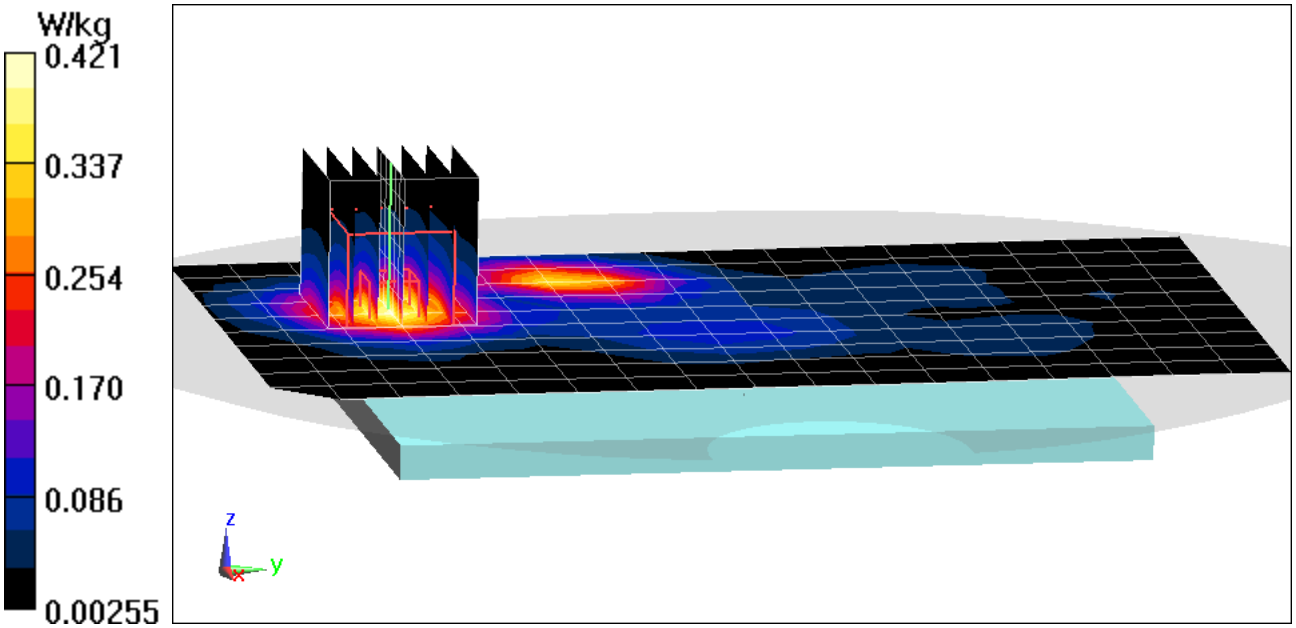
Communication System: UID 0, LTE Band 7; Frequency: 2535 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2535 MHz; σ = 2.114 S/m; ε_r = 50.592; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2018; Ambient Temp: 23.3°C; Tissue Temp: 22.2°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 7, Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.43 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.635 W/kg
SAR(1 g) = 0.335 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00740

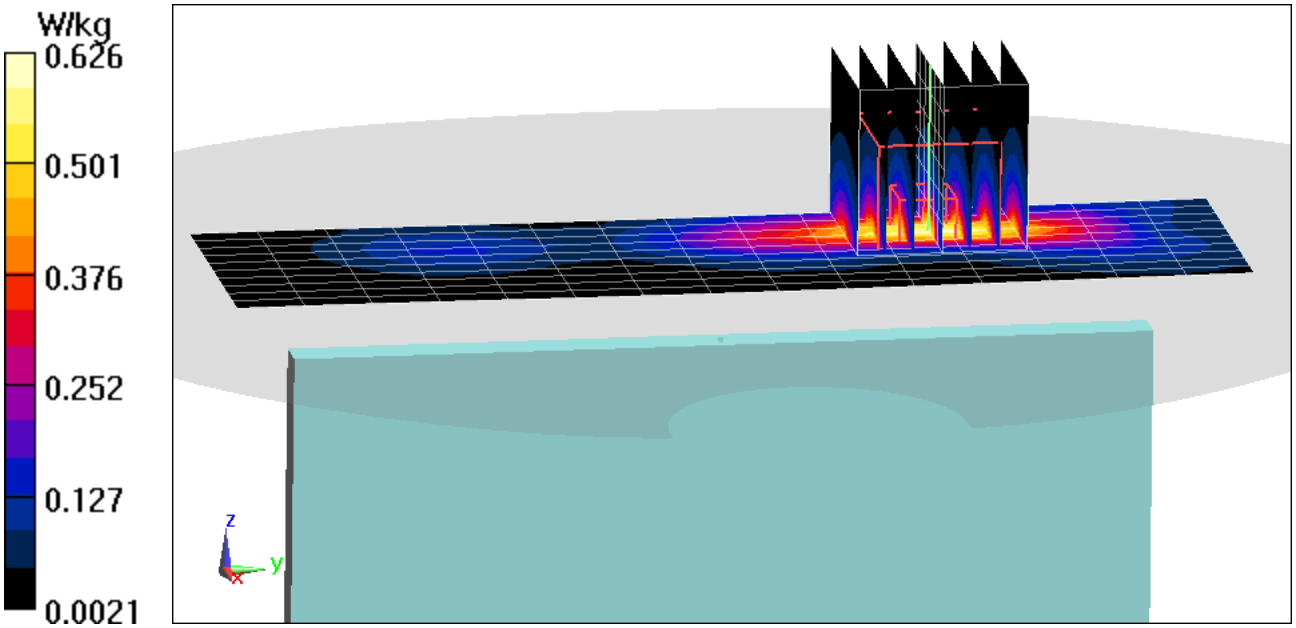
Communication System: UID 0, LTE Band 7; Frequency: 2535 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2535 MHz; σ = 2.114 S/m; ε_r = 50.592; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0cm

Test Date: 06-20-2018; Ambient Temp: 23.3°C; Tissue Temp: 22.2°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 7, Body SAR, Right Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (11x16x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.09 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.462 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00724

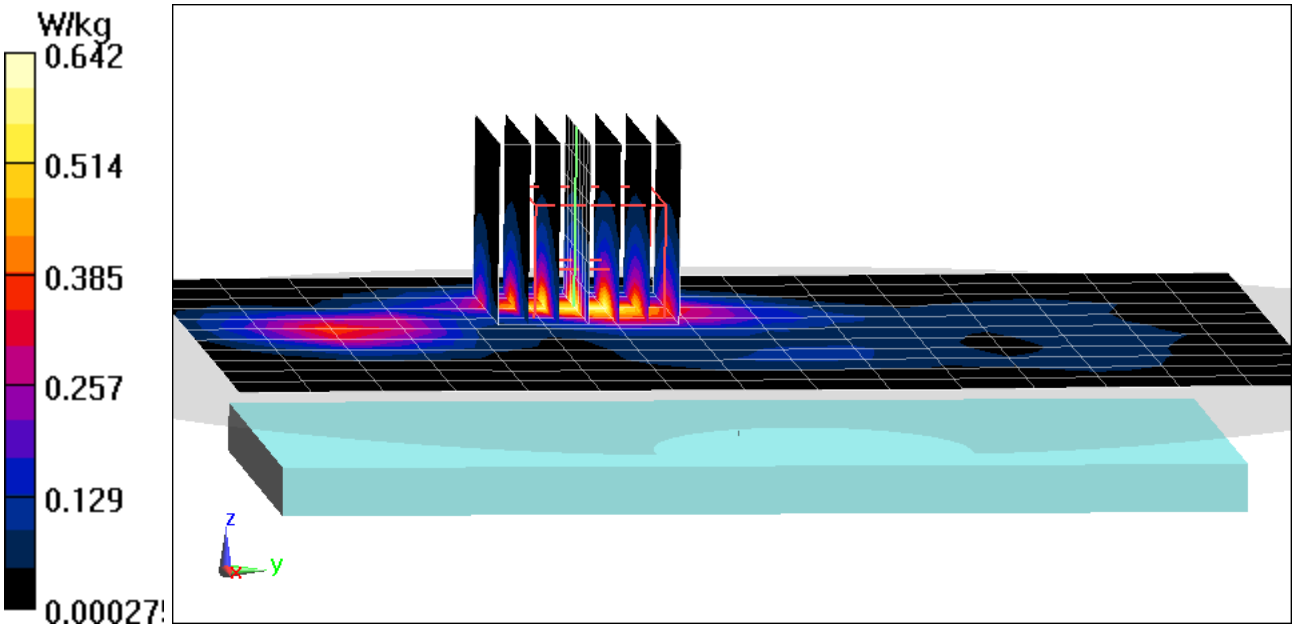
Communication System: UID 0, _LTE Band 41 (Class 2); Frequency: 2593 MHz; Duty Cycle: 1:2.31
Medium: 2450 Body Medium parameters used (interpolated):
f = 2593 MHz; σ = 2.204 S/m; ε_r = 50.734; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.9°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 PC2, Body SAR, Back side, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (12x16x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.11 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.05 W/kg
SAR(1 g) = 0.490 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00724

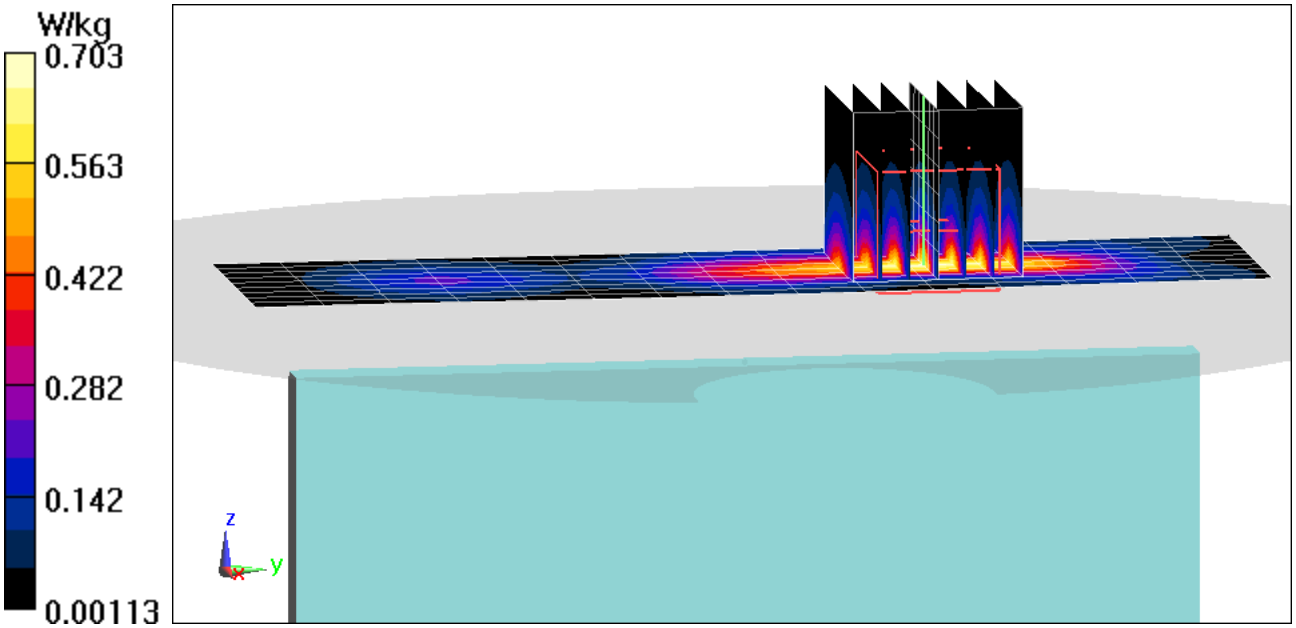
Communication System: UID 0, _LTE Band 41 (Class 2); Frequency: 2593 MHz; Duty Cycle: 1:2.31
Medium: 2450 Body Medium parameters used (interpolated):
f = 2593 MHz; σ = 2.204 S/m; ε_r = 50.734; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-05-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.9°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 PC2, Body SAR, Right Edge, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x16x1): Measurement grid: dx=5mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.69 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.18 W/kg
SAR(1 g) = 0.517 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00906

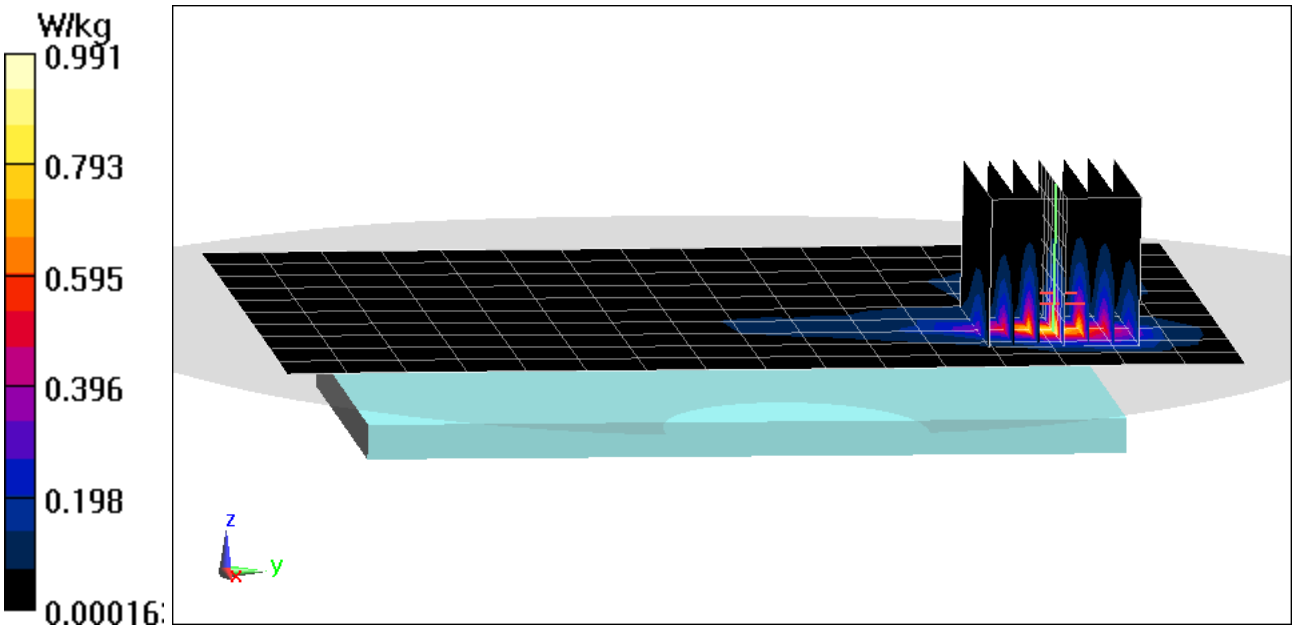
Communication System: UID 0, _IEEE 802.11b; Frequency: 2412 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2412 MHz; σ = 1.969 S/m; ε_r = 50.93; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-20-2018; Ambient Temp: 23.3°C; Tissue Temp: 22.2°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, Ch 1, 1 Mbps, Back Side, Ant 2

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (9x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.324 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.61 W/kg
SAR(1 g) = 0.707 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00906

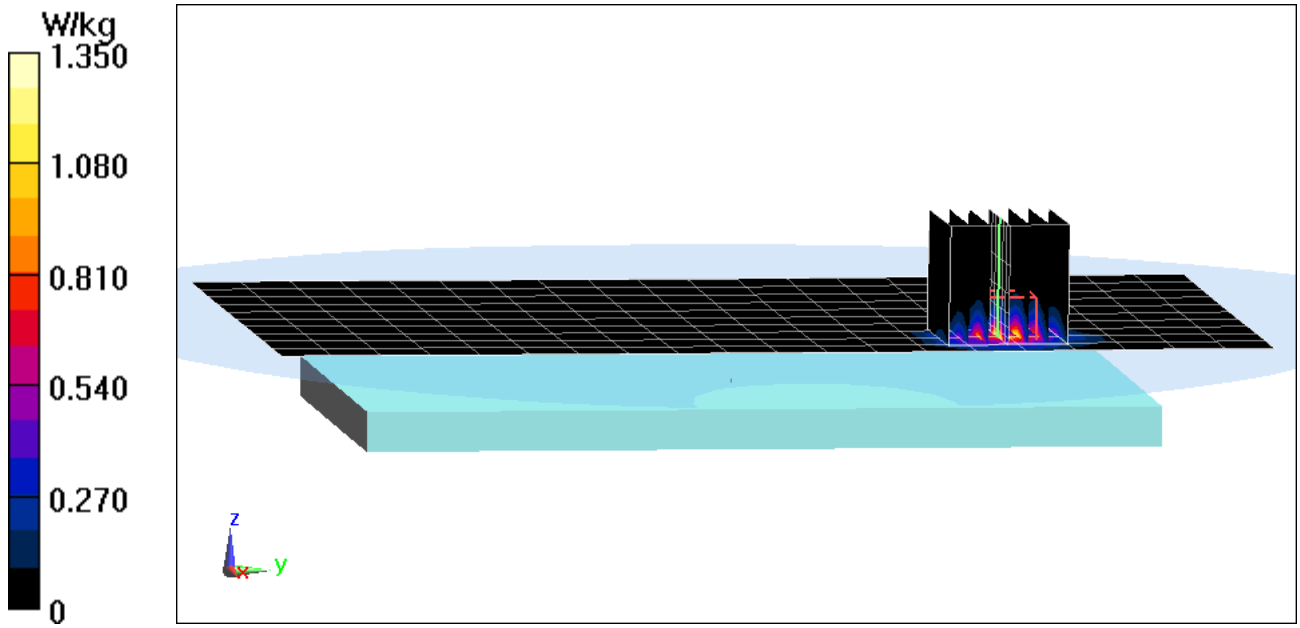
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5320 MHz; σ = 5.588 S/m; ε_r = 48.157; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(4.78, 4.78, 4.78); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, UNII-2A, 20 MHz Bandwidth,
Body SAR, Ch 64, 6 Mbps, Back Side, Ant 2

Area Scan (11x21x1): 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 = 10.68 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 2.18 W/kg
SAR(1 g) = 0.536 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00906

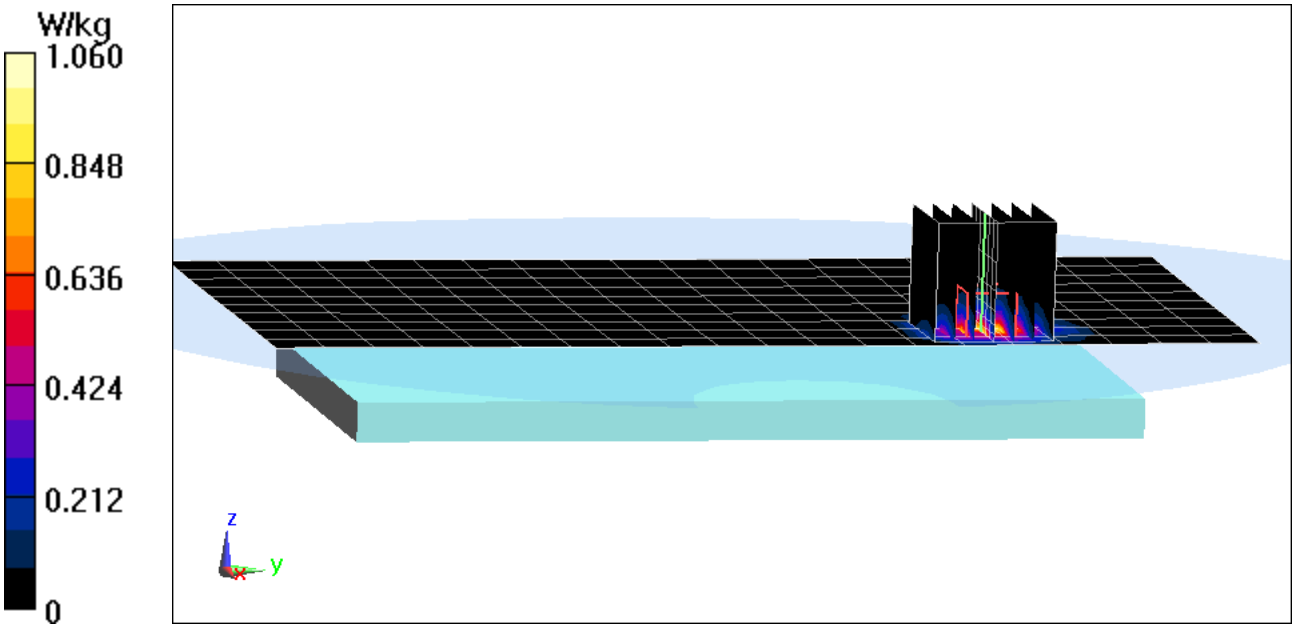
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5240 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5240 MHz; σ = 5.485 S/m; ε_r = 48.261; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.4°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(4.78, 4.78, 4.78); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, UNII-1, 20 MHz Bandwidth, Body SAR,
Antenna 2, Ch 48, 6 Mbps, Back Side

Area Scan (11x21x1): 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 = 9.675 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.68 W/kg
SAR(1 g) = 0.421 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00906

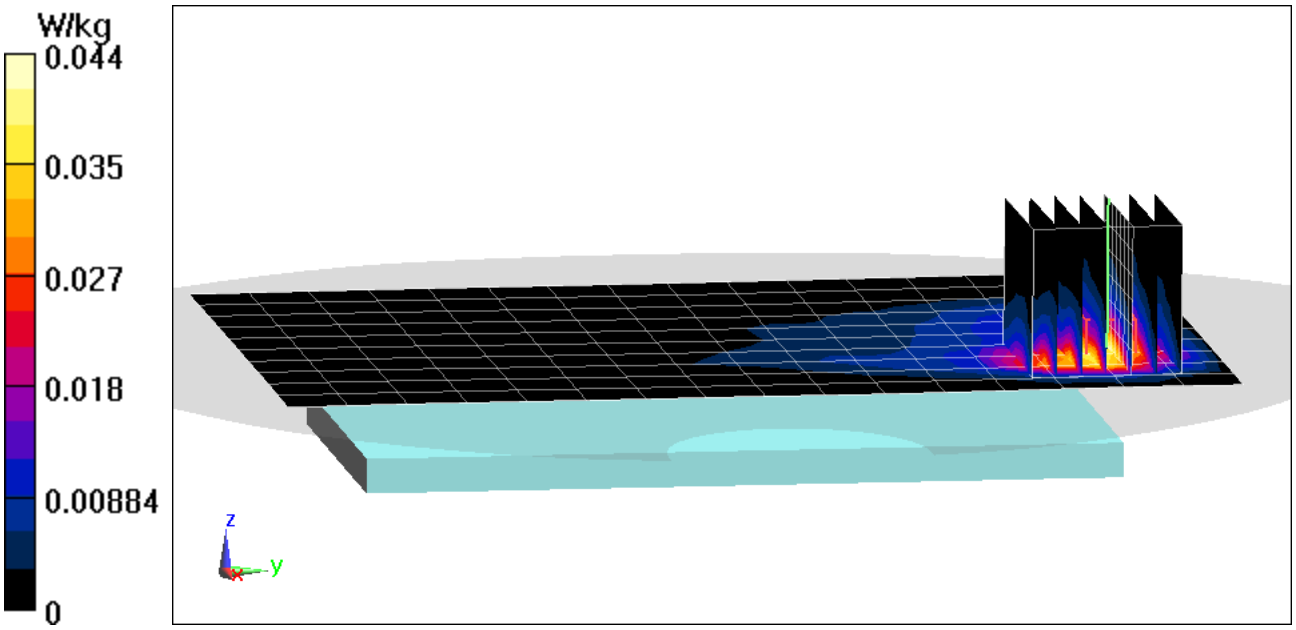
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Body Medium parameters used (interpolated):
f = 2480 MHz; σ = 2.025 S/m; ε_r = 51.269; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-09-2018; Ambient Temp: 22.2°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 (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.055 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.0690 W/kg
SAR(1 g) = 0.033 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00765

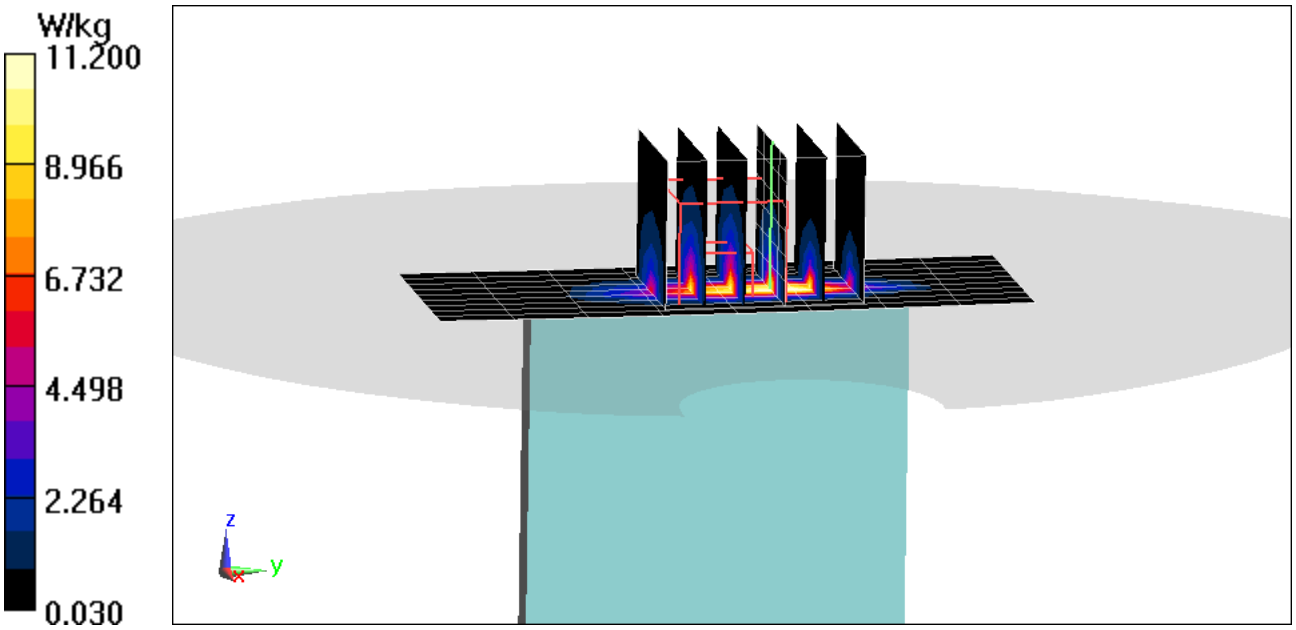
Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1908.75 MHz; σ = 1.567 S/m; ε_r = 51.203; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-02-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.3°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: PCS EVDO Rev.0, Phablet SAR, Bottom Edge, High.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 = 65.49 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 13.5 W/kg
SAR(10 g) = 2.65 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

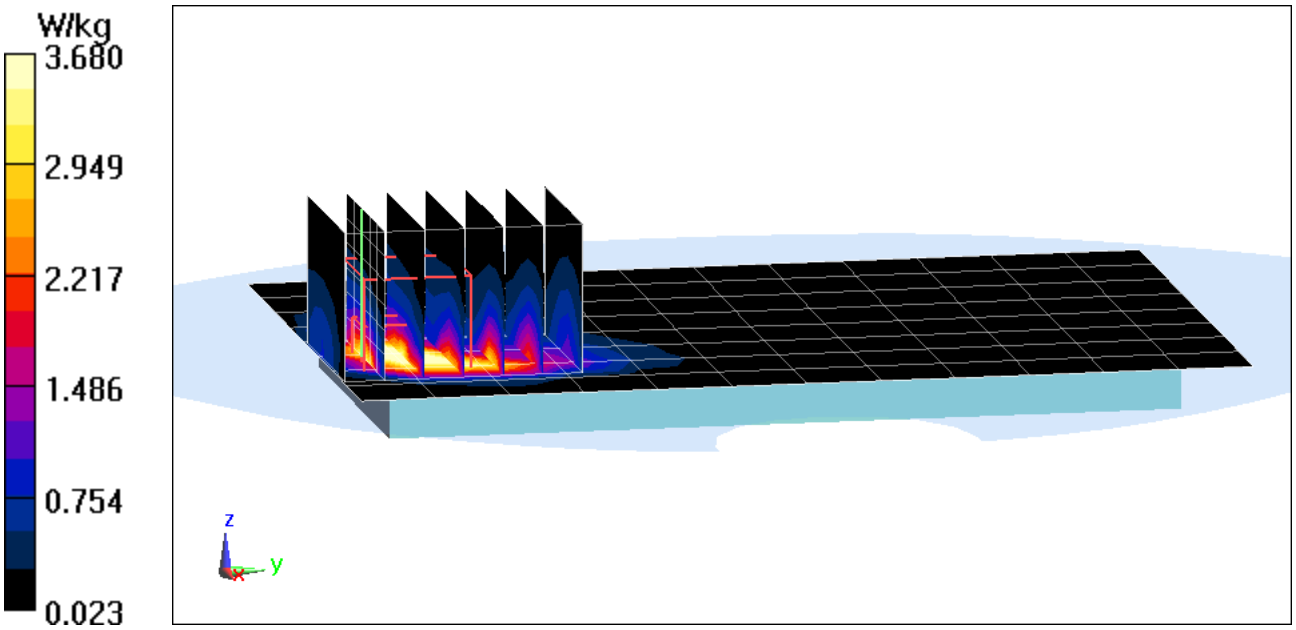
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.491 S/m; ε_r = 51.788; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-25-2018; Ambient Temp: 23.1°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); 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 1750, Phablet SAR, Back side, Mid.ch

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 44.79 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 7.18 W/kg
SAR(10 g) = 1.36 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00757

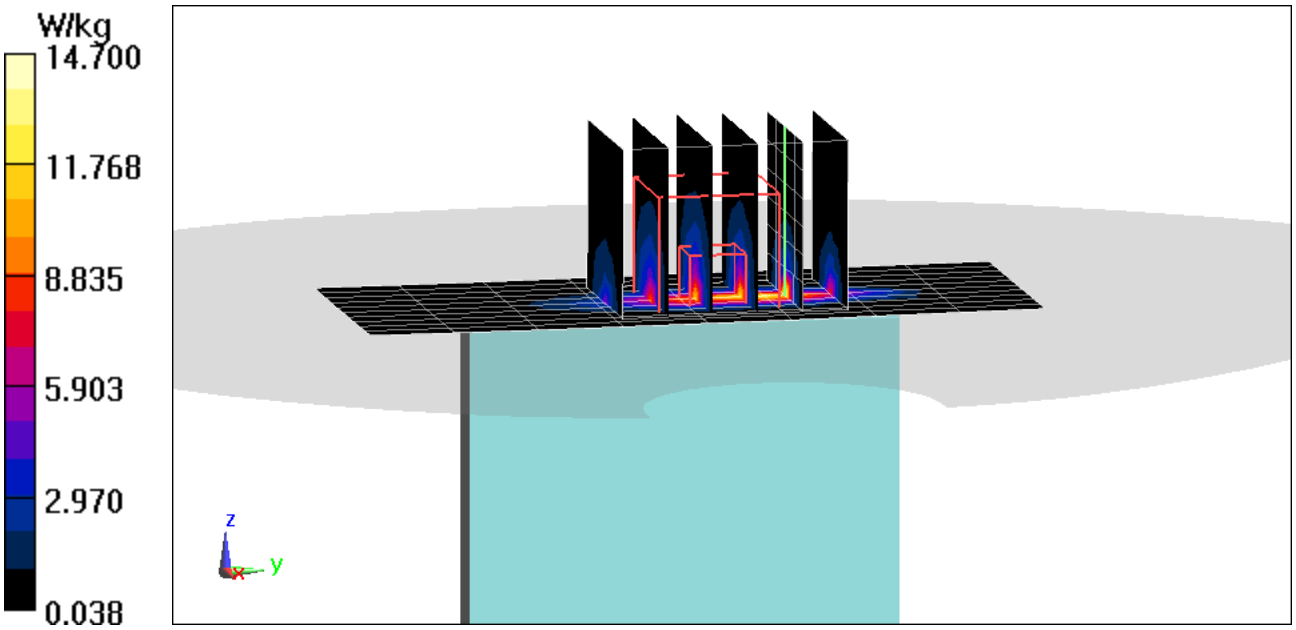
Communication System: UID 0, _UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; σ = 1.583 S/m; ε_r = 51.169; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-25-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: 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 = 70.19 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 18.4 W/kg
SAR(10 g) = 2.84 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00724

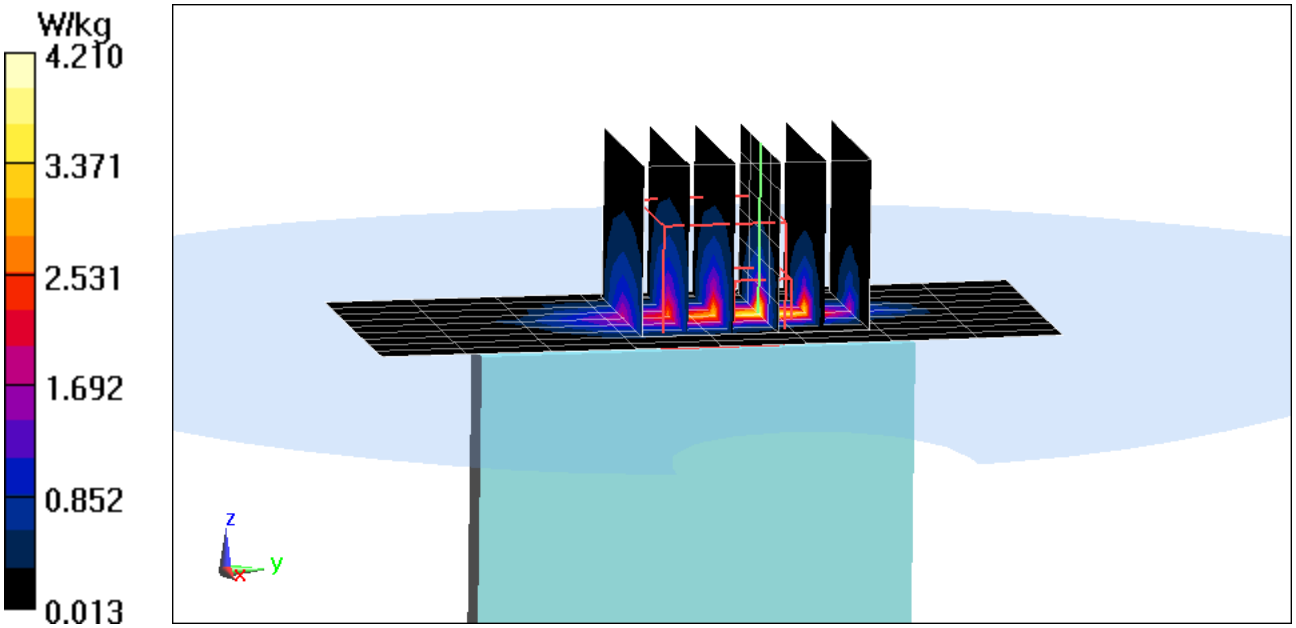
Communication System: UID 0, _LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1720 MHz; σ = 1.477 S/m; ε_r = 51.836; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-25-2018; Ambient Temp: 23.1°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3332; ConvF(5.16, 5.16, 5.16); 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 66 (AWS), Phablet SAR, Bottom Edge, Low.ch, 20 MHz Bandwidth, QPSK, 50 RB, 25 RB Offset

Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 48.76 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 6.61 W/kg
SAR(10 g) = 1.07 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00716

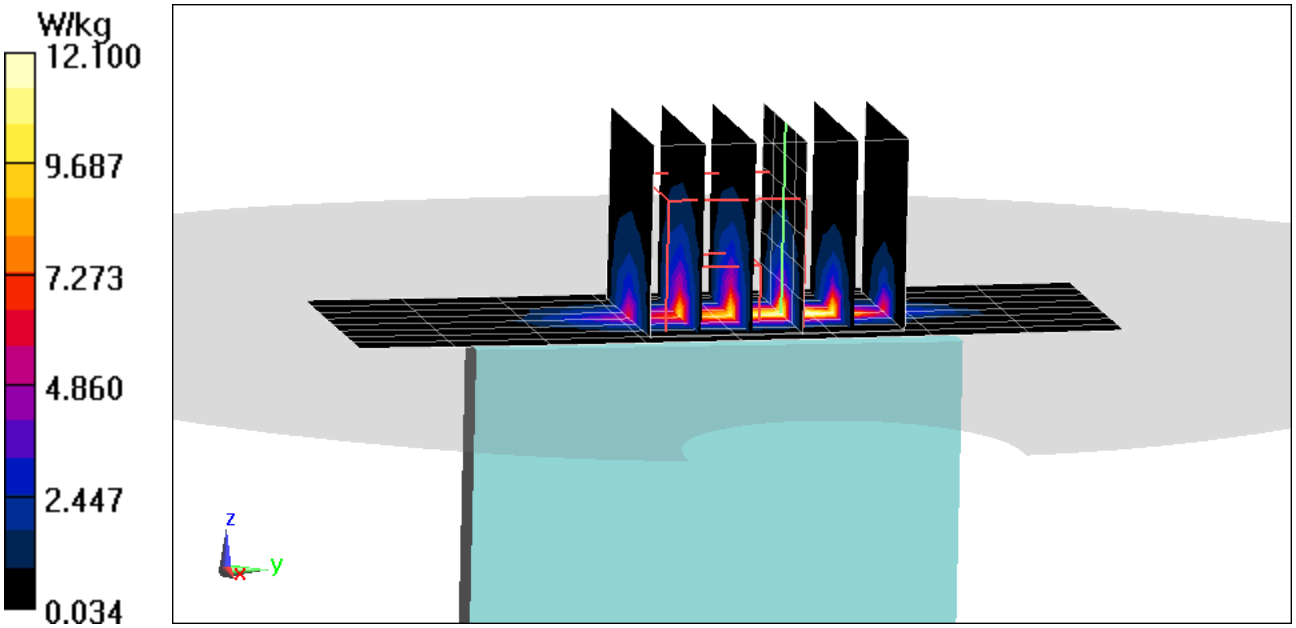
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; σ = 1.581 S/m; ε_r = 51.176; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 06-25-2018; Ambient Temp: 21.1°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
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: LTE Band 25 (PCS), Phablet SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x9x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 66.82 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 14.6 W/kg
SAR(10 g) = 2.69 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFV405UA; Type: Portable Handset; Serial: 00906

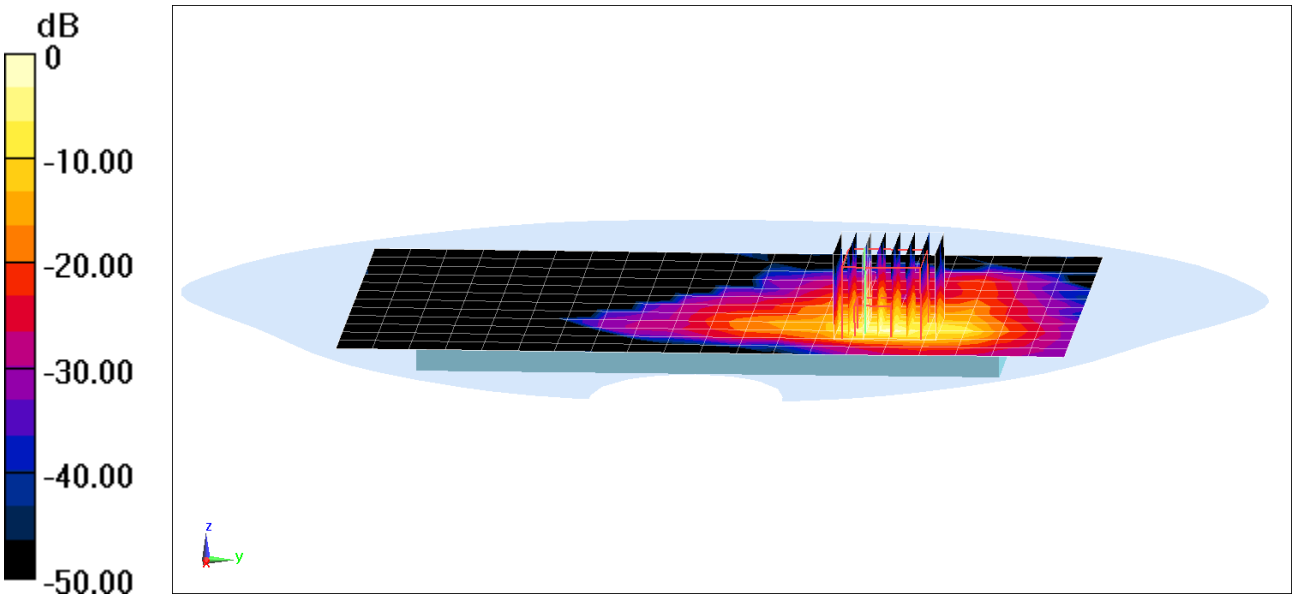
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5320 MHz; σ = 5.567 S/m; ε_r = 48.128; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-09-2018; Ambient Temp: 21.5°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7357; ConvF(4.78, 4.78, 4.78); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, U-NII-2A, MIMO, 20 MHz Bandwidth, Phablet SAR, Ch 64, 6 Mbps, Back Side

Area Scan (13x21x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 32.76 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 55.1 W/kg
SAR(10 g) = 1.80 W/kg



0 dB = 24.9 W/kg = 13.96 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

© 2018 PCTEST Engineering Laboratory, Inc.

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161

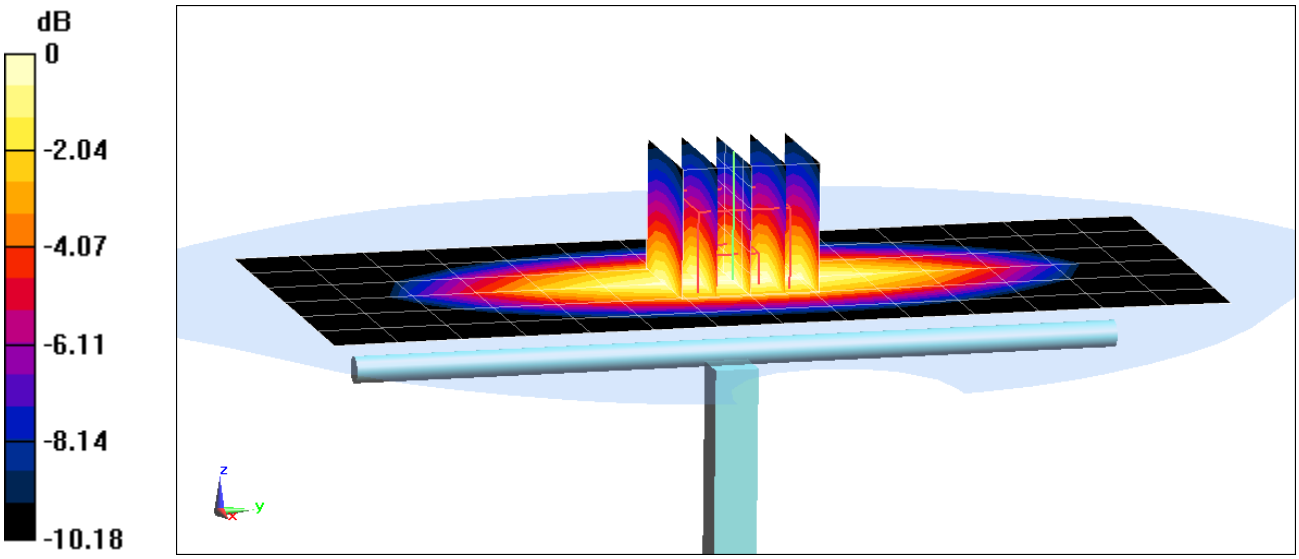
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.927 S/m; ε_r = 43.722; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°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) = 2.39 W/kg
SAR(1 g) = 1.62 W/kg
Deviation(1 g) = -0.86%



0 dB = 1.88 W/kg = 2.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161

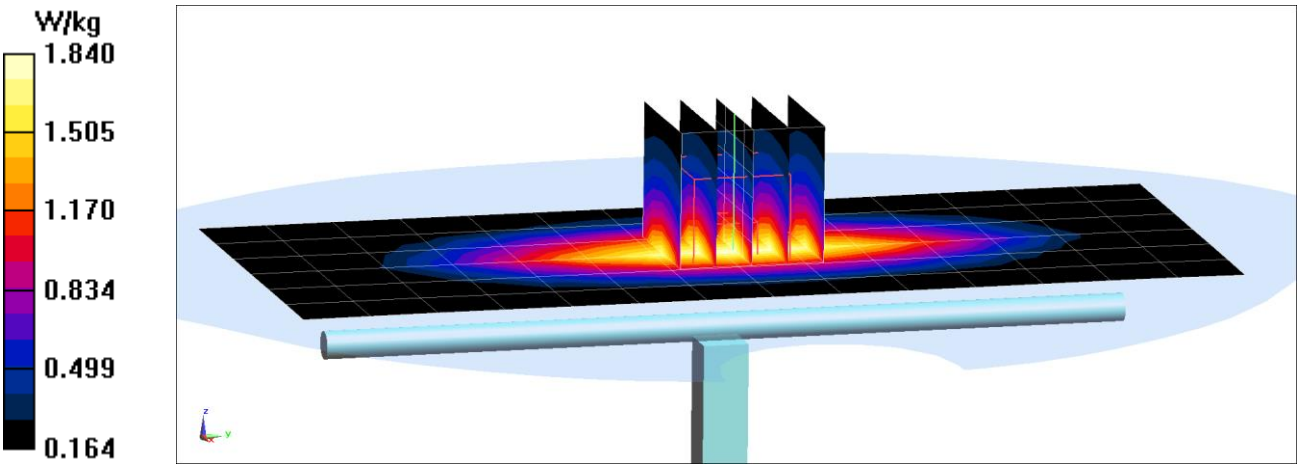
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.921 S/m; ε_r = 43.032; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-30-2018; Ambient Temp: 24.5°C; Tissue Temp: 23.0°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) = 2.38 W/kg
SAR(1 g) = 1.58 W/kg
Deviation(1 g) = -3.30%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

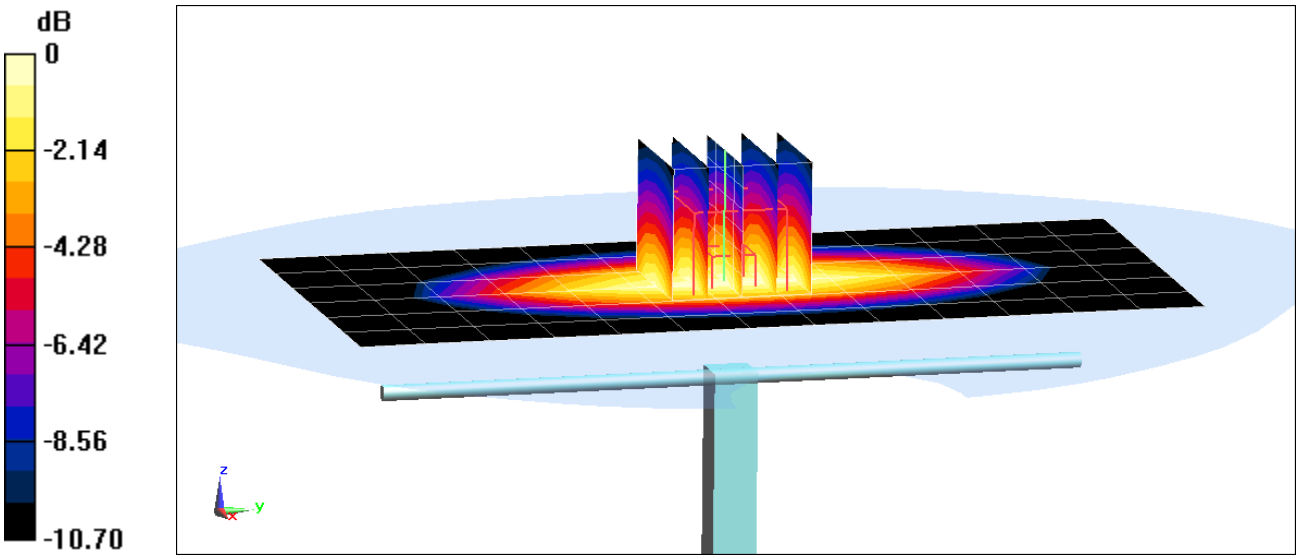
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.944 S/m; ε_r = 43.235; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 06-27-2018; Ambient Temp: 23.9°C; Tissue Temp: 22.2°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) = 2.88 W/kg
SAR(1 g) = 1.94 W/kg
Deviation(1 g) = 6.24%



0 dB = 2.27 W/kg = 3.56 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

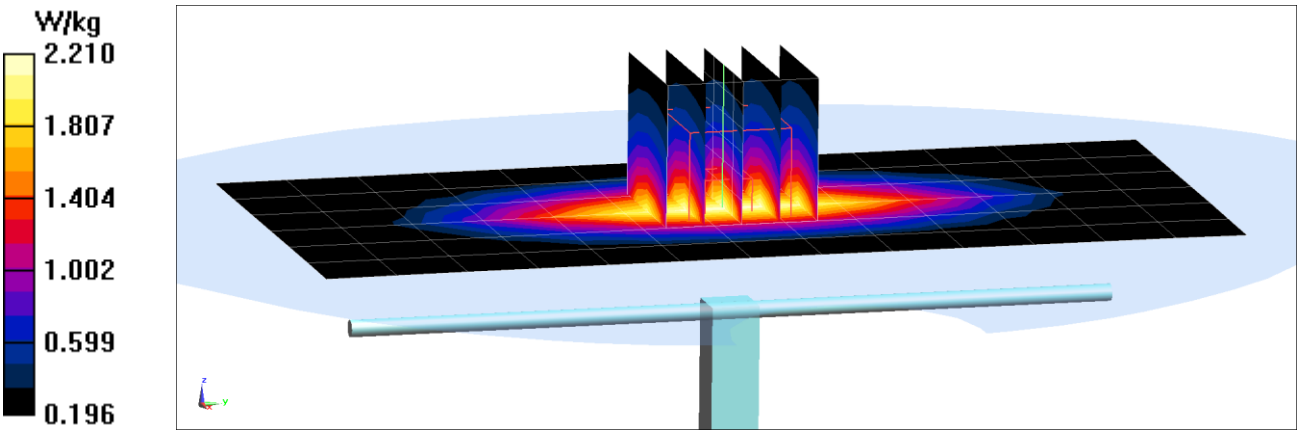
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.917 S/m; ε_r = 42.813; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-09-2018; Ambient Temp: 20.9°C; Tissue Temp: 19.9°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) = 2.78 W/kg
SAR(1 g) = 1.89 W/kg
Deviation(1 g) = 3.50%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

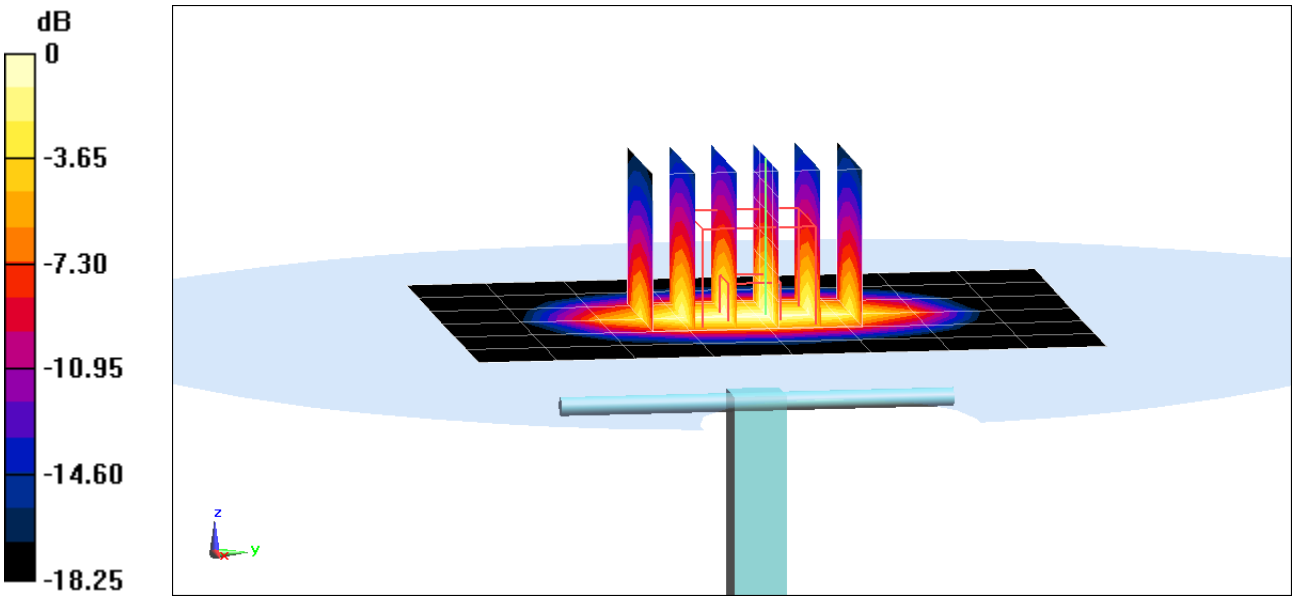
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.371 S/m; ε_r = 38.986; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-21-2018; Ambient Temp: 22.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3332; ConvF(5.56, 5.56, 5.56); 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)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.21 W/kg
SAR(1 g) = 3.47 W/kg
Deviation(1 g) = -3.88%



0 dB = 4.36 W/kg = 6.39 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

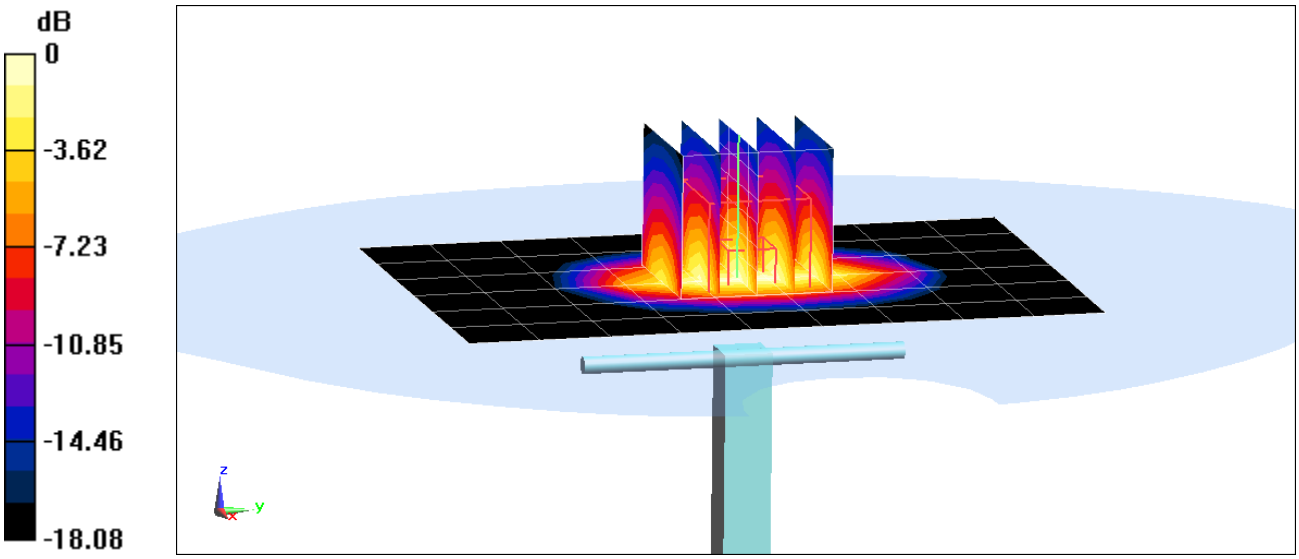
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.453 S/m; ε_r = 41.756; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-25-2018; Ambient Temp: 23.5°C; Tissue Temp: 21.8°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) = 7.36 W/kg
SAR(1 g) = 4.02 W/kg
Deviation(1 g) = 0.25%



0 dB = 5.08 W/kg = 7.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

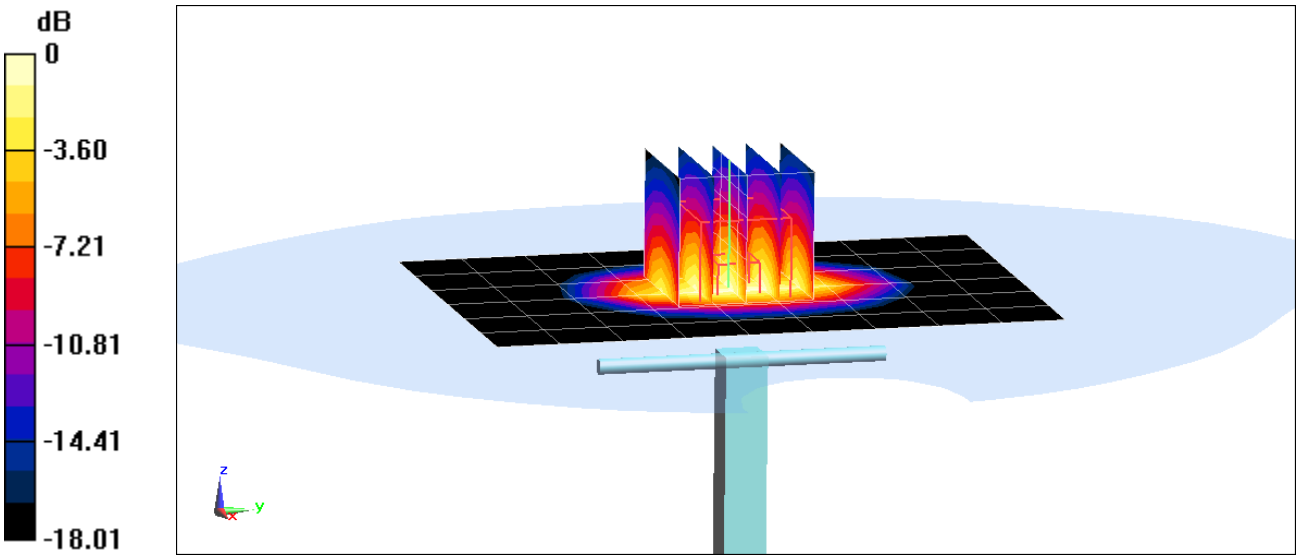
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.453 S/m; ε_r = 41.415; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 06-27-2018; Ambient Temp: 23.9°C; Tissue Temp: 22.2°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) = 7.35 W/kg
SAR(1 g) = 4.03 W/kg
Deviation(1 g) = 0.50%



0 dB = 5.11 W/kg = 7.08 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

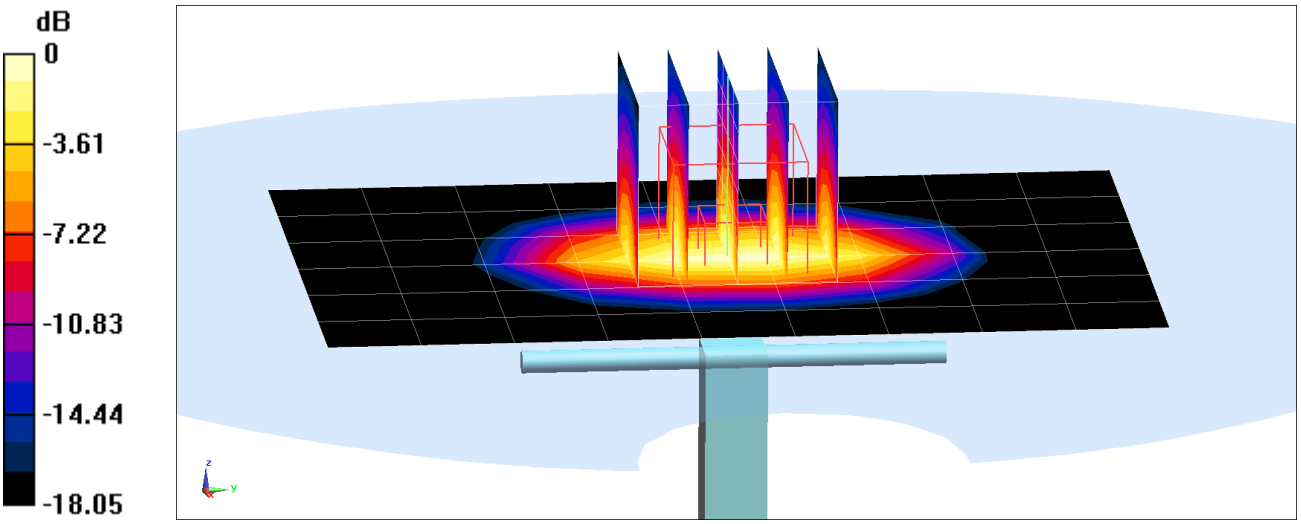
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.461 S/m; ε_r = 40.017; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-12-2018; Ambient Temp: 24.0°C; Tissue Temp: 22.8°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) = 7.64 W/kg
SAR(1 g) = 4.13 W/kg
Deviation(1 g) = 2.99%



0 dB = 5.25 W/kg = 7.20 dBW/kg