FCC SAR Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT1924-7
FCC ID	:	IHDT56XA2
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

We, Sporton International (Xi'an) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Xi'an) Inc., the test report shall not be reproduced except in full.

Mark Qu

Approved by: Mark Qu / Manager

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TESTING
NVLAP LAB CODE 600154-0

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA7D2903	Rev. 01	Initial issue of report	Mar. 08, 2018

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT1924-7**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.28	0.73	0.73	1.59
		GSM1900	<0.10	0.76	0.74	
	WCDMA	Band V	0.56	0.80	0.80	
		Band IV	0.15	0.79	0.64	
		Band II	0.13	0.98	0.75	
	LTE	Band 12	0.30	0.60	0.60	
		Band 13	0.43	0.56	0.56	
		Band 71	0.19	0.77	0.77	
		Band 5	0.42	0.70	0.70	
		Band 66/Band 4	0.13	0.61	0.37	
		Band 2	<0.10	0.58	0.48	
		Band 7	0.26	0.96	0.75	
		Band 41/Band 38	0.12	1.09	0.38	
DTS	WLAN	2.4GHz WLAN	0.87	0.74	0.74	1.42
NII		5GHz WLAN	**0.99**	**1.18**	**0.92**	1.59
DSS	Bluetooth	2.4GHz Bluetooth		<0.10	<0.10	1.09

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM1900	3.58	3.67
	WCDMA	Band V	1.45	
		Band IV	3.19	
		Band II	3.45	
	LTE	Band 13	1.49	
		Band 5	1.45	
		Band 66/Band 4	2.06	
		Band 2	3.25	
		Band 7	**3.67**	
		Band 41/Band 38	1.12	
NII	WLAN	5GHz WLAN	0.83	3.67
Date of Testing:			2018/2/17 ~ 2018/2/27	

Remark: This device supports LTE B4 / B38 and B66 / B41. Since the supported frequency span for LTE B4 / B38 falls completely within the supports frequency span for LTE B66 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B66 / B41.

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.

2. Administration Data

Testing Laboratory	
Test Site	Sporton International (Xi'an) Inc.
Test Site Location	1F, Bldg. A3, No.39, Chuangye Ave. New Industrial Park, High-Tech District Xi'an Shaanxi Province 710119 China TEL: +86-29-8860-8767 FAX: +86-29-8860-8791

Applicant	
Company Name	Motorola Mobility LLC
Address	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

Manufacturer	
Company Name	Motorola Mobility LLC
Address	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

3. Guidance Applied

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- 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

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1924-7
FCC ID	IHDT56XA2
IMEI Code	351883090029269
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~1779.3 MHz LTE Band 71: 665.5 MHz ~ 695.5MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink is not supported) LTE: QPSK, 16QAM WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth v3.0+EDR, Bluetooth v4.0 LE, Bluetooth v4.1 LE, Bluetooth v4.2 LE
HW Version	DVT 1B
SW Version	OPP27.66
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	Identical Prototype

Remark:

1. This device supports straddle channel only includes channel 144.
2. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
3. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
4. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
5. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.
6. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, GSM850/1900, WCDMA band II/IV/V and LTE band 2/4/5/7/12/13/38/41/66 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.)
7. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM850/1900, WCDMA band II/IV/V and LTE band 2/4/5/7/12/13/38/41/66.
8. P-sensor can detect handheld state, for product specific 10g SAR condition, WCDMA band II/IV, LTE band 2/4/66 reduced powers will be active.
9. This device hotspot reduced power and P-sensor reduced power level are the same. So only show one reduced power level for hotspot reduced power and P-sensor reduced power for this application.
10. When the phone is in talking mode and receiver worked, then power reduction will be implemented immediately at WLAN5.3/5.5/5.8GHz.
11. This device has two WWAN transmitter antennas. WWAN antenna 1 is located at the left side of bottom edge of the device and WWAN antenna 2 is located at the right side of bottom edge of the device which can refer to antenna location chapter. WWAN antenna 1 frequency bands include GSM850/1900, WCDMA Band II/IV/V and LTE Band 2/4/5/12/13/66/71, and WWAN antenna 2 frequency bands include LTE Band 7/38/41. They can't transmit simultaneously.

4.2 Specification of Accessory

Specification of Accessory				
AC Adapter 1	**Brand Name**	Motorola (Salom)	**Model Name**	SPN5970A SC-22
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5 Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA 12Vdc,1200mA		
AC Adapter 2	**Brand Name**	Motorola (Chenyang)	**Model Name**	SPN5993A SC-22
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5 Vdc,3000mA or 9Vdc,1600mA or 12Vdc,1200mA		
Earphone	**Brand Name**	Motorola (NEW Leader)	**Model Name**	NLD-EM300V-01SF
	Signal Line	1.25 meter, non-shielded cable, without ferrite core		
Battery	**Brand Name**	Motorola (Amperex)	**Model Name**	HE50
	Power Rating	3.8Vdc,4850/5000mAh	**Type**	Li-ion
USB Cable (Black/White)	**Brand Name**	Motorola (SaiBao)	**Model Name**	SLQ-A081A
	Signal Line	1.02 meter, shielded cable, without ferrite core		

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	IHDT56XA2
Equipment Name	Mobile Cellular Phone
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~1779.3 MHz LTE Band 71: 665.5 MHz ~ 695.5MHz
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 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz,5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM
LTE Voice / Data requirements	Voice and Data
LTE Release Version	R10, Cat6
CA Support	Yes, Downlink Only
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3** 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
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 1. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, LTE band 2/4/5/7/12/13/38/41/66 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.) 2. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of LTE band 2/4/5/7/12/13/38/41/66. 3. P-sensor can detect handheld state, for product specific 10g SAR condition, LTE band 2/4/66 reduced powers will be active.
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 13.
LTE Carrier Aggregation Additional Information	This device supports maximum of 2 carriers in the downlink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 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	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844
LTE Band 7								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560
LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711
LTE Band 13								
	Bandwidth 5 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782	
M	23230		782					
H	23255		784.5					

LTE Band 38								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610

LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

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

LTE Band 71								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	133147	665.5	133172	668	133197	670.5	133222	673
M	133247	675.5	133272	678	133297	680.5	133322	683
H	133447	695.5	133422	693	133397	690.5	133372	688

5. Re-use of Measured Data

5.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: XT1924-7, FCC ID: IHDT56XA2) is electrically identical to the reference device (Model: XT1924-6, XT1924-8, FCC ID: IHDT56XA1) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 178919 D01.

5.2 Difference Section

For details concerning the similarity with respect to component placement, mechanical/electrical design etc., please refer to the Product Equality Declaration “PED” file.

The re-used RF data includes the following bands provided in Appendix E (Sporton SAR Report No. FA7D2903-01 for the reference device Model: XT1924-6, XT1924-8, FCC ID: IHDT56XA1):

- GSM850/1900
- LTE Band 7/12/13
- WLAN/Bluetooth

WCDMA Band II/IV/V and LTE Band 2/4/5/38/41/66/71 for full SAR test, spot check for GSM850/1900, LTEBand 7/12/13, and BT/WLAN are performed for ensure that SAR measurement for both device are the same. So, the original SAR value can represent this application.

5.3 Spot Check Verification Data Section

Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Original model (FCC ID: IHDT56XA1)				Spot check model (FCC ID: IHDT56XA2)				Deviation
											Average Power (dBm)	Tune-Up Limit (dBm)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Average Power (dBm)	Tune-Up Limit (dBm)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Left Cheek	-	Full	11	2462	17.44	18.00	0.744	0.868	17.44	18.00	0.693	0.808	-6.91%
GSM850	-	-	-	-	GPRS 2 Tx slots	Front	5	Reduced	251	848.8	27.30	28.00	0.625	0.734	27.30	28.00	0.619	0.727	-0.95%
GSM1900	-	-	-	-	GPRS 2 Tx slots	Bottom Side	5	Reduced	810	1909.8	22.36	23.00	0.658	0.762	22.36	23.00	0.695	0.805	5.64%
LTE Band 12	10M	QPSK	1	0	-	Front	5	Reduced	23095	707.5	21.55	22.00	0.544	0.603	21.55	22.00	0.530	0.588	-2.49%
LTE Band 13	10M	QPSK	1	0	-	Front	5	Reduced	23230	782	19.68	20.00	0.520	0.560	19.68	20.00	0.533	0.574	2.50%
LTE Band 7	20M	QPSK	1	99	-	Bottom Side	5	Reduced	20850	2510	18.38	18.50	0.936	0.962	18.38	18.50	0.811	0.834	-13.31%
Bluetooth	-	-	-	-	1Mbps	Back	5	Full	00	2402	10.08	10.50	0.064	0.077	10.08	10.50	0.067	0.080	3.90%
WLAN5.2GHz					802.11a 6Mbps	Back	5	Full	44	5220	14.45	15.00	0.907	1.175	14.45	15.00	0.778	1.008	-14.21%

Note: In the table above, all the deviation of SAR test results are compliant with uncertainty budget.

5.4 Reference detail Section

Reference FCC ID	Folder Test/RF Exposure	Report Title/Section
IHDT56XA1	RF Exposure(FA7D2903-01)	All sections applicable (Only GSM850/1900, LTE B7/12/13, BT/WLAN)

6. RF Exposure Limits

6.1 Uncontrolled Environment

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

6.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

7. Specific Absorption Rate (SAR)

7.1 Introduction

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

7.2 SAR Definition

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

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

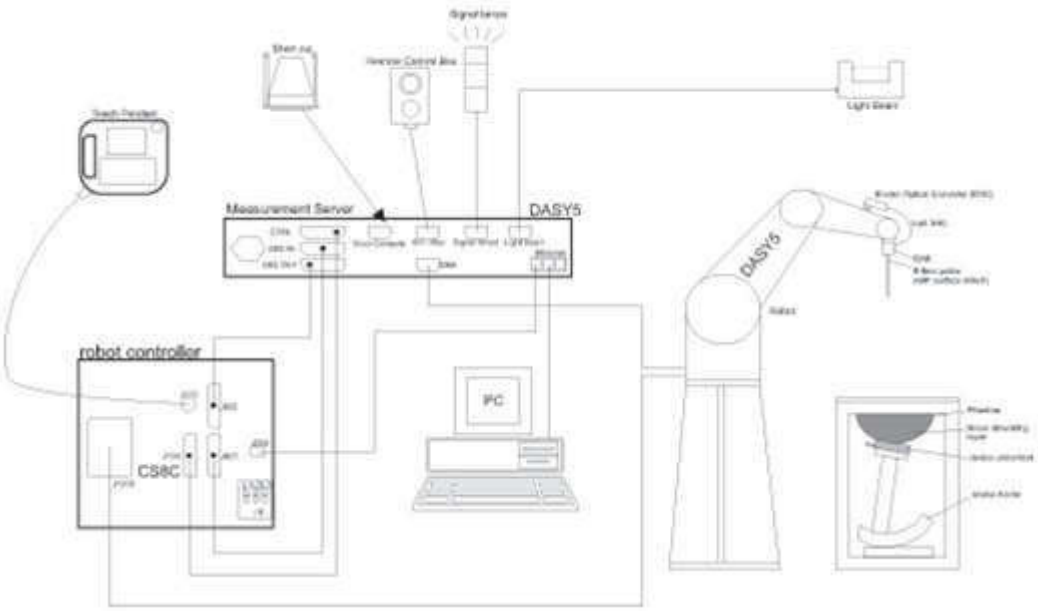
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

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



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

8.1 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.

<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 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/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

8.2 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.

Photo of DAE

8.3 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

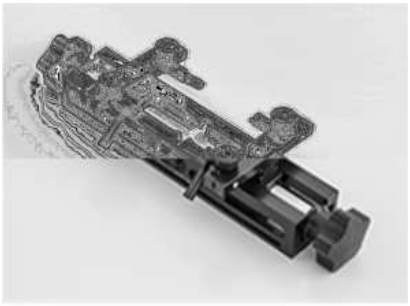
The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

8.4 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

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

9.1 Spatial Peak SAR Evaluation

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

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

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

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

9.2 Power Reference Measurement

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

9.3 Area Scan

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

Area scan parameters extracted from FCC KDB 865664 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	½·δ·ln(2) ± 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: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

9.4 Zoom Scan

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

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{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 1st 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	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
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 *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

9.5 Volume Scan Procedures

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

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2017/3/20	2018/3/19
SPEAG	835MHz System Validation Kit	D835V2	4d151	2017/3/20	2018/3/19
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2017/3/23	2018/3/22
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2017/3/22	2018/3/21
SPEAG	2600MHz System Validation Kit	D2600V2	1112	2017/9/18	2018/9/17
SPEAG	Data Acquisition Electronics	DAE4	1358	2017/10/24	2018/10/23
SPEAG	Dosimetric E-Field Probe	EX3DV4	3935	2017/12/14	2018/12/13
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1753	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1754	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2017/4/18	2018/4/17
Anritsu	Radio communication analyzer	MT8820C	6201300653	2017/7/19	2018/7/18
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2017/4/18	2018/4/17
SPEAG	Dielectric Assessment KIT	DAK-3.5	1071	2017/11/28	2018/11/27
Anritsu	Power Senor	ML2495A	1602009	2017/4/22	2018/4/21
Anritsu	Power Meter	MA2411B	1531051	2017/5/18	2018/5/17
Anritsu	Power Senor	MA2411B	1306099	2017/8/21	2018/8/20
Anritsu	Power Meter	ML2495A	1349001	2017/7/19	2018/7/18
R&S	Signal Generator	N5181A	MY50145381	2017/12/26	2018/12/25
R&S	Spectrum Analyzer	N9010A	MY55150244	2017/4/18	2018/4/17
TES	Liquid thermometer	TES 1310	141004807	2017/4/21	2018/4/20
VICTOR	Temperature and humidity meter	VC230	H-3	2017/4/18	2018/4/17
ARRA	Power Divider	A3200-2	N/A	Note	
Agilent	Dual Directional Coupler	778D	50422	Note	
PASTERNACK	Dual Directional Coupler	PE2214-10	N/A	Note	
MCL	Attenuation1	BW-S10W5+	N/A	Note	
MCL	Attenuation2	BW-S10W5+	N/A	Note	
MCL	Attenuation3	BW-S10W5+	N/A	Note	
AR	Amplifier	5S1G4	333096	Note	
mini-circuits	Amplifier	ZVE-3W-83+	162601250	Note	

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

11. System Verification

11.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.2.

Fig 11.1 Photo of Liquid Height for Head SAR

Fig 11.2 Photo of Liquid Height for Body SAR

11.2 Tissue Verification

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

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.6	0.893	41.983	0.89	41.90	0.34	0.20	±5	2018/2/27
835	Head	22.5	0.907	42.336	0.90	41.50	0.78	2.01	±5	2018/2/17
1750	Head	22.6	1.375	41.370	1.37	40.10	0.36	3.17	±5	2018/2/21
1900	Head	22.3	1.464	39.144	1.40	40.00	4.57	-2.14	±5	2018/2/22
2600	Head	22.2	2.038	39.034	1.96	39.00	3.98	0.09	±5	2018/2/21
750	Body	22.4	0.959	56.966	0.96	55.50	-0.10	2.64	±5	2018/2/27
835	Body	22.2	0.996	55.226	0.97	55.20	2.68	0.05	±5	2018/2/25
1750	Body	22.6	1.466	54.713	1.49	53.40	-1.61	2.46	±5	2018/2/24
1900	Body	22.3	1.561	53.103	1.52	53.30	2.70	-0.37	±5	2018/2/24
2600	Body	22.6	2.148	53.076	2.16	52.50	-0.56	1.10	±5	2018/2/24

11.3 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.

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2018/2/27	750	Head	250	1087	3935	1358	2.08	8.37	8.32	-0.60
2018/2/17	835	Head	250	4d151	3935	1358	2.43	9.73	9.72	-0.10
2018/2/21	1750	Head	250	1090	3935	1358	8.70	37.00	34.80	-5.95
2018/2/22	1900	Head	250	5d170	3935	1358	10.30	40.00	41.20	3.00
2018/2/21	2600	Head	250	1112	3935	1358	14.20	56.40	56.80	0.71
2018/2/27	750	Body	250	1087	3935	1358	2.25	8.73	9.00	3.09
2018/2/25	835	Body	250	4d151	3935	1358	2.60	9.72	10.40	7.00
2018/2/24	1750	Body	250	1090	3935	1358	9.04	38.10	36.16	-5.09
2018/2/24	1900	Body	250	5d170	3935	1358	10.40	40.70	41.60	2.21
2018/2/24	2600	Body	250	1112	3935	1358	13.10	55.00	52.40	-4.73

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2018/2/25	835	Body	250	4d151	3935	1358	1.74	6.44	6.96	8.07
2018/2/24	1750	Body	250	1090	3935	1358	4.84	20.60	19.36	-6.02
2018/2/24	1900	Body	250	5d170	3935	1358	5.39	21.40	21.56	0.75
2018/2/24	2600	Body	250	1112	3935	1358	5.75	24.40	23.00	-5.74

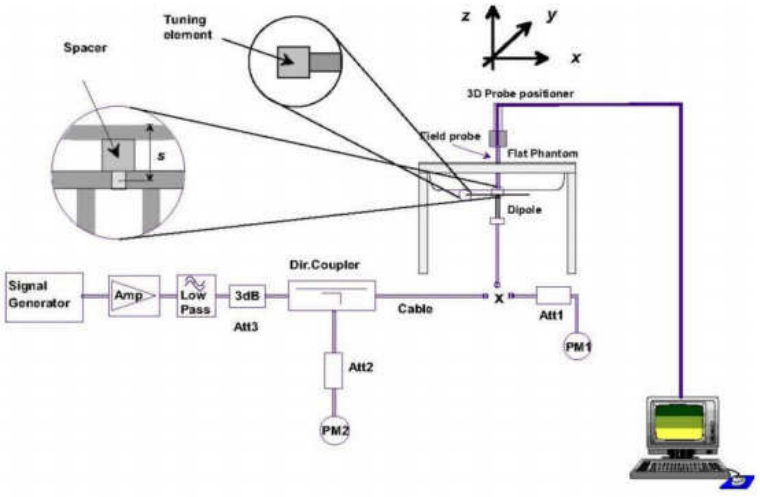


Fig 11.3.1 System Performance Check Setup

Fig 11.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

Figure 12.1.1 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 12.1.2 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 12.1.3). 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 12.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

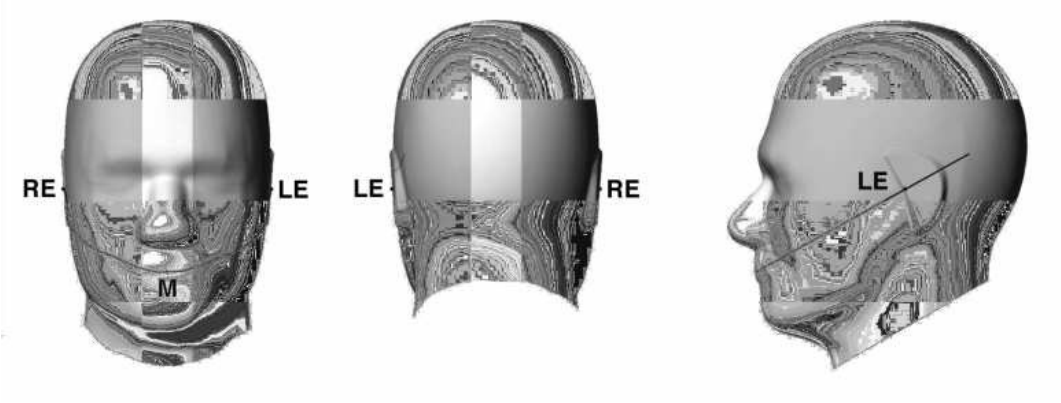


Fig 12.1.1 Front, back, and side views of SAM twin phantom

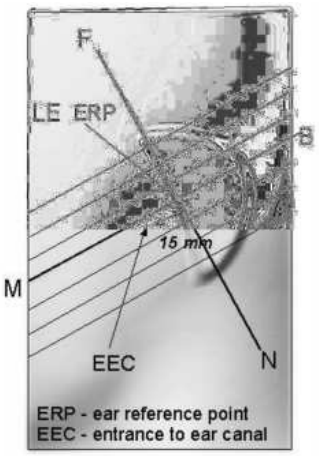


Fig 12.1.2 Close-up side view of phantom showing the ear region.

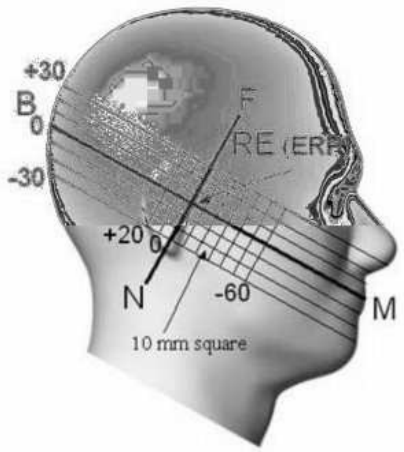


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 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 wt of the handset at the level of the acoustic output (point A in Figure 12.2.1 and Figure 12.2.2), and the midpoint of the width wb 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 12.2.1). 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 12.2.2), 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 12.2.3), 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 12.2.3. The actual rotation angles should be documented in the test report.

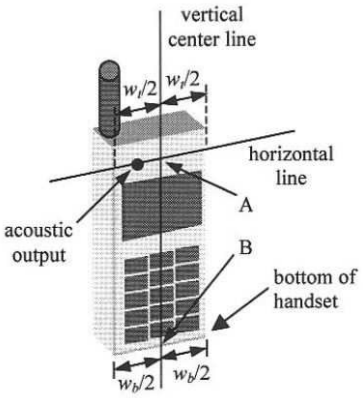


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

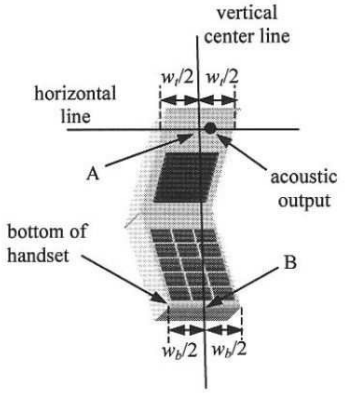


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

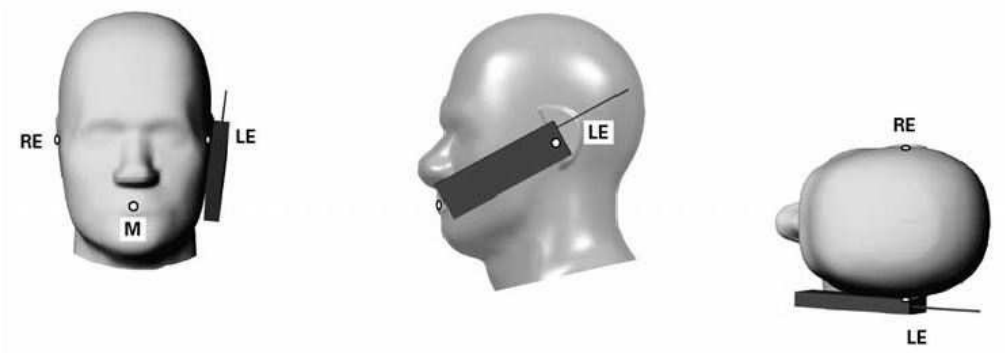


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 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 12.3.1. 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

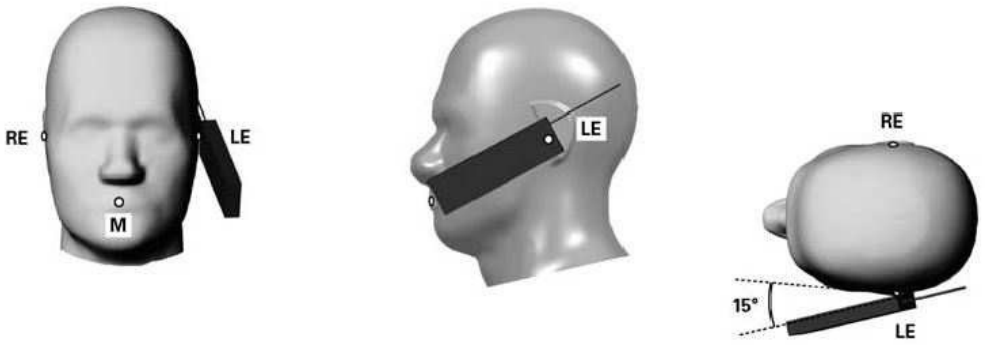


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 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 12.4). 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 handset 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 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.

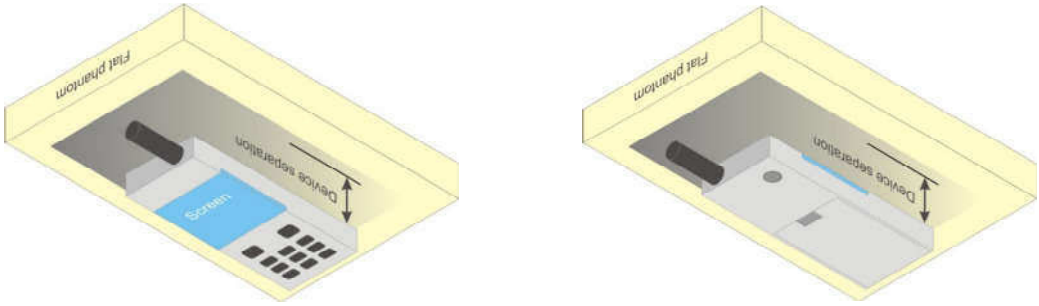


Fig 12.4 Body Worn Position

12.5 Product Specific 10g SAR 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.

12.6 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 x W ≥ 9 cm x 5 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 form 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.

13. Conducted RF Output Power (Unit: dBm)

<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} (Note1, 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: Δ_{ACK}, Δ_{NACK} and Δ_{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 Δ_{NACK} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$, and Δ_{CQI} = 24/15 with $\beta_{hs} = 24/15 * \beta_c$.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_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 β_c = 11/15 and β_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-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
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-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 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 Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_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 β_c = 10/15 and β_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: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_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	Proces ses	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.		

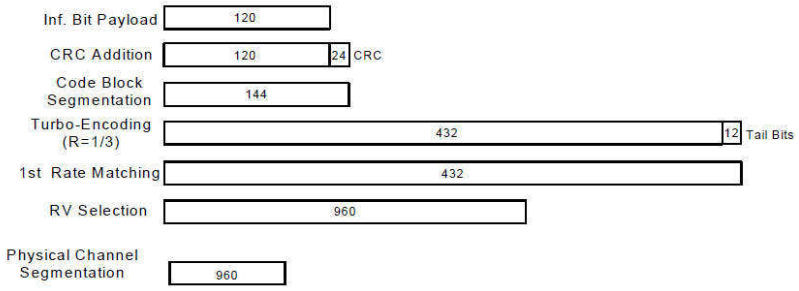


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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 ≤ ¼ 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 ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

<Full Power Mode>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band 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	23.00	23.19	23.06	24.50	22.98	22.91	22.84	24.50	22.91	22.81	22.85	24.50
3GPP Rel 99	RMC 12.2Kbps	23.02	23.21	23.08	24.50	23.01	22.93	22.86	24.50	22.93	22.83	22.87	24.50
3GPP Rel 6	HSDPA Subtest-1	22.10	22.19	22.14	23.50	22.16	22.06	22.01	23.50	21.96	21.86	21.88	23.50
3GPP Rel 6	HSDPA Subtest-2	22.09	22.17	22.15	23.50	22.18	22.09	21.98	23.50	21.94	21.83	21.89	23.50
3GPP Rel 6	HSDPA Subtest-3	21.49	21.60	21.52	23.00	21.54	21.49	21.38	23.00	21.41	21.30	21.37	23.00
3GPP Rel 6	HSDPA Subtest-4	21.47	21.56	21.55	23.00	21.56	21.46	21.41	23.00	21.44	21.26	21.35	23.00
3GPP Rel 8	DC-HSDPA Subtest-1	21.95	22.08	22.01	23.50	22.12	22.08	22.03	23.50	21.85	21.78	21.75	23.50
3GPP Rel 8	DC-HSDPA Subtest-2	22.00	22.10	22.02	23.50	22.15	22.10	22.05	23.50	21.90	21.82	21.80	23.50
3GPP Rel 8	DC-HSDPA Subtest-3	21.60	21.64	21.63	23.00	21.63	21.60	21.53	23.00	21.42	21.34	21.35	23.00
3GPP Rel 8	DC-HSDPA Subtest-4	21.55	21.60	21.58	23.00	21.60	21.55	21.50	23.00	21.40	21.30	21.32	23.00
3GPP Rel 6	HSUPA Subtest-1	22.11	22.27	22.09	23.50	22.13	22.09	22.03	23.50	21.92	21.81	21.87	23.50
3GPP Rel 6	HSUPA Subtest-2	20.13	20.23	20.07	21.50	20.15	20.06	20.04	21.50	19.95	19.80	19.91	21.50
3GPP Rel 6	HSUPA Subtest-3	21.12	21.26	21.08	22.50	21.18	21.10	21.08	22.50	20.92	20.84	20.86	22.50
3GPP Rel 6	HSUPA Subtest-4	20.14	20.24	20.03	21.50	20.16	20.04	20.01	21.50	19.88	19.79	19.80	21.50
3GPP Rel 6	HSUPA Subtest-5	21.81	21.89	21.74	23.50	21.75	21.66	21.59	23.50	21.54	21.42	21.49	23.50

<Reduced Power Mode for Hotspot On/P-Sensor On>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band 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	15.68	15.70	15.70	16.00	15.68	15.60	15.55	16.50	21.30	21.30	21.28	21.50
3GPP Rel 99	RMC 12.2Kbps	15.69	15.71	15.72	16.00	15.69	15.62	15.56	16.50	21.34	21.32	21.30	21.50
3GPP Rel 6	HSDPA Subtest-1	14.67	14.71	14.75	15.50	14.86	14.70	14.73	15.50	20.19	20.28	20.25	20.50
3GPP Rel 6	HSDPA Subtest-2	14.68	14.64	14.76	15.50	14.86	14.66	14.76	15.50	20.24	20.33	19.97	20.50
3GPP Rel 6	HSDPA Subtest-3	14.27	14.19	14.26	15.00	14.35	14.14	14.27	15.00	19.74	19.80	19.76	20.00
3GPP Rel 6	HSDPA Subtest-4	14.26	14.21	14.26	15.00	14.35	14.19	14.27	15.00	19.73	19.80	19.74	20.00
3GPP Rel 8	DC-HSDPA Subtest-1	14.92	14.86	14.95	15.50	14.75	14.78	14.74	15.50	20.15	20.22	20.16	20.50
3GPP Rel 8	DC-HSDPA Subtest-2	14.90	14.85	14.92	15.50	14.80	14.75	14.76	15.50	20.20	20.32	20.12	20.50
3GPP Rel 8	DC-HSDPA Subtest-3	14.53	14.55	14.52	15.00	14.36	14.30	14.39	15.00	19.75	19.80	19.82	20.00
3GPP Rel 8	DC-HSDPA Subtest-4	14.50	14.52	14.56	15.00	14.32	14.28	14.35	15.00	19.74	19.78	19.75	20.00
3GPP Rel 6	HSUPA Subtest-1	14.67	14.71	14.79	15.00	14.70	14.64	14.65	15.50	20.35	20.38	20.29	20.50
3GPP Rel 6	HSUPA Subtest-2	12.64	12.69	12.74	13.00	12.68	12.63	12.66	13.50	18.42	18.36	18.25	18.50
3GPP Rel 6	HSUPA Subtest-3	13.64	13.73	13.76	14.00	13.70	13.65	13.66	14.50	19.41	19.38	19.28	19.50
3GPP Rel 6	HSUPA Subtest-4	12.65	12.73	12.75	13.00	12.68	12.62	12.67	13.50	18.43	18.36	18.26	18.50
3GPP Rel 6	HSUPA Subtest-5	14.28	14.37	14.36	15.00	14.37	14.36	14.37	15.50	19.95	19.91	19.88	20.50

<Reduced Power Mode for Product Specific 10g SAR>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band 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	20.71	20.68	20.62	21.00	19.70	19.60	19.61	20.00
3GPP Rel 99	RMC 12.2Kbps	20.72	20.70	20.64	21.00	19.72	19.62	19.63	20.00
3GPP Rel 6	HSDPA Subtest-1	19.83	19.85	19.72	20.00	18.74	18.76	18.81	19.00
3GPP Rel 6	HSDPA Subtest-2	19.79	19.81	19.70	20.00	18.76	18.71	18.80	19.00
3GPP Rel 6	HSDPA Subtest-3	19.31	19.32	19.22	19.50	18.27	18.23	18.24	18.50
3GPP Rel 6	HSDPA Subtest-4	19.33	19.33	19.21	19.50	18.25	18.23	18.28	18.50
3GPP Rel 8	DC-HSDPA Subtest-1	19.70	19.65	19.60	20.00	18.72	18.70	18.75	19.00
3GPP Rel 8	DC-HSDPA Subtest-2	19.75	19.62	19.55	20.00	18.73	18.74	18.72	19.00
3GPP Rel 8	DC-HSDPA Subtest-3	19.16	19.10	19.12	19.50	18.16	18.20	18.24	18.50
3GPP Rel 8	DC-HSDPA Subtest-4	19.12	19.05	19.10	19.50	18.15	18.19	18.21	18.50
3GPP Rel 6	HSUPA Subtest-1	19.96	19.93	19.76	20.50	18.79	18.78	18.83	19.00
3GPP Rel 6	HSUPA Subtest-2	17.95	17.93	17.73	18.50	16.78	16.79	16.81	17.00
3GPP Rel 6	HSUPA Subtest-3	18.93	18.92	18.77	19.50	17.79	17.81	17.87	18.00
3GPP Rel 6	HSUPA Subtest-4	17.92	17.91	17.74	18.50	16.76	16.76	16.82	17.00
3GPP Rel 6	HSUPA Subtest-5	19.66	19.63	19.45	20.50	18.41	18.38	18.50	19.00

<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 ½ 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 ½ 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 / B38 / B71 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 38 / 4 SAR test was covered by Band 41 / 66; 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 ≤ 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

<Full Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.14	23.38	23.21	24	0
20	QPSK	1	49	23.02	23.14	23.04		
20	QPSK	1	99	23.11	23.26	23.12		
20	QPSK	50	0	21.91	22.05	22.04	23	1
20	QPSK	50	24	21.91	21.96	21.95		
20	QPSK	50	50	21.98	22.02	21.99		
20	QPSK	100	0	21.89	22.07	22.09		
20	16QAM	1	0	22.21	22.35	22.38	23	1
20	16QAM	1	49	22.12	22.13	22.09		
20	16QAM	1	99	22.24	22.43	22.14		
20	16QAM	50	0	20.92	21.10	21.05	22	2
20	16QAM	50	24	20.91	21.06	21.01		
20	16QAM	50	50	21.01	21.08	21.07		
20	16QAM	100	0	20.90	21.06	21.05		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.14	23.35	23.18	24	0
15	QPSK	1	37	23.02	23.12	22.91		
15	QPSK	1	74	23.31	23.36	23.35		
15	QPSK	36	0	21.88	22.18	22.03	23	1
15	QPSK	36	20	21.91	22.09	21.95		
15	QPSK	36	39	22.03	22.16	21.93		
15	QPSK	75	0	21.94	22.07	22.01		
15	16QAM	1	0	22.37	22.51	22.54	23	1
15	16QAM	1	37	22.46	22.25	22.32		
15	16QAM	1	74	22.53	22.64	22.39		
15	16QAM	36	0	20.92	21.17	21.01	22	2
15	16QAM	36	20	20.94	21.11	20.96		
15	16QAM	36	39	21.01	21.02	20.93		
15	16QAM	75	0	20.96	21.06	21.11		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.10	23.20	23.36	24	0
10	QPSK	1	25	22.90	23.00	22.98		
10	QPSK	1	49	23.18	23.23	23.18		
10	QPSK	25	0	21.97	22.00	22.00	23	1
10	QPSK	25	12	21.95	22.01	21.98		
10	QPSK	25	25	21.99	21.98	22.04		
10	QPSK	50	0	21.91	22.00	21.96		
10	16QAM	1	0	22.31	22.42	22.47	23	1
10	16QAM	1	25	22.12	22.23	22.08		
10	16QAM	1	49	22.40	22.58	22.44		
10	16QAM	25	0	20.99	21.08	21.05	22	2
10	16QAM	25	12	20.90	21.06	20.96		
10	16QAM	25	25	21.01	21.18	21.08		
10	16QAM	50	0	20.97	21.18	21.03		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.90	23.17	23.04	24	0
5	QPSK	1	12	22.80	22.83	23.27		
5	QPSK	1	24	22.79	23.05	22.77		
5	QPSK	12	0	21.95	22.14	22.02	23	1
5	QPSK	12	7	21.91	22.01	22.04		
5	QPSK	12	13	21.91	22.03	22.02		
5	QPSK	25	0	21.89	22.00	21.96		
5	16QAM	1	0	22.16	22.35	22.35	23	1
5	16QAM	1	12	22.00	22.25	22.21		
5	16QAM	1	24	22.15	22.35	22.08		
5	16QAM	12	0	20.97	21.13	21.09	22	2
5	16QAM	12	7	20.95	21.03	20.95		
5	16QAM	12	13	20.95	21.05	21.02		
5	16QAM	25	0	20.90	21.07	21.00		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.89	23.02	23.01	24	0
3	QPSK	1	8	22.94	23.08	23.05		
3	QPSK	1	14	22.85	23.00	22.80		
3	QPSK	8	0	21.90	22.06	21.98	23	1
3	QPSK	8	4	21.91	22.04	21.96		
3	QPSK	8	7	21.90	21.98	21.95		
3	QPSK	15	0	21.89	22.05	21.95		
3	16QAM	1	0	22.51	22.41	22.38	23	1
3	16QAM	1	8	22.27	22.35	22.20		
3	16QAM	1	14	22.05	22.29	22.23		
3	16QAM	8	0	20.99	21.15	21.08	22	2
3	16QAM	8	4	20.99	21.13	21.09		
3	16QAM	8	7	20.94	21.07	21.04		
3	16QAM	15	0	20.93	21.08	21.02		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.77	22.99	22.87	24	0
1.4	QPSK	1	3	22.76	23.04	22.93		
1.4	QPSK	1	5	22.75	22.93	22.84		
1.4	QPSK	3	0	22.81	22.92	22.84		
1.4	QPSK	3	1	22.86	22.97	22.94		
1.4	QPSK	3	3	22.85	22.93	22.83		
1.4	QPSK	6	0	21.86	22.00	21.93	23	1
1.4	16QAM	1	0	22.20	22.47	22.38	23	1
1.4	16QAM	1	3	22.11	22.35	22.26		
1.4	16QAM	1	5	22.14	22.17	22.07		
1.4	16QAM	3	0	21.91	22.07	22.01		
1.4	16QAM	3	1	21.92	22.05	22.00		
1.4	16QAM	3	3	21.85	21.95	21.91		
1.4	16QAM	6	0	20.96	21.02	20.99	22	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.03	23.14	22.99	24	0
20	QPSK	1	49	22.96	23.04	22.95		
20	QPSK	1	99	22.88	22.96	22.77		
20	QPSK	50	0	21.84	21.94	21.77	23	1
20	QPSK	50	24	21.77	21.86	21.76		
20	QPSK	50	50	21.75	21.81	21.63		
20	QPSK	100	0	21.76	21.87	21.74		
20	16QAM	1	0	21.97	22.08	22.10	23	1
20	16QAM	1	49	21.98	22.19	22.11		
20	16QAM	1	99	22.02	22.15	22.00		
20	16QAM	50	0	20.84	20.94	20.82	22	2
20	16QAM	50	24	20.77	20.92	20.76		
20	16QAM	50	50	20.74	20.86	20.67		
20	16QAM	100	0	20.77	20.87	20.74		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.89	23.01	22.87	24	0
15	QPSK	1	37	22.80	22.95	22.79		
15	QPSK	1	74	22.74	22.80	22.78		
15	QPSK	36	0	21.91	22.00	21.90	23	1
15	QPSK	36	20	21.89	21.91	21.88		
15	QPSK	36	39	21.82	21.85	21.83		
15	QPSK	75	0	21.85	21.86	21.84		
15	16QAM	1	0	22.20	22.23	22.13	23	1
15	16QAM	1	37	22.00	22.05	22.01		
15	16QAM	1	74	21.98	21.99	21.96		
15	16QAM	36	0	20.90	20.96	20.92	22	2
15	16QAM	36	20	20.82	20.89	20.85		
15	16QAM	36	39	20.82	20.88	20.80		
15	16QAM	75	0	20.86	20.87	20.86		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.10	23.10	22.99	24	0
10	QPSK	1	25	22.71	22.89	22.87		
10	QPSK	1	49	23.10	23.09	23.05		
10	QPSK	25	0	21.97	22.00	21.96	23	1
10	QPSK	25	12	21.96	21.97	21.91		
10	QPSK	25	25	21.99	22.01	21.93		
10	QPSK	50	0	21.93	21.98	21.90		
10	16QAM	1	0	22.29	22.49	22.38	23	1
10	16QAM	1	25	22.23	22.30	22.23		
10	16QAM	1	49	22.52	22.51	22.50		
10	16QAM	25	0	21.15	21.20	21.00	22	2
10	16QAM	25	12	21.18	21.13	21.00		
10	16QAM	25	25	21.29	21.10	21.09		
10	16QAM	50	0	21.25	21.17	21.06		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.05	23.10	23.11	24	0
5	QPSK	1	12	22.90	22.87	22.91		
5	QPSK	1	24	22.99	22.91	22.94		
5	QPSK	12	0	22.22	22.21	22.13	23	1
5	QPSK	12	7	22.07	22.03	22.04		
5	QPSK	12	13	22.05	22.10	22.08		
5	QPSK	25	0	22.01	22.09	22.00		
5	16QAM	1	0	22.39	22.38	22.40	23	1
5	16QAM	1	12	22.28	22.26	22.21		
5	16QAM	1	24	22.36	22.31	22.33		
5	16QAM	12	0	21.21	21.18	21.12	22	2
5	16QAM	12	7	21.09	21.01	21.00		
5	16QAM	12	13	21.11	21.03	21.01		
5	16QAM	25	0	21.09	21.02	21.05		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.03	23.06	22.96	24	0
3	QPSK	1	8	23.00	23.02	22.99		
3	QPSK	1	14	22.93	22.98	22.85		
3	QPSK	8	0	22.02	22.03	21.97	23	1
3	QPSK	8	4	21.97	22.03	21.98		
3	QPSK	8	7	21.98	22.01	21.89		
3	QPSK	15	0	21.97	22.01	21.93		
3	16QAM	1	0	22.38	22.45	22.35	23	1
3	16QAM	1	8	22.25	22.31	22.20		
3	16QAM	1	14	22.41	22.50	22.35		
3	16QAM	8	0	21.08	21.13	21.01	22	2
3	16QAM	8	4	21.10	21.14	21.02		
3	16QAM	8	7	21.09	21.15	21.03		
3	16QAM	15	0	21.03	21.08	21.08		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.87	22.91	22.89	24	0
1.4	QPSK	1	3	22.97	22.99	23.00		
1.4	QPSK	1	5	22.83	22.90	22.89		
1.4	QPSK	3	0	22.91	22.97	22.86		
1.4	QPSK	3	1	22.98	23.03	23.00		
1.4	QPSK	3	3	22.88	22.98	22.90		
1.4	QPSK	6	0	21.97	21.99	21.96	23	1
1.4	16QAM	1	0	22.25	22.30	22.19	23	1
1.4	16QAM	1	3	22.30	22.35	22.24		
1.4	16QAM	1	5	22.21	22.28	22.20		
1.4	16QAM	3	0	21.98	22.00	21.90		
1.4	16QAM	3	1	22.01	22.09	21.98		
1.4	16QAM	3	3	21.97	22.00	21.90		
1.4	16QAM	6	0	21.03	21.06	21.00	22	2

<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	22.83	22.79	22.86	24	0
10	QPSK	1	25	22.65	22.61	22.66		
10	QPSK	1	49	23.02	22.89	23.05		
10	QPSK	25	0	22.05	21.98	22.03	23	1
10	QPSK	25	12	21.95	21.87	22.04		
10	QPSK	25	25	22.09	21.94	22.03		
10	QPSK	50	0	22.00	21.91	22.07		
10	16QAM	1	0	22.35	22.37	22.36	23	1
10	16QAM	1	25	22.13	22.08	22.27		
10	16QAM	1	49	22.57	22.42	22.49		
10	16QAM	25	0	21.01	20.98	21.03	22	2
10	16QAM	25	12	20.96	20.90	21.06		
10	16QAM	25	25	21.08	20.96	21.07		
10	16QAM	50	0	21.03	20.94	21.08		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.80	22.78	22.81	24	0
5	QPSK	1	12	22.70	22.76	22.69		
5	QPSK	1	24	22.69	22.65	22.70		
5	QPSK	12	0	21.77	21.71	21.76	23	1
5	QPSK	12	7	21.77	21.80	21.82		
5	QPSK	12	13	21.78	21.79	21.65		
5	QPSK	25	0	21.74	21.70	21.85		
5	16QAM	1	0	22.01	21.90	22.08	23	1
5	16QAM	1	12	21.95	21.90	22.00		
5	16QAM	1	24	21.96	22.07	22.08		
5	16QAM	12	0	20.75	20.65	20.60	22	2
5	16QAM	12	7	20.79	20.71	20.65		
5	16QAM	12	13	20.80	20.85	20.90		
5	16QAM	25	0	20.76	20.71	20.61		

Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.60	22.75	22.59	24	0
3	QPSK	1	8	22.61	22.71	22.58		
3	QPSK	1	14	22.80	22.75	22.60		
3	QPSK	8	0	21.80	21.75	21.90	23	1
3	QPSK	8	4	21.52	21.70	21.69		
3	QPSK	8	7	21.73	21.82	21.91		
3	QPSK	15	0	21.80	21.74	21.83		
3	16QAM	1	0	22.03	22.05	22.10	23	1
3	16QAM	1	8	22.10	22.14	22.06		
3	16QAM	1	14	21.98	22.01	22.03		
3	16QAM	8	0	20.76	20.83	20.90	22	2
3	16QAM	8	4	20.65	20.82	20.51		
3	16QAM	8	7	20.90	20.88	20.71		
3	16QAM	15	0	20.93	20.77	20.69		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.51	22.60	22.60	24	0
1.4	QPSK	1	3	22.60	22.65	22.71		
1.4	QPSK	1	5	22.70	22.68	22.70		
1.4	QPSK	3	0	22.63	22.62	22.60		
1.4	QPSK	3	1	22.55	22.65	22.61		
1.4	QPSK	3	3	22.53	22.61	22.58		
1.4	QPSK	6	0	21.60	21.65	21.70	23	1
1.4	16QAM	1	0	21.98	22.00	22.03	23	1
1.4	16QAM	1	3	21.96	21.99	22.00		
1.4	16QAM	1	5	21.99	22.05	22.03		
1.4	16QAM	3	0	21.63	21.69	21.71		
1.4	16QAM	3	1	21.70	21.71	21.73		
1.4	16QAM	3	3	21.63	21.66	21.78		
1.4	16QAM	6	0	20.63	20.74	20.80	22	2

<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	23.11	23.01	22.96	24	0
20	QPSK	1	49	23.04	23.02	22.96		
20	QPSK	1	99	23.41	23.35	23.06		
20	QPSK	50	0	21.88	21.84	21.82	23	1
20	QPSK	50	24	21.85	21.82	21.80		
20	QPSK	50	50	21.83	21.81	21.76		
20	QPSK	100	0	21.87	21.81	21.79		
20	16QAM	1	0	22.28	22.21	22.19	23	1
20	16QAM	1	49	22.16	22.11	22.06		
20	16QAM	1	99	22.33	22.28	22.25		
20	16QAM	50	0	20.92	20.87	20.84	22	2
20	16QAM	50	24	20.91	20.88	20.83		
20	16QAM	50	50	20.90	20.86	20.82		
20	16QAM	100	0	20.94	20.84	20.82		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	23.12	23.08	23.05	24	0
15	QPSK	1	37	23.02	22.94	22.89		
15	QPSK	1	74	23.26	23.25	23.18		
15	QPSK	36	0	21.92	21.88	21.85	23	1
15	QPSK	36	20	21.82	21.80	21.76		
15	QPSK	36	39	21.76	21.74	21.72		
15	QPSK	75	0	21.85	21.84	21.82		
15	16QAM	1	0	22.41	22.38	22.35	23	1
15	16QAM	1	37	22.31	22.20	22.16		
15	16QAM	1	74	22.20	22.11	22.06		
15	16QAM	36	0	20.91	20.87	20.82	22	2
15	16QAM	36	20	20.90	20.88	20.85		
15	16QAM	36	39	20.79	20.76	20.69		
15	16QAM	75	0	20.88	20.85	20.82		

Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.25	22.36	22.38	24	0
10	QPSK	1	25	22.64	22.58	22.58		
10	QPSK	1	49	23.00	23.02	22.88		
10	QPSK	25	0	21.52	21.58	21.50	23	1
10	QPSK	25	12	21.68	21.60	21.56		
10	QPSK	25	25	21.61	21.65	21.54		
10	QPSK	50	0	21.64	21.61	21.49		
10	16QAM	1	0	21.48	21.43	21.52	23	1
10	16QAM	1	25	21.79	21.87	21.72		
10	16QAM	1	49	21.99	22.21	22.01		
10	16QAM	25	0	20.59	20.61	20.52	22	2
10	16QAM	25	12	20.73	20.66	20.53		
10	16QAM	25	25	20.71	20.63	20.50		
10	16QAM	50	0	20.66	20.56	20.51		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	22.89	22.81	22.78	24	0
5	QPSK	1	12	22.77	22.72	22.68		
5	QPSK	1	24	22.71	22.65	22.62		
5	QPSK	12	0	21.71	21.65	21.63	23	1
5	QPSK	12	7	21.63	21.58	21.55		
5	QPSK	12	13	21.66	21.62	21.59		
5	QPSK	25	0	21.60	21.57	21.56		
5	16QAM	1	0	22.10	22.05	22.03	23	1
5	16QAM	1	12	21.92	21.88	21.85		
5	16QAM	1	24	21.94	21.88	21.83		
5	16QAM	12	0	20.77	20.71	20.69	22	2
5	16QAM	12	7	20.72	20.67	20.64		
5	16QAM	12	13	20.73	20.69	20.65		
5	16QAM	25	0	20.55	20.53	20.51		

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	22.71	22.64	22.62	24	0
3	QPSK	1	8	22.62	22.55	22.54		
3	QPSK	1	14	22.63	22.57	22.55		
3	QPSK	8	0	21.66	21.58	21.57	23	1
3	QPSK	8	4	21.58	21.55	21.53		
3	QPSK	8	7	21.63	21.58	21.56		
3	QPSK	15	0	21.55	21.51	21.51		
3	16QAM	1	0	21.85	21.80	21.78	23	1
3	16QAM	1	8	21.88	21.82	21.82		
3	16QAM	1	14	21.76	21.73	21.70		
3	16QAM	8	0	20.65	20.60	20.59	22	2
3	16QAM	8	4	20.66	20.57	20.54		
3	16QAM	8	7	20.64	20.62	20.58		
3	16QAM	15	0	20.58	20.55	20.52		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	22.61	22.56	22.52	24	0
1.4	QPSK	1	3	22.66	22.60	22.58		
1.4	QPSK	1	5	22.63	22.57	22.55		
1.4	QPSK	3	0	22.55	22.50	22.46		
1.4	QPSK	3	1	22.61	22.58	22.55		
1.4	QPSK	3	3	22.53	22.51	22.46		
1.4	QPSK	6	0	21.52	21.48	21.45	23	1
1.4	16QAM	1	0	21.72	21.74	21.69	23	1
1.4	16QAM	1	3	21.89	21.87	21.85		
1.4	16QAM	1	5	21.65	21.67	21.63		
1.4	16QAM	3	0	21.55	21.58	21.55		
1.4	16QAM	3	1	21.57	21.59	21.55		
1.4	16QAM	3	3	21.49	21.51	21.46		
1.4	16QAM	6	0	20.56	20.54	20.53	22	2

<LTE Band 71>

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				133222	133322	133372		
Frequency (MHz)				673	683	688		
20	QPSK	1	0	21.30	21.31	21.27	23	0
20	QPSK	1	49	22.18	22.28	22.16		
20	QPSK	1	99	22.20	22.55	22.14		
20	QPSK	50	0	20.95	20.92	20.86	22	1
20	QPSK	50	24	21.25	21.17	21.22		
20	QPSK	50	50	21.15	21.22	21.23		
20	QPSK	100	0	21.13	21.07	21.16		
20	16QAM	1	0	20.80	20.85	20.80	22	1
20	16QAM	1	49	21.50	21.55	21.51		
20	16QAM	1	99	21.76	21.80	21.75		
20	16QAM	50	0	19.90	19.93	19.90	21	2
20	16QAM	50	24	20.17	20.16	20.13		
20	16QAM	50	50	20.16	20.10	20.05		
20	16QAM	100	0	20.10	20.05	20.10		
Channel				133197	133297	133397	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				670.5	680.5	690.5		
15	QPSK	1	0	22.00	22.05	22.10	23	0
15	QPSK	1	37	22.15	22.20	22.02		
15	QPSK	1	74	22.13	22.25	22.23		
15	QPSK	36	0	21.10	21.13	21.10	22	1
15	QPSK	36	20	21.13	21.20	21.28		
15	QPSK	36	39	21.20	21.27	21.24		
15	QPSK	75	0	20.92	20.95	20.90		
15	16QAM	1	0	21.40	21.44	21.50	22	1
15	16QAM	1	37	21.43	21.52	21.46		
15	16QAM	1	74	21.42	21.55	21.50		
15	16QAM	36	0	20.16	20.16	20.12	21	2
15	16QAM	36	20	20.28	20.22	20.16		
15	16QAM	36	39	20.20	20.26	20.20		
15	16QAM	75	0	20.23	20.23	20.15		

Channel				133172	133272	133422	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				668	678	693		
10	QPSK	1	0	21.55	21.60	21.45	23	0
10	QPSK	1	25	22.25	22.30	22.36		
10	QPSK	1	49	22.30	22.53	22.23		
10	QPSK	25	0	21.15	21.20	21.25	22	1
10	QPSK	25	12	21.45	21.40	21.43		
10	QPSK	25	25	21.60	21.50	21.42		
10	QPSK	50	0	21.42	21.38	21.50		
10	16QAM	1	0	20.50	20.48	20.56	22	1
10	16QAM	1	25	21.35	21.31	21.35		
10	16QAM	1	49	21.45	21.44	21.48		
10	16QAM	25	0	20.18	20.17	20.26	21	2
10	16QAM	25	12	20.40	20.37	20.40		
10	16QAM	25	25	20.51	20.50	20.46		
10	16QAM	50	0	20.45	20.44	20.40		
Channel				133147	133247	133447	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				665.5	675.5	695.5		
5	QPSK	1	0	22.40	22.44	22.40	23	0
5	QPSK	1	12	22.35	22.37	22.30		
5	QPSK	1	24	22.36	22.40	22.35		
5	QPSK	12	0	21.32	21.40	21.36	22	1
5	QPSK	12	7	21.23	21.30	21.25		
5	QPSK	12	13	21.30	21.36	21.23		
5	QPSK	25	0	21.36	21.34	21.34		
5	16QAM	1	0	21.88	21.92	21.89	22	1
5	16QAM	1	12	21.85	21.88	21.80		
5	16QAM	1	24	21.90	21.95	21.94		
5	16QAM	12	0	20.52	20.56	20.60	21	2
5	16QAM	12	7	20.53	20.58	20.46		
5	16QAM	12	13	20.55	20.57	20.55		
5	16QAM	25	0	20.46	20.50	20.53		

<Reduced Power Mode for Hotspot On/P-Sensor On>

<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	14.45	14.48	14.43	14.5	0
20	QPSK	1	49	14.08	14.16	14.02		
20	QPSK	1	99	14.44	14.42	14.27		
20	QPSK	50	0	11.71	11.76	11.65	13.5	1
20	QPSK	50	24	11.70	11.66	11.54		
20	QPSK	50	50	11.75	11.74	11.55		
20	QPSK	100	0	11.90	11.80	11.68		
20	16QAM	1	0	12.30	12.16	11.87	13.5	1
20	16QAM	1	49	11.88	11.94	11.99		
20	16QAM	1	99	12.11	12.12	11.92		
20	16QAM	50	0	10.89	10.92	10.62	12.5	2
20	16QAM	50	24	10.74	10.77	10.52		
20	16QAM	50	50	10.82	10.70	10.61		
20	16QAM	100	0	10.85	10.85	10.64		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	14.44	14.43	14.42	14.5	0
15	QPSK	1	37	14.19	13.99	14.09		
15	QPSK	1	74	14.42	14.40	14.35		
15	QPSK	36	0	11.88	11.78	11.70	13.5	1
15	QPSK	36	20	11.80	11.79	11.65		
15	QPSK	36	39	11.90	11.71	11.70		
15	QPSK	75	0	11.98	11.84	11.70		
15	16QAM	1	0	12.24	12.25	11.84	13.5	1
15	16QAM	1	37	11.91	11.81	11.95		
15	16QAM	1	74	12.27	12.21	11.97		
15	16QAM	36	0	10.81	10.81	10.66	12.5	2
15	16QAM	36	20	10.88	10.74	10.67		
15	16QAM	36	39	10.85	10.76	10.74		
15	16QAM	75	0	10.98	10.85	10.63		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	14.31	14.36	14.26	14.5	0
10	QPSK	1	25	14.25	14.11	14.11		
10	QPSK	1	49	14.42	14.38	14.34		
10	QPSK	25	0	12.16	12.10	11.93	13.5	1
10	QPSK	25	12	12.18	12.06	11.89		
10	QPSK	25	25	12.06	12.12	11.89		
10	QPSK	50	0	12.19	12.18	11.94		
10	16QAM	1	0	12.64	12.59	12.58	13.5	1
10	16QAM	1	25	12.64	12.73	12.43		
10	16QAM	1	49	12.82	12.81	12.58		
10	16QAM	25	0	11.18	11.11	10.85	12.5	2
10	16QAM	25	12	11.08	11.06	10.87		
10	16QAM	25	25	11.08	11.00	10.89		
10	16QAM	50	0	11.24	11.13	10.99		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	14.36	14.36	14.34	14.5	0
5	QPSK	1	12	14.47	14.45	14.45		
5	QPSK	1	24	14.44	14.36	14.26		
5	QPSK	12	0	12.21	12.06	11.95	13.5	1
5	QPSK	12	7	12.15	12.02	11.82		
5	QPSK	12	13	12.07	12.06	11.79		
5	QPSK	25	0	12.16	12.04	11.83		
5	16QAM	1	0	12.15	12.24	11.95	13.5	1
5	16QAM	1	12	11.94	11.96	11.81		
5	16QAM	1	24	11.99	12.01	11.80		
5	16QAM	12	0	11.16	11.09	10.86	12.5	2
5	16QAM	12	7	11.14	11.03	10.76		
5	16QAM	12	13	11.13	11.07	10.69		
5	16QAM	25	0	11.07	11.06	10.87		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	14.37	14.32	14.40	14.5	0
3	QPSK	1	8	14.15	14.24	14.17		
3	QPSK	1	14	14.35	14.41	14.22		
3	QPSK	8	0	12.11	12.04	11.79	13.5	1
3	QPSK	8	4	12.01	12.01	11.85		
3	QPSK	8	7	12.08	11.98	11.76		
3	QPSK	15	0	12.10	11.98	11.80		
3	16QAM	1	0	12.22	12.12	12.26	13.5	1
3	16QAM	1	8	12.32	12.10	12.14		
3	16QAM	1	14	12.17	12.09	12.18		
3	16QAM	8	0	11.19	11.05	10.87	12.5	2
3	16QAM	8	4	11.21	11.09	10.81		
3	16QAM	8	7	11.16	11.08	10.78		
3	16QAM	15	0	11.11	11.00	10.89		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	14.32	14.39	14.35	14.5	0
1.4	QPSK	1	3	14.37	14.40	14.28		
1.4	QPSK	1	5	14.41	14.42	14.20		
1.4	QPSK	3	0	14.37	14.44	14.17		
1.4	QPSK	3	1	14.32	14.40	14.26		
1.4	QPSK	3	3	14.34	14.44	14.21		
1.4	QPSK	6	0	12.05	11.94	11.67	13.5	1
1.4	16QAM	1	0	12.41	12.45	12.28	13.5	1
1.4	16QAM	1	3	12.53	12.45	12.20		
1.4	16QAM	1	5	12.41	12.41	12.26		
1.4	16QAM	3	0	11.94	11.95	11.78		
1.4	16QAM	3	1	11.92	11.98	11.68		
1.4	16QAM	3	3	11.99	11.93	11.72		
1.4	16QAM	6	0	11.12	11.03	10.76	12.5	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	15.47	15.43	15.42	15.5	0
20	QPSK	1	49	15.34	15.32	15.15		
20	QPSK	1	99	15.21	15.35	15.32		
20	QPSK	50	0	12.96	12.91	13.00	14.5	1
20	QPSK	50	24	12.94	12.90	12.91		
20	QPSK	50	50	12.91	12.80	12.88		
20	QPSK	100	0	12.98	12.86	12.98		
20	16QAM	1	0	13.58	13.53	13.32	14.5	1
20	16QAM	1	49	13.50	13.38	13.43		
20	16QAM	1	99	13.32	13.25	13.31		
20	16QAM	50	0	12.03	11.91	11.90	13.5	2
20	16QAM	50	24	11.99	11.80	11.91		
20	16QAM	50	50	11.97	11.78	11.88		
20	16QAM	100	0	12.02	11.87	12.00		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	15.36	15.33	15.39	15.5	0
15	QPSK	1	37	15.28	15.18	15.29		
15	QPSK	1	74	15.16	15.24	15.31		
15	QPSK	36	0	13.15	12.97	13.17	14.5	1
15	QPSK	36	20	13.09	12.98	13.11		
15	QPSK	36	39	13.03	12.86	13.03		
15	QPSK	75	0	13.02	12.89	13.01		
15	16QAM	1	0	13.78	13.69	13.63	14.5	1
15	16QAM	1	37	13.48	13.32	13.48		
15	16QAM	1	74	13.51	13.46	13.56		
15	16QAM	36	0	12.14	11.96	12.13	13.5	2
15	16QAM	36	20	12.09	11.88	12.09		
15	16QAM	36	39	12.04	11.86	12.02		
15	16QAM	75	0	12.06	11.89	11.91		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	15.32	15.38	15.34	15.5	0
10	QPSK	1	25	15.26	15.21	15.28		
10	QPSK	1	49	15.43	15.37	15.36		
10	QPSK	25	0	13.15	13.16	13.15	14.5	1
10	QPSK	25	12	13.18	13.17	13.14		
10	QPSK	25	25	13.30	13.21	13.32		
10	QPSK	50	0	13.20	13.21	13.08		
10	16QAM	1	0	13.52	13.51	13.51	14.5	1
10	16QAM	1	25	13.25	13.29	13.26		
10	16QAM	1	49	13.54	13.68	13.68		
10	16QAM	25	0	12.19	12.18	12.10	13.5	2
10	16QAM	25	12	12.20	12.20	12.10		
10	16QAM	25	25	12.22	12.25	12.17		
10	16QAM	50	0	12.19	12.21	12.16		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	15.32	15.34	15.35	15.5	0
5	QPSK	1	12	15.28	15.22	15.24		
5	QPSK	1	24	15.29	15.39	15.38		
5	QPSK	12	0	13.19	13.16	13.19	14.5	1
5	QPSK	12	7	13.10	13.11	13.11		
5	QPSK	12	13	13.15	13.15	13.00		
5	QPSK	25	0	13.09	13.11	13.21		
5	16QAM	1	0	13.31	13.21	13.28	14.5	1
5	16QAM	1	12	13.16	12.97	13.10		
5	16QAM	1	24	13.09	12.98	12.97		
5	16QAM	12	0	12.27	12.21	12.15	13.5	2
5	16QAM	12	7	12.16	12.16	12.18		
5	16QAM	12	13	12.21	12.19	12.05		
5	16QAM	25	0	12.27	12.11	12.12		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	15.38	15.34	15.31	15.5	0
3	QPSK	1	8	15.27	15.23	15.24		
3	QPSK	1	14	15.34	15.35	15.36		
3	QPSK	8	0	13.18	13.09	13.13	14.5	1
3	QPSK	8	4	13.12	13.11	13.09		
3	QPSK	8	7	13.01	13.06	13.04		
3	QPSK	15	0	13.10	13.09	13.05		
3	16QAM	1	0	13.73	13.43	13.55	14.5	1
3	16QAM	1	8	13.72	13.47	13.65		
3	16QAM	1	14	13.43	13.64	13.44		
3	16QAM	8	0	12.30	12.30	12.23	13.5	2
3	16QAM	8	4	12.26	12.21	12.21		
3	16QAM	8	7	12.13	12.26	12.18		
3	16QAM	15	0	12.15	12.10	12.09		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	15.37	15.32	15.39	15.5	0
1.4	QPSK	1	3	15.33	15.35	15.22		
1.4	QPSK	1	5	15.29	15.38	15.37		
1.4	QPSK	3	0	15.37	15.35	15.34		
1.4	QPSK	3	1	15.33	15.37	15.37		
1.4	QPSK	3	3	15.32	15.35	15.36		
1.4	QPSK	6	0	13.14	13.04	13.05	14.5	1
1.4	16QAM	1	0	13.42	13.21	13.32	14.5	1
1.4	16QAM	1	3	13.45	13.25	13.26		
1.4	16QAM	1	5	13.37	13.36	13.18		
1.4	16QAM	3	0	13.13	13.12	13.12		
1.4	16QAM	3	1	13.27	13.16	13.17		
1.4	16QAM	3	3	13.26	13.25	13.17		
1.4	16QAM	6	0	12.19	12.18	12.10	13.5	2

<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	21.42	21.40	21.33	21.5	0
10	QPSK	1	25	21.15	21.12	20.98		
10	QPSK	1	49	21.41	21.44	21.35		
10	QPSK	25	0	18.58	18.58	18.57	20.5	1
10	QPSK	25	12	18.53	18.53	18.52		
10	QPSK	25	25	18.60	18.62	18.54		
10	QPSK	50	0	18.58	18.54	18.53		
10	16QAM	1	0	18.92	18.91	18.62	20.5	1
10	16QAM	1	25	18.65	18.70	18.56		
10	16QAM	1	49	18.90	18.91	18.79		
10	16QAM	25	0	17.59	17.57	17.55	19.5	2
10	16QAM	25	12	17.57	17.54	17.53		
10	16QAM	25	25	17.58	17.57	17.64		
10	16QAM	50	0	17.56	17.58	17.51		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	21.13	21.18	20.92	21.5	0
5	QPSK	1	12	21.09	21.05	20.91		
5	QPSK	1	24	21.20	21.10	20.91		
5	QPSK	12	0	18.57	18.54	18.56	20.5	1
5	QPSK	12	7	18.50	18.51	18.52		
5	QPSK	12	13	18.58	18.59	18.56		
5	QPSK	25	0	18.53	18.57	18.58		
5	16QAM	1	0	18.70	18.75	18.52	20.5	1
5	16QAM	1	12	18.63	18.68	18.57		
5	16QAM	1	24	18.72	18.59	18.60		
5	16QAM	12	0	17.59	17.55	17.55	19.5	2
5	16QAM	12	7	17.51	17.54	17.53		
5	16QAM	12	13	17.55	17.58	17.59		
5	16QAM	25	0	17.68	17.58	17.57		

Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	21.10	21.13	20.96	21.5	0
3	QPSK	1	8	21.10	21.06	20.96		
3	QPSK	1	14	21.14	20.99	20.89		
3	QPSK	8	0	18.65	18.59	18.58	20.5	1
3	QPSK	8	4	18.55	18.57	18.54		
3	QPSK	8	7	18.68	18.55	18.66		
3	QPSK	15	0	18.61	18.54	18.59		
3	16QAM	1	0	18.67	18.66	18.53	20.5	1
3	16QAM	1	8	18.70	18.66	18.61		
3	16QAM	1	14	18.73	18.56	18.55		
3	16QAM	8	0	17.64	17.65	17.51	19.5	2
3	16QAM	8	4	17.64	17.68	17.52		
3	16QAM	8	7	17.59	17.55	17.59		
3	16QAM	15	0	17.62	17.57	17.50		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	21.06	21.08	20.94	21.5	0
1.4	QPSK	1	3	21.08	21.00	20.95		
1.4	QPSK	1	5	21.03	21.01	20.89		
1.4	QPSK	3	0	21.10	20.99	20.92		
1.4	QPSK	3	1	21.10	21.10	20.94		
1.4	QPSK	3	3	21.11	21.10	20.92		
1.4	QPSK	6	0	18.58	18.55	18.51	20.5	1
1.4	16QAM	1	0	18.60	18.59	18.55	20.5	1
1.4	16QAM	1	3	18.73	18.67	18.56		
1.4	16QAM	1	5	18.51	18.63	18.58		
1.4	16QAM	3	0	18.60	18.59	18.57		
1.4	16QAM	3	1	18.63	18.60	18.55		
1.4	16QAM	3	3	18.54	18.65	18.52		
1.4	16QAM	6	0	17.58	17.55	17.56	19.5	2

<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	15.22	15.19	15.17	16	0
20	QPSK	1	49	15.21	15.29	15.22		
20	QPSK	1	99	15.55	15.45	15.36		
20	QPSK	50	0	13.39	13.14	13.24	15	1
20	QPSK	50	24	13.22	13.23	13.16		
20	QPSK	50	50	13.30	13.29	13.14		
20	QPSK	100	0	13.29	13.17	13.46		
20	16QAM	1	0	13.83	13.58	13.55	15	1
20	16QAM	1	49	13.84	13.56	13.52		
20	16QAM	1	99	13.62	13.96	14.00		
20	16QAM	50	0	12.29	12.20	12.39	14	2
20	16QAM	50	24	12.41	12.30	12.34		
20	16QAM	50	50	12.37	12.24	12.21		
20	16QAM	100	0	12.39	12.23	12.29		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	15.41	15.33	15.22	16	0
15	QPSK	1	37	15.30	15.18	15.13		
15	QPSK	1	74	15.35	15.37	15.24		
15	QPSK	36	0	13.26	13.20	13.37	15	1
15	QPSK	36	20	13.14	13.24	13.11		
15	QPSK	36	39	13.15	13.12	13.18		
15	QPSK	75	0	13.14	13.17	13.31		
15	16QAM	1	0	14.09	14.11	14.01	15	1
15	16QAM	1	37	13.75	13.78	13.67		
15	16QAM	1	74	13.86	13.84	13.76		
15	16QAM	36	0	12.28	12.21	12.32	14	2
15	16QAM	36	20	12.14	12.24	12.29		
15	16QAM	36	39	12.17	12.03	12.18		
15	16QAM	75	0	12.28	12.16	12.37		

Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	14.59	14.61	14.57	16	0
10	QPSK	1	25	15.03	14.93	14.90		
10	QPSK	1	49	15.35	15.39	15.52		
10	QPSK	25	0	13.28	13.17	13.24	15	1
10	QPSK	25	12	13.40	13.38	13.29		
10	QPSK	25	25	13.40	13.29	13.39		
10	QPSK	50	0	13.41	13.25	13.27		
10	16QAM	1	0	13.20	13.25	13.01	15	1
10	16QAM	1	25	13.41	13.54	13.33		
10	16QAM	1	49	13.59	13.93	13.19		
10	16QAM	25	0	12.31	12.14	12.22	14	2
10	16QAM	25	12	12.36	12.27	12.25		
10	16QAM	25	25	12.27	12.20	12.36		
10	16QAM	50	0	12.41	12.28	12.20		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	15.29	15.11	15.37	16	0
5	QPSK	1	12	15.04	14.90	15.06		
5	QPSK	1	24	15.25	15.15	15.17		
5	QPSK	12	0	13.32	13.26	13.41	15	1
5	QPSK	12	7	13.25	13.23	13.29		
5	QPSK	12	13	13.24	13.21	13.22		
5	QPSK	25	0	13.30	13.25	13.27		
5	16QAM	1	0	13.26	13.15	13.33	15	1
5	16QAM	1	12	13.10	13.09	13.21		
5	16QAM	1	24	13.14	13.21	13.17		
5	16QAM	12	0	12.38	12.40	12.40	14	2
5	16QAM	12	7	12.31	12.30	12.35		
5	16QAM	12	13	12.31	12.26	12.30		
5	16QAM	25	0	12.21	12.27	12.22		

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	15.32	15.12	15.29	16	0
3	QPSK	1	8	15.31	15.20	15.10		
3	QPSK	1	14	15.25	15.12	15.25		
3	QPSK	8	0	13.28	13.17	13.28	15	1
3	QPSK	8	4	13.35	13.20	13.31		
3	QPSK	8	7	13.31	13.18	13.28		
3	QPSK	15	0	13.30	13.17	13.28		
3	16QAM	1	0	13.68	13.44	13.26	15	1
3	16QAM	1	8	13.57	13.40	13.33		
3	16QAM	1	14	13.66	13.34	13.33		
3	16QAM	8	0	12.40	12.44	12.46	14	2
3	16QAM	8	4	12.47	12.37	12.36		
3	16QAM	8	7	12.43	12.33	12.43		
3	16QAM	15	0	12.35	12.32	12.31		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	15.26	15.16	15.07	16	0
1.4	QPSK	1	3	15.25	15.12	14.94		
1.4	QPSK	1	5	15.11	15.01	15.16		
1.4	QPSK	3	0	15.31	15.19	15.22		
1.4	QPSK	3	1	15.27	15.13	15.28		
1.4	QPSK	3	3	15.34	15.24	15.26		
1.4	QPSK	6	0	13.24	13.15	13.15	15	1
1.4	16QAM	1	0	13.62	13.39	13.66	15	1
1.4	16QAM	1	3	13.71	13.67	13.63		
1.4	16QAM	1	5	13.64	13.42	13.57		
1.4	16QAM	3	0	13.25	13.11	13.20		
1.4	16QAM	3	1	13.31	13.26	13.21		
1.4	16QAM	3	3	13.20	13.24	13.23		
1.4	16QAM	6	0	12.33	12.22	12.34	14	2

<Reduced Power Mode for Product Specific 10g SAR>

<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	21.51	21.69	21.61	22	0
20	QPSK	1	49	21.46	21.45	21.54		
20	QPSK	1	99	21.51	21.54	21.44		
20	QPSK	50	0	19.41	19.53	19.42	21	1
20	QPSK	50	24	19.44	19.41	19.41		
20	QPSK	50	50	19.45	19.43	19.35		
20	QPSK	100	0	19.43	19.48	19.36		
20	16QAM	1	0	19.45	19.44	19.40	21	1
20	16QAM	1	49	19.40	19.43	19.26		
20	16QAM	1	99	19.37	19.44	19.23		
20	16QAM	50	0	18.51	18.45	18.24	20	2
20	16QAM	50	24	18.53	18.46	18.27		
20	16QAM	50	50	18.48	18.38	18.31		
20	16QAM	100	0	18.50	18.43	18.28		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	21.44	21.66	21.42	22	0
15	QPSK	1	37	21.32	21.54	21.56		
15	QPSK	1	74	21.33	21.55	21.56		
15	QPSK	36	0	19.26	19.27	19.27	21	1
15	QPSK	36	20	19.23	19.28	19.25		
15	QPSK	36	39	19.26	19.30	19.27		
15	QPSK	75	0	19.26	19.25	19.22		
15	16QAM	1	0	19.55	19.31	19.50	21	1
15	16QAM	1	37	19.23	19.24	19.27		
15	16QAM	1	74	19.31	19.25	19.21		
15	16QAM	36	0	18.33	18.36	18.20	20	2
15	16QAM	36	20	18.24	18.31	18.28		
15	16QAM	36	39	18.22	18.34	18.29		
15	16QAM	75	0	18.30	18.38	18.31		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	21.64	21.56	21.41	22	0
10	QPSK	1	25	21.50	21.24	21.23		
10	QPSK	1	49	21.66	21.58	21.50		
10	QPSK	25	0	19.32	19.31	19.30	21	1
10	QPSK	25	12	19.27	19.28	19.38		
10	QPSK	25	25	19.31	19.29	19.32		
10	QPSK	50	0	19.31	19.33	19.38		
10	16QAM	1	0	19.40	19.44	19.35	21	1
10	16QAM	1	25	19.24	19.48	19.33		
10	16QAM	1	49	19.27	19.25	19.27		
10	16QAM	25	0	18.35	18.36	18.26	20	2
10	16QAM	25	12	18.33	18.33	18.25		
10	16QAM	25	25	18.32	18.32	18.29		
10	16QAM	50	0	18.37	18.34	18.21		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	21.60	21.50	21.37	22	0
5	QPSK	1	12	21.45	21.22	21.26		
5	QPSK	1	24	21.36	21.44	21.23		
5	QPSK	12	0	19.29	19.21	19.24	21	1
5	QPSK	12	7	19.25	19.23	19.27		
5	QPSK	12	13	19.22	19.26	19.20		
5	QPSK	25	0	19.26	19.22	19.23		
5	16QAM	1	0	19.21	19.23	19.27	21	1
5	16QAM	1	12	19.22	19.21	19.22		
5	16QAM	1	24	19.23	19.28	19.23		
5	16QAM	12	0	18.27	18.22	18.20	20	2
5	16QAM	12	7	18.26	18.23	18.21		
5	16QAM	12	13	18.28	18.21	18.27		
5	16QAM	25	0	18.27	18.27	18.21		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	21.59	21.54	21.38	22	0
3	QPSK	1	8	21.54	21.42	21.30		
3	QPSK	1	14	21.39	21.40	21.25		
3	QPSK	8	0	19.33	19.28	19.21	21	1
3	QPSK	8	4	19.41	19.30	19.28		
3	QPSK	8	7	19.36	19.36	19.20		
3	QPSK	15	0	19.34	19.35	19.24		
3	16QAM	1	0	19.58	19.24	19.24	21	1
3	16QAM	1	8	19.55	19.26	19.19		
3	16QAM	1	14	19.30	19.27	19.21		
3	16QAM	8	0	18.37	18.29	18.20	20	2
3	16QAM	8	4	18.24	18.21	18.21		
3	16QAM	8	7	18.27	18.35	18.11		
3	16QAM	15	0	18.19	18.24	18.24		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	21.34	21.58	21.35	22	0
1.4	QPSK	1	3	21.55	21.39	21.34		
1.4	QPSK	1	5	21.30	21.14	21.27		
1.4	QPSK	3	0	21.43	21.23	21.21		
1.4	QPSK	3	1	21.48	21.46	21.22		
1.4	QPSK	3	3	21.55	21.31	21.26		
1.4	QPSK	6	0	19.45	19.41	19.30	21	1
1.4	16QAM	1	0	19.43	19.49	19.24	21	1
1.4	16QAM	1	3	19.37	19.38	19.38		
1.4	16QAM	1	5	19.36	19.31	19.26		
1.4	16QAM	3	0	19.30	19.33	19.22		
1.4	16QAM	3	1	19.33	19.26	19.23		
1.4	16QAM	3	3	19.35	19.22	19.40		
1.4	16QAM	6	0	18.33	18.31	18.16	20	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	19.44	19.48	19.42	19.5	0
20	QPSK	1	49	19.35	19.40	19.35		
20	QPSK	1	99	19.24	19.23	19.35		
20	QPSK	50	0	16.96	16.97	17.03	18.5	1
20	QPSK	50	24	16.92	16.88	16.87		
20	QPSK	50	50	16.88	16.84	16.84		
20	QPSK	100	0	16.98	16.82	16.90		
20	16QAM	1	0	17.34	17.34	17.64	18.5	1
20	16QAM	1	49	17.24	17.24	17.68		
20	16QAM	1	99	17.33	17.22	17.61		
20	16QAM	50	0	15.98	15.88	15.92	17.5	2
20	16QAM	50	24	15.94	15.89	15.87		
20	16QAM	50	50	15.92	15.75	15.86		
20	16QAM	100	0	15.89	15.91	15.91		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	19.36	19.26	19.39	19.5	0
15	QPSK	1	37	19.24	19.32	19.32		
15	QPSK	1	74	19.29	19.36	19.33		
15	QPSK	36	0	17.07	16.96	16.94	18.5	1
15	QPSK	36	20	16.99	16.89	16.97		
15	QPSK	36	39	16.94	16.75	16.93		
15	QPSK	75	0	17.04	16.92	16.89		
15	16QAM	1	0	17.36	17.34	17.36	18.5	1
15	16QAM	1	37	17.21	16.96	17.30		
15	16QAM	1	74	16.98	16.89	17.14		
15	16QAM	36	0	16.03	15.90	16.08	17.5	2
15	16QAM	36	20	16.01	15.94	16.12		
15	16QAM	36	39	15.97	15.80	15.99		
15	16QAM	75	0	16.07	15.81	15.89		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	19.35	19.40	19.38	19.5	0
10	QPSK	1	25	19.36	19.25	19.27		
10	QPSK	1	49	19.32	19.35	19.34		
10	QPSK	25	0	17.08	17.20	17.14	18.5	1
10	QPSK	25	12	17.08	17.08	17.07		
10	QPSK	25	25	17.15	17.11	17.21		
10	QPSK	50	0	17.12	17.12	17.11		
10	16QAM	1	0	17.68	17.61	17.46	18.5	1
10	16QAM	1	25	17.36	17.32	17.44		
10	16QAM	1	49	17.44	17.46	17.37		
10	16QAM	25	0	16.08	16.16	16.13	17.5	2
10	16QAM	25	12	16.20	16.06	16.05		
10	16QAM	25	25	16.19	16.07	16.20		
10	16QAM	50	0	16.15	16.15	16.04		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	19.40	19.44	19.39	19.5	0
5	QPSK	1	12	19.30	19.31	19.31		
5	QPSK	1	24	19.44	19.43	19.33		
5	QPSK	12	0	17.10	17.12	17.07	18.5	1
5	QPSK	12	7	16.97	16.96	17.06		
5	QPSK	12	13	17.01	17.02	17.01		
5	QPSK	25	0	16.97	16.99	17.08		
5	16QAM	1	0	17.44	17.59	17.49	18.5	1
5	16QAM	1	12	17.38	17.24	17.42		
5	16QAM	1	24	17.45	17.47	17.42		
5	16QAM	12	0	16.13	16.06	16.13	17.5	2
5	16QAM	12	7	15.99	16.09	16.13		
5	16QAM	12	13	16.01	16.17	16.08		
5	16QAM	25	0	15.97	15.88	15.98		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	19.33	18.99	19.12	19.5	0
3	QPSK	1	8	19.44	19.42	19.33		
3	QPSK	1	14	19.43	19.29	19.44		
3	QPSK	8	0	17.11	16.93	17.06	18.5	1
3	QPSK	8	4	17.05	16.96	16.99		
3	QPSK	8	7	16.89	16.90	16.94		
3	QPSK	15	0	17.00	16.94	16.97		
3	16QAM	1	0	17.09	17.39	17.48	18.5	1
3	16QAM	1	8	17.42	17.10	17.37		
3	16QAM	1	14	16.99	17.42	17.43		
3	16QAM	8	0	16.08	15.93	16.05	17.5	2
3	16QAM	8	4	16.00	15.93	15.97		
3	16QAM	8	7	15.87	16.00	15.95		
3	16QAM	15	0	16.08	16.12	16.03		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	19.24	19.26	19.36	19.5	0
1.4	QPSK	1	3	19.13	19.22	19.39		
1.4	QPSK	1	5	19.32	19.33	19.31		
1.4	QPSK	3	0	19.23	19.33	19.32		
1.4	QPSK	3	1	19.22	19.35	19.34		
1.4	QPSK	3	3	19.30	19.47	19.34		
1.4	QPSK	6	0	17.00	16.89	16.88	18.5	1
1.4	16QAM	1	0	17.32	17.26	17.26	18.5	1
1.4	16QAM	1	3	17.61	17.31	17.33		
1.4	16QAM	1	5	17.57	17.23	17.35		
1.4	16QAM	3	0	17.04	16.97	17.02		
1.4	16QAM	3	1	17.00	16.90	17.15		
1.4	16QAM	3	3	16.89	16.87	17.05		
1.4	16QAM	6	0	15.99	15.98	15.97	17.5	2

<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	19.55	19.51	19.66	20	0
20	QPSK	1	49	19.59	19.65	19.58		
20	QPSK	1	99	19.61	19.66	19.72		
20	QPSK	50	0	17.62	17.48	17.45	19	1
20	QPSK	50	24	17.48	17.53	17.59		
20	QPSK	50	50	17.55	17.50	17.44		
20	QPSK	100	0	17.66	17.47	17.58		
20	16QAM	1	0	17.66	17.81	17.85	19	1
20	16QAM	1	49	17.49	17.61	17.79		
20	16QAM	1	99	17.59	17.66	17.35		
20	16QAM	50	0	16.42	16.41	16.48	18	2
20	16QAM	50	24	16.50	16.44	16.61		
20	16QAM	50	50	16.54	16.51	16.48		
20	16QAM	100	0	16.55	16.46	16.61		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	19.33	19.52	19.51	20	0
15	QPSK	1	37	19.63	19.51	19.24		
15	QPSK	1	74	19.32	19.55	19.55		
15	QPSK	36	0	17.43	17.44	17.61	19	1
15	QPSK	36	20	17.45	17.44	17.41		
15	QPSK	36	39	17.46	17.37	17.52		
15	QPSK	75	0	17.41	17.46	17.50		
15	16QAM	1	0	17.77	17.79	17.81	19	1
15	16QAM	1	37	17.50	17.61	17.64		
15	16QAM	1	74	17.86	17.78	17.56		
15	16QAM	36	0	16.69	16.47	16.56	18	2
15	16QAM	36	20	16.49	16.57	16.47		
15	16QAM	36	39	16.42	16.30	16.49		
15	16QAM	75	0	16.50	16.48	16.64		

Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	18.99	18.93	18.82	20	0
10	QPSK	1	25	19.40	19.69	18.92		
10	QPSK	1	49	19.61	19.68	19.67		
10	QPSK	25	0	17.56	17.43	17.47	19	1
10	QPSK	25	12	17.64	17.63	17.56		
10	QPSK	25	25	17.60	17.55	17.56		
10	QPSK	50	0	17.67	17.57	17.56		
10	16QAM	1	0	17.91	17.92	17.80	19	1
10	16QAM	1	25	18.18	18.26	17.90		
10	16QAM	1	49	17.93	18.68	17.82		
10	16QAM	25	0	16.45	16.43	16.47	18	2
10	16QAM	25	12	16.64	16.62	16.62		
10	16QAM	25	25	16.49	16.54	16.65		
10	16QAM	50	0	16.70	16.60	16.60		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	19.43	19.46	19.55	20	0
5	QPSK	1	12	19.16	19.08	19.14		
5	QPSK	1	24	19.49	19.34	19.31		
5	QPSK	12	0	17.69	17.63	17.66	19	1
5	QPSK	12	7	17.56	17.51	17.58		
5	QPSK	12	13	17.49	17.49	17.59		
5	QPSK	25	0	17.56	17.57	17.58		
5	16QAM	1	0	18.06	18.01	18.19	19	1
5	16QAM	1	12	17.93	17.81	17.88		
5	16QAM	1	24	17.69	18.05	17.95		
5	16QAM	12	0	16.56	16.59	16.60	18	2
5	16QAM	12	7	16.56	16.53	16.63		
5	16QAM	12	13	16.49	16.50	16.51		
5	16QAM	25	0	16.48	16.46	16.51		

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	19.48	19.47	19.26	20	0
3	QPSK	1	8	19.38	19.55	19.37		
3	QPSK	1	14	19.34	19.56	19.61		
3	QPSK	8	0	17.49	17.52	17.49	19	1
3	QPSK	8	4	17.56	17.53	17.61		
3	QPSK	8	7	17.60	17.50	17.48		
3	QPSK	15	0	17.60	17.50	17.29		
3	16QAM	1	0	17.79	17.59	17.52	19	1
3	16QAM	1	8	17.60	17.51	17.66		
3	16QAM	1	14	17.56	17.65	17.43		
3	16QAM	8	0	16.69	16.59	16.42	18	2
3	16QAM	8	4	16.74	16.62	16.65		
3	16QAM	8	7	16.77	16.70	16.44		
3	16QAM	15	0	16.63	16.53	16.51		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	19.51	19.45	19.29	20	0
1.4	QPSK	1	3	19.56	19.61	19.65		
1.4	QPSK	1	5	19.29	19.63	19.60		
1.4	QPSK	3	0	19.55	19.50	19.51		
1.4	QPSK	3	1	19.61	19.44	19.45		
1.4	QPSK	3	3	19.52	19.51	19.44		
1.4	QPSK	6	0	17.43	17.46	17.55	19	1
1.4	16QAM	1	0	17.87	17.83	17.55	19	1
1.4	16QAM	1	3	17.89	17.82	17.57		
1.4	16QAM	1	5	17.88	17.81	17.62		
1.4	16QAM	3	0	17.57	17.40	17.43		
1.4	16QAM	3	1	17.75	17.56	17.47		
1.4	16QAM	3	3	17.77	17.55	17.60		
1.4	16QAM	6	0	16.68	16.55	16.28	18	2

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations

b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS

c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

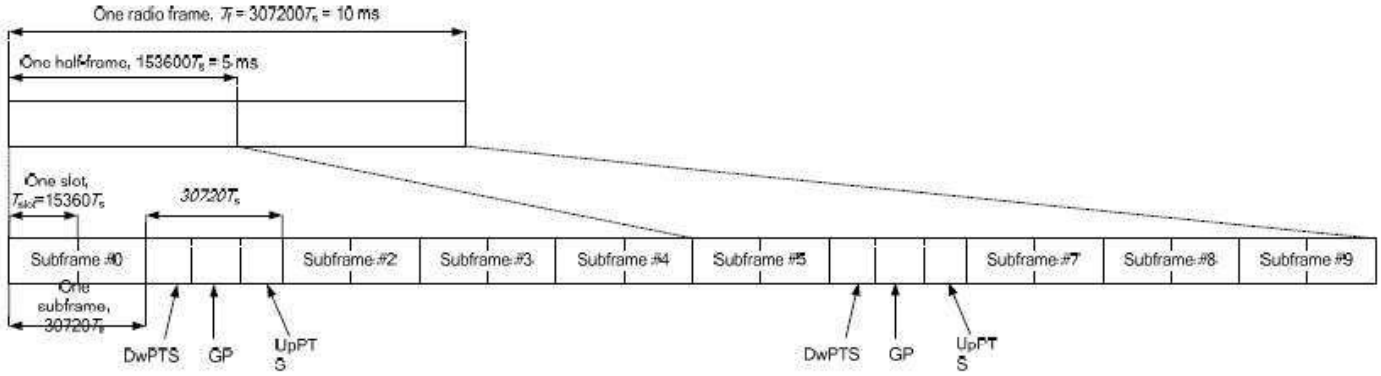


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~4**	7.13%	8.33%
	5~9	14.3%	16.7%

Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~3**	7.13%	8.33%
	4~7	14.3%	16.7%

The highest duty factor is resulted from:

i. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

ii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iii. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

iv. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

<Full Power Mode>

<LTE Band 38>

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				37850	38000	38150		
Frequency (MHz)				2580	2595	2610		
20	QPSK	1	0	22.51	22.55	22.53	23	0
20	QPSK	1	49	22.47	22.30	22.27		
20	QPSK	1	99	22.57	22.56	22.50		
20	QPSK	50	0	21.72	21.66	21.74	22	1
20	QPSK	50	24	21.83	21.74	21.78		
20	QPSK	50	50	21.71	21.70	21.84		
20	QPSK	100	0	21.70	21.77	21.76		
20	16QAM	1	0	21.81	21.86	21.85	22	1
20	16QAM	1	49	21.84	21.78	21.97		
20	16QAM	1	99	21.92	21.76	21.95		
20	16QAM	50	0	20.75	20.61	20.88	21	2
20	16QAM	50	24	20.87	20.69	20.85		
20	16QAM	50	50	20.86	20.82	20.87		
20	16QAM	100	0	20.86	20.72	20.90		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	22.44	22.45	22.40	23	0
15	QPSK	1	37	22.48	22.48	22.49		
15	QPSK	1	74	22.40	22.45	22.52		
15	QPSK	36	0	21.63	21.58	21.53	22	1
15	QPSK	36	20	21.41	21.69	21.70		
15	QPSK	36	39	21.57	21.72	21.87		
15	QPSK	75	0	21.79	21.67	21.76		
15	16QAM	1	0	21.82	21.83	21.74	22	1
15	16QAM	1	37	21.72	21.74	21.68		
15	16QAM	1	74	21.73	21.67	21.71		
15	16QAM	36	0	20.67	20.73	20.71	21	2
15	16QAM	36	20	20.70	20.85	20.82		
15	16QAM	36	39	20.78	20.81	20.79		
15	16QAM	75	0	20.70	20.73	20.87		

Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	22.41	22.42	22.43	23	0
10	QPSK	1	25	22.45	22.33	22.52		
10	QPSK	1	49	22.50	22.41	22.51		
10	QPSK	25	0	21.68	21.71	21.77	22	1
10	QPSK	25	12	21.65	21.67	21.58		
10	QPSK	25	25	21.70	21.74	21.77		
10	QPSK	50	0	21.63	21.67	21.86		
10	16QAM	1	0	21.84	21.83	21.85	22	1
10	16QAM	1	25	21.79	21.63	21.73		
10	16QAM	1	49	21.78	21.67	21.84		
10	16QAM	25	0	20.77	20.47	20.64	21	2
10	16QAM	25	12	20.62	20.46	20.72		
10	16QAM	25	25	20.52	20.51	20.69		
10	16QAM	50	0	20.70	20.71	20.61		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	22.44	22.45	22.51	23	0
5	QPSK	1	12	22.45	22.48	22.49		
5	QPSK	1	24	22.46	22.46	22.46		
5	QPSK	12	0	21.77	21.77	21.74	22	1
5	QPSK	12	7	21.62	21.74	21.53		
5	QPSK	12	13	21.55	21.72	21.74		
5	QPSK	25	0	21.59	21.66	21.61		
5	16QAM	1	0	21.69	21.61	21.60	22	1
5	16QAM	1	12	21.70	21.71	21.76		
5	16QAM	1	24	21.79	21.66	21.73		
5	16QAM	12	0	20.69	20.52	20.66	21	2
5	16QAM	12	7	20.72	20.70	20.71		
5	16QAM	12	13	20.64	20.76	20.75		
5	16QAM	25	0	20.65	20.77	20.78		

<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	22.23	22.20	22.33	22.29	22.26	23	0
20	QPSK	1	49	22.18	22.18	22.30	22.24	22.19		
20	QPSK	1	99	22.33	22.36	22.53	22.48	22.42		
20	QPSK	50	0	21.40	21.48	21.53	21.50	21.51	22	1
20	QPSK	50	24	21.46	21.51	21.56	21.49	21.55		
20	QPSK	50	50	21.38	21.46	21.50	21.51	21.49		
20	QPSK	100	0	21.40	21.49	21.55	21.52	21.46		
20	16QAM	1	0	21.38	21.44	21.51	21.47	21.43	22	1
20	16QAM	1	49	21.35	21.43	21.50	21.46	21.48		
20	16QAM	1	99	21.34	21.47	21.48	21.52	21.50		
20	16QAM	50	0	20.46	20.48	20.54	20.49	20.51	21	2
20	16QAM	50	24	20.40	20.51	20.58	20.54	20.47		
20	16QAM	50	50	20.42	20.44	20.40	20.38	20.41		
20	16QAM	100	0	20.45	20.43	20.42	20.42	20.43		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	22.28	22.31	22.36	22.40	22.35	23	0
15	QPSK	1	37	22.35	22.33	22.41	22.39	22.43		
15	QPSK	1	74	22.41	22.44	22.48	22.46	22.45		
15	QPSK	36	0	21.37	21.45	21.43	21.38	21.41	22	1
15	QPSK	36	20	21.33	21.41	21.35	21.42	21.38		
15	QPSK	36	39	21.40	21.44	21.45	21.44	21.42		
15	QPSK	75	0	21.52	21.50	21.57	21.56	21.63		
15	16QAM	1	0	21.55	21.52	21.53	21.54	21.54	22	1
15	16QAM	1	37	21.49	21.46	21.52	21.48	21.49		
15	16QAM	1	74	21.56	21.53	21.58	21.55	21.55		
15	16QAM	36	0	20.55	20.57	20.60	20.61	20.58	21	2
15	16QAM	36	20	20.48	20.49	20.52	20.53	20.55		
15	16QAM	36	39	20.43	20.39	20.44	20.46	20.48		
15	16QAM	75	0	20.45	20.41	20.46	20.44	20.43		

Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	22.38	22.42	22.44	22.48	22.46	23	0
10	QPSK	1	25	22.35	22.35	22.36	22.44	22.41		
10	QPSK	1	49	22.41	22.46	22.42	22.41	22.38		
10	QPSK	25	0	21.54	21.59	21.57	21.56	21.52	22	1
10	QPSK	25	12	21.31	21.41	21.34	21.41	21.37		
10	QPSK	25	25	21.42	21.46	21.45	21.50	21.46		
10	QPSK	50	0	21.52	21.52	21.49	21.49	21.51		
10	16QAM	1	0	21.66	21.61	21.62	21.62	21.60	22	1
10	16QAM	1	25	21.59	21.66	21.63	21.55	21.59		
10	16QAM	1	49	21.63	21.54	21.58	21.59	21.62		
10	16QAM	25	0	20.65	20.62	20.64	20.58	20.66	21	2
10	16QAM	25	12	20.63	20.58	20.61	20.63	20.64		
10	16QAM	25	25	20.55	20.50	20.51	20.52	20.55		
10	16QAM	50	0	20.60	20.49	20.55	20.49	20.57		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	22.51	22.48	22.46	22.48	22.50	23	0
5	QPSK	1	12	22.50	22.46	22.48	22.42	22.46		
5	QPSK	1	24	22.43	22.35	22.32	22.38	22.33		
5	QPSK	12	0	21.41	21.38	21.35	21.33	21.34	22	1
5	QPSK	12	7	21.38	21.44	21.41	21.36	21.44		
5	QPSK	12	13	21.49	21.46	21.45	21.43	21.51		
5	QPSK	25	0	21.44	21.39	21.40	21.38	21.42		
5	16QAM	1	0	21.62	21.58	21.57	21.55	21.55	22	1
5	16QAM	1	12	21.59	21.60	21.62	21.58	21.59		
5	16QAM	1	24	21.57	21.59	21.59	21.57	21.60		
5	16QAM	12	0	20.52	20.46	20.48	20.52	20.45	21	2
5	16QAM	12	7	20.43	20.44	20.39	20.44	20.42		
5	16QAM	12	13	20.54	20.51	20.49	20.53	20.54		
5	16QAM	25	0	20.66	20.60	20.63	20.66	20.64		

<Reduced Power Mode for Hotspot On/P-Sensor On>

<LTE Band 38>

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				37850	38000	38150		
Frequency (MHz)				2580	2595	2610		
20	QPSK	1	0	17.90	18.07	17.89	18.5	0
20	QPSK	1	49	18.17	18.09	17.65		
20	QPSK	1	99	18.35	18.11	17.76		
20	QPSK	50	0	16.49	16.46	16.28	17.5	1
20	QPSK	50	24	16.56	16.41	16.24		
20	QPSK	50	50	16.58	16.37	16.12		
20	QPSK	100	0	16.49	16.42	16.24		
20	16QAM	1	0	16.50	16.49	16.31	17.5	1
20	16QAM	1	49	16.42	16.36	16.27		
20	16QAM	1	99	16.69	16.38	16.09		
20	16QAM	50	0	15.47	15.44	15.27	16.5	2
20	16QAM	50	24	15.55	15.48	15.24		
20	16QAM	50	50	15.57	15.43	15.20		
20	16QAM	100	0	15.57	15.50	15.22		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	17.69	18.05	17.82	18.5	0
15	QPSK	1	37	18.10	18.05	17.81		
15	QPSK	1	74	18.33	17.96	17.72		
15	QPSK	36	0	16.39	16.35	16.16	17.5	1
15	QPSK	36	20	16.50	16.42	16.19		
15	QPSK	36	39	16.59	16.33	16.14		
15	QPSK	75	0	16.44	16.35	16.09		
15	16QAM	1	0	16.49	16.34	16.25	17.5	1
15	16QAM	1	37	16.41	16.53	16.16		
15	16QAM	1	74	16.63	16.30	16.16		
15	16QAM	36	0	15.42	15.37	15.20	16.5	2
15	16QAM	36	20	15.52	15.44	15.23		
15	16QAM	36	39	15.54	15.36	15.08		
15	16QAM	75	0	15.50	15.29	15.17		

Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	17.94	17.98	17.74	18.5	0
10	QPSK	1	25	17.72	17.83	17.58		
10	QPSK	1	49	18.03	18.31	17.82		
10	QPSK	25	0	16.49	16.50	16.28	17.5	1
10	QPSK	25	12	16.50	16.37	16.15		
10	QPSK	25	25	16.38	16.44	16.06		
10	QPSK	50	0	16.49	16.46	16.12		
10	16QAM	1	0	16.66	16.76	16.41	17.5	1
10	16QAM	1	25	16.46	16.58	16.11		
10	16QAM	1	49	16.83	16.65	16.33		
10	16QAM	25	0	15.50	15.49	15.18	16.5	2
10	16QAM	25	12	15.48	15.44	15.23		
10	16QAM	25	25	15.46	15.41	15.14		
10	16QAM	50	0	15.58	15.55	15.17		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	17.97	17.84	17.76	18.5	0
5	QPSK	1	12	18.08	17.69	17.55		
5	QPSK	1	24	18.12	17.76	17.69		
5	QPSK	12	0	16.38	16.27	16.18	17.5	1
5	QPSK	12	7	16.37	16.25	16.16		
5	QPSK	12	13	16.36	16.24	16.05		
5	QPSK	25	0	16.40	16.42	16.15		
5	16QAM	1	0	16.55	16.59	16.29	17.5	1
5	16QAM	1	12	16.59	16.54	16.12		
5	16QAM	1	24	16.51	16.52	16.09		
5	16QAM	12	0	15.23	15.43	15.15	16.5	2
5	16QAM	12	7	15.41	15.40	15.17		
5	16QAM	12	13	15.40	15.39	15.08		
5	16QAM	25	0	15.50	15.49	15.14		

<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	16.97	17.13	16.87	17.17	17.04	18.5	0
20	QPSK	1	49	16.93	17.13	16.95	17.17	17.02		
20	QPSK	1	99	17.20	17.28	17.12	17.23	17.15		
20	QPSK	50	0	16.24	16.36	16.09	16.21	16.18	17.5	1
20	QPSK	50	24	16.05	16.26	16.04	16.16	16.06		
20	QPSK	50	50	16.15	16.29	16.15	16.18	16.13		
20	QPSK	100	0	16.16	16.21	16.14	16.20	16.12		
20	16QAM	1	0	16.08	16.10	16.13	16.15	16.22	17.5	1
20	16QAM	1	49	16.01	16.13	16.16	16.11	16.12		
20	16QAM	1	99	16.13	16.20	16.27	16.12	16.21		
20	16QAM	50	0	15.17	15.43	15.26	15.25	15.26	16.5	2
20	16QAM	50	24	15.07	15.32	15.22	15.16	15.10		
20	16QAM	50	50	15.21	15.33	15.19	15.32	15.19		
20	16QAM	100	0	15.11	15.37	15.26	15.35	15.14		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	17.20	17.05	17.05	17.24	17.25	18.5	0
15	QPSK	1	37	17.06	17.05	17.02	17.08	17.13		
15	QPSK	1	74	17.22	17.07	17.21	17.24	17.15		
15	QPSK	36	0	16.03	15.99	16.08	16.20	16.02	17.5	1
15	QPSK	36	20	15.92	15.91	16.03	16.14	15.95		
15	QPSK	36	39	15.86	15.90	16.04	16.10	15.99		
15	QPSK	75	0	16.07	15.94	16.13	16.19	15.97		
15	16QAM	1	0	16.19	16.19	16.31	16.24	16.09	17.5	1
15	16QAM	1	37	16.04	16.07	16.14	16.15	16.07		
15	16QAM	1	74	16.24	16.42	16.28	16.30	16.02		
15	16QAM	36	0	15.05	15.12	15.12	15.16	15.07	16.5	2
15	16QAM	36	20	15.01	15.13	15.04	15.10	15.01		
15	16QAM	36	39	15.02	15.07	15.09	15.26	15.10		
15	16QAM	75	0	15.05	15.11	15.13	15.23	15.07		

Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	17.03	17.21	17.11	17.12	17.07	18.5	0
10	QPSK	1	25	16.77	16.91	16.78	17.04	16.83		
10	QPSK	1	49	17.21	17.24	17.26	17.27	17.01		
10	QPSK	25	0	15.87	16.01	15.95	16.16	15.83	17.5	1
10	QPSK	25	12	15.80	16.06	16.00	16.16	15.89		
10	QPSK	25	25	15.83	16.19	16.06	16.07	15.79		
10	QPSK	50	0	15.95	16.10	16.06	16.20	15.86		
10	16QAM	1	0	16.17	16.29	16.27	16.40	16.07	17.5	1
10	16QAM	1	25	16.00	16.00	16.01	16.19	16.02		
10	16QAM	1	49	16.29	16.25	16.24	16.48	16.03		
10	16QAM	25	0	15.00	15.01	15.06	15.20	15.07	16.5	2
10	16QAM	25	12	15.05	15.10	15.06	15.19	15.04		
10	16QAM	25	25	15.08	15.18	15.06	15.06	15.08		
10	16QAM	50	0	15.09	15.12	15.10	15.22	15.09		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	16.78	16.90	16.89	16.85	16.71	18.5	0
5	QPSK	1	12	16.71	16.84	16.82	16.86	16.72		
5	QPSK	1	24	16.70	16.83	16.84	16.89	16.70		
5	QPSK	12	0	15.88	15.96	15.91	16.05	15.71	17.5	1
5	QPSK	12	7	15.79	15.92	15.91	16.01	15.65		
5	QPSK	12	13	15.65	15.93	15.94	15.97	15.76		
5	QPSK	25	0	15.72	15.82	15.98	15.86	15.63		
5	16QAM	1	0	15.84	15.95	15.91	16.01	15.68	17.5	1
5	16QAM	1	12	15.86	16.10	15.93	15.93	15.82		
5	16QAM	1	24	15.79	16.05	16.01	16.00	15.86		
5	16QAM	12	0	15.02	15.11	15.04	15.09	15.02	16.5	2
5	16QAM	12	7	15.06	15.14	15.08	15.06	15.03		
5	16QAM	12	13	15.04	15.11	15.06	15.09	15.07		
5	16QAM	25	0	15.05	15.12	15.11	15.05	15.03		

<LTE Carrier Aggregation>

General Note:

This device supports Carrier Aggregation on downlink for inter and intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.

<Inter-Band Carrier Combination>

E-UTRA CA configuration / Bandwidth combination set										
E-UTRA CA Configuration	Uplink CA configurations	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_2A-4A	-	2	Yes	Yes	Yes	Yes	Yes	Yes	40	0
		4			Yes	Yes	Yes	Yes		
		2			Yes	Yes			20	1
		4			Yes	Yes				
		2			Yes	Yes	Yes	Yes	40	2
		4			Yes	Yes	Yes	Yes		
CA_2A-5A	-	2			Yes	Yes	Yes	Yes	30	0
		5			Yes	Yes				
		2			Yes	Yes			20	1
		5			Yes	Yes				
CA_2A-12A	-	2			Yes	Yes	Yes	Yes	30	0
		12			Yes	Yes				
		2			Yes	Yes	Yes	Yes	30	1
		12		Yes	Yes	Yes				
		2			Yes	Yes			20	2
		12			Yes	Yes				
CA_2A-66A	-	2	Yes	Yes	Yes	Yes	Yes	Yes	40	0
		66			Yes	Yes	Yes	Yes		
		2			Yes	Yes			20	1
		66			Yes	Yes				
		2			Yes	Yes	Yes	Yes	40	2
		66			Yes	Yes	Yes	Yes		
CA_2A-71A	-	2			Yes	Yes	Yes	Yes	40	0
		71			Yes	Yes	Yes	Yes		
		2			Yes	Yes			20	1
		71			Yes	Yes				

E-UTRA CA configuration / Bandwidth combination set										
E-UTRA CA Configuration	Uplink CA configurations	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_4A-5A	-	4			Yes	Yes			20	0
		5			Yes	Yes				
		4			Yes	Yes	Yes	Yes	30	0
		5			Yes	Yes				
CA_4A-12A	-	4	Yes	Yes	Yes	Yes			20	0
		12			Yes	Yes				
		4	Yes	Yes	Yes	Yes	Yes	Yes	30	1
		12			Yes	Yes				
		4			Yes	Yes	Yes	Yes	30	2
		12		Yes	Yes	Yes				
		4			Yes	Yes			20	3
		12			Yes	Yes				
		4			Yes	Yes	Yes	Yes	30	4
		12			Yes	Yes				
		4			Yes	Yes	Yes		20	5
		12			Yes					
CA_4A-71A	-	4			Yes	Yes	Yes	Yes	40	0
		71			Yes	Yes	Yes	Yes		
CA_12A-66A	-	12			Yes	Yes			20	0
		66	Yes	Yes	Yes	Yes				
		12			Yes	Yes			30	1
		66	Yes	Yes	Yes	Yes	Yes	Yes		
		12		Yes	Yes	Yes			30	2
		66			Yes	Yes	Yes	Yes		
		12			Yes	Yes			20	3
		66			Yes	Yes				
		12			Yes	Yes			30	4
		66			Yes	Yes	Yes	Yes		
		12			Yes				20	5
		66			Yes	Yes	Yes			
CA_66A-71A	-	66			Yes	Yes	Yes	Yes	40	0
		71			Yes	Yes	Yes	Yes		

<Intra-Band Carrier Combination>

E-UTRA CA configuration / Bandwidth combination set							
E-UTRA CA configuration	Uplink CA configurations	Component carriers in order of increasing carrier frequency				Maximum aggregated bandwidth [MHz]	Bandwidth combination set
		Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_2C	-	5	20			40	0
		10	15, 20				
		15	10, 15, 20				
		20	5, 10, 15, 20				
CA_66B	-	5	5, 10, 15			20	0
		10	5, 10				
		15	5				
CA_66C	-	5	20			40	0
		10	15, 20				
		15	10, 15, 20				
		20	5, 10, 15, 20				

E-UTRA CA configuration / Bandwidth combination set							
E-UTRA CA configuration	Uplink CA configurations	Component carriers in order of increasing carrier frequency				Maximum aggregated bandwidth [MHz]	Bandwidth combination set
		Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_2A-2A	-	5, 10, 15, 20	5, 10, 15, 20			40	0
CA_4A-4A	-	5, 10, 15, 20	5, 10, 15, 20			40	0
		5, 10	5, 10			20	1
CA_66A-66A	-	5, 10, 15, 20	5, 10, 15, 20			40	0

LTE Carrier Aggregation Conducted Power (Downlink)

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 carrier aggregation only. Uplink carrier aggregation is not supported. 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 inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.

vi. 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. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.

vii. 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.

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

<Full Power Mode>

Configure		PCC							SCC				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
Inter-Band		Band 2	20M	1880	18900	QPSK	1	0	Band 4	20M	2132.5	2175	23.31	23.38
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 2	20M	1960	900	23.12	23.14
		Band 2	20M	1880	18900	QPSK	1	0	Band 5	10M	881.5	2525	23.36	23.38
		Band 5	10M	844	20600	QPSK	1	49	Band 2	20M	1960	900	23.04	23.05
		Band 2	20M	1880	18900	QPSK	1	0	Band 12	10M	737.5	5095	23.32	23.38
		Band 12	10M	704	23060	QPSK	1	0	Band 2	20M	1960	900	23.68	23.78
		Band 2	20M	1880	18900	QPSK	1	0	Band 66	20M	2155	66886	23.25	23.38
		Band 66	20M	1720	132072	QPSK	1	99	Band 2	20M	1960	900	23.28	23.41
		Band 2	20M	1880	18900	QPSK	1	0	Band 71	20M	637	68786	23.32	23.38
		Band 71	20M	683	133322	QPSK	1	99	Band 2	20M	1960	900	22.53	22.55
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	23.08	23.14
		Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	23.04	23.05
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	23.08	23.14
		Band 12	10M	704	23060	QPSK	1	0	Band 4	20M	2132.5	2175	23.75	23.78
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 71	20M	637	68786	23.08	23.14
		Band 71	20M	683	133322	QPSK	1	99	Band 4	10M	2132.5	2175	22.52	22.55
		Band 12	10M	704	23060	QPSK	1	0	Band 66	20M	2155	66886	23.75	23.78
		Band 66	20M	1720	132072	QPSK	1	99	Band 12	10M	737.5	5095	23.40	23.41
		Band 66	20M	1720	132072	QPSK	1	99	Band 71	20M	637	68786	23.38	23.41
		Band 71	20M	683	133322	QPSK	1	99	Band 66	20M	2155	66886	22.50	22.55
Intra-Band	Contiguous	Band 2	20M	1880	18900	QPSK	1	0	Band 2	20M	1979.8	1098	23.35	23.38
		Band 66	15M	1717.5	132047	QPSK	1	74	Band 66	5M	2121.8	66554	23.21	23.26
		Band 66	20M	1720	132072	QPSK	1	99	Band 66	20M	2139.8	66734	23.38	23.41
	Non-Contiguous	Band 2	20M	1880	18900	QPSK	1	0	Band 2	5M	1987.5	1175	23.31	23.38
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	23.08	23.14
		Band 66	20M	1720	132072	QPSK	1	99	Band 66	5M	2197.5	67311	23.35	23.41

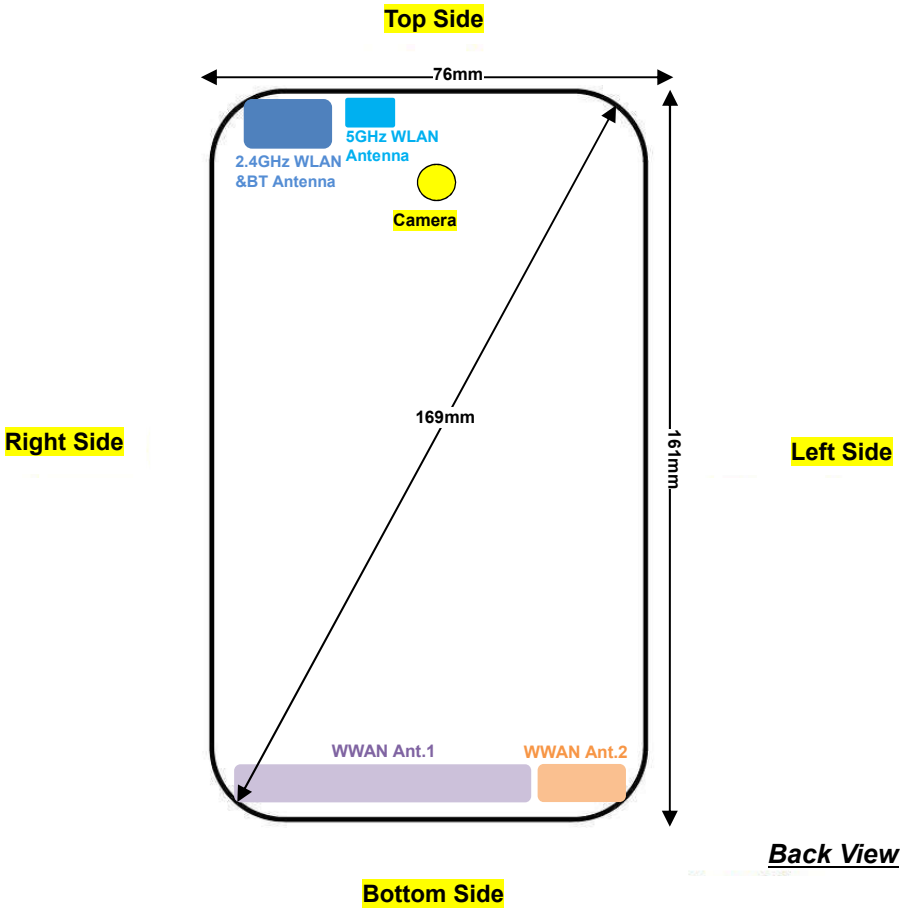
<Reduced Power Mode for Hotspot On/P-Sensor On>

Configure		PCC							SCC				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
Inter-Band		Band 2	20M	1880	18900	QPSK	1	0	Band 4	20M	2132.5	2175	14.41	14.48
		Band 4	20M	1720	2050	QPSK	1	0	Band 2	20M	1960	900	15.41	15.47
		Band 2	20M	1880	18900	QPSK	1	0	Band 5	10M	881.5	2525	14.46	14.48
		Band 5	10M	836.5	844	QPSK	1	49	Band 2	20M	1960	900	21.32	21.44
		Band 2	20M	1880	18900	QPSK	1	0	Band 12	10M	737.5	5095	14.42	14.48
		Band 12	10M	711	23130	QPSK	1	0	Band 2	20M	1960	900	21.51	21.56
		Band 2	20M	1880	18900	QPSK	1	0	Band 66	20M	2155	66886	14.45	14.48
		Band 66	20M	1720	132072	QPSK	1	99	Band 2	20M	1960	900	15.51	15.55
		Band 2	20M	1880	18900	QPSK	1	0	Band 71	20M	637	68786	14.40	14.48
		Band 71	20M	683	133322	QPSK	1	99	Band 2	20M	1960	900	22.54	22.55
		Band 4	20M	1720	2050	QPSK	1	0	Band 5	10M	881.5	2525	15.38	15.47
		Band 5	10M	836.5	844	QPSK	1	49	Band 4	20M	2132.5	2175	21.38	21.44
		Band 4	20M	1720	2050	QPSK	1	0	Band 12	10M	737.5	5095	15.41	15.47
		Band 12	10M	711	23130	QPSK	1	0	Band 4	20M	2132.5	2175	21.53	21.56
		Band 4	20M	1720	2050	QPSK	1	0	Band 71	20M	637	68786	15.38	15.47
		Band 71	20M	683	133322	QPSK	1	99	Band 4	10M	2132.5	2175	22.48	22.55
		Band 12	10M	711	23130	QPSK	1	0	Band 66	20M	2155	66886	21.55	21.56
		Band 66	20M	1720	132072	QPSK	1	99	Band 12	10M	737.5	5095	15.50	15.55
		Band 66	20M	1720	132072	QPSK	1	99	Band 71	20M	637	68786	15.51	15.55
		Band 71	10M	829	20450	QPSK	1	0	Band 66	20M	2155	66886	22.41	22.55
Intra-Band	Contiguous	Band 2	20M	1880	18900	QPSK	1	0	Band 2	20M	1979.8	1098	14.41	14.48
		Band 66	15M	1717.5	132047	QPSK	1	0	Band 66	5M	2121.8	66554	15.38	15.41
		Band 66	20M	1720	132072	QPSK	1	99	Band 66	20M	2139.8	66734	15.51	15.55
	Non-Contiguous	Band 2	20M	1880	18900	QPSK	1	0	Band 2	5M	1987.5	1175	14.42	14.48
		Band 4	20M	1720	2050	QPSK	1	0	Band 4	5M	2152.5	2375	15.41	15.47
		Band 66	20M	1720	132072	QPSK	1	99	Band 66	5M	2197.5	67311	15.52	15.55

<Reduced Power Mode for Product Specific 10g SAR>

Configure		PCC							SCC				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
Inter-Band		Band 2	20M	1880	18900	QPSK	1	0	Band 4	20M	2132.5	2175	21.65	21.69
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 2	20M	1960	900	19.41	19.48
		Band 2	20M	1880	18900	QPSK	1	0	Band 5	10M	881.5	2525	21.68	21.69
		Band 5	10M	844	20600	QPSK	1	49	Band 2	20M	1960	900	23.01	23.05
		Band 2	20M	1880	18900	QPSK	1	0	Band 12	10M	737.5	5095	21.65	21.69
		Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	23.28	23.29
		Band 2	20M	1880	18900	QPSK	1	0	Band 66	20M	2155	66886	21.65	21.69
		Band 66	20M	1770	132572	QPSK	1	99	Band 2	20M	1960	900	19.68	19.72
		Band 2	20M	1880	18900	QPSK	1	0	Band 71	20M	637	68786	21.68	21.69
		Band 71	20M	683	133322	QPSK	1	99	Band 2	20M	1960	900	22.48	22.55
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	19.35	19.48
		Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	23.01	23.05
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	19.42	19.48
		Band 12	10M	707.5	23095	QPSK	1	0	Band 4	20M	2132.5	2175	23.25	23.29
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 71	20M	637	68786	19.41	19.48
		Band 71	20M	683	133322	QPSK	1	99	Band 4	10M	2132.5	2175	22.48	22.55
		Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	23.25	23.29
		Band 66	20M	1770	132572	QPSK	1	99	Band 12	10M	737.5	5095	19.70	19.72
		Band 66	20M	1770	132572	QPSK	1	99	Band 71	20M	637	68786	19.68	19.72
		Band 71	20M	683	133322	QPSK	1	99	Band 66	20M	2155	66886	22.49	22.55
Intra-Band	Contiguous	Band 2	20M	1880	18900	QPSK	1	0	Band 2	20M	1979.8	1098	21.65	21.69
		Band 66	15M	1717.5	132047	QPSK	1	37	Band 66	5M	2121.8	66554	19.58	19.63
		Band 66	20M	1770	132572	QPSK	1	99	Band 66	20M	2170.2	67038	19.63	19.72
	Non-Contiguous	Band 2	20M	1880	18900	QPSK	1	0	Band 2	5M	1987.5	1175	21.65	21.69
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	19.41	19.48
		Band 66	20M	1770	132572	QPSK	1	99	Band 66	5M	2112.5	66461	19.71	19.72

14. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Antenna 1	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WWAN Antenna 2	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm	≤ 25mm
2.4GHz WLAN & BT	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
5GHz WLAN	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Antenna 1	Yes	Yes	No	Yes	Yes	Yes
WWAN Antenna 2	Yes	Yes	No	Yes	No	Yes
2.4GHz WLAN & BT	Yes	Yes	Yes	No	Yes	No
5GHz WLAN	Yes	Yes	Yes	No	Yes	No

General Note:

1. This device has two WWAN transmitter antennas. WWAN antenna 1 is located at the left side of bottom edge of the device and WWAN antenna 2 is located at the right side of bottom edge of the device which can refer to antenna location chapter. WWAN antenna 1 frequency bands include GSM850/1900, WCDMA Band II/IV/V, and LTE Band 2/4/5/12/13/66/71, and WWAN antenna 2 frequency bands include LTE Band 7/38/41. They can't transmit simultaneously.
2. Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

15. 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 WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   c. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
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 when the measured SAR is ≥ 0.8W/kg. 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. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, GSM850/1900, WCDMA band II/IV/V, and LTE band 2/4/5/7/12/13/38/41/66 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.)
6. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM850/1900, WCDMA band II/IV/V and LTE band 2/4/5/7/12/13/38/41/66.
7. P-sensor can detect handheld state, for product specific 10g SAR condition, WCDMA band II/IV, LTE band 2/4/66 reduced powers will be active.
8. This device hotspot reduced power and P-sensor reduced power level are the same. So only show one reduced power level for hotspot reduced power and P-sensor reduced power for this application.
9. 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 extremity 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.
   a. For this device for WWAN transmitter scaled to reduced power mode for product specific 10g SAR is higher than 1.2W/kg of GSM850/1900, WCDMA band II/IV/V, and LTE band 2/4/5/7/13/38/41/66, therefore product specific SAR is necessary.
   b. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.

WCDMA 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 ≤ ¼ 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 (HSDPA / HSUPA / DC-HSDPA) are less than ¼ 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 ½ 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 ½ 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 / B38 / B71 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 B38 / B4 SAR test was covered by B41 / B66; 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 ≤ 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.

15.1 Head SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Power Mode	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	WCDMA Band V	RMC 12.2Kbps	Right Cheek	Full	4132	826.4	22.93	24.50	1.435	0.09	0.387	**0.556**
	WCDMA Band V	RMC 12.2Kbps	Right Tilted	Full	4132	826.4	22.93	24.50	1.435	0.07	0.215	0.309
	WCDMA Band V	RMC 12.2Kbps	Left Cheek	Full	4132	826.4	22.93	24.50	1.435	0.09	0.295	0.423
	WCDMA Band V	RMC 12.2Kbps	Left Tilted	Full	4132	826.4	22.93	24.50	1.435	0.07	0.199	0.286
#02	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	Full	1312	1712.4	23.01	24.50	1.409	0.06	0.105	**0.148**
	WCDMA Band IV	RMC 12.2Kbps	Right Tilted	Full	1312	1712.4	23.01	24.50	1.409	0.17	0.042	0.059
	WCDMA Band IV	RMC 12.2Kbps	Left Cheek	Full	1312	1712.4	23.01	24.50	1.409	0.06	0.087	0.123
	WCDMA Band IV	RMC 12.2Kbps	Left Tilted	Full	1312	1712.4	23.01	24.50	1.409	0.17	0.065	0.092
#03	WCDMA Band II	RMC 12.2Kbps	Right Cheek	Full	9400	1880	23.21	24.50	1.346	0.05	0.095	**0.128**
	WCDMA Band II	RMC 12.2Kbps	Right Tilted	Full	9400	1880	23.21	24.50	1.346	0.01	0.040	0.054
	WCDMA Band II	RMC 12.2Kbps	Left Cheek	Full	9400	1880	23.21	24.50	1.346	0.03	0.068	0.092
	WCDMA Band II	RMC 12.2Kbps	Left Tilted	Full	9400	1880	23.21	24.50	1.346	0.07	0.073	0.098

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Power Mode	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)
#04	LTE Band 71	20M	QPSK	1	99	Right Cheek	Full	133322	683	22.55	23.00	1.109	0.08	0.175	**0.194**
	LTE Band 71	20M	QPSK	1	99	Right Tilted	Full	133322	683	22.55	23.00	1.109	0.11	0.065	0.072
	LTE Band 71	20M	QPSK	1	99	Left Cheek	Full	133322	683	22.55	23.00	1.109	0.01	0.165	0.183
	LTE Band 71	20M	QPSK	1	99	Left Tilted	Full	133322	683	22.55	23.00	1.109	0.08	0.096	0.106
	LTE Band 71	20M	QPSK	50	24	Right Cheek	Full	133322	683	21.17	22.00	1.211	0.03	0.080	0.097
	LTE Band 71	20M	QPSK	50	24	Right Tilted	Full	133322	683	21.17	22.00	1.211	0.06	0.043	0.052
	LTE Band 71	20M	QPSK	50	24	Left Cheek	Full	133322	683	21.17	22.00	1.211	0.02	0.075	0.091
	LTE Band 71	20M	QPSK	50	24	Left Tilted	Full	133322	683	21.17	22.00	1.211	0.07	0.043	0.052
#05	LTE Band 5	10M	QPSK	1	49	Right Cheek	Full	20525	836.5	22.89	24.00	1.291	0.02	0.325	**0.420**
	LTE Band 5	10M	QPSK	1	49	Right Tilted	Full	20525	836.5	22.89	24.00	1.291	0.14	0.151	0.195
	LTE Band 5	10M	QPSK	1	49	Left Cheek	Full	20525	836.5	22.89	24.00	1.291	0.03	0.238	0.307
	LTE Band 5	10M	QPSK	1	49	Left Tilted	Full	20525	836.5	22.89	24.00	1.291	0.16	0.149	0.192
	LTE Band 5	10M	QPSK	25	25	Right Cheek	Full	20525	836.5	21.94	23.00	1.276	0.02	0.163	0.208
	LTE Band 5	10M	QPSK	25	25	Right Tilted	Full	20525	836.5	21.94	23.00	1.276	0.02	0.080	0.102
	LTE Band 5	10M	QPSK	25	25	Left Cheek	Full	20525	836.5	21.94	23.00	1.276	0.06	0.128	0.163
	LTE Band 5	10M	QPSK	25	25	Left Tilted	Full	20525	836.5	21.94	23.00	1.276	0.13	0.081	0.103
	LTE Band 66	20M	QPSK	1	99	Right Cheek	Full	132072	1720	23.41	24.00	1.146	0.02	0.107	0.123
	LTE Band 66	20M	QPSK	1	99	Right Tilted	Full	132072	1720	23.41	24.00	1.146	0.02	0.043	0.049
#06	LTE Band 66	20M	QPSK	1	99	Left Cheek	Full	132072	1720	23.41	24.00	1.146	0.05	0.110	**0.126**
	LTE Band 66	20M	QPSK	1	99	Left Tilted	Full	132072	1720	23.41	24.00	1.146	0.02	0.064	0.073
	LTE Band 66	20M	QPSK	50	0	Right Cheek	Full	132072	1720	21.88	23.00	1.294	0.06	0.055	0.072
	LTE Band 66	20M	QPSK	50	0	Right Tilted	Full	132072	1720	21.88	23.00	1.294	0.08	0.023	0.030
	LTE Band 66	20M	QPSK	50	0	Left Cheek	Full	132072	1720	21.88	23.00	1.294	0.01	0.059	0.076
	LTE Band 66	20M	QPSK	50	0	Left Tilted	Full	132072	1720	21.88	23.00	1.294	0.02	0.033	0.043
	LTE Band 2	20M	QPSK	1	0	Right Cheek	Full	18900	1880	23.38	24.00	1.153	0.09	0.069	0.079
	LTE Band 2	20M	QPSK	1	0	Right Tilted	Full	18900	1880	23.38	24.00	1.153	0.06	0.030	0.034
#07	LTE Band 2	20M	QPSK	1	0	Left Cheek	Full	18900	1880	23.38	24.00	1.153	0.09	0.076	**0.088**
	LTE Band 2	20M	QPSK	1	0	Left Tilted	Full	18900	1880	23.38	24.00	1.153	0.06	0.058	0.067
	LTE Band 2	20M	QPSK	50	0	Right Cheek	Full	18900	1880	22.05	23.00	1.245	0.08	0.035	0.043
	LTE Band 2	20M	QPSK	50	0	Right Tilted	Full	18900	1880	22.05	23.00	1.245	0.05	0.015	0.019
	LTE Band 2	20M	QPSK	50	0	Left Cheek	Full	18900	1880	22.05	23.00	1.245	0.04	0.041	0.051
	LTE Band 2	20M	QPSK	50	0	Left Tilted	Full	18900	1880	22.05	23.00	1.245	0.08	0.029	0.036

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Power Mode	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)
	LTE Band 41	20M	QPSK	1	99	Right Cheek	Full	40620	2593	22.53	23.00	1.114	62.9	1.006	0.04	0.078	0.087
	LTE Band 41	20M	QPSK	1	99	Right Tilted	Full	40620	2593	22.53	23.00	1.114	62.9	1.006	0.02	0.065	0.073
#08	LTE Band 41	20M	QPSK	1	99	Left Cheek	Full	40620	2593	22.53	23.00	1.114	62.9	1.006	0.08	0.106	**0.119**
	LTE Band 41	20M	QPSK	1	99	Left Tilted	Full	40620	2593	22.53	23.00	1.114	62.9	1.006	0.01	0.031	0.035
	LTE Band 41	20M	QPSK	50	24	Right Cheek	Full	40620	2593	21.56	22.00	1.107	62.9	1.006	0.06	0.073	0.081
	LTE Band 41	20M	QPSK	50	24	Right Tilted	Full	40620	2593	21.56	22.00	1.107	62.9	1.006	0.01	0.060	0.067
	LTE Band 41	20M	QPSK	50	24	Left Cheek	Full	40620	2593	21.56	22.00	1.107	62.9	1.006	0.06	0.097	0.108
	LTE Band 41	20M	QPSK	50	24	Left Tilted	Full	40620	2593	21.56	22.00	1.107	62.9	1.006	0.01	0.028	0.031

15.2 Hotspot SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
#09	WCDMA Band V	RMC 12.2Kbps	Front	5	Hotspot On	4132	826.4	21.34	21.50	1.038	-0.04	0.769	**0.798**
	WCDMA Band V	RMC 12.2Kbps	Back	5	Hotspot On	4132	826.4	21.34	21.50	1.038	0.08	0.499	0.518
	WCDMA Band V	RMC 12.2Kbps	Left Side	5	Hotspot On	4132	826.4	21.34	21.50	1.038	0.09	0.184	0.191
	WCDMA Band V	RMC 12.2Kbps	Right Side	5	Hotspot On	4132	826.4	21.34	21.50	1.038	0.04	0.349	0.362
	WCDMA Band V	RMC 12.2Kbps	Bottom Side	5	Hotspot On	4132	826.4	21.34	21.50	1.038	0.04	0.427	0.443
	WCDMA Band IV	RMC 12.2Kbps	Front	5	Hotspot On	1312	1712.4	15.69	16.50	1.205	0.08	0.527	0.635
	WCDMA Band IV	RMC 12.2Kbps	Back	5	Hotspot On	1312	1712.4	15.69	16.50	1.205	0.07	0.283	0.341
	WCDMA Band IV	RMC 12.2Kbps	Left Side	5	Hotspot On	1312	1712.4	15.69	16.50	1.205	0.02	0.027	0.033
	WCDMA Band IV	RMC 12.2Kbps	Right Side	5	Hotspot On	1312	1712.4	15.69	16.50	1.205	0.01	0.043	0.052
#10	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	5	Hotspot On	1312	1712.4	15.69	16.50	1.205	-0.01	0.653	**0.787**
	WCDMA Band II	RMC 12.2Kbps	Front	5	Hotspot On	9538	1907.6	15.72	16.00	1.067	0.06	0.704	0.751
	WCDMA Band II	RMC 12.2Kbps	Back	5	Hotspot On	9538	1907.6	15.72	16.00	1.067	0.07	0.405	0.432
	WCDMA Band II	RMC 12.2Kbps	Left Side	5	Hotspot On	9538	1907.6	15.72	16.00	1.067	0.03	0.037	0.039
	WCDMA Band II	RMC 12.2Kbps	Right Side	5	Hotspot On	9538	1907.6	15.72	16.00	1.067	0.06	0.039	0.042
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	5	Hotspot On	9538	1907.6	15.72	16.00	1.067	0.05	0.752	0.802
#11	WCDMA Band II	RMC 12.2Kbps	Bottom Side	5	Hotspot On	9262	1852.4	15.69	16.00	1.074	0.10	0.911	**0.978**
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	5	Hotspot On	9400	1880	15.71	16.00	1.069	0.12	0.806	0.862

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
#12	LTE Band 71	20M	QPSK	1	99	Front	5	Full	133322	683	22.55	23.00	1.109	-0.02	0.696	**0.772**
	LTE Band 71	20M	QPSK	1	99	Back	5	Full	133322	683	22.55	23.00	1.109	-0.01	0.428	0.475
	LTE Band 71	20M	QPSK	1	99	Left side	5	Full	133322	683	22.55	23.00	1.109	0.13	0.242	0.268
	LTE Band 71	20M	QPSK	1	99	Right side	5	Full	133322	683	22.55	23.00	1.109	0.09	0.393	0.436
	LTE Band 71	20M	QPSK	1	99	Bottom side	5	Full	133322	683	22.55	23.00	1.109	-0.03	0.363	0.403
	LTE Band 71	20M	QPSK	50	24	Front	5	Full	133322	683	21.17	22.00	1.211	0.09	0.347	0.420
	LTE Band 71	20M	QPSK	50	24	Back	5	Full	133322	683	21.17	22.00	1.211	0.06	0.206	0.249
	LTE Band 71	20M	QPSK	50	24	Left side	5	Full	133322	683	21.17	22.00	1.211	0.04	0.115	0.139
	LTE Band 71	20M	QPSK	50	24	Right side	5	Full	133322	683	21.17	22.00	1.211	0.13	0.186	0.225
	LTE Band 71	20M	QPSK	50	24	Bottom side	5	Full	133322	683	21.17	22.00	1.211	-0.1	0.167	0.202
#13	LTE Band 5	10M	QPSK	1	49	Front	5	Hotspot On	20525	836.5	21.44	21.50	1.014	-0.04	0.687	**0.697**
	LTE Band 5	10M	QPSK	1	49	Back	5	Hotspot On	20525	836.5	21.44	21.50	1.014	-0.07	0.409	0.415
	LTE Band 5	10M	QPSK	1	49	Left side	5	Hotspot On	20525	836.5	21.44	21.50	1.014	0.12	0.128	0.130
	LTE Band 5	10M	QPSK	1	49	Right side	5	Hotspot On	20525	836.5	21.44	21.50	1.014	0.07	0.266	0.270
	LTE Band 5	10M	QPSK	1	49	Bottom side	5	Hotspot On	20525	836.5	21.44	21.50	1.014	-0.1	0.385	0.390
	LTE Band 5	10M	QPSK	25	25	Front	5	Hotspot On	20525	836.5	18.62	20.50	1.542	-0.03	0.368	0.567
	LTE Band 5	10M	QPSK	25	25	Back	5	Hotspot On	20525	836.5	18.62	20.50	1.542	0.08	0.219	0.338
	LTE Band 5	10M	QPSK	25	25	Left side	5	Hotspot On	20525	836.5	18.62	20.50	1.542	0.06	0.067	0.103
	LTE Band 5	10M	QPSK	25	25	Right side	5	Hotspot On	20525	836.5	18.62	20.50	1.542	0.01	0.142	0.219
	LTE Band 5	10M	QPSK	25	25	Bottom side	5	Hotspot On	20525	836.5	18.62	20.50	1.542	-0.04	0.203	0.313
	LTE Band 66	20M	QPSK	1	99	Front	5	Hotspot On	132072	1720	15.55	16.00	1.109	0.09	0.335	0.372
	LTE Band 66	20M	QPSK	1	99	Back	5	Hotspot On	132072	1720	15.55	16.00	1.109	0.13	0.265	0.294
	LTE Band 66	20M	QPSK	1	99	Left side	5	Hotspot On	132072	1720	15.55	16.00	1.109	0.08	0.032	0.035
	LTE Band 66	20M	QPSK	1	99	Right side	5	Hotspot On	132072	1720	15.55	16.00	1.109	0.02	0.042	0.047
#14	LTE Band 66	20M	QPSK	1	99	Bottom side	5	Hotspot On	132072	1720	15.55	16.00	1.109	-0.07	0.548	**0.608**
	LTE Band 66	20M	QPSK	50	0	Front	5	Hotspot On	132072	1720	13.39	15.00	1.449	0.01	0.223	0.323
	LTE Band 66	20M	QPSK	50	0	Back	5	Hotspot On	132072	1720	13.39	15.00	1.449	0.05	0.136	0.197
	LTE Band 66	20M	QPSK	50	0	Left side	5	Hotspot On	132072	1720	13.39	15.00	1.449	0.03	0.016	0.023
	LTE Band 66	20M	QPSK	50	0	Right side	5	Hotspot On	132072	1720	13.39	15.00	1.449	0.06	0.023	0.033
	LTE Band 66	20M	QPSK	50	0	Bottom side	5	Hotspot On	132072	1720	13.39	15.00	1.449	-0.02	0.351	0.509
	LTE Band 2	20M	QPSK	1	0	Front	5	Hotspot On	18900	1880	14.48	14.50	1.005	0.01	0.480	0.482
	LTE Band 2	20M	QPSK	1	0	Back	5	Hotspot On	18900	1880	14.48	14.50	1.005	0.03	0.272	0.273
	LTE Band 2	20M	QPSK	1	0	Left side	5	Hotspot On	18900	1880	14.48	14.50	1.005	0.12	0.026	0.026
	LTE Band 2	20M	QPSK	1	0	Right side	5	Hotspot On	18900	1880	14.48	14.50	1.005	0.07	0.027	0.027
#15	LTE Band 2	20M	QPSK	1	0	Bottom side	5	Hotspot On	18900	1880	14.48	14.50	1.005	0.02	0.578	**0.581**
	LTE Band 2	20M	QPSK	50	0	Front	5	Hotspot On	18900	1880	11.76	13.50	1.493	0.03	0.277	0.414
	LTE Band 2	20M	QPSK	50	0	Back	5	Hotspot On	18900	1880	11.76	13.50	1.493	0.03	0.150	0.224
	LTE Band 2	20M	QPSK	50	0	Left side	5	Hotspot On	18900	1880	11.76	13.50	1.493	0.14	0.013	0.019
	LTE Band 2	20M	QPSK	50	0	Right side	5	Hotspot On	18900	1880	11.76	13.50	1.493	0.06	0.015	0.022
	LTE Band 2	20M	QPSK	50	0	Bottom side	5	Hotspot On	18900	1880	11.76	13.50	1.493	0.03	0.315	0.470

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
	LTE Band 41	20M	QPSK	1	99	Front	5	Hotspot On	40185	2549.5	17.28	18.50	1.324	62.9	1.006	0.04	0.282	0.376
	LTE Band 41	20M	QPSK	1	99	Back	5	Hotspot On	40185	2549.5	17.28	18.50	1.324	62.9	1.006	0.07	0.219	0.292
	LTE Band 41	20M	QPSK	1	99	Left side	5	Hotspot On	40185	2549.5	17.28	18.50	1.324	62.9	1.006	0.07	0.188	0.250
	LTE Band 41	20M	QPSK	1	99	Bottom side	5	Hotspot On	40185	2549.5	17.28	18.50	1.324	62.9	1.006	0.02	0.487	0.649
	LTE Band 41	20M	QPSK	1	99	Bottom side	5	Hotspot On	39750	2506	17.20	18.50	1.349	62.9	1.006	0.14	0.530	0.719
	LTE Band 41	20M	QPSK	1	99	Bottom side	5	Hotspot On	40620	2593	17.12	18.50	1.374	62.9	1.006	0.06	0.490	0.677
	LTE Band 41	20M	QPSK	1	99	Bottom side	5	Hotspot On	41055	2636.5	17.23	18.50	1.340	62.9	1.006	0.02	0.756	1.019
#16	LTE Band 41	20M	QPSK	1	99	Bottom side	5	Hotspot On	41490	2680	17.15	18.50	1.365	62.9	1.006	0.03	0.797	**1.094**
	LTE Band 41	20M	QPSK	50	0	Front	5	Hotspot On	40185	2549.5	16.36	17.50	1.300	62.9	1.006	0.06	0.234	0.306
	LTE Band 41	20M	QPSK	50	0	Back	5	Hotspot On	40185	2549.5	16.36	17.50	1.300	62.9	1.006	0.09	0.182	0.238
	LTE Band 41	20M	QPSK	50	0	Left side	5	Hotspot On	40185	2549.5	16.36	17.50	1.300	62.9	1.006	0	0.150	0.196
	LTE Band 41	20M	QPSK	50	0	Bottom side	5	Hotspot On	40185	2549.5	16.36	17.50	1.300	62.9	1.006	0.07	0.384	0.502
	LTE Band 41	20M	QPSK	100	0	Bottom side	5	Hotspot On	40185	2549.5	16.21	17.50	1.346	62.9	1.006	0.13	0.374	0.506

15.3 Body Worn Accessory SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
#17	WCDMA Band V	RMC 12.2Kbps	Front	5	P-Sensor On	4132	826.4	21.34	21.50	1.038	-0.04	0.769	**0.798**
	WCDMA Band V	RMC 12.2Kbps	Back	5	P-Sensor On	4132	826.4	21.34	21.50	1.038	0.08	0.499	0.518
#18	WCDMA Band IV	RMC 12.2Kbps	Front	5	P-Sensor On	1312	1712.4	15.69	16.50	1.205	0.08	0.527	**0.635**
	WCDMA Band IV	RMC 12.2Kbps	Back	5	P-Sensor On	1312	1712.4	15.69	16.50	1.205	0.07	0.283	0.341
#19	WCDMA Band II	RMC 12.2Kbps	Front	5	P-Sensor On	9538	1907.6	15.72	16.00	1.067	0.06	0.704	**0.751**
	WCDMA Band II	RMC 12.2Kbps	Back	5	P-Sensor On	9538	1907.6	15.72	16.00	1.067	0.07	0.405	0.432

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
#20	LTE Band 71	20M	QPSK	1	99	Front	5	Full	133322	683	22.55	23.00	1.109	-0.02	0.696	**0.772**
	LTE Band 71	20M	QPSK	1	99	Back	5	Full	133322	683	22.55	23.00	1.109	-0.01	0.428	0.475
	LTE Band 71	20M	QPSK	50	24	Front	5	Full	133322	683	21.17	22.00	1.211	0.09	0.347	0.420
	LTE Band 71	20M	QPSK	50	24	Back	5	Full	133322	683	21.17	22.00	1.211	0.06	0.206	0.249
#21	LTE Band 5	10M	QPSK	1	49	Front	5	P-Sensor On	20525	836.5	21.44	21.50	1.014	-0.04	0.687	**0.697**
	LTE Band 5	10M	QPSK	1	49	Back	5	P-Sensor On	20525	836.5	21.44	21.50	1.014	-0.07	0.409	0.415
	LTE Band 5	10M	QPSK	25	25	Front	5	P-Sensor On	20525	836.5	18.62	20.50	1.542	-0.03	0.368	0.567
	LTE Band 5	10M	QPSK	25	25	Back	5	P-Sensor On	20525	836.5	18.62	20.50	1.542	0.08	0.219	0.338
#22	LTE Band 66	20M	QPSK	1	99	Front	5	P-Sensor On	132072	1720	15.55	16.00	1.109	0.09	0.335	**0.372**
	LTE Band 66	20M	QPSK	1	99	Back	5	P-Sensor On	132072	1720	15.55	16.00	1.109	0.13	0.265	0.294
	LTE Band 66	20M	QPSK	50	0	Front	5	P-Sensor On	132072	1720	13.39	15.00	1.449	0.01	0.223	0.323
	LTE Band 66	20M	QPSK	50	0	Back	5	P-Sensor On	132072	1720	13.39	15.00	1.449	0.05	0.136	0.197
#23	LTE Band 2	20M	QPSK	1	0	Front	5	P-Sensor On	18900	1880	14.48	14.50	1.005	0.01	0.480	**0.482**
	LTE Band 2	20M	QPSK	1	0	Back	5	P-Sensor On	18900	1880	14.48	14.50	1.005	0.03	0.272	0.273
	LTE Band 2	20M	QPSK	50	0	Front	5	P-Sensor On	18900	1880	11.76	13.50	1.493	0.03	0.277	0.414
	LTE Band 2	20M	QPSK	50	0	Back	5	P-Sensor On	18900	1880	11.76	13.50	1.493	0.03	0.150	0.224

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
#24	LTE Band 41	20M	QPSK	1	99	Front	5	P-Sensor On	40185	2549.5	17.28	18.50	1.324	62.9	1.006	0.04	0.282	**0.376**
	LTE Band 41	20M	QPSK	1	99	Back	5	P-Sensor On	40185	2549.5	17.28	18.50	1.324	62.9	1.006	0.07	0.219	0.292
	LTE Band 41	20M	QPSK	50	0	Front	5	P-Sensor On	40185	2549.5	16.36	17.50	1.300	62.9	1.006	0.06	0.234	0.306
	LTE Band 41	20M	QPSK	50	0	Back	5	P-Sensor On	40185	2549.5	16.36	17.50	1.300	62.9	1.006	0.09	0.182	0.238

15.4 Product specific 10g SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	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)
#25	WCDMA Band V	RMC 12.2Kbps	Front	0	Full	4132	826.4	22.93	24.50	1.435	0.15	1.010	**1.450**
	WCDMA Band IV	RMC 12.2Kbps	Front	0	Handheld On	1312	1712.4	19.72	20.00	1.067	0.05	2.360	2.517
	WCDMA Band IV	RMC 12.2Kbps	Front	0	Handheld On	1413	1732.6	19.62	20.00	1.091	0.04	2.330	2.543
	WCDMA Band IV	RMC 12.2Kbps	Front	0	Handheld On	1513	1752.6	19.63	20.00	1.089	0.01	2.570	2.799
	WCDMA Band IV	RMC 12.2Kbps	Bottom side	0	Handheld On	1312	1712.4	19.72	20.00	1.067	-0.06	2.410	2.570
	WCDMA Band IV	RMC 12.2Kbps	Bottom side	0	Handheld On	1413	1732.6	19.62	20.00	1.091	-0.06	2.820	3.078
#26	WCDMA Band IV	RMC 12.2Kbps	Bottom side	0	Handheld On	1513	1752.6	19.63	20.00	1.089	-0.02	2.930	**3.191**
	WCDMA Band II	RMC 12.2Kbps	Front	0	Handheld On	9262	1852.4	20.72	21.00	1.067	0.05	3.050	3.253
#27	WCDMA Band II	RMC 12.2Kbps	Front	0	Handheld On	9400	1880	20.70	21.00	1.072	-0.01	3.220	**3.450**
	WCDMA Band II	RMC 12.2Kbps	Front	0	Handheld On	9538	1907.6	20.64	21.00	1.086	0.07	3.090	3.357
	WCDMA Band II	RMC 12.2Kbps	Back	0	Handheld On	9262	1852.4	20.72	21.00	1.067	0.04	1.920	2.048
	WCDMA Band II	RMC 12.2Kbps	Back	0	Handheld On	9400	1880	20.70	21.00	1.072	0.09	1.850	1.982
	WCDMA Band II	RMC 12.2Kbps	Back	0	Handheld On	9538	1907.6	20.64	21.00	1.086	0.07	1.920	2.086
	WCDMA Band II	RMC 12.2Kbps	Bottom side	0	Handheld On	9262	1852.4	20.72	21.00	1.067	-0.04	2.570	2.741
	WCDMA Band II	RMC 12.2Kbps	Bottom side	0	Handheld On	9400	1880	20.70	21.00	1.072	-0.16	2.990	3.204
	WCDMA Band II	RMC 12.2Kbps	Bottom side	0	Handheld On	9538	1907.6	20.64	21.00	1.086	-0.02	2.850	3.096

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
#28	LTE Band 5	10M	QPSK	1	49	Front	0	Full	20525	836.5	22.89	24.00	1.291	0.06	1.120	**1.446**
	LTE Band 66	20M	QPSK	1	99	Bottom side	0	Handheld On	132572	1770	19.72	20.00	1.067	0.18	1.880	2.005
	LTE Band 66	20M	QPSK	1	99	Bottom side	0	Handheld On	132072	1720	19.61	20.00	1.094	0.06	1.830	2.002
#29	LTE Band 66	20M	QPSK	1	99	Bottom side	0	Handheld On	132322	1745	19.66	20.00	1.081	-0.03	1.900	**2.055**
	LTE Band 66	20M	QPSK	50	0	Bottom side	0	Handheld On	132072	1720	17.62	19.00	1.374	0.01	1.000	1.374
	LTE Band 66	20M	QPSK	100	0	Bottom side	0	Handheld On	132072	1720	17.66	19.00	1.361	-0.04	1.060	1.443
#30	LTE Band 2	20M	QPSK	1	0	Front	0	Handheld On	18900	1880	21.69	22.00	1.074	0.06	3.030	**3.254**
	LTE Band 2	20M	QPSK	1	0	Front	0	Handheld On	18700	1860	21.51	22.00	1.119	0.08	2.970	3.325
	LTE Band 2	20M	QPSK	1	0	Front	0	Handheld On	19100	1900	21.61	22.00	1.094	0.03	2.970	3.249
	LTE Band 2	20M	QPSK	1	0	Back	0	Handheld On	18900	1880	21.69	22.00	1.074	0.01	1.770	1.901
	LTE Band 2	20M	QPSK	1	0	Bottom side	0	Handheld On	18900	1880	21.69	22.00	1.074	0.06	2.990	3.211
	LTE Band 2	20M	QPSK	1	0	Bottom side	0	Handheld On	18700	1860	21.51	22.00	1.119	0.02	2.520	2.821
	LTE Band 2	20M	QPSK	1	0	Bottom side	0	Handheld On	19100	1900	21.61	22.00	1.094	0.02	2.890	3.162
	LTE Band 2	20M	QPSK	50	0	Front	0	Handheld On	18900	1880	19.53	21.00	1.403	0.01	1.670	2.343
	LTE Band 2	20M	QPSK	50	0	Front	0	Handheld On	18700	1860	19.41	21.00	1.442	0.02	1.630	2.351
	LTE Band 2	20M	QPSK	50	0	Front	0	Handheld On	19100	1900	19.42	21.00	1.439	0.07	1.620	2.331
	LTE Band 2	20M	QPSK	50	0	Back	0	Handheld On	18900	1880	19.53	21.00	1.403	0.02	0.941	1.320
	LTE Band 2	20M	QPSK	50	0	Bottom side	0	Handheld On	18900	1880	19.53	21.00	1.403	0.09	1.620	2.273
	LTE Band 2	20M	QPSK	50	0	Bottom side	0	Handheld On	18700	1860	19.41	21.00	1.442	0.1	1.350	1.947
	LTE Band 2	20M	QPSK	50	0	Bottom side	0	Handheld On	19100	1900	19.42	21.00	1.439	0.01	1.560	2.245
	LTE Band 2	20M	QPSK	100	0	Front	0	Handheld On	18900	1880	19.48	21.00	1.419	0.08	1.650	2.341
	LTE Band 2	20M	QPSK	100	0	Bottom side	0	Handheld On	18900	1880	19.48	21.00	1.419	0.11	1.580	2.242

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	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)
#31	LTE Band 41	20M	QPSK	1	99	Bottom side	0	Full	40620	2593	22.53	23.00	1.114	62.9	1.006	-0.01	0.997	**1.118**
	LTE Band 41	20M	QPSK	50	24	Bottom side	0	Full	40620	2593	21.56	22.00	1.107	62.9	1.006	0.08	0.738	0.822

15.5 Repeated SAR Measurement

<1g SAR>

No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA Band II	RMC 12.2Kbps	Bottom side	5	Hotspot On	9262	1852.4	15.69	16.00	1.074	0.10	0.911	1	0.978
2nd	WCDMA Band II	RMC 12.2Kbps	Bottom side	5	Hotspot On	9262	1852.4	15.69	16.00	1.074	0.12	0.907	1.004	0.974

<10g SAR>

No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA Band IV	RMC 12.2Kbps	Bottom side	0	Handheld On	1513	1752.6	19.63	20.00	1.089	-0.02	2.930	1	3.191
2nd	WCDMA Band IV	RMC 12.2Kbps	Bottom side	0	Handheld On	1513	1752.6	19.63	20.00	1.089	-0.05	2.910	1.007	3.169
1st	WCDMA Band II	RMC 12.2Kbps	Front	0	Handheld On	9400	1880	20.7	21.00	1.072	-0.01	3.220	1	3.450
2nd	WCDMA Band II	RMC 12.2Kbps	Front	0	Handheld On	9400	1880	20.7	21.00	1.072	0.08	3.180	1.013	3.407

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥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.

16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset				Note
		Head	Body-worn	Hotspot	Product specific 10g SAR	
1.	GSM Voice + WLAN2.4GHz	Yes	Yes			
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	Yes	WLAN Hotspot
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes	WLAN Hotspot
4.	CDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes	WLAN Hotspot
5.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Yes	WLAN Hotspot
6.	GSM Voice + WLAN5.3/5.5GHz	Yes	Yes			
7.	GPRS/EDGE + WLAN5.3/5.5GHz	Yes	Yes		Yes	WLAN Direct (GC only)
8.	WCDMA + WLAN5.3/5.5GHz	Yes	Yes		Yes	WLAN Direct (GC only)
9.	CDMA + WLAN5.3/5.5GHz	Yes	Yes		Yes	WLAN Direct (GC only)
10.	LTE + WLAN5.3/5.5GHz	Yes	Yes		Yes	WLAN Direct (GC only)
11.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes			
12.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
13.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
14.	CDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
15.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
16.	GSM Voice + Bluetooth		Yes			
17.	GPRS/EDGE + Bluetooth		Yes	Yes	Yes	BT Tethering
18.	WCDMA + Bluetooth		Yes	Yes	Yes	BT Tethering
19.	CDMA + Bluetooth		Yes	Yes	Yes	BT Tethering
20.	LTE + Bluetooth		Yes	Yes	Yes	BT Tethering

General Note:

1. For simultaneously transmission SAR analysis, SAR values only considered WWAN bands which we did perform SAR testing on FA7D2903. Since spot check for GSM850/1900, LTE B7/B12/B13, and BT/WLAN are performed for this application and found the original SAR value can represent this application, so other test results were leverage from the original data which released from original report (Sporton Report Number FA7D2903-01 or refer to Appendix F) to do co-located analysis.
2. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
3. EUT will choose each GSM, WCDMA, CDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
4. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
5. This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
6. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment though they have independent antenna.
7. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
8. According to the EUT character, WLAN 5GHz and Bluetooth can't transmit simultaneously.
9. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
10. The reported SAR summation is calculated based on the same configuration and test position.
11. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
    i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
    ii) SPLSR = (SAR1 + SAR2)^1.5 / (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 ≤ 0.04 for 1g SAR, SPLSR ≤ 0.10 for 10g SAR simultaneously transmission SAR measurement is not necessary.
    iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
    v) The SPLSR calculated results please refer to section 16.5.

16.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2			1+3		
			WWAN	2.4GHz WLAN	5GHz WLAN	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
GSM	GSM850	Right Cheek	0.283	0.868	0.988	1.15			1.27		
		Right Tilted	0.164	0.520	0.988	0.68			1.15		
		Left Cheek	0.211	0.868	0.988	1.08			1.20		
		Left Tilted	0.157	0.792	0.881	0.95			1.04		
	GSM1900	Right Cheek	0.074	0.868	0.988	0.94			1.06		
		Right Tilted	0.025	0.520	0.988	0.55			1.01		
		Left Cheek	0.061	0.868	0.988	0.93			1.05		
		Left Tilted	0.043	0.792	0.881	0.84			0.92		
WCDMA	Band V	Right Cheek	0.556	0.868	0.988	**1.42**			1.54		
		Right Tilted	0.309	0.520	0.988	0.83			1.30		
		Left Cheek	0.423	0.868	0.988	1.29			1.41		
		Left Tilted	0.286	0.792	0.881	1.08			1.17		
	Band IV	Right Cheek	0.148	0.868	0.988	1.02			1.14		
		Right Tilted	0.059	0.520	0.988	0.58			1.05		
		Left Cheek	0.123	0.868	0.988	0.99			1.11		
		Left Tilted	0.092	0.792	0.881	0.88			0.97		
	Band II	Right Cheek	0.128	0.868	0.988	1.00			1.12		
		Right Tilted	0.054	0.520	0.988	0.57			1.04		
		Left Cheek	0.092	0.868	0.988	0.96			1.08		
		Left Tilted	0.098	0.792	0.881	0.89			0.98		

WWAN Band		Exposure Position	1	2	3	1+2			1+3		
			WWAN 1g SAR (W/kg)	2.4GHz WLAN 1g SAR (W/kg)	5GHz WLAN 1g SAR (W/kg)	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
LTE	Band 12	Right Cheek	0.295	0.868	0.988	1.16			1.28		
		Right Tilted	0.148	0.520	0.988	0.67			1.14		
		Left Cheek	0.128	0.868	0.988	1.00			1.12		
		Left Tilted	0.049	0.792	0.881	0.84			0.93		
	Band 13	Right Cheek	0.432	0.868	0.988	1.30			1.42		
		Right Tilted	0.096	0.520	0.988	0.62			1.08		
		Left Cheek	0.211	0.868	0.988	1.08			1.20		
		Left Tilted	0.081	0.792	0.881	0.87			0.96		
	Band 71	Right Cheek	0.194	0.868	0.988	1.06			1.18		
		Right Tilted	0.072	0.520	0.988	0.59			1.06		
		Left Cheek	0.183	0.868	0.988	1.05			1.17		
		Left Tilted	0.106	0.792	0.881	0.90			0.99		
	Band 5	Right Cheek	0.420	0.868	0.988	1.29			1.41		
		Right Tilted	0.195	0.520	0.988	0.72			1.18		
		Left Cheek	0.307	0.868	0.988	1.18			1.30		
		Left Tilted	0.192	0.792	0.881	0.98			1.07		
	Band 66	Right Cheek	0.123	0.868	0.988	0.99			1.11		
		Right Tilted	0.049	0.520	0.988	0.57			1.04		
		Left Cheek	0.126	0.868	0.988	0.99			1.11		
		Left Tilted	0.073	0.792	0.881	0.87			0.95		
	Band 2	Right Cheek	0.079	0.868	0.988	0.95			1.07		
		Right Tilted	0.034	0.520	0.988	0.55			1.02		
		Left Cheek	0.088	0.868	0.988	0.96			1.08		
		Left Tilted	0.067	0.792	0.881	0.86			0.95		
	Band 7	Right Cheek	0.189	0.868	0.988	1.06			1.18		
		Right Tilted	0.154	0.520	0.988	0.67			1.14		
		Left Cheek	0.260	0.868	0.988	1.13			1.25		
		Left Tilted	0.083	0.792	0.881	0.88			0.96		
	Band 41	Right Cheek	0.087	0.868	0.988	0.96			1.08		
		Right Tilted	0.073	0.520	0.988	0.59			1.06		
		Left Cheek	0.119	0.868	0.988	0.99			1.11		
		Left Tilted	0.035	0.792	0.881	0.83			0.92		

16.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2			1+3			1+4		
			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)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.734	0.356	0.495	0.033	1.09			1.23			0.77		
		Back	0.421	0.737	1.175	0.077	1.16			**1.60**	**0.01**	**#1**	0.50		
		Left Side	0.076				0.08			0.08			0.08		
		Right Side	0.253	0.249	0.067	0.024	0.50			0.32			0.28		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.317				0.32			0.32			0.32		
	GSM1900	Front	0.744	0.356	0.495	0.033	1.10			1.24			0.78		
		Back	0.415	0.737	1.175	0.077	1.15			**1.59**			0.49		
		Left Side	0.034				0.03			0.03			0.03		
		Right Side	0.037	0.249	0.067	0.024	0.29			0.10			0.06		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.762				0.76			0.76			0.76		
WCDMA	Band V	Front	0.798	0.356	0.495	0.033	1.15			1.29			0.83		
		Back	0.518	0.737	1.175	0.077	1.26			**1.69**	**0.01**	**#2**	0.60		
		Left Side	0.191				0.19			0.19			0.19		
		Right Side	0.362	0.249	0.067	0.024	0.61			0.43			0.39		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.443				0.44			0.44			0.44		
	Band IV	Front	0.635	0.356	0.495	0.033	0.99			1.13			0.67		
		Back	0.341	0.737	1.175	0.077	1.08			1.52			0.42		
		Left Side	0.033				0.03			0.03			0.03		
		Right Side	0.052	0.249	0.067	0.024	0.30			0.12			0.08		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.787				0.79			0.79			0.79		
	Band II	Front	0.751	0.356	0.495	0.033	1.11			1.25			0.78		
		Back	0.432	0.737	1.175	0.077	1.17			**1.61**	**0.01**	**#3**	0.51		
		Left Side	0.039				0.04			0.04			0.04		
		Right Side	0.042	0.249	0.067	0.024	0.29			0.11			0.07		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.978				0.98			0.98			0.98		

WWAN Band		Exposure Position	1	2	3	4	1+2			1+3			1+4		
			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)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
LTE	Band 12	Front	0.603	0.356	0.495	0.033	0.96			1.10			0.64		
		Back	0.365	0.737	1.175	0.077	1.10			1.54			0.44		
		Left Side	0.271				0.27			0.27			0.27		
		Right Side	0.404	0.249	0.067	0.024	0.65			0.47			0.43		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.294				0.29			0.29			0.29		
	Band 13	Front	0.560	0.356	0.495	0.033	0.92			1.06			0.59		
		Back	0.328	0.737	1.175	0.077	1.07			1.50			0.41		
		Left Side	0.110				0.11			0.11			0.11		
		Right Side	0.233	0.249	0.067	0.024	0.48			0.30			0.26		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.264				0.26			0.26			0.26		
	Band 71	Front	0.772	0.356	0.495	0.033	1.13			1.27			0.81		
		Back	0.475	0.737	1.175	0.077	1.21			**1.65**	**0.01**	**#4**	0.55		
		Left Side	0.268				0.27			0.27			0.27		
		Right Side	0.436	0.249	0.067	0.024	0.69			0.50			0.46		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.403				0.40			0.40			0.40		
	Band 5	Front	0.697	0.356	0.495	0.033	1.05			1.19			0.73		
		Back	0.415	0.737	1.175	0.077	1.15			1.59			0.49		
		Left Side	0.130				0.13			0.13			0.13		
		Right Side	0.270	0.249	0.067	0.024	0.52			0.34			0.29		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.390				0.39			0.39			0.39		
	Band 66	Front	0.372	0.356	0.495	0.033	0.73			0.87			0.41		
		Back	0.294	0.737	1.175	0.077	1.03			1.47			0.37		
		Left Side	0.035				0.04			0.04			0.04		
		Right Side	0.047	0.249	0.067	0.024	0.30			0.11			0.07		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.608				0.61			0.61			0.61		
	Band 2	Front	0.482	0.356	0.495	0.033	0.84			0.98			0.52		
		Back	0.273	0.737	1.175	0.077	1.01			1.45			0.35		
		Left Side	0.026				0.03			0.03			0.03		
		Right Side	0.027	0.249	0.067	0.024	0.28			0.09			0.05		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.581				0.58			0.58			0.58		
LTE	Band 7	Front	0.751	0.356	0.495	0.033	1.11			1.25			0.78		
		Back	0.496	0.737	1.175	0.077	1.23			**1.67**	**0.01**	**#5**	0.57		
		Left Side	0.453				0.45			0.45			0.45		
		Right Side		0.249	0.067	0.024	0.25			0.07			0.02		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	0.962				0.96			0.96			0.96		
	Band 41	Front	0.376	0.356	0.495	0.033	0.73			0.87			0.41		
		Back	0.292	0.737	1.175	0.077	1.03			1.47			0.37		
		Left Side	0.250				0.25			0.25			0.25		
		Right Side		0.249	0.067	0.024	0.25			0.07			0.02		
		Top Side		0.490	1.175	0.054	0.49			1.18			0.05		
		Bottom Side	1.094				1.09			1.09			**1.09**		

16.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2			1+3			1+4		
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)									
GSM	GSM850	Front	0.734	0.356	0.587	0.033	1.09			1.32			0.77		
		Back	0.421	0.737	0.915	0.077	1.16			1.34			0.50		
	GSM1900	Front	0.744	0.356	0.587	0.033	1.10			1.33			0.78		
		Back	0.415	0.737	0.915	0.077	1.15			1.33			0.49		
WCDMA	Band V	Front	0.798	0.356	0.587	0.033	1.15			1.39			0.83		
		Back	0.518	0.737	0.915	0.077	1.26			1.43			0.60		
	Band IV	Front	0.635	0.356	0.587	0.033	0.99			1.22			0.67		
		Back	0.341	0.737	0.915	0.077	1.08			1.26			0.42		
	Band II	Front	0.751	0.356	0.587	0.033	1.11			1.34			0.78		
		Back	0.432	0.737	0.915	0.077	1.17			1.35			0.51		
LTE	Band 12	Front	0.603	0.356	0.587	0.033	0.96			1.19			0.64		
		Back	0.365	0.737	0.915	0.077	1.10			1.28			0.44		
	Band 13	Front	0.560	0.356	0.587	0.033	0.92			1.15			0.59		
		Back	0.328	0.737	0.915	0.077	1.07			1.24			0.41		
	Band 71	Front	0.772	0.356	0.587	0.033	1.13			1.36			0.81		
		Back	0.475	0.737	0.915	0.077	1.21			1.39			0.55		
	Band 5	Front	0.697	0.356	0.587	0.033	1.05			1.28			0.73		
		Back	0.415	0.737	0.915	0.077	1.15			1.33			0.49		
	Band 66	Front	0.372	0.356	0.587	0.033	0.73			0.96			0.41		
		Back	0.294	0.737	0.915	0.077	1.03			1.21			0.37		
	Band 2	Front	0.482	0.356	0.587	0.033	0.84			1.07			0.52		
		Back	0.273	0.737	0.915	0.077	1.01			1.19			0.35		
	Band 7	Front	0.751	0.356	0.587	0.033	1.11			1.34			0.78		
		Back	0.496	0.737	0.915	0.077	1.23			1.41			0.57		
	Band 41	Front	0.376	0.356	0.587	0.033	0.73			0.96			0.41		
		Back	0.292	0.737	0.915	0.077	1.03			1.21			0.37		

16.4 Product specific 10g SAR Exposure Conditions

WWAN Band		Exposure Position	1	2	1+2		
			WWAN	5GHz WLAN			
			10g SAR (W/kg)	10g SAR (W/kg)	Summed 10g SAR (W/kg)	SPLSR	Case No
GSM	GSM1900	Front	3.580	0.825	**4.41**	**0.06**	**#6**
		Bottom Side	2.991		2.99		
WCDMA	Band V	Front	1.450	0.825	2.28		
	Band IV	Front	2.799	0.825	3.62		
		Bottom Side	3.191		3.19		
	Band II	Front	3.450	0.825	**4.28**	**0.06**	**#7**
		Back	2.086	0.712	2.80		
		Bottom Side	3.204		3.20		
LTE	Band 13	Front	1.489	0.825	2.31		
	Band 5	Front	1.446	0.825	2.27		
	Band 66	Bottom Side	2.055		2.06		
	Band 2	Front	3.254	0.825	**4.08**	**0.05**	**#8**
		Back	1.901	0.712	2.61		
		Bottom Side	3.211		3.21		
	Band 7	Front	3.669	0.825	**4.49**	**0.06**	**#9**
		Back	2.213	0.712	2.93		
		Left Side	1.422		1.42		
		Bottom Side	1.615		1.62		
	Band 41	Bottom Side	1.118		1.12		

Remark:

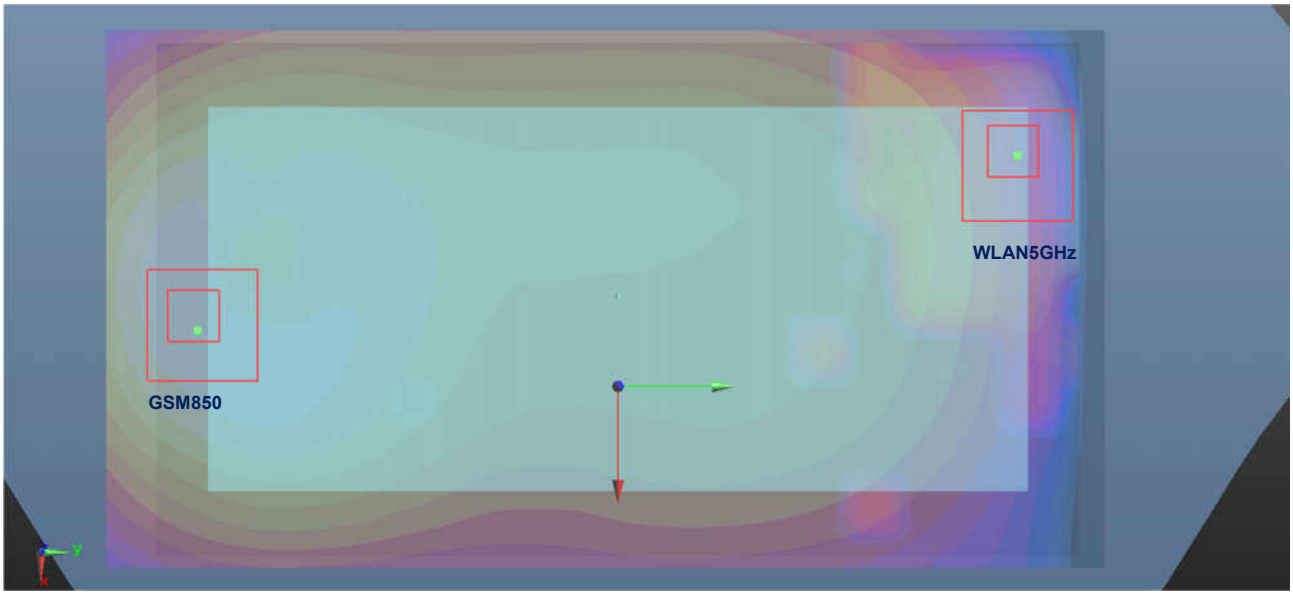
1. For Bluetooth/WLAN 2.4GHz product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.
2. SPLSR ≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.

16.5 SPLSR Evaluation and Analysis

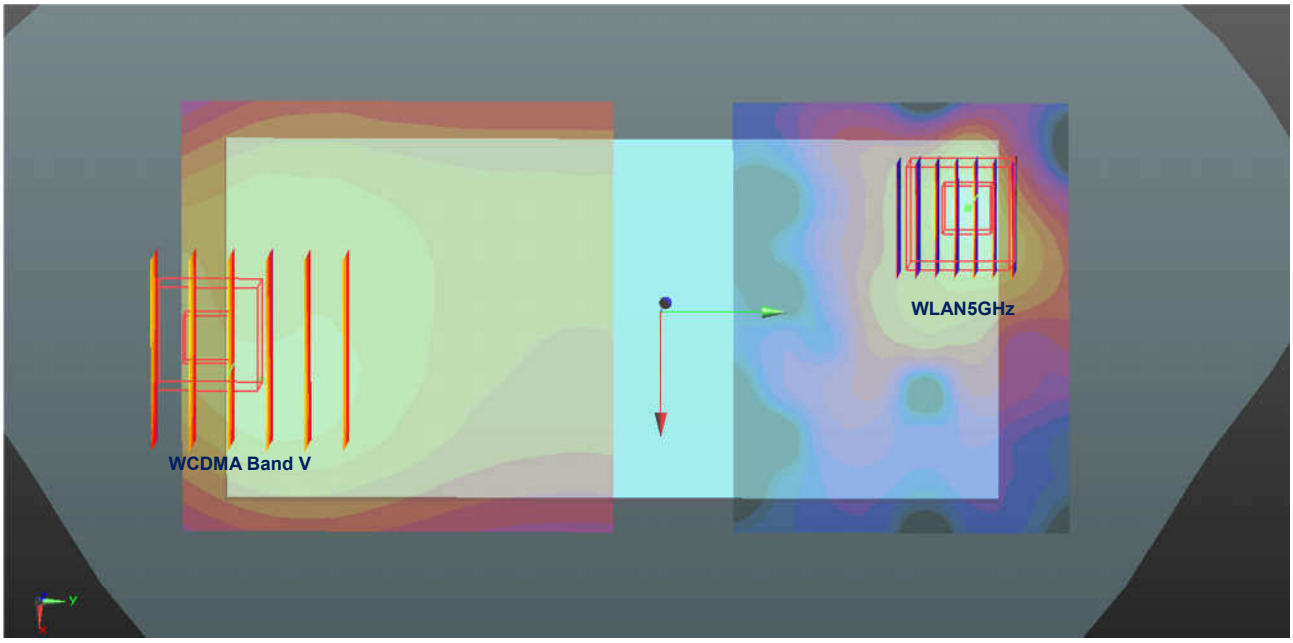
General Note:

1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of [(x1−x2)2 + (y1−y2)2 + (z1−z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04 for 1g SAR and SPLSR ≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.

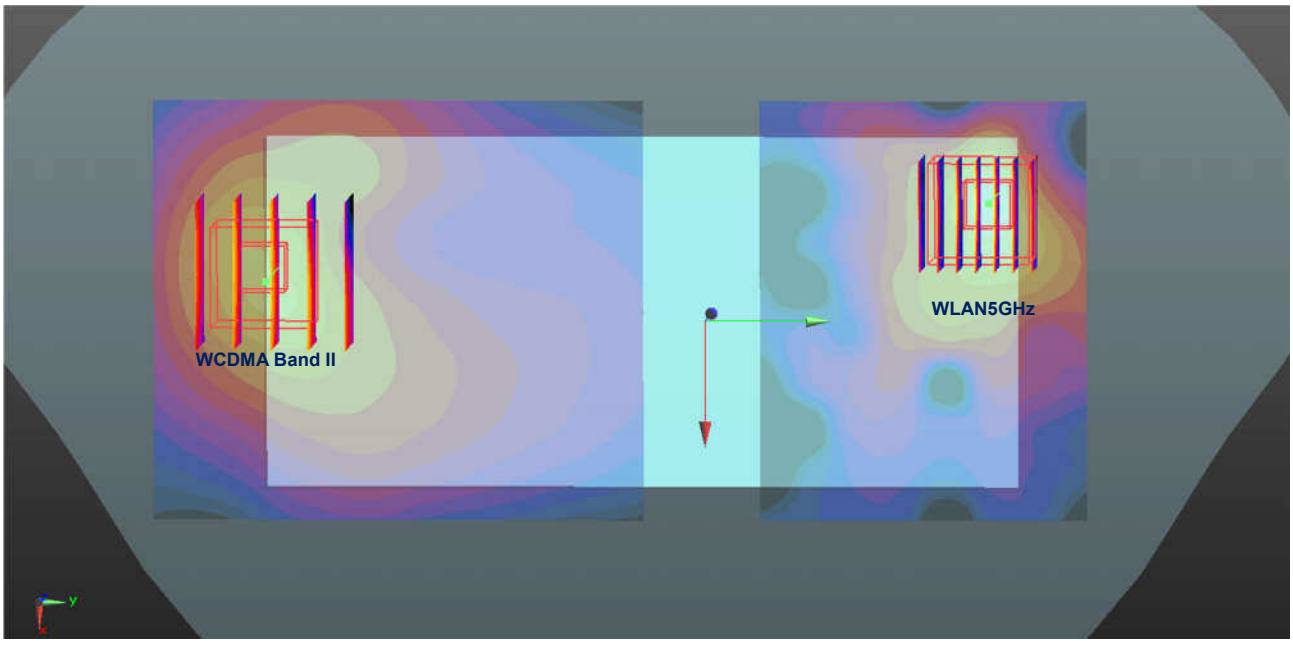
Case #1	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed 1g SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850	Back	0.421	5	0.92	-8.04	-0.12	161.82	1.60	0.01	Not required
	WLAN5GHz		1.175	5	-2.92	7.68	-0.12				



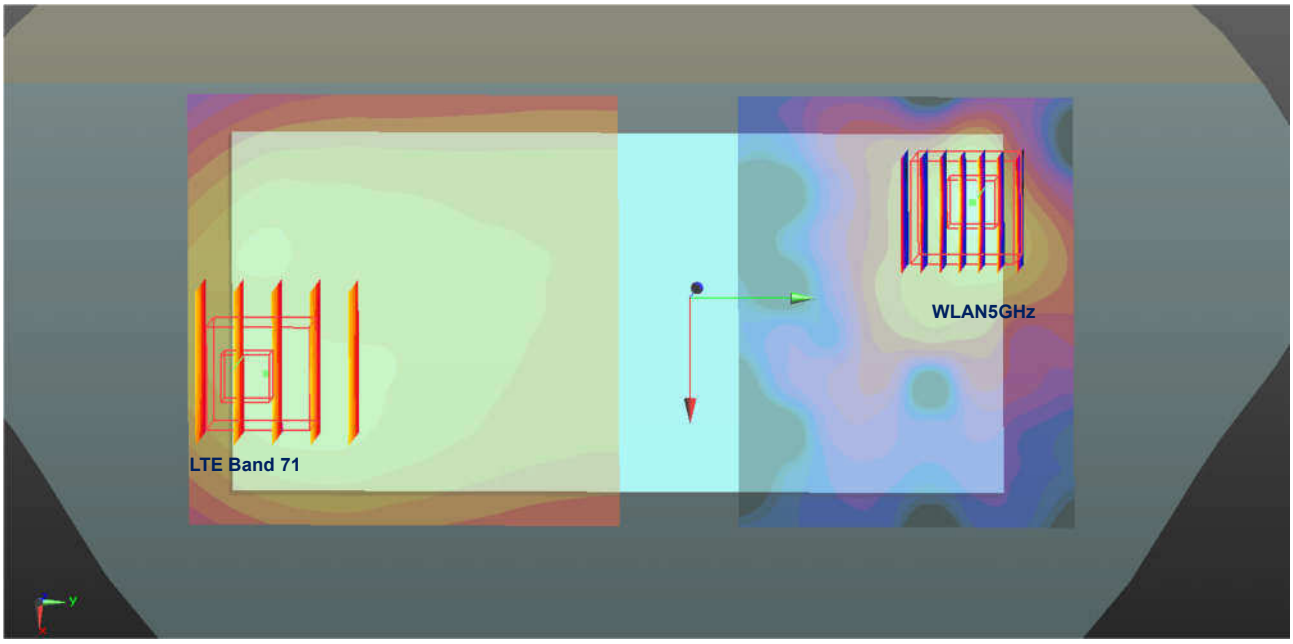
Case	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed 1g SAR (W/kg)	SPLSR Results	Simultaneous SAR
#2	WCDMA Band V	Back	0.518	5	0.61	-8.37	-0.24	164.3	1.69	0.01	Not required
	WLAN5GHz		1.175	5	-2.92	7.68	-0.12				



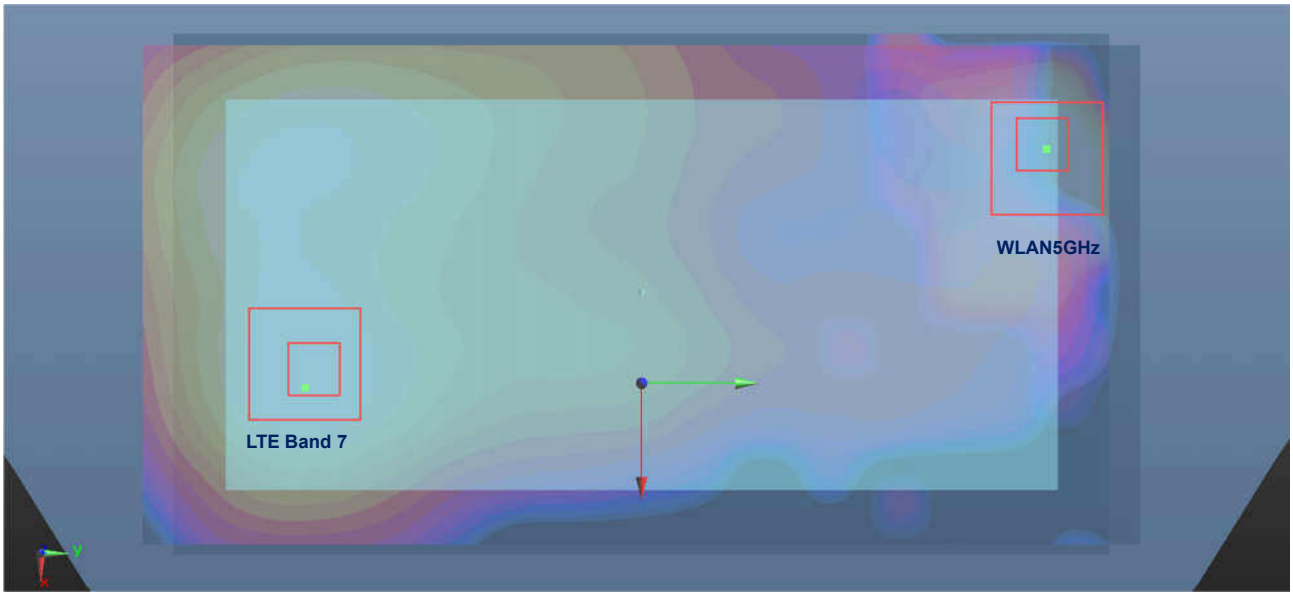
Case	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed 1g SAR (W/kg)	SPLSR Results	Simultaneous SAR
#3	WCDMA Band II	Back	0.432	5	-1.02	-8.16	-0.22	159.5	1.61	0.01	Not required
	WLAN5GHz		1.175	5	-2.92	7.68	-0.12				



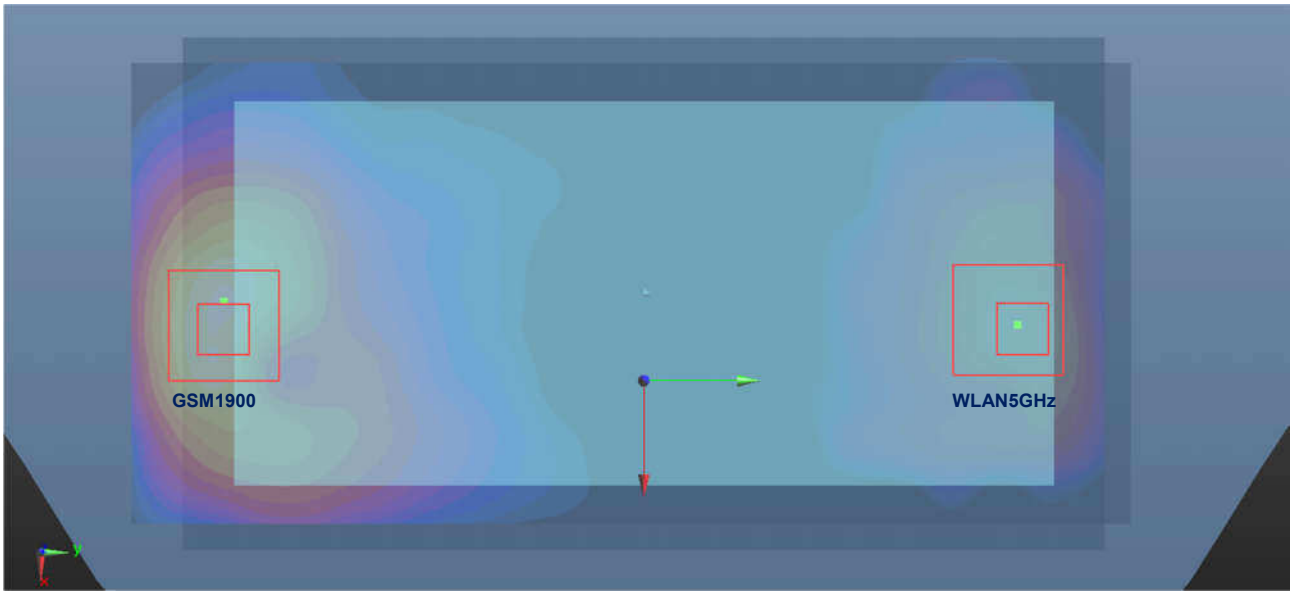
Case #4	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed 1g SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE band 71	Back	0.475	5	1.25	-7.89	-0.22	161.2	1.65	0.01	Not required
	WLAN5GHz		1.175	5	-2.92	7.68	-0.12				



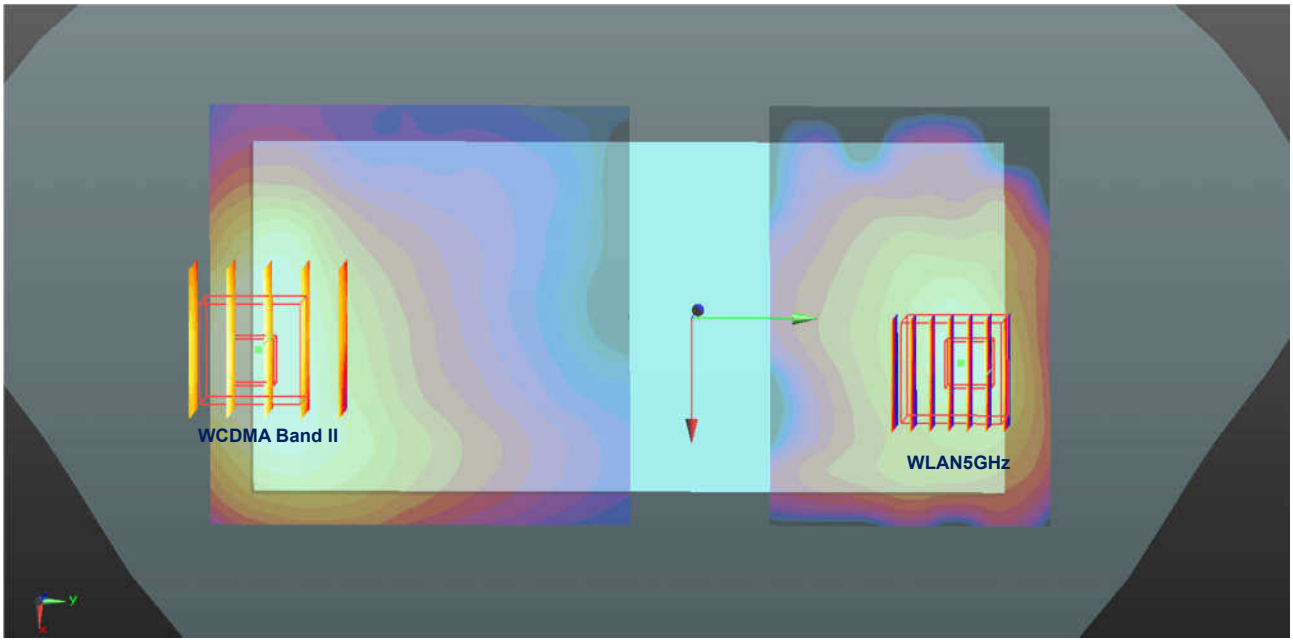
Case #5	Band	Position	1g SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed 1g SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7	Back	0.496	5	1.6	-6.18	-0.13	145.78	1.67	0.01	Not required
	WLAN5GHz		1.175	5	-2.92	7.68	-0.12				



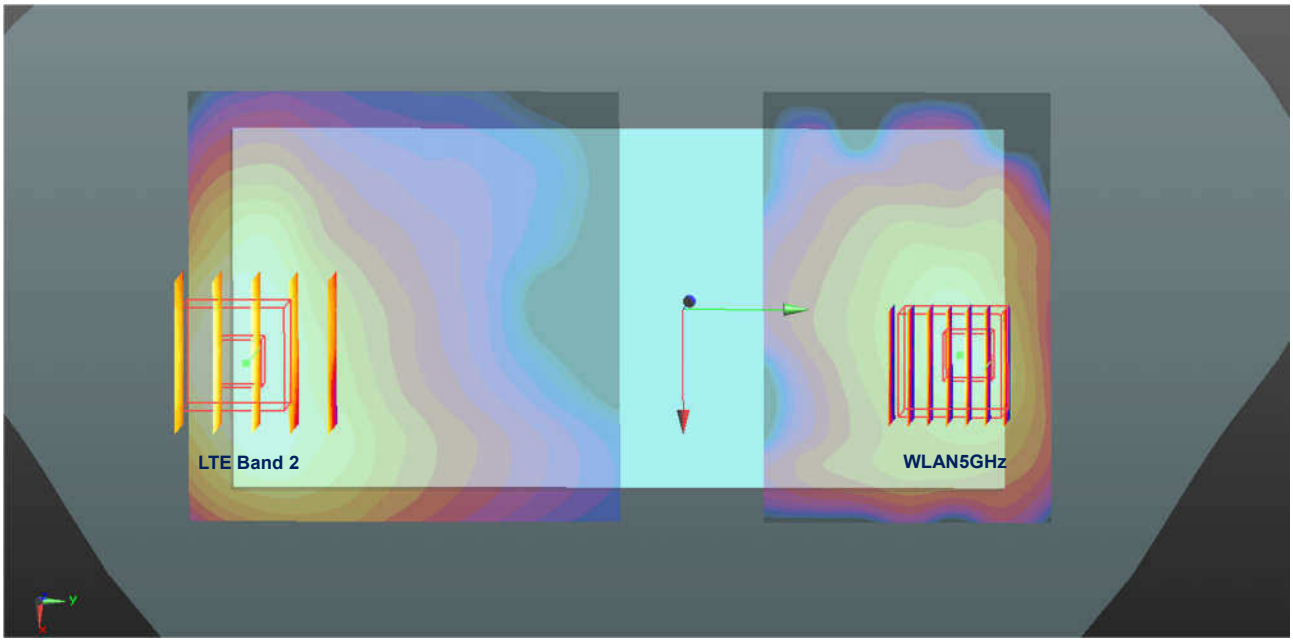
Case #6	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed 10g SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM1900	Front	3.580	0	0.79	-8.2	-0.1	157.00	4.41	0.06	Not required
	WLAN5GHz		0.825	0	0.72	7.5	-0.11				



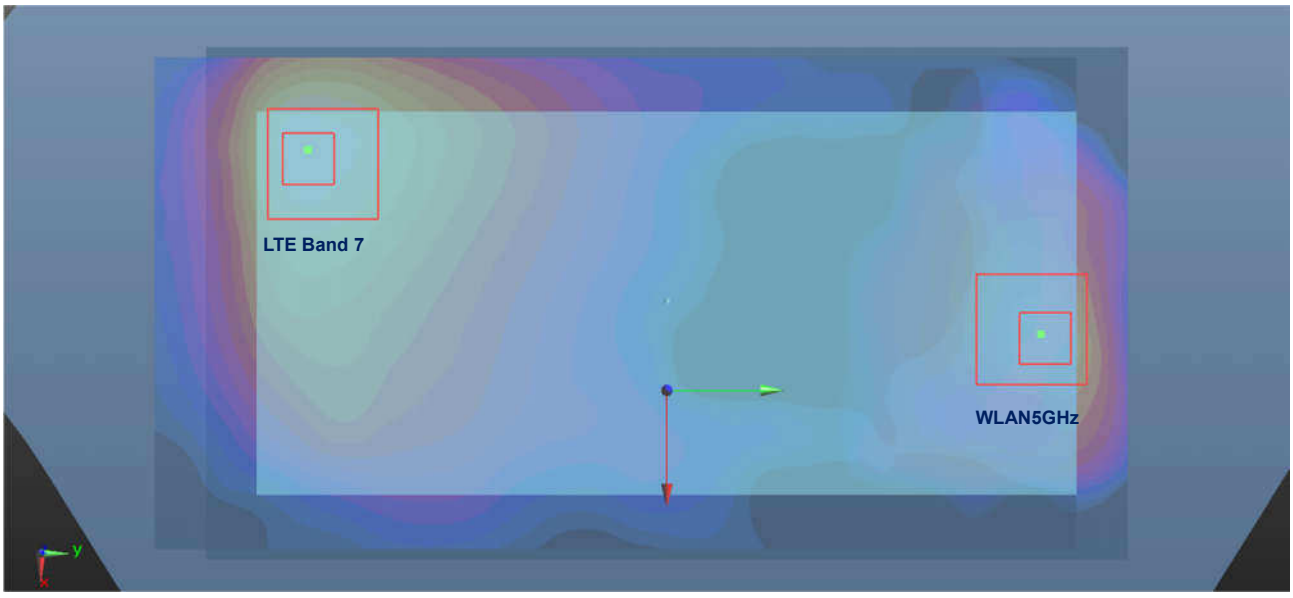
Case #7	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed 10g SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band II	Front	3.450	0	0.81	-8.01	-0.19	155.1	4.28	0.06	Not required
	WLAN5GHz		0.825	0	0.72	7.5	-0.11				



Case #8	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed 10g SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 2	Front	3.254	0	1.1	-7.86	-0.19	153.6	4.08	0.05	Not required
	WLAN5GHz		0.825	0	0.72	7.5	-0.11				



Case #9	Band	Position	10g SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed 10g SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7	Front	3.669	0	0.12	-7.78	-0.12	152.92	4.49	0.06	Not required
	WLAN5GHz		0.825	0	0.72	7.5	-0.11				



Test Engineer : Kat Yin

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 ≤ 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.