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

SAR EVALUATION REPORT

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

Date of Testing:
08/10/17 - 08/22/17
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Document Serial No.:
1M1708030234-01-R4.ZNF

FCC ID: ZNFG011C

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

DUT Type: Portable Handset
Application Type: Class II Permissive Change
FCC Rule Part(s): CFR §2.1093
Model: G011C
Permissive Change(s): See FCC Document

Equipment Class	Band & Mode	Tx Frequency	SAR			
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)	10 gm Phablet (W/kg)
PCE	CDMA/EVDO BC10 (§90S)	817.90 - 823.10 MHz	0.19	0.29	0.32	N/A
PCE	CDMA/EVDO BC0 (§22H)	824.70 - 848.31 MHz	0.21	0.30	0.32	N/A
PCE	PCS CDMA/EVDO	1851.25 - 1908.75 MHz	0.26	0.71	1.18	N/A
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.17	0.25	0.26	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.15	0.54	0.75	N/A
PCE	UMTS 850	826.40 - 846.60 MHz	0.20	0.30	0.32	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.13	0.56	0.67	N/A
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.19	0.77	0.96	N/A
PCE	LTE Band 12	699.7 - 715.3 MHz	0.15	0.28	0.28	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	0.20	0.36	0.36	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.15	0.31	0.33	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.11	0.47	0.50	N/A
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	0.18	0.61	0.78	N/A
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	0.15	0.29	0.30	N/A
PCE	LTE Band 7	2502.5 - 2567.5 MHz	0.20	0.45	0.45	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	0.17	0.29	0.29	N/A
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.85	0.38	0.38	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	0.27	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.64	0.22	N/A	1.17
NII	U-NII-2C	5500 - 5720 MHz	0.43	0.33	N/A	0.98
NII	U-NII-3	5745 - 5825 MHz	0.49	0.29	0.29	N/A
DSS/DTS	Bluetooth	2402 - 2480 MHz	<0.1	< 0.1	< 0.1	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			1.43	1.47	1.59	2.16

Note: This revised Test Report (S/N: 1M1708030234-01-R4.ZNF) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.
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 Manufacturers Forum (MMF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MMF. Further details can be obtained by emailing: sartick@mmfai.info.

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

TABLE OF CONTENTS

1 DEVICE UNDER TEST 3

2 LTE INFORMATION 12

3 INTRODUCTION 13

4 DOSIMETRIC ASSESSMENT 14

5 DEFINITION OF REFERENCE POINTS 15

6 TEST CONFIGURATION POSITIONS 16

7 RF EXPOSURE LIMITS 19

8 FCC MEASUREMENT PROCEDURES 20

9 RF CONDUCTED POWERS 27

10 SYSTEM VERIFICATION 63

11 SAR DATA SUMMARY 67

12 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS 87

13 SAR MEASUREMENT VARIABILITY 109

14 ADDITIONAL TESTING PER FCC GUIDANCE 110

15 EQUIPMENT LIST 115

16 MEASUREMENT UNCERTAINTIES 116

17 CONCLUSION 117

18 REFERENCES 118

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: CONDUCTED POWERS FOR 4x4 DL MIMO

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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 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 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 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 - 2472 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz

1.2 Power Reduction for SAR

There is no power reduction used for any band/mode implemented in this device for SAR purposes.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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 Power

Mode / Band		Modulated Average (dBm)
CDMA/EVDO BC10 (§90S)	Maximum	**25.2**
	Nominal	**24.7**
CDMA/EVDO BC0 (§22H)	Maximum	**25.2**
	Nominal	**24.7**
PCS CDMA/EVDO	Maximum	**24.2**
	Nominal	**23.7**

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	**33.7**	**33.7**	**31.2**	**29.2**	**28.2**	**26.7**	**26.7**	**25.7**	**24.7**
	Nominal	**33.2**	**33.2**	**30.7**	**28.7**	**27.7**	**26.2**	**26.2**	**25.2**	**24.2**
GSM/GPRS/EDGE 1900	Maximum	**30.7**	**30.7**	**28.2**	**26.7**	**25.7**	**25.7**	**25.7**	**24.7**	**23.7**
	Nominal	**30.2**	**30.2**	**27.7**	**26.2**	**25.2**	**25.2**	**25.2**	**24.2**	**23.2**

Mode / Band		Modulated Average (dBm)			
		3GPP WCDMA	*3GPP HSDPA*	*3GPP HSUPA*	*3GPP DC-HSDPA*
UMTS Band 5 (850 MHz)	Maximum	**25.0**	**24.0**	**24.0**	**24.0**
	Nominal	**24.5**	**23.5**	**23.5**	**23.5**
UMTS Band 4 (1750 MHz)	Maximum	**24.2**	**23.7**	**23.7**	**23.7**
	Nominal	**23.7**	**23.2**	**23.2**	**23.2**
UMTS Band 2 (1900 MHz)	Maximum	**24.2**	**23.7**	**23.7**	**23.7**
	Nominal	**23.7**	**23.2**	**23.2**	**23.2**

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Mode / Band		Modulated Average (dBm)
LTE Band 12	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 17	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 13	Maximum	**25.7**
	Nominal	**25.2**
LTE Band 26 (Cell)	Maximum	**25.7**
	Nominal	**25.2**
LTE Band 5 (Cell)	Maximum	**25.7**
	Nominal	**25.2**
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**
LTE Band 30	Maximum	**23.2**
	Nominal	**22.7**
LTE Band 7	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 41 (PC 3)	Maximum	**25.2**
	Nominal	**24.7**
LTE Band 41 (PC 2)	Maximum	**27.0**
	Nominal	**26.5**

WLAN Antenna 1 and 2 SISO

Mode / Band		Modulated Average - Single Tx Chain (dBm)				
		Ch 1-2	Ch 3-9	Ch 10-11	Ch 12	Ch 13
IEEE 802.11b (2.4 GHz)	Maximum	**19.0**			**12.5**	**12.5**
	Nominal	**17.5**			**11.0**	**11.0**
IEEE 802.11g (2.4 GHz)	Maximum	**15.5**	**17.0**	**15.5**	**7.5**	**1.5**
	Nominal	**14.0**	**15.5**	**14.0**	**6.0**	**0.0**
IEEE 802.11n (2.4 GHz)	Maximum	**14.5**	**17.0**	**14.5**	**7.5**	**1.5**
	Nominal	**13.0**	**15.5**	**13.0**	**6.0**	**0.0**
IEEE 802.11ac (2.4 GHz)	Maximum	**14.5**	**17.0**	**14.5**	**7.5**	**1.5**
	Nominal	**13.0**	**15.5**	**13.0**	**6.0**	**0.0**

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Mode / Band		Modulated Average - Single Tx Chain (dBm)				
		20 MHz Bandwidth	40 MHz Bandwidth			80 MHz Bandwidth
		Ch 36-165	Ch. 62, 102	Ch 38, 142,151	Ch 46,54,118,126,159	Ch 42 - 155
IEEE 802.11a (5 GHz)	Maximum	16.5				
	Nominal	15.0				
IEEE 802.11n (5 GHz)	Maximum	16.5	13.0	14.0	16.0	
	Nominal	15.0	11.5	12.5	14.5	
IEEE 802.11ac (5 GHz)	Maximum	16.5	13.0	14.0	16.0	12.5
	Nominal	15.0	11.5	12.5	14.5	11.0

WLAN MIMO

Mode / Band		Modulated Average - MIMO (dBm)				
		20 MHz Bandwidth				
		Ch 1-2	Ch 3-9	Ch 10-11	Ch 12	Ch 13
IEEE 802.11b (2.4 GHz)	Maximum	22.0			15.5	15.5
	Nominal	20.5			14.0	14.0
IEEE 802.11g (2.4 GHz)	Maximum	18.5	20.0	18.5	10.5	4.5
	Nominal	17.0	18.5	17.0	9.0	3.0
IEEE 802.11n/ac (2.4 GHz)	Maximum	17.5	20.0	17.5	10.5	4.5
	Nominal	16.0	18.5	16.0	9.0	3.0

Mode / Band		Modulated Average - MIMO (dBm)				
		20 MHz Bandwidth	40 MHz Bandwidth			80 MHz Bandwidth
		Ch 36-165	Ch. 62, 102	Ch 38, 142,151	Ch 46,54,118,126,159	Ch 42 - 155
IEEE 802.11a (5 GHz)	Maximum	19.5				
	Nominal	18.0				
IEEE 802.11n (5 GHz)	Maximum	19.5	16.0	17.0	19.0	
	Nominal	18.0	14.5	15.5	17.5	
IEEE 802.11ac (5 GHz)	Maximum	19.5	16.0	17.0	19.0	15.5
	Nominal	18.0	14.5	15.5	17.5	14.0

Bluetooth

Mode / Band		Modulated Average - Single Tx Chain (dBm)
Bluetooth (1 Mbps)	Maximum	11.0
	Nominal	10.0
Bluetooth (2 Mbps)	Maximum	10.0
	Nominal	9.0
Bluetooth (3 Mbps)	Maximum	10.0
	Nominal	9.0
Bluetooth LE	Maximum	10.0
	Nominal	7.0

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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	Yes
EVDO BC0 (§22H)	Yes	Yes	No	Yes	Yes	Yes
PCS EVDO	Yes	Yes	No	Yes	No	Yes
GPRS 850	Yes	Yes	No	Yes	Yes	Yes
GPRS 1900	Yes	Yes	No	Yes	No	Yes
UMTS 850	Yes	Yes	No	Yes	Yes	Yes
UMTS 1750	Yes	Yes	No	Yes	No	Yes
UMTS 1900	Yes	Yes	No	Yes	No	Yes
LTE Band 12	Yes	Yes	No	Yes	Yes	Yes
LTE Band 13	Yes	Yes	No	Yes	Yes	Yes
LTE Band 26 (Cell)	Yes	Yes	No	Yes	Yes	Yes
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	Yes
LTE Band 7	Yes	Yes	No	Yes	Yes	Yes
LTE Band 41	Yes	Yes	No	Yes	Yes	Yes
2.4 GHz WLAN Ant 1	Yes	Yes	Yes	No	No	Yes
2.4 GHz WLAN Ant 2	Yes	Yes	Yes	No	Yes	No
Bluetooth	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	Yes	No

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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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. Possible transmission paths for the DUT are shown in Figure 1-1 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

Figure 1-1
Simultaneous Transmission Paths

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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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. All licensed modes share the same antenna path and cannot transmit simultaneously.
2. 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.
3. Per the manufacturer, WIFI Direct is expected to be used in conjunction with a held-to-ear or body-worn accessory voice call. Simultaneous transmission scenarios involving WIFI direct are included in the above table.
4. 5 GHz Wireless Router is only supported for the U-NII-1 and U-NII-3 by S/W, therefore U-NII-2A, and U-NII-2C were not evaluated for wireless router conditions.
5. This device supports 2x2 MIMO Tx for WLAN. 802.11a/b/g/n/ac modes support CDD and 802.11n/ac modes additionally support SDM.
6. This device supports VOLTE and VOWIFI.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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.

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

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

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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

This device supports both LTE B12 and LTE B17. Since the supported frequency span for LTE B17 falls completely within the supported frequency span for LTE B12, both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B12.

This device supports both LTE B26 and LTE B5. Since the supported frequency span for LTE B5 falls completely within the supported frequency span for LTE B26, both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B26.

This device supports both LTE B66 (AWS) and LTE B4 (AWS). Since the supported frequency span for LTE B4 (AWS) falls completely within the supported frequency span for LTE B66 (AWS), both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B66 (AWS).

This device supports both LTE B25 (PCS) and LTE B2 (PCS). Since the supported frequency span for LTE B2 (PCS) falls completely within the supported frequency span for LTE B25 (PCS), both LTE bands have the same target power, and both LTE bands share the same transmission path, SAR was only assessed for LTE B25 (PCS).

This device supports downlink 4x4 MIMO operations for LTE Bands 2, 4, 66, 7 and 41 only. Per FCC 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.

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)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)

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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

2 LTE INFORMATION

LTE Information					
FCC ID	**ZNFG011C**				
Form Factor	Portable Handset				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 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 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 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 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 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 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 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 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	UL 5; DL 15				
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 features on 3GGP Release 11. It supports downlink carrier aggregation and downlink MIMO features as shown in Section 9 and Appendix G. 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 11 features are not supported: Relay, HetNet, Enhanced eICIC, WIFI Offloading, MDH, eMBMS, Cross-carrier scheduling, Enhanced SC-FDMA.				

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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]

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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:

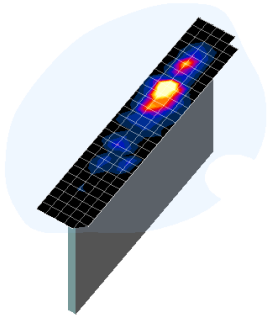


Figure 4-1
Sample SAR Area Scan

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

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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].

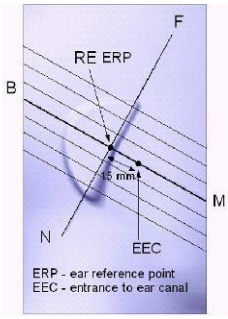


Figure 5-1
Close-Up Side view of ERP

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.

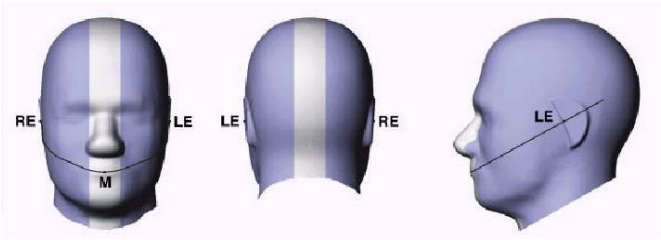


Figure 5-2
Front, back and side view of SAM Twin Phantom

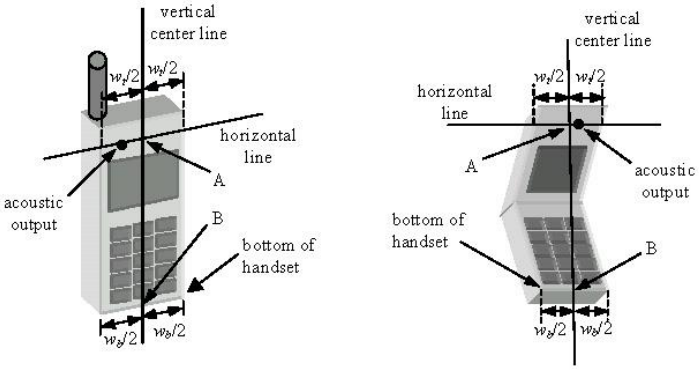


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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).

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

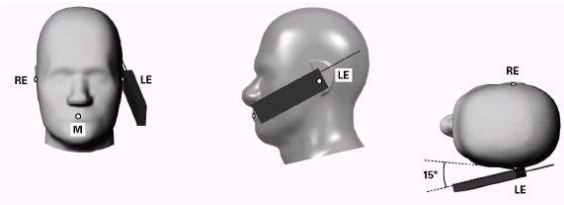


Figure 6-2
Front, Side and Top View of Ear/15º Tilt Position

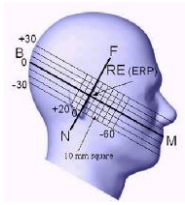


Figure 6-3
Side view w/ relevant markings

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.

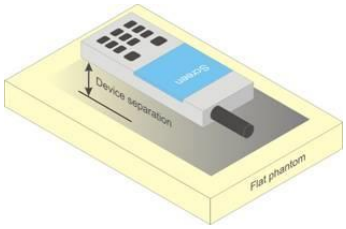


Figure 6-4
Sample Body-Worn Diagram

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 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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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 1-g body and 10-g 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 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 10-g SAR. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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.

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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 Ev-Do capabilities, the 3G SAR test reduction procedure is applied to Ev-Do 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.

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

© 2017 PCTEST Engineering Laboratory, Inc.
REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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 Ev-Do 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 Ev-Do Rev. 0 and Rev. A as the respective primary modes. Otherwise, the 'Body-Worn Accessory SAR' procedures in the '3GPP2 CDMA 2000 1x Handsets' section are applied.

8.4.6 CDMA2000 1x Advanced

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

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

8.5 SAR Measurement Conditions for UMTS

8.5.1 Output Power Verification

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

8.5.2 Head SAR Measurements

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

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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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.

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:

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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.

Per FCC KDB Publication 447498 D01v06, when the reported (scaled) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was ≤ 0.6 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.

8.6.5 TDD

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

8.6.6 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. For every supported combination of downlink only carrier aggregation, additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.7 SAR Testing with 802.11 Transmitters

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

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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 10-g 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 positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10-g 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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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 10-g 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 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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 10-g 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 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9 RF CONDUCTED POWERS

9.1 CDMA Conducted Powers

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	25.04	25.01	25.01	25.05	25.07	25.20	25.20
Cellular	1013	22H	824.7	25.03	25.07	25.01	24.99	25.10	24.89	24.97
	384	22H	836.52	25.11	25.06	25.12	25.20	25.10	25.20	25.20
	777	22H	848.31	24.98	25.07	25.14	25.10	25.02	24.89	24.98
PCS	25	24E	1851.25	24.17	24.20	24.19	24.11	24.15	24.18	24.17
	600	24E	1880	24.11	24.15	24.12	24.12	24.05	24.11	24.08
	1175	24E	1908.75	24.13	24.07	24.12	24.20	24.12	24.15	24.09

Note: 1. RC1 is only applicable for IS-95 compatibility.
2. 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

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.2 GSM Conducted Powers

Maximum Burst-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	33.70	33.65	31.15	29.13	**28.18**	26.60	26.64	25.50	24.57
	190	33.62	33.55	31.15	29.04	**28.12**	26.55	26.40	25.62	24.52
	251	33.68	33.70	31.20	29.16	**28.20**	26.60	26.62	25.68	24.49
GSM 1900	512	30.56	30.60	28.01	26.64	**25.67**	25.56	25.49	24.59	23.28
	661	30.64	30.59	28.20	26.64	**25.60**	25.41	25.18	24.49	23.33
	810	30.70	30.64	28.16	26.63	**25.70**	25.58	25.42	24.62	23.38

Calculated Maximum Frame-Averaged Output Power										
		Voice	*GPRS/EDGE Data (GMSK)*				*EDGE Data (8-PSK)*			
Band	**Channel**	**GSM [dBm] CS (1 Slot)**	**GPRS [dBm] 1 Tx Slot**	**GPRS [dBm] 2 Tx Slot**	**GPRS [dBm] 3 Tx Slot**	**GPRS [dBm] 4 Tx Slot**	**EDGE [dBm] 1 Tx Slot**	**EDGE [dBm] 2 Tx Slot**	**EDGE [dBm] 3 Tx Slot**	**EDGE [dBm] 4 Tx Slot**
GSM 850	128	24.67	24.62	25.13	24.87	**25.17**	17.57	20.62	21.24	21.56
	190	24.59	24.52	25.13	24.78	**25.11**	17.52	20.38	21.36	21.51
	251	24.65	24.67	25.18	24.90	**25.19**	17.57	20.60	21.42	21.48
GSM 1900	512	21.53	21.57	21.99	22.38	**22.66**	16.53	19.47	20.33	20.27
	661	21.61	21.56	22.18	22.38	**22.59**	16.38	19.16	20.23	20.32
	810	21.67	21.61	22.14	22.37	**22.69**	16.55	19.40	20.36	20.37
GSM 850	**Frame Avg.Targets:**	24.17	24.17	24.68	24.44	**24.69**	17.17	20.18	20.94	21.19
GSM 1900		21.17	21.17	21.68	21.94	**22.19**	16.17	19.18	19.94	20.19

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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: 33 (Max 4 Tx uplink slots)
EDGE Multislot class: 33(Max 4 Tx uplink slots)
DTM Multislot Class: N/A

Figure 9-2
Power Measurement Setup

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.3 UMTS Conducted Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	24.97	24.91	24.87	24.09	24.16	24.20	24.18	24.17	24.18	-
99		12.2 kbps AMR	25.00	24.97	25.00	24.10	24.20	24.14	24.20	24.19	24.02	-
6	HSDPA	Subtest 1	23.85	24.00	23.94	23.57	23.65	23.65	23.62	23.68	23.63	0
6		Subtest 2	23.85	23.95	23.96	23.64	23.54	23.53	23.66	23.64	23.68	0
6		Subtest 3	23.45	23.44	23.45	23.12	23.16	23.20	23.07	23.10	23.14	0.5
6		Subtest 4	23.44	23.47	23.43	23.08	23.11	23.16	23.06	23.09	23.07	0.5
6	HSUPA	Subtest 1	24.00	23.83	23.92	23.52	23.62	23.60	23.70	23.54	23.70	0
6		Subtest 2	21.98	22.00	21.98	21.51	21.55	21.63	21.44	21.53	21.45	2
6		Subtest 3	22.89	22.82	22.87	22.52	22.58	22.66	22.64	22.61	22.57	1
6		Subtest 4	21.82	21.99	21.98	21.58	21.58	21.60	21.62	21.58	21.61	2
6		Subtest 5	24.00	23.88	23.98	23.56	23.61	23.58	23.68	23.70	23.60	0
8	DC-HSDPA	Subtest 1	23.92	23.98	24.00	23.67	23.68	23.67	23.58	23.68	23.54	0
8		Subtest 2	23.81	23.87	23.96	23.56	23.43	23.51	23.66	23.66	23.70	0
8		Subtest 3	23.50	23.20	23.42	23.14	23.01	23.19	23.10	23.14	23.11	0.5
8		Subtest 4	23.43	23.47	23.41	23.08	23.01	23.07	22.94	23.16	23.01	0.5

DC-HSDPA considerations

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

Figure 9-3
Power Measurement Setup

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.4 LTE Conducted Powers

9.4.1 LTE Band 12

Table 9-1
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	25.00	0	0
	1	25	25.01		0
	1	49	**25.16**		0
	25	0	**24.16**	0-1	1
	25	12	23.70		1
	25	25	23.81		1
	50	0	23.47		1
16QAM	1	0	23.77	0-1	1
	1	25	23.67		1
	1	49	23.87		1
	25	0	22.54	0-2	2
	25	12	22.50		2
	25	25	22.53		2
	50	0	22.49		2
64QAM	1	0	22.66	0-2	2
	1	25	22.60		2
	1	49	22.76		2
	25	0	21.53	0-3	3
	25	12	21.58		3
	25	25	21.53		3
	50	0	21.52		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.

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-2
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	24.92	24.88	24.91	0	0
	1	12	24.95	24.98	24.93		0
	1	24	25.05	25.11	25.03		0
	12	0	24.12	24.13	24.14	0-1	1
	12	6	23.57	23.62	23.65		1
	12	13	23.80	23.70	23.72		1
	25	0	23.40	23.37	23.36		1
16QAM	1	0	23.71	23.76	23.67	0-1	1
	1	12	23.67	23.64	23.62		1
	1	24	23.74	23.86	23.76		1
	12	0	22.52	22.43	22.51	0-2	2
	12	6	22.41	22.36	22.48		2
	12	13	22.46	22.39	22.39		2
	25	0	22.44	22.37	22.41		2
64QAM	1	0	22.69	22.78	22.63	0-2	2
	1	12	22.69	22.63	22.60		2
	1	24	22.73	22.89	22.81		2
	12	0	21.48	21.44	21.48	0-3	3
	12	6	21.42	21.29	21.45		3
	12	13	21.45	21.34	21.37		3
	25	0	21.44	21.38	21.37		3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-3
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	24.94	24.93	24.91	0	0
	1	7	24.87	24.96	24.95		0
	1	14	25.08	25.11	25.05		0
	8	0	24.09	24.12	24.11	0-1	1
	8	4	23.60	23.57	23.59		1
	8	7	23.80	23.75	23.75		1
	15	0	23.44	23.37	23.42		1
16QAM	1	0	23.75	23.64	23.71	0-1	1
	1	7	23.54	23.62	23.55		1
	1	14	23.76	23.74	23.80		1
	8	0	22.43	22.48	22.48	0-2	2
	8	4	22.46	22.48	22.42		2
	8	7	22.48	22.44	22.40		2
	15	0	22.48	22.45	22.40		2
64QAM	1	0	22.66	22.54	22.68	0-2	2
	1	7	22.50	22.61	22.54		2
	1	14	22.78	22.71	22.79		2
	8	0	21.46	21.45	21.51	0-3	3
	8	4	21.47	21.49	21.49		3
	8	7	21.45	21.52	21.37		3
	15	0	21.43	21.47	21.36		3

Table 9-4
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	24.87	24.77	24.86	0	0
	1	2	24.83	24.93	24.86		0
	1	5	25.02	25.01	24.94		0
	3	0	24.87	24.81	24.77		0
	3	2	24.93	24.93	24.81		0
	3	3	24.99	25.02	24.96		0
	6	0	23.49	23.40	23.40	0-1	1
16QAM	1	0	23.71	23.64	23.86	0-1	1
	1	2	23.82	23.72	23.87		1
	1	5	23.72	23.66	23.77		1
	3	0	23.67	23.48	23.49		1
	3	2	23.64	23.47	23.51		1
	3	3	23.60	23.47	23.53		1
	6	0	22.49	22.55	22.38	0-2	2
64QAM	1	0	22.66	22.63	22.84	0-2	2
	1	2	22.78	22.72	22.79		2
	1	5	22.61	22.63	22.80		2
	3	0	22.69	22.42	22.52		2
	3	2	22.56	22.47	22.43		2
	3	3	22.68	22.51	22.59		2
	6	0	21.45	21.49	21.32	0-3	3

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.4.2 LTE Band 13

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

LTE Band 13 10 MHzBandwidth					
Modulation	**RB Size**	**RB Offset**	**Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]**	**MPR Allowed per 3GPP [dB]**	**MPR [dB]**
QPSK	1	0	25.69	0	0
	1	25	25.65		0
	1	49	**25.70**		0
	25	0	**24.68**	0-1	1
	25	12	24.25		1
	25	25	24.25		1
	50	0	24.21		1
16QAM	1	0	24.28	0-1	1
	1	25	24.40		1
	1	49	24.49		1
	25	0	23.28	0-2	2
	25	12	23.24		2
	25	25	23.28		2
	50	0	23.24		2
64QAM	1	0	23.26	0-2	2
	1	25	23.21		2
	1	49	23.30		2
	25	0	22.30	0-3	3
	25	12	22.30		3
	25	25	22.20		3
	50	0	22.28		3

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-6
LTE Band 13 Conducted Powers - 5 MHz Bandwidth

LTE Band 13 5 MHzBandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	25.27	0	0
	1	12	25.17		0
	1	24	25.25		0
	12	0	24.25	0-1	1
	12	6	24.25		1
	12	13	24.31		1
	25	0	24.22		1
16QAM	1	0	24.53	0-1	1
	1	12	24.50		1
	1	24	24.57		1
	12	0	23.28	0-2	2
	12	6	23.30		2
	12	13	23.35		2
	25	0	23.23		2
64QAM	1	0	23.26	0-2	2
	1	12	23.36		2
	1	24	23.35		2
	12	0	22.30	0-3	3
	12	6	22.31		3
	12	13	22.35		3
	25	0	22.40		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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.4.3 LTE Band 26 (Cell)

Table 9-7
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	**25.68**	0	0
	1	36	25.48		0
	1	74	25.64		0
	36	0	**24.66**	0-1	1
	36	18	24.28		1
	36	37	24.18		1
	75	0	24.24		1
16QAM	1	0	24.55	0-1	1
	1	36	24.47		1
	1	74	24.34		1
	36	0	23.34	0-2	2
	36	18	23.31		2
	36	37	23.20		2
	75	0	23.27		2
64QAM	1	0	23.61	0-2	2
	1	36	23.47		2
	1	74	23.25		2
	36	0	22.29	0-3	3
	36	18	22.23		3
	36	37	22.18		3
	75	0	22.20		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.

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-8
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	25.45	25.54	25.45	0	0
	1	25	25.32	25.40	25.39		0
	1	49	25.58	25.41	25.45		0
	25	0	24.48	24.49	24.50	0-1	1
	25	12	24.46	24.50	24.50		1
	25	25	24.37	24.40	24.33		1
	50	0	24.39	24.49	24.42		1
16QAM	1	0	24.67	24.68	24.64	0-1	1
	1	25	24.66	24.69	24.51		1
	1	49	24.58	24.70	24.68		1
	25	0	23.51	23.54	23.47	0-2	2
	25	12	23.44	23.46	23.55		2
	25	25	23.38	23.45	23.38		2
	50	0	23.43	23.49	23.43		2
64QAM	1	0	23.68	23.61	23.64	0-2	2
	1	25	23.54	23.68	23.57		2
	1	49	23.58	23.61	23.67		2
	25	0	22.59	22.54	22.46	0-3	3
	25	12	22.46	22.50	22.53		3
	25	25	22.36	22.38	22.38		3
	50	0	22.36	22.45	22.46		3

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-9
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	25.48	25.49	25.37	0	0
	1	12	25.41	25.43	25.51		0
	1	24	25.39	25.38	25.48		0
	12	0	24.47	24.49	24.38	0-1	1
	12	6	24.44	24.45	24.33		1
	12	13	24.40	24.46	24.30		1
	25	0	24.45	24.48	24.37		1
16QAM	1	0	24.69	24.61	24.70	0-1	1
	1	12	24.70	24.65	24.58		1
	1	24	24.64	24.64	24.57		1
	12	0	23.52	23.46	23.51	0-2	2
	12	6	23.53	23.48	23.49		2
	12	13	23.45	23.43	23.42		2
	25	0	23.47	23.61	23.39		2
64QAM	1	0	23.64	23.64	23.67	0-2	2
	1	12	23.68	23.66	23.65		2
	1	24	23.68	23.62	23.56		2
	12	0	22.57	22.48	22.42	0-3	3
	12	6	22.55	22.47	22.42		3
	12	13	22.37	22.37	22.39		3
	25	0	22.47	22.59	22.39		3

Table 9-10
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	25.37	25.41	25.65	0	0
	1	7	25.46	25.52	25.58		0
	1	14	25.28	25.37	25.61		0
	8	0	24.48	24.44	24.33	0-1	1
	8	4	24.49	24.43	24.33		1
	8	7	24.43	24.42	24.34		1
	15	0	24.45	24.43	24.34		1
16QAM	1	0	24.65	24.70	24.68	0-1	1
	1	7	24.60	24.68	24.66		1
	1	14	24.66	24.64	24.61		1
	8	0	23.53	23.41	23.33	0-2	2
	8	4	23.56	23.40	23.32		2
	8	7	23.49	23.40	23.32		2
	15	0	23.45	23.45	23.29		2
64QAM	1	0	23.55	23.68	23.65	0-2	2
	1	7	23.64	23.61	23.58		2
	1	14	23.60	23.62	23.64		2
	8	0	22.57	22.39	22.34	0-3	3
	8	4	22.64	22.49	22.35		3
	8	7	22.54	22.40	22.21		3
	15	0	22.40	22.48	22.28		3

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-11
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	25.50	25.57	25.44	0	0
	1	2	25.64	25.55	25.45		0
	1	5	25.46	25.60	25.50		0
	3	0	25.47	25.64	25.57		0
	3	2	25.64	25.48	25.64		0
	3	3	25.57	25.27	25.55		0
	6	0	24.38	24.38	24.23	0-1	1
16QAM	1	0	24.57	24.59	24.59	0-1	1
	1	2	24.67	24.67	24.66		1
	1	5	24.60	24.60	24.58		1
	3	0	24.53	24.41	24.23		1
	3	2	24.55	24.44	24.27		1
	3	3	24.49	24.41	24.24		1
	6	0	23.33	23.50	23.08	0-2	2
64QAM	1	0	23.51	23.60	23.57	0-2	2
	1	2	23.68	23.64	23.70		2
	1	5	23.55	23.68	23.55		2
	3	0	23.50	23.40	23.17		2
	3	2	23.50	23.54	23.16		2
	3	3	23.52	23.36	23.28		2
	6	0	22.33	22.47	22.08	0-3	3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.4.4 LTE Band 66 (AWS)

Table 9-12
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	24.14	24.18	24.10	0	0
	1	50	**24.20**	24.19	24.18		0
	1	99	24.08	24.19	24.17		0
	50	0	23.17	**23.19**	23.18	0-1	1
	50	25	23.03	22.98	23.07		1
	50	50	23.14	23.03	23.01		1
	100	0	23.15	23.01	23.04		1
16QAM	1	0	23.20	23.19	23.08	0-1	1
	1	50	23.14	22.89	22.91		1
	1	99	23.10	22.98	23.01		1
	50	0	21.96	21.98	22.12	0-2	2
	50	25	21.92	21.90	22.08		2
	50	50	22.13	22.00	22.05		2
	100	0	22.10	22.01	22.09		2
64QAM	1	0	22.17	22.00	22.01	0-2	2
	1	50	22.13	21.86	21.86		2
	1	99	22.03	21.89	21.90		2
	50	0	20.98	20.97	21.09	0-3	3
	50	25	20.90	20.96	20.97		3
	50	50	21.19	20.98	20.93		3
	100	0	21.07	20.92	21.07		3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-13
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	24.13	24.06	24.04	0	0
	1	36	23.95	23.89	24.00		0
	1	74	23.91	24.01	24.14		0
	36	0	23.11	22.96	23.09	0-1	1
	36	18	23.08	22.95	23.02		1
	36	37	23.06	23.02	23.19		1
	75	0	23.05	22.92	23.02		1
16QAM	1	0	23.18	22.78	23.04	0-1	1
	1	36	23.16	22.58	23.02		1
	1	74	23.19	22.69	23.12		1
	36	0	22.10	21.97	22.13	0-2	2
	36	18	22.06	21.96	22.12		2
	36	37	22.04	21.99	22.18		2
	75	0	22.11	21.95	22.07		2
64QAM	1	0	22.06	21.72	22.11	0-2	2
	1	36	22.11	21.69	22.08		2
	1	74	22.00	21.69	22.08		2
	36	0	21.11	20.98	21.11	0-3	3
	36	18	21.04	20.94	21.15		3
	36	37	21.12	20.93	21.20		3
	75	0	21.06	20.97	21.09		3

Table 9-14
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	24.07	23.98	23.99	0	0
	1	25	23.96	23.89	24.02		0
	1	49	23.98	23.98	24.03		0
	25	0	23.10	22.92	23.03	0-1	1
	25	12	23.05	22.94	23.18		1
	25	25	23.14	23.00	23.17		1
	50	0	23.07	22.96	23.18		1
16QAM	1	0	23.17	22.67	23.19	0-1	1
	1	25	23.15	22.59	23.15		1
	1	49	23.13	22.71	23.17		1
	25	0	22.10	22.02	22.05	0-2	2
	25	12	22.12	22.02	22.18		2
	25	25	22.07	22.06	22.20		2
	50	0	22.14	21.95	22.16		2
64QAM	1	0	22.00	21.68	22.19	0-2	2
	1	25	22.10	21.62	22.07		2
	1	49	22.04	21.60	22.18		2
	25	0	21.18	21.08	21.01	0-3	3
	25	12	21.11	21.00	21.16		3
	25	25	20.98	21.01	21.20		3
	50	0	21.00	20.84	21.17		3

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-15
LTE Band 66 (AWS) Conducted Powers - 5 MHz Bandwidth

LTE Band 66 (AWS) 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 131997 (1712.5 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132647 (1777.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.06	23.94	23.98	0	0
	1	12	24.00	23.90	23.95		0
	1	24	23.96	23.96	23.96		0
	12	0	23.00	22.90	23.13	0-1	1
	12	6	23.00	22.87	23.12		1
	12	13	23.00	22.99	23.09		1
	25	0	22.97	22.90	23.10		1
16QAM	1	0	23.14	22.90	23.13	0-1	1
	1	12	23.18	22.90	23.20		1
	1	24	23.19	22.97	23.19		1
	12	0	22.10	21.96	22.14	0-2	2
	12	6	22.10	21.93	22.16		2
	12	13	22.05	22.03	22.14		2
	25	0	22.03	21.95	22.09		2
64QAM	1	0	22.08	21.84	22.00	0-2	2
	1	12	22.10	21.97	22.13		2
	1	24	22.13	22.00	22.00		2
	12	0	21.13	20.89	21.12	0-3	3
	12	6	21.19	20.98	21.19		3
	12	13	21.05	21.10	21.10		3
	25	0	21.10	21.00	21.06		3

Table 9-16
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	24.20	24.19	24.04	0	0
	1	7	23.99	23.93	23.86		0
	1	14	24.03	23.95	23.83		0
	8	0	23.05	23.15	23.16	0-1	1
	8	4	23.18	22.98	23.04		1
	8	7	23.00	22.98	22.98		1
	15	0	22.93	22.96	23.03		1
16QAM	1	0	23.17	23.13	23.13	0-1	1
	1	7	23.01	22.95	23.20		1
	1	14	23.04	23.15	23.13		1
	8	0	22.17	22.04	21.97	0-2	2
	8	4	22.10	21.93	22.07		2
	8	7	22.11	22.10	21.93		2
	15	0	22.15	22.03	22.11		2
64QAM	1	0	22.19	22.00	22.12	0-2	2
	1	7	22.03	22.00	22.00		2
	1	14	22.05	22.19	22.11		2
	8	0	21.10	20.97	20.94	0-3	3
	8	4	21.00	20.87	21.16		3
	8	7	21.17	21.10	20.92		3
	15	0	21.14	21.00	21.11		3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-17
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)	Low-Mid Channel 132322 (1745.0 MHz)	Mid-High 132665 (1779.3 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.13	24.18	24.20	0	0
	1	2	24.01	23.93	23.87		0
	1	5	24.04	24.02	23.92		0
	3	0	24.03	24.12	24.08		0
	3	2	24.03	23.96	24.10		0
	3	3	24.01	23.97	23.85		0
	6	0	23.04	22.93	23.01	0-1	1
16QAM	1	0	23.14	23.11	23.10	0-1	1
	1	2	23.07	23.13	23.00		1
	1	5	23.00	23.06	23.05		1
	3	0	23.03	22.96	22.96		1
	3	2	23.07	22.93	22.99		1
	3	3	23.12	23.01	22.98		1
	6	0	22.07	21.94	22.12	0-2	2
64QAM	1	0	22.17	22.03	22.19	0-2	2
	1	2	22.10	22.14	21.97		2
	1	5	21.97	22.07	22.08		2
	3	0	22.11	21.99	21.90		2
	3	2	22.15	21.99	21.97		2
	3	3	22.09	21.93	21.95		2
	6	0	21.09	20.87	21.16	0-3	3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.4.5 LTE Band 25 (PCS)

Table 9-18
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	24.18	24.05	24.13	0	0
	1	50	**24.20**	23.91	24.08		0
	1	99	24.19	24.11	24.09		0
	50	0	**23.19**	22.88	23.18	0-1	1
	50	25	22.92	22.93	23.11		1
	50	50	22.93	22.95	23.13		1
	100	0	22.92	22.86	23.05		1
16QAM	1	0	23.18	23.18	23.13	0-1	1
	1	50	23.16	23.06	23.12		1
	1	99	23.19	23.15	23.16		1
	50	0	22.03	21.90	22.14	0-2	2
	50	25	21.99	21.96	22.17		2
	50	50	21.93	21.92	22.13		2
	100	0	21.91	21.86	22.15		2
64QAM	1	0	22.09	22.00	22.10	0-2	2
	1	50	22.00	22.16	22.20		2
	1	99	22.00	22.07	22.10		2
	50	0	21.10	20.95	21.20	0-3	3
	50	25	20.88	20.99	21.17		3
	50	50	20.97	20.84	21.05		3
	100	0	20.97	20.82	21.12		3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-19
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	23.94	23.93	24.20	0	0
	1	36	23.68	23.91	24.09		0
	1	74	23.84	23.82	24.15		0
	36	0	22.91	22.89	23.17	0-1	1
	36	18	22.79	22.94	23.16		1
	36	37	22.85	22.91	23.11		1
	75	0	22.88	22.92	23.14		1
16QAM	1	0	23.16	23.11	23.14	0-1	1
	1	36	23.05	23.17	23.17		1
	1	74	23.14	23.10	23.19		1
	36	0	21.97	21.88	22.19	0-2	2
	36	18	21.83	21.94	22.13		2
	36	37	21.91	21.93	22.12		2
	75	0	21.94	21.97	22.11		2
64QAM	1	0	22.12	22.13	22.16	0-2	2
	1	36	22.05	22.13	22.18		2
	1	74	22.19	22.10	22.16		2
	36	0	21.00	20.80	21.19	0-3	3
	36	18	20.76	20.88	21.10		3
	36	37	20.87	20.82	21.06		3
	75	0	20.86	20.88	21.07		3

Table 9-20
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	24.05	24.06	24.14	0	0
	1	25	23.70	23.90	24.04		0
	1	49	23.97	23.99	23.99		0
	25	0	22.95	22.95	23.11	0-1	1
	25	12	22.93	22.92	23.12		1
	25	25	22.75	22.92	23.07		1
	50	0	22.92	22.97	23.11		1
16QAM	1	0	23.17	23.14	23.13	0-1	1
	1	25	23.07	23.18	23.19		1
	1	49	23.19	23.19	23.12		1
	25	0	21.98	21.95	22.16	0-2	2
	25	12	21.93	21.96	22.13		2
	25	25	21.80	21.96	22.12		2
	50	0	21.95	21.97	22.15		2
64QAM	1	0	22.10	22.02	22.16	0-2	2
	1	25	22.07	22.11	22.13		2
	1	49	22.10	22.16	22.06		2
	25	0	21.07	20.83	21.20	0-3	3
	25	12	20.85	20.93	21.15		3
	25	25	20.82	20.87	21.16		3
	50	0	20.93	20.99	21.17		3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-21
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	23.97	23.95	24.02	0	0
	1	12	23.90	23.89	23.92		0
	1	24	23.90	23.92	23.91		0
	12	0	22.88	22.89	23.09	0-1	1
	12	6	22.94	22.91	23.08		1
	12	13	22.86	22.88	23.02		1
	25	0	22.89	22.87	23.06		1
16QAM	1	0	23.13	23.18	23.17	0-1	1
	1	12	23.18	23.11	23.11		1
	1	24	23.11	23.18	23.13		1
	12	0	21.97	21.92	22.19	0-2	2
	12	6	21.96	21.93	22.18		2
	12	13	21.97	21.92	22.16		2
	25	0	21.91	21.93	22.09		2
64QAM	1	0	22.08	22.19	22.13	0-2	2
	1	12	22.12	22.09	22.07		2
	1	24	22.03	22.00	22.06		2
	12	0	20.98	20.87	21.18	0-3	3
	12	6	20.96	20.94	21.20		3
	12	13	20.93	20.85	21.14		3
	25	0	20.82	20.86	21.02		3

Table 9-22
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	23.78	23.91	24.02	0	0
	1	7	23.86	24.01	24.12		0
	1	14	23.77	23.86	23.98		0
	8	0	22.88	22.87	23.03	0-1	1
	8	4	22.90	22.88	23.09		1
	8	7	22.87	22.87	23.06		1
	15	0	22.85	22.88	23.07		1
16QAM	1	0	23.10	23.18	23.12	0-1	1
	1	7	23.20	23.14	23.19		1
	1	14	23.10	23.14	23.20		1
	8	0	21.91	21.87	22.05	0-2	2
	8	4	21.97	21.86	22.07		2
	8	7	21.91	21.85	22.02		2
	15	0	21.89	21.89	22.03		2
64QAM	1	0	22.13	22.20	22.12	0-2	2
	1	7	22.10	22.01	22.16		2
	1	14	22.06	22.13	22.20		2
	8	0	20.84	20.83	21.01	0-3	3
	8	4	20.98	20.91	21.15		3
	8	7	20.82	20.84	20.91		3
	15	0	20.88	20.88	21.10		3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-23
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	23.79	24.02	23.91	0	0
	1	2	23.82	24.11	23.98		0
	1	5	23.76	24.00	23.92		0
	3	0	23.79	24.03	23.98		0
	3	2	23.86	24.09	24.04		0
	3	3	23.77	24.03	23.98		0
	6	0	22.80	23.01	22.92	0-1	1
16QAM	1	0	23.03	23.18	23.00	0-1	1
	1	2	23.14	23.20	23.14		1
	1	5	23.05	23.20	23.12		1
	3	0	22.97	23.13	23.01		1
	3	2	22.97	23.17	23.07		1
	3	3	22.93	23.13	23.00		1
	6	0	21.75	22.18	21.92	0-2	2
64QAM	1	0	22.00	22.11	21.99	0-2	2
	1	2	22.09	22.00	22.09		2
	1	5	22.03	22.17	22.15		2
	3	0	22.02	22.07	21.98		2
	3	2	21.85	22.00	22.00		2
	3	3	22.01	22.15	21.93		2
	6	0	20.81	21.13	20.84	0-3	3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.4.6 LTE Band 30

Table 9-24
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	**23.15**	0	0
	1	25	23.10		0
	1	49	23.12		0
	25	0	**22.14**	0-1	1
	25	12	21.75		1
	25	25	21.71		1
	50	0	21.72		1
16QAM	1	0	22.19	0-1	1
	1	25	21.95		1
	1	49	21.93		1
	25	0	20.90	0-2	2
	25	12	20.72		2
	25	25	20.73		2
	50	0	20.77		2
64QAM	1	0	20.70	0-2	2
	1	25	20.89		2
	1	49	20.88		2
	25	0	19.68	0-3	3
	25	12	19.70		3
	25	25	19.79		3
	50	0	19.70		3

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-25
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	23.20	0	0
	1	12	23.12		0
	1	24	23.08		0
	12	0	22.13	0-1	1
	12	6	21.69		1
	12	13	21.67		1
	25	0	21.66		1
16QAM	1	0	22.02	0-1	1
	1	12	21.90		1
	1	24	21.91		1
	12	0	20.69	0-2	2
	12	6	20.70		2
	12	13	20.68		2
	25	0	20.72		2
64QAM	1	0	20.69	0-2	2
	1	12	20.70		2
	1	24	20.80		2
	12	0	19.66	0-3	3
	12	6	19.78		3
	12	13	19.78		3
	25	0	19.80		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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.4.7 LTE Band 7

Table 9-26
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	24.99	25.07	25.18	0	0
	1	50	25.13	25.18	25.05		0
	1	99	25.15	**25.19**	24.81		0
	50	0	24.17	**24.18**	24.17	0-1	1
	50	25	23.47	23.56	23.44		1
	50	50	23.37	23.47	23.36		1
	100	0	23.48	23.55	23.41		1
16QAM	1	0	23.97	23.79	24.08	0-1	1
	1	50	23.67	23.68	23.75		1
	1	99	23.62	23.58	23.72		1
	50	0	22.53	22.64	22.57	0-2	2
	50	25	22.47	22.57	22.45		2
	50	50	22.42	22.49	22.38		2
	100	0	22.46	22.53	22.42		2
64QAM	1	0	22.93	22.68	22.96	0-2	2
	1	50	22.68	22.76	22.74		2
	1	99	22.50	22.46	22.72		2
	50	0	21.61	21.60	21.52	0-3	3
	50	25	21.54	21.59	21.45		3
	50	50	21.34	21.50	21.33		3
	100	0	21.45	21.56	21.39		3

Table 9-27
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	24.99	25.01	24.74	0	0
	1	36	24.79	24.73	24.63		0
	1	74	24.72	24.63	24.54		0
	36	0	23.65	23.53	23.43	0-1	1
	36	18	23.51	23.50	23.39		1
	36	37	23.47	23.40	23.34		1
	75	0	23.49	23.47	23.36		1
16QAM	1	0	23.97	23.87	23.71	0-1	1
	1	36	23.74	23.71	23.61		1
	1	74	23.69	23.64	23.54		1
	36	0	22.66	22.55	22.48	0-2	2
	36	18	22.51	22.49	22.42		2
	36	37	22.44	22.43	22.30		2
	75	0	22.50	22.46	22.39		2
64QAM	1	0	22.91	22.96	22.73	0-2	2
	1	36	22.66	22.69	22.58		2
	1	74	22.73	22.66	22.44		2
	36	0	21.56	21.45	21.44	0-3	3
	36	18	21.58	21.50	21.37		3
	36	37	21.41	21.32	21.31		3
	75	0	21.55	21.51	21.28		3

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-28
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	24.94	24.96	24.81	0	0
	1	25	24.83	24.85	24.68		0
	1	49	24.72	24.77	24.61		0
	25	0	23.59	23.51	23.43	0-1	1
	25	12	23.60	23.53	23.42		1
	25	25	23.44	23.46	23.31		1
	50	0	23.59	23.50	23.38		1
16QAM	1	0	23.90	23.85	23.84	0-1	1
	1	25	23.81	23.74	23.74		1
	1	49	23.68	23.64	23.66		1
	25	0	22.62	22.53	22.43	0-2	2
	25	12	22.59	22.52	22.43		2
	25	25	22.48	22.44	22.34		2
	50	0	22.57	22.53	22.39		2
64QAM	1	0	22.89	22.88	22.73	0-2	2
	1	25	22.86	22.73	22.75		2
	1	49	22.64	22.64	22.61		2
	25	0	21.52	21.48	21.38	0-3	3
	25	12	21.48	21.59	21.50		3
	25	25	21.51	21.38	21.32		3
	50	0	21.65	21.51	21.41		3

Table 9-29
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	24.88	25.00	24.99	0	0
	1	12	24.97	24.95	24.96		0
	1	24	24.85	24.80	24.89		0
	12	0	23.60	23.50	23.35	0-1	1
	12	6	23.61	23.48	23.36		1
	12	13	23.52	23.48	23.30		1
	25	0	23.58	23.47	23.35		1
16QAM	1	0	23.82	23.72	23.60	0-1	1
	1	12	23.85	23.70	23.58		1
	1	24	23.77	23.64	23.55		1
	12	0	22.65	22.49	22.48	0-2	2
	12	6	22.69	22.51	22.50		2
	12	13	22.58	22.48	22.44		2
	25	0	22.58	22.55	22.37		2
64QAM	1	0	22.72	22.68	22.51	0-2	2
	1	12	22.89	22.66	22.58		2
	1	24	22.78	22.61	22.55		2
	12	0	21.64	21.49	21.45	0-3	3
	12	6	21.75	21.50	21.41		3
	12	13	21.59	21.43	21.37		3
	25	0	21.63	21.49	21.41		3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.4.8 LTE Band 41

Table 9-30
LTE Band 41 Power Class 3 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHzBandwidth									
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	25.17	25.05	25.14	**25.20**	25.19	0	0
	1	50	24.94	24.99	25.03	25.05	24.96		0
	1	99	24.89	24.97	25.08	25.06	24.85		0
	50	0	24.11	24.07	24.00	**24.20**	24.13	0-1	1
	50	25	23.69	23.63	23.72	23.67	23.62		1
	50	50	23.62	23.57	23.59	23.60	23.64		1
	100	0	23.68	23.65	23.68	23.70	23.62		1
16QAM	1	0	23.90	23.66	24.01	23.71	23.66	0-1	1
	1	50	23.60	23.43	23.73	23.59	23.40		1
	1	99	23.54	23.26	23.64	23.56	23.40		1
	50	0	22.83	22.72	22.79	22.74	22.68	0-2	2
	50	25	22.68	22.65	22.73	22.66	22.59		2
	50	50	22.61	22.57	22.66	22.57	22.61		2
	100	0	22.65	22.67	22.71	22.68	22.61		2
64QAM	1	0	22.88	22.66	23.02	22.74	22.64	0-2	2
	1	50	22.54	22.43	22.63	22.64	22.41		2
	1	99	22.55	22.16	22.58	22.56	22.41		2
	50	0	21.82	21.73	21.82	21.74	21.71	0-3	3
	50	25	21.72	21.66	21.71	21.56	21.50		3
	50	50	21.64	21.50	21.61	21.58	21.52		3
	100	0	21.64	21.64	21.65	21.69	21.55		3

Table 9-31
LTE Band 41 Power Class 3 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHzBandwidth									
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	25.07	24.95	25.05	24.95	24.95	0	0
	1	36	24.93	24.80	24.89	24.80	24.92		0
	1	74	24.76	24.75	24.80	24.81	24.82		0
	36	0	24.05	23.91	23.93	23.93	23.90	0-1	1
	36	18	24.00	23.86	23.94	23.91	23.94		1
	36	37	23.87	23.78	23.86	23.82	23.88		1
	75	0	24.01	23.92	23.87	23.87	23.95		1
16QAM	1	0	24.06	23.92	24.06	23.95	23.92	0-1	1
	1	36	23.91	23.77	23.91	23.80	23.87		1
	1	74	23.77	23.68	23.81	23.79	23.76		1
	36	0	23.03	22.91	22.97	22.91	22.87	0-2	2
	36	18	23.02	22.85	22.95	22.91	22.92		2
	36	37	22.84	22.77	22.85	22.83	22.82		2
	75	0	22.98	22.85	22.91	22.89	22.94		2
64QAM	1	0	23.06	22.85	23.02	22.91	22.88	0-2	2
	1	36	22.83	22.70	22.93	22.78	22.74		2
	1	74	22.83	22.63	22.81	22.74	22.64		2
	36	0	22.04	21.95	21.93	21.88	21.98	0-3	3
	36	18	21.97	21.80	21.97	21.87	21.94		3
	36	37	21.77	21.84	21.81	21.92	21.86		3
	75	0	22.03	21.85	21.95	21.89	21.80		3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-32
LTE Band 41 Power Class 3 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHzBandwidth									
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	25.02	24.93	24.99	24.93	24.89	0	0
	1	25	24.96	24.79	24.88	24.83	24.87		0
	1	49	24.80	24.76	24.83	24.87	24.82		0
	25	0	23.99	23.86	23.94	23.92	23.96	0-1	1
	25	12	24.02	23.91	23.91	23.92	23.91		1
	25	25	23.95	23.80	23.83	23.83	23.87		1
	50	0	23.99	23.85	23.90	23.88	23.87		1
16QAM	1	0	23.99	23.87	24.12	23.92	23.78	0-1	1
	1	25	23.94	23.78	24.01	23.82	23.82		1
	1	49	23.80	23.69	23.93	23.87	23.78		1
	25	0	23.06	22.89	22.93	22.92	22.97	0-2	2
	25	12	23.03	22.87	22.93	22.92	22.95		2
	25	25	22.98	22.84	22.85	22.86	22.89		2
	50	0	22.98	22.88	22.95	22.88	22.97		2
64QAM	1	0	23.04	22.78	23.04	23.00	22.71	0-2	2
	1	25	22.97	22.75	22.91	22.77	22.73		2
	1	49	22.76	22.65	23.01	22.80	22.69		2
	25	0	22.07	21.88	21.91	22.02	21.93	0-3	3
	25	12	21.97	21.89	22.01	21.87	21.96		3
	25	25	22.07	21.84	21.88	21.80	21.88		3
	50	0	22.00	21.91	21.90	21.81	22.01		3

Table 9-33
LTE Band 41 Power Class 3 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHzBandwidth									
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	24.96	24.85	24.85	24.87	24.81	0	0
	1	12	24.92	24.86	24.84	24.85	24.91		0
	1	24	24.78	24.78	24.77	24.78	24.87		0
	12	0	23.97	23.86	23.93	23.89	23.93	0-1	1
	12	6	24.03	23.90	23.91	23.89	23.90		1
	12	13	23.97	23.81	23.87	23.86	23.88		1
	25	0	23.98	23.80	23.89	23.86	23.87		1
16QAM	1	0	23.89	23.80	23.98	23.80	23.73	0-1	1
	1	12	23.88	23.74	23.95	23.77	23.82		1
	1	24	23.73	23.72	23.87	23.73	23.81		1
	12	0	23.01	22.84	22.96	22.89	22.89	0-2	2
	12	6	23.02	22.86	22.96	22.93	22.92		2
	12	13	22.99	22.80	22.93	22.84	22.82		2
	25	0	22.96	22.87	22.88	22.86	22.94		2
64QAM	1	0	22.83	22.77	22.95	22.81	22.73	0-2	2
	1	12	22.94	22.64	22.91	22.67	22.74		2
	1	24	22.73	22.64	22.90	22.75	22.83		2
	12	0	21.97	21.83	21.87	21.85	21.82	0-3	3
	12	6	22.04	21.79	21.92	21.89	21.92		3
	12	13	21.90	21.79	21.93	21.76	21.86		3
	25	0	21.96	21.90	21.90	21.77	21.94		3

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-34
LTE Band 41 Power Class 2 Conducted Powers - 20 MHz Bandwidth

LTE Band 41 20 MHzBandwidth									
Modulation	RB Size	RB Offset	Low Channel 39790 (2510 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	26.97	26.91	26.95	26.86	26.98	0	0
	1	50	26.92	26.90	26.96	26.84	26.78		0
	1	99	26.91	26.90	26.95	26.90	26.56		0
	50	0	25.94	25.96	25.91	25.92	25.86	0-1	1
	50	25	25.21	25.24	25.36	25.38	25.25		1
	50	50	25.07	25.16	25.33	25.33	25.21		1
	100	0	25.29	25.26	25.37	25.39	25.24		1
16QAM	1	0	25.59	25.59	25.60	25.84	25.63	0-1	1
	1	50	25.28	25.40	25.43	25.72	25.38		1
	1	99	25.41	25.28	25.38	25.73	25.40		1
	50	0	24.24	24.31	24.46	24.49	24.29	0-2	2
	50	25	24.27	24.23	24.40	24.44	24.22		2
	50	50	24.13	24.18	24.32	24.38	24.23		2
	100	0	24.14	24.26	24.38	24.38	24.22		2
64QAM	1	0	24.67	24.61	24.54	24.92	24.60	0-2	2
	1	50	24.23	24.34	24.36	24.70	24.32		2
	1	99	24.22	24.19	24.37	24.77	24.37		2
	50	0	23.22	23.26	23.46	23.54	23.35	0-3	3
	50	25	23.12	23.15	23.39	23.49	23.22		3
	50	50	23.05	23.10	23.33	23.41	23.15		3
	100	0	23.30	23.30	23.38	23.47	23.23		3

Table 9-35
LTE Band 41 Power Class 2 Conducted Powers - 15 MHz Bandwidth

LTE Band 41 15 MHzBandwidth									
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	26.64	26.66	26.72	26.87	26.74	0	0
	1	36	26.49	26.53	26.59	26.73	26.67		0
	1	74	26.31	26.47	26.48	26.73	26.58		0
	36	0	25.36	25.28	25.42	25.48	25.32	0-1	1
	36	18	25.34	25.24	25.41	25.40	25.37		1
	36	37	25.13	25.17	25.32	25.37	25.31		1
	75	0	25.31	25.23	25.37	25.36	25.32		1
16QAM	1	0	25.59	25.73	25.66	25.90	25.68	0-1	1
	1	36	25.49	25.54	25.53	25.71	25.62		1
	1	74	25.28	25.52	25.50	25.78	25.48		1
	36	0	24.35	24.26	24.44	24.45	24.32	0-2	2
	36	18	24.32	24.27	24.41	24.43	24.39		2
	36	37	24.10	24.17	24.33	24.32	24.28		2
	75	0	24.31	24.22	24.39	24.39	24.33		2
64QAM	1	0	24.56	24.66	24.71	24.93	24.69	0-2	2
	1	36	24.49	24.43	24.59	24.74	24.59		2
	1	74	24.15	24.55	24.57	24.75	24.40		2
	36	0	23.35	23.14	23.35	23.42	23.31	0-3	3
	36	18	23.28	23.21	23.40	23.39	23.33		3
	36	37	23.12	23.17	23.33	23.34	23.22		3
	75	0	23.20	23.19	23.43	23.31	23.25		3

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-36
LTE Band 41 Power Class 2 Conducted Powers - 10 MHz Bandwidth

LTE Band 41 10 MHzBandwidth									
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	26.89	26.70	26.77	26.80	26.74	0	0
	1	25	26.77	26.78	26.89	26.80	26.75		0
	1	49	26.80	26.84	26.95	26.80	26.71		0
	25	0	25.38	25.28	25.40	25.42	25.37	0-1	1
	25	12	25.41	25.28	25.42	25.40	25.34		1
	25	25	25.34	25.23	25.38	25.38	25.22		1
	50	0	25.38	25.26	25.40	25.39	25.32		1
16QAM	1	0	25.62	25.67	25.82	25.65	25.75	0-1	1
	1	25	25.55	25.63	25.75	25.58	25.67		1
	1	49	25.39	25.56	25.72	25.62	25.80		1
	25	0	24.41	24.31	24.44	24.44	24.38	0-2	2
	25	12	24.40	24.30	24.45	24.42	24.36		2
	25	25	24.36	24.25	24.41	24.38	24.35		2
	50	0	24.39	24.30	24.45	24.38	24.36		2
64QAM	1	0	24.66	24.68	24.89	24.64	24.76	0-2	2
	1	25	24.46	24.60	24.82	24.46	24.60		2
	1	49	24.36	24.58	24.61	24.58	24.80		2
	25	0	23.36	23.26	23.37	23.52	23.32	0-3	3
	25	12	23.46	23.22	23.49	23.38	23.34		3
	25	25	23.32	23.24	23.29	23.40	23.38		3
	50	0	23.30	23.29	23.44	23.25	23.32		3

Table 9-37
LTE Band 41 Power Class 2 Conducted Powers - 5 MHz Bandwidth

LTE Band 41 5 MHzBandwidth									
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	26.64	26.65	26.74	26.69	26.60	0	0
	1	12	26.56	26.59	26.67	26.61	26.62		0
	1	24	26.45	26.57	26.61	26.66	26.57		0
	12	0	25.37	25.28	25.43	25.40	25.32	0-1	1
	12	6	25.40	25.30	25.40	25.40	25.36		1
	12	13	25.34	25.25	25.39	25.39	25.26		1
	25	0	25.33	25.27	25.37	25.40	25.30		1
16QAM	1	0	25.52	25.51	25.75	25.59	25.48	0-1	1
	1	12	25.50	25.47	25.73	25.54	25.51		1
	1	24	25.37	25.46	25.72	25.53	25.53		1
	12	0	24.42	24.29	24.50	24.46	24.36	0-2	2
	12	6	24.45	24.33	24.55	24.50	24.35		2
	12	13	24.37	24.27	24.46	24.41	24.29		2
	25	0	24.35	24.32	24.39	24.37	24.37		2
64QAM	1	0	24.55	24.46	24.67	24.50	24.45	0-2	2
	1	12	24.51	24.48	24.73	24.55	24.56		2
	1	24	24.29	24.38	24.71	24.51	24.60		2
	12	0	23.40	23.34	23.54	23.40	23.35	0-3	3
	12	6	23.37	23.33	23.58	23.39	23.43		3
	12	13	23.42	23.32	23.49	23.35	23.22		3
	25	0	23.33	23.31	23.38	23.42	23.37		3

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.4.9 LTE Carrier Aggregation Conducted Powers

Table 9-38
Two Component Carrier Conducted Powers

	PCC									SCC				Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-2A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B2	5	1175	1987.5	24.10	24.20
CA_2A-4A (2)	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B4	20	2175	2132.5	24.04	24.20
CA_2A-5A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B5	10	2525	881.5	24.10	24.20
CA_2A-7A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B7	20	3100	2655	24.13	24.20
CA_2A-12A (1)	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B12	10	5095	737.5	24.16	24.20
CA_2A-17A	LTE B2	10	19150	1905	QPSK	1	0	1150	1985	LTE B17	10	5790	740	24.16	24.14
CA_2A-29A (2)	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B29	10	9715	722.5	24.06	24.20
CA_2A-30A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B30	10	9820	2355	24.03	24.20
CA_2A-66A (2)	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B66	20	66786	2145	24.10	24.20
CA_2A-13A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B13	10	5230	751	24.10	24.20
CA_2A-4A (2)	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B2	20	900	1960	24.09	24.20
CA_4A-4A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B4	5	2375	2152.5	24.09	24.20
CA_4A-5A (1)	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B5	10	2525	881.5	24.16	24.20
CA_4A-7A (1)	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B7	20	3100	2655	24.08	24.20
CA_4A-12A (2)	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B12	10	5095	737.5	24.20	24.20
CA_4A-13A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B13	10	5230	751	24.11	24.20
CA_4A-17A	LTE B4	10	20000	1715	QPSK	1	0	2000	2115	LTE B17	10	5790	740	24.10	24.07
CA_4A-29A (2)	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B29	10	9715	722.5	24.20	24.20
CA_4A-30A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B30	10	9820	2355	24.13	24.20
CA_2A-5A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B2	20	900	1960	25.22	25.58
CA_4A-5A (1)	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B4	20	2175	2132.5	25.33	25.58
CA_5A-7A (1)	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B7	20	3100	2655	25.28	25.58
CA_5A-66A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B66	20	66786	2145	25.38	25.58
CA_5B	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B5	10	2549	883.9	25.33	25.58
CA_5A-30A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B30	10	9820	2355	25.30	25.58
CA_25A-25A (1)	LTE B25	20	26140	1860	QPSK	1	50	8140	1940	LTE B25	5	8665	1992.5	24.00	24.20
CA_2A-7A	LTE B7	20	21100	2535	QPSK	1	99	3100	2655	LTE B2	20	900	1960	25.20	25.19
CA_4A-7A (1)	LTE B7	20	21100	2535	QPSK	1	99	3100	2655	LTE B4	20	2175	2132.5	25.17	25.19
CA_5A-7A (1)	LTE B7	20	21100	2535	QPSK	1	99	3100	2655	LTE B5	10	2525	881.5	25.10	25.19
CA_7A-7A (1)	LTE B7	20	21100	2535	QPSK	1	99	3100	2655	LTE B7	5	2775	2622.5	25.08	25.19
CA_7C (1)	LTE B7	20	21100	2535	QPSK	1	99	3100	2655	LTE B7	20	2902	2635.2	25.00	25.19
CA_7A-12A	LTE B7	20	21100	2535	QPSK	1	99	3100	2655	LTE B12	10	5095	737.5	25.20	25.19
CA_2A-66A (2)	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B2	20	900	1960	24.19	24.20
CA_5A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B5	10	2525	881.5	24.01	24.20
CA_12A-66A (2)	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B12	10	5095	737.5	24.17	24.20
CA_13A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B13	10	5230	751	24.19	24.20
CA_66A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B66	5	67311	2197.5	24.16	24.20
CA_66B	LTE B66	15	132597	1772.5	QPSK	1	74	67061	2172.5	LTE B66	5	66962	2162.6	24.14	24.14
CA_66C	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B66	20	66734	2139.8	24.11	24.20
CA_2A-12A (1)	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	20	900	1960	25.10	25.16
CA_4A-12A (2)	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B4	20	2175	2132.5	25.13	25.16
CA_7A-12A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B7	20	3100	2655	25.01	25.16
CA_12A-30A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B30	10	9820	2355	25.16	25.16
CA_12A-66A (2)	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B66	20	66786	2145	25.20	25.16
CA_2A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B2	20	900	1960	23.00	23.20
CA_4A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B4	20	2175	2132.5	23.13	23.20
CA_5A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B5	10	2525	881.5	23.20	23.20
CA_12A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B12	10	5095	737.5	23.10	23.20
CA_29A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B29	10	9715	722.5	23.10	23.20
CA_2A-13A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	25.66	25.70
CA_4A-13A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B4	20	2175	2132.5	25.70	25.70
CA_13A-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B66	20	66786	2145	25.58	25.70
CA_2A-17A	LTE B17	10	23790	710	QPSK	1	49	5790	740	LTE B2	10	900	1960	25.18	25.16
CA_4A-17A	LTE B17	10	23790	710	QPSK	1	49	5790	740	LTE B4	10	2175	2132.5	25.11	25.16
CA_41A-41A (1)	LTE B41	20	41055	2636.5	QPSK	1	0	41055	2636.5	LTE B41	5	39750	2506	25.19	25.20
CA_41C (1)	LTE B41	20	41055	2636.5	QPSK	1	0	41055	2636.5	LTE B41	20	40857	2616.7	25.11	25.20
CA_41A-41A (1)	LTE B41 (PC2)	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	5	41490	2680	26.99	26.98
CA_41C (1)	LTE B41 (PC2)	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	41292	2660.2	26.95	26.98

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-39
Three Component Carrier Conducted Powers

	PCC									SCC 1				SCC 2				Power	
Combination	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA_2A-2A-4A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B2	5	1175	1987.5	LTE B4	20	2175	2132.5	24.13	24.20
CA_2A-2A-5A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B2	5	1175	1987.5	LTE B5	10	2525	881.5	24.13	24.20
CA_2A-2A-12A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B2	5	1175	1987.5	LTE B12	10	5095	737.5	24.20	24.20
CA_2A-2A-13A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B2	5	1175	1987.5	LTE B13	10	5230	751	24.10	24.20
CA_2A-4A-4A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B4	20	2175	2132.5	LTE B4	5	2375	2152.5	24.10	24.20
CA_2A-4A-5A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B4	20	2175	2132.5	LTE B5	10	2525	881.5	24.19	24.20
CA_2A-4A-7A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B4	20	2175	2132.5	LTE B7	20	3100	2655	24.13	24.20
CA_2A-4A-13A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B4	20	2175	2132.5	LTE B13	10	5230	751	24.09	24.20
CA_2A-5A-30A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B5	10	2525	881.5	LTE B30	10	9820	2355	24.13	24.20
CA_2A-5A-66A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B5	10	2525	881.5	LTE B66	20	66786	2145	24.10	24.20
CA_2A-12A-30A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B12	10	5095	737.5	LTE B30	10	9820	2355	24.00	24.20
CA_2A-13A-66A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B13	10	5230	751	LTE B66	20	66786	2145	24.20	24.20
CA_2A-29A-30A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B29	10	9715	722.5	LTE B30	10	9820	2355	24.10	24.20
CA_2A-4A-12A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B4	20	2175	2132.5	LTE B12	10	5095	737.5	24.17	24.20
CA_2A-4A-29A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B4	20	2175	2132.5	LTE B29	10	9715	722.5	24.13	24.20
CA_2A-12A-66A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B12	10	5095	737.5	LTE B66	20	66786	2145	24.07	24.20
CA_2A-66A-66A	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B66	5	66786	2145	LTE B66	5	66461	2112.5	24.20	24.20
CA_2A-66C	LTE B2	20	18700	1860	QPSK	1	50	700	1940	LTE B66	20	66786	2145	LTE B66	20	66984	2164.8	24.19	24.20
CA_2A-2A-4A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B2	20	900	1960	LTE B2	5	625	1932.5	24.18	24.20
CA_2A-4A-4A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B2	20	900	1960	LTE B4	5	2375	2152.5	24.20	24.20
CA_2A-4A-5A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B2	20	900	1960	LTE B5	10	2525	881.5	24.20	24.20
CA_2A-4A-7A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B2	20	900	1960	LTE B7	20	3100	2655	24.13	24.20
CA_2A-4A-13A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B2	20	900	1960	LTE B13	10	5230	751	24.09	24.20
CA_4A-5A-30A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B5	10	2525	881.5	LTE B30	10	9820	2355	24.00	24.20
CA_4A-7A-12A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B7	20	3100	2655	LTE B12	10	5095	737.5	24.20	24.20
CA_4A-12A-30A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B12	10	5095	737.5	LTE B30	10	9820	2355	24.13	24.20
CA_4A-29A-30A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B29	10	9715	722.5	LTE B30	10	9820	2355	24.11	24.20
CA_2A-4A-12A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B2	20	900	1960	LTE B12	10	5095	737.5	24.06	24.20
CA_2A-4A-29A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B2	20	900	1960	LTE B29	10	9715	722.5	24.06	24.20
CA_4A-4A-5A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B4	5	2375	2152.5	LTE B5	10	2525	881.5	24.16	24.20
CA_4A-4A-12A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B4	5	2375	2152.5	LTE B12	10	5095	737.5	24.16	24.20
CA_4A-4A-13A	LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B4	5	2375	2152.5	LTE B13	10	5230	751	24.20	24.20
CA_41D	LTE B41	20	41055	2636.5	QPSK	1	0	41055	2636.5	LTE B41	20	40857	2616.7	LTE B41	20	40659	2596.9	25.20	25.20
CA_2A-2A-5A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B2	5	900	1960	LTE B2	5	625	1932.5	25.33	25.58
CA_2A-4A-5A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	25.40	25.58
CA_2A-5A-30A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B2	20	900	1960	LTE B30	10	9820	2355	25.33	25.58
CA_2A-5A-66A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B2	20	900	1960	LTE B66	20	66786	2145	25.22	25.58
CA_4A-5A-30A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B4	20	2175	2132.5	LTE B30	10	9820	2355	25.20	25.58
CA_4A-4A-5A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B4	5	2175	2132.5	LTE B4	5	1975	2112.5	25.30	25.58
CA_5A-66A-66A	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B66	5	66786	2145	LTE B66	5	66461	2112.5	25.36	25.58
CA_5A-66C	LTE B5	10	20450	829	QPSK	1	49	2450	874	LTE B66	20	66786	2145	LTE B66	20	66984	2164.8	25.29	25.58
CA_4A-7A-12A	LTE B7	20	21100	2535	QPSK	1	99	3100	2655	LTE B4	20	2175	2132.5	LTE B12	10	5095	737.5	25.20	25.19
CA_2A-4A-7A	LTE B7	20	21100	2535	QPSK	1	99	3100	2655	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	25.10	25.19
CA_13A-66A-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B66	5	66786	2145	LTE B66	5	66461	2112.5	25.60	25.70
CA_12A-66C	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B66	20	66786	2145	LTE B66	20	66984	2164.8	25.11	25.16
CA_2A-5A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B2	20	900	1960	LTE B5	10	2525	881.5	23.15	23.20
CA_2A-12A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B2	20	900	1960	LTE B12	10	5095	737.5	23.06	23.20
CA_2A-29A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B2	20	900	1960	LTE B29	10	9715	722.5	23.17	23.20
CA_4A-5A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B4	20	2175	2132.5	LTE B5	10	2525	881.5	23.18	23.20
CA_4A-12A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B4	20	2175	2132.5	LTE B12	10	5095	737.5	23.20	23.20
CA_4A-29A-30A	LTE B30	5	27710	2310	QPSK	1	0	9820	2355	LTE B4	20	2175	2132.5	LTE B29	10	9715	722.5	23.10	23.20
CA_41A-41C	LTE B41	20	41055	2636.5	QPSK	1	0	41055	2636.5	LTE B41	20	39750	2506	LTE B41	20	39948	2525.8	25.15	25.20
CA_41C-41A	LTE B41	20	41055	2636.5	QPSK	1	0	41055	2636.5	LTE B41	20	41253	2656.3	LTE B41	5	39750	2506	25.19	25.20
CA_2A-2A-12A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	5	900	1960	LTE B2	5	625	1932.5	25.14	25.16
CA_2A-12A-30A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	20	900	1960	LTE B30	10	9820	2355	25.19	25.16
CA_12A-66A-66A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B66	5	66786	2145	LTE B66	5	66461	2112.5	25.17	25.16
CA_4A-7A-12A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B4	20	2175	2132.5	LTE B7	20	3100	2655	25.10	25.16
CA_4A-12A-30A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B4	20	2175	2132.5	LTE B30	10	9820	2355	25.16	25.16
CA_2A-4A-12A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	25.18	25.16
CA_2A-12A-66A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	25.11	25.16
CA_2A-2A-13A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	5	900	1960	LTE B2	5	625	1932.5	25.65	25.70
CA_2A-4A-13A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B4	20	2175	2132.5	25.66	25.70
CA_2A-13A-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B66	20	66786	2145	25.66	25.70
CA_13A-66C	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B66	20	66786	2145	LTE B66	20	66984	2164.8	25.55	25.70
CA_4A-4A-13A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B4	20	2175	2132.5	LTE B4	5	2375	2152.5	25.59	25.70
CA_4A-4A-12A	LTE B12	10	23095	707.5	QPSK	1	49	5095	737.5	LTE B4	20	2175	2132.5	LTE B4	5	2375	2152.5	25.17	25.16
CA_2A-5A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B2	20	900	1960	LTE B5	10	2525	881.5	24.20	24.20
CA_2A-13A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B2	20	900	1960	LTE B13	10	5230	751	24.06	24.20
CA_13A-66C	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B13	10	5230	751	LTE B66	20	66734	2139.8	24.05	24.20
CA_12A-66A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B12	10	5095	737.5	LTE B66	5	67311	2197.5	24.06	24.20
CA_2A-12A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B2	20	900	1960	LTE B12	10	5095	737.5	24.10	24.20
CA_2A-66A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B2	20	900	1960	LTE B66	5	67311	2197.5	24.13	24.20
CA_2A-66C	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B2	20	900	1960	LTE B66	20	66734	2139.8	24.18	24.20
CA_5A-66A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B5	10	2525	881.5	LTE B66	5	67311	2197.5	24.18	24.20
CA_5A-66C	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B5	10	2525	881.5	LTE B66	20	66734	2139.8	24.00	24.20
CA_12A-66C	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B12	10	5095	737.5	LTE B66	20	66734	2139.8	24.08	24.20
CA_13A-66A-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B13	10	5230	751	LTE B66	5	67311	2197.5	24.03	24.20
CA_66A-66C	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B66	20	67186	2185	LTE B66	5	67303	2196.7	24.16	24.20
CA_66C-66A	LTE B66	20	132072	1720	QPSK	1	50	66536	2120	LTE B66	5	67311	2197.5	LTE B66	20	66734	2139.8	24.20	24.20
CA_41D	LTE B41 (PC2)	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	41094	2640.4	26.98	26.98
CA_41A-41C	LTE B41 (PC2)	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	5	41490	2680	LTE B41	20	39948	2525.8	26.90	26.98
CA_41C-41A	LTE B41 (PC2)	20	41490	2680	QPSK	1	0	41490	2680	LTE B41	20	41292	2660.2	LTE B41	20	41490	2680	26.95	26.98

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

1. The device only supports downlink Carrier Aggregation. For every supported combination of downlink carrier aggregation, power measurements were performed 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.
2. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
3. For every supported combination of downlink carrier aggregation, power measurements were performed 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.
4. All control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
5. Per FCC guidance, LTE B26 standalone powers were used to select measurement configurations for LTE B5, LTE Band 25 standalone powers were used to select measurement configurations for LTE Band 2, LTE Band 66 standalone powers were used to select measurement configurations for LTE B4, and LTE Band 12 standalone powers were used to select measurement configurations for LTE B17.
6. For downlink carrier aggregation combinations, PCC uplink channel was selected based on section C)3)b)ii) of KBD 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers. All selected downlink channels remained fully within the downlink transmission band of the respective component carrier.

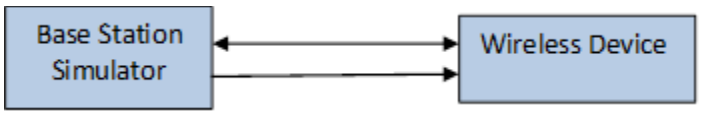


Figure 9-4
Power Measurement Setup

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.5 WLAN Conducted Powers

Table 9-40
2.4 GHz WLAN Ant 1 Maximum Average RF Power

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	18.23	14.92
2422	3	N/A	16.29
2437	6	18.33	16.10
2452	9	N/A	15.82
2462	11	**18.36**	15.40

Table 9-41
2.4 GHz WLAN Ant 2 Maximum Average RF Power

2.4GHz Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11b	802.11g
2412	1	18.01	14.79
2422	3	N/A	16.47
2437	6	17.95	16.35
2452	9	N/A	16.60
2462	11	**18.23**	15.43

Table 9-42
5 GHz WLAN Ant 1 Maximum Average RF Power

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	16.09	15.85	15.86
5200	40	15.90	15.74	15.68
5220	44	15.81	15.64	15.62
5240	48	15.59	15.48	15.41
5260	52	15.50	15.30	15.23
5280	56	**15.54**	15.39	15.42
5300	60	15.32	15.06	15.08
5320	64	15.34	15.05	15.25
5500	100	**16.43**	16.28	16.21
5600	120	12.91	12.94	12.95
5620	124	12.99	12.55	12.84
5720	144	15.83	15.73	15.70
5745	149	15.79	15.69	15.67
5785	157	15.79	15.52	15.58
5825	165	**15.85**	15.73	15.74

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 9-43
5 GHz WLAN Ant 2 Maximum Average RF Power

5GHz (20MHz) Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11a	802.11n	802.11ac
5180	36	15.04	14.89	14.92
5200	40	14.88	14.72	14.70
5220	44	14.89	14.70	14.73
5240	48	**15.21**	15.04	15.15
5260	52	**15.20**	15.05	15.10
5280	56	14.97	14.90	14.89
5300	60	14.94	14.90	14.83
5320	64	14.84	14.74	14.71
5500	100	15.84	15.77	15.71
5600	120	14.85	14.55	14.58
5620	124	14.74	14.62	14.59
5720	144	**16.49**	16.36	16.34
5745	149	16.40	16.15	16.13
5785	157	16.25	16.06	16.00
5825	165	**16.49**	16.46	16.34

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.

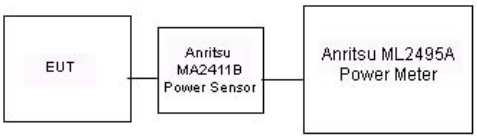


Figure 9-5
Power Measurement Setup for Bandwidths < 50 MHz

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

9.6 Bluetooth Conducted Powers

Table 9-44
Bluetooth Average RF Power

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	**10.01**	10.016
2441	1.0	39	9.57	9.050
2480	1.0	78	9.59	9.106
2402	2.0	0	9.22	8.348
2441	2.0	39	8.77	7.532
2480	2.0	78	8.90	7.770
2402	3.0	0	9.26	8.430
2441	3.0	39	8.82	7.620
2480	3.0	78	8.96	7.862

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

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

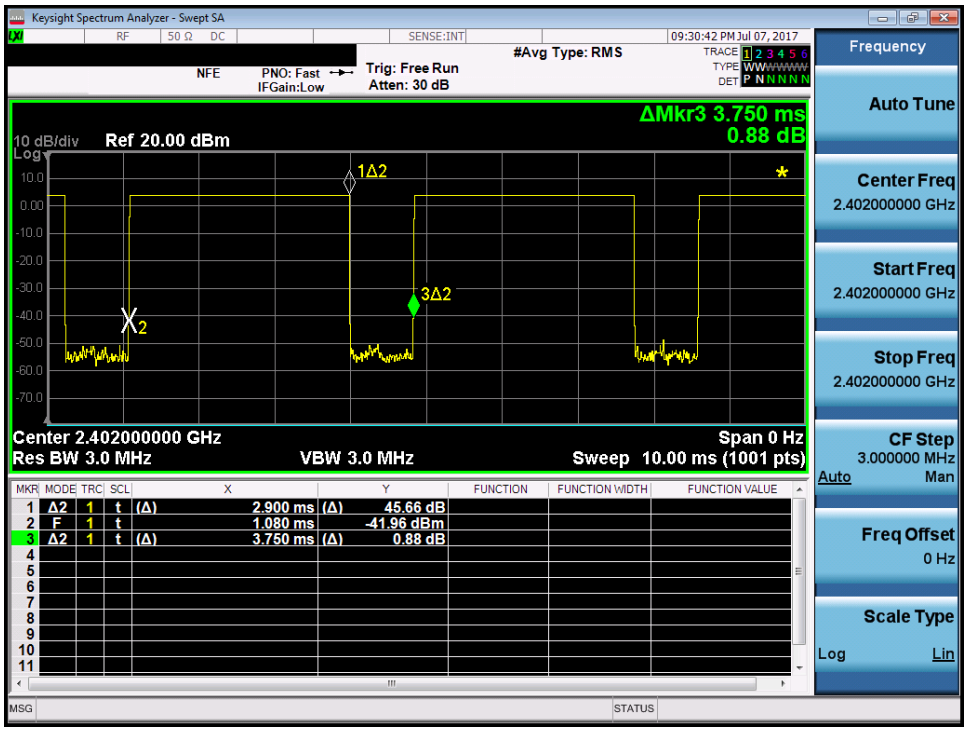


Figure 9-6
Bluetooth Transmission Plot

Equation 2
Bluetooth Duty Cycle Calculation

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

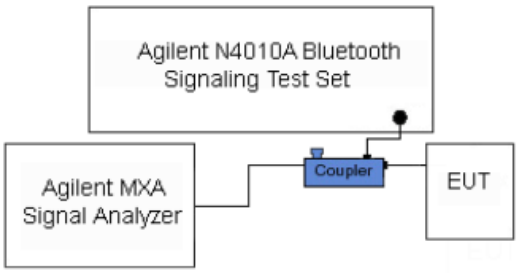


Figure 9-7
Power Measurement Setup

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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
8/17/2017	750H	21.5	700	0.859	42.902	0.889	42.201	-3.37%	1.66%
			710	0.868	42.766	0.890	42.149	-2.47%	1.46%
			740	0.895	42.404	0.893	41.994	0.22%	0.98%
			755	0.909	42.205	0.894	41.916	1.68%	0.69%
8/22/2017	750H	19.5	740	0.894	42.146	0.893	41.994	0.11%	0.36%
			755	0.910	41.952	0.894	41.916	1.79%	0.09%
			770	0.925	41.749	0.895	41.838	3.35%	-0.21%
			785	0.939	41.538	0.896	41.760	4.80%	-0.53%
8/17/2017	835H	21.2	820	0.897	43.256	0.899	41.578	-0.22%	4.04%
			835	0.911	43.063	0.900	41.500	1.22%	3.77%
			850	0.926	42.865	0.916	41.500	1.09%	3.29%
8/21/2017	835H	21.0	820	0.895	42.609	0.899	41.578	-0.44%	2.48%
			835	0.910	42.515	0.900	41.500	1.11%	2.45%
			850	0.924	42.294	0.916	41.500	0.87%	1.91%
8/15/2017	1750H	20.6	1710	1.346	38.872	1.348	40.142	-0.15%	-3.16%
			1750	1.385	38.681	1.371	40.079	1.02%	-3.49%
			1790	1.426	38.468	1.394	40.016	2.30%	-3.87%
8/15/2017	1900H	22.7	1850	1.360	39.956	1.400	40.000	-2.86%	-0.11%
			1880	1.391	39.834	1.400	40.000	-0.64%	-0.41%
			1910	1.422	39.695	1.400	40.000	1.57%	-0.76%
8/14/2017	2300H	21.2	2300	1.689	39.961	1.670	39.500	1.14%	1.17%
			2310	1.701	39.914	1.679	39.480	1.31%	1.10%
			2320	1.712	39.878	1.687	39.460	1.48%	1.06%
8/10/2017	2450H	20.5	2400	1.832	38.219	1.756	39.289	4.33%	-2.72%
			2450	1.887	38.017	1.800	39.200	4.83%	-3.02%
			2500	1.945	37.821	1.855	39.136	4.85%	-3.36%
8/14/2017	2450H	21.2	2400	1.805	39.571	1.756	39.289	2.79%	0.72%
			2450	1.859	39.369	1.800	39.200	3.28%	0.43%
			2500	1.917	39.170	1.855	39.136	3.34%	0.09%
8/14/2017	2600H	21.2	2500	1.917	39.170	1.855	39.136	3.34%	0.09%
			2550	1.975	39.021	1.909	39.073	3.46%	-0.13%
			2600	2.031	38.790	1.964	39.009	3.41%	-0.56%
8/16/2017	2600H	22.7	2600	1.966	38.632	1.964	39.009	0.10%	-0.97%
			2650	2.019	38.436	2.018	38.945	0.05%	-1.31%
			2700	2.075	38.250	2.073	38.882	0.10%	-1.63%
08/15/2017	5200H-5800H	20.6	5220	4.470	34.543	4.676	35.963	-4.41%	-3.95%
			5240	4.491	34.511	4.696	35.940	-4.37%	-3.98%
			5260	4.508	34.508	4.717	35.917	-4.43%	-3.92%
			5280	4.526	34.489	4.737	35.894	-4.45%	-3.91%
			5500	4.738	34.167	4.963	35.643	-4.53%	-4.14%
			5600	4.840	34.043	5.065	35.529	-4.44%	-4.18%
			5700	4.965	33.916	5.168	35.414	-3.93%	-4.23%
			5745	5.017	33.812	5.214	35.363	-3.78%	-4.39%
			5765	5.028	33.761	5.234	35.340	-3.94%	-4.47%
			5825	5.096	33.735	5.296	35.271	-3.78%	-4.35%

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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
8/16/2017	750B	21.9	700	0.913	58.068	0.959	55.726	-4.80%	4.20%
			710	0.923	57.985	0.960	55.687	-3.85%	4.13%
			740	0.950	57.749	0.963	55.570	-1.35%	3.92%
			755	0.964	57.631	0.964	55.512	0.00%	3.82%
8/21/2017	750B	21.5	740	0.954	57.166	0.963	55.570	-0.93%	2.87%
			755	0.968	57.052	0.964	55.512	0.41%	2.77%
			770	0.981	56.947	0.965	55.453	1.66%	2.69%
			785	0.992	56.681	0.966	55.395	2.69%	2.32%
8/14/2017	835B	19.1	820	0.956	52.878	0.969	55.258	-1.34%	-4.31%
			835	0.970	52.719	0.970	55.200	0.00%	-4.49%
			850	0.986	52.571	0.988	55.154	-0.20%	-4.68%
8/13/2017	1750B	19.8	1710	1.485	51.510	1.463	53.537	1.50%	-3.79%
			1750	1.527	51.346	1.488	53.432	2.62%	-3.90%
			1790	1.573	51.201	1.514	53.326	3.90%	-3.98%
8/11/2017	1900B	22.2	1850	1.526	52.921	1.520	53.300	0.39%	-0.71%
			1880	1.560	52.900	1.520	53.300	2.63%	-0.75%
			1910	1.585	52.828	1.520	53.300	4.28%	-0.89%
8/16/2017	1900B	22.7	1850	1.519	52.309	1.520	53.300	-0.07%	-1.86%
			1880	1.553	52.223	1.520	53.300	2.17%	-2.02%
			1910	1.584	52.144	1.520	53.300	4.21%	-2.17%
8/10/2017	2300B	22.6	2300	1.806	51.451	1.809	52.900	-0.17%	-2.74%
			2310	1.819	51.437	1.816	52.887	0.17%	-2.74%
			2320	1.835	51.455	1.826	52.873	0.49%	-2.68%
8/10/2017	2600B	22.6	2500	2.071	50.693	2.021	52.636	2.47%	-3.69%
			2550	2.136	50.519	2.092	52.573	2.10%	-3.91%
			2600	2.207	50.329	2.163	52.509	2.03%	-4.15%
			2650	2.274	50.166	2.234	52.445	1.79%	-4.35%
			2700	2.341	49.941	2.305	52.382	1.56%	-4.66%
8/14/2017	2450B	23.2	2400	1.930	51.785	1.902	52.767	1.47%	-1.86%
			2450	1.992	51.600	1.950	52.700	2.15%	-2.09%
			2500	2.065	51.406	2.021	52.636	2.18%	-2.34%
08/14/2017	5200B-5800B	20.9	5180	5.186	47.439	5.276	49.041	-1.71%	-3.27%
			5240	5.267	47.367	5.346	48.960	-1.48%	-3.25%
			5260	5.284	47.358	5.369	48.933	-1.58%	-3.22%
			5280	5.316	47.297	5.393	48.906	-1.43%	-3.29%
			5500	5.607	46.950	5.650	48.607	-0.76%	-3.41%
			5600	5.746	46.805	5.766	48.471	-0.35%	-3.44%
			5700	5.874	46.600	5.883	48.336	-0.15%	-3.59%
			5745	5.929	46.566	5.936	48.275	-0.12%	-3.54%
			5765	5.962	46.532	5.959	48.248	0.05%	-3.56%
			5825	6.030	46.389	6.029	48.166	0.02%	-3.69%

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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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)	$Deviation_{1g}$ (%)
I	750	HEAD	08/17/2017	21.7	20.9	0.200	1034	3213	1.600	8.220	8.000	-2.68%
I	750	HEAD	08/22/2017	19.7	19.5	0.200	1003	3213	1.750	8.390	8.750	4.29%
G	835	HEAD	08/17/2017	22.0	21.3	0.200	4d132	3287	2.020	9.520	10.100	6.09%
G	835	HEAD	08/21/2017	22.0	21.0	0.200	4d180	3287	1.880	9.260	9.400	1.51%
G	1750	HEAD	08/15/2017	22.0	20.6	0.100	1092	3287	3.610	36.400	36.100	-0.82%
K	1900	HEAD	08/15/2017	21.9	20.8	0.100	5d148	7406	3.810	40.200	38.100	-5.22%
H	2300	HEAD	08/14/2017	20.1	19.7	0.100	1038	3318	4.830	47.500	48.300	1.68%
H	2450	HEAD	08/10/2017	21.1	20.5	0.100	945	3318	5.130	51.300	51.300	0.00%
H	2450	HEAD	08/14/2017	20.1	19.7	0.100	797	3318	4.980	52.100	49.800	-4.41%
H	2600	HEAD	08/14/2017	20.1	19.7	0.100	1071	3318	5.380	56.300	53.800	-4.44%
K	2600	HEAD	08/16/2017	22.1	21.3	0.100	1071	7406	5.540	56.300	55.400	-1.60%
H	5250	HEAD	08/15/2017	21.9	20.8	0.050	1123	3914	3.810	79.300	76.200	-3.91%
H	5600	HEAD	08/15/2017	21.9	20.8	0.050	1123	3914	3.990	84.200	79.800	-5.23%
H	5750	HEAD	08/15/2017	21.9	20.8	0.050	1123	3914	4.220	82.300	84.400	2.55%
J	750	BODY	08/16/2017	19.2	21.9	0.200	1054	3209	1.790	8.610	8.950	3.95%
J	750	BODY	08/21/2017	19.5	19.8	0.200	1034	3209	1.810	8.710	9.050	3.90%
I	835	BODY	08/14/2017	19.9	19.1	0.200	4d180	3213	2.020	9.610	10.100	5.10%
J	1750	BODY	08/13/2017	21.3	19.8	0.100	1092	3209	3.800	37.000	38.000	2.70%
K	1900	BODY	08/11/2017	21.7	20.5	0.100	5d026	7406	4.000	40.300	40.000	-0.74%
K	1900	BODY	08/16/2017	22.1	22.7	0.100	5d026	7406	4.180	40.300	41.800	3.72%
G	2300	BODY	08/10/2017	22.2	21.4	0.100	1038	3287	4.610	47.500	46.100	-2.95%
G	2450	BODY	08/14/2017	21.0	21.3	0.100	797	3287	5.240	50.700	52.400	3.35%
G	2600	BODY	08/10/2017	22.2	21.4	0.100	1071	3287	5.670	54.200	56.700	4.61%
D	5250	BODY	08/14/2017	21.4	20.8	0.050	1123	3589	3.690	75.900	73.800	-2.77%
D	5600	BODY	08/14/2017	21.4	20.8	0.050	1123	3589	4.040	78.900	80.800	2.41%
D	5750	BODY	08/14/2017	21.4	20.8	0.050	1123	3589	3.570	76.300	71.400	-6.42%

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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)	$Deviation_{10g}$ (%)
D	5250	BODY	08/14/2017	21.4	20.8	0.050	1123	3589	1.030	21.300	20.600	-3.29%
D	5600	BODY	08/14/2017	21.4	20.8	0.050	1123	3589	1.110	22.100	22.200	0.45%
D	5750	BODY	08/14/2017	21.4	20.8	0.050	1123	3589	0.993	21.300	19.860	-6.76%

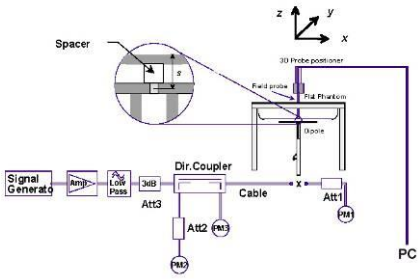


Figure 10-1
System Verification Setup Diagram

Figure 10-2
System Verification Setup Photo

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1
Cell. CDMA BC10 (§90S) Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Ant State	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	25.2	25.01	-0.02	Right	Cheek	0	15065	1:1	0.183	1.045	0.191	A1
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.2	25.01	0.05	Right	Tilt	0	15065	1:1	0.109	1.045	0.114	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.2	25.01	0.02	Left	Cheek	0	15065	1:1	0.179	1.045	0.187	
820.10	564	CDMA BC10 (§90S)	RC3 / SO55	25.2	25.01	-0.11	Left	Tilt	0	15065	1:1	0.102	1.045	0.107	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.2	25.20	0.03	Right	Cheek	0	15065	1:1	0.181	1.000	0.181	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.2	25.20	-0.16	Right	Tilt	0	15065	1:1	0.096	1.000	0.096	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.2	25.20	-0.19	Left	Cheek	0	15065	1:1	0.155	1.000	0.155	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. A	25.2	25.20	0.04	Left	Tilt	0	15065	1:1	0.097	1.000	0.097	
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
Cell. CDMA BC0 (§22H) Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Ant State	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	25.2	25.06	0.00	Right	Cheek	0	15065	1:1	0.193	1.033	0.199	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.2	25.06	0.20	Right	Tilt	0	15065	1:1	0.097	1.033	0.100	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.2	25.06	-0.03	Left	Cheek	0	15065	1:1	0.187	1.033	0.193	
836.52	384	CDMA BC0 (§22H)	RC3 / SO55	25.2	25.06	0.02	Left	Tilt	0	15065	1:1	0.112	1.033	0.116	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.2	25.20	-0.19	Right	Cheek	0	15065	1:1	0.210	1.000	0.210	A2
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.2	25.20	0.10	Right	Tilt	0	15065	1:1	0.099	1.000	0.099	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.2	25.20	0.12	Left	Cheek	0	15065	1:1	0.207	1.000	0.207	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. A	25.2	25.20	0.05	Left	Tilt	0	15065	1:1	0.105	1.000	0.105	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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	24.2	24.15	0.12	Right	Cheek	15057	1:1	0.207	1.012	0.209	
1880.00	600	PCS CDMA	RC3 / SO55	24.2	24.15	-0.14	Right	Tilt	15057	1:1	0.082	1.012	0.083	
1880.00	600	PCS CDMA	RC3 / SO55	24.2	24.15	0.11	Left	Cheek	15057	1:1	0.150	1.012	0.152	
1880.00	600	PCS CDMA	RC3 / SO55	24.2	24.15	-0.19	Left	Tilt	15057	1:1	0.081	1.012	0.082	
1880.00	600	PCS CDMA	EVDO Rev. A	24.2	24.08	0.21	Right	Cheek	15057	1:1	0.253	1.028	**0.260**	A3
1880.00	600	PCS CDMA	EVDO Rev. A	24.2	24.08	0.11	Right	Tilt	15057	1:1	0.111	1.028	0.114	
1880.00	600	PCS CDMA	EVDO Rev. A	24.2	24.08	0.19	Left	Cheek	15057	1:1	0.199	1.028	0.205	
1880.00	600	PCS CDMA	EVDO Rev. A	24.2	24.08	0.06	Left	Tilt	15057	1:1	0.102	1.028	0.105	
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	33.7	33.62	0.01	Right	Cheek	15065	1	1:8.3	0.165	1.019	0.168	A4
836.60	190	GSM 850	GSM	33.7	33.62	-0.06	Right	Tilt	15065	1	1:8.3	0.091	1.019	0.093	
836.60	190	GSM 850	GSM	33.7	33.62	-0.03	Left	Cheek	15065	1	1:8.3	0.155	1.019	0.158	
836.60	190	GSM 850	GSM	33.7	33.62	-0.02	Left	Tilt	15065	1	1:8.3	0.078	1.019	0.079	
836.60	190	GSM 850	GPRS	28.2	28.12	-0.08	Right	Cheek	15065	4	1:2.076	0.159	1.019	0.162	
836.60	190	GSM 850	GPRS	28.2	28.12	-0.10	Right	Tilt	15065	4	1:2.076	0.080	1.019	0.082	
836.60	190	GSM 850	GPRS	28.2	28.12	-0.19	Left	Cheek	15065	4	1:2.076	0.144	1.019	0.147	
836.60	190	GSM 850	GPRS	28.2	28.12	-0.02	Left	Tilt	15065	4	1:2.076	0.077	1.019	0.078	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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	30.7	30.64	0.13	Right	Cheek	15057	1	1:8.3	0.121	1.014	0.123	
1880.00	661	GSM 1900	GSM	30.7	30.64	-0.18	Right	Tilt	15057	1	1:8.3	0.052	1.014	0.053	
1880.00	661	GSM 1900	GSM	30.7	30.64	-0.05	Left	Cheek	15057	1	1:8.3	0.083	1.014	0.084	
1880.00	661	GSM 1900	GSM	30.7	30.64	0.05	Left	Tilt	15057	1	1:8.3	0.046	1.014	0.047	
1880.00	661	GSM 1900	GPRS	25.7	25.60	-0.16	Right	Cheek	15057	4	1:2.076	0.145	1.023	0.148	A5
1880.00	661	GSM 1900	GPRS	25.7	25.60	0.04	Right	Tilt	15057	4	1:2.076	0.052	1.023	0.053	
1880.00	661	GSM 1900	GPRS	25.7	25.60	0.20	Left	Cheek	15057	4	1:2.076	0.104	1.023	0.106	
1880.00	661	GSM 1900	GPRS	25.7	25.60	0.20	Left	Tilt	15057	4	1:2.076	0.049	1.023	0.050	
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	Ant State	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	25.0	24.91	0.16	Right	Cheek	12	15065	1:1	0.193	1.021	0.197	A6
836.60	4183	UMTS 850	RMC	25.0	24.91	0.00	Right	Tilt	12	15065	1:1	0.107	1.021	0.109	
836.60	4183	UMTS 850	RMC	25.0	24.91	-0.07	Left	Cheek	12	15065	1:1	0.190	1.021	0.194	
836.60	4183	UMTS 850	RMC	25.0	24.91	0.00	Left	Tilt	12	15065	1:1	0.104	1.021	0.106	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 11-7
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	24.2	24.16	0.13	Right	Cheek	15057	1:1	0.130	1.009	0.131	A7
1732.40	1412	UMTS 1750	RMC	24.2	24.16	0.04	Right	Tilt	15057	1:1	0.090	1.009	0.091	
1732.40	1412	UMTS 1750	RMC	24.2	24.16	0.01	Left	Cheek	15057	1:1	0.111	1.009	0.112	
1732.40	1412	UMTS 1750	RMC	24.2	24.16	0.06	Left	Tilt	15057	1:1	0.106	1.009	0.107	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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	24.2	24.17	0.06	Right	Cheek	15057	1:1	0.187	1.007	0.188	A8
1880.00	9400	UMTS 1900	RMC	24.2	24.17	-0.03	Right	Tilt	15057	1:1	0.074	1.007	0.075	
1880.00	9400	UMTS 1900	RMC	24.2	24.17	0.12	Left	Cheek	15057	1:1	0.134	1.007	0.135	
1880.00	9400	UMTS 1900	RMC	24.2	24.17	0.12	Left	Tilt	15057	1:1	0.074	1.007	0.075	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11-9
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	Ant State	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	0.04	0	Right	Cheek	12	QPSK	1	49	15065	1:1	0.148	1.009	0.149	A9
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	0.05	1	Right	Cheek	12	QPSK	25	0	15065	1:1	0.112	1.009	0.113	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	-0.02	0	Right	Tilt	12	QPSK	1	49	15065	1:1	0.080	1.009	0.081	
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	0.05	1	Right	Tilt	12	QPSK	25	0	15065	1:1	0.064	1.009	0.065	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	-0.01	0	Left	Cheek	12	QPSK	1	49	15065	1:1	0.133	1.009	0.134	
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	0.01	1	Left	Cheek	12	QPSK	25	0	15065	1:1	0.105	1.009	0.106	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	0.05	0	Left	Tilt	12	QPSK	1	49	15065	1:1	0.072	1.009	0.073	
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	0.07	1	Left	Tilt	12	QPSK	25	0	15065	1:1	0.055	1.009	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 11-10
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	Ant State	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	25.7	25.70	-0.02	0	Right	Cheek	11	QPSK	1	49	15669	1:1	0.203	1.000	0.203	A10
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.02	1	Right	Cheek	11	QPSK	25	0	15669	1:1	0.155	1.005	0.156	
782.00	23230	Mid	LTE Band 13	10	25.7	25.70	0.07	0	Right	Tilt	11	QPSK	1	49	15669	1:1	0.123	1.000	0.123	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.06	1	Right	Tilt	11	QPSK	25	0	15669	1:1	0.093	1.005	0.093	
782.00	23230	Mid	LTE Band 13	10	25.7	25.70	-0.05	0	Left	Cheek	11	QPSK	1	49	15669	1:1	0.191	1.000	0.191	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.01	1	Left	Cheek	11	QPSK	25	0	15669	1:1	0.171	1.005	0.172	
782.00	23230	Mid	LTE Band 13	10	25.7	25.70	0.06	0	Left	Tilt	11	QPSK	1	49	15669	1:1	0.106	1.000	0.106	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.02	1	Left	Tilt	11	QPSK	25	0	15669	1:1	0.090	1.005	0.090	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram											

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-11
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	Ant State	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	25.7	25.68	-0.01	0	Right	Cheek	0	QPSK	1	0	15065	1:1	0.148	1.005	0.149	A11
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	0.11	1	Right	Cheek	0	QPSK	36	0	15065	1:1	0.142	1.009	0.143	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.68	0.08	0	Right	Tilt	0	QPSK	1	0	15065	1:1	0.103	1.005	0.104	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	0.06	1	Right	Tilt	0	QPSK	36	0	15065	1:1	0.082	1.009	0.083	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.68	0.01	0	Left	Cheek	0	QPSK	1	0	15065	1:1	0.132	1.005	0.133	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	-0.05	1	Left	Cheek	0	QPSK	36	0	15065	1:1	0.129	1.009	0.130	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.68	0.20	0	Left	Tilt	0	QPSK	1	0	15065	1:1	0.113	1.005	0.114	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	0.05	1	Left	Tilt	0	QPSK	36	0	15065	1:1	0.088	1.009	0.089	
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 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)	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.06	0	Right	Cheek	QPSK	1	50	15057	1:1	0.105	1.000	0.105	A12
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.2	23.19	0.01	1	Right	Cheek	QPSK	50	0	15057	1:1	0.094	1.002	0.094	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.01	0	Right	Tilt	QPSK	1	50	15057	1:1	0.079	1.000	0.079	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.2	23.19	-0.01	1	Right	Tilt	QPSK	50	0	15057	1:1	0.064	1.002	0.064	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.08	0	Left	Cheek	QPSK	1	50	15057	1:1	0.084	1.000	0.084	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.2	23.19	-0.07	1	Left	Cheek	QPSK	50	0	15057	1:1	0.074	1.002	0.074	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	0.03	0	Left	Tilt	QPSK	1	50	15057	1:1	0.103	1.000	0.103	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.2	23.19	0.07	1	Left	Tilt	QPSK	50	0	15057	1:1	0.083	1.002	0.083	
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 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)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.20	-0.02	0	Right	Cheek	QPSK	1	50	15057	1:1	0.184	1.000	0.184	A13
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.19	0.05	1	Right	Cheek	QPSK	50	0	15057	1:1	0.149	1.002	0.149	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.20	0.19	0	Right	Tilt	QPSK	1	50	15057	1:1	0.065	1.000	0.065	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.19	0.06	1	Right	Tilt	QPSK	50	0	15057	1:1	0.057	1.002	0.057	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.20	0.14	0	Left	Cheek	QPSK	1	50	15057	1:1	0.109	1.000	0.109	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.19	0.13	1	Left	Cheek	QPSK	50	0	15057	1:1	0.086	1.002	0.086	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.20	0.16	0	Left	Tilt	QPSK	1	50	15057	1:1	0.075	1.000	0.075	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.19	0.03	1	Left	Tilt	QPSK	50	0	15057	1:1	0.064	1.002	0.064	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram										

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-14
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	23.2	23.15	0.05	0	Right	Cheek	QPSK	1	0	15065	1:1	0.149	1.012	0.151	A14
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	0.05	1	Right	Cheek	QPSK	25	0	15065	1:1	0.136	1.014	0.138	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.15	-0.02	0	Right	Tilt	QPSK	1	0	15065	1:1	0.100	1.012	0.101	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	0.04	1	Right	Tilt	QPSK	25	0	15065	1:1	0.091	1.014	0.092	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.15	0.12	0	Left	Cheek	QPSK	1	0	15065	1:1	0.088	1.012	0.089	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	0.05	1	Left	Cheek	QPSK	25	0	15065	1:1	0.078	1.014	0.079	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.15	0.15	0	Left	Tilt	QPSK	1	0	15065	1:1	0.062	1.012	0.063	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	0.14	1	Left	Tilt	QPSK	25	0	15065	1:1	0.057	1.014	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 11-15
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	25.2	25.19	0.06	0	Right	Cheek	QPSK	1	99	15065	1:1	0.200	1.002	0.200	A15
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	0.11	1	Right	Cheek	QPSK	50	0	15065	1:1	0.196	1.005	0.197	
2535.00	21100	Mid	LTE Band 7	20	25.2	25.19	0.18	0	Right	Tilt	QPSK	1	99	15065	1:1	0.070	1.002	0.070	
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	0.16	1	Right	Tilt	QPSK	50	0	15065	1:1	0.056	1.005	0.056	
2535.00	21100	Mid	LTE Band 7	20	25.2	25.19	0.15	0	Left	Cheek	QPSK	1	99	15065	1:1	0.108	1.002	0.108	
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	0.11	1	Left	Cheek	QPSK	50	0	15065	1:1	0.091	1.005	0.091	
2535.00	21100	Mid	LTE Band 7	20	25.2	25.19	0.08	0	Left	Tilt	QPSK	1	99	15065	1:1	0.116	1.002	0.116	
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	0.04	1	Left	Tilt	QPSK	50	0	15065	1:1	0.106	1.005	0.107	
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 41 Head SAR

MEASUREMENT RESULTS																					
Power Class	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)	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	-0.02	0	Right	Cheek	QPSK	1	0	15065	1:1.58	0.167	1.000	0.167	A16
Power Class 2	2636.50	41055	Mid-High	LTE Band 41	20	27.0	26.86	0.08	0	Right	Cheek	QPSK	1	0	15065	1:2.309	0.163	1.033	0.168	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	0.10	1	Right	Cheek	QPSK	50	0	15065	1:1.58	0.140	1.000	0.140	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	0.03	0	Right	Tilt	QPSK	1	0	15065	1:1.58	0.055	1.000	0.055	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	0.03	1	Right	Tilt	QPSK	50	0	15065	1:1.58	0.045	1.000	0.045	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	0.12	0	Left	Cheek	QPSK	1	0	15065	1:1.58	0.084	1.000	0.084	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	0.19	1	Left	Cheek	QPSK	50	0	15065	1:1.58	0.070	1.000	0.070	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	0.09	0	Left	Tilt	QPSK	1	0	15065	1:1.58	0.085	1.000	0.085	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	0.02	1	Left	Tilt	QPSK	50	0	15065	1:1.58	0.073	1.000	0.073	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram										

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-17
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)	
2437	6	802.11b	DSSS	22	19.0	18.33	0.18	Right	Cheek	1	35350	1	99.2	0.870	0.675	1.167	1.008	0.794	
2462	11	802.11b	DSSS	22	19.0	18.36	0.17	Right	Cheek	1	35350	1	99.2	0.882	0.724	1.159	1.008	**0.846**	A17
2462	11	802.11b	DSSS	22	19.0	18.36	0.20	Right	Tilt	1	35350	1	99.2	0.472	0.546	1.159	1.008	0.638	
2462	11	802.11b	DSSS	22	19.0	18.36	-0.19	Left	Cheek	1	35350	1	99.2	0.250	0.188	1.159	1.008	0.220	
2462	11	802.11b	DSSS	22	19.0	18.36	0.10	Left	Tilt	1	35350	1	99.2	0.190	-	1.159	1.008	-	
2462	11	802.11b	DSSS	22	19.0	18.23	0.15	Right	Cheek	2	35350	1	99.3	0.237	0.151	1.194	1.007	0.182	
2462	11	802.11b	DSSS	22	19.0	18.23	0.14	Right	Tilt	2	35350	1	99.3	0.088	-	1.194	1.007	-	
2462	11	802.11b	DSSS	22	19.0	18.23	0.14	Left	Cheek	2	35350	1	99.3	0.762	0.560	1.194	1.007	0.673	
2462	11	802.11b	DSSS	22	19.0	18.23	0.15	Left	Tilt	2	35350	1	99.3	0.273	0.253	1.194	1.007	0.304	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram											

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-18
NII Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	16.5	15.54	0.18	Right	Cheek	1	35350	6	95.5	0.678	0.366	1.247	1.047	0.478	
5280	56	802.11a	OFDM	20	16.5	15.54	0.20	Right	Tilt	1	35350	6	95.5	0.475	0.200	1.247	1.047	0.261	
5280	56	802.11a	OFDM	20	16.5	15.54	0.21	Left	Cheek	1	35350	6	95.5	0.213	-	1.247	1.047	-	
5280	56	802.11a	OFDM	20	16.5	15.54	0.17	Left	Tilt	1	35350	6	95.5	0.205	-	1.247	1.047	-	
5260	52	802.11a	OFDM	20	16.5	15.20	-0.12	Right	Cheek	2	35350	6	95.2	0.347	0.155	1.349	1.050	0.220	
5260	52	802.11a	OFDM	20	16.5	15.20	0.20	Right	Tilt	2	35350	6	95.2	0.078	-	1.349	1.050	-	
5260	52	802.11a	OFDM	20	16.5	15.20	0.14	Left	Cheek	2	35350	6	95.2	1.029	0.455	1.349	1.050	**0.644**	A18
5260	52	802.11a	OFDM	20	16.5	15.20	0.19	Left	Tilt	2	35350	6	95.2	0.371	0.168	1.349	1.050	0.238	
5500	100	802.11a	OFDM	20	16.5	16.43	0.20	Right	Cheek	1	35350	6	95.5	0.967	0.406	1.016	1.047	0.432	
5500	100	802.11a	OFDM	20	16.5	16.43	-0.04	Right	Tilt	1	35350	6	95.5	0.854	0.371	1.016	1.047	0.395	
5500	100	802.11a	OFDM	20	16.5	16.43	0.18	Left	Cheek	1	35350	6	95.5	0.307	-	1.016	1.047	-	
5500	100	802.11a	OFDM	20	16.5	16.43	0.20	Left	Tilt	1	35350	6	95.5	0.337	-	1.016	1.047	-	
5720	144	802.11a	OFDM	20	16.5	16.49	0.15	Right	Cheek	2	35350	6	95.2	0.180	0.109	1.002	1.050	0.115	
5720	144	802.11a	OFDM	20	16.5	16.49	0.20	Right	Tilt	2	35350	6	95.2	0.094	-	1.002	1.050	-	
5720	144	802.11a	OFDM	20	16.5	16.49	0.21	Left	Cheek	2	35350	6	95.2	0.655	0.314	1.002	1.050	0.330	
5720	144	802.11a	OFDM	20	16.5	16.49	0.16	Left	Tilt	2	35350	6	95.2	0.290	-	1.002	1.050	-	
5825	165	802.11a	OFDM	20	16.5	15.85	0.17	Right	Cheek	1	35350	6	95.5	0.960	0.405	1.161	1.047	0.492	
5825	165	802.11a	OFDM	20	16.5	15.85	0.13	Right	Tilt	1	35350	6	95.5	0.874	0.368	1.161	1.047	0.447	
5825	165	802.11a	OFDM	20	16.5	15.85	0.17	Left	Cheek	1	35350	6	95.5	0.527	-	1.161	1.047	-	
5825	165	802.11a	OFDM	20	16.5	15.85	0.18	Left	Tilt	1	35350	6	95.5	0.545	-	1.161	1.047	-	
5825	165	802.11a	OFDM	20	16.5	16.49	-0.12	Right	Cheek	2	35350	6	95.2	0.131	0.077	1.002	1.050	0.081	
5825	165	802.11a	OFDM	20	16.5	16.49	0.20	Right	Tilt	2	35350	6	95.2	0.077	-	1.002	1.050	-	
5825	165	802.11a	OFDM	20	16.5	16.49	0.21	Left	Cheek	2	35350	6	95.2	0.387	0.199	1.002	1.050	0.209	
5825	165	802.11a	OFDM	20	16.5	16.49	0.13	Left	Tilt	2	35350	6	95.2	0.157	-	1.002	1.050	-	
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
Bluetooth 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 (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402	0	Bluetooth	FHSS	11.0	10.01	0.09	Right	Cheek	15065	1	77.3	0.032	1.256	1.294	**0.052**	A19
2402	0	Bluetooth	FHSS	11.0	10.01	0.10	Right	Tilt	15065	1	77.3	0.020	1.256	1.294	0.033	
2402	0	Bluetooth	FHSS	11.0	10.01	0.17	Left	Cheek	15065	1	77.3	0.010	1.256	1.294	0.016	
2402	0	Bluetooth	FHSS	11.0	10.01	0.17	Left	Tilt	15065	1	77.3	0.007	1.256	1.294	0.011	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

11.2 Standalone Body-Worn SAR Data

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

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Ant State	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	25.2	25.07	0.01	10 mm	12	15065	N/A	1:1	back	0.284	1.030	0.293	A20
836.52	384	CDMA BC0 (§22H)	TDSO / SO32	25.2	25.10	-0.01	10 mm	0	15065	N/A	1:1	back	0.294	1.023	0.301	A22
1880.00	600	PCS CDMA	TDSO / SO32	24.2	24.05	-0.12	10 mm	N/A	15057	N/A	1:1	back	0.688	1.035	0.712	A24
836.60	190	GSM 850	GSM	33.7	33.62	-0.01	10 mm	N/A	15065	1	1:8.3	back	0.230	1.019	0.234	
836.60	190	GSM 850	GPRS	28.2	28.12	-0.07	10 mm	N/A	15065	4	1:2.076	back	0.244	1.019	0.249	A26
1880.00	661	GSM 1900	GSM	30.7	30.64	-0.07	10 mm	N/A	15057	1	1:8.3	back	0.423	1.014	0.429	
1880.00	661	GSM 1900	GPRS	25.7	25.60	-0.09	10 mm	N/A	15057	4	1:2.076	back	0.528	1.023	0.540	A28
836.60	4183	UMTS 850	RMC	25.0	24.91	0.00	10 mm	0	15065	N/A	1:1	back	0.292	1.021	0.298	A30
1732.40	1412	UMTS 1750	RMC	24.2	24.16	-0.03	10 mm	N/A	15057	N/A	1:1	back	0.557	1.009	0.562	A32
1880.00	9400	UMTS 1900	RMC	24.2	24.17	-0.17	10 mm	N/A	15057	N/A	1:1	back	0.764	1.007	**0.769**	A34
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 11-21
LTE FDD Body-Worn SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Ant State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	0.00	0	12	15065	QPSK	1	49	10 mm	back	1:1	0.279	1.009	0.282	A36
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	0.01	1	12	15065	QPSK	25	0	10 mm	back	1:1	0.238	1.009	0.240	
782.00	23230	Mid	LTE Band 13	10	25.7	25.70	0.09	0	1	15065	QPSK	1	49	10 mm	back	1:1	0.357	1.000	0.357	A37
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.02	1	1	15065	QPSK	25	0	10 mm	back	1:1	0.289	1.005	0.290	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.68	-0.03	0	0	15065	QPSK	1	0	10 mm	back	1:1	0.304	1.005	0.306	A38
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	0.03	1	0	15065	QPSK	36	0	10 mm	back	1:1	0.256	1.009	0.258	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	0.00	0	N/A	15057	QPSK	1	50	10 mm	back	1:1	0.468	1.000	0.468	A40
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.2	23.19	0.03	1	N/A	15057	QPSK	50	0	10 mm	back	1:1	0.414	1.002	0.415	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.20	-0.19	0	N/A	15057	QPSK	1	50	10 mm	back	1:1	0.613	1.000	0.613	A42
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.19	-0.18	1	N/A	15057	QPSK	50	0	10 mm	back	1:1	0.523	1.002	0.524	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.15	0.11	0	N/A	15065	QPSK	1	0	10 mm	back	1:1	0.285	1.012	0.288	A44
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	-0.05	1	N/A	15065	QPSK	25	0	10 mm	back	1:1	0.223	1.014	0.226	
2535.00	21100	Mid	LTE Band 7	20	25.2	25.19	0.11	0	N/A	15065	QPSK	1	99	10 mm	back	1:1	0.451	1.002	0.452	A46
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	-0.03	1	N/A	15065	QPSK	50	0	10 mm	back	1:1	0.364	1.005	0.366	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram											

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-22
LTE TDD Body-Worn SAR

MEASUREMENT RESULTS																				
Power Class	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)	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	0.07	0	15065	QPSK	1	0	10 mm	back	1:1.58	0.287	1.000	0.287	A47
Power Class 2	2636.50	41055	Mid-High	LTE Band 41	20	27.0	26.86	0.01	0	15065	QPSK	1	0	10 mm	back	1:2.309	0.260	1.033	0.269	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	-0.05	1	15065	QPSK	50	0	10 mm	back	1:1.58	0.217	1.000	0.217	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram										

Table 11-23
DTS Body-Worn SAR

MEASUREMENT RESULTS																				
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
2462	11	802.11b	DSSS	22	19.0	18.36	-0.13	10 mm	1	15065	1	back	99.2	0.380	0.321	1.159	1.008	**0.375**	A48
2462	11	802.11b	DSSS	22	19.0	18.23	-0.05	10 mm	2	15065	1	back	99.3	0.254	0.225	1.194	1.007	0.271	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Body 1.6 W/kg (mW/g) averaged over 1 gram									

Table 11-24
NII Body-Worn SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Antenna Config.	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Peak SAR of Area Scan	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													W/kg	(W/kg)			(W/kg)	
5280	56	802.11a	OFDM	20	16.5	15.54	-0.16	10 mm	1	35335	6	back	95.5	0.260	0.098	1.247	1.047	0.128	
5260	52	802.11a	OFDM	20	16.5	15.20	0.20	10 mm	2	35335	6	back	95.2	0.334	0.158	1.349	1.050	0.224	
5500	100	802.11a	OFDM	20	16.5	16.43	0.11	10 mm	1	35335	6	back	95.5	0.444	0.216	1.016	1.047	0.230	
5720	144	802.11a	OFDM	20	16.5	16.49	-0.03	10 mm	2	35335	6	back	95.2	0.605	0.314	1.002	1.050	**0.330**	A49
5825	165	802.11a	OFDM	20	16.5	15.85	0.14	10 mm	1	35335	6	back	95.5	0.406	0.166	1.161	1.047	0.202	
5825	165	802.11a	OFDM	20	16.5	16.49	-0.05	10 mm	2	35335	6	back	95.2	0.562	0.279	1.002	1.050	0.294	
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
Bluetooth 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 (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402	0	Bluetooth	FHSS	11.0	10.01	0.03	10 mm	15065	1	back	77.3	0.016	1.256	1.294	**0.026**	A51
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram								

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

11.3 Standalone Hotspot SAR Data

Table 11-26
CDMA/GPRS/UMTS Hotspot SAR Data

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Ant State	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	25.2	25.20	0.02	10 mm	12	15065	N/A	1:1	back	0.308	1.000	0.308	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.2	25.20	0.02	10 mm	12	15065	N/A	1:1	front	0.269	1.000	0.269	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.2	25.20	-0.02	10 mm	12	15065	N/A	1:1	bottom	0.103	1.000	0.103	
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.2	25.20	0.00	10 mm	12	15065	N/A	1:1	right	0.319	1.000	0.319	A21
820.10	564	CDMA BC10 (§90S)	EVDO Rev. 0	25.2	25.20	-0.03	10 mm	12	15065	N/A	1:1	left	0.198	1.000	0.198	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.2	25.20	-0.04	10 mm	0	15065	N/A	1:1	back	0.309	1.000	0.309	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.2	25.20	0.03	10 mm	0	15065	N/A	1:1	front	0.282	1.000	0.282	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.2	25.20	-0.03	10 mm	0	15065	N/A	1:1	bottom	0.101	1.000	0.101	
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.2	25.20	0.00	10 mm	0	15065	N/A	1:1	right	0.317	1.000	0.317	A23
836.52	384	CDMA BC0 (§22H)	EVDO Rev. 0	25.2	25.20	-0.01	10 mm	0	15065	N/A	1:1	left	0.204	1.000	0.204	
1851.25	25	PCS CDMA	EVDO Rev. 0	24.2	24.18	-0.17	10 mm	N/A	15057	N/A	1:1	back	0.855	1.005	0.859	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.2	24.11	-0.13	10 mm	N/A	15057	N/A	1:1	back	0.903	1.021	0.922	
1908.75	1175	PCS CDMA	EVDO Rev. 0	24.2	24.15	-0.21	10 mm	N/A	15057	N/A	1:1	back	0.908	1.012	0.919	
1851.25	25	PCS CDMA	EVDO Rev. 0	24.2	24.18	-0.02	10 mm	N/A	15057	N/A	1:1	front	0.765	1.005	0.769	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.2	24.11	-0.09	10 mm	N/A	15057	N/A	1:1	front	0.784	1.021	0.800	
1908.75	1175	PCS CDMA	EVDO Rev. 0	24.2	24.15	-0.06	10 mm	N/A	15057	N/A	1:1	front	0.684	1.012	0.692	
1851.25	25	PCS CDMA	EVDO Rev. 0	24.2	24.18	-0.12	10 mm	N/A	15057	N/A	1:1	bottom	1.040	1.005	1.045	
1880.00	600	PCS CDMA	EVDO Rev. 0	24.2	24.11	-0.02	10 mm	N/A	15057	N/A	1:1	bottom	1.120	1.021	1.144	
1908.75	1175	PCS CDMA	EVDO Rev. 0	24.2	24.15	-0.12	10 mm	N/A	15057	N/A	1:1	bottom	1.170	1.012	**1.184**	A25
1880.00	600	PCS CDMA	EVDO Rev. 0	24.2	24.11	-0.02	10 mm	N/A	15057	N/A	1:1	left	0.510	1.021	0.521	
1908.75	1175	PCS CDMA	EVDO Rev. 0	24.2	24.15	-0.14	10 mm	N/A	15057	N/A	1:1	bottom	1.170	1.012	**1.184**	
836.60	190	GSM 850	GPRS	28.2	28.12	-0.07	10 mm	N/A	15065	4	1:2.076	back	0.244	1.019	0.249	
836.60	190	GSM 850	GPRS	28.2	28.12	-0.09	10 mm	N/A	15065	4	1:2.076	front	0.212	1.019	0.216	
836.60	190	GSM 850	GPRS	28.2	28.12	0.10	10 mm	N/A	15065	4	1:2.076	bottom	0.074	1.019	0.075	
836.60	190	GSM 850	GPRS	28.2	28.12	0.00	10 mm	N/A	15065	4	1:2.076	right	0.257	1.019	0.262	A27
836.60	190	GSM 850	GPRS	28.2	28.12	-0.04	10 mm	N/A	15065	4	1:2.076	left	0.164	1.019	0.167	
1880.00	661	GSM 1900	GPRS	25.7	25.60	-0.09	10 mm	N/A	15057	4	1:2.076	back	0.528	1.023	0.540	
1880.00	661	GSM 1900	GPRS	25.7	25.60	-0.03	10 mm	N/A	15057	4	1:2.076	front	0.427	1.023	0.437	
1880.00	661	GSM 1900	GPRS	25.7	25.60	-0.09	10 mm	N/A	15057	4	1:2.076	bottom	0.729	1.023	0.746	A29
1880.00	661	GSM 1900	GPRS	25.7	25.60	-0.03	10 mm	N/A	15057	4	1:2.076	left	0.257	1.023	0.263	
836.60	4183	UMTS 850	RMC	25.0	24.91	0.00	10 mm	0	15065	N/A	1:1	back	0.292	1.021	0.298	
836.60	4183	UMTS 850	RMC	25.0	24.91	0.00	10 mm	0	15065	N/A	1:1	front	0.260	1.021	0.265	
836.60	4183	UMTS 850	RMC	25.0	24.91	-0.02	10 mm	0	15065	N/A	1:1	bottom	0.076	1.021	0.078	
836.60	4183	UMTS 850	RMC	25.0	24.91	0.00	10 mm	0	15065	N/A	1:1	right	0.312	1.021	0.319	A31
836.60	4183	UMTS 850	RMC	25.0	24.91	0.01	10 mm	0	15065	N/A	1:1	left	0.193	1.021	0.197	
1732.40	1412	UMTS 1750	RMC	24.2	24.16	-0.03	10 mm	N/A	15057	N/A	1:1	back	0.557	1.009	0.562	
1732.40	1412	UMTS 1750	RMC	24.2	24.16	-0.02	10 mm	N/A	15057	N/A	1:1	front	0.466	1.009	0.470	
1732.40	1412	UMTS 1750	RMC	24.2	24.16	-0.03	10 mm	N/A	15057	N/A	1:1	bottom	0.661	1.009	0.667	A33
1732.40	1412	UMTS 1750	RMC	24.2	24.16	-0.05	10 mm	N/A	15057	N/A	1:1	left	0.313	1.009	0.316	
1880.00	9400	UMTS 1900	RMC	24.2	24.17	-0.17	10 mm	N/A	15057	N/A	1:1	back	0.764	1.007	0.769	
1880.00	9400	UMTS 1900	RMC	24.2	24.17	-0.07	10 mm	N/A	15057	N/A	1:1	front	0.709	1.007	0.714	
1852.40	9262	UMTS 1900	RMC	24.2	24.18	-0.03	10 mm	N/A	15057	N/A	1:1	bottom	0.857	1.005	0.861	
1880.00	9400	UMTS 1900	RMC	24.2	24.17	-0.05	10 mm	N/A	15057	N/A	1:1	bottom	0.950	1.007	0.957	A35
1907.60	9538	UMTS 1900	RMC	24.2	24.18	-0.05	10 mm	N/A	15057	N/A	1:1	bottom	0.947	1.005	0.952	
1880.00	9400	UMTS 1900	RMC	24.2	24.17	0.01	10 mm	N/A	15057	N/A	1:1	left	0.362	1.007	0.365	
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

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-27
LTE Band 12 Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Ant State	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	0.00	0	12	15065	QPSK	1	49	10 mm	back	1:1	0.279	1.009	0.282	A36
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	0.01	1	12	15065	QPSK	25	0	10 mm	back	1:1	0.238	1.009	0.240	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	0.03	0	12	15065	QPSK	1	49	10 mm	front	1:1	0.188	1.009	0.190	
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	0.00	1	12	15065	QPSK	25	0	10 mm	front	1:1	0.177	1.009	0.179	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	0.07	0	12	15065	QPSK	1	49	10 mm	bottom	1:1	0.030	1.009	0.030	
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	0.19	1	12	15065	QPSK	25	0	10 mm	bottom	1:1	0.024	1.009	0.024	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	0.00	0	12	15065	QPSK	1	49	10 mm	right	1:1	0.225	1.009	0.227	
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	0.01	1	12	15065	QPSK	25	0	10 mm	right	1:1	0.213	1.009	0.215	
707.50	23095	Mid	LTE Band 12	10	25.2	25.16	-0.01	0	12	15065	QPSK	1	49	10 mm	left	1:1	0.170	1.009	0.172	
707.50	23095	Mid	LTE Band 12	10	24.2	24.16	-0.02	1	12	15065	QPSK	25	0	10 mm	left	1:1	0.161	1.009	0.162	
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
LTE Band 13 Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Ant State	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	25.7	25.70	0.09	0	1	15065	QPSK	1	49	10 mm	back	1:1	0.357	1.000	0.357	A37
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.02	1	1	15065	QPSK	25	0	10 mm	back	1:1	0.289	1.005	0.290	
782.00	23230	Mid	LTE Band 13	10	25.7	25.70	-0.01	0	1	15065	QPSK	1	49	10 mm	front	1:1	0.321	1.000	0.321	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.04	1	1	15065	QPSK	25	0	10 mm	front	1:1	0.271	1.005	0.272	
782.00	23230	Mid	LTE Band 13	10	25.7	25.70	-0.09	0	1	15065	QPSK	1	49	10 mm	bottom	1:1	0.046	1.000	0.046	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.04	1	1	15065	QPSK	25	0	10 mm	bottom	1:1	0.038	1.005	0.038	
782.00	23230	Mid	LTE Band 13	10	25.7	25.70	0.01	0	1	15065	QPSK	1	49	10 mm	right	1:1	0.225	1.000	0.225	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	-0.01	1	1	15065	QPSK	25	0	10 mm	right	1:1	0.185	1.005	0.186	
782.00	23230	Mid	LTE Band 13	10	25.7	25.70	-0.02	0	1	15065	QPSK	1	49	10 mm	left	1:1	0.322	1.000	0.322	
782.00	23230	Mid	LTE Band 13	10	24.7	24.68	0.00	1	1	15065	QPSK	25	0	10 mm	left	1:1	0.274	1.005	0.275	
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 11-29
LTE Band 26 (Cell) Hotspot SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Ant State	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	25.7	25.68	-0.03	0	0	15065	QPSK	1	0	10 mm	back	1:1	0.304	1.005	0.306	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	0.03	1	0	15065	QPSK	36	0	10 mm	back	1:1	0.256	1.009	0.258	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.68	-0.06	0	0	15065	QPSK	1	0	10 mm	front	1:1	0.245	1.005	0.246	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	-0.02	1	0	15065	QPSK	36	0	10 mm	front	1:1	0.209	1.009	0.211	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.68	0.00	0	0	15065	QPSK	1	0	10 mm	bottom	1:1	0.084	1.005	0.084	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	0.00	1	0	15065	QPSK	36	0	10 mm	bottom	1:1	0.076	1.009	0.077	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.68	-0.01	0	0	15065	QPSK	1	0	10 mm	right	1:1	0.325	1.005	0.327	A39
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	-0.01	1	0	15065	QPSK	36	0	10 mm	right	1:1	0.282	1.009	0.285	
831.50	26865	Mid	LTE Band 26 (Cell)	15	25.7	25.68	-0.02	0	0	15065	QPSK	1	0	10 mm	left	1:1	0.181	1.005	0.182	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.7	24.66	-0.01	1	0	15065	QPSK	36	0	10 mm	left	1:1	0.161	1.009	0.162	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram												

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-30
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)	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	0.00	0	15057	QPSK	1	50	10 mm	back	1:1	0.468	1.000	0.468	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.2	23.19	0.03	1	15057	QPSK	50	0	10 mm	back	1:1	0.414	1.002	0.415	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	0.01	0	15057	QPSK	1	50	10 mm	front	1:1	0.409	1.000	0.409	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.2	23.19	0.00	1	15057	QPSK	50	0	10 mm	front	1:1	0.370	1.002	0.371	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.05	0	15057	QPSK	1	50	10 mm	bottom	1:1	0.501	1.000	0.501	A41
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.2	23.19	0.04	1	15057	QPSK	50	0	10 mm	bottom	1:1	0.451	1.002	0.452	
1720.00	132072	Low	LTE Band 66 (AWS)	20	24.2	24.20	-0.02	0	15057	QPSK	1	50	10 mm	left	1:1	0.277	1.000	0.277	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	23.2	23.19	0.09	1	15057	QPSK	50	0	10 mm	left	1:1	0.242	1.002	0.242	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

Table 11-31
LTE Band 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	24.2	24.20	-0.19	0	15057	QPSK	1	50	10 mm	back	1:1	0.613	1.000	0.613	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.19	-0.18	1	15057	QPSK	50	0	10 mm	back	1:1	0.523	1.002	0.524	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.20	0.01	0	15057	QPSK	1	50	10 mm	front	1:1	0.534	1.000	0.534	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.19	0.00	1	15057	QPSK	50	0	10 mm	front	1:1	0.457	1.002	0.458	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.20	-0.05	0	15057	QPSK	1	50	10 mm	bottom	1:1	0.779	1.000	0.779	A43
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.19	-0.06	1	15057	QPSK	50	0	10 mm	bottom	1:1	0.663	1.002	0.664	
1860.00	26140	Low	LTE Band 25 (PCS)	20	24.2	24.20	-0.01	0	15057	QPSK	1	50	10 mm	left	1:1	0.381	1.000	0.381	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.2	23.19	-0.01	1	15057	QPSK	50	0	10 mm	left	1:1	0.330	1.002	0.331	
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 11-32
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	23.2	23.15	0.11	0	15065	QPSK	1	0	10 mm	back	1:1	0.285	1.012	0.288	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	-0.05	1	15065	QPSK	25	0	10 mm	back	1:1	0.223	1.014	0.226	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.15	-0.03	0	15065	QPSK	1	0	10 mm	front	1:1	0.295	1.012	0.299	A45
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	0.10	1	15065	QPSK	25	0	10 mm	front	1:1	0.229	1.014	0.232	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.15	-0.02	0	15065	QPSK	1	0	10 mm	bottom	1:1	0.138	1.012	0.140	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	-0.03	1	15065	QPSK	25	0	10 mm	bottom	1:1	0.104	1.014	0.105	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.15	0.01	0	15065	QPSK	1	0	10 mm	right	1:1	0.209	1.012	0.212	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	-0.07	1	15065	QPSK	25	0	10 mm	right	1:1	0.168	1.014	0.170	
2310.00	27710	Mid	LTE Band 30	10	23.2	23.15	-0.21	0	15065	QPSK	1	0	10 mm	left	1:1	0.017	1.012	0.017	
2310.00	27710	Mid	LTE Band 30	10	22.2	22.14	-0.13	1	15065	QPSK	25	0	10 mm	left	1:1	0.013	1.014	0.013	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Body 1.6 W/kg (mW/g) averaged over 1 gram											

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-33
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	25.2	25.19	0.11	0	15065	QPSK	1	99	10 mm	back	1:1	0.451	1.002	0.452	A46
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	-0.03	1	15065	QPSK	50	0	10 mm	back	1:1	0.364	1.005	0.366	
2535.00	21100	Mid	LTE Band 7	20	25.2	25.19	-0.01	0	15065	QPSK	1	99	10 mm	front	1:1	0.398	1.002	0.399	
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	-0.02	1	15065	QPSK	50	0	10 mm	front	1:1	0.308	1.005	0.310	
2535.00	21100	Mid	LTE Band 7	20	25.2	25.19	-0.13	0	15065	QPSK	1	99	10 mm	bottom	1:1	0.201	1.002	0.201	
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	0.00	1	15065	QPSK	50	0	10 mm	bottom	1:1	0.153	1.005	0.154	
2535.00	21100	Mid	LTE Band 7	20	25.2	25.19	-0.02	0	15065	QPSK	1	99	10 mm	right	1:1	0.402	1.002	0.403	
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	-0.08	1	15065	QPSK	50	0	10 mm	right	1:1	0.375	1.005	0.377	
2535.00	21100	Mid	LTE Band 7	20	25.2	25.19	0.07	0	15065	QPSK	1	99	10 mm	left	1:1	0.011	1.002	0.011	
2535.00	21100	Mid	LTE Band 7	20	24.2	24.18	0.07	1	15065	QPSK	50	0	10 mm	left	1:1	0.008	1.005	0.008	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Body 1.6 W/kg (mW/g) averaged over 1 gram										

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-34
LTE Band 41 Hotspot SAR

MEASUREMENT RESULTS																				
Power Class	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)	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	0.07	0	15065	QPSK	1	0	10 mm	back	1:1.58	0.287	1.000	0.287	A47
Power Class 2	2636.50	41055	Mid-High	LTE Band 41	20	27.0	26.86	0.01	0	15065	QPSK	1	0	10 mm	back	1:2.309	0.260	1.033	0.269	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	-0.05	1	15065	QPSK	50	0	10 mm	back	1:1.58	0.217	1.000	0.217	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	-0.02	0	15065	QPSK	1	0	10 mm	front	1:1.58	0.287	1.000	0.287	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	0.04	1	15065	QPSK	50	0	10 mm	front	1:1.58	0.220	1.000	0.220	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	0.17	0	15065	QPSK	1	0	10 mm	bottom	1:1.58	0.124	1.000	0.124	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	0.04	1	15065	QPSK	50	0	10 mm	bottom	1:1.58	0.097	1.000	0.097	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	0.03	0	15065	QPSK	1	0	10 mm	right	1:1.58	0.281	1.000	0.281	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	0.10	1	15065	QPSK	50	0	10 mm	right	1:1.58	0.261	1.000	0.261	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	25.2	25.20	0.04	0	15065	QPSK	1	0	10 mm	left	1:1.58	0.010	1.000	0.010	
Power Class 3	2636.50	41055	Mid-High	LTE Band 41	20	24.2	24.20	0.03	1	15065	QPSK	50	0	10 mm	left	1:1.58	0.009	1.000	0.009	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram					

Table 11-35
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	19.0	18.36	-0.13	10 mm	1	15065	1	back	99.2	0.380	0.321	1.159	1.008	**0.375**	A48
2462	11	802.11b	DSSS	22	19.0	18.36	0.01	10 mm	1	15065	1	front	99.2	0.155	-	1.159	1.008	-	
2462	11	802.11b	DSSS	22	19.0	18.36	-0.04	10 mm	1	15065	1	top	99.2	0.107	-	1.159	1.008	-	
2462	11	802.11b	DSSS	22	19.0	18.36	0.01	10 mm	1	15065	1	left	99.2	0.368	-	1.159	1.008	-	
2462	11	802.11b	DSSS	22	19.0	18.23	-0.05	10 mm	2	15065	1	back	99.3	0.254	0.225	1.194	1.007	0.271	
2462	11	802.11b	DSSS	22	19.0	18.23	-0.10	10 mm	2	15065	1	front	99.3	0.128	-	1.194	1.007	-	
2462	11	802.11b	DSSS	22	19.0	18.23	0.04	10 mm	2	15065	1	top	99.3	0.036	-	1.194	1.007	-	
2462	11	802.11b	DSSS	22	19.0	18.23	0.02	10 mm	2	15065	1	right	99.3	0.283	0.205	1.194	1.007	0.246	
5180	36	802.11a	OFDM	20	16.5	16.09	0.13	10 mm	1	35335	6	back	95.5	0.282	0.105	1.099	1.047	0.121	
5180	36	802.11a	OFDM	20	16.5	16.09	0.00	10 mm	1	35335	6	front	95.5	0.068	-	1.099	1.047	-	
5180	36	802.11a	OFDM	20	16.5	16.09	-0.18	10 mm	1	35335	6	top	95.5	0.075	-	1.099	1.047	-	
5180	36	802.11a	OFDM	20	16.5	16.09	0.18	10 mm	1	35335	6	left	95.5	0.156	-	1.099	1.047	-	
5240	48	802.11a	OFDM	20	16.5	15.21	0.18	10 mm	2	35335	6	back	95.2	0.305	-	1.346	1.050	-	
5240	48	802.11a	OFDM	20	16.5	15.21	0.00	10 mm	2	35335	6	front	95.2	0.150	-	1.346	1.050	-	
5240	48	802.11a	OFDM	20	16.5	15.21	0.20	10 mm	2	35335	6	top	95.2	0.068	-	1.346	1.050	-	
5240	48	802.11a	OFDM	20	16.5	15.21	0.17	10 mm	2	35335	6	right	95.2	0.438	0.193	1.346	1.050	0.273	
5825	165	802.11a	OFDM	20	16.5	15.85	0.14	10 mm	1	35335	6	back	95.5	0.406	0.166	1.161	1.047	0.202	
5825	165	802.11a	OFDM	20	16.5	15.85	0.00	10 mm	1	35335	6	front	95.5	0.123	-	1.161	1.047	-	
5825	165	802.11a	OFDM	20	16.5	15.85	0.20	10 mm	1	35335	6	top	95.5	0.154	-	1.161	1.047	-	
5825	165	802.11a	OFDM	20	16.5	15.85	-0.20	10 mm	1	35335	6	left	95.5	0.178	-	1.161	1.047	-	
5825	165	802.11a	OFDM	20	16.5	16.49	-0.05	10 mm	2	35335	6	back	95.2	0.562	0.279	1.002	1.050	**0.294**	A50
5825	165	802.11a	OFDM	20	16.5	16.49	0.21	10 mm	2	35335	6	front	95.2	0.094	-	1.002	1.050	-	
5825	165	802.11a	OFDM	20	16.5	16.49	0.00	10 mm	2	35335	6	top	95.2	0.040	-	1.002	1.050	-	
5825	165	802.11a	OFDM	20	16.5	16.49	0.12	10 mm	2	35335	6	right	95.2	0.419	-	1.002	1.050	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram					

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 11-36
Bluetooth 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 (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.											(W/kg)			(W/kg)	
2402	0	Bluetooth	FHSS	11.0	10.01	0.03	10 mm	15065	1	back	77.3	0.016	1.256	1.294	**0.026**	A51
2402	0	Bluetooth	FHSS	11.0	10.01	-0.03	10 mm	15065	1	front	77.3	0.006	1.256	1.294	0.010	
2402	0	Bluetooth	FHSS	11.0	10.01	-0.19	10 mm	15065	1	top	77.3	0.003	1.256	1.294	0.005	
2402	0	Bluetooth	FHSS	11.0	10.01	-0.13	10 mm	15065	1	left	77.3	0.013	1.256	1.294	0.021	
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 11-37
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)	
5280	56	802.11a	OFDM	20	16.5	15.54	-0.01	0 mm	1	35335	6	back	95.5	7.740	0.547	1.247	1.047	0.714	
5280	56	802.11a	OFDM	20	16.5	15.54	0.15	0 mm	1	35335	6	front	95.5	1.347	-	1.247	1.047	-	
5280	56	802.11a	OFDM	20	16.5	15.54	-0.17	0 mm	1	35335	6	top	95.5	2.870	-	1.247	1.047	-	
5280	56	802.11a	OFDM	20	16.5	15.54	0.20	0 mm	1	35335	6	left	95.5	5.533	-	1.247	1.047	-	
5260	52	802.11a	OFDM	20	16.5	15.20	0.16	0 mm	2	35335	6	back	95.2	8.581	0.751	1.349	1.050	1.064	
5280	56	802.11a	OFDM	20	16.5	14.97	-0.14	0 mm	2	35335	6	back	95.2	3.340	0.772	1.422	1.050	1.153	
5300	60	802.11a	OFDM	20	16.5	14.94	0.03	0 mm	2	35335	6	back	95.2	5.558	0.781	1.432	1.050	**1.174**	
5320	64	802.11a	OFDM	20	16.5	14.84	0.06	0 mm	2	35335	6	back	95.2	6.519	0.669	1.466	1.050	1.030	
5260	52	802.11a	OFDM	20	16.5	15.20	0.17	0 mm	2	35335	6	front	95.2	2.352	-	1.349	1.050	-	
5260	52	802.11a	OFDM	20	16.5	15.20	0.15	0 mm	2	35335	6	top	95.2	1.013	-	1.349	1.050	-	
5260	52	802.11a	OFDM	20	16.5	15.20	0.13	0 mm	2	35335	6	right	95.2	5.096	0.646	1.349	1.050	0.915	
5500	100	802.11a	OFDM	20	16.5	16.43	-0.09	0 mm	1	35335	6	back	95.5	13.757	0.924	1.016	1.047	0.983	A52
5500	100	802.11a	OFDM	20	16.5	16.43	0.00	0 mm	1	35335	6	front	95.5	1.511	-	1.016	1.047	-	
5500	100	802.11a	OFDM	20	16.5	16.43	0.16	0 mm	1	35335	6	top	95.5	4.977	-	1.016	1.047	-	
5500	100	802.11a	OFDM	20	16.5	16.43	-0.12	0 mm	1	35335	6	left	95.5	7.618	-	1.016	1.047	-	
5720	144	802.11a	OFDM	20	16.5	16.49	0.14	0 mm	2	35335	6	back	95.2	7.462	0.781	1.002	1.050	0.822	
5720	144	802.11a	OFDM	20	16.5	16.49	0.19	0 mm	2	35335	6	front	95.2	1.610	-	1.002	1.050	-	
5720	144	802.11a	OFDM	20	16.5	16.49	0.19	0 mm	2	35335	6	top	95.2	0.849	-	1.002	1.050	-	
5720	144	802.11a	OFDM	20	16.5	16.49	0.15	0 mm	2	35335	6	right	95.2	5.070	-	1.002	1.050	-	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Phablet 4.0 W/kg (mW/g) averaged over 10 grams											

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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 supports dynamic antenna tuning for some bands. Per FCC Guidance, SAR was measured according to the normally required SAR measurement configurations with tuner active. The auto-tune state determined by the device was verified before and after each SAR measurement and is listed in tables above. Please see Section 14 for supplemental data.

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 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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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 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 and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg per FCC KDB Publication 941225 D01v03r01.

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 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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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 (scaled) for LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg, 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. 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 highest available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR among all exposure condition. Please see Section 14 for linearity results.
7. Per KDB Publication 941225 D05Av01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

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, 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. See Section 8.7.6 for more information.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

4. 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 or all test channels were measured.
5. When 10-g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.
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.

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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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 1-g 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 1-g or 10-g SAR.

Main antenna SAR testing was not required for phablet exposure conditions per FCC KDB 648474 D04v01r03. Therefore, no further analysis was required to determine that possible simultaneous scenarios would not exceed the SAR limit.

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

Per FCC KDB Publication 648474 D04 Handset SAR v01r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-“).

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

12.3 Head SAR Simultaneous Transmission Analysis

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

Simult Tx	Configuration	CDMA BC10 (§90S) 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	Right Cheek	0.191	0.846	0.182	1.037	0.373	1.219
	Right Tilt	0.114	0.638	0.673*	0.752	0.787	**1.425**
	Left Cheek	0.187	0.220	0.673	0.407	0.860	1.080
	Left Tilt	0.107	0.846*	0.304	0.953	0.411	1.257
Simult Tx	Configuration	EVDO BC10 (§90S) 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	Right Cheek	0.181	0.846	0.182	1.027	0.363	1.209
	Right Tilt	0.096	0.638	0.673*	0.734	0.769	**1.407**
	Left Cheek	0.155	0.220	0.673	0.375	0.828	1.048
	Left Tilt	0.097	0.846*	0.304	0.943	0.401	1.247
Simult Tx	Configuration	CDMA BC0 (§22H) 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	Right Cheek	0.199	0.846	0.182	1.045	0.381	1.227
	Right Tilt	0.100	0.638	0.673*	0.738	0.773	**1.411**
	Left Cheek	0.193	0.220	0.673	0.413	0.866	1.086
	Left Tilt	0.116	0.846*	0.304	0.962	0.420	1.266
Simult Tx	Configuration	EVDO BC0 (§22H) 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	Right Cheek	0.210	0.846	0.182	1.056	0.392	1.238
	Right Tilt	0.099	0.638	0.673*	0.737	0.772	**1.410**
	Left Cheek	0.207	0.220	0.673	0.427	0.880	1.100
	Left Tilt	0.105	0.846*	0.304	0.951	0.409	1.255

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Simult Tx	Configuration	PCS CDMA 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	Right Cheek	0.209	0.846	0.182	1.055	0.391	1.237
	Right Tilt	0.083	0.638	0.673*	0.721	0.756	**1.394**
	Left Cheek	0.152	0.220	0.673	0.372	0.825	1.045
	Left Tilt	0.082	0.846*	0.304	0.928	0.386	1.232

Simult Tx	Configuration	PCS EVDO 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	Right Cheek	0.260	0.846	0.182	1.106	0.442	1.288
	Right Tilt	0.114	0.638	0.673*	0.752	0.787	**1.425**
	Left Cheek	0.205	0.220	0.673	0.425	0.878	1.098
	Left Tilt	0.105	0.846*	0.304	0.951	0.409	1.255

Simult Tx	Configuration	GSM 850 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	Right Cheek	0.168	0.846	0.182	1.014	0.350	1.196
	Right Tilt	0.093	0.638	0.673*	0.731	0.766	**1.404**
	Left Cheek	0.158	0.220	0.673	0.378	0.831	1.051
	Left Tilt	0.079	0.846*	0.304	0.925	0.383	1.229

Simult Tx	Configuration	GPRS 850 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	Right Cheek	0.162	0.846	0.182	1.008	0.344	1.190
	Right Tilt	0.082	0.638	0.673*	0.720	0.755	**1.393**
	Left Cheek	0.147	0.220	0.673	0.367	0.820	1.040
	Left Tilt	0.078	0.846*	0.304	0.924	0.382	1.228

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Simult Tx	Configuration	GSM 1900 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	Right Cheek	0.123	0.846	0.182	0.969	0.305	1.151
	Right Tilt	0.053	0.638	0.673*	0.691	0.726	**1.364**
	Left Cheek	0.084	0.220	0.673	0.304	0.757	0.977
	Left Tilt	0.047	0.846*	0.304	0.893	0.351	1.197

Simult Tx	Configuration	GPRS 1900 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	Right Cheek	0.148	0.846	0.182	0.994	0.330	1.176
	Right Tilt	0.053	0.638	0.673*	0.691	0.726	**1.364**
	Left Cheek	0.106	0.220	0.673	0.326	0.779	0.999
	Left Tilt	0.050	0.846*	0.304	0.896	0.354	1.200

Simult Tx	Configuration	UMTS 850 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	Right Cheek	0.197	0.846	0.182	1.043	0.379	1.225
	Right Tilt	0.109	0.638	0.673*	0.747	0.782	**1.420**
	Left Cheek	0.194	0.220	0.673	0.414	0.867	1.087
	Left Tilt	0.106	0.846*	0.304	0.952	0.410	1.256

Simult Tx	Configuration	UMTS 1750 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	Right Cheek	0.131	0.846	0.182	0.977	0.313	1.159
	Right Tilt	0.091	0.638	0.673*	0.729	0.764	**1.402**
	Left Cheek	0.112	0.220	0.673	0.332	0.785	1.005
	Left Tilt	0.107	0.846*	0.304	0.953	0.411	1.257

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Simult Tx	Configuration	UMTS 1900 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	Right Cheek	0.188	0.846	0.182	1.034	0.370	1.216
	Right Tilt	0.075	0.638	0.673*	0.713	0.748	**1.386**
	Left Cheek	0.135	0.220	0.673	0.355	0.808	1.028
	Left Tilt	0.075	0.846*	0.304	0.921	0.379	1.225

Simult Tx	Configuration	LTE Band 12 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	Right Cheek	0.149	0.846	0.182	0.995	0.331	1.177
	Right Tilt	0.081	0.638	0.673*	0.719	0.754	**1.392**
	Left Cheek	0.134	0.220	0.673	0.354	0.807	1.027
	Left Tilt	0.073	0.846*	0.304	0.919	0.377	1.223

Simult Tx	Configuration	LTE Band 13 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	Right Cheek	0.203	0.846	0.182	1.049	0.385	1.231
	Right Tilt	0.123	0.638	0.673*	0.761	0.796	**1.434**
	Left Cheek	0.191	0.220	0.673	0.411	0.864	1.084
	Left Tilt	0.106	0.846*	0.304	0.952	0.410	1.256

Simult Tx	Configuration	LTE Band 26 (Cell) 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	Right Cheek	0.149	0.846	0.182	0.995	0.331	1.177
	Right Tilt	0.104	0.638	0.673*	0.742	0.777	**1.415**
	Left Cheek	0.133	0.220	0.673	0.353	0.806	1.026
	Left Tilt	0.114	0.846*	0.304	0.960	0.418	1.264

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Simult Tx	Configuration	LTE Band 66 (AWS) 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	Right Cheek	0.105	0.846	0.182	0.951	0.287	1.133
	Right Tilt	0.079	0.638	0.673*	0.717	0.752	**1.390**
	Left Cheek	0.084	0.220	0.673	0.304	0.757	0.977
	Left Tilt	0.103	0.846*	0.304	0.949	0.407	1.253

Simult Tx	Configuration	LTE Band 25 (PCS) 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	Right Cheek	0.184	0.846	0.182	1.030	0.366	1.212
	Right Tilt	0.065	0.638	0.673*	0.703	0.738	**1.376**
	Left Cheek	0.109	0.220	0.673	0.329	0.782	1.002
	Left Tilt	0.075	0.846*	0.304	0.921	0.379	1.225

Simult Tx	Configuration	LTE Band 30 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	Right Cheek	0.151	0.846	0.182	0.997	0.333	1.179
	Right Tilt	0.101	0.638	0.673*	0.739	0.774	**1.412**
	Left Cheek	0.089	0.220	0.673	0.309	0.762	0.982
	Left Tilt	0.063	0.846*	0.304	0.909	0.367	1.213

Simult Tx	Configuration	LTE Band 7 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	Right Cheek	0.200	0.846	0.182	1.046	0.382	1.228
	Right Tilt	0.070	0.638	0.673*	0.708	0.743	**1.381**
	Left Cheek	0.108	0.220	0.673	0.328	0.781	1.001
	Left Tilt	0.116	0.846*	0.304	0.962	0.420	1.266

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Simult Tx	Configuration	LTE Band 41 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.168	0.846	0.182	1.014	0.350	1.196
	Right Tilt	0.055	0.638	0.673*	0.693	0.728	**1.366**
	Left Cheek	0.084	0.220	0.673	0.304	0.757	0.977
	Left Tilt	0.085	0.846*	0.304	0.931	0.389	1.235

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)	0.191	0.492	0.644	0.683	0.835	1.327
	CDMA/EVDO BC0 (§22H)	0.210	0.492	0.644	0.702	0.854	1.346
	PCS CDMA/EVDO	0.260	0.492	0.644	0.752	0.904	**1.396**
	GSM/GPRS 850	0.168	0.492	0.644	0.660	0.812	1.304
	GSM/GPRS 1900	0.148	0.492	0.644	0.640	0.792	1.284
	UMTS 850	0.197	0.492	0.644	0.689	0.841	1.333
	UMTS 1750	0.131	0.492	0.644	0.623	0.775	1.267
	UMTS 1900	0.188	0.492	0.644	0.680	0.832	1.324
	LTE Band 12	0.149	0.492	0.644	0.641	0.793	1.285
	LTE Band 13	0.203	0.492	0.644	0.695	0.847	1.339
	LTE Band 26 (Cell)	0.149	0.492	0.644	0.641	0.793	1.285
	LTE Band 66 (AWS)	0.105	0.492	0.644	0.597	0.749	1.241
	LTE Band 25 (PCS)	0.184	0.492	0.644	0.676	0.828	1.320
	LTE Band 30	0.151	0.492	0.644	0.643	0.795	1.287
	LTE Band 7	0.200	0.492	0.644	0.692	0.844	1.336
	LTE Band 41	0.168	0.492	0.644	0.660	0.812	1.304

Table 12-3
Simultaneous Transmission Scenario with 2.4 GHz Ant1 & 5GHz Ant2 WLAN (Held to Ear)

Simult Tx	Configuration	CDMA BC10 (§90S) 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	1+3	1+2+3
Head SAR	Right Cheek	0.191	0.846	0.220	1.037	0.411	1.257
	Right Tilt	0.114	0.638	0.644*	0.752	0.758	**1.396**
	Left Cheek	0.187	0.220	0.644	0.407	0.831	1.051
	Left Tilt	0.107	0.846*	0.238	0.953	0.345	1.191

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Simult Tx	Configuration	EVDO BC10 (§90S) 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	1+3	1+2+3
Head SAR	Right Cheek	0.181	0.846	0.220	1.027	0.401	1.247
	Right Tilt	0.096	0.638	0.644*	0.734	0.740	**1.378**
	Left Cheek	0.155	0.220	0.644	0.375	0.799	1.019
	Left Tilt	0.097	0.846*	0.238	0.943	0.335	1.181

Simult Tx	Configuration	CDMA 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)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.199	0.846	0.220	1.045	0.419	1.265
	Right Tilt	0.100	0.638	0.644*	0.738	0.744	**1.382**
	Left Cheek	0.193	0.220	0.644	0.413	0.837	1.057
	Left Tilt	0.116	0.846*	0.238	0.962	0.354	1.200

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)		
		1	2	3	1+2	1+3	1+2+3
Head SAR	Right Cheek	0.210	0.846	0.220	1.056	0.430	1.276
	Right Tilt	0.099	0.638	0.644*	0.737	0.743	**1.381**
	Left Cheek	0.207	0.220	0.644	0.427	0.851	1.071
	Left Tilt	0.105	0.846*	0.238	0.951	0.343	1.189

Simult Tx	Configuration	PCS CDMA 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	1+3	1+2+3
Head SAR	Right Cheek	0.209	0.846	0.220	1.055	0.429	1.275
	Right Tilt	0.083	0.638	0.644*	0.721	0.727	**1.365**
	Left Cheek	0.152	0.220	0.644	0.372	0.796	1.016
	Left Tilt	0.082	0.846*	0.238	0.928	0.320	1.166

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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	1+3	1+2+3
Head SAR	Right Cheek	0.260	0.754	0.220	1.014	0.480	1.234
	Right Tilt	0.114	0.569	0.644*	0.683	0.758	**1.327**
	Left Cheek	0.205	0.196	0.644	0.401	0.849	1.045
	Left Tilt	0.105	0.754*	0.238	0.859	0.343	1.097

Simult Tx	Configuration	GSM 850 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	1+3	1+2+3
Head SAR	Right Cheek	0.168	0.846	0.220	1.014	0.388	1.234
	Right Tilt	0.093	0.638	0.644*	0.731	0.737	**1.375**
	Left Cheek	0.158	0.220	0.644	0.378	0.802	1.022
	Left Tilt	0.079	0.846*	0.238	0.925	0.317	1.163

Simult Tx	Configuration	GPRS 850 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	1+3	1+2+3
Head SAR	Right Cheek	0.162	0.846	0.220	1.008	0.382	1.228
	Right Tilt	0.082	0.638	0.644*	0.720	0.726	**1.364**
	Left Cheek	0.147	0.220	0.644	0.367	0.791	1.011
	Left Tilt	0.078	0.846*	0.238	0.924	0.316	1.162

Simult Tx	Configuration	GSM 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	1+3	1+2+3
Head SAR	Right Cheek	0.123	0.846	0.220	0.969	0.343	1.189
	Right Tilt	0.053	0.638	0.644*	0.691	0.697	**1.335**
	Left Cheek	0.084	0.220	0.644	0.304	0.728	0.948
	Left Tilt	0.047	0.846*	0.238	0.893	0.285	1.131

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Simult Tx	Configuration	GPRS 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	1+3	1+2+3
Head SAR	Right Cheek	0.148	0.846	0.220	0.994	0.368	1.214
	Right Tilt	0.053	0.638	0.644*	0.691	0.697	**1.335**
	Left Cheek	0.106	0.220	0.644	0.326	0.750	0.970
	Left Tilt	0.050	0.846*	0.238	0.896	0.288	1.134

Simult Tx	Configuration	UMTS 850 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	1+3	1+2+3
Head SAR	Right Cheek	0.197	0.754	0.220	0.951	0.417	1.171
	Right Tilt	0.109	0.569	0.644*	0.678	0.753	**1.322**
	Left Cheek	0.194	0.196	0.644	0.390	0.838	1.034
	Left Tilt	0.106	0.754*	0.238	0.860	0.344	1.098

Simult Tx	Configuration	UMTS 1750 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	1+3	1+2+3
Head SAR	Right Cheek	0.131	0.846	0.220	0.977	0.351	1.197
	Right Tilt	0.091	0.638	0.644*	0.729	0.735	**1.373**
	Left Cheek	0.112	0.220	0.644	0.332	0.756	0.976
	Left Tilt	0.107	0.846*	0.238	0.953	0.345	1.191

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	1+3	1+2+3
Head SAR	Right Cheek	0.188	0.846	0.220	1.034	0.408	1.254
	Right Tilt	0.075	0.638	0.644*	0.713	0.719	**1.357**
	Left Cheek	0.135	0.220	0.644	0.355	0.779	0.999
	Left Tilt	0.075	0.846*	0.238	0.921	0.313	1.159

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Simult Tx	Configuration	LTE Band 12 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	1+3	1+2+3
Head SAR	Right Cheek	0.149	0.846	0.220	0.995	0.369	1.215
	Right Tilt	0.081	0.638	0.644*	0.719	0.725	**1.363**
	Left Cheek	0.134	0.220	0.644	0.354	0.778	0.998
	Left Tilt	0.073	0.846*	0.238	0.919	0.311	1.157

Simult Tx	Configuration	LTE Band 13 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	1+3	1+2+3
Head SAR	Right Cheek	0.203	0.754	0.220	0.957	0.423	1.177
	Right Tilt	0.123	0.569	0.644*	0.692	0.767	**1.336**
	Left Cheek	0.191	0.196	0.644	0.387	0.835	1.031
	Left Tilt	0.106	0.754*	0.238	0.860	0.344	1.098

Simult Tx	Configuration	LTE Band 26 (Cell) 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	1+3	1+2+3
Head SAR	Right Cheek	0.149	0.846	0.220	0.995	0.369	1.215
	Right Tilt	0.104	0.638	0.644*	0.742	0.748	**1.386**
	Left Cheek	0.133	0.220	0.644	0.353	0.777	0.997
	Left Tilt	0.114	0.846*	0.238	0.960	0.352	1.198

Simult Tx	Configuration	LTE Band 66 (AWS) 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	1+3	1+2+3
Head SAR	Right Cheek	0.105	0.846	0.220	0.951	0.325	1.171
	Right Tilt	0.079	0.638	0.644*	0.717	0.723	**1.361**
	Left Cheek	0.084	0.220	0.644	0.304	0.728	0.948
	Left Tilt	0.103	0.846*	0.238	0.949	0.341	1.187

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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	1+3	1+2+3
Head SAR	Right Cheek	0.184	0.846	0.220	1.030	0.404	1.250
	Right Tilt	0.065	0.638	0.644*	0.703	0.709	**1.347**
	Left Cheek	0.109	0.220	0.644	0.329	0.753	0.973
	Left Tilt	0.075	0.846*	0.238	0.921	0.313	1.159

Simult Tx	Configuration	LTE Band 30 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	1+3	1+2+3
Head SAR	Right Cheek	0.151	0.846	0.220	0.997	0.371	1.217
	Right Tilt	0.101	0.638	0.644*	0.739	0.745	**1.383**
	Left Cheek	0.089	0.220	0.644	0.309	0.733	0.953
	Left Tilt	0.063	0.846*	0.238	0.909	0.301	1.147

Simult Tx	Configuration	LTE Band 7 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	1+3	1+2+3
Head SAR	Right Cheek	0.200	0.754	0.220	0.954	0.420	1.174
	Right Tilt	0.070	0.569	0.644*	0.639	0.714	**1.283**
	Left Cheek	0.108	0.196	0.644	0.304	0.752	0.948
	Left Tilt	0.116	0.754*	0.238	0.870	0.354	1.108

Simult Tx	Configuration	LTE Band 41 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	1+3	1+2+3
Head SAR	Right Cheek	0.168	0.846	0.220	1.014	0.388	1.234
	Right Tilt	0.055	0.638	0.644*	0.693	0.699	**1.337**
	Left Cheek	0.084	0.220	0.644	0.304	0.728	0.948
	Left Tilt	0.085	0.846*	0.238	0.931	0.323	1.169

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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)	0.191	0.052	0.243
	CDMA/EVDO BC0 (§22H)	0.210	0.052	0.262
	PCS CDMA/EVDO	0.260	0.052	**0.312**
	GSM/GPRS 850	0.168	0.052	0.220
	GSM/GPRS 1900	0.148	0.052	0.200
	UMTS 850	0.197	0.052	0.249
	UMTS 1750	0.131	0.052	0.183
	UMTS 1900	0.188	0.052	0.240
	LTE Band 12	0.149	0.052	0.201
	LTE Band 13	0.203	0.052	0.255
	LTE Band 26 (Cell)	0.149	0.052	0.201
	LTE Band 66 (AWS)	0.105	0.052	0.157
	LTE Band 25 (PCS)	0.184	0.052	0.236
	LTE Band 30	0.151	0.052	0.203
	LTE Band 7	0.200	0.052	0.252
	LTE Band 41	0.168	0.052	0.220

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	CDMA BC10 (§90S)	0.293	0.375	0.271	0.668	0.564	0.939
	CDMA BC0 (§22H)	0.301	0.375	0.271	0.676	0.572	0.947
	PCS CDMA	0.712	0.375	0.271	1.087	0.983	1.358
	GSM/GPRS 850	0.249	0.375	0.271	0.624	0.520	0.895
	GSM/GPRS 1900	0.540	0.375	0.271	0.915	0.811	1.186
	UMTS 850	0.298	0.375	0.271	0.673	0.569	0.944
	UMTS 1750	0.562	0.375	0.271	0.937	0.833	1.208
	UMTS 1900	0.769	0.375	0.271	1.144	1.040	**1.415**
	LTE Band 12	0.282	0.375	0.271	0.657	0.553	0.928
	LTE Band 13	0.357	0.375	0.271	0.732	0.628	1.003
	LTE Band 26 (Cell)	0.306	0.375	0.271	0.681	0.577	0.952
	LTE Band 66 (AWS)	0.468	0.375	0.271	0.843	0.739	1.114
	LTE Band 25 (PCS)	0.613	0.375	0.271	0.988	0.884	1.259
	LTE Band 30	0.288	0.375	0.271	0.663	0.559	0.934
	LTE Band 7	0.452	0.375	0.271	0.827	0.723	1.098
	LTE Band 41	0.287	0.375	0.271	0.662	0.558	0.933

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 12-6
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)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	CDMA BC10 (§90S)	0.293	0.230	0.330	0.523	0.623	0.853
	CDMA BC0 (§22H)	0.301	0.230	0.330	0.531	0.631	0.861
	PCS CDMA	0.712	0.230	0.330	0.942	1.042	1.272
	GSM/GPRS 850	0.249	0.230	0.330	0.479	0.579	0.809
	GSM/GPRS 1900	0.540	0.230	0.330	0.770	0.870	1.100
	UMTS 850	0.298	0.230	0.330	0.528	0.628	0.858
	UMTS 1750	0.562	0.230	0.330	0.792	0.892	1.122
	UMTS 1900	0.769	0.230	0.330	0.999	1.099	**1.329**
	LTE Band 12	0.282	0.230	0.330	0.512	0.612	0.842
	LTE Band 13	0.357	0.230	0.330	0.587	0.687	0.917
	LTE Band 26 (Cell)	0.306	0.230	0.330	0.536	0.636	0.866
	LTE Band 66 (AWS)	0.468	0.230	0.330	0.698	0.798	1.028
	LTE Band 25 (PCS)	0.613	0.230	0.330	0.843	0.943	1.173
	LTE Band 30	0.288	0.230	0.330	0.518	0.618	0.848
	LTE Band 7	0.452	0.230	0.330	0.682	0.782	1.012
	LTE Band 41	0.287	0.230	0.330	0.517	0.617	0.847

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 12-7
Simultaneous Transmission Scenario with 2.4 GHz Ant1 and 5 GHz Ant2 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)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body-Worn	CDMA BC10 (§90S)	0.293	0.375	0.330	0.668	0.623	0.998
	CDMA BC0 (§22H)	0.301	0.375	0.330	0.676	0.631	1.006
	PCS CDMA	0.712	0.375	0.330	1.087	1.042	1.417
	GSM/GPRS 850	0.249	0.375	0.330	0.624	0.579	0.954
	GSM/GPRS 1900	0.540	0.375	0.330	0.915	0.870	1.245
	UMTS 850	0.298	0.375	0.330	0.673	0.628	1.003
	UMTS 1750	0.562	0.375	0.330	0.937	0.892	1.267
	UMTS 1900	0.769	0.375	0.330	1.144	1.099	**1.474**
	LTE Band 12	0.282	0.375	0.330	0.657	0.612	0.987
	LTE Band 13	0.357	0.375	0.330	0.732	0.687	1.062
	LTE Band 26 (Cell)	0.306	0.375	0.330	0.681	0.636	1.011
	LTE Band 66 (AWS)	0.468	0.375	0.330	0.843	0.798	1.173
	LTE Band 25 (PCS)	0.613	0.375	0.330	0.988	0.943	1.318
	LTE Band 30	0.288	0.375	0.330	0.663	0.618	0.993
	LTE Band 7	0.452	0.375	0.330	0.827	0.782	1.157
	LTE Band 41	0.287	0.375	0.330	0.662	0.617	0.992

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 12-8
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)	0.293	0.026	0.319
	CDMA BC0 (§22H)	0.301	0.026	0.327
	PCS CDMA	0.712	0.026	0.738
	GSM/GPRS 850	0.249	0.026	0.275
	GSM/GPRS 1900	0.540	0.026	0.566
	UMTS 850	0.298	0.026	0.324
	UMTS 1750	0.562	0.026	0.588
	UMTS 1900	0.769	0.026	**0.795**
	LTE Band 12	0.282	0.026	0.308
	LTE Band 13	0.357	0.026	0.383
	LTE Band 26 (Cell)	0.306	0.026	0.332
	LTE Band 66 (AWS)	0.468	0.026	0.494
	LTE Band 25 (PCS)	0.613	0.026	0.639
	LTE Band 30	0.288	0.026	0.314
	LTE Band 7	0.452	0.026	0.478
	LTE Band 41	0.287	0.026	0.313

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

12.5 Hotspot SAR Simultaneous Transmission Analysis

Table 12-9
Simultaneous Transmission Scenario (2.4 GHz Hotspot at 1.0 cm)

Exposure Condition	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	EVDO BC10 (§90S)	0.319	0.375	0.271	0.694	0.590	0.965
	EVDO BC0 (§22H)	0.317	0.375	0.271	0.692	0.588	0.963
	PCS EVDO	1.184	0.375	0.271	**1.559**	1.455	See Table Below
	GPRS 850	0.262	0.375	0.271	0.637	0.533	0.908
	GPRS 1900	0.746	0.375	0.271	1.121	1.017	1.392
	UMTS 850	0.319	0.375	0.271	0.694	0.590	0.965
	UMTS 1750	0.667	0.375	0.271	1.042	0.938	1.313
	UMTS 1900	0.957	0.375	0.271	1.332	1.228	See Table Below
	LTE Band 12	0.282	0.375	0.271	0.657	0.553	0.928
	LTE Band 13	0.357	0.375	0.271	0.732	0.628	1.003
	LTE Band 26 (Cell)	0.327	0.375	0.271	0.702	0.598	0.973
	LTE Band 66 (AWS)	0.501	0.375	0.271	0.876	0.772	1.147
	LTE Band 25 (PCS)	0.779	0.375	0.271	1.154	1.050	1.425
	LTE Band 30	0.299	0.375	0.271	0.674	0.570	0.945
	LTE Band 7	0.452	0.375	0.271	0.827	0.723	1.098
	LTE Band 41	0.287	0.375	0.271	0.662	0.558	0.933

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.922	0.375	0.271	1.297	1.193	**1.568**
	Front	0.800	0.375*	0.271*	1.175	1.071	1.446
	Top	-	0.375*	0.271*	0.375	0.271	0.646
	Bottom	1.184	-	-	1.184	1.184	1.184
	Right	-	-	0.246	0.000	0.246	0.246
	Left	0.521	0.375*	-	0.896	0.521	0.896

Simult Tx	Configuration	UMTS 1900 SAR (W/kg)	2.4 GHz WLAN Ant 1 SAR (W/kg)	2.4 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Hotspot SAR	Back	0.769	0.375	0.271	1.144	1.040	**1.415**
	Front	0.714	0.375*	0.271*	1.089	0.985	1.360
	Top	-	0.375*	0.271*	0.375	0.271	0.646
	Bottom	0.957	-	-	0.957	0.957	0.957
	Right	-	-	0.246	0.000	0.246	0.246
	Left	0.365	0.375*	-	0.740	0.365	0.740

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 12-10
Simultaneous Transmission Scenario (5 GHz 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)	0.319	0.202	0.294	0.521	0.613	0.815
	EVDO BC0 (§22H)	0.317	0.202	0.294	0.519	0.611	0.813
	PCS EVDO	1.184	0.202	0.294	1.386	**1.478**	See Table Below
	GPRS 850	0.262	0.202	0.294	0.464	0.556	0.758
	GPRS 1900	0.746	0.202	0.294	0.948	1.040	1.242
	UMTS 850	0.319	0.202	0.294	0.521	0.613	0.815
	UMTS 1750	0.667	0.202	0.294	0.869	0.961	1.163
	UMTS 1900	0.957	0.202	0.294	1.159	1.251	1.453
	LTE Band 12	0.282	0.202	0.294	0.484	0.576	0.778
	LTE Band 13	0.357	0.202	0.294	0.559	0.651	0.853
	LTE Band 26 (Cell)	0.327	0.202	0.294	0.529	0.621	0.823
	LTE Band 66 (AWS)	0.501	0.202	0.294	0.703	0.795	0.997
	LTE Band 25 (PCS)	0.779	0.202	0.294	0.981	1.073	1.275
	LTE Band 30	0.299	0.202	0.294	0.501	0.593	0.795
	LTE Band 7	0.452	0.202	0.294	0.654	0.746	0.948
	LTE Band 41	0.287	0.202	0.294	0.489	0.581	0.783

Simult Tx	Configuration	PCS EVDO 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	0.922	0.202	0.294	1.124	1.216	**1.418**
	Front	0.800	0.202*	0.294*	1.002	1.094	1.296
	Top	-	0.202*	0.294*	0.202	0.294	0.496
	Bottom	1.184	-	-	1.184	1.184	1.184
	Right	-	-	0.273	0.000	0.273	0.273
	Left	0.521	0.202*	-	0.723	0.521	0.723

© 2017 PCTEST Engineering Laboratory, Inc.

REV 18.3 M
01/30/2017

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 12-11
Simultaneous Transmission Scenario (2.4 GHz Ant1 and 5 GHz Ant2 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	1+3	1+2+3
Hotspot SAR	EVDO BC10 (§90S)	0.319	0.375	0.294	0.694	0.613	0.988
	EVDO BC0 (§22H)	0.317	0.375	0.294	0.692	0.611	0.986
	PCS EVDO	1.184	0.375	0.294	**1.559**	1.478	See Table Below
	GPRS 850	0.262	0.375	0.294	0.637	0.556	0.931
	GPRS 1900	0.746	0.375	0.294	1.121	1.040	1.415
	UMTS 850	0.319	0.375	0.294	0.694	0.613	0.988
	UMTS 1750	0.667	0.375	0.294	1.042	0.961	1.336
	UMTS 1900	0.957	0.375	0.294	1.332	1.251	See Table Below
	LTE Band 12	0.282	0.375	0.294	0.657	0.576	0.951
	LTE Band 13	0.357	0.375	0.294	0.732	0.651	1.026
	LTE Band 26 (Cell)	0.327	0.375	0.294	0.702	0.621	0.996
	LTE Band 66 (AWS)	0.501	0.375	0.294	0.876	0.795	1.170
	LTE Band 25 (PCS)	0.779	0.375	0.294	1.154	1.073	1.448
	LTE Band 30	0.299	0.375	0.294	0.674	0.593	0.968
	LTE Band 7	0.452	0.375	0.294	0.827	0.746	1.121
	LTE Band 41	0.287	0.375	0.294	0.662	0.581	0.956

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	1+3	1+2+3
Hotspot SAR	Back	0.922	0.375	0.294	1.297	1.216	**1.591**
	Front	0.800	0.375*	0.294*	1.175	1.094	1.469
	Top	-	0.375*	0.294*	0.375	0.294	0.669
	Bottom	1.184	-	-	1.184	1.184	1.184
	Right	-	-	0.273	0.000	0.273	0.273
	Left	0.521	0.375*	-	0.896	0.521	0.896

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	1+3	1+2+3
Hotspot SAR	Back	0.769	0.375	0.294	1.144	1.063	**1.438**
	Front	0.714	0.375*	0.294*	1.089	1.008	1.383
	Top	-	0.375*	0.294*	0.375	0.294	0.669
	Bottom	0.957	-	-	0.957	0.957	0.957
	Right	-	-	0.273	0.000	0.273	0.273
	Left	0.365	0.375*	-	0.740	0.365	0.740

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 12-12
Simultaneous Transmission Scenario (Bluetooth Hotpot 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)	0.319	0.026	0.345
	EVDO BC0 (§22H)	0.317	0.026	0.343
	PCS EVDO	1.184	0.026	**1.210**
	GPRS 850	0.262	0.026	0.288
	GPRS 1900	0.746	0.026	0.772
	UMTS 850	0.319	0.026	0.345
	UMTS 1750	0.667	0.026	0.693
	UMTS 1900	0.957	0.026	0.983
	LTE Band 12	0.282	0.026	0.308
	LTE Band 13	0.357	0.026	0.383
	LTE Band 26 (Cell)	0.327	0.026	0.353
	LTE Band 66 (AWS)	0.501	0.026	0.527
	LTE Band 25 (PCS)	0.779	0.026	0.805
	LTE Band 30	0.299	0.026	0.325
	LTE Band 7	0.452	0.026	0.478
	LTE Band 41	0.287	0.026	0.313

12.6 Phablet Simultaneous Transmission Analysis

Table 12-13
Simultaneous Transmission Scenario with 5 GHz WLAN (Phablet at 0.0 cm)

Simult Tx	5 GHz WLAN Ant 1 SAR (W/kg)	5 GHz WLAN Ant 2 SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Phablet SAR	0.983	1.174	**2.157**

12.7 Simultaneous Transmission Conclusion

The above numerical summed SAR results 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.

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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 1-g 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

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)	
1900	1908.75	1175	PCS CDMA	EVDO Rev. 0	bottom	10 mm	1.170	1.170	1.00	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							

13.2 Measurement Uncertainty

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

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

14 ADDITIONAL TESTING PER FCC GUIDANCE

14.1 Tuner Testing

The following test procedures were followed to demonstrate that the SAR results in Section 11 represented the appropriate SAR test conditions.
For bands with dynamic tuning implemented, SAR was measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching. Additional single point SAR time-sweep measurements were evaluated for other tuner states to determine that the other tuner configurations would result in similar SAR values. Per FCC Guidance, no additional SAR measurements were needed since the reported 1g SAR was under 0.5 W/kg.

To evaluate all of the tuner states, the 139 tuner states were divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement was measured among the configurations. Single point time-sweep measurements were performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination.

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

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 14-1
UMTS/CDMA/LTE Supplemental Head SAR Data

Supplemental Head SAR Data											
UMTS 850		CDMA BC10		CDMA BC0		LTE Band 12		LTE Band 13		LTE Band 26	
RMC		RC3/SO55		EVDO Rev. A		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 15MHz Bandwidth, 1 RB, 0 RB Offsets	
Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Right Cheek
Frequency (MHz)	836.6	Frequency (MHz)	820.1	Frequency (MHz)	836.52	Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	831.5
Channel	4183	Channel	564	Channel	384	Channel	23095	Channel	23230	Channel	26865
Measured 1g SAR (W/kg)	0.193	Measured 1g SAR (W/kg)	0.183	Measured 1g SAR (W/kg)	0.21	Measured 1g SAR (W/kg)	0.148	Measured 1g SAR (W/kg)	0.203	Measured 1g SAR (W/kg)	0.148
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 12)	0.205	Auto-tune (State 0)	0.207	Auto-tune (State 0)	0.229	Auto-tune (State 12)	0.179	Auto-tune (State 11)	0.238	Auto-tune (State 0)	0.153
Default (State 0)	0.202	Default (State 0)	0.204	Default (State 0)	0.216	Default (State 0)	0.178	Default (State 0)	0.241	Default (State 0)	0.146
0	0.202	0	0.204	0	0.216	0	0.178	0	0.241	0	0.146
5	0.203	7	0.207	4	0.217	2	0.178	1	0.242	3	0.145
12	0.206	14	0.145	6	0.215	6	0.177	8	0.241	10	0.146
19	0.161	21	0.146	11	0.216	9	0.178	11	0.238	17	0.113
26	0.056	25	0.144	17	0.162	12	0.179	12	0.240	24	0.114
33	0.056	28	0.051	31	0.053	16	0.102	15	0.204	31	0.043
47	0.075	35	0.051	45	0.074	23	0.103	21	0.211	38	0.043
54	0.159	42	0.074	49	0.073	30	0.070	22	0.211	45	0.056
61	0.161	49	0.075	56	0.168	37	0.070	29	0.068	49	0.056
68	0.104	56	0.144	66	0.095	40	0.105	36	0.068	52	0.116
75	0.105	63	0.144	80	0.093	44	0.106	43	0.093	59	0.114
89	0.096	70	0.073	94	0.123	58	0.110	57	0.214	60	0.117
95	0.125	77	0.074	91	0.121	63	0.109	71	0.126	66	0.071
98	0.123	84	0.094	104	0.225	72	0.054	77	0.128	73	0.066
103	0.124	91	0.131	108	0.167	86	0.129	85	0.119	80	0.069
105	0.167	101	0.130	118	0.224	100	0.126	87	0.117	87	0.073
117	0.124	105	0.141	122	0.170	101	0.125	99	0.152	101	0.098
125	0.204	108	0.143	125	0.227	114	0.112	113	0.068	115	0.119
129	0.161	119	0.145	132	0.226	123	0.128	118	0.238	129	0.117
131	0.124	133	0.146	133	0.171	128	0.113	127	0.068	133	0.113

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 14-2
UMTS/CDMA/LTE Supplemental Body SAR Data

Supplemental Body SAR Data											
UMTS 850		CDMA BC10		CDMA BC0		LTE Band 12		LTE Band 13		LTE Band 26	
RMC		TDSO/SO32		TDSO/SO33		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 10MHz Bandwidth, 1 RB, 49 RB Offsets		QPSK, 15MHz Bandwidth, 1 RB, 0 RB Offsets	
Test Position	Right Edge	Test Position	Right Edge	Test Position	Right Edge	Test Position	Back Side	Test Position	Back Side	Test Position	Right Edge
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	836.6	Frequency (MHz)	820.1	Frequency (MHz)	836.52	Frequency (MHz)	707.5	Frequency (MHz)	782	Frequency (MHz)	831.5
Channel	4183	Channel	564	Channel	384	Channel	23095	Channel	23230	Channel	26865
Measured 1g SAR (W/kg)	0.312	Measured 1g SAR (W/kg)	0.319	Measured 1g SAR (W/kg)	0.317	Measured 1g SAR (W/kg)	0.279	Measured 1g SAR (W/kg)	0.357	Measured 1g SAR (W/kg)	0.325
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 0)	0.459	Auto-tune (State 12)	0.473	Auto-tune (State 0)	0.485	Auto-tune (State 12)	0.298	Auto-tune (State 1)	0.404	Auto-tune (State 0)	0.385
Default (State 0)	0.459	Default (State 0)	0.48	Default (State 0)	0.485	Default (State 0)	0.3	Default (State 0)	0.403	Default (State 0)	0.385
0	0.459	0	0.480	0	0.485	0	0.300	0	0.403	0	0.385
11	0.454	12	0.473	13	0.348	7	0.299	1	0.393	18	0.250
12	0.452	14	0.287	14	0.365	9	0.299	2	0.403	25	0.253
19	0.321	21	0.291	20	0.339	12	0.298	8	0.402	32	0.104
26	0.122	28	0.117	27	0.138	16	0.166	10	0.402	38	0.104
28	0.119	35	0.117	34	0.142	23	0.165	14	0.325	39	0.154
33	0.120	42	0.164	41	0.180	24	0.165	22	0.320	46	0.142
40	0.159	49	0.168	48	0.198	30	0.132	29	0.123	53	0.249
47	0.163	56	0.294	55	0.376	31	0.131	36	0.123	67	0.141
52	0.322	63	0.299	62	0.355	37	0.131	43	0.168	74	0.142
54	0.318	68	0.154	69	0.173	44	0.190	50	0.168	80	0.187
61	0.319	70	0.153	76	0.175	51	0.189	57	0.323	81	0.187
68	0.188	77	0.152	82	0.251	59	0.175	64	0.325	88	0.187
82	0.214	84	0.227	83	0.245	65	0.091	73	0.196	97	0.245
89	0.215	98	0.302	90	0.251	70	0.088	78	0.205	102	0.246
96	0.282	112	0.297	97	0.322	79	0.227	84	0.209	109	0.185
110	0.281	121	0.181	111	0.502	93	0.208	92	0.262	116	0.185
112	0.325	126	0.294	125	0.502	107	0.192	106	0.123	122	0.251
124	0.285	135	0.180	136	0.376	121	0.200	120	0.123	130	0.183
138	0.284	136	0.299	137	0.248	135	0.200	134	0.123	137	0.188

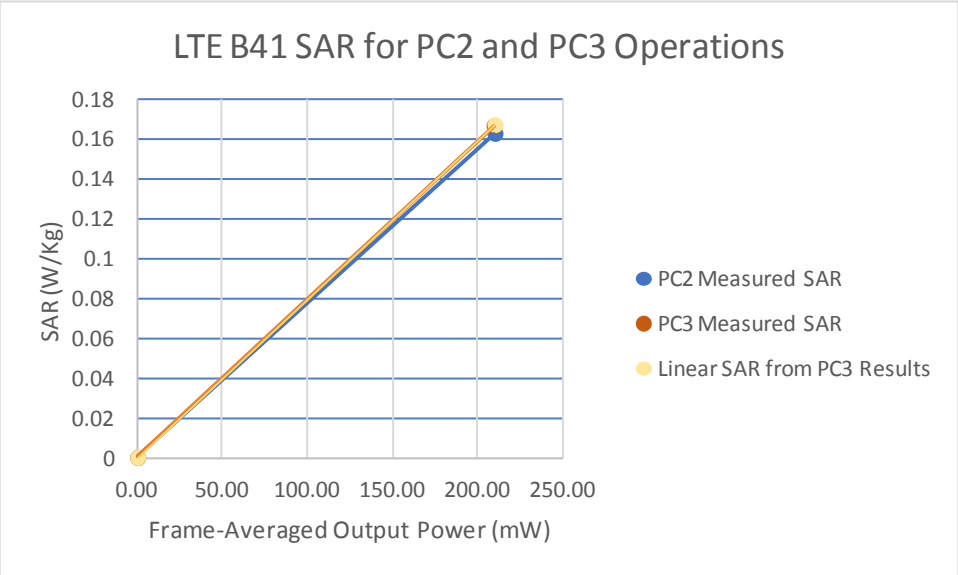
© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

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

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance 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 among all exposure conditions. 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 FCC Guidance, no additional SAR measurements were required.

Table 14-3
LTE Band 41 Head Linearity Data

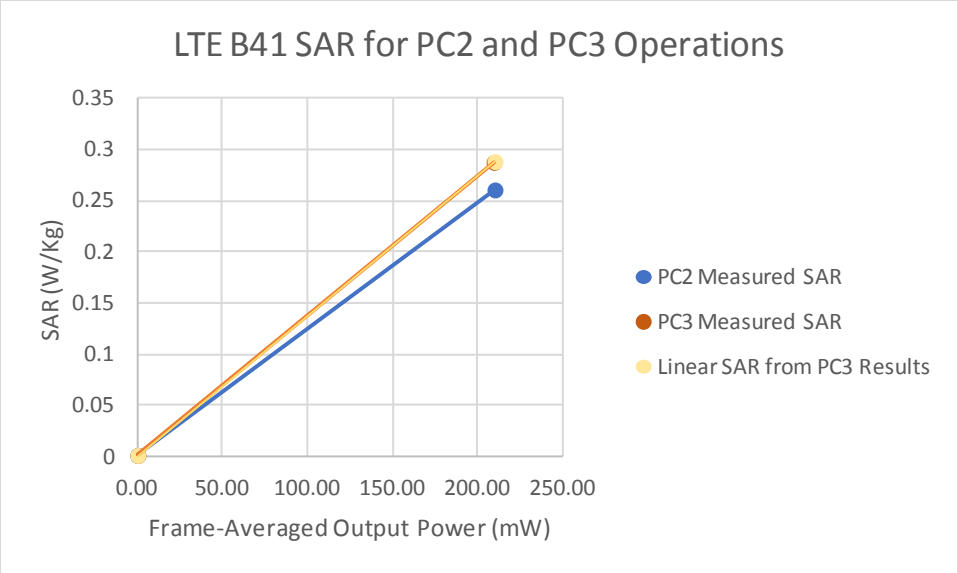
	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27
Measured Output Power (dBm)	25.2	26.86
Measured SAR (W/kg)	0.167	0.163
Measured Power (mW)	331.13	485.29
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	209.61	210.13
% deviation from expected linearity		-2.64%



© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

Table 14-4
LTE Band 41 Body Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.2	27
Measured Output Power (dBm)	25.2	26.86
Measured SAR (W/kg)	0.287	0.26
Measured Power (mW)	331.13	485.29
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	209.61	210.13
% deviation from expected linearity		-9.63%



© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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	8753ES	S-Parameter Network Analyzer	10/26/2016	Annual	10/26/2017	US39170118
Agilent	E4438C	ESG Vector Signal Generator	3/24/2017	Annual	3/24/2018	MY45091346
Agilent	E4438C	ESG Vector Signal Generator	3/23/2017	Annual	3/23/2018	MY47270002
Agilent	E5515C	8960 Series 10 Wireless Communications Test Set	10/5/2016	Annual	10/5/2017	GB42230325
Agilent	E5515C	Wireless Communications Test Set	5/31/2017	Annual	5/31/2018	GB43304278
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/22/2017	Annual	3/22/2018	MY45470194
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB44450273
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Agilent	N5182A	MXG Vector Signal Generator	10/27/2016	Annual	10/27/2017	MY47420603
Agilent	N5182A	MXG Vector Signal Generator	2/28/2017	Annual	2/28/2018	MY47420800
Agilent	N9020A	MXA Signal Analyzer	10/28/2016	Annual	10/28/2017	US46470561
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433972
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1231535
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1231538
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1244512
Anritsu	MA24106A	USB Power Sensor	6/7/2017	Annual	6/7/2018	1244515
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1207364
Anritsu	MA2411B	Pulse Power Sensor	2/10/2017	Annual	2/10/2018	1339018
Anritsu	ML2495A	Power Meter	10/16/2015	Biennial	10/16/2017	941001
Anritsu	ML2496A	Power Meter	4/20/2017	Annual	4/20/2018	1306009
Anritsu	MT8820C	Radio Communication Analyzer	11/4/2016	Annual	11/4/2017	6201144418
COMTech	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M1S5A00-009
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261694
Control Company	4352	Ultra Long Stem Thermometer	3/8/2016	Biennial	3/8/2018	160261729
Keysight	772D	Dual Directional Coupler	CBT	N/A	CBT	MY52180215
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R8979500903
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
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
Mitutoyo	CD-6"CSX	Digital Caliper	3/2/2016	Biennial	3/2/2018	13264162
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Narda	EHP-200AC	Electric & Magnetic Field Probe	4/18/2017	Annual	4/18/2018	170WX70211
Pasternack	NC-100	Torque Wrench	3/8/2017	Annual	3/8/2018	N/A
Pasternack	NC-100	Torque Wrench	3/8/2017	Annual	3/8/2018	N/A
Pasternack	PE2208-6	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	12/12/2016	Annual	12/12/2017	833855/0010
Rohde & Schwarz	CMU200	Base Station Simulator	4/11/2017	Annual	4/11/2018	836371/0079
Rohde & Schwarz	CMW500	Radio Communication Tester	10/20/2016	Annual	10/20/2017	100976
Rohde & Schwarz	CMW500	Radio Communication Tester	5/4/2017	Annual	5/4/2018	101699
Seekonk	NC-100	Torque Wrench (8" lb)	9/1/2016	Biennial	9/1/2018	21053
Seekonk	NC-100	Torque Wrench (8" lb)	8/30/2016	Biennial	8/30/2018	N/A
SPEAG	D750V3	750 MHz SAR Dipole	1/11/2017	Annual	1/11/2018	1003
SPEAG	D750V3	750 MHz SAR Dipole	5/11/2017	Annual	5/11/2018	1034
SPEAG	D750V3	750 MHz SAR Dipole	3/7/2017	Annual	3/7/2018	1054
SPEAG	D835V2	835 MHz SAR Dipole	1/11/2017	Annual	1/11/2018	4d132
SPEAG	D835V2	850 MHz SAR Dipole	5/11/2017	Annual	5/11/2018	4d180
SPEAG	D1750V2	1750 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	1092
SPEAG	D1900V2	1900 MHz SAR Dipole	5/10/2017	Annual	5/10/2018	5d026
SPEAG	D1900V2	1900 MHz SAR Dipole	2/9/2017	Annual	2/9/2018	5d148
SPEAG	D2300V2	2300 MHz SAR Dipole	3/7/2017	Annual	3/7/2018	1038
SPEAG	D2450V2	2450 MHz SAR Dipole	9/13/2016	Annual	9/13/2017	797
SPEAG	D2450V2	2450 MHz SAR Dipole	5/9/2017	Annual	5/9/2018	945
SPEAG	D2600V2	2600 MHz SAR Dipole	9/13/2016	Annual	9/13/2017	1071
SPEAG	D5GHzV2	5 GHz SAR Dipole	3/9/2017	Annual	3/9/2018	1123
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2017	Annual	2/9/2018	1272
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/13/2017	Annual	3/13/2018	1415
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/11/2017	Annual	4/11/2018	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/14/2016	Annual	9/14/2017	1408
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/16/2017	Annual	1/16/2018	1466
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/10/2017	Annual	5/10/2018	1070
SPEAG	ES3DV3	SAR Probe	3/14/2017	Annual	3/14/2018	3209
SPEAG	ES3DV3	SAR Probe	2/10/2017	Annual	2/10/2018	3213
SPEAG	ES3DV3	SAR Probe	9/19/2016	Annual	9/19/2017	3287
SPEAG	ES3DV3	SAR Probe	2/10/2017	Annual	2/10/2018	3318
SPEAG	EX3DV4	SAR Probe	1/13/2017	Annual	1/13/2018	3589
SPEAG	EX3DV4	SAR Probe	2/13/2017	Annual	2/13/2018	3914
SPEAG	EX3DV4	SAR Probe	4/18/2017	Annual	4/18/2018	7406

Note: 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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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	

© 2017 PCTEST Engineering Laboratory, Inc.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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]

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.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, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz), Feb. 2005.

[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.

© 2017 PCTEST Engineering Laboratory, Inc. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST Engineering Laboratory, Inc. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTESTLAB.COM.

APPENDIX A: SAR TEST DATA

© 2017 PCTEST Engineering Laboratory, Inc.

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

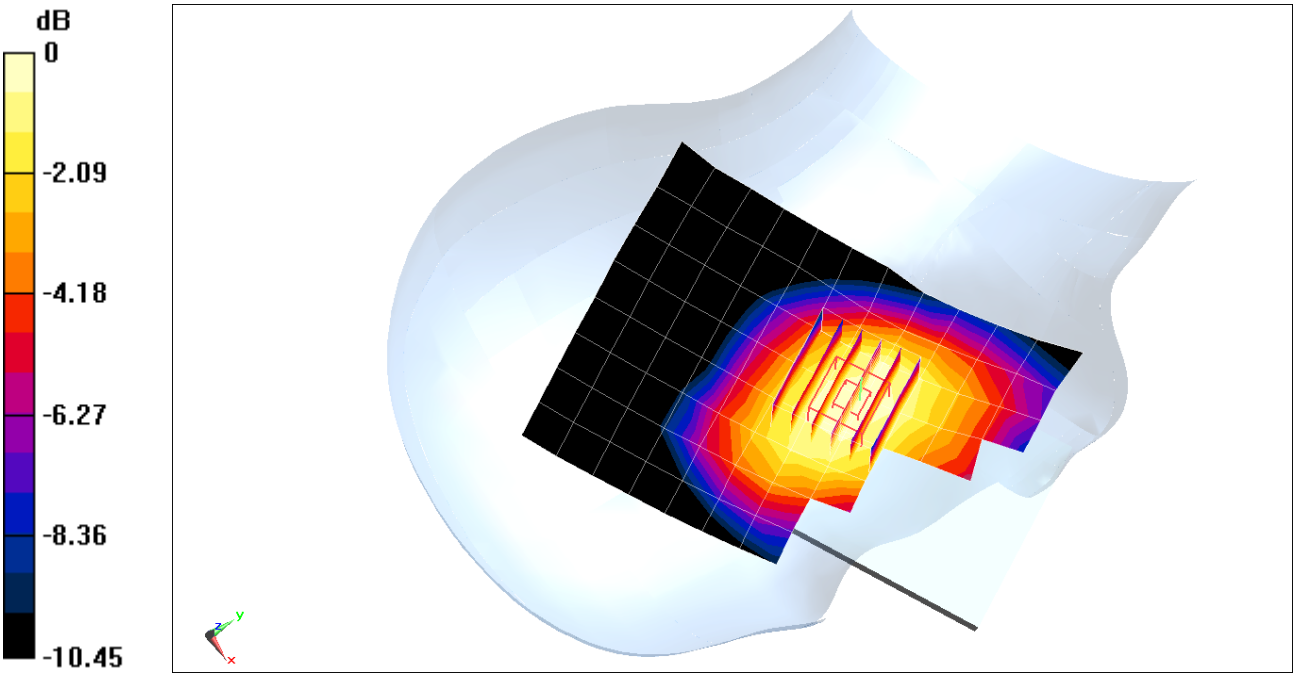
Communication System: UID 0, Cellular CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.895 S/m; ε_r = 42.608; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-21-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3287; ConvF(6.67, 6.67, 6.67); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. BC10 CDMA, Rule Part 90S, Right 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 = 14.95 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.229 W/kg
SAR(1 g) = 0.183 W/kg



0 dB = 0.199 W/kg = -7.01 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

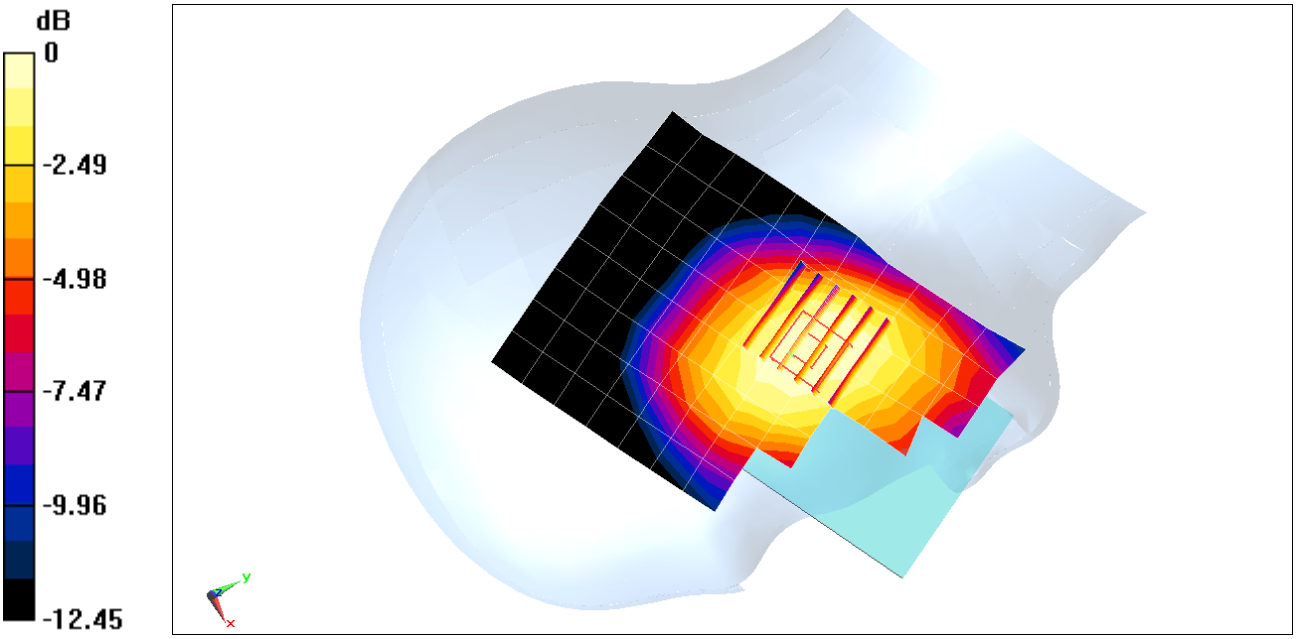
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.911 S/m; ε_r = 42.493; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-21-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3287; ConvF(6.67, 6.67, 6.67); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. BC0 EVDO Rev. A, Rule Part 22H, Right 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 = 15.60 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.262 W/kg
SAR(1 g) = 0.210 W/kg



0 dB = 0.226 W/kg = -6.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

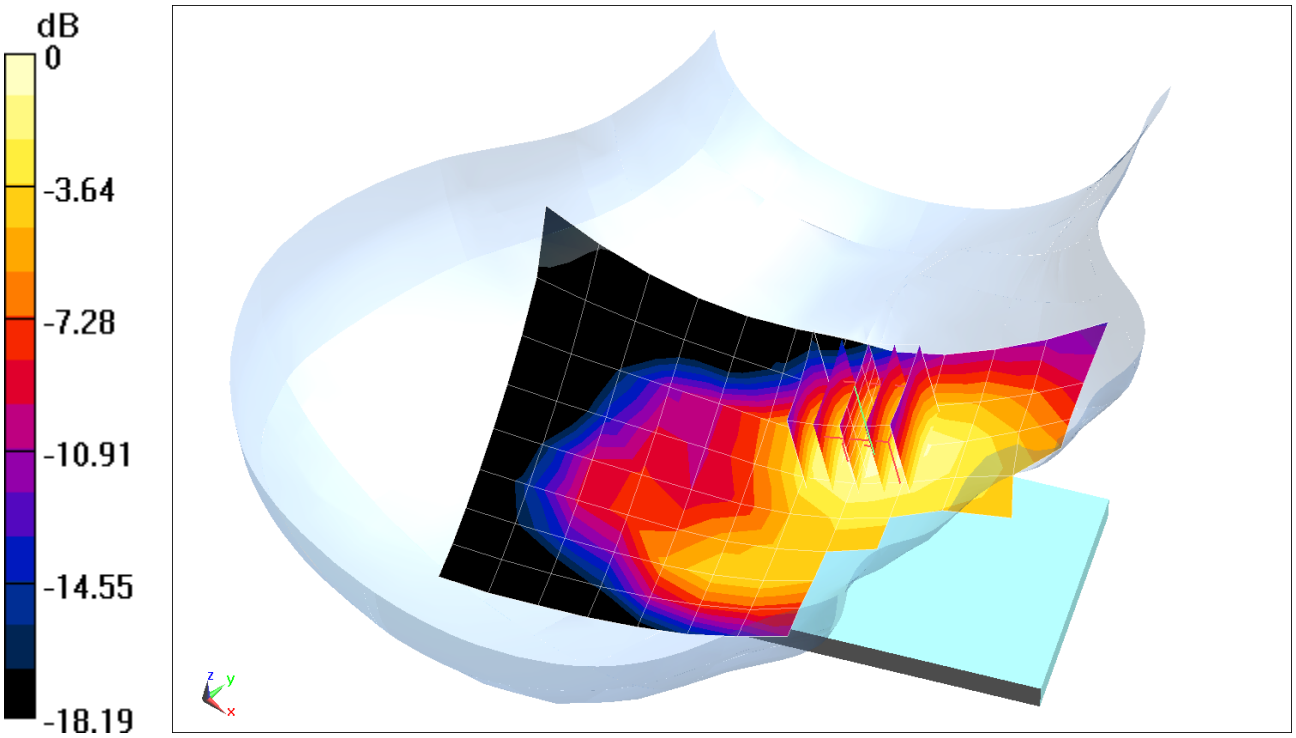
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.391 S/m; ε_r = 39.834; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-15-2017; Ambient Temp: 21.9°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7406; ConvF(8.4, 8.4, 8.4); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
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 = 13.77 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 0.391 W/kg
SAR(1 g) = 0.253 W/kg



0 dB = 0.330 W/kg = -4.81 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

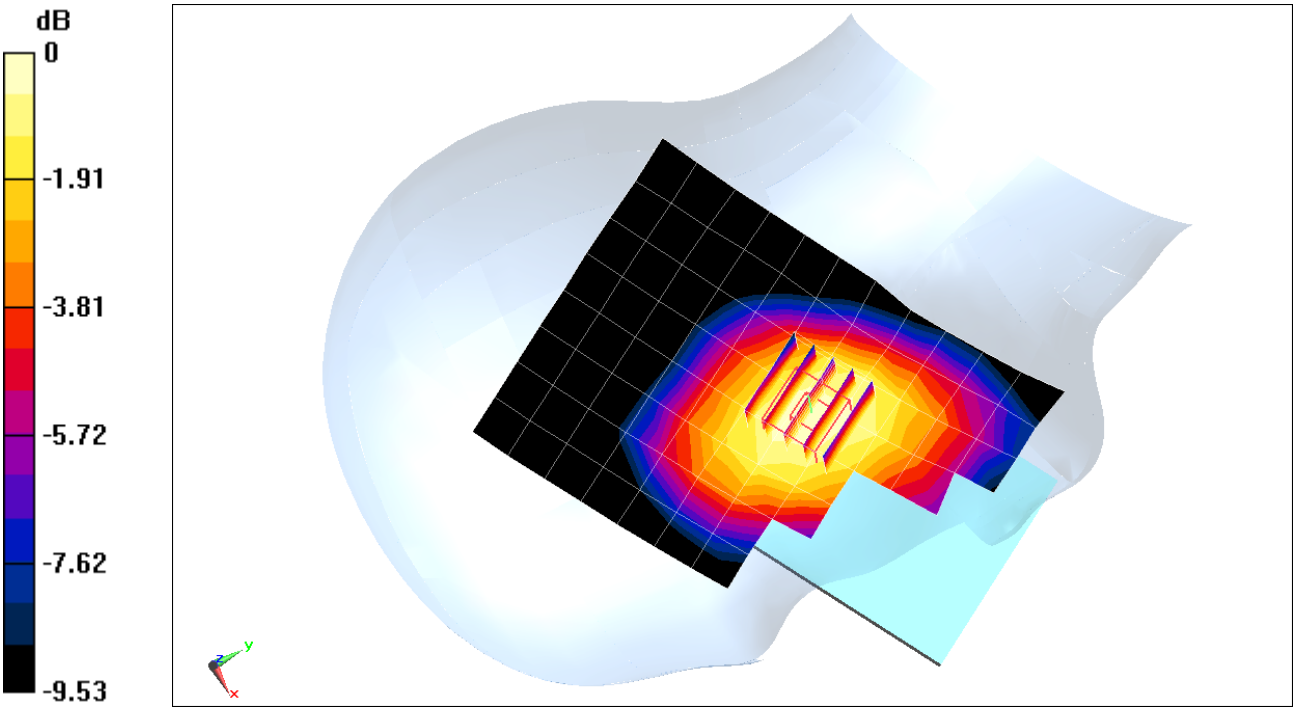
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.913 S/m; ε_r = 43.042; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-17-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3287; ConvF(6.67, 6.67, 6.67); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.94 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.206 W/kg
SAR(1 g) = 0.165 W/kg



0 dB = 0.181 W/kg = -7.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

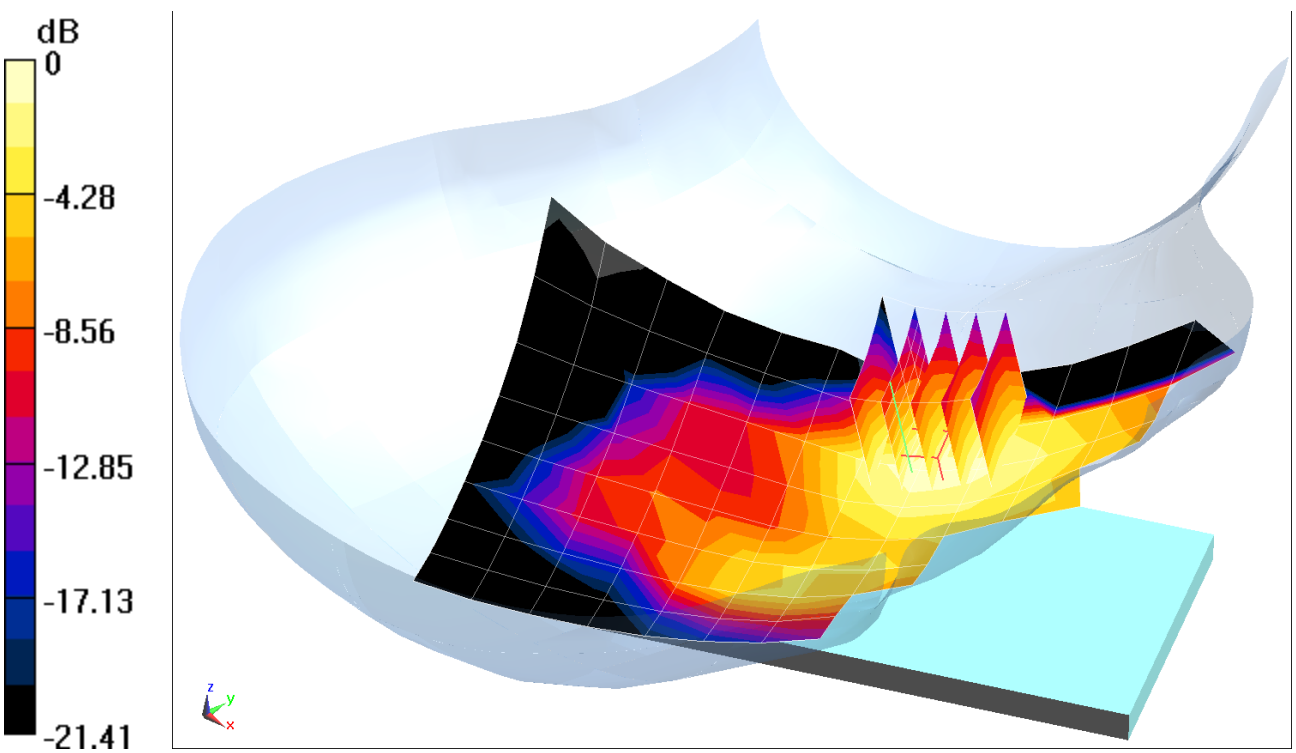
Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.391 S/m; ε_r = 39.834; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-15-2017; Ambient Temp: 21.9°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7406; ConvF(8.4, 8.4, 8.4); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 1900, Right Head, Cheek, Mid.ch, 4 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 = 10.28 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.220 W/kg
SAR(1 g) = 0.145 W/kg



0 dB = 0.188 W/kg = -7.26 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

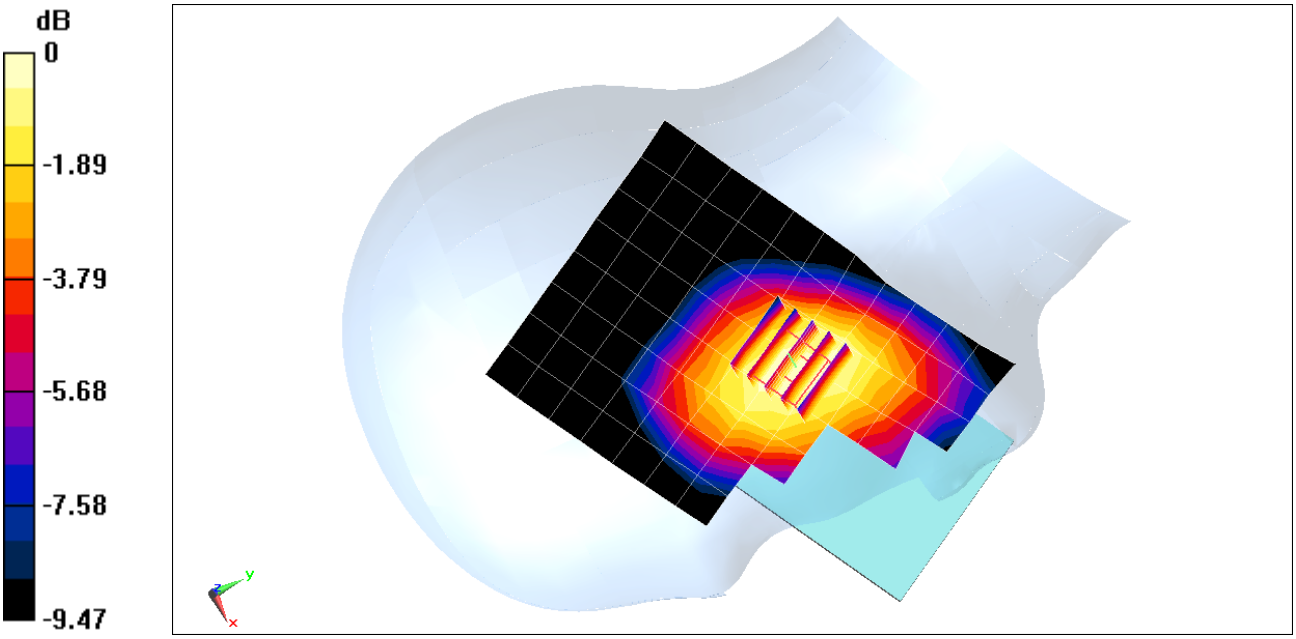
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.913 S/m; ε_r = 43.042; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-17-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3287; ConvF(6.67, 6.67, 6.67); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

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

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.03 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.238 W/kg
SAR(1 g) = 0.193 W/kg



0 dB = 0.212 W/kg = -6.74 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

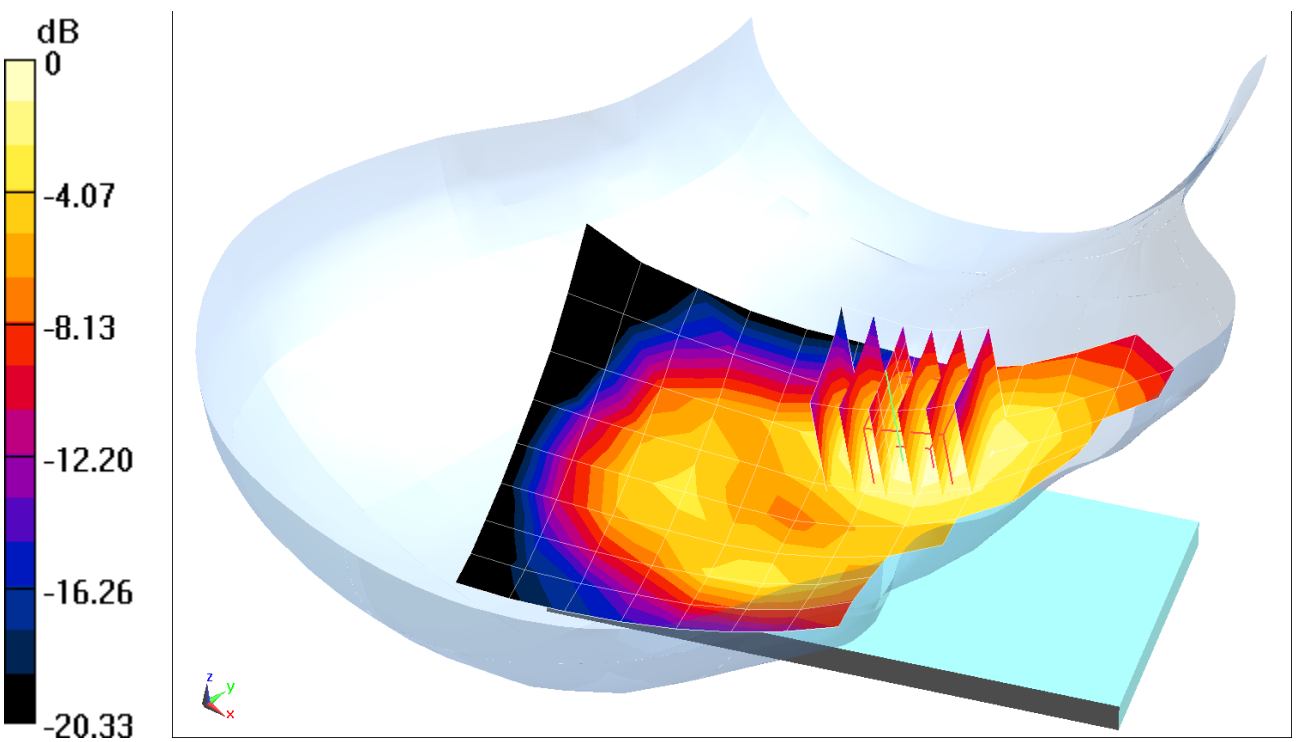
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.368 S/m; ε_r = 38.765; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-15-2017; Ambient Temp: 22.0°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3287; ConvF(5.49, 5.49, 5.49); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
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 (9x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.15 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.190 W/kg
SAR(1 g) = 0.130 W/kg



0 dB = 0.144 W/kg = -8.42 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

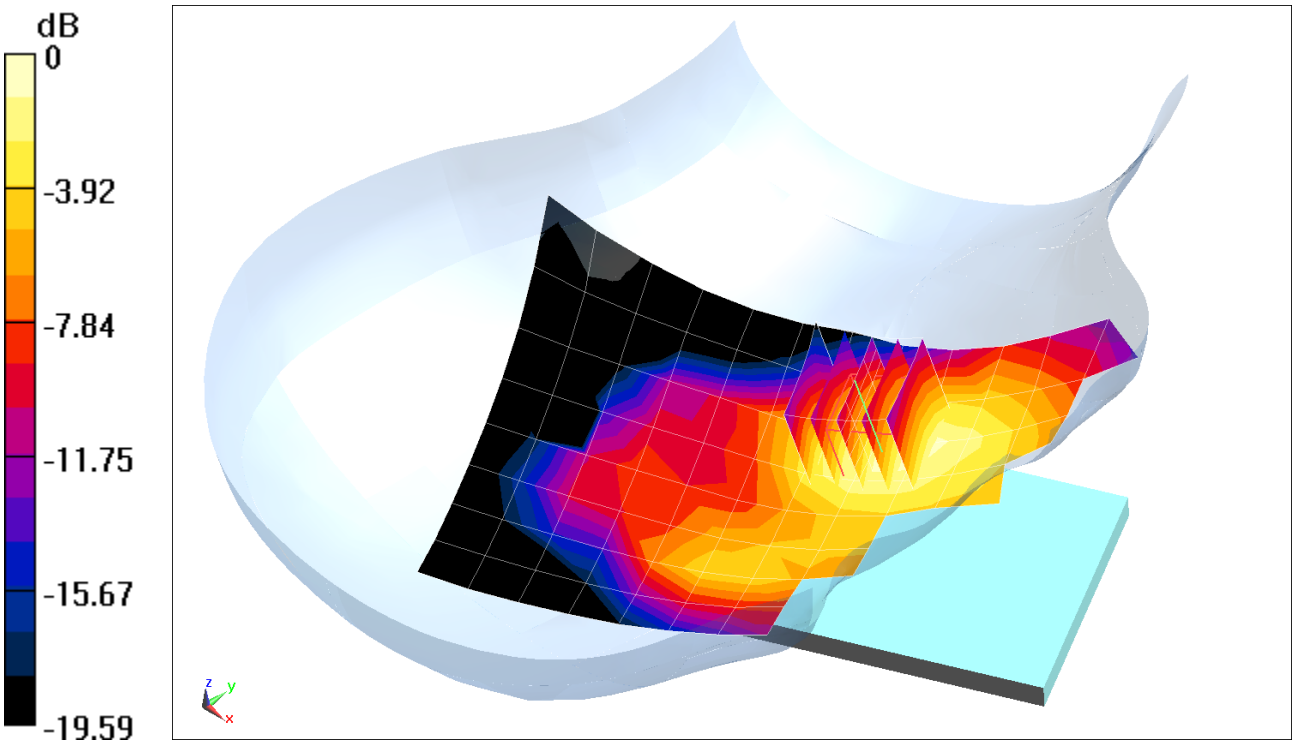
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; σ = 1.391 S/m; ε_r = 39.834; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-15-2017; Ambient Temp: 21.9°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7406; ConvF(8.4, 8.4, 8.4); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
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 = 12.01 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.289 W/kg
SAR(1 g) = 0.187 W/kg



0 dB = 0.248 W/kg = -6.06 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

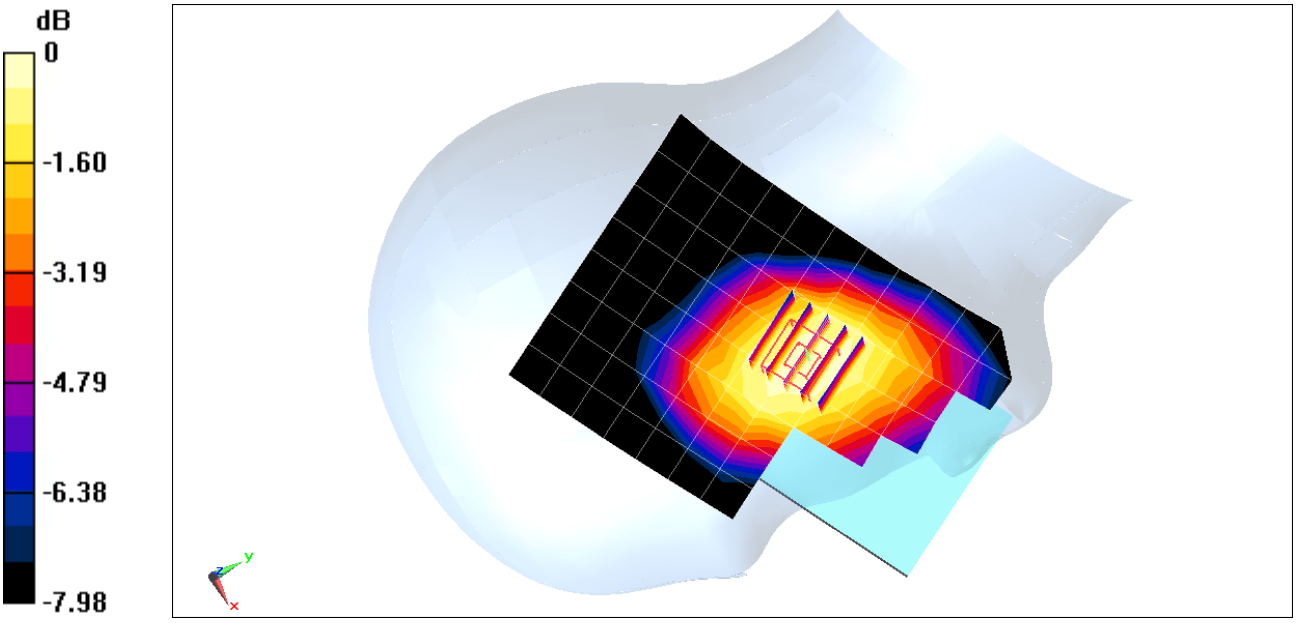
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.866 S/m; ε_r = 42.8; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-17-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3213; ConvF(6.85, 6.85, 6.85); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Right; Type: SAM; Serial: 1757
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, 49 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 = 14.05 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.181 W/kg
SAR(1 g) = 0.148 W/kg



0 dB = 0.160 W/kg = -7.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15669

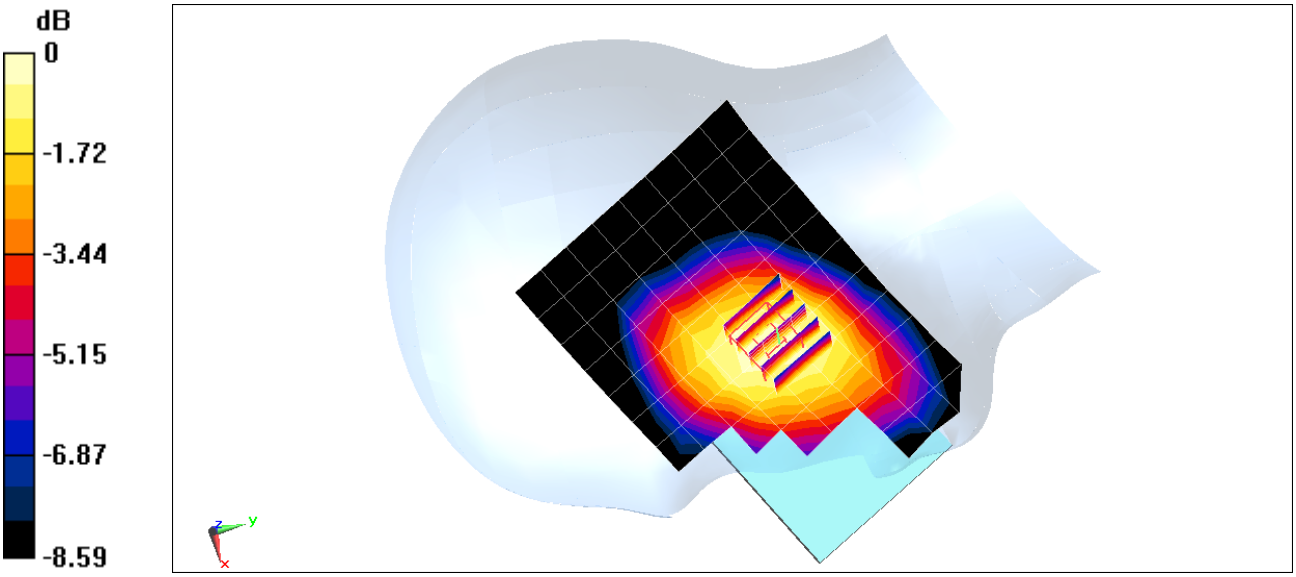
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 782 MHz; σ = 0.936 S/m; ε_r = 41.58; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-22-2017; Ambient Temp: 19.7°C; Tissue Temp: 19.5°C

Probe: ES3DV3 - SN3213; ConvF(6.85, 6.85, 6.85); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 13, Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 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 = 15.91 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.254 W/kg
SAR(1 g) = 0.203 W/kg



0 dB = 0.219 W/kg = -6.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

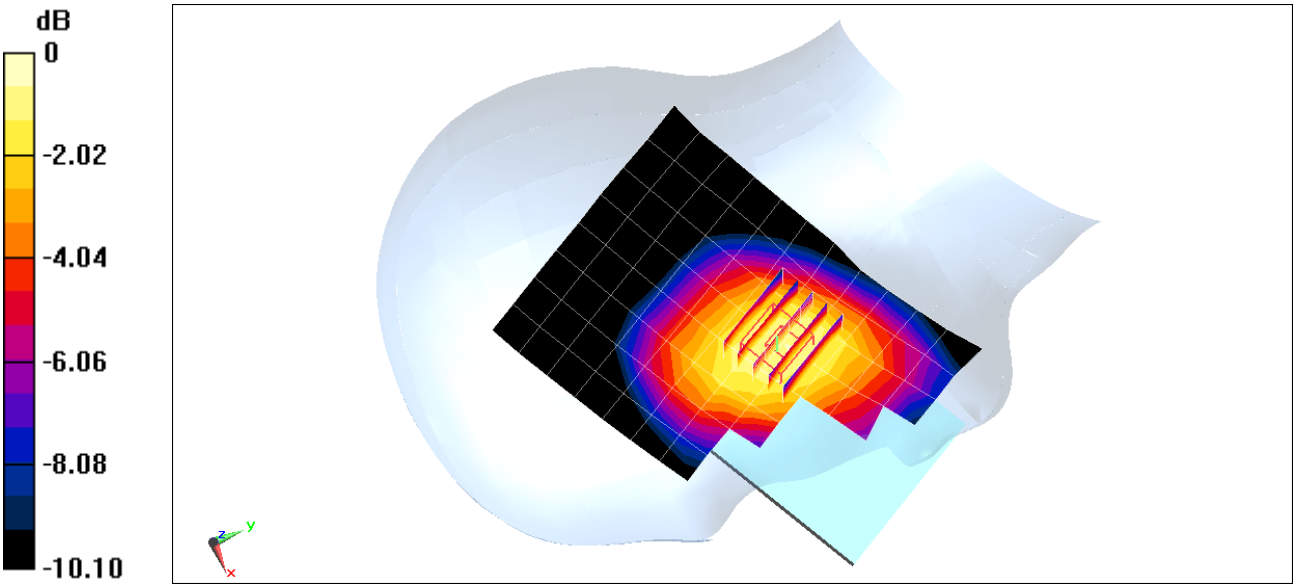
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.906 S/m; ε_r = 42.537; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-21-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3287; ConvF(6.67, 6.67, 6.67); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 26 (Cell.), Right Head, Cheek, Mid.ch,
15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.12 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.184 W/kg
SAR(1 g) = 0.148 W/kg



0 dB = 0.161 W/kg = -7.93 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

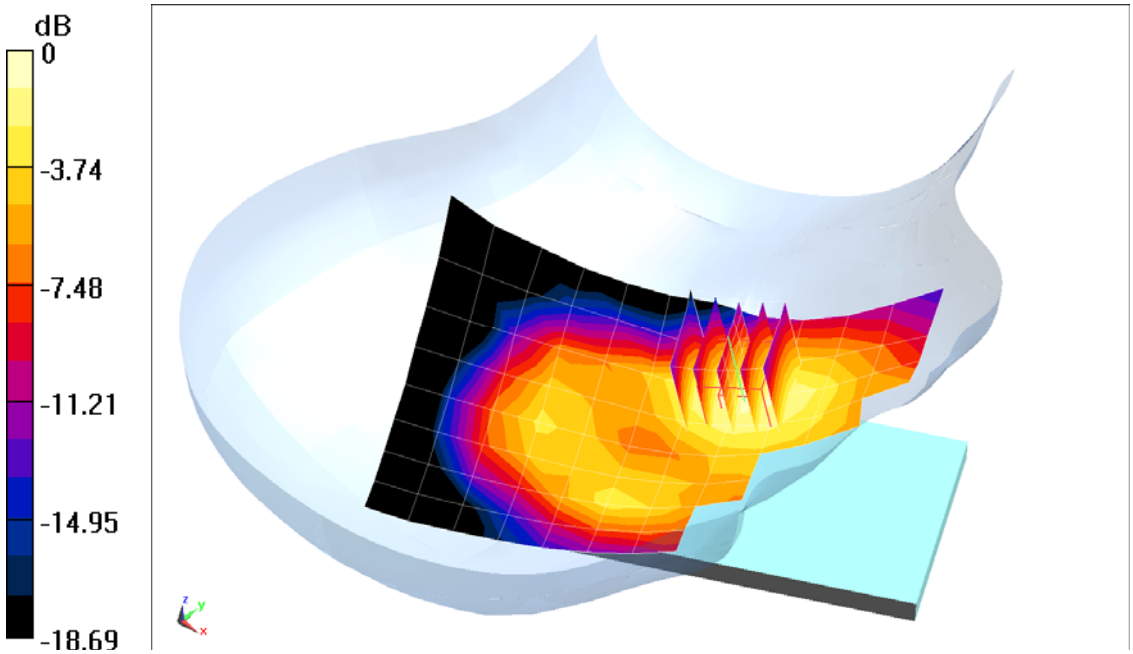
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1720 MHz; σ = 1.356 S/m; ε_r = 38.824; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-15-2017; Ambient Temp: 22.0°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3287; ConvF(5.49, 5.49, 5.49); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
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, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 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 = 9.774 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.153 W/kg
SAR(1 g) = 0.105 W/kg



0 dB = 0.122 W/kg = -9.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

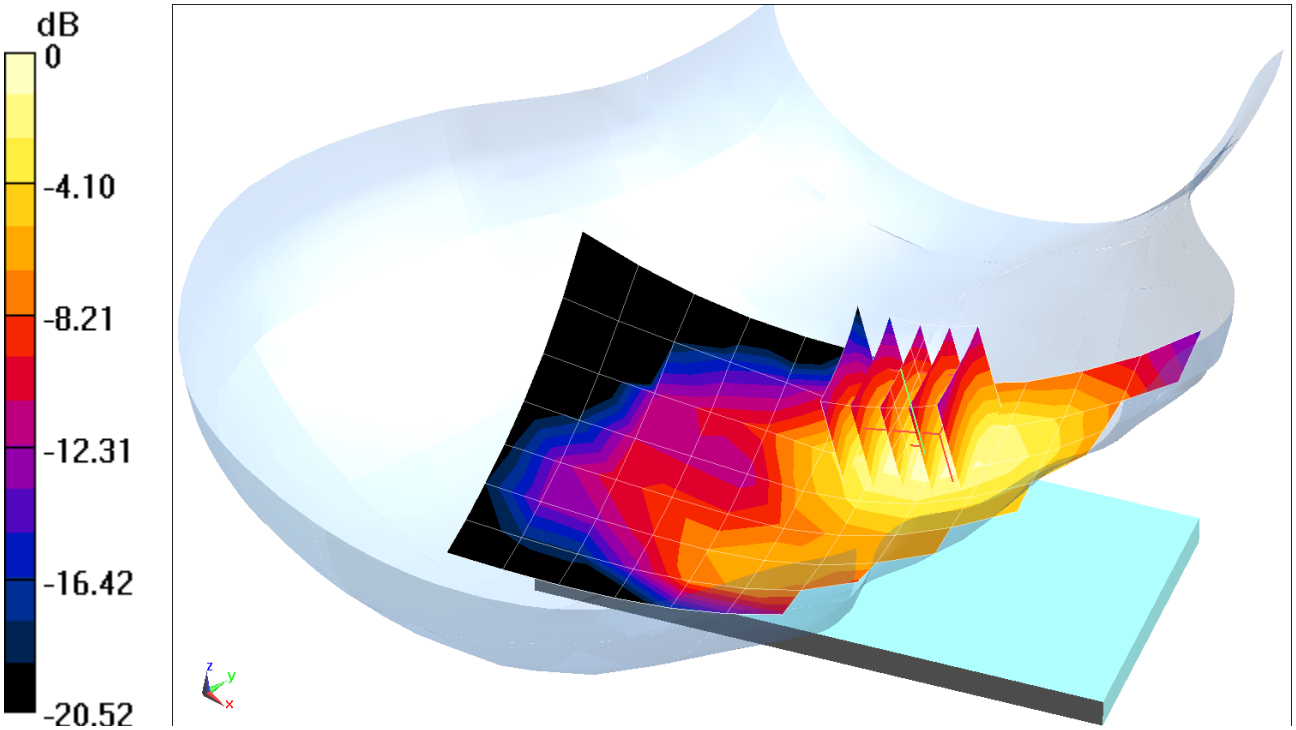
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.37 S/m; ε_r = 39.915; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-15-2017; Ambient Temp: 21.9°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7406; ConvF(8.4, 8.4, 8.4); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Right Head, Cheek, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.62 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.283 W/kg
SAR(1 g) = 0.184 W/kg



0 dB = 0.249 W/kg = -6.04 dB/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

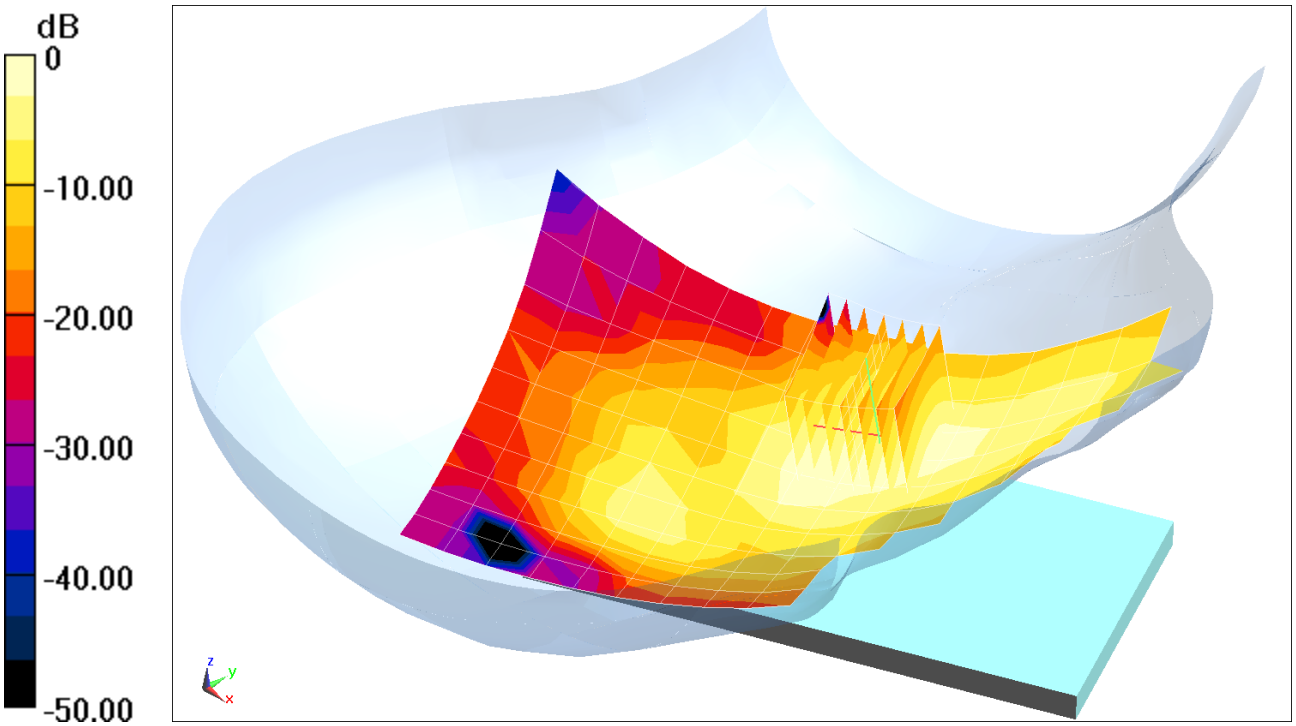
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2300 Head Medium parameters used:
f = 2310 MHz; σ = 1.701 S/m; ε_r = 39.914; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-14-2017; Ambient Temp: 20.1°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3318; ConvF(4.95, 4.95, 4.95); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
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 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 (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.63 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.241 W/kg
SAR(1 g) = 0.149 W/kg



0 dB = 0.177 W/kg = -7.52 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

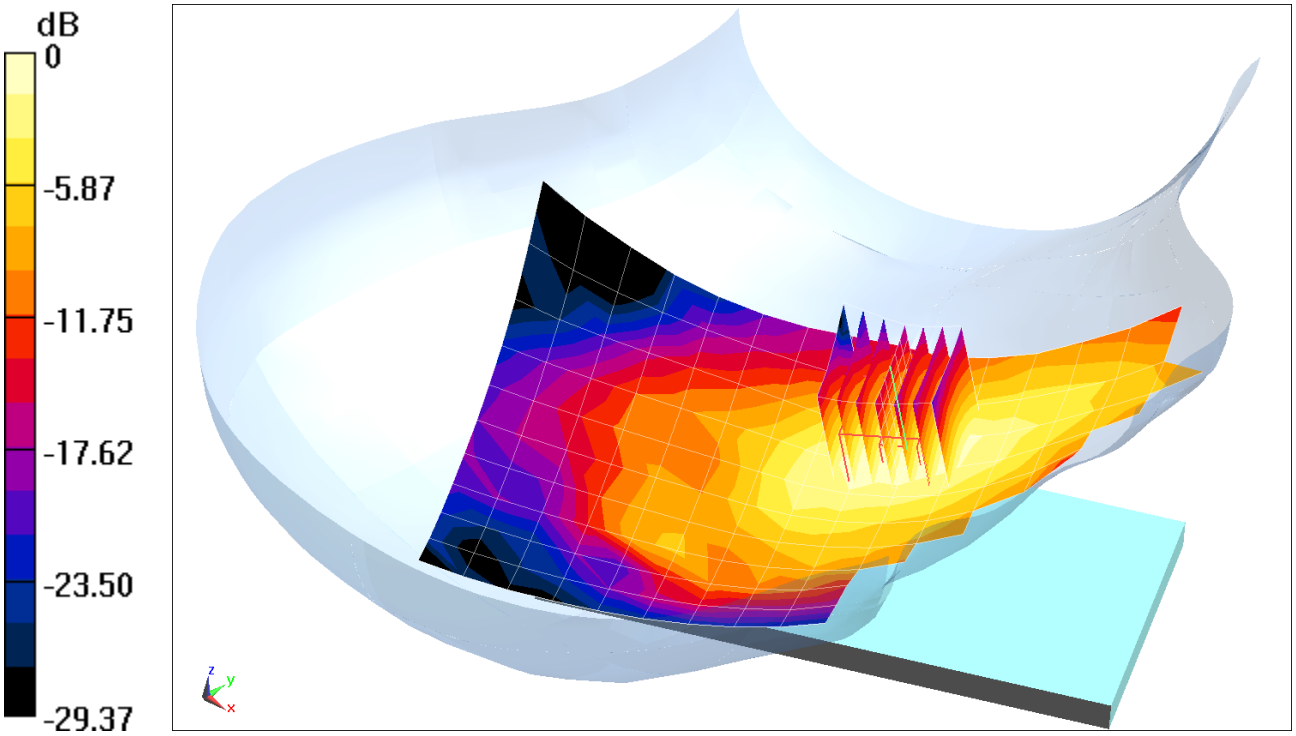
Communication System: UID 0, LTE Band 7; Frequency: 2535 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2535 MHz; σ = 1.958 S/m; ε_r = 39.066; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-14-2017; Ambient Temp: 20.1°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3318; ConvF(4.53, 4.53, 4.53); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
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 7, Right Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 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 = 11.76 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.359 W/kg
SAR(1 g) = 0.200 W/kg



0 dB = 0.250 W/kg = -6.02 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

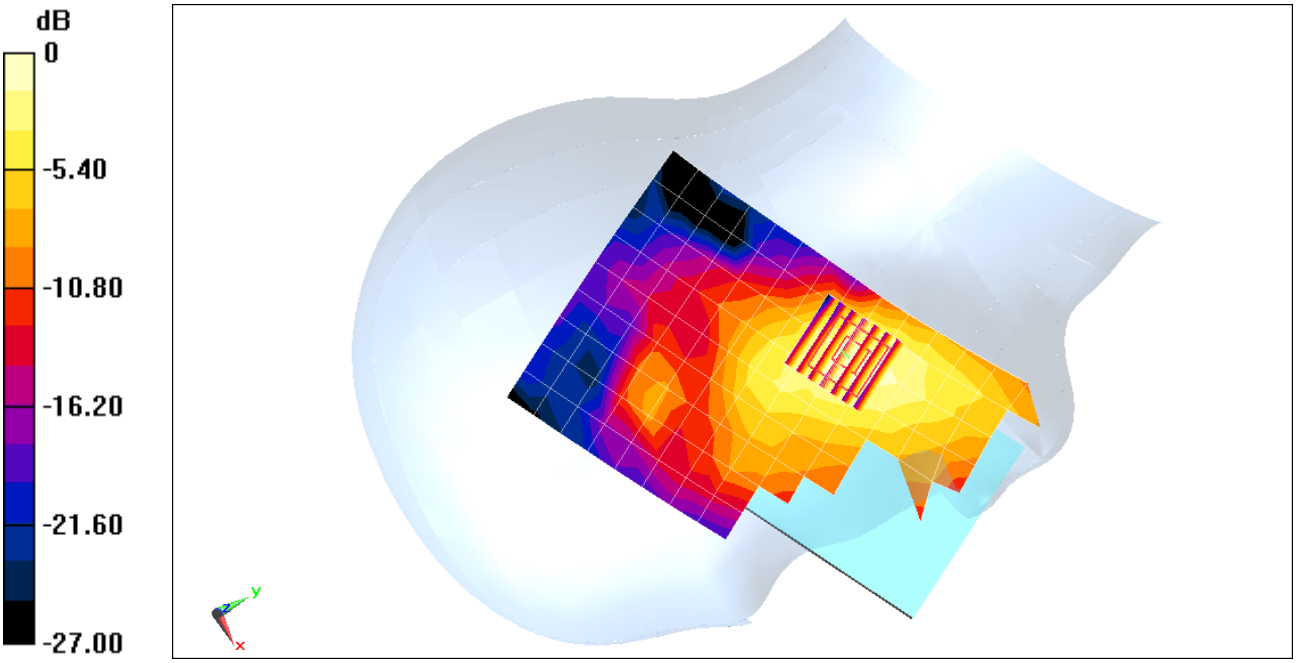
Communication System: UID 0, LTE Band 41; Frequency: 2636.5 MHz; Duty Cycle: 1:1.58
Medium: 2600 Head Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 2.005 S/m; ε_r = 38.489; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-16-2017; Ambient Temp: 22.1°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7406; ConvF(7.44, 7.44, 7.44); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 41 Power Class 3, Right Head, Cheek, Mid-High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.38 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.309 W/kg
SAR(1 g) = 0.167 W/kg



0 dB = 0.253 W/kg = -5.97 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 35350

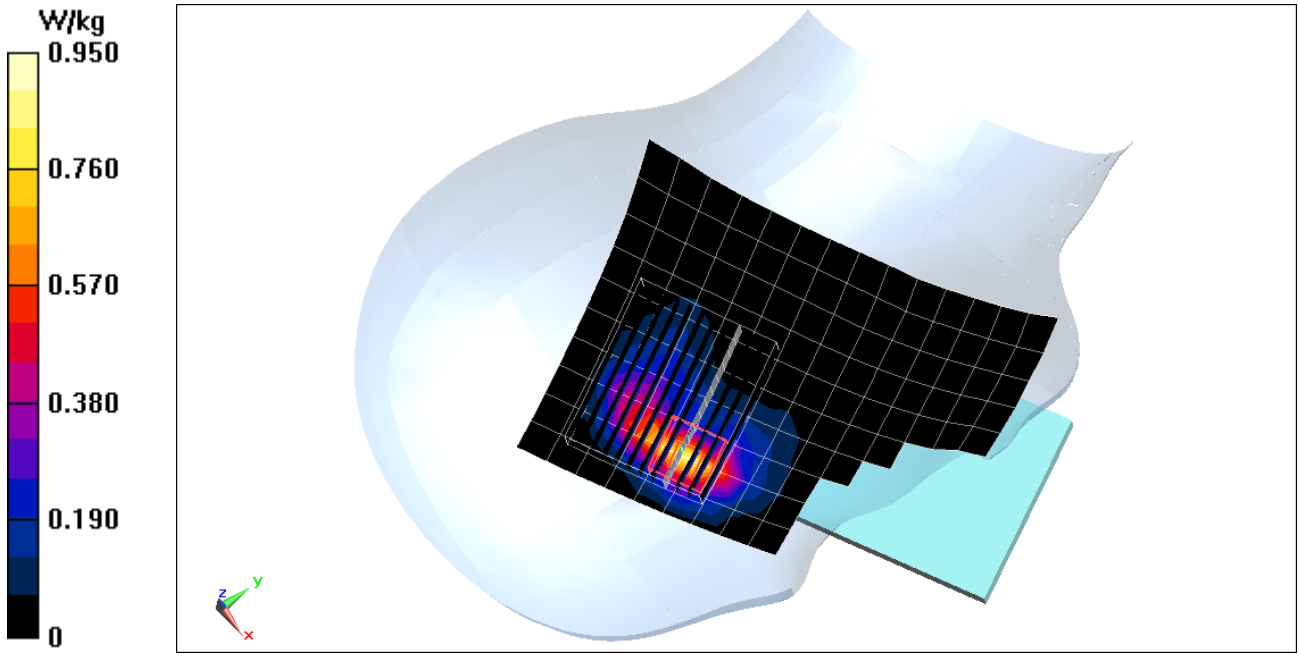
Communication System: UID 0, IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; σ = 1.901 S/m; ε_r = 37.97; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-10-2017; Ambient Temp: 21.1°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3318; ConvF(4.74, 4.74, 4.74); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
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: IEEE 802.11b, 22 MHz Bandwidth,
Right Head, Cheek, Ch 11, 1 Mbps, Antenna 1

Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (14x12x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.480 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 0.724 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 35350

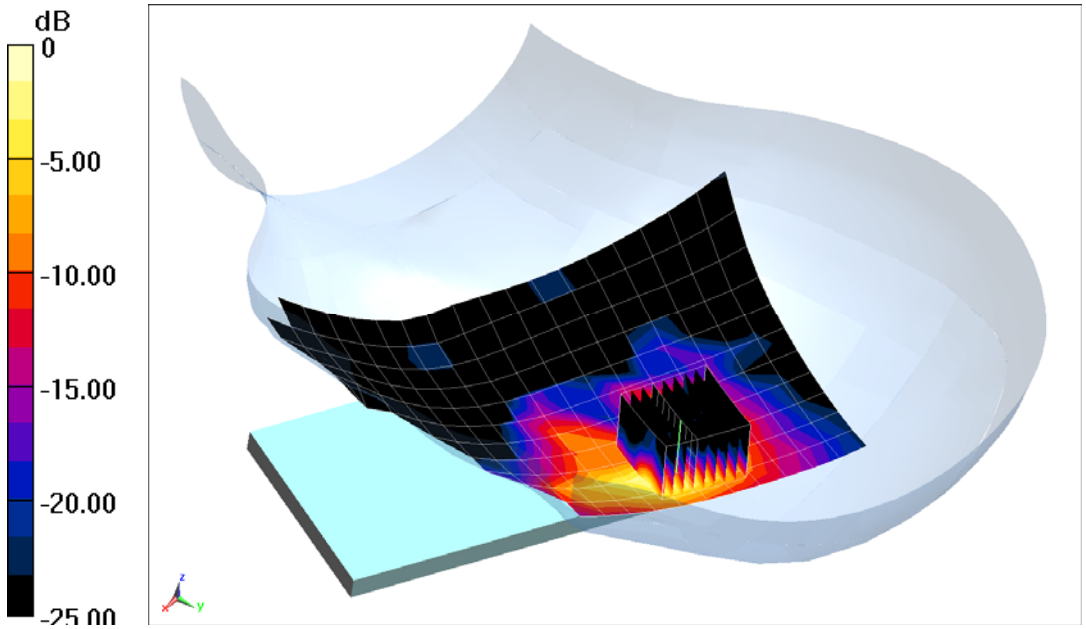
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5260 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5260 MHz; σ = 4.508 S/m; ε_r = 34.508; ρ = 1000 kg/m^3
Phantom section: Left Section

Test Date: 08-15-2017; Ambient Temp: 21.9°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3914; ConvF(5.49, 5.49, 5.49); Calibrated: 2/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
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-2A, 20 MHz Bandwidth,
Left Head, Cheek, Ch 52, 6 Mbps, Antenna 2

Area Scan (12x20x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 2.090 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 2.23 W/kg
SAR(1 g) = 0.455 W/kg



0 dB = 1.14 W/kg = 0.57 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

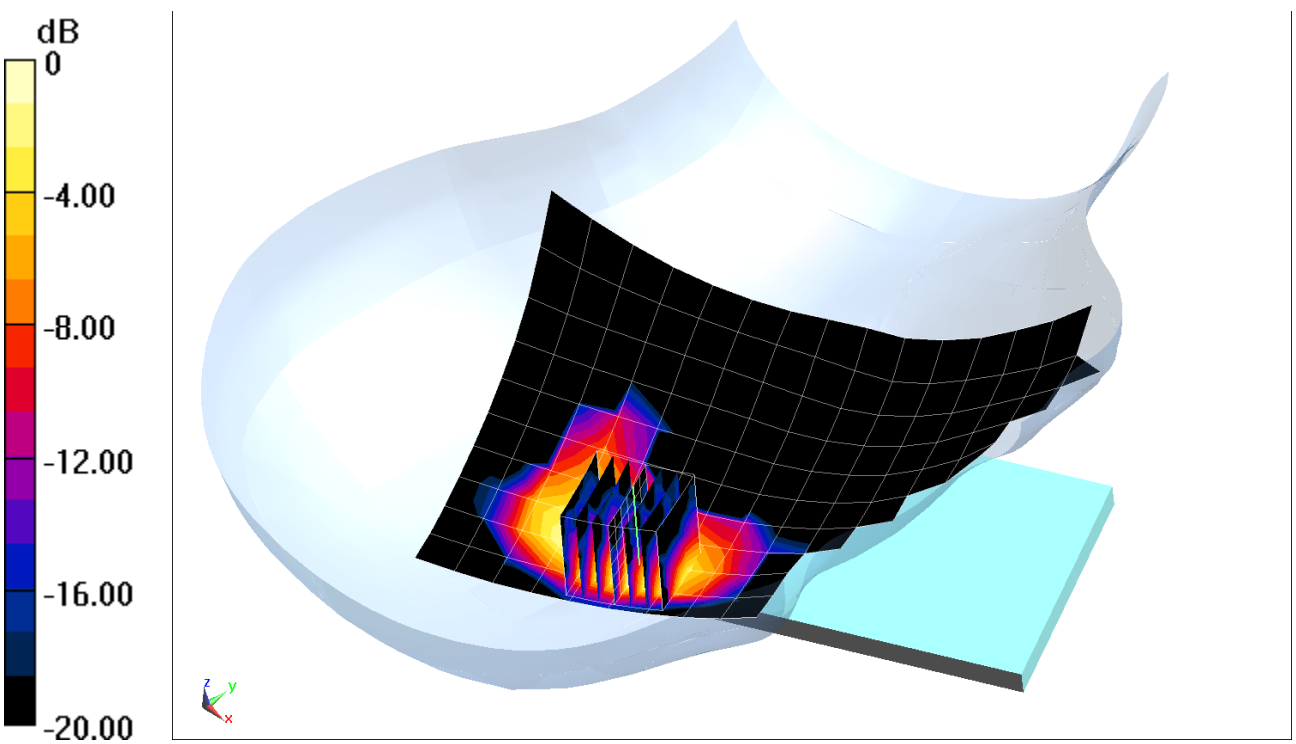
Communication System: UID 0, Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1.294
Medium: 2450 Head Medium parameters used (interpolated):
f = 2402 MHz; σ = 1.807 S/m; ε_r = 39.563; ρ = 1000 kg/m^3
Phantom section: Right Section

Test Date: 08-14-2017; Ambient Temp: 20.1°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3318; ConvF(4.74, 4.74, 4.74); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
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: Bluetooth, Right Head, Cheek, Ch 0, 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 = 4.517 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.0840 W/kg
SAR(1 g) = 0.032 W/kg



0 dB = 0.0416 W/kg = -13.81 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

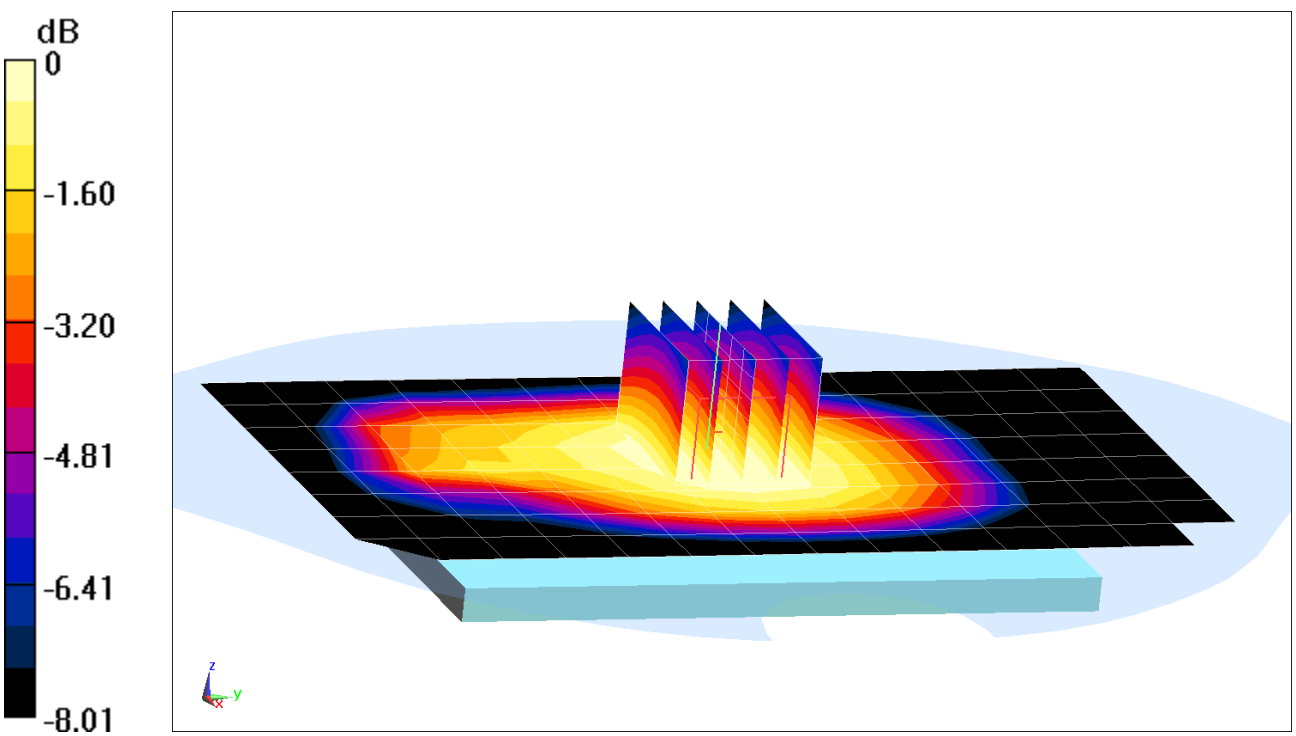
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.956 S/m; ε_r = 52.877; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. BC10 CDMA Rule Part 90S, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.70 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.356 W/kg
SAR(1 g) = 0.284 W/kg



0 dB = 0.310 W/kg = -5.09 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

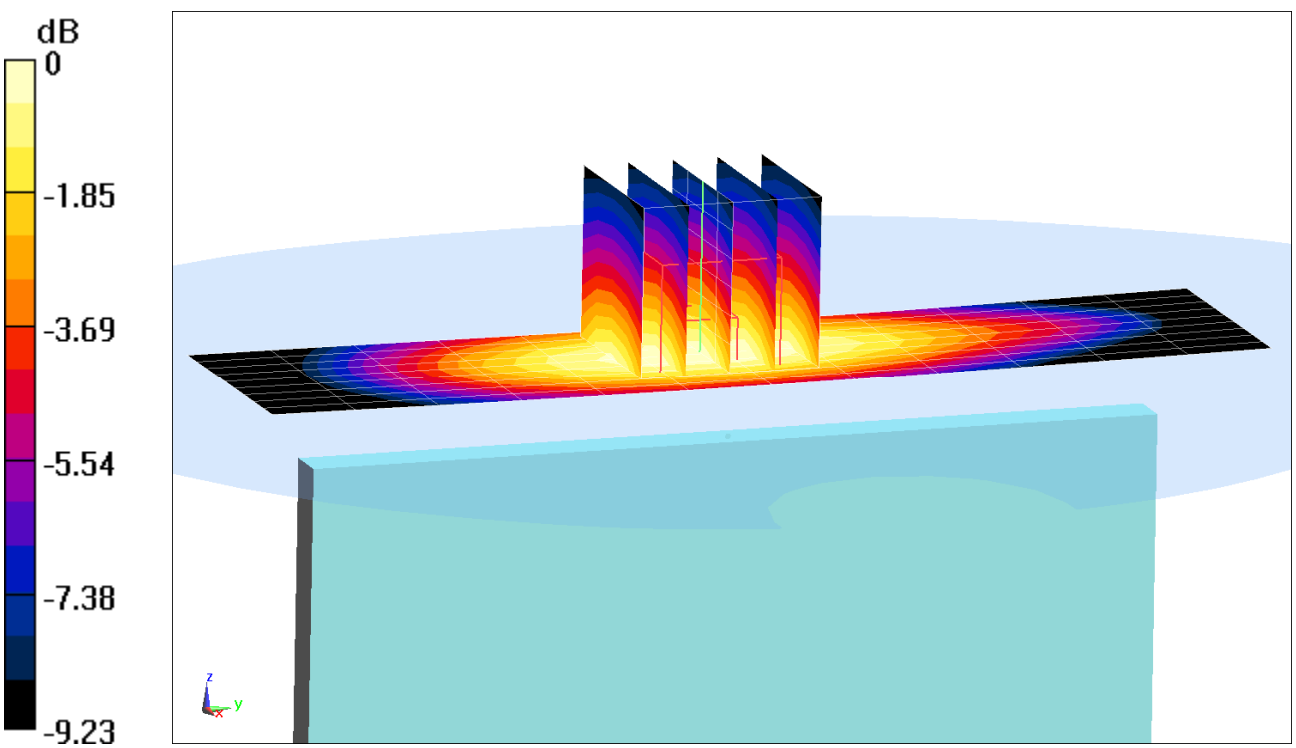
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; σ = 0.956 S/m; ε_r = 52.877; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. BC10 EVDO Rev.0 Rule Part 90S, Body SAR, Right Edge, Mid.ch

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.05 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.452 W/kg
SAR(1 g) = 0.319 W/kg



0 dB = 0.366 W/kg = -4.37 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

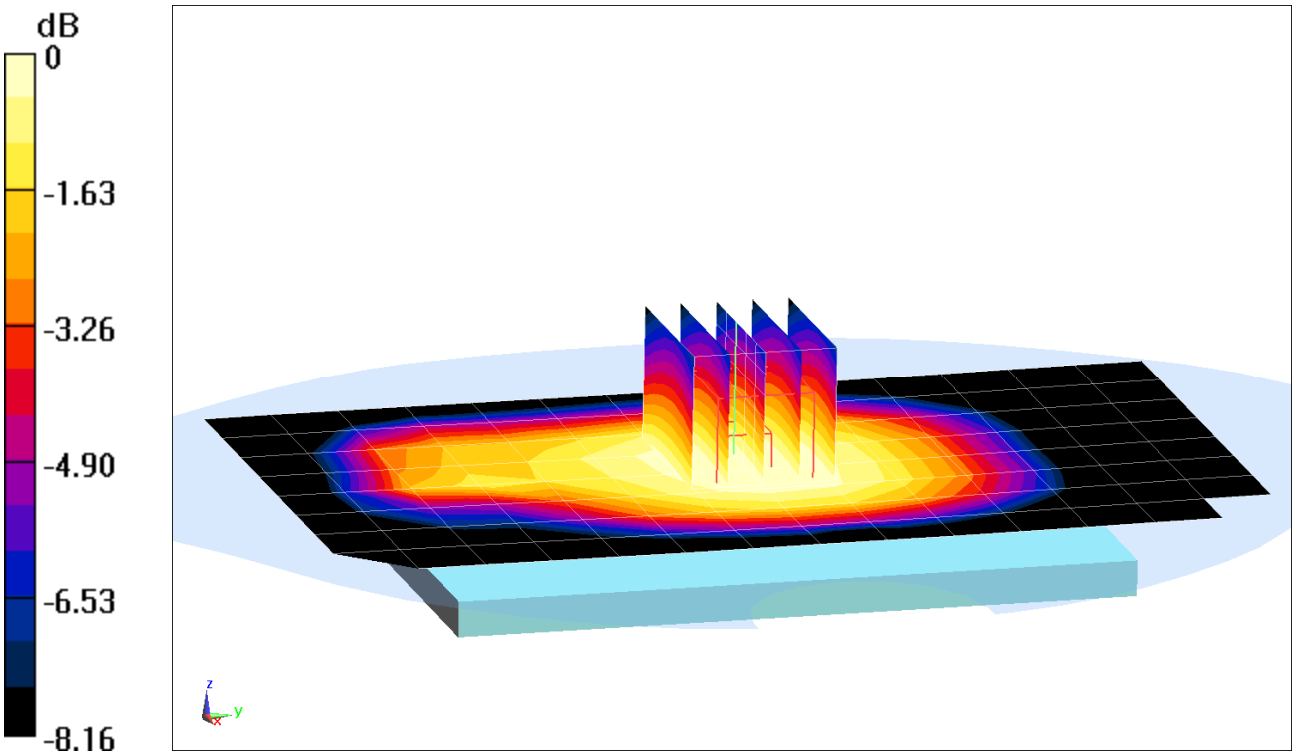
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.972 S/m; ε_r = 52.704; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. BC0 CDMA Rule Part 22H, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.94 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.369 W/kg
SAR(1 g) = 0.294 W/kg



0 dB = 0.321 W/kg = -4.93 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

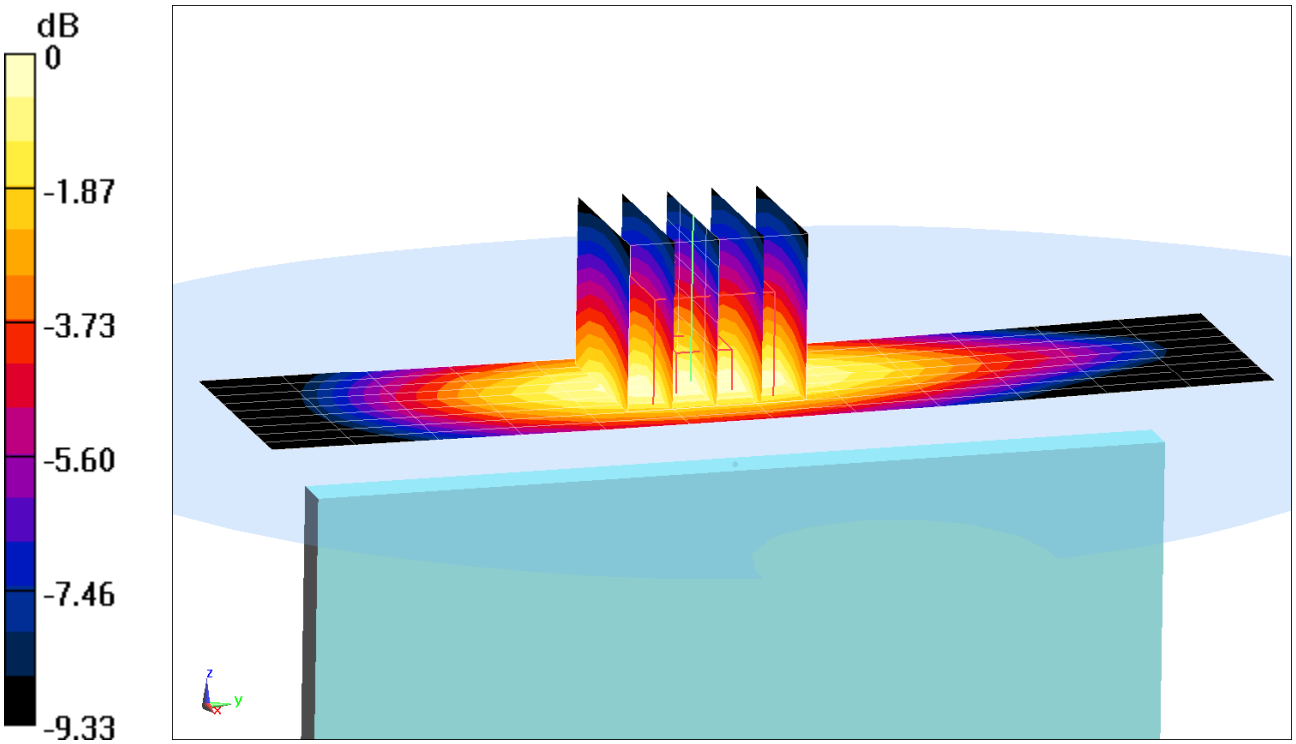
Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.52 MHz; σ = 0.972 S/m; ε_r = 52.704; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Cell. BC0 EVDO Rev 0 Rule Part 22H, Body SAR, Right Edge, Mid.ch

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.88 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.452 W/kg
SAR(1 g) = 0.317 W/kg



0 dB = 0.365 W/kg = -4.38 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

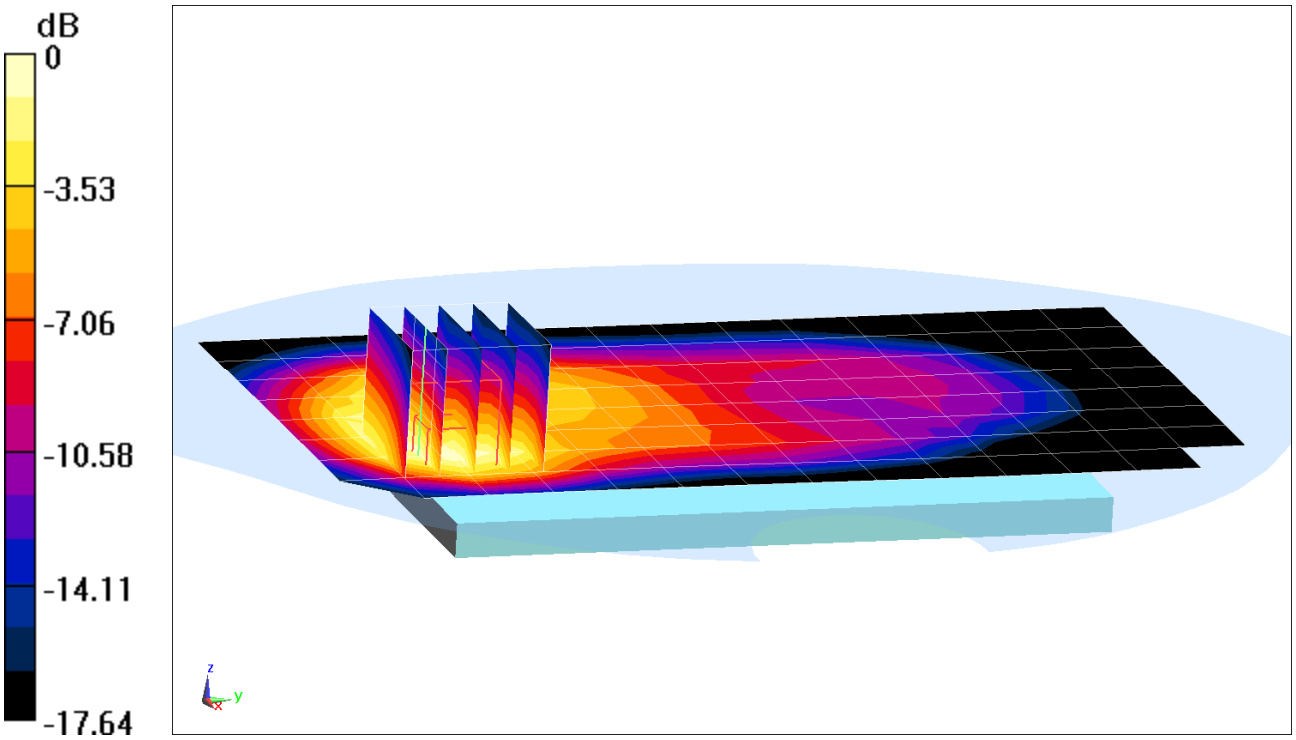
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.56 S/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
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 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.87 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.688 W/kg



0 dB = 1.04 W/kg = 0.17 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

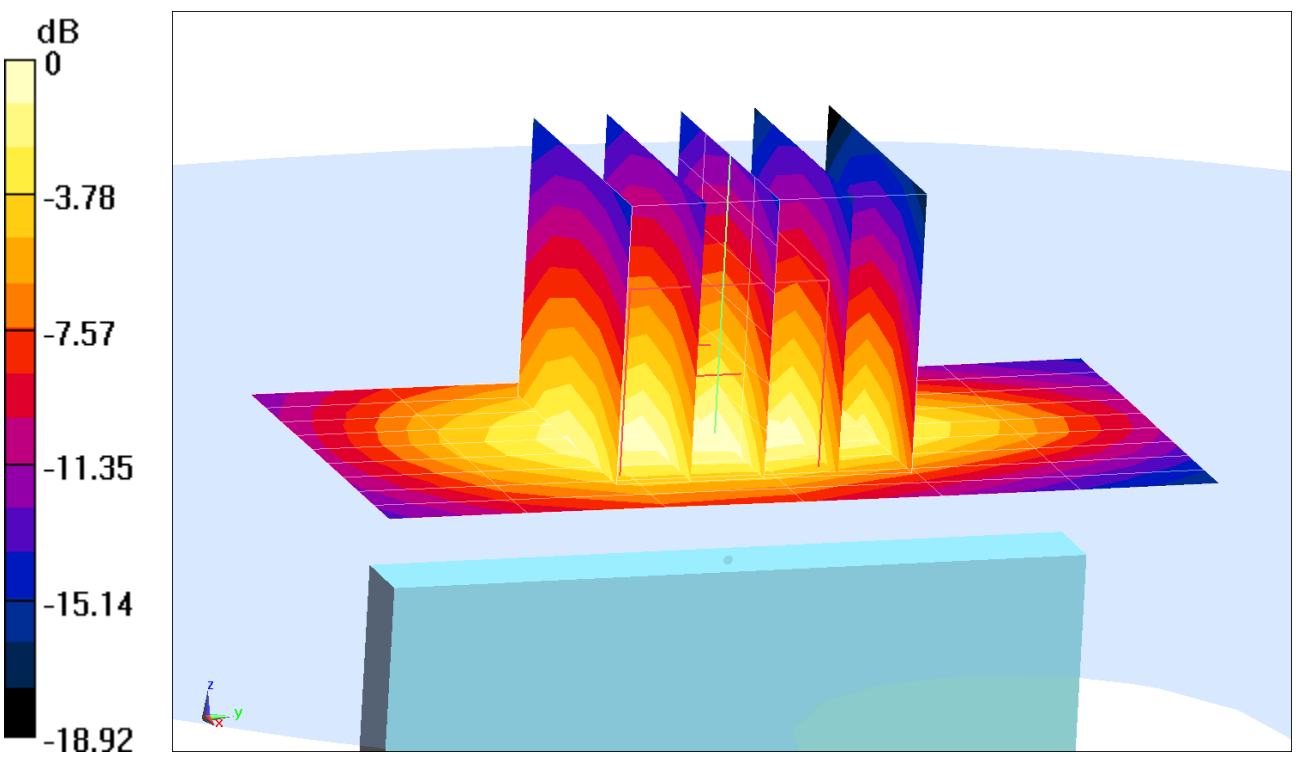
Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1908.75 MHz; σ = 1.584 S/m; ε_r = 52.831; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
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 = 28.12 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 2.03 W/kg
SAR(1 g) = 1.17 W/kg



0 dB = 1.68 W/kg = 2.25 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

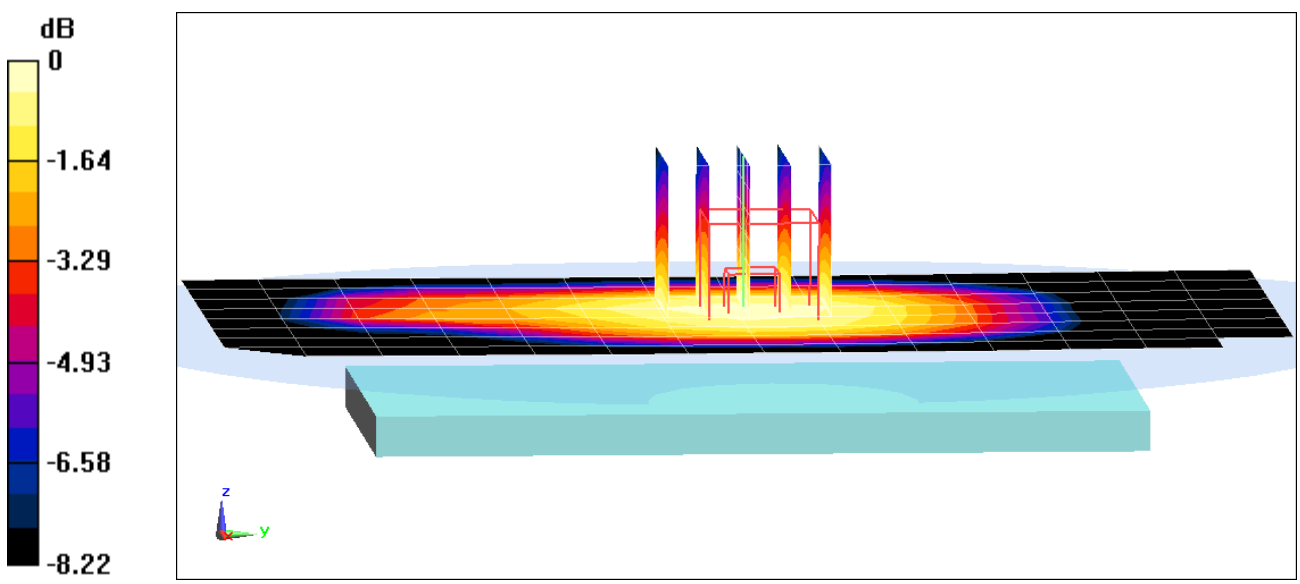
Communication System: UID 0, _GSM GPRS; 4 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:2.076
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.972 S/m; ε_r = 52.703; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 4 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 = 16.47 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.309 W/kg
SAR(1 g) = 0.244 W/kg



0 dB = 0.266 W/kg = -5.75 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

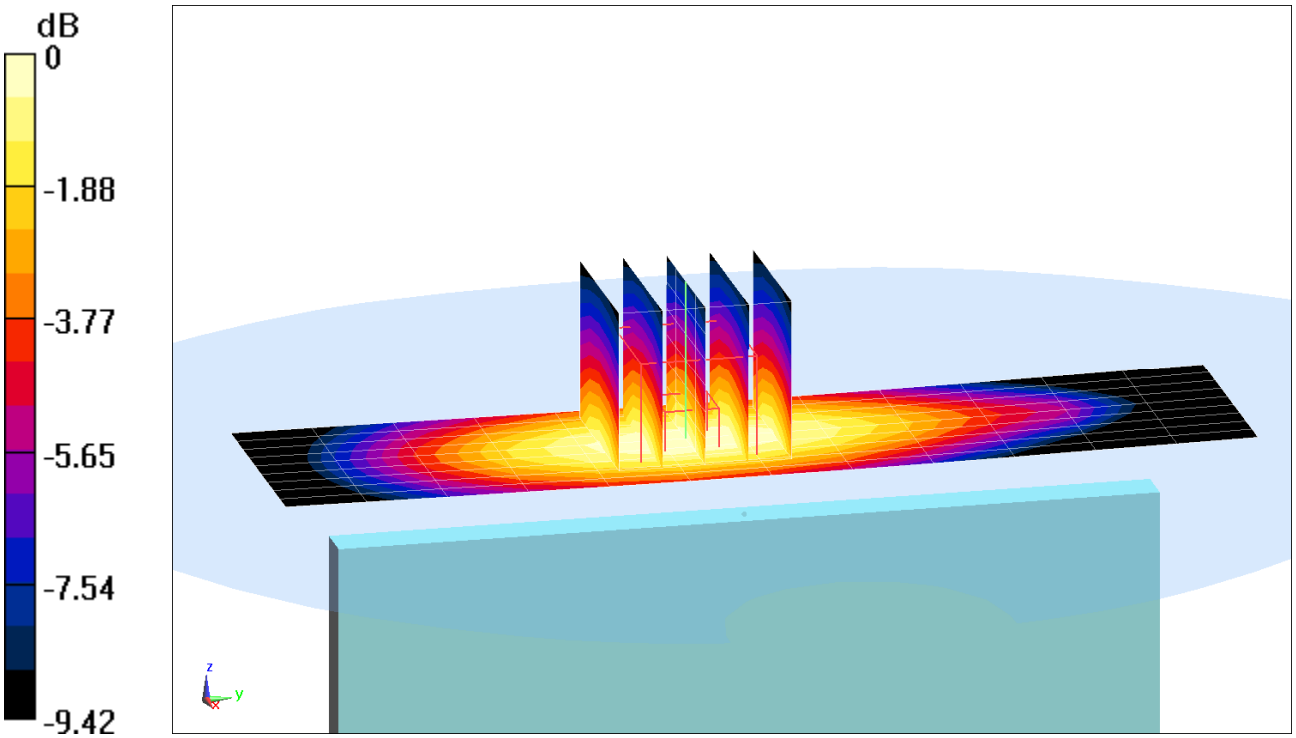
Communication System: UID 0, _GSM GPRS; 4 Tx slots;
Frequency: 836.6 MHz; Duty Cycle: 1:2.076
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.972 S/m; ε_r = 52.703; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 850, Body SAR, Right Edge, Mid.ch, 4 Tx Slots

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.93 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.365 W/kg
SAR(1 g) = 0.257 W/kg



0 dB = 0.296 W/kg = -5.29 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

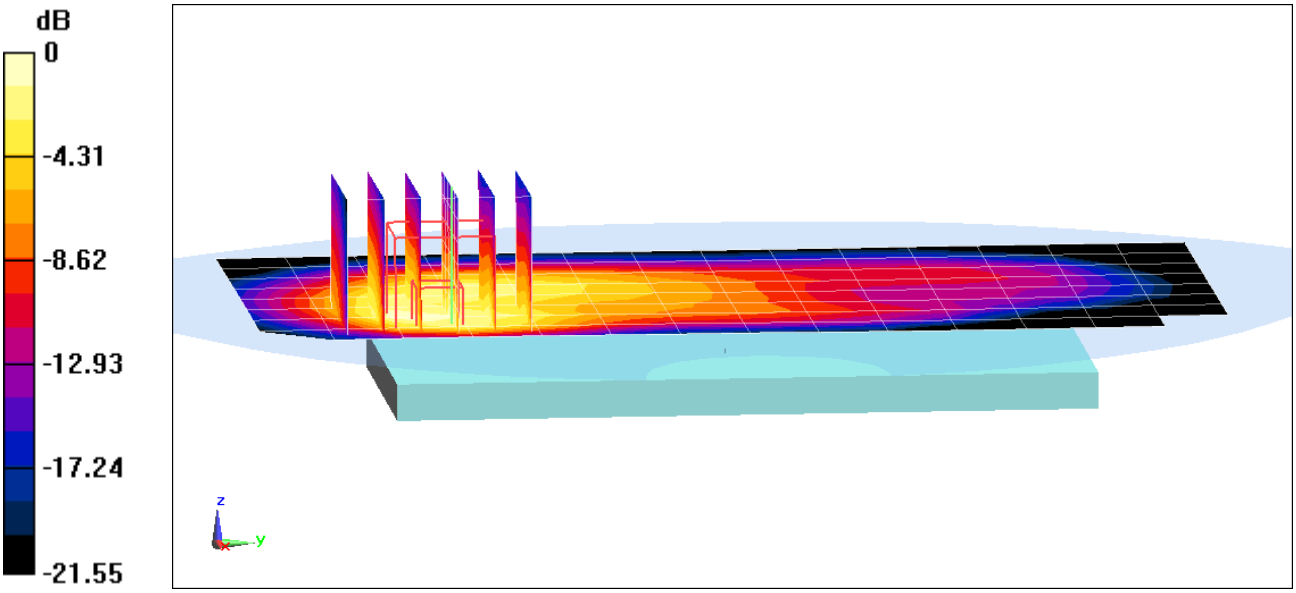
Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.56 S/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: GPRS 1900, Body SAR, Back side, Mid.ch, 4 Tx Slots

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.68 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.528 W/kg



0 dB = 0.830 W/kg = -0.81 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

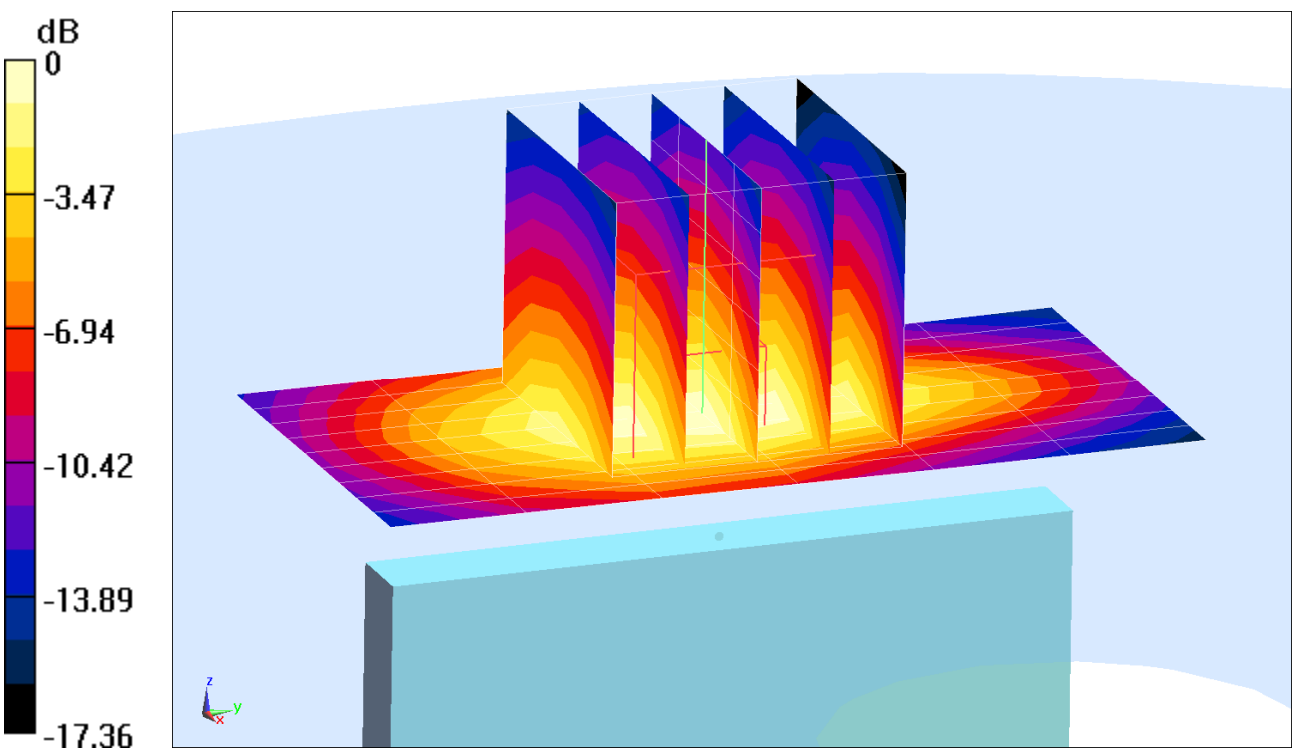
Communication System: UID 0, GSM GPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.56 S/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
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 = 22.72 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.729 W/kg



0 dB = 1.07 W/kg = 0.29 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

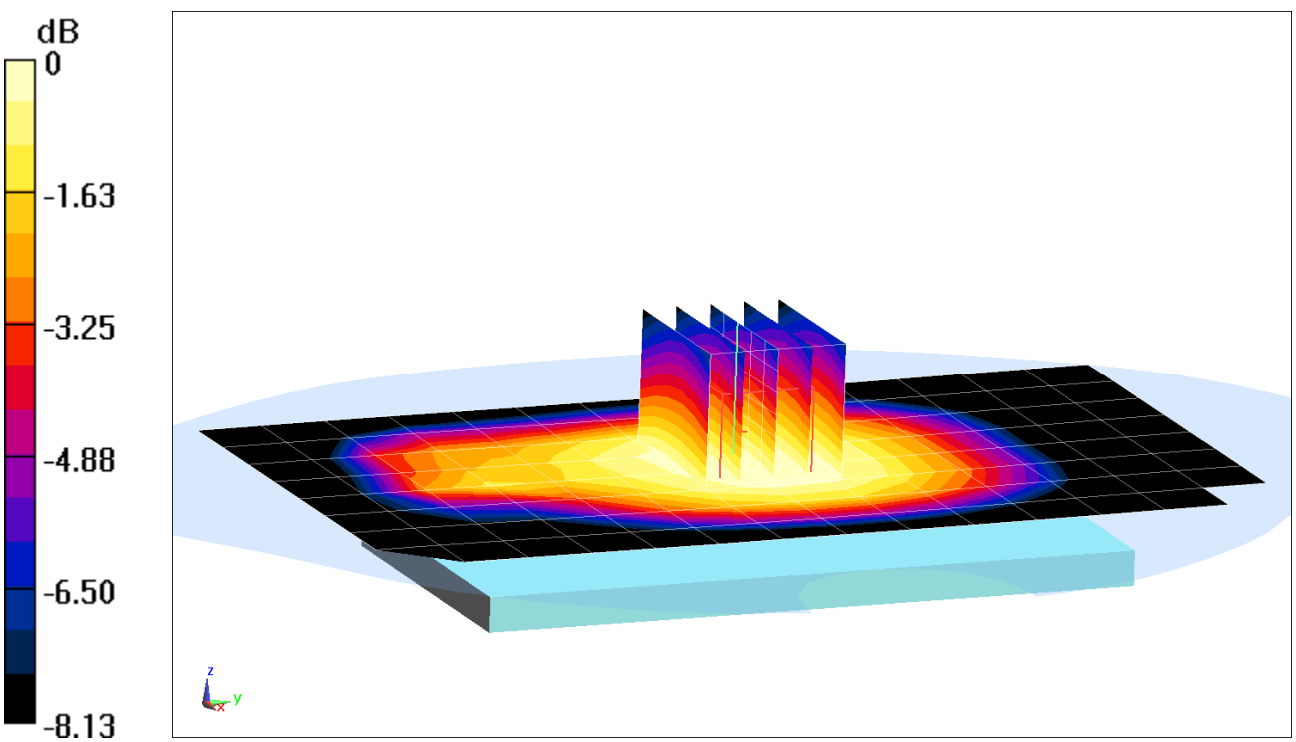
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.972 S/m; ε_r = 52.703; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.91 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.367 W/kg
SAR(1 g) = 0.292 W/kg



0 dB = 0.319 W/kg = -4.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

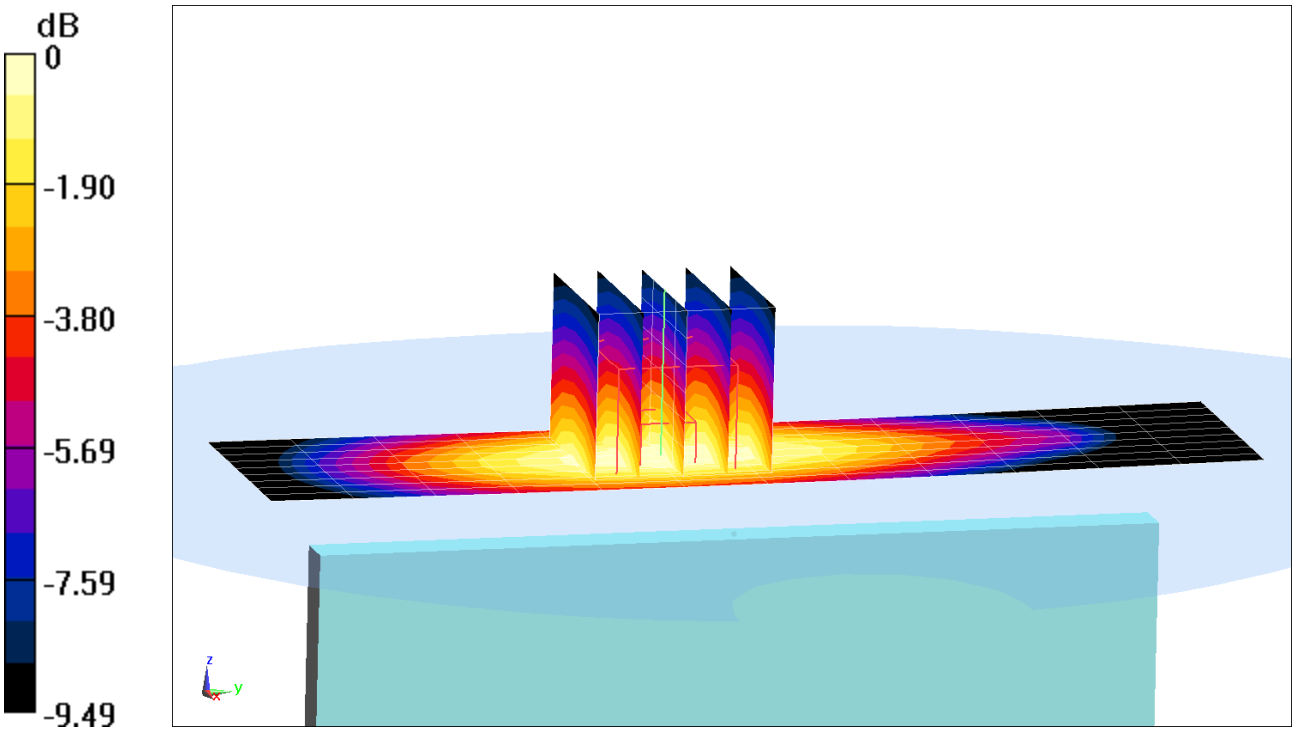
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; σ = 0.972 S/m; ε_r = 52.703; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 850, Body SAR, Right Edge, Mid.ch

Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.75 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.445 W/kg
SAR(1 g) = 0.312 W/kg



0 dB = 0.359 W/kg = -4.45 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

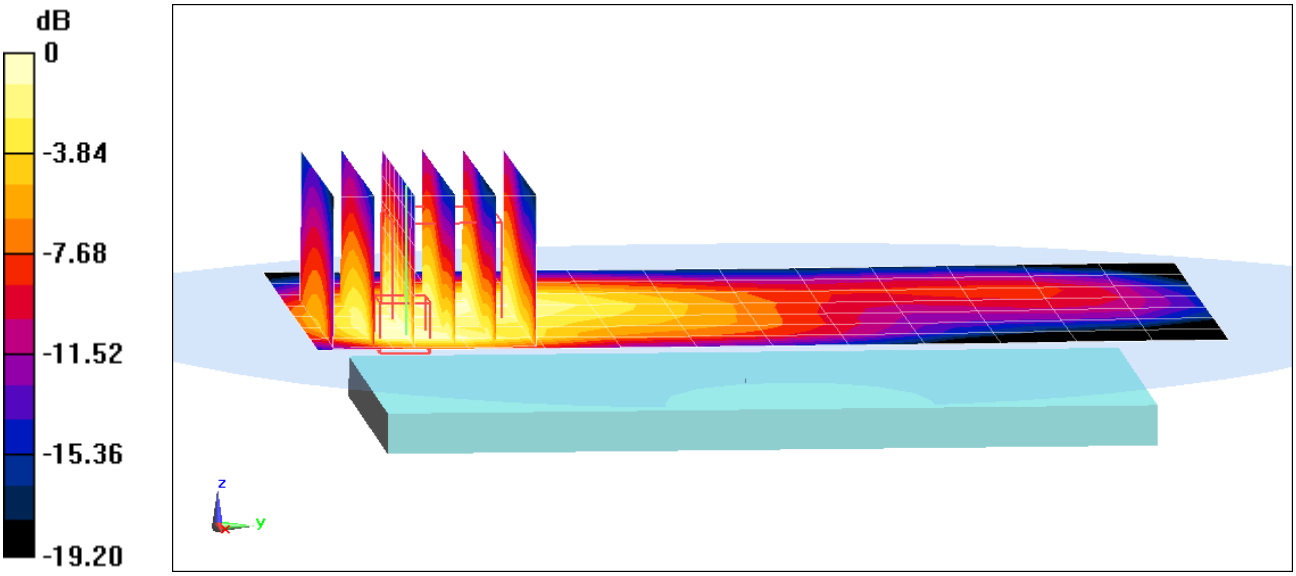
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.509 S/m; ε_r = 51.418; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 8-13-2017; Ambient Temp: 21.3°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Body SAR, Back side, Mid.ch

Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (9x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.88 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.557 W/kg



0 dB = 0.717 W/kg = -1.44 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

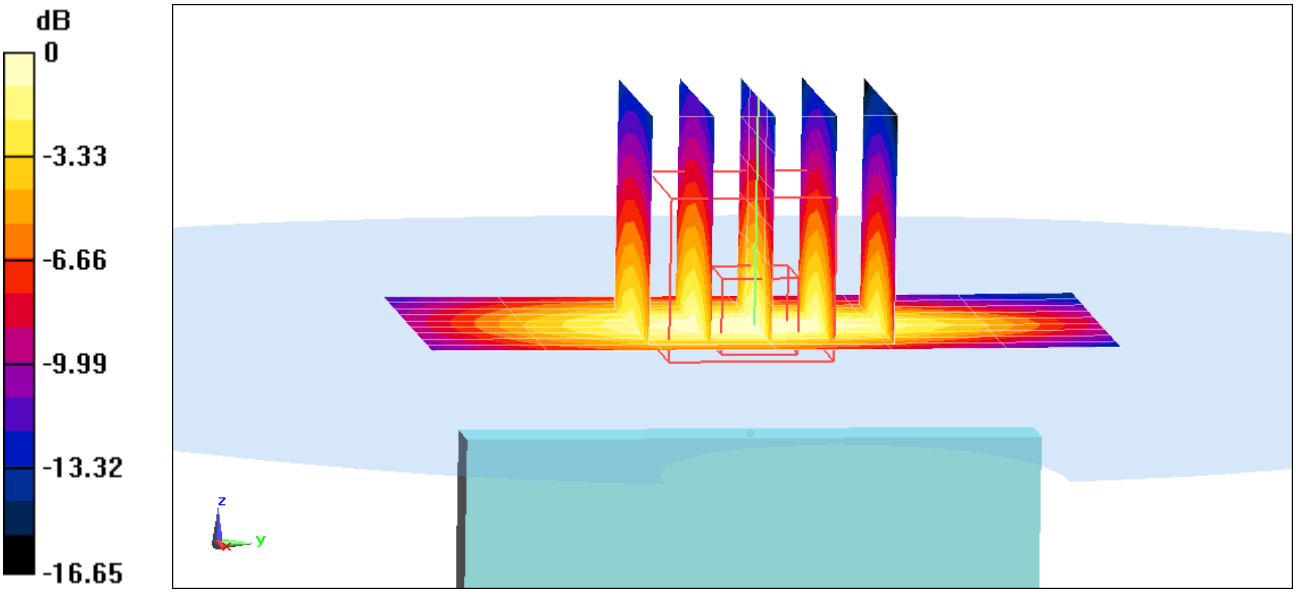
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; σ = 1.509 S/m; ε_r = 51.418; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 8-13-2017; Ambient Temp: 21.3°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1750, Body SAR, Bottom Edge, Mid.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.50 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.661 W/kg



0 dB = 0.809 W/kg = -0.92 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

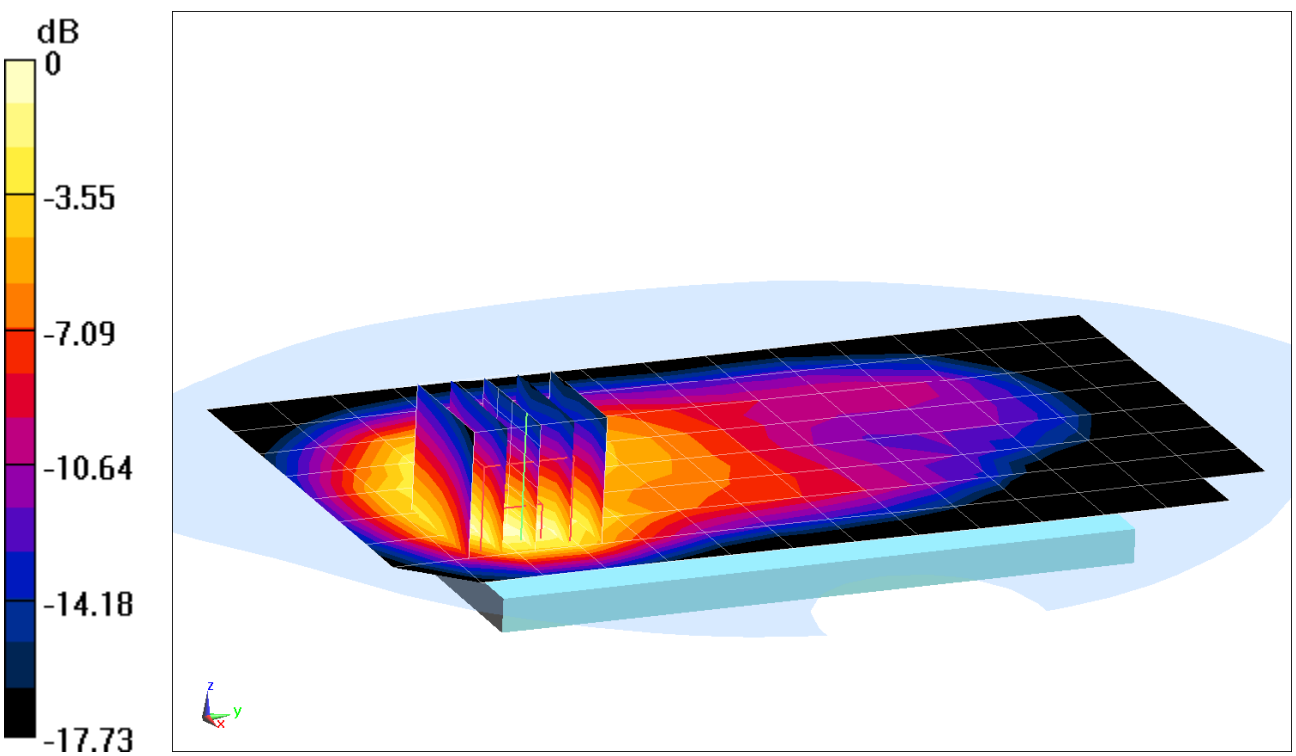
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.56 S/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Body SAR, Back side, Mid.ch

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.84 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.764 W/kg



0 dB = 1.17 W/kg = 0.68 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

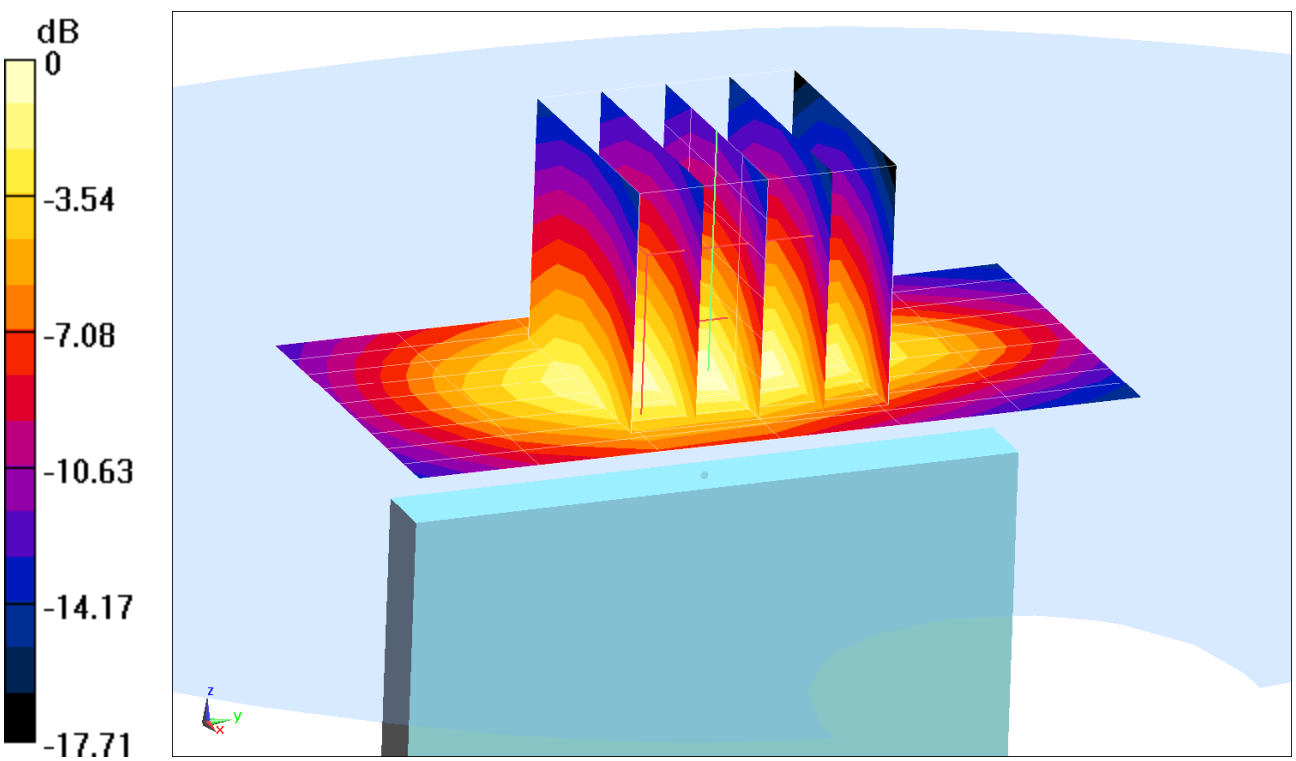
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; σ = 1.56 S/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: UMTS 1900, Body SAR, Bottom Edge, Mid.ch

Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.94 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 0.950 W/kg



0 dB = 1.39 W/kg = 1.43 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

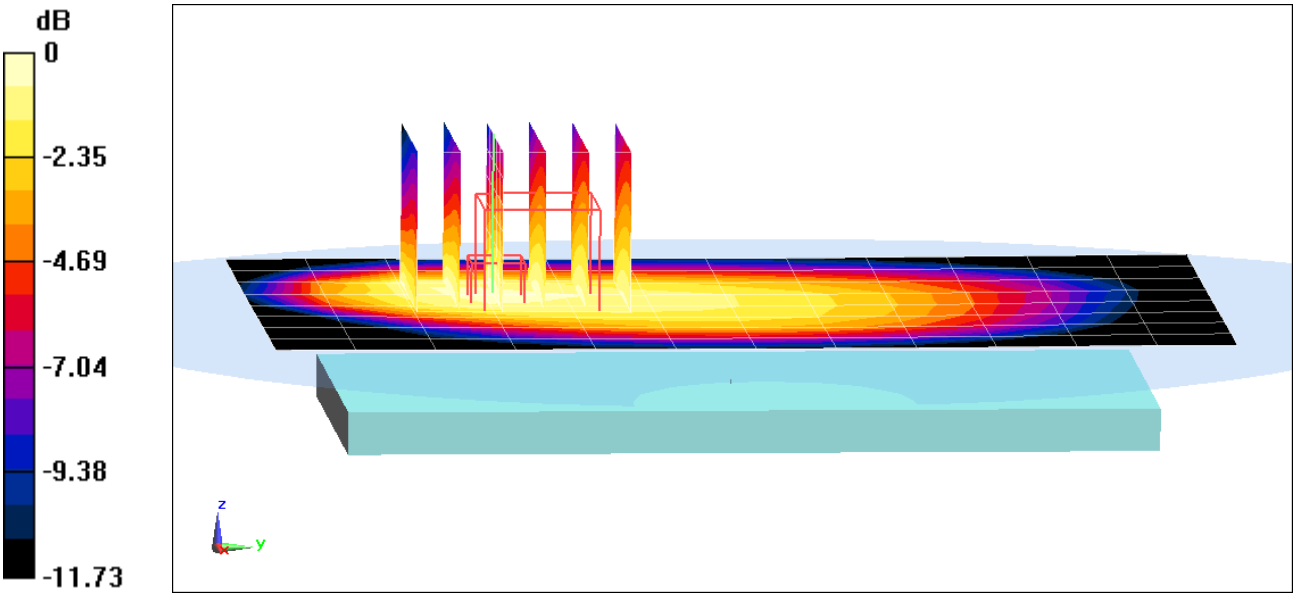
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; σ = 0.92 S/m; ε_r = 58.006; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-16-2017; Ambient Temp: 19.2°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(6.44, 6.44, 6.44); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
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, 49 RB Offset

Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.31 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.397 W/kg
SAR(1 g) = 0.279 W/kg



0 dB = 0.311 W/kg = -5.07 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

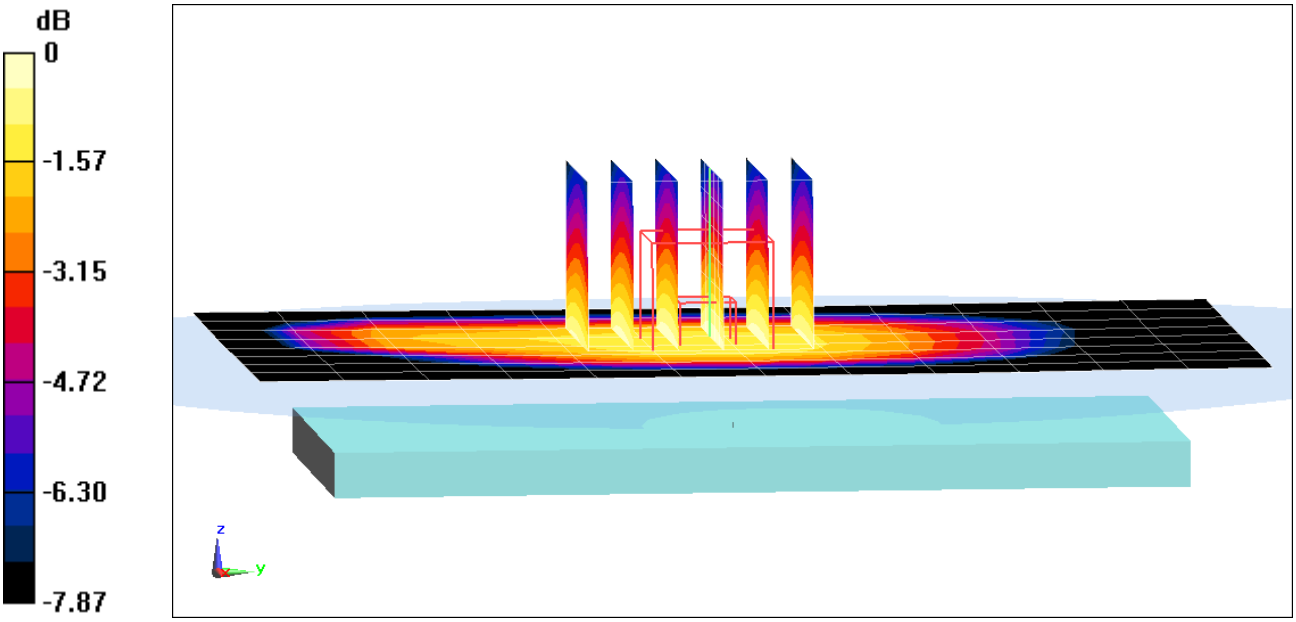
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; σ = 0.99 S/m; ε_r = 56.734; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-21-2017; Ambient Temp: 19.5°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3209; ConvF(6.44, 6.44, 6.44); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
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 (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.36 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.442 W/kg
SAR(1 g) = 0.357 W/kg



0 dB = 0.389 W/kg = -4.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

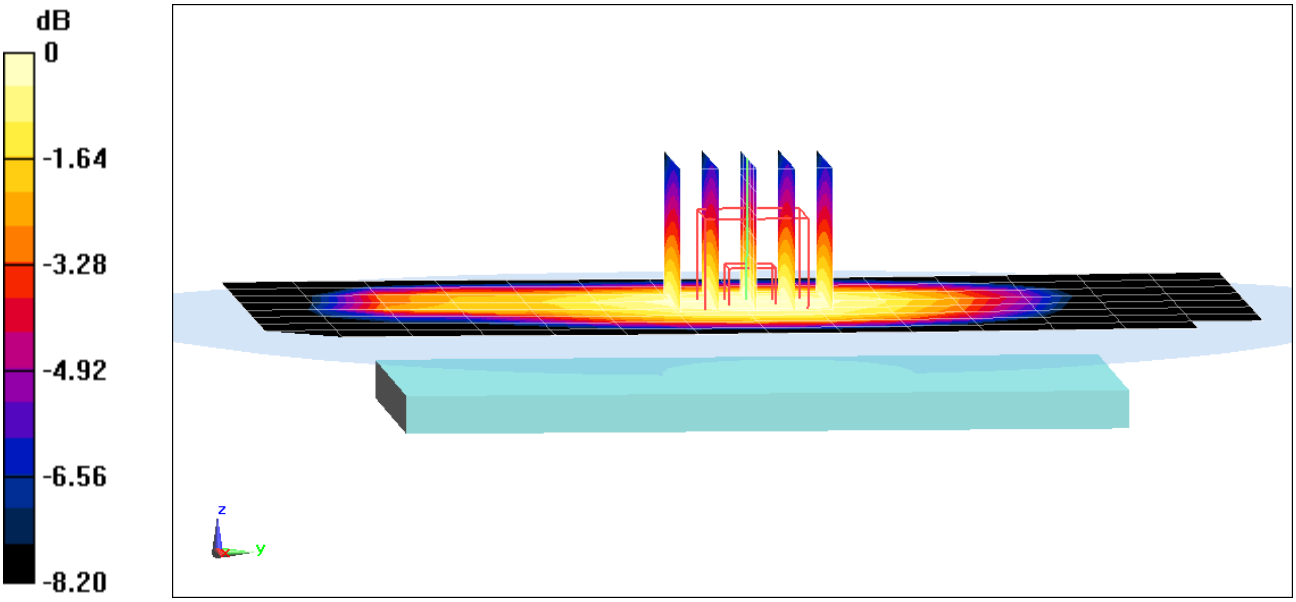
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.967 S/m; ε_r = 52.756; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
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 (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.38 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.386 W/kg
SAR(1 g) = 0.304 W/kg



0 dB = 0.333 W/kg = -4.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

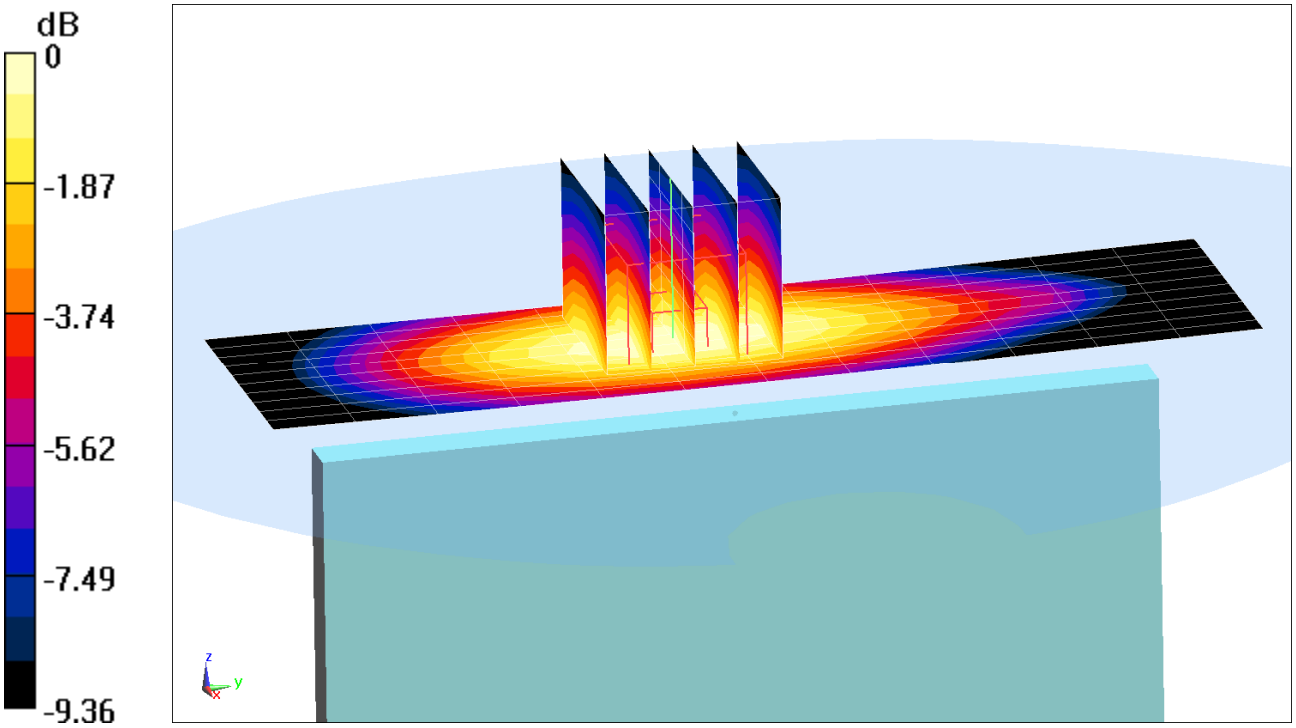
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; σ = 0.967 S/m; ε_r = 52.756; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 26 (Cell.), Body SAR, Right Edge,
Mid.ch, 15 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (11x13x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.20 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.462 W/kg
SAR(1 g) = 0.325 W/kg



0 dB = 0.374 W/kg = -4.27 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

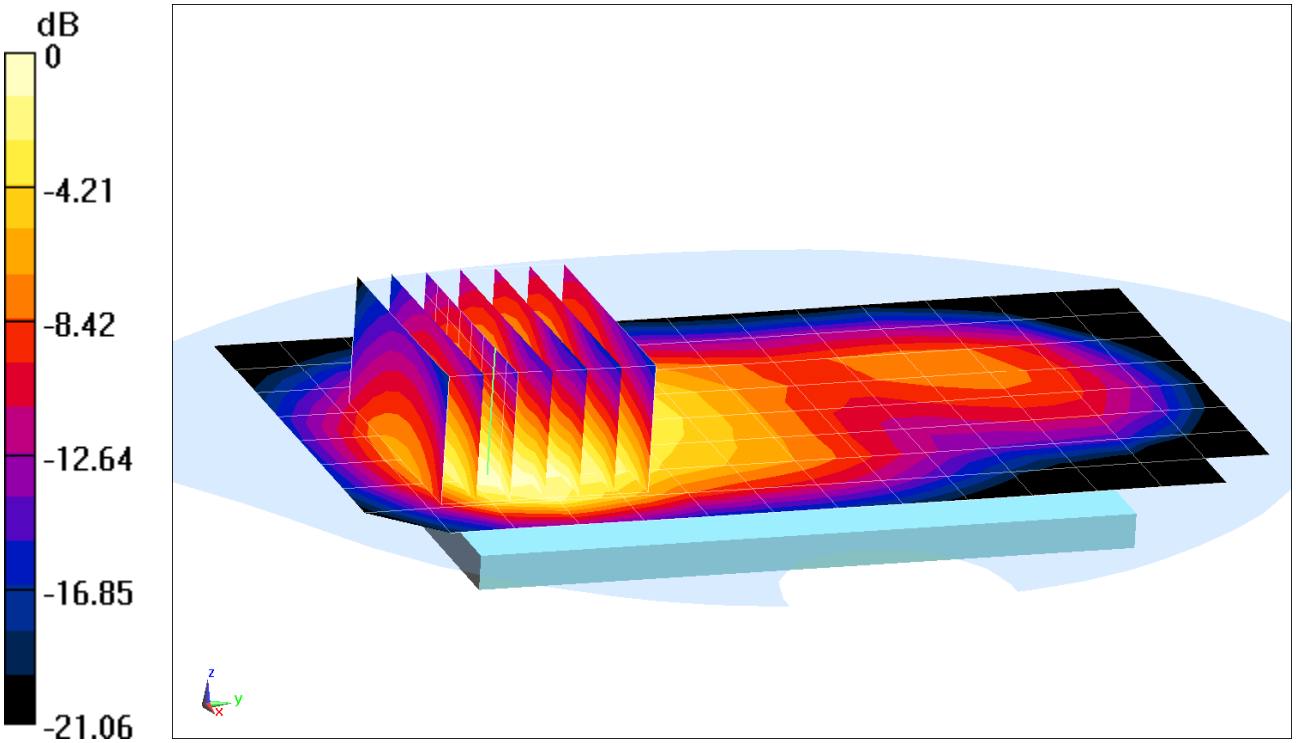
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1720 MHz; σ = 1.496 S/m; ε_r = 51.469; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 8-13-2017; Ambient Temp: 21.3°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Body SAR, Back side,
Low.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (9x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.43 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.803 W/kg
SAR(1 g) = 0.468 W/kg



0 dB = 0.544 W/kg = -2.64 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

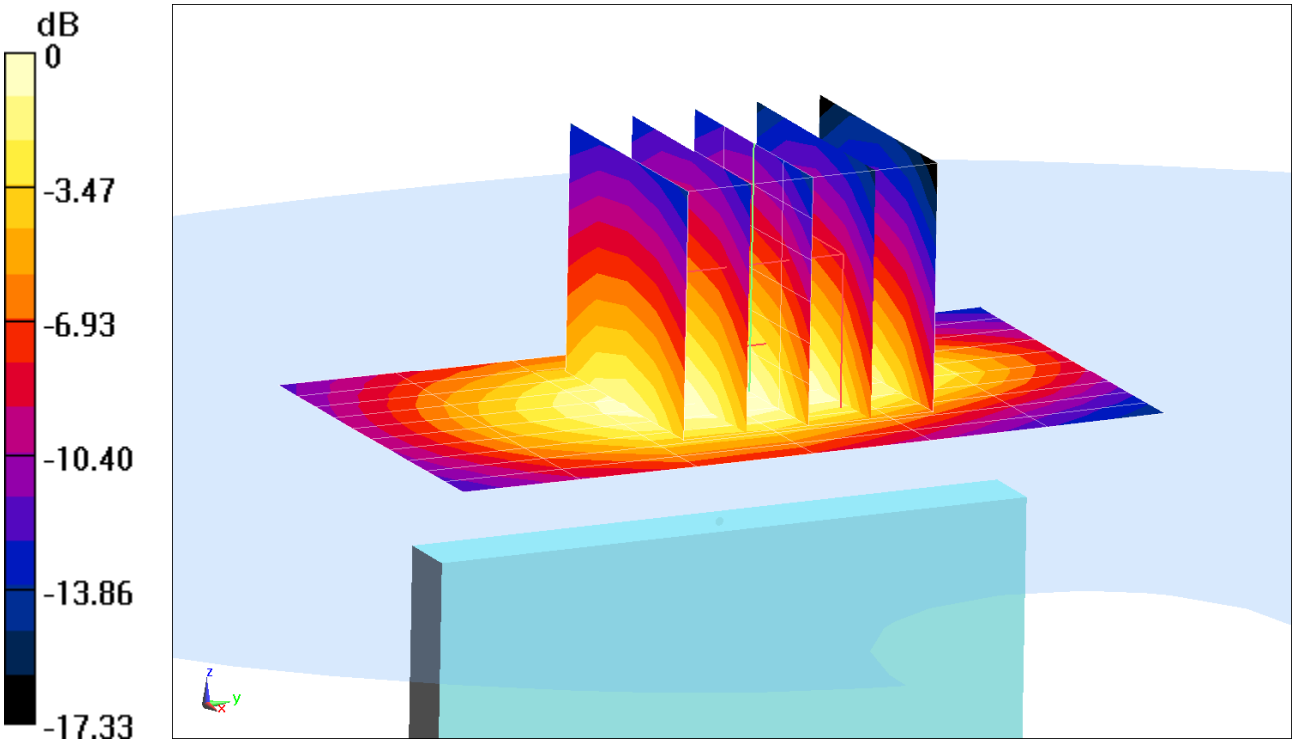
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1720 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1720 MHz; σ = 1.496 S/m; ε_r = 51.469; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 8-13-2017; Ambient Temp: 21.3°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge,
Low ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (11x7x1): Measurement grid: dx=5mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.87 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.808 W/kg
SAR(1 g) = 0.501 W/kg



0 dB = 0.610 W/kg = -2.15 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

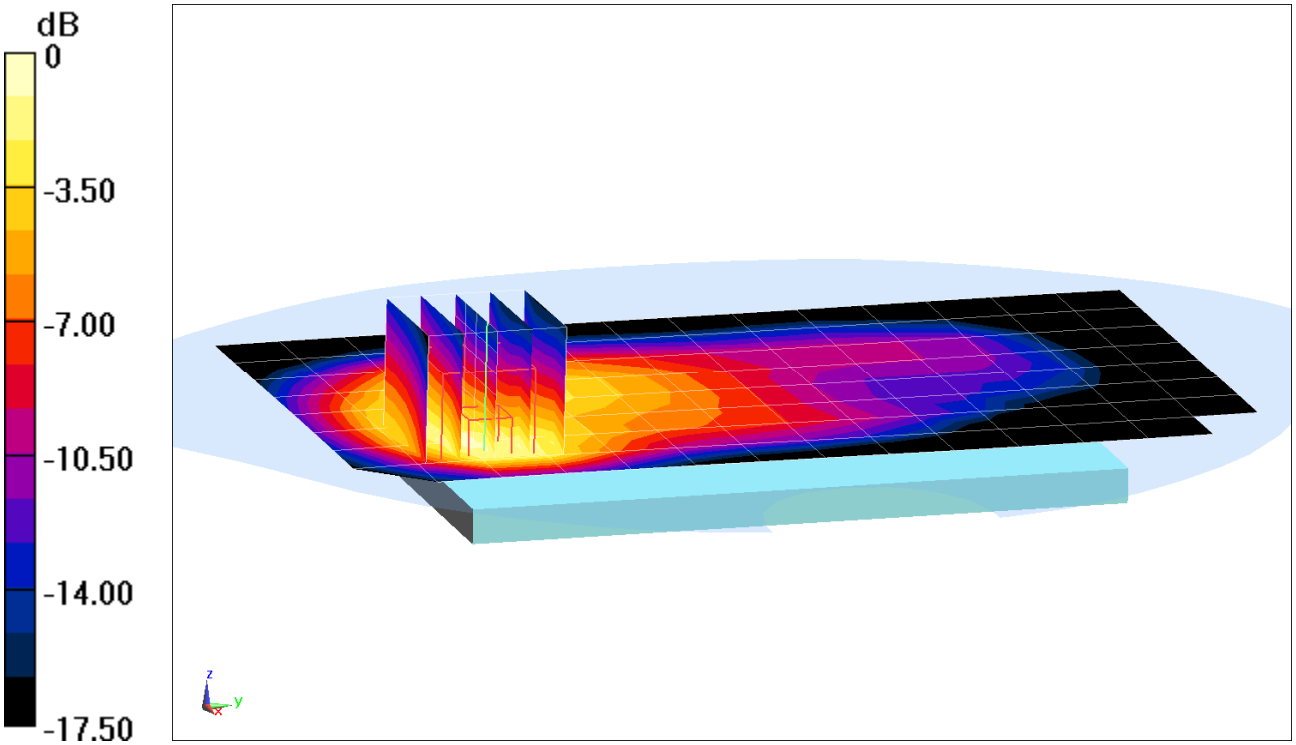
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.537 S/m; ε_r = 52.914; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Body SAR, Back side,
Low.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.94 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 1.18 W/kg
SAR(1 g) = 0.613 W/kg



0 dB = 0.971 W/kg = -0.13 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15057

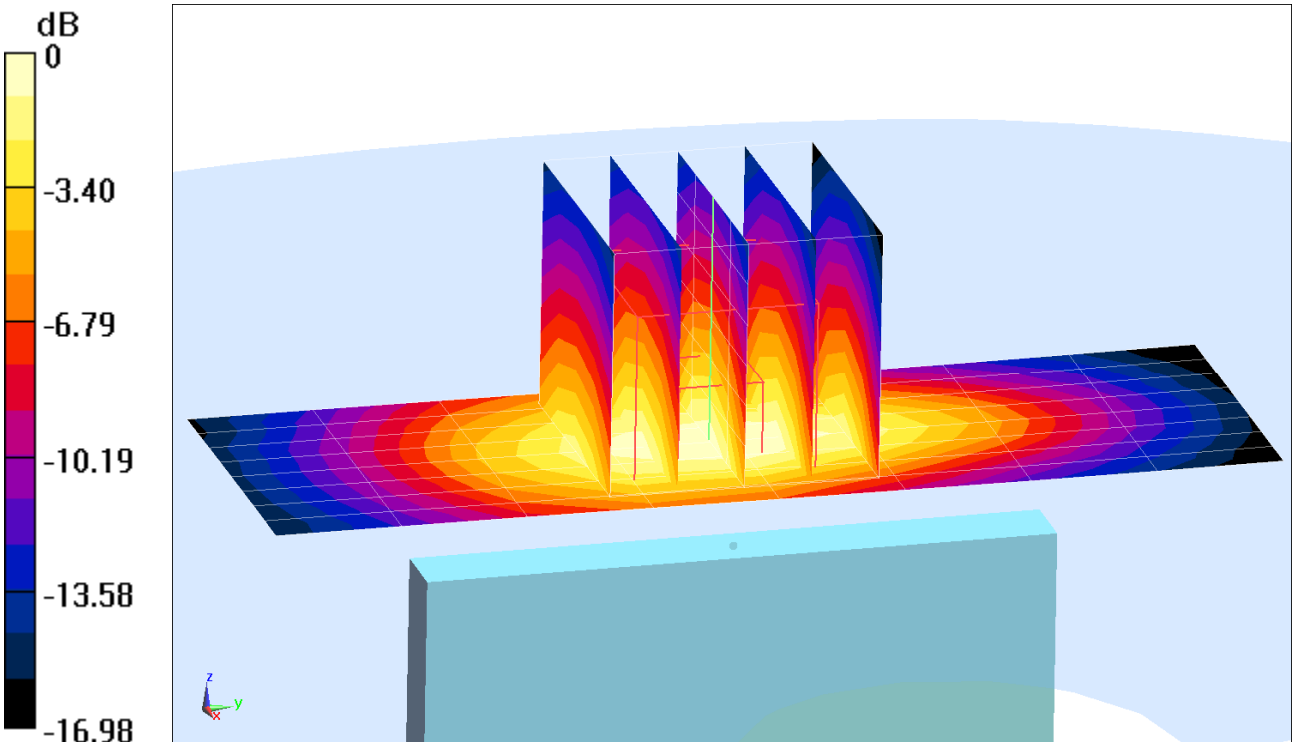
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1860 MHz; σ = 1.537 S/m; ε_r = 52.914; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-11-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.5°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge,
Low.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 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 = 23.60 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.779 W/kg



0 dB = 1.13 W/kg = 0.53 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

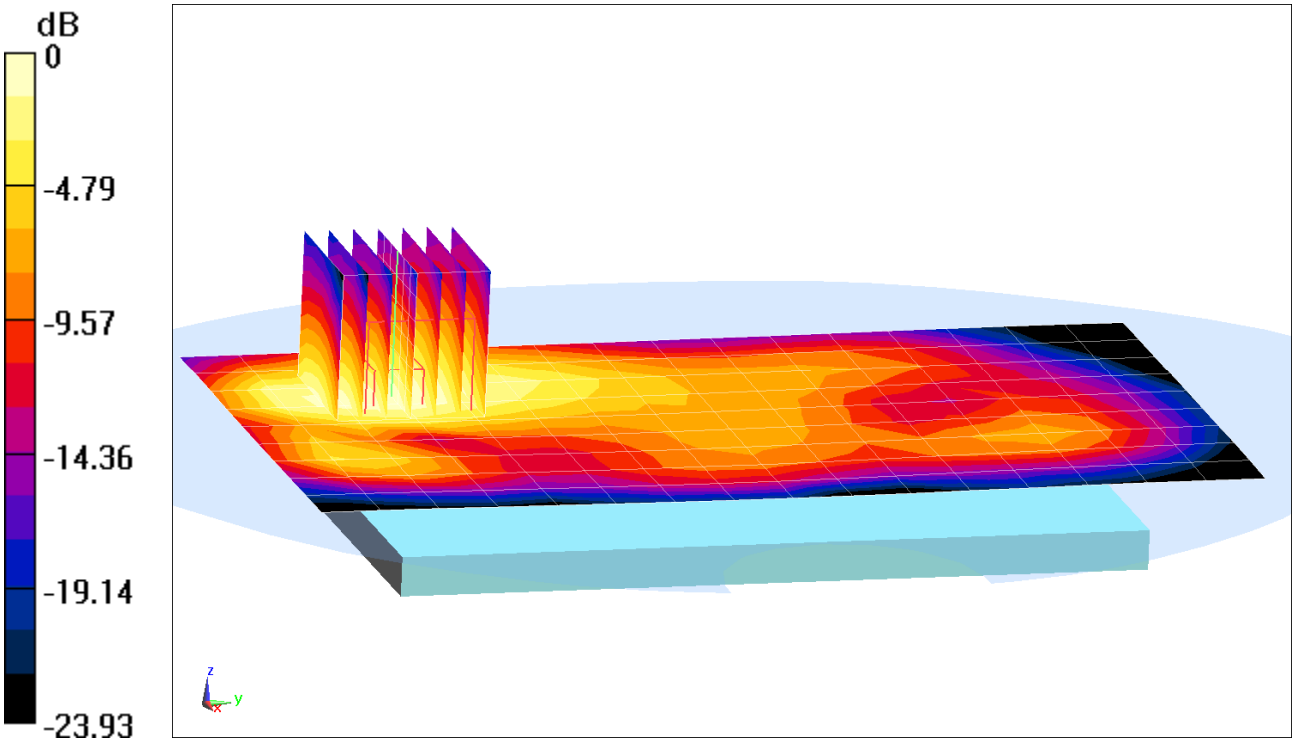
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2300 Body Medium parameters used:
f = 2310 MHz; σ = 1.819 S/m; ε_r = 51.437; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2017; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3287; ConvF(4.55, 4.55, 4.55); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
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 (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.44 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.513 W/kg
SAR(1 g) = 0.285 W/kg



0 dB = 0.351 W/kg = -4.55 dBW/kg

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

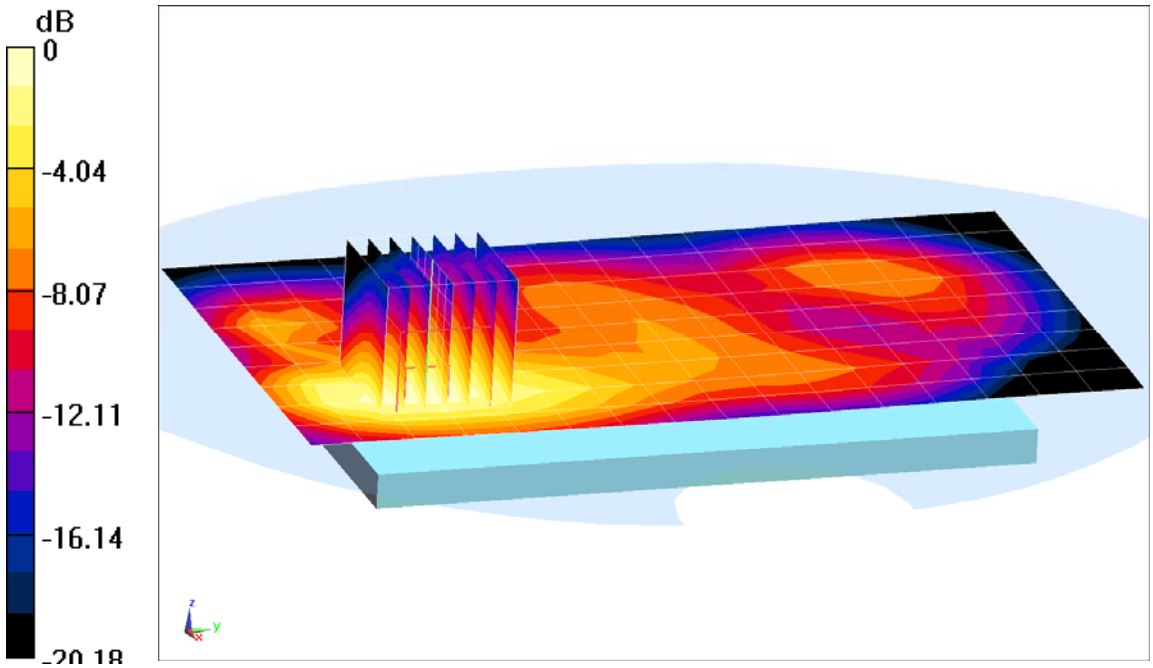
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2300 Body Medium parameters used:
f = 2310 MHz; σ = 1.819 S/m; ε_r = 51.437; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2017; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3287; ConvF(4.55, 4.55, 4.55); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 30, Body SAR, Front side,
Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.60 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.510 W/kg
SAR(1 g) = 0.295 W/kg



0 dB = 0.357 W/kg = -4.47 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

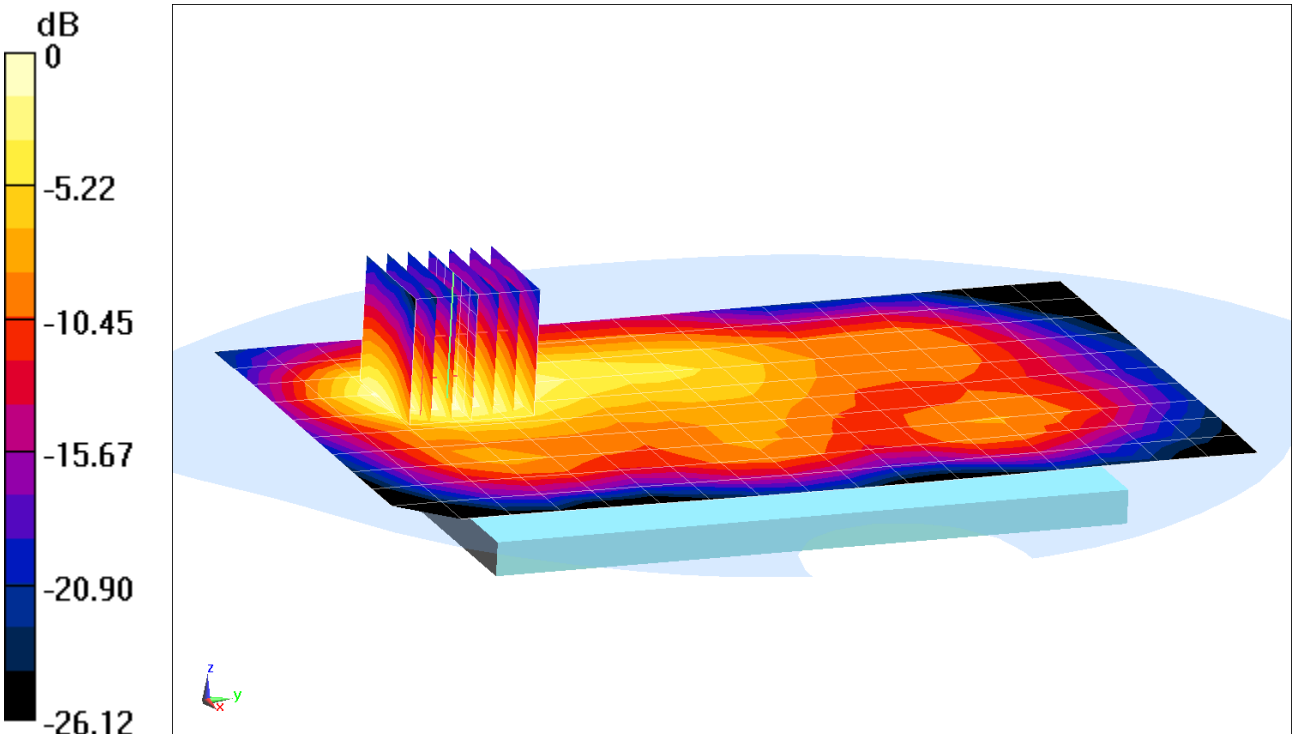
Communication System: UID 0, LTE Band 7; Frequency: 2535 MHz; Duty Cycle: 1:1
Medium: 2600 Body Medium parameters used (interpolated):
f = 2535 MHz; σ = 2.117 S/m; ε_r = 50.571; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2017; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3287; ConvF(4.12, 4.12, 4.12); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
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, 99 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 = 15.51 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.969 W/kg
SAR(1 g) = 0.451 W/kg



0 dB = 0.584 W/kg = -2.34 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

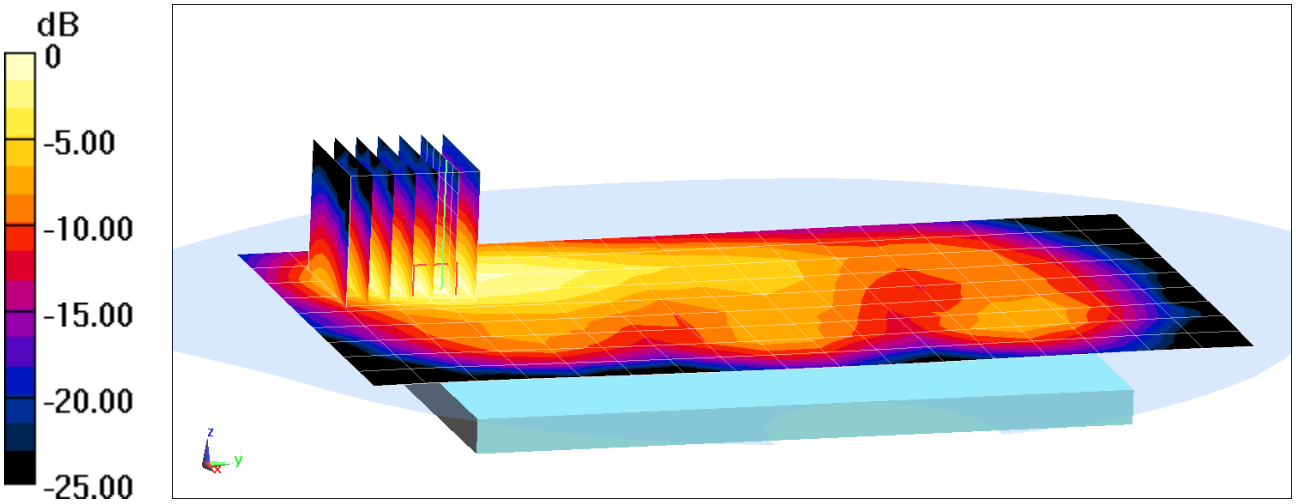
Communication System: UID 0, LTE Band 41; Frequency: 2636.5 MHz; Duty Cycle: 1:1.58
Medium: 2600 Body Medium parameters used (interpolated):
f = 2636.5 MHz; σ = 2.256 S/m; ε_r = 50.21; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2017; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3287; ConvF(4.12, 4.12, 4.12); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: LTE Band 41 Power Class 3, Body SAR, Back side, Mid-High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

Area Scan (10x18x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.69 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.651 W/kg
SAR(1 g) = 0.287 W/kg



0 dB = 0.374 W/kg = -4.27 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

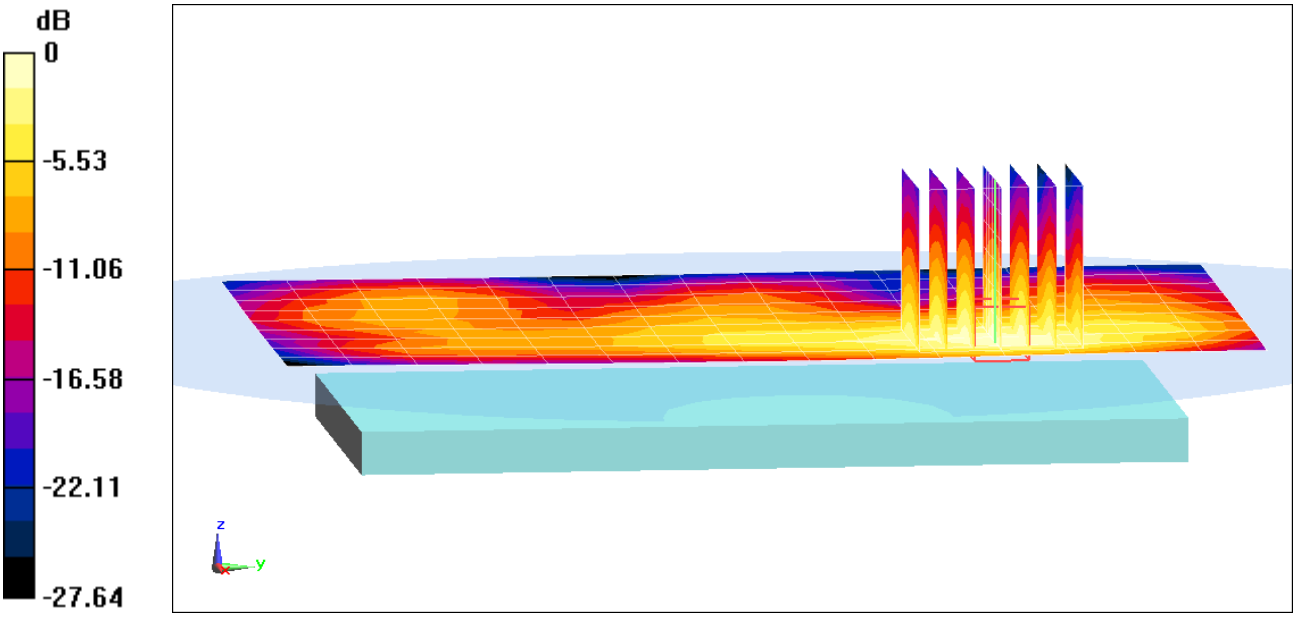
Communication System: UID 0, IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2462 MHz; σ = 2.01 S/m; ε_r = 51.553; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3287; ConvF(4.35, 4.35, 4.35); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11b, 22 MHz Bandwidth,
Body SAR, Ch 11, 1 Mbps, Back Side, Antenna 1

Area Scan (10x16x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.038 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.667 W/kg
SAR(1 g) = 0.321 W/kg



0 dB = 0.402 W/kg = -3.96 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 35335

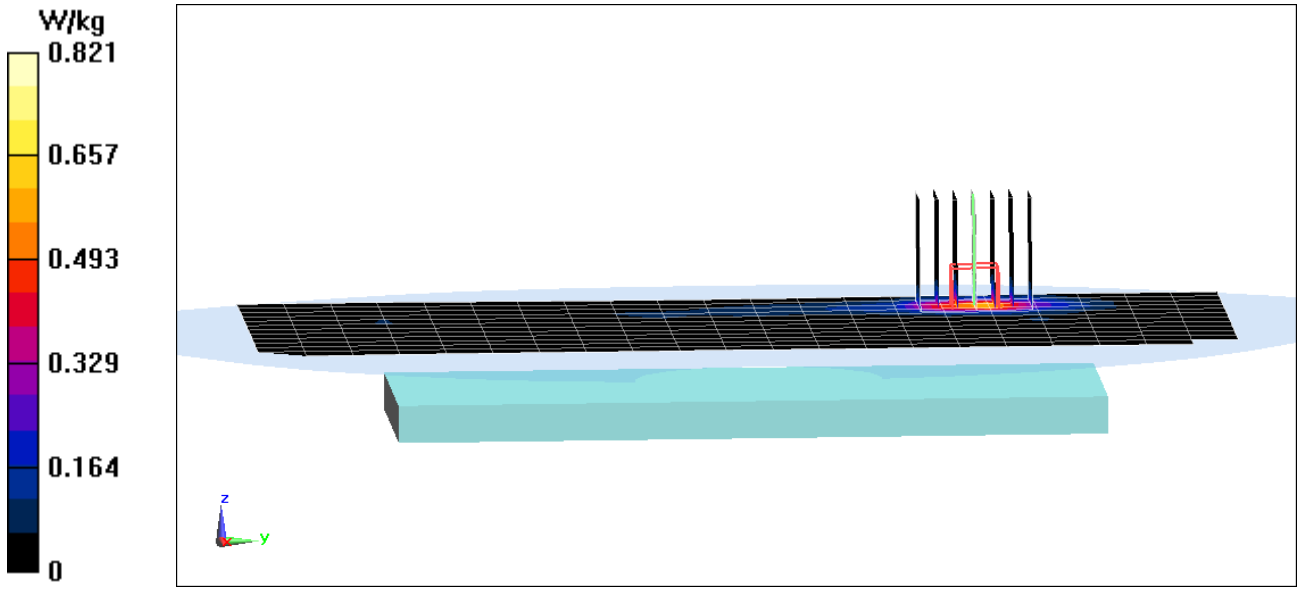
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5720 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5720 MHz; σ = 5.898 S/m; ε_r = 46.585; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(3.83, 3.83, 3.83); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, UNII-2C, 20 MHz Bandwidth,
Body SAR, Ch 144, 6 Mbps, Back Side, Antenna 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 = 7.858 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 0.314 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 35335

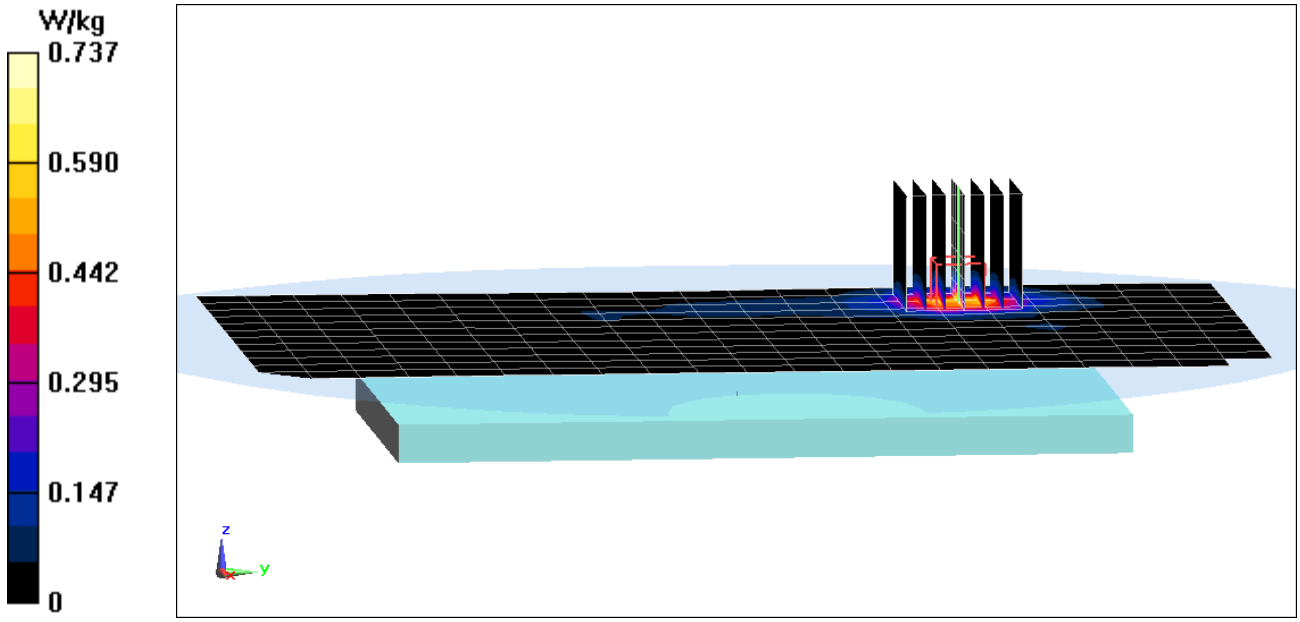
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5825 MHz; σ = 6.03 S/m; ε_r = 46.389; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(3.83, 3.83, 3.83); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, UNII-3, 20 MHz Bandwidth,
Body SAR, Ch 165, 6 Mbps, Back Side, Antenna 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 = 7.283 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.18 W/kg
SAR(1 g) = 0.279 W/kg



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 15065

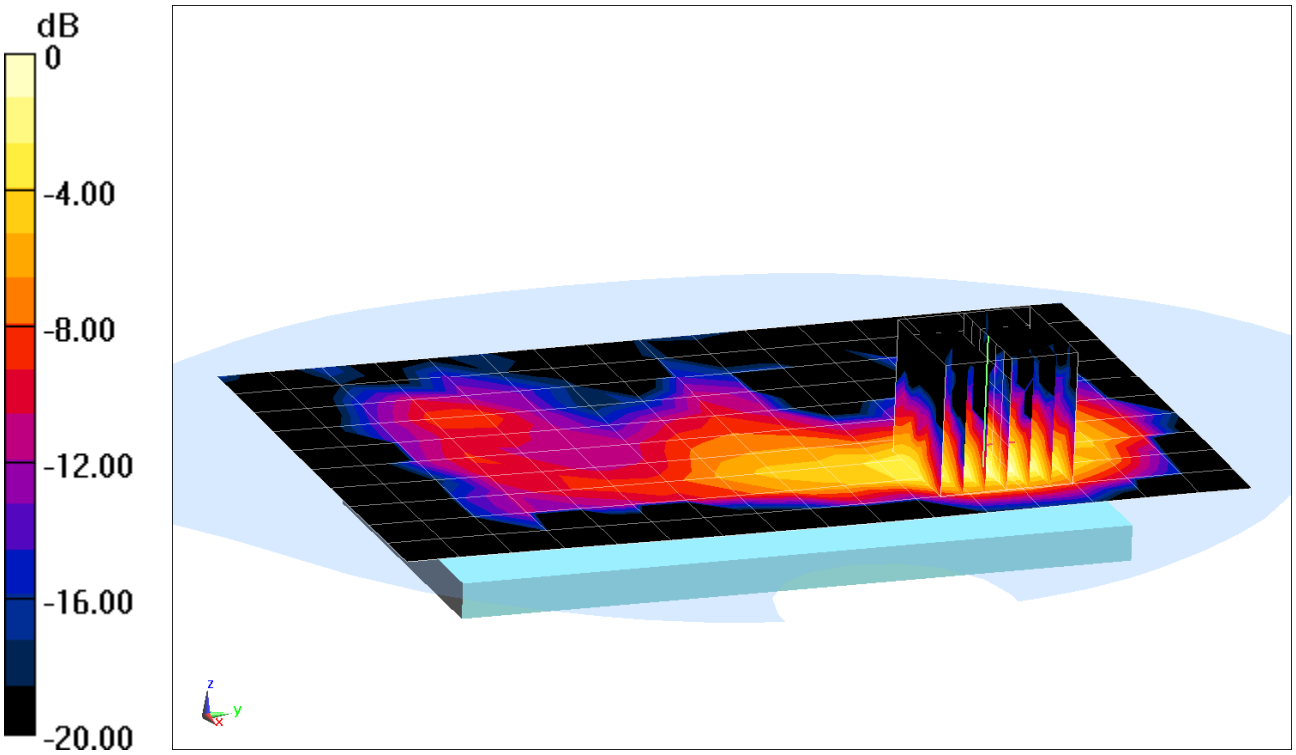
Communication System: UID 0, Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1.294
Medium: 2450 Body Medium parameters used (interpolated):
f = 2402 MHz; σ = 1.932 S/m; ε_r = 51.778; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3287; ConvF(4.35, 4.35, 4.35); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: Bluetooth, Body SAR, Ch 0, 1 Mbps, Back Side

Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.149 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.0660 W/kg
SAR(1 g) = 0.016 W/kg



0 dB = 0.0220 W/kg = -16.58 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFG011C; Type: Portable Handset; Serial: 35335

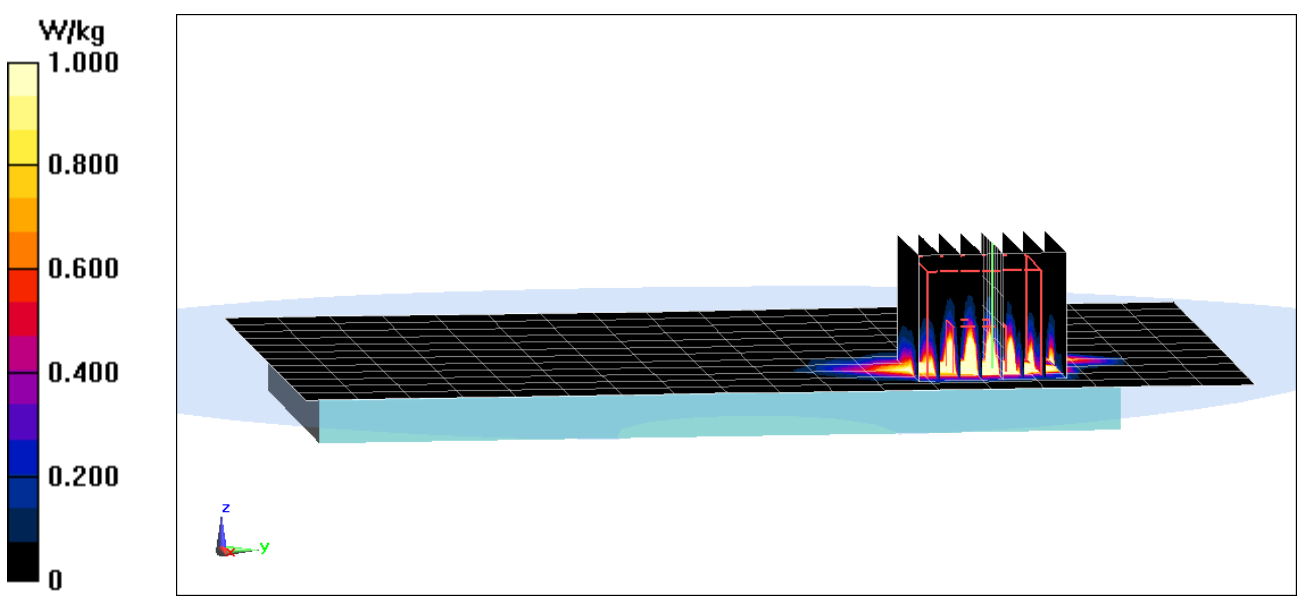
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5500 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5500 MHz; σ = 5.607 S/m; ε_r = 46.95; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-14-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(3.82, 3.82, 3.82); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

Mode: IEEE 802.11a, U-NII-2C, 20 MHz Bandwidth,
Phablet SAR, Ch 100, 6 Mbps, Back Side, Antenna 1

Area Scan (13x9x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (9x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 29.72 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 43.1 W/kg
SAR(10 g) = 0.924 W/kg



APPENDIX B: SYSTEM VERIFICATION

© 2017 PCTEST Engineering Laboratory, Inc.

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1034

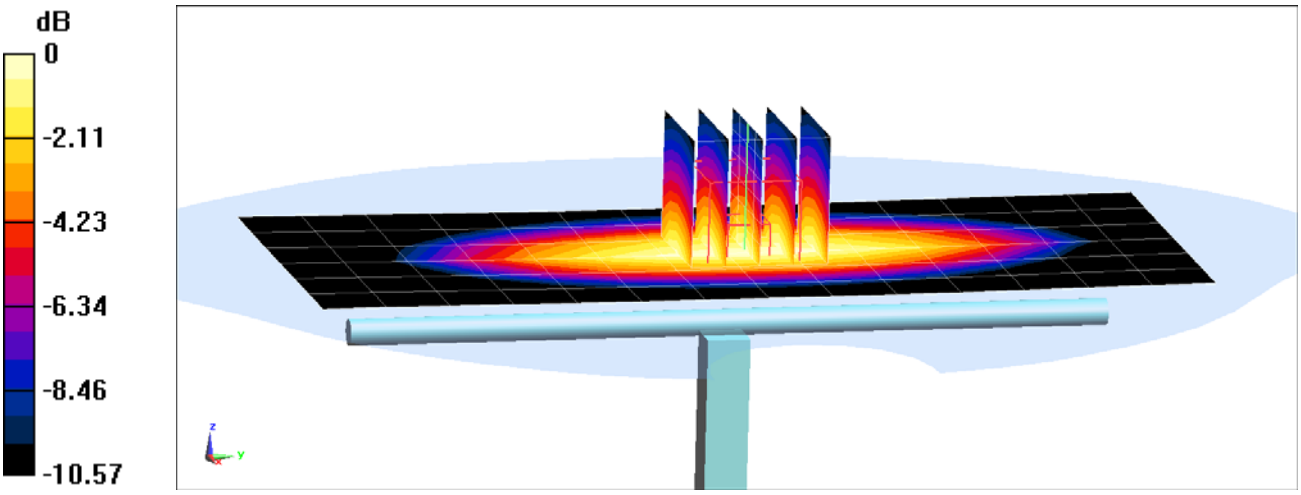
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.904 S/m; ε_r = 42.271; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-17-2017; Ambient Temp: 21.7°C; Tissue Temp: 20.9°C

Probe: ES3DV3 - SN3213; ConvF(6.85, 6.85, 6.85); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Right; Type: SAM; Serial: 1757
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) = 2.40 W/kg
SAR(1 g) = 1.60 W/kg
Deviation(1 g) = -2.68%



0 dB = 1.89 W/kg = 2.76 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1003

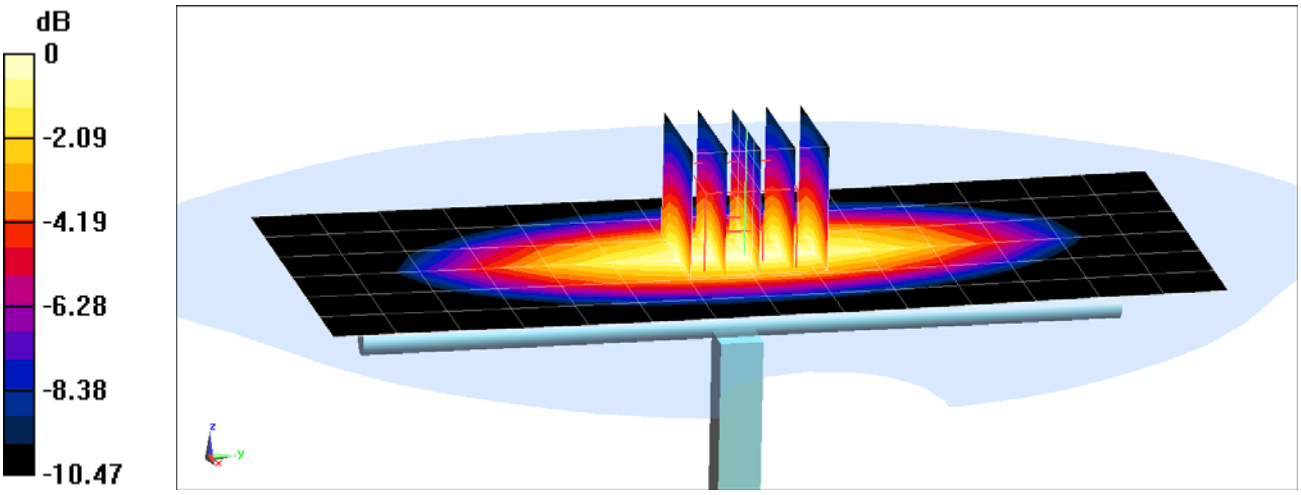
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; σ = 0.905 S/m; ε_r = 42.017; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-22-2017; Ambient Temp: 19.7°C; Tissue Temp: 19.5°C

Probe: ES3DV3 - SN3213; ConvF(6.85, 6.85, 6.85); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
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) = 2.59 W/kg
SAR(1 g) = 1.75 W/kg
Deviation(1 g) = 4.29%



0 dB = 2.04 W/kg = 3.10 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d132

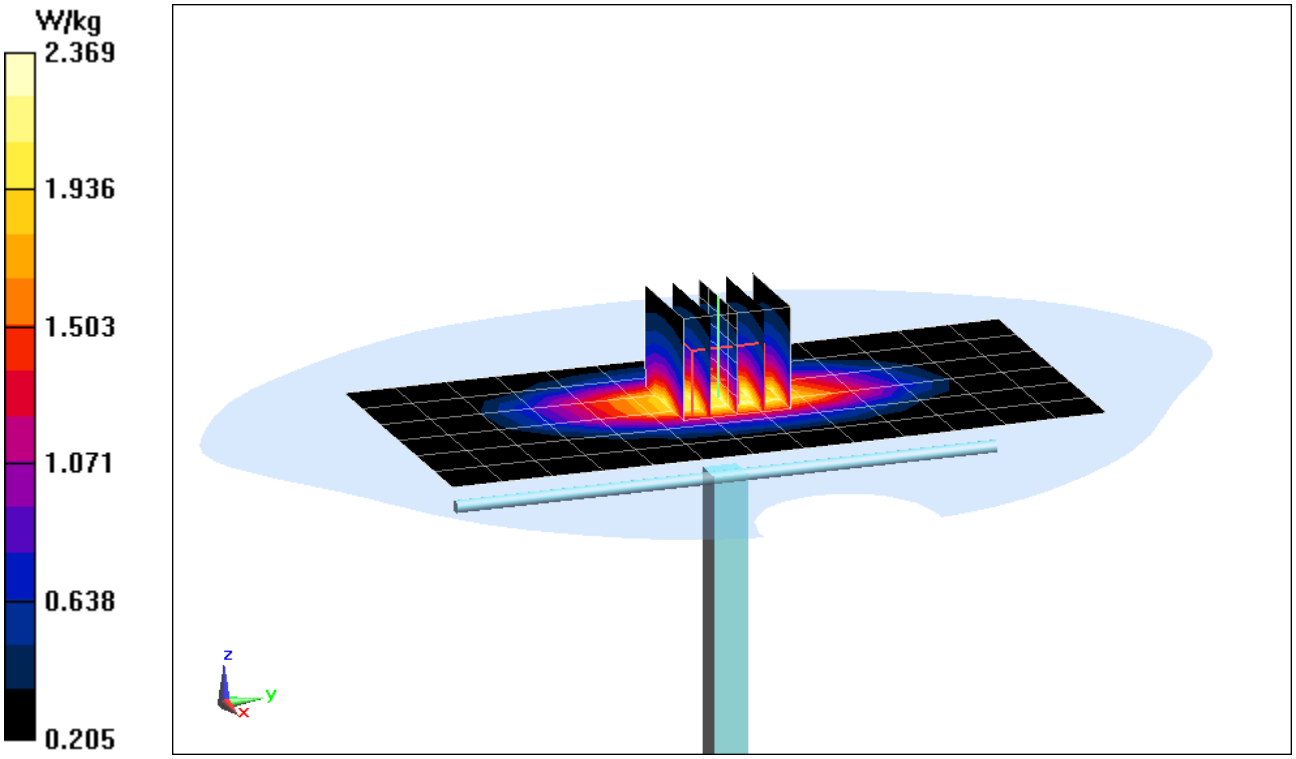
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.911 S/m; ε_r = 43.063; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-17-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3287; ConvF(6.67, 6.67, 6.67); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.02 W/kg
SAR(1 g) = 2.02 W/kg
Deviation(1 g) = 6.09%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d180

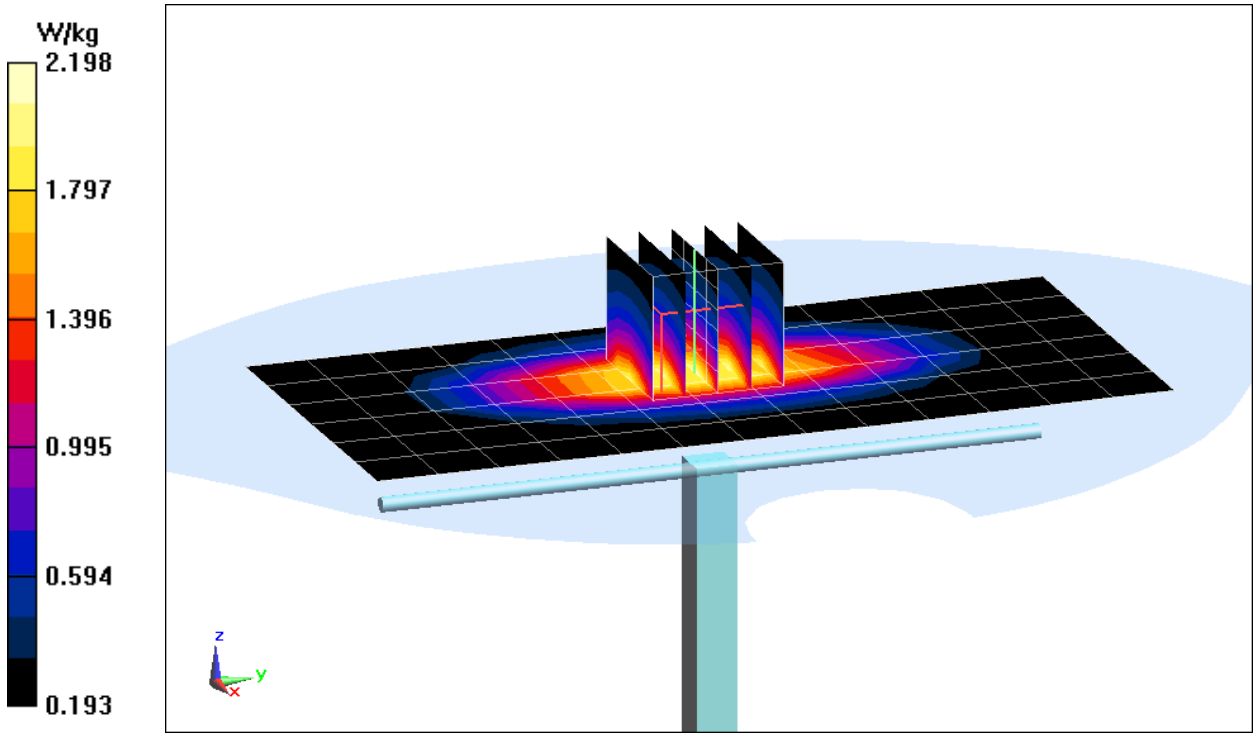
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; σ = 0.91 S/m; ε_r = 42.515; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-21-2017; Ambient Temp: 22.0°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3287; ConvF(6.67, 6.67, 6.67); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

835 MHz System Verification at 23.0 dBm (200 mW)

Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.78 W/kg
SAR(1 g) = 1.88 W/kg
Deviation(1 g) = 1.51%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1092

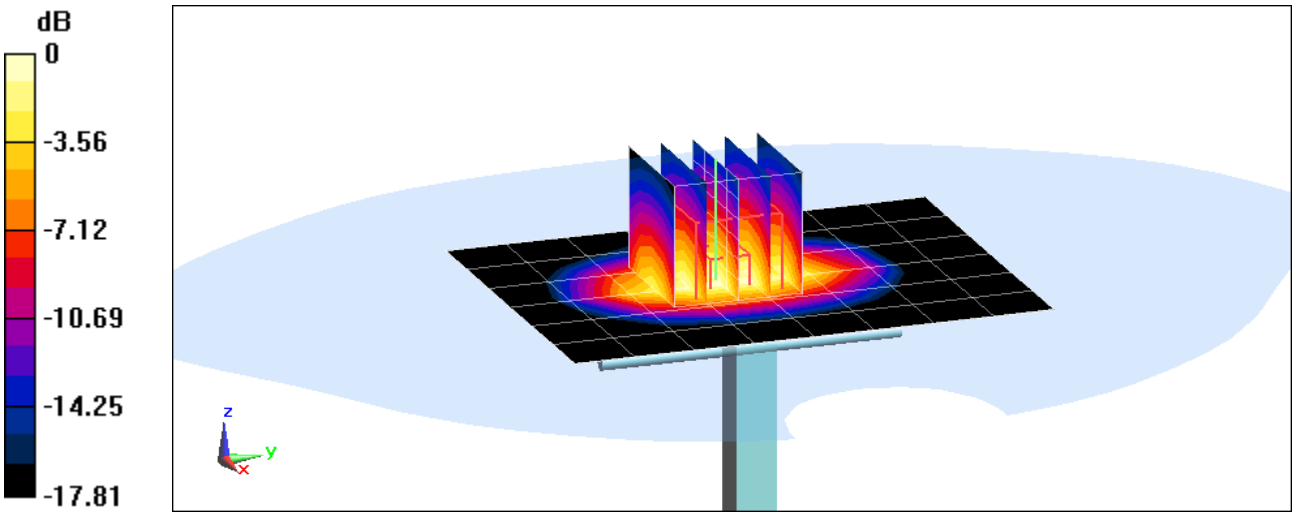
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; σ = 1.385 S/m; ε_r = 38.681; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2017; Ambient Temp: 22.0°C; Tissue Temp: 20.6°C

Probe: ES3DV3 - SN3287; ConvF(5.49, 5.49, 5.49); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
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 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.59 W/kg
SAR(1 g) = 3.61 W/kg
Deviation(1 g) = -0.82%



0 dB = 4.57 W/kg = 6.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

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

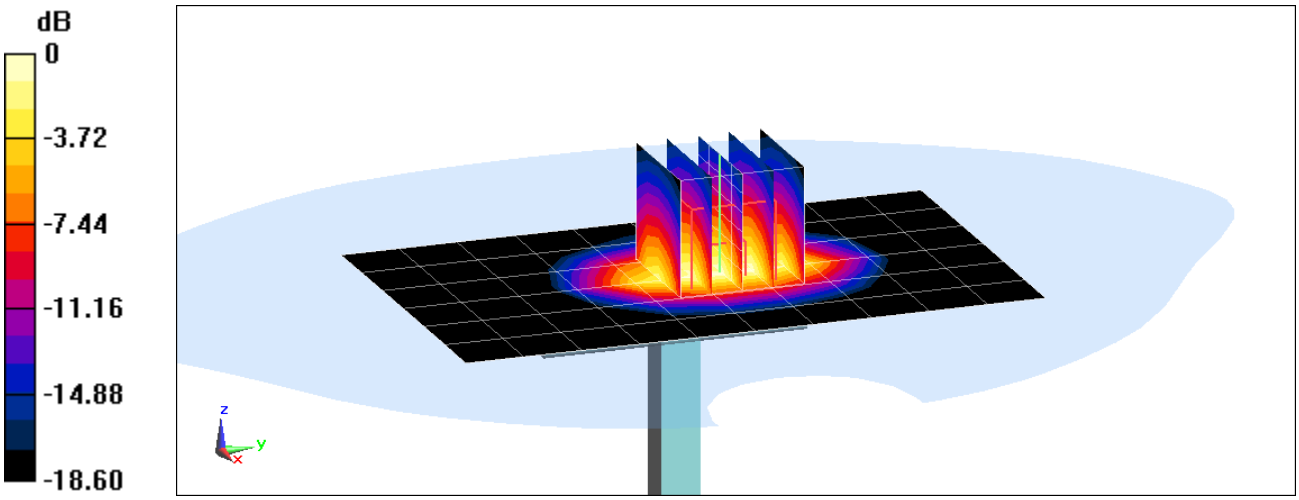
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.412 S/m; ε_r = 39.741; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2017; Ambient Temp: 21.9°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7406; ConvF(8.4, 8.4, 8.4); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
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 (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.58 W/kg
SAR(1 g) = 3.81 W/kg
Deviation(1 g) = -5.22%



0 dB = 6.16 W/kg = 7.90 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1038

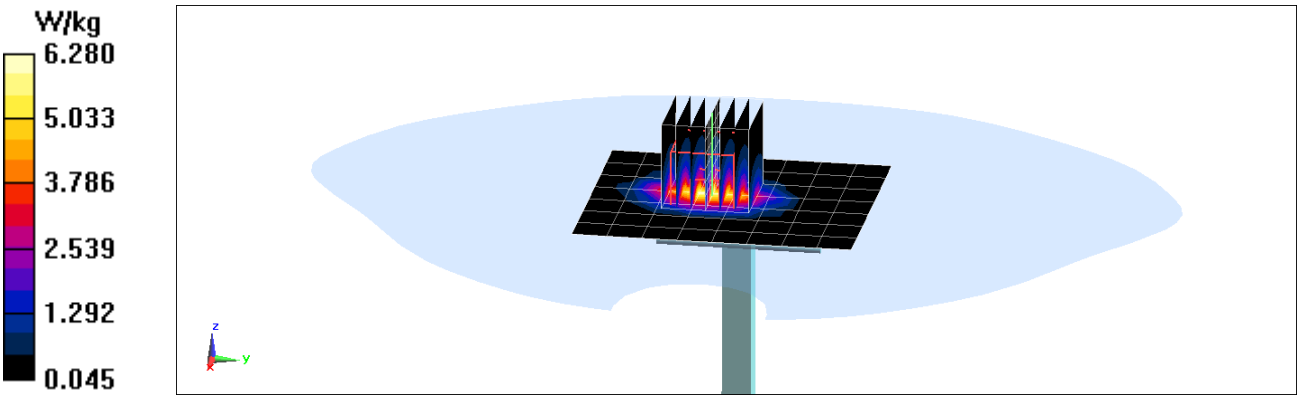
Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1
Medium: 2300 Head Medium parameters used:
f = 2300 MHz; σ = 1.689 S/m; ε_r = 39.961; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 20.1°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3318; ConvF(4.95, 4.95, 4.95); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
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)

2300 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 9.78 W/kg
SAR(1 g) = 4.83 W/kg
Deviation(1 g) = 1.68%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 945

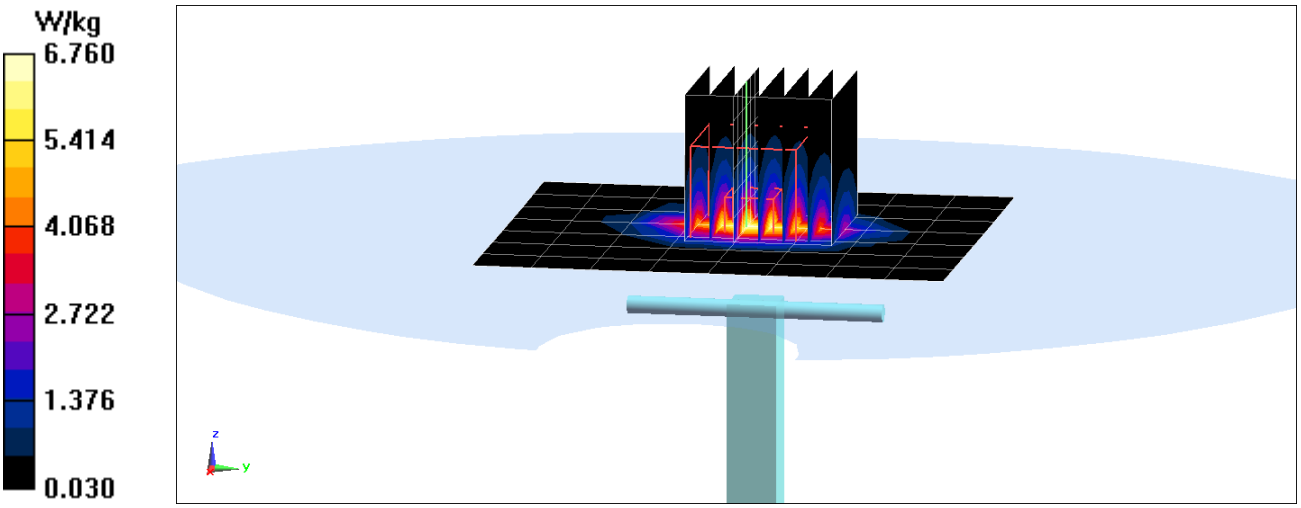
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.887 S/m; ε_r = 38.017; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2017; Ambient Temp: 21.1°C; Tissue Temp: 20.5°C

Probe: ES3DV3 - SN3318; ConvF(4.74, 4.74, 4.74); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
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)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.9 W/kg
SAR(1 g) = 5.13 W/kg
Deviation(1 g) = 0.00%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

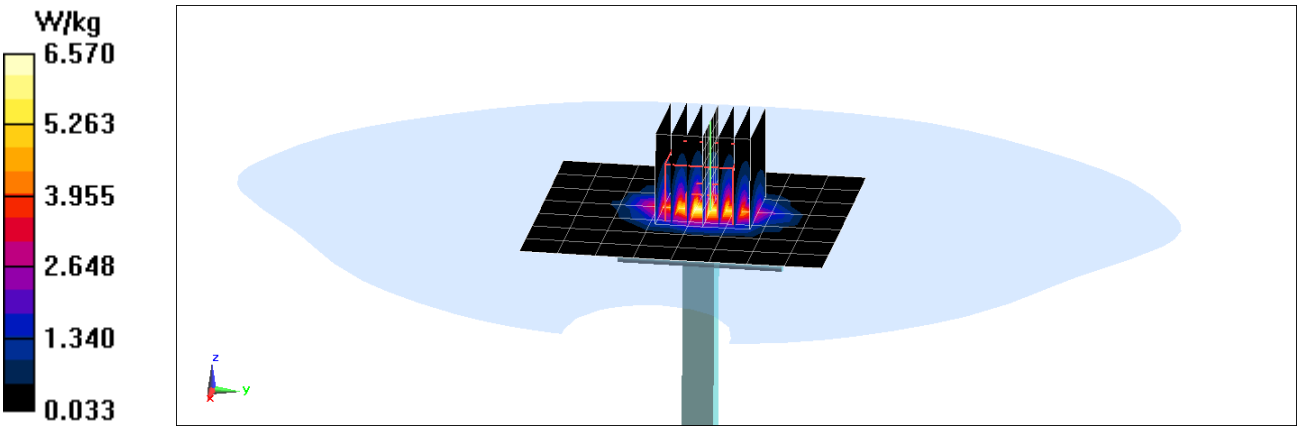
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; σ = 1.859 S/m; ε_r = 39.369; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 20.1°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3318; ConvF(4.74, 4.74, 4.74); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
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)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.8 W/kg
SAR(1 g) = 4.98 W/kg
Deviation(1 g) = -4.41%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

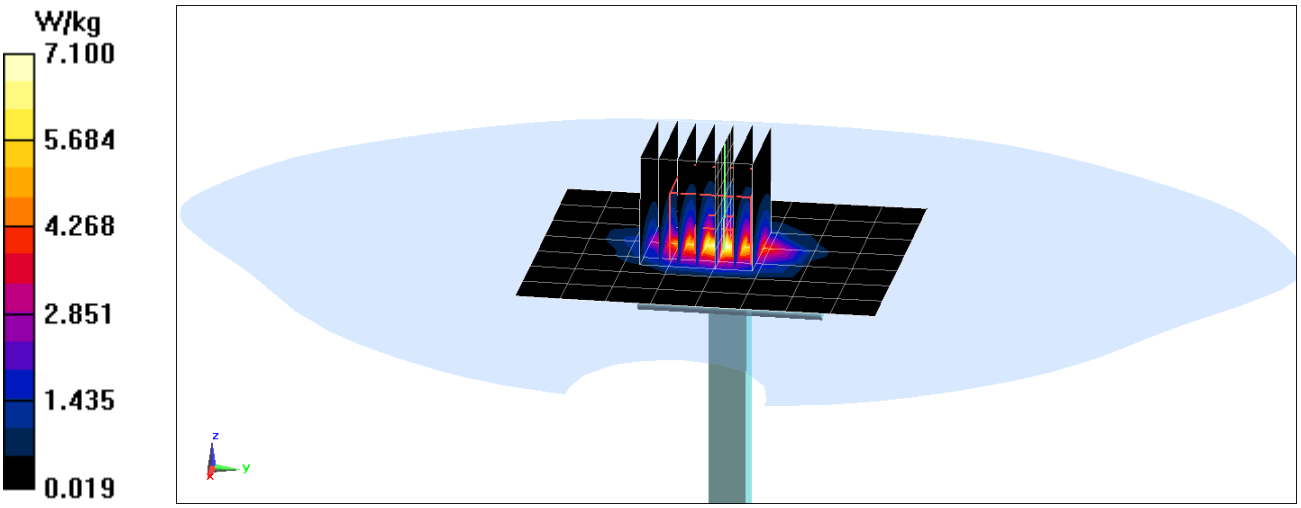
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2600 MHz; σ = 2.031 S/m; ε_r = 38.79; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 20.1°C; Tissue Temp: 19.7°C

Probe: ES3DV3 - SN3318; ConvF(4.53, 4.53, 4.53); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
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)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.2 W/kg
SAR(1 g) = 5.38 W/kg
Deviation(1 g) = -4.44%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

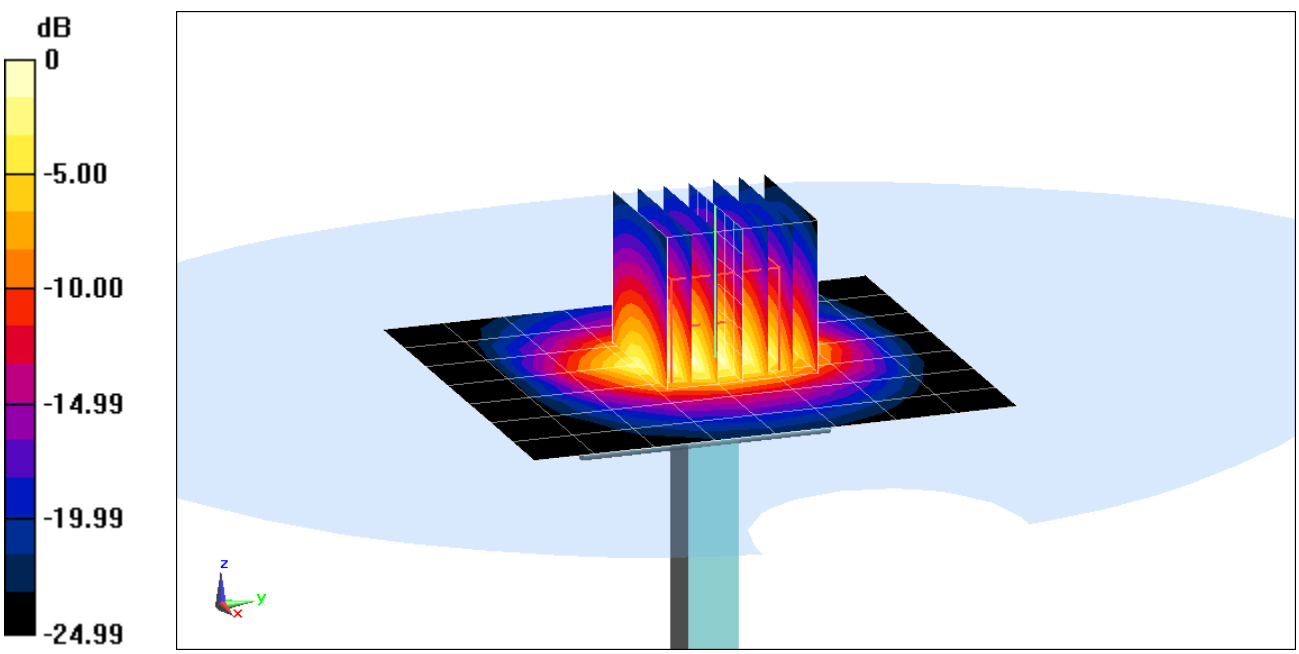
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2600 Head Medium parameters used:
f = 2600 MHz; σ = 1.966 S/m; ε_r = 38.632; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-16-2017; Ambient Temp: 22.1°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7406; ConvF(7.44, 7.44, 7.44); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.6 W/kg
SAR(1 g) = 5.54 W/kg
Deviation(1 g) = -1.60%



0 dB = 9.69 W/kg = 9.86 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

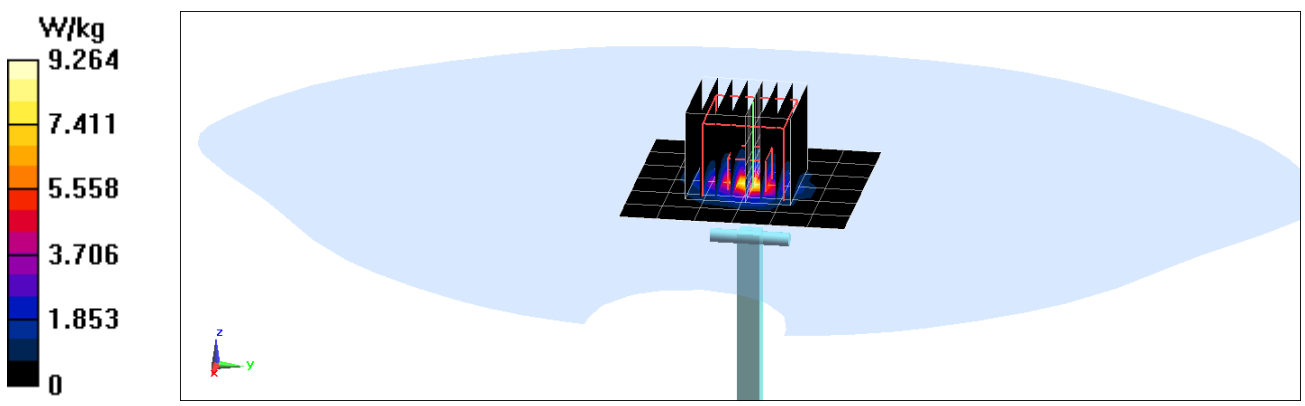
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used (interpolated):
f = 5250 MHz; σ = 4.5 S/m; ε_r = 34.51; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2017; Ambient Temp: 21.9°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3914; ConvF(5.49, 5.49, 5.49); Calibrated: 2/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 3.81 W/kg
Deviation(1 g) = -3.91%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

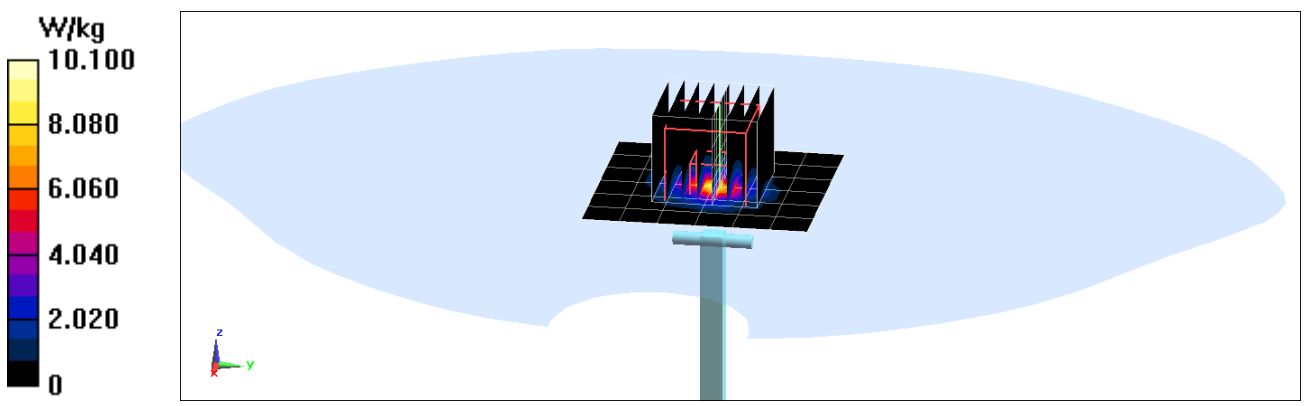
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used:
f = 5600 MHz; σ = 4.84 S/m; ε_r = 34.043; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2017; Ambient Temp: 21.9°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3914; ConvF(4.94, 4.94, 4.94); Calibrated: 2/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.3 W/kg
SAR(1 g) = 3.99 W/kg
Deviation(1 g) = -5.23%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

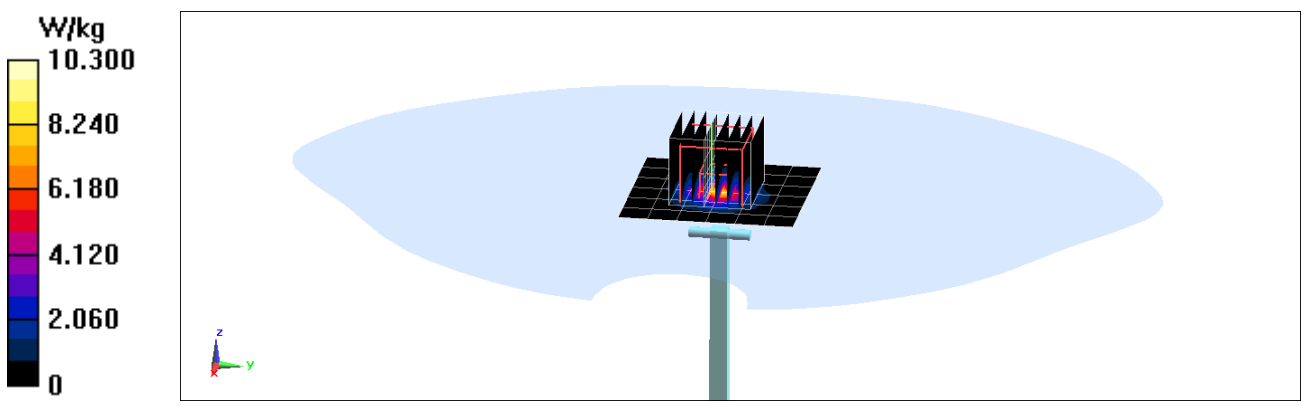
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Head Medium parameters used (interpolated):
f = 5750 MHz; σ = 5.02 S/m; ε_r = 33.799; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-15-2017; Ambient Temp: 21.9°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3914; ConvF(4.91, 4.91, 4.91); Calibrated: 2/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn665; Calibrated: 2/9/2017
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 4.22 W/kg
Deviation(1 g) = 2.55 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054

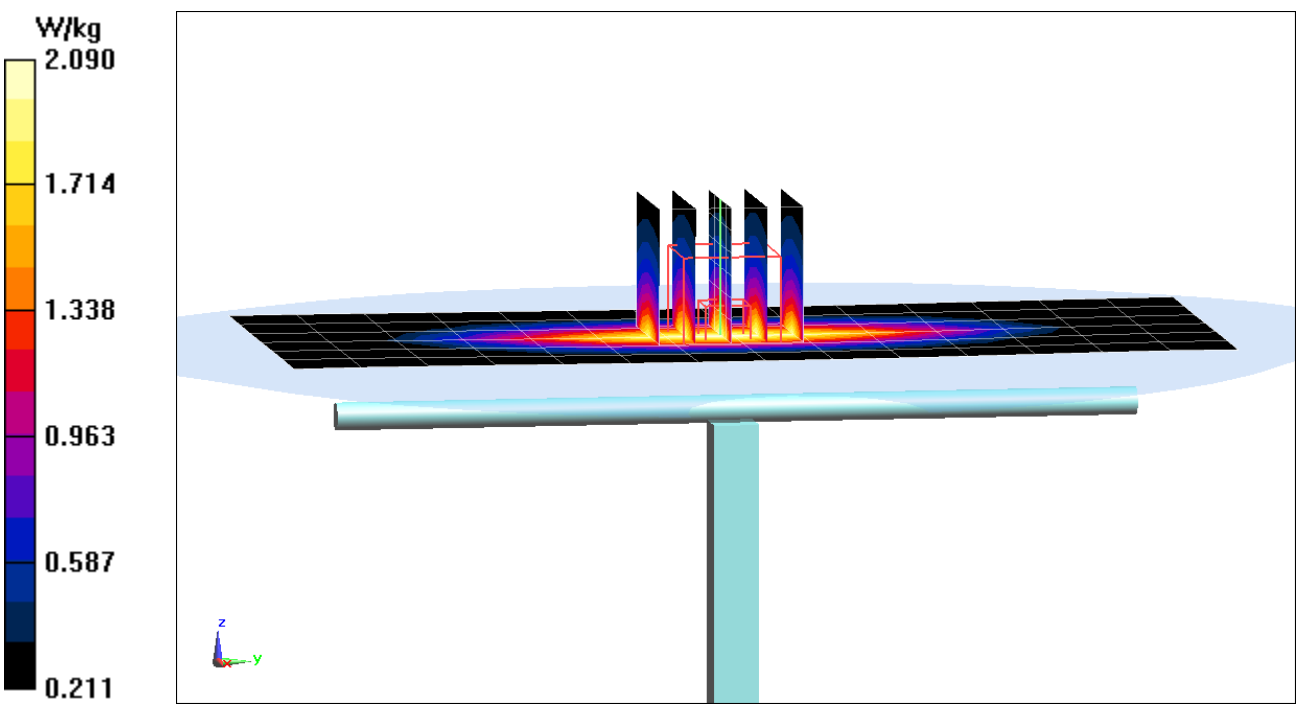
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.959 S/m; ε_r = 57.67; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-16-2017; Ambient Temp: 19.2°C; Tissue Temp: 21.9°C

Probe: ES3DV3 - SN3209; ConvF(6.44, 6.44, 6.44); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
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) = 2.63 W/kg
SAR(1 g) = 1.79 W/kg
Deviation(1 g) = 3.95%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1034

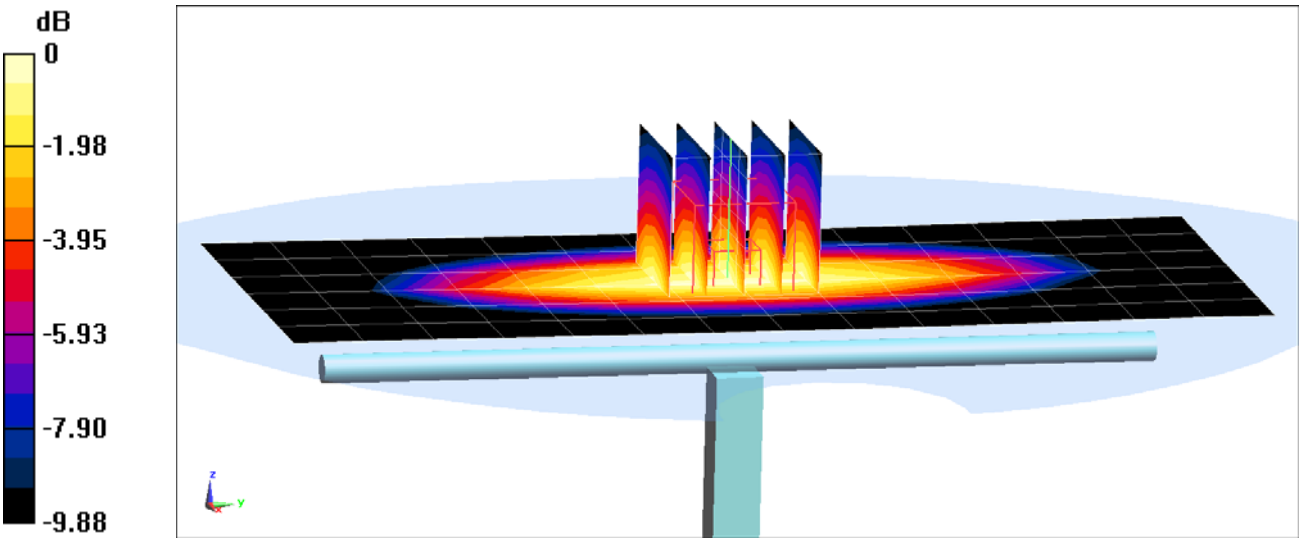
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; σ = 0.963 S/m; ε_r = 57.09; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Space: 1.5 cm

Test Date: 08-21-2017; Ambient Temp: 19.5°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3209; ConvF(6.44, 6.44, 6.44); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10 (0);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) = 2.64 W/kg
SAR(1 g) = 1.81 W/kg
Deviation(1 g) = 3.90%



0 dB = 2.11 W/kg = 3.24 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d180

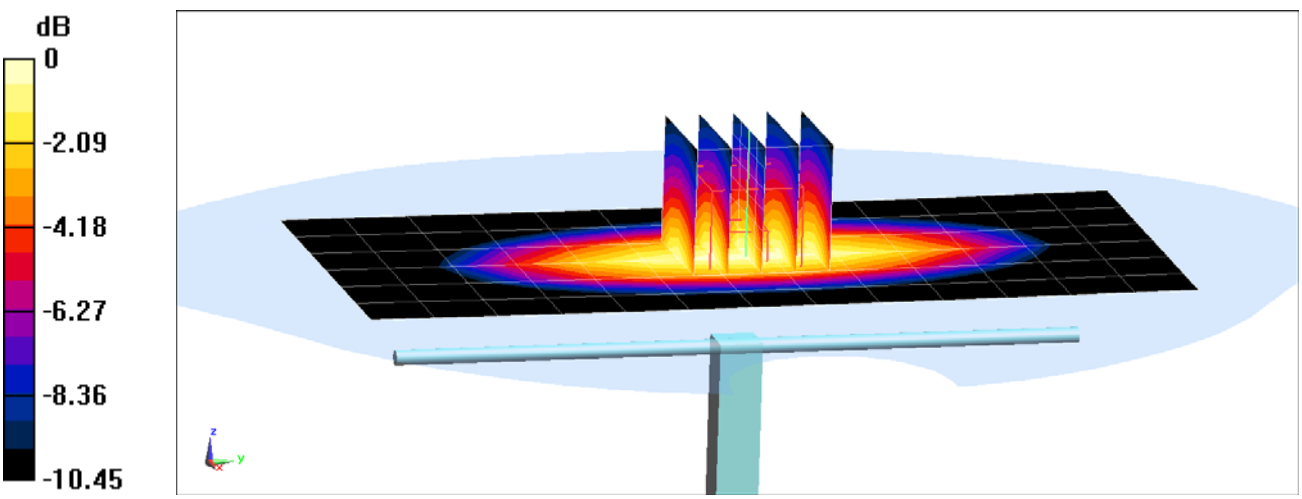
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; σ = 0.97 S/m; ε_r = 52.719; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-14-2017; Ambient Temp: 19.9°C; Tissue Temp: 19.1°C

Probe: ES3DV3 - SN3213; ConvF(6.28, 6.28, 6.28); Calibrated: 2/10/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2017
Phantom: SAM Front; Type: QD000P40CD; Serial: TP:1758
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) = 2.97 W/kg
SAR(1 g) = 2.02 W/kg
Deviation(1 g) = 5.10%



0 dB = 2.38 W/kg = 3.77 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1092

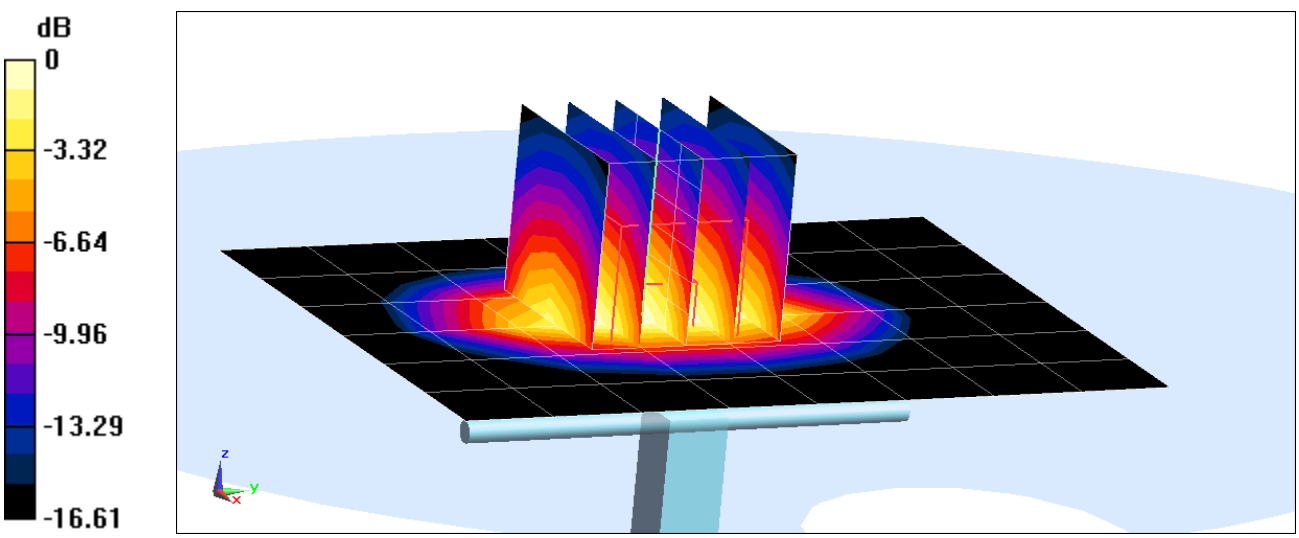
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; σ = 1.527 S/m; ε_r = 51.346; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 8-13-2017; Ambient Temp: 21.3°C; Tissue Temp: 19.8°C

Probe: ES3DV3 - SN3209; ConvF(5.13, 5.13, 5.13); Calibrated: 3/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1415; Calibrated: 3/13/2017
Phantom: SAM with CRP v4.0 Left; Type: QD000P40CD; Serial: TP:1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

1750 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.67 W/kg
SAR(1 g) = 3.80 W/kg
Deviation(1 g) = 2.70%



0 dB = 4.76 W/kg = 6.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d026

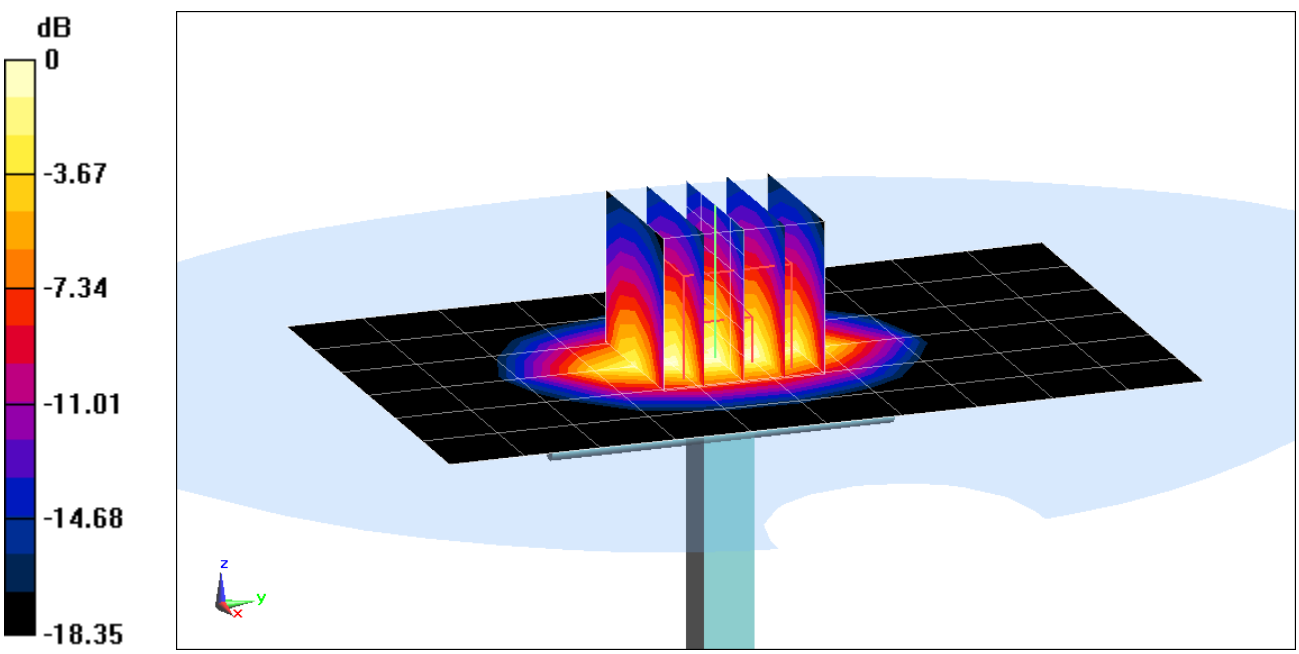
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; σ = 1.574 S/m; ε_r = 52.17; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-16-2017; Ambient Temp: 22.1°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN7406; ConvF(7.81, 7.81, 7.81); Calibrated: 4/18/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2017
Phantom: SAM Right; Type: QD000P40CD; Serial: TP:7535
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 (7x11x1): Measurement grid: dx=15mm, dy=15mm
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.71 W/kg
SAR(1 g) = 4.18 W/kg
Deviation(1 g) = 3.72%



0 dB = 6.52 W/kg = 8.14 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1038

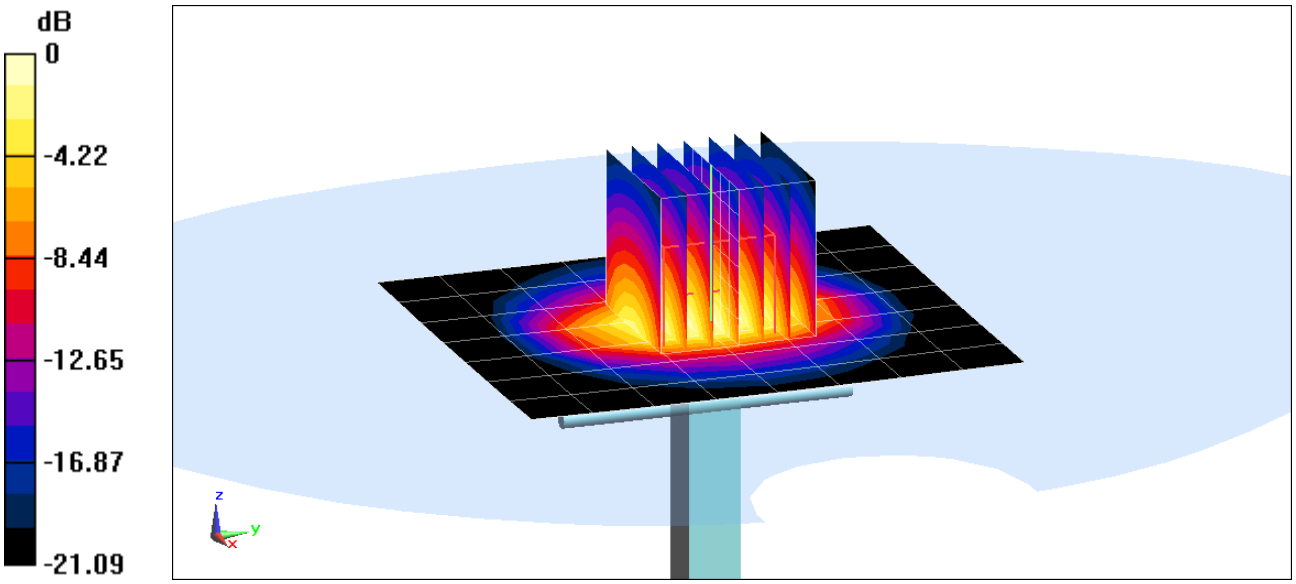
Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1
Medium: 2300 Body Medium parameters used:
f = 2300 MHz; σ = 1.806 S/m; ε_r = 51.451; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2017; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3287; ConvF(4.55, 4.55, 4.55); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2300 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 9.27 W/kg
SAR(1 g) = 4.61 W/kg
Deviation(1 g) = -2.95%



0 dB = 6.01 W/kg = 7.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797

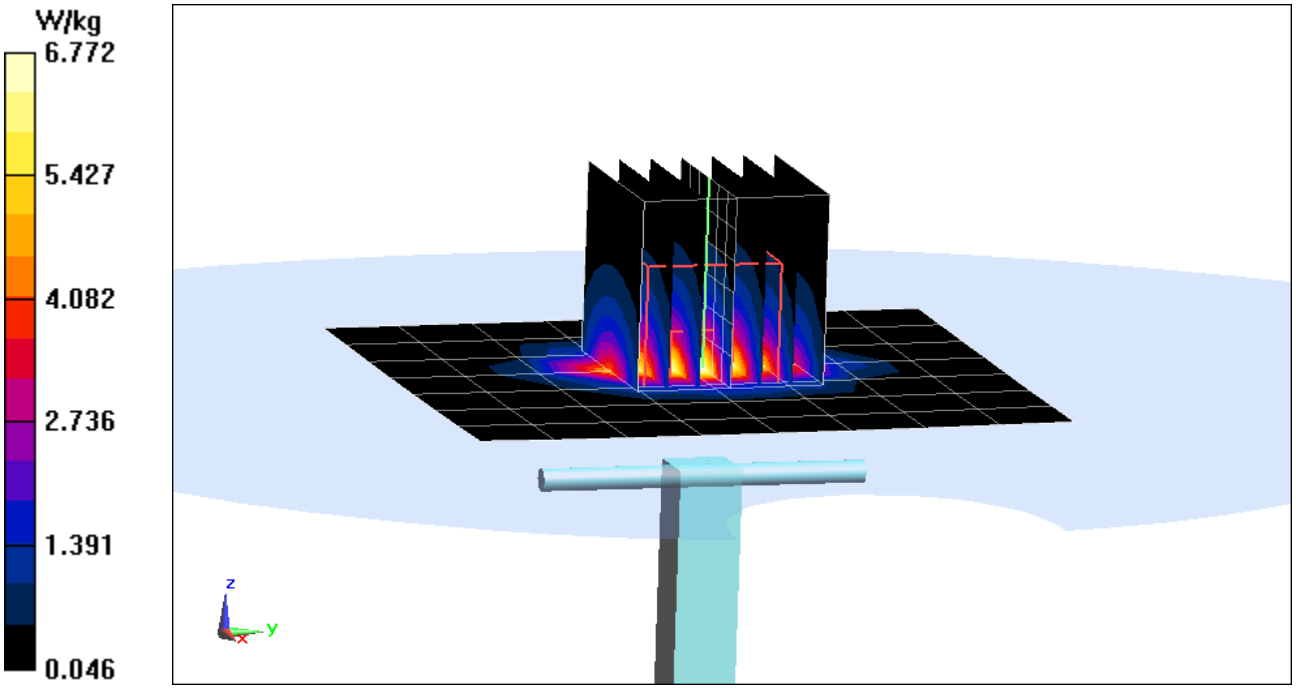
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; σ = 1.992 S/m; ε_r = 51.6; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 21.0°C; Tissue Temp: 21.3°C

Probe: ES3DV3 - SN3287; ConvF(4.35, 4.35, 4.35); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2450 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.7 W/kg
SAR(1 g) = 5.24 W/kg
Deviation(1 g) = 3.35%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071

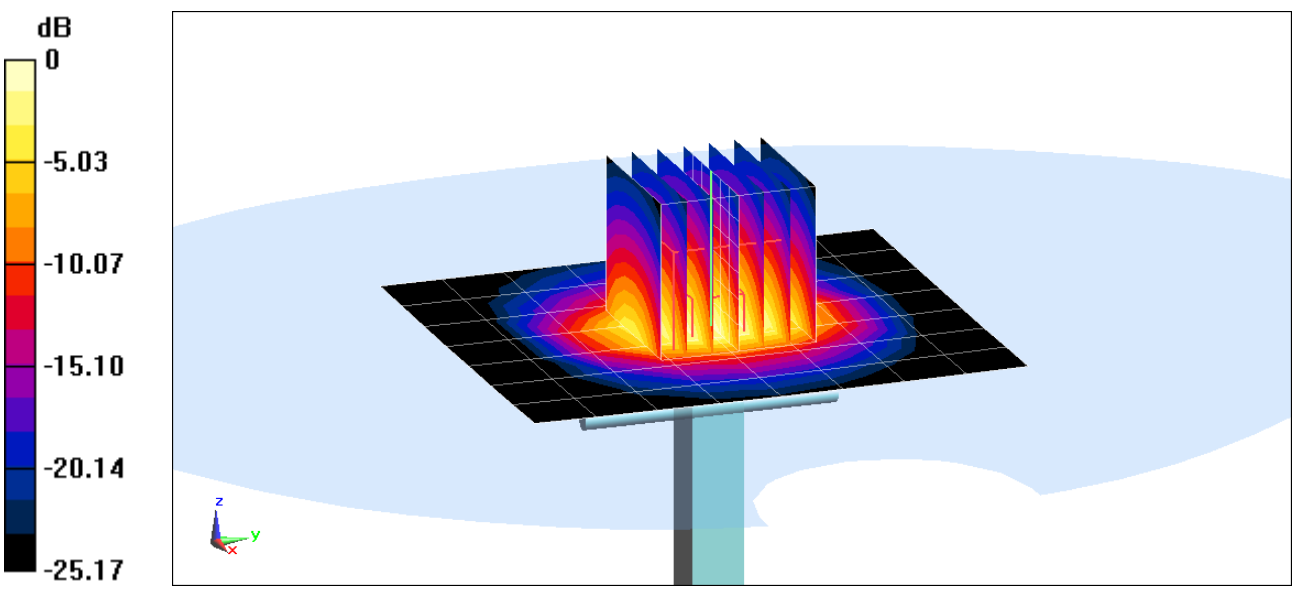
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2600 Body Medium parameters used:
f = 2600 MHz; σ = 2.207 S/m; ε_r = 50.329; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-10-2017; Ambient Temp: 22.2°C; Tissue Temp: 21.4°C

Probe: ES3DV3 - SN3287; ConvF(4.12, 4.12, 4.12); Calibrated: 9/19/2016;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1408; Calibrated: 9/14/2016
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

2600 MHz System Verification at 20.0 dBm (100 mW)

Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.9 W/kg
SAR(1 g) = 5.67 W/kg
Deviation(1 g) = 4.61%



0 dB = 7.57 W/kg = 8.79 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

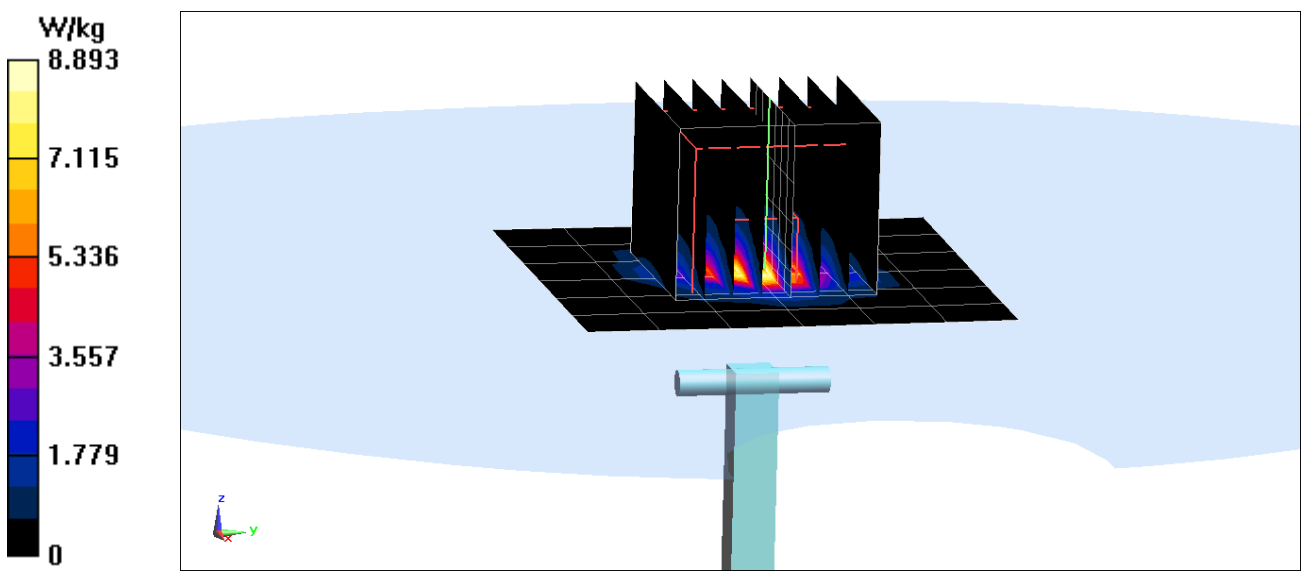
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5250 MHz; σ = 5.275 S/m; ε_r = 47.362; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(4.19, 4.19, 4.19); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5250 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 15.8 W/kg
SAR(1 g) = 3.69 W/kg; SAR(10 g) = 1.03 W/kg
Deviation(1 g) = -2.77%; Deviation(10 g) = -3.29%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

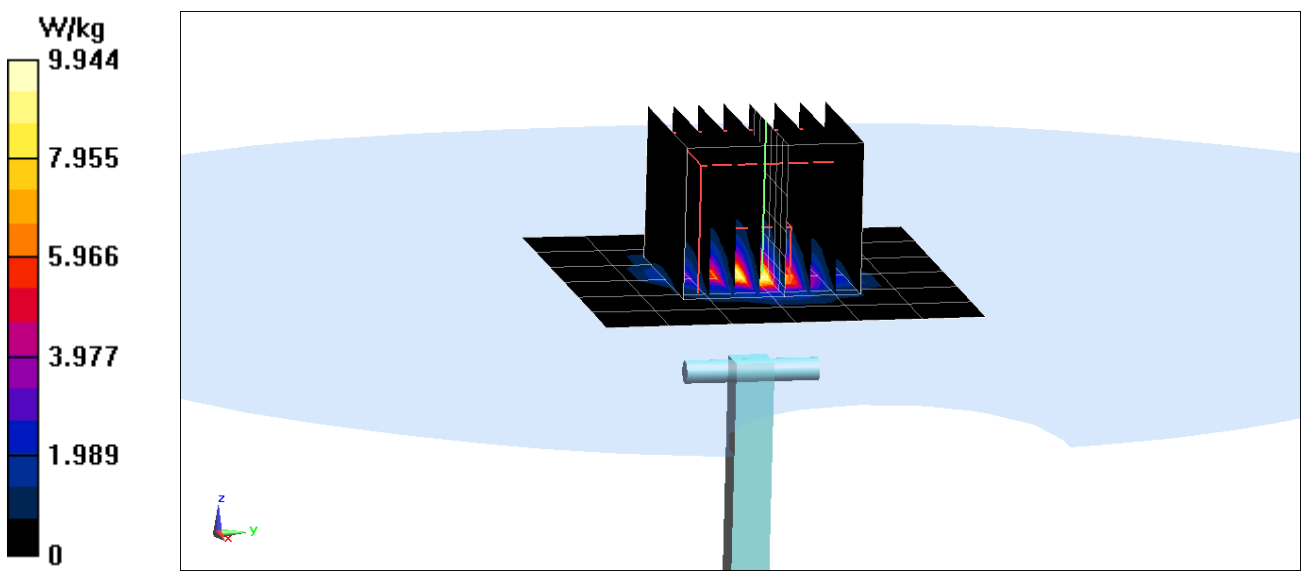
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; σ = 5.746 S/m; ε_r = 46.805; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(3.82, 3.82, 3.82); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5600 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 4.04 W/kg; SAR(10 g) = 1.11 W/kg
Deviation(1 g) = 2.41%; Deviation(10 g) = 0.45%



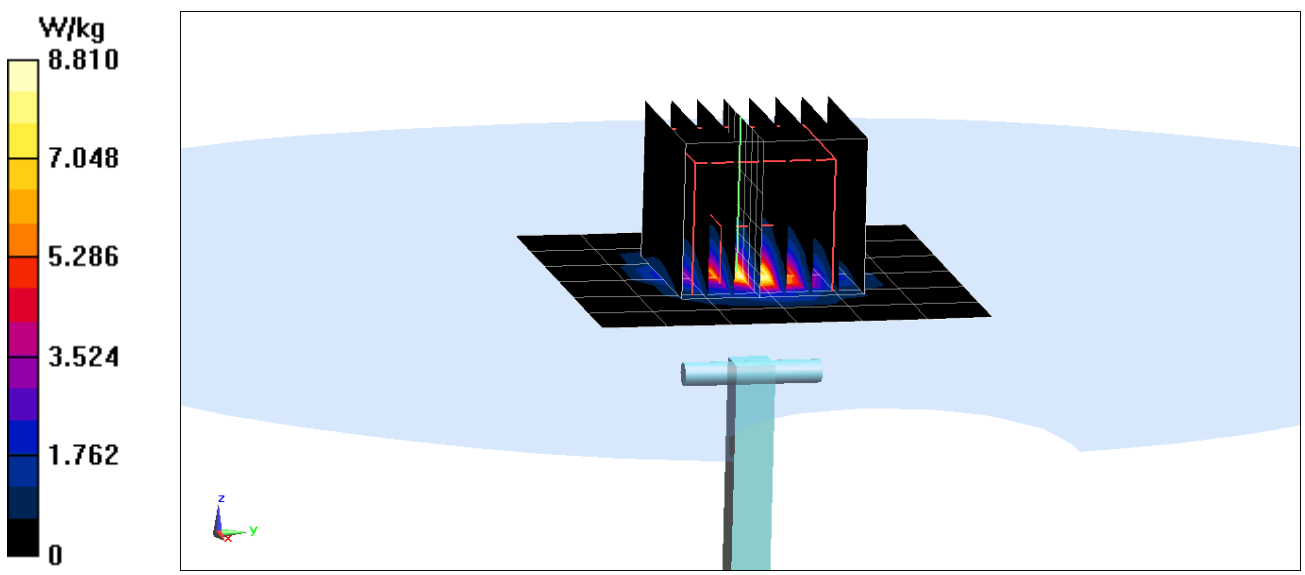
PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1123

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5750 MHz; σ = 5.937 S/m; ε_r = 46.557; ρ = 1000 kg/m^3
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-14-2017; Ambient Temp: 21.4°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN3589; ConvF(3.83, 3.83, 3.83); Calibrated: 1/13/2017;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1466; Calibrated: 1/16/2017
Phantom: SAM with CRP v5.0 Front; Type: QD000P40CD; Serial: 1646
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

5750 MHz System Verification at 17.0 dBm (50 mW)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 3.57 W/kg; SAR(10 g) = 0.993 W/kg
Deviation(1 g) = -6.42%; Deviation(10 g) = -6.76%