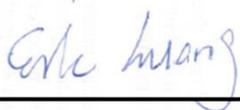


FCC SAR Test Report

APPLICANT : Dell Inc.
EQUIPMENT : Tablet PC
BRAND NAME : DELL
MODEL NAME : T02E002
FCC ID : E2K-T02E002
STANDARD : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2003

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Eric Huang / Deputy Manager



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)



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1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Dell Inc., Tablet PC, T02E002**, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary	
		Body 1g SAR (W/kg)	Simultaneous Transmission 1g SAR (W/kg)
PCB	GSM850	1.10	1.59
	GSM1900	1.19	
	WCDMA Band V	1.00	
	WCDMA Band IV	1.18	
	WCDMA Band II	1.11	
	LTE Band 17	1.18	
	LTE Band 5	1.12	
	LTE Band 4	1.19	
	LTE Band 2	1.07	
	LTE Band 7	1.17	
DTS	WLAN 2.4GHz Band	1.19	1.59
NII	WLAN 5.2GHz Band	1.19	1.54
	WLAN 5.3GHz Band	1.01	
	WLAN 5.5GHz Band	0.88	
	WLAN 5.8GHz Band	1.02	
Date of Testing:		2015/01/26~2015/02/06	

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2003.



2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Dell Inc.
Address	One Dell Way, Round Rock, Texas 78682, USA

Manufacturer	
Company Name	Dell Inc.
Address	One Dell Way, Round Rock, Texas 78682, USA

3. Guidance Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 248227 D01 SAR meas for 802 11abg v01r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r01
- FCC KDB 941225 D01 3G SAR Procedures v03
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r01



4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	Tablet PC
Brand Name	DELL
Model Name	T02E002
FCC ID	E2K-T02E002
IMEI Code	Sample for WWAN SAR testing: 004402055023463 Sample for WLAN SAR testing: 004402055023783
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	<ul style="list-style-type: none"> • GSM/GPRS/EGPRS • RMC 12.2Kbps • HSDPA • HSUPA • DC-HSDPA • LTE: QPSK, 16QAM • 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 • Bluetooth v3.0+HS , Bluetooth v4.0-LE • NFC:ASK
EUT Stage	Identical Prototype
Remark:	
1. 802.11n-HT40 is not supported in 2.4GHz WLAN.	

Accessories Information				
AC Adapter	Brand Name	DELL	Model Name	HA10USNM130
	Vendor	Chicony		
	Power Rating	I/P: 100-240V~50/60Hz 0.3A ; O/P: 5V 2A		
Li-ion Battery	Brand Name	DELL	Model Name	K81RP
	Vendor	SIMPLO		
	Power Rating	21Wh, 3.7V		
USB Cable	Brand Name	N/A	Model Name	N/A
WLAN/ BT	Brand Name	Broadcom	Model Name	BCM4339
GPS	Brand Name	Broadcom	Model Name	BCM47521
2/3/4G	Brand Name	Intel	Model Name	X-GOLD 726G



4.2 Maximum Tune-up Limit

Mode	Burst average power (dBm)			
	GSM 850		GSM 1900	
Output Power Status	Full Power Mode	Reduced Power mode	Full Power Mode	Reduced Power mode
GPRS (GMSK, 1 Tx slot)	33.50	30.50	30.50	24.50
GPRS (GMSK, 2 Tx slots)	30.50	27.50	27.50	21.00
GPRS (GMSK, 3 Tx slot)	28.50	25.50	26.50	20.00
GPRS (GMSK, 4 Tx slot)	27.50	24.50	25.50	19.00
EDGE (8PSK, 1 Tx slot)	27.50	24.50	26.50	20.00
EDGE (8PSK, 2 Tx slots)	27.50	24.50	26.50	20.00
EDGE (8PSK, 3 Tx slot)	26.50	23.50	26.00	19.50
EDGE (8PSK, 4 Tx slots)	25.50	22.50	25.00	18.50

Mode	Average power (dBm)					
	WCDMA Band V		WCDMA Band II		WCDMA Band IV	
Output Power Status	Full Power Mode	Reduced Power mode	Full Power Mode	Reduced Power mode	Full Power Mode	Reduced Power mode
RMC 12.2Kbps	24.50	20.00	24.50	15.00	24.50	16.00
HSDPA Subtest-1	24.50	20.00	24.50	15.00	24.50	16.00
HSUPA Subtest-5	24.50	20.00	24.50	15.00	24.50	16.00

LTE Band 17						
Modulation	BW (MHz)	RB size	Full		Reduction	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	10	≤ 12	0	24.00	0	22.00
QPSK	10	> 12	1	23.00	1	21.00
16QAM	10	≤ 12	1	23.00	1	21.00
16QAM	10	> 12	2	22.00	2	20.00
QPSK	5	≤ 8	0	24.00	0	22.00
QPSK	5	> 8	1	23.00	1	21.00
16QAM	5	≤ 8	1	23.00	1	21.00
16QAM	5	> 8	2	22.00	2	20.00

LTE Band 5						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power mode	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	10	≤ 12	0	24.00	0	20.00
QPSK	10	> 12	1	23.00	1	19.00
16QAM	10	≤ 12	1	23.00	1	19.00
16QAM	10	> 12	2	22.00	2	18.00
QPSK	5	≤ 8	0	24.00	0	20.00
QPSK	5	> 8	1	23.00	1	19.00
16QAM	5	≤ 8	1	23.00	1	19.00
16QAM	5	> 8	2	22.00	2	18.00
QPSK	3	≤ 4	0	24.00	0	20.00
QPSK	3	> 4	1	23.00	1	19.00
16QAM	3	≤ 4	1	23.00	1	19.00
16QAM	3	> 4	2	22.00	2	18.00
QPSK	1.4	≤ 5	0	24.00	0	20.00
QPSK	1.4	> 5	1	23.00	1	19.00
16QAM	1.4	≤ 5	1	23.00	1	19.00
16QAM	1.4	> 5	2	22.00	2	18.00



LTE Band 4						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power mode	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	20	≤ 18	0	24.00	0	16.00
QPSK	20	> 18	1	23.00	1	15.00
16QAM	20	≤ 18	1	23.00	1	15.00
16QAM	20	> 18	2	22.00	2	14.00
QPSK	15	≤ 16	0	24.00	0	16.00
QPSK	15	> 16	1	23.00	1	15.00
16QAM	15	≤ 16	1	23.00	1	15.00
16QAM	15	> 16	2	22.00	2	14.00
QPSK	10	≤ 12	0	24.00	0	16.00
QPSK	10	> 12	1	23.00	1	15.00
16QAM	10	≤ 12	1	23.00	1	15.00
16QAM	10	> 12	2	22.00	2	14.00
QPSK	5	≤ 8	0	24.00	0	16.00
QPSK	5	> 8	1	23.00	1	15.00
16QAM	5	≤ 8	1	23.00	1	15.00
16QAM	5	> 8	2	22.00	2	14.00
QPSK	3	≤ 4	0	24.00	0	16.00
QPSK	3	> 4	1	23.00	1	15.00
16QAM	3	≤ 4	1	23.00	1	15.00
16QAM	3	> 4	2	22.00	2	14.00
QPSK	1.4	≤ 5	0	24.00	0	16.00
QPSK	1.4	> 5	1	23.00	1	15.00
16QAM	1.4	≤ 5	1	23.00	1	15.00
16QAM	1.4	> 5	2	22.00	2	14.00

LTE Band 2						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power mode	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	20	≤ 18	0	24.00	0	15.00
QPSK	20	> 18	1	23.00	1	14.00
16QAM	20	≤ 18	1	23.00	1	14.00
16QAM	20	> 18	2	22.00	2	13.00
QPSK	15	≤ 16	0	24.00	0	15.00
QPSK	15	> 16	1	23.00	1	14.00
16QAM	15	≤ 16	1	23.00	1	14.00
16QAM	15	> 16	2	22.00	2	13.00
QPSK	10	≤ 12	0	24.00	0	15.00
QPSK	10	> 12	1	23.00	1	14.00
16QAM	10	≤ 12	1	23.00	1	14.00
16QAM	10	> 12	2	22.00	2	13.00
QPSK	5	≤ 8	0	24.00	0	15.00
QPSK	5	> 8	1	23.00	1	14.00
16QAM	5	≤ 8	1	23.00	1	14.00
16QAM	5	> 8	2	22.00	2	13.00
QPSK	3	≤ 4	0	24.00	0	15.00
QPSK	3	> 4	1	23.00	1	14.00
16QAM	3	≤ 4	1	23.00	1	14.00
16QAM	3	> 4	2	22.00	2	13.00
QPSK	1.4	≤ 5	0	24.00	0	15.00
QPSK	1.4	> 5	1	23.00	1	14.00
16QAM	1.4	≤ 5	1	23.00	1	14.00
16QAM	1.4	> 5	2	22.00	2	13.00



LTE Band 7						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power mode	
			MPR	Power	MPR	Power
QPSK	20	≤ 18	0	23.00	0	13.00
QPSK	20	> 18	1	22.00	1	12.00
16QAM	20	≤ 18	1	22.00	1	12.00
16QAM	20	> 18	2	21.00	2	11.00
QPSK	15	≤ 16	0	23.00	0	13.00
QPSK	15	> 16	1	22.00	1	12.00
16QAM	15	≤ 16	1	22.00	1	12.00
16QAM	15	> 16	2	21.00	2	11.00
QPSK	10	≤ 12	0	23.00	0	13.00
QPSK	10	> 12	1	22.00	1	12.00
16QAM	10	≤ 12	1	22.00	1	12.00
16QAM	10	> 12	2	21.00	2	11.00
QPSK	5	≤ 8	0	23.00	0	13.00
QPSK	5	> 8	1	22.00	1	12.00
16QAM	5	≤ 8	1	22.00	1	12.00
16QAM	5	> 8	2	21.00	2	11.00
QPSK	3	≤ 4	0	23.00	0	13.00
QPSK	3	> 4	1	22.00	1	12.00
16QAM	3	≤ 4	1	22.00	1	12.00
16QAM	3	> 4	2	21.00	2	11.00
QPSK	1.4	≤ 5	0	23.00	0	13.00
QPSK	1.4	> 5	1	22.00	1	12.00
16QAM	1.4	≤ 5	1	22.00	1	12.00
16QAM	1.4	> 5	2	21.00	2	11.00

Mode	Average Power (dBm)
Bluetooth v3.0 with HS	8.00
Bluetooth v4.0 with LE	8.00

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)		
		11b	11g	HT20
2.4GHz Band	2412	13.50	13.50	13.50
	2437	14.00	14.00	14.00
	2462	13.50	13.50	13.50

Band / Frequency (MHz)	IEEE 802.11 Average Power (dBm)					
	11a	HT20	HT40	VHT20	VHT40	VHT80
5.2GHz Band	11.50					
5.3GHz Band	10.50					
5.5GHz Band	9.00					
5.8GHz Band	9.00					



4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03																																							
FCC ID	E2K-T02E002																																						
Equipment Name	Tablet PC																																						
Operating Frequency Range of each LTE transmission band	LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 05: 824.7 MHz ~ 848.3 MHz LTE Band 04: 1710.7 MHz ~ 1754.3 MHz LTE Band 02: 1850.7 MHz ~ 1909.3 MHz LTE Band 07: 2502.5 MHz ~ 2567.5 MHz																																						
Channel Bandwidth	LTE Band 17: 5MHz, 10MHz LTE Band 05: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 04: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 02: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz																																						
Release and category	Rel10, cat6																																						
uplink modulations used	QPSK, and 16QAM																																						
LTE Voice / Data requirements	Data only																																						
LTE MPR permanently built-in by design	<p align="center">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)																																
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																						
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																						
Power reduction applied to satisfy SAR compliance	Yes, proximity sensor.																																						
LTE Carrier Aggregation Combinations																																							
1. Intra-band is not supported																																							
2. Inter-Band combinations as below and the detail power measurement please referred to page49.																																							
B4(PCC) + B5(SCC)	B4(PCC) + B17(SCC)	B4(PCC) + B29(SCC)	B2(PCC) + B17(SCC)	B4(PCC) + B29(SCC)																																			
B4 5MHz + B5 5MHz	B4 5MHz + B17 5MHz	B4 5MHz + B27 5MHz	B2 5MHz + B17 5MHz	B2 5MHz + B29 5MHz																																			
B4 5MHz + B5 10MHz	B4 5MHz + B17 10MHz	B4 5MHz + B27 10MHz	B2 5MHz + B17 10MHz	B2 5MHz + B29 10MHz																																			
B4 10MHz + B5 5MHz	B4 10MHz + B17 5MHz	B4 10MHz + B27 5MHz	B2 10MHz + B17 5MHz	B2 10MHz + B29 5MHz																																			
B4 10MHz + B5 10MHz	B4 10MHz + B17 10MHz	B4 10MHz + B29 10MHz	B2 10MHz + B17 10MHz	B2 10MHz + B29 10MHz																																			
LTE Carrier Aggregation Additional Information																																							
This device does not support full CA features on 3GPP Release 10. It supports a maximum of 2 carriers in the downlink only. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																							



Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)					
L	23755		706.5		23780		709					
M	23790		710		23790		710					
H	23825		713.5		23800		711					
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				

5. Proximity Sensor Triggering Test

Proximity sensor power reduction

Exposure Position / wireless mode	Bottom Face ⁽¹⁾	Edge 1	Edge 2	Edge 3	Edge 4
GSM850 GPRS (GMSK 1 Tx slot) - CS1	3.0 dB	0 dB	3.0 dB	3.0 dB	0 dB
GSM850 GPRS (GMSK 2 Tx slots) - CS1	3.0 dB		3.0 dB	3.0 dB	
GSM850 GPRS (GMSK 3 Tx slots) - CS1	3.0 dB		3.0 dB	3.0 dB	
GSM850 GPRS (GMSK 4 Tx slots) - CS1	3.0 dB		3.0 dB	3.0 dB	
GSM850 EDGE (8PSK 1 Tx slot) - MCS5	3.0 dB		3.0 dB	3.0 dB	
GSM850 EDGE (8PSK 2 Tx slots) - MCS5	3.0 dB		3.0 dB	3.0 dB	
GSM850 EDGE (8PSK 3 Tx slots) - MCS5	3.0 dB		3.0 dB	3.0 dB	
GSM850 EDGE (8PSK 4 Tx slots) - MCS5	3.0 dB		3.0 dB	3.0 dB	
GSM1900 GPRS (GMSK 1 Tx slot) - CS1	6.0 dB		6.0 dB	6.0 dB	
GSM1900 GPRS (GMSK 2 Tx slots) - CS1	6.5 dB		6.5 dB	6.5 dB	
GSM1900 GPRS (GMSK 3 Tx slots) - CS1	6.5 dB		6.5 dB	6.5 dB	
GSM1900 GPRS (GMSK 4 Tx slots) - CS1	6.5 dB		6.5 dB	6.5 dB	
GSM1900 EDGE (8PSK 1 Tx slot) - MCS5	6.5 dB		6.5 dB	6.5 dB	
GSM1900 EDGE (8PSK 2 Tx slots) - MCS5	6.5 dB		6.5 dB	6.5 dB	
GSM1900 EDGE (8PSK 3 Tx slots) - MCS5	6.5 dB		6.5 dB	6.5 dB	
GSM1900 EDGE (8PSK 4 Tx slots) - MCS5	6.5 dB		6.5 dB	6.5 dB	
WCDMA Band V	4.5 dB		4.5 dB	4.5 dB	
WCDMA Band II	9.5 dB		9.5 dB	9.5 dB	
WCDMA Band IV	8.5 dB		8.5 dB	8.5 dB	
LTE Band 17	2.0 dB		2.0 dB	2.0 dB	
LTE Band 5	4.0 dB	4.0 dB	4.0 dB		
LTE Band 4	8.0 dB	8.0 dB	8.0 dB		
LTE Band 2	9.0 dB	9.0 dB	9.0 dB		
LTE Band 7	10.0 dB	10.0 dB	10.0 dB		

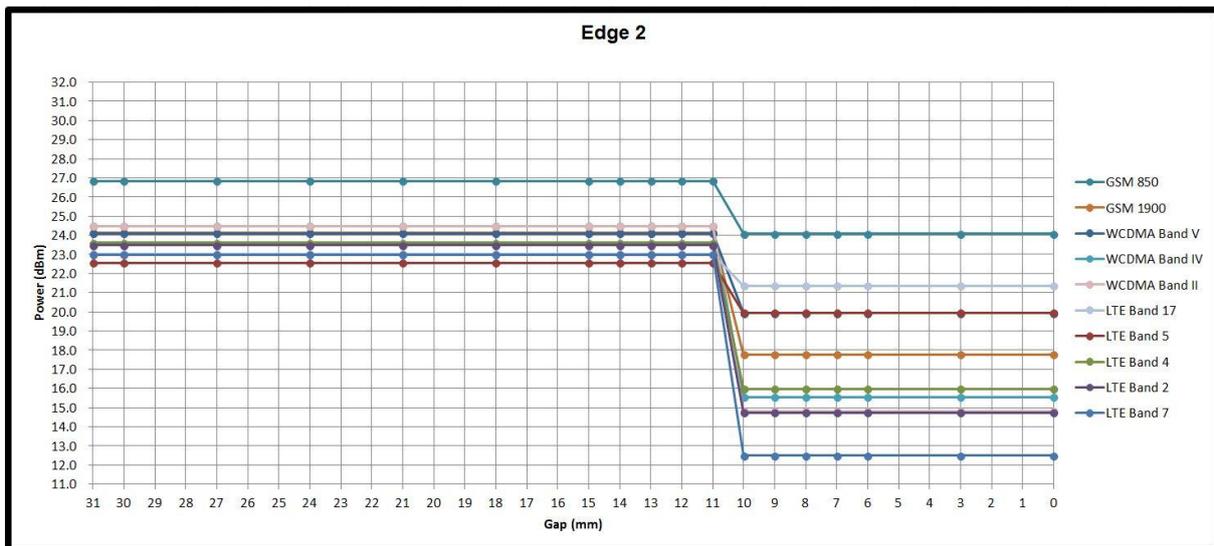
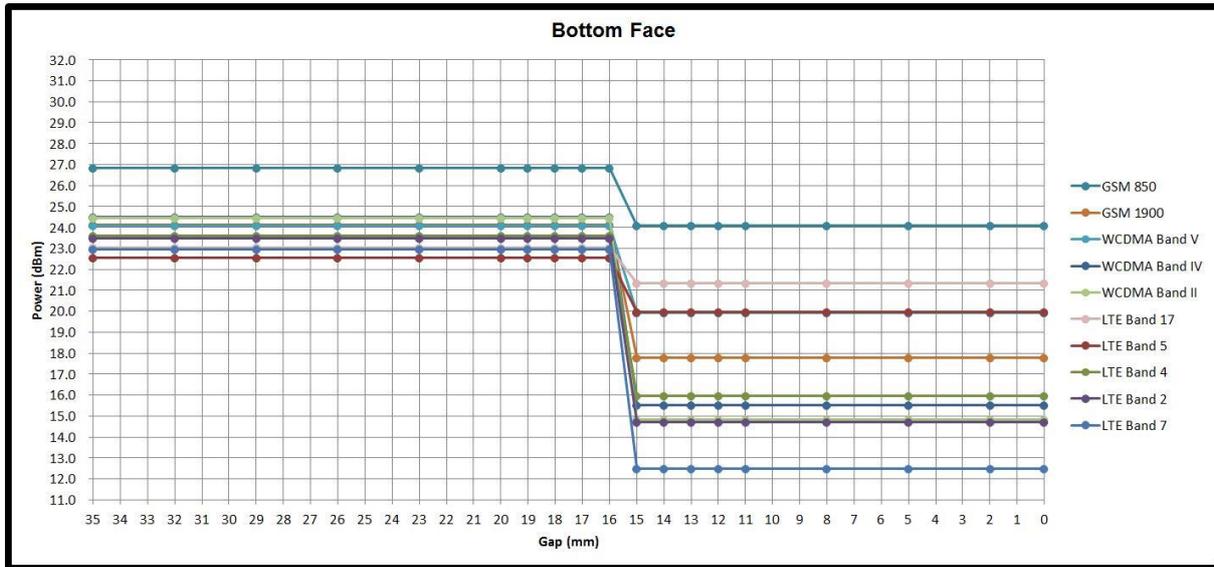
Remark:

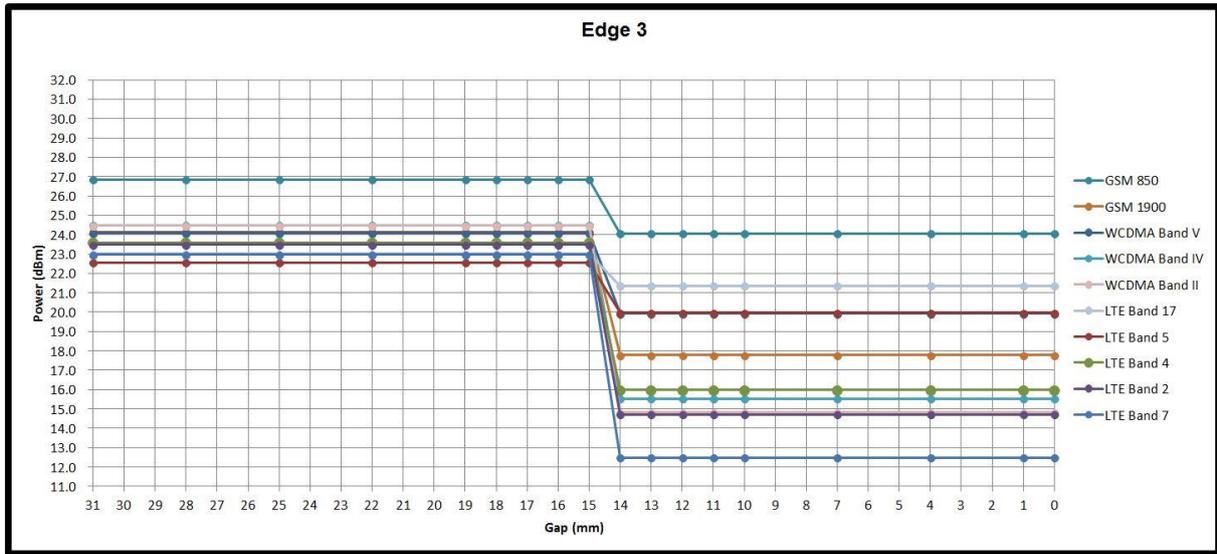
- ⁽¹⁾: Reduced maximum limit applied by activation of proximity sensor.
- Power reduction is not applicable for WLAN and Bluetooth.
- Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, 6.3, 6.4 and 6.5 and compliant results are shown and described in exhibit "P-Sensor operational description"
- For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:
 - Bottom Face: [14 mm](#)
 - Edge2: [9 mm](#)
 - Edge3: [11 mm](#)



Power Measurement during Sensor Trigger distance testing

Band/Mode	Ch #	Measured power reduction (dBm)		Reduction Levels (dB)
		w/o power back-off	w/ power back-off	
GSM850 GPRS (GMSK 4 Tx slots)	128	26.84	24.07	2.77
GSM1900 GPRS (GMSK 4 Tx slots)	810	24.14	17.78	6.36
WCDMA Band V	4132	24.09	19.93	4.16
WCDMA Band IV	1312	24.49	15.54	8.95
WCDMA Band II	9538	24.47	14.83	9.64
LTE Band 17	23790	23.02	21.36	1.66
LTE Band 5	20450	22.55	19.96	2.59
LTE Band 4	20175	23.60	15.98	7.62
LTE Band 2	18700	23.48	14.72	8.76
LTE Band 7	21100	22.97	12.49	10.48







6. RF Exposure Limits

6.1 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.

6.2 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. The 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.

Limits for Occupational/Controlled Exposure (W/kg)

Table with 3 columns: Whole-Body, Partial-Body, Hands, Wrists, Feet and Ankles. Values: 0.4, 8.0, 20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Table with 3 columns: Whole-Body, Partial-Body, Hands, Wrists, Feet and Ankles. Values: 0.08, 1.6, 4.0

- 1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.



7. Specific Absorption Rate (SAR)

7.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

7.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

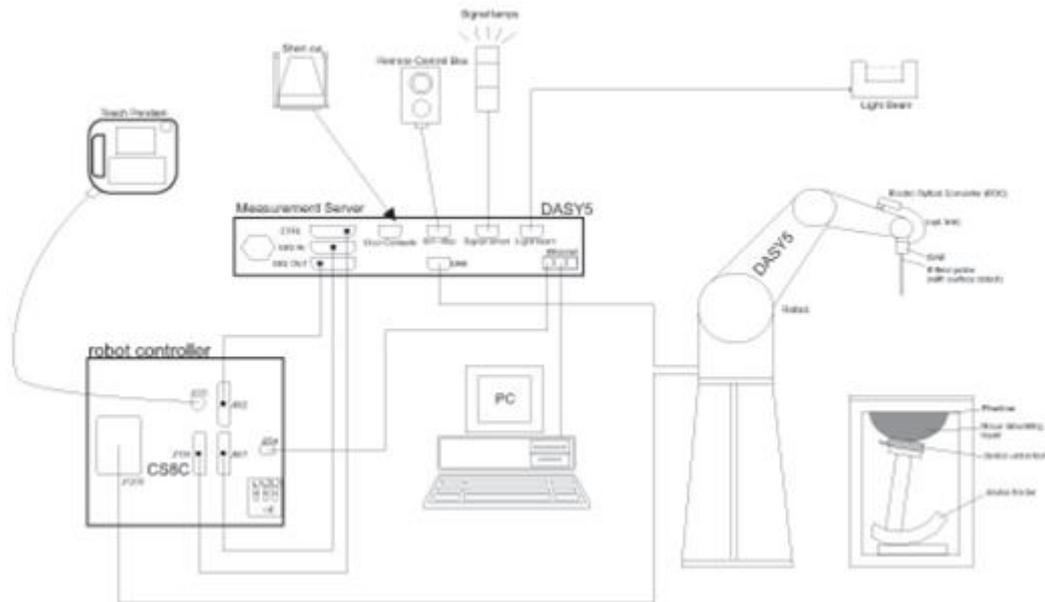
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

8. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.



9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Appendix D demonstrates.
- (c) Set scan area, grid size and other setting on the DASY software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

9.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

9.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

9.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

		≤ 3 GHz	> 3 GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm	
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

9.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASYS measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.



10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Nov. 19, 2014	Nov. 18, 2015
SPEAG	835MHz System Validation Kit	D835V2	4d162	Nov. 19, 2014	Nov. 18, 2015
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 14, 2014	Nov. 13, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Nov. 14, 2014	Nov. 13, 2015
SPEAG	2450MHz System Validation Kit	D2450V2	924	Nov. 19, 2014	Nov. 18, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Nov. 19, 2014	Nov. 18, 2015
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 25, 2014	Sep. 24, 2015
SPEAG	Data Acquisition Electronics	DAE4	1388	Sep. 24, 2014	Sep. 23, 2015
SPEAG	Data Acquisition Electronics	DAE3	577	Oct. 06, 2014	Oct. 05, 2015
SPEAG	Data Acquisition Electronics	DAE4	1279	Jul. 23, 2014	Jul. 22, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3697	Sep. 29, 2014	Sep. 28, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 25, 2014	Sep. 24, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3954	Nov. 21, 2014	Nov. 20, 2015
Wisewind	Thermometer	HTC-1	TM281	Oct. 21, 2014	Oct. 20, 2015
H.M.IRIS	Thermometer	TH-08	TM658	Oct. 21, 2014	Oct. 20, 2015
WonDer	Thermometer	WD-5015	TM225	Oct. 21, 2014	Oct. 20, 2015
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Feb. 11, 2014	Feb. 10, 2015
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 27, 2014	May. 26, 2015
SPEAG	Device Holder	N/A	N/A	NCR	NCR
R&S	Signal Generator	SMU200A	102502	Jul. 07, 2014	Jul. 06, 2015
SPEAG	Dielectric Probe Kit	DAKS-3.5	0004	Mar. 04, 2014	Mar. 03, 2015
Agilent	ENA Network Analyzer	E5071C	MY46101588	May. 31, 2014	May. 30, 2015
Anritsu	Power Meter	ML2495A	1036004	Aug. 09, 2014	Aug. 08, 2015
Anritsu	Power Sensor	MA2411B	1027253	Aug. 11, 2014	Aug. 10, 2015
R&S	Spectrum Analyzer	FSP 7	101131	Jul. 10, 2014	Jul. 09, 2015
Agilent	Dual Directional Coupler	778D	50422		Note1
Woken	Attenuator 1	WK0602-XX	N/A		Note1
PE	Attenuator 2	PE7005-10	N/A		Note1
PE	Attenuator 3	PE7005- 3	N/A		Note1
AR	Power Amplifier	5S1G4M2	0328767		Note1
Mini-Circuits	Power Amplifier	ZVE-3W	162601250		Note1
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344		Note1

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.



11. System Verification

11.1 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ϵ_r)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
750	MSL	22.4	0.972	56.686	0.96	55.50	1.25	2.14	±5	2015/1/30
835	MSL	22.5	0.956	55.413	0.97	55.20	-1.44	0.39	±5	2015/1/29
835	MSL	22.4	0.956	55.413	0.97	55.20	-1.44	0.39	±5	2015/1/29
835	MSL	22.4	0.981	55.046	0.97	55.20	1.13	-0.28	±5	2015/2/4
1750	MSL	22.4	1.456	53.753	1.49	53.40	-2.28	0.66	±5	2015/1/29
1750	MSL	22.4	1.466	53.886	1.49	53.40	-1.61	0.91	±5	2015/1/31
1750	MSL	22.5	1.469	53.938	1.49	53.40	-1.41	1.01	±5	2015/2/1
1900	MSL	22.4	1.525	54.810	1.52	53.30	0.33	2.83	±5	2015/1/29
1900	MSL	22.3	1.547	53.631	1.52	53.30	1.78	0.62	±5	2015/1/31
1900	MSL	22.5	1.534	53.660	1.52	53.30	0.92	0.68	±5	2015/2/1
2450	MSL	22.6	2.019	54.592	1.95	52.70	3.54	3.59	±5	2015/1/26
2600	MSL	22.4	2.201	53.823	2.16	52.50	1.90	2.52	±5	2015/2/3
5200	MSL	22.6	5.299	47.672	5.30	49.00	-0.02	-2.71	±5	2015/1/27
5300	MSL	22.6	5.592	47.329	5.42	48.90	3.17	-3.21	±5	2015/1/29
5600	MSL	22.4	5.906	46.730	5.77	48.50	2.36	-3.65	±5	2015/2/6
5800	MSL	22.4	6.139	46.492	6.00	48.20	2.32	-3.54	±5	2015/2/6

11.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2015/1/30	750	MSL	250	D750V3-1099	EX3DV4 - SN3954	DAE4 Sn1279	2.07	8.56	8.28	-3.27
2015/1/29	835	MSL	250	D835V2-4d162	EX3DV4 - SN3954	DAE4 Sn1279	2.46	9.56	9.84	2.93
2015/1/29	835	MSL	250	D835V2-4d162	EX3DV4 - SN3697	DAE4 Sn1388	2.31	9.56	9.24	-3.35
2015/2/4	835	MSL	250	D835V2-4d162	EX3DV4 - SN3954	DAE4 Sn1279	2.48	9.56	9.92	3.77
2015/1/29	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3954	DAE4 Sn1279	9.69	38.00	38.76	2.00
2015/1/31	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3697	DAE4 Sn1388	9.20	38.00	36.80	-3.16
2015/2/1	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE3 Sn577	8.96	38.00	35.84	-5.68
2015/1/29	1900	MSL	250	D1900V2-5d182	EX3DV4 - SN3954	DAE4 Sn1279	10.70	40.00	42.80	7.00
2015/1/31	1900	MSL	250	D1900V2-5d182	EX3DV4 - SN3697	DAE4 Sn1388	10.80	40.00	43.20	8.00
2015/2/1	1900	MSL	250	D1900V2-5d182	EX3DV4 - SN3931	DAE3 Sn577	9.58	40.00	38.32	-4.20
2015/1/26	2450	MSL	250	D2450V2-924	EX3DV4 - SN3954	DAE4 Sn1279	13.30	51.40	53.20	3.50
2015/2/3	2600	MSL	250	D2600V2-1070	EX3DV4 - SN3954	DAE4 Sn1279	14.40	55.30	57.60	4.16
2015/1/27	5200	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	8.09	77.50	80.90	4.39
2015/1/29	5300	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	8.49	80.00	84.90	6.13
2015/2/6	5600	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	8.74	85.20	87.40	2.58
2015/2/6	5800	MSL	100	D5GHzV2-1006	EX3DV4 - SN3954	DAE4 Sn1279	8.14	78.40	81.40	3.83

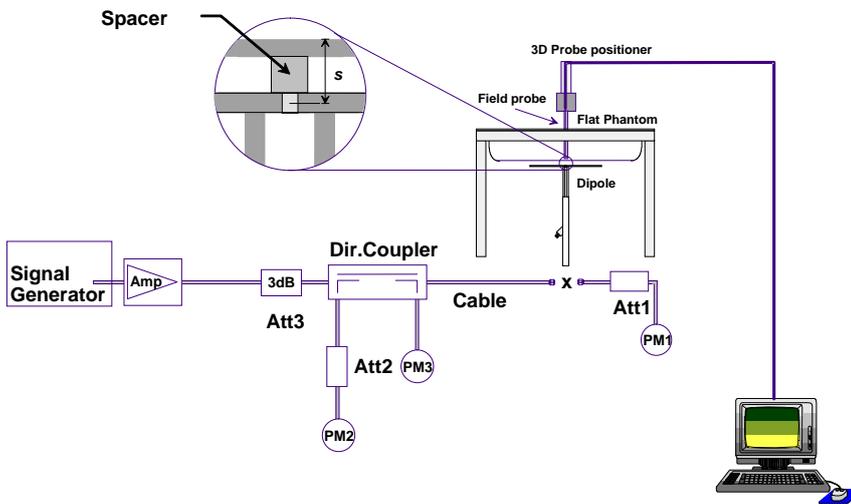


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

12. RF Exposure Positions

12.1 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v05r02 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

13. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

- Per KDB 447498 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
- Per KDB 941225 D01v03, for Body SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the GPRS 4Tx slots modes was selected when EUT operating without power back-off, the GPRS 4Tx slots modes was selected when EUT operating with power back-off, according to the highest source-based time-averaged output power.

Full Power Mode (Proximity Sensor Inactive)

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	128	189		251	128	189	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS (GMSK, 1 Tx slot)	32.96	32.50	32.70	33.50	23.96	23.50	23.70	24.50
GPRS (GMSK, 2 Tx slots)	29.72	29.27	29.43	30.50	23.72	23.27	23.43	24.50
GPRS (GMSK, 3 Tx slots)	27.94	27.52	27.68	28.50	23.68	23.26	23.42	24.24
GPRS (GMSK, 4 Tx slots)	26.84	26.43	26.55	27.50	23.84	23.43	23.55	24.50
EDGE (8PSK, 1 Tx slot)	27.14	26.99	26.84	27.50	18.14	17.99	17.84	18.50
EDGE (8PSK, 2 Tx slots)	27.07	26.93	26.80	27.50	21.07	20.93	20.80	21.50
EDGE (8PSK, 3 Tx slots)	26.23	26.08	25.95	26.50	21.97	21.82	21.69	22.24
EDGE (8PSK, 4 Tx slots)	25.06	24.93	24.78	25.50	22.06	21.93	21.78	22.50

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	512	661		810	512	661	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS (GMSK, 1 Tx slot)	29.72	29.87	29.96	30.50	20.72	20.87	20.96	21.50
GPRS (GMSK, 2 Tx slots)	26.75	26.88	26.95	27.50	20.75	20.88	20.95	21.50
GPRS (GMSK, 3 Tx slots)	25.03	25.16	25.25	26.50	20.77	20.90	20.99	22.24
GPRS (GMSK, 4 Tx slots)	23.97	24.08	24.14	25.50	20.97	21.08	21.14	22.50
EDGE (8PSK, 1 Tx slot)	26.27	26.35	26.43	26.50	17.27	17.35	17.43	17.50
EDGE (8PSK, 2 Tx slots)	26.32	26.39	26.45	26.50	20.32	20.39	20.45	20.50
EDGE (8PSK, 3 Tx slots)	25.20	25.32	25.30	26.00	20.94	21.06	21.04	21.74
EDGE (8PSK, 4 Tx slots)	23.96	24.05	24.11	25.00	20.96	21.05	21.11	22.00



Reduced Power Mode (Proximity Sensor active)

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)	
	TX Channel	128	189		251	128	189		251
	Frequency (MHz)	824.2	836.4		848.8	824.2	836.4		848.8
GPRS (GMSK, 1 Tx slot)	29.78	29.33	29.50	30.50	20.78	20.33	20.50	21.50	
GPRS (GMSK, 2 Tx slots)	26.88	26.46	26.62	27.50	20.88	20.46	20.62	21.50	
GPRS (GMSK, 3 Tx slots)	25.15	24.73	24.89	25.50	20.89	20.47	20.63	21.24	
GPRS (GMSK, 4 Tx slots)	24.07	23.63	23.81	24.50	21.07	20.63	20.81	21.50	
EDGE (8PSK, 1 Tx slot)	24.28	24.13	23.98	24.50	15.28	15.13	14.98	15.50	
EDGE (8PSK, 2 Tx slots)	24.26	24.10	23.96	24.50	18.26	18.10	17.96	18.50	
EDGE (8PSK, 3 Tx slots)	23.47	23.34	23.19	23.50	19.21	19.08	18.93	19.24	
EDGE (8PSK, 4 Tx slots)	22.22	22.06	21.97	22.50	19.22	19.06	18.97	19.50	

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)	
	TX Channel	512	661		810	512	661		810
	Frequency (MHz)	1850.2	1880		1909.8	1850.2	1880		1909.8
GPRS (GMSK, 1 Tx slot)	23.39	23.52	23.61	24.50	14.39	14.52	14.61	15.50	
GPRS (GMSK, 2 Tx slots)	20.56	20.67	20.74	21.00	14.56	14.67	14.74	15.00	
GPRS (GMSK, 3 Tx slots)	18.84	18.94	19.02	20.00	14.58	14.68	14.76	15.74	
GPRS (GMSK, 4 Tx slots)	17.60	17.69	17.78	19.00	14.60	14.69	14.78	16.00	
EDGE (8PSK, 1 Tx slot)	19.08	19.46	19.61	20.00	10.08	10.46	10.61	11.00	
EDGE (8PSK, 2 Tx slots)	19.52	19.58	19.63	20.00	13.52	13.58	13.63	14.00	
EDGE (8PSK, 3 Tx slots)	18.76	18.84	18.88	19.50	14.50	14.58	14.62	15.24	
EDGE (8PSK, 4 Tx slots)	17.63	17.57	17.75	18.50	14.63	14.57	14.75	15.50	

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set Gain Factors (β_c and β_d) and parameters were set according to each
 - ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - iii. Set RMC 12.2Kbps + HSDPA mode.
 - iv. Set Cell Power = -86 dBm
 - v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
 - vi. Select HSDPA Uplink Parameters
 - vii. Set Delta ACK, Delta NACK and Delta CQI = 8
 - viii. Set Ack-Nack Repetition Factor to 3
 - ix. Set CQI Feedback Cycle (k) to 4 ms
 - x. Set CQI Repetition Factor to 2
 - xi. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15, \beta_{HS}/\beta_c = 24/15$. For all other combinations of DPCCH, DPDCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

Setup Configuration

HSUPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting * :
 - i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
 - iii. Set Cell Power = -86 dBm
 - iv. Set Channel Type = 12.2k + HSPA
 - v. Set UE Target Power
 - vi. Power Ctrl Mode= Alternating bits
 - vii. Set and observe the E-TFCl
 - viii. Confirm that E-TFCl is equal to the target E-TFCl of 75 for sub-test 1, and other subtest's E-TFCl
- d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCl
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15, \beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$.

Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set RMC 12.2Kbps + HSDPA mode.
 - ii. Set Cell Power = -25 dBm
 - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
 - iv. Select HSDPA Uplink Parameters
 - v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - a). Subtest 1: $\beta_c/\beta_d=2/15$
 - b). Subtest 2: $\beta_c/\beta_d=12/15$
 - c). Subtest 3: $\beta_c/\beta_d=15/8$
 - d). Subtest 4: $\beta_c/\beta_d=15/4$
 - vi. Set Delta ACK, Delta NACK and Delta CQI = 8
 - vii. Set Ack-Nack Repetition Factor to 3
 - viii. Set CQI Feedback Cycle (k) to 4 ms
 - ix. Set CQI Repetition Factor to 2
 - x. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

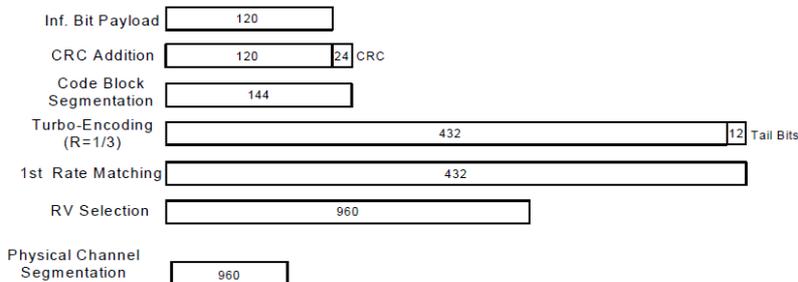


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03, SAR for Body exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

Full Power Mode (Proximity Sensor Inactive)

Band			WCDMA V			WCDMA II			WCDMA IV		
TX Channel			4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency (MHz)			826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
MPR (dB)	3GPP Rel 99	RMC 12.2Kbps	24.09	23.67	23.82	23.98	24.24	24.47	24.49	24.36	24.34
0	3GPP Rel 6	HSDPA Subtest-1	24.03	23.60	23.76	23.91	24.18	24.37	24.39	24.35	24.32
0	3GPP Rel 6	HSDPA Subtest-2	23.53	23.06	23.28	23.46	23.71	23.93	23.97	23.88	23.86
0.5	3GPP Rel 6	HSDPA Subtest-3	22.97	22.55	22.71	22.99	23.22	23.42	23.47	23.40	23.41
0.5	3GPP Rel 6	HSDPA Subtest-4	22.84	22.30	22.56	22.79	22.98	23.28	23.45	23.14	23.16
0	3GPP Rel 8	DC-HSDPA Subtest-1	24.01	23.55	23.71	23.89	24.16	24.33	24.36	24.31	24.33
0	3GPP Rel 8	DC-HSDPA Subtest-2	23.48	23.04	23.21	23.38	23.70	23.91	23.92	23.85	23.84
0.5	3GPP Rel 8	DC-HSDPA Subtest-3	22.96	22.48	22.66	22.98	23.20	23.34	23.50	23.41	23.40
0.5	3GPP Rel 8	DC-HSDPA Subtest-4	22.81	22.28	22.54	22.74	22.95	23.21	23.44	23.16	23.17
0	3GPP Rel 6	HSUPA Subtest-1	23.01	22.60	22.75	23.02	23.24	23.43	23.76	23.43	23.43
2	3GPP Rel 6	HSUPA Subtest-2	21.14	20.81	20.93	21.38	21.50	21.71	22.08	21.62	21.76
1	3GPP Rel 6	HSUPA Subtest-3	22.20	21.83	21.98	22.34	22.51	22.67	22.85	22.61	22.66
2	3GPP Rel 6	HSUPA Subtest-4	21.22	21.07	20.98	21.45	21.73	21.92	22.16	21.87	21.84
0	3GPP Rel 6	HSUPA Subtest-5	23.48	23.17	23.29	23.36	23.68	23.85	24.15	23.82	23.85

Reduced Power Mode (Proximity Sensor active)

Band			WCDMA V			WCDMA II			WCDMA IV		
TX Channel			4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency (MHz)			826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
MPR (dB)	3GPP Rel 99	RMC 12.2Kbps	19.93	19.55	19.72	14.49	14.67	14.83	15.54	15.32	15.35
0	3GPP Rel 6	HSDPA Subtest-1	19.85	19.51	19.71	14.48	14.65	14.81	15.51	15.31	15.32
0	3GPP Rel 6	HSDPA Subtest-2	19.84	19.50	19.69	14.46	14.61	14.80	15.49	15.28	15.29
0.5	3GPP Rel 6	HSDPA Subtest-3	19.86	19.49	19.67	14.41	14.60	14.78	15.46	15.27	15.31
0.5	3GPP Rel 6	HSDPA Subtest-4	19.82	19.48	19.70	14.43	14.59	14.78	15.48	15.26	15.30
0	3GPP Rel 8	DC-HSDPA Subtest-1	19.75	19.45	19.66	14.39	14.56	14.73	15.42	15.30	15.26
0	3GPP Rel 8	DC-HSDPA Subtest-2	19.84	19.43	19.68	14.44	14.58	14.73	15.44	15.18	15.20
0.5	3GPP Rel 8	DC-HSDPA Subtest-3	19.77	19.43	19.63	14.39	14.51	14.74	15.39	15.25	15.25
0.5	3GPP Rel 8	DC-HSDPA Subtest-4	19.75	19.41	19.62	14.38	14.52	14.77	15.46	15.16	15.29
0	3GPP Rel 6	HSUPA Subtest-1	19.23	18.92	19.11	14.07	14.25	14.39	14.83	14.62	14.64
2	3GPP Rel 6	HSUPA Subtest-2	19.51	19.09	19.28	14.61	14.70	14.81	14.98	14.84	14.85
1	3GPP Rel 6	HSUPA Subtest-3	18.89	18.70	18.84	14.18	14.31	14.42	14.59	14.46	14.48
2	3GPP Rel 6	HSUPA Subtest-4	18.84	18.84	18.92	14.33	14.46	14.51	14.66	14.59	14.63
0	3GPP Rel 6	HSUPA Subtest-5	19.92	19.61	19.74	14.52	14.65	14.80	15.51	15.31	15.33



<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r03, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.



Full Power Mode (Proximity Sensor Inactive)

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	23.00	23.02	23.01	24	0
10	QPSK	1	24	22.98	23.00	23.00		
10	QPSK	1	49	22.99	22.98	22.99		
10	QPSK	25	0	22.11	22.17	22.16	23	1
10	QPSK	25	12	22.07	22.14	22.08		
10	QPSK	25	24	22.10	22.13	22.07		
10	QPSK	50	0	22.03	22.11	22.09		
10	16QAM	1	0	22.30	22.32	22.34	23	1
10	16QAM	1	24	22.21	22.27	22.32		
10	16QAM	1	49	22.22	22.20	22.22		
10	16QAM	25	0	21.14	21.19	21.24	22	2
10	16QAM	25	12	21.12	21.14	21.14		
10	16QAM	25	24	21.15	21.16	21.16		
10	16QAM	50	0	21.08	21.09	21.11		
Channel				23755	23790	23825	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.94	22.91	22.91	24	0
5	QPSK	1	12	22.88	22.88	22.85		
5	QPSK	1	24	22.76	22.83	22.82		
5	QPSK	12	0	21.82	21.83	21.84	23	1
5	QPSK	12	6	21.80	21.79	21.78		
5	QPSK	12	11	21.77	21.77	21.78		
5	QPSK	25	0	21.87	21.88	21.89	23	1
5	16QAM	1	0	22.06	22.14	22.10		
5	16QAM	1	12	22.11	22.05	22.04		
5	16QAM	1	24	21.92	21.97	21.97	22	2
5	16QAM	12	0	20.82	20.84	20.85		
5	16QAM	12	6	20.82	20.81	20.80		
5	16QAM	12	11	20.78	20.78	20.77		
5	16QAM	25	0	20.87	20.90	20.91		



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.55	22.52	22.45	24	0
10	QPSK	1	24	22.53	22.47	22.45		
10	QPSK	1	49	22.41	22.46	22.26		
10	QPSK	25	0	21.61	21.49	21.47	23	1
10	QPSK	25	12	21.60	21.44	21.44		
10	QPSK	25	24	21.54	21.47	21.38		
10	QPSK	50	0	21.54	21.48	21.43		
10	16QAM	1	0	21.87	21.79	21.76	23	1
10	16QAM	1	24	21.85	21.72	21.69		
10	16QAM	1	49	21.70	21.74	21.46		
10	16QAM	25	0	20.70	20.51	20.53	22	2
10	16QAM	25	12	20.64	20.47	20.49		
10	16QAM	25	24	20.59	20.49	20.42		
10	16QAM	50	0	20.63	20.49	20.48		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.49	22.43	22.35	24	0
5	QPSK	1	12	22.46	22.38	22.34		
5	QPSK	1	24	22.37	22.35	22.20		
5	QPSK	12	0	21.55	21.47	21.45	23	1
5	QPSK	12	6	21.52	21.44	21.38		
5	QPSK	12	11	21.51	21.46	21.37		
5	QPSK	25	0	21.50	21.47	21.39		
5	16QAM	1	0	21.77	21.70	21.67	23	1
5	16QAM	1	12	21.67	21.61	21.64		
5	16QAM	1	24	21.62	21.62	21.41		
5	16QAM	12	0	20.64	20.55	20.53	22	2
5	16QAM	12	6	20.59	20.51	20.46		
5	16QAM	12	11	20.61	20.54	20.43		
5	16QAM	25	0	20.57	20.52	20.44		
Channel				20415	20525	20635	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.50	22.50	22.51	24	0
3	QPSK	1	7	22.39	22.38	22.45		
3	QPSK	1	14	22.36	22.33	22.36		
3	QPSK	8	0	21.35	21.31	21.43	23	1
3	QPSK	8	4	21.34	21.33	21.37		
3	QPSK	8	7	21.33	21.31	21.36		
3	QPSK	15	0	21.33	21.32	21.37		
3	16QAM	1	0	21.79	21.72	21.77	23	1
3	16QAM	1	7	21.67	21.64	21.76		
3	16QAM	1	14	21.63	21.58	21.59		
3	16QAM	8	0	20.51	20.44	20.50	22	2
3	16QAM	8	4	20.47	20.40	20.45		
3	16QAM	8	7	20.47	20.42	20.42		
3	16QAM	15	0	20.47	20.42	20.43		



Channel				20407	20525	20643	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.53	22.52	22.51	24	0
1.4	QPSK	1	2	22.10	22.09	22.09		
1.4	QPSK	1	5	22.52	22.51	22.19		
1.4	QPSK	3	0	22.41	22.39	22.41		
1.4	QPSK	3	1	22.27	22.26	22.26		
1.4	QPSK	3	2	22.30	22.30	22.30		
1.4	QPSK	6	0	21.38	21.38	21.40	23	1
1.4	16QAM	1	0	21.80	21.79	21.74	23	1
1.4	16QAM	1	2	21.37	21.33	21.35		
1.4	16QAM	1	5	21.75	21.74	21.73		
1.4	16QAM	3	0	21.51	21.51	21.52		
1.4	16QAM	3	1	21.36	21.39	21.38		
1.4	16QAM	3	2	21.38	21.38	21.35		
1.4	16QAM	6	0	20.54	20.52	20.48	22	2



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.43	23.60	23.58	24	0
20	QPSK	1	49	23.42	23.40	23.37		
20	QPSK	1	99	22.90	22.95	22.88		
20	QPSK	50	0	22.98	23.00	22.97	23	1
20	QPSK	50	24	22.81	22.83	22.82		
20	QPSK	50	49	22.73	22.76	22.76		
20	QPSK	100	0	22.73	22.80	22.79		
20	16QAM	1	0	22.90	22.67	22.91	23	1
20	16QAM	1	49	22.78	22.90	22.72		
20	16QAM	1	99	22.26	22.23	22.20		
20	16QAM	50	0	21.95	21.92	21.94	22	2
20	16QAM	50	24	21.78	21.77	21.74		
20	16QAM	50	49	21.70	21.70	21.70		
20	16QAM	100	0	21.73	21.75	21.71		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.20	23.03	23.09	24	0
15	QPSK	1	37	23.19	23.02	23.03		
15	QPSK	1	74	22.79	22.73	22.70		
15	QPSK	36	0	22.53	22.43	22.48	23	1
15	QPSK	36	18	22.32	22.23	22.29		
15	QPSK	36	37	22.33	22.22	22.29		
15	QPSK	75	0	22.37	22.29	22.31	23	1
15	16QAM	1	0	22.56	22.41	22.47		
15	16QAM	1	37	22.47	22.38	22.42		
15	16QAM	1	74	22.19	22.15	22.07		
15	16QAM	36	0	21.47	21.39	21.45	22	2
15	16QAM	36	18	21.30	21.19	21.26		
15	16QAM	36	37	21.27	21.19	21.25		
15	16QAM	75	0	21.34	21.21	21.28		
Channel				20000	20175	20350		
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.40	23.26	23.28	24	0
10	QPSK	1	24	23.33	23.20	23.20		
10	QPSK	1	49	23.11	23.01	23.01		
10	QPSK	25	0	22.37	22.23	22.26	23	1
10	QPSK	25	12	22.30	22.21	22.21		
10	QPSK	25	24	22.24	22.13	22.13		
10	QPSK	50	0	22.40	22.25	22.30	23	1
10	16QAM	1	0	22.69	22.55	22.59		
10	16QAM	1	24	22.63	22.50	22.51		
10	16QAM	1	49	22.43	22.32	22.29		
10	16QAM	25	0	21.32	21.22	21.24	22	2
10	16QAM	25	12	21.27	21.19	21.16		
10	16QAM	25	24	21.23	21.16	21.12		
10	16QAM	50	0	21.36	21.24	21.27		



Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.28	23.11	23.15	24	0
5	QPSK	1	12	23.19	23.10	23.12		
5	QPSK	1	24	23.08	23.00	23.02		
5	QPSK	12	0	22.36	22.27	22.29	23	1
5	QPSK	12	6	22.33	22.23	22.23		
5	QPSK	12	11	22.32	22.23	22.23		
5	QPSK	25	0	22.31	22.20	22.24		
5	16QAM	1	0	22.54	22.45	22.48	23	1
5	16QAM	1	12	22.50	22.38	22.47		
5	16QAM	1	24	22.39	22.31	22.31		
5	16QAM	12	0	21.36	21.26	21.28	22	2
5	16QAM	12	6	21.31	21.21	21.21		
5	16QAM	12	11	21.30	21.24	21.21		
5	16QAM	25	0	21.28	21.20	21.18		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.58	23.38	23.45	24	0
3	QPSK	1	7	23.48	23.37	23.36		
3	QPSK	1	14	23.43	23.32	23.34		
3	QPSK	8	0	22.50	22.37	22.39	23	1
3	QPSK	8	4	22.45	22.35	22.37		
3	QPSK	8	7	22.44	22.35	22.35		
3	QPSK	15	0	22.47	22.35	22.34		
3	16QAM	1	0	22.86	22.72	22.78	23	1
3	16QAM	1	7	22.80	22.71	22.71		
3	16QAM	1	14	22.69	22.55	22.58		
3	16QAM	8	0	21.50	21.39	21.37	22	2
3	16QAM	8	4	21.45	21.34	21.33		
3	16QAM	8	7	21.45	21.34	21.34		
3	16QAM	15	0	21.45	21.33	21.34		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.41	23.27	23.47	24	0
1.4	QPSK	1	2	22.98	22.94	23.04		
1.4	QPSK	1	5	23.26	23.16	23.44		
1.4	QPSK	3	0	22.96	22.99	23.34		
1.4	QPSK	3	1	23.27	23.03	23.21		
1.4	QPSK	3	2	23.22	23.10	23.21		
1.4	QPSK	6	0	22.28	22.25	22.36	23	1
1.4	16QAM	1	0	22.94	22.80	22.76	23	1
1.4	16QAM	1	2	22.48	22.43	22.36		
1.4	16QAM	1	5	22.72	22.48	22.75		
1.4	16QAM	3	0	22.40	22.37	22.49		
1.4	16QAM	3	1	22.07	22.31	22.32		
1.4	16QAM	3	2	22.41	22.30	22.28		
1.4	16QAM	6	0	21.41	21.34	21.37	22	2



<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.48	23.39	23.33	24	0
20	QPSK	1	49	23.45	23.38	23.31		
20	QPSK	1	99	23.02	22.96	22.92		
20	QPSK	50	0	22.99	22.92	22.90	23	1
20	QPSK	50	24	22.83	22.79	22.74		
20	QPSK	50	49	22.74	22.72	22.67		
20	QPSK	100	0	22.81	22.74	22.73	23	1
20	16QAM	1	0	22.91	22.84	22.86		
20	16QAM	1	49	22.76	22.63	22.60		
20	16QAM	1	99	22.34	22.22	22.16	22	2
20	16QAM	50	0	22.00	22.00	21.94		
20	16QAM	50	24	21.86	21.80	21.79		
20	16QAM	50	49	21.82	21.79	21.71	22	2
20	16QAM	100	0	21.86	21.81	21.78		
Channel				18675	18900	19125		
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.19	23.25	22.98	24	0
15	QPSK	1	37	23.18	23.22	22.94		
15	QPSK	1	74	22.85	22.95	22.65		
15	QPSK	36	0	22.48	22.51	22.30	23	1
15	QPSK	36	18	22.30	22.31	22.08		
15	QPSK	36	37	22.29	22.35	22.11		
15	QPSK	75	0	22.36	22.39	22.18	23	1
15	16QAM	1	0	22.48	22.55	22.32		
15	16QAM	1	37	22.46	22.49	22.25		
15	16QAM	1	74	22.24	22.26	21.97	22	2
15	16QAM	36	0	21.57	21.58	21.37		
15	16QAM	36	18	21.35	21.39	21.16		
15	16QAM	36	37	21.37	21.41	21.19	22	2
15	16QAM	75	0	21.41	21.48	21.24		
Channel				18650	18900	19150		
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.28	23.24	23.18	24	0
10	QPSK	1	24	23.21	23.19	23.07		
10	QPSK	1	49	23.06	23.07	22.94		
10	QPSK	25	0	22.24	22.23	22.15	23	1
10	QPSK	25	12	22.17	22.15	22.07		
10	QPSK	25	24	22.13	22.13	22.01		
10	QPSK	50	0	22.20	22.20	22.10	23	1
10	16QAM	1	0	22.51	22.47	22.37		
10	16QAM	1	24	22.45	22.40	22.29		
10	16QAM	1	49	22.31	22.29	22.12	22	2
10	16QAM	25	0	21.32	21.28	21.21		
10	16QAM	25	12	21.25	21.22	21.13		
10	16QAM	25	24	21.22	21.19	21.09	22	2
10	16QAM	50	0	21.26	21.24	21.16		



Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.11	23.19	23.06	24	0
5	QPSK	1	12	23.10	23.15	23.00		
5	QPSK	1	24	22.97	23.06	22.88		
5	QPSK	12	0	22.16	22.23	22.08	23	1
5	QPSK	12	6	22.13	22.19	22.04		
5	QPSK	12	11	22.14	22.21	22.04		
5	QPSK	25	0	22.16	22.22	22.05		
5	16QAM	1	0	22.36	22.43	22.28	23	1
5	16QAM	1	12	22.29	22.37	22.24		
5	16QAM	1	24	22.20	22.29	22.11		
5	16QAM	12	0	21.30	21.33	21.19	22	2
5	16QAM	12	6	21.26	21.28	21.14		
5	16QAM	12	11	21.30	21.30	21.14		
5	16QAM	25	0	21.29	21.27	21.14		
Channel				18615	18900	19185	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.21	23.27	23.26	24	0
3	QPSK	1	7	23.16	23.18	23.20		
3	QPSK	1	14	23.09	23.15	23.14		
3	QPSK	8	0	22.09	22.15	22.16	23	1
3	QPSK	8	4	22.08	22.14	22.14		
3	QPSK	8	7	22.07	22.13	22.12		
3	QPSK	15	0	22.05	22.13	22.11		
3	16QAM	1	0	22.48	22.52	22.50	23	1
3	16QAM	1	7	22.44	22.45	22.44		
3	16QAM	1	14	22.27	22.33	22.31		
3	16QAM	8	0	21.20	21.28	21.27	22	2
3	16QAM	8	4	21.15	21.20	21.21		
3	16QAM	8	7	21.17	21.22	21.26		
3	16QAM	15	0	21.17	21.23	21.27		
Channel				18607	18900	19193	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.24	23.25	23.28	24	0
1.4	QPSK	1	2	22.79	22.80	22.88		
1.4	QPSK	1	5	23.23	23.21	23.27		
1.4	QPSK	3	0	23.11	23.11	23.12		
1.4	QPSK	3	1	22.99	22.97	22.99		
1.4	QPSK	3	2	23.00	23.01	23.01		
1.4	QPSK	6	0	22.07	22.06	22.08	23	1
1.4	16QAM	1	0	22.44	22.49	22.45	23	1
1.4	16QAM	1	2	22.04	22.06	22.04		
1.4	16QAM	1	5	22.43	22.44	22.40		
1.4	16QAM	3	0	22.16	22.21	22.17		
1.4	16QAM	3	1	22.01	22.06	22.03		
1.4	16QAM	3	2	21.98	22.03	22.00		
1.4	16QAM	6	0	21.18	21.23	21.26	22	2



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.73	22.97	22.86	23	0
20	QPSK	1	49	22.72	22.94	22.85		
20	QPSK	1	99	22.52	22.73	22.57		
20	QPSK	50	0	21.94	21.96	21.91	22	1
20	QPSK	50	24	21.84	21.94	21.87		
20	QPSK	50	49	21.81	21.86	21.87		
20	QPSK	100	0	21.80	21.83	21.78		
20	16QAM	1	0	21.69	21.97	21.98	22	1
20	16QAM	1	49	21.55	21.84	21.72		
20	16QAM	1	99	21.34	21.60	21.43		
20	16QAM	50	0	20.97	20.97	20.93	21	2
20	16QAM	50	24	20.85	20.90	20.86		
20	16QAM	50	49	20.83	20.86	20.88		
20	16QAM	100	0	20.80	20.89	20.87		
Channel				20825	21100	21375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.69	22.82	22.78	23	0
15	QPSK	1	37	22.51	22.65	22.75		
15	QPSK	1	74	22.31	22.49	22.45		
15	QPSK	36	0	22.00	21.97	21.95	22	1
15	QPSK	36	18	21.86	21.94	21.94		
15	QPSK	36	37	21.86	21.97	21.96		
15	QPSK	75	0	21.88	21.98	21.98		
15	16QAM	1	0	21.92	21.98	21.96	22	1
15	16QAM	1	37	21.86	21.94	21.93		
15	16QAM	1	74	21.67	21.82	21.76		
15	16QAM	36	0	20.92	20.93	20.92	21	2
15	16QAM	36	18	20.89	20.90	20.91		
15	16QAM	36	37	20.88	20.94	20.88		
15	16QAM	75	0	20.88	20.89	20.84		
Channel				20800	21100	21400	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.78	22.91	22.96	23	0
10	QPSK	1	24	22.75	22.90	22.94		
10	QPSK	1	49	22.66	22.79	22.77		
10	QPSK	25	0	21.82	21.95	21.97	22	1
10	QPSK	25	12	21.78	21.96	21.96		
10	QPSK	25	24	21.77	21.90	21.90		
10	QPSK	50	0	21.82	22.00	21.92		
10	16QAM	1	0	21.94	21.98	21.92	22	1
10	16QAM	1	24	21.91	21.97	21.86		
10	16QAM	1	49	21.88	21.92	21.83		
10	16QAM	25	0	20.84	20.97	20.81	21	2
10	16QAM	25	12	20.81	20.97	20.95		
10	16QAM	25	24	20.78	20.93	20.89		
10	16QAM	50	0	20.83	20.99	20.96		



Channel				20775	21100	21425	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.64	22.80	22.80	23	0
5	QPSK	1	12	22.56	22.71	22.78		
5	QPSK	1	24	22.54	22.68	22.66		
5	QPSK	12	0	21.74	21.86	21.89	22	1
5	QPSK	12	6	21.72	21.83	21.86		
5	QPSK	12	11	21.74	21.85	21.87		
5	QPSK	25	0	21.75	21.87	21.86		
5	16QAM	1	0	21.98	21.96	21.95	22	1
5	16QAM	1	12	21.89	21.95	21.93		
5	16QAM	1	24	21.85	21.94	21.91		
5	16QAM	12	0	20.76	20.90	20.92	21	2
5	16QAM	12	6	20.74	20.87	20.88		
5	16QAM	12	11	20.79	20.91	20.89		
5	16QAM	25	0	20.73	20.88	20.90		



Reduced Power Mode (Proximity Sensor active)

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	21.32	21.36	21.31	22	0
10	QPSK	1	24	21.21	21.22	21.24		
10	QPSK	1	49	21.13	21.08	21.21		
10	QPSK	25	0	20.32	20.38	20.25	21	1
10	QPSK	25	12	20.31	20.36	20.30		
10	QPSK	25	24	20.30	20.34	20.31		
10	QPSK	50	0	20.28	20.33	20.29		
10	16QAM	1	0	20.51	20.49	20.62	21	1
10	16QAM	1	24	20.52	20.56	20.56		
10	16QAM	1	49	20.39	20.37	20.51		
10	16QAM	25	0	19.39	19.25	19.34	20	2
10	16QAM	25	12	19.25	19.25	19.25		
10	16QAM	25	24	19.25	19.23	19.23		
10	16QAM	50	0	19.36	19.32	19.36		
Channel				23755	23790	23825	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	21.17	21.11	21.14	22	0
5	QPSK	1	12	21.20	21.15	21.19		
5	QPSK	1	24	21.13	21.09	21.11		
5	QPSK	12	0	20.37	20.32	20.32	21	1
5	QPSK	12	6	20.35	20.29	20.27		
5	QPSK	12	11	20.37	20.32	20.28		
5	QPSK	25	0	20.32	20.25	20.26	21	1
5	16QAM	1	0	20.47	20.39	20.55		
5	16QAM	1	12	20.60	20.50	20.51		
5	16QAM	1	24	20.49	20.39	20.42	20	2
5	16QAM	12	0	19.39	19.35	19.40		
5	16QAM	12	6	19.37	19.32	19.33		
5	16QAM	12	11	19.42	19.35	19.30		
5	16QAM	25	0	19.34	19.27	19.28		



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	19.80	19.96	19.81	20	0
10	QPSK	1	24	19.69	19.68	19.71		
10	QPSK	1	49	19.64	19.62	19.44		
10	QPSK	25	0	18.76	18.87	18.77	19	1
10	QPSK	25	12	18.75	18.76	18.75		
10	QPSK	25	24	18.73	18.76	18.69		
10	QPSK	50	0	18.78	18.80	18.72		
10	16QAM	1	0	18.98	18.97	18.95	19	1
10	16QAM	1	24	18.95	18.91	18.92		
10	16QAM	1	49	18.94	18.85	18.70		
10	16QAM	25	0	17.81	17.77	17.67	18	2
10	16QAM	25	12	17.72	17.71	17.66		
10	16QAM	25	24	17.69	17.75	17.59		
10	16QAM	50	0	17.74	17.76	17.66		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	19.69	19.62	19.58	20	0
5	QPSK	1	12	19.66	19.62	19.69		
5	QPSK	1	24	19.61	19.61	19.43		
5	QPSK	12	0	18.81	18.69	18.75	19	1
5	QPSK	12	6	18.69	18.71	18.72		
5	QPSK	12	11	18.71	18.74	18.64		
5	QPSK	25	0	18.76	18.75	18.72		
5	16QAM	1	0	18.92	18.98	18.93	19	1
5	16QAM	1	12	18.90	18.93	18.94		
5	16QAM	1	24	18.89	18.97	18.61		
5	16QAM	12	0	17.71	17.77	17.61	18	2
5	16QAM	12	6	17.65	17.71	17.56		
5	16QAM	12	11	17.62	17.71	17.56		
5	16QAM	25	0	17.68	17.72	17.65		
Channel				20415	20525	20635	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	19.75	19.61	19.66	20	0
3	QPSK	1	7	19.65	19.66	19.63		
3	QPSK	1	14	19.59	19.58	19.43		
3	QPSK	8	0	18.74	18.78	18.71	19	1
3	QPSK	8	4	18.69	18.71	18.72		
3	QPSK	8	7	18.65	18.70	18.63		
3	QPSK	15	0	18.77	18.78	18.64		
3	16QAM	1	0	18.97	18.94	18.95	19	1
3	16QAM	1	7	18.95	18.91	18.89		
3	16QAM	1	14	18.86	18.87	18.60		
3	16QAM	8	0	17.75	17.75	17.64	18	2
3	16QAM	8	4	17.71	17.68	17.66		
3	16QAM	8	7	17.63	17.70	17.54		
3	16QAM	15	0	17.68	17.67	17.64		



Channel				20407	20525	20643	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	19.75	19.62	19.65	20	0
1.4	QPSK	1	2	19.62	19.58	19.63		
1.4	QPSK	1	5	19.54	19.60	19.39		
1.4	QPSK	3	0	19.05	18.98	18.99		
1.4	QPSK	3	1	19.07	19.00	18.98		
1.4	QPSK	3	2	19.05	18.98	19.00		
1.4	QPSK	6	0	18.71	18.72	18.68	19	1
1.4	16QAM	1	0	18.96	18.93	18.86	19	1
1.4	16QAM	1	2	18.91	18.89	18.99		
1.4	16QAM	1	5	18.85	18.87	18.62		
1.4	16QAM	3	0	18.05	17.98	18.00		
1.4	16QAM	3	1	18.08	17.94	18.03		
1.4	16QAM	3	2	18.07	17.94	18.02		
1.4	16QAM	6	0	17.69	17.62	17.64	18	2



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	15.84	15.98	15.96	16	0
20	QPSK	1	49	15.83	15.87	15.78		
20	QPSK	1	99	15.35	15.34	15.42		
20	QPSK	50	0	14.88	14.94	14.85	15	1
20	QPSK	50	24	14.84	14.72	14.69		
20	QPSK	50	49	14.78	14.63	14.62		
20	QPSK	100	0	14.86	14.88	14.69		
20	16QAM	1	0	14.87	14.61	14.63	15	1
20	16QAM	1	49	14.97	14.81	14.86		
20	16QAM	1	99	14.39	14.59	14.42		
20	16QAM	50	0	13.95	13.78	13.79	14	2
20	16QAM	50	24	13.78	13.64	13.66		
20	16QAM	50	49	13.70	13.56	13.57		
20	16QAM	100	0	13.82	13.68	13.66		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	15.53	15.13	15.14	16	0
15	QPSK	1	37	15.57	15.50	15.43		
15	QPSK	1	74	14.89	14.81	14.81		
15	QPSK	36	0	14.94	14.78	14.84	15	1
15	QPSK	36	18	14.79	14.71	14.63		
15	QPSK	36	37	14.74	14.56	14.59		
15	QPSK	75	0	14.79	14.59	14.65		
15	16QAM	1	0	14.86	14.58	14.55	15	1
15	16QAM	1	37	14.97	14.74	14.86		
15	16QAM	1	74	14.39	14.17	14.11		
15	16QAM	36	0	13.88	13.76	13.75	14	2
15	16QAM	36	18	13.77	13.59	13.60		
15	16QAM	36	37	13.64	13.51	13.56		
15	16QAM	75	0	13.77	13.63	13.59		
Channel				20000	20175	20350		
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	15.51	15.11	15.11	16	0
10	QPSK	1	24	15.48	15.46	15.35		
10	QPSK	1	49	14.94	14.88	14.81		
10	QPSK	25	0	14.88	14.69	14.79	15	1
10	QPSK	25	12	14.82	14.67	14.54		
10	QPSK	25	24	14.71	14.52	14.55		
10	QPSK	50	0	14.81	14.56	14.63		
10	16QAM	1	0	14.84	14.55	14.51	15	1
10	16QAM	1	24	14.90	14.70	14.85		
10	16QAM	1	49	14.33	14.09	14.02		
10	16QAM	25	0	13.85	13.68	13.65	14	2
10	16QAM	25	12	13.69	13.56	13.51		
10	16QAM	25	24	13.69	13.42	13.54		
10	16QAM	50	0	13.81	13.60	13.55		



Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	15.09	15.07	15.09	16	0
5	QPSK	1	12	15.45	15.43	15.42		
5	QPSK	1	24	14.95	14.74	14.77		
5	QPSK	12	0	14.95	14.71	14.84	15	1
5	QPSK	12	6	14.79	14.64	14.60		
5	QPSK	12	11	14.76	14.46	14.58		
5	QPSK	25	0	14.79	14.50	14.61		
5	16QAM	1	0	14.81	14.58	14.45	15	1
5	16QAM	1	12	14.90	14.70	14.77		
5	16QAM	1	24	14.36	14.12	14.10		
5	16QAM	12	0	13.90	13.70	13.72	14	2
5	16QAM	12	6	13.69	13.56	13.60		
5	16QAM	12	11	13.60	13.42	13.49		
5	16QAM	25	0	13.75	13.56	13.54		
5	16QAM	25	0	13.75	13.56	13.54		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	15.57	15.12	15.12	16	0
3	QPSK	1	7	15.48	15.48	15.33		
3	QPSK	1	14	14.95	14.88	14.76		
3	QPSK	8	0	14.87	14.68	14.83	15	1
3	QPSK	8	4	14.71	14.61	14.61		
3	QPSK	8	7	14.73	14.47	14.59		
3	QPSK	15	0	14.69	14.50	14.62		
3	16QAM	1	0	14.77	14.56	14.55		
3	16QAM	1	7	14.85	14.65	14.80	15	1
3	16QAM	1	14	14.31	14.13	14.10		
3	16QAM	8	0	13.85	13.72	13.70		
3	16QAM	8	4	13.68	13.49	13.56	14	2
3	16QAM	8	7	13.55	13.43	13.52		
3	16QAM	8	7	13.55	13.43	13.52		
3	16QAM	15	0	13.70	13.57	13.56		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	15.55	15.10	15.14	16	0
1.4	QPSK	1	2	15.48	15.41	15.43		
1.4	QPSK	1	5	14.87	14.81	14.76		
1.4	QPSK	3	0	14.88	14.75	14.83		
1.4	QPSK	3	1	14.98	14.88	14.78		
1.4	QPSK	3	2	14.88	14.82	14.88		
1.4	QPSK	6	0	14.74	14.58	14.63		
1.4	16QAM	1	0	14.76	14.55	14.54	15	1
1.4	16QAM	1	2	14.84	14.72	14.78		
1.4	16QAM	1	5	14.34	14.17	14.01		
1.4	16QAM	3	0	13.88	13.78	13.73		
1.4	16QAM	3	1	13.86	13.76	13.80		
1.4	16QAM	3	2	13.88	13.75	13.78		
1.4	16QAM	6	0	13.69	13.59	13.53		
1.4	16QAM	6	0	13.69	13.59	13.53	14	2



<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	14.51	14.72	14.62	15	0
20	QPSK	1	49	14.38	14.37	14.38		
20	QPSK	1	99	14.05	14.06	14.01		
20	QPSK	50	0	13.85	13.95	13.94	14	1
20	QPSK	50	24	13.71	13.71	13.79		
20	QPSK	50	49	13.64	13.66	13.76		
20	QPSK	100	0	13.75	13.87	13.86		
20	16QAM	1	0	13.57	13.47	13.62	14	1
20	16QAM	1	49	13.83	13.81	13.89		
20	16QAM	1	99	13.11	13.09	13.24		
20	16QAM	50	0	12.88	12.88	12.99	13	2
20	16QAM	50	24	12.71	12.76	12.84		
20	16QAM	50	49	12.67	12.72	12.80		
20	16QAM	100	0	12.76	12.77	12.89		
Channel				18675	18900	19125		
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	14.19	14.19	14.19	15	0
15	QPSK	1	37	14.20	14.16	14.13		
15	QPSK	1	74	13.93	13.96	14.07		
15	QPSK	36	0	13.64	13.62	13.73	14	1
15	QPSK	36	18	13.46	13.47	13.56		
15	QPSK	36	37	13.46	13.51	13.58		
15	QPSK	75	0	13.54	13.56	13.65		
15	16QAM	1	0	13.62	13.58	13.71	14	1
15	16QAM	1	37	13.61	13.60	13.63		
15	16QAM	1	74	13.30	13.31	13.40		
15	16QAM	36	0	12.70	12.69	12.79	13	2
15	16QAM	36	18	12.53	12.53	12.61		
15	16QAM	36	37	12.52	12.57	12.63		
15	16QAM	75	0	12.60	12.63	12.69		
Channel				18650	18900	19150		
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	14.20	14.12	14.18	15	0
10	QPSK	1	24	14.16	14.17	14.13		
10	QPSK	1	49	14.18	14.16	14.19		
10	QPSK	25	0	13.57	13.61	13.65	14	1
10	QPSK	25	12	13.52	13.56	13.60		
10	QPSK	25	24	13.48	13.51	13.56		
10	QPSK	50	0	13.51	13.58	13.62		
10	16QAM	1	0	13.84	13.88	13.91	14	1
10	16QAM	1	24	13.82	13.84	13.85		
10	16QAM	1	49	13.64	13.70	13.71		
10	16QAM	25	0	12.61	12.64	12.71	13	2
10	16QAM	25	12	12.58	12.59	12.66		
10	16QAM	25	24	12.53	12.57	12.61		
10	16QAM	50	0	12.56	12.61	12.67		



Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	14.12	14.10	14.15	15	0
5	QPSK	1	12	14.14	14.17	14.15		
5	QPSK	1	24	14.09	14.05	14.16		
5	QPSK	12	0	13.50	13.52	13.57	14	1
5	QPSK	12	6	13.45	13.48	13.52		
5	QPSK	12	11	13.46	13.49	13.53		
5	QPSK	25	0	13.48	13.49	13.52		
5	16QAM	1	0	13.64	13.67	13.66	14	1
5	16QAM	1	12	13.71	13.70	13.69		
5	16QAM	1	24	13.54	13.54	13.58		
5	16QAM	12	0	12.56	12.58	12.62	13	2
5	16QAM	12	6	12.51	12.52	12.56		
5	16QAM	12	11	12.52	12.54	12.57		
5	16QAM	25	0	12.51	12.53	12.57		
Channel				18615	18900	19185	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	14.07	14.07	14.10	15	0
3	QPSK	1	7	14.02	14.06	14.09		
3	QPSK	1	14	14.04	14.06	14.07		
3	QPSK	8	0	13.62	13.63	13.66	14	1
3	QPSK	8	4	13.62	13.63	13.66		
3	QPSK	8	7	13.59	13.61	13.64		
3	QPSK	15	0	13.58	13.61	13.63		
3	16QAM	1	0	13.95	13.91	13.95	14	1
3	16QAM	1	7	13.99	13.98	13.97		
3	16QAM	1	14	13.81	13.83	13.84		
3	16QAM	8	0	12.71	12.72	12.75	13	2
3	16QAM	8	4	12.65	12.67	12.69		
3	16QAM	8	7	12.67	12.69	12.71		
3	16QAM	15	0	12.67	12.70	12.70		
Channel				18607	18900	19193	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	14.14	14.07	14.07	15	0
1.4	QPSK	1	2	14.12	14.04	14.06		
1.4	QPSK	1	5	14.12	14.01	14.02		
1.4	QPSK	3	0	14.03	14.05	14.01		
1.4	QPSK	3	1	14.05	14.01	13.99		
1.4	QPSK	3	2	14.03	14.02	13.93		
1.4	QPSK	6	0	13.60	13.59	13.61	14	1
1.4	16QAM	1	0	13.99	13.99	13.98	14	1
1.4	16QAM	1	2	13.60	13.62	13.60		
1.4	16QAM	1	5	13.92	13.98	13.96		
1.4	16QAM	3	0	13.66	13.64	13.67		
1.4	16QAM	3	1	13.54	13.52	13.54		
1.4	16QAM	3	2	13.48	13.52	13.52		
1.4	16QAM	6	0	12.69	12.72	12.75	13	2



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	12.32	12.49	12.13	13	0
20	QPSK	1	49	12.43	12.38	12.45		
20	QPSK	1	99	11.76	11.93	11.91		
20	QPSK	50	0	11.68	11.87	11.86	12	1
20	QPSK	50	24	11.62	11.69	11.81		
20	QPSK	50	49	11.56	11.69	11.73		
20	QPSK	100	0	11.61	11.81	11.80		
20	16QAM	1	0	11.28	11.39	11.53	12	1
20	16QAM	1	49	11.81	11.81	11.93		
20	16QAM	1	99	11.09	11.22	11.29		
20	16QAM	50	0	10.74	10.82	10.94	11	2
20	16QAM	50	24	10.66	10.74	10.85		
20	16QAM	50	49	10.63	10.76	10.80		
20	16QAM	100	0	10.66	10.75	10.85		
Channel				20825	21100	21375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	12.25	12.36	12.46	13	0
15	QPSK	1	37	12.44	12.48	12.45		
15	QPSK	1	74	12.10	12.22	12.22		
15	QPSK	36	0	11.72	11.80	11.90	12	1
15	QPSK	36	18	11.61	11.69	11.77		
15	QPSK	36	37	11.63	11.73	11.76		
15	QPSK	75	0	11.66	11.77	11.81		
15	16QAM	1	0	11.61	11.71	11.86	12	1
15	16QAM	1	37	11.82	11.82	11.85		
15	16QAM	1	74	11.51	11.56	11.63		
15	16QAM	36	0	10.76	10.83	10.95	11	2
15	16QAM	36	18	10.67	10.72	10.84		
15	16QAM	36	37	10.68	10.78	10.83		
15	16QAM	75	0	10.70	10.80	10.83		
Channel				20800	21100	21400	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	12.40	12.42	12.43	13	0
10	QPSK	1	24	12.38	12.41	12.41		
10	QPSK	1	49	12.41	12.46	12.38		
10	QPSK	25	0	11.63	11.71	11.81	12	1
10	QPSK	25	12	11.63	11.71	11.83		
10	QPSK	25	24	11.61	11.68	11.76		
10	QPSK	50	0	11.61	11.68	11.79		
10	16QAM	1	0	11.84	11.87	11.99	12	1
10	16QAM	1	24	11.93	11.97	11.97		
10	16QAM	1	49	11.82	11.82	11.92		
10	16QAM	25	0	10.72	10.80	10.90	11	2
10	16QAM	25	12	10.72	10.79	10.88		
10	16QAM	25	24	10.69	10.74	10.83		
10	16QAM	50	0	10.70	10.77	10.88		



Channel				20775	21100	21425	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	12.40	12.45	12.36	13	0
5	QPSK	1	12	12.47	12.41	12.44		
5	QPSK	1	24	12.37	12.42	12.37		
5	QPSK	12	0	11.64	11.74	11.81	12	1
5	QPSK	12	6	11.61	11.71	11.78		
5	QPSK	12	11	11.65	11.71	11.78		
5	QPSK	25	0	11.63	11.69	11.76		
5	16QAM	1	0	11.77	11.82	11.99	12	1
5	16QAM	1	12	11.92	11.94	11.98		
5	16QAM	1	24	11.78	11.81	11.95		
5	16QAM	12	0	10.73	10.78	10.90	11	2
5	16QAM	12	6	10.70	10.74	10.86		
5	16QAM	12	11	10.73	10.77	10.88		
5	16QAM	25	0	10.67	10.75	10.86		



LTE Carrier Aggregation Conducted Power

Note:

- i. According to KDB941225 D05A v01, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.

LTE Band 4(full power mode) with LTE Band17

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 4A+17A (10M+10M)	with CA 4A+17A (10M+5M)
1715	20000	10	1	0	QPSK	23.40	23.32	23.20
1715	20000	10	1	24		23.33	23.15	23.22
1715	20000	10	1	49		23.11	22.98	22.96
1715	20000	10	1	0	16-QAM	22.69	22.59	22.71
1715	20000	10	1	24		22.63	22.62	22.59
1715	20000	10	1	49		22.43	22.33	22.33
1732.5	20175	10	1	0	QPSK	23.26	23.09	23.26
1732.5	20175	10	1	24		23.20	23.01	23.10
1732.5	20175	10	1	49		23.01	22.91	22.81
1732.5	20175	10	1	0	16-QAM	22.55	22.41	22.39
1732.5	20175	10	1	24		22.50	22.34	22.43
1732.5	20175	10	1	49		22.32	22.13	22.20
1750	20350	10	1	0	QPSK	23.28	23.24	23.28
1750	20350	10	1	24		23.20	23.00	23.12
1750	20350	10	1	49		23.01	22.81	22.85
1750	20350	10	1	0	16-QAM	22.59	22.39	22.39
1750	20350	10	1	24		22.51	22.49	22.31
1750	20350	10	1	49		22.29	22.24	22.15

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 4A+17A (5M+10M)	with CA 4A+17A (5M+5M)
1712.5	19975	5	1	0	QPSK	23.28	23.12	23.31
1712.5	19975	5	1	12		23.19	23.06	23.06
1712.5	19975	5	1	24		23.08	22.92	22.89
1712.5	19975	5	1	0	16-QAM	22.54	22.41	22.52
1712.5	19975	5	1	12		22.50	22.42	22.33
1712.5	19975	5	1	24		22.39	22.24	22.30
1732.5	20175	5	1	0	QPSK	23.11	23.01	23.07
1732.5	20175	5	1	12		23.10	23.02	23.02
1732.5	20175	5	1	24		23.00	22.90	22.90
1732.5	20175	5	1	0	16-QAM	22.45	22.28	22.36
1732.5	20175	5	1	12		22.38	22.34	22.38
1732.5	20175	5	1	24		22.31	22.14	22.21
1752.5	20375	5	1	0	QPSK	23.15	23.07	23.14
1752.5	20375	5	1	12		23.12	22.92	23.11
1752.5	20375	5	1	24		23.02	22.97	22.86
1752.5	20375	5	1	0	16-QAM	22.48	22.46	22.28
1752.5	20375	5	1	12		22.47	22.32	22.37
1752.5	20375	5	1	24		22.31	22.15	22.19



LTE Band 4(full power mode) with LTE Band5

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 4A+5A (10M+10M)	with CA 4A+5A (10M+5M)
1715	20000	10	1	0	QPSK	23.40	23.30	23.30
1715	20000	10	1	24		23.33	23.20	23.25
1715	20000	10	1	49		23.11	23.08	23.05
1715	20000	10	1	0	16-QAM	22.69	22.54	22.54
1715	20000	10	1	24		22.63	22.47	22.62
1715	20000	10	1	49		22.43	22.36	22.24
1732.5	20175	10	1	0	QPSK	23.26	23.14	23.22
1732.5	20175	10	1	24		23.20	23.03	23.14
1732.5	20175	10	1	49		23.01	22.83	23.00
1732.5	20175	10	1	0	16-QAM	22.55	22.48	22.42
1732.5	20175	10	1	24		22.50	22.34	22.45
1732.5	20175	10	1	49		22.32	22.18	22.17
1750	20350	10	1	0	QPSK	23.28	23.09	23.17
1750	20350	10	1	24		23.20	23.17	23.05
1750	20350	10	1	49		23.01	22.85	22.90
1750	20350	10	1	0	16-QAM	22.59	22.54	22.54
1750	20350	10	1	24		22.51	22.51	22.31
1750	20350	10	1	49		22.29	22.22	22.21

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 4A+5A (5M+10M)	with CA 4A+5A (5M+5M)
1712.5	19975	5	1	0	QPSK	23.28	23.18	23.32
1712.5	19975	5	1	12		23.19	23.01	23.02
1712.5	19975	5	1	24		23.08	22.92	22.94
1712.5	19975	5	1	0	16-QAM	22.54	22.50	22.58
1712.5	19975	5	1	12		22.50	22.50	22.37
1712.5	19975	5	1	24		22.39	22.20	22.24
1732.5	20175	5	1	0	QPSK	23.11	23.07	22.95
1732.5	20175	5	1	12		23.10	22.97	22.94
1732.5	20175	5	1	24		23.00	22.89	22.81
1732.5	20175	5	1	0	16-QAM	22.45	22.40	22.35
1732.5	20175	5	1	12		22.38	22.33	22.18
1732.5	20175	5	1	24		22.31	22.15	22.15
1752.5	20375	5	1	0	QPSK	23.15	23.08	22.98
1752.5	20375	5	1	12		23.12	22.97	22.99
1752.5	20375	5	1	24		23.02	22.91	22.99
1752.5	20375	5	1	0	16-QAM	22.48	22.32	22.33
1752.5	20375	5	1	12		22.47	22.39	22.28
1752.5	20375	5	1	24		22.31	22.25	22.19



LTE Band 2(full power mode) with LTE Band17

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 2A+17A (10M+10M)	with CA 2A+17A (10M+5M)
1855	18650	10	1	0	QPSK	23.28	23.10	23.19
1855	18650	10	1	24		23.21	23.06	23.05
1855	18650	10	1	49		23.06	23.00	22.89
1855	18650	10	1	0	16-QAM	22.51	22.48	22.44
1855	18650	10	1	24		22.45	22.26	22.30
1855	18650	10	1	49		22.31	22.30	22.18
1880	18900	10	1	0	QPSK	23.24	23.21	23.06
1880	18900	10	1	24		23.19	23.07	23.10
1880	18900	10	1	49		23.07	22.89	22.88
1880	18900	10	1	0	16-QAM	22.47	22.42	22.40
1880	18900	10	1	24		22.40	22.37	22.40
1880	18900	10	1	49		22.29	22.26	22.22
1905	19150	10	1	0	QPSK	23.18	23.08	23.02
1905	19150	10	1	24		23.07	22.92	22.94
1905	19150	10	1	49		22.94	22.88	22.85
1905	19150	10	1	0	16-QAM	22.37	22.41	22.36
1905	19150	10	1	24		22.29	22.23	22.29
1905	19150	10	1	49		22.12	22.09	22.08

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 2A+17A (5M+10M)	with CA 2A+17A (5M+5M)
1852.5	18625	5	1	0	QPSK	23.11	23.05	23.00
1852.5	18625	5	1	12		23.10	22.95	23.08
1852.5	18625	5	1	24		22.97	22.88	22.96
1852.5	18625	5	1	0	16-QAM	22.36	22.36	22.19
1852.5	18625	5	1	12		22.29	22.11	22.10
1852.5	18625	5	1	24		22.20	22.06	22.21
1880	18900	5	1	0	QPSK	23.19	23.04	23.16
1880	18900	5	1	12		23.15	22.99	23.11
1880	18900	5	1	24		23.06	22.89	23.00
1880	18900	5	1	0	16-QAM	22.43	22.43	22.40
1880	18900	5	1	12		22.37	22.32	22.27
1880	18900	5	1	24		22.29	22.15	22.19
1752.5	20375	5	1	0	QPSK	23.06	22.93	23.04
1752.5	20375	5	1	12		23.00	22.93	22.95
1752.5	20375	5	1	24		22.88	22.73	22.86
1752.5	20375	5	1	0	16-QAM	22.28	22.25	22.11
1752.5	20375	5	1	12		22.24	22.21	22.13
1752.5	20375	5	1	24		22.11	21.99	22.08



LTE Band 4(Reduced power mode) with LTE Band17

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 4A+17A (10M+10M)	with CA 4A+17A (10M+5M)
1715	20000	10	1	0	QPSK	15.51	15.31	15.49
1715	20000	10	1	24		15.48	15.37	15.48
1715	20000	10	1	49		14.94	14.92	14.86
1715	20000	10	1	0	16-QAM	14.84	14.84	14.80
1715	20000	10	1	24		14.90	14.75	14.78
1715	20000	10	1	49		14.33	14.27	14.20
1732.5	20175	10	1	0	QPSK	15.11	14.99	15.03
1732.5	20175	10	1	24		15.46	15.48	15.29
1732.5	20175	10	1	49		14.88	14.86	14.80
1732.5	20175	10	1	0	16-QAM	14.55	14.37	14.54
1732.5	20175	10	1	24		14.70	14.52	14.51
1732.5	20175	10	1	49		14.09	14.05	14.04
1750	20350	10	1	0	QPSK	15.11	15.06	14.91
1750	20350	10	1	24		15.35	15.25	15.31
1750	20350	10	1	49		14.81	14.74	14.77
1750	20350	10	1	0	16-QAM	14.51	14.50	14.34
1750	20350	10	1	24		14.85	14.86	14.70
1750	20350	10	1	49		14.02	13.87	13.82

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 4A+17A (5M+10M)	with CA 4A+17A (5M+5M)
1712.5	19975	5	1	0	QPSK	15.09	15.04	15.05
1712.5	19975	5	1	12		15.45	15.37	15.26
1712.5	19975	5	1	24		14.95	14.92	14.81
1712.5	19975	5	1	0	16-QAM	14.81	14.64	14.68
1712.5	19975	5	1	12		14.90	14.85	14.76
1712.5	19975	5	1	24		14.36	14.18	14.32
1732.5	20175	5	1	0	QPSK	15.07	14.90	15.07
1732.5	20175	5	1	12		15.43	15.34	15.37
1732.5	20175	5	1	24		14.74	14.66	14.69
1732.5	20175	5	1	0	16-QAM	14.58	14.53	14.49
1732.5	20175	5	1	12		14.70	14.50	14.65
1732.5	20175	5	1	24		14.12	13.99	13.95
1752.5	20375	5	1	0	QPSK	15.09	15.06	14.97
1752.5	20375	5	1	12		15.42	15.24	15.31
1752.5	20375	5	1	24		14.77	14.72	14.77
1752.5	20375	5	1	0	16-QAM	14.45	14.37	14.36
1752.5	20375	5	1	12		14.77	14.68	14.63
1752.5	20375	5	1	24		14.10	13.99	14.00



LTE Band 4(Reduced power mode) with LTE Band5

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 4A+5A (10M+10M)	with CA 4A+5A (10M+5M)
1715	20000	10	1	0	QPSK	15.51	15.44	15.51
1715	20000	10	1	24		15.48	15.43	15.30
1715	20000	10	1	49		14.94	14.87	14.84
1715	20000	10	1	0	16-QAM	14.84	14.66	14.74
1715	20000	10	1	24		14.90	14.81	14.82
1715	20000	10	1	49		14.33	14.27	14.13
1732.5	20175	10	1	0	QPSK	15.11	14.98	14.92
1732.5	20175	10	1	24		15.46	15.41	15.29
1732.5	20175	10	1	49		14.88	14.80	14.83
1732.5	20175	10	1	0	16-QAM	14.55	14.35	14.36
1732.5	20175	10	1	24		14.70	14.59	14.65
1732.5	20175	10	1	49		14.09	13.95	14.06
1750	20350	10	1	0	QPSK	15.11	14.97	15.10
1750	20350	10	1	24		15.35	15.27	15.35
1750	20350	10	1	49		14.81	14.69	14.77
1750	20350	10	1	0	16-QAM	14.51	14.50	14.34
1750	20350	10	1	24		14.85	14.69	14.73
1750	20350	10	1	49		14.02	13.92	13.83

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 4A+5A (5M+10M)	with CA 4A+5A (5M+5M)
1712.5	19975	5	1	0	QPSK	15.09	15.08	15.07
1712.5	19975	5	1	12		15.45	15.26	15.28
1712.5	19975	5	1	24		14.95	14.84	14.91
1712.5	19975	5	1	0	16-QAM	14.81	14.78	14.79
1712.5	19975	5	1	12		14.90	14.90	14.71
1712.5	19975	5	1	24		14.36	14.31	14.22
1732.5	20175	5	1	0	QPSK	15.07	14.98	15.06
1732.5	20175	5	1	12		15.43	15.26	15.27
1732.5	20175	5	1	24		14.74	14.65	14.74
1732.5	20175	5	1	0	16-QAM	14.58	14.50	14.43
1732.5	20175	5	1	12		14.70	14.70	14.62
1732.5	20175	5	1	24		14.12	13.93	14.10
1752.5	20375	5	1	0	QPSK	15.09	15.05	15.06
1752.5	20375	5	1	12		15.42	15.25	15.33
1752.5	20375	5	1	24		14.77	14.73	14.57
1752.5	20375	5	1	0	16-QAM	14.45	14.38	14.43
1752.5	20375	5	1	12		14.77	14.57	14.78
1752.5	20375	5	1	24		14.10	14.03	14.04



LTE Band 2(Reduced power mode) with LTE Band17

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 2A+17A (10M+10M)	with CA 2A+17A (10M+5M)
1855	18650	10	1	0	QPSK	14.20	14.05	14.17
1855	18650	10	1	24		14.16	14.05	14.11
1855	18650	10	1	49		14.18	14.15	14.07
1855	18650	10	1	0	16-QAM	13.84	13.75	13.65
1855	18650	10	1	24		13.82	13.67	13.64
1855	18650	10	1	49		13.64	13.51	13.63
1880	18900	10	1	0	QPSK	14.12	14.03	14.03
1880	18900	10	1	24		14.17	14.03	14.03
1880	18900	10	1	49		14.16	14.06	14.15
1880	18900	10	1	0	16-QAM	13.88	13.71	13.68
1880	18900	10	1	24		13.84	13.77	13.85
1880	18900	10	1	49		13.70	13.68	13.63
1905	19150	10	1	0	QPSK	14.18	14.01	14.01
1905	19150	10	1	24		14.13	14.12	13.96
1905	19150	10	1	49		14.19	14.00	14.15
1905	19150	10	1	0	16-QAM	13.91	13.92	13.85
1905	19150	10	1	24		13.85	13.80	13.77
1905	19150	10	1	49		13.71	13.51	13.65

Frequency [MHz]	Uplink Channel Number	BW [MHz]	RB Size	RB Offset	Mod	Average Power (dBm)		
						without CA	with CA 2A+17A (5M+10M)	with CA 2A+17A (5M+5M)
1852.5	18625	5	1	0	QPSK	14.12	14.01	14.08
1852.5	18625	5	1	12		14.14	13.94	14.13
1852.5	18625	5	1	24		14.09	13.93	14.11
1852.5	18625	5	1	0	16-QAM	13.64	13.46	13.46
1852.5	18625	5	1	12		13.71	13.72	13.71
1852.5	18625	5	1	24		13.54	13.41	13.40
1880	18900	5	1	0	QPSK	14.10	14.01	14.00
1880	18900	5	1	12		14.17	14.07	14.08
1880	18900	5	1	24		14.05	14.05	14.04
1880	18900	5	1	0	16-QAM	13.67	13.70	13.51
1880	18900	5	1	12		13.70	13.65	13.63
1880	18900	5	1	24		13.54	13.34	13.48
1752.5	20375	5	1	0	QPSK	14.15	14.05	13.96
1752.5	20375	5	1	12		14.15	14.15	14.00
1752.5	20375	5	1	24		14.16	14.11	14.03
1752.5	20375	5	1	0	16-QAM	13.66	13.62	13.63
1752.5	20375	5	1	12		13.69	13.50	13.61
1752.5	20375	5	1	24		13.58	13.40	13.56



<WLAN Conducted Power>

General Note:

1. For IEEE802.11a/b/g SAR testing, highest average RF output power channel for the lowest data rate for 802.11a/b were selected for SAR evaluation. 802.11g were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of 802.11a/b mode.
2. For IEEE802.11n/ac, SAR testing can be conducted on channel with the highest output power when taking into consideration tune-up tolerance for same test configuration that was identified during SAR evaluations for IEEE802.11a/b/g (as applicable) provided bandwidth and test position are the same.
3. For IEEE802.11n/ac with multiple channel BW configurations, highest channel BW configuration with highest output power limit shall be tested.
4. Testing of lower BW configurations is not required when the maximum average output of the default test channels in each lower BW configuration is less than 1/4dB higher than the default test channel in the highest BW configuration.

<2.4GHZ WLAN>

WLAN 2.4GHz 802.11b Average Power (dBm)					
Power vs. Channel			Power vs. Data Rate		
Channel	Frequency (MHz)	Data Rate	2Mbps	5.5Mbps	11Mbps
		1Mbps			
CH 1	2412	12.64	13.32	13.37	13.41
CH 6	2437	13.59			
CH 11	2462	13.10			

WLAN 2.4GHz 802.11g Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps							
CH 1	2412	12.82	13.21	12.98	13.33	13.01	13.33	13.27	13.11
CH 6	2437	13.75							
CH 11	2462	13.33							

WLAN 2.4GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0							
CH 1	2412	12.63	13.68	13.07	13.16	13.19	13.22	13.08	13.09
CH 6	2437	13.70							
CH 11	2462	13.11							



<5GHz WLAN>

WLAN 5GHz 802.11a Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps							
CH 36	5180	11.48	11.33	11.41	10.70	10.39	10.56	10.49	10.54
CH 40	5200	11.42							
CH 44	5220	11.43							
CH 48	5240	11.25							
CH 52	5260	9.80	9.80	9.82	9.81	9.81	9.80	9.81	9.79
CH 56	5280	9.64							
CH 60	5300	9.65							
CH 64	5320	9.83							
CH 100	5500	8.78	8.66	8.71	7.85	7.58	7.76	7.85	7.89
CH 104	5520	8.76							
CH 108	5540	8.57							
CH 112	5560	8.77							
CH 116	5580	8.70							
CH 132	5660	8.51							
CH 136	5680	8.52							
CH 140	5700	8.60							
CH 149	5745	8.41	8.59	7.31	7.41	7.09	7.26	7.40	7.30
CH 153	5765	8.10							
CH 157	5785	8.63							
CH 161	5805	8.35							
CH 165	5825	8.23							

WLAN 5GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0							
CH 36	5180	11.49	9.62	9.68	9.58	9.59	9.37	9.72	9.61
CH 40	5200	11.24							
CH 44	5220	11.44							
CH 48	5240	11.37							
CH 52	5260	9.50	9.74	9.75	9.74	9.75	9.75	9.75	9.74
CH 56	5280	9.70							
CH 60	5300	9.72							
CH 64	5320	9.76							
CH 100	5500	8.79							
CH 104	5520	8.74							
CH 108	5540	8.71	8.80	8.73	8.74	8.71	8.76	8.78	8.71
CH 112	5560	8.57							
CH 116	5580	8.89							
CH 132	5660	8.71							
CH 136	5680	8.65							
CH 140	5700	8.81							
CH 149	5745	8.71							
CH 153	5765	8.56	8.31	8.29	8.36	8.43	8.33	8.46	8.37
CH 157	5785	8.62							
CH 161	5805	8.37							
CH 165	5825	8.41							



WLAN 5GHz 802.11n-HT40 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0							
CH 38	5190	11.42	10.62	10.74	10.88	10.77	10.72	10.82	10.83
CH 46	5230	11.49							
CH 54	5270	9.63	9.88	9.11	9.15	9.31	9.20	9.28	9.36
CH 62	5310	9.90							
CH 102	5510	8.77	7.94	7.95	8.04	8.02	8.07	7.98	8.14
CH 110	5550	8.71							
CH 134	5670	8.89							
CH 151	5755	8.99							
CH 159	5795	8.79	8.91	8.87	8.78	8.95	8.91	8.83	8.89

WLAN 5GHz 802.11ac-VHT20 Average Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
		MCS0								
CH 36	5180	11.22	10.61	10.56	10.48	10.48	10.71	10.50	10.42	10.40
CH 40	5200	11.12								
CH 44	5220	11.44								
CH 48	5240	11.41								
CH 52	5260	9.50	9.80	9.80	9.79	9.80	9.80	9.79	9.79	9.78
CH 56	5280	9.61								
CH 60	5300	9.72								
CH 64	5320	9.81								
CH 100	5500	8.66								
CH 104	5520	8.56	7.93	8.04	7.96	7.88	7.94	7.78	7.91	7.85
CH 108	5540	8.14								
CH 112	5560	8.19								
CH 116	5580	8.85								
CH 132	5660	8.69								
CH 136	5680	8.45								
CH 140	5700	8.74	8.32	8.28	8.28	8.38	8.54	8.49	8.41	8.47
CH 149	5745	8.59								
CH 153	5765	8.56								
CH 157	5785	8.55								
CH 161	5805	8.28								
CH 165	5825	8.32								

WLAN 5GHz 802.11ac-VHT40 Average Power (dBm)											
Power vs. Channel			Power vs. MCS Index								
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
		MCS0									
CH 38	5190	11.45	11.00	10.88	11.03	11.09	11.24	11.31	11.37	11.23	10.86
CH 46	5230	11.41									
CH 54	5270	9.86	9.88	9.88	9.88	9.22	9.33	9.17	9.30	9.27	9.34
CH 62	5310	9.89									
CH 102	5510	8.88	7.91	7.95	8.01	8.05	8.14	7.99	7.94	7.88	7.92
CH 110	5550	8.70									
CH 134	5670	8.87									
CH 151	5755	8.74									
CH 159	5795	8.70	7.59	7.64	7.73	7.77	7.48	7.52	7.86	8.01	7.71

WLAN 5GHz 802.11ac-VHT80 Average Power (dBm)											
Power vs. Channel			Power vs. MCS Index								
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
		MCS0									
CH 42	5210	11.41	10.75	10.97	10.84	10.81	10.75	9.85	10.80	10.76	10.78
CH 58	5290	9.93	9.90	9.89	9.36	9.25	9.28	9.30	9.26	9.32	9.36
CH 106	5530	8.88	8.62	8.78	8.70	8.70	8.60	8.86	8.60	8.81	8.76
CH 155	5775	8.65	7.45	7.63	7.70	7.58	7.88	7.83	7.61	7.71	7.98

14. Bluetooth Exclusions Applied

Mode Band	Average power(dBm)	
	Bluetooth v3.0 with HS	Bluetooth v4.0 with LE
2.4GHz Bluetooth	8	8

Note:

1. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

$$[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] \cdot [\sqrt{f(GHz)}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}$$

1-g SAR and ≤ 7.5 for 10-g extremity SAR

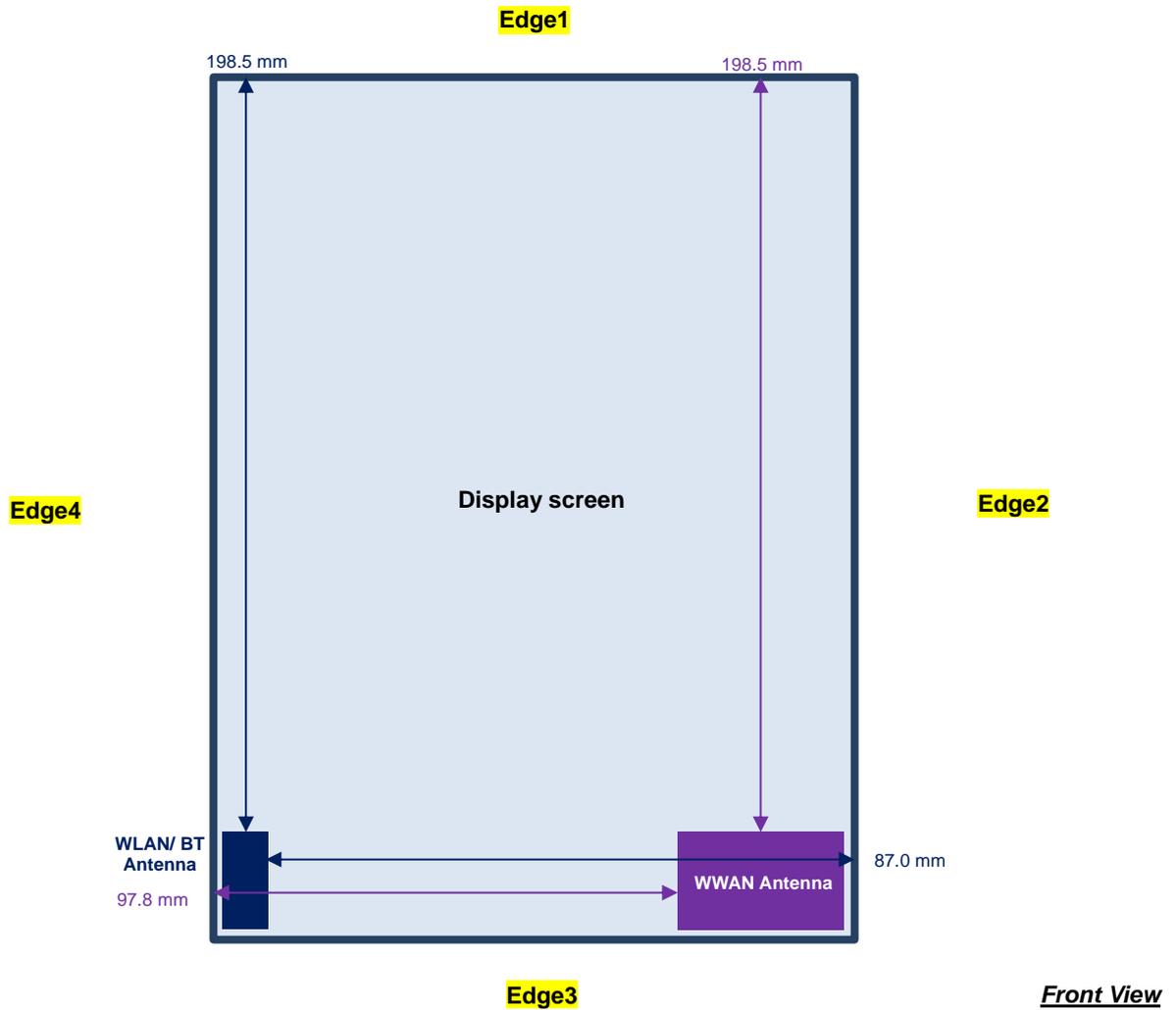
- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
8	< 5	2.48	1.89

Note:

Per KDB 447498 D01v05r02, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 1.89 which is ≤ 3, SAR testing is not required.

15. Antenna Location





<SAR test exclusion table>

General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v05r02, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v05r02, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
 - [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v05r02, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
 - a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
 - b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

Exposure Position	Wireless Interface	GPRS 850 Class 12	GPRS 1900 Class 12	WCDMA Band V	WCDMA Band IV	WCDMA Band II	LTE Band 17	LTE Band 5	LTE Band 4	LTE Band 2	LTE Band 7	802.11b	802.11a
	Calculated Frequency	848MHz	1909MHz	846MHz	1750MHz	1907MHz	713MHz	848MHz	1754MHz	1909MHz	2570MHz	2462MHz	5825MHz
	Maximum power (dBm)	24.5	22.5	24.5	24.5	24.5	24.0	24.0	24.0	24.0	23.0	14.0	11.5
	Maximum rated power(mW)	282	178	282	282	282	251	251	251	251	200	25	14
Bottom Face	Separation distance(mm)	5										5	5
	exclusion threshold	51.9	49.2	51.9	74.6	77.9	42.4	46.2	66.5	69.4	64.1	7.9	6.8
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 1	Separation distance(mm)	198.5										198.5	198.5
	exclusion threshold	1002.0	1594.0	1001.0	1598.0	1594.0	884.0	1002.0	1598.0	1594.0	1579.0	1581.0	1547.0
	Testing required?	No	No	No	No	No	No	No	No	No	No	No	No
Edge 2	Separation distance(mm)	5.0										87.0	87.0
	exclusion threshold	51.9	49.2	51.9	74.6	77.9	42.4	46.2	66.5	69.4	64.1	466.0	432.0
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Edge 3	Separation distance(mm)	5.0										5.0	5.0
	exclusion threshold	51.9	49.2	51.9	74.6	77.9	42.4	46.2	66.5	69.4	64.1	7.9	6.8
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 4	Separation distance(mm)	97.8										5.0	5.0
	exclusion threshold	433.0	587.0	433.0	591.0	587.0	405.0	433.0	591.0	587.0	572.0	7.9	6.8
	Testing required?	No	No	No	No	No	No	No	No	No	No	Yes	Yes



16. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - b. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - c. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - d. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - e. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v05r02, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. For the exposure positions that proximity sensor power reduction is applied for SAR compliance, additional SAR testing with EUT transmitting full power in normal mode was performed; 1.4cm for bottom face, 0.9cm for edge2, 1.1cm for edge3.
4. Per KDB 941225 D01v03, for Body SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the GPRS 4Tx slots modes was selected when EUT operating without power back-off, the GPRS 4Tx slots modes was selected when EUT operating with power back-off, according to the highest source-based time-averaged output power.
5. Per KDB 941225 D01v03, SAR for body exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
6. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.
7. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
8. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
9. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
10. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
11. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.



16.1 Body SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
1	GSM850	GPRS (4 Tx slots)	Bottom Face	0cm	ON	128	824.2	24.07	24.50	1.104	0.17	0.942	1.040
1	GSM850	GPRS (4 Tx slots)	Bottom Face	0cm	ON	189	836.4	23.63	24.50	1.222	0.19	0.902	1.102
	GSM850	GPRS (4 Tx slots)	Bottom Face	0cm	ON	251	848.8	23.81	24.50	1.172	0.14	0.929	1.089
	GSM850	GPRS (4 Tx slots)	Edge 2	0cm	ON	128	824.2	24.07	24.50	1.104	-0.14	0.812	0.897
	GSM850	GPRS (4 Tx slots)	Edge 2	0cm	ON	189	836.4	23.63	24.50	1.222	-0.11	0.842	1.029
	GSM850	GPRS (4 Tx slots)	Edge 2	0cm	ON	251	848.8	23.81	24.50	1.172	-0.13	0.834	0.978
	GSM850	GPRS (4 Tx slots)	Edge 3	0cm	ON	128	824.2	24.07	24.50	1.104	-0.03	0.349	0.385
	GSM850	GPRS (4 Tx slots)	Bottom Face	1.4cm	OFF	128	824.2	26.84	27.50	1.164	-0.1	0.354	0.412
	GSM850	GPRS (4 Tx slots)	Edge 2	0.9cm	OFF	128	824.2	26.84	27.50	1.164	0.01	0.316	0.368
	GSM850	GPRS (4 Tx slots)	Edge 3	1.1cm	OFF	128	824.2	26.84	27.50	1.164	-0.09	0.288	0.335
2	GSM1900	GPRS (4 Tx slots)	Bottom Face	0cm	ON	810	1909.8	17.78	19.00	1.324	-0.12	0.895	1.185
	GSM1900	GPRS (4 Tx slots)	Bottom Face	0cm	ON	512	1850.2	17.60	19.00	1.380	0.1	0.807	1.114
	GSM1900	GPRS (4 Tx slots)	Bottom Face	0cm	ON	661	1880	17.69	19.00	1.352	0.14	0.816	1.103
	GSM1900	GPRS (4 Tx slots)	Edge 2	0cm	ON	810	1909.8	17.78	19.00	1.324	-0.02	0.556	0.736
	GSM1900	GPRS (4 Tx slots)	Edge 3	0cm	ON	810	1909.8	17.78	19.00	1.324	-0.01	0.322	0.426
	GSM1900	GPRS (4 Tx slots)	Bottom Face	1.4cm	OFF	810	1909.8	24.14	25.50	1.368	-0.06	0.433	0.592
	GSM1900	GPRS (4 Tx slots)	Edge 2	0.9cm	OFF	810	1909.8	24.14	25.50	1.368	-0.06	0.424	0.580
	GSM1900	GPRS (4 Tx slots)	Edge 3	1.1cm	OFF	810	1909.8	24.14	25.50	1.368	-0.07	0.288	0.394

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	ON	4132	826.4	19.93	20.00	1.016	0.13	0.936	0.951
	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	ON	4182	836.4	19.55	20.00	1.109	-0.18	0.852	0.945
	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	ON	4233	846.6	19.72	20.00	1.067	0.1	0.849	0.906
	WCDMA V	RMC 12.2Kbps	Edge 2	0cm	ON	4132	826.4	19.93	20.00	1.016	-0.12	0.964	0.980
3	WCDMA V	RMC 12.2Kbps	Edge 2	0cm	ON	4182	836.4	19.55	20.00	1.109	0.1	0.905	1.004
	WCDMA V	RMC 12.2Kbps	Edge 2	0cm	ON	4233	846.6	19.72	20.00	1.067	0.13	0.889	0.948
	WCDMA V	RMC 12.2Kbps	Edge 3	0cm	ON	4132	826.4	19.93	20.00	1.016	-0.03	0.246	0.250
	WCDMA V	RMC 12.2Kbps	Bottom Face	1.4cm	OFF	4132	826.4	24.09	24.50	1.099	-0.01	0.433	0.476
	WCDMA V	RMC 12.2Kbps	Edge 2	0.9cm	OFF	4132	826.4	24.09	24.50	1.099	-0.01	0.366	0.402
	WCDMA V	RMC 12.2Kbps	Edge 3	1.1cm	OFF	4132	826.4	24.09	24.50	1.099	-0.04	0.277	0.304
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0cm	ON	1312	1712.4	15.54	16.00	1.112	0.01	1.040	1.156
4	WCDMA IV	RMC 12.2Kbps	Bottom Face	0cm	ON	1413	1732.6	15.32	16.00	1.169	0.1	1.010	1.181
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0cm	ON	1513	1752.6	15.35	16.00	1.161	0.13	0.979	1.137
	WCDMA IV	RMC 12.2Kbps	Edge 2	0cm	ON	1312	1712.4	15.54	16.00	1.112	-0.12	0.712	0.792
	WCDMA IV	RMC 12.2Kbps	Edge 3	0cm	ON	1312	1712.4	15.54	16.00	1.112	-0.03	0.384	0.427
	WCDMA IV	RMC 12.2Kbps	Bottom Face	1.4cm	OFF	1312	1712.4	24.49	24.50	1.002	-0.07	0.920	0.922
	WCDMA IV	RMC 12.2Kbps	Bottom Face	1.4cm	OFF	1413	1732.6	24.36	24.50	1.033	-0.04	0.865	0.893
	WCDMA IV	RMC 12.2Kbps	Bottom Face	1.4cm	OFF	1513	1752.6	24.34	24.50	1.038	-0.06	0.800	0.830
	WCDMA IV	RMC 12.2Kbps	Edge 2	0.9cm	OFF	1312	1712.4	24.49	24.50	1.002	-0.01	0.823	0.825
	WCDMA IV	RMC 12.2Kbps	Edge 2	0.9cm	OFF	1413	1732.6	24.36	24.50	1.033	0.04	0.790	0.816
	WCDMA IV	RMC 12.2Kbps	Edge 2	0.9cm	OFF	1513	1752.6	24.34	24.50	1.038	0.01	0.777	0.806
	WCDMA IV	RMC 12.2Kbps	Edge 3	1.1cm	OFF	1312	1712.4	24.49	24.50	1.002	-0.08	0.540	0.541



Plot No.	Band	Mode	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
5	WCDMA II	RMC 12.2Kbps	Bottom Face	0cm	ON	9538	1907.6	14.83	15.00	1.040	-0.13	1.070	1.113
	WCDMA II	RMC 12.2Kbps	Bottom Face	0cm	ON	9262	1852.4	14.49	15.00	1.125	0.1	0.958	1.077
	WCDMA II	RMC 12.2Kbps	Bottom Face	0cm	ON	9400	1880	14.67	15.00	1.079	0.01	1.020	1.101
	WCDMA II	RMC 12.2Kbps	Edge 2	0cm	ON	9538	1907.6	14.83	15.00	1.040	0.12	0.614	0.639
	WCDMA II	RMC 12.2Kbps	Edge 3	0cm	ON	9538	1907.6	14.83	15.00	1.040	-0.18	0.402	0.418
	WCDMA II	RMC 12.2Kbps	Bottom Face	1.4cm	OFF	9538	1907.6	24.47	24.50	1.007	-0.06	0.940	0.947
	WCDMA II	RMC 12.2Kbps	Bottom Face	1.4cm	OFF	9262	1852.4	23.98	24.50	1.127	-0.1	0.918	1.035
	WCDMA II	RMC 12.2Kbps	Bottom Face	1.4cm	OFF	9400	1880	24.24	24.50	1.062	-0.05	0.939	0.997
	WCDMA II	RMC 12.2Kbps	Edge 2	0.9cm	OFF	9538	1907.6	24.47	24.50	1.007	-0.04	0.928	0.934
	WCDMA II	RMC 12.2Kbps	Edge 2	0.9cm	OFF	9262	1852.4	23.98	24.50	1.127	-0.02	0.867	0.977
	WCDMA II	RMC 12.2Kbps	Edge 2	0.9cm	OFF	9400	1880	24.24	24.50	1.062	-0.04	0.901	0.957
	WCDMA II	RMC 12.2Kbps	Edge 3	1.1cm	OFF	9538	1907.6	24.47	24.50	1.007	-0.07	0.669	0.674

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
6	LTE Band 17	10M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	23790	710	21.36	22.00	1.159	-0.11	1.020	1.182
	LTE Band 17	10M	QPSK	25RB	0Offset	Bottom Face	0cm	ON	23790	710	20.38	21.00	1.153	0.08	0.822	0.948
	LTE Band 17	10M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	23790	710	20.33	21.00	1.167	-0.13	0.768	0.896
	LTE Band 17	10M	QPSK	1RB	0Offset	Edge 2	0cm	ON	23790	710	21.36	22.00	1.159	0.14	0.978	1.133
	LTE Band 17	10M	QPSK	25RB	0Offset	Edge 2	0cm	ON	23790	710	20.38	21.00	1.153	0.1	0.833	0.961
	LTE Band 17	10M	QPSK	50RB	0Offset	Edge 2	0cm	ON	23790	710	20.33	21.00	1.167	0.19	0.762	0.889
	LTE Band 17	10M	QPSK	1RB	0Offset	Edge 3	0cm	ON	23790	710	21.36	22.00	1.159	0.07	0.384	0.445
	LTE Band 17	10M	QPSK	25RB	0Offset	Edge 3	0cm	ON	23790	710	20.38	21.00	1.153	0.01	0.284	0.328
	LTE Band 17	10M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	23790	710	23.02	24.00	1.253	0.03	0.203	0.254
	LTE Band 17	10M	QPSK	25RB	0Offset	Bottom Face	1.4cm	OFF	23790	710	22.17	23.00	1.211	-0.15	0.201	0.243
	LTE Band 17	10M	QPSK	1RB	0Offset	Edge 2	0.9cm	OFF	23790	710	23.02	24.00	1.253	0.1	0.165	0.207
	LTE Band 17	10M	QPSK	25RB	0Offset	Edge 2	0.9cm	OFF	23790	710	22.17	23.00	1.211	0.11	0.134	0.162
	LTE Band 17	10M	QPSK	1RB	0Offset	Edge 3	1.1cm	OFF	23790	710	23.02	24.00	1.253	-0.18	0.201	0.252
	LTE Band 17	10M	QPSK	25RB	0Offset	Edge 3	1.1cm	OFF	23790	710	22.17	23.00	1.211	-0.14	0.199	0.241
	LTE Band 5	10M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	20525	836.5	19.96	20.00	1.009	-0.14	0.912	0.920
7	LTE Band 5	10M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	20450	829	19.80	20.00	1.047	-0.07	1.070	1.120
	LTE Band 5	10M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	20600	844	19.81	20.00	1.045	-0.16	0.935	0.977
	LTE Band 5	10M	QPSK	25RB	0Offset	Bottom Face	0cm	ON	20525	836.5	18.87	19.00	1.030	-0.19	0.729	0.751
	LTE Band 5	10M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	20525	836.5	18.80	19.00	1.047	-0.1	0.651	0.682
	LTE Band 5	10M	QPSK	1RB	0Offset	Edge 2	0cm	ON	20525	836.5	19.96	20.00	1.009	-0.12	0.825	0.833
	LTE Band 5	10M	QPSK	1RB	0Offset	Edge 2	0cm	ON	20450	829	19.80	20.00	1.047	-0.11	0.869	0.910
	LTE Band 5	10M	QPSK	1RB	0Offset	Edge 2	0cm	ON	20600	844	19.81	20.00	1.045	-0.03	0.833	0.870
	LTE Band 5	10M	QPSK	25RB	0Offset	Edge 2	0cm	ON	20525	836.5	18.87	19.00	1.030	-0.01	0.684	0.705
	LTE Band 5	10M	QPSK	50RB	0Offset	Edge 2	0cm	ON	20525	836.5	18.80	19.00	1.047	-0.18	0.672	0.704
	LTE Band 5	10M	QPSK	1RB	0Offset	Edge 3	0cm	ON	20525	836.5	19.96	20.00	1.009	-0.15	0.249	0.251
	LTE Band 5	10M	QPSK	25RB	0Offset	Edge 3	0cm	ON	20525	836.5	18.87	19.00	1.030	-0.18	0.215	0.222
	LTE Band 5	10M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	20450	829	22.55	24.00	1.396	0.17	0.244	0.341
	LTE Band 5	10M	QPSK	25RB	0Offset	Bottom Face	1.4cm	OFF	20450	829	21.61	23.00	1.377	-0.01	0.241	0.332
	LTE Band 5	10M	QPSK	1RB	0Offset	Edge 2	0.9cm	OFF	20450	829	22.55	24.00	1.396	-0.08	0.240	0.335
	LTE Band 5	10M	QPSK	25RB	0Offset	Edge 2	0.9cm	OFF	20450	829	21.61	23.00	1.377	0.1	0.192	0.264
	LTE Band 5	10M	QPSK	1RB	0Offset	Edge 3	1.1cm	OFF	20450	829	22.55	24.00	1.396	0.01	0.170	0.237
	LTE Band 5	10M	QPSK	25RB	0Offset	Edge 3	1.1cm	OFF	20450	829	21.61	23.00	1.377	0.01	0.155	0.213



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 4	20M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	20175	1732.5	15.98	16.00	1.005	-0.09	1.110	1.115
	LTE Band 4	20M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	20050	1720	15.84	16.00	1.038	0.12	1.140	1.183
8	LTE Band 4	20M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	20300	1745	15.96	16.00	1.009	0.18	1.180	1.191
	LTE Band 4	20M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	20175	1732.5	14.94	15.00	1.014	0.02	0.919	0.932
	LTE Band 4	20M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	20050	1720	14.88	15.00	1.028	0.08	0.942	0.968
	LTE Band 4	20M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	20300	1745	14.85	15.00	1.035	0.03	0.917	0.949
	LTE Band 4	20M	QPSK	100RB	0Offset	Bottom Face	0cm	ON	20175	1732.5	14.88	15.00	1.028	0.07	0.864	0.888
	LTE Band 4	20M	QPSK	1RB	0Offset	Edge 2	0cm	ON	20175	1732.5	15.98	16.00	1.005	-0.07	0.721	0.724
	LTE Band 4	20M	QPSK	50RB	0Offset	Edge 2	0cm	ON	20175	1732.5	14.94	15.00	1.014	0.04	0.645	0.654
	LTE Band 4	20M	QPSK	1RB	0Offset	Edge 3	0cm	ON	20175	1732.5	15.98	16.00	1.005	-0.07	0.394	0.396
	LTE Band 4	20M	QPSK	50RB	0Offset	Edge 3	0cm	ON	20175	1732.5	14.94	15.00	1.014	0.08	0.357	0.362
	LTE Band 4	20M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	20175	1732.5	23.60	24.00	1.096	0.02	0.879	0.964
	LTE Band 4	20M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	20050	1720	23.43	24.00	1.140	0.04	0.899	1.025
	LTE Band 4	20M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	20300	1720	23.58	24.00	1.102	0.04	0.818	0.901
	LTE Band 4	20M	QPSK	50RB	0Offset	Bottom Face	1.4cm	OFF	20175	1732.5	23.00	23.00	1.000	0.1	0.786	0.786
	LTE Band 4	20M	QPSK	100RB	0Offset	Bottom Face	1.4cm	OFF	20175	1732.5	22.80	23.00	1.047	0.06	0.720	0.754
	LTE Band 4	20M	QPSK	1RB	0Offset	Edge 2	0.9cm	OFF	20175	1732.5	23.60	24.00	1.096	-0.16	0.855	0.937
	LTE Band 4	20M	QPSK	1RB	0Offset	Edge 2	0.9cm	OFF	20050	1720	23.43	24.00	1.140	-0.03	0.848	0.967
	LTE Band 4	20M	QPSK	1RB	0Offset	Edge 2	0.9cm	OFF	20300	1745	23.58	24.00	1.102	-0.16	0.863	0.951
	LTE Band 4	20M	QPSK	50RB	0Offset	Edge 2	0.9cm	OFF	20175	1732.5	23.00	23.00	1.000	-0.13	0.753	0.753
	LTE Band 4	20M	QPSK	100RB	0Offset	Edge 2	0.9cm	OFF	20175	1732.5	22.80	23.00	1.047	-0.09	0.712	0.746
	LTE Band 4	20M	QPSK	1RB	0Offset	Edge 3	1.1cm	OFF	20175	1732.5	23.60	24.00	1.096	-0.11	0.678	0.743
	LTE Band 4	20M	QPSK	50RB	0Offset	Edge 3	1.1cm	OFF	20175	1732.5	23.00	23.00	1.000	-0.07	0.556	0.556
	LTE Band 2	20M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	18900	1880	14.72	15.00	1.067	0.1	0.989	1.055
	LTE Band 2	20M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	18700	1860	14.51	15.00	1.119	0.13	0.953	1.067
9	LTE Band 2	20M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	19100	1900	14.62	15.00	1.091	0.15	0.979	1.069
	LTE Band 2	20M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	18900	1880	13.95	14.00	1.012	0.01	0.836	0.846
	LTE Band 2	20M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	18700	1860	13.85	14.00	1.036	0.15	0.798	0.827
	LTE Band 2	20M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	19100	1900	13.94	14.00	1.014	0.17	0.856	0.868
	LTE Band 2	20M	QPSK	100RB	0Offset	Bottom Face	0cm	ON	18900	1880	13.87	14.00	1.030	0.04	0.655	0.675
	LTE Band 2	20M	QPSK	1RB	0Offset	Edge 2	0cm	ON	18900	1880	14.72	15.00	1.067	-0.02	0.594	0.634
	LTE Band 2	20M	QPSK	50RB	0Offset	Edge 2	0cm	ON	18900	1880	13.95	14.00	1.012	-0.09	0.495	0.501
	LTE Band 2	20M	QPSK	1RB	0Offset	Edge 3	0cm	ON	18900	1880	14.72	15.00	1.067	-0.08	0.339	0.362
	LTE Band 2	20M	QPSK	50RB	0Offset	Edge 3	0cm	ON	18900	1880	13.95	14.00	1.012	-0.05	0.261	0.264
	LTE Band 2	20M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	18700	1860	23.48	24.00	1.127	0.12	0.859	0.968
	LTE Band 2	20M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	18900	1880	23.39	24.00	1.151	0.13	0.866	0.997
	LTE Band 2	20M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	19100	1900	23.33	24.00	1.167	0.1	0.844	0.985
	LTE Band 2	20M	QPSK	50RB	0Offset	Bottom Face	1.4cm	OFF	18700	1860	22.99	23.00	1.002	0.07	0.752	0.754
	LTE Band 2	20M	QPSK	100RB	0Offset	Bottom Face	1.4cm	OFF	18700	1860	22.81	23.00	1.045	0	0.694	0.725
	LTE Band 2	20M	QPSK	1RB	0Offset	Edge 2	0.9cm	OFF	18700	1860	23.48	24.00	1.127	-0.07	0.861	0.971
	LTE Band 2	20M	QPSK	1RB	0Offset	Edge 2	0.9cm	OFF	18900	1880	23.39	24.00	1.151	-0.08	0.858	0.987
	LTE Band 2	20M	QPSK	1RB	0Offset	Edge 2	0.9cm	OFF	19100	1900	23.33	24.00	1.167	-0.19	0.844	0.985
	LTE Band 2	20M	QPSK	50RB	0Offset	Edge 2	0.9cm	OFF	18700	1860	22.99	23.00	1.002	-0.15	0.753	0.755
	LTE Band 2	20M	QPSK	100RB	0Offset	Edge 2	0.9cm	OFF	18700	1860	22.81	23.00	1.045	-0.08	0.710	0.742
	LTE Band 2	20M	QPSK	1RB	0Offset	Edge 3	1.1cm	OFF	18700	1860	23.48	24.00	1.127	0.08	0.678	0.764
	LTE Band 2	20M	QPSK	50RB	0Offset	Edge 3	1.1cm	OFF	18700	1860	22.99	23.00	1.002	-0.07	0.586	0.587



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	21100	2535	12.49	13.00	1.125	-0.07	0.982	1.104
	LTE Band 7	20M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	20850	2510	12.32	13.00	1.169	-0.07	0.834	0.975
10	LTE Band 7	20M	QPSK	1RB	0Offset	Bottom Face	0cm	ON	21350	2560	12.13	13.00	1.222	-0.09	0.958	1.170
	LTE Band 7	20M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	21100	2535	11.87	12.00	1.030	-0.14	0.854	0.880
	LTE Band 7	20M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	20850	2510	11.68	12.00	1.076	0.11	0.862	0.928
	LTE Band 7	20M	QPSK	50RB	0Offset	Bottom Face	0cm	ON	21350	2560	11.86	12.00	1.033	-0.19	0.896	0.925
	LTE Band 7	20M	QPSK	100RB	0Offset	Bottom Face	0cm	ON	21100	2535	11.81	12.00	1.045	0.07	0.823	0.860
	LTE Band 7	20M	QPSK	1RB	0Offset	Edge 2	0cm	ON	21100	2535	12.49	13.00	1.125	-0.07	0.327	0.368
	LTE Band 7	20M	QPSK	50RB	0Offset	Edge 2	0cm	ON	21100	2535	11.87	12.00	1.030	-0.03	0.292	0.301
	LTE Band 7	20M	QPSK	1RB	0Offset	Edge 3	0cm	ON	21100	2535	12.49	13.00	1.125	-0.11	0.601	0.676
	LTE Band 7	20M	QPSK	50RB	0Offset	Edge 3	0cm	ON	21100	2535	11.87	12.00	1.030	-0.1	0.545	0.562
	LTE Band 7	20M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	21100	2535	22.97	23.00	1.007	-0.09	0.863	0.869
	LTE Band 7	20M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	20850	2510	22.73	23.00	1.064	0.05	0.779	0.829
	LTE Band 7	20M	QPSK	1RB	0Offset	Bottom Face	1.4cm	OFF	21350	2560	22.86	23.00	1.033	-0.03	0.793	0.819
	LTE Band 7	20M	QPSK	50RB	0Offset	Bottom Face	1.4cm	OFF	21100	2535	21.96	22.00	1.009	0.11	0.643	0.649
	LTE Band 7	20M	QPSK	100RB	0Offset	Bottom Face	1.4cm	OFF	21100	2535	21.83	22.00	1.040	-0.13	0.616	0.641
	LTE Band 7	20M	QPSK	1RB	0Offset	Edge 2	0.9cm	OFF	21100	2535	22.97	23.00	1.007	-0.11	0.383	0.386
	LTE Band 7	20M	QPSK	50RB	0Offset	Edge 2	0.9cm	OFF	21100	2535	21.96	22.00	1.009	-0.12	0.304	0.307
	LTE Band 7	20M	QPSK	1RB	0Offset	Edge 3	1.1cm	OFF	21100	2535	22.97	23.00	1.007	-0.17	0.879	0.885
	LTE Band 7	20M	QPSK	1RB	0Offset	Edge 3	1.1cm	OFF	20850	2510	22.73	23.00	1.064	-0.11	0.823	0.876
	LTE Band 7	20M	QPSK	1RB	0Offset	Edge 3	1.1cm	OFF	21350	2560	22.86	23.00	1.033	-0.11	0.858	0.886
	LTE Band 7	20M	QPSK	50RB	0Offset	Edge 3	1.1cm	OFF	21100	2535	21.96	22.00	1.009	-0.16	0.703	0.710
	LTE Band 7	20M	QPSK	100RB	0Offset	Edge 3	1.1cm	OFF	21100	2535	21.83	22.00	1.040	-0.12	0.726	0.755

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	6	2437	13.59	14.00	1.099	98.62	1.014	-0.14	0.903	1.006
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	1	2412	12.64	13.50	1.219	98.62	1.014	-0.19	0.926	1.144
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	11	2462	13.10	13.50	1.096	98.62	1.014	-0.18	1.060	1.178
	WLAN2.4GHz	802.11b 1Mbps	Edge3	0cm	6	2437	13.59	14.00	1.099	98.62	1.014	-0.17	0.214	0.238
	WLAN2.4GHz	802.11b 1Mbps	Edge4	0cm	6	2437	13.59	14.00	1.099	98.62	1.014	-0.12	0.917	1.022
	WLAN2.4GHz	802.11b 1Mbps	Edge4	0cm	1	2412	12.64	13.50	1.219	98.62	1.014	-0.13	0.920	1.137
11	WLAN2.4GHz	802.11b 1Mbps	Edge4	0cm	11	2462	13.10	13.50	1.096	98.62	1.014	-0.11	1.070	1.190
	WLAN2.4GHz	802.11n-HT20 MCS0	Edge4	0cm	6	2437	13.70	14.00	1.072	93.06	1.075	-0.15	0.872	1.004
	WLAN2.4GHz	802.11n-HT20 MCS0	Edge4	0cm	1	2412	12.63	13.50	1.222	93.06	1.075	0.11	0.844	1.109
	WLAN2.4GHz	802.11n-HT20 MCS0	Edge4	0cm	11	2462	9.57	10.00	1.104	93.06	1.075	-0.12	0.412	0.489
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	36	5180	11.48	11.50	1.005	93.51	1.069	-0.06	0.800	0.859
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	44	5220	11.43	11.50	1.016	93.51	1.069	-0.05	1.040	1.129
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	36	5180	11.48	11.50	1.005	93.51	1.069	-0.14	0.378	0.406
12	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	36	5180	11.48	11.50	1.005	93.51	1.069	-0.11	1.110	1.193
	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	44	5220	11.43	11.50	1.016	93.51	1.069	0.13	0.992	1.077
	WLAN5GHz	802.11n-HT40 MCS0	Edge 4	0cm	46	5230	11.49	11.50	1.002	86.72	1.153	0.17	0.944	1.091
	WLAN5GHz	802.11n-HT40 MCS0	Edge 4	0cm	38	5190	11.42	11.50	1.019	86.72	1.153	-0.03	0.977	1.147
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 4	0cm	42	5210	11.41	11.50	1.021	77.06	1.298	0.08	0.726	0.962
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	64	5320	9.83	10.50	1.166	93.51	1.069	0.14	0.541	0.675
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	64	5320	9.83	10.50	1.166	93.51	1.069	-0.18	0.304	0.379
	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	64	5320	9.83	10.50	1.166	93.51	1.069	0.15	0.777	0.969
	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	52	5260	9.80	10.50	1.175	93.51	1.069	-0.1	0.767	0.963
	WLAN5GHz	802.11n-HT40 MCS0	Edge 4	0cm	62	5310	9.90	10.50	1.148	86.72	1.153	0.19	0.737	0.976
13	WLAN5GHz	802.11n-HT40 MCS0	Edge 4	0cm	54	5270	9.63	10.50	1.222	86.72	1.153	0.1	0.716	1.009
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 4	0cm	58	5290	9.93	10.50	1.140	77.06	1.298	0.16	0.627	0.928



Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	100	5500	8.78	9.00	1.052	93.51	1.069	-0.12	0.554	0.623
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	112	5560	8.77	9.00	1.054	93.51	1.069	-0.13	0.685	0.772
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	140	5700	8.60	9.00	1.096	93.51	1.069	-0.05	0.707	0.828
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	100	5500	8.78	9.00	1.052	93.51	1.069	-0.18	0.302	0.340
	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	100	5500	8.78	9.00	1.052	93.51	1.069	-0.16	0.570	0.641
	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	112	5560	8.77	9.00	1.054	93.51	1.069	-0.16	0.645	0.727
14	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	140	5700	8.60	9.00	1.096	93.51	1.069	-0.01	0.753	0.882
	WLAN5GHz	802.11n-HT40 MCS0	Edge 4	0cm	134	5670	8.89	9.00	1.026	86.72	1.153	-0.19	0.735	0.869
	WLAN5GHz	802.11n-HT40 MCS0	Edge 4	0cm	102	5510	8.77	9.00	1.054	86.72	1.153	-0.15	0.555	0.675
	WLAN5GHz	802.11n-HT40 MCS0	Edge 4	0cm	110	5550	8.71	9.00	1.069	86.72	1.153	-0.12	0.581	0.716
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 4	0cm	106	5530	8.88	9.00	1.028	77.06	1.298	-0.05	0.491	0.655
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	157	5785	8.63	9.00	1.089	93.51	1.069	-0.1	0.826	0.962
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	149	5745	8.41	9.00	1.146	93.51	1.069	-0.17	0.796	0.975
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	161	5805	8.35	9.00	1.161	93.51	1.069	-0.03	0.817	1.014
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	157	5785	8.63	9.00	1.089	93.51	1.069	-0.04	0.408	0.475
15	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	157	5785	8.63	9.00	1.089	93.51	1.069	-0.04	0.874	1.017
	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	149	5745	8.41	9.00	1.146	93.51	1.069	-0.08	0.762	0.933
	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	161	5805	8.35	9.00	1.161	93.51	1.069	-0.08	0.805	0.999
	WLAN5GHz	802.11n-HT40 MCS0	Edge 4	0cm	151	5755	8.99	9.00	1.002	86.72	1.153	-0.05	0.725	0.838
	WLAN5GHz	802.11n-HT40 MCS0	Edge 4	0cm	159	5795	8.79	9.00	1.050	86.72	1.153	-0.05	0.774	0.937
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 4	0cm	155	5775	8.65	9.00	1.084	77.06	1.298	-0.09	0.498	0.701



16.2 Repeated SAR Measurement

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Face	0cm	ON	9538	1907.6	14.83	15.00	1.040	-0.13	1.070	-	1.113
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Face	0cm	ON	9538	1907.6	14.83	15.00	1.040	0.03	1.040	1.03	1.082
1st	LTE Band 17	10M	QPSK	1RB	0Offset	-	Bottom Face	0cm	ON	23790	710	21.36	22.00	1.159	-0.11	1.020	-	1.182
2nd	LTE Band 17	10M	QPSK	1RB	0Offset	-	Bottom Face	0cm	ON	23790	710	21.36	22.00	1.159	-0.04	0.995	1.03	1.153
1st	LTE Band 5	10M	QPSK	1RB	0Offset	-	Bottom Face	0cm	ON	20450	829	19.80	20.00	1.047	-0.07	1.070	-	1.120
2nd	LTE Band 5	10M	QPSK	1RB	0Offset	-	Bottom Face	0cm	ON	20450	829	19.80	20.00	1.047	-0.08	1.010	1.06	1.058
1st	LTE Band 4	20M	QPSK	1RB	0Offset	-	Bottom Face	0cm	ON	20300	1745	15.96	16.00	1.009	0.18	1.180	-	1.191
2nd	LTE Band 4	20M	QPSK	1RB	0Offset	-	Bottom Face	0cm	ON	20300	1745	15.96	16.00	1.009	-0.09	1.170	1.01	1.181
1st	LTE Band 7	20M	QPSK	1RB	0Offset	-	Bottom Face	0cm	ON	21100	2535	12.49	13.00	1.125	-0.07	0.982	-	1.104
2nd	LTE Band 7	20M	QPSK	1RB	0Offset	-	Bottom Face	0cm	ON	21100	2535	12.49	13.00	1.125	-0.01	0.948	1.04	1.066

No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WLAN2.4GHz	802.11b 1Mbps	Edge4	0cm	11	2462	13.10	13.50	1.096	98.62	1.014	-0.11	1.070	-	1.190
2nd	WLAN2.4GHz	802.11b 1Mbps	Edge4	0cm	11	2462	13.10	13.50	1.096	98.62	1.014	-0.11	1.050	1.02	1.167
1st	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	36	5180	11.48	11.50	1.005	93.51	1.069	-0.11	1.110	-	1.193
2nd	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	36	5180	11.48	11.50	1.005	93.51	1.069	0.02	1.080	1.03	1.160
1st	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	157	5785	8.63	9.00	1.089	93.51	1.069	-0.04	0.874	-	1.017
2nd	WLAN5GHz	802.11a 6Mbps	Edge 4	0cm	157	5785	8.63	9.00	1.089	93.51	1.069	-0.06	0.821	1.06	0.956

General Note:

1. Per KDB 865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8W/kg$
2. Per KDB 865664 D01v01r03, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR $< 1.45W/kg$, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated measured SAR.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

17. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Tablet	Note
		Body	
1.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
2.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
3.	LTE(Data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
4.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	Bluetooth Tethering
5.	WCDMA(Data) + Bluetooth(data)	Yes	Bluetooth Tethering
6.	LTE(Data) + Bluetooth(data)	Yes	Bluetooth Tethering
7.	GPRS/EDGE(data) + WLAN5GHz(data)	Yes	5.8GHz Hotspot
8.	WCDMA(data) + WLAN5GHz(data)	Yes	5.8GHz Hotspot
9.	LTE(data) + WLAN5GHz(data)	Yes	5.8GHz Hotspot

General Note:

- For simultaneous transmission analysis for exposure position of edge2 0.9cm, edge3 1.1cm and bottom face 1.4cm, WLAN SAR tested at 0mm separation is worse and the test data is used for conservative SAR summation.
- This device 2.4GHz / 5.8GHz WLAN supports Hotspot and WiFi Direct (GC/GO) operation, and 5.2GHz / 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
- The worst case 5 GHz WLAN reported SAR for each configuration was used for SAR summation, regardless of whether the WLAN channel has WiFi Direct and Hotspot capability. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with 5 GHz WLAN
- WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
- EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
- For co-location analysis:
 - For co-location analysis was performed at the same exposure positions, which are bottom face and Edge2 and Edge3, where both WWAN standalone SAR and WLAN standalone SAR was assessed.
- The Scaled SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
 - Scalar SAR summation < 1.6W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\min. \text{separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
 - The SPLSR calculated results please refer to section 17.2.
- For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v05r02 based on the formula below.
 - $(\text{max. power of channel, including tune-up tolerance, mW}) / (\min. \text{test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})} / x] \text{ W/kg}$ for test separation distances $\leq 50 \text{ mm}$; where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.
 - When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
 - 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.
 - Bluetooth estimated SAR is conservatively determined by 5mm separation, for all applicable exposure positions.

Bluetooth Max Power	Exposure Position	All Positions
8 dBm	Estimated SAR (W/kg)	0.252 W/kg

17.1 Body Exposure Conditions

WWAN Band	Exposure Position	1	2	3	1+2 Summed SAR (W/kg)	1+3 Summed SAR (W/kg)	SPLSR	Case No	
		WWAN	2.4GHz WLAN	2.4GHz Bluetooth					
		SAR (W/kg)	SAR (W/kg)	Estimated SAR (W/kg)					
GSM	GSM850	Bottom Face at 0 cm	1.102	1.178	0.252	2.28	1.35	0.03	Case 1
		Edge2 at 0 cm	1.029		0.252	1.03	1.28		
		Edge3 at 0cm	0.385	0.238	0.252	0.62	0.64		
		Bottom Face at 1.4 cm	0.412	1.178	0.252	1.59	0.66		
		Edge2 at 0.9cm	0.368		0.252	0.37	0.62		
		Edge3 at 1.1cm	0.335	0.238	0.252	0.57	0.59		
	GSM1900	Bottom Face at 0 cm	1.185	1.178	0.252	2.36	1.44	0.03	Case 2
		Edge2 at 0 cm	0.736		0.252	0.74	0.99		
		Edge3 at 0cm	0.426	0.238	0.252	0.66	0.68		
		Bottom Face at 1.4 cm	0.592	1.178	0.252	1.77	0.84	0.02	Case 3
		Edge2 at 0.9cm	0.580		0.252	0.58	0.83		
		Edge3 at 1.1cm	0.394	0.238	0.252	0.63	0.65		
WCDMA	Band V	Bottom Face at 0 cm	0.951	1.178	0.252	2.13	1.20	0.03	Case 4
		Edge2 at 0 cm	1.004		0.252	1.00	1.26		
		Edge3 at 0cm	0.250	0.238	0.252	0.49	0.50		
		Bottom Face at 1.4 cm	0.476	1.178	0.252	1.65	0.73	0.02	Case 5
		Edge2 at 0.9cm	0.402		0.252	0.40	0.65		
		Edge3 at 1.1cm	0.304	0.238	0.252	0.54	0.56		
	Band IV	Bottom Face at 0 cm	1.181	1.178	0.252	2.36	1.43	0.03	Case 6
		Edge2 at 0 cm	0.792		0.252	0.79	1.04		
		Edge3 at 0cm	0.427	0.238	0.252	0.67	0.68		
		Bottom Face at 1.4 cm	0.922	1.178	0.252	2.10	1.17	0.03	Case 7
		Edge2 at 0.9cm	0.825		0.252	0.83	1.08		
		Edge3 at 1.1cm	0.541	0.238	0.252	0.78	0.79		
	Band II	Bottom Face at 0 cm	1.113	1.178	0.252	2.29	1.37	0.03	Case 8
		Edge2 at 0 cm	0.639		0.252	0.64	0.89		
		Edge3 at 0cm	0.418	0.238	0.252	0.66	0.67		
		Bottom Face at 1.4 cm	1.035	1.178	0.252	2.21	1.29	0.03	Case 9
		Edge2 at 0.9cm	0.977		0.252	0.98	1.23		
		Edge3 at 1.1cm	0.674	0.238	0.252	0.91	0.93		



WWAN Band	Exposure Position	1	2	3	1+2 Summed SAR (W/kg)	1+3 Summed SAR (W/kg)	SPLSR	Case No	
		WWAN	2.4GHz WLAN	2.4GHz Bluetooth					
		SAR (W/kg)	SAR (W/kg)	Estimated SAR (W/kg)					
LTE	Band 17	Bottom Face at 0 cm	1.182	1.178	0.252	2.36	1.43	0.03	Case 10
		Edge2 at 0 cm	1.133		0.252	1.13	1.39		
		Edge3 at 0cm	0.445	0.238	0.252	0.68	0.70		
		Bottom Face at 1.4 cm	0.254	1.178	0.252	1.43	0.51		
		Edge2 at 0.9cm	0.207		0.252	0.21	0.46		
		Edge3 at 1.1cm	0.252	0.238	0.252	0.49	0.50		
	Band 5	Bottom Face at 0 cm	1.120	1.178	0.252	2.30	1.37	0.03	Case 11
		Edge2 at 0 cm	0.910		0.252	0.91	1.16		
		Edge3 at 0cm	0.251	0.238	0.252	0.49	0.50		
		Bottom Face at 1.4 cm	0.341	1.178	0.252	1.52	0.59		
		Edge2 at 0.9cm	0.335		0.252	0.34	0.59		
		Edge3 at 1.1cm	0.237	0.238	0.252	0.48	0.49		
	Band 4	Bottom Face at 0 cm	1.191	1.178	0.252	2.37	1.44	0.03	Case 12
		Edge2 at 0 cm	0.724		0.252	0.72	0.98		
		Edge3 at 0cm	0.396	0.238	0.252	0.63	0.65		
		Bottom Face at 1.4 cm	1.025	1.178	0.252	2.20	1.28	0.03	Case 13
		Edge2 at 0.9cm	0.967		0.252	0.97	1.22		
		Edge3 at 1.1cm	0.743	0.238	0.252	0.98	1.00		
	Band 2	Bottom Face at 0 cm	1.069	1.178	0.252	2.25	1.32	0.03	Case 14
		Edge2 at 0 cm	0.634		0.252	0.63	0.89		
		Edge3 at 0cm	0.362	0.238	0.252	0.60	0.61		
Bottom Face at 1.4 cm		0.997	1.178	0.252	2.18	1.25	0.03	Case 15	
Edge2 at 0.9cm		0.987		0.252	0.99	1.24			
Edge3 at 1.1cm		0.764	0.238	0.252	1.00	1.02			
Band 7	Bottom Face at 0 cm	1.170	1.178	0.252	2.35	1.42	0.03	Case 16	
	Edge2 at 0 cm	0.368		0.252	0.37	0.62			
	Edge3 at 0cm	0.676	0.238	0.252	0.91	0.93			
	Bottom Face at 1.4 cm	0.869	1.178	0.252	2.05	1.12	0.02	Case 17	
	Edge2 at 0.9cm	0.386		0.252	0.39	0.64			
	Edge3 at 1.1cm	0.886	0.238	0.252	1.12	1.14			



WWAN Band	Exposure Position	1	2		1+2 Summed SAR (W/kg)	SPLSR	Case No	
		WWAN	5.2GHz / 5.3GHz / 5.5GHz / 5.8GHz WLAN					
		SAR (W/kg)	Band	SAR (W/kg)				
GSM	GSM850	Bottom Face at 0 cm	1.102	5.2GHz	1.129	2.23	0.03	Case 18
		Edge2 at 0 cm	1.029			1.03		
		Edge3 at 0cm	0.385	5.8GHz	0.475	0.86		
		Bottom Face at 1.4 cm	0.412	5.2GHz	1.129	1.54		
		Edge2 at 0.9cm	0.368			0.37		
		Edge3 at 1.1cm	0.335	5.8GHz	0.475	0.81		
	GSM1900	Bottom Face at 0 cm	1.185	5.2GHz	1.129	2.31	0.03	Case 19
		Edge2 at 0 cm	0.736			0.74		
		Edge3 at 0cm	0.426	5.8GHz	0.475	0.90		
		Bottom Face at 1.4 cm	0.592	5.2GHz	1.129	1.72	0.02	Case 20
		Edge2 at 0.9cm	0.580			0.58		
		Edge3 at 1.1cm	0.394	5.8GHz	0.475	0.87		
WCDMA	Band V	Bottom Face at 0 cm	0.951	5.2GHz	1.129	2.08	0.03	Case 21
		Edge2 at 0 cm	1.004			1.00		
		Edge3 at 0cm	0.250	5.8GHz	0.475	0.73		
		Bottom Face at 1.4 cm	0.476	5.2GHz	1.129	1.61	0.02	Case 22
		Edge2 at 0.9cm	0.402			0.40		
		Edge3 at 1.1cm	0.304	5.8GHz	0.475	0.78		
	Band IV	Bottom Face at 0 cm	1.181	5.2GHz	1.129	2.31	0.03	Case 23
		Edge2 at 0 cm	0.792			0.79		
		Edge3 at 0cm	0.427	5.8GHz	0.475	0.90		
		Bottom Face at 1.4 cm	0.922	5.2GHz	1.129	2.05	0.03	Case 24
		Edge2 at 0.9cm	0.825			0.83		
		Edge3 at 1.1cm	0.541	5.8GHz	0.475	1.02		
	Band II	Bottom Face at 0 cm	1.113	5.2GHz	1.129	2.24	0.03	Case 25
		Edge2 at 0 cm	0.639			0.64		
		Edge3 at 0cm	0.418	5.8GHz	0.475	0.89		
		Bottom Face at 1.4 cm	1.035	5.2GHz	1.129	2.16	0.03	Case 26
		Edge2 at 0.9cm	0.977			0.98		
		Edge3 at 1.1cm	0.674	5.8GHz	0.475	1.15		



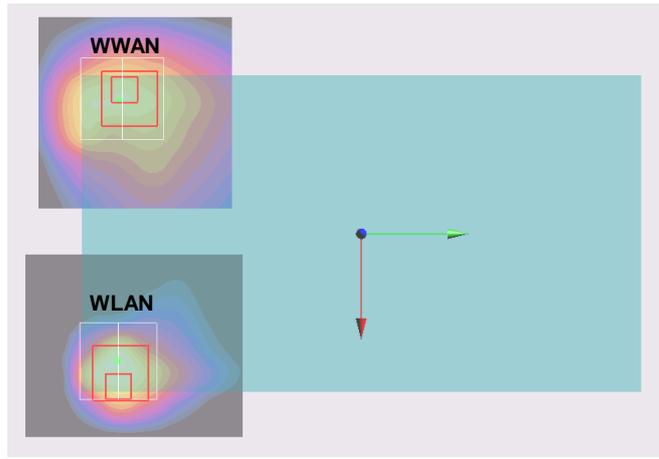
WWAN Band	Exposure Position	1	2		1+2 Summed SAR (W/kg)	SPLSR	Case No	
		WWAN	5.2GHz / 5.3GHz / 5.5GHz / 5.8GHz WLAN					
		SAR (W/kg)	Band	SAR (W/kg)				
LTE	Band 17	Bottom Face at 0 cm	1.182	5.2GHz	1.129	2.31	0.03	Case 27
		Edge2 at 0 cm	1.133			1.13		
		Edge3 at 0cm	0.445	5.8GHz	0.475	0.92		
		Bottom Face at 1.4 cm	0.254	5.2GHz	1.129	1.38		
		Edge2 at 0.9cm	0.207			0.21		
		Edge3 at 1.1cm	0.252	5.8GHz	0.475	0.73		
	Band 5	Bottom Face at 0 cm	1.120	5.2GHz	1.129	2.25	0.03	Case 28
		Edge2 at 0 cm	0.910			0.91		
		Edge3 at 0cm	0.251	5.8GHz	0.475	0.73		
		Bottom Face at 1.4 cm	0.341	5.2GHz	1.129	1.47		
		Edge2 at 0.9cm	0.335			0.34		
		Edge3 at 1.1cm	0.237	5.8GHz	0.475	0.71		
	Band 4	Bottom Face at 0 cm	1.191	5.2GHz	1.129	2.32	0.03	Case 29
		Edge2 at 0 cm	0.724			0.72		
		Edge3 at 0cm	0.396	5.8GHz	0.475	0.87		
		Bottom Face at 1.4 cm	1.025	5.2GHz	1.129	2.15	0.03	Case 30
		Edge2 at 0.9cm	0.967			0.97		
		Edge3 at 1.1cm	0.743	5.8GHz	0.475	1.22		
	Band 2	Bottom Face at 0 cm	1.069	5.2GHz	1.129	2.20	0.03	Case 31
		Edge2 at 0 cm	0.634			0.63		
		Edge3 at 0cm	0.362	5.8GHz	0.475	0.84		
		Bottom Face at 1.4 cm	0.997	5.2GHz	1.129	2.13	0.03	Case 32
		Edge2 at 0.9cm	0.987			0.99		
		Edge3 at 1.1cm	0.764	5.8GHz	0.475	1.24		
Band 7	Bottom Face at 0 cm	1.170	5.2GHz	1.129	2.30	0.03	Case 33	
	Edge2 at 0 cm	0.368			0.37			
	Edge3 at 0cm	0.676	5.8GHz	0.475	1.15			
	Bottom Face at 1.4 cm	0.869	5.2GHz	1.129	2.00	0.02	Case 34	
	Edge2 at 0.9cm	0.386			0.39			
	Edge3 at 1.1cm	0.886	5.8GHz	0.475	1.36			

17.2 SPLSR Evaluation and Analysis

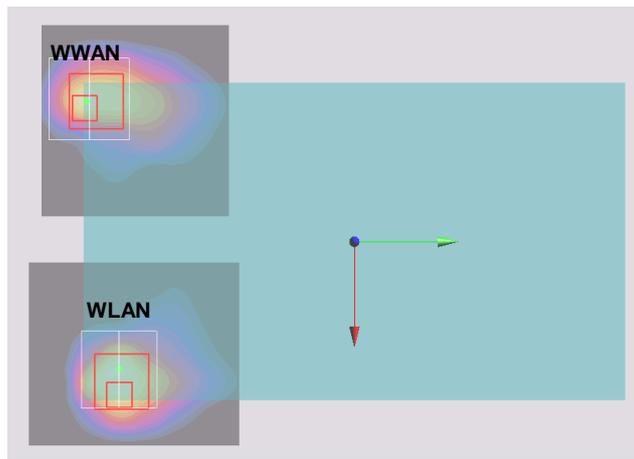
General Note:

- SPLSR = $(SAR_1 + SAR_2)^{1.5} / (\text{min. separation distance, mm})$. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary

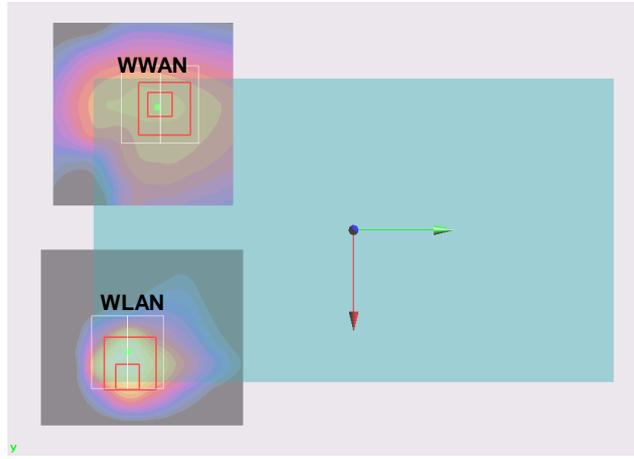
Case 1	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	121.0	2.28	0.03	Not required
	GSM850		1.102	0	-0.061	-0.0925	-0.18				



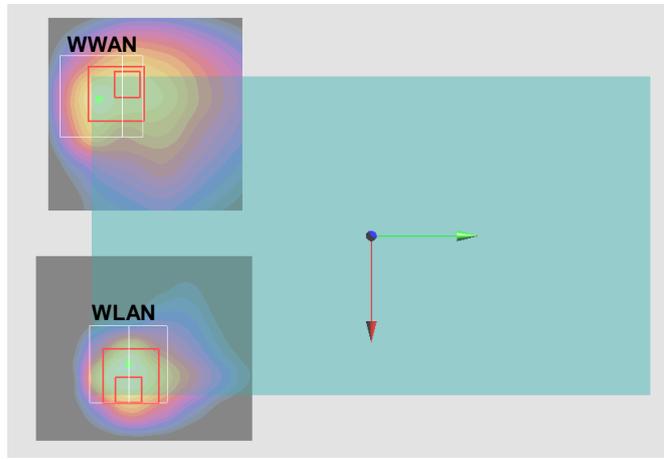
Case 2	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	116.6	2.36	0.03	Not required
	GSM1900		1.185	0	-0.056	-0.106	-0.178				



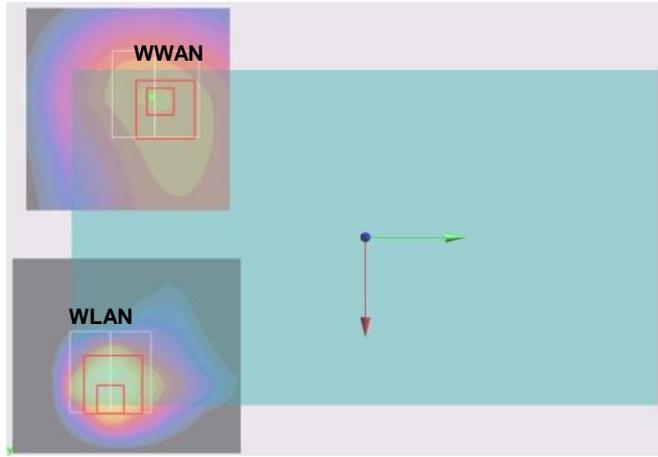
Case 3	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	112.3	1.77	0.02	Not required
	GSM1900		0.592	1.4	-0.0515	-0.0805	-0.181				



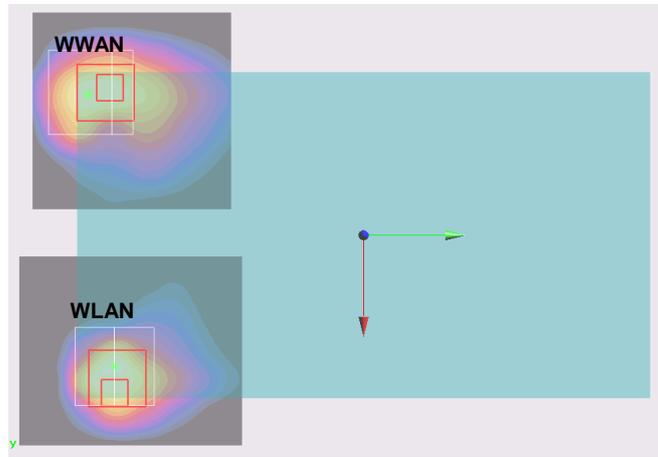
Case 4	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	122.5	2.13	0.03	Not required
	WCDMA V		0.951	0	-0.0625	-0.0965	-0.179				



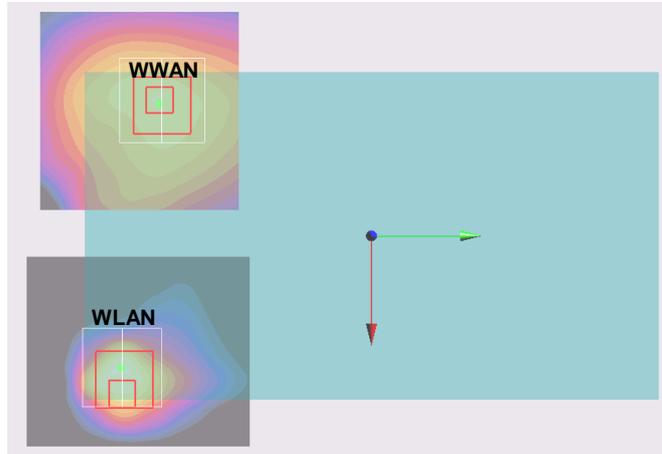
Case 5	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	114.2	1.65	0.02	Not required
	WCDMA V		0.476	0	-0.053	-0.0775	-0.181				



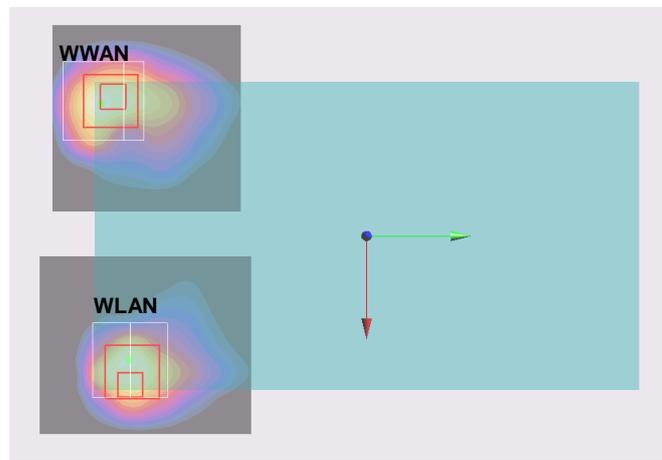
Case 6	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	114.5	2.36	0.03	Not required
	WCDMA IV		1.181	0	-0.0545	-0.095	-0.18				



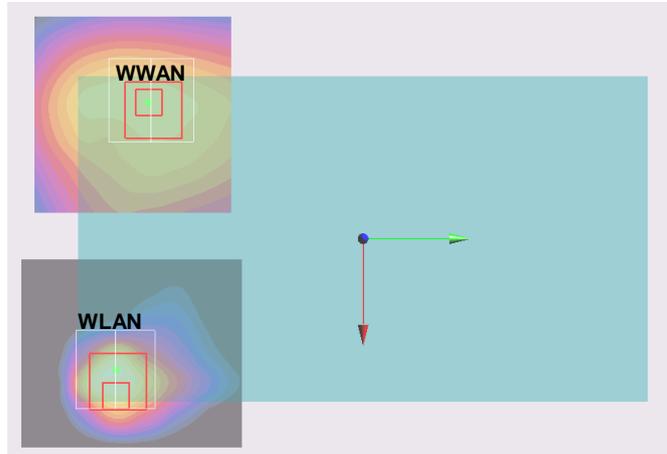
Case 7	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	112.5	2.10	0.03	Not required
	WCDMA IV		0.922	1.4	-0.0515	-0.079	-0.181				



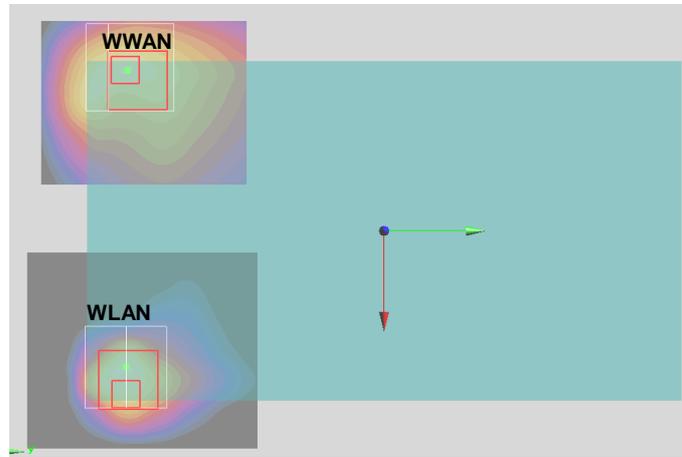
Case 8	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	114.5	2.29	0.03	Not required
	WCDMA II		1.113	0	-0.0545	-0.0965	-0.179				



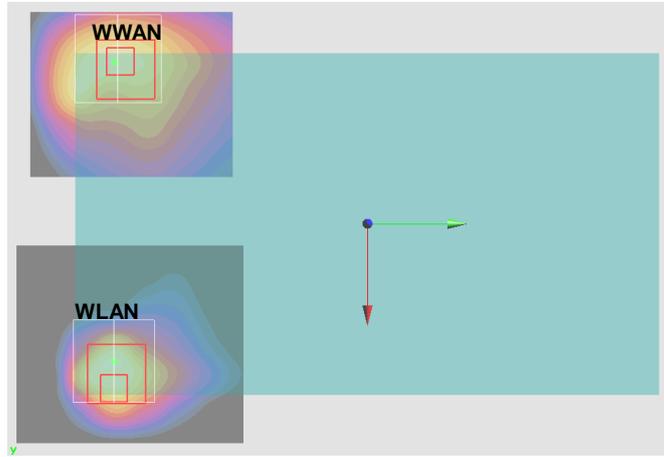
Case 9	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	113.8	2.21	0.03	Not required
	WCDMA II		1.035	1.4	-0.053	-0.0805	-0.181				



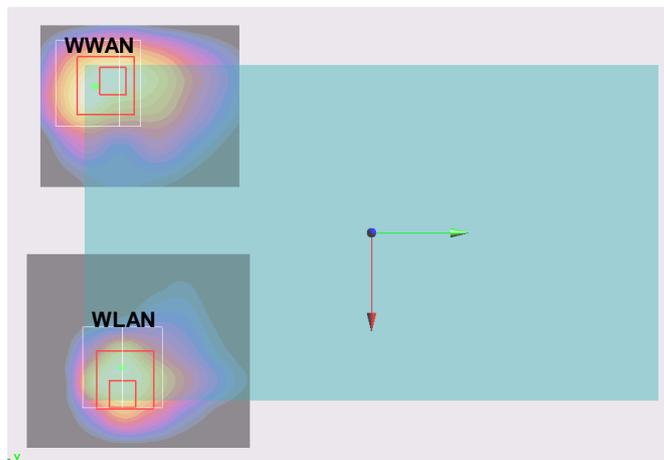
Case 10	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	120.2	2.36	0.03	Not required
	LTE Band 17		1.182	0	-0.06	-0.101	-0.181				



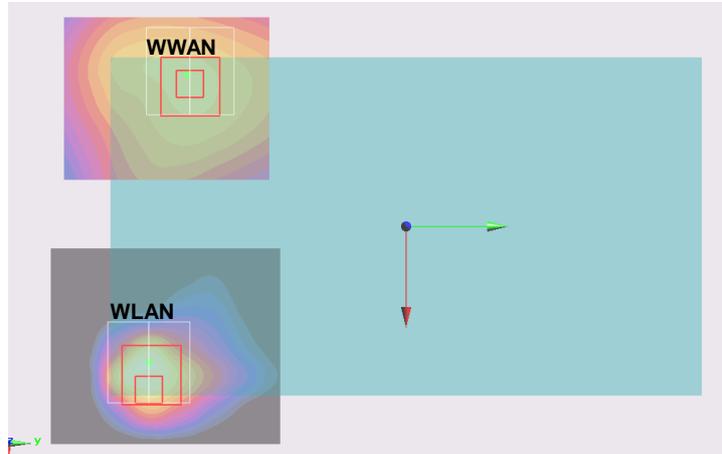
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
11	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	120.0	2.30	0.03	Not required
	LTE Band 5		1.12	0	-0.06	-0.0925	-0.18				



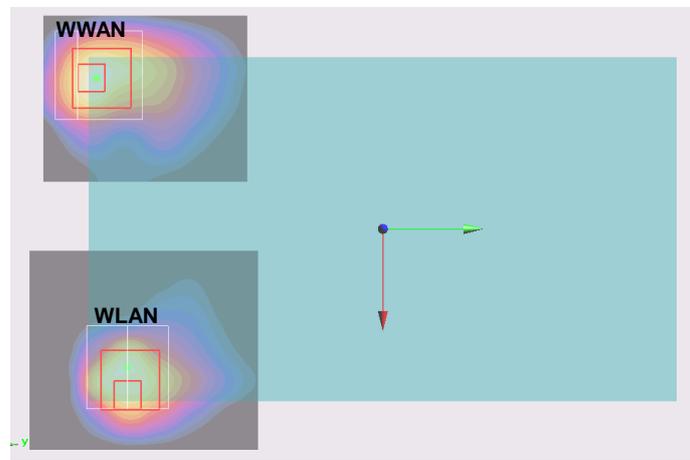
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
12	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	115.5	2.37	0.03	Not required
	LTE Band 4		1.191	0	-0.0555	-0.095	-0.178				



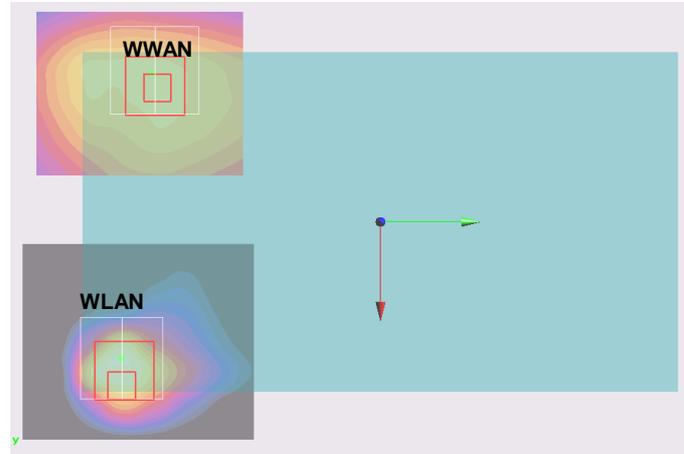
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
13	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	118.0	2.20	0.03	Not required
	LTE Band 4		1.025	1.4	-0.057	-0.079	-0.181				



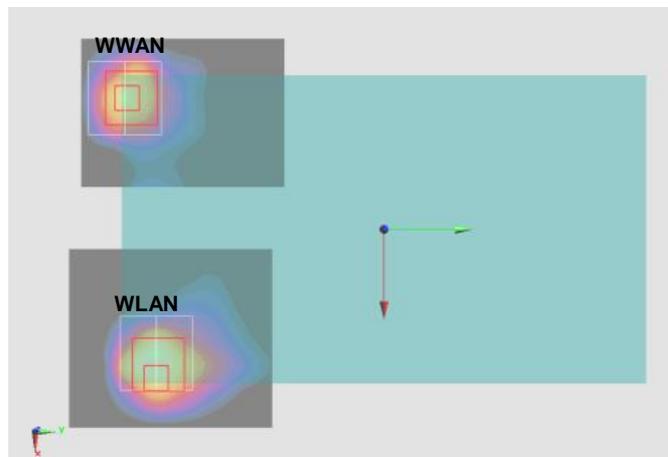
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
14	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	117.1	2.25	0.03	Not required
	LTE Band 2		1.069	0	-0.0555	-0.113	-0.179				



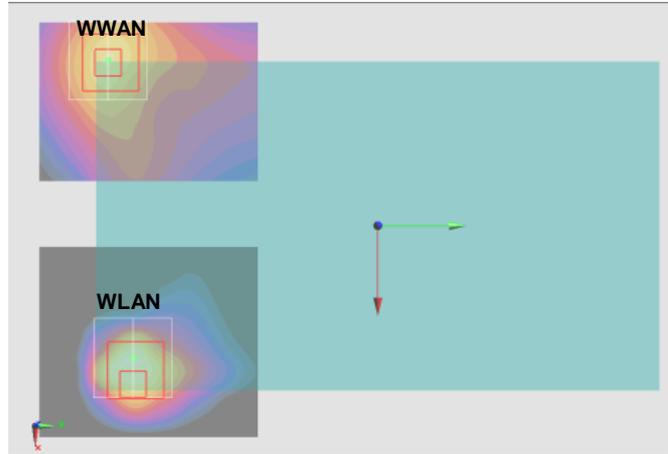
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
15	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	108.2	2.18	0.03	Not required
	LTE Band 2		0.997	1.4	-0.0475	-0.082	-0.181				



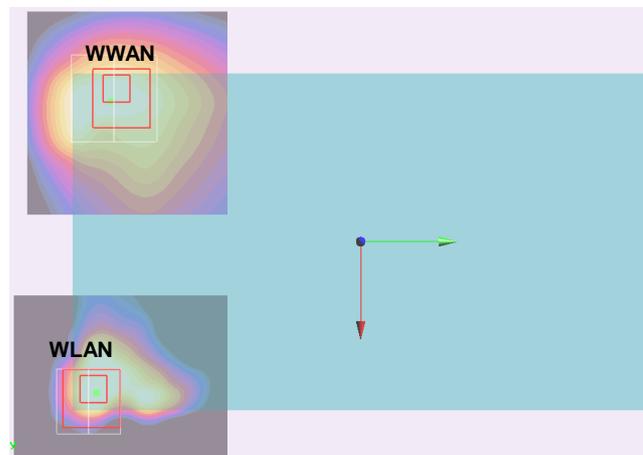
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
16	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	113.7	2.35	0.03	Not required
	LTE Band 7		1.17	0	-0.053	-0.107	-0.18				



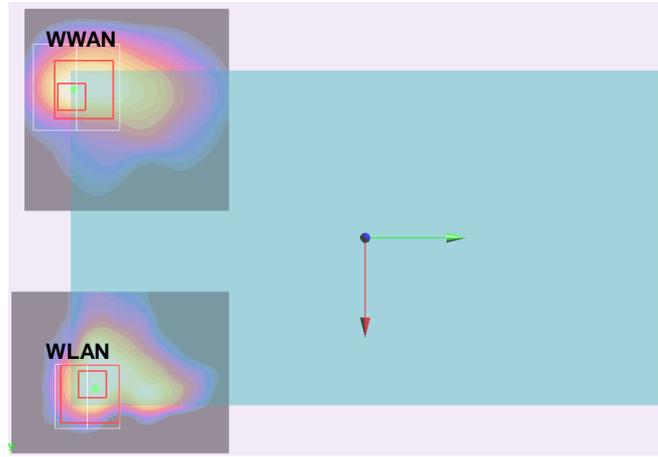
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
17	2.4GHz WLAN	Bottom Face	1.178	0	0.06	-0.094	-0.18	123.0	2.05	0.02	Not required
	LTE Band 7		0.869	1.4	-0.0626	-0.104	-0.181				



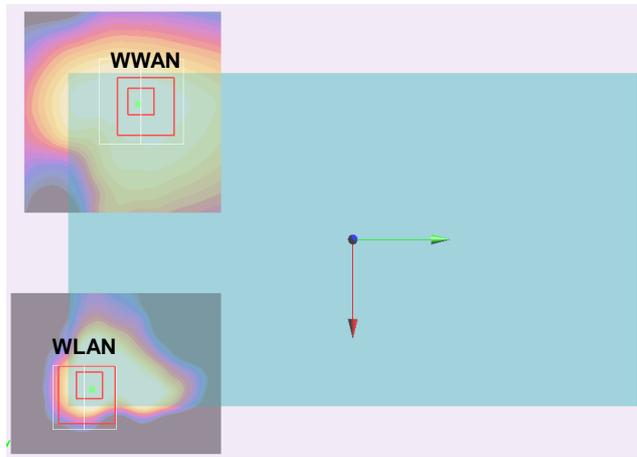
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
18	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	116.4	2.23	0.03	Not required
	GSM850		1.102	0	-0.061	-0.0925	-0.18				



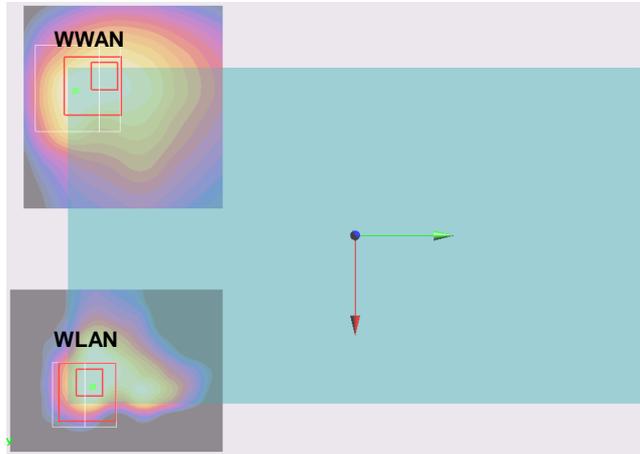
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
19	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	111.1	2.31	0.03	Not required
	GSM1900		1.185	0	-0.056	-0.106	-0.178				



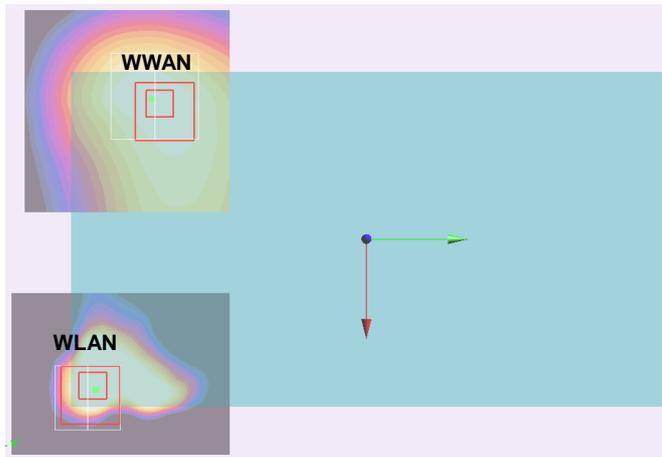
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
20	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	108.7	1.72	0.02	Not required
	GSM1900		0.592	1.4	-0.0515	-0.0805	-0.181				



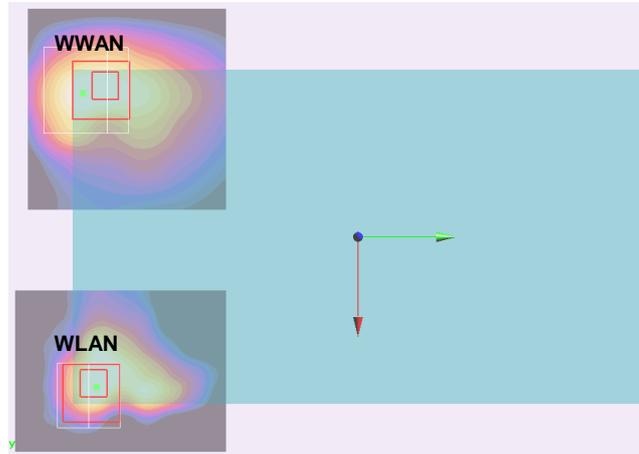
Case 21	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	117.6	2.08	0.03	Not required
	WCDMA V		0.951	0	-0.0625	-0.0965	-0.179				



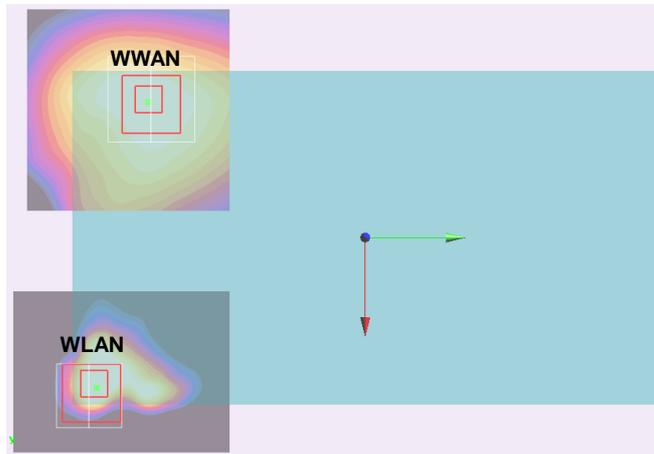
Case 22	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	110.8	1.61	0.02	Not required
	WCDMA V		0.476	1.4	-0.053	-0.0775	-0.181				



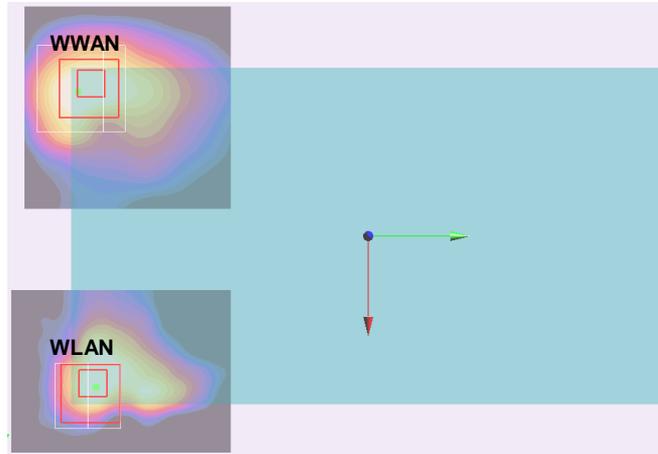
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
23	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	109.7	2.31	0.03	Not required
	WCDMA IV		1.181	0	-0.0545	-0.095	-0.18				



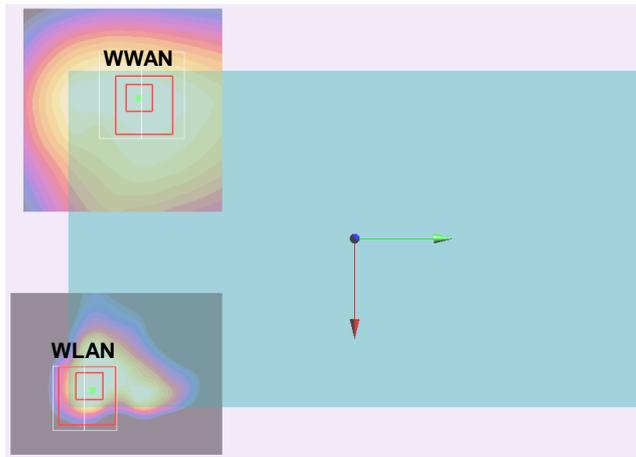
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
24	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	109.0	2.05	0.03	Not required
	WCDMA IV		0.922	1.4	-0.0515	-0.079	-0.181				



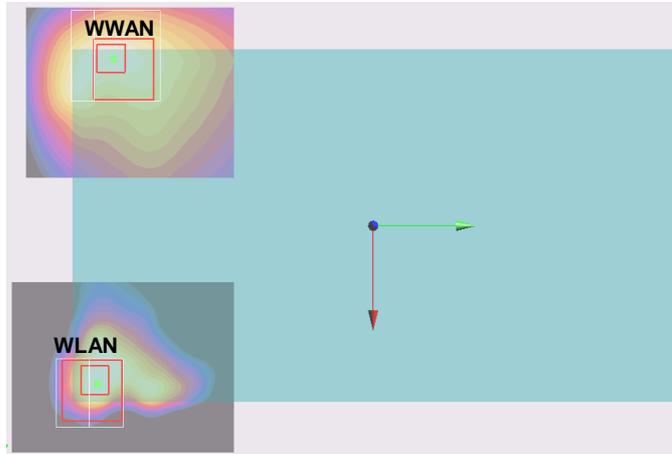
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
25	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	109.6	2.24	0.03	Not required
	WCDMA II		1.113	0	-0.0545	-0.0965	-0.179				



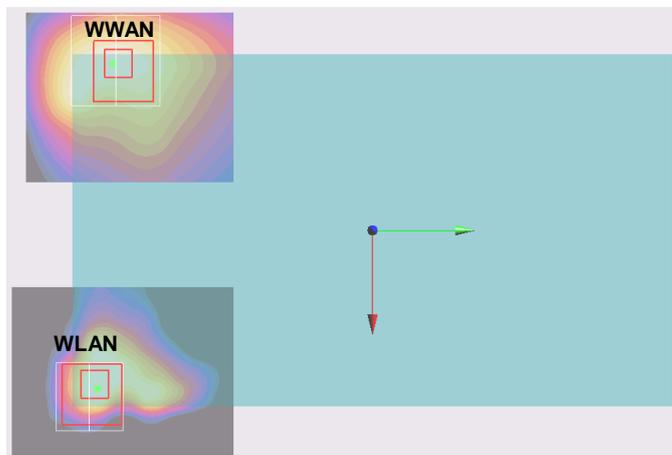
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
26	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	109.6	2.16	0.03	Not required
	WCDMA II		1.035	1.4	-0.0545	-0.0965	-0.179				



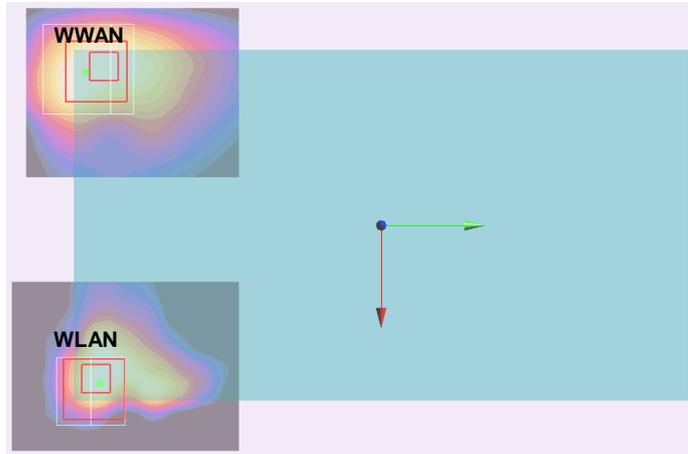
Case 27	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	115.0	2.31	0.03	Not required
	LTE Band 17		1.182	0	-0.06	-0.101	-0.181				



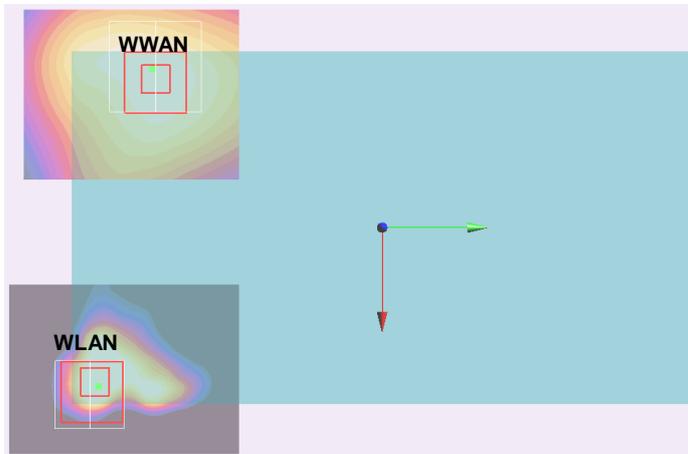
Case 28	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	115.4	2.25	0.03	Not required
	LTE Band 5		1.12	0	-0.06	-0.0925	-0.18				



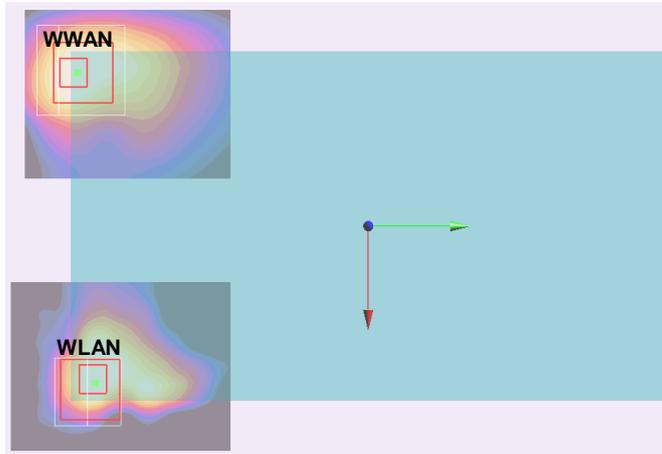
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
29	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	110.7	2.32	0.03	Not required
	LTE Band 4		1.191	0	-0.0555	-0.095	-0.178				



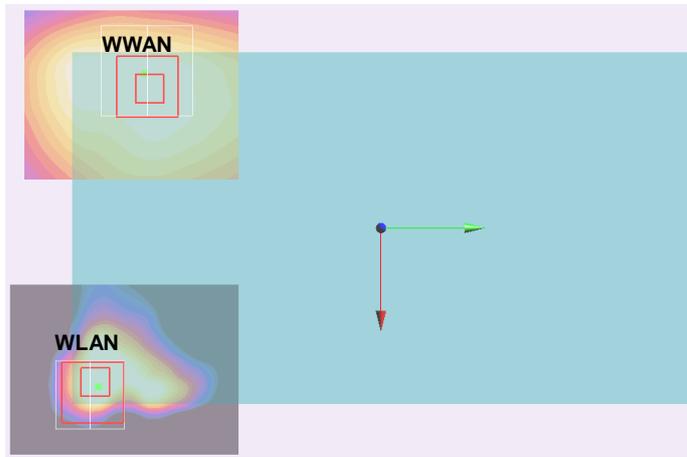
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
30	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	114.4	2.15	0.03	Not required
	LTE Band 4		1.025	1.4	-0.057	-0.079	-0.181				



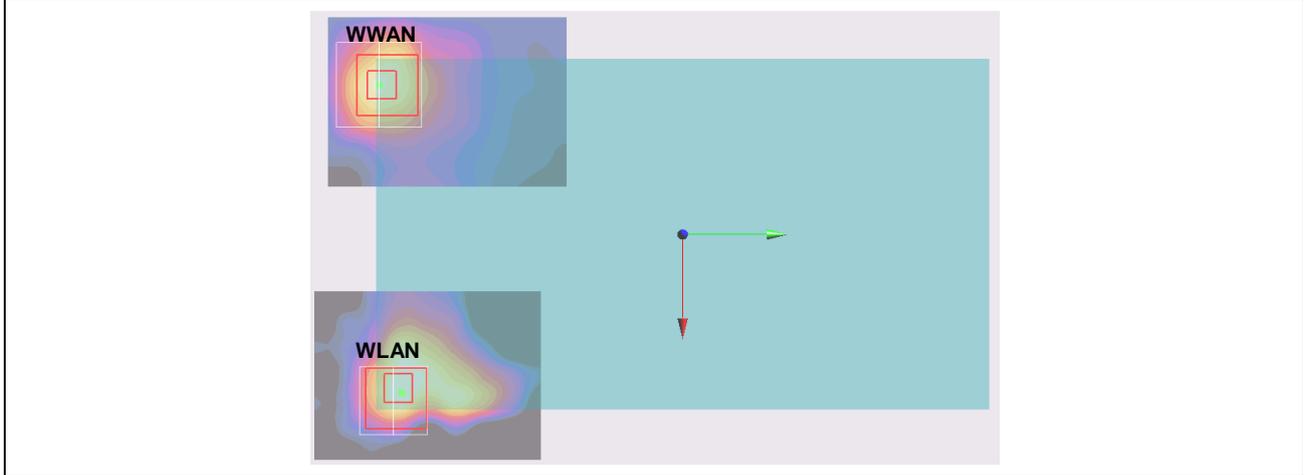
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
31	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	111.1	2.20	0.03	Not required
	LTE Band 2		1.069	0	-0.0555	-0.113	-0.179				



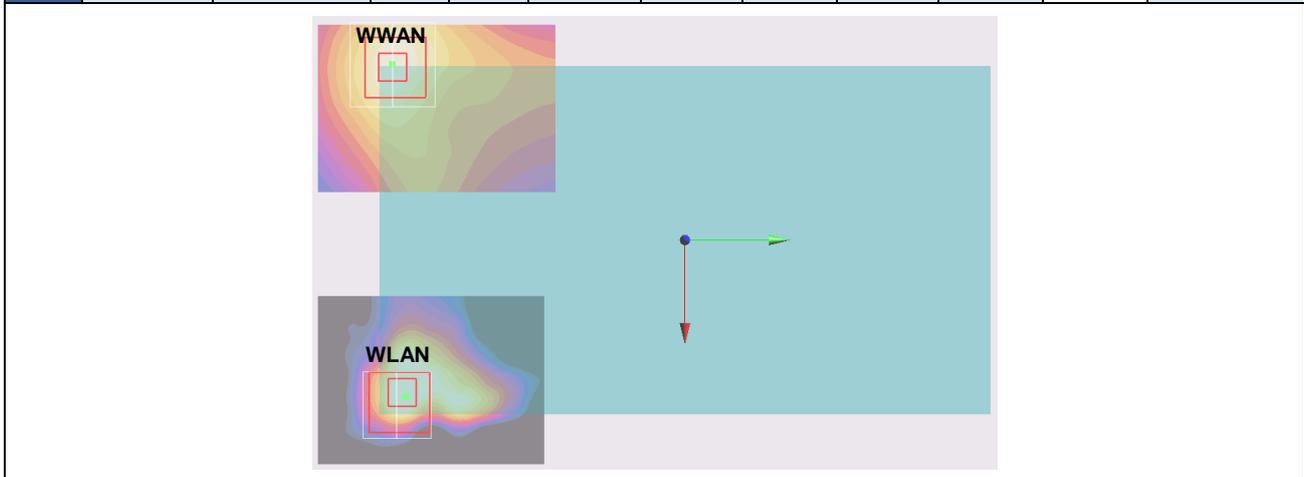
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
32	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	104.5	2.13	0.03	Not required
	LTE Band 2		0.997	1.4	-0.0475	-0.082	-0.181				



Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
33	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	108.1	2.30	0.03	Not required
	LTE Band 7		1.17	0	-0.053	-0.107	-0.18				



Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
34	5.2GHz WLAN	Bottom Face	1.129	0	0.055	-0.102	-0.178	117.7	2.00	0.02	Not required
	LTE Band 7		0.869	1.4	-0.0626	-0.104	-0.181				



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18. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture’s specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor ^(a)	1/k ^(b)	1/√3	1/√6	1/√2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 18.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual “root-sum-squares” (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.



Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						± 22.0 %	± 21.5 %

Table 18.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.55	Normal	1	1	1	± 6.55 %	± 6.55 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	2.0	Rectangular	√3	1	1	± 1.2 %	± 1.2 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Probe Positioning	9.9	Rectangular	√3	1	1	± 5.7 %	± 5.7 %
Max. SAR Eval.	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 12.8 %	± 12.6 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						± 25.6 %	± 25.2 %

Table 18.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz



19. References

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