


FCC SAR TEST REPORT

FCC ID : IHDT56ZS3
Equipment : Mobile Cellular Phone
Brand Name : Motorola
Model Name : XT2135-1
Applicant : Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA
Manufacturer : Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA
Standard : FCC 47 CFR Part 2 (2.1093)

The product was received on Jan 11, 2021 and testing was started from Jan 20, 2021 and completed on Feb 02, 2021. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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



Approved by: Cona Huang / Deputy Manager



SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan



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History of this test report

Report No.	Version	Description	Issued Date
FA0N2018-01	01	Initial issue of report	Feb. 18, 2021



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Motorola Mobility LLC, Mobile Cellular Phone, XT2135-1, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)	Highest Simultaneous Transmission 10g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 5mm)	Hotspot (Separation 5mm)	Product Specific (Separation 0mm)		
		1g SAR (W/kg)					
Licensed	GSM850	0.45	1.37	1.37	1.56	1.59	3.99
	GSM1900	0.09	1.23	1.23	3.22		
	WCDMA II	0.15	1.07	1.28	2.96		
	WCDMA IV	0.19	1.21	1.27	3.40		
	WCDMA V	0.50	1.43	1.43	2.99		
	LTE Band 2	0.19	1.29	1.34	2.99		
	LTE Band 5	0.40	1.41	1.41	2.90		
	LTE Band 7	0.68	1.34	1.34	3.24		
	LTE Band 12 / 17	0.22	0.88	0.88			
	LTE Band 13	0.27	1.06	1.06			
	LTE Band 4 / 66	0.15	1.13	1.17	3.41		
DTS	2.4GHz WLAN	1.05	1.05	1.05	0.74	1.48	3.98
NII	5GHz WLAN	1.12	1.18	1.16	1.81	1.59	3.99
DSS	Bluetooth	< 0.01	< 0.01	< 0.01		1.43	3.41
Date of Testing:		2021/1/20 ~ 2021/2/5					

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) 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 1528-2013 and FCC KDB publications

Reviewed by: Jason Wang
Report Producer: Carlie Tsai

2. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01
- FCC KDB 941225 D07 UMPC Mini Tablet v01r02



3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2135-1
FCC ID	IHDT56ZS3
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 66: 1710 MHz ~ 1780 MHz WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN U-NII 1: 5150 MHz ~ 5250 MHz WLAN U-NII 2: 5250 MHz ~ 5350 MHz WLAN U-NII 3: 5470 MHz ~ 5725 MHz WLAN U-NII 4: 5725 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM WLAN: 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Production Unit
Remark:	
1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.	



3.2 Maximum Output Power

General Note:

1. The device implements audio receiver, sensor detection and hotspot power reduction for SAR compliance at different exposure conditions (Head / Hotspot / Body-worn / Extremity) and the device will manage to ensure the averaged power level not exceeding the associated below power table. Proximity sensors are used to detect the exposure conditions and the verification is illustrated in section 4. Details about the power management decision are provided in the operational description.
2. Below table shows maximum tune up output power configured for this EUT for various transmit conditions by manufacturer, and the detail power measurement refer to section 13 and 14
3. In the table below which the output power states may have difference output power level. If some output power states measurement was not include in the section13 and 14, because the same output power level has been presented within the other output power states and use the same level to do SAR tested.

Frequency Band	Default	Head State 1		Hotspot State 2		Body-worn State 3		Extremity State 4	
	Tune-Up Limit (dBm)	Tune-Up Limit (dBm)	power reduction (dB)	Tune-Up Limit (dBm)	power reduction (dB)	Tune-Up Limit (dBm)	power reduction (dB)	Tune-Up Limit (dBm)	power reduction (dB)
GSM850 GSM 1 Tx slot	33.50	33.50	0.00	31.50	2.00	31.50	2.00	33.50	0.00
GSM850 GPRS 1 Tx slot	33.50	33.50	0.00	31.50	2.00	31.50	2.00	33.50	0.00
GSM850 GPRS 2 Tx slots	31.50	31.50	0.00	29.50	2.00	29.50	2.00	31.50	0.00
GSM850 GPRS 3 Tx slots	29.50	29.50	0.00	27.50	2.00	27.50	2.00	29.50	0.00
GSM850 GPRS 4 Tx slots	27.50	27.50	0.00	25.50	2.00	25.50	2.00	27.50	0.00
GSM850 EDGE 1 Tx slot	27.50	27.50	0.00	25.50	2.00	25.50	2.00	27.50	0.00
GSM850 EDGE 2 Tx slots	25.50	25.50	0.00	23.50	2.00	23.50	2.00	25.50	0.00
GSM850 EDGE 3 Tx slots	23.50	23.50	0.00	21.50	2.00	21.50	2.00	23.50	0.00
GSM850 EDGE 4 Tx slots	21.00	21.00	0.00	19.00	2.00	19.00	2.00	21.00	0.00
GSM1900 GSM 1 Tx slot	30.50	30.50	0.00	23.50	7.00	25.00	5.50	28.00	2.50
GSM1900 GPRS 1 Tx slot	30.50	30.50	0.00	23.50	7.00	25.00	5.50	28.00	2.50
GSM1900 GPRS 2 Tx slots	28.50	28.50	0.00	21.50	7.00	23.00	5.50	26.00	2.50
GSM1900 GPRS 3 Tx slots	26.50	26.50	0.00	19.50	7.00	21.00	5.50	24.00	2.50
GSM1900 GPRS 4 Tx slots	24.50	24.50	0.00	17.50	7.00	19.00	5.50	22.00	2.50
GSM1900 EDGE 1 Tx slot	26.50	26.50	0.00	19.50	7.00	21.00	5.50	24.00	2.50
GSM1900 EDGE 2 Tx slots	24.50	24.50	0.00	17.50	7.00	19.00	5.50	22.00	2.50
GSM1900 EDGE 3 Tx slots	22.50	22.50	0.00	15.50	7.00	17.00	5.50	20.00	2.50
GSM1900 EDGE 4 Tx slots	20.50	20.50	0.00	13.50	7.00	15.00	5.50	18.00	2.50
WCDMA II	24.00	24.00	0.00	15.00	9.00	16.50	7.50	19.00	5.00
WCDMA VI	24.00	24.00	0.00	18.00	6.00	19.50	4.50	21.50	2.50
WCDMA V	24.00	24.00	0.00	22.50	1.50	22.50	1.50	24.00	0.00
LTE B2	24.00	24.00	0.00	15.00	9.00	16.50	7.50	19.50	4.50
LTE B4	24.00	24.00	0.00	18.00	6.00	19.50	4.50	22.50	1.50
LTE B5	24.00	24.00	0.00	23.00	1.00	23.00	1.00	24.00	0.00
LTE B7	24.00	24.00	0.00	19.50	4.50	19.50	4.50	21.50	2.50
LTE B12	24.00	24.00	0.00	24.00	0.00	24.00	0.00	24.00	0.00
LTE B17	24.00	24.00	0.00	24.00	0.00	24.00	0.00	24.00	0.00
LTE B66	24.00	24.00	0.00	18.50	5.50	19.50	4.50	22.50	1.50



Band	Mode	Channel	Frequency (MHz)	Default	Head State 1		Hotspot State 2		Body-worn State 3		Extremity State 4		
				Tune-Up Limit (dBm)	Tune-Up Limit (dBm)	power reduction (dB)	Tune-Up Limit (dBm)	power reduction (dB)	Tune-Up Limit (dBm)	power reduction (dB)	Tune-Up Limit (dBm)	power reduction (dB)	
2.4GHz WLAN	802.11b 1Mbps	1	2412	16.00	16.00	0.00	16.00	0.00	16.00	0.00	16.00	0.00	
		6	2437	16.50	16.50	0.00	16.50	0.00	16.50	0.00	16.50	0.00	
		11	2462	18.50	17.00	1.50	17.00	1.50	17.00	1.50	18.50	0.00	
	802.11g 6Mbps	1	2412	16.00	16.00	0.00	16.00	0.00	16.00	0.00	16.00	0.00	
		6	2437	17.00	17.00	0.00	17.00	0.00	17.00	0.00	17.00	0.00	
		11	2462	15.00	15.00	0.00	15.00	0.00	15.00	0.00	15.00	0.00	
	802.11n-HT20 MCS0	1	2412	16.00	16.00	0.00	16.00	0.00	16.00	0.00	16.00	0.00	
		6	2437	17.00	17.00	0.00	17.00	0.00	17.00	0.00	17.00	0.00	
		11	2462	14.00	14.00	0.00	14.00	0.00	14.00	0.00	14.00	0.00	
5.2GHz WLAN	802.11a 6Mbps	36	5180	18.50	18.50	0.00	13.00	5.50	13.00	5.50	18.50	0.00	
		40	5200	18.50	18.50	0.00	13.00	5.50	13.00	5.50	18.50	0.00	
		44	5220	18.50	18.50	0.00	13.00	5.50	13.00	5.50	18.50	0.00	
		48	5240	18.50	18.50	0.00	13.00	5.50	13.00	5.50	18.50	0.00	
	802.11n-HT20 MCS0	36	5180	18.50	18.50	0.00	13.00	5.50	13.00	5.50	18.50	0.00	
		40	5200	18.00	18.00	0.00	12.50	5.50	12.50	5.50	18.00	0.00	
		44	5220	18.50	18.50	0.00	13.00	5.50	13.00	5.50	18.50	0.00	
	802.11n-HT40 MCS0	48	5240	18.00	18.00	0.00	12.50	5.50	12.50	5.50	18.00	0.00	
		38	5190	14.00	14.00	0.00	8.50	5.50	8.50	5.50	14.00	0.00	
		46	5230	17.50	17.50	0.00	12.00	5.50	12.00	5.50	17.50	0.00	
	802.11ac-VHT20 MCS0	36	5180	18.50	18.50	0.00	13.00	5.50	13.00	5.50	18.50	0.00	
		40	5200	18.00	18.00	0.00	12.50	5.50	12.50	5.50	18.00	0.00	
		44	5220	18.00	18.00	0.00	12.50	5.50	12.50	5.50	18.00	0.00	
		48	5240	18.00	18.00	0.00	12.50	5.50	12.50	5.50	18.00	0.00	
	802.11ac-VHT40 MCS0	38	5190	17.50	17.50	0.00	12.00	5.50	12.00	5.50	17.50	0.00	
		46	5230	17.50	17.50	0.00	12.00	5.50	12.00	5.50	17.50	0.00	
	802.11ac-VHT80 MCS0	42	5210	12.00	12.00	0.00	12.00	0.00	12.00	0.00	12.00	0.00	
		52	5260	18.00	18.00	0.00	18.00	0.00	15.00	3.00	18.00	0.00	
5.3GHz WLAN	802.11a 6Mbps	56	5280	18.50	18.50	0.00	18.50	0.00	15.00	3.50	18.50	0.00	
		60	5300	18.50	18.50	0.00	18.50	0.00	15.50	3.00	18.50	0.00	
		64	5320	18.50	18.50	0.00	18.50	0.00	15.50	3.00	18.50	0.00	
		52	5260	18.50	18.50	0.00	18.50	0.00	15.50	3.00	18.50	0.00	
	802.11n-HT20 MCS0	56	5280	18.50	18.50	0.00	18.50	0.00	15.50	3.00	18.50	0.00	
		60	5300	18.00	18.00	0.00	18.00	0.00	15.00	3.00	18.00	0.00	
		64	5320	18.50	18.50	0.00	18.50	0.00	15.50	3.00	18.50	0.00	
	802.11n-HT40 MCS0	54	5270	17.50	17.50	0.00	17.50	0.00	14.50	3.00	17.50	0.00	
		62	5310	15.00	15.00	0.00	15.00	0.00	12.00	3.00	15.00	0.00	
	802.11ac-VHT20 MCS0	52	5260	18.50	18.50	0.00	18.50	0.00	15.50	3.00	18.50	0.00	
		56	5280	18.50	18.50	0.00	18.50	0.00	15.50	3.00	18.50	0.00	
		60	5300	18.00	18.00	0.00	18.00	0.00	15.00	3.00	18.00	0.00	
		64	5320	18.00	18.00	0.00	18.00	0.00	15.00	3.00	18.00	0.00	
	802.11ac-VHT40 MCS0	54	5270	17.50	17.50	0.00	17.50	0.00	14.50	3.00	17.50	0.00	
		62	5310	17.50	17.50	0.00	17.50	0.00	14.50	3.00	17.50	0.00	
	802.11ac-VHT80 MCS0	58	5290	14.00	14.00	0.00	14.00	0.00	14.00	0.00	14.00	0.00	
	5.5GHz WLAN	802.11a 6Mbps	100	5500	18.00	16.50	1.50	18.00	0.00	18.00	0.00	18.00	0.00
			116	5580	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00
124			5620	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00	
132			5660	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00	
144			5720	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00	
802.11n-HT20 MCS0		100	5500	18.00	16.50	1.50	18.00	0.00	18.00	0.00	18.00	0.00	
		116	5580	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00	
		124	5620	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00	



		132	5660	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00
		144	5720	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00
	802.11n-HT40 MCS0	102	5510	15.00	15.00	0.00	15.00	0.00	15.00	0.00	15.00	0.00
		110	5550	17.50	16.50	1.00	17.50	0.00	17.50	0.00	17.50	0.00
		126	5630	17.50	16.50	1.00	17.50	0.00	17.50	0.00	17.50	0.00
		134	5670	17.50	16.50	1.00	17.50	0.00	17.50	0.00	17.50	0.00
		142	5710	17.50	16.50	1.00	17.50	0.00	17.50	0.00	17.50	0.00
	802.11ac-VHT20 MCS0	100	5500	18.00	16.50	1.50	18.00	0.00	18.00	0.00	18.00	0.00
		116	5580	18.00	17.00	1.00	18.00	0.00	18.00	0.00	18.00	0.00
		124	5620	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00
		132	5660	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00
		144	5720	18.50	17.00	1.50	18.50	0.00	18.50	0.00	18.50	0.00
	802.11ac-VHT40 MCS0	102	5510	17.50	16.50	1.00	17.50	0.00	17.50	0.00	17.50	0.00
		110	5550	17.50	16.50	1.00	17.50	0.00	17.50	0.00	17.50	0.00
		126	5630	17.50	16.50	1.00	17.50	0.00	17.50	0.00	17.50	0.00
		134	5670	17.50	16.50	1.00	17.50	0.00	17.50	0.00	17.50	0.00
		142	5710	17.50	16.50	1.00	17.50	0.00	17.50	0.00	17.50	0.00
	802.11ac-VHT80 MCS0	106	5530	13.00	13.00	0.00	13.00	0.00	13.00	0.00	13.00	0.00
122		5610	17.00	16.00	1.00	17.00	0.00	17.00	0.00	17.00	0.00	
138		5690	17.00	16.00	1.00	17.00	0.00	17.00	0.00	17.00	0.00	
5.8GHz WLAN	802.11a 6Mbps	149	5745	18.50	15.50	3.00	18.50	0.00	18.50	0.00	18.50	0.00
		157	5785	18.50	15.50	3.00	18.50	0.00	18.50	0.00	18.50	0.00
		165	5825	18.50	15.50	3.00	18.50	0.00	18.50	0.00	18.50	0.00
	802.11n-HT20 MCS0	149	5745	18.00	15.00	3.00	18.00	0.00	18.00	0.00	18.00	0.00
		157	5785	18.50	15.50	3.00	18.50	0.00	18.50	0.00	18.50	0.00
		165	5825	18.50	15.50	3.00	18.50	0.00	18.50	0.00	18.50	0.00
	802.11n-HT40 MCS0	151	5755	17.50	14.50	3.00	17.50	0.00	17.50	0.00	17.50	0.00
		159	5795	17.50	14.50	3.00	17.50	0.00	17.50	0.00	17.50	0.00
	802.11ac-VHT20 MCS0	149	5745	18.00	15.00	3.00	18.00	0.00	18.00	0.00	18.00	0.00
		157	5785	18.50	15.50	3.00	18.50	0.00	18.50	0.00	18.50	0.00
		165	5825	18.50	15.50	3.00	18.50	0.00	18.50	0.00	18.50	0.00
	802.11ac-VHT40 MCS0	151	5755	17.50	14.50	3.00	17.50	0.00	17.50	0.00	17.50	0.00
		159	5795	17.50	14.50	3.00	17.50	0.00	17.50	0.00	17.50	0.00
	802.11ac-VHT80 MCS0	155	5775	17.00	15.00	2.00	17.00	0.00	17.00	0.00	17.00	0.00



3.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	IHDT56ZS3																																																														
Equipment Name	Mobile Cellular Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 66: 1710 MHz ~ 1780 MHz																																																														
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE MPR permanently built-in by design	<p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{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> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N _{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	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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256 QAM	≥ 1						≤ 5																																																								
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, detail refer to operational description																																																														
LTE Carrier Aggregation Combinations	Intra-Band possible combinations and the detail power measurement please referred to section 13.																																																														
LTE Carrier Aggregation Additional Information	This device supports maximum of 3 carriers in the downlink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICl, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																																														

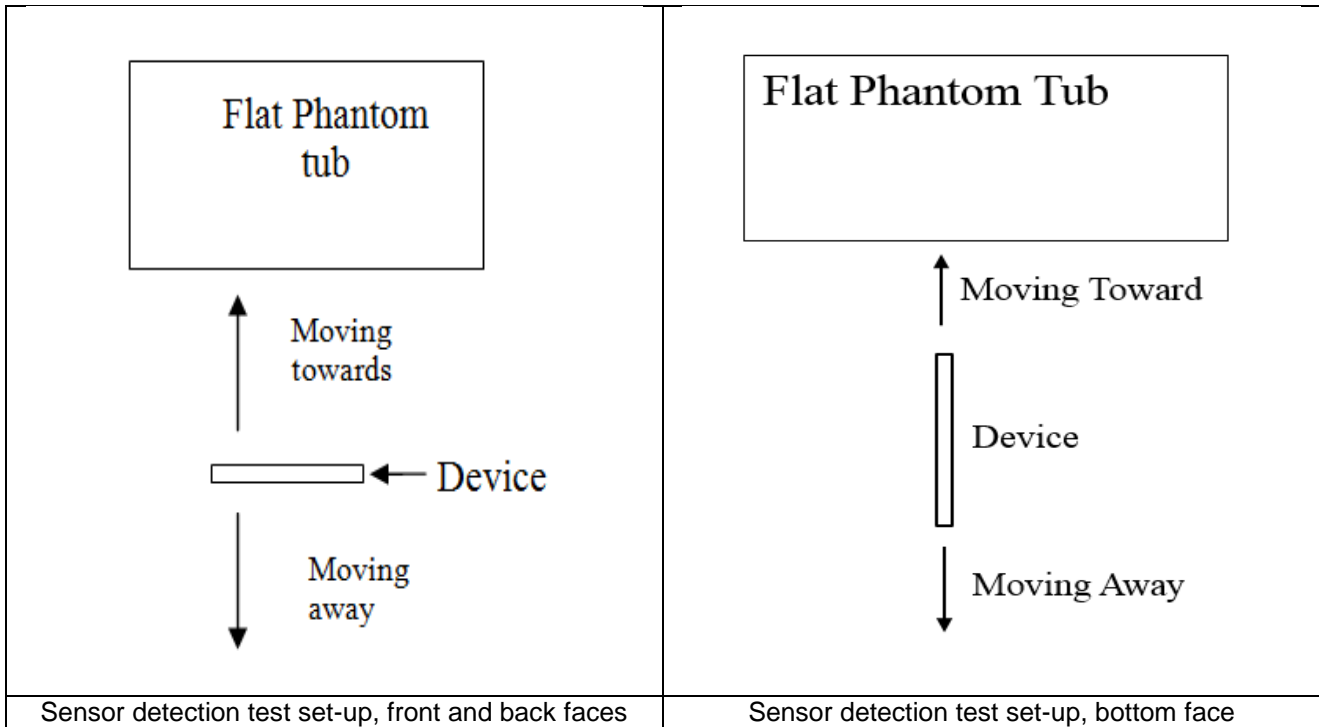


Transmission (H, M, L) channel numbers and frequencies in each LTE band													
LTE Band 2													
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (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 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 5													
	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	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829	
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844	
LTE Band 7													
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 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	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510	
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560	
LTE Band 12													
	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	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704	
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711	
LTE Band 13													
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #
L	23205		779.5		23230		782		23255		784.5		23230
M	23230		782		23230		782		23230		782		23230
H	23255		784.5		23230		782		23255		784.5		23230
LTE Band 17													
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #
L	23755		706.5		23780		709		23790		710		23780
M	23790		710		23790		710		23790		710		23790
H	23825		713.5		23800		711		23800		711		23800
LTE Band 66													
	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	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720	
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770	

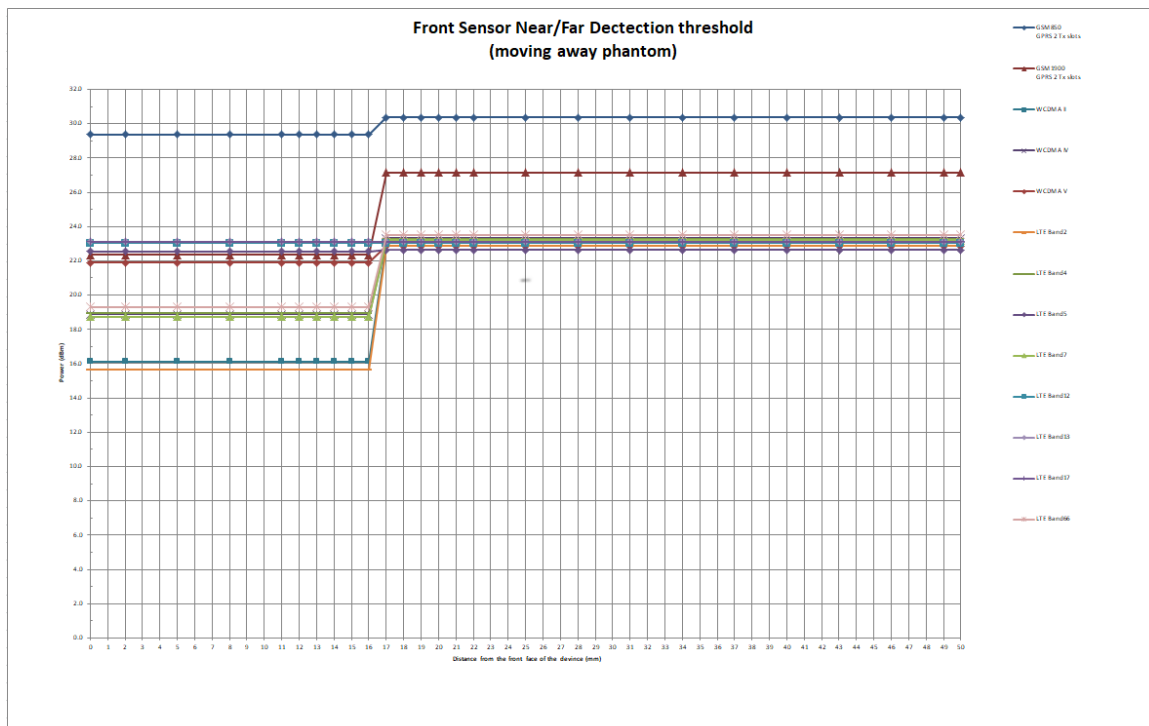
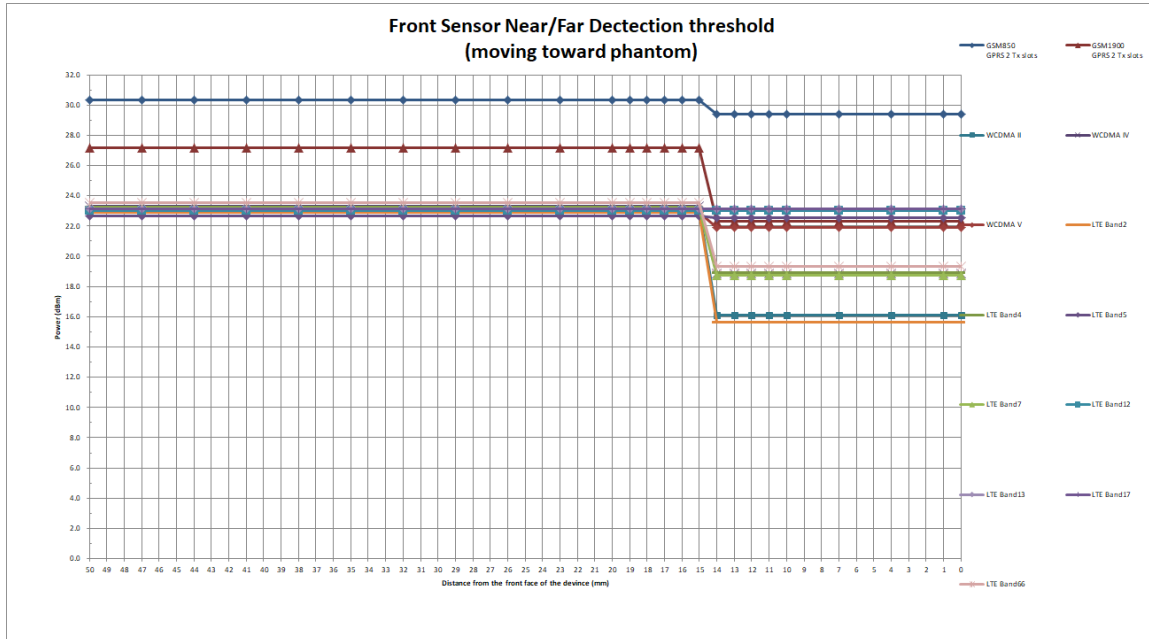
4. Proximity Sensor Triggering Test

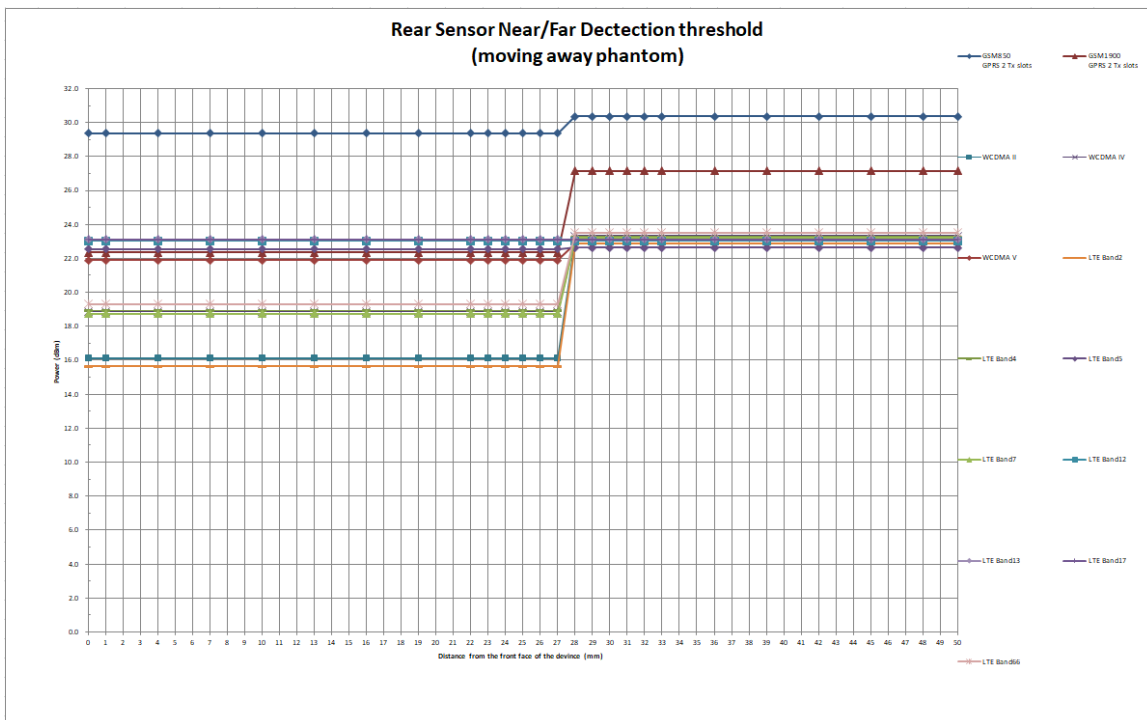
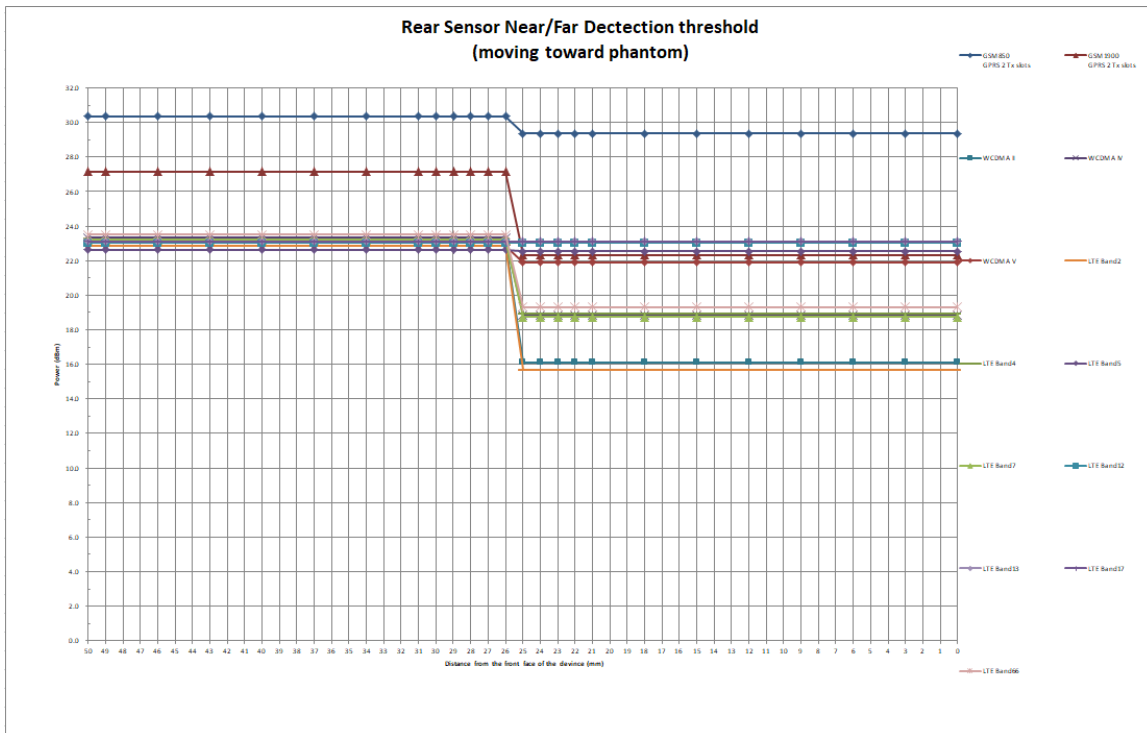
<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (3700MHz) and lowest (750MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back of the device.
3. When the sensor is active, the device will reduce maximum output powers on the GSM850/GSM1900, UMTS B2/B4/B5 and LTE B2/B4/B5/B7/B66 transmitter.
4. Body-worn/Hotspot SAR was tested at 5mm separation and extremity SAR was tested at 0mm separation, at the reduced power level in each associated power table. 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:
 - a. For Body-worn:
 - Front: [13 mm](#)
 - Back: [24 mm](#)
 - b. For Extremity:
 - Front: [7 mm](#)
 - Back: [19 mm](#)
 - Bottom: [15 mm](#)

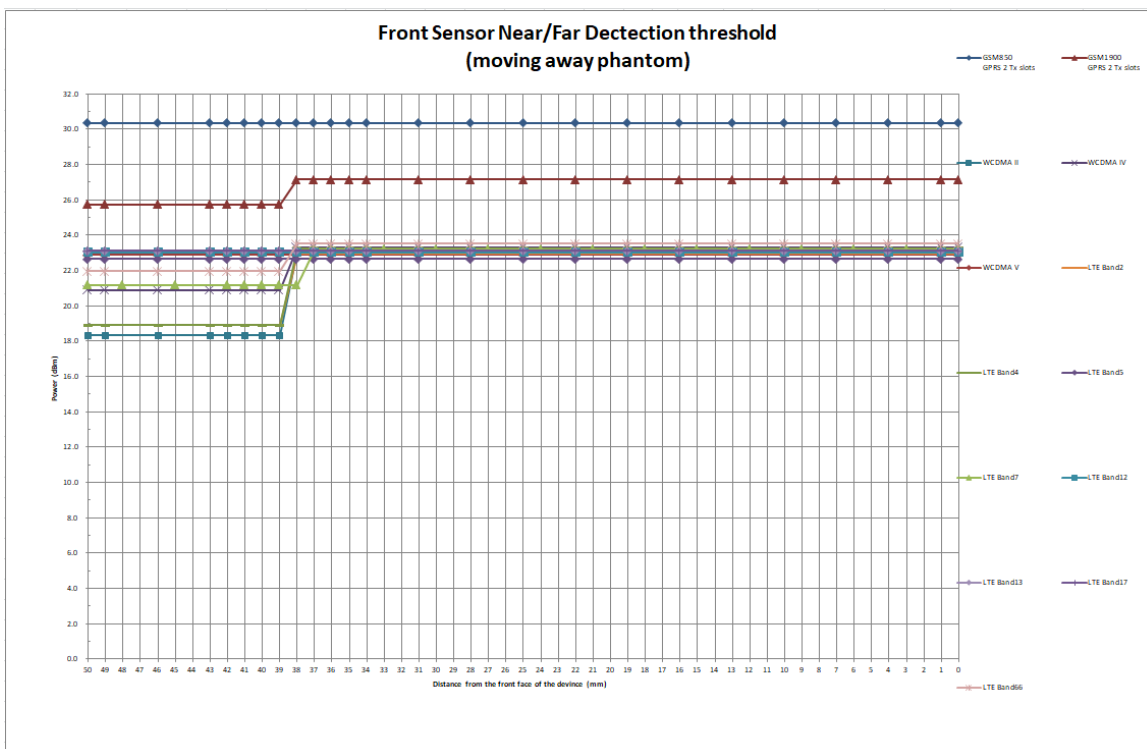
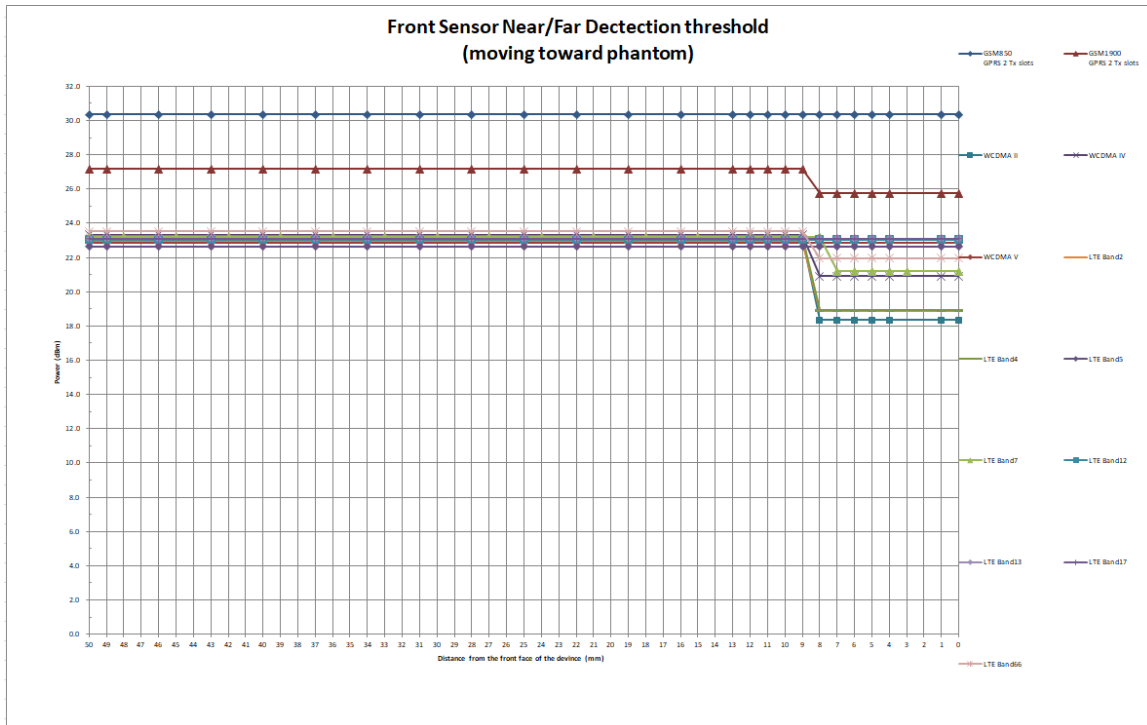


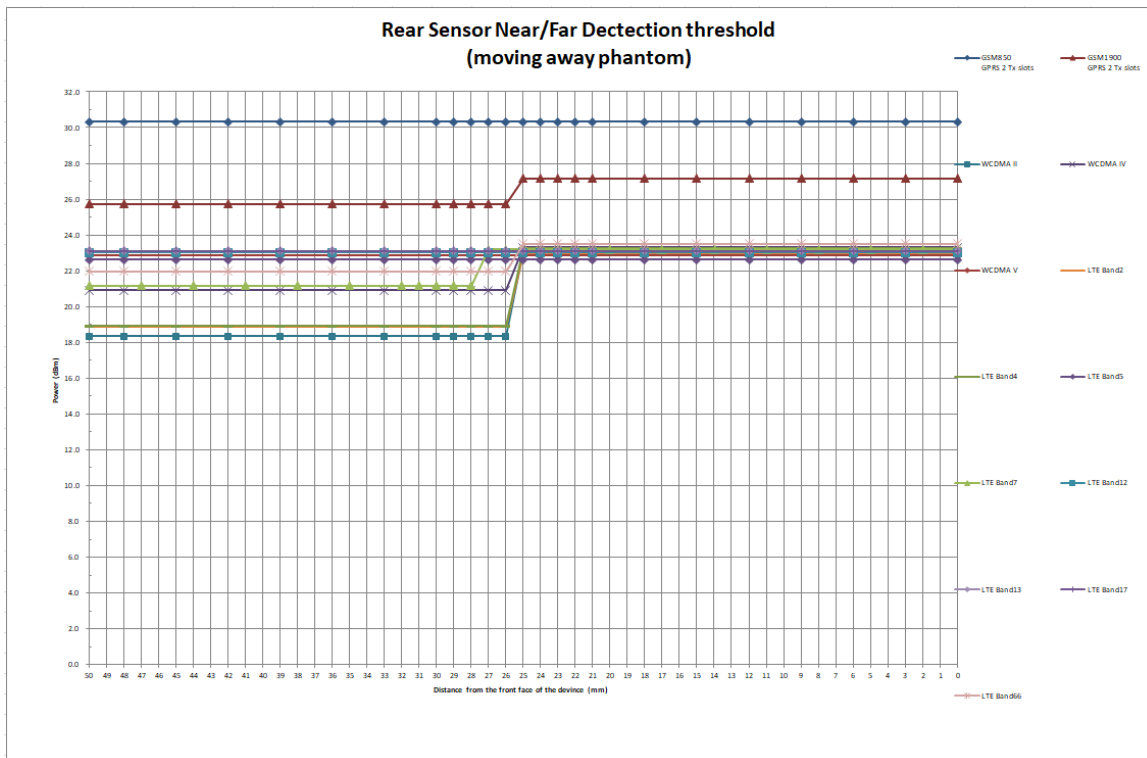
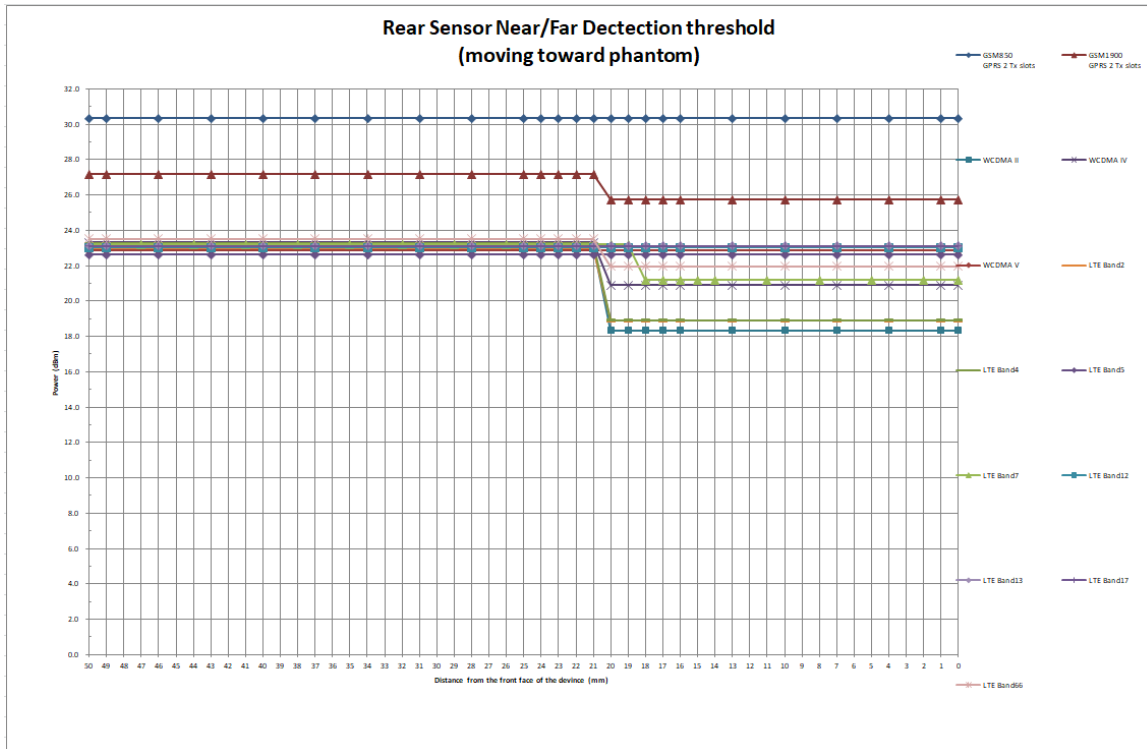
Proximity Top+ Bottom Sensor Trigger Distance for Body-worn(mm)				
Position	Front		Back	
Position	Moving towards	Moving away	Moving towards	Moving away
Minimum	14	16	25	27

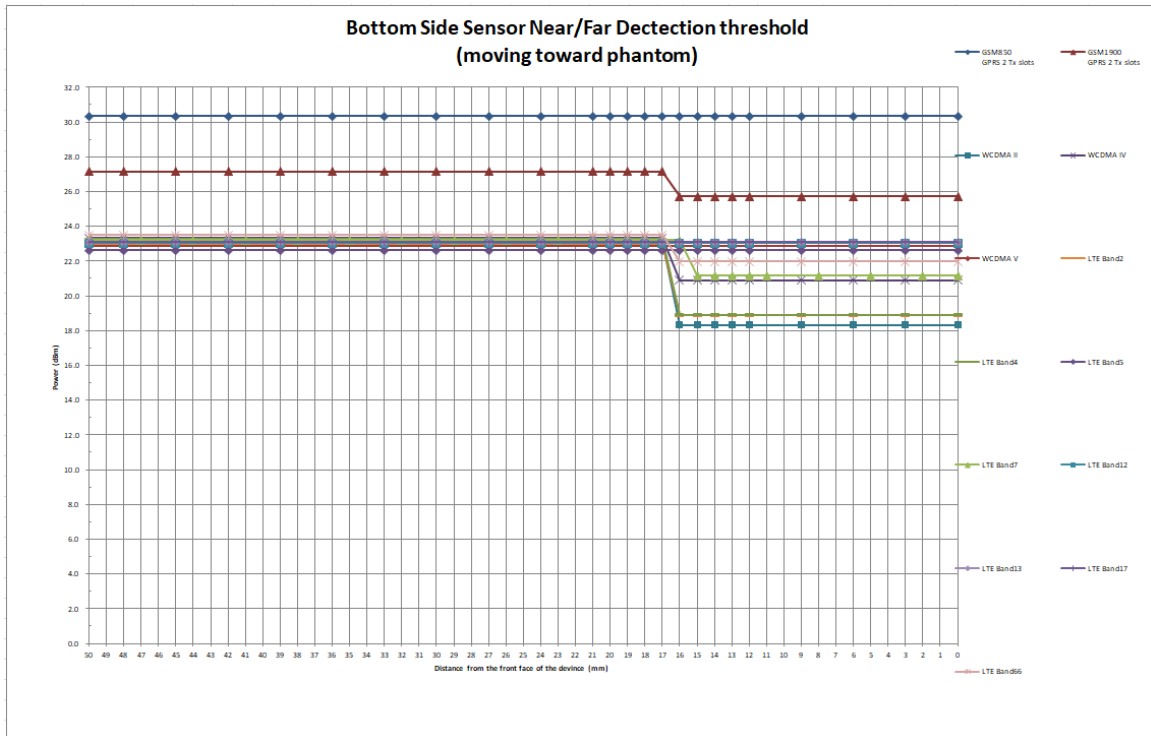
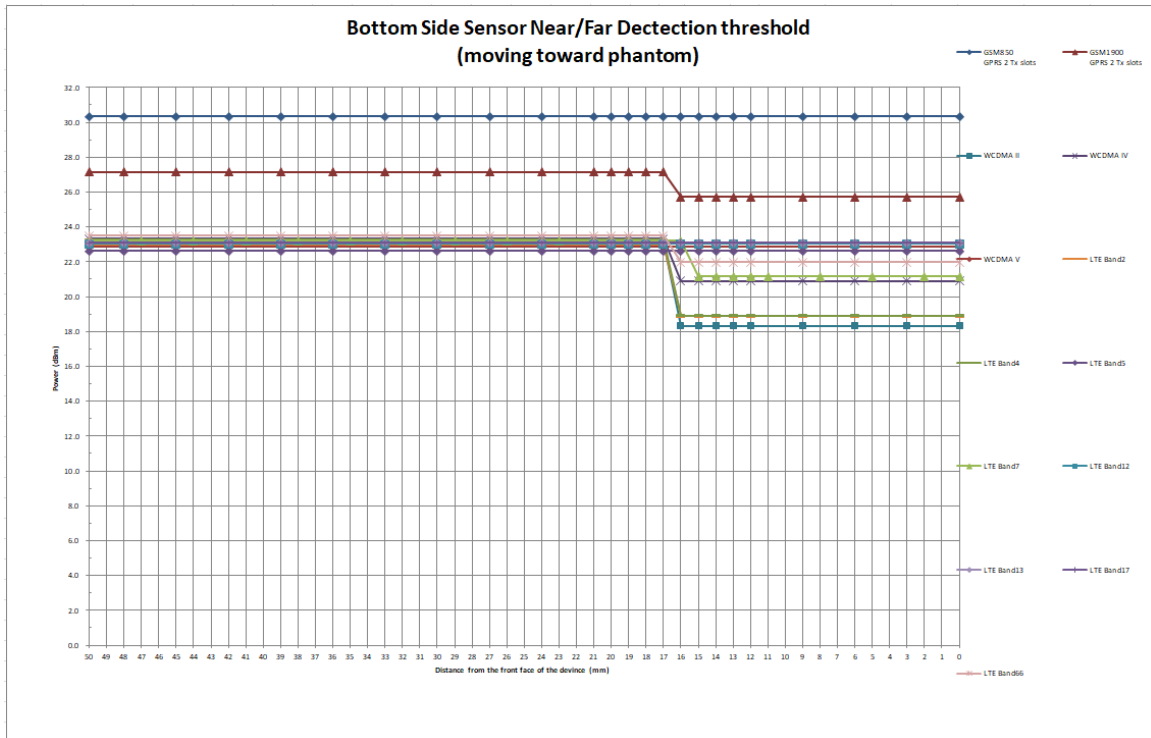




Proximity Bottom Sensor Trigger Distance (mm) for Extremity						
Position	Front		Back		Bottom Side	
Position	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	8	11	20	24	16	22









5. RF Exposure Limits

5.1 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.

5.2 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)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

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

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
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.

6. Specific Absorption Rate (SAR)

6.1 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.

6.2 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:

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

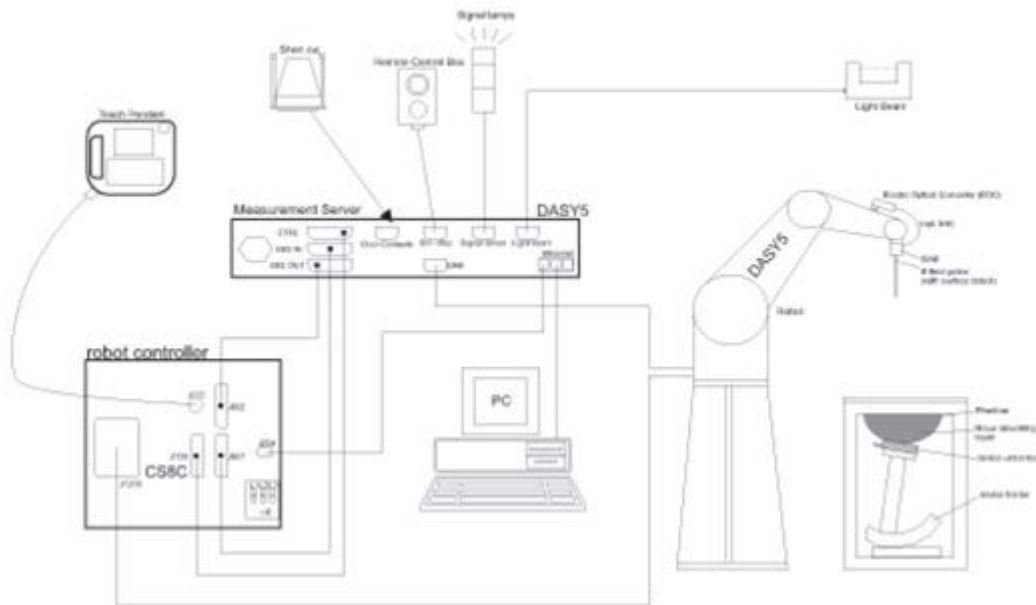
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. 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.

7.1 Test Site Location


The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 0007) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory			
Test Site Location	TW1190 No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, CHINESE TAIPEI		TW0007 No. 58, Aly. 75, Ln. 564, Wehnuia 3rd, Rd., Guishan Dist., Taoyuan City, CHINESE TAIPEI	
	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY
Test Site No.	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY
	SAR06-HY	SAR10-HY		


7.2 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ± 0.2 dB (30 MHz – 4 GHz)	
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 μ W/g – >100 mW/g; Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm	

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ± 0.2 dB (30 MHz – 6 GHz)	
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

7.3 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

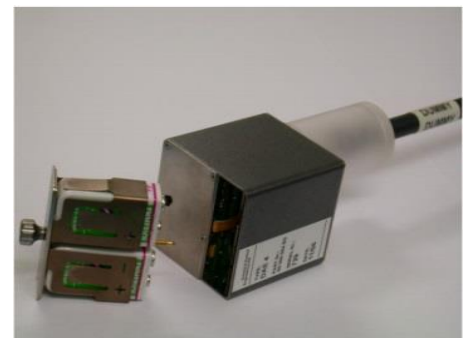



Fig 5.1 Photo of DAE


7.4 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

7.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Mounting Device for Laptops

8. 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

8.1 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

8.2 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.

8.3 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 dB) 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 D01v01r04 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.	

8.4 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 D01v01r04 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.				

8.5 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.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASy 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.



9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit ⁽²⁾	D750V3	1107	Mar. 08, 2019	Mar. 06, 2021
SPEAG	835MHz System Validation Kit ⁽²⁾	D835V2	4d167	Nov. 25, 2019	Nov. 23, 2021
SPEAG	1750MHz System Validation Kit ⁽²⁾	D1750V2	1112	Mar. 07, 2019	Mar. 05, 2021
SPEAG	1900MHz System Validation Kit ⁽²⁾	D1900V2	5d041	Sep. 11, 2018	Sep. 08, 2021
SPEAG	2450MHz System Validation Kit ⁽²⁾	D2450V2	736	Aug. 31, 2018	Aug. 28, 2021
SPEAG	2600MHz System Validation Kit ⁽²⁾	D2600V2	1008	Aug. 31, 2018	Aug. 28, 2021
SPEAG	5GHz System Validation Kit ⁽²⁾	D5GHzV2	1006	Sep. 27, 2018	Sep. 24, 2021
SPEAG	Data Acquisition Electronics	DAE4	376	Nov. 23, 2020	Nov. 22, 2021
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 23, 2020	Jul. 22, 2021
SPEAG	Data Acquisition Electronics	DAE4	915	Jun. 22, 2020	Jun. 21, 2021
SPEAG	Data Acquisition Electronics	DAE4	1311	Aug. 25, 2020	Aug. 24, 2021
SPEAG	Dosimetric E-Field Probe	ES3DV3	3169	May. 27, 2020	May. 26, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	3642	Apr. 29, 2020	Apr. 28, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	7375	Dec. 21, 2020	Dec. 20, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	7346	May. 20, 2020	May. 19, 2021
RCPTWN	Thermometer	HTC-1	TM685-1	Nov. 10, 2020	Nov. 09, 2021
RCPTWN	Thermometer	HTC-1	TM560-2	Nov. 10, 2020	Nov. 09, 2021
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Nov. 10, 2020	Nov. 09, 2021
Keysight	Wireless Communication Test Set	E5515C	MY50267236	Mar. 18, 2020	Mar. 17, 2021
R&S	BT Base Station	CBT	100815	Feb. 15, 2020	Feb. 14, 2021
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Nov. 11, 2020	Nov. 10, 2021
Keysight	ENA Network Analyzer	E5071C	MY46101588	Jun. 10, 2020	Jun. 09, 2021
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 16, 2020	Sep. 15, 2021
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Nov. 06, 2020	Nov. 05, 2021
Anritsu	Power Meter	ML2495A	1419002	Aug. 19, 2020	Aug. 18, 2021
Anritsu	Power Sensor	MA2411B	1911176	Aug. 18, 2020	Aug. 17, 2021
Anritsu	Power Meter	ML2495A	1804003	Oct. 21, 2020	Oct. 20, 2021
Anritsu	Power Sensor	MA2411B	1726150	Oct. 21, 2020	Oct. 20, 2021
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 30, 2020	Jun. 29, 2021
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Mar. 12, 2020	Mar. 11, 2021
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 21, 2020	Oct. 20, 2021
Mini-Circuits	Power Amplifier	ZVE-8G+	479102029	Aug. 26, 2020	Aug. 25, 2021
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

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.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.



10. System Verification

10.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18°C to 25°C, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.

The liquid tissue depth was at least 15cm in the phantom for all SAR testing

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
750	22.2	0.904	43.000	0.89	41.90	1.57	2.63	±5	2021/1/22
750	22.2	0.881	40.956	0.89	41.90	-1.01	-2.25	±5	2021/1/22
750	22.4	0.896	41.600	0.89	41.90	0.67	-0.72	±5	2021/1/24
835	22.2	0.871	40.800	0.90	41.50	-3.22	-1.69	±5	2021/1/22
835	22.2	0.914	40.660	0.90	41.50	1.56	-2.02	±5	2021/1/22
835	22.4	0.931	41.300	0.90	41.50	3.44	-0.48	±5	2021/1/24
835	22.6	0.921	41.100	0.90	41.50	2.33	-0.96	±5	2021/1/26
1750	22.2	1.360	40.100	1.37	40.10	-0.73	0.00	±5	2021/1/22
1750	22.5	1.360	40.200	1.37	40.10	-0.73	0.25	±5	2021/1/25
1750	22.7	1.380	41.300	1.37	40.10	0.73	2.99	±5	2021/1/27
1750	22.3	1.360	40.219	1.37	40.10	-0.73	0.30	±5	2021/1/29
1750	22.3	1.370	41.300	1.37	40.10	0.00	2.99	±5	2021/1/30
1900	22.2	1.450	39.400	1.40	40.00	3.57	-1.50	±5	2021/1/22
1900	22.3	1.430	40.000	1.40	40.00	2.14	0.00	±5	2021/1/23
1900	22.5	1.440	38.700	1.40	40.00	2.86	-3.25	±5	2021/1/25
1900	22.7	1.430	38.800	1.40	40.00	2.14	-3.00	±5	2021/1/27
1900	22.3	1.437	38.671	1.40	40.00	2.64	-3.32	±5	2021/1/29
1900	22.5	1.435	41.039	1.40	40.00	2.50	2.60	±5	2021/2/1
2450	22.5	1.789	38.644	1.80	39.20	-0.61	-1.42	±5	2021/2/3
2450	22.5	1.785	39.851	1.80	39.20	-0.83	1.66	±5	2021/2/5
2600	22.2	2.020	39.800	1.96	39.00	3.06	2.05	±5	2021/1/22
2600	22.3	1.980	39.300	1.96	39.00	1.02	0.77	±5	2021/1/23
2600	22.5	1.920	39.000	1.96	39.00	-2.04	0.00	±5	2021/1/25
2600	22.7	1.940	39.100	1.96	39.00	-1.02	0.26	±5	2021/1/27
2600	22.3	1.978	37.572	1.96	39.00	0.92	-3.66	±5	2021/1/31
5250	22.3	4.632	36.213	4.71	35.95	-1.66	0.73	±5	2021/1/20
5250	22.3	4.635	36.998	4.71	35.95	-1.59	2.92	±5	2021/1/21
5250	22.5	4.630	36.960	4.71	35.95	-1.70	2.81	±5	2021/2/4
5600	22.3	4.964	35.733	5.07	35.50	-2.09	0.66	±5	2021/1/20
5600	22.3	4.986	36.571	5.07	35.50	-1.66	3.02	±5	2021/1/21
5600	22.5	4.990	36.432	5.07	35.50	-1.58	2.63	±5	2021/2/4
5750	22.3	5.132	35.491	5.22	35.35	-1.69	0.40	±5	2021/1/20
5750	22.3	5.160	36.407	5.22	35.35	-1.15	2.99	±5	2021/1/21
5750	22.5	5.149	36.298	5.22	35.35	-1.36	2.68	±5	2021/2/4



10.2 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)	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 (%)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2021/1/22	750	50	D750V3-1107	ES3DV3 - SN3169	DAE4 Sn915	0.421	8.32	8.42	1.20	0.279	5.61	5.58	-0.53
2021/1/22	750	250	D750V3-1107	EX3DV4 - SN7346	DAE4 Sn853	2.08	8.32	8.32	0.00	1.40	5.61	5.6	-0.18
2021/1/24	750	50	D750V3-1107	ES3DV3 - SN3169	DAE4 Sn915	0.417	8.32	8.34	0.24	0.276	5.61	5.52	-1.60
2021/1/22	835	50	D835V2-4d167	ES3DV3 - SN3169	DAE4 Sn915	0.525	9.55	10.5	9.95	0.341	6.21	6.82	9.82
2021/1/22	835	250	D835V2-4d167	EX3DV4 - SN7346	DAE4 Sn853	2.52	9.55	10.08	5.55	1.67	6.21	6.68	7.57
2021/1/24	835	250	D835V2-4d167	ES3DV3 - SN3169	DAE4 Sn915	2.51	9.55	10.04	5.13	1.65	6.21	6.6	6.28
2021/1/26	835	250	D835V2-4d167	ES3DV3 - SN3169	DAE4 Sn915	2.59	9.55	10.36	8.48	1.70	6.21	6.8	9.50
2021/1/22	1750	50	D1750V2-1112	ES3DV3 - SN3169	DAE4 Sn915	1.96	36.70	39.2	6.81	1.06	19.40	21.2	9.28
2021/1/25	1750	50	D1750V2-1112	ES3DV3 - SN3169	DAE4 Sn915	1.96	36.70	39.2	6.81	1.06	19.40	21.2	9.28
2021/1/27	1750	50	D1750V2-1112	ES3DV3 - SN3169	DAE4 Sn915	1.98	36.70	39.6	7.90	1.06	19.40	21.2	9.28
2021/1/29	1750	50	D1750V2-1112	ES3DV3 - SN3169	DAE4 Sn915	1.96	36.70	39.2	6.81	1.06	19.40	21.2	9.28
2021/1/30	1750	50	D1750V2-1112	ES3DV3 - SN3169	DAE4 Sn915	1.98	36.70	39.6	7.90	1.06	19.40	21.2	9.28
2021/1/22	1900	50	D1900V2-5d041	ES3DV3 - SN3169	DAE4 Sn915	2.21	40.20	44.2	9.95	1.16	21.20	23.2	9.43
2021/1/23	1900	50	D1900V2-5d041	ES3DV3 - SN3169	DAE4 Sn915	2.20	40.20	44	9.45	1.16	21.20	23.2	9.43
2021/1/25	1900	50	D1900V2-5d041	ES3DV3 - SN3169	DAE4 Sn915	2.21	40.20	44.2	9.95	1.16	21.20	23.2	9.43
2021/1/27	1900	50	D1900V2-5d041	ES3DV3 - SN3169	DAE4 Sn915	2.20	40.20	44	9.45	1.16	21.20	23.2	9.43
2021/1/29	1900	50	D1900V2-5d041	ES3DV3 - SN3169	DAE4 Sn915	2.21	40.20	44.2	9.95	1.16	21.20	23.2	9.43
2021/2/1	1900	50	D1900V2-5d041	ES3DV3 - SN3169	DAE4 Sn915	2.20	40.20	44	9.45	1.16	21.20	23.2	9.43
2021/2/3	2450	250	D2450V2-736	EX3DV4 - SN3642	DAE4 Sn1311	13.30	52.70	53.2	0.95	6.27	24.60	25.08	1.95
2021/2/5	2450	250	D2450V2-736	EX3DV4 - SN3642	DAE4 Sn1311	13.30	52.70	53.2	0.95	6.25	24.60	25	1.63
2021/1/22	2600	50	D2600V2-1008	ES3DV3 - SN3169	DAE4 Sn915	3.09	56.40	61.8	9.57	1.39	25.30	27.8	9.88
2021/1/23	2600	50	D2600V2-1008	ES3DV3 - SN3169	DAE4 Sn915	3.09	56.40	61.8	9.57	1.39	25.30	27.8	9.88
2021/1/25	2600	50	D2600V2-1008	ES3DV3 - SN3169	DAE4 Sn915	3.02	56.40	60.4	7.09	1.39	25.30	27.8	9.88
2021/1/27	2600	50	D2600V2-1008	ES3DV3 - SN3169	DAE4 Sn915	3.06	56.40	61.2	8.51	1.39	25.30	27.8	9.88
2021/1/31	2600	50	D2600V2-1008	ES3DV3 - SN3169	DAE4 Sn915	2.80	56.40	56	-0.71	1.29	25.30	25.8	1.98
2021/1/20	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7375	DAE4 Sn376	8.50	80.70	85	5.33	2.41	23.20	24.1	3.88
2021/1/21	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7375	DAE4 Sn376	8.52	80.70	85.2	5.58	2.44	23.20	24.4	5.17
2021/2/4	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN3642	DAE4 Sn1311	8.43	80.70	84.3	4.46	2.38	23.20	23.8	2.59
2021/1/20	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7375	DAE4 Sn376	8.43	83.30	84.3	1.20	2.32	23.80	23.2	-2.52
2021/1/21	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7375	DAE4 Sn376	8.47	83.30	84.7	1.68	2.33	23.80	23.3	-2.10
2021/2/4	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN3642	DAE4 Sn1311	8.85	83.30	88.5	6.24	2.47	23.80	24.7	3.78
2021/1/20	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7375	DAE4 Sn376	7.93	80.40	79.3	-1.37	2.19	22.90	21.9	-4.37
2021/1/21	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7375	DAE4 Sn376	7.97	80.40	79.7	-0.87	2.21	22.90	22.1	-3.49
2021/2/4	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN3642	DAE4 Sn1311	8.40	80.40	84	4.48	2.36	22.90	23.6	3.06

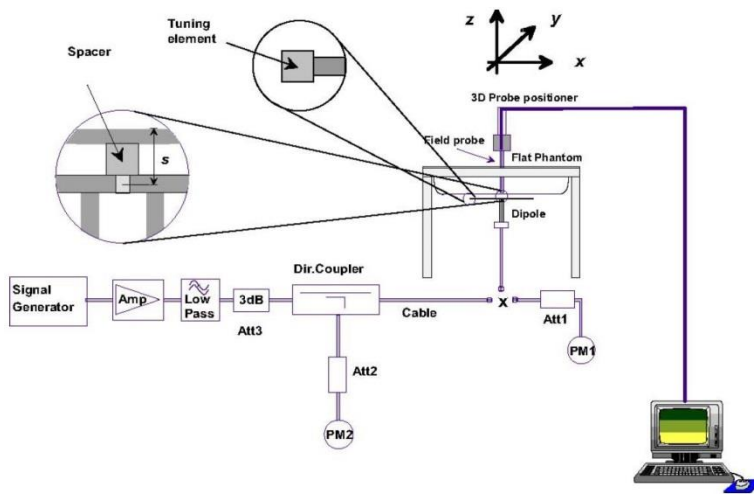


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

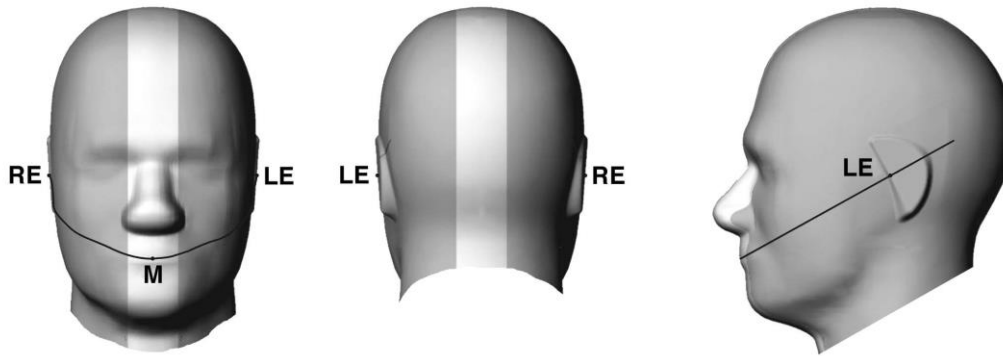


Fig 9.1.1 Front, back, and side views of SAM twin phantom



Fig 9.1.2 Close-up side view of phantom showing the ear region.

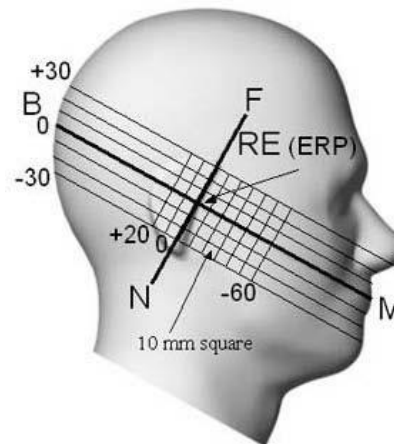


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width w_t of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width w_b of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.



Fig 9.2.1 Handset vertical and horizontal reference lines—“fixed case”

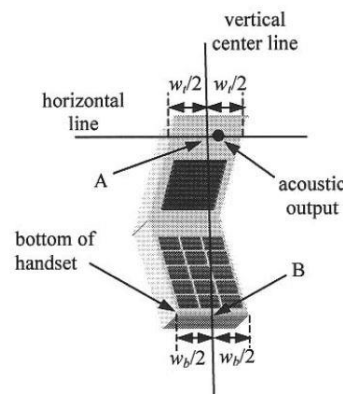


Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

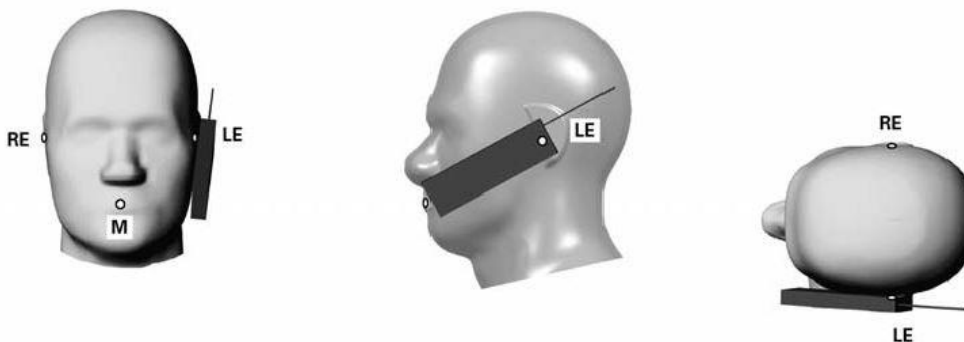


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

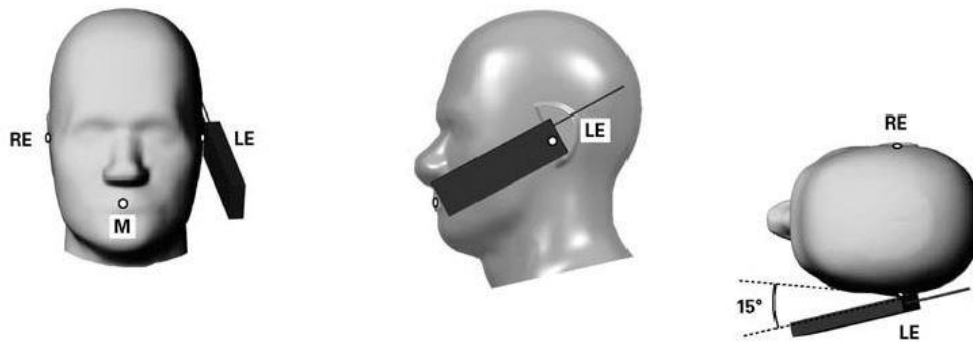


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

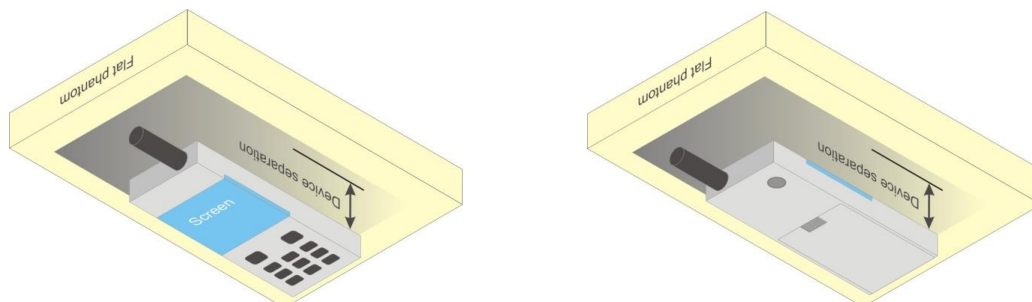


Fig 9.4 Body Worn Position



11.5 Extremity Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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



12. GSM/UMTS/CDMA/LTE Output Power (Unit: dBm)

<GSM Conducted Power>

- For DTM multi-slot class mode, the device was linked with base station simulator (Agilent E5515C) and transmit maximum power on maximum number of TX slots, i.e. one CS timeslot, and additional PS timeslots (1 for DTM class 5 and 9, 2 for DTM class 11) in one TDMA frame.
- Agilent E5515C was used to setup the device operated under DTM mode for power measurement and SAR testing. For conducted power, the power of the burst for voice and the power of the bursts for data was reported separately in the table below, and the frame-average power is derived below to determine SAR testing.

$$DTM \text{ frame average power (dBm)} = 10 * \log [\sum(\text{power of each slot, in mW})/8]$$

- Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
- Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (2 Tx slots) for GSM850/GSM1900 is considered as the primary mode.
- Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode, SAR measurement is not required for the secondary mode

Default / State 1

GSM850 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.38	32.68	32.48	33.50	23.38	23.68	23.48	24.50
GPRS 1 Tx slot	32.36	32.67	32.47	33.50	23.36	23.67	23.47	24.50
GPRS 2 Tx slots	30.24	30.35	30.29	31.50	24.24	24.35	24.29	25.50
GPRS 3 Tx slots	28.05	28.40	28.33	29.50	23.79	24.14	24.07	25.24
GPRS 4 Tx slots	25.94	26.10	26.05	27.50	22.94	23.10	23.05	24.50
EDGE 1 Tx slot	26.74	26.98	26.81	27.50	17.74	17.98	17.81	18.50
EDGE 2 Tx slots	24.57	24.85	24.72	25.50	18.57	18.85	18.72	19.50
EDGE 3 Tx slots	22.30	22.41	22.40	23.50	18.04	18.15	18.14	19.24
EDGE 4 Tx slots	19.65	19.64	19.58	21.00	16.65	16.64	16.58	18.00

GSM1900 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.33	29.26	29.28	30.50	20.33	20.26	20.28	21.50
GPRS 1 Tx slot	29.31	29.25	29.26	30.50	20.31	20.25	20.26	21.50
GPRS 2 Tx slots	27.10	27.16	27.26	28.50	21.10	21.16	21.26	22.50
GPRS 3 Tx slots	24.86	24.92	25.04	26.50	20.60	20.66	20.78	22.24
GPRS 4 Tx slots	22.77	22.67	22.76	24.50	19.77	19.67	19.76	21.50
EDGE 1 Tx slot	25.47	25.50	25.57	26.50	16.47	16.50	16.57	17.50
EDGE 2 Tx slots	23.08	23.25	23.32	24.50	17.08	17.25	17.32	18.50
EDGE 3 Tx slots	21.04	21.06	21.12	22.50	16.78	16.80	16.86	18.24
EDGE 4 Tx slots	18.61	18.73	18.74	20.50	15.61	15.73	15.74	17.50



State 2

GSM850 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
	Frequency (MHz)	824.2	836.4		848.8	824.2	836.4	
GSM 1 Tx slot	31.45	31.12	31.23	31.50	22.45	22.12	22.23	22.50
GPRS 1 Tx slot	31.44	31.11	31.21	31.50	22.44	22.11	22.21	22.50
GPRS 2 Tx slots	29.36	29.37	29.33	29.50	23.36	23.37	23.33	23.50
GPRS 3 Tx slots	27.23	27.08	27.29	27.50	22.97	22.82	23.03	23.24
GPRS 4 Tx slots	24.88	24.82	24.80	25.50	21.88	21.82	21.80	22.50
EDGE 1 Tx slot	25.46	25.42	25.41	25.50	16.46	16.42	16.41	16.50
EDGE 2 Tx slots	23.49	23.42	23.43	23.50	17.49	17.42	17.43	17.50
EDGE 3 Tx slots	21.14	20.82	20.95	21.50	16.88	16.56	16.69	17.24
EDGE 4 Tx slots	18.83	18.77	18.85	19.00	15.83	15.77	15.85	16.00

GSM1900 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
	Frequency (MHz)	1850.2	1880		1909.8	1850.2	1880	
GSM 1 Tx slot	22.99	22.93	23.22	23.50	13.99	13.93	14.22	14.50
GPRS 1 Tx slot	22.98	22.92	23.20	23.50	13.98	13.92	14.20	14.50
GPRS 2 Tx slots	21.00	21.39	21.28	21.50	15.00	15.39	15.28	15.50
GPRS 3 Tx slots	18.66	18.64	18.84	19.50	14.40	14.38	14.58	15.24
GPRS 4 Tx slots	16.62	16.70	16.83	17.50	13.62	13.70	13.83	14.50
EDGE 1 Tx slot	19.12	19.04	19.22	19.50	10.12	10.04	10.22	10.50
EDGE 2 Tx slots	16.84	16.51	16.96	17.50	10.84	10.51	10.96	11.50
EDGE 3 Tx slots	14.24	14.68	14.50	15.50	9.98	10.42	10.24	11.24
EDGE 4 Tx slots	12.74	12.66	12.82	13.50	9.74	9.66	9.82	10.50



State 3

GSM850 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
	Frequency (MHz)	824.2	836.4		848.8	824.2	836.4	
GSM 1 Tx slot	31.45	31.12	31.23	31.50	22.45	22.12	22.23	22.50
GPRS 1 Tx slot	31.44	31.11	31.21	31.50	22.44	22.11	22.21	22.50
GPRS 2 Tx slots	29.36	29.37	29.33	29.50	23.36	23.37	23.33	23.50
GPRS 3 Tx slots	27.23	27.08	27.29	27.50	22.97	22.82	23.03	23.24
GPRS 4 Tx slots	24.88	24.82	24.80	25.50	21.88	21.82	21.80	22.50
EDGE 1 Tx slot	25.46	25.42	25.41	25.50	16.46	16.42	16.41	16.50
EDGE 2 Tx slots	23.49	23.42	23.43	23.50	17.49	17.42	17.43	17.50
EDGE 3 Tx slots	21.14	20.82	20.95	21.50	16.88	16.56	16.69	17.24
EDGE 4 Tx slots	18.83	18.77	18.85	19.00	15.83	15.77	15.85	16.00

GSM1900 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
	Frequency (MHz)	1850.2	1880		1909.8	1850.2	1880	
GSM 1 Tx slot	24.37	24.19	24.53	25.00	15.37	15.19	15.53	16.00
GPRS 1 Tx slot	24.36	24.17	24.52	25.00	15.36	15.17	15.52	16.00
GPRS 2 Tx slots	22.28	22.34	22.28	23.00	16.28	16.34	16.28	17.00
GPRS 3 Tx slots	20.11	19.95	19.98	21.00	15.85	15.69	15.72	16.74
GPRS 4 Tx slots	17.45	17.60	17.86	19.00	14.45	14.60	14.86	16.00
EDGE 1 Tx slot	20.32	20.24	20.49	21.00	11.32	11.24	11.49	12.00
EDGE 2 Tx slots	18.23	18.17	18.35	19.00	12.23	12.17	12.35	13.00
EDGE 3 Tx slots	15.86	15.90	16.04	17.00	11.60	11.64	11.78	12.74
EDGE 4 Tx slots	13.79	13.91	13.97	15.00	10.79	10.91	10.97	12.00

State 4

GSM1900 TX Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
	Frequency (MHz)	1850.2	1880		1909.8	1850.2	1880	
GSM 1 Tx slot	27.80	27.79	27.81	28.00	18.80	18.79	18.81	19.00
GPRS 1 Tx slot	27.79	27.78	28.10	28.00	18.79	18.78	19.10	19.00
GPRS 2 Tx slots	25.38	25.73	25.28	26.00	19.38	19.73	19.28	20.00
GPRS 3 Tx slots	23.60	23.41	23.77	24.00	19.34	19.15	19.51	19.74
GPRS 4 Tx slots	21.32	21.12	21.06	22.00	18.32	18.12	18.06	19.00
EDGE 1 Tx slot	23.98	23.84	24.07	24.00	14.98	14.84	15.07	15.00
EDGE 2 Tx slots	21.86	21.70	21.97	22.00	15.86	15.70	15.97	16.00
EDGE 3 Tx slots	19.72	19.51	19.79	20.00	15.46	15.25	15.53	15.74
EDGE 4 Tx slots	17.47	17.21	17.13	18.00	14.47	14.21	14.13	15.00

<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 D01v03r01 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 DPDCH, DPCCH 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} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCl
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	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	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	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	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

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: 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 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

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.		

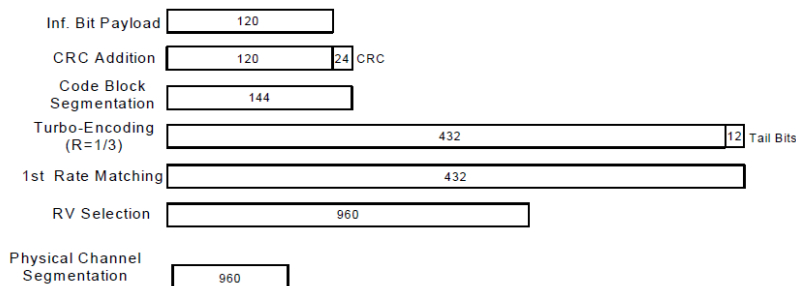


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. 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, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than $\frac{1}{4}$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

Default / State 1

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938	1537	1638	1738	4357	4407	4458			
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	AMR 12.2Kbps	23.07	23.11	23.25	24.00	23.10	23.28	23.31	24.00	22.86	22.84	22.90	24.00
3GPP Rel 99	RMC 12.2Kbps	23.09	23.13	23.26	24.00	23.11	23.30	23.32	24.00	22.87	22.86	22.92	24.00
3GPP Rel 6	HSDPA Subtest-1	22.35	22.48	22.55	23.00	22.36	22.46	22.55	23.00	22.25	22.25	22.32	23.00
3GPP Rel 6	HSDPA Subtest-2	22.37	22.51	22.58	23.00	22.34	22.47	22.55	23.00	22.28	22.24	22.41	23.00
3GPP Rel 6	HSDPA Subtest-3	21.89	22.01	22.07	22.50	21.89	21.99	22.08	22.50	21.79	21.78	21.81	22.50
3GPP Rel 6	HSDPA Subtest-4	21.90	22.04	22.08	22.50	21.85	21.94	22.08	22.50	21.76	21.78	21.87	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.22	22.41	22.46	23.00	22.21	22.32	22.45	23.00	22.14	22.16	22.21	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.27	22.41	22.43	23.00	22.22	22.34	22.49	23.00	22.19	22.14	22.35	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	21.83	21.91	21.94	22.50	21.82	21.85	22.02	22.50	21.68	21.69	21.69	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.83	21.93	21.99	22.50	21.72	21.87	21.99	22.50	21.70	21.68	21.77	22.50
3GPP Rel 6	HSUPA Subtest-1	22.47	22.43	22.50	23.00	22.30	22.44	22.54	23.00	22.28	22.23	22.32	23.00
3GPP Rel 6	HSUPA Subtest-2	20.41	20.44	20.56	21.00	20.32	20.43	20.55	21.00	20.27	20.25	20.41	21.00
3GPP Rel 6	HSUPA Subtest-3	21.49	21.46	21.51	22.00	21.27	21.46	21.51	22.00	21.27	21.30	21.36	22.00
3GPP Rel 6	HSUPA Subtest-4	20.35	20.43	20.53	21.00	20.32	20.42	20.53	21.00	20.25	20.25	20.36	21.00
3GPP Rel 6	HSUPA Subtest-5	22.40	22.50	22.60	23.00	22.30	22.50	22.60	23.00	22.30	22.30	22.40	23.00

State 2

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938	1537	1638	1738	4357	4407	4458			
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	AMR 12.2Kbps	14.13	14.22	14.35	15.00	17.11	17.18	17.26	18.00	21.87	21.97	21.90	22.50
3GPP Rel 99	RMC 12.2Kbps	14.31	14.42	14.37	15.00	17.14	17.32	17.25	18.00	21.89	21.99	21.91	22.50
3GPP Rel 6	HSDPA Subtest-1	13.47	13.54	13.62	14.00	15.82	15.92	16.05	17.00	21.21	21.31	21.31	21.50
3GPP Rel 6	HSDPA Subtest-2	13.43	13.63	13.66	14.00	15.83	15.92	16.02	17.00	21.33	21.30	21.37	21.50
3GPP Rel 6	HSDPA Subtest-3	12.99	13.08	13.16	13.50	15.38	15.45	15.58	16.50	20.85	20.74	20.78	21.00
3GPP Rel 6	HSDPA Subtest-4	13.01	13.12	13.15	13.50	15.33	15.45	15.55	16.50	20.72	20.81	20.88	21.00
3GPP Rel 8	DC-HSDPA Subtest-1	13.29	13.48	13.53	14.00	15.67	15.79	15.91	17.00	21.12	21.21	21.28	21.50
3GPP Rel 8	DC-HSDPA Subtest-2	13.33	13.46	13.49	14.00	15.69	15.85	15.95	17.00	21.21	21.18	21.38	21.50
3GPP Rel 8	DC-HSDPA Subtest-3	12.92	12.99	13.01	13.50	15.31	15.30	15.49	16.50	20.64	20.71	20.68	21.00
3GPP Rel 8	DC-HSDPA Subtest-4	12.92	12.99	13.10	13.50	15.17	15.33	15.50	16.50	20.71	20.70	20.74	21.00
3GPP Rel 6	HSUPA Subtest-1	13.56	13.48	13.61	14.00	15.78	15.95	16.00	17.00	21.26	21.26	21.37	21.50
3GPP Rel 6	HSUPA Subtest-2	11.47	11.51	11.62	12.00	13.78	13.88	14.07	15.00	19.32	19.29	19.48	19.50
3GPP Rel 6	HSUPA Subtest-3	12.58	12.56	12.58	13.00	14.76	14.93	14.97	16.00	20.29	20.30	20.38	20.50
3GPP Rel 6	HSUPA Subtest-4	11.46	11.53	11.61	12.00	13.84	13.88	14.04	15.00	19.29	19.25	19.40	19.50
3GPP Rel 6	HSUPA Subtest-5	13.51	13.59	13.71	14.00	15.79	15.95	16.09	17.00	21.29	21.30	21.39	21.50



State 3

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	AMR 12.2Kbps	16.01	16.11	16.08	16.50	18.66	18.89	18.85	19.50	21.87	21.97	21.90	22.50
3GPP Rel 99	RMC 12.2Kbps	16.03	16.12	16.10	16.50	18.68	18.90	18.87	19.50	21.89	21.99	21.91	22.50
3GPP Rel 6	HSDPA Subtest-1	15.27	15.43	15.44	15.50	17.87	18.01	18.08	18.50	21.21	21.31	21.31	21.50
3GPP Rel 6	HSDPA Subtest-2	15.08	15.26	15.28	15.50	17.91	18.00	18.05	18.50	21.33	21.30	21.37	21.50
3GPP Rel 6	HSDPA Subtest-3	14.62	14.72	14.79	15.00	17.39	17.55	17.65	18.00	20.85	20.74	20.78	21.00
3GPP Rel 6	HSDPA Subtest-4	14.65	14.71	14.81	15.00	17.40	17.51	17.56	18.00	20.72	20.81	20.88	21.00
3GPP Rel 8	DC-HSDPA Subtest-1	14.94	15.11	15.16	15.50	17.74	17.78	18.00	18.50	21.12	21.21	21.28	21.50
3GPP Rel 8	DC-HSDPA Subtest-2	14.95	15.15	15.13	15.50	17.76	17.79	18.05	18.50	21.21	21.18	21.38	21.50
3GPP Rel 8	DC-HSDPA Subtest-3	14.57	14.60	14.64	15.00	17.39	17.41	17.57	18.00	20.64	20.71	20.68	21.00
3GPP Rel 8	DC-HSDPA Subtest-4	14.58	14.62	14.69	15.00	17.27	17.34	17.48	18.00	20.71	20.70	20.74	21.00
3GPP Rel 6	HSUPA Subtest-1	15.21	15.17	15.24	15.50	17.86	17.90	18.02	18.50	21.26	21.26	21.37	21.50
3GPP Rel 6	HSUPA Subtest-2	13.15	13.14	13.24	13.50	15.90	15.97	16.10	16.50	19.32	19.29	19.48	19.50
3GPP Rel 6	HSUPA Subtest-3	14.23	14.18	14.23	14.50	16.77	16.92	16.97	17.50	20.29	20.30	20.38	20.50
3GPP Rel 6	HSUPA Subtest-4	13.08	13.15	13.21	13.50	15.78	16.00	15.99	16.50	19.29	19.25	19.40	19.50
3GPP Rel 6	HSUPA Subtest-5	15.10	15.18	15.30	15.50	17.81	18.06	18.15	18.50	21.29	21.30	21.39	21.50

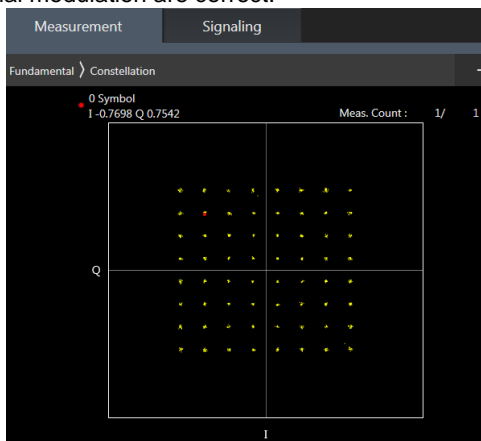
State 4

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513	
Rx Channel		9662	9800	9938		1537	1638	1738	
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6		
3GPP Rel 99	AMR 12.2Kbps	18.17	18.29	18.31	19.00	20.82	20.89	20.92	21.50
3GPP Rel 99	RMC 12.2Kbps	18.19	18.33	18.30	19.00	20.84	20.94	20.90	21.50
3GPP Rel 6	HSDPA Subtest-1	17.24	17.40	17.42	18.00	19.75	19.88	19.96	20.50
3GPP Rel 6	HSDPA Subtest-2	17.27	17.37	17.47	18.00	19.77	19.91	19.98	20.50
3GPP Rel 6	HSDPA Subtest-3	16.75	16.88	17.02	17.50	19.32	19.38	19.49	20.00
3GPP Rel 6	HSDPA Subtest-4	16.84	16.95	16.99	17.50	19.28	19.35	19.51	20.00
3GPP Rel 8	DC-HSDPA Subtest-1	17.10	17.29	17.38	18.00	19.64	19.74	19.89	20.50
3GPP Rel 8	DC-HSDPA Subtest-2	17.14	17.29	17.31	18.00	19.65	19.76	19.93	20.50
3GPP Rel 8	DC-HSDPA Subtest-3	16.70	16.82	16.82	17.50	19.26	19.29	19.40	20.00
3GPP Rel 8	DC-HSDPA Subtest-4	16.73	16.86	16.92	17.50	19.16	19.29	19.42	20.00
3GPP Rel 6	HSUPA Subtest-1	17.35	17.32	17.37	18.00	19.73	19.86	19.94	20.50
3GPP Rel 6	HSUPA Subtest-2	15.32	15.36	15.45	16.00	17.76	17.82	17.98	18.50
3GPP Rel 6	HSUPA Subtest-3	16.37	16.34	16.42	17.00	18.64	18.84	18.88	19.50
3GPP Rel 6	HSUPA Subtest-4	15.26	15.33	15.43	16.00	17.75	17.85	17.91	18.50
3GPP Rel 6	HSUPA Subtest-5	17.34	17.45	17.48	18.00	19.73	19.94	20.02	20.50

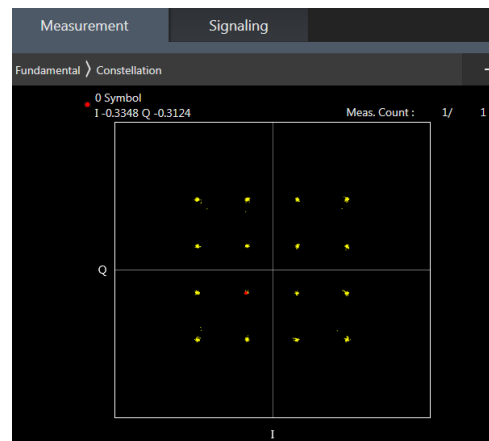
<LTE Conducted Power>

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 D05v02r05, 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 D05v02r05, 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 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, 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 D05v02r05, 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 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, 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 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5/B12/B17 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 4/17 SAR test was covered by Band 66/12; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM



Default /State 1

<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	22.88	22.96	23.36	24	0
20	QPSK	1	49	23.04	22.99	23.18		
20	QPSK	1	99	22.94	22.94	22.95		
20	QPSK	50	0	21.87	22.09	22.30	23	1
20	QPSK	50	24	21.87	22.14	22.24		
20	QPSK	50	50	21.83	22.03	22.26		
20	QPSK	100	0	21.83	22.05	22.18		
20	16QAM	1	0	21.93	22.18	22.32	23	1
20	16QAM	1	49	22.05	22.43	22.35		
20	16QAM	1	99	22.11	22.27	22.38		
20	16QAM	50	0	20.97	21.20	21.25	22	2
20	16QAM	50	24	20.97	21.17	21.36		
20	16QAM	50	50	20.92	21.13	21.32		
20	16QAM	100	0	20.89	21.15	21.17		
20	64QAM	1	0	20.93	21.14	21.33	22	2
20	64QAM	1	49	21.29	21.32	21.41		
20	64QAM	1	99	20.94	21.14	21.36		
20	64QAM	50	0	20.18	20.21	20.25	21	3
20	64QAM	50	24	20.01	20.19	20.36		
20	64QAM	50	50	19.96	20.11	20.33		
20	64QAM	100	0	19.95	20.15	20.25		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.80	23.02	23.18	24	0
15	QPSK	1	37	22.82	23.06	23.17		
15	QPSK	1	74	22.84	22.97	23.11		
15	QPSK	36	0	21.86	22.09	22.27	23	1
15	QPSK	36	20	21.99	22.10	22.29		
15	QPSK	36	39	21.94	22.02	22.20		
15	QPSK	75	0	21.96	22.06	22.26		
15	16QAM	1	0	22.16	22.40	22.48	23	1
15	16QAM	1	37	22.14	22.35	22.40		
15	16QAM	1	74	22.13	22.22	22.31		
15	16QAM	36	0	20.89	21.16	21.31	22	2
15	16QAM	36	20	21.05	21.15	21.36		
15	16QAM	36	39	20.98	21.07	21.28		
15	16QAM	75	0	21.00	21.14	21.29		
15	64QAM	1	0	21.12	21.31	21.39	22	2
15	64QAM	1	37	21.00	21.25	21.39		
15	64QAM	1	74	21.06	21.20	21.41		
15	64QAM	36	0	19.96	20.22	20.35	21	3
15	64QAM	36	20	20.06	20.23	20.34		
15	64QAM	36	39	20.05	20.16	20.33		
15	64QAM	75	0	19.92	20.14	20.36		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.97	23.06	23.27	24	0
10	QPSK	1	25	23.20	23.08	23.33		
10	QPSK	1	49	22.94	23.11	23.28		
10	QPSK	25	0	21.95	22.13	22.21	23	1



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10	QPSK	25	12	21.96	22.13	22.41		
10	QPSK	25	25	22.03	22.09	22.39		
10	QPSK	50	0	22.07	22.08	22.37		
10	16QAM	1	0	22.29	22.36	22.45	23	1
10	16QAM	1	25	22.17	22.36	22.47		
10	16QAM	1	49	22.20	22.25	22.49		
10	16QAM	25	0	21.04	21.21	21.47	22	2
10	16QAM	25	12	21.06	21.20	21.52		
10	16QAM	25	25	21.12	21.15	21.43		
10	16QAM	50	0	21.11	21.19	21.46		
10	64QAM	1	0	21.40	21.32	21.53	22	2
10	64QAM	1	25	21.15	21.29	21.50		
10	64QAM	1	49	21.12	21.23	21.47		
10	64QAM	25	0	19.99	20.18	20.48	21	3
10	64QAM	25	12	20.06	20.24	20.47		
10	64QAM	25	25	20.13	20.19	20.45		
10	64QAM	50	0	19.99	20.18	20.48		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.99	23.06	23.30	24	0
5	QPSK	1	12	23.01	23.09	23.15		
5	QPSK	1	24	22.98	23.06	23.28		
5	QPSK	12	0	22.03	22.11	22.38	23	1
5	QPSK	12	7	22.05	22.10	22.44		
5	QPSK	12	13	21.99	22.10	22.35		
5	QPSK	25	0	22.06	22.09	22.37		
5	16QAM	1	0	22.21	22.33	22.56	23	1
5	16QAM	1	12	22.23	22.38	22.62		
5	16QAM	1	24	22.25	22.23	22.61		
5	16QAM	12	0	21.07	21.17	21.44	22	2
5	16QAM	12	7	21.12	21.14	21.46		
5	16QAM	12	13	21.11	21.15	21.40		
5	16QAM	25	0	21.09	21.16	21.45		
5	64QAM	1	0	21.13	21.33	21.40	22	2
5	64QAM	1	12	21.07	21.35	21.42		
5	64QAM	1	24	21.02	21.29	21.48		
5	64QAM	12	0	20.05	20.19	20.26	21	3
5	64QAM	12	7	20.03	20.24	20.34		
5	64QAM	12	13	20.02	20.19	20.38		
5	64QAM	25	0	20.04	20.17	20.42		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.95	23.07	23.27	24	0
3	QPSK	1	8	23.00	22.99	23.35		
3	QPSK	1	14	22.99	23.06	23.14		
3	QPSK	8	0	22.00	22.08	22.01	23	1
3	QPSK	8	4	22.06	22.13	22.41		
3	QPSK	8	7	22.02	22.12	22.37		
3	QPSK	15	0	22.08	22.11	22.36		
3	16QAM	1	0	22.20	22.43	22.55	23	1
3	16QAM	1	8	22.20	22.33	22.60		
3	16QAM	1	14	22.26	22.37	22.56		
3	16QAM	8	0	21.16	21.16	21.45	22	2
3	16QAM	8	4	21.15	21.24	21.53		
3	16QAM	8	7	21.15	21.19	21.42		
3	16QAM	15	0	21.11	21.18	21.45		



3	64QAM	1	0	21.38	21.32	21.48	22	2
3	64QAM	1	8	21.21	21.25	21.42		
3	64QAM	1	14	21.05	21.32	21.45		
3	64QAM	8	0	20.05	20.18	20.45	21	3
3	64QAM	8	4	20.09	20.26	20.53		
3	64QAM	8	7	20.05	20.19	20.45		
3	64QAM	15	0	20.02	20.23	20.46		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.89	23.00	23.26	24	0
1.4	QPSK	1	3	22.92	23.08	23.34		
1.4	QPSK	1	5	22.87	23.00	23.19		
1.4	QPSK	3	0	22.91	23.00	23.33		
1.4	QPSK	3	1	22.95	23.09	23.26		
1.4	QPSK	3	3	22.92	23.06	23.32		
1.4	QPSK	6	0	21.88	22.06	22.34	23	1
1.4	16QAM	1	0	22.15	22.29	22.35	23	1
1.4	16QAM	1	3	22.27	22.42	22.47		
1.4	16QAM	1	5	22.12	22.33	22.25		
1.4	16QAM	3	0	21.96	22.08	22.33		
1.4	16QAM	3	1	22.01	22.15	22.37		
1.4	16QAM	3	3	21.93	22.02	22.24		
1.4	16QAM	6	0	21.04	21.18	21.46	22	2
1.4	64QAM	1	0	21.09	21.20	21.38	22	2
1.4	64QAM	1	3	21.13	21.39	21.51		
1.4	64QAM	1	5	21.16	21.29	21.37		
1.4	64QAM	3	0	21.06	21.24	21.31		
1.4	64QAM	3	1	21.16	21.31	21.41		
1.4	64QAM	3	3	21.03	21.19	21.32		
1.4	64QAM	6	0	20.08	20.22	20.52	21	3

<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	22.81	22.91	23.25	24	0
20	QPSK	1	49	22.86	23.07	23.18		
20	QPSK	1	99	22.91	23.01	23.12		
20	QPSK	50	0	21.93	22.12	22.24	23	1
20	QPSK	50	24	21.96	22.16	22.17		
20	QPSK	50	50	22.01	22.10	22.13		
20	QPSK	100	0	21.90	22.10	22.13		
20	16QAM	1	0	22.03	22.28	22.42	23	1
20	16QAM	1	49	22.15	22.33	22.53		
20	16QAM	1	99	22.27	22.36	22.45		
20	16QAM	50	0	21.02	21.21	21.22	22	2
20	16QAM	50	24	21.05	21.22	21.27		
20	16QAM	50	50	21.07	21.21	21.28		
20	16QAM	100	0	20.98	21.18	21.19		
20	64QAM	1	0	21.06	21.26	21.24	22	2
20	64QAM	1	49	21.15	21.27	21.45		
20	64QAM	1	99	21.06	21.29	21.35		
20	64QAM	50	0	20.05	20.22	20.23		



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20	64QAM	50	24	20.03	20.24	20.23		
20	64QAM	50	50	20.08	20.23	20.35		
20	64QAM	100	0	19.99	20.18	20.19		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.79	23.10	23.05	24	0
15	QPSK	1	37	22.87	23.06	23.19		
15	QPSK	1	74	22.87	23.04	23.14		
15	QPSK	36	0	21.91	22.14	22.11	23	1
15	QPSK	36	20	22.00	22.16	22.26		
15	QPSK	36	39	21.88	22.10	22.22		
15	QPSK	75	0	21.92	22.08	22.12	23	1
15	16QAM	1	0	22.21	22.37	22.44		
15	16QAM	1	37	22.25	22.44	22.57		
15	16QAM	1	74	22.15	22.36	22.42	22	2
15	16QAM	36	0	21.00	21.19	21.24		
15	16QAM	36	20	21.00	21.17	21.35		
15	16QAM	36	39	20.98	21.18	21.30	22	2
15	16QAM	75	0	21.02	21.17	21.16		
15	64QAM	1	0	21.07	21.38	21.36		
15	64QAM	1	37	21.10	21.35	21.48	22	2
15	64QAM	1	74	21.02	21.22	21.38		
15	64QAM	36	0	20.09	20.21	20.22		
15	64QAM	36	20	20.08	20.25	20.35	21	3
15	64QAM	36	39	20.09	20.24	20.32		
15	64QAM	75	0	20.05	20.21	20.24		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.79	23.08	23.23	24	0
10	QPSK	1	25	22.73	23.09	23.23		
10	QPSK	1	49	22.79	23.09	23.18		
10	QPSK	25	0	21.78	22.16	22.24	23	1
10	QPSK	25	12	21.85	22.15	22.27		
10	QPSK	25	25	21.79	22.13	22.22		
10	QPSK	50	0	21.87	22.12	22.28	23	1
10	16QAM	1	0	22.07	22.43	22.51		
10	16QAM	1	25	22.12	22.35	22.50		
10	16QAM	1	49	22.13	22.30	22.40	22	2
10	16QAM	25	0	20.88	21.24	21.33		
10	16QAM	25	12	20.96	21.20	21.34		
10	16QAM	25	25	20.90	21.18	21.33	22	2
10	16QAM	50	0	20.95	21.23	21.31		
10	64QAM	1	0	20.99	21.35	21.36		
10	64QAM	1	25	20.97	21.34	21.38	22	2
10	64QAM	1	49	21.03	21.32	21.35		
10	64QAM	25	0	19.85	20.20	20.24		
10	64QAM	25	12	19.97	20.26	20.24	21	3
10	64QAM	25	25	19.97	20.22	20.17		
10	64QAM	50	0	20.00	20.22	20.38		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.90	23.10	23.20	24	0
5	QPSK	1	12	22.99	23.13	23.19		
5	QPSK	1	24	22.86	23.10	23.17		
5	QPSK	12	0	21.96	22.13	22.26	23	1
5	QPSK	12	7	21.97	22.17	22.27		



5	QPSK	12	13	21.90	22.15	22.28		
5	QPSK	25	0	21.77	22.14	22.27		
5	16QAM	1	0	22.02	22.39	22.46	23	1
5	16QAM	1	12	22.07	22.42	22.41		
5	16QAM	1	24	21.97	22.25	22.42		
5	16QAM	12	0	21.07	21.20	21.33	22	2
5	16QAM	12	7	20.98	21.25	21.35		
5	16QAM	12	13	21.00	21.21	21.30		
5	16QAM	25	0	21.07	21.25	21.33		
5	64QAM	1	0	21.24	21.35	21.43	22	2
5	64QAM	1	12	21.14	21.36	21.50		
5	64QAM	1	24	21.08	21.33	21.35		
5	64QAM	12	0	20.08	20.28	20.37	21	3
5	64QAM	12	7	20.10	20.34	20.42		
5	64QAM	12	13	20.03	20.27	20.37		
5	64QAM	25	0	19.87	20.20	20.34		
Channel				19965	20175	20385		
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.78	23.07	23.22	24	0
3	QPSK	1	8	22.78	23.11	23.23		
3	QPSK	1	14	22.74	23.11	23.20		
3	QPSK	8	0	22.03	22.14	22.27	23	1
3	QPSK	8	4	22.07	22.19	22.28		
3	QPSK	8	7	21.97	22.16	22.21		
3	QPSK	15	0	21.99	22.18	22.28		
3	16QAM	1	0	22.28	22.31	22.59	23	1
3	16QAM	1	8	22.23	22.43	22.53		
3	16QAM	1	14	22.15	22.36	22.42		
3	16QAM	8	0	21.10	21.25	21.40	22	2
3	16QAM	8	4	21.15	21.27	21.41		
3	16QAM	8	7	21.11	21.25	21.35		
3	16QAM	15	0	21.09	21.24	21.39		
3	64QAM	1	0	21.18	21.34	21.47		
3	64QAM	1	8	21.13	21.44	21.48	22	2
3	64QAM	1	14	21.03	21.26	21.44		
3	64QAM	8	0	20.12	20.28	20.36		
3	64QAM	8	4	20.17	20.27	20.43	21	3
3	64QAM	8	7	20.14	20.28	20.40		
3	64QAM	15	0	19.93	20.28	20.36		
Channel				19957	20175	20393		
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.85	23.05	23.15	24	0
1.4	QPSK	1	3	22.90	23.14	23.23		
1.4	QPSK	1	5	22.83	23.04	23.19		
1.4	QPSK	3	0	22.89	23.11	23.21		
1.4	QPSK	3	1	22.96	23.16	23.19		
1.4	QPSK	3	3	22.91	23.13	23.22	23	1
1.4	QPSK	6	0	21.93	22.14	22.20		
1.4	16QAM	1	0	22.09	22.37	22.41	23	1
1.4	16QAM	1	3	22.20	22.38	22.57		
1.4	16QAM	1	5	22.19	22.30	22.33		
1.4	16QAM	3	0	21.80	22.12	22.29		
1.4	16QAM	3	1	21.86	22.21	22.25		
1.4	16QAM	3	3	21.82	22.16	22.24	22	2
1.4	16QAM	6	0	20.92	21.30	21.41		
1.4	64QAM	1	0	20.93	21.27	21.37		



1.4	64QAM	1	3	20.92	21.29	21.35		
1.4	64QAM	1	5	20.89	21.28	21.35		
1.4	64QAM	3	0	20.94	21.19	21.29		
1.4	64QAM	3	1	21.02	21.23	21.35		
1.4	64QAM	3	3	20.92	21.14	21.32		
1.4	64QAM	6	0	19.83	20.20	20.33		

<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	22.58	22.64	22.99	24	0
10	QPSK	1	25	22.67	22.62	22.90		
10	QPSK	1	49	22.57	22.55	22.83		
10	QPSK	25	0	21.70	21.74	21.87	23	1
10	QPSK	25	12	21.73	21.72	21.84		
10	QPSK	25	25	21.62	21.65	21.86		
10	QPSK	50	0	21.68	21.68	21.84	23	1
10	16QAM	1	0	21.92	21.95	22.22		
10	16QAM	1	25	21.93	22.07	22.25		
10	16QAM	1	49	21.91	21.97	22.18	22	2
10	16QAM	25	0	20.86	20.82	20.95		
10	16QAM	25	12	20.79	20.83	20.95		
10	16QAM	25	25	20.73	20.74	21.02	22	2
10	16QAM	50	0	20.75	20.76	20.93		
10	64QAM	1	0	20.84	20.90	21.07		
10	64QAM	1	25	20.83	20.90	21.25	22	2
10	64QAM	1	49	20.81	20.85	21.09		
10	64QAM	25	0	19.84	19.86	19.96		
10	64QAM	25	12	19.79	19.83	20.01	21	3
10	64QAM	25	25	19.78	19.74	20.02		
10	64QAM	50	0	19.84	19.82	19.96		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.56	22.71	22.98	24	0
5	QPSK	1	12	22.59	22.65	22.97		
5	QPSK	1	24	22.62	22.61	22.93		
5	QPSK	12	0	21.60	21.70	21.98	23	1
5	QPSK	12	7	21.75	21.69	22.00		
5	QPSK	12	13	21.69	21.64	22.06		
5	QPSK	25	0	21.72	21.69	22.09	23	1
5	16QAM	1	0	21.93	21.95	22.22		
5	16QAM	1	12	21.84	21.98	22.22		
5	16QAM	1	24	22.01	21.90	22.18	22	2
5	16QAM	12	0	20.74	20.82	21.19		
5	16QAM	12	7	20.83	20.84	21.21		
5	16QAM	12	13	20.80	20.79	21.21	22	2
5	16QAM	25	0	20.79	20.76	21.19		
5	64QAM	1	0	20.85	20.95	21.20		
5	64QAM	1	12	20.92	20.90	21.11	22	2
5	64QAM	1	24	20.84	20.86	21.06		
5	64QAM	12	0	19.76	19.84	20.15		
5	64QAM	12	7	19.90	19.86	20.16	21	3



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5	64QAM	12	13	19.82	19.81	20.22		
5	64QAM	25	0	19.84	19.80	20.10		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.64	22.68	22.98	24	0
3	QPSK	1	8	22.61	22.66	22.97		
3	QPSK	1	14	22.58	22.63	22.95		
3	QPSK	8	0	21.63	21.67	21.98	23	1
3	QPSK	8	4	21.69	21.73	22.04		
3	QPSK	8	7	21.60	21.68	21.95		
3	QPSK	15	0	21.62	21.69	21.94		
3	16QAM	1	0	22.26	22.01	22.35	23	1
3	16QAM	1	8	21.95	21.93	22.29		
3	16QAM	1	14	21.98	21.90	22.29		
3	16QAM	8	0	20.74	20.80	21.12	22	2
3	16QAM	8	4	20.78	20.81	21.10		
3	16QAM	8	7	20.71	20.80	21.12		
3	16QAM	15	0	20.73	20.74	21.10		
3	64QAM	1	0	20.83	20.84	21.16	22	2
3	64QAM	1	8	20.81	20.89	21.22		
3	64QAM	1	14	20.78	20.82	21.15		
3	64QAM	8	0	19.95	19.84	20.08	21	3
3	64QAM	8	4	19.94	19.80	20.17		
3	64QAM	8	7	19.91	19.76	20.11		
3	64QAM	15	0	19.87	19.80	20.05		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.70	22.73	22.97	24	0
1.4	QPSK	1	3	22.77	22.81	22.92		
1.4	QPSK	1	5	22.67	22.75	22.95		
1.4	QPSK	3	0	22.55	22.62	22.96		
1.4	QPSK	3	1	22.57	22.64	22.94		
1.4	QPSK	3	3	22.56	22.62	22.97		
1.4	QPSK	6	0	21.60	21.65	22.00	23	1
1.4	16QAM	1	0	21.86	21.85	22.15	23	1
1.4	16QAM	1	3	21.90	21.98	22.22		
1.4	16QAM	1	5	21.87	21.88	22.07		
1.4	16QAM	3	0	21.64	21.61	21.87		
1.4	16QAM	3	1	21.64	21.68	21.91		
1.4	16QAM	3	3	21.54	21.69	21.83		
1.4	16QAM	6	0	20.67	20.77	21.09	22	2
1.4	64QAM	1	0	20.73	20.80	21.11	22	2
1.4	64QAM	1	3	20.93	20.88	21.19		
1.4	64QAM	1	5	20.76	20.79	21.10		
1.4	64QAM	3	0	20.76	20.80	21.18		
1.4	64QAM	3	1	20.75	20.79	21.21		
1.4	64QAM	3	3	20.74	20.79	21.16		
1.4	64QAM	6	0	19.63	19.69	20.11	21	3



<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	23.07	23.12	23.40	24	0
20	QPSK	1	49	23.06	23.02	23.11		
20	QPSK	1	99	23.03	22.96	23.02		
20	QPSK	50	0	22.13	22.07	22.22	23	1
20	QPSK	50	24	22.14	22.08	22.20		
20	QPSK	50	50	22.08	22.01	22.16		
20	QPSK	100	0	22.09	22.02	22.14	23	1
20	16QAM	1	0	22.52	22.44	22.51		
20	16QAM	1	49	22.37	22.46	22.49		
20	16QAM	1	99	22.42	22.32	22.29	22	2
20	16QAM	50	0	21.20	21.18	21.32		
20	16QAM	50	24	21.22	21.16	21.29		
20	16QAM	50	50	21.15	21.08	21.26	22	2
20	16QAM	100	0	21.14	21.10	21.23		
20	64QAM	1	0	21.24	21.34	21.44		
20	64QAM	1	49	21.35	21.28	21.32	22	2
20	64QAM	1	99	21.27	21.08	21.19		
20	64QAM	50	0	20.16	20.15	20.31		
20	64QAM	50	24	20.21	20.11	20.23	21	3
20	64QAM	50	50	20.18	20.09	20.18		
20	64QAM	100	0	20.19	20.12	20.28		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.13	23.09	23.16	24	0
15	QPSK	1	37	23.08	23.01	23.04		
15	QPSK	1	74	23.14	23.00	23.05		
15	QPSK	36	0	22.14	22.10	22.22	23	1
15	QPSK	36	20	22.14	22.07	22.17		
15	QPSK	36	39	22.12	22.04	22.12		
15	QPSK	75	0	22.12	22.04	22.17	23	1
15	16QAM	1	0	22.51	22.49	22.51		
15	16QAM	1	37	22.43	22.33	22.37		
15	16QAM	1	74	22.50	22.34	22.33	22	2
15	16QAM	36	0	21.20	21.17	21.27		
15	16QAM	36	20	21.22	21.15	21.25		
15	16QAM	36	39	21.15	21.12	21.17	22	2
15	16QAM	75	0	21.18	21.12	21.22		
15	64QAM	1	0	21.36	21.30	21.45		
15	64QAM	1	37	21.21	21.24	21.35	22	2
15	64QAM	1	74	21.41	21.14	21.13		
15	64QAM	36	0	20.20	20.13	20.24		
15	64QAM	36	20	20.20	20.11	20.30	21	3
15	64QAM	36	39	20.20	20.09	20.22		
15	64QAM	75	0	20.22	20.11	20.27		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.08	23.11	23.11	24	0
10	QPSK	1	25	23.11	23.06	23.08		
10	QPSK	1	49	23.11	23.02	23.05		
10	QPSK	25	0	22.07	22.05	22.17	23	1
10	QPSK	25	12	22.11	22.06	22.12		



10	QPSK	25	25	22.11	22.04	22.10		
10	QPSK	50	0	22.10	22.04	22.14		
10	16QAM	1	0	22.44	22.46	22.50		
10	16QAM	1	25	22.51	22.41	22.38	23	1
10	16QAM	1	49	22.49	22.28	22.27		
10	16QAM	25	0	21.21	21.13	21.26		
10	16QAM	25	12	21.19	21.16	21.20	22	2
10	16QAM	25	25	21.21	21.14	21.18		
10	16QAM	50	0	21.20	21.09	21.23		
10	64QAM	1	0	21.31	21.20	21.37		
10	64QAM	1	25	21.35	21.25	21.26	22	2
10	64QAM	1	49	21.35	21.23	21.20		
10	64QAM	25	0	20.20	20.15	20.22		
10	64QAM	25	12	20.21	20.11	20.25	21	3
10	64QAM	25	25	20.17	20.10	20.17		
10	64QAM	50	0	20.17	20.08	20.19		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.02	23.05	23.10	24	0
5	QPSK	1	12	23.05	22.99	23.09		
5	QPSK	1	24	23.10	23.00	23.05		
5	QPSK	12	0	22.10	22.03	22.14	23	1
5	QPSK	12	7	22.16	22.04	22.14		
5	QPSK	12	13	22.09	22.04	22.14		
5	QPSK	25	0	22.10	22.01	22.11		
5	16QAM	1	0	22.33	22.44	22.46	23	1
5	16QAM	1	12	22.35	22.36	22.36		
5	16QAM	1	24	22.46	22.41	22.39		
5	16QAM	12	0	21.19	21.09	21.20	22	2
5	16QAM	12	7	21.22	21.15	21.22		
5	16QAM	12	13	21.17	21.12	21.22		
5	16QAM	25	0	21.20	21.09	21.17		
5	64QAM	1	0	21.19	21.24	21.20	22	2
5	64QAM	1	12	21.33	21.22	21.23		
5	64QAM	1	24	21.34	21.27	21.26		
5	64QAM	12	0	20.13	20.06	20.17	21	3
5	64QAM	12	7	20.17	20.13	20.26		
5	64QAM	12	13	20.14	20.08	20.16		
5	64QAM	25	0	20.15	20.12	20.23		

<LTE Band 12>

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				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	23.12	23.04	23.18	24	0
10	QPSK	1	25	23.12	23.01	23.01		
10	QPSK	1	49	23.01	22.93	22.99		
10	QPSK	25	0	22.20	22.14	22.09	23	1
10	QPSK	25	12	22.19	22.12	22.07		
10	QPSK	25	25	22.13	22.02	22.00		
10	QPSK	50	0	22.16	22.10	22.09		
10	16QAM	1	0	22.33	22.28	22.42	23	1
10	16QAM	1	25	22.46	22.38	22.19		



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10	16QAM	1	49	22.35	22.14	22.17		
10	16QAM	25	0	21.33	21.28	21.23	22	2
10	16QAM	25	12	21.24	21.23	21.22		
10	16QAM	25	25	21.20	21.16	21.06		
10	16QAM	50	0	21.26	21.15	21.16		
10	64QAM	1	0	21.29	21.27	21.38	22	2
10	64QAM	1	25	21.32	21.37	21.19		
10	64QAM	1	49	21.23	21.09	21.23		
10	64QAM	25	0	20.33	20.26	20.22	21	3
10	64QAM	25	12	20.31	20.25	20.24		
10	64QAM	25	25	20.21	20.16	20.10		
10	64QAM	50	0	20.24	20.22	20.17		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.10	23.12	23.16	24	0
5	QPSK	1	12	23.05	23.07	23.13		
5	QPSK	1	24	23.05	22.98	23.11		
5	QPSK	12	0	22.09	22.11	22.14	23	1
5	QPSK	12	7	22.14	22.13	22.24		
5	QPSK	12	13	22.19	22.12	22.17		
5	QPSK	25	0	22.18	22.13	22.16		
5	16QAM	1	0	22.31	22.39	22.29	23	1
5	16QAM	1	12	22.23	22.42	22.39		
5	16QAM	1	24	22.45	22.21	22.48		
5	16QAM	12	0	21.21	21.26	21.21	22	2
5	16QAM	12	7	21.22	21.27	21.28		
5	16QAM	12	13	21.25	21.15	21.28		
5	16QAM	25	0	21.26	21.18	21.21		
5	64QAM	1	0	21.27	21.39	21.34	22	2
5	64QAM	1	12	21.28	21.35	21.43		
5	64QAM	1	24	21.33	21.23	21.27		
5	64QAM	12	0	20.25	20.28	20.23	21	3
5	64QAM	12	7	20.25	20.30	20.39		
5	64QAM	12	13	20.32	20.22	20.35		
5	64QAM	25	0	20.27	20.21	20.20		
Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.03	23.09	23.16	24	0
3	QPSK	1	8	23.01	23.08	23.16		
3	QPSK	1	14	23.02	23.02	23.16		
3	QPSK	8	0	22.09	22.11	22.19	23	1
3	QPSK	8	4	22.09	22.10	22.24		
3	QPSK	8	7	22.10	22.10	22.20		
3	QPSK	15	0	22.06	22.12	22.20		
3	16QAM	1	0	22.33	22.33	22.29	23	1
3	16QAM	1	8	22.32	22.38	22.36		
3	16QAM	1	14	22.33	22.35	22.32		
3	16QAM	8	0	21.19	21.25	21.31	22	2
3	16QAM	8	4	21.20	21.27	21.32		
3	16QAM	8	7	21.20	21.18	21.29		
3	16QAM	15	0	21.21	21.20	21.28		
3	64QAM	1	0	21.29	21.39	21.34	22	2
3	64QAM	1	8	21.22	21.34	21.42		
3	64QAM	1	14	21.29	21.26	21.28		
3	64QAM	8	0	20.19	20.25	20.28	21	3
3	64QAM	8	4	20.26	20.25	20.32		



3	64QAM	8	7	20.24	20.23	20.28		
3	64QAM	15	0	20.16	20.21	20.26		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.95	22.96	23.08	24	0
1.4	QPSK	1	3	23.06	23.02	23.14		
1.4	QPSK	1	5	22.92	22.97	23.04		
1.4	QPSK	3	0	23.00	23.01	23.14		
1.4	QPSK	3	1	23.03	23.09	23.16		
1.4	QPSK	3	3	23.00	23.01	23.11		
1.4	QPSK	6	0	21.98	21.98	22.12	23	1
1.4	16QAM	1	0	22.14	22.39	22.36	23	1
1.4	16QAM	1	3	22.23	22.31	22.38		
1.4	16QAM	1	5	22.27	22.31	22.36		
1.4	16QAM	3	0	22.06	22.07	22.11		
1.4	16QAM	3	1	22.04	22.09	22.14		
1.4	16QAM	3	3	21.97	22.05	22.14		
1.4	16QAM	6	0	21.11	21.22	21.25	22	2
1.4	64QAM	1	0	21.27	21.28	21.37	22	2
1.4	64QAM	1	3	21.26	21.26	21.41		
1.4	64QAM	1	5	21.20	21.26	21.28		
1.4	64QAM	3	0	21.20	21.29	21.30		
1.4	64QAM	3	1	21.20	21.30	21.37		
1.4	64QAM	3	3	21.08	21.20	21.24		
1.4	64QAM	6	0	20.19	20.20	20.28	21	3

<LTE Band 13>

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				23230			Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				782				
10	QPSK	1	0		23.11		24	0
10	QPSK	1	25		22.84			
10	QPSK	1	49		22.87			
10	QPSK	25	0		22.11		23	1
10	QPSK	25	12		22.08			
10	QPSK	25	25		21.97			
10	QPSK	50	0		22.03			
10	16QAM	1	0		22.30		23	1
10	16QAM	1	25		22.30			
10	16QAM	1	49		22.16			
10	16QAM	25	0		21.15		22	2
10	16QAM	25	12		21.12			
10	16QAM	25	25		21.04			
10	16QAM	50	0		21.13			
10	64QAM	1	0		21.12		22	2
10	64QAM	1	25		20.99			
10	64QAM	1	49		20.95			
10	64QAM	25	0		20.16		21	3
10	64QAM	25	12		20.13			
10	64QAM	25	25		20.07			
10	64QAM	50	0		20.17			
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		



5	QPSK	1	0	22.93	22.99	23.08	24	0
5	QPSK	1	12	22.85	22.99	23.05		
5	QPSK	1	24	22.96	22.99	23.10		
5	QPSK	12	0	21.99	22.05	22.13	23	1
5	QPSK	12	7	22.06	22.06	22.12		
5	QPSK	12	13	22.04	22.03	22.17		
5	QPSK	25	0	22.06	22.03	22.09	23	1
5	16QAM	1	0	22.22	22.27	22.38		
5	16QAM	1	12	22.17	22.31	22.52		
5	16QAM	1	24	22.19	22.23	22.22	22	2
5	16QAM	12	0	21.03	21.15	21.15		
5	16QAM	12	7	21.20	21.12	21.18		
5	16QAM	12	13	21.12	21.03	21.23	22	2
5	16QAM	25	0	21.13	21.10	21.18		
5	64QAM	1	0	21.26	21.26	21.27		
5	64QAM	1	12	21.15	21.19	21.25	22	2
5	64QAM	1	24	21.08	21.12	21.09		
5	64QAM	12	0	20.11	20.14	20.21		
5	64QAM	12	7	20.21	20.16	20.20	21	3
5	64QAM	12	13	20.13	20.16	20.31		
5	64QAM	25	0	20.11	20.11	20.18		

<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	23.11	22.97	24	0
10	QPSK	1	25	22.98	22.99	22.96		
10	QPSK	1	49	22.81	23.09	22.84		
10	QPSK	25	0	22.10	22.10	22.06	23	1
10	QPSK	25	12	22.09	22.08	22.07		
10	QPSK	25	25	21.97	21.99	22.01		
10	QPSK	50	0	22.00	22.06	22.04	23	1
10	16QAM	1	0	22.24	22.36	22.23		
10	16QAM	1	25	22.36	22.24	22.24		
10	16QAM	1	49	22.11	22.20	22.16	22	2
10	16QAM	25	0	21.19	21.19	21.16		
10	16QAM	25	12	21.16	21.19	21.12		
10	16QAM	25	25	21.05	21.07	21.09	22	2
10	16QAM	50	0	21.15	21.14	21.09		
10	64QAM	1	0	21.28	21.23	21.19		
10	64QAM	1	25	21.22	21.17	21.02	22	2
10	64QAM	1	49	21.07	21.03	21.01		
10	64QAM	25	0	20.24	20.16	20.18		
10	64QAM	25	12	20.16	20.15	20.12	21	3
10	64QAM	25	25	20.09	20.07	20.03		
10	64QAM	50	0	20.14	20.09	20.09		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.00	23.02	23.10		
5	QPSK	1	12	22.85	22.99	23.06		
5	QPSK	1	24	22.89	22.96	23.05		
5	QPSK	12	0	22.04	22.11	22.11	23	1



5	QPSK	12	7	22.09	22.08	22.10		
5	QPSK	12	13	22.06	21.98	22.04		
5	QPSK	25	0	22.10	22.04	22.07		
5	16QAM	1	0	22.26	22.33	22.29	23	1
5	16QAM	1	12	22.36	22.25	22.20		
5	16QAM	1	24	22.29	22.07	22.22		
5	16QAM	12	0	21.13	21.17	21.15	22	2
5	16QAM	12	7	21.21	21.17	21.19		
5	16QAM	12	13	21.17	21.09	21.14		
5	16QAM	25	0	21.17	21.13	21.15		
5	64QAM	1	0	21.21	21.35	21.33	22	2
5	64QAM	1	12	21.05	21.17	21.30		
5	64QAM	1	24	21.16	21.17	21.26		
5	64QAM	12	0	20.08	20.19	20.24	21	3
5	64QAM	12	7	20.25	20.24	20.22		
5	64QAM	12	13	20.18	20.14	20.15		
5	64QAM	25	0	20.17	20.14	20.15		

<LTE Band 66>

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				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	23.38	23.55	23.52	24	0
20	QPSK	1	49	23.29	23.48	23.54		
20	QPSK	1	99	23.34	23.41	23.38		
20	QPSK	50	0	22.44	22.62	22.59	23	1
20	QPSK	50	24	22.49	22.60	22.60		
20	QPSK	50	50	22.41	22.55	22.54		
20	QPSK	100	0	22.48	22.57	22.56		
20	16QAM	1	0	22.59	22.76	22.81	23	1
20	16QAM	1	49	22.69	22.74	22.82		
20	16QAM	1	99	22.71	22.75	22.62		
20	16QAM	50	0	21.47	21.68	21.68	22	2
20	16QAM	50	24	21.57	21.68	21.70		
20	16QAM	50	50	21.55	21.67	21.64		
20	16QAM	100	0	21.51	21.60	21.66		
20	64QAM	1	0	21.57	21.68	21.84	22	2
20	64QAM	1	49	21.63	21.79	21.74		
20	64QAM	1	99	21.64	21.69	21.65		
20	64QAM	50	0	20.49	20.68	20.72	21	3
20	64QAM	50	24	20.61	20.67	20.69		
20	64QAM	50	50	20.52	20.66	20.65		
20	64QAM	100	0	20.60	20.67	20.66		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	23.34	23.53	23.53	24	0
15	QPSK	1	37	23.33	23.46	23.49		
15	QPSK	1	74	23.33	23.44	23.40		
15	QPSK	36	0	22.36	22.56	22.59	23	1
15	QPSK	36	20	22.38	22.58	22.60		
15	QPSK	36	39	22.44	22.58	22.53		
15	QPSK	75	0	22.46	22.58	22.55		
15	16QAM	1	0	22.58	22.84	22.87	23	1



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15	16QAM	1	37	22.53	22.79	22.84		
15	16QAM	1	74	22.72	22.82	22.69		
15	16QAM	36	0	21.46	21.60	21.64	22	2
15	16QAM	36	20	21.45	21.67	21.66		
15	16QAM	36	39	21.55	21.61	21.64		
15	16QAM	75	0	21.54	21.63	21.64		
15	64QAM	1	0	21.57	21.74	21.76	22	2
15	64QAM	1	37	21.54	21.77	21.78		
15	64QAM	1	74	21.63	21.65	21.64		
15	64QAM	36	0	20.47	20.69	20.66	21	3
15	64QAM	36	20	20.51	20.68	20.73		
15	64QAM	36	39	20.57	20.64	20.64		
15	64QAM	75	0	20.57	20.67	20.65		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	23.42	23.49	23.52	24	0
10	QPSK	1	25	23.42	23.43	23.51		
10	QPSK	1	49	23.39	23.54	23.44		
10	QPSK	25	0	22.45	22.64	22.62	23	1
10	QPSK	25	12	22.53	22.66	22.60		
10	QPSK	25	25	22.48	22.60	22.61		
10	QPSK	50	0	22.48	22.65	22.61		
10	16QAM	1	0	22.77	22.97	22.86	23	1
10	16QAM	1	25	22.72	22.92	22.84		
10	16QAM	1	49	22.71	22.79	22.80		
10	16QAM	25	0	21.56	21.71	21.71	22	2
10	16QAM	25	12	21.55	21.76	21.70		
10	16QAM	25	25	21.50	21.72	21.65		
10	16QAM	50	0	21.52	21.73	21.72		
10	64QAM	1	0	21.67	21.78	21.85	22	2
10	64QAM	1	25	21.63	21.75	21.80		
10	64QAM	1	49	21.56	21.76	21.77		
10	64QAM	25	0	20.59	20.72	20.76	21	3
10	64QAM	25	12	20.59	20.77	20.75		
10	64QAM	25	25	20.43	20.68	20.68		
10	64QAM	50	0	20.42	20.70	20.70		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	23.41	23.48	23.52	24	0
5	QPSK	1	12	23.40	23.47	23.50		
5	QPSK	1	24	23.35	23.48	23.49		
5	QPSK	12	0	22.45	22.66	22.58	23	1
5	QPSK	12	7	22.47	22.65	22.65		
5	QPSK	12	13	22.45	22.62	22.57		
5	QPSK	25	0	22.47	22.62	22.57		
5	16QAM	1	0	22.66	22.79	22.88	23	1
5	16QAM	1	12	22.64	22.89	22.86		
5	16QAM	1	24	22.54	22.79	22.70		
5	16QAM	12	0	21.55	21.67	21.65	22	2
5	16QAM	12	7	21.58	21.72	21.69		
5	16QAM	12	13	21.46	21.69	21.65		
5	16QAM	25	0	21.52	21.68	21.63		
5	64QAM	1	0	21.71	21.82	21.82	22	2
5	64QAM	1	12	21.60	21.73	21.82		
5	64QAM	1	24	21.60	21.73	21.75		
5	64QAM	12	0	20.55	20.76	20.68	21	3



5	64QAM	12	7	20.61	20.78	20.76		
5	64QAM	12	13	20.56	20.72	20.68		
5	64QAM	25	0	20.57	20.74	20.69		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	23.41	23.47	23.42	24	0
3	QPSK	1	8	23.42	23.46	23.48		
3	QPSK	1	14	23.38	23.49	23.49		
3	QPSK	8	0	22.47	22.59	22.59	23	1
3	QPSK	8	4	22.50	22.64	22.62		
3	QPSK	8	7	22.44	22.63	22.55		
3	QPSK	15	0	22.45	22.61	22.57	23	1
3	16QAM	1	0	22.74	22.78	22.79		
3	16QAM	1	8	22.69	22.94	22.76		
3	16QAM	1	14	22.51	22.85	22.79	22	2
3	16QAM	8	0	21.53	21.69	21.68		
3	16QAM	8	4	21.58	21.79	21.67		
3	16QAM	8	7	21.57	21.71	21.64	22	2
3	16QAM	15	0	21.55	21.72	21.68		
3	64QAM	1	0	21.62	21.70	21.78		
3	64QAM	1	8	21.70	21.73	21.73	21	3
3	64QAM	1	14	21.63	21.81	21.72		
3	64QAM	8	0	20.55	20.71	20.65		
3	64QAM	8	4	20.56	20.77	20.70	21	3
3	64QAM	8	7	20.58	20.77	20.66		
3	64QAM	15	0	20.55	20.65	20.69		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	23.27	23.40	23.34	24	0
1.4	QPSK	1	3	23.33	23.49	23.37		
1.4	QPSK	1	5	23.22	23.37	23.32		
1.4	QPSK	3	0	23.32	23.41	23.36		
1.4	QPSK	3	1	23.34	23.48	23.47		
1.4	QPSK	3	3	23.29	23.41	23.48		
1.4	QPSK	6	0	22.29	22.44	22.52	23	1
1.4	16QAM	1	0	22.50	22.69	22.79	23	1
1.4	16QAM	1	3	22.58	22.68	22.82		
1.4	16QAM	1	5	22.42	22.60	22.77		
1.4	16QAM	3	0	22.29	22.47	22.54		
1.4	16QAM	3	1	22.37	22.52	22.55		
1.4	16QAM	3	3	22.33	22.43	22.46		
1.4	16QAM	6	0	21.40	21.61	21.69	22	2
1.4	64QAM	1	0	21.46	21.65	21.64	22	2
1.4	64QAM	1	3	21.40	21.64	21.76		
1.4	64QAM	1	5	21.47	21.64	21.69		
1.4	64QAM	3	0	21.34	21.63	21.66		
1.4	64QAM	3	1	21.19	21.66	21.65		
1.4	64QAM	3	3	21.44	21.56	21.63		
1.4	64QAM	6	0	20.34	20.48	20.57	21	3



State 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	14.12	14.47	14.31	15.5	0
20	QPSK	1	49	14.11	14.21	14.30		
20	QPSK	1	99	14.01	14.05	14.21		
20	QPSK	50	0	14.20	14.35	14.34	15.5	0
20	QPSK	50	24	14.19	14.28	14.33		
20	QPSK	50	50	14.09	14.14	14.28		
20	QPSK	100	0	14.16	14.30	14.25		
20	16QAM	1	0	14.06	14.20	14.31	15.5	0
20	16QAM	1	49	14.14	14.23	14.35		
20	16QAM	1	99	13.99	14.10	14.17		
20	16QAM	50	0	14.17	14.31	14.22	15.5	0
20	16QAM	50	24	14.14	14.25	14.32		
20	16QAM	50	50	14.07	14.17	14.28		
20	16QAM	100	0	14.11	14.21	14.18		
20	64QAM	1	0	14.04	14.22	14.25	15.5	0
20	64QAM	1	49	14.14	14.27	14.24		
20	64QAM	1	99	14.03	14.07	14.29		
20	64QAM	50	0	14.14	14.24	14.21	15.5	0
20	64QAM	50	24	14.14	14.23	14.32		
20	64QAM	50	50	14.09	14.16	14.25		
20	64QAM	100	0	14.13	14.19	14.18		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	14.09	14.29	14.35	15.5	0
15	QPSK	1	37	13.99	14.17	14.30		
15	QPSK	1	74	14.02	14.07	14.25		
15	QPSK	36	0	14.10	14.27	14.29	15.5	0
15	QPSK	36	25.73	21.39	21.28	14.30		
15	QPSK	36	39	14.16	14.18	14.30		
15	QPSK	75	0	14.14	14.23	14.33		
15	16QAM	1	0	14.07	14.25	14.27	15.5	0
15	16QAM	1	37	14.04	14.25	14.26		
15	16QAM	1	74	14.07	14.10	14.23		
15	16QAM	36	0	14.06	14.31	14.28	15.5	0
15	16QAM	36	20	14.19	14.25	14.34		
15	16QAM	36	39	14.10	14.18	14.30		
15	16QAM	75	0	14.15	14.20	14.29		
15	64QAM	1	0	14.07	14.30	14.30	15.5	0
15	64QAM	1	37	14.06	14.14	14.18		
15	64QAM	1	74	14.04	14.08	14.21		
15	64QAM	36	0	14.05	14.29	14.28	15.5	0
15	64QAM	36	20	14.20	14.27	14.35		
15	64QAM	36	39	14.12	14.17	14.26		
15	64QAM	75	0	14.17	14.25	14.28		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	14.05	14.23	14.42	15.5	0
10	QPSK	1	25	14.05	14.17	14.38		
10	QPSK	1	49	14.10	14.16	14.37		
10	QPSK	25	0	14.06	14.27	14.40		



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10	QPSK	25	12	14.08	14.23	14.42		
10	QPSK	25	25	14.10	14.21	14.39		
10	QPSK	50	0	14.12	14.23	14.37		
10	16QAM	1	0	14.08	14.31	14.34	15.5	0
10	16QAM	1	25	13.99	14.23	14.39		
10	16QAM	1	49	14.15	14.06	14.33		
10	16QAM	25	0	14.07	14.23	14.40	15.5	0
10	16QAM	25	12	14.06	14.25	14.39		
10	16QAM	25	25	14.14	14.25	14.38		
10	16QAM	50	0	14.13	14.20	14.40		
10	64QAM	1	0	14.04	14.27	14.35	15.5	0
10	64QAM	1	25	13.99	14.27	14.40		
10	64QAM	1	49	14.09	14.14	14.26		
10	64QAM	25	0	14.06	14.22	14.41	15.5	0
10	64QAM	25	12	14.04	14.24	14.42		
10	64QAM	25	25	14.13	14.19	14.34		
10	64QAM	50	0	14.11	14.24	14.36		
Channel				18625	18900	19175		
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	14.04	14.21	14.38	15.5	0
5	QPSK	1	12	14.05	14.20	14.35		
5	QPSK	1	24	14.06	14.16	14.35		
5	QPSK	12	0	14.09	14.23	14.41	15.5	0
5	QPSK	12	7	14.05	14.28	14.43		
5	QPSK	12	13	14.07	14.19	14.41		
5	QPSK	25	0	14.07	14.20	14.40		
5	16QAM	1	0	14.06	14.30	14.44		
5	16QAM	1	12	14.09	14.28	14.41	15.5	0
5	16QAM	1	24	14.00	14.05	14.28		
5	16QAM	12	0	14.05	14.22	14.44		
5	16QAM	12	7	14.07	14.26	14.45	15.5	0
5	16QAM	12	13	14.07	14.23	14.39		
5	16QAM	25	0	14.05	14.24	14.35		
5	64QAM	1	0	14.17	14.37	14.36		
5	64QAM	1	12	14.02	14.31	14.46		
5	64QAM	1	24	14.01	14.24	14.45	15.5	0
5	64QAM	12	0	14.14	14.32	14.38		
5	64QAM	12	7	14.16	14.31	14.47		
5	64QAM	12	13	14.10	14.25	14.37		
5	64QAM	25	0	14.07	14.21	14.40		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	14.06	14.24	14.34	15.5	0
3	QPSK	1	8	14.07	14.17	14.34		
3	QPSK	1	14	14.07	14.13	14.33		
3	QPSK	8	0	14.09	14.23	14.41	15.5	0
3	QPSK	8	4	14.13	14.26	14.42		
3	QPSK	8	7	14.10	14.21	14.37		
3	QPSK	15	0	14.05	14.21	14.42		
3	16QAM	1	0	14.08	14.22	14.39		
3	16QAM	1	8	13.99	14.22	14.29	15.5	0
3	16QAM	1	14	14.00	14.09	14.29		
3	16QAM	8	0	14.15	14.24	14.39		
3	16QAM	8	4	14.17	14.30	14.38	15.5	0
3	16QAM	8	7	14.09	14.29	14.41		
3	16QAM	15	0	14.05	14.22	14.35		



3	64QAM	1	0	14.08	14.28	14.44	15.5	0
3	64QAM	1	8	14.00	14.18	14.35		
3	64QAM	1	14	13.97	14.25	14.39		
3	64QAM	8	0	14.13	14.29	14.43	15.5	0
3	64QAM	8	4	14.12	14.34	14.41		
3	64QAM	8	7	14.11	14.26	14.38		
3	64QAM	15	0	14.07	14.22	14.40		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	13.94	14.16	14.25	15.5	0
1.4	QPSK	1	3	14.06	14.21	14.35		
1.4	QPSK	1	5	13.97	14.12	14.30		
1.4	QPSK	3	0	13.99	14.16	14.38		
1.4	QPSK	3	1	14.04	14.19	14.36		
1.4	QPSK	3	3	13.99	14.14	14.32		
1.4	QPSK	6	0	13.97	14.16	14.37	15.5	0
1.4	16QAM	1	0	14.00	14.08	14.29	15.5	0
1.4	16QAM	1	3	14.07	14.15	14.33		
1.4	16QAM	1	5	13.91	14.18	14.32		
1.4	16QAM	3	0	14.00	14.16	14.34		
1.4	16QAM	3	1	14.02	14.17	14.40		
1.4	16QAM	3	3	13.98	14.11	14.32		
1.4	16QAM	6	0	14.04	14.18	14.36	15.5	0
1.4	64QAM	1	0	13.85	14.13	14.30	15.5	0
1.4	64QAM	1	3	14.05	14.15	14.34		
1.4	64QAM	1	5	13.98	14.04	14.24		
1.4	64QAM	3	0	14.02	14.21	14.36		
1.4	64QAM	3	1	14.04	14.22	14.33		
1.4	64QAM	3	3	14.02	14.18	14.39		
1.4	64QAM	6	0	13.98	14.14	14.29	15.5	0

<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	18.00	17.87	18.05	18.5	0
20	QPSK	1	49	17.72	17.91	17.97		
20	QPSK	1	99	17.75	17.84	17.84		
20	QPSK	50	0	17.70	17.90	17.96	18.5	0
20	QPSK	50	24	17.68	17.88	17.90		
20	QPSK	50	50	17.79	17.86	17.95		
20	QPSK	100	0	17.71	17.89	17.90		
20	16QAM	1	0	17.27	17.61	17.67	18.5	0
20	16QAM	1	49	17.44	17.69	17.74		
20	16QAM	1	99	17.39	17.58	17.63		
20	16QAM	50	0	17.19	17.41	17.41	18.5	0
20	16QAM	50	24	17.24	17.44	17.41		
20	16QAM	50	50	17.29	17.36	17.41		
20	16QAM	100	0	17.16	17.40	17.32		
20	64QAM	1	0	17.20	17.47	17.61	18.5	0
20	64QAM	1	49	17.29	17.53	17.69		
20	64QAM	1	99	17.43	17.38	17.51		
20	64QAM	50	0	17.14	17.38	17.39		



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20	64QAM	50	24	17.24	17.42	17.37		
20	64QAM	50	50	17.27	17.36	17.41		
20	64QAM	100	0	17.20	17.43	17.41		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	17.58	17.94	17.96	18.5	0
15	QPSK	1	37	17.70	17.93	17.91		
15	QPSK	1	74	17.69	17.85	17.89		
15	QPSK	36	0	17.72	17.89	17.90	18.5	0
15	QPSK	36	20	17.76	17.94	18.03		
15	QPSK	36	39	17.71	17.92	17.92		
15	QPSK	75	0	17.67	17.93	17.84	18.5	0
15	16QAM	1	0	17.31	17.73	17.67		
15	16QAM	1	37	17.49	17.62	17.71		
15	16QAM	1	74	17.46	17.67	17.64	18.5	0
15	16QAM	36	0	17.19	17.41	17.39		
15	16QAM	36	20	17.30	17.48	17.48		
15	16QAM	36	39	17.22	17.39	17.40	18.5	0
15	16QAM	75	0	17.20	17.39	17.37		
15	64QAM	1	0	17.14	17.59	17.57		
15	64QAM	1	37	17.47	17.54	17.59	18.5	0
15	64QAM	1	74	17.34	17.47	17.50		
15	64QAM	36	0	17.23	17.46	17.42		
15	64QAM	36	20	17.26	17.51	17.50	18.5	0
15	64QAM	36	39	17.20	17.42	17.41		
15	64QAM	75	0	17.19	17.43	17.35		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	17.95	17.86	17.85	18.5	0
10	QPSK	1	25	17.67	17.81	17.92		
10	QPSK	1	49	17.70	17.80	17.80		
10	QPSK	25	0	17.65	17.90	17.84	18.5	0
10	QPSK	25	12	17.60	17.81	17.87		
10	QPSK	25	25	17.73	17.86	17.92		
10	QPSK	50	0	17.69	17.82	17.76	18.5	0
10	16QAM	1	0	17.45	17.52	17.63		
10	16QAM	1	25	17.39	17.59	17.72		
10	16QAM	1	49	17.38	17.56	17.60	18.5	0
10	16QAM	25	0	17.17	17.37	17.37		
10	16QAM	25	12	17.23	17.38	17.35		
10	16QAM	25	25	17.29	17.29	17.31	18.5	0
10	16QAM	50	0	17.13	17.33	17.24		
10	64QAM	1	0	17.16	17.47	17.51		
10	64QAM	1	25	17.21	17.51	17.62	18.5	0
10	64QAM	1	49	17.41	17.33	17.50		
10	64QAM	25	0	17.13	17.35	17.33		
10	64QAM	25	12	17.18	17.33	17.30	18.5	0
10	64QAM	25	25	17.21	17.34	17.31		
10	64QAM	50	0	17.12	17.40	17.41		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	18.05	17.80	17.87	18.5	0
5	QPSK	1	12	17.64	17.87	17.88		
5	QPSK	1	24	17.72	17.81	17.76		
5	QPSK	12	0	17.67	17.81	17.80	18.5	0
5	QPSK	12	7	17.58	17.86	17.83		



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5	QPSK	12	13	17.78	17.81	17.89		
5	QPSK	25	0	17.68	17.80	17.79		
5	16QAM	1	0	17.24	17.59	17.65	18.5	0
5	16QAM	1	12	17.35	17.63	17.68		
5	16QAM	1	24	17.32	17.58	17.57		
5	16QAM	12	0	17.13	17.35	17.36	18.5	0
5	16QAM	12	7	17.20	17.38	17.36		
5	16QAM	12	13	17.26	17.29	17.33		
5	16QAM	25	0	17.08	17.32	17.25		
5	64QAM	1	0	17.34	17.43	17.56	18.5	0
5	64QAM	1	12	17.20	17.49	17.65		
5	64QAM	1	24	17.37	17.29	17.48		
5	64QAM	12	0	17.10	17.36	17.29	18.5	0
5	64QAM	12	7	17.21	17.36	17.31		
5	64QAM	12	13	17.25	17.35	17.31		
5	64QAM	25	0	17.18	17.39	17.41		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	17.98	17.80	17.89	18.5	0
3	QPSK	1	8	17.68	17.90	17.92		
3	QPSK	1	14	17.71	17.78	17.77		
3	QPSK	8	0	17.69	17.86	17.81	18.5	0
3	QPSK	8	4	17.66	17.85	17.82		
3	QPSK	8	7	17.69	17.85	17.89		
3	QPSK	15	0	17.64	17.87	17.82		
3	16QAM	1	0	17.21	17.53	17.63	18.5	0
3	16QAM	1	8	17.36	17.68	17.65		
3	16QAM	1	14	17.39	17.50	17.56		
3	16QAM	8	0	17.10	17.34	17.39	18.5	0
3	16QAM	8	4	17.16	17.43	17.32		
3	16QAM	8	7	17.27	17.33	17.34		
3	16QAM	15	0	17.13	17.40	17.27		
3	64QAM	1	0	17.16	17.42	17.56	18.5	0
3	64QAM	1	8	17.24	17.51	17.63		
3	64QAM	1	14	17.38	17.31	17.48		
3	64QAM	8	0	17.14	17.32	17.32	18.5	0
3	64QAM	8	4	17.16	17.35	17.31		
3	64QAM	8	7	17.17	17.28	17.40		
3	64QAM	15	0	17.18	17.40	17.38		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	18.02	17.80	17.80	18.5	0
1.4	QPSK	1	3	17.68	17.87	17.91		
1.4	QPSK	1	5	17.69	17.81	17.80		
1.4	QPSK	3	0	17.67	17.84	17.79	18.5	0
1.4	QPSK	3	1	17.61	17.84	17.80		
1.4	QPSK	3	3	17.78	17.80	17.88		
1.4	QPSK	6	0	17.67	17.81	17.76	18.5	0
1.4	16QAM	1	0	17.39	17.53	17.61	18.5	0
1.4	16QAM	1	3	17.42	17.65	17.72		
1.4	16QAM	1	5	17.37	17.52	17.59		
1.4	16QAM	3	0	17.10	17.37	17.37	18.5	0
1.4	16QAM	3	1	17.23	17.36	17.39		
1.4	16QAM	3	3	17.21	17.30	17.31		
1.4	16QAM	6	0	17.09	17.34	17.23	18.5	0
1.4	64QAM	1	0	17.20	17.37	17.58	18.5	0



1.4	64QAM	1	3	17.19	17.50	17.66		
1.4	64QAM	1	5	17.34	17.30	17.46		
1.4	64QAM	3	0	17.11	17.31	17.37		
1.4	64QAM	3	1	17.19	17.33	17.30		
1.4	64QAM	3	3	17.26	17.28	17.33		
1.4	64QAM	6	0	17.14	17.40	17.33	18.5	0

<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	22.15	22.55	22.19	23	0
10	QPSK	1	25	22.22	22.26	22.47		
10	QPSK	1	49	22.13	22.16	22.38		
10	QPSK	25	0	21.79	22.01	21.81	22.5	0.5
10	QPSK	25	12	21.76	21.79	21.95		
10	QPSK	25	25	21.75	21.77	22.00		
10	QPSK	50	0	21.77	21.96	21.80	22.5	0.5
10	16QAM	1	0	22.03	22.00	22.22		
10	16QAM	1	25	22.09	22.07	22.39		
10	16QAM	1	49	22.08	22.05	22.33	21.5	1.5
10	16QAM	25	0	20.88	20.88	21.06		
10	16QAM	25	12	20.85	20.91	21.07		
10	16QAM	25	25	20.85	20.80	21.14	21.5	1.5
10	16QAM	50	0	20.84	20.87	20.99		
10	64QAM	1	0	20.89	20.84	21.09		
10	64QAM	1	25	20.92	20.98	21.07	21.5	1.5
10	64QAM	1	49	20.84	20.89	20.94		
10	64QAM	25	0	19.88	19.91	19.83		
10	64QAM	25	12	19.85	19.92	19.85	20.5	2.5
10	64QAM	25	25	19.81	19.81	19.90		
10	64QAM	50	0	19.83	19.87	19.91		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.14	22.28	22.54	23	0
5	QPSK	1	12	22.18	22.22	22.53		
5	QPSK	1	24	22.16	22.18	22.50		
5	QPSK	12	0	21.82	21.81	22.06	22.5	0.5
5	QPSK	12	7	21.81	21.79	22.13		
5	QPSK	12	13	21.71	21.71	22.03		
5	QPSK	25	0	21.76	21.71	22.08	22.5	0.5
5	16QAM	1	0	21.99	21.95	22.30		
5	16QAM	1	12	21.95	22.04	22.33		
5	16QAM	1	24	21.91	21.98	22.29	21.5	1.5
5	16QAM	12	0	20.72	20.84	21.17		
5	16QAM	12	7	20.85	20.84	21.19		
5	16QAM	12	13	20.83	20.87	21.16	21.5	1.5
5	16QAM	25	0	20.82	20.87	21.12		
5	64QAM	1	0	20.81	21.01	21.27		
5	64QAM	1	12	20.88	20.89	21.20	21.5	1.5
5	64QAM	1	24	20.92	20.99	21.26		
5	64QAM	12	0	19.76	19.91	20.26		
5	64QAM	12	7	19.96	19.93	20.26	20.5	2.5



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5	64QAM	12	13	19.87	19.87	20.19		
5	64QAM	25	0	19.87	19.84	20.18		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.13	22.24	22.54	23	0
3	QPSK	1	8	22.11	22.23	22.53		
3	QPSK	1	14	22.11	22.20	22.52		
3	QPSK	8	0	21.68	21.74	22.03	22.5	0.5
3	QPSK	8	4	21.70	21.78	22.06		
3	QPSK	8	7	21.64	21.72	22.03		
3	QPSK	15	0	21.61	21.75	22.08		
3	16QAM	1	0	22.02	22.05	22.34	22.5	0.5
3	16QAM	1	8	21.98	22.03	22.25		
3	16QAM	1	14	21.94	21.98	22.28		
3	16QAM	8	0	20.78	20.84	21.17	21.5	1.5
3	16QAM	8	4	20.83	20.92	21.03		
3	16QAM	8	7	20.71	20.84	21.16		
3	16QAM	15	0	20.76	20.82	21.15		
3	64QAM	1	0	20.84	20.98	21.28	21.5	1.5
3	64QAM	1	8	20.91	20.96	21.19		
3	64QAM	1	14	20.88	20.93	21.23		
3	64QAM	8	0	19.77	19.86	20.22	20.5	2.5
3	64QAM	8	4	19.83	19.92	20.21		
3	64QAM	8	7	19.77	19.82	20.15		
3	64QAM	15	0	19.75	19.81	20.13		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.15	22.15	22.48	23	0
1.4	QPSK	1	3	22.13	22.21	22.54		
1.4	QPSK	1	5	22.13	22.14	22.40		
1.4	QPSK	3	0	22.10	22.18	22.48		
1.4	QPSK	3	1	22.13	22.23	22.54		
1.4	QPSK	3	3	22.11	22.17	22.50		
1.4	QPSK	6	0	21.60	21.70	21.98	22.5	0.5
1.4	16QAM	1	0	21.87	22.03	22.33	22.5	0.5
1.4	16QAM	1	3	21.97	22.09	22.23		
1.4	16QAM	1	5	21.90	21.95	22.18		
1.4	16QAM	3	0	21.64	21.74	22.01		
1.4	16QAM	3	1	21.69	21.76	22.08		
1.4	16QAM	3	3	21.66	21.73	21.98		
1.4	16QAM	6	0	20.73	20.81	21.17	21.5	1.5
1.4	64QAM	1	0	21.82	21.90	21.72	21.5	1.5
1.4	64QAM	1	3	21.85	21.81	21.77		
1.4	64QAM	1	5	21.73	21.87	21.81		
1.4	64QAM	3	0	21.69	21.65	21.51		
1.4	64QAM	3	1	21.77	21.62	21.58		
1.4	64QAM	3	3	21.69	21.63	21.43		
1.4	64QAM	6	0	19.67	19.75	20.05	20.5	2.5



<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	19.5	0
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	18.81	18.82	18.75	19.5	0
20	QPSK	1	49	18.66	18.55	18.75		
20	QPSK	1	99	18.80	18.51	18.74		
20	QPSK	50	0	18.64	18.89	18.74	19.5	0
20	QPSK	50	24	18.77	18.64	18.88		
20	QPSK	50	50	18.69	18.63	18.78		
20	QPSK	100	0	18.66	18.86	18.72	19.5	0
20	16QAM	1	0	18.78	18.59	18.69		
20	16QAM	1	49	18.65	18.43	18.70		
20	16QAM	1	99	18.82	18.43	18.57	19.5	0
20	16QAM	50	0	18.81	18.84	18.76		
20	16QAM	50	24	18.83	18.76	18.78		
20	16QAM	50	50	18.82	18.78	18.79	19.5	0
20	16QAM	100	0	18.88	18.80	18.79		
20	64QAM	1	0	18.48	18.57	18.41		
20	64QAM	1	49	18.50	18.78	18.33	19.5	0
20	64QAM	1	99	18.37	18.35	18.35		
20	64QAM	50	0	18.88	18.77	18.76		
20	64QAM	50	24	18.87	18.78	18.82	19.5	0
20	64QAM	50	50	18.82	18.76	18.78		
20	64QAM	100	0	18.86	18.73	18.75		
Channel				20825	21100	21375	19.5	0
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	18.78	18.64	18.75	19.5	0
15	QPSK	1	37	18.60	18.52	18.73		
15	QPSK	1	74	18.58	18.59	18.80		
15	QPSK	36	0	18.79	18.68	18.79	19.5	0
15	QPSK	36	20	18.74	18.59	18.82		
15	QPSK	36	39	18.72	18.64	18.76		
15	QPSK	75	0	18.75	18.65	18.84	19.5	0
15	16QAM	1	0	18.90	18.89	18.77		
15	16QAM	1	37	18.90	18.75	18.54		
15	16QAM	1	74	18.52	18.84	18.72	19.5	0
15	16QAM	36	0	18.81	18.81	18.82		
15	16QAM	36	20	18.91	18.77	18.79		
15	16QAM	36	39	18.80	18.71	18.72	19.5	0
15	16QAM	75	0	18.82	18.78	18.74		
15	64QAM	1	0	18.78	18.82	18.44		
15	64QAM	1	37	18.70	18.50	18.49	19.5	0
15	64QAM	1	74	18.57	18.65	18.49		
15	64QAM	36	0	18.91	18.77	18.77		
15	64QAM	36	20	18.84	18.73	18.75	19.5	0
15	64QAM	36	39	18.72	18.66	18.72		
15	64QAM	75	0	18.88	18.40	18.59		
Channel				20800	21100	21400	19.5	0
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	18.78	18.61	18.70	19.5	0
10	QPSK	1	25	18.68	18.59	18.79		
10	QPSK	1	49	18.69	18.47	18.69		
10	QPSK	25	0	18.80	18.66	18.85	19.5	0
10	QPSK	25	12	18.78	18.59	18.78		



10	QPSK	25	25	18.73	18.62	18.83		
10	QPSK	50	0	18.77	18.63	18.79		
10	16QAM	1	0	18.54	18.63	18.80	19.5	0
10	16QAM	1	25	18.87	18.74	18.77		
10	16QAM	1	49	18.86	18.69	18.83		
10	16QAM	25	0	18.86	18.72	18.81	19.5	0
10	16QAM	25	12	18.86	18.82	18.80		
10	16QAM	25	25	18.89	18.66	18.75		
10	16QAM	50	0	18.85	18.68	18.75	19.5	0
10	64QAM	1	0	18.83	18.75	18.42		
10	64QAM	1	25	18.73	18.60	18.68		
10	64QAM	1	49	18.85	18.58	18.72	19.5	0
10	64QAM	25	0	18.70	18.65	18.66		
10	64QAM	25	12	18.73	18.69	18.67		
10	64QAM	25	25	18.77	18.59	18.75	19.5	0
10	64QAM	50	0	18.84	18.51	18.52		
Channel				20775	21100	21425		
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	18.73	18.63	18.74	19.5	0
5	QPSK	1	12	18.74	18.60	18.87		
5	QPSK	1	24	18.63	18.52	18.89		
5	QPSK	12	0	18.70	18.57	18.78	19.5	0
5	QPSK	12	7	18.68	18.62	18.81		
5	QPSK	12	13	18.72	18.62	18.76		
5	QPSK	25	0	18.71	18.58	18.75	19.5	0
5	16QAM	1	0	18.76	18.65	18.55		
5	16QAM	1	12	18.77	18.64	18.76		
5	16QAM	1	24	18.81	18.68	18.70	19.5	0
5	16QAM	12	0	18.71	18.65	18.70		
5	16QAM	12	7	18.70	18.56	18.74		
5	16QAM	12	13	18.72	18.55	18.64	19.5	0
5	16QAM	25	0	18.61	18.45	18.64		
5	64QAM	1	0	18.70	18.88	18.49		
5	64QAM	1	12	18.61	18.64	18.81	19.5	0
5	64QAM	1	24	18.88	18.67	18.75		
5	64QAM	12	0	18.67	18.73	18.81		
5	64QAM	12	7	18.84	18.68	18.79	19.5	0
5	64QAM	12	13	18.83	18.70	18.88		
5	64QAM	25	0	18.69	18.67	18.74		

<LTE Band 66>

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				132072	132322	132572	18.5	0
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	18.14	18.37	18.25	18.5	0
20	QPSK	1	49	18.13	18.27	18.21		
20	QPSK	1	99	18.12	18.12	18.08		
20	QPSK	50	0	18.21	18.35	18.21	18.5	0
20	QPSK	50	24	18.20	18.32	18.20		
20	QPSK	50	50	18.14	18.21	18.11		
20	QPSK	100	0	18.17	18.26	18.15	18.5	0
20	16QAM	1	0	18.02	18.21	18.15		
20	16QAM	1	49	18.15	18.21	18.04		



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20	16QAM	1	99	18.10	18.03	18.02		
20	16QAM	50	0	17.96	18.19	18.11	18.5	0
20	16QAM	50	24	18.12	18.19	18.07		
20	16QAM	50	50	18.07	18.12	17.99		
20	16QAM	100	0	18.09	18.14	18.06		
20	64QAM	1	0	18.10	18.22	18.24	18.5	0
20	64QAM	1	49	18.17	18.23	18.13		
20	64QAM	1	99	18.16	18.17	18.08		
20	64QAM	50	0	17.97	18.17	18.06	18.5	0
20	64QAM	50	24	18.11	18.18	18.09		
20	64QAM	50	50	18.08	18.13	17.99		
20	64QAM	100	0	18.05	18.14	18.03		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	18.05	18.09	18.22	18.5	0
15	QPSK	1	37	18.07	18.18	18.17		
15	QPSK	1	74	18.04	18.04	18.08		
15	QPSK	36	0	18.03	18.23	18.12	18.5	0
15	QPSK	36	20	18.13	18.28	18.17		
15	QPSK	36	39	18.08	18.19	18.02		
15	QPSK	75	0	18.10	18.16	18.07		
15	16QAM	1	0	17.94	18.21	18.11	18.5	0
15	16QAM	1	37	18.08	18.16	17.98		
15	16QAM	1	74	18.03	17.94	18.00		
15	16QAM	36	0	17.93	18.15	18.10	18.5	0
15	16QAM	36	20	18.10	18.15	17.97		
15	16QAM	36	39	17.99	18.11	17.90		
15	16QAM	75	0	18.08	18.12	18.05		
15	64QAM	1	0	18.08	18.12	18.17	18.5	0
15	64QAM	1	37	18.16	18.16	18.10		
15	64QAM	1	74	18.06	18.15	18.05		
15	64QAM	36	0	17.91	18.16	18.01	18.5	0
15	64QAM	36	20	18.01	18.17	18.02		
15	64QAM	36	39	18.01	18.03	17.89		
15	64QAM	75	0	17.96	18.13	17.95		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	18.04	18.11	18.17	18.5	0
10	QPSK	1	25	18.06	18.21	18.13		
10	QPSK	1	49	18.07	18.06	18.00		
10	QPSK	25	0	17.98	18.21	18.12	18.5	0
10	QPSK	25	12	18.12	18.29	18.17		
10	QPSK	25	25	18.05	18.20	18.03		
10	QPSK	50	0	18.16	18.18	18.07		
10	16QAM	1	0	17.95	18.15	18.12	18.5	0
10	16QAM	1	25	18.09	18.20	18.00		
10	16QAM	1	49	18.09	18.00	18.00		
10	16QAM	25	0	17.89	18.10	18.06	18.5	0
10	16QAM	25	12	18.02	18.14	18.04		
10	16QAM	25	25	18.05	18.07	17.99		
10	16QAM	50	0	18.02	18.08	18.05		
10	64QAM	1	0	18.09	18.15	18.19	18.5	0
10	64QAM	1	25	18.14	18.21	18.05		
10	64QAM	1	49	18.11	18.14	17.98		
10	64QAM	25	0	17.93	18.09	17.97	18.5	0
10	64QAM	25	12	18.07	18.14	18.01		



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10	64QAM	25	25	18.03	18.05	17.89		
10	64QAM	50	0	18.01	18.12	17.97		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	18.01	18.06	18.24	18.5	0
5	QPSK	1	12	18.07	18.25	18.12		
5	QPSK	1	24	18.03	18.05	18.04		
5	QPSK	12	0	18.05	18.26	18.12	18.5	0
5	QPSK	12	7	18.12	18.28	18.17		
5	QPSK	12	13	18.11	18.15	18.04		
5	QPSK	25	0	18.12	18.24	18.07		
5	16QAM	1	0	18.02	18.14	18.12	18.5	0
5	16QAM	1	12	18.07	18.12	17.98		
5	16QAM	1	24	18.04	17.96	17.99		
5	16QAM	12	0	17.87	18.16	18.07	18.5	0
5	16QAM	12	7	18.07	18.17	18.07		
5	16QAM	12	13	18.02	18.03	17.95		
5	16QAM	25	0	18.00	18.14	18.01		
5	64QAM	1	0	18.07	18.13	18.23	18.5	0
5	64QAM	1	12	18.14	18.21	18.07		
5	64QAM	1	24	18.07	18.17	18.01		
5	64QAM	12	0	17.95	18.09	18.03	18.5	0
5	64QAM	12	7	18.01	18.16	18.00		
5	64QAM	12	13	18.05	18.12	17.92		
5	64QAM	25	0	18.04	18.11	17.94		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	17.99	18.08	18.16	18.5	0
3	QPSK	1	8	18.13	18.21	18.15		
3	QPSK	1	14	18.04	18.11	17.98		
3	QPSK	8	0	18.00	18.27	18.16	18.5	0
3	QPSK	8	4	18.19	18.31	18.11		
3	QPSK	8	7	18.11	18.16	18.06		
3	QPSK	15	0	18.14	18.19	18.11		
3	16QAM	1	0	17.94	18.19	18.10	18.5	0
3	16QAM	1	8	18.07	18.21	17.99		
3	16QAM	1	14	18.00	18.02	17.99		
3	16QAM	8	0	17.95	18.17	18.07	18.5	0
3	16QAM	8	4	18.04	18.13	17.98		
3	16QAM	8	7	17.98	18.03	17.95		
3	16QAM	15	0	18.01	18.12	18.03		
3	64QAM	1	0	18.08	18.19	18.23	18.5	0
3	64QAM	1	8	18.10	18.18	18.09		
3	64QAM	1	14	18.15	18.13	18.04		
3	64QAM	8	0	17.96	18.11	18.01	18.5	0
3	64QAM	8	4	18.10	18.11	18.05		
3	64QAM	8	7	18.03	18.13	17.91		
3	64QAM	15	0	17.98	18.05	17.99		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	18.04	18.08	18.20	18.5	0
1.4	QPSK	1	3	18.04	18.18	18.20		
1.4	QPSK	1	5	18.03	18.09	18.01		
1.4	QPSK	3	0	18.01	18.27	18.16		
1.4	QPSK	3	1	18.15	18.30	18.12		
1.4	QPSK	3	3	18.08	18.16	18.10		



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1.4	QPSK	6	0	18.15	18.17	18.06	18.5	0
1.4	16QAM	1	0	17.99	18.18	18.13	18.5	0
1.4	16QAM	1	3	18.14	18.16	17.96		
1.4	16QAM	1	5	18.06	17.97	17.99		
1.4	16QAM	3	0	17.93	18.16	18.08		
1.4	16QAM	3	1	18.12	18.11	17.99		
1.4	16QAM	3	3	18.06	18.04	17.97		
1.4	16QAM	6	0	18.02	18.13	17.96	18.5	0
1.4	64QAM	1	0	18.03	18.18	18.21	18.5	0
1.4	64QAM	1	3	18.10	18.19	18.04		
1.4	64QAM	1	5	18.10	18.11	18.03		
1.4	64QAM	3	0	17.91	18.15	17.98		
1.4	64QAM	3	1	18.10	18.14	18.02		
1.4	64QAM	3	3	18.05	18.11	17.89		
1.4	64QAM	6	0	17.95	18.07	17.94	18.5	0



State 3

<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	16.5	0
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	15.65	15.99	15.87		
20	QPSK	1	49	15.59	15.78	15.86	16.5	0
20	QPSK	1	99	15.55	15.67	15.77		
20	QPSK	50	0	15.62	15.91	15.88		
20	QPSK	50	24	15.61	15.81	15.87	16.5	0
20	QPSK	50	50	15.50	15.70	15.80		
20	QPSK	100	0	15.54	15.77	15.70		
20	16QAM	1	0	15.45	15.76	15.76	16.5	0
20	16QAM	1	49	15.55	15.81	15.93		
20	16QAM	1	99	15.55	15.66	15.84		
20	16QAM	50	0	15.73	15.94	15.91	16.5	0
20	16QAM	50	24	15.72	15.90	15.82		
20	16QAM	50	50	15.66	15.87	15.94		
20	16QAM	100	0	15.70	15.87	15.88	16.5	0
20	64QAM	1	0	15.48	15.78	15.76		
20	64QAM	1	49	15.55	15.81	15.46		
20	64QAM	1	99	15.35	15.62	15.79	16.5	0
20	64QAM	50	0	15.70	15.92	15.88		
20	64QAM	50	24	15.68	15.89	15.80		
20	64QAM	50	50	15.65	15.82	15.93	16.5	0
20	64QAM	50	50	15.65	15.82	15.93		
20	64QAM	100	0	15.74	15.88	15.85		
Channel				18675	18900	19125	16.5	0
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	15.50	15.82	15.86		
15	QPSK	1	37	15.47	15.71	15.84	16.5	0
15	QPSK	1	74	15.49	15.64	15.75		
15	QPSK	36	0	15.53	15.81	15.89		
15	QPSK	36	20.85	22.39	22.28	15.90	16.5	0
15	QPSK	36	39	15.58	15.73	15.85		
15	QPSK	75	0	15.57	15.80	15.86		
15	16QAM	1	0	15.51	15.88	15.89	16.5	0
15	16QAM	1	37	15.39	15.86	15.87		
15	16QAM	1	74	15.51	15.60	15.69		
15	16QAM	36	0	15.62	15.98	15.81	16.5	0
15	16QAM	36	20	15.75	15.96	15.82		
15	16QAM	36	39	15.72	15.88	15.96		
15	16QAM	75	0	15.75	15.95	15.95	16.5	0
15	64QAM	1	0	15.52	15.80	15.90		
15	64QAM	1	37	15.44	15.78	15.79		
15	64QAM	1	74	15.54	15.71	15.80	16.5	0
15	64QAM	36	0	15.65	15.98	15.95		
15	64QAM	36	20	15.75	15.97	15.90		
15	64QAM	36	39	15.69	15.89	15.93	16.5	0
15	64QAM	36	39	15.69	15.89	15.93		
15	64QAM	75	0	15.74	15.96	15.89		
Channel				18650	18900	19150	16.5	0
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	15.54	15.76	15.57		
10	QPSK	1	25	15.42	15.76	15.54	16.5	0
10	QPSK	1	49	15.55	15.69	15.53		
10	QPSK	25	0	15.50	15.79	15.92		



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10	QPSK	25	12	15.48	15.75	15.94		
10	QPSK	25	25	15.56	15.77	15.93		
10	QPSK	50	0	15.59	15.80	15.94		
10	16QAM	1	0	15.68	15.98	15.55	16.5	0
10	16QAM	1	25	15.52	15.89	15.64		
10	16QAM	1	49	15.57	15.74	15.53		
10	16QAM	25	0	15.46	15.62	15.79	16.5	0
10	16QAM	25	12	15.45	15.64	15.77		
10	16QAM	25	25	15.55	15.59	15.75		
10	16QAM	50	0	15.55	15.60	15.78		
10	64QAM	1	0	15.62	15.79	15.92	16.5	0
10	64QAM	1	25	15.57	15.75	15.79		
10	64QAM	1	49	15.69	15.72	15.87		
10	64QAM	25	0	15.49	15.59	15.76	16.5	0
10	64QAM	25	12	15.48	15.64	15.79		
10	64QAM	25	25	15.59	15.56	15.72		
10	64QAM	50	0	15.56	15.72	15.74		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	15.49	15.80	15.93	16.5	0
5	QPSK	1	12	15.45	15.76	15.91		
5	QPSK	1	24	15.50	15.74	15.91		
5	QPSK	12	0	15.51	15.81	15.95	16.5	0
5	QPSK	12	7	15.52	15.76	15.97		
5	QPSK	12	13	15.53	15.73	15.92		
5	QPSK	25	0	15.45	15.76	15.93		
5	16QAM	1	0	15.50	15.87	15.61	16.5	0
5	16QAM	1	12	15.58	15.89	15.54		
5	16QAM	1	24	15.49	15.83	15.90		
5	16QAM	12	0	15.50	15.60	15.77	16.5	0
5	16QAM	12	7	15.47	15.61	15.79		
5	16QAM	12	13	15.49	15.60	15.78		
5	16QAM	25	0	15.47	15.60	15.70		
5	64QAM	1	0	15.60	15.72	15.57	16.5	0
5	64QAM	1	12	15.61	15.75	15.58		
5	64QAM	1	24	15.52	15.65	15.44		
5	64QAM	12	0	15.45	15.58	15.47	16.5	0
5	64QAM	12	7	15.46	15.65	15.43		
5	64QAM	12	13	15.45	15.64	15.79		
5	64QAM	25	0	15.43	15.73	15.73		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	15.51	15.78	15.89	16.5	0
3	QPSK	1	8	15.48	15.74	15.93		
3	QPSK	1	14	15.44	15.70	15.88		
3	QPSK	8	0	15.50	15.78	15.93	16.5	0
3	QPSK	8	4	15.54	15.81	15.96		
3	QPSK	8	7	15.48	15.74	15.95		
3	QPSK	15	0	15.50	15.71	15.92		
3	16QAM	1	0	15.54	15.89	15.93	16.5	0
3	16QAM	1	8	15.59	15.90	15.83		
3	16QAM	1	14	15.59	15.73	15.94		
3	16QAM	8	0	15.49	15.65	15.80	16.5	0
3	16QAM	8	4	15.57	15.64	15.62		
3	16QAM	8	7	15.49	15.62	15.79		
3	16QAM	15	0	15.49	15.58	15.75		



3	64QAM	1	0	15.71	15.71	15.87	16.5	0
3	64QAM	1	8	15.74	15.69	15.62		
3	64QAM	1	14	15.56	15.79	15.81		
3	64QAM	8	0	15.58	15.71	15.77	16.5	0
3	64QAM	8	4	15.57	15.68	15.80		
3	64QAM	8	7	15.54	15.68	15.74		
3	64QAM	15	0	15.49	15.70	15.75		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	15.41	15.67	15.87	16.5	0
1.4	QPSK	1	3	15.45	15.77	15.72		
1.4	QPSK	1	5	15.37	15.64	15.87		
1.4	QPSK	3	0	15.44	15.73	15.88		
1.4	QPSK	3	1	15.44	15.73	15.66		
1.4	QPSK	3	3	15.49	15.73	15.90		
1.4	QPSK	6	0	15.46	15.75	15.88	16.5	0
1.4	16QAM	1	0	15.43	15.55	15.32	16.5	0
1.4	16QAM	1	3	15.50	15.53	15.64		
1.4	16QAM	1	5	15.49	15.61	15.57		
1.4	16QAM	3	0	15.41	15.49	15.76		
1.4	16QAM	3	1	15.45	15.63	15.71		
1.4	16QAM	3	3	15.43	15.53	15.67		
1.4	16QAM	6	0	15.50	15.59	15.74	16.5	0
1.4	64QAM	1	0	15.71	15.67	15.73	16.5	0
1.4	64QAM	1	3	15.56	15.76	15.82		
1.4	64QAM	1	5	15.59	15.70	15.90		
1.4	64QAM	3	0	15.56	15.65	15.79		
1.4	64QAM	3	1	15.66	15.72	15.84		
1.4	64QAM	3	3	15.60	15.65	15.76		
1.4	64QAM	6	0	15.45	15.69	15.68	16.5	0

<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	18.51	18.63	18.91	19.5	0
20	QPSK	1	49	18.53	18.51	18.50		
20	QPSK	1	99	18.54	18.60	18.69		
20	QPSK	50	0	18.55	18.76	18.82	19.5	0
20	QPSK	50	24	18.61	18.80	18.79		
20	QPSK	50	50	18.70	18.77	18.80		
20	QPSK	100	0	18.60	18.72	18.80		
20	16QAM	1	0	18.35	18.67	18.59	19.5	0
20	16QAM	1	49	18.54	18.72	18.65		
20	16QAM	1	99	18.63	18.59	18.59		
20	16QAM	50	0	18.65	18.85	18.87	19.5	0
20	16QAM	50	24	18.74	18.86	18.85		
20	16QAM	50	50	18.70	18.87	18.90		
20	16QAM	100	0	18.65	18.81	18.76		
20	64QAM	1	0	18.36	18.58	18.73	19.5	0
20	64QAM	1	49	18.57	18.83	18.81		
20	64QAM	1	99	18.52	18.59	18.66		



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20	64QAM	50	0	18.64	18.82	18.83	19.5	0
20	64QAM	50	24	18.68	18.88	18.80		
20	64QAM	50	50	18.76	18.82	18.84		
20	64QAM	100	0	18.67	18.90	18.84		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	18.36	18.61	18.76	19.5	0
15	QPSK	1	37	18.32	18.41	18.38		
15	QPSK	1	74	18.44	18.59	18.60		
15	QPSK	36	0	18.51	18.71	18.47	19.5	0
15	QPSK	36	20	18.53	18.74	18.75		
15	QPSK	36	39	18.64	18.74	18.79		
15	QPSK	75	0	18.54	18.75	18.66		
15	16QAM	1	0	18.37	18.75	18.68	19.5	0
15	16QAM	1	37	18.59	18.80	18.73		
15	16QAM	1	74	18.68	18.69	18.64		
15	16QAM	36	0	18.57	18.80	18.85	19.5	0
15	16QAM	36	20	18.69	18.82	18.77		
15	16QAM	36	39	18.65	18.85	18.86		
15	16QAM	75	0	18.57	18.81	18.67		
15	64QAM	1	0	18.31	18.52	18.65	19.5	0
15	64QAM	1	37	18.55	18.80	18.72		
15	64QAM	1	74	18.44	18.53	18.63		
15	64QAM	36	0	18.62	18.79	18.81	19.5	0
15	64QAM	36	20	18.68	18.78	18.76		
15	64QAM	36	39	18.68	18.79	18.77		
15	64QAM	75	0	18.62	18.84	18.78		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	18.39	18.54	18.73	19.5	0
10	QPSK	1	25	18.39	18.44	18.40		
10	QPSK	1	49	18.49	18.52	18.60		
10	QPSK	25	0	18.50	18.68	18.51	19.5	0
10	QPSK	25	12	18.58	18.79	18.76		
10	QPSK	25	25	18.64	18.73	18.73		
10	QPSK	50	0	18.52	18.81	18.64		
10	16QAM	1	0	18.44	18.73	18.65	19.5	0
10	16QAM	1	25	18.63	18.77	18.71		
10	16QAM	1	49	18.64	18.67	18.62		
10	16QAM	25	0	18.64	18.81	18.86	19.5	0
10	16QAM	25	12	18.70	18.78	18.79		
10	16QAM	25	25	18.70	18.80	18.87		
10	16QAM	50	0	18.62	18.72	18.71		
10	64QAM	1	0	18.31	18.49	18.70	19.5	0
10	64QAM	1	25	18.55	18.78	18.74		
10	64QAM	1	49	18.42	18.52	18.66		
10	64QAM	25	0	18.57	18.74	18.73	19.5	0
10	64QAM	25	12	18.65	18.84	18.71		
10	64QAM	25	25	18.72	18.81	18.77		
10	64QAM	50	0	18.59	18.82	18.78		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	18.35	18.56	18.81	19.5	0
5	QPSK	1	12	18.41	18.47	18.35		
5	QPSK	1	24	18.45	18.51	18.65		
5	QPSK	12	0	18.50	18.73	18.52	19.5	0



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5	QPSK	12	7	18.57	18.75	18.71		
5	QPSK	12	13	18.69	18.70	18.73		
5	QPSK	25	0	18.53	18.79	18.64		
5	16QAM	1	0	18.39	18.71	18.60	19.5	0
5	16QAM	1	12	18.64	18.81	18.71		
5	16QAM	1	24	18.65	18.62	18.62		
5	16QAM	12	0	18.56	18.76	18.85	19.5	0
5	16QAM	12	7	18.69	18.83	18.82		
5	16QAM	12	13	18.63	18.82	18.82		
5	16QAM	25	0	18.58	18.79	18.73		
5	64QAM	1	0	18.26	18.54	18.69	19.5	0
5	64QAM	1	12	18.48	18.71	18.73		
5	64QAM	1	24	18.43	18.58	18.59		
5	64QAM	12	0	18.62	18.77	18.82	19.5	0
5	64QAM	12	7	18.65	18.83	18.76		
5	64QAM	12	13	18.76	18.75	18.76		
5	64QAM	25	0	18.64	18.85	18.77		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	18.40	18.58	18.76	19.5	0
3	QPSK	1	8	18.40	18.51	18.31		
3	QPSK	1	14	18.49	18.52	18.69		
3	QPSK	8	0	18.50	18.74	18.46	19.5	0
3	QPSK	8	4	18.59	18.78	18.75		
3	QPSK	8	7	18.61	18.76	18.79		
3	QPSK	15	0	18.52	18.75	18.70		
3	16QAM	1	0	18.36	18.71	18.67	19.5	0
3	16QAM	1	8	18.62	18.75	18.66		
3	16QAM	1	14	18.69	18.64	18.67		
3	16QAM	8	0	18.62	18.83	18.85	19.5	0
3	16QAM	8	4	18.69	18.77	18.83		
3	16QAM	8	7	18.62	18.81	18.88		
3	16QAM	15	0	18.62	18.78	18.68		
3	64QAM	1	0	18.36	18.55	18.65	19.5	0
3	64QAM	1	8	18.48	18.74	18.72		
3	64QAM	1	14	18.45	18.57	18.58		
3	64QAM	8	0	18.56	18.78	18.75	19.5	0
3	64QAM	8	4	18.64	18.80	18.73		
3	64QAM	8	7	18.67	18.79	18.78		
3	64QAM	15	0	18.66	18.86	18.74		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	18.38	18.58	18.74	19.5	0
1.4	QPSK	1	3	18.34	18.44	18.40		
1.4	QPSK	1	5	18.47	18.52	18.60		
1.4	QPSK	3	0	18.50	18.68	18.53		
1.4	QPSK	3	1	18.53	18.81	18.73		
1.4	QPSK	3	3	18.62	18.71	18.74	19.5	0
1.4	QPSK	6	0	18.52	18.75	18.68	19.5	0
1.4	16QAM	1	0	18.37	18.76	18.61		
1.4	16QAM	1	3	18.56	18.79	18.70		
1.4	16QAM	1	5	18.69	18.59	18.67		
1.4	16QAM	3	0	18.65	18.79	18.82		
1.4	16QAM	3	1	18.74	18.84	18.84		
1.4	16QAM	3	3	18.66	18.79	18.86	19.5	0
1.4	16QAM	6	0	18.56	18.78	18.71		



1.4	64QAM	1	0	18.35	18.57	18.71	19.5	0
1.4	64QAM	1	3	18.51	18.77	18.80		
1.4	64QAM	1	5	18.44	18.50	18.59		
1.4	64QAM	3	0	18.62	18.81	18.81		
1.4	64QAM	3	1	18.59	18.87	18.75		
1.4	64QAM	3	3	18.72	18.73	18.82		
1.4	64QAM	6	0	18.58	18.83	18.81	19.5	0

<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	22.15	22.55	22.19	23	0
10	QPSK	1	25	22.22	22.26	22.47		
10	QPSK	1	49	22.13	22.16	22.38		
10	QPSK	25	0	21.79	22.01	21.81	22.5	0.5
10	QPSK	25	12	21.76	21.79	21.95		
10	QPSK	25	25	21.75	21.77	22.00		
10	QPSK	50	0	21.77	21.96	21.80		
10	16QAM	1	0	22.03	22.00	22.22	22.5	0.5
10	16QAM	1	25	22.09	22.07	22.39		
10	16QAM	1	49	22.08	22.05	22.33		
10	16QAM	25	0	20.88	20.88	21.06	21.5	1.5
10	16QAM	25	12	20.85	20.91	21.07		
10	16QAM	25	25	20.85	20.80	21.14		
10	16QAM	50	0	20.84	20.87	20.99		
10	64QAM	1	0	20.89	20.84	21.09	21.5	1.5
10	64QAM	1	25	20.92	20.98	21.07		
10	64QAM	1	49	20.84	20.89	20.94		
10	64QAM	25	0	19.88	19.91	19.83	20.5	2.5
10	64QAM	25	12	19.85	19.92	19.85		
10	64QAM	25	25	19.81	19.81	19.90		
10	64QAM	50	0	19.83	19.87	19.91		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.14	22.28	22.54	23	0
5	QPSK	1	12	22.18	22.22	22.53		
5	QPSK	1	24	22.16	22.18	22.50		
5	QPSK	12	0	21.82	21.81	22.06	22.5	0.5
5	QPSK	12	7	21.81	21.79	22.13		
5	QPSK	12	13	21.71	21.71	22.03		
5	QPSK	25	0	21.76	21.71	22.08		
5	16QAM	1	0	21.99	21.95	22.30	22.5	0.5
5	16QAM	1	12	21.95	22.04	22.33		
5	16QAM	1	24	21.91	21.98	22.29		
5	16QAM	12	0	20.72	20.84	21.17	21.5	1.5
5	16QAM	12	7	20.85	20.84	21.19		
5	16QAM	12	13	20.83	20.87	21.16		
5	16QAM	25	0	20.82	20.87	21.12		
5	64QAM	1	0	20.81	21.01	21.27	21.5	1.5
5	64QAM	1	12	20.88	20.89	21.20		
5	64QAM	1	24	20.92	20.99	21.26		



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5	64QAM	12	0	19.76	19.91	20.26	20.5	2.5
5	64QAM	12	7	19.96	19.93	20.26		
5	64QAM	12	13	19.87	19.87	20.19		
5	64QAM	25	0	19.87	19.84	20.18		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.13	22.24	22.54	23	0
3	QPSK	1	8	22.11	22.23	22.53		
3	QPSK	1	14	22.11	22.20	22.52		
3	QPSK	8	0	21.68	21.74	22.03	22.5	0.5
3	QPSK	8	4	21.70	21.78	22.06		
3	QPSK	8	7	21.64	21.72	22.03		
3	QPSK	15	0	21.61	21.75	22.08		
3	16QAM	1	0	22.02	22.05	22.34	22.5	0.5
3	16QAM	1	8	21.98	22.03	22.25		
3	16QAM	1	14	21.94	21.98	22.28		
3	16QAM	8	0	20.78	20.84	21.17	21.5	1.5
3	16QAM	8	4	20.83	20.92	21.03		
3	16QAM	8	7	20.71	20.84	21.16		
3	16QAM	15	0	20.76	20.82	21.15		
3	64QAM	1	0	20.84	20.98	21.28	21.5	1.5
3	64QAM	1	8	20.91	20.96	21.19		
3	64QAM	1	14	20.88	20.93	21.23		
3	64QAM	8	0	19.77	19.86	20.22		
3	64QAM	8	4	19.83	19.92	20.21	20.5	2.5
3	64QAM	8	7	19.77	19.82	20.15		
3	64QAM	15	0	19.75	19.81	20.13		
Channel				20407	20525	20643		
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.15	22.15	22.48	23	0
1.4	QPSK	1	3	22.13	22.21	22.54		
1.4	QPSK	1	5	22.13	22.14	22.40		
1.4	QPSK	3	0	22.10	22.18	22.48		
1.4	QPSK	3	1	22.13	22.23	22.54		
1.4	QPSK	3	3	22.11	22.17	22.50		
1.4	QPSK	6	0	21.60	21.70	21.98	22.5	0.5
1.4	16QAM	1	0	21.87	22.03	22.33	22.5	0.5
1.4	16QAM	1	3	21.97	22.09	22.23		
1.4	16QAM	1	5	21.90	21.95	22.18		
1.4	16QAM	3	0	21.64	21.74	22.01		
1.4	16QAM	3	1	21.69	21.76	22.08		
1.4	16QAM	3	3	21.66	21.73	21.98		
1.4	16QAM	6	0	20.73	20.81	21.17	21.5	1.5
1.4	64QAM	1	0	21.82	21.90	21.72	21.5	1.5
1.4	64QAM	1	3	21.85	21.81	21.77		
1.4	64QAM	1	5	21.73	21.87	21.81		
1.4	64QAM	3	0	21.69	21.65	21.51		
1.4	64QAM	3	1	21.77	21.62	21.58		
1.4	64QAM	3	3	21.69	21.63	21.43		
1.4	64QAM	6	0	19.67	19.75	20.05	20.5	2.5



<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	19.5	0
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	18.81	18.82	18.75	19.5	0
20	QPSK	1	49	18.66	18.55	18.75		
20	QPSK	1	99	18.80	18.51	18.74		
20	QPSK	50	0	18.64	18.89	18.74	19.5	0
20	QPSK	50	24	18.77	18.64	18.88		
20	QPSK	50	50	18.69	18.63	18.78		
20	QPSK	100	0	18.66	18.86	18.72	19.5	0
20	16QAM	1	0	18.78	18.59	18.69		
20	16QAM	1	49	18.65	18.43	18.70		
20	16QAM	1	99	18.82	18.43	18.57	19.5	0
20	16QAM	50	0	18.81	18.84	18.76		
20	16QAM	50	24	18.83	18.76	18.78		
20	16QAM	50	50	18.82	18.78	18.79	19.5	0
20	16QAM	100	0	18.88	18.80	18.79		
20	64QAM	1	0	18.48	18.57	18.41		
20	64QAM	1	49	18.50	18.78	18.33	19.5	0
20	64QAM	1	99	18.37	18.35	18.35		
20	64QAM	50	0	18.88	18.77	18.76		
20	64QAM	50	24	18.87	18.78	18.82	19.5	0
20	64QAM	50	50	18.82	18.76	18.78		
20	64QAM	100	0	18.86	18.73	18.75		
Channel				20825	21100	21375	19.5	0
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	18.78	18.64	18.75	19.5	0
15	QPSK	1	37	18.60	18.52	18.73		
15	QPSK	1	74	18.58	18.59	18.80		
15	QPSK	36	0	18.79	18.68	18.79	19.5	0
15	QPSK	36	20	18.74	18.59	18.82		
15	QPSK	36	39	18.72	18.64	18.76		
15	QPSK	75	0	18.75	18.65	18.84	19.5	0
15	16QAM	1	0	18.90	18.89	18.77		
15	16QAM	1	37	18.90	18.75	18.54		
15	16QAM	1	74	18.52	18.84	18.72	19.5	0
15	16QAM	36	0	18.81	18.81	18.82		
15	16QAM	36	20	18.91	18.77	18.79		
15	16QAM	36	39	18.80	18.71	18.72	19.5	0
15	16QAM	75	0	18.82	18.78	18.74		
15	64QAM	1	0	18.78	18.82	18.44		
15	64QAM	1	37	18.70	18.50	18.49	19.5	0
15	64QAM	1	74	18.57	18.65	18.49		
15	64QAM	36	0	18.91	18.77	18.77		
15	64QAM	36	20	18.84	18.73	18.75	19.5	0
15	64QAM	36	39	18.72	18.66	18.72		
15	64QAM	75	0	18.88	18.40	18.59		
Channel				20800	21100	21400	19.5	0
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	18.78	18.61	18.70	19.5	0
10	QPSK	1	25	18.68	18.59	18.79		
10	QPSK	1	49	18.69	18.47	18.69		
10	QPSK	25	0	18.80	18.66	18.85	19.5	0
10	QPSK	25	12	18.78	18.59	18.78		



10	QPSK	25	25	18.73	18.62	18.83		
10	QPSK	50	0	18.77	18.63	18.79		
10	16QAM	1	0	18.54	18.63	18.80	19.5	0
10	16QAM	1	25	18.87	18.74	18.77		
10	16QAM	1	49	18.86	18.69	18.83		
10	16QAM	25	0	18.86	18.72	18.81	19.5	0
10	16QAM	25	12	18.86	18.82	18.80		
10	16QAM	25	25	18.89	18.66	18.75		
10	16QAM	50	0	18.85	18.68	18.75	19.5	0
10	64QAM	1	0	18.83	18.75	18.42		
10	64QAM	1	25	18.73	18.60	18.68		
10	64QAM	1	49	18.85	18.58	18.72	19.5	0
10	64QAM	25	0	18.70	18.65	18.66		
10	64QAM	25	12	18.73	18.69	18.67		
10	64QAM	25	25	18.77	18.59	18.75	19.5	0
10	64QAM	50	0	18.84	18.51	18.52		
Channel				20775	21100	21425		
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	18.73	18.63	18.74	19.5	0
5	QPSK	1	12	18.74	18.60	18.87		
5	QPSK	1	24	18.63	18.52	18.89		
5	QPSK	12	0	18.70	18.57	18.78	19.5	0
5	QPSK	12	7	18.68	18.62	18.81		
5	QPSK	12	13	18.72	18.62	18.76		
5	QPSK	25	0	18.71	18.58	18.75	19.5	0
5	16QAM	1	0	18.76	18.65	18.55		
5	16QAM	1	12	18.77	18.64	18.76		
5	16QAM	1	24	18.81	18.68	18.70	19.5	0
5	16QAM	12	0	18.71	18.65	18.70		
5	16QAM	12	7	18.70	18.56	18.74		
5	16QAM	12	13	18.72	18.55	18.64	19.5	0
5	16QAM	25	0	18.61	18.45	18.64		
5	64QAM	1	0	18.70	18.88	18.49		
5	64QAM	1	12	18.61	18.64	18.81	19.5	0
5	64QAM	1	24	18.88	18.67	18.75		
5	64QAM	12	0	18.67	18.73	18.81		
5	64QAM	12	7	18.84	18.68	18.79	19.5	0
5	64QAM	12	13	18.83	18.70	18.88		
5	64QAM	25	0	18.69	18.67	18.74		

<LTE Band 66>

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				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	19.27	19.46	19.31	19.5	0
20	QPSK	1	49	19.25	19.36	19.28		
20	QPSK	1	99	19.26	19.24	19.11		
20	QPSK	50	0	19.35	19.40	19.30	19.5	0
20	QPSK	50	24	19.34	19.39	19.26		
20	QPSK	50	50	19.28	19.32	19.20		
20	QPSK	100	0	19.28	19.36	19.27	19.5	0
20	16QAM	1	0	19.16	19.19	19.30		



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20	16QAM	1	49	19.13	19.37	19.15		
20	16QAM	1	99	19.21	19.24	19.15		
20	16QAM	50	0	19.17	19.34	19.21	19.5	0
20	16QAM	50	24	19.26	19.32	19.25		
20	16QAM	50	50	19.23	19.29	19.16		
20	16QAM	100	0	19.23	19.30	19.16		
20	64QAM	1	0	19.31	19.37	19.40	19.5	0
20	64QAM	1	49	19.28	19.44	19.40		
20	64QAM	1	99	19.01	19.32	19.18		
20	64QAM	50	0	19.12	19.32	19.29	19.5	0
20	64QAM	50	24	19.27	19.38	19.25		
20	64QAM	50	50	19.25	19.28	19.20		
20	64QAM	100	0	19.25	19.32	19.16		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	19.17	19.37	19.25	19.5	0
15	QPSK	1	37	19.19	19.32	19.17		
15	QPSK	1	74	19.27	19.19	19.12		
15	QPSK	36	0	19.20	19.41	19.24	19.5	0
15	QPSK	36	20	19.24	19.35	19.24		
15	QPSK	36	39	19.30	19.35	19.17		
15	QPSK	75	0	19.30	19.35	19.23		
15	16QAM	1	0	19.18	19.41	19.30	19.5	0
15	16QAM	1	37	19.27	19.40	19.21		
15	16QAM	1	74	19.43	19.28	19.25		
15	16QAM	36	0	19.11	19.30	19.22	19.5	0
15	16QAM	36	20	19.17	19.36	19.20		
15	16QAM	36	39	19.24	19.26	19.12		
15	16QAM	75	0	19.24	19.31	19.15		
15	64QAM	1	0	19.33	19.40	19.38	19.5	0
15	64QAM	1	37	19.35	19.42	19.40		
15	64QAM	1	74	19.33	19.35	19.27		
15	64QAM	36	0	19.17	19.36	19.25	19.5	0
15	64QAM	36	20	19.23	19.42	19.27		
15	64QAM	36	39	19.28	19.32	19.21		
15	64QAM	75	0	19.25	19.33	19.15		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	19.14	19.37	19.18	19.5	0
10	QPSK	1	25	19.17	19.36	19.19		
10	QPSK	1	49	19.15	19.27	19.12		
10	QPSK	25	0	19.16	19.34	19.19	19.5	0
10	QPSK	25	12	19.21	19.35	19.23		
10	QPSK	25	25	19.11	19.28	19.18		
10	QPSK	50	0	19.19	19.30	19.21		
10	16QAM	1	0	19.22	19.41	19.24	19.5	0
10	16QAM	1	25	19.25	19.35	19.23		
10	16QAM	1	49	19.22	19.25	19.14		
10	16QAM	25	0	19.13	19.35	19.16	19.5	0
10	16QAM	25	12	19.16	19.31	19.20		
10	16QAM	25	25	19.14	19.29	19.12		
10	16QAM	50	0	19.16	19.30	19.14		
10	64QAM	1	0	19.38	19.31	19.29	19.5	0
10	64QAM	1	25	19.27	19.37	19.33		
10	64QAM	1	49	19.37	19.43	19.24		
10	64QAM	25	0	19.17	19.32	19.22	19.5	0



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10	64QAM	25	12	19.20	19.34	19.17		
10	64QAM	25	25	19.16	19.26	19.15		
10	64QAM	50	0	19.12	19.29	19.19		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	19.14	19.31	19.12	19.5	0
5	QPSK	1	12	19.17	19.31	19.17		
5	QPSK	1	24	19.05	19.27	19.09		
5	QPSK	12	0	19.15	19.35	19.17	19.5	0
5	QPSK	12	7	19.24	19.41	19.18		
5	QPSK	12	13	19.18	19.29	19.15		
5	QPSK	25	0	19.17	19.34	19.19		
5	16QAM	1	0	19.09	19.27	19.05	19.5	0
5	16QAM	1	12	19.22	19.33	19.08		
5	16QAM	1	24	19.14	19.34	19.05		
5	16QAM	12	0	19.09	19.35	19.12	19.5	0
5	16QAM	12	7	19.16	19.32	19.14		
5	16QAM	12	13	19.13	19.31	19.10		
5	16QAM	25	0	19.10	19.27	19.12		
5	64QAM	1	0	19.32	19.30	19.18	19.5	0
5	64QAM	1	12	19.31	19.42	19.29		
5	64QAM	1	24	19.17	19.40	19.16		
5	64QAM	12	0	19.18	19.41	19.18	19.5	0
5	64QAM	12	7	19.23	19.39	19.22		
5	64QAM	12	13	19.20	19.33	19.14		
5	64QAM	25	0	19.13	19.30	19.12		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	19.08	19.32	19.20	19.5	0
3	QPSK	1	8	19.16	19.35	19.15		
3	QPSK	1	14	19.16	19.29	19.10		
3	QPSK	8	0	19.17	19.33	19.17	19.5	0
3	QPSK	8	4	19.18	19.38	19.22		
3	QPSK	8	7	19.17	19.32	19.18		
3	QPSK	15	0	19.16	19.29	19.17		
3	16QAM	1	0	19.16	19.35	19.14	19.5	0
3	16QAM	1	8	19.14	19.25	19.16		
3	16QAM	1	14	19.20	19.22	19.17		
3	16QAM	8	0	19.21	19.35	19.16	19.5	0
3	16QAM	8	4	19.25	19.38	19.18		
3	16QAM	8	7	19.15	19.32	19.15		
3	16QAM	15	0	19.08	19.27	19.12		
3	64QAM	1	0	19.24	19.42	19.26	19.5	0
3	64QAM	1	8	19.26	19.43	19.30		
3	64QAM	1	14	19.10	19.35	19.22		
3	64QAM	8	0	19.13	19.33	19.17	19.5	0
3	64QAM	8	4	19.24	19.35	19.18		
3	64QAM	8	7	19.16	19.27	19.12		
3	64QAM	15	0	19.08	19.34	19.17		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	19.00	19.31	19.14	19.5	0
1.4	QPSK	1	3	19.12	19.32	19.14		
1.4	QPSK	1	5	19.13	19.24	19.01		
1.4	QPSK	3	0	19.16	19.29	19.11		
1.4	QPSK	3	1	19.09	19.32	19.13		



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1.4	QPSK	3	3	19.15	19.30	19.11		
1.4	QPSK	6	0	19.07	19.29	19.09	19.5	0
1.4	16QAM	1	0	19.08	19.29	19.08	19.5	0
1.4	16QAM	1	3	19.06	19.16	19.13		
1.4	16QAM	1	5	19.13	19.20	19.07		
1.4	16QAM	3	0	19.14	19.29	19.14		
1.4	16QAM	3	1	19.16	19.33	19.11		
1.4	16QAM	3	3	19.07	19.31	19.13		
1.4	16QAM	6	0	19.04	19.17	19.04	19.5	0
1.4	64QAM	1	0	19.21	19.41	19.18	19.5	0
1.4	64QAM	1	3	19.18	19.42	19.25		
1.4	64QAM	1	5	19.03	19.32	19.12		
1.4	64QAM	3	0	19.12	19.31	19.11		
1.4	64QAM	3	1	19.16	19.34	19.13		
1.4	64QAM	3	3	19.10	19.20	19.03		
1.4	64QAM	6	0	19.07	19.25	19.16	19.5	0



State 4

<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	18.58	18.93	18.77	19.5	0
20	QPSK	1	49	18.57	18.68	18.76		
20	QPSK	1	99	18.50	18.48	18.58		
20	QPSK	50	0	18.58	18.90	18.83	19.5	0
20	QPSK	50	24	18.54	18.73	18.82		
20	QPSK	50	50	18.43	18.61	18.82		
20	QPSK	100	0	18.50	18.75	18.69	19.5	0
20	16QAM	1	0	18.88	18.81	18.48		
20	16QAM	1	49	18.74	18.42	18.44		
20	16QAM	1	99	18.56	18.90	18.56	19.5	0
20	16QAM	50	0	18.68	18.92	18.80		
20	16QAM	50	24	18.66	18.84	18.85		
20	16QAM	50	50	18.58	18.71	18.80	19.5	0
20	16QAM	100	0	18.60	18.82	18.76		
20	64QAM	1	0	18.63	18.92	18.87		
20	64QAM	1	49	18.56	18.74	18.69	19.5	0
20	64QAM	1	99	18.86	18.69	18.77		
20	64QAM	50	0	18.68	18.83	18.89		
20	64QAM	50	24	18.63	18.81	18.83	19.5	0
20	64QAM	50	50	18.57	18.72	18.78		
20	64QAM	100	0	18.63	18.83	18.77		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	18.51	18.77	18.81	19.5	0
15	QPSK	1	37	18.34	18.60	18.83		
15	QPSK	1	74	18.35	18.49	18.62		
15	QPSK	36	0	18.45	18.65	18.81	19.5	0
15	QPSK	36	20	18.53	18.67	18.79		
15	QPSK	36	39	18.44	18.64	18.78		
15	QPSK	75	0	18.54	18.66	18.83	19.5	0
15	16QAM	1	0	18.53	18.63	18.77		
15	16QAM	1	37	18.36	18.79	18.67		
15	16QAM	1	74	18.52	18.51	18.85	19.5	0
15	16QAM	36	0	18.57	18.85	18.88		
15	16QAM	36	20	18.65	18.87	18.86		
15	16QAM	36	39	18.55	18.75	18.84	19.5	0
15	16QAM	75	0	18.62	18.78	18.82		
15	64QAM	1	0	18.85	18.72	18.84		
15	64QAM	1	37	18.61	18.57	18.73	19.5	0
15	64QAM	1	74	18.85	18.77	18.80		
15	64QAM	36	0	18.62	18.89	18.72		
15	64QAM	36	20	18.72	18.82	18.91	19.5	0
15	64QAM	36	39	18.53	18.78	18.81		
15	64QAM	75	0	18.67	18.77	18.81		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	18.46	18.74	18.77	19.5	0
10	QPSK	1	25	18.40	18.62	18.83		
10	QPSK	1	49	18.45	18.53	18.76		



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10	QPSK	25	0	18.42	18.72	18.85	19.5	0
10	QPSK	25	12	18.48	18.66	18.84		
10	QPSK	25	25	18.54	18.67	18.87		
10	QPSK	50	0	18.47	18.68	18.91	19.5	0
10	16QAM	1	0	18.83	18.84	18.54		
10	16QAM	1	25	18.44	18.72	18.50		
10	16QAM	1	49	18.83	18.50	18.86	19.5	0
10	16QAM	25	0	18.59	18.76	18.91		
10	16QAM	25	12	18.59	18.76	18.88		
10	16QAM	25	25	18.61	18.84	18.85	19.5	0
10	16QAM	50	0	18.61	18.68	18.87		
10	64QAM	1	0	18.51	18.88	18.84		
10	64QAM	1	25	18.68	18.84	18.77	19.5	0
10	64QAM	1	49	18.54	18.68	18.92		
10	64QAM	25	0	18.57	18.76	18.83		
10	64QAM	25	12	18.54	18.75	18.85	19.5	0
10	64QAM	25	25	18.58	18.80	18.88		
10	64QAM	50	0	18.64	18.74	18.91		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	18.38	18.60	18.75	19.5	0
5	QPSK	1	12	18.45	18.58	18.69		
5	QPSK	1	24	18.33	18.41	18.54		
5	QPSK	12	0	18.50	18.58	18.71	19.5	0
5	QPSK	12	7	18.46	18.69	18.84		
5	QPSK	12	13	18.39	18.60	18.77		
5	QPSK	25	0	18.46	18.69	18.75	19.5	0
5	16QAM	1	0	18.80	18.71	18.41		
5	16QAM	1	12	18.65	18.41	18.38		
5	16QAM	1	24	18.53	18.84	18.48	19.5	0
5	16QAM	12	0	18.67	18.91	18.70		
5	16QAM	12	7	18.59	18.84	18.81		
5	16QAM	12	13	18.55	18.62	18.79	19.5	0
5	16QAM	25	0	18.58	18.78	18.67		
5	64QAM	1	0	18.60	18.85	18.89		
5	64QAM	1	12	18.52	18.71	18.69	19.5	0
5	64QAM	1	24	18.80	18.65	18.69		
5	64QAM	12	0	18.68	18.82	18.87		
5	64QAM	12	7	18.60	18.75	18.92	19.5	0
5	64QAM	12	13	18.51	18.69	18.77		
5	64QAM	25	0	18.55	18.80	18.72		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	18.43	18.64	18.72	19.5	0
3	QPSK	1	8	18.47	18.66	18.73		
3	QPSK	1	14	18.35	18.39	18.55		
3	QPSK	8	0	18.51	18.58	18.73	19.5	0
3	QPSK	8	4	18.53	18.67	18.84		
3	QPSK	8	7	18.40	18.52	18.81		
3	QPSK	15	0	18.44	18.66	18.68	19.5	0
3	16QAM	1	0	18.78	18.73	18.43		
3	16QAM	1	8	18.71	18.36	18.36		
3	16QAM	1	14	18.51	18.82	18.56	19.5	0
3	16QAM	8	0	18.67	18.86	18.72		
3	16QAM	8	4	18.58	18.82	18.81		
3	16QAM	8	7	18.53	18.69	18.72	19.5	0



Channel	Frequency (MHz)	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)		
3	16QAM	15	0	18.59	18.76	18.72	19.5	0
3	64QAM	1	0	18.62	18.91	18.90		
3	64QAM	1	8	18.49	18.69	18.59		
3	64QAM	1	14	18.82	18.62	18.73	19.5	0
3	64QAM	8	0	18.62	18.75	18.85		
3	64QAM	8	4	18.55	18.78	18.90		
3	64QAM	8	7	18.54	18.68	18.68		
3	64QAM	15	0	18.57	18.76	18.72	19.5	0
Channel				18607	18900	19193		
Frequency (MHz)				1850.7	1880	1909.3	Tune-up limit (dBm)	MPR (dB)
1.4	QPSK	1	0	18.41	18.56	18.77	19.5	0
1.4	QPSK	1	3	18.37	18.62	18.72		
1.4	QPSK	1	5	18.32	18.39	18.50		
1.4	QPSK	3	0	18.48	18.60	18.75		
1.4	QPSK	3	1	18.53	18.66	18.82		
1.4	QPSK	3	3	18.33	18.57	18.73		
1.4	QPSK	6	0	18.45	18.61	18.72	19.5	0
1.4	16QAM	1	0	18.79	18.75	18.40	19.5	0
1.4	16QAM	1	3	18.71	18.34	18.39		
1.4	16QAM	1	5	18.47	18.75	18.46		
1.4	16QAM	3	0	18.67	18.87	18.77		
1.4	16QAM	3	1	18.61	18.82	18.85		
1.4	16QAM	3	3	18.55	18.70	18.71		
1.4	16QAM	6	0	18.55	18.75	18.73	19.5	0
1.4	64QAM	1	0	18.62	18.90	18.86	19.5	0
1.4	64QAM	1	3	18.54	18.68	18.62		
1.4	64QAM	1	5	18.81	18.64	18.73		
1.4	64QAM	3	0	18.68	18.77	18.80		
1.4	64QAM	3	1	18.55	18.73	18.85		
1.4	64QAM	3	3	18.48	18.68	18.78		
1.4	64QAM	6	0	18.57	18.81	18.68	19.5	0

<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	22.5	0
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	21.52	21.75	21.98	22.5	0
20	QPSK	1	49	21.72	21.88	21.95		
20	QPSK	1	99	21.82	21.86	21.89		
20	QPSK	50	0	21.76	21.83	21.96	22.5	0
20	QPSK	50	24	21.84	21.87	21.94		
20	QPSK	50	50	21.95	21.81	21.84		
20	QPSK	100	0	21.77	21.90	21.94	22.5	0
20	16QAM	1	0	21.68	21.57	21.77		
20	16QAM	1	49	21.66	21.74	21.90		
20	16QAM	1	99	21.73	21.78	21.68	22	0.5
20	16QAM	50	0	21.00	21.23	21.23		
20	16QAM	50	24	21.05	21.28	21.25		
20	16QAM	50	50	21.16	21.19	21.29	22	0.5
20	16QAM	100	0	21.07	21.25	21.23		
20	64QAM	1	0	21.21	21.50	21.40		
20	64QAM	1	49	21.49	21.34	21.47	22	0.5



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20	64QAM	1	99	21.37	21.61	21.36		
20	64QAM	50	0	20.03	20.23	20.25	21	1.5
20	64QAM	50	24	19.95	20.23	20.16		
20	64QAM	50	50	20.14	20.16	20.33		
20	64QAM	100	0	20.07	20.33	20.10		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	21.57	21.87	21.82	22.5	0
15	QPSK	1	37	21.68	21.93	21.97		
15	QPSK	1	74	21.69	21.89	21.90		
15	QPSK	36	0	21.78	21.80	21.92	22.5	0
15	QPSK	36	20	21.72	21.85	21.86		
15	QPSK	36	39	21.77	21.83	21.94		
15	QPSK	75	0	21.78	21.97	21.84		
15	16QAM	1	0	21.41	21.76	21.47	22.5	0
15	16QAM	1	37	21.57	21.76	21.77		
15	16QAM	1	74	21.32	21.77	21.79		
15	16QAM	36	0	21.05	21.28	21.22	22	0.5
15	16QAM	36	20	21.12	21.31	21.36		
15	16QAM	36	39	21.09	21.32	21.29		
15	16QAM	75	0	21.11	21.26	21.24		
15	64QAM	1	0	21.49	21.32	21.51	22	0.5
15	64QAM	1	37	21.29	21.53	21.63		
15	64QAM	1	74	21.59	21.63	21.48		
15	64QAM	36	0	19.86	20.21	20.17	21	1.5
15	64QAM	36	20	20.05	20.18	20.32		
15	64QAM	36	39	19.91	20.24	20.26		
15	64QAM	75	0	19.96	20.22	20.09		
Channel				20000	20175	20350		
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	21.52	21.89	21.76	22.5	0
10	QPSK	1	25	21.63	21.89	21.96		
10	QPSK	1	49	21.66	21.88	21.86		
10	QPSK	25	0	21.76	21.94	21.91	22.5	0
10	QPSK	25	12	21.65	21.96	21.81		
10	QPSK	25	25	21.68	21.97	21.90		
10	QPSK	50	0	21.77	21.95	21.77		
10	16QAM	1	0	21.80	21.97	21.85	22.5	0
10	16QAM	1	25	21.92	21.87	21.66		
10	16QAM	1	49	21.66	21.75	21.78		
10	16QAM	25	0	21.01	21.21	21.18	22	0.5
10	16QAM	25	12	21.04	21.26	21.30		
10	16QAM	25	25	21.00	21.28	21.22		
10	16QAM	50	0	21.05	21.20	21.23		
10	64QAM	1	0	21.43	21.23	21.45	22	0.5
10	64QAM	1	25	21.25	21.52	21.61		
10	64QAM	1	49	21.55	21.67	21.43		
10	64QAM	25	0	19.81	20.14	20.13	21	1.5
10	64QAM	25	12	20.05	20.12	20.27		
10	64QAM	25	25	19.86	20.19	20.23		
10	64QAM	50	0	19.96	20.18	20.00		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	21.43	21.90	21.72	22.5	0
5	QPSK	1	12	21.60	21.87	21.87		
5	QPSK	1	24	21.63	21.87	21.82		



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5	QPSK	12	0	21.67	21.92	21.91	22.5	0
5	QPSK	12	7	21.62	21.91	21.93		
5	QPSK	12	13	21.67	21.88	21.89		
5	QPSK	25	0	21.70	21.91	21.70	22.5	0
5	16QAM	1	0	21.72	21.95	21.77		
5	16QAM	1	12	21.89	21.87	21.66		
5	16QAM	1	24	21.66	21.68	21.77	22	0.5
5	16QAM	12	0	20.92	21.20	21.09		
5	16QAM	12	7	20.94	21.24	21.25		
5	16QAM	12	13	20.98	21.21	21.15	22	0.5
5	16QAM	25	0	21.04	21.13	21.17		
5	64QAM	1	0	21.34	21.15	21.35		
5	64QAM	1	12	21.16	21.45	21.60	21	1.5
5	64QAM	1	24	21.49	21.60	21.35		
5	64QAM	12	0	19.80	20.08	20.09		
5	64QAM	12	7	20.04	20.09	20.18	21	1.5
5	64QAM	12	13	19.85	20.12	20.20		
5	64QAM	25	0	19.93	20.13	20.00		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	21.48	21.93	21.70	22.5	0
3	QPSK	1	8	21.58	21.88	21.89		
3	QPSK	1	14	21.65	21.82	21.79		
3	QPSK	8	0	21.71	21.85	21.85	22.5	0
3	QPSK	8	4	21.57	21.88	21.97		
3	QPSK	8	7	21.60	21.97	21.81		
3	QPSK	15	0	21.77	21.88	21.70	22.5	0
3	16QAM	1	0	21.78	21.92	21.78		
3	16QAM	1	8	21.86	21.80	21.60		
3	16QAM	1	14	21.62	21.68	21.73	22	0.5
3	16QAM	8	0	20.98	21.14	21.09		
3	16QAM	8	4	21.03	21.25	21.24		
3	16QAM	8	7	20.93	21.18	21.17	22	0.5
3	16QAM	15	0	21.04	21.11	21.17		
3	64QAM	1	0	21.40	21.19	21.42		
3	64QAM	1	8	21.24	21.49	21.59	21	1.5
3	64QAM	1	14	21.50	21.66	21.39		
3	64QAM	8	0	19.74	20.14	20.12		
3	64QAM	8	4	19.96	20.04	20.18	21	1.5
3	64QAM	8	7	19.82	20.12	20.20		
3	64QAM	15	0	19.93	20.14	19.94		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	21.46	21.90	21.70	22.5	0
1.4	QPSK	1	3	21.59	21.88	21.90		
1.4	QPSK	1	5	21.62	21.79	21.79		
1.4	QPSK	3	0	21.72	21.92	21.87	22.5	0
1.4	QPSK	3	1	21.58	21.91	21.94		
1.4	QPSK	3	3	21.62	21.91	21.86		
1.4	QPSK	6	0	21.74	21.89	21.74	22.5	0
1.4	16QAM	1	0	21.76	21.92	21.81	22.5	0
1.4	16QAM	1	3	21.83	21.86	21.62		
1.4	16QAM	1	5	21.65	21.65	21.70		
1.4	16QAM	3	0	21.20	21.36	21.37	22.5	0
1.4	16QAM	3	1	21.23	21.47	21.54		
1.4	16QAM	3	3	21.18	21.47	21.39		



1.4	16QAM	6	0	20.97	21.19	21.15	22	0.5
1.4	64QAM	1	0	21.39	21.16	21.43	22	0.5
1.4	64QAM	1	3	21.16	21.52	21.52		
1.4	64QAM	1	5	21.52	21.57	21.35		
1.4	64QAM	3	0	21.03	21.20	21.15		
1.4	64QAM	3	1	21.10	21.18	21.36		
1.4	64QAM	3	3	20.92	21.21	21.25		
1.4	64QAM	6	0	19.96	20.18	19.99	21	1.5

<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	21.15	21.29	21.18	21.5	0
20	QPSK	1	49	21.06	21.03	21.12		
20	QPSK	1	99	21.11	21.03	21.07		
20	QPSK	50	0	21.17	21.26	21.23	21.5	0
20	QPSK	50	24	21.16	21.15	21.22		
20	QPSK	50	50	21.08	21.04	21.14		
20	QPSK	100	0	21.15	21.23	21.03	21.5	0
20	16QAM	1	0	21.21	21.11	21.23		
20	16QAM	1	49	21.08	21.12	21.15		
20	16QAM	1	99	21.09	21.08	21.04	21.5	0
20	16QAM	50	0	21.13	20.98	21.13		
20	16QAM	50	24	21.03	21.03	21.21		
20	16QAM	50	50	21.03	20.99	21.18	21.5	0
20	16QAM	100	0	20.99	20.92	21.16		
20	64QAM	1	0	21.13	21.21	21.22		
20	64QAM	1	49	21.27	21.14	21.18	21.5	0
20	64QAM	1	99	21.09	20.96	21.04		
20	64QAM	50	0	19.96	20.06	20.22		
20	64QAM	50	24	20.02	19.98	20.04	20.5	1
20	64QAM	50	50	20.04	19.90	20.00		
20	64QAM	100	0	20.12	19.99	20.14		
Channel				20825	21100	21375		
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	21.02	21.18	21.22	21.5	0
15	QPSK	1	37	21.04	21.08	21.13		
15	QPSK	1	74	21.05	20.96	21.09		
15	QPSK	36	0	21.17	21.11	21.24	21.5	0
15	QPSK	36	20	21.11	21.14	21.19		
15	QPSK	36	39	21.12	21.06	21.12		
15	QPSK	75	0	21.05	21.10	21.10	21.5	0
15	16QAM	1	0	21.25	21.19	21.17		
15	16QAM	1	37	21.09	21.16	21.26		
15	16QAM	1	74	21.14	21.03	21.00	21.5	0
15	16QAM	36	0	21.09	21.01	21.20		
15	16QAM	36	20	21.08	21.00	21.10		
15	16QAM	36	39	20.97	20.90	21.06	21.5	0
15	16QAM	75	0	21.01	20.91	21.14		
15	64QAM	1	0	21.05	21.22	21.25		
15	64QAM	1	37	21.18	21.13	21.17	21.5	0



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15	64QAM	1	74	21.11	20.91	21.02		
15	64QAM	36	0	20.05	19.97	20.12	20.5	1
15	64QAM	36	20	20.06	20.00	20.04		
15	64QAM	36	39	20.01	19.91	20.06		
15	64QAM	75	0	20.02	20.02	20.16		
Channel				20800	21100	21400		
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	21.07	21.17	21.27	21.5	0
10	QPSK	1	25	21.03	20.98	21.16		
10	QPSK	1	49	21.08	20.97	21.00		
10	QPSK	25	0	21.18	21.04	21.27	21.5	0
10	QPSK	25	12	21.12	21.03	21.17		
10	QPSK	25	25	21.12	21.02	21.23		
10	QPSK	50	0	21.09	21.01	21.10		
10	16QAM	1	0	21.27	21.13	21.20		
10	16QAM	1	25	21.09	21.18	21.15	21.5	0
10	16QAM	1	49	21.10	20.99	20.99		
10	16QAM	25	0	21.07	21.01	21.18		
10	16QAM	25	12	21.07	21.09	21.15	21.5	0
10	16QAM	25	25	20.98	21.00	21.07		
10	16QAM	50	0	21.04	20.91	21.10		
10	64QAM	1	0	21.05	21.16	21.24		
10	64QAM	1	25	21.17	21.11	21.23		
10	64QAM	1	49	21.12	20.97	21.04	21.5	0
10	64QAM	25	0	20.03	19.95	20.16		
10	64QAM	25	12	20.03	20.02	20.05		
10	64QAM	25	25	20.01	19.94	20.06		
10	64QAM	50	0	20.07	20.03	20.13		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	21.11	21.10	21.28	21.5	0
5	QPSK	1	12	21.08	20.99	21.12		
5	QPSK	1	24	20.99	21.00	21.03		
5	QPSK	12	0	21.11	21.10	21.22	21.5	0
5	QPSK	12	7	21.16	21.03	21.16		
5	QPSK	12	13	21.04	20.98	21.13		
5	QPSK	25	0	21.15	21.07	21.19		
5	16QAM	1	0	21.25	21.18	21.27		
5	16QAM	1	12	21.08	21.12	21.19	21.5	0
5	16QAM	1	24	21.19	21.07	20.99		
5	16QAM	12	0	21.06	21.04	21.21		
5	16QAM	12	7	21.04	21.00	21.15	21.5	0
5	16QAM	12	13	21.00	20.94	21.15		
5	16QAM	25	0	21.03	20.97	21.05		
5	64QAM	1	0	21.16	21.24	21.28		
5	64QAM	1	12	21.28	21.21	21.21		
5	64QAM	1	24	21.13	20.99	21.10	21.5	0
5	64QAM	12	0	20.02	20.04	20.23		
5	64QAM	12	7	20.02	20.00	20.08		
5	64QAM	12	13	20.03	19.91	20.11		
5	64QAM	25	0	20.11	19.95	20.19		



<LTE Band 66>

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				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	21.94	22.08	21.97	22.5	0
20	QPSK	1	49	21.85	22.05	21.89		
20	QPSK	1	99	21.93	21.90	21.82		
20	QPSK	50	0	21.92	22.06	22.00	22.5	0
20	QPSK	50	24	22.00	22.04	21.94		
20	QPSK	50	50	21.91	22.04	21.91		
20	QPSK	100	0	22.00	22.03	21.97	22.5	0
20	16QAM	1	0	21.86	21.92	21.92		
20	16QAM	1	49	21.89	22.04	21.98		
20	16QAM	1	99	21.84	21.96	21.82	22	0.5
20	16QAM	50	0	21.46	21.68	21.56		
20	16QAM	50	24	21.61	21.67	21.55		
20	16QAM	50	50	21.58	21.62	21.52	22	0.5
20	16QAM	100	0	21.55	21.64	21.51		
20	64QAM	1	0	21.27	21.49	21.45		
20	64QAM	1	49	21.39	21.56	21.51	22	0.5
20	64QAM	1	99	21.47	21.52	21.41		
20	64QAM	50	0	20.44	20.67	20.94		
20	64QAM	50	24	20.58	20.62	20.56	21	1.5
20	64QAM	50	50	20.56	20.54	20.47		
20	64QAM	100	0	20.56	20.61	20.49		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	21.79	21.87	21.91	22.5	0
15	QPSK	1	37	21.84	21.98	21.87		
15	QPSK	1	74	21.93	21.85	21.79		
15	QPSK	36	0	21.90	22.04	21.97	22.5	0
15	QPSK	36	20	21.94	21.95	21.84		
15	QPSK	36	39	21.96	22.01	21.82		
15	QPSK	75	0	21.95	22.02	21.89	22.5	0
15	16QAM	1	0	21.76	21.92	21.83		
15	16QAM	1	37	21.83	21.98	21.90		
15	16QAM	1	74	21.82	21.96	21.73	22	0.5
15	16QAM	36	0	21.43	21.64	21.55		
15	16QAM	36	20	21.52	21.65	21.53		
15	16QAM	36	39	21.52	21.61	21.43	22	0.5
15	16QAM	75	0	21.53	21.58	21.44		
15	64QAM	1	0	21.20	21.42	21.43		
15	64QAM	1	37	21.39	21.53	21.44	22	0.5
15	64QAM	1	74	21.45	21.49	21.38		
15	64QAM	36	0	20.36	20.61	20.59		
15	64QAM	36	20	20.56	20.55	20.54	21	1.5
15	64QAM	36	39	20.48	20.51	20.47		
15	64QAM	75	0	20.46	20.56	20.43		
Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	21.74	21.93	21.91	22.5	0
10	QPSK	1	25	21.76	21.97	21.88		
10	QPSK	1	49	21.85	21.87	21.76		
10	QPSK	25	0	21.84	22.03	21.98	22.5	0
10	QPSK	25	12	21.98	21.96	21.89		



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10	QPSK	25	25	21.93	21.97	21.91		
10	QPSK	50	0	21.92	22.07	21.88		
10	16QAM	1	0	21.83	21.84	21.90	22.5	0
10	16QAM	1	25	21.80	22.03	21.97		
10	16QAM	1	49	21.81	21.89	21.78		
10	16QAM	25	0	21.45	21.67	21.55	22	0.5
10	16QAM	25	12	21.61	21.64	21.46		
10	16QAM	25	25	21.52	21.60	21.44		
10	16QAM	50	0	21.53	21.61	21.45		
10	64QAM	1	0	21.17	21.42	21.41	22	0.5
10	64QAM	1	25	21.37	21.50	21.49		
10	64QAM	1	49	21.45	21.48	21.36		
10	64QAM	25	0	20.37	20.65	20.68	21	1.5
10	64QAM	25	12	20.52	20.60	20.47		
10	64QAM	25	25	20.47	20.45	20.46		
10	64QAM	50	0	20.48	20.61	20.41		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	21.76	21.92	21.90	22.5	0
5	QPSK	1	12	21.79	22.02	21.87		
5	QPSK	1	24	21.84	21.84	21.72		
5	QPSK	12	0	21.83	22.00	21.98	22.5	0
5	QPSK	12	7	21.90	21.97	21.94		
5	QPSK	12	13	21.98	22.03	21.85		
5	QPSK	25	0	21.92	22.02	21.93		
5	16QAM	1	0	21.84	21.85	21.86	22.5	0
5	16QAM	1	12	21.80	21.95	21.89		
5	16QAM	1	24	21.83	21.91	21.79		
5	16QAM	12	0	21.37	21.58	21.54	22	0.5
5	16QAM	12	7	21.57	21.59	21.49		
5	16QAM	12	13	21.50	21.57	21.46		
5	16QAM	25	0	21.53	21.62	21.44		
5	64QAM	1	0	21.20	21.44	21.41	22	0.5
5	64QAM	1	12	21.37	21.48	21.48		
5	64QAM	1	24	21.46	21.45	21.39		
5	64QAM	12	0	20.34	20.61	20.69	21	1.5
5	64QAM	12	7	20.50	20.57	20.50		
5	64QAM	12	13	20.49	20.45	20.38		
5	64QAM	25	0	20.51	20.59	20.47		
Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	21.71	21.89	21.90	22.5	0
3	QPSK	1	8	21.84	22.00	21.85		
3	QPSK	1	14	21.85	21.84	21.80		
3	QPSK	8	0	21.89	22.00	21.92	22.5	0
3	QPSK	8	4	21.90	21.95	21.87		
3	QPSK	8	7	21.98	21.95	21.81		
3	QPSK	15	0	22.00	22.07	21.94		
3	16QAM	1	0	21.84	21.86	21.84	22.5	0
3	16QAM	1	8	21.79	22.02	21.94		
3	16QAM	1	14	21.79	21.94	21.78		
3	16QAM	8	0	21.45	21.65	21.54	22	0.5
3	16QAM	8	4	21.61	21.62	21.50		
3	16QAM	8	7	21.54	21.61	21.44		
3	16QAM	15	0	21.45	21.63	21.46		
3	64QAM	1	0	21.21	21.46	21.36	22	0.5



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3	64QAM	1	8	21.37	21.55	21.42	21	1.5
3	64QAM	1	14	21.40	21.51	21.40		
3	64QAM	8	0	20.37	20.60	20.68		
3	64QAM	8	4	20.55	20.57	20.48		
3	64QAM	8	7	20.53	20.53	20.45		
3	64QAM	15	0	20.47	20.60	20.42		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	21.80	21.91	21.92	22.5	0
1.4	QPSK	1	3	21.82	22.00	21.86		
1.4	QPSK	1	5	21.84	21.89	21.73		
1.4	QPSK	3	0	21.91	22.06	21.98		
1.4	QPSK	3	1	21.92	21.99	21.87		
1.4	QPSK	3	3	21.99	21.99	21.87		
1.4	QPSK	6	0	21.97	22.02	21.89	22.5	0
1.4	16QAM	1	0	21.79	21.90	21.88	22.5	0
1.4	16QAM	1	3	21.88	22.01	21.98		
1.4	16QAM	1	5	21.83	21.90	21.80		
1.4	16QAM	3	0	21.42	21.65	21.46		
1.4	16QAM	3	1	21.58	21.67	21.53		
1.4	16QAM	3	3	21.50	21.61	21.45		
1.4	16QAM	6	0	21.50	21.59	21.48	22	0.5
1.4	64QAM	1	0	21.25	21.44	21.36	22	0.5
1.4	64QAM	1	3	21.32	21.50	21.44		
1.4	64QAM	1	5	21.43	21.44	21.40		
1.4	64QAM	3	0	21.43	21.64	21.63		
1.4	64QAM	3	1	21.52	21.60	21.54		
1.4	64QAM	3	3	21.47	21.46	21.39		
1.4	64QAM	6	0	20.53	20.56	20.42	21	1.5



<LTE Carrier Aggregation combinations>

General Note:

1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports combination bands and configurations are according to 3GPP.
2. In applying the existing power measurement procedure of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of the frequency band and CCs in each row need consideration, and that configurations require power measurement should be highlighted in the below table.
3. All permutations exist. No restrictions on Pcell & SCell combinations. Only LTE Band 29A is limited to Scell.

2CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset
1	2A-4A	3CC-18	18	2A-4A-5A	
2	2A-5A	3CC-18	19	7A-66A-66A	
3	2A-7A		20	4A-7C	
4	4A-4A				
5	4A-5A	3CC-18			
6	4A-7A	3CC-20			
7	4A-12A				
8	4A-17A				
9	5A-7A				
10	5A-66A				
11	7A-7A				
12	7B				
13	7C	3CC-20			
14	12A-66A				
15	66A-66A	3CC-19			
16	66B				
17	66C				

<Power verification when LTE Carrier Aggregation Active>**General Note:**

- i. According to KDB941225 D05A v01r02, 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.
- iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- vi. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lceil \frac{BW_{\text{Channel}(1)} + BW_{\text{Channel}(2)} - 0.1|BW_{\text{Channel}(1)} - BW_{\text{Channel}(2)}|}{0.6} \right\rceil 0.3 \text{ [MHz]}$$

<Two Carrier power verification>

Configure	CA List	PCC							SCC				Power	
		LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	With CA	Without CA
		Band	(MHz)	Freq. (MHz)	Channel		RB	RB Offset	Band	(MHz)	Freq. (MHz)	Channel	Tx. Power (dBm)	Tx. Power (dBm)
Inter-Band	CA_2A-7A	Band 2	20M	1900	19100	QPSK	1	0	Band 7	20M	2655	3100	23.21	23.36
		Band 7	20M	2535	21350	QPSK	1	0	Band 2	20M	1960	900	23.11	23.20
	CA_4A-7A	Band 4	20M	1745	20300	QPSK	1	0	Band 7	20M	2655	3100	23.13	23.25
		Band 7	20M	2560	21350	QPSK	1	0	Band 4	20M	2132.5	2175	23.06	23.20
	CA_4A-12A	Band 4	20M	1745	20300	QPSK	1	0	Band 12	10M	737.5	5095	23.18	23.25
		Band 12	10M	711	23130	QPSK	1	0	Band 4	20M	2132.5	2175	23.08	23.18
	CA_4A-17A	Band 4	10M	1750	20350	QPSK	1	0	Band 17	10M	740	5790	23.10	23.23
		Band 17	10M	710	23790	QPSK	1	0	Band 4	10M	2132.5	2175	23.02	23.11
	CA_5A-7A	Band 5	10M	844	20600	QPSK	1	0	Band 7	20M	2655	3100	22.86	22.99
		Band 7	20M	2560	21350	QPSK	1	0	Band 5	10M	881.5	2525	23.12	23.20
	CA_5A-66A	Band 5	10M	844	20600	QPSK	1	0	Band 66	20M	2155	66886	22.78	22.99
		Band 66	20M	1745	132322	QPSK	1	0	Band 5	10M	881.5	2525	23.43	23.55
	CA_12A-66A	Band 12	10M	711	23130	QPSK	1	0	Band 66	20M	2155	66886	23.03	23.18
		Band 66	20M	1745	132322	QPSK	1	0	Band 12	10M	737.5	5095	23.39	23.55
Inter-Band	CA_7B	Band 7	15M	2562.5	21375	QPSK	1	0	Band 7	5M	2664.3	3193	23.09	23.16
	CA_66B	Band 66	15M	1745	132322	QPSK	1	0	Band 66	5M	2164.3	66979	23.44	23.53
	CA_66C	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	23.41	23.55
	CA_4A-4A	Band 4	20M	1745	20300	QPSK	1	0	Band 4	5M	2152.5	2375	23.15	23.25
	CA_7A-7A	Band 7	20M	2560	21350	QPSK	1	0	Band 7	5M	2687.5	3425	23.03	23.20

<Three Carrier power verification>

Configure	CA List	PCC							SCC1				SCC2				Power	
		LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	LTE	BW	DL	DL	With CA	Without CA
		Band	(MHz)	Freq. (MHz)	Channel		RB	RB Offset	Band	(MHz)	Freq. (MHz)	Channel	Band	(MHz)	Freq. (MHz)	Channel	Tx. Power (dBm)	Tx. Power (dBm)
Inter-Band	CA_2A-4A-5A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	23.18	23.36
		Band 4	20M	1745	20300	QPSK	1	0	Band 5	10M	881.5	2525	Band 2	20M	1960	900	23.04	23.25
		Band 5	10M	844	20600	QPSK	1	0	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	22.82	22.99

Configure	CA List	PCC							SCC1				SCC2				Power	
		LTE	BW	UL	UL	Mod.	UL#	UL	LTE	BW	DL	DL	LTE	BW	DL	DL	With CA	Without CA
		Band	(MHz)	Freq. (MHz)	Channel		RB	RB Offset	Band	(MHz)	Freq. (MHz)	Channel	Band	(MHz)	Freq. (MHz)	Channel	Tx. Power (dBm)	Tx. Power (dBm)
Inter-Band	CA_4A-7C	Band 4	20M	1745	20300	QPSK	1	0	Band 7	20M	2655	3100	Band 7	20M	2674.8	3298	23.12	23.25
		Band 7	20M	2560	21350	QPSK	1	0	Band 7	20M	2674.8	3298	Band 4	20M	2132.5	2175	23.07	23.2
	CA_7A-66A-66A	Band 7	20M	2560	21350	QPSK	1	0	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	23.11	23.2
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 7	20M	2674.8	3298	23.43	23.55



13. WiFi/Bluetooth Output Power (Unit: dBm)

General Note:

1. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band or when MIMO mode was not performed, due to for each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode. Additional output power measurements were not necessary.
2. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
3. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
4. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
5. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.



Default

<2.4GHz WLAN>

2.4GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
802.11b 1Mbps		1	2412	15.53	16.00	100.00
		6	2437	16.04	16.50	
		11	2462	18.12	18.50	
802.11g 6Mbps		1	2412	Not required	16.00	Not required
		6	2437		17.00	
		11	2462		15.00	
802.11n-HT20 MCS0		1	2412		16.00	
		6	2437		17.00	
		11	2462		14.00	

<5GHz WLAN>

5.2GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
802.11a 6Mbps		36	5180	16.73	18.50	98.28
		40	5200	16.71	18.50	
		44	5220	16.60	18.50	
		48	5240	16.55	18.50	
802.11n-HT20 MCS0		36	5180	Not required	18.50	Not required
		40	5200		18.00	
		44	5220		18.50	
		48	5240		18.00	
802.11n-HT40 MCS0		38	5190		14.00	
		46	5230		17.50	
802.11ac-VHT20 MCS0		36	5180		18.50	
		40	5200		18.00	
		44	5220		18.00	
		48	5240		18.00	
802.11ac-VHT40 MCS0		38	5190		17.50	
		46	5230		17.50	
802.11ac-VHT80 MCS0		42	5210		12.00	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	16.40	18.00	98.28
		56	5280	16.84	18.50	
		60	5300	16.70	18.50	
		64	5320	16.89	18.50	
	802.11n-HT20 MCS0	52	5260	Not required	18.50	Not required
		56	5280		18.50	
		60	5300		18.00	
		64	5320		18.50	
	802.11n-HT40 MCS0	54	5270		17.50	
		62	5310		15.00	
	802.11ac-VHT20 MCS0	52	5260		18.50	
		56	5280		18.50	
		60	5300		18.00	
		64	5320		18.00	
	802.11ac-VHT40 MCS0	54	5270		17.50	
		62	5310		17.50	
	802.11ac-VHT80 MCS0	58	5290		14.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	16.47	18.00	98.28
		116	5580	16.70	18.50	
		124	5620	16.80	18.50	
		132	5660	16.77	18.50	
		144	5720	16.79	18.50	
	802.11n-HT20 MCS0	100	5500	Not required	18.00	Not required
		116	5580		18.50	
		124	5620		18.50	
		132	5660		18.50	
		144	5720		18.50	
	802.11n-HT40 MCS0	102	5510		15.00	
		110	5550		17.50	
		126	5630		17.50	
		134	5670		17.50	
	802.11ac-VHT20 MCS0	142	5710		17.50	
		100	5500		18.00	
		116	5580		18.00	
		124	5620		18.50	
	802.11ac-VHT40 MCS0	132	5660		18.50	
		144	5720		18.50	
		102	5510		17.50	
		110	5550		17.50	
	802.11ac-VHT80 MCS0	126	5630		17.50	
		134	5670		17.50	
142		5710	17.50			
106		5530	13.00			
		122	5610		17.00	
		138	5690		17.00	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	16.50	18.50	98.28
		157	5785	16.60	18.50	
		165	5825	16.86	18.50	
	802.11n-HT20 MCS0	149	5745	Not required	18.00	Not required
		157	5785		18.50	
		165	5825		18.50	
	802.11n-HT40 MCS0	151	5755		17.50	
		159	5795		17.50	
	802.11ac-VHT20 MCS0	149	5745		18.00	
		157	5785		18.50	
		165	5825		18.50	
	802.11ac-VHT40 MCS0	151	5755		17.50	
		159	5795		17.50	
	802.11ac-VHT80 MCS0	155	5775		17.00	

State 1

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	15.53	16.00	100.00
		6	2437	16.04	16.50	
		11	2462	16.45	17.00	
	802.11g 6Mbps	1	2412	Not required	16.00	Not required
		6	2437		17.00	
		11	2462		15.00	
	802.11n-HT20 MCS0	1	2412		16.00	
		6	2437		17.00	
		11	2462		14.00	



<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	14.99	16.50	98.28
		116	5580	15.06	17.00	
		124	5620	15.28	17.00	
		132	5660	15.03	17.00	
		144	5720	15.19	17.00	
	802.11n-HT20 MCS0	100	5500	Not required	16.50	Not required
		116	5580		17.00	
		124	5620		17.00	
		132	5660		17.00	
		144	5720		17.00	
	802.11n-HT40 MCS0	102	5510		15.00	
		110	5550		16.50	
		126	5630		16.50	
		134	5670		16.50	
		142	5710		16.50	
	802.11ac-VHT20 MCS0	100	5500		16.50	
		116	5580		17.00	
		124	5620		17.00	
		132	5660		17.00	
		144	5720		17.00	
	802.11ac-VHT40 MCS0	102	5510	16.50		
		110	5550	16.50		
		126	5630	16.50		
		134	5670	16.50		
		142	5710	16.50		
	802.11ac-VHT80 MCS0	106	5530	13.00		
		122	5610	16.00		
		138	5690	16.00		

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	14.74	15.50	98.28
		157	5785	14.56	15.50	
		165	5825	14.81	15.50	
	802.11n-HT20 MCS0	149	5745	Not required	15.00	Not required
		157	5785		15.50	
		165	5825		15.50	
	802.11n-HT40 MCS0	151	5755		14.50	
		159	5795		14.50	
	802.11ac-VHT20 MCS0	149	5745		15.00	
		157	5785		15.50	
		165	5825		15.50	
	802.11ac-VHT40 MCS0	151	5755		14.50	
		159	5795		14.50	
	802.11ac-VHT80 MCS0	155	5775		15.00	



State 2

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	15.53	16.00	100.00
		6	2437	16.04	16.50	
		11	2462	16.45	17.00	
	802.11g 6Mbps	1	2412	Not required	16.00	Not required
		6	2437		17.00	
		11	2462		15.00	
	802.11n-HT20 MCS0	1	2412		16.00	
		6	2437		17.00	
		11	2462		14.00	

<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	12.37	13.00	98.28
		40	5200	12.14	13.00	
		44	5220	12.06	13.00	
		48	5240	12.22	13.00	
	802.11n-HT20 MCS0	36	5180	Not required	13.00	Not required
		40	5200		12.50	
		44	5220		13.00	
		48	5240		12.50	
	802.11n-HT40 MCS0	38	5190		8.50	
		46	5230		12.00	
	802.11ac-VHT20 MCS0	36	5180		13.00	
		40	5200		12.50	
		44	5220		12.50	
		48	5240		12.50	
	802.11ac-VHT40 MCS0	38	5190		12.00	
		46	5230		12.00	
802.11ac-VHT80 MCS0	42	5210	12.00			



State 3

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	15.53	16.00	100.00
		6	2437	16.04	16.50	
		11	2462	16.45	17.00	
	802.11g 6Mbps	1	2412	Not required	16.00	Not required
		6	2437		17.00	
		11	2462		15.00	
	802.11n-HT20 MCS0	1	2412		16.00	
		6	2437		17.00	
		11	2462		14.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	12.37	13.00	98.28
		40	5200	12.14	13.00	
		44	5220	12.06	13.00	
		48	5240	12.22	13.00	
	802.11n-HT20 MCS0	36	5180	Not required	13.00	Not required
		40	5200		12.50	
		44	5220		13.00	
		48	5240		12.50	
	802.11n-HT40 MCS0	38	5190		8.50	
		46	5230		12.00	
	802.11ac-VHT20 MCS0	36	5180		13.00	
		40	5200		12.50	
		44	5220		12.50	
		48	5240		12.50	
	802.11ac-VHT40 MCS0	38	5190		12.00	
		46	5230		12.00	
	802.11ac-VHT80 MCS0	42	5210		12.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	13.48	15.00	98.28
		56	5280	13.41	15.00	
		60	5300	13.56	15.50	
		64	5320	13.83	15.50	
	802.11n-HT20 MCS0	52	5260	Not required	15.50	Not required
		56	5280		15.50	
		60	5300		15.00	
		64	5320		15.50	
	802.11n-HT40 MCS0	54	5270		14.50	
		62	5310		12.00	
	802.11ac-VHT20 MCS0	52	5260		15.50	
		56	5280		15.50	
		60	5300		15.00	
		64	5320		15.00	
	802.11ac-VHT40 MCS0	54	5270		14.50	
		62	5310		14.50	
	802.11ac-VHT80 MCS0	58	5290		14.00	



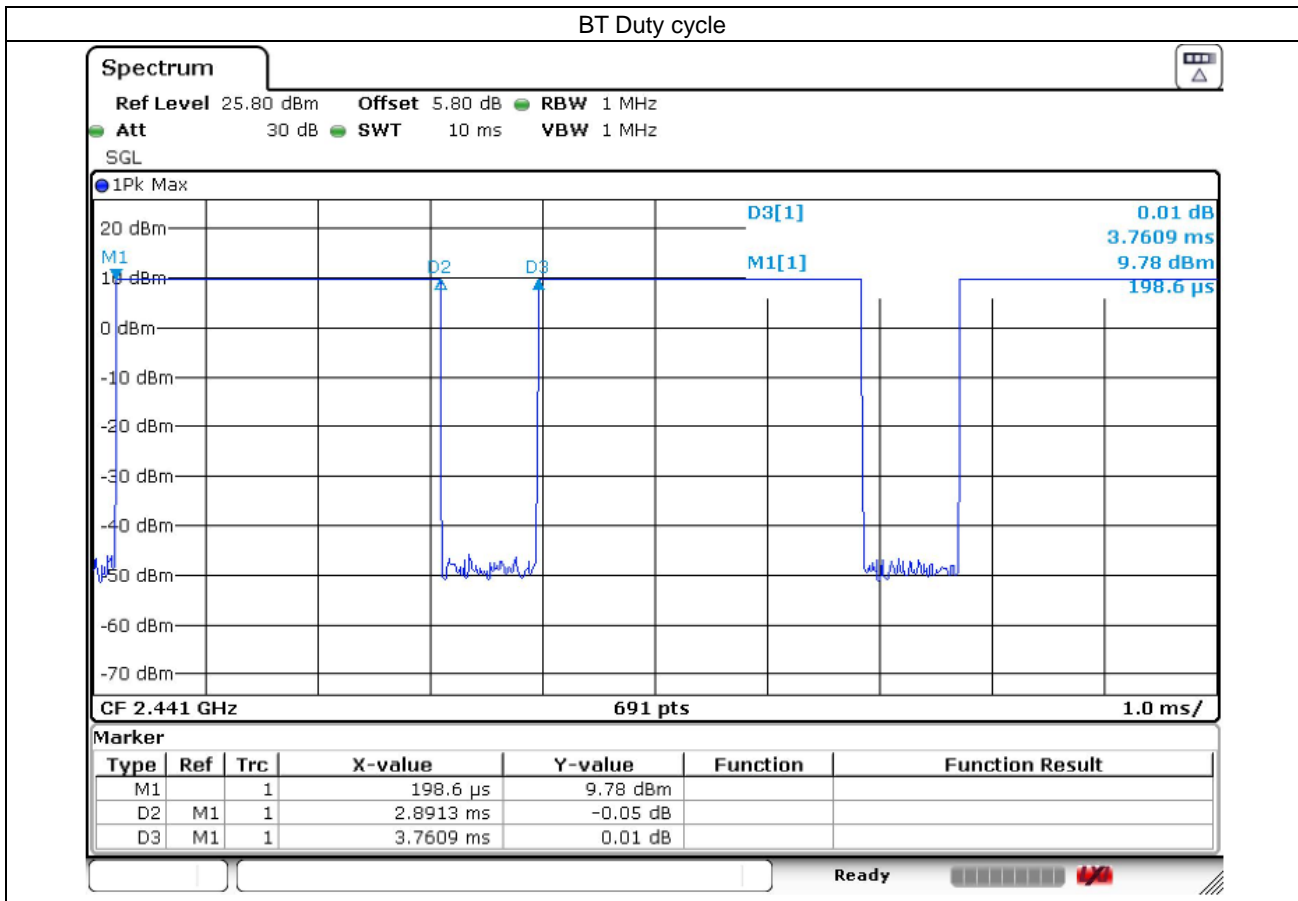
<2.4GHz Bluetooth Default Power>

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	10.92	8.53	8.66
	CH 39	2441	9.86	6.99	7.25
	CH 78	2480	10.31	7.72	7.75
Tune-up Limit			11.00	9.00	9.00

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	5.91	6.01
	CH 19	2440	4.89	5.00
	CH 39	2480	6.02	6.06
Tune-up Limit			6.50	6.50

General Note:

- For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.88% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.





14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. 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.
 - b. 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)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, 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. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
4. Per KDB648474 D04v01r03, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold, for this device only bottom side SAR for WWAN transmitter scaled to maximum output power is higher than 1.2W/kg of GSM850/1900, UMTS B2/B4/B5, LTE B2/B5/B7/B66 and 2.4GHz/5.2GHz WLAN, therefore product specific SAR is necessary.
6. For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is > 16 cm.
7. Per KDB 648474 D04v01r03, for additional accessories (batteries, NFC and wireless charging battery covers or similar accessory), need repeat SAR testing at the worst position (head, and body-worn, and hotspot), for each wireless mode and each band. In addition, for test cases where the measured SAR for a handset without the accessory is greater than 1.2 W/kg, these tests should be repeated with the additional accessories.
8. When the sensor is active, the device will reduce maximum output powers on the GSM850/GSM1900, UMTS B2/B4/B5 and LTE B2/B4/B5/B7/B66 transmitter.
9. Body-worn/Hotspot SAR was tested at 5mm separation and extremity SAR was tested at 0mm separation, at the reduced power level in each associated power table. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1 was performed:
 - a. For Body-worn:
 - Front: [13 mm](#)
 - Back: [24 mm](#)
 - b. For Extremity:
 - Front: [7 mm](#)
 - Back: [19 mm](#)
 - Bottom: [15 mm](#)

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (2Tx slots) for GSM850/GSM1900 is considered as the primary mode.
2. The GPRS (2Tx slots) for GSM850 and GPRS (2Tx slots) for GSM1900 for GSM850/GSM1900 head, hotspot, body-worn and product specific SAR is considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq 1/4$ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

**UMTS Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. 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, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than $\frac{1}{4}$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, 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.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, 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.
4. Per KDB 941225 D05v02r05, 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 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, 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 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5/B12/B17 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 4/17 SAR test was covered by Band 66/12; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. The maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion.
 - b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.



14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	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)
01	GSM850	GPRS (2 Tx slots)	Right Cheek	0mm	State 1	189	836.4	30.35	31.50	1.303	0.12	0.345	0.450
	GSM850	GPRS (2 Tx slots)	Right Tilted	0mm	State 1	189	836.4	30.35	31.50	1.303	-0.12	0.220	0.287
	GSM850	GPRS (2 Tx slots)	Left Cheek	0mm	State 1	189	836.4	30.35	31.50	1.303	-0.01	0.302	0.394
	GSM850	GPRS (2 Tx slots)	Left Tilted	0mm	State 1	189	836.4	30.35	31.50	1.303	0.08	0.183	0.238
02	GSM1900	GPRS (2 Tx slots)	Right Cheek	0mm	State 1	810	1909.8	27.26	28.50	1.330	0.17	0.065	0.086
	GSM1900	GPRS (2 Tx slots)	Right Tilted	0mm	State 1	810	1909.8	27.26	28.50	1.330	0.01	0.039	0.052
	GSM1900	GPRS (2 Tx slots)	Left Cheek	0mm	State 1	810	1909.8	27.26	28.50	1.330	0.15	0.060	0.080
	GSM1900	GPRS (2 Tx slots)	Left Tilted	0mm	State 1	810	1909.8	27.26	28.50	1.330	-0.16	0.049	0.065

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	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 II	RMC 12.2Kbps	Right Cheek	0mm	State 1	9538	1907.6	23.26	24.00	1.186	0.14	0.114	0.135
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	State 1	9538	1907.6	23.26	24.00	1.186	0.07	0.113	0.134
03	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	State 1	9538	1907.6	23.26	24.00	1.186	0.13	0.125	0.148
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	State 1	9538	1907.6	23.26	24.00	1.186	0.13	0.113	0.134
	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	State 1	1513	1752.6	23.32	24.00	1.169	-0.11	0.158	0.185
	WCDMA IV	RMC 12.2Kbps	Right Tilted	0mm	State 1	1513	1752.6	23.32	24.00	1.169	-0.08	0.092	0.108
04	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	State 1	1513	1752.6	23.32	24.00	1.169	0.06	0.161	0.188
	WCDMA IV	RMC 12.2Kbps	Left Tilted	0mm	State 1	1513	1752.6	23.32	24.00	1.169	-0.09	0.107	0.126
05	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	State 1	4233	846.6	22.92	24.00	1.282	0.05	0.393	0.504
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	State 1	4233	846.6	22.92	24.00	1.282	-0.11	0.259	0.332
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	State 1	4233	846.6	22.92	24.00	1.282	0.1	0.328	0.421
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	State 1	4233	846.6	22.92	24.00	1.282	-0.16	0.220	0.282



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	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 2	20M	QPSK	1	0	Right Cheek	0mm	State 1	19100	1900	23.36	24.00	1.159	0.17	0.154	0.179
	LTE Band 2	20M	QPSK	50	0	Right Cheek	0mm	State 1	19100	1900	22.30	23.00	1.175	0.1	0.119	0.140
	LTE Band 2	20M	QPSK	1	0	Right Tilted	0mm	State 1	19100	1900	23.36	24.00	1.159	-0.16	0.128	0.148
	LTE Band 2	20M	QPSK	50	0	Right Tilted	0mm	State 1	19100	1900	22.30	23.00	1.175	0.15	0.104	0.122
06	LTE Band 2	20M	QPSK	1	0	Left Cheek	0mm	State 1	19100	1900	23.36	24.00	1.159	0.12	0.163	0.189
	LTE Band 2	20M	QPSK	50	0	Left Cheek	0mm	State 1	19100	1900	22.30	23.00	1.175	-0.04	0.128	0.150
	LTE Band 2	20M	QPSK	1	0	Left Tilted	0mm	State 1	19100	1900	23.36	24.00	1.159	0.13	0.119	0.138
	LTE Band 2	20M	QPSK	50	0	Left Tilted	0mm	State 1	19100	1900	22.30	23.00	1.175	0.07	0.093	0.109
07	LTE Band 5	10M	QPSK	1	0	Right Cheek	0mm	State 1	20525	836.5	22.64	24.00	1.368	0.13	0.294	0.402
	LTE Band 5	10M	QPSK	25	0	Right Cheek	0mm	State 1	20525	836.5	21.74	23.00	1.337	-0.08	0.230	0.308
	LTE Band 5	10M	QPSK	1	0	Right Tilted	0mm	State 1	20525	836.5	22.64	24.00	1.368	0.1	0.196	0.267
	LTE Band 5	10M	QPSK	25	0	Right Tilted	0mm	State 1	20525	836.5	21.74	23.00	1.337	-0.03	0.151	0.202
	LTE Band 5	10M	QPSK	1	0	Left Cheek	0mm	State 1	20525	836.5	22.64	24.00	1.368	0.06	0.257	0.351
	LTE Band 5	10M	QPSK	25	0	Left Cheek	0mm	State 1	20525	836.5	21.74	23.00	1.337	0.04	0.197	0.263
	LTE Band 5	10M	QPSK	1	0	Left Tilted	0mm	State 1	20525	836.5	22.64	24.00	1.368	-0.11	0.151	0.206
	LTE Band 5	10M	QPSK	25	0	Left Tilted	0mm	State 1	20525	836.5	21.74	23.00	1.337	0.04	0.122	0.163
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	State 1	21350	2560	23.40	24.00	1.148	0.13	0.559	0.642
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	State 1	21350	2560	22.22	23.00	1.197	-0.17	0.441	0.528
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	State 1	21350	2560	23.40	24.00	1.148	0.19	0.150	0.173
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	State 1	21350	2560	22.22	23.00	1.197	0.04	0.117	0.139
08	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	State 1	21350	2560	23.40	24.00	1.148	0.11	0.596	0.684
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	State 1	21350	2560	22.22	23.00	1.197	0.07	0.471	0.563
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	State 1	21350	2560	23.40	24.00	1.148	-0.11	0.226	0.259
	LTE Band 7	20M	QPSK	50	0	Left Tilted	0mm	State 1	21350	2560	22.22	23.00	1.197	0.09	0.179	0.214
09	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	State 1	23095	707.5	23.04	24.00	1.247	0.07	0.179	0.223
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	State 1	23095	707.5	22.14	23.00	1.219	-0.16	0.142	0.173
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	State 1	23095	707.5	23.04	24.00	1.247	-0.18	0.127	0.158
	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	State 1	23095	707.5	22.14	23.00	1.219	-0.12	0.098	0.119
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	State 1	23095	707.5	23.04	24.00	1.247	0.09	0.160	0.200
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	State 1	23095	707.5	22.14	23.00	1.219	0.07	0.129	0.157
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	State 1	23095	707.5	23.04	24.00	1.247	0.04	0.137	0.171
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	State 1	23095	707.5	22.14	23.00	1.219	0.14	0.108	0.132
10	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	State 1	23230	782	23.11	24.00	1.227	0.01	0.222	0.272
	LTE Band 13	10M	QPSK	25	0	Right Cheek	0mm	State 1	23230	782	22.11	23.00	1.227	0.03	0.177	0.217
	LTE Band 13	10M	QPSK	1	0	Right Tilted	0mm	State 1	23230	782	23.11	24.00	1.227	-0.15	0.151	0.185
	LTE Band 13	10M	QPSK	25	0	Right Tilted	0mm	State 1	23230	782	22.11	23.00	1.227	0.15	0.120	0.148
	LTE Band 13	10M	QPSK	1	0	Left Cheek	0mm	State 1	23230	782	23.11	24.00	1.227	-0.18	0.205	0.252
	LTE Band 13	10M	QPSK	25	0	Left Cheek	0mm	State 1	23230	782	22.11	23.00	1.227	-0.12	0.159	0.196
	LTE Band 13	10M	QPSK	1	0	Left Tilted	0mm	State 1	23230	782	23.11	24.00	1.227	0.04	0.107	0.131
	LTE Band 13	10M	QPSK	25	0	Left Tilted	0mm	State 1	23230	782	22.11	23.00	1.227	-0.06	0.085	0.105
11	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	State 1	132322	1745	23.55	24.00	1.109	0.08	0.136	0.151
	LTE Band 66	20M	QPSK	50	0	Right Cheek	0mm	State 1	132322	1745	22.62	23.00	1.091	-0.08	0.110	0.120
	LTE Band 66	20M	QPSK	1	0	Right Tilted	0mm	State 1	132322	1745	23.55	24.00	1.109	0.07	0.108	0.120
	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	State 1	132322	1745	22.62	23.00	1.091	0.08	0.085	0.092
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	State 1	132322	1745	23.55	24.00	1.109	-0.05	0.130	0.144
	LTE Band 66	20M	QPSK	50	0	Left Cheek	0mm	State 1	132322	1745	22.62	23.00	1.091	-0.13	0.106	0.116
	LTE Band 66	20M	QPSK	1	0	Left Tilted	0mm	State 1	132322	1745	23.55	24.00	1.109	0.09	0.090	0.100
	LTE Band 66	20M	QPSK	50	0	Left Tilted	0mm	State 1	132322	1745	22.62	23.00	1.091	-0.17	0.071	0.077



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	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	Right Cheek	0mm	State 1	11	2462	16.45	17.00	1.135	100	1.000	0.19	0.492	0.558
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	State 1	11	2462	16.45	17.00	1.135	100	1.000	-0.08	0.528	0.600
12	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	State 1	11	2462	16.45	17.00	1.135	100	1.000	0.07	0.929	1.054
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	State 1	1	2412	15.53	16.00	1.114	100	1.000	-0.05	0.543	0.605
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	State 1	6	2437	16.04	16.50	1.112	100	1.000	-0.04	0.693	0.770
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	State 1	11	2462	16.45	17.00	1.135	100	1.000	0.11	0.874	0.992
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	State 1	1	2412	15.53	16.00	1.114	100	1.000	0.07	0.511	0.569
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	State 1	6	2437	16.04	16.50	1.112	100	1.000	0.01	0.642	0.714
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Default	64	5320	16.89	18.50	1.449	98.28	1.018	0.02	0.206	0.304
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Default	64	5320	16.89	18.50	1.449	98.28	1.018	0.11	0.283	0.417
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Default	64	5320	16.89	18.50	1.449	98.28	1.018	0.06	0.237	0.350
13	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Default	64	5320	16.89	18.50	1.449	98.28	1.018	-0.07	0.308	0.454
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	State 1	124	5620	15.28	17.00	1.486	98.28	1.018	0.03	0.352	0.532
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	State 1	124	5620	15.28	17.00	1.486	98.28	1.018	0.12	0.495	0.749
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	State 1	124	5620	15.28	17.00	1.486	98.28	1.018	0.06	0.521	0.788
14	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	124	5620	15.28	17.00	1.486	98.28	1.018	0.02	0.740	1.119
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	100	5500	14.99	16.50	1.416	98.28	1.018	0.06	0.637	0.918
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	116	5580	15.06	17.00	1.563	98.28	1.018	0.1	0.695	1.106
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	132	5660	15.03	17.00	1.574	98.28	1.018	-0.03	0.681	1.091
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	144	5720	15.19	17.00	1.517	98.28	1.018	0.15	0.719	1.110
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	State 1	165	5825	14.81	15.50	1.172	98.28	1.018	0.03	0.709	0.846
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	State 1	149	5745	14.74	15.50	1.191	98.28	1.018	0.02	0.655	0.794
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	State 1	157	5785	14.56	15.50	1.242	98.28	1.018	0.01	0.618	0.781
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	State 1	165	5825	14.81	15.50	1.172	98.28	1.018	0.01	0.887	1.058
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	State 1	149	5745	14.74	15.50	1.191	98.28	1.018	0.09	0.822	0.997
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	State 1	157	5785	14.56	15.50	1.242	98.28	1.018	-0.13	0.785	0.992
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	State 1	165	5825	14.81	15.50	1.172	98.28	1.018	-0.01	0.763	0.910
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	State 1	149	5745	14.74	15.50	1.191	98.28	1.018	0.09	0.711	0.862
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	State 1	157	5785	14.56	15.50	1.242	98.28	1.018	-0.14	0.674	0.852
15	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	165	5825	14.81	15.50	1.172	98.28	1.018	0.02	0.921	1.099
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	149	5745	14.74	15.50	1.191	98.28	1.018	0.02	0.833	1.010
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	157	5785	14.56	15.50	1.242	98.28	1.018	0.05	0.791	1.000

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
	Bluetooth	1Mbps	Right Cheek	0mm	0	2402	10.92	11.00	1.018	76.88	1.084	0.05	< 0.001	< 0.001
	Bluetooth	1Mbps	Right Tilted	0mm	0	2402	10.92	11.00	1.018	76.88	1.084	0.01	< 0.001	< 0.001
16	Bluetooth	1Mbps	Left Cheek	0mm	0	2402	10.92	11.00	1.018	76.88	1.084	0	< 0.001	< 0.001
	Bluetooth	1Mbps	Left Tilted	0mm	0	2402	10.92	11.00	1.018	76.88	1.084	0.1	< 0.001	< 0.001



14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	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)
	GSM850	GPRS (2 Tx slots)	Front	5mm	State 3	189	836.4	29.37	29.50	1.030	-0.07	0.488	0.503
	GSM850	GPRS (2 Tx slots)	Back	5mm	State 3	189	836.4	29.37	29.50	1.030	-0.02	1.230	1.267
17	GSM850	GPRS (2 Tx slots)	Back	5mm	State 3	128	824.2	29.36	29.50	1.033	-0.19	1.330	1.374
	GSM850	GPRS (2 Tx slots)	Back	5mm	State 3	251	848.8	29.33	29.50	1.040	-0.07	1.060	1.102
	GSM850	GPRS (2 Tx slots)	Left Side	5mm	State 2	189	836.4	29.37	29.50	1.030	-0.13	0.079	0.081
	GSM850	GPRS (2 Tx slots)	Right Side	5mm	State 2	189	836.4	29.37	29.50	1.030	0.08	0.175	0.180
	GSM850	GPRS (2 Tx slots)	Bottom Side	5mm	State 2	189	836.4	29.37	29.50	1.030	0.08	0.904	0.931
	GSM850	GPRS (2 Tx slots)	Bottom Side	5mm	State 2	128	824.2	29.36	29.50	1.033	0.09	0.973	1.005
	GSM850	GPRS (2 Tx slots)	Bottom Side	5mm	State 2	251	848.8	29.33	29.50	1.040	0.07	0.842	0.876
	GSM1900	GPRS (2 Tx slots)	Front	5mm	State 3	661	1880	22.34	23.00	1.164	0.14	0.586	0.682
18	GSM1900	GPRS (2 Tx slots)	Back	5mm	State 3	661	1880	22.34	23.00	1.164	-0.04	1.060	1.234
	GSM1900	GPRS (2 Tx slots)	Back	5mm	State 3	512	1850.2	22.28	23.00	1.180	0.15	0.994	1.173
	GSM1900	GPRS (2 Tx slots)	Back	5mm	State 3	810	1909.8	22.28	23.00	1.180	0.16	1.040	1.228
	GSM1900	GPRS (2 Tx slots)	Left Side	5mm	State 2	661	1880	21.39	21.50	1.026	-0.05	0.016	0.016
	GSM1900	GPRS (2 Tx slots)	Right Side	5mm	State 2	661	1880	21.39	21.50	1.026	0.06	0.019	0.019
	GSM1900	GPRS (2 Tx slots)	Bottom Side	5mm	State 2	661	1880	21.39	21.50	1.026	-0.1	1.050	1.077
	GSM1900	GPRS (2 Tx slots)	Bottom Side	5mm	State 2	512	1850.2	21.00	21.50	1.122	0.04	0.945	1.060
	GSM1900	GPRS (2 Tx slots)	Bottom Side	5mm	State 2	810	1909.8	21.28	21.50	1.052	0.02	1.110	1.168

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	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 II	RMC 12.2Kbps	Front	5mm	State 3	9400	1880	16.12	16.50	1.091	-0.14	0.529	0.577
	WCDMA II	RMC 12.2Kbps	Back	5mm	State 3	9400	1880	16.12	16.50	1.091	0.08	0.978	1.067
	WCDMA II	RMC 12.2Kbps	Back	5mm	State 3	9262	1852.4	16.03	16.50	1.114	-0.01	0.932	1.039
	WCDMA II	RMC 12.2Kbps	Back	5mm	State 3	9538	1907.6	16.10	16.50	1.096	-0.12	0.923	1.012
	WCDMA II	RMC 12.2Kbps	Left Side	5mm	State 2	9400	1880	14.42	15.00	1.143	-0.03	0.022	0.025
	WCDMA II	RMC 12.2Kbps	Right Side	5mm	State 2	9400	1880	14.42	15.00	1.143	-0.16	0.017	0.019
19	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	State 2	9400	1880	14.42	15.00	1.143	0.06	1.120	1.280
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	State 2	9262	1852.4	14.31	15.00	1.172	-0.19	0.850	0.996
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	State 2	9538	1907.6	14.37	15.00	1.156	-0.19	1.010	1.168
	WCDMA IV	RMC 12.2Kbps	Front	5mm	State 3	1413	1732.6	18.90	19.50	1.148	0.08	0.657	0.754
	WCDMA IV	RMC 12.2Kbps	Back	5mm	State 3	1413	1732.6	18.90	19.50	1.148	-0.1	0.945	1.085
	WCDMA IV	RMC 12.2Kbps	Back	5mm	State 3	1312	1712.4	18.68	19.50	1.208	0.05	0.897	1.083
	WCDMA IV	RMC 12.2Kbps	Back	5mm	State 3	1513	1752.6	18.87	19.50	1.156	0.04	1.050	1.214
	WCDMA IV	RMC 12.2Kbps	Left Side	5mm	State 2	1413	1732.6	17.32	18.00	1.169	0.09	0.023	0.027
	WCDMA IV	RMC 12.2Kbps	Right Side	5mm	State 2	1413	1732.6	17.32	18.00	1.169	-0.13	0.028	0.033
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	State 2	1413	1732.6	17.32	18.00	1.169	-0.17	1.030	1.205
20	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	State 2	1312	1712.4	17.14	18.00	1.219	0.07	1.040	1.268
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	State 2	1513	1752.6	17.25	18.00	1.189	0.17	0.965	1.147
	WCDMA V	RMC 12.2Kbps	Front	5mm	State 3	4182	836.4	21.99	22.50	1.125	-0.06	0.371	0.417
	WCDMA V	RMC 12.2Kbps	Back	5mm	State 3	4182	836.4	21.99	22.50	1.125	0.17	1.060	1.192
21	WCDMA V	RMC 12.2Kbps	Back	5mm	State 3	4132	826.4	21.89	22.50	1.151	0.05	1.240	1.427
	WCDMA V	RMC 12.2Kbps	Back	5mm	State 3	4233	846.6	21.91	22.50	1.146	0.01	1.110	1.272
	WCDMA V	RMC 12.2Kbps	Left Side	5mm	State 2	4182	836.4	21.99	22.50	1.125	-0.03	0.054	0.061
	WCDMA V	RMC 12.2Kbps	Right Side	5mm	State 2	4182	836.4	21.99	22.50	1.125	-0.19	0.211	0.237
	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	State 2	4182	836.4	21.99	22.50	1.125	-0.12	0.765	0.860
	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	State 2	4132	826.4	21.89	22.50	1.151	-0.01	1.110	1.277
	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	State 2	4233	846.6	21.91	22.50	1.146	-0.14	0.626	0.717



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Cap (mm)	Output Power State	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 2	20M	QPSK	1	0	Front	5mm	State 3	18900	1880	15.99	16.50	1.125	0.18	0.562	0.632
	LTE Band 2	20M	QPSK	50	0	Front	5mm	State 3	18900	1880	15.91	16.50	1.146	-0.07	0.446	0.511
	LTE Band 2	20M	QPSK	1	0	Back	5mm	State 3	18900	1880	15.99	16.50	1.125	0.12	0.977	1.099
	LTE Band 2	20M	QPSK	1	0	Back	5mm	State 3	18700	1860	15.65	16.50	1.216	0.16	1.060	1.289
	LTE Band 2	20M	QPSK	1	0	Back	5mm	State 3	19100	1900	15.87	16.50	1.156	0.01	0.924	1.068
	LTE Band 2	20M	QPSK	50	0	Back	5mm	State 3	18900	1880	15.91	16.50	1.146	-0.1	0.776	0.889
	LTE Band 2	20M	QPSK	50	0	Back	5mm	State 3	18700	1860	15.62	16.50	1.225	-0.09	0.842	1.031
	LTE Band 2	20M	QPSK	50	0	Back	5mm	State 3	19100	1900	15.88	16.50	1.153	-0.04	0.734	0.847
	LTE Band 2	20M	QPSK	100	0	Back	5mm	State 3	18900	1880	15.77	16.50	1.183	0.05	0.612	0.724
	LTE Band 2	20M	QPSK	1	0	Left Side	5mm	State 2	18900	1880	14.47	15.50	1.268	0.17	0.012	0.015
	LTE Band 2	20M	QPSK	50	0	Left Side	5mm	State 2	18900	1880	14.35	15.50	1.303	-0.17	0.010	0.013
	LTE Band 2	20M	QPSK	1	0	Right Side	5mm	State 2	18900	1880	14.47	15.50	1.268	0.07	0.016	0.020
	LTE Band 2	20M	QPSK	50	0	Right Side	5mm	State 2	18900	1880	14.35	15.50	1.303	0.13	0.012	0.016
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	State 2	18900	1880	14.47	15.50	1.268	0.17	0.899	1.140
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	State 2	18700	1860	14.12	15.50	1.374	-0.11	0.892	1.226
22	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	State 2	19100	1900	14.31	15.50	1.315	0.06	1.020	1.342
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	State 2	18900	1880	14.35	15.50	1.303	-0.19	0.713	0.929
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	State 2	18700	1860	14.20	15.50	1.349	0.02	0.709	0.956
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	State 2	19100	1900	14.34	15.50	1.306	-0.01	0.811	1.059
	LTE Band 2	20M	QPSK	100	0	Bottom Side	5mm	State 2	18900	1880	14.30	15.50	1.318	0.16	0.566	0.746
	LTE Band 5	10M	QPSK	1	0	Front	5mm	State 3	20525	836.5	22.55	23.00	1.109	0.02	0.346	0.384
	LTE Band 5	10M	QPSK	25	0	Front	5mm	State 3	20525	836.5	22.01	22.50	1.119	-0.13	0.306	0.343
23	LTE Band 5	10M	QPSK	1	0	Back	5mm	State 3	20525	836.5	22.55	23.00	1.109	0.01	1.270	1.409
	LTE Band 5	10M	QPSK	25	0	Back	5mm	State 3	20525	836.5	22.01	22.50	1.119	0.02	1.060	1.187
	LTE Band 5	10M	QPSK	50	0	Back	5mm	State 3	20525	836.5	21.96	22.50	1.132	-0.01	1.040	1.178
	LTE Band 5	10M	QPSK	1	0	Left Side	5mm	State 2	20525	836.5	22.55	23.00	1.109	-0.1	0.040	0.044
	LTE Band 5	10M	QPSK	25	0	Left Side	5mm	State 2	20525	836.5	22.01	22.50	1.119	0.17	0.035	0.039
	LTE Band 5	10M	QPSK	1	0	Right Side	5mm	State 2	20525	836.5	22.55	23.00	1.109	-0.14	0.221	0.245
	LTE Band 5	10M	QPSK	25	0	Right Side	5mm	State 2	20525	836.5	22.01	22.50	1.119	-0.16	0.195	0.218
	LTE Band 5	10M	QPSK	1	0	Bottom Side	5mm	State 2	20525	836.5	22.55	23.00	1.109	0.19	0.582	0.646
	LTE Band 5	10M	QPSK	25	0	Bottom Side	5mm	State 2	20525	836.5	22.01	22.50	1.119	-0.08	0.514	0.575
	LTE Band 7	20M	QPSK	1	0	Front	5mm	State 3	21100	2535	18.82	19.50	1.169	-0.06	0.589	0.689
	LTE Band 7	20M	QPSK	50	0	Front	5mm	State 3	21100	2535	18.89	19.50	1.151	0.17	0.576	0.663
	LTE Band 7	20M	QPSK	1	0	Back	5mm	State 3	21100	2535	18.82	19.50	1.169	0.03	1.100	1.286
	LTE Band 7	20M	QPSK	1	0	Back	5mm	State 3	20850	2510	18.81	19.50	1.172	0.18	1.060	1.243
24	LTE Band 7	20M	QPSK	1	0	Back	5mm	State 3	21350	2560	18.75	19.50	1.189	0.01	1.130	1.343
	LTE Band 7	20M	QPSK	50	0	Back	5mm	State 3	21100	2535	18.89	19.50	1.151	-0.12	1.110	1.277
	LTE Band 7	20M	QPSK	50	0	Back	5mm	State 3	20850	2510	18.64	19.50	1.219	-0.02	1.010	1.231
	LTE Band 7	20M	QPSK	50	0	Back	5mm	State 3	21350	2560	18.74	19.50	1.191	-0.01	1.120	1.334
	LTE Band 7	20M	QPSK	100	0	Back	5mm	State 3	21100	2535	18.86	19.50	1.159	0.12	1.090	1.263
	LTE Band 7	20M	QPSK	1	0	Left Side	5mm	State 2	21100	2535	18.82	19.50	1.169	-0.12	0.489	0.572
	LTE Band 7	20M	QPSK	50	0	Left Side	5mm	State 2	21100	2535	18.89	19.50	1.151	0.17	0.495	0.570
	LTE Band 7	20M	QPSK	1	0	Right Side	5mm	State 2	21100	2535	18.82	19.50	1.169	-0.14	0.021	0.025
	LTE Band 7	20M	QPSK	50	0	Right Side	5mm	State 2	21100	2535	18.89	19.50	1.151	0.07	0.020	0.023
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	State 2	21100	2535	18.82	19.50	1.169	-0.03	0.616	0.720
	LTE Band 7	20M	QPSK	50	0	Bottom Side	5mm	State 2	21100	2535	18.89	19.50	1.151	0.04	0.622	0.716



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	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 12	10M	QPSK	1	0	Front	5mm	State 1	23095	707.5	23.04	24.00	1.247	0.16	0.257	0.321
	LTE Band 12	10M	QPSK	25	0	Front	5mm	State 1	23095	707.5	22.14	23.00	1.219	0.04	0.199	0.243
25	LTE Band 12	10M	QPSK	1	0	Back	5mm	State 1	23095	707.5	23.04	24.00	1.247	-0.16	0.705	0.879
	LTE Band 12	10M	QPSK	25	0	Back	5mm	State 1	23095	707.5	22.14	23.00	1.219	0.04	0.566	0.690
	LTE Band 12	10M	QPSK	50	0	Back	5mm	State 1	23095	707.5	22.10	23.00	1.230	-0.06	0.558	0.686
	LTE Band 12	10M	QPSK	1	0	Left Side	5mm	State 1	23095	707.5	23.04	24.00	1.247	0.04	0.099	0.123
	LTE Band 12	10M	QPSK	25	0	Left Side	5mm	State 1	23095	707.5	22.14	23.00	1.219	0.07	0.079	0.096
	LTE Band 12	10M	QPSK	1	0	Right Side	5mm	State 1	23095	707.5	23.04	24.00	1.247	0.11	0.195	0.243
	LTE Band 12	10M	QPSK	25	0	Right Side	5mm	State 1	23095	707.5	22.14	23.00	1.219	-0.03	0.155	0.189
	LTE Band 12	10M	QPSK	1	0	Bottom Side	5mm	State 1	23095	707.5	23.04	24.00	1.247	0.11	0.525	0.655
	LTE Band 12	10M	QPSK	25	0	Bottom Side	5mm	State 1	23095	707.5	22.14	23.00	1.219	-0.08	0.424	0.517
	LTE Band 13	10M	QPSK	1	0	Front	5mm	State 1	23230	782	23.11	24.00	1.227	-0.05	0.324	0.398
	LTE Band 13	10M	QPSK	25	0	Front	5mm	State 1	23230	782	22.11	23.00	1.227	-0.04	0.255	0.313
26	LTE Band 13	10M	QPSK	1	0	Back	5mm	State 1	23230	782	23.11	24.00	1.227	-0.08	0.860	1.056
	LTE Band 13	10M	QPSK	25	0	Back	5mm	State 1	23230	782	22.11	23.00	1.227	0.15	0.683	0.838
	LTE Band 13	10M	QPSK	50	0	Back	5mm	State 1	23230	782	22.03	23.00	1.250	0.02	0.670	0.838
	LTE Band 13	10M	QPSK	1	0	Left Side	5mm	State 1	23230	782	23.11	24.00	1.227	-0.12	0.114	0.140
	LTE Band 13	10M	QPSK	25	0	Left Side	5mm	State 1	23230	782	22.11	23.00	1.227	0.06	0.088	0.108
	LTE Band 13	10M	QPSK	1	0	Right Side	5mm	State 1	23230	782	23.11	24.00	1.227	-0.09	0.230	0.282
	LTE Band 13	10M	QPSK	25	0	Right Side	5mm	State 1	23230	782	22.11	23.00	1.227	-0.13	0.181	0.222
	LTE Band 13	10M	QPSK	1	0	Bottom Side	5mm	State 1	23230	782	23.11	24.00	1.227	0.15	0.691	0.848
	LTE Band 13	10M	QPSK	25	0	Bottom Side	5mm	State 1	23230	782	22.11	23.00	1.227	-0.06	0.544	0.668
	LTE Band 13	10M	QPSK	50	0	Bottom Side	5mm	State 1	23230	782	22.03	23.00	1.250	0.03	0.539	0.674
	LTE Band 66	20M	QPSK	1	0	Front	5mm	State 3	132322	1745	19.46	19.50	1.009	0.11	0.721	0.728
	LTE Band 66	20M	QPSK	50	0	Front	5mm	State 3	132322	1745	19.40	19.50	1.023	0.02	0.706	0.722
	LTE Band 66	20M	QPSK	1	0	Back	5mm	State 3	132322	1745	19.46	19.50	1.009	-0.17	1.030	1.040
	LTE Band 66	20M	QPSK	1	0	Back	5mm	State 3	132072	1720	19.27	19.50	1.054	0.04	0.860	0.907
	LTE Band 66	20M	QPSK	1	0	Back	5mm	State 3	132572	1770	19.31	19.50	1.045	0.04	1.080	1.128
	LTE Band 66	20M	QPSK	50	0	Back	5mm	State 3	132322	1745	19.40	19.50	1.023	0.19	1.050	1.074
	LTE Band 66	20M	QPSK	50	0	Back	5mm	State 3	132072	1720	19.35	19.50	1.035	-0.19	0.889	0.920
	LTE Band 66	20M	QPSK	50	0	Back	5mm	State 3	132572	1770	19.30	19.50	1.047	-0.14	1.060	1.110
	LTE Band 66	20M	QPSK	100	0	Back	5mm	State 3	132322	1745	19.36	19.50	1.033	0.07	1.080	1.115
	LTE Band 66	20M	QPSK	1	0	Left Side	5mm	State 2	132322	1745	18.37	18.50	1.030	-0.01	0.039	0.040
	LTE Band 66	20M	QPSK	50	0	Left Side	5mm	State 2	132322	1745	18.35	18.50	1.035	-0.06	0.036	0.037
	LTE Band 66	20M	QPSK	1	0	Right Side	5mm	State 2	132322	1745	18.37	18.50	1.030	-0.17	0.074	0.076
	LTE Band 66	20M	QPSK	50	0	Right Side	5mm	State 2	132322	1745	18.35	18.50	1.035	0.15	0.067	0.069
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	State 2	132322	1745	18.37	18.50	1.030	-0.1	0.946	0.975
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	State 2	132072	1720	18.14	18.50	1.086	-0.17	0.817	0.888
27	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	State 2	132572	1770	18.25	18.50	1.059	0.08	1.100	1.165
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	State 2	132322	1745	18.35	18.50	1.035	-0.11	0.941	0.974
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	State 2	132072	1720	18.21	18.50	1.069	0.17	0.827	0.884
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	State 2	132572	1770	18.21	18.50	1.069	-0.05	1.040	1.112
	LTE Band 66	20M	QPSK	100	0	Bottom Side	5mm	State 2	132322	1745	18.26	18.50	1.057	-0.19	0.916	0.968

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	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	Front	5mm	State 2	11	2462	16.45	17.00	1.135	100	1.000	-0.15	0.548	0.622
28	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	State 2	11	2462	16.45	17.00	1.135	100	1.000	-0.06	0.929	1.054
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	State 2	1	2412	15.53	16.00	1.114	100	1.000	0.17	0.706	0.787
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	State 2	6	2437	16.04	16.50	1.112	100	1.000	0	0.755	0.839
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	State 2	11	2462	16.45	17.00	1.135	100	1.000	-0.08	0.465	0.528
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	State 2	11	2462	16.45	17.00	1.135	100	1.000	-0.09	0.611	0.693
	WLAN5GHz	802.11a 6Mbps	Front	5mm	State 2	36	5180	12.37	13.00	1.156	98.28	1.018	0.01	0.065	0.076
29	WLAN5GHz	802.11a 6Mbps	Back	5mm	State 2	36	5180	12.37	13.00	1.156	98.28	1.018	0.04	0.935	1.100
	WLAN5GHz	802.11a 6Mbps	Back	5mm	State 2	40	5200	12.14	13.00	1.219	98.28	1.018	-0.03	0.845	1.049
	WLAN5GHz	802.11a 6Mbps	Back	5mm	State 2	44	5220	12.06	13.00	1.242	98.28	1.018	0.02	0.863	1.091
	WLAN5GHz	802.11a 6Mbps	Back	5mm	State 2	48	5240	12.22	13.00	1.197	98.28	1.018	0.01	0.896	1.092
	WLAN5GHz	802.11a 6Mbps	Right Side	5mm	State 2	36	5180	12.37	13.00	1.156	98.28	1.018	0.03	0.182	0.214
	WLAN5GHz	802.11a 6Mbps	Top Side	5mm	State 2	36	5180	12.37	13.00	1.156	98.28	1.018	0.04	0.890	1.047
	WLAN5GHz	802.11a 6Mbps	Top Side	5mm	State 2	40	5200	12.14	13.00	1.219	98.28	1.018	0.07	0.796	0.988
	WLAN5GHz	802.11a 6Mbps	Top Side	5mm	State 2	44	5220	12.06	13.00	1.242	98.28	1.018	0.11	0.775	0.980
	WLAN5GHz	802.11a 6Mbps	Top Side	5mm	State 2	48	5240	12.22	13.00	1.197	98.28	1.018	0.05	0.802	0.977
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Default	165	5825	16.86	18.50	1.459	98.28	1.018	-0.06	0.332	0.493
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Default	165	5825	16.86	18.50	1.459	98.28	1.018	-0.14	0.309	0.459
	WLAN5GHz	802.11a 6Mbps	Right Side	5mm	Default	165	5825	16.86	18.50	1.459	98.28	1.018	0.03	0.123	0.183
30	WLAN5GHz	802.11a 6Mbps	Top Side	5mm	Default	165	5825	16.86	18.50	1.459	98.28	1.018	0.08	0.781	1.160
	WLAN5GHz	802.11a 6Mbps	Top Side	5mm	Default	149	5745	16.50	18.50	1.585	98.28	1.018	-0.19	0.693	1.118
	WLAN5GHz	802.11a 6Mbps	Top Side	5mm	Default	157	5785	16.60	18.50	1.549	98.28	1.018	-0.12	0.720	1.135

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
	Bluetooth	1Mbps	Front	5mm	0	2402	10.92	11.00	1.018	76.88	1.084	-0.01	< 0.001	< 0.001
31	Bluetooth	1Mbps	Back	5mm	0	2402	10.92	11.00	1.018	76.88	1.084	0	< 0.001	< 0.001
	Bluetooth	1Mbps	Right Side	5mm	0	2402	10.92	11.00	1.018	76.88	1.084	0.18	< 0.001	< 0.001
	Bluetooth	1Mbps	Top Side	5mm	0	2402	10.92	11.00	1.018	76.88	1.084	-0.08	< 0.001	< 0.001



14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Output Power State	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)
	GSM850	GPRS (2 Tx slots)	Front	5mm	-	State 3	189	836.4	29.37	29.50	1.030	-0.07	0.488	0.503
	GSM850	GPRS (2 Tx slots)	Back	5mm	-	State 3	189	836.4	29.37	29.50	1.030	-0.02	1.230	1.267
32	GSM850	GPRS (2 Tx slots)	Back	5mm	-	State 3	128	824.2	29.36	29.50	1.033	-0.19	1.330	1.374
	GSM850	GPRS (2 Tx slots)	Back	5mm	-	State 3	251	848.8	29.33	29.50	1.040	-0.07	1.060	1.102
	GSM850	GPRS (2 Tx slots)	Back	5mm	-	State 3	128	824.2	29.36	29.50	1.033	0.05	1.020	1.053
	GSM850	GPRS (2 Tx slots)	Back	5mm	Headset 2	State 3	128	824.2	29.36	29.50	1.033	-0.11	1.040	1.074
	GSM850	GPRS (2 Tx slots)	Back	5mm	Headset 3	State 3	128	824.2	29.36	29.50	1.033	-0.03	1.030	1.064
	GSM850	GPRS (2 Tx slots)	Front	13mm	-	State 1	189	836.4	30.35	31.50	1.303	0.01	0.367	0.478
	GSM850	GPRS (2 Tx slots)	Back	24mm	-	State 1	189	836.4	30.35	31.50	1.303	-0.07	0.270	0.352
	GSM1900	GPRS (2 Tx slots)	Front	5mm	-	State 3	661	1880	22.34	23.00	1.164	0.14	0.586	0.682
33	GSM1900	GPRS (2 Tx slots)	Back	5mm	-	State 3	661	1880	22.34	23.00	1.164	-0.04	1.060	1.234
	GSM1900	GPRS (2 Tx slots)	Back	5mm	-	State 3	661	1880	22.34	23.00	1.164	-0.01	1.010	1.176
	GSM1900	GPRS (2 Tx slots)	Back	5mm	Headset 2	State 3	661	1880	22.34	23.00	1.164	-0.12	1.030	1.199
	GSM1900	GPRS (2 Tx slots)	Back	5mm	Headset 3	State 3	661	1880	22.34	23.00	1.164	0.1	1.020	1.187
	GSM1900	GPRS (2 Tx slots)	Back	5mm	-	State 3	512	1850.2	22.28	23.00	1.180	0.15	0.994	1.173
	GSM1900	GPRS (2 Tx slots)	Back	5mm	-	State 3	810	1909.8	22.28	23.00	1.180	0.16	1.040	1.228
	GSM1900	GPRS (2 Tx slots)	Front	13mm	-	State 1	810	1909.8	27.26	28.50	1.330	0.03	0.542	0.721
	GSM1900	GPRS (2 Tx slots)	Back	24mm	-	State 1	810	1909.8	27.26	28.50	1.330	0.18	0.322	0.428

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Output Power State	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 II	RMC 12.2Kbps	Front	5mm	-	State 3	9400	1880	16.12	16.50	1.091	-0.14	0.529	0.577
34	WCDMA II	RMC 12.2Kbps	Back	5mm	-	State 3	9400	1880	16.12	16.50	1.091	0.08	0.978	1.067
	WCDMA II	RMC 12.2Kbps	Back	5mm	-	State 3	9262	1852.4	16.03	16.50	1.114	-0.01	0.932	1.039
	WCDMA II	RMC 12.2Kbps	Back	5mm	-	State 3	9538	1907.6	16.10	16.50	1.096	-0.12	0.923	1.012
	WCDMA II	RMC 12.2Kbps	Front	13mm	-	State 1	9538	1907.6	23.26	24.00	1.186	-0.11	0.892	1.058
	WCDMA II	RMC 12.2Kbps	Front	13mm	-	State 1	9400	1880	23.13	24.00	1.222	-0.06	0.858	1.048
	WCDMA II	RMC 12.2Kbps	Front	13mm	-	State 1	9262	1852.4	23.09	24.00	1.233	0.06	0.860	1.060
	WCDMA II	RMC 12.2Kbps	Back	24mm	-	State 1	9538	1907.6	23.26	24.00	1.186	0.02	0.527	0.625
	WCDMA IV	RMC 12.2Kbps	Front	5mm	-	State 3	1413	1732.6	18.90	19.50	1.148	0.08	0.657	0.754
	WCDMA IV	RMC 12.2Kbps	Back	5mm	-	State 3	1413	1732.6	18.90	19.50	1.148	-0.1	0.945	1.085
	WCDMA IV	RMC 12.2Kbps	Back	5mm	-	State 3	1312	1712.4	18.68	19.50	1.208	0.05	0.897	1.083
35	WCDMA IV	RMC 12.2Kbps	Back	5mm	-	State 3	1513	1752.6	18.87	19.50	1.156	0.04	1.050	1.214
	WCDMA IV	RMC 12.2Kbps	Back	5mm	-	State 3	1513	1752.6	18.87	19.50	1.156	0.09	1.020	1.179
	WCDMA IV	RMC 12.2Kbps	Back	5mm	Headset 2	State 3	1513	1752.6	18.87	19.50	1.156	0.01	1.040	1.202
	WCDMA IV	RMC 12.2Kbps	Back	5mm	Headset 3	State 3	1513	1752.6	18.87	19.50	1.156	-0.1	1.030	1.191
	WCDMA IV	RMC 12.2Kbps	Front	13mm	-	State 1	1513	1752.6	23.32	24.00	1.169	0.02	0.802	0.938
	WCDMA IV	RMC 12.2Kbps	Front	13mm	-	State 1	1413	1732.6	23.30	24.00	1.175	0	0.735	0.864
	WCDMA IV	RMC 12.2Kbps	Front	13mm	-	State 1	1312	1712.4	23.11	24.00	1.227	-0.05	0.702	0.862
	WCDMA IV	RMC 12.2Kbps	Back	24mm	-	State 1	1513	1752.6	23.32	24.00	1.169	0.01	0.330	0.386
	WCDMA V	RMC 12.2Kbps	Front	5mm	-	State 3	4182	836.4	21.99	22.50	1.125	-0.06	0.371	0.417
	WCDMA V	RMC 12.2Kbps	Back	5mm	-	State 3	4182	836.4	21.99	22.50	1.125	0.17	1.060	1.192
36	WCDMA V	RMC 12.2Kbps	Back	5mm	-	State 3	4132	826.4	21.89	22.50	1.151	0.05	1.240	1.427
	WCDMA V	RMC 12.2Kbps	Back	5mm	-	State 3	4132	826.4	21.89	22.50	1.151	-0.16	1.210	1.392
	WCDMA V	RMC 12.2Kbps	Back	5mm	Headset 2	State 3	4132	826.4	21.89	22.50	1.151	0.05	1.230	1.415
	WCDMA V	RMC 12.2Kbps	Back	5mm	Headset 3	State 3	4132	826.4	21.89	22.50	1.151	0.11	1.220	1.404
	WCDMA V	RMC 12.2Kbps	Back	5mm	-	State 3	4233	846.6	21.91	22.50	1.146	0.01	1.110	1.272
	WCDMA V	RMC 12.2Kbps	Front	13mm	-	State 1	4233	846.6	22.92	24.00	1.282	0.02	0.366	0.469
	WCDMA V	RMC 12.2Kbps	Back	24mm	-	State 1	4233	846.6	22.92	24.00	1.282	-0.07	0.294	0.377



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	Output Power State	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 2	20M	QPSK	1	0	Front	5mm	-	State 3	18900	1880	15.99	16.50	1.125	0.18	0.562	0.632
	LTE Band 2	20M	QPSK	50	0	Front	5mm	-	State 3	18900	1880	15.91	16.50	1.146	-0.07	0.446	0.511
	LTE Band 2	20M	QPSK	1	0	Back	5mm	-	State 3	18900	1880	15.99	16.50	1.125	0.12	0.977	1.099
37	LTE Band 2	20M	QPSK	1	0	Back	5mm	-	State 3	18700	1860	15.65	16.50	1.216	0.16	1.060	1.289
	LTE Band 2	20M	QPSK	1	0	Back	5mm	-	State 3	18700	1860	15.65	16.50	1.216	0.08	0.987	1.200
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Headset 2	State 3	18700	1860	15.65	16.50	1.216	-0.16	0.972	1.182
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Headset 3	State 3	18700	1860	15.65	16.50	1.216	0.05	0.993	1.208
	LTE Band 2	20M	QPSK	1	0	Back	5mm	-	State 3	19100	1900	15.87	16.50	1.156	0.01	0.924	1.068
	LTE Band 2	20M	QPSK	50	0	Back	5mm	-	State 3	18900	1880	15.91	16.50	1.146	-0.1	0.776	0.889
	LTE Band 2	20M	QPSK	50	0	Back	5mm	-	State 3	18700	1860	15.62	16.50	1.225	-0.09	0.842	1.031
	LTE Band 2	20M	QPSK	50	0	Back	5mm	-	State 3	19100	1900	15.88	16.50	1.153	-0.04	0.734	0.847
	LTE Band 2	20M	QPSK	100	0	Back	5mm	-	State 3	18900	1880	15.77	16.50	1.183	0.05	0.612	0.724
	LTE Band 2	20M	QPSK	1	0	Front	13mm	-	State 1	19100	1900	23.36	24.00	1.159	0	0.898	1.041
	LTE Band 2	20M	QPSK	1	0	Front	13mm	-	State 1	18900	1880	22.96	24.00	1.271	0.07	0.905	1.150
	LTE Band 2	20M	QPSK	1	0	Front	13mm	-	State 1	18700	1860	22.88	24.00	1.294	0.07	0.881	1.140
	LTE Band 2	20M	QPSK	1	0	Back	24mm	-	State 1	19100	1900	23.36	24.00	1.159	0.05	0.479	0.555
	LTE Band 5	10M	QPSK	1	0	Front	5mm	-	State 3	20525	836.5	22.55	23.00	1.109	0.02	0.346	0.384
	LTE Band 5	10M	QPSK	25	0	Front	5mm	-	State 3	20525	836.5	22.01	22.50	1.119	-0.13	0.306	0.343
38	LTE Band 5	10M	QPSK	1	0	Back	5mm	-	State 3	20525	836.5	22.55	23.00	1.109	0.01	1.270	1.409
	LTE Band 5	10M	QPSK	1	0	Back	5mm	-	State 3	20525	836.5	22.55	23.00	1.109	0.1	1.170	1.298
	LTE Band 5	10M	QPSK	1	0	Back	5mm	Headset 2	State 3	20525	836.5	22.55	23.00	1.109	-0.03	1.190	1.320
	LTE Band 5	10M	QPSK	1	0	Back	5mm	Headset 3	State 3	20525	836.5	22.55	23.00	1.109	0.07	1.180	1.309
	LTE Band 5	10M	QPSK	25	0	Back	5mm	-	State 3	20525	836.5	22.01	22.50	1.119	0.02	1.060	1.187
	LTE Band 5	10M	QPSK	50	0	Back	5mm	-	State 3	20525	836.5	21.96	22.50	1.132	-0.01	1.040	1.178
	LTE Band 5	10M	QPSK	1	0	Front	13mm	-	State 1	20525	836.5	22.64	24.00	1.368	-0.1	0.316	0.432
	LTE Band 5	10M	QPSK	1	0	Back	24mm	-	State 1	20525	836.5	22.64	24.00	1.368	-0.06	0.261	0.357
	LTE Band 7	20M	QPSK	1	0	Front	5mm	-	State 3	21100	2535	18.82	19.50	1.169	-0.06	0.589	0.689
	LTE Band 7	20M	QPSK	50	0	Front	5mm	-	State 3	21100	2535	18.89	19.50	1.151	0.17	0.576	0.663
	LTE Band 7	20M	QPSK	1	0	Back	5mm	-	State 3	21100	2535	18.82	19.50	1.169	0.03	1.100	1.286
	LTE Band 7	20M	QPSK	1	0	Back	5mm	-	State 3	20850	2510	18.81	19.50	1.172	0.18	1.060	1.243
39	LTE Band 7	20M	QPSK	1	0	Back	5mm	-	State 3	21350	2560	18.75	19.50	1.189	0.01	1.130	1.343
	LTE Band 7	20M	QPSK	1	0	Back	5mm	-	State 3	21350	2560	18.75	19.50	1.189	0.1	1.100	1.307
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Headset 2	State 3	21350	2560	18.75	19.50	1.189	-0.15	1.120	1.331
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Headset 3	State 3	21350	2560	18.75	19.50	1.189	0.07	1.110	1.319
	LTE Band 7	20M	QPSK	50	0	Back	5mm	-	State 3	21100	2535	18.89	19.50	1.151	-0.12	1.110	1.277
	LTE Band 7	20M	QPSK	50	0	Back	5mm	-	State 3	20850	2510	18.64	19.50	1.219	-0.02	1.010	1.231
	LTE Band 7	20M	QPSK	50	0	Back	5mm	-	State 3	21350	2560	18.74	19.50	1.191	-0.01	1.120	1.334
	LTE Band 7	20M	QPSK	100	0	Back	5mm	-	State 3	21100	2535	18.86	19.50	1.159	0.12	1.090	1.263
	LTE Band 7	20M	QPSK	1	0	Front	13mm	-	State 1	21350	2560	23.40	24.00	1.148	-0.01	0.471	0.541
	LTE Band 7	20M	QPSK	1	0	Back	24mm	-	State 1	21350	2560	23.40	24.00	1.148	0.03	0.183	0.210



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	Output Power State	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 12	10M	QPSK	1	0	Front	5mm	-	State 1	23095	707.5	23.04	24.00	1.247	0.16	0.257	0.321
	LTE Band 12	10M	QPSK	25	0	Front	5mm	-	State 1	23095	707.5	22.14	23.00	1.219	0.04	0.199	0.243
40	LTE Band 12	10M	QPSK	1	0	Back	5mm	-	State 1	23095	707.5	23.04	24.00	1.247	-0.16	0.705	0.879
	LTE Band 12	10M	QPSK	25	0	Back	5mm	-	State 1	23095	707.5	22.14	23.00	1.219	0.04	0.566	0.690
	LTE Band 12	10M	QPSK	50	0	Back	5mm	-	State 1	23095	707.5	22.10	23.00	1.230	-0.06	0.558	0.686
	LTE Band 13	10M	QPSK	1	0	Front	5mm	-	State 1	23230	782	23.11	24.00	1.227	-0.05	0.324	0.398
	LTE Band 13	10M	QPSK	25	0	Front	5mm	-	State 1	23230	782	22.11	23.00	1.227	-0.04	0.255	0.313
41	LTE Band 13	10M	QPSK	1	0	Back	5mm	-	State 1	23230	782	23.11	24.00	1.227	-0.08	0.860	1.056
	LTE Band 13	10M	QPSK	25	0	Back	5mm	-	State 1	23230	782	22.11	23.00	1.227	0.15	0.683	0.838
	LTE Band 13	10M	QPSK	50	0	Back	5mm	-	State 1	23230	782	22.03	23.00	1.250	0.02	0.670	0.838
	LTE Band 66	20M	QPSK	1	0	Front	5mm	-	State 3	132322	1745	19.46	19.50	1.009	0.11	0.721	0.728
	LTE Band 66	20M	QPSK	50	0	Front	5mm	-	State 3	132322	1745	19.40	19.50	1.023	0.02	0.706	0.722
	LTE Band 66	20M	QPSK	1	0	Back	5mm	-	State 3	132322	1745	19.46	19.50	1.009	-0.17	1.030	1.040
	LTE Band 66	20M	QPSK	1	0	Back	5mm	-	State 3	132072	1720	19.27	19.50	1.054	0.04	0.860	0.907
42	LTE Band 66	20M	QPSK	1	0	Back	5mm	-	State 3	132572	1770	19.31	19.50	1.045	0.04	1.080	1.128
	LTE Band 66	20M	QPSK	50	0	Back	5mm	-	State 3	132322	1745	19.40	19.50	1.023	0.19	1.050	1.074
	LTE Band 66	20M	QPSK	50	0	Back	5mm	-	State 3	132072	1720	19.35	19.50	1.035	-0.19	0.889	0.920
	LTE Band 66	20M	QPSK	50	0	Back	5mm	-	State 3	132572	1770	19.30	19.50	1.047	-0.14	1.060	1.110
	LTE Band 66	20M	QPSK	100	0	Back	5mm	-	State 3	132322	1745	19.36	19.50	1.033	0.07	1.080	1.115
	LTE Band 66	20M	QPSK	1	0	Front	13mm	-	State 1	132322	1745	23.55	24.00	1.109	0.02	0.542	0.601
	LTE Band 66	20M	QPSK	1	0	Back	24mm	-	State 1	132322	1745	23.55	24.00	1.109	0.15	0.270	0.299

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Output Power State	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	Front	5mm	-	State 3	11	2462	16.45	17.00	1.135	100	1.000	-0.15	0.164	0.186
43	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	-	State 3	11	2462	16.45	17.00	1.135	100	1.000	-0.06	0.929	1.054
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	-	State 3	1	2412	15.53	16.00	1.114	100	1.000	0.17	0.122	0.135
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	-	State 3	6	2437	16.04	16.50	1.112	100	1.000	0	0.455	0.506
	WLAN2.4GHz	802.11a 6Mbps	Front	13mm	-	State 1	11	2462	18.12	18.50	1.091	100	1.000	0.03	0.283	0.309
	WLAN2.4GHz	802.11a 6Mbps	Back	24mm	-	State 1	11	2462	18.12	18.50	1.091	100	1.000	0.02	0.113	0.123
	WLAN5GHz	802.11a 6Mbps	Front	5mm	-	State 3	64	5320	13.83	15.50	1.469	98.28	1.018	0.16	0.223	0.333
44	WLAN5GHz	802.11a 6Mbps	Back	5mm	-	State 3	64	5320	13.83	15.50	1.469	98.28	1.018	0.06	0.792	1.184
	WLAN5GHz	802.11a 6Mbps	Back	5mm	-	State 3	52	5260	13.48	15.00	1.419	98.28	1.018	0.12	0.652	0.942
	WLAN5GHz	802.11a 6Mbps	Back	5mm	-	State 3	56	5280	13.41	15.00	1.442	98.28	1.018	-0.08	0.540	0.793
	WLAN5GHz	802.11a 6Mbps	Back	5mm	-	State 3	60	5300	13.56	15.50	1.563	98.28	1.018	0.19	0.692	1.101
	WLAN5GHz	802.11a 6Mbps	Front	13mm	-	Default	64	5320	16.89	18.50	1.449	98.28	1.018	-0.14	0.059	0.087
	WLAN5GHz	802.11a 6Mbps	Back	24mm	-	Default	64	5320	16.89	18.50	1.449	98.28	1.018	-0.01	0.484	0.714
	WLAN5GHz	802.11a 6Mbps	Front	5mm	-	Default	124	5620	16.80	18.50	1.479	98.28	1.018	-0.18	0.511	0.769
45	WLAN5GHz	802.11a 6Mbps	Back	5mm	-	Default	124	5620	16.80	18.50	1.479	98.28	1.018	0.15	0.584	0.879
	WLAN5GHz	802.11a 6Mbps	Back	5mm	-	Default	144	5720	16.79	18.50	1.483	98.28	1.018	-0.18	0.561	0.847
46	WLAN5GHz	802.11a 6Mbps	Front	5mm	-	Default	165	5825	16.86	18.50	1.459	98.28	1.018	0.04	0.338	0.502
	WLAN5GHz	802.11a 6Mbps	Back	5mm	-	Default	165	5825	16.86	18.50	1.459	98.28	1.018	0.11	0.315	0.468

<Bluetooth SAR>

lot No.	Band	Mode	Test Position	Gap (mm)	Headset	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)
	Bluetooth	1Mbps	Front	5mm	-	0	2402	10.92	11.00	1.018	76.88	1.084	-0.01	< 0.001	< 0.001
47	Bluetooth	1Mbps	Back	5mm	-	0	2402	10.92	11.00	1.018	76.88	1.084	0	< 0.001	< 0.001



14.4 Product Specific SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
48	GSM850	GPRS (2 Tx slots)	Back	0mm	State 1	189	836.4	30.35	31.50	1.303	-0.11	1.200	1.564
	GSM850	GPRS (2 Tx slots)	Bottom Side	0mm	State 1	189	836.4	30.35	31.50	1.303	0.01	0.907	1.182
	GSM1900	GPRS (2 Tx slots)	Front	0mm	State 4	661	1880	25.73	26.00	1.064	-0.16	1.560	1.660
	GSM1900	GPRS (2 Tx slots)	Back	0mm	State 4	661	1880	25.73	26.00	1.064	-0.06	1.650	1.756
	GSM1900	GPRS (2 Tx slots)	Bottom Side	0mm	State 4	661	1880	25.73	26.00	1.064	-0.19	2.340	2.490
	GSM1900	GPRS (2 Tx slots)	Bottom Side	0mm	State 4	512	1850.2	25.38	26.00	1.153	-0.12	2.360	2.722
49	GSM1900	GPRS (2 Tx slots)	Bottom Side	0mm	State 4	810	1909.8	25.28	26.00	1.180	0.17	2.730	3.222
	GSM1900	GPRS (2 Tx slots)	Front	7mm	State 1	810	1909.8	27.26	28.50	1.330	0.11	0.054	0.072
	GSM1900	GPRS (2 Tx slots)	Back	19mm	State 1	810	1909.8	27.26	28.50	1.330	0.18	0.034	0.045
	GSM1900	GPRS (2 Tx slots)	Bottom Side	15mm	State 1	810	1909.8	27.26	28.50	1.330	-0.03	0.707	0.941

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	0mm	State 4	9400	1880	18.33	19.00	1.167	0.07	1.470	1.715
	WCDMA II	RMC 12.2Kbps	Back	0mm	State 4	9400	1880	18.33	19.00	1.167	-0.06	1.640	1.914
50	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	State 4	9400	1880	18.33	19.00	1.167	-0.09	2.540	2.964
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	State 4	9262	1852.4	18.19	19.00	1.205	0.13	2.400	2.892
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	State 4	9538	1907.6	18.30	19.00	1.175	-0.08	2.370	2.785
	WCDMA II	RMC 12.2Kbps	Front	7mm	State 1	9538	1907.6	23.26	24.00	1.186	0.19	0.904	1.072
	WCDMA II	RMC 12.2Kbps	Back	19mm	State 1	9538	1907.6	23.26	24.00	1.186	-0.01	0.521	0.618
	WCDMA II	RMC 12.2Kbps	Bottom Side	15mm	State 1	9538	1907.6	23.26	24.00	1.186	-0.08	1.140	1.352
	WCDMA IV	RMC 12.2Kbps	Front	0mm	State 4	1413	1732.6	20.94	21.50	1.138	0.03	1.680	1.911
	WCDMA IV	RMC 12.2Kbps	Back	0mm	State 4	1413	1732.6	20.94	21.50	1.138	-0.11	1.920	2.184
	WCDMA IV	RMC 12.2Kbps	Back	0mm	State 4	1312	1712.4	20.84	21.50	1.164	-0.1	1.790	2.084
	WCDMA IV	RMC 12.2Kbps	Back	0mm	State 4	1513	1752.6	20.90	21.50	1.148	-0.18	1.790	2.055
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	State 4	1413	1732.6	20.94	21.50	1.138	0.16	2.850	3.242
51	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	State 4	1312	1712.4	20.84	21.50	1.164	0.03	2.920	3.399
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	State 4	1513	1752.6	20.90	21.50	1.148	-0.09	2.900	3.330
	WCDMA IV	RMC 12.2Kbps	Front	7mm	State 1	1513	1752.6	23.32	24.00	1.169	0.02	0.775	0.906
	WCDMA IV	RMC 12.2Kbps	Back	19mm	State 1	1513	1752.6	23.32	24.00	1.169	-0.19	0.326	0.381
	WCDMA IV	RMC 12.2Kbps	Bottom Side	15mm	State 1	1513	1752.6	23.32	24.00	1.169	-0.1	0.654	0.765
	WCDMA V	RMC 12.2Kbps	Back	0mm	State 1	4182	836.4	22.86	24.00	1.300	-0.18	2.080	2.704
	WCDMA V	RMC 12.2Kbps	Back	0mm	State 1	4132	826.4	22.87	24.00	1.297	0.08	2.180	2.828
52	WCDMA V	RMC 12.2Kbps	Back	0mm	State 1	4233	846.6	22.92	24.00	1.282	0.01	2.330	2.988
	WCDMA V	RMC 12.2Kbps	Bottom Side	0mm	State 1	4182	836.4	22.86	24.00	1.300	0.03	1.960	2.548
	WCDMA V	RMC 12.2Kbps	Bottom Side	0mm	State 1	4132	826.4	22.87	24.00	1.297	0.06	2.000	2.594
	WCDMA V	RMC 12.2Kbps	Bottom Side	0mm	State 1	4233	846.6	22.92	24.00	1.282	-0.13	1.900	2.436



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	0mm	State 4	18900	1880	18.93	19.50	1.140	-0.14	1.140	1.300
	LTE Band 2	20M	QPSK	50	0	Front	0mm	State 4	18900	1880	18.90	19.50	1.148	0.03	1.110	1.274
	LTE Band 2	20M	QPSK	1	0	Back	0mm	State 4	18900	1880	18.93	19.50	1.140	-0.14	1.500	1.710
	LTE Band 2	20M	QPSK	50	0	Back	0mm	State 4	18900	1880	18.90	19.50	1.148	-0.13	1.440	1.653
53	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	State 4	18900	1880	18.93	19.50	1.140	0.05	2.620	2.987
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	State 4	18700	1860	18.58	19.50	1.236	-0.07	2.400	2.966
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	State 4	19100	1900	18.77	19.50	1.183	-0.07	2.390	2.827
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0mm	State 4	18900	1880	18.90	19.50	1.148	-0.17	2.600	2.985
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0mm	State 4	18700	1860	18.58	19.50	1.236	0.17	2.400	2.966
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0mm	State 4	19100	1900	18.83	19.50	1.167	-0.03	2.370	2.765
	LTE Band 2	20M	QPSK	100	0	Bottom Side	0mm	State 4	18900	1880	18.75	19.50	1.189	0.17	2.500	2.971
	LTE Band 2	20M	QPSK	1	0	Front	7mm	State 1	19100	1900	23.36	24.00	1.159	0.11	0.898	1.041
	LTE Band 2	20M	QPSK	1	0	Back	19mm	State 1	19100	1900	23.36	24.00	1.159	0.02	0.402	0.466
	LTE Band 2	20M	QPSK	1	0	Bottom Side	15mm	State 1	19100	1900	23.36	24.00	1.159	-0.05	1.050	1.217
	LTE Band 5	10M	QPSK	1	0	Front	0mm	State 1	20525	836.5	22.64	24.00	1.368	-0.11	1.380	1.887
	LTE Band 5	10M	QPSK	25	0	Front	0mm	State 1	20525	836.5	21.74	23.00	1.337	0.09	1.120	1.497
54	LTE Band 5	10M	QPSK	1	0	Back	0mm	State 1	20525	836.5	22.64	24.00	1.368	0.15	2.120	2.900
	LTE Band 5	10M	QPSK	25	0	Back	0mm	State 1	20525	836.5	21.74	23.00	1.337	-0.15	1.620	2.165
	LTE Band 5	10M	QPSK	50	0	Back	0mm	State 1	20525	836.5	21.68	23.00	1.355	0.02	1.600	2.168
	LTE Band 5	10M	QPSK	1	0	Bottom Side	0mm	State 1	20525	836.5	22.64	24.00	1.368	-0.04	1.590	2.175
	LTE Band 5	10M	QPSK	25	0	Bottom Side	0mm	State 1	20525	836.5	21.74	23.00	1.337	0.18	1.290	1.724
	LTE Band 5	10M	QPSK	50	0	Bottom Side	0mm	State 1	20525	836.5	21.68	23.00	1.355	0.08	1.260	1.708
	LTE Band 7	20M	QPSK	1	0	Front	0mm	State 4	21100	2535	21.29	21.50	1.050	0.04	2.000	2.099
	LTE Band 7	20M	QPSK	1	0	Front	0mm	State 4	20850	2510	21.15	21.50	1.084	0.01	2.110	2.287
	LTE Band 7	20M	QPSK	1	0	Front	0mm	State 4	21350	2560	21.18	21.50	1.076	-0.17	2.210	2.379
	LTE Band 7	20M	QPSK	50	0	Front	0mm	State 4	21100	2535	21.26	21.50	1.057	0.05	1.980	2.092
	LTE Band 7	20M	QPSK	50	0	Front	0mm	State 4	20850	2510	21.17	21.50	1.079	0.09	2.090	2.255
	LTE Band 7	20M	QPSK	50	0	Front	0mm	State 4	21350	2560	21.23	21.50	1.064	0.19	2.180	2.320
	LTE Band 7	20M	QPSK	100	0	Front	0mm	State 4	21100	2535	21.23	21.50	1.064	-0.09	1.970	2.096
	LTE Band 7	20M	QPSK	1	0	Back	0mm	State 4	21100	2535	21.29	21.50	1.050	-0.19	2.560	2.687
	LTE Band 7	20M	QPSK	1	0	Back	0mm	State 4	20850	2510	21.15	21.50	1.084	-0.18	2.600	2.818
55	LTE Band 7	20M	QPSK	1	0	Back	0mm	State 4	21350	2560	21.18	21.50	1.076	0.12	3.010	3.240
	LTE Band 7	20M	QPSK	50	0	Back	0mm	State 4	21100	2535	21.26	21.50	1.057	0.11	2.450	2.589
	LTE Band 7	20M	QPSK	50	0	Back	0mm	State 4	20850	2510	21.17	21.50	1.079	0.18	2.560	2.762
	LTE Band 7	20M	QPSK	50	0	Back	0mm	State 4	21350	2560	21.23	21.50	1.064	-0.03	2.950	3.139
	LTE Band 7	20M	QPSK	100	0	Back	0mm	State 4	21100	2535	21.23	21.50	1.064	-0.09	2.430	2.586
	LTE Band 7	20M	QPSK	1	0	Left Side	0mm	State 4	21100	2535	21.29	21.50	1.050	0.01	2.780	2.918
	LTE Band 7	20M	QPSK	1	0	Left Side	0mm	State 4	20850	2510	21.15	21.50	1.084	-0.11	2.780	3.013
	LTE Band 7	20M	QPSK	1	0	Left Side	0mm	State 4	21350	2560	21.18	21.50	1.076	0.11	2.870	3.089
	LTE Band 7	20M	QPSK	50	0	Left Side	0mm	State 4	21100	2535	21.26	21.50	1.057	-0.01	2.720	2.875
	LTE Band 7	20M	QPSK	50	0	Left Side	0mm	State 4	20850	2510	21.17	21.50	1.079	-0.05	2.730	2.946
	LTE Band 7	20M	QPSK	50	0	Left Side	0mm	State 4	21350	2560	21.23	21.50	1.064	0.03	2.810	2.990
	LTE Band 7	20M	QPSK	100	0	Left Side	0mm	State 4	21100	2535	21.23	21.50	1.064	0.03	2.710	2.884
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	State 4	21100	2535	21.29	21.50	1.050	-0.09	2.090	2.194
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	State 4	20850	2510	21.15	21.50	1.084	-0.08	1.860	2.016
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	State 4	21350	2560	21.18	21.50	1.076	0.1	2.380	2.562
	LTE Band 7	20M	QPSK	50	0	Bottom Side	0mm	State 4	21100	2535	21.26	21.50	1.057	0.09	2.010	2.124
	LTE Band 7	20M	QPSK	50	0	Bottom Side	0mm	State 4	20850	2510	21.17	21.50	1.079	0.09	1.830	1.974
	LTE Band 7	20M	QPSK	50	0	Bottom Side	0mm	State 4	21350	2560	21.23	21.50	1.064	0.04	2.330	2.479
	LTE Band 7	20M	QPSK	100	0	Bottom Side	0mm	State 4	21100	2535	21.23	21.50	1.064	0.09	1.960	2.086
	LTE Band 7	20M	QPSK	1	0	Front	6mm	State 1	21350	2560	23.40	24.00	1.148	0.01	0.686	0.788
	LTE Band 7	20M	QPSK	1	0	Back	17mm	State 1	21350	2560	23.40	24.00	1.148	-0.11	0.183	0.210
	LTE Band 7	20M	QPSK	1	0	Bottom Side	14mm	State 1	21350	2560	23.40	24.00	1.148	0.15	0.275	0.316



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 66	20M	QPSK	1	0	Front	0mm	State 4	132322	1745	22.08	22.50	1.102	-0.16	1.600	1.762
	LTE Band 66	20M	QPSK	50	0	Front	0mm	State 4	132322	1745	22.06	22.50	1.107	-0.04	1.550	1.715
	LTE Band 66	20M	QPSK	1	0	Back	0mm	State 4	132322	1745	22.08	22.50	1.102	-0.06	1.510	1.663
	LTE Band 66	20M	QPSK	50	0	Back	0mm	State 4	132322	1745	22.06	22.50	1.107	0.15	1.410	1.560
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	State 4	132322	1745	22.08	22.50	1.102	-0.01	2.820	3.106
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	State 4	132072	1720	21.94	22.50	1.138	0.04	2.490	2.833
56	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	State 4	132572	1770	21.97	22.50	1.130	-0.02	3.020	3.412
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0mm	State 4	132322	1745	22.06	22.50	1.107	0.04	2.790	3.087
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0mm	State 4	132072	1720	21.92	22.50	1.143	0.08	2.370	2.709
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0mm	State 4	132572	1770	22.00	22.50	1.122	-0.17	2.990	3.355
	LTE Band 66	20M	QPSK	100	0	Bottom Side	0mm	State 4	132322	1745	22.03	22.50	1.114	-0.09	2.710	3.020
	LTE Band 66	20M	QPSK	1	0	Front	7mm	State 1	132322	1745	23.55	24.00	1.109	0	0.149	0.165
	LTE Band 66	20M	QPSK	1	0	Back	19mm	State 1	132322	1745	23.55	24.00	1.109	-0.18	0.618	0.685
	LTE Band 66	20M	QPSK	1	0	Bottom Side	15mm	State 1	132322	1745	23.55	24.00	1.109	-0.06	0.490	0.543

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
57	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Default	11	2462	18.12	18.50	1.091	100	1.000	-0.02	0.674	0.736
58	WLAN5GHz	802.11a 6Mbps	Back	0mm	Default	36	5180	16.73	18.50	1.503	98.28	1.018	0.03	1.180	1.806
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Default	36	5180	16.73	18.50	1.503	98.28	1.018	0.04	0.411	0.629
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Default	64	5320	16.89	18.50	1.450	98.28	1.018	0.08	0.087	0.128
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Default	64	5320	16.89	18.50	1.450	98.28	1.018	-0.09	0.802	1.184
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Default	64	5320	16.89	18.50	1.450	98.28	1.018	0.02	0.173	0.255
59	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Default	64	5320	16.89	18.50	1.450	98.28	1.018	-0.06	1.200	1.772
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Default	124	5620	16.80	18.50	1.479	98.28	1.018	0.13	0.282	0.425
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Default	124	5620	16.80	18.50	1.479	98.28	1.018	0.12	0.419	0.631
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Default	124	5620	16.80	18.50	1.479	98.28	1.018	-0.14	0.199	0.300
60	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Default	124	5620	16.80	18.50	1.479	98.28	1.018	-0.09	0.966	1.455



14.5 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Output Power State	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	GSM850	GPRS (2 Tx slots)	Back	5mm	State 3	128	824.2	29.36	29.50	1.033	-	1.000	-0.19	1.330	-	1.374
2nd	GSM850	GPRS (2 Tx slots)	Back	5mm	State 3	128	824.2	29.36	29.50	1.033	-	1.000	-0.19	1.310	1.02	1.353
1st	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	State 2	9400	1880	14.42	15.00	1.143	-	1.000	0.06	1.120	-	1.280
2nd	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	State 2	9400	1880	14.42	15.00	1.143	-	1.000	0.03	1.070	1.04	1.223
1st	LTE Band 7	20M_QPSK_1_0	Back	5mm	State 3	21350	2560	18.75	19.50	1.189	-	1.000	0.01	1.130	-	1.343
2nd	LTE Band 7	20M_QPSK_1_0	Back	5mm	State 3	21350	2560	18.75	19.50	1.189	-	1.000	0.01	1.100	1.03	1.307
1st	LTE Band 13	20M_QPSK_1_0	Back	5mm	State 1	23230	782	23.11	24.00	1.227	-	1.000	-0.08	0.860	-	1.056
2nd	LTE Band 13	20M_QPSK_1_0	Back	5mm	State 1	23230	782	23.11	24.00	1.227	-	1.000	0.07	0.841	1.02	1.032
1st	LTE Band 66	20M_QPSK_1_0	Bottom Side	5mm	State 2	132572	1770	18.25	18.50	1.059	-	1.000	0.08	1.100	-	1.165
2nd	LTE Band 66	20M_QPSK_1_0	Bottom Side	5mm	State 2	132572	1770	18.25	18.50	1.059	-	1.000	0.08	1.070	1.03	1.133
1st	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	State 1	11	2462	16.45	17.00	1.135	100	1.000	0.07	0.929	-	1.054
2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	State 1	11	2462	16.45	17.00	1.135	100	1.000	0.03	0.901	1.03	1.023
1st	WLAN5GHz	802.11a 6Mbps	Back	5mm	State 2	36	5180	12.37	13.00	1.156	98.28	1.018	0.04	0.935	-	1.100
2nd	WLAN5GHz	802.11a 6Mbps	Back	5mm	State 2	36	5180	12.37	13.00	1.156	98.28	1.018	0.01	0.930	1.00	1.095
1st	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	165	5825	14.81	15.50	1.172	98.28	1.018	0.02	0.921	-	1.099
2nd	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	State 1	165	5825	14.81	15.50	1.172	98.28	1.018	0.07	0.908	1.01	1.084

No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	GSM1900	GPRS (2 Tx slots)	Bottom Side	0mm	State 4	810	1909.8	25.28	26.00	1.180	1.000	0.17	6.790	8.014	2.730		3.222
2nd	GSM1900	GPRS (2 Tx slots)	Bottom Side	0mm	State 4	810	1909.8	25.28	26.00	1.180	1.000	0.17	6.790	8.014	2.670	1.02	3.151
1st	WCDMA V	RMC 12.2Kbps	Back	0mm	State 1	4233	846.6	22.92	24.00	1.282	1.000	0.01	5.500	7.053	2.330		2.988
2nd	WCDMA V	RMC 12.2Kbps	Back	0mm	State 1	4233	846.6	22.92	24.00	1.282	1.000	0.01	5.500	7.053	2.280	1.02	2.924
1st	LTE Band 7	20M_QPSK_1_0	Back	0mm	State 4	21350	2560	21.18	21.50	1.076	1.000	0.12	6.670	7.180	3.010		3.240
2nd	LTE Band 7	20M_QPSK_1_0	Back	0mm	State 4	21350	2560	21.18	21.50	1.076	1.000	0.12	6.670	7.180	2.940	1.02	3.165
1st	LTE Band 66	20M_QPSK_1_0	Bottom Side	0mm	State 4	132572	1770	21.97	22.50	1.130	1.000	-0.02	7.530	8.507	3.020		3.412
2nd	LTE Band 66	20M_QPSK_1_0	Bottom Side	0mm	State 4	132572	1770	21.97	22.50	1.130	1.000	-0.02	7.530	8.507	2.950	1.02	3.333

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8W/kg$.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR $< 1.45W/kg$, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product Specific
1.	WWAN + WLAN 2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN 5GHz	Yes	Yes	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
2. The Scaled SAR summation is calculated based on the same configuration and test position.
3. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) Scalar SAR summation < 1.6W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, 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.
 - iii) If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
 - v) The SPLSR calculated results please refer to section 17.5.



15.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+6	1+2 SPLSR	1+2 Case No	1+3 SPLSR	1+3 Case No
		WWAN 1g SAR (W/kg)	2.4GHz WLAN 1g SAR (W/kg)	5GHz WLAN 1g SAR (W/kg)	Bluetooth 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)				
GSM850	Right Cheek	0.450	0.558	0.846	0.001	1.008	1.296	0.451				
	Right Tilted	0.287	0.600	1.058	0.001	0.887	1.345	0.288				
	Left Cheek	0.394	1.054	0.910	0.001	1.448	1.304	0.395				
	Left Tilted	0.238	0.992	1.119	0.001	1.230	1.357	0.239				
GSM1900	Right Cheek	0.086	0.558	0.846	0.001	0.644	0.932	0.087				
	Right Tilted	0.052	0.600	1.058	0.001	0.652	1.110	0.053				
	Left Cheek	0.080	1.054	0.910	0.001	1.134	0.990	0.081				
	Left Tilted	0.065	0.992	1.119	0.001	1.057	1.184	0.066				
WCDMA II	Right Cheek	0.135	0.558	0.846	0.001	0.693	0.981	0.136				
	Right Tilted	0.134	0.600	1.058	0.001	0.734	1.192	0.135				
	Left Cheek	0.148	1.054	0.910	0.001	1.202	1.058	0.149				
	Left Tilted	0.134	0.992	1.119	0.001	1.126	1.253	0.135				
WCDMA IV	Right Cheek	0.185	0.558	0.846	0.001	0.743	1.031	0.186				
	Right Tilted	0.108	0.600	1.058	0.001	0.708	1.166	0.109				
	Left Cheek	0.188	1.054	0.910	0.001	1.242	1.098	0.189				
	Left Tilted	0.126	0.992	1.119	0.001	1.118	1.245	0.127				
WCDMA V	Right Cheek	0.504	0.558	0.846	0.001	1.062	1.350	0.505				
	Right Tilted	0.332	0.600	1.058	0.001	0.932	1.390	0.333				
	Left Cheek	0.421	1.054	0.910	0.001	1.475	1.331	0.422				
	Left Tilted	0.282	0.992	1.119	0.001	1.274	1.401	0.283				
LTE Band 2	Right Cheek	0.179	0.558	0.846	0.001	0.737	1.025	0.180				
	Right Tilted	0.148	0.600	1.058	0.001	0.748	1.206	0.149				
	Left Cheek	0.189	1.054	0.910	0.001	1.243	1.099	0.190				
	Left Tilted	0.138	0.992	1.119	0.001	1.130	1.257	0.139				
LTE Band 5	Right Cheek	0.402	0.558	0.846	0.001	0.960	1.248	0.403				
	Right Tilted	0.267	0.600	1.058	0.001	0.867	1.325	0.268				
	Left Cheek	0.351	1.054	0.910	0.001	1.405	1.261	0.352				
	Left Tilted	0.206	0.992	1.119	0.001	1.198	1.325	0.207				
LTE Band 7	Right Cheek	0.642	0.558	0.846	0.001	1.200	1.488	0.643				
	Right Tilted	0.173	0.600	1.058	0.001	0.773	1.231	0.174				
	Left Cheek	0.684	1.054	0.910	0.001	1.738	1.594	0.685	0.03	Case 1		
	Left Tilted	0.259	0.992	1.119	0.001	1.251	1.378	0.260				
LTE Band 12	Right Cheek	0.223	0.558	0.846	0.001	0.781	1.069	0.224				
	Right Tilted	0.158	0.600	1.058	0.001	0.758	1.216	0.159				
	Left Cheek	0.200	1.054	0.910	0.001	1.254	1.110	0.201				
	Left Tilted	0.171	0.992	1.119	0.001	1.163	1.290	0.172				
LTE Band 13	Right Cheek	0.272	0.558	0.846	0.001	0.830	1.118	0.273				
	Right Tilted	0.185	0.600	1.058	0.001	0.785	1.243	0.186				
	Left Cheek	0.252	1.054	0.910	0.001	1.306	1.162	0.253				
	Left Tilted	0.131	0.992	1.119	0.001	1.123	1.250	0.132				
LTE Band 66	Right Cheek	0.151	0.558	0.846	0.001	0.709	0.997	0.152				
	Right Tilted	0.120	0.600	1.058	0.001	0.720	1.178	0.121				
	Left Cheek	0.144	1.054	0.910	0.001	1.198	1.054	0.145				
	Left Tilted	0.100	0.992	1.119	0.001	1.092	1.219	0.101				



15.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+2 SPLSR	1+2 Case No	1+3 SPLSR	1+3 Case No
		WWAN 1g SAR (W/kg)	2.4GHz WLAN 1g SAR (W/kg)	5GHz WLAN 1g SAR (W/kg)	Bluetooth 1g SAR (W/kg)							
GSM850	Front	0.503	0.622	0.493	0.001	1.125	0.996	0.504				
	Back	1.374	1.054	1.100	0.001	2.428	2.474	1.375	0.02	Case 2	0.02	Case 3
	Left side	0.081				0.081	0.081	0.081				
	Right side	0.180	0.528	0.214	0.001	0.708	0.394	0.181				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	1.005				1.005	1.005	1.005				
GSM1900	Front	0.682	0.622	0.493	0.001	1.304	1.175	0.683				
	Back	1.234	1.054	1.100	0.001	2.288	2.334	1.235	0.02	Case 4	0.02	Case 5
	Left side	0.016				0.016	0.016	0.016				
	Right side	0.019	0.528	0.214	0.001	0.547	0.233	0.020				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	1.168				1.168	1.168	1.168				
WCDMA II	Front	0.577	0.622	0.493	0.001	1.199	1.070	0.578				
	Back	1.067	1.054	1.100	0.001	2.121	2.167	1.068	0.02	Case 6	0.02	Case 7
	Left side	0.025				0.025	0.025	0.025				
	Right side	0.019	0.528	0.214	0.001	0.547	0.233	0.020				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	1.280				1.280	1.280	1.280				
WCDMA IV	Front	0.754	0.622	0.493	0.001	1.376	1.247	0.755				
	Back	1.214	1.054	1.100	0.001	2.268	2.314	1.215	0.02	Case 8	0.02	Case 9
	Left side	0.027				0.027	0.027	0.027				
	Right side	0.033	0.528	0.214	0.001	0.561	0.247	0.034				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	1.268				1.268	1.268	1.268				
WCDMA V	Front	0.417	0.622	0.493	0.001	1.039	0.910	0.418				
	Back	1.427	1.054	1.100	0.001	2.481	2.527	1.428	0.02	Case 10	0.02	Case 11
	Left side	0.061				0.061	0.061	0.061				
	Right side	0.237	0.528	0.214	0.001	0.765	0.451	0.238				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	1.277				1.277	1.277	1.277				
LTE Band 2	Front	0.632	0.622	0.493	0.001	1.254	1.125	0.633				
	Back	1.289	1.054	1.100	0.001	2.343	2.389	1.290	0.02	Case 12	0.02	Case 13
	Left side	0.015				0.015	0.015	0.015				
	Right side	0.020	0.528	0.214	0.001	0.548	0.234	0.021				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	1.342				1.342	1.342	1.342				
LTE Band 5	Front	0.384	0.622	0.493	0.001	1.006	0.877	0.385				
	Back	1.409	1.054	1.100	0.001	2.463	2.509	1.410	0.02	Case 14	0.02	Case 15
	Left side	0.044				0.044	0.044	0.044				
	Right side	0.245	0.528	0.214	0.001	0.773	0.459	0.246				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	0.646				0.646	0.646	0.646				
LTE Band 7	Front	0.689	0.622	0.493	0.001	1.311	1.182	0.690				
	Back	1.343	1.054	1.100	0.001	2.397	2.443	1.344	0.02	Case 16	0.02	Case 17
	Left side	0.572				0.572	0.572	0.572				
	Right side	0.025	0.528	0.214	0.001	0.553	0.239	0.026				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	0.720				0.720	0.720	0.720				
LTE Band 12	Front	0.321	0.622	0.493	0.001	0.943	0.814	0.322				
	Back	0.879	1.054	1.100	0.001	1.933	1.979	0.880	0.02	Case 18	0.02	Case 19
	Left side	0.123				0.123	0.123	0.123				



	Right side	0.243	0.528	0.214	0.001	0.771	0.457	0.244				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	0.655				0.655	0.655	0.655				
LTE Band 13	Front	0.398	0.622	0.493	0.001	1.020	0.891	0.399				
	Back	1.056	1.054	1.100	0.001	2.110	2.156	1.057	0.02	Case 20	0.02	Case 21
	Left side	0.140				0.140	0.140	0.140				
	Right side	0.282	0.528	0.214	0.001	0.810	0.496	0.283				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	0.848				0.848	0.848	0.848				
LTE Band 66	Front	0.728	0.622	0.493	0.001	1.350	1.221	0.729				
	Back	1.128	1.054	1.100	0.001	2.182	2.228	1.129	0.02	Case 22	0.02	Case 23
	Left side	0.040				0.040	0.040	0.040				
	Right side	0.076	0.528	0.214	0.001	0.604	0.290	0.077				
	Top side		0.693	1.160	0.001	0.693	1.160	0.001				
	Bottom side	1.165				1.165	1.165	1.165				

15.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+6	1+2	1+2	1+3	1+3
		WWAN 1g SAR (W/kg)	2.4GHz WLAN 1g SAR (W/kg)	5GHz WLAN 1g SAR (W/kg)	Bluetooth 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	SPLSR	Case No	SPLSR	Case No
GSM850	Front	0.503	0.186	0.769	0.001	0.689	1.272	0.504				
	Back	1.374	1.054	1.184	0.001	2.428	2.558	1.375	0.02	Case 24	0.03	Case 25
	Back with Headset	1.074	1.054	1.184	0.001	2.128	2.258	1.075	0.02	Case 46	0.02	Case 47
GSM1900	Front	0.682	0.186	0.769	0.001	0.868	1.451	0.683				
	Back	1.234	1.054	1.184	0.001	2.288	2.418	1.235	0.02	Case 26	0.02	Case 27
	Back with Headset	1.199	1.054	1.184	0.001	2.253	2.383	1.200	0.02	Case 48	0.02	Case 49
WCDMA II	Front	0.577	0.186	0.769	0.001	0.763	1.346	0.578				
	Back	1.067	1.054	1.184	0.001	2.121	2.251	1.068	0.02	Case 28	0.02	Case 29
WCDMA IV	Front	0.754	0.186	0.769	0.001	0.940	1.523	0.755				
	Back	1.214	1.054	1.184	0.001	2.268	2.398	1.215	0.02	Case 30	0.02	Case 31
	Back with Headset	1.202	1.054	1.184	0.001	2.256	2.386	1.203	0.02	Case 50	0.02	Case 51
WCDMA V	Front	0.417	0.186	0.769	0.001	0.603	1.186	0.418				
	Back	1.427	1.054	1.184	0.001	2.481	2.611	1.428	0.02	Case 32	0.03	Case 33
	Back with Headset	1.415	1.054	1.184	0.001	2.469	2.599	1.416	0.02	Case 52	0.03	Case 53
LTE Band 2	Front	0.632	0.186	0.769	0.001	0.818	1.401	0.633				
	Back	1.289	1.054	1.184	0.001	2.343	2.473	1.290	0.02	Case 34	0.02	Case 35
	Back with Headset	1.208	1.054	1.184	0.001	2.262	2.392	1.209	0.02	Case 54	0.02	Case 55
LTE Band 5	Front	0.384	0.186	0.769	0.001	0.570	1.153	0.385				
	Back	1.409	1.054	1.184	0.001	2.463	2.593	1.410	0.02	Case 36	0.03	Case 37
	Back with Headset	1.320	1.054	1.184	0.001	2.374	2.504	1.321	0.02	Case 56	0.02	Case 57
LTE Band 7	Front	0.689	0.186	0.769	0.001	0.875	1.458	0.690				
	Back	1.343	1.054	1.184	0.001	2.397	2.527	1.344	0.02	Case 38	0.03	Case 39
	Back with Headset	1.331	1.054	1.184	0.001	2.385	2.515	1.332	0.02	Case 58	0.03	Case 59
LTE Band 12	Front	0.321	0.186	0.769	0.001	0.507	1.090	0.322				
	Back	0.879	1.054	1.184	0.001	1.933	2.063	0.880	0.02	Case 40	0.02	Case 41
LTE Band 13	Front	0.398	0.186	0.769	0.001	0.584	1.167	0.399				
	Back	1.056	1.054	1.184	0.001	2.110	2.240	1.057	0.02	Case 42	0.02	Case 43
LTE Band 66	Front	0.728	0.186	0.769	0.001	0.914	1.497	0.729				
	Back	1.128	1.054	1.184	0.001	2.182	2.312	1.129	0.02	Case 44	0.02	Case 45



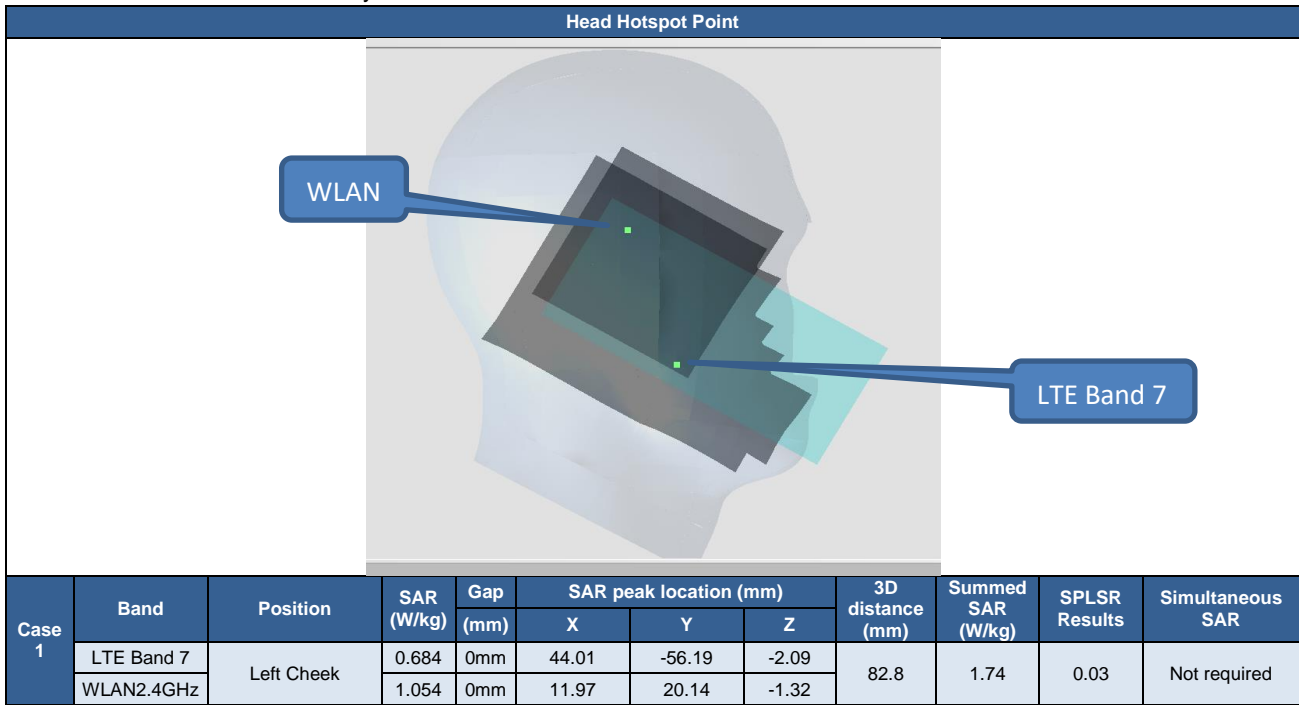
15.4 Product Specific Exposure Conditions

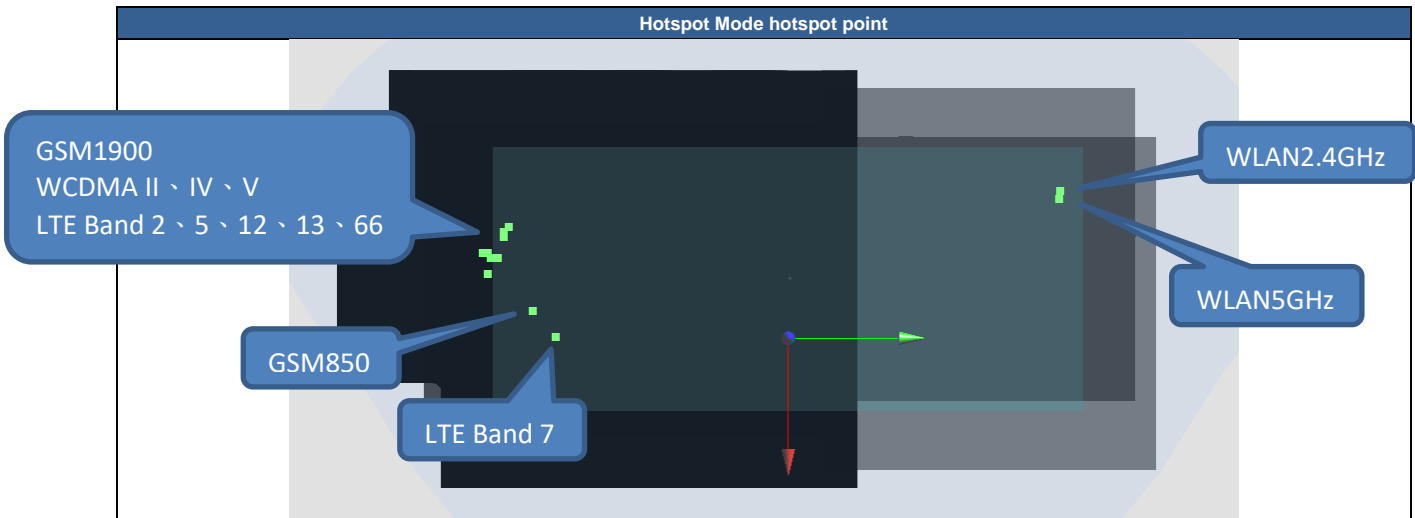
WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+3 SPLSR	1+3 Case No
		WWAN 1g SAR (W/kg)	2.4GHz WLAN 1g SAR (W/kg)	5GHz WLAN 1g SAR (W/kg)	Bluetooth 1g SAR (W/kg)					
GSM850	Front			0.425		0.000	0.425	0.000		
	Back	1.564	0.736	1.806		2.300	3.370	1.564		
	Left side					0.000	0.000	0.000		
	Right side			0.300		0.000	0.300	0.000		
	Top side			1.772		0.000	1.772	0.000		
	Bottom side	1.182				1.182	1.182	1.182		
GSM1900	Front	1.660		0.425		1.660	2.085	1.660		
	Back	1.756	0.736	1.806		2.492	3.562	1.756		
	Left side					0.000	0.000	0.000		
	Right side			0.300		0.000	0.300	0.000		
	Top side			1.772		0.000	1.772	0.000		
	Bottom side	3.222				3.222	3.222	3.222		
WCDMA II	Front	1.715		0.425		1.715	2.140	1.715		
	Back	1.914	0.736	1.806		2.650	3.720	1.914		
	Left side					0.000	0.000	0.000		
	Right side			0.300		0.000	0.300	0.000		
	Top side			1.772		0.000	1.772	0.000		
	Bottom side	2.964				2.964	2.964	2.964		
WCDMA IV	Front	1.911		0.425		1.911	2.336	1.911		
	Back	2.184	0.736	1.806		2.920	3.990	2.184		
	Left side					0.000	0.000	0.000		
	Right side			0.300		0.000	0.300	0.000		
	Top side			1.772		0.000	1.772	0.000		
	Bottom side	3.399				3.399	3.399	3.399		
WCDMA V	Front			0.425		0.000	0.425	0.000		
	Back	2.988	0.736	1.806		3.724	4.794	2.988	0.06	Case 60
	Left side					0.000	0.000	0.000		
	Right side			0.300		0.000	0.300	0.000		
	Top side			1.772		0.000	1.772	0.000		
	Bottom side	2.594				2.594	2.594	2.594		
LTE Band 2	Front	1.300		0.425		1.300	1.725	1.300		
	Back	1.710	0.736	1.806		2.446	3.516	1.710		
	Left side					0.000	0.000	0.000		
	Right side			0.300		0.000	0.300	0.000		
	Top side			1.772		0.000	1.772	0.000		
	Bottom side	2.987				2.987	2.987	2.987		
LTE Band 5	Front	1.887		0.425		1.887	2.312	1.887		
	Back	2.900	0.736	1.806		3.636	4.706	2.900	0.06	Case 61
	Left side					0.000	0.000	0.000		
	Right side			0.300		0.000	0.300	0.000		
	Top side			1.772		0.000	1.772	0.000		
	Bottom side	2.175				2.175	2.175	2.175		
LTE Band 7	Front	2.379		0.425		2.379	2.804	2.379		
	Back	3.240	0.736	1.806		3.976	5.046	3.240	0.07	Case 62
	Left side	3.089				3.089	3.089	3.089		
	Right side			0.300		0.000	0.300	0.000		
	Top side			1.772		0.000	1.772	0.000		
	Bottom side	2.562				2.562	2.562	2.562		
LTE Band 66	Front	1.762		0.425		1.762	2.187	1.762		
	Back	1.663	0.736	1.806		2.399	3.469	1.663		
	Left side					0.000	0.000	0.000		
	Right side			0.300		0.000	0.300	0.000		
	Top side			1.772		0.000	1.772	0.000		
	Bottom side	3.412				3.412	3.412	3.412		

15.5 SPLSR Evaluation and Analysis

General Note:

1. Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration. Therefore, the adjacent transmit antennas will be summed first, and then the SPLSR calculation will be evaluated with the farther transmitted antennas.
2. $SPLSR = (SAR_1 + SAR_2)^{1.5} / (min. \text{ separation distance, mm})$. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary

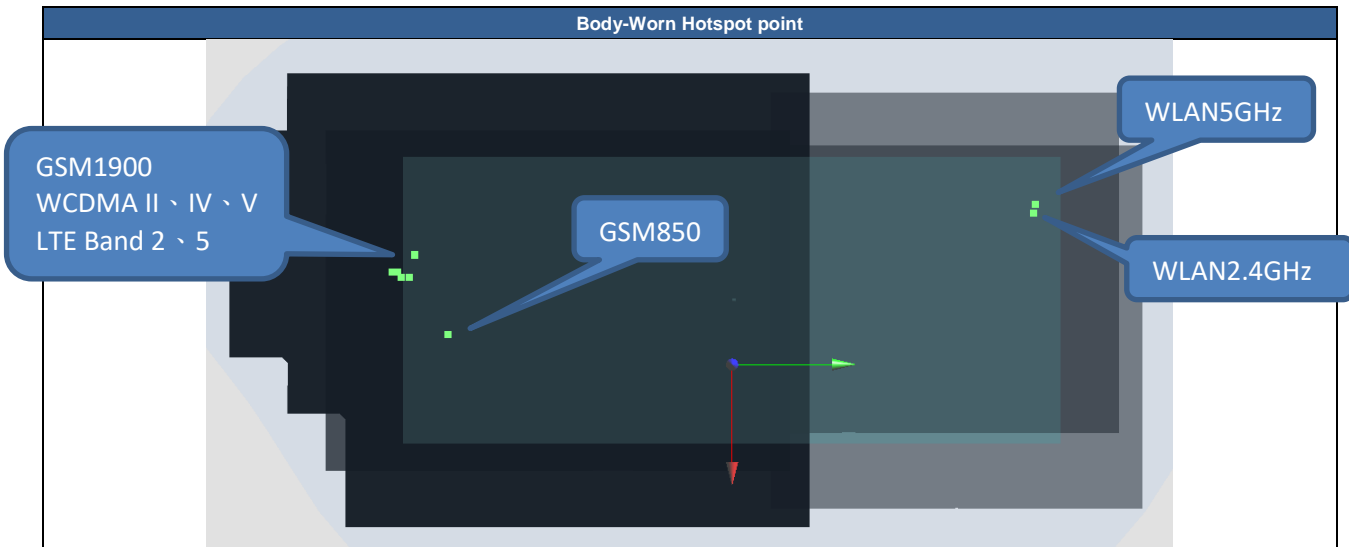




Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 2	GSM850	Back	1.374	5mm	-6.97	-81.5	-1.87	164.9	2.43	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 3	GSM850	Back	1.374	5mm	-6.97	-81.5	-1.87	162.8	2.47	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 4	GSM1900	Back	1.234	5mm	-5.92	-84.88	-1.86	168.4	2.29	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 5	GSM1900	Back	1.234	5mm	-5.92	-84.88	-1.86	166.2	2.33	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 6	WCDMA II	Back	1.067	5mm	-7.62	-83.89	-1.94	167.2	2.12	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 7	WCDMA II	Back	1.067	5mm	-7.62	-83.89	-1.94	165.1	2.17	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 8	WCDMA IV	Back	1.214	5mm	-6	-81.88	-1.87	165.4	2.27	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 9	WCDMA IV	Back	1.214	5mm	-6	-81.88	-1.87	163.3	2.31	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 10	WCDMA V	Back	1.427	5mm	-18.41	-81.99	-1.88	164.5	2.48	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 11											



Case	WCDMA V	Back	1.427	5mm	-18.41	-81.99	-1.88	162.5	2.53	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 12	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 12	LTE Band 2	Back	1.289	5mm	-5.89	-84.79	-1.91	168.3	2.34	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 13	LTE Band 2	Back	1.289	5mm	-5.89	-84.79	-1.91	166.2	2.39	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 14	LTE Band 5	Back	1.409	5mm	-18.46	-81.97	-1.88	164.5	2.46	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 15	LTE Band 5	Back	1.409	5mm	-18.46	-81.97	-1.88	162.5	2.51	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 16	LTE Band 7	Back	1.343	5mm	19.7	-71.79	-1.76	160.7	2.40	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 17	LTE Band 7	Back	1.343	5mm	19.7	-71.79	-1.76	158.3	2.44	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 18	LTE Band 12	Back	0.879	5mm	-21.34	-83.7	-2.72	166.2	1.93	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 19	LTE Band 12	Back	0.879	5mm	-21.34	-83.7	-2.72	164.1	1.98	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 20	LTE Band 13	Back	1.056	5mm	-21.44	-83.61	-2.76	166.1	2.11	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 21	LTE Band 13	Back	1.056	5mm	-21.44	-83.61	-2.76	164.0	2.16	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				
Case 22	LTE Band 66	Back	1.128	5mm	1.69	-84.89	-1.87	169.5	2.18	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 23	LTE Band 66	Back	1.128	5mm	1.69	-84.89	-1.87	167.2	2.23	0.02	Not required
	WLAN5GHz		1.1	5mm	-23.78	80.4	-1.09				



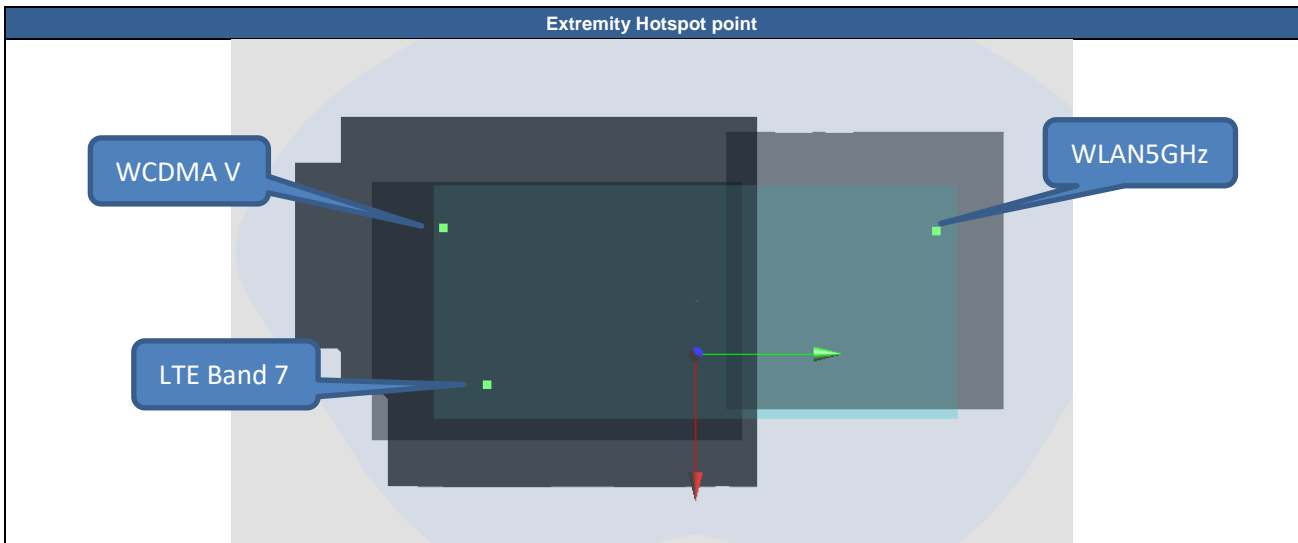
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 24	GSM850	Back	1.374	5mm	-6.97	-81.5	-1.87	164.9	2.43	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 25	GSM850	Back	1.374	5mm	-6.97	-81.5	-1.87	159.8	2.56	0.03	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
Case 26	GSM1900	Back	1.234	5mm	-5.92	-84.88	-1.86	168.4	2.29	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 27	GSM1900	Back	1.234	5mm	-5.92	-84.88	-1.86	163.3	2.42	0.02	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
Case 28	WCDMA II	Back	1.067	5mm	-7.62	-83.89	-1.94	167.2	2.12	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 29	WCDMA II	Back	1.067	5mm	-7.62	-83.89	-1.94	162.1	2.25	0.02	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
Case 30	WCDMA IV	Back	1.214	5mm	-6	-81.88	-1.87	165.4	2.27	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case 31	WCDMA IV	Back	1.214	5mm	-6	-81.88	-1.87	160.3	2.40	0.02	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
Case 32	WCDMA V	Back	1.427	5mm	-18.41	-81.99	-1.88	164.5	2.48	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
Case	Band	Position	SAR	Gap	SAR peak location (mm)			3D	Summed	SPLSR	Simultaneous



Case	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	distance (mm)	SAR (W/kg)	SPLSR Results	SAR
33	WCDMA V	Back	1.427	5mm	-18.41	-81.99	-1.88	159.2	2.61	0.03	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
Case 34	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 2	Back	1.289	5mm	-5.89	-84.79	-1.91	168.3	2.34	0.02	Not required
WLAN2.4GHz	1.054		5mm	-25.36	82.41	-1.1					
Case 35	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 2	Back	1.289	5mm	-5.89	-84.79	-1.91	163.2	2.47	0.02	Not required
WLAN5GHz	1.184		5mm	-27.17	77	-1.04					
Case 36	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 5	Back	1.409	5mm	-18.46	-81.97	-1.88	164.5	2.46	0.02	Not required
WLAN2.4GHz	1.054		5mm	-25.36	82.41	-1.1					
Case 37	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 5	Back	1.409	5mm	-18.46	-81.97	-1.88	159.2	2.59	0.03	Not required
WLAN5GHz	1.184		5mm	-27.17	77	-1.04					
Case 38	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7	Back	1.343	5mm	19.7	-71.79	-1.76	160.7	2.40	0.02	Not required
WLAN2.4GHz	1.054		5mm	-25.36	82.41	-1.1					
Case 39	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7	Back	1.343	5mm	19.7	-71.79	-1.76	156.0	2.53	0.03	Not required
WLAN5GHz	1.184		5mm	-27.17	77	-1.04					
Case 40	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 12	Back	0.879	5mm	-21.34	-83.7	-2.72	166.2	1.93	0.02	Not required
WLAN2.4GHz	1.054		5mm	-25.36	82.41	-1.1					
Case 41	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 12	Back	0.879	5mm	-21.34	-83.7	-2.72	160.8	2.06	0.02	Not required
WLAN5GHz	1.184		5mm	-27.17	77	-1.04					
Case 42	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 13	Back	1.056	5mm	-21.44	-83.61	-2.76	166.1	2.11	0.02	Not required
WLAN2.4GHz	1.054		5mm	-25.36	82.41	-1.1					
Case 43	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 13	Back	1.056	5mm	-21.44	-83.61	-2.76	160.7	2.24	0.02	Not required
WLAN5GHz	1.184		5mm	-27.17	77	-1.04					
Case 44	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 66	Back	1.128	5mm	1.69	-84.89	-1.87	169.5	2.18	0.02	Not required
WLAN2.4GHz	1.054		5mm	-25.36	82.41	-1.1					
Case 45	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 66	Back	1.128	5mm	1.69	-84.89	-1.87	164.4	2.31	0.02	Not required
WLAN5GHz	1.184		5mm	-27.17	77	-1.04					
Case 46	Band	Position	SAR (W/kg)	Gap (mm)	X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850	Back with Headset	1.074	5mm	-6.97	-81.5	-1.87	164.9	2.13	0.02	Not required
WLAN2.4GHz	1.054		5mm	-25.36	82.41	-1.1					



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
47	GSM850	Back with Headset	1.074	5mm	-6.97	-81.5	-1.87	159.8	2.26	0.02	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
48	GSM1900	Back with Headset	1.199	5mm	-5.92	-84.88	-1.86	168.4	2.25	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
49	GSM1900	Back with Headset	1.199	5mm	-5.92	-84.88	-1.86	163.3	2.38	0.02	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
50	WCDMA IV	Back with Headset	1.202	5mm	-6	-81.88	-1.87	165.4	2.26	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
51	WCDMA IV	Back with Headset	1.202	5mm	-6	-81.88	-1.87	160.3	2.39	0.02	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
52	WCDMA V	Back with Headset	1.415	5mm	-18.41	-81.99	-1.88	164.5	2.47	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
53	WCDMA V	Back with Headset	1.415	5mm	-18.41	-81.99	-1.88	159.2	2.60	0.03	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
54	LTE Band 2	Back with Headset	1.208	5mm	-5.89	-84.79	-1.91	168.3	2.26	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
55	LTE Band 2	Back with Headset	1.208	5mm	-5.89	-84.79	-1.91	163.2	2.39	0.02	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
56	LTE Band 5	Back with Headset	1.32	5mm	-18.46	-81.97	-1.88	164.5	2.37	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
57	LTE Band 5	Back with Headset	1.32	5mm	-18.46	-81.97	-1.88	159.2	2.50	0.02	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				
58	LTE Band 7	Back with Headset	1.331	5mm	19.7	-71.79	-1.76	160.7	2.39	0.02	Not required
	WLAN2.4GHz		1.054	5mm	-25.36	82.41	-1.1				
59	LTE Band 7	Back with Headset	1.331	5mm	19.7	-71.79	-1.76	156.0	2.52	0.03	Not required
	WLAN5GHz		1.184	5mm	-27.17	77	-1.04				



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 60	WCDMA V	Back	2.988	0mm	-24	-80.3	-1.81	161.5	4.79	0.06	Not required
	WLAN5GHz		1.806	0mm	-23.79	81.21	-0.61				
Case 61	LTE Band 5	Back	2.9	0mm	-23.99	-80.38	-1.86	161.6	4.71	0.06	Not required
	WLAN5GHz		1.806	0mm	-23.79	81.21	-0.61				
Case 62	LTE Band 7	Back	3.24	0mm	24.99	-74.78	-1.73	163.4	5.05	0.07	Not required
	WLAN5GHz		1.806	0mm	-23.79	81.21	-0.61				



16. Supplemental Antenna tuner tests results

General Note:

1. This device implements antenna tuning techniques for UMTS B2/4/5, LTE B2/4/5/12/13/17/66. SAR test proposal was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing and this design will provide the highest power at different user scenarios and would not influence to the antenna characteristics other than impedance matching.
2. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values.
3. To evaluate all of the tuner states, the 144 tuner states are divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination.
4. The device supports LTE B4/12/17/66. Since the supported frequency span for LTE B4/B17 falls completely within the supported frequency span for LTE B66/B12, and both bands have the same target power and both LTE bands share the same transmission path, therefore standalone SAR was only assessed for LTE B66/B12. The single point SAR time-sweep measurements were treated independently for each supported ACL frequency band. For the LTE B4/B17 single point SAR measurement selected the highest measured SAR configuration and exposure condition of LTE B66/B12.
5. The tuner state was established remotely through Wi-Fi so that the device is not moved for the entire series of single point SAR for the tuner states in each combination (band, mode, exposure conditions).
6. if any single point SAR measurement result is > 1.2 W/kg for a band/exposure condition combination set, all supported tuner states are evaluated with single point SAR measurements for the combination

16.1 Supplemental SAR results

Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 28)	0	16	32	48	64	80	96	112	128
WCDMA B2	RMC12.2K	1907.6	9538	N/A	N/A	Left Cheek	0 mm	0.125	0.148	0.022	0.06	0.146	0.041	0.127	0.108	0.013	0.098	0.041
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
WCDMA B4	RMC12.2K	1752.6	1513	N/A	N/A	Left Cheek	0 mm	0.161	0.187	0.099	0.185	0.052	0.09	0.023	0.08	0.061	0.071	0.014
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
WCDMA B5	RMC12.2K	846.6	4233	N/A	N/A	Right Cheek	0 mm	0.393	0.436	0.101	0.158	0.434	0.386	0.129	0.186	0.158	0.244	0.053
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
LTE B2	QPSK	1900	19100	1	0	Left Cheek	0 mm	0.163	0.193	0.039	0.124	0.181	0.039	0.077	0.086	0.105	0.172	0.077
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
LTE B5	QPSK	836.5	20525	1	0	Right Cheek	0 mm	0.294	0.318	0.24	0.211	0.287	0.106	0.059	0.087	0.116	0.249	0.116
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
LTE B12	QPSK	707.5	23095	1	0	Right Cheek	0 mm	0.179	0.204	0.183	0.145	0.088	0.04	0.135	0.107	0.116	0.183	0.164
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
LTE B13	QPSK	782	23230	1	0	Right Cheek	0 mm	0.222	0.244	0.052	0.204	0.232	0.137	0.109	0.147	0.032	0.061	0.147
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 9)	7	23	39	55	71	87	103	119	135



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LTE B66	QPSK	1745	132322	1	0	Left Cheek	0 mm	0.136	0.158	0.07	0.07	0.051	0.061	0.156	0.137	0.146	0.07	0.146
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 30)	8	24	40	56	72	88	104	120	136
WCDMA B2	RMC12.2K	1880	9400	N/A	N/A	Back	5mm	1.2	1.51	1.47	0.832	0.803	1.022	0.841	1.165	0.737	0.394	1.308
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 9)	9	25	41	57	73	89	105	121	137
WCDMA B4	RMC12.2K	1752.6	1513	N/A	N/A	Back	5mm	1.05	1.32	1.301	0.766	0.242	1.118	0.747	0.528	1.089	1.07	1.08
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 76)	10	26	42	58	74	90	106	122	138
WCDMA B5	RMC12.2K	826.4	4132	N/A	N/A	Back	5mm	1.24	1.65	0.591	0.753	0.477	0.867	1.515	0.486	0.153	1.172	0.41
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 27)	11	27	43	59	75	91	107	123	139
LTE B2	QPSK	1860	18700	1	0	Back	5mm	1.06	1.21	1.141	1.193	0.827	0.922	1.046	1.198	0.97	0.922	0.96
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 124)	12	28	44	60	76	92	108	124	140
LTE B5	QPSK	836.5	20525	1	0	Back	5mm	1.2	1.59	1.217	0.874	1.474	0.931	0.34	0.198	0.864	1.563	1.131
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 12)	13	29	45	61	77	93	109	125	141
LTE B12	QPSK	707.5	23095	1	0	Back	5mm	0.705	1.19	1.097	0.788	0.455	0.607	0.664	0.569	0.369	0.969	1.007
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 44)	14	30	46	62	78	94	110	126	142
LTE B13	QPSK	782	23230	1	0	Back	5mm	0.86	1.54	1.195	0.852	1.405	0.3	0.852	0.481	1.195	0.795	1.452
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)									
									Auto-Tune (State 9)	15	31	47	63	79	95	111	127	143
LTE B66	QPSK	1770	132572	1	0	Bottom Side	5mm	1.1	1.47	1.278	1.02	1.087	0.373	1.22	0.439	0.658	0.344	1.268



When SAR is higher than 1.2W/kg

Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																
									Auto-Tune (State 27)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WCDMA B2	RMC12.2K	1880	9400	N/A	N/A	Back	5mm	1.2	1.51	1.118	0.194	0.194	0.384	0.756	0.822	1.27	1.089	1.47	1.232	0.689	0.46	1.156	0.632	1.156	0.26
									16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
									0.194	1.479	0.079	1.06	0.756	1.079	1.098	0.565	0.832	0.27	0.956	0.498	0.451	1.022	0.689	0.613	1.308
									33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
									0.651	0.413	0.765	0.318	1.222	1.394	0.737	0.803	1.022	1.413	0.47	0.222	1.441	1.298	0.527	0.479	0.413
									50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
									0.289	0.194	0.775	0.537	0.07	1.451	1.022	1.394	1.089	1.079	0.098	1.156	0.232	0.127	0.422	0.613	0.375
									67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
									0.889	0.956	0.403	0.698	0.222	0.841	1.479	0.175	1.165	1.298	1.222	1.356	1.298	0.508	1.308	1.108	0.822
									84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
									0.718	0.898	1.327	0.794	1.165	0.279	0.784	0.603	0.498	0.308	1.118	0.737	0.775	1.279	1.289	0.308	1.432
									101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117
									1.032	0.518	1.451	0.737	0.698	0.365	0.298	0.851	0.984	1.375	0.108	0.898	0.594	0.546	1.318	0.537	1.346
									118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134
									1.146	1.232	0.394	0.889	0.746	1.346	1.156	1.46	0.118	0.613	0.851	1.318	1.451	0.232	0.108	0.727	0.708
									135	136	137	138	139	140	141	142	143								
0.337	1.308	1.203	0.489	0.575	0.851	1.489	0.337	0.356																	
WCDMA B5	RMC12.2K	826.4	4132	N/A	N/A	Back	5mm	1.24	1.65	1.219	0.172	0.267	1.524	1.524	1.477	0.248	0.505	0.658	1.629	0.591	0.724	0.829	1.305	1.581	0.496
									16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
									0.553	0.258	0.858	0.229	0.505	1.562	0.534	0.924	0.838	0.096	0.753	1.153	1.086	0.077	0.743	0.172	0.077
									33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
									0.105	1.067	1.6	1.581	1.096	0.219	0.743	1.562	1.505	0.477	0.715	1.419	0.972	0.696	0.81	0.619	0.772
									50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
									0.705	0.772	1.277	1.115	1.086	1.134	0.886	0.372	0.867	1.41	1.486	1.638	0.772	1.534	0.077	0.81	0.4
									67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
									0.905	1.353	0.705	1.515	0.829	0.258	1.334	1.515	1.429	1.172	1.334	1.248	0.972	0.81	0.943	0.8	1.162
									84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
									1.362	1.172	0.162	0.086	1.543	0.286	0.486	0.41	0.791	1.191	0.619	0.915	0.467	0.248	1.619	0.886	1.153
									101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117
									0.353	0.943	1.048	1.258	1.172	0.153	1.496	1.477	0.277	1.181	1.096	0.753	0.2	1.648	0.277	0.6	0.943
									118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134
									1.4	0.81	0.962	0.153	1.172	0.391	1.153	0.562	1.381	1.286	0.315	1.258	0.715	1.648	1.191	1.019	0.905
									135	136	137	138	139	140	141	142	143								
0.315	0.877	0.524	0.41	1.467	1.067	0.858	0.115	1.381																	
LTE B5	QPSK	836.5	20525	1	0	Back	5mm	1.2	1.59	1.045	1.169	0.578	1.331	1.445	0.169	1.483	0.912	0.521	0.131	1.188	0.131	1.217	0.074	1.464	1.388
									16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
									0.369	0.121	1.398	0.617	1.302	0.083	0.14	1.121	1.483	0.15	0.074	0.959	0.874	0.645	1.302	0.921	1.464
									33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
									0.14	0.998	1.017	0.959	0.207	1.15	0.798	0.836	1.331	0.112	0.702	1.474	0.721	0.921	0.255	1.559	0.807
									50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
									1.217	0.15	0.264	1.578	0.54	1.521	1.493	1.245	1.074	0.369	0.931	0.483	1.045	1.531	1.398	1.274	0.121
									67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
									1.121	0.312	1.207	0.569	1.283	0.521	0.845	0.731	1.083	0.34	1.521	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
									84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
									0.312	0.902	0.102	0.531	0.674	0.102	1.283	0.474	0.198	1.236	1.236	0.95	0.683	0.588	0.893	0.283	1.264
									101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117
									0.417	0.674	1.312	0.474	0.388	1.55	0.378	0.864	0.112	0.883	0.207	0.959	1.283	0.398	1.569	1.445	0.855
									118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134
									1.255	0.331	1.588	1.064	0.712	1.15	1.563	0.35	1.331	0.902	1.102	1.588	0.245	0.245	1.378	1.578	1.54
									135	136	137	138	139	140	141	142	143								
1.188	0.198	1.35	1.236	1.512	1.131	0.578	1.283	1.502																	

Test Engineer : Luke Lee, Hoodie HuZeng, Jimmy Lu, Jacky Chen, Ken Lin, Thomas Wang and Sing Lim



17. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be $\leq 30\%$, for a confidence interval of $k = 2$. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

Declaration of Conformity:

The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

18. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 248227 D01 v02r02, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Oct 2015.
- [6] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [7] FCC KDB 648474 D04 v01r03, "SAR Evaluation Considerations for Wireless Handsets", Oct 2015.
- [8] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [9] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [10] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.
- [12] FCC KDB 941225 D07 v01r02, " SAR Evaluation Procedures for UMPC Mini-Tablet Devices", Oct 2015.
- [13] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.
- [14] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.