FCC SAR TEST REPORT

FCC ID	:	IHDT56XM1
Equipment	:	Mobile Cellular Phone
Brand Name	:	Motorola
Applicant	:	Motorola Mobility, LLC 222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States
Manufacturer	:	Motorola Mobility, LLC 222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States
Standard	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

The product was received on Jan. 30, 2019 and testing was started from Feb. 12, 2019 and completed on Mar 05, 2019. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Cona Huang

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA912419	01	Initial issue of report	Mar. 27, 2019

1. Statement of Compliance

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

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 5mm)	Hotspot (Separation 5mm)	Product Specific (Separation 0mm)	
		1g SAR (W/kg)			10g SAR (W/kg)	
Licensed	GSM850	0.65	0.84	0.84		1.59
	GSM1900	0.22	0.91	0.91		
	WCDMA II	0.65	0.89	0.89	2.74	
	WCDMA V	0.47	0.96	0.96		
	CDMA BC0	0.38	0.97	1.02		
	CDMA BC1	0.52	0.98	1.04	2.87	
	LTE Band 2	0.78	0.94	0.94	3.20	
	LTE Band 5	0.18	0.95	0.95		
	LTE Band 7	0.20	0.55	0.72	3.05	
	LTE Band 13	0.23	0.96	0.96		
	LTE Band 4 / 66	0.56	0.94	0.94	2.15	
DTS	2.4GHz WLAN	0.06	0.26	0.28		1.58
NII	5GHz WLAN	0.03	0.66	0.74	0.92	1.59
DSS	Bluetooth	0.06	0.24	0.26		1.59
Date of Testing:		2019/2/12 ~ 2019/3/5				

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

Reviewed by: Jason Wang
Report Producer: Daisy Peng

2. 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

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
FCC ID	IHDT56XM1
IMEI Code	355573090013639
S / N	NVGV3A0004
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 V: 826.4 MHz ~ 846.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 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 13: 779.5 MHz ~ 784.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/ 1xEv-Do(Rev.B) LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz : 802.11b/g/n HT20 WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	DVT3
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 is a folding phone, for head exposure condition only operated in the FLIP open, other exposure condition can operated in the FLIP open and FLIP close
2. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
3. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, this technique is employed in the WCDMA and LTE modes for UMTS B5, CDMA BC0 and LTE B5/B13. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner are included in the operational description and supplemental data for additional information on section16.
4. When operating in a body-worn condition, with proximity of the user's body at the front or back of the device, the device operates in the Body-Worn power table. If neither the Body-Worn condition is detected, but the device is operating in WiFi Hotspot mode, the device utilizes the Hotspot power table. When operating in any other radiated condition, the device uses the Default power table.
5. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. The control logic is such that, when this front or back body-worn condition is detected and the device is

operating in a mode where on-body operation may be expected, the conducted power is applied in the Body-Worn power table. In this condition (user's body detected at front or back face of the device), the Body-Worn power table is applied regardless whether or not the Wi-Fi hotspot mode is active.

6. Note that the Body-Worn Reduced power tables and detection schemes described above are sufficient to assure that body-worn SAR limits are met, regardless whether the Wi-Fi hotspot feature is active or not. However, because FCC has an additional specific test definition and limit for Wi-Fi hotspot mode operation, the additional Hotspot power table is applied if hand-held operation is indicated (i.e., not At-Head or Body-Worn) when the Wi-Fi hotspot feature is active. This ensures the 4 edges of the device comply with the letter of the Wi-Fi Hotspot requirement.
7. The device additionally employs proximity sensors that detect the presence of tissue near the currently active transmit antenna (if that antenna may require reduced power relative the Default power table in order to meet extremity SAR limits). The control logic is such that, if the Body-Worn or WiFi Hotspot conditions are not detected, but tissue (as a finger or hand, for example) is detected near the transmitting antenna, the Handheld power table will be applied
8. Reduced power for different RF exposure conditions:

   Body worn: The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device, when operating in near-body condition by end user, the device will reduced maximum output powers on the WCDMA B2 / B5, CDMA BC0 / BC1 and LTE B2 / B4 / B5 / B7 / B13 / B66 and detail descriptions of the power reduction mechanism are included in the operational description.

   Hotspot: When the mobile hotspot session is turn on by end user, the device will reduced output powers on the WCDMA B2 / B5, CDMA BC0 / BC1 and LTE B2 / B4 / B5 / B7 / B13 / B66 and detail descriptions of the power reduction mechanism are included in the operational description.

   Handheld: The device additionally employs proximity sensors that detect the presence of tissue near the currently active transmit antenna, the device will reduced output powers on the LTE B4/B66 transmitter and detail descriptions of the power reduction mechanism are included in the operational description.

<Maximum power for each bands and exposure conditions>

TX. freq.	Default	Head		Body Worn		Hotspot		Extremity	
	max. tune up limit (dBm)	max. tune up limit(dBm)	power reduction (dB)	max. tune up limit(dBm)	power reduction (dB)	max. tune up limit(dBm)	power reduction (dB)	max. tune up limit(dBm)	power reduction (dB)
GSM850 GSM 1 Tx slot	33.50	33.50	0	33.50	0	33.50	0	33.50	0
GSM850 GPRS 1 Tx slot	33.50	33.50	0	33.50	0	33.50	0	33.50	0
GSM850 GPRS 2 Tx slots	33.00	33.00	0	33.00	0	33.00	0	33.00	0
GSM850 GPRS 3 Tx slots	31.50	31.50	0	31.50	0	31.50	0	31.50	0
GSM850 GPRS 4 Tx slots	30.00	30.00	0	30.00	0	30.00	0	30.00	0
GSM850 EDGE 1 Tx slot	28.50	28.50	0	28.50	0	28.50	0	28.50	0
GSM850 EDGE 2 Tx slots	27.00	27.00	0	27.00	0	27.00	0	27.00	0
GSM850 EDGE 3 Tx slots	25.50	25.50	0	25.50	0	25.50	0	25.50	0
GSM850 EDGE 4 Tx slots	24.00	24.00	0	24.00	0	24.00	0	24.00	0
GSM1900 GSM 1 Tx slot	30.50	30.50	0	30.50	0	30.50	0	30.50	0
GSM1900 GPRS 1 Tx slot	30.50	30.50	0	30.50	0	30.50	0	30.50	0
GSM1900 GPRS 2 Tx slots	30.00	30.00	0	30.00	0	30.00	0	30.00	0
GSM1900 GPRS 3 Tx slots	28.50	28.50	0	28.50	0	28.50	0	28.50	0
GSM1900 GPRS 4 Tx slots	27.00	27.00	0	27.00	0	27.00	0	27.00	0
GSM1900 EDGE 1 Tx slot	27.50	27.50	0	27.50	0	27.50	0	27.50	0
GSM1900 EDGE 2 Tx slots	26.00	26.00	0	26.00	0	26.00	0	26.00	0
GSM1900 EDGE 3 Tx slots	24.50	24.50	0	24.50	0	24.50	0	24.50	0
GSM1900 EDGE 4 Tx slots	23.00	23.00	0	23.00	0	23.00	0	23.00	0
WCDMA II	24.00	24.00	0	20.50	3.5	20.50	3.5	24.00	0
WCDMA V	24.00	24.00	0	23.00	1	23.00	1	24.00	0
CDMA BC0	25.00	25.00	0	22.50	2.5	22.50	2.5	25.00	0
CDMA BC1	25.00	25.00	0	20.50	4.5	20.50	4.5	25.00	0
LTE B2	24.00	24.00	0	19.50	4.5	19.50	4.5	24.00	0
LTE B4	24.00	24.00	0	19.00	5	19.00	5	23.00	1.00
LTE B5	24.00	24.00	0	22.50	1.5	22.50	1.5	24.00	0
LTE B7	24.00	24.00	0	19.50	4.5	19.50	4.5	24.00	0
LTE B13	24.00	24.00	0	21.00	3	21.00	3	24.00	0
LTE B66	24.00	24.00	0	19.00	5	19.00	5	23.00	1.00
2.4GHz WLAN 802.11b	20.50	20.50	0	20.50	0	20.50	0	20.50	0
2.4GHz WLAN 802.11g	20.50	20.50	0	20.50	0	20.50	0	20.50	0
2.4GHz WLAN 802.11n-HT20	20.50	20.50	0	20.50	0	20.50	0	20.50	0
5GHz WLAN 802.11a	21.00	21.00	0	21.00	0	21.00	0	21.00	0
5GHz WLAN 802.11n-HT20	21.00	21.00	0	21.00	0	21.00	0	21.00	0
5GHz WLAN 802.11n-HT40	19.50	19.50	0	19.50	0	19.50	0	19.50	0
5GHz WLAN 802.11ac-VHT20	21.00	21.00	0	21.00	0	21.00	0	21.00	0
5GHz WLAN 802.11ac-VHT40	19.50	19.50	0	19.50	0	19.50	0	19.50	0
5GHz WLAN 802.11ac-VHT80	18.00	18.00	0	18.00	0	18.00	0	18.00	0
BT	16.00	16.00	0	16.00	0	16.00	0	16.00	0

3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	IHDT56XM1
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 13: 779.5 MHz ~ 784.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz
Channel Bandwidth	LTE Band 02:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 04:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 05:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 13: 5MHz, 10MHz LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM / 64QAM
LTE Voice / Data requirements	Data 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	1. Yes, when operating in hotspot mode that LTE B2 / B4 / B5 / B7 / B13 / B66 power reduction applied to satisfy SAR compliance.
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 12.
LTE Carrier Aggregation Additional Information	2. This device supports maximum of 3 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 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		

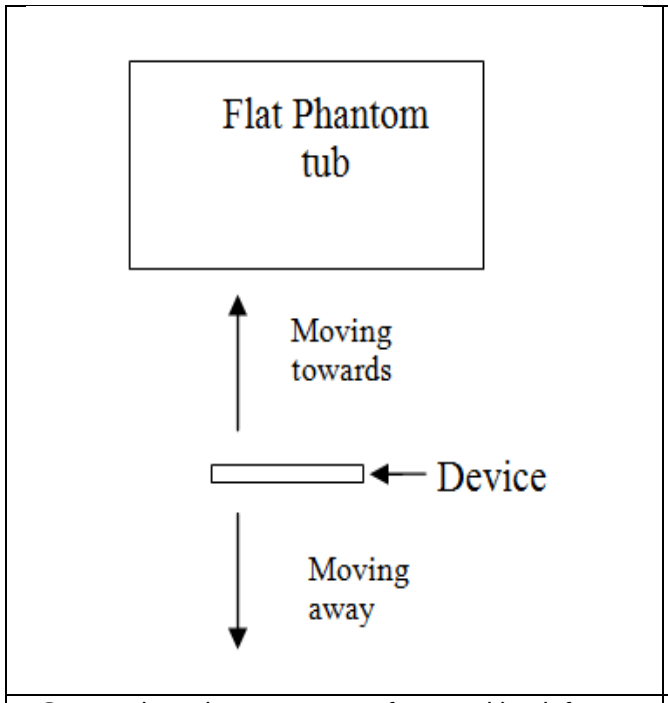
LTE Band 66

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

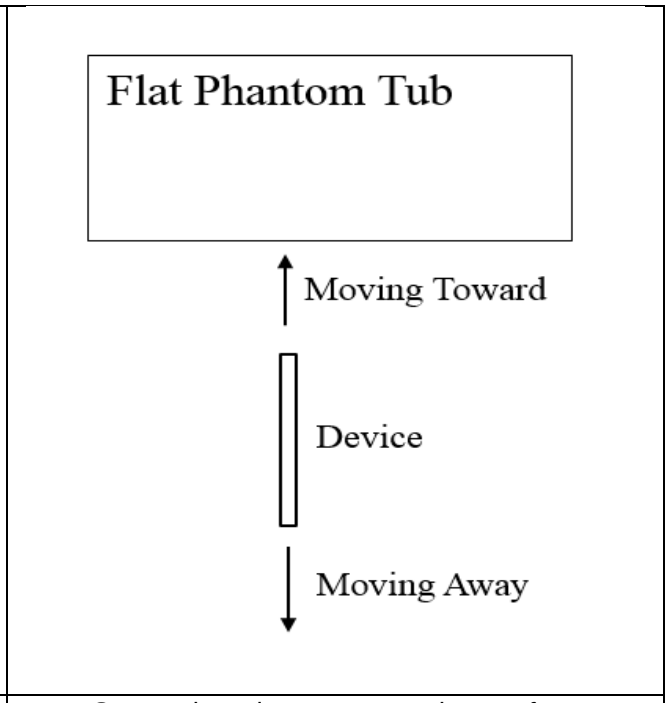
4. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (2600MHz) and lowest (750MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back of the device.
3. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
4. The sensors used to detect the proximity of the user's body (Body-Worn condition) at the front or back surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).
5. The device additionally employs proximity sensors that detect the presence of tissue near the currently active transmit antenna (if that antenna may require reduced power relative the Default power table in order to meet extremity SAR limits). The control logic is such that, if the Body-Worn, At-Head or WiFi Hotspot conditions are not detected, but tissue (as a finger or hand, for example) is detected near the transmitting antenna, the Handheld Reduced power table will be applied
6. When the sensor is active, the device will reduced maximum output powers on the GSM850/1900, WCDMA B2 / B4 / B5 and LTE B2 / B4 / B7 / B66 transmitter.



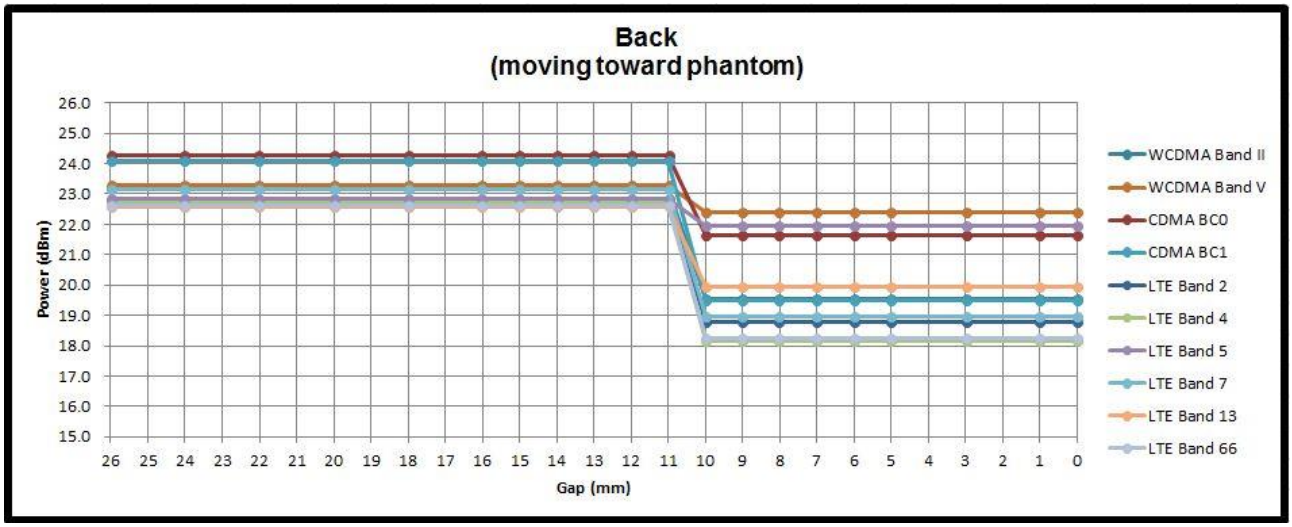
Sensor detection test set-up, front and back faces

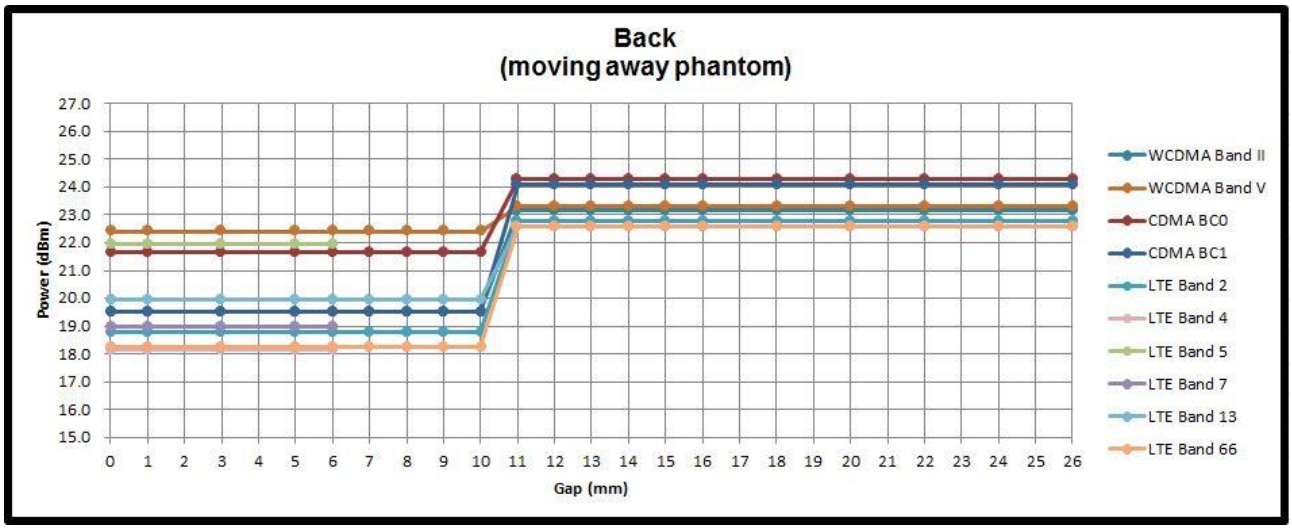


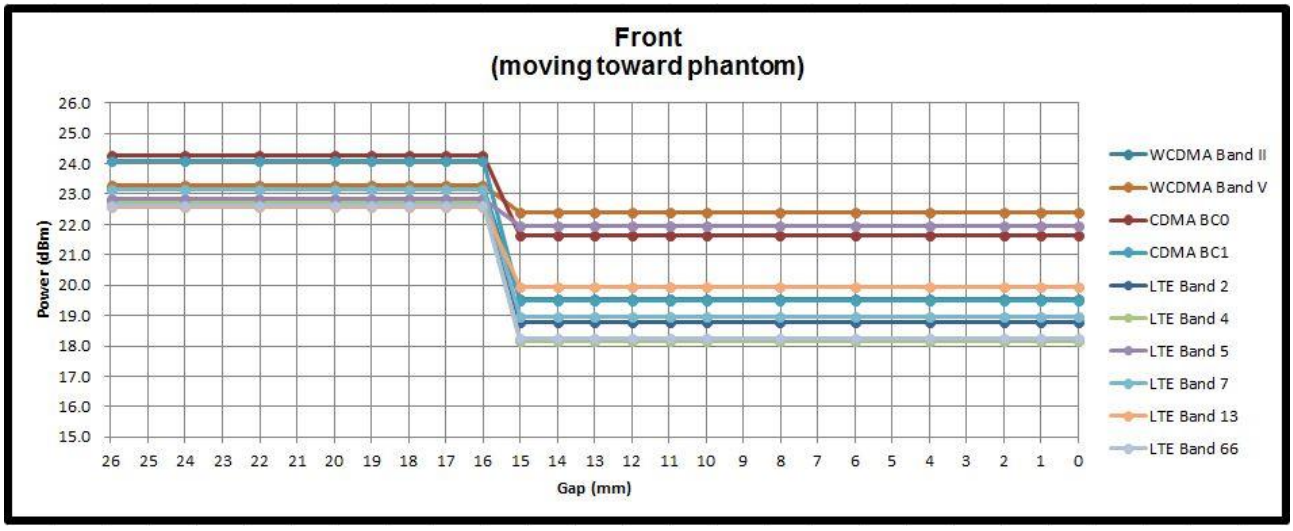
Sensor detection test set-up, bottom face

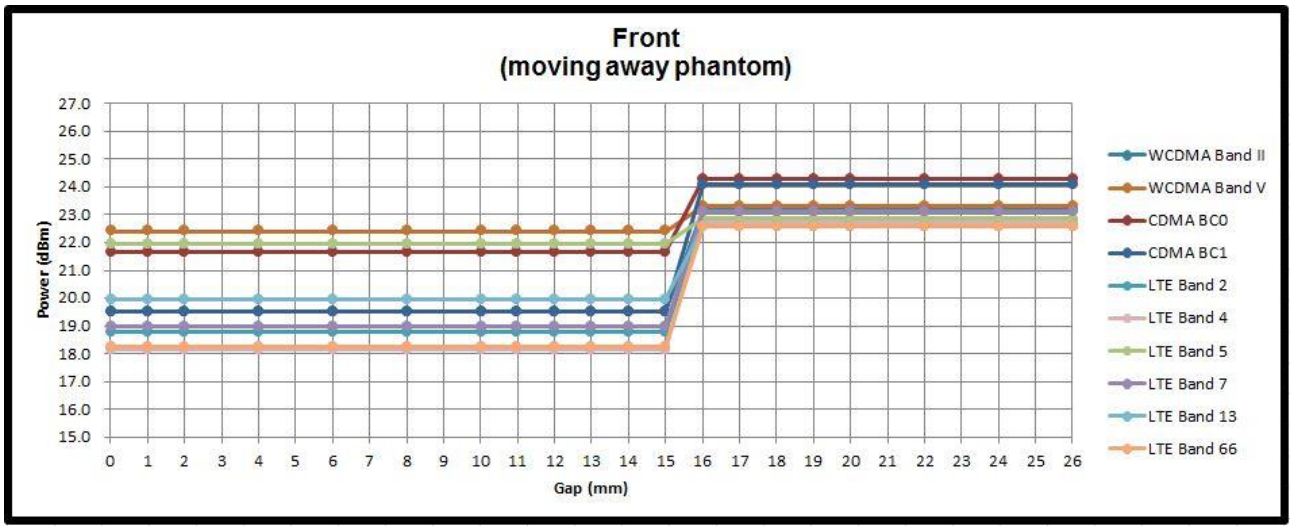
Proximity Sensor Trigger Distance for FILP open (mm)										
Position	Front		Back		Bottom Side		Left Side		Right Side	
Position	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	15	15	10	10	15	15	15	15	15	15

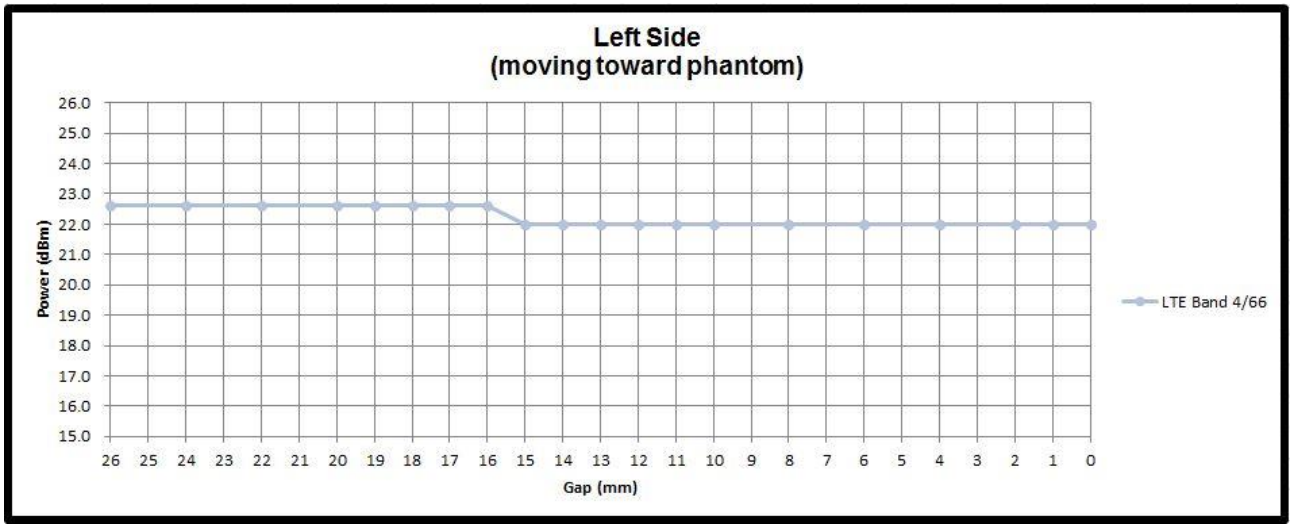
Proximity Sensor Trigger Distance for FILP close (mm)										
Position	Front		Back		Bottom Side		Left Side		Right Side	
Position	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	15	15	10	10	15	15	15	15	15	15

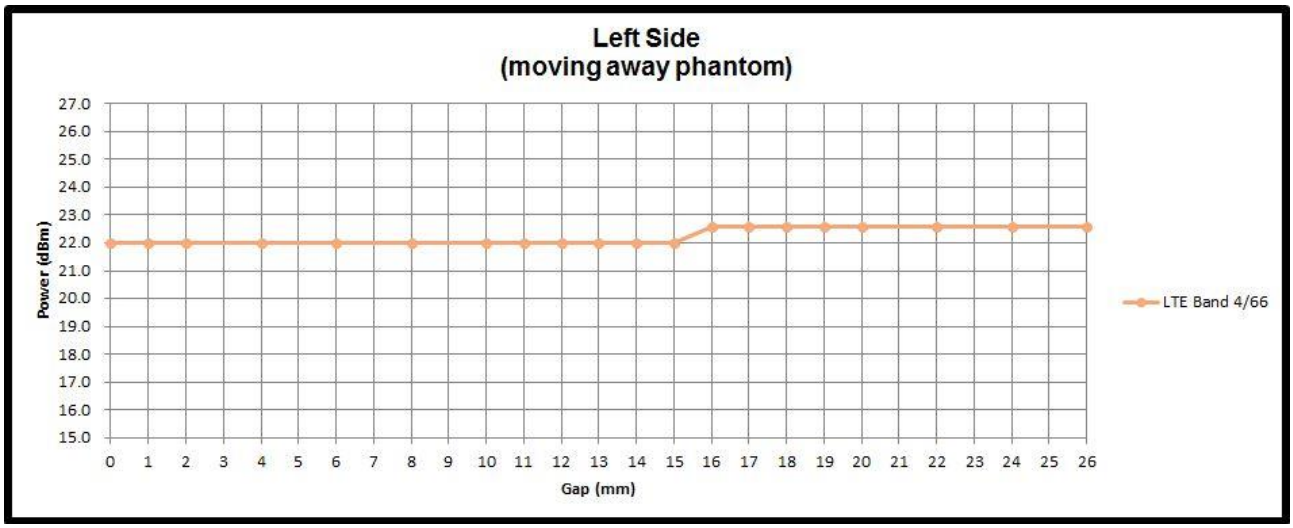

Back
(moving toward phantom)
Power (dBm)
Gap (mm)
WCDMA Band II
WCDMA Band V
CDMA BC0
CDMA BC1
LTE Band 2
LTE Band 4
LTE Band 5
LTE Band 7
LTE Band 13
LTE Band 66


Back
(moving away phantom)
Power (dBm)
Gap (mm)
WCDMA Band II
WCDMA Band V
CDMA BC0
CDMA BC1
LTE Band 2
LTE Band 4
LTE Band 5
LTE Band 7
LTE Band 13
LTE Band 66


Front
(moving toward phantom)
Power (dBm)
Gap (mm)
WCDMA Band II
WCDMA Band V
CDMA BC0
CDMA BC1
LTE Band 2
LTE Band 4
LTE Band 5
LTE Band 7
LTE Band 13
LTE Band 66


Front
(moving away phantom)
Power (dBm)
Gap (mm)
WCDMA Band II
WCDMA Band V
CDMA BC0
CDMA BC1
LTE Band 2
LTE Band 4
LTE Band 5
LTE Band 7
LTE Band 13
LTE Band 66


Left Side
(moving toward phantom)
Power (dBm)
26.0
25.0
24.0
23.0
22.0
21.0
20.0
19.0
18.0
17.0
16.0
15.0
26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Gap (mm)
LTE Band 4/66


Left Side
(moving away phantom)
Power (dBm)
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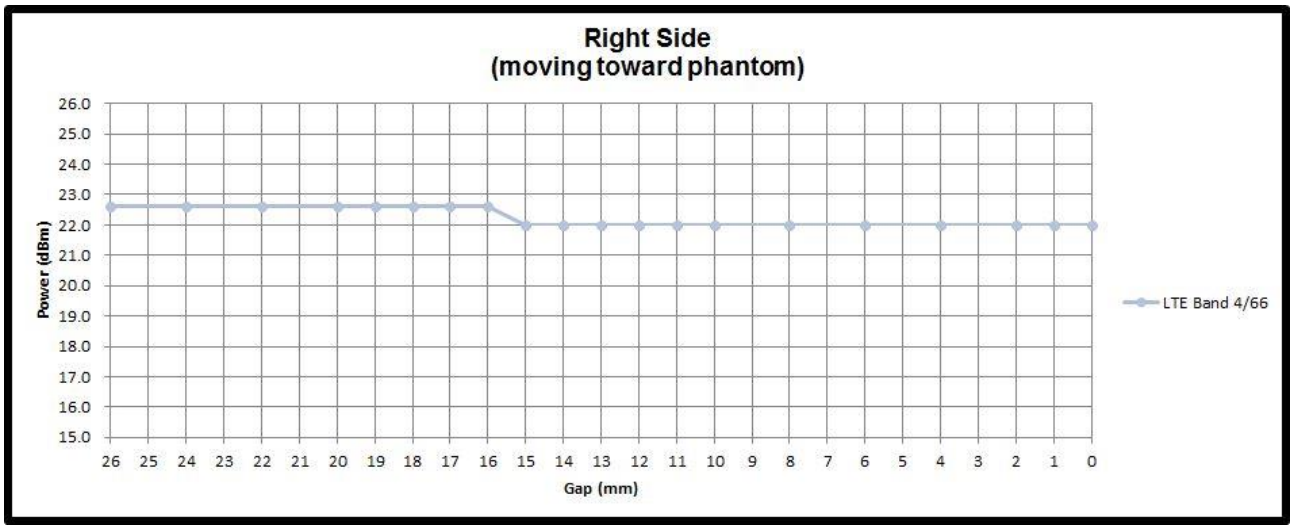
26.0
25.0
24.0
23.0
22.0
21.0
20.0
19.0
18.0
17.0
16.0
15.0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
Gap (mm)
LTE Band 4/66


Right Side
(moving toward phantom)
Power (dBm)
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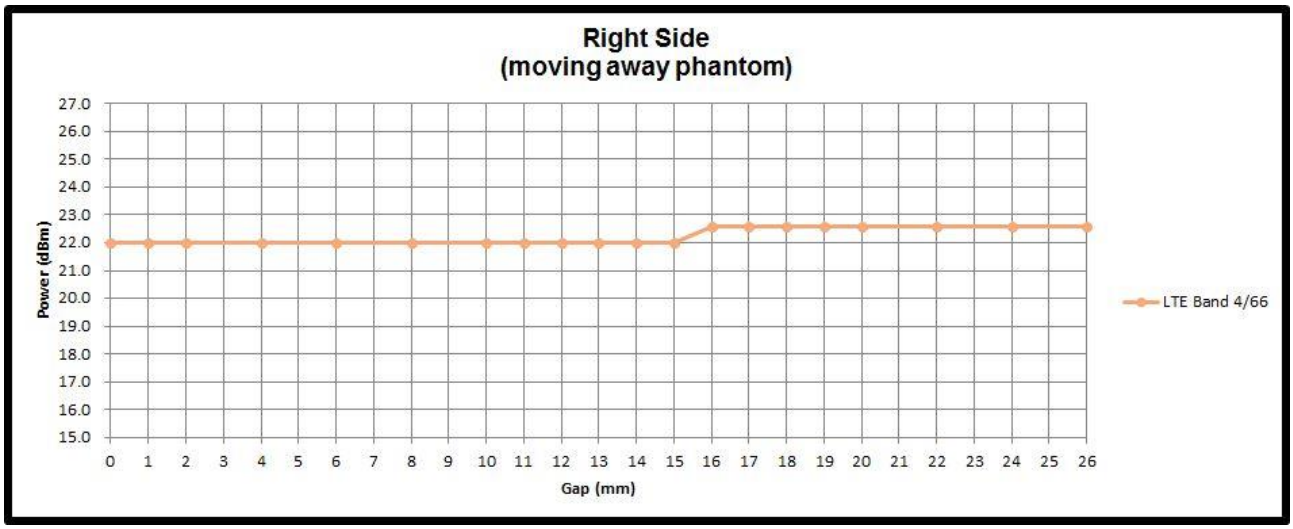
25.0
24.0
23.0
22.0
21.0
20.0
19.0
18.0
17.0
16.0
15.0
26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Gap (mm)
LTE Band 4/66


Right Side
(moving away phantom)
Power (dBm)
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26.0
25.0
24.0
23.0
22.0
21.0
20.0
19.0
18.0
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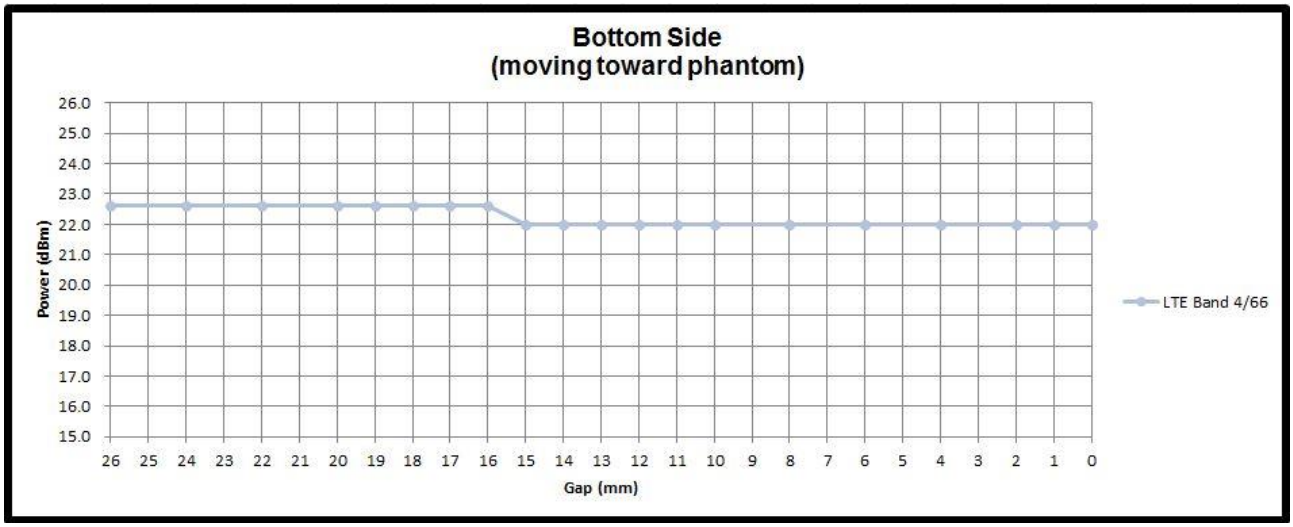
15.0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
Gap (mm)
LTE Band 4/66


Bottom Side
(moving toward phantom)
Power (dBm)
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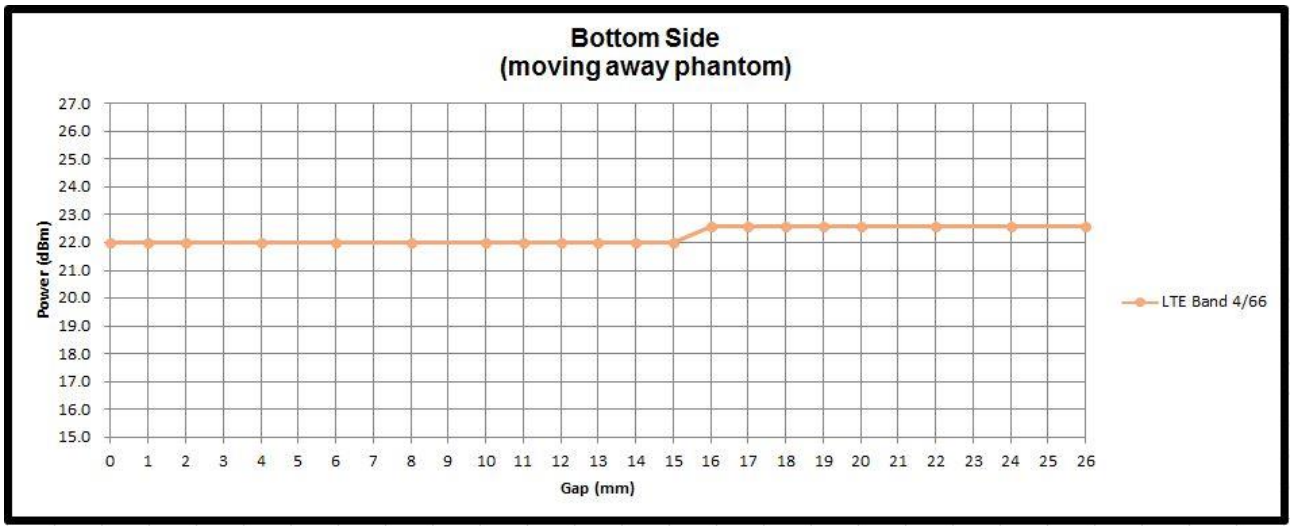
25.0
24.0
23.0
22.0
21.0
20.0
19.0
18.0
17.0
16.0
15.0
26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
Gap (mm)
LTE Band 4/66


Bottom Side
(moving away phantom)
Power (dBm)
27.0
26.0
25.0
24.0
23.0
22.0
21.0
20.0
19.0
18.0
17.0
16.0
15.0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
Gap (mm)
LTE Band 4/66

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

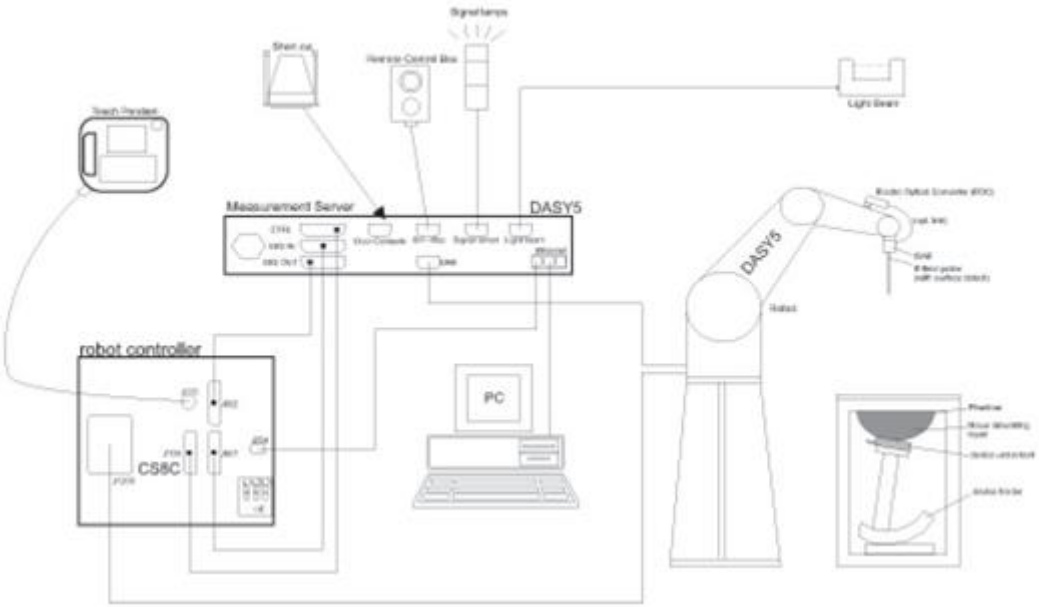
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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



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

7.1 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 6 GHz)	
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 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	

7.2 Data Acquisition Electronics (DAE)

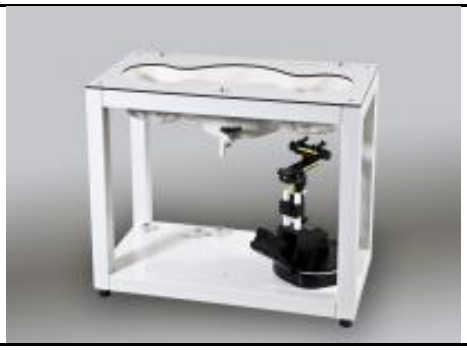
The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an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

Fig 5.1 Photo of DAE

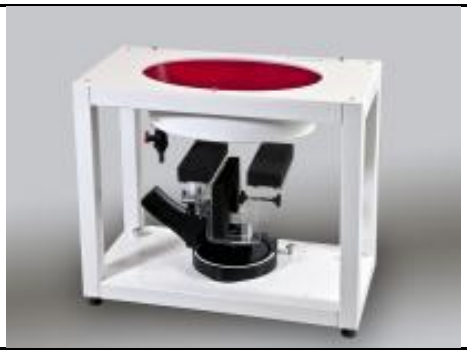
7.3 Phantom

<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.

7.4 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

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

8.1 Spatial Peak SAR Evaluation

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

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

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

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values 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

8.2 Power Reference Measurement

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

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in 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.	

8.4 Zoom Scan

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

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

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: 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	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *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.

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1012	Sep. 05, 2018	Sep. 04, 2019
SPEAG	835MHz System Validation Kit	D835V2	499	Sep. 06, 2018	Sep. 05, 2019
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 19, 2018	Nov. 18, 2019
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Sep. 11, 2018	Sep. 10, 2019
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 31, 2018	Aug. 30, 2019
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 31, 2018	Aug. 30, 2019
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 27, 2018	Sep. 26, 2019
SPEAG	Data Acquisition Electronics	DAE3	495	May. 24, 2018	May. 23, 2019
SPEAG	Data Acquisition Electronics	DAE4	699	Jan. 03, 2019	Jan. 02, 2020
SPEAG	Data Acquisition Electronics	DAE4	1399	Nov. 16, 2018	Nov. 15, 2019
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 24, 2018	Sep. 23, 2019
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 27, 2018	Sep. 26, 2019
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 26, 2018	Jul. 25, 2019
RCPTWN	Thermometer	HTC-1	TM685-1	Nov. 12, 2018	Nov. 11, 2019
RCPTWN	Thermometer	HTC-1	TM281-1	Mar. 16, 2018	Mar. 15, 2019
RCPTWN	Thermometer	HTC-1	TM560-1	Mar. 16, 2018	Mar. 15, 2019
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Apr. 17, 2018	Apr. 16, 2019
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 21, 2018	May. 20, 2019
R&S	BT Base Station	CBT32	100519	May. 30, 2018	May. 29, 2019
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Dec. 11, 2018	Dec. 10, 2019
Agilent	ENA Network Analyzer	E5071C	MY46104758	Sep. 19, 2018	Sep. 18, 2019
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 19, 2018	Sep. 18, 2019
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3169	Sep. 11, 2018	Sep. 10, 2019
Anritsu	Power Meter	ML2495A	1419002	May. 18, 2018	May. 17, 2019
Anritsu	Power Sensor	MA2411B	1339124	May. 18, 2018	May. 17, 2019
Anritsu	Power Meter	ML2495A	1240001	Sep. 13, 2018	Sep. 12, 2019
Anritsu	Power Sensor	MA2411B	1207349	Sep. 13, 2018	Sep. 12, 2019
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 28, 2018	Aug. 27, 2019
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 23, 2018	Jun. 22, 2019
Mini-Circuits	Power Amplifier	ZVE-8G+	6382	Aug. 09, 2018	Aug. 08, 2019
Mini-Circuits	Power Amplifier	ZHL-42W+	15542	Aug. 09, 2018	Aug. 08, 2019
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General Note:

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

10. System Verification

10.1 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.

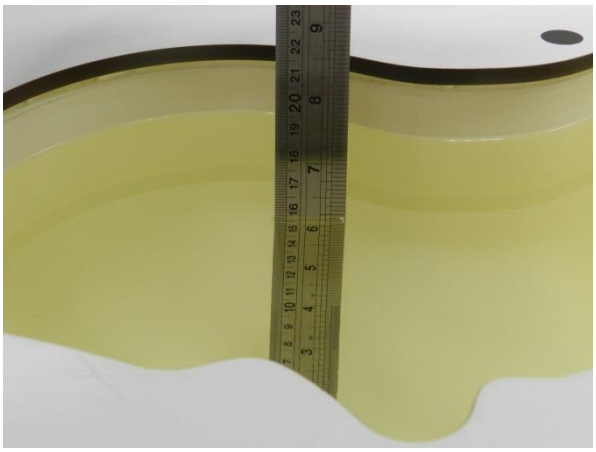


Fig 10.1Photo of Liquid Height for Head SAR

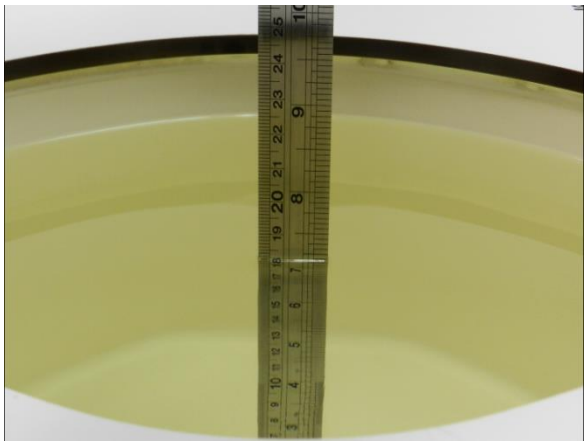


Fig 10.2 Photo of Liquid Height for Body SAR

10.2 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
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	HSL	22.6	0.898	43.469	0.89	41.90	0.90	3.74	±5	2019/2/14
835	HSL	22.6	0.893	40.727	0.90	41.50	-0.78	-1.86	±5	2019/2/14
1750	HSL	22.5	1.382	40.546	1.37	40.10	0.88	1.11	±5	2019/2/12
1900	HSL	22.5	1.439	39.113	1.40	40.00	2.79	-2.22	±5	2019/2/12
2450	HSL	22.9	1.792	40.089	1.80	39.20	-0.44	2.27	±5	2019/2/19
2450	HSL	22.4	1.797	38.672	1.80	39.20	-0.17	-1.35	±5	2019/3/4
2600	HSL	22.6	1.948	39.437	1.96	39.00	-0.61	1.12	±5	2019/2/12
5250	HSL	22.5	4.674	35.972	4.71	35.95	-0.76	0.06	±5	2019/2/19
5600	HSL	22.5	5.014	35.497	5.07	35.50	-1.10	-0.01	±5	2019/2/19
5750	HSL	22.5	5.171	35.291	5.22	35.35	-0.94	-0.17	±5	2019/2/19
750	MSL	22.5	0.969	55.292	0.96	55.50	0.94	-0.37	±5	2019/3/1
835	MSL	22.2	0.965	55.818	0.97	55.20	-0.52	1.12	±5	2019/2/21
835	MSL	22.5	0.975	56.182	0.97	55.20	0.52	1.78	±5	2019/3/1
835	MSL	22.6	0.973	55.690	0.97	55.20	0.31	0.89	±5	2019/3/2
835	MSL	22.5	0.977	55.810	0.97	55.20	0.72	1.11	±5	2019/3/5
1750	MSL	22.8	1.504	54.158	1.49	53.40	0.94	1.42	±5	2019/2/27
1900	MSL	22.5	1.550	55.343	1.52	53.30	1.97	3.83	±5	2019/2/21
1900	MSL	22.8	1.582	54.608	1.52	53.30	4.08	2.45	±5	2019/2/26
1900	MSL	22.8	1.580	54.555	1.52	53.30	3.95	2.35	±5	2019/2/27
1900	MSL	22.5	1.550	52.469	1.52	53.30	1.97	-1.56	±5	2019/3/4
2450	MSL	22.6	2.025	52.242	1.95	52.70	3.85	-0.87	±5	2019/2/18
2450	MSL	22.4	2.005	52.427	1.95	52.70	2.82	-0.52	±5	2019/3/4
2600	MSL	22.7	2.133	52.647	2.16	52.50	-1.25	0.28	±5	2019/2/26
5250	MSL	22.2	5.366	47.753	5.36	48.95	0.11	-2.45	±5	2019/2/17
5250	MSL	22.1	5.484	48.861	5.36	48.95	2.31	-0.18	±5	2019/2/21
5600	MSL	22.2	5.821	47.178	5.77	48.50	0.88	-2.73	±5	2019/2/17
5600	MSL	22.1	5.957	48.295	5.77	48.50	3.24	-0.42	±5	2019/2/21
5750	MSL	22.2	6.019	46.947	5.94	48.28	1.33	-2.76	±5	2019/2/17
5750	MSL	22.1	6.175	48.079	5.94	48.28	3.96	-0.42	±5	2019/2/21

10.3 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.

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 (%)
2019/2/14	750	HSL	250	D750V3-1012	EX3DV4 - SN7306	DAE3 Sn495	2.18	8.47	8.72	2.95
2019/2/14	835	HSL	250	D835V2-499	EX3DV4 - SN7306	DAE3 Sn495	2.44	9.59	9.76	1.77
2019/2/12	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE4 Sn1399	9.67	37.10	38.68	4.26
2019/2/12	1900	HSL	250	D1900V2-5d041	EX3DV4 - SN3931	DAE4 Sn1399	10.90	40.20	43.60	8.46
2019/2/19	2450	HSL	250	D2450V2-736	EX3DV4 - SN3931	DAE4 Sn1399	13.20	52.70	52.80	0.19
2019/3/4	2450	HSL	250	D2450V2-736	EX3DV4 - SN3931	DAE4 Sn1399	13.30	52.70	53.20	0.95
2019/2/12	2600	HSL	250	D2600V2-1008	EX3DV4 - SN3931	DAE4 Sn1399	14.30	56.40	57.20	1.42
2019/2/19	5250	HSL	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn1399	8.04	80.70	80.40	-0.37
2019/2/19	5600	HSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn1399	8.71	83.30	87.10	4.56
2019/2/19	5750	HSL	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn1399	8.11	80.40	81.10	0.87
2019/3/1	750	MSL	250	D750V3-1012	EX3DV4 - SN3931	DAE4 Sn1399	2.25	8.76	9.00	2.74
2019/2/21	835	MSL	250	D835V2-499	EX3DV4 - SN3931	DAE4 Sn1399	2.40	9.82	9.60	-2.24
2019/3/1	835	MSL	250	D835V2-499	EX3DV4 - SN3931	DAE4 Sn1399	2.43	9.82	9.72	-1.02
2019/3/2	835	MSL	250	D835V2-499	EX3DV4 - SN3931	DAE4 Sn1399	2.60	9.82	10.40	5.91
2019/3/5	835	MSL	250	D835V2-499	EX3DV4 - SN3931	DAE4 Sn1399	2.57	9.82	10.28	4.68
2019/2/27	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE4 Sn1399	8.50	37.00	34.00	-8.11
2019/2/21	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3931	DAE4 Sn1399	9.64	40.20	38.56	-4.08
2019/2/26	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3931	DAE4 Sn1399	10.90	40.20	43.60	8.46
2019/2/27	1900	MSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE4 Sn699	10.60	40.20	42.40	5.47
2019/3/4	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3931	DAE4 Sn1399	10.80	40.20	43.20	7.46
2019/2/18	2450	MSL	250	D2450V2-736	EX3DV4 - SN3931	DAE4 Sn1399	13.20	51.50	52.80	2.52
2019/3/4	2450	MSL	250	D2450V2-736	EX3DV4 - SN3931	DAE4 Sn1399	13.10	51.50	52.40	1.75
2019/2/26	2600	MSL	250	D2600V2-1008	EX3DV4 - SN3931	DAE4 Sn1399	13.50	55.30	54.00	-2.35
2019/2/17	5250	MSL	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn1399	7.76	78.30	77.60	-0.89
2019/2/21	5250	MSL	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn1399	7.83	78.30	78.30	0.00
2019/2/17	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn1399	8.29	81.00	82.90	2.35
2019/2/21	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn1399	8.15	81.00	81.50	0.62
2019/2/17	5750	MSL	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn1399	7.35	77.40	73.50	-5.04
2019/2/21	5750	MSL	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn1399	7.86	77.40	78.60	1.55

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 (%)
2019/2/27	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE4 Sn1399	4.67	19.60	18.68	-4.69
2019/2/26	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3931	DAE4 Sn1399	5.84	21.50	23.36	8.65
2019/3/4	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3931	DAE4 Sn1399	5.70	21.50	22.8	6.05
2019/2/26	2600	MSL	250	D2600V2-1008	EX3DV4 - SN3931	DAE4 Sn1399	6.05	24.70	24.2	-2.02
2019/2/21	5250	MSL	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn1399	2.13	21.70	21.3	-1.84
2019/2/21	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn1399	2.28	22.50	22.8	1.33
2019/2/17	5750	MSL	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn1399	2.05	21.30	20.5	-3.76
2019/2/21	5750	MSL	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn1399	2.06	21.30	20.6	-3.29

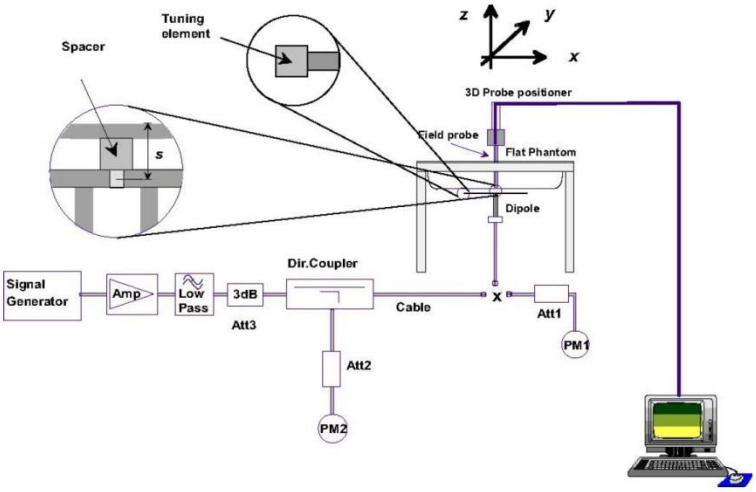


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

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

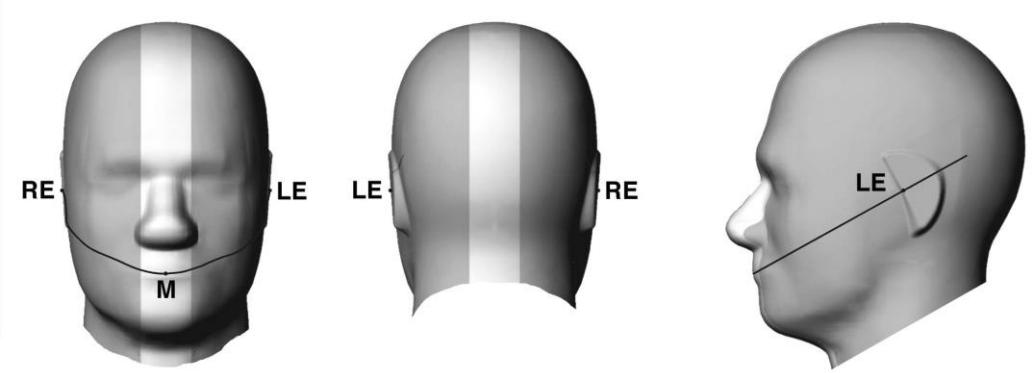


Fig 9.1.1 Front, back, and side views of SAM twin phantom

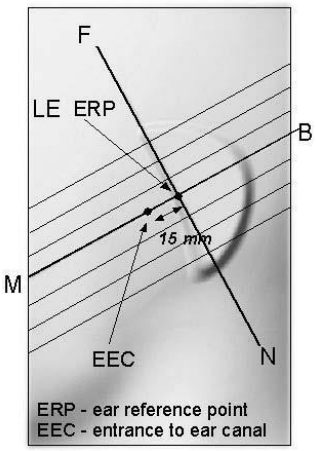


Fig 9.1.2 Close-up side view of phantom showing the ear region.

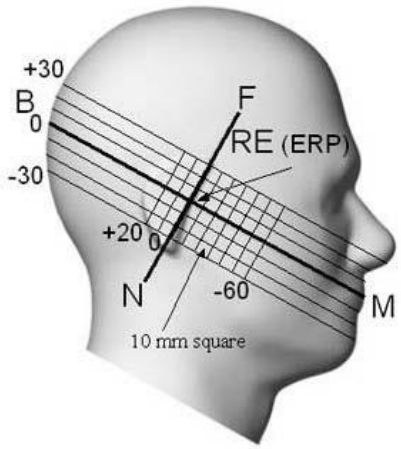


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

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

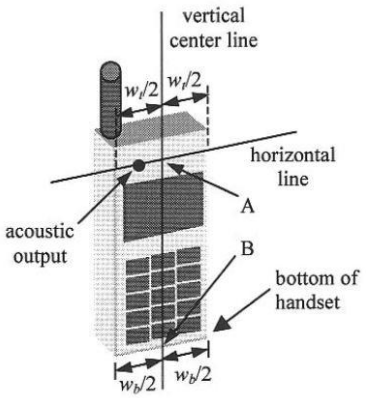


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

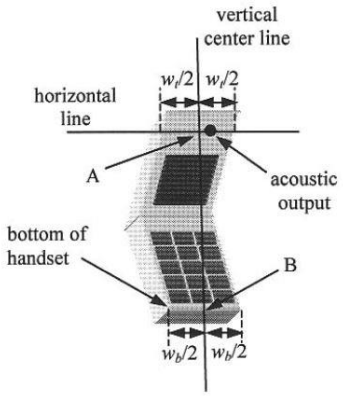


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

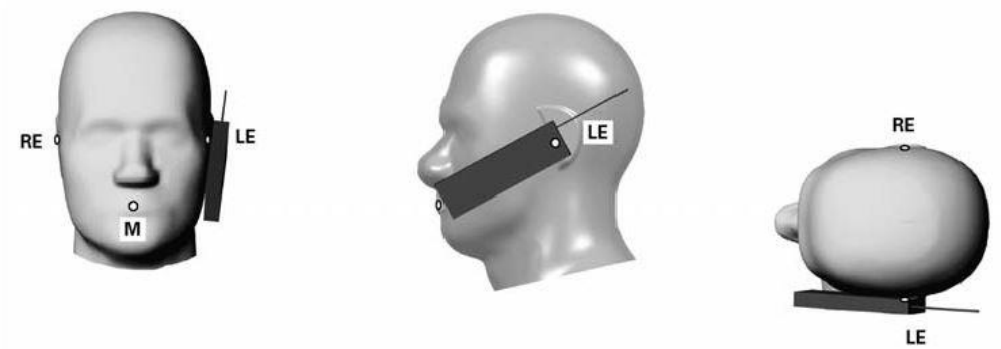


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

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

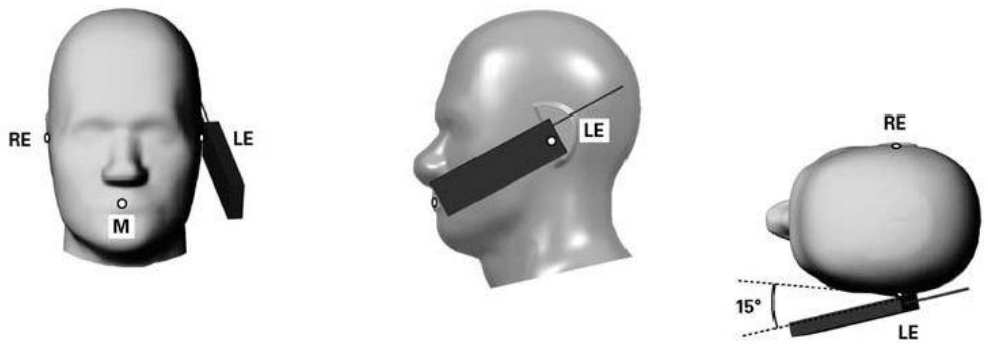


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

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

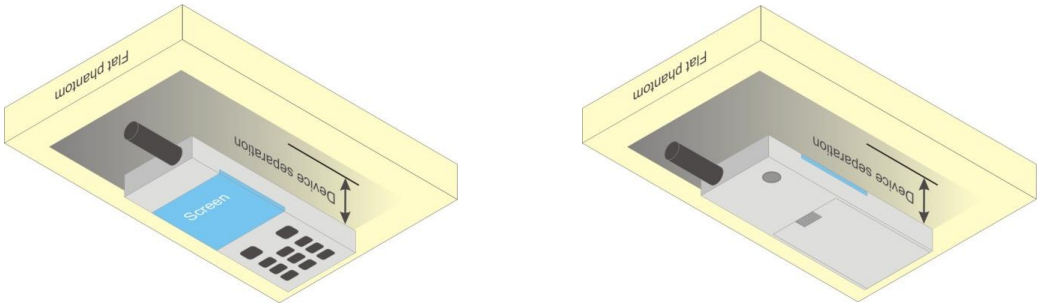


Fig 9.4 Body Worn Position

11.5 Product Specific

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

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

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

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L 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.

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (3Tx slots) for GSM850/GSM1900 is considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode

<Default Power Mode>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	33.23	33.35	32.95	33.50	24.23	24.35	23.95	24.50
GPRS 1 Tx slot	33.19	33.35	32.89	33.50	24.19	24.35	23.89	24.50
GPRS 2 Tx slots	31.70	31.90	31.68	33.00	25.70	25.90	25.68	27.00
GPRS 3 Tx slots	29.92	29.92	29.85	31.50	25.66	25.66	25.59	27.24
GPRS 4 Tx slots	28.10	28.17	28.12	30.00	25.10	25.17	25.12	27.00
EDGE 1 Tx slot	26.83	26.88	26.87	28.50	17.83	17.88	17.87	19.50
EDGE 2 Tx slots	26.71	26.68	26.70	27.00	20.71	20.68	20.70	21.00
EDGE 3 Tx slots	24.00	23.96	23.76	25.50	19.74	19.70	19.50	21.24
EDGE 4 Tx slots	22.12	22.20	22.12	24.00	19.12	19.20	19.12	21.00

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.77	29.77	29.48	30.50	20.77	20.77	20.48	21.50
GPRS 1 Tx slot	29.78	29.72	29.45	30.50	20.78	20.72	20.45	21.50
GPRS 2 Tx slots	28.46	28.64	28.36	30.00	22.46	22.64	22.36	24.00
GPRS 3 Tx slots	26.92	26.87	26.66	28.50	22.66	22.61	22.40	24.24
GPRS 4 Tx slots	25.11	25.07	25.02	27.00	22.11	22.07	22.02	24.00
EDGE 1 Tx slot	25.56	25.55	25.50	27.50	16.56	16.55	16.50	18.50
EDGE 2 Tx slots	24.60	24.60	24.50	26.00	18.60	18.60	18.50	20.00
EDGE 3 Tx slots	22.82	22.75	22.75	24.50	18.56	18.49	18.49	20.24
EDGE 4 Tx slots	21.15	21.09	21.05	23.00	18.15	18.09	18.05	20.00

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(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 β_{hs} = 30/15 * β_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 β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_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	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

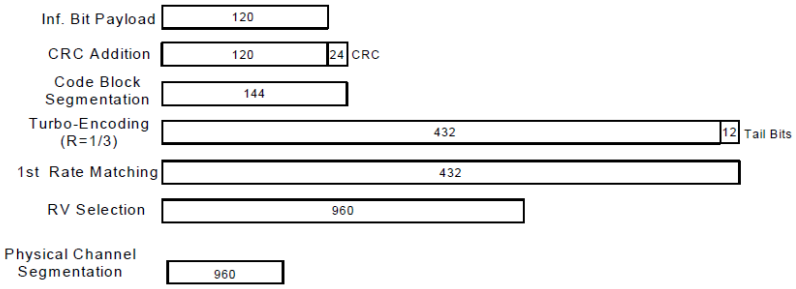


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ 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.

<Default Power Mode >

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		4132	4182	4233	
Rx Channel		9662	9800	9938		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	23.09	23.00	23.12	24.00	23.17	23.20	23.11	24.00
3GPP Rel 99	RMC 12.2Kbps	23.12	23.02	23.19	24.00	23.30	23.21	23.12	24.00
3GPP Rel 6	HSDPA Subtest-1	21.92	21.92	22.09	23.00	22.12	22.20	22.10	23.00
3GPP Rel 6	HSDPA Subtest-2	21.90	21.93	22.06	23.00	22.34	22.19	22.14	23.00
3GPP Rel 6	HSDPA Subtest-3	21.78	21.94	22.05	22.50	21.85	21.74	21.65	22.50
3GPP Rel 6	HSDPA Subtest-4	21.77	21.92	22.04	22.50	21.84	21.74	21.65	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	21.89	21.89	22.06	23.00	22.09	22.17	22.07	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.87	21.90	22.03	23.00	22.31	22.16	22.11	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	21.75	21.91	22.02	22.50	21.82	21.71	21.62	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.74	21.89	22.01	22.50	21.81	21.71	21.62	22.50
3GPP Rel 6	HSUPA Subtest-1	22.13	22.00	22.17	23.00	22.30	22.31	22.12	23.00
3GPP Rel 6	HSUPA Subtest-2	20.11	20.00	20.18	21.00	20.30	20.22	20.11	21.00
3GPP Rel 6	HSUPA Subtest-3	21.09	21.01	21.17	22.00	21.30	21.21	21.12	22.00
3GPP Rel 6	HSUPA Subtest-4	20.08	20.03	20.16	21.00	20.29	20.20	20.08	21.00
3GPP Rel 6	HSUPA Subtest-5	22.11	22.01	22.20	23.00	22.31	22.24	22.11	23.00

<Near-Body and Hotspot Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		4132	4182	4233	
Rx Channel		9662	9800	9938		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	19.47	19.40	19.51	20.50	22.40	22.30	22.17	23.00
3GPP Rel 99	RMC 12.2Kbps	19.49	19.41	19.54	20.50	22.41	22.32	22.18	23.00
3GPP Rel 6	HSDPA Subtest-1	18.40	18.35	18.45	19.50	21.23	21.21	21.17	22.00
3GPP Rel 6	HSDPA Subtest-2	18.38	18.33	18.42	19.50	21.25	21.20	21.15	22.00
3GPP Rel 6	HSDPA Subtest-3	18.17	18.25	18.39	19.00	20.91	20.85	20.73	21.50
3GPP Rel 6	HSDPA Subtest-4	18.18	18.24	18.40	19.00	20.92	20.85	20.72	21.50
3GPP Rel 8	DC-HSDPA Subtest-1	18.38	18.33	18.43	19.50	21.21	21.19	21.15	22.00
3GPP Rel 8	DC-HSDPA Subtest-2	18.36	18.31	18.40	19.50	21.23	21.18	21.13	22.00
3GPP Rel 8	DC-HSDPA Subtest-3	18.15	18.23	18.37	19.00	20.89	20.83	20.71	21.50
3GPP Rel 8	DC-HSDPA Subtest-4	18.16	18.22	18.38	19.00	20.90	20.83	20.70	21.50
3GPP Rel 6	HSUPA Subtest-1	18.47	18.35	18.51	19.50	21.38	21.35	21.23	22.00
3GPP Rel 6	HSUPA Subtest-2	16.50	16.41	16.56	17.50	19.41	19.33	19.22	20.00
3GPP Rel 6	HSUPA Subtest-3	17.49	17.37	17.53	18.50	20.41	20.32	20.23	21.00
3GPP Rel 6	HSUPA Subtest-4	16.47	16.41	16.51	17.50	19.40	19.31	19.19	20.00
3GPP Rel 6	HSUPA Subtest-5	18.47	18.37	18.56	19.50	21.42	21.35	21.22	22.00

<CDMA2000 Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

<Default Power Mode>

Band	CDMA BC0			Tune-up Limit (dBm)	CDMA BC1			Tune-up Limit (dBm)
TX Channel	1013	384	777		25	600	1175	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75	
RC1 SO55	24.26	24.25	24.16	25.00	23.94	24.02	23.99	25.00
RC3 SO55	24.27	24.26	24.18	25.00	23.91	24.06	23.93	25.00
RC3 SO32 (F+SCH)	24.24	24.22	24.18	25.00	24.05	24.07	23.96	25.00
RC3 SO32 (+SCH)	24.24	24.23	24.22	25.00	24.06	24.08	23.95	25.00
RTAP 153.6Kbps	24.23	24.21	24.19	25.00	24.09	24.08	23.97	25.00
RETAP 4096Bits	24.26	24.26	24.19	25.00	24.08	24.07	23.97	25.00

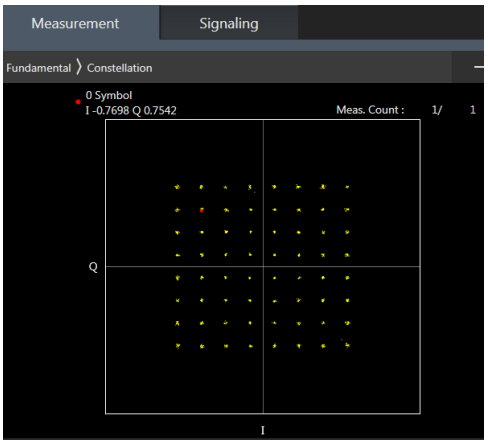
<Near-Body and Hotspot Power Mode>

Band	CDMA BC0			Tune-up Limit (dBm)	CDMA BC1			Tune-up Limit (dBm)
TX Channel	1013	384	777		25	600	1175	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75	
RC1 SO55	21.63	21.63	21.62	22.50	19.35	19.42	19.37	20.50
RC3 SO55	21.65	21.60	21.57	22.50	19.48	19.48	19.37	20.50
RC3 SO32 (F+SCH)	21.64	21.63	21.58	22.50	19.47	19.48	19.36	20.50
RC3 SO32 (+SCH)	21.63	21.62	21.57	22.50	19.46	19.47	19.37	20.50
RTAP 153.6Kbps	21.64	21.63	21.55	22.50	19.50	19.49	19.38	20.50
RETAP 4096Bits	21.63	21.62	21.56	22.50	19.49	19.49	19.36	20.50

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not 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 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 4 SAR test was covered by Band 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
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM

16QAM

Default 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	22.79	22.68	22.58	24	0
20	QPSK	1	49	22.70	22.62	22.67		
20	QPSK	1	99	22.59	22.57	22.56		
20	QPSK	50	0	21.78	21.71	21.63	23	1
20	QPSK	50	24	21.76	21.71	21.73		
20	QPSK	50	50	21.70	21.61	21.69		
20	QPSK	100	0	21.75	21.65	21.62		
20	16QAM	1	0	22.32	22.03	21.91	23	1
20	16QAM	1	49	22.26	21.91	21.99		
20	16QAM	1	99	22.15	21.89	21.89		
20	16QAM	50	0	20.92	20.76	20.69	22	2
20	16QAM	50	24	20.89	20.78	20.78		
20	16QAM	50	50	20.82	20.74	20.75		
20	16QAM	100	0	20.79	20.74	20.66		
20	64QAM	1	0	20.70	20.93	20.81	22	2
20	64QAM	1	49	20.67	20.86	20.89		
20	64QAM	1	99	20.53	20.78	20.77		
20	64QAM	50	0	19.94	19.78	19.69	21	3
20	64QAM	50	24	19.94	19.80	19.81		
20	64QAM	50	50	19.85	19.73	19.76		
20	64QAM	100	0	19.83	19.75	19.66		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.70	22.59	22.52	24	0
15	QPSK	1	37	22.66	22.57	22.53		
15	QPSK	1	74	22.55	22.48	22.44		
15	QPSK	36	0	21.74	21.64	21.57	23	1
15	QPSK	36	20	21.70	21.68	21.59		
15	QPSK	36	39	21.65	21.57	21.53		
15	QPSK	75	0	21.68	21.62	21.56		
15	16QAM	1	0	21.98	21.90	21.86	23	1
15	16QAM	1	37	21.98	21.87	21.87		
15	16QAM	1	74	21.85	21.75	21.77		
15	16QAM	36	0	20.77	20.71	20.63	22	2
15	16QAM	36	20	20.81	20.72	20.66		
15	16QAM	36	39	20.71	20.70	20.60		
15	16QAM	75	0	20.76	20.70	20.61		
15	64QAM	1	0	20.92	20.87	20.78	22	2
15	64QAM	1	37	20.87	20.83	20.74		
15	64QAM	1	74	20.79	20.73	20.67		
15	64QAM	36	0	19.82	19.77	19.64	21	3
15	64QAM	36	20	19.82	19.77	19.66		
15	64QAM	36	39	19.75	19.73	19.62		
15	64QAM	75	0	19.76	19.70	19.59		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.74	22.75	22.72	24	0
10	QPSK	1	25	22.57	22.52	22.61		
10	QPSK	1	49	22.55	22.54	22.64		
10	QPSK	25	0	21.58	21.62	21.68	23	1
10	QPSK	25	12	21.65	21.69	21.70		
10	QPSK	25	25	21.59	21.60	21.62		
10	QPSK	50	0	21.53	21.61	21.63		
10	16QAM	1	0	21.92	22.01	22.03	23	1
10	16QAM	1	25	21.85	21.89	21.93		
10	16QAM	1	49	21.81	21.90	21.96		
10	16QAM	25	0	20.76	20.69	20.77	22	2
10	16QAM	25	12	20.70	20.78	20.78		
10	16QAM	25	25	20.56	20.70	20.71		
10	16QAM	50	0	20.69	20.72	20.73		
10	64QAM	1	0	20.87	20.87	20.96	22	2
10	64QAM	1	25	20.80	20.80	20.87		
10	64QAM	1	49	20.82	20.85	20.88		
10	64QAM	25	0	19.75	19.78	19.78	21	3
10	64QAM	25	12	19.63	19.68	19.76		
10	64QAM	25	25	19.72	19.63	19.73		
10	64QAM	50	0	19.66	19.71	19.76		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.67	22.61	22.61	24	0
5	QPSK	1	12	22.74	22.53	22.59		
5	QPSK	1	24	22.70	22.51	22.53		
5	QPSK	12	0	21.79	21.69	21.64	23	1
5	QPSK	12	7	21.78	21.62	21.64		
5	QPSK	12	13	21.74	21.58	21.62		
5	QPSK	25	0	21.72	21.60	21.59		
5	16QAM	1	0	22.07	21.90	21.92	23	1
5	16QAM	1	12	22.01	21.88	21.94		
5	16QAM	1	24	21.98	21.78	21.85		
5	16QAM	12	0	20.86	20.79	20.79	22	2
5	16QAM	12	7	20.90	20.82	20.71		
5	16QAM	12	13	20.81	20.74	20.70		
5	16QAM	25	0	20.80	20.68	20.70		
5	64QAM	1	0	20.98	20.81	20.84	22	2
5	64QAM	1	12	20.94	20.87	20.81		
5	64QAM	1	24	20.89	20.81	20.74		
5	64QAM	12	0	19.83	19.77	19.76	21	3
5	64QAM	12	7	19.87	19.83	19.72		
5	64QAM	12	13	19.88	19.77	19.78		
5	64QAM	25	0	19.80	19.76	19.71		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.77	22.62	22.65	24	0
3	QPSK	1	8	22.76	22.62	22.65		
3	QPSK	1	14	22.71	22.61	22.61		
3	QPSK	8	0	21.81	21.69	21.69	23	1
3	QPSK	8	4	21.86	21.71	21.74		
3	QPSK	8	7	21.81	21.67	21.67		
3	QPSK	15	0	21.79	21.67	21.67		
3	16QAM	1	0	22.08	21.91	21.95	23	1
3	16QAM	1	8	22.10	21.92	22.00		
3	16QAM	1	14	22.02	21.88	21.93		
3	16QAM	8	0	20.92	20.81	20.80	22	2
3	16QAM	8	4	20.94	20.82	20.81		
3	16QAM	8	7	20.90	20.77	20.80		
3	16QAM	15	0	20.89	20.75	20.76		
3	64QAM	1	0	20.99	20.86	20.87	22	2
3	64QAM	1	8	20.97	20.88	20.89		
3	64QAM	1	14	20.95	20.84	20.84		
3	64QAM	8	0	19.91	19.80	19.79	21	3
3	64QAM	8	4	19.95	19.85	19.82		
3	64QAM	8	7	19.90	19.80	19.78		
3	64QAM	15	0	19.87	19.76	19.77		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.72	22.56	22.57	24	0
1.4	QPSK	1	3	22.74	22.63	22.64		
1.4	QPSK	1	5	22.70	22.54	22.54		
1.4	QPSK	3	0	22.76	22.61	22.59		
1.4	QPSK	3	1	22.69	22.63	22.64		
1.4	QPSK	3	3	22.76	22.59	22.61		
1.4	QPSK	6	0	21.75	21.61	21.63	23	1
1.4	16QAM	1	0	22.03	21.87	21.89	23	1
1.4	16QAM	1	3	22.09	21.92	21.98		
1.4	16QAM	1	5	22.02	21.82	21.87		
1.4	16QAM	3	0	21.83	21.66	21.71		
1.4	16QAM	3	1	21.89	21.73	21.76		
1.4	16QAM	3	3	21.83	21.66	21.68		
1.4	16QAM	6	0	20.90	20.76	20.76	22	2
1.4	64QAM	1	0	20.95	20.81	20.80	22	2
1.4	64QAM	1	3	21.01	20.87	20.90		
1.4	64QAM	1	5	20.94	20.77	20.81		
1.4	64QAM	3	0	20.94	20.82	20.80		
1.4	64QAM	3	1	21.00	20.86	20.86		
1.4	64QAM	3	3	20.93	20.82	20.80		
1.4	64QAM	6	0	19.83	19.70	19.68	21	3

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.75	22.69	22.68	24	0
20	QPSK	1	49	22.65	22.55	22.71		
20	QPSK	1	99	22.52	22.46	22.59		
20	QPSK	50	0	21.75	21.67	21.70	23	1
20	QPSK	50	24	21.75	21.65	21.69		
20	QPSK	50	50	21.67	21.58	21.73		
20	QPSK	100	0	21.70	21.62	21.66		
20	16QAM	1	0	22.09	22.01	21.95	23	1
20	16QAM	1	49	21.99	21.85	22.05		
20	16QAM	1	99	21.84	21.72	21.90		
20	16QAM	50	0	20.79	20.77	20.79	22	2
20	16QAM	50	24	20.80	20.73	20.78		
20	16QAM	50	50	20.71	20.68	20.78		
20	16QAM	100	0	20.73	20.69	20.74		
20	64QAM	1	0	20.93	20.86	20.88	22	2
20	64QAM	1	49	20.90	20.82	20.98		
20	64QAM	1	99	20.77	20.65	20.81		
20	64QAM	50	0	19.82	19.75	19.80	21	3
20	64QAM	50	24	19.80	19.73	19.79		
20	64QAM	50	50	19.72	19.67	19.80		
20	64QAM	100	0	19.76	19.69	19.74		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.70	22.63	22.53	24	0
15	QPSK	1	37	22.63	22.53	22.59		
15	QPSK	1	74	22.51	22.44	22.55		
15	QPSK	36	0	21.68	21.62	21.55	23	1
15	QPSK	36	20	21.68	21.61	21.66		
15	QPSK	36	39	21.64	21.53	21.61		
15	QPSK	75	0	21.66	21.56	21.62		
15	16QAM	1	0	22.02	21.96	21.91	23	1
15	16QAM	1	37	21.97	21.80	22.02		
15	16QAM	1	74	21.87	21.71	21.85		
15	16QAM	36	0	20.77	20.72	20.73	22	2
15	16QAM	36	20	20.74	20.69	20.80		
15	16QAM	36	39	20.70	20.58	20.68		
15	16QAM	75	0	20.74	20.65	20.59		
15	64QAM	1	0	20.92	20.85	20.78	22	2
15	64QAM	1	37	20.86	20.79	20.83		
15	64QAM	1	74	20.74	20.68	20.78		
15	64QAM	36	0	19.78	19.70	19.71	21	3
15	64QAM	36	20	19.78	19.71	19.78		
15	64QAM	36	39	19.72	19.67	19.76		
15	64QAM	75	0	19.73	19.65	19.67		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.72	22.64	22.69	24	0
10	QPSK	1	25	22.71	22.60	22.64		
10	QPSK	1	49	22.64	22.49	22.57		
10	QPSK	25	0	21.78	21.62	21.71	23	1
10	QPSK	25	12	21.76	21.63	21.71		
10	QPSK	25	25	21.68	21.60	21.64		
10	QPSK	50	0	21.70	21.63	21.68		
10	16QAM	1	0	22.13	21.98	22.00	23	1
10	16QAM	1	25	22.05	21.87	21.99		
10	16QAM	1	49	21.96	21.77	21.91		
10	16QAM	25	0	20.84	20.71	20.76	22	2
10	16QAM	25	12	20.86	20.73	20.76		
10	16QAM	25	25	20.79	20.67	20.74		
10	16QAM	50	0	20.82	20.69	20.72		
10	64QAM	1	0	21.03	20.87	20.90	22	2
10	64QAM	1	25	20.95	20.82	20.86		
10	64QAM	1	49	20.85	20.75	20.80		
10	64QAM	25	0	19.85	19.75	19.77	21	3
10	64QAM	25	12	19.84	19.75	19.77		
10	64QAM	25	25	19.67	19.66	19.71		
10	64QAM	50	0	19.69	19.74	19.75		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.69	22.54	22.71	24	0
5	QPSK	1	12	22.69	22.59	22.70		
5	QPSK	1	24	22.69	22.49	22.63		
5	QPSK	12	0	21.71	21.60	21.75	23	1
5	QPSK	12	7	21.73	21.61	21.75		
5	QPSK	12	13	21.69	21.54	21.73		
5	QPSK	25	0	21.68	21.59	21.69		
5	16QAM	1	0	21.98	21.85	22.03	23	1
5	16QAM	1	12	22.00	21.85	21.99		
5	16QAM	1	24	22.01	21.73	21.91		
5	16QAM	12	0	20.89	20.67	20.85	22	2
5	16QAM	12	7	20.90	20.75	20.82		
5	16QAM	12	13	20.84	20.72	20.79		
5	16QAM	25	0	20.83	20.64	20.73		
5	64QAM	1	0	20.88	20.84	20.93	22	2
5	64QAM	1	12	20.92	20.83	20.96		
5	64QAM	1	24	20.90	20.71	20.90		
5	64QAM	12	0	19.89	19.70	19.82	21	3
5	64QAM	12	7	19.82	19.74	19.80		
5	64QAM	12	13	19.76	19.74	19.80		
5	64QAM	25	0	19.78	19.68	19.73		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.71	22.61	22.71	24	0
3	QPSK	1	8	22.70	22.59	22.71		
3	QPSK	1	14	22.69	22.56	22.70		
3	QPSK	8	0	21.78	21.65	21.75	23	1
3	QPSK	8	4	21.81	21.69	21.80		
3	QPSK	8	7	21.77	21.61	21.74		
3	QPSK	15	0	21.76	21.65	21.77		
3	16QAM	1	0	22.04	21.95	22.05	23	1
3	16QAM	1	8	22.08	21.87	22.05		
3	16QAM	1	14	22.02	21.81	22.00		
3	16QAM	8	0	20.89	20.76	20.88	22	2
3	16QAM	8	4	20.92	20.81	20.87		
3	16QAM	8	7	20.86	20.72	20.89		
3	16QAM	15	0	20.84	20.73	20.83		
3	64QAM	1	0	20.95	20.85	20.93	22	2
3	64QAM	1	8	20.96	20.85	20.96		
3	64QAM	1	14	20.93	20.77	20.91		
3	64QAM	8	0	19.89	19.77	19.86	21	3
3	64QAM	8	4	19.90	19.77	19.88		
3	64QAM	8	7	19.85	19.74	19.83		
3	64QAM	15	0	19.86	19.72	19.82		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.64	22.50	22.65	24	0
1.4	QPSK	1	3	22.74	22.60	22.72		
1.4	QPSK	1	5	22.64	22.50	22.62		
1.4	QPSK	3	0	22.71	22.55	22.67		
1.4	QPSK	3	1	22.71	22.61	22.72		
1.4	QPSK	3	3	22.71	22.56	22.68		
1.4	QPSK	6	0	21.71	21.56	21.67	23	1
1.4	16QAM	1	0	21.99	21.85	22.00	23	1
1.4	16QAM	1	3	22.10	21.92	22.03		
1.4	16QAM	1	5	21.99	21.79	21.97		
1.4	16QAM	3	0	21.80	21.66	21.76		
1.4	16QAM	3	1	21.84	21.70	21.80		
1.4	16QAM	3	3	21.80	21.58	21.74		
1.4	16QAM	6	0	20.85	20.72	20.82	22	2
1.4	64QAM	1	0	20.94	20.75	20.88	22	2
1.4	64QAM	1	3	20.97	20.83	20.93		
1.4	64QAM	1	5	20.90	20.73	20.84		
1.4	64QAM	3	0	20.90	20.76	20.86		
1.4	64QAM	3	1	20.95	20.83	20.92		
1.4	64QAM	3	3	20.90	20.78	20.88		
1.4	64QAM	6	0	19.79	19.64	19.75	21	3

<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	22.85	22.86	22.77	24	0
10	QPSK	1	25	22.80	22.83	22.83		
10	QPSK	1	49	22.83	22.73	22.70		
10	QPSK	25	0	21.84	21.88	21.80	23	1
10	QPSK	25	12	21.91	21.85	21.85		
10	QPSK	25	25	21.89	21.82	21.81		
10	QPSK	50	0	21.94	21.81	21.73		
10	16QAM	1	0	22.11	22.12	22.07	23	1
10	16QAM	1	25	22.06	22.09	22.14		
10	16QAM	1	49	22.10	22.02	21.99		
10	16QAM	25	0	20.92	20.93	20.87	22	2
10	16QAM	25	12	21.01	20.94	20.95		
10	16QAM	25	25	20.96	20.90	20.88		
10	16QAM	50	0	21.03	20.90	20.82		
10	64QAM	1	0	21.07	21.07	21.03	22	2
10	64QAM	1	25	21.00	21.05	21.03		
10	64QAM	1	49	21.06	20.93	20.92		
10	64QAM	25	0	19.94	19.97	19.85	21	3
10	64QAM	25	12	20.05	19.96	19.96		
10	64QAM	25	25	19.98	19.88	19.88		
10	64QAM	50	0	20.01	19.92	19.82		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.83	22.81	22.76	24	0
5	QPSK	1	12	22.80	22.79	22.74		
5	QPSK	1	24	22.76	22.75	22.68		
5	QPSK	12	0	21.83	21.84	21.79	23	1
5	QPSK	12	7	21.84	21.84	21.81		
5	QPSK	12	13	21.79	21.78	21.75		
5	QPSK	25	0	21.82	21.79	21.76		
5	16QAM	1	0	22.10	22.06	22.10	23	1
5	16QAM	1	12	22.06	22.08	22.08		
5	16QAM	1	24	22.07	22.05	21.95		
5	16QAM	12	0	20.90	20.91	20.88	22	2
5	16QAM	12	7	20.92	20.92	20.88		
5	16QAM	12	13	20.88	20.86	20.83		
5	16QAM	25	0	20.89	20.85	20.86		
5	64QAM	1	0	21.04	21.00	21.06	22	2
5	64QAM	1	12	21.03	21.02	21.01		
5	64QAM	1	24	20.95	20.95	20.89		
5	64QAM	12	0	19.97	19.93	19.93	21	3
5	64QAM	12	7	19.98	19.97	19.94		
5	64QAM	12	13	19.91	19.90	19.87		
5	64QAM	25	0	19.89	19.88	19.88		

Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.83	22.79	22.76	24	0
3	QPSK	1	8	22.80	22.78	22.73		
3	QPSK	1	14	22.76	22.78	22.69		
3	QPSK	8	0	21.82	21.78	21.76	23	1
3	QPSK	8	4	21.85	21.81	21.79		
3	QPSK	8	7	21.82	21.77	21.73		
3	QPSK	15	0	21.83	21.80	21.76		
3	16QAM	1	0	22.07	22.07	22.10	23	1
3	16QAM	1	8	22.08	22.07	22.09		
3	16QAM	1	14	22.01	22.04	21.97		
3	16QAM	8	0	20.93	20.90	20.87	22	2
3	16QAM	8	4	20.96	20.94	20.91		
3	16QAM	8	7	20.93	20.89	20.87		
3	16QAM	15	0	20.92	20.89	20.84		
3	64QAM	1	0	21.04	21.00	20.99	22	2
3	64QAM	1	8	21.02	21.00	20.98		
3	64QAM	1	14	20.97	21.00	20.91		
3	64QAM	8	0	19.93	19.90	19.89	21	3
3	64QAM	8	4	19.97	19.94	19.90		
3	64QAM	8	7	19.92	19.89	19.86		
3	64QAM	15	0	19.91	19.90	19.84		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.72	22.70	22.66	24	0
1.4	QPSK	1	3	22.82	22.79	22.72		
1.4	QPSK	1	5	22.72	22.71	22.62		
1.4	QPSK	3	0	22.77	22.75	22.69		
1.4	QPSK	3	1	22.82	22.79	22.74		
1.4	QPSK	3	3	22.78	22.74	22.69		
1.4	QPSK	6	0	21.77	21.73	21.68	23	1
1.4	16QAM	1	0	22.00	21.97	21.99	23	1
1.4	16QAM	1	3	22.08	22.04	21.99		
1.4	16QAM	1	5	22.00	21.97	21.87		
1.4	16QAM	3	0	21.83	21.79	21.79		
1.4	16QAM	3	1	21.87	21.84	21.82		
1.4	16QAM	3	3	21.82	21.78	21.77		
1.4	16QAM	6	0	20.91	20.88	20.83	22	2
1.4	64QAM	1	0	20.97	20.95	20.91	22	2
1.4	64QAM	1	3	21.04	20.99	20.95		
1.4	64QAM	1	5	20.95	20.92	20.84		
1.4	64QAM	3	0	20.97	20.96	20.90		
1.4	64QAM	3	1	21.00	20.99	20.95		
1.4	64QAM	3	3	20.95	20.94	20.88		
1.4	64QAM	6	0	19.83	19.82	19.77	21	3

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.08	23.01	23.14	24	0
20	QPSK	1	49	22.95	23.02	22.98		
20	QPSK	1	99	22.95	23.02	23.02		
20	QPSK	50	0	22.05	22.05	22.18	23	1
20	QPSK	50	24	22.00	22.07	22.11		
20	QPSK	50	50	21.99	22.01	22.04		
20	QPSK	100	0	22.03	22.09	22.15		
20	16QAM	1	0	22.42	22.26	22.44	23	1
20	16QAM	1	49	22.15	22.25	22.27		
20	16QAM	1	99	22.18	22.30	22.30		
20	16QAM	50	0	21.13	21.08	21.21	22	2
20	16QAM	50	24	21.09	21.13	21.21		
20	16QAM	50	50	21.05	21.16	21.14		
20	16QAM	100	0	21.06	21.12	21.23		
20	64QAM	1	0	21.29	21.19	21.23	22	2
20	64QAM	1	49	21.19	21.18	21.19		
20	64QAM	1	99	21.14	21.15	21.24		
20	64QAM	50	0	20.09	20.08	20.19	21	3
20	64QAM	50	24	20.09	20.11	20.20		
20	64QAM	50	50	20.05	20.13	20.11		
20	64QAM	100	0	20.05	20.10	20.20		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.00	23.03	23.13	24	0
15	QPSK	1	37	22.90	23.02	23.02		
15	QPSK	1	74	22.93	23.13	23.09		
15	QPSK	36	0	21.97	22.06	22.17	23	1
15	QPSK	36	20	21.95	22.05	22.06		
15	QPSK	36	39	21.93	22.08	22.06		
15	QPSK	75	0	21.97	22.07	22.18		
15	16QAM	1	0	22.30	22.37	22.50	23	1
15	16QAM	1	37	22.18	22.31	22.33		
15	16QAM	1	74	22.22	22.45	22.37		
15	16QAM	36	0	21.08	21.10	21.23	22	2
15	16QAM	36	20	21.04	21.17	21.12		
15	16QAM	36	39	20.98	21.16	21.14		
15	16QAM	75	0	21.03	21.14	21.21		
15	64QAM	1	0	21.21	21.29	21.34	22	2
15	64QAM	1	37	21.09	21.21	21.20		
15	64QAM	1	74	21.13	21.30	21.28		
15	64QAM	36	0	20.05	20.09	20.22	21	3
15	64QAM	36	20	20.03	20.14	20.15		
15	64QAM	36	39	19.96	20.15	20.15		
15	64QAM	75	0	20.00	20.10	20.20		

Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.02	23.07	23.06	24	0
10	QPSK	1	25	22.98	23.09	23.08		
10	QPSK	1	49	22.94	23.13	23.11		
10	QPSK	25	0	22.04	22.08	22.10	23	1
10	QPSK	25	12	22.01	22.14	22.12		
10	QPSK	25	25	21.98	22.10	22.08		
10	QPSK	50	0	22.00	22.11	22.11		
10	16QAM	1	0	22.39	22.34	22.38	23	1
10	16QAM	1	25	22.32	22.39	22.41		
10	16QAM	1	49	22.23	22.47	22.37		
10	16QAM	25	0	21.11	21.16	21.16	22	2
10	16QAM	25	12	21.08	21.17	21.19		
10	16QAM	25	25	21.05	21.19	21.20		
10	16QAM	50	0	21.07	21.14	21.16		
10	64QAM	1	0	21.20	21.22	21.32	22	2
10	64QAM	1	25	21.16	21.21	21.25		
10	64QAM	1	49	21.17	21.30	21.26		
10	64QAM	25	0	20.06	20.10	20.13	21	3
10	64QAM	25	12	20.07	20.16	20.15		
10	64QAM	25	25	20.04	20.14	20.17		
10	64QAM	50	0	20.08	20.14	20.16		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.00	23.05	23.06	24	0
5	QPSK	1	12	22.98	23.05	23.04		
5	QPSK	1	24	22.99	23.10	23.08		
5	QPSK	12	0	22.03	22.05	22.11	23	1
5	QPSK	12	7	22.03	22.11	22.10		
5	QPSK	12	13	22.01	22.08	22.12		
5	QPSK	25	0	22.00	22.07	22.10		
5	16QAM	1	0	22.31	22.34	22.28	23	1
5	16QAM	1	12	22.35	22.38	22.31		
5	16QAM	1	24	22.26	22.39	22.32		
5	16QAM	12	0	21.07	21.12	21.14	22	2
5	16QAM	12	7	21.11	21.16	21.19		
5	16QAM	12	13	21.08	21.15	21.15		
5	16QAM	25	0	21.08	21.14	21.17		
5	64QAM	1	0	21.22	21.25	21.25	22	2
5	64QAM	1	12	21.14	21.20	21.31		
5	64QAM	1	24	21.22	21.28	21.27		
5	64QAM	12	0	20.10	20.11	20.17	21	3
5	64QAM	12	7	20.10	20.15	20.17		
5	64QAM	12	13	20.10	20.14	20.17		
5	64QAM	25	0	20.06	20.11	20.13		

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0	22.57			24	0
10	QPSK	1	25	22.46				
10	QPSK	1	49	22.48				
10	QPSK	25	0	21.55			23	1
10	QPSK	25	12	21.55				
10	QPSK	25	25	21.50				
10	QPSK	50	0	21.51				
10	16QAM	1	0	21.57			23	1
10	16QAM	1	25	21.72				
10	16QAM	1	49	21.74				
10	16QAM	25	0	20.62			22	2
10	16QAM	25	12	20.63				
10	16QAM	25	25	20.58				
10	16QAM	50	0	20.59				
10	64QAM	1	0	20.53			22	2
10	64QAM	1	25	20.70				
10	64QAM	1	49	20.70				
10	64QAM	25	0	19.65			21	3
10	64QAM	25	12	19.63				
10	64QAM	25	25	19.59				
10	64QAM	50	0	19.60				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	22.43	22.43	22.38	24	0
5	QPSK	1	12	22.49	22.51	22.41		
5	QPSK	1	24	22.56	22.44	22.35		
5	QPSK	12	0	21.49	21.46	21.39	23	1
5	QPSK	12	7	21.62	21.48	21.38		
5	QPSK	12	13	21.58	21.51	21.42		
5	QPSK	25	0	21.64	21.44	21.35		
5	16QAM	1	0	21.62	21.65	21.60	23	1
5	16QAM	1	12	21.69	21.79	21.74		
5	16QAM	1	24	21.79	21.71	21.71		
5	16QAM	12	0	20.54	20.51	20.49	22	2
5	16QAM	12	7	20.70	20.54	20.44		
5	16QAM	12	13	20.65	20.60	20.50		
5	16QAM	25	0	20.68	20.51	20.48		
5	64QAM	1	0	20.59	20.64	20.54	22	2
5	64QAM	1	12	20.66	20.72	20.71		
5	64QAM	1	24	20.74	20.66	20.56		
5	64QAM	12	0	19.62	19.61	19.58	21	3
5	64QAM	12	7	19.77	19.64	19.62		
5	64QAM	12	13	19.74	19.67	19.64		
5	64QAM	25	0	19.70	19.52	19.49		

<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	22.60	22.59	22.43	24	0
20	QPSK	1	49	22.50	22.50	22.39		
20	QPSK	1	99	22.42	22.42	22.17		
20	QPSK	50	0	21.52	21.50	21.33	23	1
20	QPSK	50	24	21.47	21.45	21.26		
20	QPSK	50	50	21.42	21.43	21.19		
20	QPSK	100	0	21.49	21.48	21.27		
20	16QAM	1	0	21.85	21.85	21.80	23	1
20	16QAM	1	49	21.81	21.86	21.69		
20	16QAM	1	99	21.69	21.76	21.51		
20	16QAM	50	0	20.52	20.61	20.42	22	2
20	16QAM	50	24	20.56	20.59	20.34		
20	16QAM	50	50	20.54	20.54	20.29		
20	16QAM	100	0	20.56	20.53	20.34		
20	64QAM	1	0	20.83	20.74	20.65	22	2
20	64QAM	1	49	20.73	20.88	20.67		
20	64QAM	1	99	20.64	20.64	20.37		
20	64QAM	50	0	19.54	19.61	19.45	21	3
20	64QAM	50	24	19.58	19.58	19.37		
20	64QAM	50	50	19.54	19.53	19.29		
20	64QAM	100	0	19.56	19.56	19.35		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	22.47	22.59	22.35	24	0
15	QPSK	1	37	22.49	22.58	22.37		
15	QPSK	1	74	22.44	22.43	22.16		
15	QPSK	36	0	21.37	21.46	21.23	23	1
15	QPSK	36	20	21.46	21.53	21.30		
15	QPSK	36	39	21.40	21.34	21.15		
15	QPSK	75	0	21.44	21.41	21.19		
15	16QAM	1	0	21.78	21.92	21.68	23	1
15	16QAM	1	37	21.79	21.85	21.66		
15	16QAM	1	74	21.71	21.75	21.48		
15	16QAM	36	0	20.42	20.49	20.28	22	2
15	16QAM	36	20	20.52	20.59	20.39		
15	16QAM	36	39	20.49	20.43	20.19		
15	16QAM	75	0	20.50	20.50	20.26		
15	64QAM	1	0	20.72	20.82	20.60	22	2
15	64QAM	1	37	20.72	20.81	20.61		
15	64QAM	1	74	20.63	20.65	20.39		
15	64QAM	36	0	19.47	19.54	19.34	21	3
15	64QAM	36	20	19.53	19.64	19.41		
15	64QAM	36	39	19.49	19.47	19.22		
15	64QAM	75	0	19.51	19.52	19.27		

Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.31	22.40	22.23	24	0
10	QPSK	1	25	22.47	22.48	22.27		
10	QPSK	1	49	22.28	22.31	22.24		
10	QPSK	25	0	21.45	21.45	21.46	23	1
10	QPSK	25	12	21.45	21.59	21.45		
10	QPSK	25	25	21.49	21.46	21.48		
10	QPSK	50	0	21.40	21.50	21.44		
10	16QAM	1	0	21.68	21.71	21.63	23	1
10	16QAM	1	25	21.72	21.75	21.74		
10	16QAM	1	49	21.57	21.61	21.56		
10	16QAM	25	0	20.54	20.66	20.55	22	2
10	16QAM	25	12	20.65	20.62	20.60		
10	16QAM	25	25	20.53	20.53	20.57		
10	16QAM	50	0	20.57	20.58	20.46		
10	64QAM	1	0	20.59	20.61	20.61	22	2
10	64QAM	1	25	20.64	20.72	20.63		
10	64QAM	1	49	20.51	20.61	20.52		
10	64QAM	25	0	19.58	19.67	19.60	21	3
10	64QAM	25	12	19.67	19.70	19.56		
10	64QAM	25	25	19.55	19.54	19.49		
10	64QAM	50	0	19.56	19.54	19.47		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	22.41	22.45	22.26	24	0
5	QPSK	1	12	22.49	22.52	22.36		
5	QPSK	1	24	22.34	22.39	22.37		
5	QPSK	12	0	21.51	21.55	21.46	23	1
5	QPSK	12	7	21.53	21.61	21.60		
5	QPSK	12	13	21.49	21.51	21.46		
5	QPSK	25	0	21.50	21.52	21.44		
5	16QAM	1	0	21.68	21.72	21.63	23	1
5	16QAM	1	12	21.80	21.80	21.73		
5	16QAM	1	24	21.62	21.66	21.57		
5	16QAM	12	0	20.62	20.66	20.56	22	2
5	16QAM	12	7	20.70	20.71	20.67		
5	16QAM	12	13	20.61	20.63	20.55		
5	16QAM	25	0	20.57	20.61	20.53		
5	64QAM	1	0	20.63	20.67	20.57	22	2
5	64QAM	1	12	20.74	20.77	20.76		
5	64QAM	1	24	20.60	20.62	20.52		
5	64QAM	12	0	19.62	19.67	19.66	21	3
5	64QAM	12	7	19.67	19.70	19.69		
5	64QAM	12	13	19.61	19.63	19.61		
5	64QAM	25	0	19.61	19.60	19.55		

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	22.36	22.36	22.27	24	0
3	QPSK	1	8	22.50	22.44	22.36		
3	QPSK	1	14	22.34	22.32	22.20		
3	QPSK	8	0	22.45	22.43	22.23	23	1
3	QPSK	8	4	22.44	22.53	22.34		
3	QPSK	8	7	22.40	22.49	22.27		
3	QPSK	15	0	21.36	21.43	21.26		
3	16QAM	1	0	21.64	21.69	21.53	23	1
3	16QAM	1	8	21.65	21.69	21.65		
3	16QAM	1	14	21.67	21.70	21.53		
3	16QAM	8	0	21.52	21.53	21.36	22	2
3	16QAM	8	4	21.47	21.55	21.41		
3	16QAM	8	7	21.48	21.47	21.37		
3	16QAM	15	0	20.57	20.52	20.35		
3	64QAM	1	0	20.54	20.61	20.40	22	2
3	64QAM	1	8	20.68	20.68	20.59		
3	64QAM	1	14	20.58	20.60	20.48		
3	64QAM	8	0	20.58	20.58	20.49	21	3
3	64QAM	8	4	20.67	20.67	20.51		
3	64QAM	8	7	20.63	20.58	20.41		
3	64QAM	15	0	19.47	19.47	19.36		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	22.40	22.45	22.28	24	0
1.4	QPSK	1	3	22.50	22.53	22.36		
1.4	QPSK	1	5	22.39	22.42	22.26		
1.4	QPSK	3	0	22.47	22.48	22.31		
1.4	QPSK	3	1	22.50	22.53	22.36		
1.4	QPSK	3	3	22.45	22.49	22.32		
1.4	QPSK	6	0	21.45	21.48	21.29	23	1
1.4	16QAM	1	0	21.69	21.73	21.59	23	1
1.4	16QAM	1	3	21.75	21.78	21.70		
1.4	16QAM	1	5	21.68	21.71	21.56		
1.4	16QAM	3	0	21.52	21.56	21.41		
1.4	16QAM	3	1	21.56	21.57	21.47		
1.4	16QAM	3	3	21.50	21.53	21.40		
1.4	16QAM	6	0	20.61	20.62	20.45	22	2
1.4	64QAM	1	0	20.64	20.69	20.50	22	2
1.4	64QAM	1	3	20.73	20.75	20.59		
1.4	64QAM	1	5	20.62	20.65	20.48		
1.4	64QAM	3	0	20.64	20.68	20.50		
1.4	64QAM	3	1	20.72	20.75	20.56		
1.4	64QAM	3	3	20.66	20.68	20.50		
1.4	64QAM	6	0	19.56	19.57	19.37	21	3

Near-body and Hotspot 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	18.77	18.71	18.54	19.5	0
20	QPSK	1	49	18.64	18.63	18.49		
20	QPSK	1	99	18.50	18.52	18.54		
20	QPSK	50	0	18.65	18.59	18.55	19.5	0
20	QPSK	50	24	18.50	18.49	18.47		
20	QPSK	50	50	18.43	18.47	18.41		
20	QPSK	100	0	18.47	18.46	18.29		
20	16QAM	1	0	18.51	18.58	18.50	19.5	0
20	16QAM	1	49	18.67	18.65	18.63		
20	16QAM	1	99	18.65	18.67	18.52		
20	16QAM	50	0	18.48	18.47	18.34	19.5	0
20	16QAM	50	24	18.50	18.46	18.42		
20	16QAM	50	50	18.44	18.43	18.39		
20	16QAM	100	0	18.40	18.42	18.31		
20	64QAM	1	0	18.29	18.27	18.25	19.5	0
20	64QAM	1	49	18.38	18.36	18.30		
20	64QAM	1	99	18.31	18.31	18.24		
20	64QAM	50	0	18.39	18.39	18.26	19.5	0
20	64QAM	50	24	18.41	18.39	18.41		
20	64QAM	50	50	18.36	18.36	18.34		
20	64QAM	100	0	18.38	18.34	18.25		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	18.52	18.64	18.56	19.5	0
15	QPSK	1	37	18.52	18.69	18.51		
15	QPSK	1	74	18.49	18.56	18.39		
15	QPSK	36	0	18.35	18.46	18.40	19.5	0
15	QPSK	36	20	18.49	18.47	18.45		
15	QPSK	36	39	18.52	18.43	18.43		
15	QPSK	75	0	18.40	18.45	18.37		
15	16QAM	1	0	18.54	18.64	18.64	19.5	0
15	16QAM	1	37	18.41	18.67	18.55		
15	16QAM	1	74	18.62	18.53	18.49		
15	16QAM	36	0	18.37	18.47	18.38	19.5	0
15	16QAM	36	20	18.45	18.47	18.39		
15	16QAM	36	39	18.40	18.42	18.32		
15	16QAM	75	0	18.44	18.46	18.39		
15	64QAM	1	0	18.26	18.36	18.29	19.5	0
15	64QAM	1	37	18.27	18.37	18.31		
15	64QAM	1	74	18.28	18.31	18.22		
15	64QAM	36	0	18.27	18.37	18.39	19.5	0
15	64QAM	36	20	18.42	18.40	18.37		
15	64QAM	36	39	18.36	18.38	18.31		
15	64QAM	75	0	18.40	18.36	18.36		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	18.64	18.64	18.57	19.5	0
10	QPSK	1	25	18.48	18.59	18.60		
10	QPSK	1	49	18.61	18.60	18.52		
10	QPSK	25	0	18.45	18.47	18.42	19.5	0
10	QPSK	25	12	18.43	18.53	18.39		
10	QPSK	25	25	18.48	18.46	18.39		
10	QPSK	50	0	18.48	18.48	18.38		
10	16QAM	1	0	18.60	18.66	18.64	19.5	0
10	16QAM	1	25	18.54	18.66	18.62		
10	16QAM	1	49	18.66	18.64	18.58		
10	16QAM	25	0	18.42	18.49	18.40	19.5	0
10	16QAM	25	12	18.42	18.50	18.41		
10	16QAM	25	25	18.46	18.44	18.35		
10	16QAM	50	0	18.52	18.42	18.40		
10	64QAM	1	0	18.39	18.48	18.30	19.5	0
10	64QAM	1	25	18.26	18.38	18.33		
10	64QAM	1	49	18.41	18.39	18.23		
10	64QAM	25	0	18.35	18.41	18.38	19.5	0
10	64QAM	25	12	18.37	18.40	18.39		
10	64QAM	25	25	18.42	18.38	18.29		
10	64QAM	50	0	18.42	18.33	18.31		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	18.60	18.55	18.49	19.5	0
5	QPSK	1	12	18.60	18.54	18.40		
5	QPSK	1	24	18.49	18.54	18.35		
5	QPSK	12	0	18.45	18.48	18.42	19.5	0
5	QPSK	12	7	18.50	18.48	18.41		
5	QPSK	12	13	18.43	18.42	18.40		
5	QPSK	25	0	18.42	18.48	18.35		
5	16QAM	1	0	18.54	18.63	18.50	19.5	0
5	16QAM	1	12	18.71	18.73	18.56		
5	16QAM	1	24	18.50	18.50	18.55		
5	16QAM	12	0	18.41	18.46	18.35	19.5	0
5	16QAM	12	7	18.41	18.41	18.32		
5	16QAM	12	13	18.43	18.43	18.32		
5	16QAM	25	0	18.41	18.40	18.32		
5	64QAM	1	0	18.30	18.39	18.29	19.5	0
5	64QAM	1	12	18.34	18.35	18.26		
5	64QAM	1	24	18.27	18.29	18.19		
5	64QAM	12	0	18.36	18.36	18.28	19.5	0
5	64QAM	12	7	18.32	18.38	18.31		
5	64QAM	12	13	18.32	18.37	18.29		
5	64QAM	25	0	18.31	18.33	18.27		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	18.49	18.62	18.51	19.5	0
3	QPSK	1	8	18.57	18.62	18.47		
3	QPSK	1	14	18.54	18.56	18.49		
3	QPSK	8	0	18.37	18.52	18.37	19.5	0
3	QPSK	8	4	18.50	18.54	18.41		
3	QPSK	8	7	18.42	18.52	18.35		
3	QPSK	15	0	18.47	18.52	18.33		
3	16QAM	1	0	18.55	18.60	18.59	19.5	0
3	16QAM	1	8	18.62	18.65	18.58		
3	16QAM	1	14	18.48	18.55	18.52		
3	16QAM	8	0	18.44	18.47	18.40	19.5	0
3	16QAM	8	4	18.47	18.49	18.38		
3	16QAM	8	7	18.43	18.43	18.40		
3	16QAM	15	0	18.42	18.44	18.34		
3	64QAM	1	0	18.36	18.35	18.26	19.5	0
3	64QAM	1	8	18.34	18.34	18.29		
3	64QAM	1	14	18.28	18.34	18.24		
3	64QAM	8	0	18.35	18.41	18.29	19.5	0
3	64QAM	8	4	18.36	18.45	18.30		
3	64QAM	8	7	18.35	18.37	18.26		
3	64QAM	15	0	18.30	18.35	18.27		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	18.54	18.59	18.52	19.5	0
1.4	QPSK	1	3	18.59	18.64	18.51		
1.4	QPSK	1	5	18.51	18.58	18.38		
1.4	QPSK	3	0	18.47	18.49	18.39		
1.4	QPSK	3	1	18.58	18.59	18.44		
1.4	QPSK	3	3	18.48	18.49	18.39		
1.4	QPSK	6	0	18.38	18.43	18.31	19.5	0
1.4	16QAM	1	0	18.48	18.63	18.56	19.5	0
1.4	16QAM	1	3	18.57	18.66	18.64		
1.4	16QAM	1	5	18.60	18.59	18.44		
1.4	16QAM	3	0	18.40	18.33	18.30		
1.4	16QAM	3	1	18.41	18.39	18.36		
1.4	16QAM	3	3	18.40	18.37	18.23		
1.4	16QAM	6	0	18.39	18.49	18.39	19.5	0
1.4	64QAM	1	0	18.27	18.33	18.24	19.5	0
1.4	64QAM	1	3	18.34	18.34	18.26		
1.4	64QAM	1	5	18.23	18.29	18.19		
1.4	64QAM	3	0	18.29	18.30	18.22		
1.4	64QAM	3	1	18.33	18.40	18.29		
1.4	64QAM	3	3	18.30	18.34	18.21		
1.4	64QAM	6	0	18.29	18.29	18.23	19.5	0

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	18.15	18.04	18.09	19	0
20	QPSK	1	49	18.13	17.88	17.99		
20	QPSK	1	99	18.03	17.91	17.97		
20	QPSK	50	0	17.99	17.88	17.88	19	0
20	QPSK	50	24	17.95	17.90	17.92		
20	QPSK	50	50	17.94	17.81	17.99		
20	QPSK	100	0	17.93	17.84	17.87		
20	16QAM	1	0	18.06	18.03	18.08	19	0
20	16QAM	1	49	18.05	18.01	18.06		
20	16QAM	1	99	18.09	17.97	18.05		
20	16QAM	50	0	17.97	17.91	17.92	19	0
20	16QAM	50	24	17.95	17.89	17.88		
20	16QAM	50	50	17.90	17.84	17.95		
20	16QAM	100	0	17.93	17.82	17.86		
20	64QAM	1	0	17.89	17.80	17.87	19	0
20	64QAM	1	49	17.84	17.81	17.88		
20	64QAM	1	99	17.76	17.67	17.80		
20	64QAM	50	0	17.93	17.85	17.82	19	0
20	64QAM	50	24	17.90	17.84	17.80		
20	64QAM	50	50	17.85	17.72	17.90		
20	64QAM	100	0	17.91	17.81	17.82		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	18.12	18.04	18.06	19	0
15	QPSK	1	37	18.11	18.05	18.05		
15	QPSK	1	74	18.04	17.98	18.11		
15	QPSK	36	0	17.97	17.84	17.82	19	0
15	QPSK	36	20	18.01	17.86	18.00		
15	QPSK	36	39	17.93	17.86	17.94		
15	QPSK	75	0	17.96	17.82	17.84		
15	16QAM	1	0	18.07	18.01	18.01	19	0
15	16QAM	1	37	18.03	18.02	18.10		
15	16QAM	1	74	18.02	17.99	18.02		
15	16QAM	36	0	18.02	17.89	17.85	19	0
15	16QAM	36	20	18.06	17.93	18.01		
15	16QAM	36	39	17.95	17.82	17.95		
15	16QAM	75	0	17.97	17.84	17.85		
15	64QAM	1	0	17.91	17.82	17.76	19	0
15	64QAM	1	37	17.90	17.77	17.88		
15	64QAM	1	74	17.82	17.70	17.79		
15	64QAM	36	0	17.89	17.80	17.80	19	0
15	64QAM	36	20	17.94	17.82	17.87		
15	64QAM	36	39	17.82	17.78	17.88		
15	64QAM	75	0	17.86	17.75	17.80		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	18.11	18.07	18.08	19	0
10	QPSK	1	25	18.10	18.08	18.08		
10	QPSK	1	49	18.04	17.95	17.97		
10	QPSK	25	0	17.98	17.91	17.85	19	0
10	QPSK	25	12	18.02	17.91	17.86		
10	QPSK	25	25	17.94	17.87	17.81		
10	QPSK	50	0	17.97	17.84	17.80		
10	16QAM	1	0	18.10	18.03	18.05	19	0
10	16QAM	1	25	18.09	17.98	18.05		
10	16QAM	1	49	18.02	17.93	17.95		
10	16QAM	25	0	18.00	17.90	17.86	19	0
10	16QAM	25	12	17.99	17.88	17.90		
10	16QAM	25	25	17.99	17.85	17.83		
10	16QAM	50	0	17.98	17.85	17.83		
10	64QAM	1	0	17.92	17.79	17.75	19	0
10	64QAM	1	25	17.91	17.77	17.80		
10	64QAM	1	49	17.85	17.69	17.73		
10	64QAM	25	0	17.93	17.78	17.78	19	0
10	64QAM	25	12	17.92	17.84	17.78		
10	64QAM	25	25	17.93	17.76	17.73		
10	64QAM	50	0	17.94	17.81	17.78		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	18.11	18.03	18.05	19	0
5	QPSK	1	12	18.08	17.99	18.02		
5	QPSK	1	24	18.08	17.94	17.95		
5	QPSK	12	0	18.05	17.85	17.96	19	0
5	QPSK	12	7	18.09	17.94	17.95		
5	QPSK	12	13	17.99	17.85	17.94		
5	QPSK	25	0	18.00	17.83	17.92		
5	16QAM	1	0	18.07	18.00	18.02	19	0
5	16QAM	1	12	18.03	18.06	18.13		
5	16QAM	1	24	18.05	18.03	18.13		
5	16QAM	12	0	18.01	17.87	17.92	19	0
5	16QAM	12	7	18.05	17.93	17.96		
5	16QAM	12	13	17.98	17.84	17.92		
5	16QAM	25	0	17.98	17.87	17.96		
5	64QAM	1	0	17.90	17.76	17.84	19	0
5	64QAM	1	12	17.93	17.77	17.85		
5	64QAM	1	24	17.90	17.70	17.78		
5	64QAM	12	0	17.95	17.77	17.85	19	0
5	64QAM	12	7	17.97	17.80	17.90		
5	64QAM	12	13	17.91	17.78	17.84		
5	64QAM	25	0	17.94	17.80	17.86		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	18.09	18.03	18.08	19	0
3	QPSK	1	8	18.09	18.11	18.13		
3	QPSK	1	14	18.10	18.02	18.10		
3	QPSK	8	0	18.10	17.87	18.00	19	0
3	QPSK	8	4	18.09	17.93	18.03		
3	QPSK	8	7	18.03	17.90	17.97		
3	QPSK	15	0	18.02	17.87	17.95		
3	16QAM	1	0	18.04	17.96	17.94	19	0
3	16QAM	1	8	18.07	18.04	18.03		
3	16QAM	1	14	18.08	17.96	18.03		
3	16QAM	8	0	18.10	17.88	17.95	19	0
3	16QAM	8	4	18.01	17.91	17.96		
3	16QAM	8	7	18.02	17.86	17.92		
3	16QAM	15	0	18.00	17.86	17.91		
3	64QAM	1	0	17.95	17.74	17.83	19	0
3	64QAM	1	8	17.92	17.79	17.81		
3	64QAM	1	14	17.87	17.70	17.84		
3	64QAM	8	0	17.98	17.75	17.83	19	0
3	64QAM	8	4	17.91	17.84	17.83		
3	64QAM	8	7	17.92	17.78	17.86		
3	64QAM	15	0	17.91	17.80	17.86		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	18.13	17.96	17.97	19	0
1.4	QPSK	1	3	18.09	18.05	18.07		
1.4	QPSK	1	5	18.06	18.04	17.92		
1.4	QPSK	3	0	17.96	17.83	17.86		
1.4	QPSK	3	1	18.03	17.85	17.87		
1.4	QPSK	3	3	17.94	17.85	17.82		
1.4	QPSK	6	0	18.09	17.84	17.93	19	0
1.4	16QAM	1	0	18.09	17.95	18.03	19	0
1.4	16QAM	1	3	18.12	17.99	18.09		
1.4	16QAM	1	5	18.04	17.89	17.92		
1.4	16QAM	3	0	18.03	17.85	17.94		
1.4	16QAM	3	1	18.08	17.94	17.97		
1.4	16QAM	3	3	18.01	17.89	17.98		
1.4	16QAM	6	0	17.93	17.79	17.80	19	0
1.4	64QAM	1	0	17.81	17.71	17.74	19	0
1.4	64QAM	1	3	17.97	17.73	17.79		
1.4	64QAM	1	5	17.86	17.71	17.74		
1.4	64QAM	3	0	17.90	17.73	17.78		
1.4	64QAM	3	1	17.97	17.76	17.83		
1.4	64QAM	3	3	17.91	17.71	17.79		
1.4	64QAM	6	0	17.87	17.76	17.76	19	0

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	21.94	21.95	21.75	22.5	0
10	QPSK	1	25	21.92	21.93	21.67		
10	QPSK	1	49	21.81	21.79	21.66		
10	QPSK	25	0	21.27	21.29	21.20	22.5	0
10	QPSK	25	12	21.34	21.25	21.19		
10	QPSK	25	25	21.29	21.24	21.14		
10	QPSK	50	0	21.36	21.24	21.17		
10	16QAM	1	0	21.32	21.28	21.10	22.5	0
10	16QAM	1	25	21.21	21.20	21.11		
10	16QAM	1	49	21.25	21.11	21.08		
10	16QAM	25	0	20.86	20.87	20.77	21.5	1
10	16QAM	25	12	20.82	20.86	20.77		
10	16QAM	25	25	20.80	20.76	20.73		
10	16QAM	50	0	20.79	20.81	20.75		
10	64QAM	1	0	20.97	21.06	20.97	21.5	1
10	64QAM	1	25	20.90	20.98	20.91		
10	64QAM	1	49	20.99	20.84	20.82		
10	64QAM	25	0	19.85	19.86	19.81	20.5	2
10	64QAM	25	12	19.95	19.87	19.79		
10	64QAM	25	25	19.89	19.80	19.72		
10	64QAM	50	0	19.95	19.83	19.79		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	21.82	21.86	21.69	22.5	0
5	QPSK	1	12	21.79	21.78	21.64		
5	QPSK	1	24	21.75	21.77	21.69		
5	QPSK	12	0	21.26	21.25	21.15	22.5	0
5	QPSK	12	7	21.27	21.28	21.17		
5	QPSK	12	13	21.22	21.24	21.15		
5	QPSK	25	0	21.29	21.30	21.16		
5	16QAM	1	0	21.24	21.25	21.14	22.5	0
5	16QAM	1	12	21.23	21.25	21.08		
5	16QAM	1	24	21.22	21.25	21.07		
5	16QAM	12	0	20.84	20.89	20.73	21.5	1
5	16QAM	12	7	20.89	20.86	20.80		
5	16QAM	12	13	20.83	20.86	20.68		
5	16QAM	25	0	20.81	20.83	20.69		
5	64QAM	1	0	21.02	20.95	20.89	21.5	1
5	64QAM	1	12	20.98	20.97	20.90		
5	64QAM	1	24	20.91	20.90	20.78		
5	64QAM	12	0	19.91	19.89	19.79	20.5	2
5	64QAM	12	7	19.91	19.89	19.81		
5	64QAM	12	13	19.85	19.89	19.73		
5	64QAM	25	0	19.83	19.85	19.71		

Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	21.87	21.87	21.49	22.5	0
3	QPSK	1	8	21.78	21.78	21.57		
3	QPSK	1	14	21.80	21.86	21.62		
3	QPSK	8	0	21.29	21.24	21.03	22.5	0
3	QPSK	8	4	21.26	21.24	21.02		
3	QPSK	8	7	21.27	21.23	20.98		
3	QPSK	15	0	21.26	21.28	21.01		
3	16QAM	1	0	21.25	21.25	21.00	22.5	0
3	16QAM	1	8	21.24	21.24	20.94		
3	16QAM	1	14	21.19	21.22	20.98		
3	16QAM	8	0	20.92	20.86	20.66	21.5	1
3	16QAM	8	4	20.89	20.87	20.67		
3	16QAM	8	7	20.89	20.88	20.62		
3	16QAM	15	0	20.83	20.84	20.59		
3	64QAM	1	0	20.98	20.92	20.82	21.5	1
3	64QAM	1	8	20.87	20.91	20.72		
3	64QAM	1	14	20.91	20.88	20.69		
3	64QAM	8	0	19.92	19.91	19.66	20.5	2
3	64QAM	8	4	19.89	19.84	19.65		
3	64QAM	8	7	19.90	19.89	19.63		
3	64QAM	15	0	19.85	19.83	19.61		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	21.79	21.82	21.74	22.5	0
1.4	QPSK	1	3	21.75	21.75	21.75		
1.4	QPSK	1	5	21.75	21.75	21.64		
1.4	QPSK	3	0	21.19	21.25	21.09		
1.4	QPSK	3	1	21.25	21.29	21.09		
1.4	QPSK	3	3	21.22	21.17	21.06		
1.4	QPSK	6	0	21.21	21.24	21.10	22.5	0
1.4	16QAM	1	0	21.14	21.14	21.03	22.5	0
1.4	16QAM	1	3	21.20	21.22	21.08		
1.4	16QAM	1	5	21.18	21.10	20.97		
1.4	16QAM	3	0	21.23	21.34	21.11		
1.4	16QAM	3	1	21.32	21.37	21.15		
1.4	16QAM	3	3	21.23	21.19	21.06		
1.4	16QAM	6	0	20.85	20.80	20.70	21.5	1
1.4	64QAM	1	0	20.88	20.90	20.77	21.5	1
1.4	64QAM	1	3	20.94	20.99	20.76		
1.4	64QAM	1	5	20.85	20.87	20.73		
1.4	64QAM	3	0	20.88	20.87	20.76		
1.4	64QAM	3	1	20.97	20.92	20.76		
1.4	64QAM	3	3	20.87	20.88	20.73		
1.4	64QAM	6	0	19.77	19.75	19.62	20.5	2

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	18.93	18.90	18.97	19.5	0
20	QPSK	1	49	18.87	18.84	18.88		
20	QPSK	1	99	18.83	18.80	18.94		
20	QPSK	50	0	18.71	18.65	18.81	19.5	0
20	QPSK	50	24	18.63	18.70	18.79		
20	QPSK	50	50	18.60	18.71	18.73		
20	QPSK	100	0	18.64	18.65	18.77		
20	16QAM	1	0	18.77	18.74	18.87	19.5	0
20	16QAM	1	49	18.69	18.82	18.74		
20	16QAM	1	99	18.66	18.79	18.79		
20	16QAM	50	0	18.67	18.64	18.77	19.5	0
20	16QAM	50	24	18.67	18.66	18.84		
20	16QAM	50	50	18.62	18.71	18.65		
20	16QAM	100	0	18.64	18.65	18.80		
20	64QAM	1	0	18.61	18.57	18.65	19.5	0
20	64QAM	1	49	18.51	18.52	18.56		
20	64QAM	1	99	18.47	18.57	18.64		
20	64QAM	50	0	18.66	18.56	18.71	19.5	0
20	64QAM	50	24	18.56	18.60	18.73		
20	64QAM	50	50	18.55	18.64	18.63		
20	64QAM	100	0	18.59	18.64	18.70		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	18.94	18.87	18.92	19.5	0
15	QPSK	1	37	18.79	18.95	18.95		
15	QPSK	1	74	18.75	18.95	18.91		
15	QPSK	36	0	18.58	18.69	18.76	19.5	0
15	QPSK	36	20	18.59	18.69	18.72		
15	QPSK	36	39	18.53	18.71	18.66		
15	QPSK	75	0	18.58	18.66	18.80		
15	16QAM	1	0	18.75	18.73	18.92	19.5	0
15	16QAM	1	37	18.56	18.72	18.67		
15	16QAM	1	74	18.68	18.77	18.86		
15	16QAM	36	0	18.61	18.63	18.77	19.5	0
15	16QAM	36	20	18.65	18.71	18.71		
15	16QAM	36	39	18.58	18.67	18.67		
15	16QAM	75	0	18.54	18.63	18.75		
15	64QAM	1	0	18.58	18.57	18.68	19.5	0
15	64QAM	1	37	18.45	18.53	18.58		
15	64QAM	1	74	18.49	18.70	18.66		
15	64QAM	36	0	18.58	18.61	18.76	19.5	0
15	64QAM	36	20	18.58	18.63	18.69		
15	64QAM	36	39	18.51	18.63	18.67		
15	64QAM	75	0	18.55	18.62	18.76		

Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	18.90	18.81	18.92	19.5	0
10	QPSK	1	25	18.89	18.84	18.95		
10	QPSK	1	49	18.83	18.92	18.93		
10	QPSK	25	0	18.63	18.66	18.72	19.5	0
10	QPSK	25	12	18.62	18.70	18.72		
10	QPSK	25	25	18.58	18.68	18.70		
10	QPSK	50	0	18.59	18.65	18.71		
10	16QAM	1	0	18.78	18.72	18.80	19.5	0
10	16QAM	1	25	18.67	18.76	18.82		
10	16QAM	1	49	18.63	18.79	18.70		
10	16QAM	25	0	18.65	18.63	18.70	19.5	0
10	16QAM	25	12	18.62	18.69	18.72		
10	16QAM	25	25	18.56	18.68	18.70		
10	16QAM	50	0	18.63	18.63	18.66		
10	64QAM	1	0	18.56	18.58	18.66	19.5	0
10	64QAM	1	25	18.55	18.56	18.59		
10	64QAM	1	49	18.51	18.63	18.65		
10	64QAM	25	0	18.56	18.57	18.63	19.5	0
10	64QAM	25	12	18.56	18.62	18.69		
10	64QAM	25	25	18.57	18.60	18.65		
10	64QAM	50	0	18.59	18.62	18.64		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	18.86	18.88	18.94	19.5	0
5	QPSK	1	12	18.89	18.95	18.92		
5	QPSK	1	24	18.80	18.95	18.93		
5	QPSK	12	0	18.64	18.60	18.71	19.5	0
5	QPSK	12	7	18.62	18.66	18.72		
5	QPSK	12	13	18.63	18.65	18.68		
5	QPSK	25	0	18.60	18.64	18.68		
5	16QAM	1	0	18.67	18.74	18.78	19.5	0
5	16QAM	1	12	18.72	18.76	18.77		
5	16QAM	1	24	18.65	18.70	18.78		
5	16QAM	12	0	18.68	18.62	18.69	19.5	0
5	16QAM	12	7	18.70	18.66	18.72		
5	16QAM	12	13	18.59	18.68	18.71		
5	16QAM	25	0	18.62	18.65	18.68		
5	64QAM	1	0	18.56	18.54	18.61	19.5	0
5	64QAM	1	12	18.57	18.53	18.64		
5	64QAM	1	24	18.55	18.56	18.60		
5	64QAM	12	0	18.55	18.55	18.62	19.5	0
5	64QAM	12	7	18.62	18.63	18.71		
5	64QAM	12	13	18.55	18.58	18.64		
5	64QAM	25	0	18.57	18.59	18.64		

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0	19.95			21	0
10	QPSK	1	25	19.90				
10	QPSK	1	49	19.87				
10	QPSK	25	0	19.90			21	0
10	QPSK	25	12	19.87				
10	QPSK	25	25	19.82				
10	QPSK	50	0	19.84				
10	16QAM	1	0	19.56			21	0
10	16QAM	1	25	19.77				
10	16QAM	1	49	19.70				
10	16QAM	25	0	19.59			21	0
10	16QAM	25	12	19.63				
10	16QAM	25	25	19.57				
10	16QAM	50	0	19.58				
10	64QAM	1	0	19.33			21	0
10	64QAM	1	25	19.52				
10	64QAM	1	49	19.50				
10	64QAM	25	0	19.51			21	0
10	64QAM	25	12	19.55				
10	64QAM	25	25	19.48				
10	64QAM	50	0	19.51				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	19.72	19.82	19.90	21	0
5	QPSK	1	12	19.93	19.88	19.88		
5	QPSK	1	24	19.91	19.94	19.79		
5	QPSK	12	0	19.64	19.70	19.63	21	0
5	QPSK	12	7	19.67	19.69	19.63		
5	QPSK	12	13	19.77	19.64	19.72		
5	QPSK	25	0	19.64	19.65	19.57		
5	16QAM	1	0	19.65	19.62	19.76	21	0
5	16QAM	1	12	19.78	19.72	19.79		
5	16QAM	1	24	19.81	19.78	19.68		
5	16QAM	12	0	19.69	19.68	19.68	21	0
5	16QAM	12	7	19.71	19.73	19.68		
5	16QAM	12	13	19.74	19.61	19.68		
5	16QAM	25	0	19.62	19.65	19.61		
5	64QAM	1	0	19.45	19.46	19.52	21	0
5	64QAM	1	12	19.53	19.55	19.58		
5	64QAM	1	24	19.57	19.54	19.52		
5	64QAM	12	0	19.59	19.57	19.55	21	0
5	64QAM	12	7	19.58	19.59	19.57		
5	64QAM	12	13	19.66	19.51	19.63		
5	64QAM	25	0	19.53	19.56	19.51		

<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	18.25	18.20	17.97	19	0
20	QPSK	1	49	18.20	18.16	17.94		
20	QPSK	1	99	18.08	17.99	17.81		
20	QPSK	50	0	18.18	18.06	17.85	19	0
20	QPSK	50	24	17.91	17.74	17.61		
20	QPSK	50	50	17.89	17.74	17.59		
20	QPSK	100	0	17.91	17.73	17.59		
20	16QAM	1	0	18.12	17.97	17.80	19	0
20	16QAM	1	49	18.10	17.96	17.80		
20	16QAM	1	99	17.99	17.89	17.70		
20	16QAM	50	0	17.91	17.73	17.64	19	0
20	16QAM	50	24	17.90	17.73	17.57		
20	16QAM	50	50	17.81	17.75	17.55		
20	16QAM	100	0	17.87	17.72	17.62		
20	64QAM	1	0	17.95	17.75	17.58	19	0
20	64QAM	1	49	17.95	17.77	17.68		
20	64QAM	1	99	17.79	17.65	17.51		
20	64QAM	50	0	17.82	17.66	17.53	19	0
20	64QAM	50	24	17.80	17.63	17.53		
20	64QAM	50	50	17.74	17.62	17.48		
20	64QAM	100	0	17.79	17.68	17.51		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	18.18	18.04	17.97	19	0
15	QPSK	1	37	18.16	17.97	17.97		
15	QPSK	1	74	18.12	18.07	17.82		
15	QPSK	36	0	17.92	17.67	17.59	19	0
15	QPSK	36	20	17.95	17.78	17.65		
15	QPSK	36	39	17.81	17.67	17.53		
15	QPSK	75	0	17.88	17.69	17.57		
15	16QAM	1	0	18.12	17.93	17.77	19	0
15	16QAM	1	37	18.18	18.00	17.83		
15	16QAM	1	74	17.95	17.92	17.66		
15	16QAM	36	0	17.86	17.64	17.57	19	0
15	16QAM	36	20	17.95	17.77	17.62		
15	16QAM	36	39	17.87	17.64	17.51		
15	16QAM	75	0	17.85	17.62	17.50		
15	64QAM	1	0	17.93	17.76	17.56	19	0
15	64QAM	1	37	17.96	17.75	17.64		
15	64QAM	1	74	17.85	17.64	17.51		
15	64QAM	36	0	17.81	17.59	17.49	19	0
15	64QAM	36	20	17.89	17.72	17.57		
15	64QAM	36	39	17.75	17.53	17.39		
15	64QAM	75	0	17.81	17.59	17.44		

Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	18.20	18.12	17.94	19	0
10	QPSK	1	25	18.16	18.10	17.87		
10	QPSK	1	49	18.09	17.93	17.75		
10	QPSK	25	0	17.94	17.77	17.58	19	0
10	QPSK	25	12	17.96	17.71	17.57		
10	QPSK	25	25	17.94	17.69	17.58		
10	QPSK	50	0	17.96	17.75	17.55		
10	16QAM	1	0	18.15	17.84	17.80	19	0
10	16QAM	1	25	18.12	17.92	17.75		
10	16QAM	1	49	18.04	17.77	17.68		
10	16QAM	25	0	17.92	17.70	17.56	19	0
10	16QAM	25	12	17.94	17.72	17.55		
10	16QAM	25	25	17.91	17.70	17.51		
10	16QAM	50	0	17.90	17.71	17.58		
10	64QAM	1	0	17.91	17.73	17.52	19	0
10	64QAM	1	25	17.90	17.68	17.56		
10	64QAM	1	49	17.83	17.58	17.43		
10	64QAM	25	0	17.86	17.64	17.52	19	0
10	64QAM	25	12	17.89	17.67	17.48		
10	64QAM	25	25	17.78	17.65	17.40		
10	64QAM	50	0	17.84	17.64	17.47		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	18.12	17.90	17.72	19	0
5	QPSK	1	12	18.17	18.11	17.85		
5	QPSK	1	24	18.01	17.83	17.68		
5	QPSK	12	0	17.91	17.74	17.53	19	0
5	QPSK	12	7	18.04	17.80	17.56		
5	QPSK	12	13	17.90	17.66	17.51		
5	QPSK	25	0	17.95	17.70	17.52		
5	16QAM	1	0	18.00	17.77	17.52	19	0
5	16QAM	1	12	18.11	17.94	17.77		
5	16QAM	1	24	17.86	17.69	17.51		
5	16QAM	12	0	17.95	17.73	17.57	19	0
5	16QAM	12	7	18.00	17.77	17.63		
5	16QAM	12	13	17.93	17.69	17.49		
5	16QAM	25	0	17.87	17.67	17.52		
5	64QAM	1	0	17.77	17.56	17.34	19	0
5	64QAM	1	12	17.95	17.66	17.48		
5	64QAM	1	24	17.71	17.51	17.29		
5	64QAM	12	0	17.85	17.62	17.46	19	0
5	64QAM	12	7	17.95	17.70	17.53		
5	64QAM	12	13	17.84	17.64	17.43		
5	64QAM	25	0	17.84	17.59	17.43		

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	18.21	17.85	17.61	19	0
3	QPSK	1	8	18.19	18.02	17.81		
3	QPSK	1	14	18.13	17.92	17.70		
3	QPSK	8	0	18.08	17.81	17.61	19	0
3	QPSK	8	4	18.09	17.84	17.66		
3	QPSK	8	7	18.03	17.78	17.58		
3	QPSK	15	0	17.98	17.74	17.57		
3	16QAM	1	0	18.04	17.76	17.56	19	0
3	16QAM	1	8	18.12	17.87	17.60		
3	16QAM	1	14	18.04	17.76	17.51		
3	16QAM	8	0	18.03	17.77	17.50	19	0
3	16QAM	8	4	18.04	17.86	17.62		
3	16QAM	8	7	17.96	17.76	17.57		
3	16QAM	15	0	17.97	17.77	17.52		
3	64QAM	1	0	17.84	17.56	17.36	19	0
3	64QAM	1	8	17.89	17.68	17.50		
3	64QAM	1	14	17.80	17.55	17.32		
3	64QAM	8	0	17.89	17.64	17.46	19	0
3	64QAM	8	4	17.94	17.76	17.53		
3	64QAM	8	7	17.92	17.64	17.41		
3	64QAM	15	0	17.90	17.66	17.48		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	18.14	17.99	17.64	19	0
1.4	QPSK	1	3	18.14	18.06	17.85		
1.4	QPSK	1	5	18.09	17.93	17.70		
1.4	QPSK	3	0	17.96	17.74	17.48		
1.4	QPSK	3	1	18.04	17.81	17.53		
1.4	QPSK	3	3	17.99	17.72	17.53		
1.4	QPSK	6	0	18.07	17.86	17.63	19	0
1.4	16QAM	1	0	18.13	17.90	17.51	19	0
1.4	16QAM	1	3	18.15	17.89	17.67		
1.4	16QAM	1	5	18.03	17.82	17.58		
1.4	16QAM	3	0	18.03	17.82	17.63		
1.4	16QAM	3	1	18.15	17.85	17.67		
1.4	16QAM	3	3	17.99	17.82	17.60		
1.4	16QAM	6	0	17.96	17.72	17.51	19	0
1.4	64QAM	1	0	17.80	17.52	17.39	19	0
1.4	64QAM	1	3	17.96	17.67	17.51		
1.4	64QAM	1	5	17.84	17.59	17.37		
1.4	64QAM	3	0	17.91	17.63	17.47		
1.4	64QAM	3	1	17.90	17.71	17.45		
1.4	64QAM	3	3	17.92	17.65	17.45		
1.4	64QAM	6	0	17.89	17.63	17.43	19	0

Product Specific Power Mode

<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	21.98	21.92	21.93	23	0
20	QPSK	1	49	21.95	21.89	21.90		
20	QPSK	1	99	21.92	21.88	21.83		
20	QPSK	50	0	21.91	21.82	21.84	23	0
20	QPSK	50	24	21.88	21.80	21.85		
20	QPSK	50	50	21.83	21.76	21.88		
20	QPSK	100	0	21.86	21.81	21.82		
20	16QAM	1	0	21.75	21.71	21.77	23	0
20	16QAM	1	49	21.65	21.68	21.66		
20	16QAM	1	99	21.56	21.66	21.66		
20	16QAM	50	0	20.99	20.97	20.89	22	1
20	16QAM	50	24	20.93	20.91	20.95		
20	16QAM	50	50	20.94	20.90	20.95		
20	16QAM	100	0	20.93	20.91	20.90		
20	64QAM	1	0	21.75	21.76	21.74	22	1
20	64QAM	1	49	21.69	21.58	21.64		
20	64QAM	1	99	21.69	21.59	21.63		
20	64QAM	50	0	19.99	19.89	19.89	21	2
20	64QAM	50	24	19.97	19.88	19.93		
20	64QAM	50	50	19.93	19.84	19.97		
20	64QAM	100	0	19.99	19.88	19.92		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	21.92	21.80	21.83	23	0
15	QPSK	1	37	21.88	21.77	21.91		
15	QPSK	1	74	21.82	21.74	21.85		
15	QPSK	36	0	21.95	21.83	21.84	23	0
15	QPSK	36	20	21.96	21.81	21.97		
15	QPSK	36	39	21.90	21.81	21.86		
15	QPSK	75	0	21.92	21.84	21.82		
15	16QAM	1	0	21.93	21.89	21.89	23	0
15	16QAM	1	37	21.87	21.86	21.91		
15	16QAM	1	74	21.89	21.80	21.86		
15	16QAM	36	0	20.93	20.89	20.93	22	1
15	16QAM	36	20	20.94	20.90	20.91		
15	16QAM	36	39	20.96	20.89	20.91		
15	16QAM	75	0	20.97	20.89	20.88		
15	64QAM	1	0	21.92	21.94	21.90	22	1
15	64QAM	1	37	21.87	21.88	21.88		
15	64QAM	1	74	20.99	20.88	21.86		
15	64QAM	36	0	19.95	19.93	19.90	21	2
15	64QAM	36	20	19.93	19.94	19.96		
15	64QAM	36	39	19.95	19.90	19.96		
15	64QAM	75	0	19.98	19.89	19.90		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	21.92	21.88	21.79	23	0
10	QPSK	1	25	21.84	21.78	21.80		
10	QPSK	1	49	21.85	21.75	21.74		
10	QPSK	25	0	21.91	21.81	21.83	23	0
10	QPSK	25	12	21.96	21.85	21.83		
10	QPSK	25	25	21.92	21.74	21.77		
10	QPSK	50	0	21.97	21.82	21.77		
10	16QAM	1	0	21.88	21.91	21.86	23	0
10	16QAM	1	25	21.88	21.92	21.39		
10	16QAM	1	49	21.88	21.83	21.88		
10	16QAM	25	0	20.92	20.88	20.89	22	1
10	16QAM	25	12	20.94	20.94	20.94		
10	16QAM	25	25	20.89	20.89	20.83		
10	16QAM	50	0	21.02	20.93	20.91		
10	64QAM	1	0	21.25	21.00	21.02	22	1
10	64QAM	1	25	21.13	21.12	21.00		
10	64QAM	1	49	21.07	20.91	20.99		
10	64QAM	25	0	19.95	19.97	19.92	21	2
10	64QAM	25	12	19.97	19.96	19.89		
10	64QAM	25	25	19.92	19.87	19.88		
10	64QAM	50	0	19.93	19.90	19.91		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	21.92	21.75	21.83	23	0
5	QPSK	1	12	21.96	21.82	21.87		
5	QPSK	1	24	21.92	21.71	21.87		
5	QPSK	12	0	21.95	21.84	21.93	23	0
5	QPSK	12	7	21.94	21.81	21.91		
5	QPSK	12	13	21.93	21.76	21.89		
5	QPSK	25	0	21.93	21.77	21.90		
5	16QAM	1	0	21.89	21.86	21.89	23	0
5	16QAM	1	12	21.85	21.89	21.87		
5	16QAM	1	24	21.80	21.87	21.83		
5	16QAM	12	0	20.84	20.86	20.96	22	1
5	16QAM	12	7	20.92	20.90	20.98		
5	16QAM	12	13	20.91	20.89	20.99		
5	16QAM	25	0	20.93	20.88	20.95		
5	64QAM	1	0	21.18	21.07	21.18	22	1
5	64QAM	1	12	21.18	21.10	21.07		
5	64QAM	1	24	21.05	20.92	21.11		
5	64QAM	12	0	19.90	19.98	19.94	21	2
5	64QAM	12	7	19.91	19.99	19.93		
5	64QAM	12	13	19.94	19.96	19.98		
5	64QAM	25	0	19.97	19.89	19.99		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	21.91	21.82	21.89	23	0
3	QPSK	1	8	21.92	21.85	21.89		
3	QPSK	1	14	21.90	21.79	21.90		
3	QPSK	8	0	21.97	21.88	21.90	23	0
3	QPSK	8	4	21.90	21.83	21.96		
3	QPSK	8	7	21.97	21.85	21.95		
3	QPSK	15	0	21.90	21.86	21.92		
3	16QAM	1	0	21.89	21.88	21.92	23	0
3	16QAM	1	8	21.94	21.83	21.87		
3	16QAM	1	14	21.82	21.84	21.80		
3	16QAM	8	0	21.16	21.00	21.04	22	1
3	16QAM	8	4	21.18	21.02	21.05		
3	16QAM	8	7	21.04	20.93	21.03		
3	16QAM	15	0	21.12	20.93	21.05		
3	64QAM	1	0	21.25	21.03	21.09	22	1
3	64QAM	1	8	21.27	21.02	21.17		
3	64QAM	1	14	21.22	20.97	21.13		
3	64QAM	8	0	19.99	19.94	19.93	21	2
3	64QAM	8	4	19.94	19.99	19.98		
3	64QAM	8	7	19.98	19.97	19.90		
3	64QAM	15	0	19.97	19.94	19.97		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	21.90	21.73	21.85	23	0
1.4	QPSK	1	3	21.96	21.81	21.91		
1.4	QPSK	1	5	21.85	21.68	21.84		
1.4	QPSK	3	0	21.93	21.79	21.88		
1.4	QPSK	3	1	21.97	21.85	21.94		
1.4	QPSK	3	3	21.89	21.79	21.86		
1.4	QPSK	6	0	21.89	21.76	21.86	23	0
1.4	16QAM	1	0	21.89	21.89	21.92	23	0
1.4	16QAM	1	3	21.82	21.89	21.91		
1.4	16QAM	1	5	21.81	21.85	21.89		
1.4	16QAM	3	0	21.92	21.90	21.95		
1.4	16QAM	3	1	21.94	21.91	21.95		
1.4	16QAM	3	3	21.91	21.79	21.89		
1.4	16QAM	6	0	20.97	20.94	20.95	22	1
1.4	64QAM	1	0	21.11	20.99	21.13	22	1
1.4	64QAM	1	3	21.22	21.07	21.10		
1.4	64QAM	1	5	21.15	21.00	21.02		
1.4	64QAM	3	0	21.09	20.96	21.01		
1.4	64QAM	3	1	21.14	20.99	21.08		
1.4	64QAM	3	3	21.03	20.96	21.02		
1.4	64QAM	6	0	19.97	19.83	19.94	21	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	21.98	21.78	21.64	23	0
20	QPSK	1	49	21.95	21.77	21.64		
20	QPSK	1	99	21.78	21.67	21.53		
20	QPSK	50	0	21.86	21.69	21.57	23	0
20	QPSK	50	24	21.81	21.66	21.56		
20	QPSK	50	50	21.77	21.65	21.54		
20	QPSK	100	0	21.88	21.62	21.53		
20	16QAM	1	0	21.87	21.82	21.82	23	0
20	16QAM	1	49	21.84	21.86	21.84		
20	16QAM	1	99	21.80	21.79	21.67		
20	16QAM	50	0	20.91	20.77	20.65	22	1
20	16QAM	50	24	20.90	20.72	20.60		
20	16QAM	50	50	20.87	20.69	20.58		
20	16QAM	100	0	20.90	20.76	20.61		
20	64QAM	1	0	21.19	21.05	20.93	22	1
20	64QAM	1	49	21.19	20.98	20.87		
20	64QAM	1	99	21.05	20.91	20.76		
20	64QAM	50	0	19.93	19.75	19.69	21	2
20	64QAM	50	24	19.90	19.73	19.63		
20	64QAM	50	50	19.87	19.69	19.65		
20	64QAM	100	0	19.84	19.73	19.62		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	21.92	21.75	21.61	23	0
15	QPSK	1	37	21.94	21.79	21.65		
15	QPSK	1	74	21.82	21.63	21.51		
15	QPSK	36	0	21.81	21.62	21.45	23	0
15	QPSK	36	20	21.88	21.74	21.60		
15	QPSK	36	39	21.81	21.63	21.40		
15	QPSK	75	0	21.83	21.64	21.49		
15	16QAM	1	0	21.92	21.93	21.89	23	0
15	16QAM	1	37	21.91	21.95	21.94		
15	16QAM	1	74	21.84	21.89	21.90		
15	16QAM	36	0	20.84	20.66	20.59	22	1
15	16QAM	36	20	20.97	20.78	20.66		
15	16QAM	36	39	20.86	20.64	20.52		
15	16QAM	75	0	20.91	20.71	20.55		
15	64QAM	1	0	21.14	20.98	20.83	22	1
15	64QAM	1	37	21.21	21.05	20.94		
15	64QAM	1	74	21.04	20.86	20.73		
15	64QAM	36	0	19.90	19.70	19.55	21	2
15	64QAM	36	20	19.99	19.84	19.66		
15	64QAM	36	39	19.89	19.68	19.59		
15	64QAM	75	0	19.89	19.70	19.52		

Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	21.95	21.74	21.56	23	0
10	QPSK	1	25	21.94	21.71	21.59		
10	QPSK	1	49	21.80	21.66	21.49		
10	QPSK	25	0	21.92	21.63	21.48	23	0
10	QPSK	25	12	21.88	21.68	21.52		
10	QPSK	25	25	21.88	21.62	21.45		
10	QPSK	50	0	21.91	21.65	21.50		
10	16QAM	1	0	21.92	21.89	21.80	23	0
10	16QAM	1	25	21.97	21.89	21.81		
10	16QAM	1	49	21.85	21.87	21.78		
10	16QAM	25	0	20.98	20.76	20.61	22	1
10	16QAM	25	12	20.93	20.74	20.58		
10	16QAM	25	25	20.91	20.73	20.55		
10	16QAM	50	0	20.97	20.74	20.60		
10	64QAM	1	0	21.23	20.97	20.84	22	1
10	64QAM	1	25	21.21	20.95	20.80		
10	64QAM	1	49	21.07	20.93	20.70		
10	64QAM	25	0	19.96	19.75	19.62	21	2
10	64QAM	25	12	19.97	19.75	19.60		
10	64QAM	25	25	19.92	19.74	19.59		
10	64QAM	50	0	19.98	19.77	19.62		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	21.82	21.59	21.41	23	0
5	QPSK	1	12	21.93	21.70	21.53		
5	QPSK	1	24	21.74	21.50	21.29		
5	QPSK	12	0	21.89	21.67	21.49	23	0
5	QPSK	12	7	21.92	21.74	21.53		
5	QPSK	12	13	21.85	21.59	21.44		
5	QPSK	25	0	21.84	21.64	21.45		
5	16QAM	1	0	21.86	21.79	21.70	23	0
5	16QAM	1	12	21.83	21.80	21.83		
5	16QAM	1	24	21.88	21.76	21.70		
5	16QAM	12	0	21.01	20.73	20.50	22	1
5	16QAM	12	7	21.05	20.76	20.63		
5	16QAM	12	13	20.92	20.70	20.53		
5	16QAM	25	0	21.00	20.69	20.54		
5	64QAM	1	0	21.03	20.78	20.68	22	1
5	64QAM	1	12	21.12	20.90	20.85		
5	64QAM	1	24	20.97	20.71	20.60		
5	64QAM	12	0	19.88	19.76	19.60	21	2
5	64QAM	12	7	19.91	19.84	19.65		
5	64QAM	12	13	19.89	19.69	19.51		
5	64QAM	25	0	19.84	19.75	19.52		

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	21.84	21.62	21.44	23	0
3	QPSK	1	8	21.93	21.75	21.54		
3	QPSK	1	14	21.79	21.66	21.45		
3	QPSK	8	0	21.93	21.75	21.53	23	0
3	QPSK	8	4	21.97	21.76	21.56		
3	QPSK	8	7	21.96	21.71	21.53		
3	QPSK	15	0	21.95	21.74	21.55		
3	16QAM	1	0	21.88	21.90	21.74	23	0
3	16QAM	1	8	21.97	21.83	21.85		
3	16QAM	1	14	21.80	21.78	21.77		
3	16QAM	8	0	21.06	20.86	20.69	22	1
3	16QAM	8	4	21.11	20.88	20.69		
3	16QAM	8	7	21.06	20.82	20.67		
3	16QAM	15	0	21.02	20.78	20.63		
3	64QAM	1	0	21.10	20.86	20.79	22	1
3	64QAM	1	8	21.15	20.96	20.80		
3	64QAM	1	14	20.98	20.80	20.67		
3	64QAM	8	0	19.96	19.83	19.67	21	2
3	64QAM	8	4	19.93	19.94	19.71		
3	64QAM	8	7	19.94	19.86	19.68		
3	64QAM	15	0	19.93	19.79	19.57		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	21.95	21.76	21.52	23	0
1.4	QPSK	1	3	21.87	21.65	21.44		
1.4	QPSK	1	5	21.92	21.69	21.51		
1.4	QPSK	3	0	21.96	21.77	21.53		
1.4	QPSK	3	1	21.94	21.70	21.52		
1.4	QPSK	3	3	21.93	21.67	21.51		
1.4	QPSK	6	0	21.73	21.89	21.71	23	0
1.4	16QAM	1	0	21.88	21.93	21.92	23	0
1.4	16QAM	1	3	21.80	21.93	21.79		
1.4	16QAM	1	5	21.86	21.74	21.59		
1.4	16QAM	3	0	21.85	21.80	21.66		
1.4	16QAM	3	1	21.79	21.84	21.60		
1.4	16QAM	3	3	21.78	21.79	21.66		
1.4	16QAM	6	0	21.13	20.92	20.71	22	1
1.4	64QAM	1	0	21.16	20.98	20.88	22	1
1.4	64QAM	1	3	21.03	20.89	20.78		
1.4	64QAM	1	5	21.09	20.85	20.67		
1.4	64QAM	3	0	21.13	20.88	20.77		
1.4	64QAM	3	1	21.11	20.90	20.73		
1.4	64QAM	3	3	21.01	20.84	20.67		
1.4	64QAM	6	0	19.91	19.85	19.57	21	2

<LTE Carrier Aggregation combinations>

General Note:

1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports combination bands and configurations are according to 3GPP.
2. In applying the existing power measurement procedure of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of the frequency band and CCs in each row need consideration, and that configurations require power measurement should be highlighted in the below table.

2CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset
1	2A-2A	15	15	2A-2A-5A		34	66A-66B	
2	2A-4A	18	16	2A-2A-13A		35	66A-66C	
3	2A-5A	18	17	2A-2A-66A		36	66D	
4	2A-13A	16	18	2A-4A-5A				
5	2A-66A	17	19	2A-4A-13A				
6	4A-4A	25	20	2A-5A-66A				
7	4A-5A	25	21	2A-13A-66A				
8	4A-13A	26	22	2A-66B				
9	5A-5A	27	23	2A-66C				
10	5A-66A	27	24	2A-66A-66A				
11	5B		25	4A-4A-5A				
12	13A-66A	21	26	4A-4A-13A				
12	66A-66A	24	27	5A-5A-66A				
13	66B	28	28	5A-66B				
14	66C	29	29	5A-66C				
			30	5A-66A-66A				
			31	13A-66B				
			32	13A-66C				
			33	13A-66A-66A				

<Power verification when LTE Carrier Aggregation Active>

General Note:

i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.

ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.

iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.

iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

v. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.

vi. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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

<Two Carrier power verification>

Configure		CA Configuration (BCS)	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)	W/O CA Tx.Power (dBm)
Intra-Band	Contiguous	5B	5	10	836.5	20525	QPSK	1	0	5	10	891.4	2624	22.84	22.86

<Three Carrier power verification>

Configure		CA Configuration (BCS)	PCC							SCC				SCC2				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band		2A-2A-5A	2	20	1860	18700	QPSK	1	0	2	5	1932.5	625	5	10	881.5	2525	22.82	22.79
		2A-2A-13A	2	20	1860	18700	QPSK	1	0	2	5	1932.5	625	13	10	751	5230	22.80	22.79
		2A-2A-66A	2	20	1860	18700	QPSK	1	0	2	5	1932.5	625	66	20	2155	66886	22.78	22.79
		2A-4A-5A	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	5	10	881.5	2525	22.80	22.79
		2A-4A-13A	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	13	10	751	5230	22.77	22.79
		2A-5A-66A	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	66	20	2155	66886	22.81	22.79
		2A-13A-66A	2	20	1860	18700	QPSK	1	0	13	10	751	5230	66	20	2155	66886	22.81	22.79
		2A-66A-66A	2	20	1860	18700	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	22.80	22.79
		2A-66B	2	20	1860	18700	QPSK	1	0	66	15	2155	66886	66	5	2164.3	66979	22.79	22.79
		2A-66C	2	20	1860	18700	QPSK	1	0	66	20	2155	66886	66	20	2174.8	67084	22.78	22.79
		4A-4A-5A	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	5	10	881.5	2525	22.75	22.75
		4A-4A-13A	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	13	10	751	5230	22.74	22.75
		5A-5A-66A	5	10	836.5	20525	QPSK	1	0	5	5	893.3	2643	66	20	2155	66886	22.84	22.86
		5A-66A-66A	5	10	836.5	20525	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	22.85	22.86
		5A-66B	5	10	836.5	20525	QPSK	1	0	66	15	2155	66886	66	5	2164.3	66979	22.88	22.86
		5A-66C	5	10	836.5	20525	QPSK	1	0	66	20	2155	66886	66	20	2174.8	67084	22.86	22.86
		13A-66A-66A	13	10	782	23230	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	22.58	22.57
		13A-66B	13	10	782	23230	QPSK	1	0	66	15	2155	66886	66	5	2164.3	66979	22.58	22.57
		13A-66C	13	10	782	23230	QPSK	1	0	66	20	2155	66886	66	20	2174.8	67084	22.55	22.57
		66A-66B	66	20	1720	132072	QPSK	1	0	66	15	2155	66886	66	5	2164.3	66979	22.59	22.60
		66A-66C	66	20	1720	132072	QPSK	1	0	66	20	2155	66886	66	20	2174.8	67084	22.62	22.60
Intra-Band	Contiguous	66D	66	20	1720	132072	QPSK	1	0	66	20	2139.8	66734	66	20	2159.6	66932	22.61	22.60

<WLAN Conducted Power>

General Note:

3. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
4. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio ≤ 0.04, no additional SAR measurements for MIMO.
5. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
6. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
7. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
8. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz WLAN ANT 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	17.30	17.50	99.20
		6	2437	17.20	17.50	
		11	2462	17.20	17.50	
	802.11g 6Mbps	1	2412	15.70	16.00	97.87
		6	2437	17.20	17.50	
		11	2462	16.90	17.00	
	802.11n-HT20 MCS0	1	2412	14.30	15.00	97.93
		6	2437	17.10	17.50	
		11	2462	15.90	16.00	

<2.4GHz WLAN ANT 2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	17.30	17.50	98.88
		6	2437	17.10	17.50	
		11	2462	17.20	17.50	
	802.11g 6Mbps	1	2412	15.40	16.00	97.87
		6	2437	17.20	17.50	
		11	2462	16.80	17.00	
	802.11n-HT20 MCS0	1	2412	14.20	15.00	97.97
		6	2437	17.10	17.50	
		11	2462	15.70	16.00	

<2.4GHz WLAN ANT 1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	20.46	20.50	99.08
		6	2437	20.31	20.50	
		11	2462	20.26	20.50	
	802.11g 6Mbps	1	2412	18.71	19.00	98.11
		6	2437	20.41	20.50	
		11	2462	19.96	20.00	
	802.11n-HT20 MCS0	1	2412	17.31	18.00	97.72
		6	2437	20.27	20.50	
		11	2462	18.91	19.00	

<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	17.70	18.00	97.59
		40	5200	17.80	18.00	
		44	5220	17.80	18.00	
		48	5240	17.70	18.00	
	802.11n-HT20 MCS0	36	5180	17.70	18.00	97.16
		40	5200	17.60	18.00	
		44	5220	17.70	18.00	
		48	5240	17.70	18.00	
	802.11n-HT40 MCS0	38	5190	16.20	16.50	96.46
		46	5230	16.20	16.50	
	802.11ac-VHT20 MCS0	36	5180	17.80	18.00	97.98
		40	5200	17.70	18.00	
		44	5220	17.80	18.00	
		48	5240	17.80	18.00	
	802.11ac-VHT40 MCS0	38	5190	16.30	16.50	95.48
		46	5230	16.30	16.50	
	802.11ac-VHT80 MCS0	42	5210	14.60	15.00	91.90

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	17.60	18.00	97.59
		56	5280	17.70	18.00	
		60	5300	17.70	18.00	
		64	5320	17.80	18.00	
	802.11n-HT20 MCS0	52	5260	17.80	18.00	97.16
		56	5280	17.70	18.00	
		60	5300	17.70	18.00	
		64	5320	17.70	18.00	
	802.11n-HT40 MCS0	54	5270	16.10	16.50	96.46
		62	5310	16.20	16.50	
	802.11ac-VHT20 MCS0	52	5260	17.90	18.00	97.98
		56	5280	17.80	18.00	
		60	5300	17.80	18.00	
		64	5320	17.80	18.00	
	802.11ac-VHT40 MCS0	54	5270	16.20	16.50	95.48
		62	5310	16.30	16.50	
	802.11ac-VHT80 MCS0	58	5290	14.60	15.00	91.90

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	17.80	18.00	97.59
		116	5580	17.80	18.00	
		124	5620	17.70	18.00	
		132	5660	17.70	18.00	
		144	5720	17.80	18.00	
	802.11n-HT20 MCS0	100	5500	17.60	18.00	97.16
		116	5580	17.70	18.00	
		124	5620	17.70	18.00	
		132	5660	17.60	18.00	
		144	5720	17.60	18.00	
	802.11n-HT40 MCS0	102	5510	16.00	16.50	96.46
		110	5550	16.10	16.50	
		126	5630	16.10	16.50	
		134	5670	16.10	16.50	
		142	5710	16.30	16.50	
	802.11ac-VHT20 MCS0	100	5500	17.70	18.00	97.98
		116	5580	17.80	18.00	
		124	5620	17.80	18.00	
		132	5660	17.70	18.00	
		144	5720	17.70	18.00	
	802.11ac-VHT40 MCS0	102	5510	16.10	16.50	95.48
		110	5550	16.20	16.50	
		126	5630	16.20	16.50	
		134	5670	16.20	16.50	
		142	5710	16.40	16.50	
	802.11ac-VHT80 MCS0	106	5530	14.70	15.00	91.90
		122	5610	14.70	15.00	
		138	5690	14.70	15.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	17.60	18.00	97.59
		157	5785	17.70	18.00	
		165	5825	17.80	18.00	
	802.11n-HT20 MCS0	149	5745	17.60	18.00	97.16
		157	5785	17.70	18.00	
		165	5825	17.60	18.00	
	802.11n-HT40 MCS0	151	5755	16.20	16.50	96.46
		159	5795	16.10	16.50	
	802.11ac-VHT20 MCS0	149	5745	17.70	18.00	97.98
		157	5785	17.80	18.00	
		165	5825	17.70	18.00	
	802.11ac-VHT40 MCS0	151	5755	16.30	16.50	95.48
		159	5795	16.20	16.50	
	802.11ac-VHT80 MCS0	155	5775	14.70	15.00	91.90

<5GHz WLAN ANT2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	17.70	18.00	97.35
		40	5200	17.80	18.00	
		44	5220	17.80	18.00	
		48	5240	17.70	18.00	
	802.11n-HT20 MCS0	36	5180	17.70	18.00	97.41
		40	5200	17.70	18.00	
		44	5220	17.70	18.00	
		48	5240	17.70	18.00	
	802.11n-HT40 MCS0	38	5190	16.30	16.50	95.45
		46	5230	16.20	16.50	
	802.11ac-VHT20 MCS0	36	5180	17.80	18.00	97.98
		40	5200	17.80	18.00	
		44	5220	17.80	18.00	
		48	5240	17.80	18.00	
	802.11ac-VHT40 MCS0	38	5190	16.40	16.50	95.96
		46	5230	16.30	16.50	
	802.11ac-VHT80 MCS0	42	5210	14.60	15.00	92.20

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	17.60	18.00	97.35
		56	5280	17.60	18.00	
		60	5300	17.60	18.00	
		64	5320	17.80	18.00	
	802.11n-HT20 MCS0	52	5260	17.80	18.00	97.41
		56	5280	17.80	18.00	
		60	5300	17.70	18.00	
		64	5320	17.70	18.00	
	802.11n-HT40 MCS0	54	5270	16.20	16.50	95.45
		62	5310	16.10	16.50	
	802.11ac-VHT20 MCS0	52	5260	17.90	18.00	97.98
		56	5280	17.90	18.00	
		60	5300	17.80	18.00	
		64	5320	17.80	18.00	
	802.11ac-VHT40 MCS0	54	5270	16.30	16.50	95.96
		62	5310	16.30	16.50	
	802.11ac-VHT80 MCS0	58	5290	14.70	15.00	92.20

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	17.70	18.00	97.35
		116	5580	17.60	18.00	
		124	5620	17.70	18.00	
		132	5660	17.80	18.00	
		144	5720	17.70	18.00	
	802.11n-HT20 MCS0	100	5500	17.60	18.00	97.41
		116	5580	17.60	18.00	
		124	5620	17.60	18.00	
		132	5660	17.70	18.00	
		144	5720	17.80	18.00	
	802.11n-HT40 MCS0	102	5510	16.10	16.50	95.45
		110	5550	16.10	16.50	
		126	5630	16.10	16.50	
		134	5670	16.10	16.50	
		142	5710	16.30	16.50	
	802.11ac-VHT20 MCS0	100	5500	17.70	18.00	97.98
		116	5580	17.70	18.00	
		124	5620	17.70	18.00	
		132	5660	17.80	18.00	
		144	5720	17.90	18.00	
	802.11ac-VHT40 MCS0	102	5510	16.20	16.50	95.96
		110	5550	16.20	16.50	
		126	5630	16.20	16.50	
		134	5670	16.20	16.50	
		142	5710	16.40	16.50	
	802.11ac-VHT80 MCS0	106	5530	14.60	15.00	92.20
		122	5610	14.60	15.00	
		138	5690	14.60	15.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	17.70	18.00	97.35
		157	5785	17.60	18.00	
		165	5825	17.60	18.00	
	802.11n-HT20 MCS0	149	5745	17.60	18.00	97.41
		157	5785	17.60	18.00	
		165	5825	17.70	18.00	
	802.11n-HT40 MCS0	151	5755	16.20	16.50	95.45
		159	5795	16.20	16.50	
	802.11ac-VHT20 MCS0	149	5745	17.70	18.00	97.98
		157	5785	17.70	18.00	
		165	5825	17.80	18.00	
	802.11ac-VHT40 MCS0	151	5755	16.30	16.50	95.96
		159	5795	16.30	16.50	
	802.11ac-VHT80 MCS0	155	5775	14.60	15.00	92.20

<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	20.75	21.00	97.35
		40	5200	20.83	21.00	
		44	5220	20.84	21.00	
		48	5240	20.75	21.00	
	802.11n-HT20 MCS0	36	5180	20.74	21.00	97.47
		40	5200	20.74	21.00	
		44	5220	20.73	21.00	
		48	5240	20.74	21.00	
	802.11n-HT40 MCS0	38	5190	19.34	19.50	95.94
		46	5230	19.38	19.50	
	802.11ac-VHT20 MCS0	36	5180	20.84	21.00	97.42
		40	5200	20.84	21.00	
		44	5220	20.83	21.00	
		48	5240	20.84	21.00	
	802.11ac-VHT40 MCS0	38	5190	19.44	19.50	95.48
		46	5230	19.48	19.50	
	802.11ac-VHT80 MCS0	42	5210	17.63	18.00	91.92

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	20.70	21.00	97.35
		56	5280	20.75	21.00	
		60	5300	20.80	21.00	
		64	5320	20.81	21.00	
	802.11n-HT20 MCS0	52	5260	20.83	21.00	97.47
		56	5280	20.83	21.00	
		60	5300	20.80	21.00	
		64	5320	20.74	21.00	
	802.11n-HT40 MCS0	54	5270	19.23	19.50	95.94
		62	5310	19.30	19.50	
	802.11ac-VHT20 MCS0	52	5260	20.93	21.00	97.42
		56	5280	20.93	21.00	
		60	5300	20.90	21.00	
		64	5320	20.84	21.00	
	802.11ac-VHT40 MCS0	54	5270	19.33	19.50	95.48
		62	5310	19.40	19.50	
	802.11ac-VHT80 MCS0	58	5290	17.75	18.00	91.92

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	20.87	21.00	97.35
		116	5580	20.83	21.00	
		124	5620	20.78	21.00	
		132	5660	20.83	21.00	
		144	5720	20.84	21.00	
	802.11n-HT20 MCS0	100	5500	20.66	21.00	97.47
		116	5580	20.77	21.00	
		124	5620	20.74	21.00	
		132	5660	20.73	21.00	
		144	5720	20.88	21.00	
	802.11n-HT40 MCS0	102	5510	19.11	19.50	95.94
		110	5550	19.17	19.50	
		126	5630	19.27	19.50	
		134	5670	19.27	19.50	
		142	5710	19.38	19.50	
	802.11ac-VHT20 MCS0	100	5500	20.76	21.00	97.42
		116	5580	20.87	21.00	
		124	5620	20.84	21.00	
		132	5660	20.73	21.00	
		144	5720	20.98	21.00	
	802.11ac-VHT40 MCS0	102	5510	19.21	19.50	95.48
		110	5550	19.27	19.50	
		126	5630	19.37	19.50	
		134	5670	19.37	19.50	
		142	5710	19.48	19.50	
	802.11ac-VHT80 MCS0	106	5530	17.71	18.00	91.92
		122	5610	17.72	18.00	
		138	5690	17.77	18.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	20.81	21.00	98.09
		157	5785	20.86	21.00	
		165	5825	20.87	21.00	
	802.11n-HT20 MCS0	149	5745	20.77	21.00	97.47
		157	5785	20.76	21.00	
		165	5825	20.81	21.00	
	802.11n-HT40 MCS0	151	5755	19.32	19.50	95.94
		159	5795	19.36	19.50	
	802.11ac-VHT20 MCS0	149	5745	20.81	21.00	97.96
		157	5785	20.81	21.00	
		165	5825	20.86	21.00	
	802.11ac-VHT40 MCS0	151	5755	19.37	19.50	95.48
		159	5795	19.41	19.50	
	802.11ac-VHT80 MCS0	155	5775	17.76	18.00	91.92

<Beamforming Mode>

<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11ac-VHT20 MCS0	36	5180	20.77	21.00	97.42
		40	5200	20.83	21.00	
		44	5220	20.96	21.00	
		48	5240	20.73	21.00	
	802.11ac-VHT40 MCS0	38	5190	19.00	19.00	95.48
		46	5230	20.81	21.00	
	802.11ac-VHT80 MCS0	42	5210	18.77	19.00	91.92

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11ac-VHT20 MCS0	149	5745	20.87	21.00	97.96
		157	5785	20.76	21.00	
		165	5825	20.92	21.00	
	802.11ac-VHT40 MCS0	151	5755	20.87	21.00	95.48
		159	5795	20.77	21.00	
	802.11ac-VHT80 MCS0	155	5775	20.87	21.00	91.92

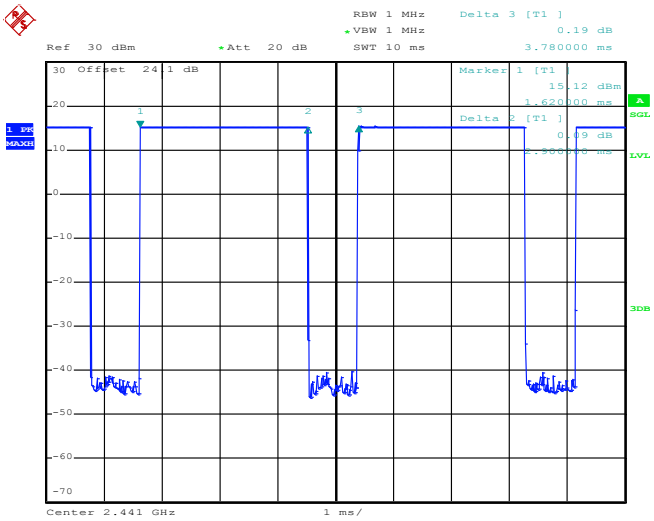
<2.4GHz Bluetooth>

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	14.91	11.35	11.47
	CH 39	2441	14.76	11.10	11.23
	CH 78	2480	15.90	12.69	12.76
Tune-up Limit			16.00	13.00	13.00

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	9.20	9.30
	CH 19	2440	9.10	9.20
	CH 39	2480	9.90	9.90
Tune-up Limit			10.00	10.00

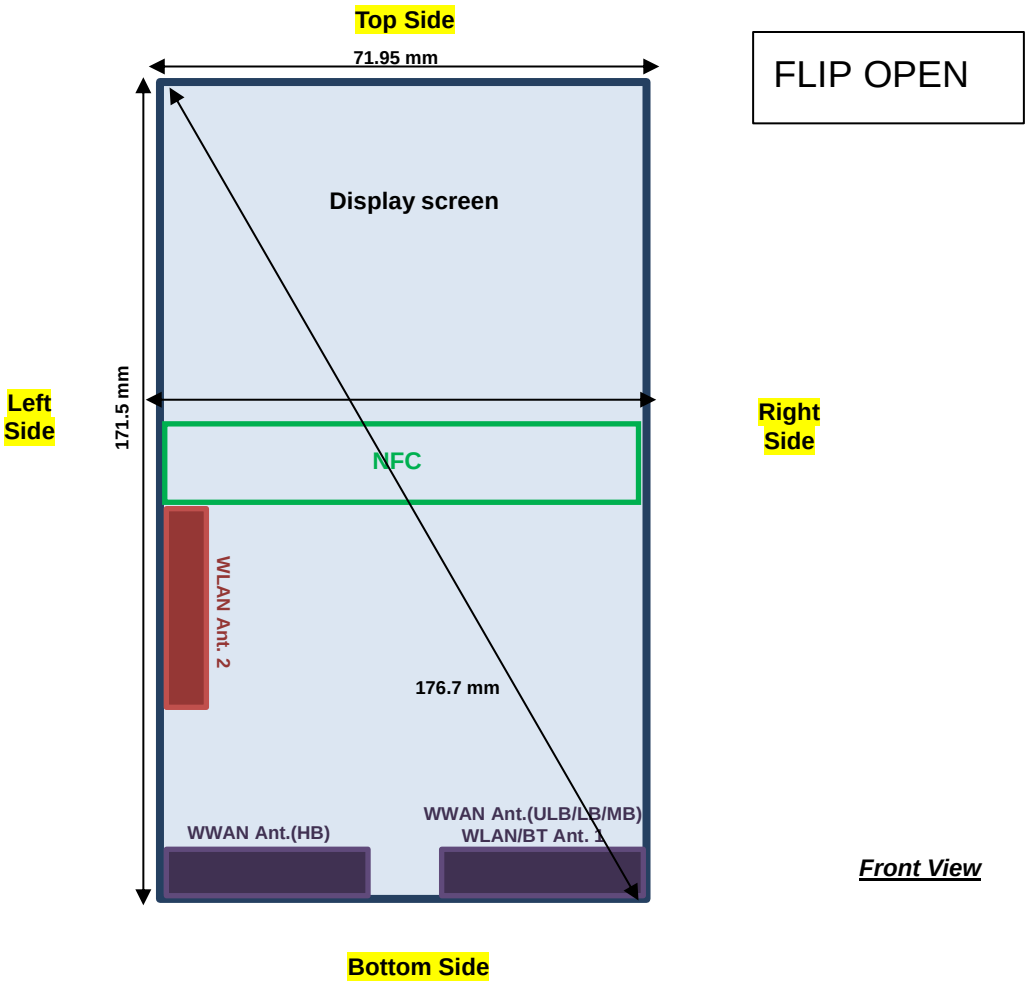
General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.72% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.

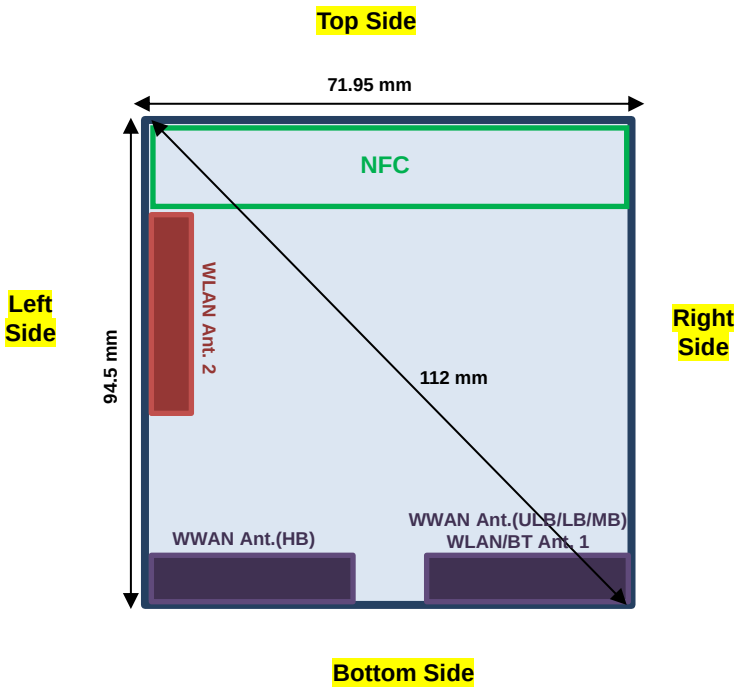


Date: 1.FEB.2019 22:55:20

13. Antenna Location



FLIP CLOSED



Front View

WWAN Antenna support bands	
WWAN Ant.(ULB/LB/MB)	GSM 850/1900, WCDMA II/V, CDMA BC0/BC1, LTE B2/4/5/13/66
WWAN Ant.(HB)	LTE B7

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant.(ULB/LB/MB)	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	>25mm
WWAN Ant.(HB)	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm	≤ 25mm
BT&WLAN Ant. 1	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	>25mm
WLAN Ant. 2	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant.(ULB/LB/MB)	Yes	Yes	No	Yes	Yes	No
WWAN Ant.(HB)	Yes	Yes	No	Yes	No	Yes
BT&WLAN Ant. 1	Yes	Yes	No	Yes	Yes	No
WLAN Ant. 2	Yes	Yes	No	Yes	No	Yes

General Note:

1. Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 5 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
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. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold, for this device only bottom side SAR for WWAN transmitter scaled to maximum output power is higher than 1.2W/kg of WCDMA B2, CDMA BC1 and LTE B2/B7/B66, therefore product specific SAR is necessary.
6. For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is > 16cm.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (3Tx slots) for GSM850/GSM1900 is considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

UMTS Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ 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.

CDMA Note:

1. Per KDB 941225 D01v03r01, SAR for next to the ear head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

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 B5 / B4 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 4 SAR test was covered by Band 66; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
6. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio ≤ 0.04, no additional SAR measurements for MIMO.
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
01	GSM850	GPRS (3 Tx slots)	Right Cheek	0mm	Open	128	824.2	29.92	31.50	1.439	-0.04	0.451	0.649
	GSM850	GPRS (3 Tx slots)	Right Tilted	0mm	Open	128	824.2	29.92	31.50	1.439	-0.03	0.281	0.404
	GSM850	GPRS (3 Tx slots)	Left Cheek	0mm	Open	128	824.2	29.92	31.50	1.439	-0.18	0.374	0.538
	GSM850	GPRS (3 Tx slots)	Left Tilted	0mm	Open	128	824.2	29.92	31.50	1.439	0.05	0.211	0.304
02	GSM1900	GPRS (3 Tx slots)	Right Cheek	0mm	Open	512	1850.2	26.92	28.50	1.439	0.06	0.156	0.224
	GSM1900	GPRS (3 Tx slots)	Right Tilted	0mm	Open	512	1850.2	26.92	28.50	1.439	-0.04	0.094	0.135
	GSM1900	GPRS (3 Tx slots)	Left Cheek	0mm	Open	512	1850.2	26.92	28.50	1.439	0.04	0.105	0.151
	GSM1900	GPRS (3 Tx slots)	Left Tilted	0mm	Open	512	1850.2	26.92	28.50	1.439	-0.06	0.080	0.115

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	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)
03	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	Open	9538	1907.6	23.19	24.00	1.205	0.01	0.543	0.654
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	Open	9538	1907.6	23.19	24.00	1.205	0	0.229	0.276
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Open	9538	1907.6	23.19	24.00	1.205	0.03	0.262	0.316
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	Open	9538	1907.6	23.19	24.00	1.205	0.08	0.173	0.208
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Open	4132	826.4	23.30	24.00	1.175	-0.02	0.379	0.445
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	Open	4132	826.4	23.30	24.00	1.175	-0.02	0.243	0.286
04	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Open	4132	826.4	23.30	24.00	1.175	0.01	0.398	0.468
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	Open	4132	826.4	23.30	24.00	1.175	0.1	0.223	0.262

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	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)
	CDMA BC0	1xRTT RC3 SO55	Right Cheek	0mm	Open	1013	824.7	24.27	25.00	1.183	-0.19	0.307	0.363
	CDMA BC0	1xRTT RC3 SO55	Right Tilted	0mm	Open	1013	824.7	24.27	25.00	1.183	-0.02	0.172	0.203
05	CDMA BC0	1xRTT RC3 SO55	Left Cheek	0mm	Open	1013	824.7	24.27	25.00	1.183	0.01	0.321	0.380
	CDMA BC0	1xRTT RC3 SO55	Left Tilted	0mm	Open	1013	824.7	24.27	25.00	1.183	0.05	0.179	0.212
06	CDMA BC1	1xRTT RC3 SO55	Right Cheek	0mm	Open	600	1880	24.06	25.00	1.242	0	0.421	0.523
	CDMA BC1	1xRTT RC3 SO55	Right Tilted	0mm	Open	600	1880	24.06	25.00	1.242	-0.08	0.215	0.267
	CDMA BC1	1xRTT RC3 SO55	Left Cheek	0mm	Open	600	1880	24.06	25.00	1.242	0.04	0.282	0.350
	CDMA BC1	1xRTT RC3 SO55	Left Tilted	0mm	Open	600	1880	24.06	25.00	1.242	0.02	0.191	0.237

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	FLIP configure	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)
07	LTE Band 2	20M	QPSK	1	0	Right Cheek	0mm	Open	18700	1860	22.79	24.00	1.321	0	0.589	0.778
	LTE Band 2	20M	QPSK	50	0	Right Cheek	0mm	Open	18700	1860	21.78	23.00	1.324	0.01	0.313	0.415
	LTE Band 2	20M	QPSK	1	0	Right Tilted	0mm	Open	18700	1860	22.79	24.00	1.321	0.08	0.275	0.363
	LTE Band 2	20M	QPSK	50	0	Right Tilted	0mm	Open	18700	1860	21.78	23.00	1.324	0.01	0.142	0.188
	LTE Band 2	20M	QPSK	1	0	Left Cheek	0mm	Open	18700	1860	22.79	24.00	1.321	0.05	0.278	0.367
	LTE Band 2	20M	QPSK	50	0	Left Cheek	0mm	Open	18700	1860	21.78	23.00	1.324	0.02	0.148	0.196
	LTE Band 2	20M	QPSK	1	0	Left Tilted	0mm	Open	18700	1860	22.79	24.00	1.321	-0.02	0.231	0.305
	LTE Band 2	20M	QPSK	50	0	Left Tilted	0mm	Open	18700	1860	21.78	23.00	1.324	0	0.122	0.162
08	LTE Band 5	10M	QPSK	1	0	Right Cheek	0mm	Open	20525	836.5	22.86	24.00	1.300	-0.04	0.136	0.177
	LTE Band 5	10M	QPSK	25	0	Right Cheek	0mm	Open	20525	836.5	21.88	23.00	1.294	0	0.073	0.094
	LTE Band 5	10M	QPSK	1	0	Right Tilted	0mm	Open	20525	836.5	22.86	24.00	1.300	0.01	0.071	0.092
	LTE Band 5	10M	QPSK	25	0	Right Tilted	0mm	Open	20525	836.5	21.88	23.00	1.294	0	0.035	0.045
	LTE Band 5	10M	QPSK	1	0	Left Cheek	0mm	Open	20525	836.5	22.86	24.00	1.300	-0.04	0.115	0.150
	LTE Band 5	10M	QPSK	25	0	Left Cheek	0mm	Open	20525	836.5	21.88	23.00	1.294	0.04	0.059	0.076
	LTE Band 5	10M	QPSK	1	0	Left Tilted	0mm	Open	20525	836.5	22.86	24.00	1.300	-0.03	0.071	0.092
	LTE Band 5	10M	QPSK	25	0	Left Tilted	0mm	Open	20525	836.5	21.88	23.00	1.294	0	0.036	0.047
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Open	21350	2560	23.14	24.00	1.219	-0.16	0.143	0.174
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	Open	21350	2560	22.18	23.00	1.208	0.02	0.112	0.135
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	Open	21350	2560	23.14	24.00	1.219	0.01	0.083	0.101
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Open	21350	2560	22.18	23.00	1.208	-0.02	0.064	0.077
09	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Open	21350	2560	23.14	24.00	1.219	-0.02	0.165	0.201
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	Open	21350	2560	22.18	23.00	1.208	0.11	0.126	0.152
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	Open	21350	2560	23.14	24.00	1.219	-0.06	0.060	0.073
	LTE Band 7	20M	QPSK	50	0	Left Tilted	0mm	Open	21350	2560	22.18	23.00	1.208	0.12	0.045	0.054
	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Open	23230	782	22.57	24.00	1.390	0.01	0.089	0.124
	LTE Band 13	10M	QPSK	25	0	Right Cheek	0mm	Open	23230	782	21.55	23.00	1.396	-0.04	0.061	0.085
	LTE Band 13	10M	QPSK	1	0	Right Tilted	0mm	Open	23230	782	22.57	24.00	1.390	0.02	0.064	0.089
	LTE Band 13	10M	QPSK	25	0	Right Tilted	0mm	Open	23230	782	21.55	23.00	1.396	0.05	0.037	0.052
10	LTE Band 13	10M	QPSK	1	0	Left Cheek	0mm	Open	23230	782	22.57	24.00	1.390	-0.1	0.167	0.232
	LTE Band 13	10M	QPSK	25	0	Left Cheek	0mm	Open	23230	782	21.55	23.00	1.396	0.05	0.110	0.154
	LTE Band 13	10M	QPSK	1	0	Left Tilted	0mm	Open	23230	782	22.57	24.00	1.390	0.1	0.105	0.146
	LTE Band 13	10M	QPSK	25	0	Left Tilted	0mm	Open	23230	782	21.55	23.00	1.396	0.03	0.071	0.099
11	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	Open	132072	1720	22.60	24.00	1.380	0	0.405	0.559
	LTE Band 66	20M	QPSK	50	0	Right Cheek	0mm	Open	132072	1720	21.52	23.00	1.406	0.05	0.250	0.352
	LTE Band 66	20M	QPSK	1	0	Right Tilted	0mm	Open	132072	1720	22.60	24.00	1.380	0.02	0.237	0.327
	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	Open	132072	1720	21.52	23.00	1.406	0.01	0.142	0.200
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	Open	132072	1720	22.60	24.00	1.380	-0.01	0.198	0.273
	LTE Band 66	20M	QPSK	50	0	Left Cheek	0mm	Open	132072	1720	21.52	23.00	1.406	0.03	0.123	0.173
	LTE Band 66	20M	QPSK	1	0	Left Tilted	0mm	Open	132072	1720	22.60	24.00	1.380	-0.02	0.256	0.353
	LTE Band 66	20M	QPSK	50	0	Left Tilted	0mm	Open	132072	1720	21.52	23.00	1.406	0.02	0.154	0.217

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	FLIP configure	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)
12	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	0.05	0.054	0.057
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	0.09	0.021	0.022
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	0.05	0.025	0.026
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	-0.11	0.032	0.034
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	0.03	0.007	0.008
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	0.01	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	0.12	0.018	0.019
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	-0.17	0.002	0.002
13	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	0.14	0.024	0.026
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	0.16	0.007	0.007
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	0	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	0.17	0.006	0.007
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	0.01	0.001	0.001
14	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	-0.06	0.027	0.029
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	-0.15	0.004	0.004
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	0.02	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	0.06	0.003	0.003
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	0.01	0.001	0.001
15	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	0.01	0.019	0.020
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	0.03	0.003	0.003
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	-0.11	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	0.17	0.003	0.003
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	0.01	0.001	0.001

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	FLIP configure	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)
16	Bluetooth	1Mbps	Right Cheek	0mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	-0.01	0.056	0.062
	Bluetooth	1Mbps	Right Tilted	0mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	-0.09	0.024	0.027
	Bluetooth	1Mbps	Left Cheek	0mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	-0.12	0.030	0.033
	Bluetooth	1Mbps	Left Tilted	0mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	-0.19	0.028	0.031

14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (3 Tx slots)	Front	5mm	Open	OFF	128	824.2	29.92	31.50	1.439	-0.15	0.251	0.361
	GSM850	GPRS (3 Tx slots)	Back	5mm	Open	OFF	128	824.2	29.92	31.50	1.439	0.1	0.537	0.773
	GSM850	GPRS (3 Tx slots)	Right Side	5mm	Open	OFF	128	824.2	29.92	31.50	1.439	0	0.304	0.437
	GSM850	GPRS (3 Tx slots)	Bottom Side	5mm	Open	OFF	128	824.2	29.92	31.50	1.439	-0.15	0.268	0.386
	GSM850	GPRS (3 Tx slots)	Front	5mm	Close	OFF	128	824.2	29.92	31.50	1.439	-0.01	0.506	0.728
17	GSM850	GPRS (3 Tx slots)	Back	5mm	Close	OFF	128	824.2	29.92	31.50	1.439	0.03	0.581	0.836
	GSM850	GPRS (3 Tx slots)	Back	5mm	Close	OFF	189	836.4	29.92	31.50	1.439	0.02	0.571	0.822
	GSM850	GPRS (3 Tx slots)	Back	5mm	Close	OFF	251	848.8	29.85	31.50	1.462	0.09	0.439	0.642
	GSM850	GPRS (3 Tx slots)	Right Side	5mm	Close	OFF	128	824.2	29.92	31.50	1.439	-0.08	0.488	0.702
	GSM850	GPRS (3 Tx slots)	Bottom Side	5mm	Close	OFF	128	824.2	29.92	31.50	1.439	-0.15	0.226	0.325
	GSM1900	GPRS (3 Tx slots)	Front	5mm	Open	OFF	512	1850.2	26.92	28.50	1.439	-0.09	0.488	0.702
	GSM1900	GPRS (3 Tx slots)	Back	5mm	Open	OFF	512	1850.2	26.92	28.50	1.439	0.13	0.403	0.580
	GSM1900	GPRS (3 Tx slots)	Right Side	5mm	Open	OFF	512	1850.2	26.92	28.50	1.439	0.03	0.474	0.682
	GSM1900	GPRS (3 Tx slots)	Bottom Side	5mm	Open	OFF	512	1850.2	26.92	28.50	1.439	0.06	0.590	0.849
	GSM1900	GPRS (3 Tx slots)	Bottom Side	5mm	Open	OFF	661	1880	26.87	28.50	1.455	0	0.492	0.716
	GSM1900	GPRS (3 Tx slots)	Bottom Side	5mm	Open	OFF	810	1909.8	26.66	28.50	1.528	-0.06	0.471	0.719
18	GSM1900	GPRS (3 Tx slots)	Front	5mm	Close	OFF	512	1850.2	26.92	28.50	1.439	-0.13	0.631	0.908
	GSM1900	GPRS (3 Tx slots)	Front	5mm	Close	OFF	661	1880	26.87	28.50	1.455	-0.07	0.547	0.796
	GSM1900	GPRS (3 Tx slots)	Front	5mm	Close	OFF	810	1909.8	26.66	28.50	1.528	-0.09	0.517	0.790
	GSM1900	GPRS (3 Tx slots)	Back	5mm	Close	OFF	512	1850.2	26.92	28.50	1.439	0.15	0.439	0.632
	GSM1900	GPRS (3 Tx slots)	Right Side	5mm	Close	OFF	512	1850.2	26.92	28.50	1.439	-0.17	0.286	0.411
	GSM1900	GPRS (3 Tx slots)	Bottom Side	5mm	Close	OFF	512	1850.2	26.92	28.50	1.439	-0.12	0.570	0.820
	GSM1900	GPRS (3 Tx slots)	Bottom Side	5mm	Close	OFF	661	1880	26.87	28.50	1.455	-0.04	0.496	0.722
	GSM1900	GPRS (3 Tx slots)	Bottom Side	5mm	Close	OFF	810	1909.8	26.66	28.50	1.528	-0.05	0.487	0.744

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	5mm	Open	ON	9538	1907.6	19.54	20.50	1.247	0.07	0.501	0.625
	WCDMA II	RMC 12.2Kbps	Back	5mm	Open	ON	9538	1907.6	19.54	20.50	1.247	0.08	0.419	0.523
	WCDMA II	RMC 12.2Kbps	Right Side	5mm	Open	ON	9538	1907.6	19.54	20.50	1.247	0.12	0.425	0.530
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	Open	ON	9538	1907.6	19.54	20.50	1.247	-0.1	0.487	0.607
	WCDMA II	RMC 12.2Kbps	Front	5mm	Close	ON	9538	1907.6	19.54	20.50	1.247	-0.13	0.654	0.816
	WCDMA II	RMC 12.2Kbps	Front	5mm	Close	ON	9262	1852.4	19.49	20.50	1.262	-0.1	0.661	0.834
19	WCDMA II	RMC 12.2Kbps	Front	5mm	Close	ON	9400	1880	19.41	20.50	1.285	-0.11	0.694	0.892
	WCDMA II	RMC 12.2Kbps	Back	5mm	Close	ON	9538	1907.6	19.54	20.50	1.247	0.05	0.558	0.696
	WCDMA II	RMC 12.2Kbps	Right Side	5mm	Close	ON	9538	1907.6	19.54	20.50	1.247	-0.05	0.436	0.544
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	Close	ON	9538	1907.6	19.54	20.50	1.247	-0.15	0.647	0.807
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	Close	ON	9262	1852.4	19.49	20.50	1.262	-0.14	0.695	0.877
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	Close	ON	9400	1880	19.41	20.50	1.285	-0.12	0.664	0.853
	WCDMA V	RMC 12.2Kbps	Front	5mm	Open	ON	4132	826.4	22.41	23.00	1.146	0.01	0.414	0.474
	WCDMA V	RMC 12.2Kbps	Back	5mm	Open	ON	4132	826.4	22.41	23.00	1.146	0.1	0.817	0.936
	WCDMA V	RMC 12.2Kbps	Back	5mm	Open	ON	4182	836.4	22.32	23.00	1.169	0.12	0.745	0.871
	WCDMA V	RMC 12.2Kbps	Back	5mm	Open	ON	4233	846.6	22.18	23.00	1.208	0.14	0.734	0.887
	WCDMA V	RMC 12.2Kbps	Right Side	5mm	Open	ON	4132	826.4	22.41	23.00	1.146	-0.02	0.423	0.485
	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	Open	ON	4132	826.4	22.41	23.00	1.146	-0.13	0.324	0.371
	WCDMA V	RMC 12.2Kbps	Front	5mm	Close	ON	4132	826.4	22.41	23.00	1.146	-0.14	0.725	0.830
	WCDMA V	RMC 12.2Kbps	Front	5mm	Close	ON	4182	836.4	22.32	23.00	1.169	-0.11	0.688	0.805
	WCDMA V	RMC 12.2Kbps	Front	5mm	Close	ON	4233	846.6	22.18	23.00	1.208	-0.1	0.609	0.736
20	WCDMA V	RMC 12.2Kbps	Back	5mm	Close	ON	4132	826.4	22.41	23.00	1.146	0.13	0.840	0.962
	WCDMA V	RMC 12.2Kbps	Back	5mm	Close	ON	4182	836.4	22.32	23.00	1.169	0.11	0.793	0.927
	WCDMA V	RMC 12.2Kbps	Back	5mm	Close	ON	4233	846.6	22.18	23.00	1.208	0.12	0.722	0.872
	WCDMA V	RMC 12.2Kbps	Right Side	5mm	Close	ON	4132	826.4	22.41	23.00	1.146	0.02	0.744	0.852
	WCDMA V	RMC 12.2Kbps	Right Side	5mm	Close	ON	4182	836.4	22.32	23.00	1.169	0.05	0.681	0.796
	WCDMA V	RMC 12.2Kbps	Right Side	5mm	Close	ON	4233	846.6	22.18	23.00	1.208	0.03	0.591	0.714
	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	Close	ON	4132	826.4	22.41	23.00	1.146	0.09	0.329	0.377

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA BC0	RTAP 153.6Kbps	Front	5mm	Open	ON	1013	824.7	21.64	22.50	1.219	0.12	0.474	0.578
	CDMA BC0	RTAP 153.6Kbps	Back	5mm	Open	ON	1013	824.7	21.64	22.50	1.219	0.1	0.724	0.883
	CDMA BC0	RTAP 153.6Kbps	Back	5mm	Open	ON	384	836.52	21.63	22.50	1.222	-0.06	0.629	0.769
	CDMA BC0	RTAP 153.6Kbps	Back	5mm	Open	ON	777	848.31	21.55	22.50	1.245	0.1	0.631	0.785
	CDMA BC0	RTAP 153.6Kbps	Right Side	5mm	Open	ON	1013	824.7	21.64	22.50	1.219	0.06	0.210	0.256
	CDMA BC0	RTAP 153.6Kbps	Bottom Side	5mm	Open	ON	1013	824.7	21.64	22.50	1.219	0.01	0.246	0.300
	CDMA BC0	RTAP 153.6Kbps	Front	5mm	Close	ON	1013	824.7	21.64	22.50	1.219	0.12	0.558	0.680
21	CDMA BC0	RTAP 153.6Kbps	Back	5mm	Close	ON	1013	824.7	21.64	22.50	1.219	0.02	0.833	1.015
	CDMA BC0	RTAP 153.6Kbps	Back	5mm	Close	ON	384	836.52	21.63	22.50	1.222	0.16	0.784	0.958
	CDMA BC0	RTAP 153.6Kbps	Back	5mm	Close	ON	777	848.31	21.55	22.50	1.245	0.1	0.733	0.912
	CDMA BC0	RTAP 153.6Kbps	Right Side	5mm	Close	ON	1013	824.7	21.64	22.50	1.219	0.14	0.520	0.634
	CDMA BC0	RTAP 153.6Kbps	Bottom Side	5mm	Close	ON	1013	824.7	21.64	22.50	1.219	0.04	0.445	0.542
	CDMA BC1	RTAP 153.6Kbps	Front	5mm	Open	ON	25	1851.25	19.50	20.50	1.259	0.02	0.612	0.770
	CDMA BC1	RTAP 153.6Kbps	Back	5mm	Open	ON	25	1851.25	19.50	20.50	1.259	0.08	0.481	0.606
	CDMA BC1	RTAP 153.6Kbps	Right Side	5mm	Open	ON	25	1851.25	19.50	20.50	1.259	0.17	0.519	0.653
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	5mm	Open	ON	25	1851.25	19.50	20.50	1.259	0.05	0.615	0.774
22	CDMA BC1	RTAP 153.6Kbps	Front	5mm	Close	ON	25	1851.25	19.50	20.50	1.259	-0.17	0.825	1.039
	CDMA BC1	RTAP 153.6Kbps	Front	5mm	Close	ON	600	1880	19.49	20.50	1.262	-0.16	0.762	0.962
	CDMA BC1	RTAP 153.6Kbps	Front	5mm	Close	ON	1175	1908.75	19.38	20.50	1.294	-0.15	0.689	0.892
	CDMA BC1	RTAP 153.6Kbps	Back	5mm	Close	ON	25	1851.25	19.50	20.50	1.259	0.11	0.574	0.723
	CDMA BC1	RTAP 153.6Kbps	Right Side	5mm	Close	ON	25	1851.25	19.50	20.50	1.259	-0.01	0.701	0.883
	CDMA BC1	RTAP 153.6Kbps	Right Side	5mm	Close	ON	600	1880	19.49	20.50	1.262	0.01	0.520	0.656
	CDMA BC1	RTAP 153.6Kbps	Right Side	5mm	Close	ON	1175	1908.75	19.38	20.50	1.294	0.03	0.460	0.595
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	5mm	Close	ON	25	1851.25	19.50	20.50	1.259	-0.11	0.712	0.896
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	5mm	Close	ON	600	1880	19.49	20.50	1.262	-0.16	0.677	0.854
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	5mm	Close	ON	1175	1908.75	19.38	20.50	1.294	-0.15	0.616	0.797

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Open	ON	18700	1860	18.77	19.50	1.183	0.01	0.469	0.555
	LTE Band 2	20M	QPSK	50	0	Front	5mm	Open	ON	18700	1860	18.65	19.50	1.216	-0.01	0.479	0.583
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Open	ON	18700	1860	18.77	19.50	1.183	0.12	0.511	0.605
	LTE Band 2	20M	QPSK	50	0	Back	5mm	Open	ON	18700	1860	18.65	19.50	1.216	0.12	0.519	0.631
	LTE Band 2	20M	QPSK	1	0	Right Side	5mm	Open	ON	18700	1860	18.77	19.50	1.183	-0.02	0.547	0.647
	LTE Band 2	20M	QPSK	50	0	Right Side	5mm	Open	ON	18700	1860	18.65	19.50	1.216	0.11	0.545	0.663
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	Open	ON	18700	1860	18.77	19.50	1.183	-0.11	0.570	0.674
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	Open	ON	18700	1860	18.65	19.50	1.216	-0.17	0.572	0.696
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Close	ON	18700	1860	18.77	19.50	1.183	-0.09	0.781	0.924
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Close	ON	18900	1880	18.71	19.50	1.199	-0.12	0.743	0.891
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Close	ON	19100	1900	18.54	19.50	1.247	-0.16	0.678	0.846
23	LTE Band 2	20M	QPSK	50	0	Front	5mm	Close	ON	18700	1860	18.65	19.50	1.216	-0.15	0.770	0.936
	LTE Band 2	20M	QPSK	50	0	Front	5mm	Close	ON	18900	1880	18.59	19.50	1.233	-0.08	0.719	0.887
	LTE Band 2	20M	QPSK	50	0	Front	5mm	Close	ON	19100	1900	18.55	19.50	1.245	-0.15	0.687	0.855
	LTE Band 2	20M	QPSK	100	0	Front	5mm	Close	ON	18700	1860	18.47	19.50	1.268	-0.17	0.728	0.923
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Close	ON	18700	1860	18.77	19.50	1.183	0.1	0.465	0.550
	LTE Band 2	20M	QPSK	50	0	Back	5mm	Close	ON	18700	1860	18.65	19.50	1.216	0.12	0.467	0.568
	LTE Band 2	20M	QPSK	1	0	Right Side	5mm	Close	ON	18700	1860	18.77	19.50	1.183	0	0.581	0.687
	LTE Band 2	20M	QPSK	50	0	Right Side	5mm	Close	ON	18700	1860	18.65	19.50	1.216	0.06	0.584	0.710
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	Close	ON	18700	1860	18.77	19.50	1.183	-0.12	0.613	0.725
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	Close	ON	18700	1860	18.65	19.50	1.216	-0.17	0.624	0.759
	LTE Band 5	10M	QPSK	1	0	Front	5mm	Open	ON	20525	836.5	21.95	22.50	1.135	-0.02	0.480	0.545
	LTE Band 5	10M	QPSK	25	0	Front	5mm	Open	ON	20525	836.5	21.29	22.50	1.321	-0.05	0.382	0.505
	LTE Band 5	10M	QPSK	1	0	Back	5mm	Open	ON	20525	836.5	21.95	22.50	1.135	0.15	0.834	0.947
	LTE Band 5	10M	QPSK	25	0	Back	5mm	Open	ON	20525	836.5	21.29	22.50	1.321	0.14	0.627	0.828
	LTE Band 5	10M	QPSK	50	0	Back	5mm	Open	ON	20525	836.5	21.24	22.50	1.337	0.13	0.620	0.829
	LTE Band 5	10M	QPSK	1	0	Right Side	5mm	Open	ON	20525	836.5	21.95	22.50	1.135	0.12	0.388	0.440
	LTE Band 5	10M	QPSK	25	0	Right Side	5mm	Open	ON	20525	836.5	21.29	22.50	1.321	0.02	0.213	0.281
	LTE Band 5	10M	QPSK	1	0	Bottom Side	5mm	Open	ON	20525	836.5	21.95	22.50	1.135	0.11	0.360	0.409
	LTE Band 5	10M	QPSK	25	0	Bottom Side	5mm	Open	ON	20525	836.5	21.29	22.50	1.321	0.11	0.249	0.329
	LTE Band 5	10M	QPSK	1	0	Front	5mm	Close	ON	20525	836.5	21.95	22.50	1.135	-0.04	0.721	0.818
	LTE Band 5	10M	QPSK	25	0	Front	5mm	Close	ON	20525	836.5	21.29	22.50	1.321	-0.05	0.565	0.747
	LTE Band 5	10M	QPSK	50	0	Front	5mm	Close	ON	20525	836.5	21.24	22.50	1.337	-0.09	0.541	0.723
24	LTE Band 5	10M	QPSK	1	0	Back	5mm	Close	ON	20525	836.5	21.95	22.50	1.135	0.14	0.838	0.951
	LTE Band 5	10M	QPSK	25	0	Back	5mm	Close	ON	20525	836.5	21.29	22.50	1.321	0.15	0.655	0.865
	LTE Band 5	10M	QPSK	50	0	Back	5mm	Close	ON	20525	836.5	21.24	22.50	1.337	0.16	0.650	0.869
	LTE Band 5	10M	QPSK	1	0	Right Side	5mm	Close	ON	20525	836.5	21.95	22.50	1.135	0.05	0.527	0.598
	LTE Band 5	10M	QPSK	25	0	Right Side	5mm	Close	ON	20525	836.5	21.29	22.50	1.321	0.07	0.402	0.531
	LTE Band 5	10M	QPSK	1	0	Bottom Side	5mm	Close	ON	20525	836.5	21.95	22.50	1.135	0.12	0.451	0.512
	LTE Band 5	10M	QPSK	25	0	Bottom Side	5mm	Close	ON	20525	836.5	21.29	22.50	1.321	0.02	0.344	0.455
	LTE Band 7	20M	QPSK	1	0	Front	5mm	Open	ON	21350	2560	18.97	19.50	1.130	-0.02	0.226	0.255
	LTE Band 7	20M	QPSK	50	0	Front	5mm	Open	ON	21350	2560	18.81	19.50	1.172	-0.02	0.215	0.252
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Open	ON	21350	2560	18.97	19.50	1.130	-0.07	0.387	0.437
	LTE Band 7	20M	QPSK	50	0	Back	5mm	Open	ON	21350	2560	18.81	19.50	1.172	0.08	0.377	0.442
	LTE Band 7	20M	QPSK	1	0	Left Side	5mm	Open	ON	21350	2560	18.97	19.50	1.130	0.15	0.427	0.482
	LTE Band 7	20M	QPSK	50	0	Left Side	5mm	Open	ON	21350	2560	18.81	19.50	1.172	0.16	0.417	0.489
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	Open	ON	21350	2560	18.97	19.50	1.130	-0.16	0.205	0.232
	LTE Band 7	20M	QPSK	50	0	Bottom Side	5mm	Open	ON	21350	2560	18.81	19.50	1.172	-0.16	0.201	0.236

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Front	5mm	Close	ON	21350	2560	18.97	19.50	1.130	0.08	0.209	0.236
	LTE Band 7	20M	QPSK	50	0	Front	5mm	Close	ON	21350	2560	18.81	19.50	1.172	0.09	0.198	0.232
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Close	ON	21350	2560	18.97	19.50	1.130	-0.18	0.483	0.546
	LTE Band 7	20M	QPSK	50	0	Back	5mm	Close	ON	21350	2560	18.81	19.50	1.172	-0.12	0.470	0.551
	LTE Band 7	20M	QPSK	1	0	Left Side	5mm	Close	ON	21350	2560	18.97	19.50	1.130	-0.19	0.631	0.713
25	LTE Band 7	20M	QPSK	50	0	Left Side	5mm	Close	ON	21350	2560	18.81	19.50	1.172	-0.16	0.613	0.719
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	Close	ON	21350	2560	18.97	19.50	1.130	-0.14	0.206	0.233
	LTE Band 7	20M	QPSK	50	0	Bottom Side	5mm	Close	ON	21350	2560	18.81	19.50	1.172	-0.12	0.197	0.231
	LTE Band 13	10M	QPSK	1	0	Front	5mm	Open	ON	23230	782	19.95	21.00	1.274	0.04	0.278	0.354
	LTE Band 13	10M	QPSK	25	0	Front	5mm	Open	ON	23230	782	19.90	21.00	1.288	0	0.297	0.383
	LTE Band 13	10M	QPSK	1	0	Back	5mm	Open	ON	23230	782	19.95	21.00	1.274	0.01	0.507	0.646
	LTE Band 13	10M	QPSK	25	0	Back	5mm	Open	ON	23230	782	19.90	21.00	1.288	0.07	0.554	0.714
	LTE Band 13	10M	QPSK	1	0	Right Side	5mm	Open	ON	23230	782	19.95	21.00	1.274	0.05	0.251	0.320
	LTE Band 13	10M	QPSK	25	0	Right Side	5mm	Open	ON	23230	782	19.90	21.00	1.288	0.05	0.263	0.339
	LTE Band 13	10M	QPSK	1	0	Bottom Side	5mm	Open	ON	23230	782	19.95	21.00	1.274	-0.11	0.151	0.192
	LTE Band 13	10M	QPSK	25	0	Bottom Side	5mm	Open	ON	23230	782	19.90	21.00	1.288	-0.1	0.160	0.206
	LTE Band 13	10M	QPSK	1	0	Front	5mm	Close	ON	23230	782	19.95	21.00	1.274	-0.11	0.642	0.818
	LTE Band 13	10M	QPSK	25	0	Front	5mm	Close	ON	23230	782	19.90	21.00	1.288	-0.1	0.679	0.875
	LTE Band 13	10M	QPSK	50	0	Front	5mm	Close	ON	23230	782	19.84	21.00	1.306	-0.1	0.669	0.874
	LTE Band 13	10M	QPSK	1	0	Back	5mm	Close	ON	23230	782	19.95	21.00	1.274	0.09	0.729	0.928
26	LTE Band 13	10M	QPSK	25	0	Back	5mm	Close	ON	23230	782	19.90	21.00	1.288	0.09	0.748	0.964
	LTE Band 13	10M	QPSK	50	0	Back	5mm	Close	ON	23230	782	19.84	21.00	1.306	0.11	0.736	0.961
	LTE Band 13	10M	QPSK	1	0	Right Side	5mm	Close	ON	23230	782	19.95	21.00	1.274	0.04	0.525	0.669
	LTE Band 13	10M	QPSK	25	0	Right Side	5mm	Close	ON	23230	782	19.90	21.00	1.288	0.06	0.569	0.733
	LTE Band 13	10M	QPSK	1	0	Bottom Side	5mm	Close	ON	23230	782	19.95	21.00	1.274	0.14	0.242	0.308
	LTE Band 13	10M	QPSK	25	0	Bottom Side	5mm	Close	ON	23230	782	19.90	21.00	1.288	0.18	0.254	0.327
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Open	ON	132072	1720	18.25	19.00	1.189	-0.11	0.371	0.441
	LTE Band 66	20M	QPSK	50	0	Front	5mm	Open	ON	132072	1720	18.18	19.00	1.208	-0.07	0.370	0.447
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Open	ON	132072	1720	18.25	19.00	1.189	0.13	0.313	0.372
	LTE Band 66	20M	QPSK	50	0	Back	5mm	Open	ON	132072	1720	18.18	19.00	1.208	0.14	0.317	0.383
	LTE Band 66	20M	QPSK	1	0	Right Side	5mm	Open	ON	132072	1720	18.25	19.00	1.189	0.01	0.427	0.507
	LTE Band 66	20M	QPSK	50	0	Right Side	5mm	Open	ON	132072	1720	18.18	19.00	1.208	-0.04	0.413	0.499
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	Open	ON	132072	1720	18.25	19.00	1.189	-0.09	0.451	0.536
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	Open	ON	132072	1720	18.18	19.00	1.208	-0.14	0.445	0.537
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Close	ON	132072	1720	18.25	19.00	1.189	-0.18	0.673	0.800
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Close	ON	132322	1745	18.20	19.00	1.202	-0.17	0.715	0.860
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Close	ON	132572	1770	17.97	19.00	1.268	-0.17	0.726	0.920
	LTE Band 66	20M	QPSK	50	0	Front	5mm	Close	ON	132072	1720	18.18	19.00	1.208	-0.12	0.671	0.810
	LTE Band 66	20M	QPSK	50	0	Front	5mm	Close	ON	132322	1745	18.06	19.00	1.242	-0.18	0.710	0.882
27	LTE Band 66	20M	QPSK	50	0	Front	5mm	Close	ON	132572	1770	17.85	19.00	1.303	-0.13	0.719	0.937
	LTE Band 66	20M	QPSK	100	0	Front	5mm	Close	ON	132072	1720	17.91	19.00	1.285	-0.02	0.677	0.870
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Close	ON	132072	1720	18.25	19.00	1.189	0.11	0.453	0.538
	LTE Band 66	20M	QPSK	50	0	Back	5mm	Close	ON	132072	1720	18.18	19.00	1.208	0.12	0.459	0.554
	LTE Band 66	20M	QPSK	1	0	Right Side	5mm	Close	ON	132072	1720	18.25	19.00	1.189	-0.1	0.497	0.591
	LTE Band 66	20M	QPSK	50	0	Right Side	5mm	Close	ON	132072	1720	18.18	19.00	1.208	-0.09	0.495	0.598
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	Close	ON	132072	1720	18.25	19.00	1.189	-0.03	0.416	0.494
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	Close	ON	132072	1720	18.18	19.00	1.208	-0.04	0.412	0.498

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	FLIP configure	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	-0.07	0.225	0.237
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	0.16	0.086	0.091
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	0.17	0.207	0.218
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	5mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	-0.08	0.228	0.241
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1	Close	1	2412	17.30	17.50	1.047	99.20	1.008	-0.13	0.246	0.260
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1	Close	1	2412	17.30	17.50	1.047	99.20	1.008	0.14	0.109	0.115
28	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 1	Close	1	2412	17.30	17.50	1.047	99.20	1.008	0.14	0.261	0.275
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	5mm	Ant 1	Close	1	2412	17.30	17.50	1.047	99.20	1.008	-0.18	0.229	0.242
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	-0.02	0.017	0.018
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	0.08	0.173	0.183
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	0.08	0.140	0.148
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	5mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	-0.01	0.004	0.004
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 2	Close	1	2412	17.30	17.50	1.047	98.88	1.011	0.09	0.009	0.010
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2	Close	1	2412	17.30	17.50	1.047	98.88	1.011	-0.09	0.186	0.197
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5mm	Ant 2	Close	1	2412	17.30	17.50	1.047	98.88	1.011	0.13	0.185	0.196
	WLAN2.4GHz	802.11b 1Mbps	Bottom Side	5mm	Ant 2	Close	1	2412	17.30	17.50	1.047	98.88	1.011	0.05	0.007	0.007
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Open	40	5200	17.80	18.00	1.047	97.59	1.025	-0.05	0.337	0.362
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Open	40	5200	17.80	18.00	1.047	97.59	1.025	-0.16	0.109	0.117
	WLAN5GHz	802.11a 6Mbps	Right Side	5mm	Ant 1	Open	40	5200	17.80	18.00	1.047	97.59	1.025	-0.06	0.283	0.304
	WLAN5GHz	802.11a 6Mbps	Bottom Side	5mm	Ant 1	Open	40	5200	17.80	18.00	1.047	97.59	1.025	0.17	0.307	0.330
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Close	40	5200	17.80	18.00	1.047	97.59	1.025	0.07	0.277	0.297
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Close	40	5200	17.80	18.00	1.047	97.59	1.025	-0.04	0.223	0.239
	WLAN5GHz	802.11a 6Mbps	Right Side	5mm	Ant 1	Close	40	5200	17.80	18.00	1.047	97.59	1.025	0.12	0.307	0.330
	WLAN5GHz	802.11a 6Mbps	Bottom Side	5mm	Ant 1	Close	40	5200	17.80	18.00	1.047	97.59	1.025	0.05	0.447	0.480
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Open	40	5200	17.80	18.00	1.047	97.35	1.027	0.08	0.023	0.025
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Open	40	5200	17.80	18.00	1.047	97.35	1.027	0.08	0.634	0.682
	WLAN5GHz	802.11a 6Mbps	Left Side	5mm	Ant 2	Open	40	5200	17.80	18.00	1.047	97.35	1.027	-0.07	0.435	0.468
	WLAN5GHz	802.11a 6Mbps	Bottom Side	5mm	Ant 2	Open	40	5200	17.80	18.00	1.047	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Close	40	5200	17.80	18.00	1.047	97.35	1.027	0.05	0.001	0.001
29	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Close	40	5200	17.80	18.00	1.047	97.35	1.027	0.09	0.684	0.736
	WLAN5GHz	802.11a 6Mbps	Left Side	5mm	Ant 2	Close	40	5200	17.80	18.00	1.047	97.35	1.027	-0.08	0.678	0.729
	WLAN5GHz	802.11a 6Mbps	Bottom Side	5mm	Ant 2	Close	40	5200	17.80	18.00	1.047	97.35	1.027	-0.06	0.050	0.054
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	0.06	0.572	0.614
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	-0.03	0.248	0.266
	WLAN5GHz	802.11a 6Mbps	Right Side	5mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	-0.13	0.395	0.424
	WLAN5GHz	802.11a 6Mbps	Bottom Side	5mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	0.11	0.483	0.518
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Close	165	5825	17.80	18.00	1.047	97.59	1.025	-0.04	0.487	0.523
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Close	165	5825	17.80	18.00	1.047	97.59	1.025	-0.05	0.225	0.241
	WLAN5GHz	802.11a 6Mbps	Right Side	5mm	Ant 1	Close	165	5825	17.80	18.00	1.047	97.59	1.025	-0.04	0.349	0.375
	WLAN5GHz	802.11a 6Mbps	Bottom Side	5mm	Ant 1	Close	165	5825	17.80	18.00	1.047	97.59	1.025	0.03	0.414	0.444
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	-0.05	0.015	0.017
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	0.03	0.474	0.522
	WLAN5GHz	802.11a 6Mbps	Left Side	5mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	-0.02	0.465	0.512
	WLAN5GHz	802.11a 6Mbps	Bottom Side	5mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Close	149	5745	17.70	18.00	1.072	97.35	1.027	0.001	0.001	0.001
30	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Close	149	5745	17.70	18.00	1.072	97.35	1.027	-0.18	0.597	0.657
	WLAN5GHz	802.11a 6Mbps	Left Side	5mm	Ant 2	Close	149	5745	17.70	18.00	1.072	97.35	1.027	-0.02	0.580	0.638
	WLAN5GHz	802.11a 6Mbps	Bottom Side	5mm	Ant 2	Close	149	5745	17.70	18.00	1.072	97.35	1.027	0.001	0.001	0.001

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	FLIP configure	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	5mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	-0.05	0.201	0.223
	Bluetooth	1Mbps	Back	5mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	0.07	0.110	0.122
	Bluetooth	1Mbps	Right Side	5mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	0.02	0.164	0.182
	Bluetooth	1Mbps	Bottom Side	5mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	-0.08	0.214	0.238
	Bluetooth	1Mbps	Front	5mm	Ant 1	Close	78	2480	15.90	16.00	1.023	76.72	1.086	-0.01	0.218	0.242
	Bluetooth	1Mbps	Back	5mm	Ant 1	Close	78	2480	15.90	16.00	1.023	76.72	1.086	0.08	0.134	0.149
31	Bluetooth	1Mbps	Right Side	5mm	Ant 1	Close	78	2480	15.90	16.00	1.023	76.72	1.086	-0.06	0.231	0.257
	Bluetooth	1Mbps	Bottom Side	5mm	Ant 1	Close	78	2480	15.90	16.00	1.023	76.72	1.086	-0.13	0.223	0.248

14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (3 Tx slots)	Front	5mm	Open	OFF	128	824.2	29.92	31.50	1.439	-0.15	0.251	0.361
	GSM850	GPRS (3 Tx slots)	Back	5mm	Open	OFF	128	824.2	29.92	31.50	1.439	0.1	0.537	0.773
	GSM850	GPRS (3 Tx slots)	Front	5mm	Close	OFF	128	824.2	29.92	31.50	1.439	-0.01	0.506	0.728
32	GSM850	GPRS (3 Tx slots)	Back	5mm	Close	OFF	128	824.2	29.92	31.50	1.439	0.03	0.581	0.836
	GSM850	GPRS (3 Tx slots)	Back	5mm	Close	OFF	189	836.4	29.92	31.50	1.439	0.02	0.571	0.822
	GSM850	GPRS (3 Tx slots)	Back	5mm	Close	OFF	251	848.8	29.85	31.50	1.462	0.09	0.439	0.642
	GSM1900	GPRS (3 Tx slots)	Front	5mm	Open	OFF	512	1850.2	26.92	28.50	1.439	-0.09	0.488	0.702
	GSM1900	GPRS (3 Tx slots)	Back	5mm	Open	OFF	512	1850.2	26.92	28.50	1.439	0.13	0.403	0.580
33	GSM1900	GPRS (3 Tx slots)	Front	5mm	Close	OFF	512	1850.2	26.92	28.50	1.439	-0.13	0.631	0.908
	GSM1900	GPRS (3 Tx slots)	Front	5mm	Close	OFF	661	1880	26.87	28.50	1.455	-0.07	0.547	0.796
	GSM1900	GPRS (3 Tx slots)	Front	5mm	Close	OFF	810	1909.8	26.66	28.50	1.528	-0.09	0.517	0.790
	GSM1900	GPRS (3 Tx slots)	Back	5mm	Close	OFF	512	1850.2	26.92	28.50	1.439	0.15	0.439	0.632

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	5mm	Open	ON	9538	1907.6	19.54	20.50	1.247	0.07	0.501	0.625
	WCDMA II	RMC 12.2Kbps	Back	5mm	Open	ON	9538	1907.6	19.54	20.50	1.247	0.08	0.419	0.523
	WCDMA II	RMC 12.2Kbps	Front	5mm	Close	ON	9538	1907.6	19.54	20.50	1.247	-0.13	0.654	0.816
	WCDMA II	RMC 12.2Kbps	Front	5mm	Close	ON	9262	1852.4	19.49	20.50	1.262	-0.1	0.661	0.834
34	WCDMA II	RMC 12.2Kbps	Front	5mm	Close	ON	9400	1880	19.41	20.50	1.285	-0.11	0.694	0.892
	WCDMA II	RMC 12.2Kbps	Back	5mm	Close	ON	9538	1907.6	19.54	20.50	1.247	0.05	0.558	0.696
	WCDMA V	RMC 12.2Kbps	Front	5mm	Open	ON	4132	826.4	22.41	23.00	1.146	0.01	0.414	0.474
	WCDMA V	RMC 12.2Kbps	Back	5mm	Open	ON	4132	826.4	22.41	23.00	1.146	0.1	0.817	0.936
	WCDMA V	RMC 12.2Kbps	Back	5mm	Open	ON	4182	836.4	22.32	23.00	1.169	0.12	0.745	0.871
	WCDMA V	RMC 12.2Kbps	Back	5mm	Open	ON	4233	846.6	22.18	23.00	1.208	0.14	0.734	0.887
	WCDMA V	RMC 12.2Kbps	Front	5mm	Close	ON	4132	826.4	22.41	23.00	1.146	-0.14	0.725	0.830
	WCDMA V	RMC 12.2Kbps	Front	5mm	Close	ON	4182	836.4	22.32	23.00	1.169	-0.11	0.688	0.805
	WCDMA V	RMC 12.2Kbps	Front	5mm	Close	ON	4233	846.6	22.18	23.00	1.208	-0.1	0.609	0.736
35	WCDMA V	RMC 12.2Kbps	Back	5mm	Close	ON	4132	826.4	22.41	23.00	1.146	0.13	0.840	0.962
	WCDMA V	RMC 12.2Kbps	Back	5mm	Close	ON	4182	836.4	22.32	23.00	1.169	0.11	0.793	0.927
	WCDMA V	RMC 12.2Kbps	Back	5mm	Close	ON	4233	846.6	22.18	23.00	1.208	0.12	0.722	0.872

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA BC0	1xRTT RC3 SO32	Front	5mm	Open	ON	1013	824.7	21.64	22.50	1.219	0.03	0.391	0.477
	CDMA BC0	1xRTT RC3 SO32	Back	5mm	Open	ON	1013	824.7	21.64	22.50	1.219	-0.11	0.593	0.723
	CDMA BC0	1xRTT RC3 SO32	Front	5mm	Close	ON	1013	824.7	21.64	22.50	1.219	0.13	0.515	0.628
36	CDMA BC0	1xRTT RC3 SO32	Back	5mm	Close	ON	1013	824.7	21.64	22.50	1.219	0.06	0.792	0.965
	CDMA BC0	1xRTT RC3 SO32	Back	5mm	Close	ON	384	836.52	21.63	22.50	1.222	-0.02	0.706	0.863
	CDMA BC0	1xRTT RC3 SO32	Back	5mm	Close	ON	777	848.31	21.58	22.50	1.236	0.11	0.710	0.878
	CDMA BC1	1xRTT RC3 SO32	Front	5mm	Open	ON	600	1880	19.48	20.50	1.265	0.02	0.631	0.798
	CDMA BC1	1xRTT RC3 SO32	Back	5mm	Open	ON	600	1880	19.48	20.50	1.265	0.05	0.496	0.627
	CDMA BC1	1xRTT RC3 SO32	Front	5mm	Close	ON	600	1880	19.48	20.50	1.265	-0.11	0.771	0.975
	CDMA BC1	1xRTT RC3 SO32	Front	5mm	Close	ON	25	1851.25	19.47	20.50	1.268	-0.13	0.756	0.958
37	CDMA BC1	1xRTT RC3 SO32	Front	5mm	Close	ON	1175	1908.75	19.36	20.50	1.300	-0.16	0.753	0.979
	CDMA BC1	1xRTT RC3 SO32	Back	5mm	Close	ON	600	1880	19.48	20.50	1.265	0.18	0.610	0.771

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Open	ON	18700	1860	18.77	19.50	1.183	0.01	0.469	0.555
	LTE Band 2	20M	QPSK	50	0	Front	5mm	Open	ON	18700	1860	18.65	19.50	1.216	-0.01	0.479	0.583
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Open	ON	18700	1860	18.77	19.50	1.183	0.12	0.511	0.605
	LTE Band 2	20M	QPSK	50	0	Back	5mm	Open	ON	18700	1860	18.65	19.50	1.216	0.12	0.519	0.631
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Close	ON	18700	1860	18.77	19.50	1.183	-0.09	0.781	0.924
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Close	ON	18900	1880	18.71	19.50	1.199	-0.12	0.743	0.891
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Close	ON	19100	1900	18.54	19.50	1.247	-0.16	0.678	0.846
38	LTE Band 2	20M	QPSK	50	0	Front	5mm	Close	ON	18700	1860	18.65	19.50	1.216	-0.15	0.770	0.936
	LTE Band 2	20M	QPSK	50	0	Front	5mm	Close	ON	18900	1880	18.59	19.50	1.233	-0.08	0.719	0.887
	LTE Band 2	20M	QPSK	50	0	Front	5mm	Close	ON	19100	1900	18.55	19.50	1.245	-0.15	0.687	0.855
	LTE Band 2	20M	QPSK	100	0	Front	5mm	Close	ON	18700	1860	18.47	19.50	1.268	-0.17	0.728	0.923
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Close	ON	18700	1860	18.77	19.50	1.183	0.1	0.465	0.550
	LTE Band 2	20M	QPSK	50	0	Back	5mm	Close	ON	18700	1860	18.65	19.50	1.216	0.12	0.467	0.568
	LTE Band 5	10M	QPSK	1	0	Front	5mm	Open	ON	20525	836.5	21.95	22.50	1.135	-0.02	0.480	0.545
	LTE Band 5	10M	QPSK	25	0	Front	5mm	Open	ON	20525	836.5	21.29	22.50	1.321	-0.05	0.382	0.505
	LTE Band 5	10M	QPSK	1	0	Back	5mm	Open	ON	20525	836.5	21.95	22.50	1.135	0.15	0.834	0.947
	LTE Band 5	10M	QPSK	25	0	Back	5mm	Open	ON	20525	836.5	21.29	22.50	1.321	0.14	0.627	0.828
	LTE Band 5	10M	QPSK	50	0	Back	5mm	Open	ON	20525	836.5	21.24	22.50	1.337	0.13	0.620	0.829
	LTE Band 5	10M	QPSK	1	0	Front	5mm	Close	ON	20525	836.5	21.95	22.50	1.135	-0.04	0.721	0.818
	LTE Band 5	10M	QPSK	25	0	Front	5mm	Close	ON	20525	836.5	21.29	22.50	1.321	-0.05	0.565	0.747
	LTE Band 5	10M	QPSK	50	0	Front	5mm	Close	ON	20525	836.5	21.24	22.50	1.337	-0.09	0.541	0.723
39	LTE Band 5	10M	QPSK	1	0	Back	5mm	Close	ON	20525	836.5	21.95	22.50	1.135	0.14	0.838	0.951
	LTE Band 5	10M	QPSK	25	0	Back	5mm	Close	ON	20525	836.5	21.29	22.50	1.321	0.15	0.655	0.865
	LTE Band 5	10M	QPSK	50	0	Back	5mm	Close	ON	20525	836.5	21.24	22.50	1.337	0.16	0.650	0.869
	LTE Band 7	20M	QPSK	1	0	Front	5mm	Open	ON	21350	2560	18.97	19.50	1.130	-0.02	0.226	0.255
	LTE Band 7	20M	QPSK	50	0	Front	5mm	Open	ON	21350	2560	18.81	19.50	1.172	-0.02	0.215	0.252
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Open	ON	21350	2560	18.97	19.50	1.130	-0.07	0.387	0.437
	LTE Band 7	20M	QPSK	50	0	Back	5mm	Open	ON	21350	2560	18.81	19.50	1.172	0.08	0.377	0.442
	LTE Band 7	20M	QPSK	1	0	Front	5mm	Close	ON	21350	2560	18.97	19.50	1.130	0.08	0.209	0.236
	LTE Band 7	20M	QPSK	50	0	Front	5mm	Close	ON	21350	2560	18.81	19.50	1.172	0.09	0.198	0.232
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Close	ON	21350	2560	18.97	19.50	1.130	-0.18	0.483	0.546
40	LTE Band 7	20M	QPSK	50	0	Back	5mm	Close	ON	21350	2560	18.81	19.50	1.172	-0.12	0.470	0.551

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 13	10M	QPSK	1	0	Front	5mm	Open	ON	23230	782	19.95	21.00	1.274	0.04	0.278	0.354
	LTE Band 13	10M	QPSK	25	0	Front	5mm	Open	ON	23230	782	19.90	21.00	1.288	0	0.297	0.383
	LTE Band 13	10M	QPSK	1	0	Back	5mm	Open	ON	23230	782	19.95	21.00	1.274	0.01	0.507	0.646
	LTE Band 13	10M	QPSK	25	0	Back	5mm	Open	ON	23230	782	19.90	21.00	1.288	0.07	0.554	0.714
	LTE Band 13	10M	QPSK	1	0	Front	5mm	Close	ON	23230	782	19.95	21.00	1.274	-0.11	0.642	0.818
	LTE Band 13	10M	QPSK	25	0	Front	5mm	Close	ON	23230	782	19.90	21.00	1.288	-0.1	0.679	0.875
	LTE Band 13	10M	QPSK	50	0	Front	5mm	Close	ON	23230	782	19.84	21.00	1.306	-0.1	0.669	0.874
	LTE Band 13	10M	QPSK	1	0	Back	5mm	Close	ON	23230	782	19.95	21.00	1.274	0.09	0.729	0.928
41	LTE Band 13	10M	QPSK	25	0	Back	5mm	Close	ON	23230	782	19.90	21.00	1.288	0.09	0.748	0.964
	LTE Band 13	10M	QPSK	50	0	Back	5mm	Close	ON	23230	782	19.84	21.00	1.306	0.11	0.736	0.961
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Open	ON	132072	1720	18.25	19.00	1.189	-0.11	0.371	0.441
	LTE Band 66	20M	QPSK	50	0	Front	5mm	Open	ON	132072	1720	18.18	19.00	1.208	-0.07	0.370	0.447
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Open	ON	132072	1720	18.25	19.00	1.189	0.13	0.313	0.372
	LTE Band 66	20M	QPSK	50	0	Back	5mm	Open	ON	132072	1720	18.18	19.00	1.208	0.14	0.317	0.383
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Close	ON	132072	1720	18.25	19.00	1.189	-0.18	0.673	0.800
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Close	ON	132322	1745	18.20	19.00	1.202	-0.17	0.715	0.860
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Close	ON	132572	1770	17.97	19.00	1.268	-0.17	0.726	0.920
	LTE Band 66	20M	QPSK	50	0	Front	5mm	Close	ON	132072	1720	18.18	19.00	1.208	-0.12	0.671	0.810
	LTE Band 66	20M	QPSK	50	0	Front	5mm	Close	ON	132322	1745	18.06	19.00	1.242	-0.18	0.710	0.882
42	LTE Band 66	20M	QPSK	50	0	Front	5mm	Close	ON	132572	1770	17.85	19.00	1.303	-0.13	0.719	0.937
	LTE Band 66	20M	QPSK	100	0	Front	5mm	Close	ON	132072	1720	17.91	19.00	1.285	-0.02	0.677	0.870
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Close	ON	132072	1720	18.25	19.00	1.189	0.11	0.453	0.538
	LTE Band 66	20M	QPSK	50	0	Back	5mm	Close	ON	132072	1720	18.18	19.00	1.208	0.12	0.459	0.554

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	FLIP configure	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	-0.07	0.225	0.237
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1	Open	1	2412	17.30	17.50	1.047	99.20	1.008	0.16	0.086	0.091
43	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1	Close	1	2412	17.30	17.50	1.047	99.20	1.008	-0.13	0.246	0.260
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1	Close	1	2412	17.30	17.50	1.047	99.20	1.008	0.14	0.109	0.115
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	-0.02	0.017	0.018
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2	Open	1	2412	17.30	17.50	1.047	98.88	1.011	0.08	0.173	0.183
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 2	Close	1	2412	17.30	17.50	1.047	98.88	1.011	0.09	0.009	0.010
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 2	Close	1	2412	17.30	17.50	1.047	98.88	1.011	-0.09	0.186	0.197
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	0.04	0.534	0.573
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	-0.04	0.246	0.264
44	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Close	64	5320	17.80	18.00	1.047	97.59	1.025	-0.01	0.543	0.583
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Close	64	5320	17.80	18.00	1.047	97.59	1.025	-0.19	0.268	0.288
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	-0.11	0.013	0.014
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	0.05	0.396	0.426
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Close	64	5320	17.80	18.00	1.047	97.35	1.027	0.001	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Close	64	5320	17.80	18.00	1.047	97.35	1.027	0.07	0.519	0.558
45	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	0.11	0.604	0.648
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	0.12	0.213	0.229
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Close	144	5720	17.80	18.00	1.047	97.59	1.025	-0.18	0.547	0.587
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Close	144	5720	17.80	18.00	1.047	97.59	1.025	-0.13	0.227	0.244
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	0.18	0.007	0.008
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	0.18	0.220	0.237
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Close	132	5660	17.80	18.00	1.047	97.35	1.027	0	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Close	132	5660	17.80	18.00	1.047	97.35	1.027	0.14	0.308	0.331
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	0.06	0.572	0.614
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Open	165	5825	17.80	18.00	1.047	97.59	1.025	-0.03	0.248	0.266
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 1	Close	165	5825	17.80	18.00	1.047	97.59	1.025	-0.04	0.487	0.523
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 1	Close	165	5825	17.80	18.00	1.047	97.59	1.025	-0.05	0.220	0.236
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	-0.05	0.015	0.017
	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Open	149	5745	17.70	18.00	1.072	97.35	1.027	0.03	0.474	0.522
	WLAN5GHz	802.11a 6Mbps	Front	5mm	Ant 2	Close	149	5745	17.70	18.00	1.072	97.35	1.027	0.001	0.001	0.001
46	WLAN5GHz	802.11a 6Mbps	Back	5mm	Ant 2	Close	149	5745	17.70	18.00	1.072	97.35	1.027	-0.18	0.597	0.657

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	FLIP configure	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	5mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	-0.05	0.201	0.223
	Bluetooth	1Mbps	Back	5mm	Ant 1	Open	78	2480	15.90	16.00	1.023	76.72	1.086	0.07	0.110	0.122
47	Bluetooth	1Mbps	Front	5mm	Ant 1	Close	78	2480	15.90	16.00	1.023	76.72	1.086	-0.01	0.218	0.242
	Bluetooth	1Mbps	Back	5mm	Ant 1	Close	78	2480	15.90	16.00	1.023	76.72	1.086	0.08	0.134	0.149

14.4 Product Specific SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Right Side	0mm	Open	OFF	9538	1907.6	23.19	24.00	1.205	-0.04	1.670	2.012
48	WCDMA II	RMC 12.2Kbps	Right Side	0mm	Open	OFF	9262	1852.4	23.12	24.00	1.225	-0.07	2.240	2.743
	WCDMA II	RMC 12.2Kbps	Right Side	0mm	Open	OFF	9400	1880	23.02	24.00	1.253	-0.05	1.930	2.419
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	Open	OFF	9538	1907.6	23.19	24.00	1.205	-0.07	0.561	0.676

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Power Reduction	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)
	CDMA BC1	RTAP 153.6Kbps	Right Side	0mm	Open	OFF	25	1851.25	24.09	25.00	1.233	0.02	1.800	2.220
49	CDMA BC1	RTAP 153.6Kbps	Right Side	0mm	Open	OFF	600	1880	24.08	25.00	1.236	0.12	2.320	2.867
	CDMA BC1	RTAP 153.6Kbps	Right Side	0mm	Open	OFF	1175	1908.75	23.97	25.00	1.268	0.01	1.930	2.447
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	0mm	Open	OFF	25	1851.25	24.09	25.00	1.233	-0.15	1.900	2.343
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	0mm	Open	OFF	600	1880	24.08	25.00	1.236	-0.11	1.790	2.212
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	0mm	Open	OFF	1175	1908.75	23.97	25.00	1.268	-0.18	1.660	2.104

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	FLIP configure	Power Reduction	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)
50	LTE Band 2	20M	QPSK	1	0	Right Side	0mm	Open	OFF	18700	1860	22.79	24.00	1.321	0.13	2.420	3.198
	LTE Band 2	20M	QPSK	1	0	Right Side	0mm	Open	OFF	18900	1880	22.68	24.00	1.355	0.14	2.180	2.954
	LTE Band 2	20M	QPSK	1	0	Right Side	0mm	Open	OFF	19100	1900	22.58	24.00	1.387	0.17	1.970	2.732
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	Open	OFF	18700	1860	22.79	24.00	1.321	-0.15	1.710	2.259
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	Open	OFF	18900	1880	22.68	24.00	1.355	-0.17	1.610	2.182
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	Open	OFF	19100	1900	22.58	24.00	1.387	-0.11	1.500	2.080
	LTE Band 7	20M	QPSK	1	0	Left Side	0mm	Open	OFF	21350	2560	23.14	24.00	1.219	0.07	2.160	2.633
	LTE Band 7	20M	QPSK	1	0	Left Side	0mm	Open	OFF	20850	2510	23.08	24.00	1.236	0.06	2.450	3.028
51	LTE Band 7	20M	QPSK	1	0	Left Side	0mm	Open	OFF	21100	2535	23.01	24.00	1.256	0.04	2.430	3.052
	LTE Band 66	20M	QPSK	1	0	Right Side	0mm	Open	ON	132072	1720	21.98	23.00	1.265	0.13	1.220	1.543
52	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	Open	ON	132072	1720	21.98	23.00	1.265	0.06	1.700	2.150
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	Open	ON	132322	1745	21.78	23.00	1.324	0.07	1.550	2.053
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	Open	ON	132572	1770	21.64	23.00	1.368	0.07	1.510	2.065

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	FLIP configure	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)
53	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	0.16	0.618	0.663
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	0.15	0.247	0.265
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	-0.11	0.428	0.459
	WLAN5GHz	802.11a 6Mbps	Bottom Side	0mm	Ant 1	Open	64	5320	17.80	18.00	1.047	97.59	1.025	-0.14	0.265	0.284
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	0.11	0.004	0.005
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	0.05	0.449	0.483
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	-0.14	0.480	0.516
	WLAN5GHz	802.11a 6Mbps	Bottom Side	0mm	Ant 2	Open	64	5320	17.80	18.00	1.047	97.35	1.027	0.13	0.003	0.003
54	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	0.11	0.859	0.922
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	0.17	0.274	0.294
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	-0.13	0.631	0.677
	WLAN5GHz	802.11a 6Mbps	Bottom Side	0mm	Ant 1	Open	144	5720	17.80	18.00	1.047	97.59	1.025	-0.14	0.301	0.323
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	-0.13	0.015	0.016
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	0.04	0.665	0.715
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	-0.16	0.551	0.593
	WLAN5GHz	802.11a 6Mbps	Bottom Side	0mm	Ant 2	Open	132	5660	17.80	18.00	1.047	97.35	1.027	0.16	0.003	0.003

14.5 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	FLIP configure	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA V	RMC 12.2Kbps	Back	5mm	Close	ON	4132	826.4	22.41	23.00	1.146	0.13	0.840	-	0.962
2nd	WCDMA V	RMC 12.2Kbps	Back	5mm	Close	ON	4132	826.4	22.41	23.00	1.146	0.01	0.826	1.01	0.946
1st	CDMA BC1	RTAP 153.6Kbps	Front	5mm	Close	ON	25	1851.25	19.50	20.50	1.259	-0.17	0.825	-	1.039
2nd	CDMA BC1	RTAP 153.6Kbps	Front	5mm	Close	ON	25	1851.25	19.50	20.50	1.259	-0.13	0.776	1.06	0.977

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	FLIP configure	Power Reduction	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	LTE Band 2	20M	QPSK	1	0	Right Side	0mm	Open	OFF	18700	1860	22.79	24.00	1.321	0.13	2.420	-	3.198
2nd	LTE Band 2	20M	QPSK	1	0	Right Side	0mm	Open	OFF	18700	1860	22.79	24.00	1.321	0.07	2.350	1.03	3.105
1st	LTE Band 7	20M	QPSK	1	0	Left Side	0mm	Open	OFF	20850	2510	23.08	24.00	1.236	0.06	2.450	-	3.028
2nd	LTE Band 7	20M	QPSK	1	0	Left Side	0mm	Open	OFF	20850	2510	23.08	24.00	1.236	0.13	2.370	1.03	2.929

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.

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Head	Body-worn	Hotspot	Product Specific
1.	WWAN + BT Ant. 1	Yes	Yes	Yes	Yes
2.	WWAN + WLAN Ant.1	Yes	Yes	Yes	Yes
3.	WWAN + WLAN Ant.2	Yes	Yes	Yes	Yes
4.	WLAN Ant.1 + WLAN Ant.2	Yes	Yes	Yes	Yes
5.	BT Ant. 1 + WLAN Ant. 2	Yes	Yes	Yes	Yes
6.	WWAN + WLAN Ant. 1 + WLAN Ant. 2	Yes	Yes	Yes	Yes
7.	WWAN + BT Ant. 1 + WLAN Ant. 2	Yes	Yes	Yes	Yes

General Note:

1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
2. WLAN RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode. Therefore SPLSR calculation was choose worst case with SAR test results of each antenna in SISO mode perform evaluation.
3. For SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
4. WLAN and Bluetooth share the same antenna 1, and cannot transmit simultaneously.
5. All licensed modes share the same antenna part and cannot transmit simultaneously
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.
7. The Scaled SAR summation is calculated based on the same configuration and test position.
8. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/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, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
   v) The SPLSR calculated results please refer to section 15.5.

15.1 Head Exposure Conditions

<FILP Open>

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 2 1g SAR (W/kg)	4 5GHz WLAN Ant 1 1g SAR (W/kg)	5 5GHz WLAN Ant 2 1g SAR (W/kg)	6 Bluetooth Ant 1 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)
GSM	GSM850	Right Cheek	0.649	0.057	0.008	0.029	0.001	0.062	**0.714**	**0.707**	**0.686**	**0.719**	**0.679**	**0.712**
		Right Tilted	0.404	0.022	0.001	0.007	0.001	0.027	**0.427**	**0.427**	**0.412**	**0.432**	**0.412**	**0.432**
		Left Cheek	0.538	0.026	0.019	0.001	0.001	0.033	**0.583**	**0.565**	**0.558**	**0.590**	**0.540**	**0.572**
		Left Tilted	0.304	0.034	0.002	0.007	0.001	0.031	**0.340**	**0.339**	**0.313**	**0.337**	**0.312**	**0.336**
	GSM1900	Right Cheek	0.224	0.057	0.008	0.029	0.001	0.062	**0.289**	**0.282**	**0.261**	**0.294**	**0.254**	**0.287**
		Right Tilted	0.135	0.022	0.001	0.007	0.001	0.027	**0.158**	**0.158**	**0.143**	**0.163**	**0.143**	**0.163**
		Left Cheek	0.151	0.026	0.019	0.001	0.001	0.033	**0.196**	**0.178**	**0.171**	**0.203**	**0.153**	**0.185**
		Left Tilted	0.115	0.034	0.002	0.007	0.001	0.031	**0.151**	**0.150**	**0.124**	**0.148**	**0.123**	**0.147**
WCDMA	WCDMA II	Right Cheek	0.654	0.057	0.008	0.029	0.001	0.062	**0.719**	**0.712**	**0.691**	**0.724**	**0.684**	**0.717**
		Right Tilted	0.276	0.022	0.001	0.007	0.001	0.027	**0.299**	**0.299**	**0.284**	**0.304**	**0.284**	**0.304**
		Left Cheek	0.316	0.026	0.019	0.001	0.001	0.033	**0.361**	**0.343**	**0.336**	**0.368**	**0.318**	**0.350**
		Left Tilted	0.208	0.034	0.002	0.007	0.001	0.031	**0.244**	**0.243**	**0.217**	**0.241**	**0.216**	**0.240**
	WCDMA V	Right Cheek	0.445	0.057	0.008	0.029	0.001	0.062	**0.510**	**0.503**	**0.482**	**0.515**	**0.475**	**0.508**
		Right Tilted	0.286	0.022	0.001	0.007	0.001	0.027	**0.309**	**0.309**	**0.294**	**0.314**	**0.294**	**0.314**
		Left Cheek	0.468	0.026	0.019	0.001	0.001	0.033	**0.513**	**0.495**	**0.488**	**0.520**	**0.470**	**0.502**
		Left Tilted	0.262	0.034	0.002	0.007	0.001	0.031	**0.298**	**0.297**	**0.271**	**0.295**	**0.270**	**0.294**
CDMA	CDMA BC0	Right Cheek	0.363	0.057	0.008	0.029	0.001	0.062	**0.428**	**0.421**	**0.400**	**0.433**	**0.393**	**0.426**
		Right Tilted	0.203	0.022	0.001	0.007	0.001	0.027	**0.226**	**0.226**	**0.211**	**0.231**	**0.211**	**0.231**
		Left Cheek	0.380	0.026	0.019	0.001	0.001	0.033	**0.425**	**0.407**	**0.400**	**0.432**	**0.382**	**0.414**
		Left Tilted	0.212	0.034	0.002	0.007	0.001	0.031	**0.248**	**0.247**	**0.221**	**0.245**	**0.220**	**0.244**
	CDMA BC1	Right Cheek	0.523	0.057	0.008	0.029	0.001	0.062	**0.588**	**0.581**	**0.560**	**0.593**	**0.553**	**0.586**
		Right Tilted	0.267	0.022	0.001	0.007	0.001	0.027	**0.290**	**0.290**	**0.275**	**0.295**	**0.275**	**0.295**
		Left Cheek	0.350	0.026	0.019	0.001	0.001	0.033	**0.395**	**0.377**	**0.370**	**0.402**	**0.352**	**0.384**
		Left Tilted	0.237	0.034	0.002	0.007	0.001	0.031	**0.273**	**0.272**	**0.246**	**0.270**	**0.245**	**0.269**
LTE	LTE Band 2	Right Cheek	0.778	0.057	0.008	0.029	0.001	0.062	**0.843**	**0.836**	**0.815**	**0.848**	**0.808**	**0.841**
		Right Tilted	0.363	0.022	0.001	0.007	0.001	0.027	**0.386**	**0.386**	**0.371**	**0.391**	**0.371**	**0.391**
		Left Cheek	0.367	0.026	0.019	0.001	0.001	0.033	**0.412**	**0.394**	**0.387**	**0.419**	**0.369**	**0.401**
		Left Tilted	0.305	0.034	0.002	0.007	0.001	0.031	**0.341**	**0.340**	**0.314**	**0.338**	**0.313**	**0.337**
	LTE Band 5	Right Cheek	0.177	0.057	0.008	0.029	0.001	0.062	**0.242**	**0.235**	**0.214**	**0.247**	**0.207**	**0.240**
		Right Tilted	0.092	0.022	0.001	0.007	0.001	0.027	**0.115**	**0.115**	**0.100**	**0.120**	**0.100**	**0.120**
		Left Cheek	0.150	0.026	0.019	0.001	0.001	0.033	**0.195**	**0.177**	**0.170**	**0.202**	**0.152**	**0.184**
		Left Tilted	0.092	0.034	0.002	0.007	0.001	0.031	**0.128**	**0.127**	**0.101**	**0.125**	**0.100**	**0.124**
	LTE Band 7	Right Cheek	0.174	0.057	0.008	0.029	0.001	0.062	**0.239**	**0.232**	**0.211**	**0.244**	**0.204**	**0.237**
		Right Tilted	0.101	0.022	0.001	0.007	0.001	0.027	**0.124**	**0.124**	**0.109**	**0.129**	**0.109**	**0.129**
		Left Cheek	0.201	0.026	0.019	0.001	0.001	0.033	**0.246**	**0.228**	**0.221**	**0.253**	**0.203**	**0.235**
		Left Tilted	0.073	0.034	0.002	0.007	0.001	0.031	**0.109**	**0.108**	**0.082**	**0.106**	**0.081**	**0.105**
	LTE Band 13	Right Cheek	0.124	0.057	0.008	0.029	0.001	0.062	**0.189**	**0.182**	**0.161**	**0.194**	**0.154**	**0.187**
		Right Tilted	0.089	0.022	0.001	0.007	0.001	0.027	**0.112**	**0.112**	**0.097**	**0.117**	**0.097**	**0.117**
		Left Cheek	0.232	0.026	0.019	0.001	0.001	0.033	**0.277**	**0.259**	**0.252**	**0.284**	**0.234**	**0.266**
		Left Tilted	0.146	0.034	0.002	0.007	0.001	0.031	**0.182**	**0.181**	**0.155**	**0.179**	**0.154**	**0.178**
	LTE Band 66	Right Cheek	0.559	0.057	0.008	0.029	0.001	0.062	**0.624**	**0.617**	**0.596**	**0.629**	**0.589**	**0.622**
		Right Tilted	0.327	0.022	0.001	0.007	0.001	0.027	**0.350**	**0.350**	**0.335**	**0.355**	**0.335**	**0.355**
		Left Cheek	0.273	0.026	0.019	0.001	0.001	0.033	**0.318**	**0.300**	**0.293**	**0.325**	**0.275**	**0.307**
		Left Tilted	0.353	0.034	0.002	0.007	0.001	0.031	**0.389**	**0.388**	**0.362**	**0.386**	**0.361**	**0.385**

15.2 Hotspot Exposure Conditions

<FILP Close>

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 2 1g SAR (W/kg)	4 5GHz WLAN Ant 1 1g SAR (W/kg)	5 5GHz WLAN Ant 2 1g SAR (W/kg)	6 Bluetooth Ant 1 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	1+2+5 SPLSR	1+2+5 Case No	1+4+5 SPLSR	1+4+5 Case No	1+5+6 SPLSR	1+5+6 Case No
GSM	GSM850	Front	0.728	0.260	0.010	0.523	0.001	0.242	0.998	0.989	1.261	0.980	1.252	0.971						
		Back	0.836	0.115	0.197	0.241	0.736	0.149	1.148	1.687	1.274	1.182	1.813	1.721	0.03	Case 1	0.04	Case 2	0.03	Case 57
		Left side			0.196		0.729		0.196	0.729	0.196	0.196	0.729	0.729						
		Right side	0.702	0.275		0.375		0.257	0.977	0.977	1.077	0.959	1.077	0.959						
		Bottom side	0.325	0.242	0.007	0.480	0.054	0.248	0.574	0.621	0.812	0.580	0.859	0.627						
	GSM1900	Front	0.908	0.260	0.010	0.523	0.001	0.242	1.178	1.169	1.441	1.160	1.432	1.151						
		Back	0.632	0.115	0.197	0.241	0.736	0.149	0.944	1.483	1.070	0.978	1.609	1.517			0.03	Case 3		
		Left side			0.196		0.729		0.196	0.729	0.196	0.196	0.729	0.729						
		Right side	0.411	0.275		0.375		0.257	0.686	0.686	0.786	0.668	0.786	0.668						
		Bottom side	0.820	0.242	0.007	0.480	0.054	0.248	1.069	1.116	1.307	1.075	1.354	1.122						
WCDMA	WCDMA II	Front	0.892	0.260	0.010	0.523	0.001	0.242	1.162	1.153	1.425	1.144	1.416	1.135						
		Back	0.696	0.115	0.197	0.241	0.736	0.149	1.008	1.547	1.134	1.042	1.673	1.581			0.03	Case 4		
		Left side			0.196		0.729		0.196	0.729	0.196	0.196	0.729	0.729						
		Right side	0.544	0.275		0.375		0.257	0.819	0.819	0.919	0.801	0.919	0.801						
		Bottom side	0.877	0.242	0.007	0.480	0.054	0.248	1.126	1.173	1.364	1.132	1.411	1.179						
	WCDMA V	Front	0.830	0.260	0.010	0.523	0.001	0.242	1.100	1.091	1.363	1.082	1.354	1.073						
		Back	0.962	0.115	0.197	0.241	0.736	0.149	1.274	1.813	1.400	1.308	1.939	1.847	0.04	Case 6	0.04	Case 7	0.04	Case 8
		Left side			0.196		0.729		0.196	0.729	0.196	0.196	0.729	0.729						
		Right side	0.852	0.275		0.375		0.257	1.127	1.127	1.227	1.109	1.227	1.109						
		Bottom side	0.377	0.242	0.007	0.480	0.054	0.248	0.626	0.673	0.864	0.632	0.911	0.679						
CDMA	CDMA BC0	Front	0.680	0.260	0.010	0.523	0.001	0.242	0.950	0.941	1.213	0.932	1.204	0.923						
		Back	1.015	0.115	0.197	0.241	0.736	0.149	1.327	1.866	1.453	1.361	1.992	1.900	0.04	Case 48	0.04	Case 49	0.04	Case 50
		Left side			0.196		0.729		0.196	0.729	0.196	0.196	0.729	0.729						
		Right side	0.634	0.275		0.375		0.257	0.909	0.909	1.009	0.891	1.009	0.891						
		Bottom side	0.542	0.242	0.007	0.480	0.054	0.248	0.791	0.838	1.029	0.797	1.076	0.844						
	CDMA BC1	Front	1.039	0.260	0.010	0.523	0.001	0.242	1.309	1.300	1.572	1.291	1.563	1.282						
		Back	0.723	0.115	0.197	0.241	0.736	0.149	1.035	1.574	1.161	1.069	1.700	1.608			0.03	Case 51	0.03	Case 58
		Left side			0.196		0.729		0.196	0.729	0.196	0.196	0.729	0.729						
		Right side	0.883	0.275		0.375		0.257	1.158	1.158	1.258	1.140	1.258	1.140						
		Bottom side	0.896	0.242	0.007	0.480	0.054	0.248	1.145	1.192	1.383	1.151	1.430	1.198						

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	1+2+5 SPLSR	1+2+5 Case No	1+4+5 SPLSR	1+4+5 Case No	1+5+6 SPLSR	1+5+6 Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1												
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)												
LTE	LTE Band 2	Front	0.936	0.260	0.010	0.523	0.001	0.242	**1.206**	**1.197**	**1.469**	**1.188**	**1.460**	**1.179**						
		Back	0.568	0.115	0.197	0.241	0.736	0.149	**0.880**	**1.419**	**1.006**	**0.914**	**1.545**	**1.453**						
		Left side			0.196		0.729		**0.196**	**0.729**	**0.196**	**0.196**	**0.729**	**0.729**						
		Right side	0.710	0.275		0.375		0.257	**0.985**	**0.985**	**1.085**	**0.967**	**1.085**	**0.967**						
		Bottom side	0.759	0.242	0.007	0.480	0.054	0.248	**1.008**	**1.055**	**1.246**	**1.014**	**1.293**	**1.061**						
	LTE Band 5	Front	0.818	0.260	0.010	0.523	0.001	0.242	**1.088**	**1.079**	**1.351**	**1.070**	**1.342**	**1.061**						
		Back	0.951	0.115	0.197	0.241	0.736	0.149	**1.263**	**1.802**	**1.389**	**1.297**	**1.928**	**1.836**	0.04	Case 10	0.04	Case 11	0.04	Case 12
		Left side			0.196		0.729		**0.196**	**0.729**	**0.196**	**0.196**	**0.729**	**0.729**						
		Right side	0.598	0.275		0.375		0.257	**0.873**	**0.873**	**0.973**	**0.855**	**0.973**	**0.855**						
		Bottom side	0.512	0.242	0.007	0.480	0.054	0.248	**0.761**	**0.808**	**0.999**	**0.767**	**1.046**	**0.814**						
	LTE Band 7	Front	0.236	0.260	0.010	0.523	0.001	0.242	**0.506**	**0.497**	**0.769**	**0.488**	**0.760**	**0.479**						
		Back	0.551	0.115	0.197	0.241	0.736	0.149	**0.863**	**1.402**	**0.989**	**0.897**	**1.528**	**1.436**						
		Left side	0.719		0.196		0.729		**0.915**	**1.448**	**0.915**	**0.915**	**1.448**	**1.448**						
		Right side		0.275		0.375		0.257	**0.275**	**0.275**	**0.375**	**0.257**	**0.375**	**0.257**						
		Bottom side	0.233	0.242	0.007	0.480	0.054	0.248	**0.482**	**0.529**	**0.720**	**0.488**	**0.767**	**0.535**						
	LTE Band 13	Front	0.875	0.260	0.010	0.523	0.001	0.242	**1.145**	**1.136**	**1.408**	**1.127**	**1.399**	**1.118**						
		Back	0.964	0.115	0.197	0.241	0.736	0.149	**1.276**	**1.815**	**1.402**	**1.310**	**1.941**	**1.849**	0.04	Case 14	0.04	Case 15	0.04	Case 16
		Left side			0.196		0.729		**0.196**	**0.729**	**0.196**	**0.196**	**0.729**	**0.729**						
		Right side	0.733	0.275		0.375		0.257	**1.008**	**1.008**	**1.108**	**0.990**	**1.108**	**0.990**						
		Bottom side	0.327	0.242	0.007	0.480	0.054	0.248	**0.576**	**0.623**	**0.814**	**0.582**	**0.861**	**0.629**						
	LTE Band 66	Front	0.937	0.260	0.010	0.523	0.001	0.242	**1.207**	**1.198**	**1.470**	**1.189**	**1.461**	**1.180**						
		Back	0.554	0.115	0.197	0.241	0.736	0.149	**0.866**	**1.405**	**0.992**	**0.900**	**1.531**	**1.439**						
		Left side			0.196		0.729		**0.196**	**0.729**	**0.196**	**0.196**	**0.729**	**0.729**						
		Right side	0.598	0.275		0.375		0.257	**0.873**	**0.873**	**0.973**	**0.855**	**0.973**	**0.855**						
		Bottom side	0.498	0.242	0.007	0.480	0.054	0.248	**0.747**	**0.794**	**0.985**	**0.753**	**1.032**	**0.800**						

<FLIP open>

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	1+2+5 SPLSR	1+2+5 Case No	1+4+5 SPLSR	1+4+5 Case No	1+5+6 SPLSR	1+5+6 Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1												
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)												
GSM	GSM850	Front	0.361	0.237	0.018	0.614	0.025	0.223	**0.616**	**0.623**	**0.993**	**0.602**	**1.000**	**0.609**						
		Back	0.773	0.091	0.183	0.266	0.682	0.122	**1.047**	**1.546**	**1.222**	**1.078**	**1.721**	**1.577**			0.03	Case 33		
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.437	0.218		0.424		0.182	**0.655**	**0.655**	**0.861**	**0.619**	**0.861**	**0.619**						
		Bottom side	0.386	0.241	0.004	0.518	0.001	0.238	**0.631**	**0.628**	**0.908**	**0.628**	**0.905**	**0.625**						
	GSM1900	Front	0.702	0.237	0.018	0.614	0.025	0.223	**0.957**	**0.964**	**1.334**	**0.943**	**1.341**	**0.950**						
		Back	0.580	0.091	0.183	0.266	0.682	0.122	**0.854**	**1.353**	**1.029**	**0.885**	**1.528**	**1.384**						
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.682	0.218		0.424		0.182	**0.900**	**0.900**	**1.106**	**0.864**	**1.106**	**0.864**						
		Bottom side	0.849	0.241	0.004	0.518	0.001	0.238	**1.094**	**1.091**	**1.371**	**1.091**	**1.368**	**1.088**						
WCDMA	WCDMA II	Front	0.625	0.237	0.018	0.614	0.025	0.223	**0.880**	**0.887**	**1.257**	**0.866**	**1.264**	**0.873**						
		Back	0.523	0.091	0.183	0.266	0.682	0.122	**0.797**	**1.296**	**0.972**	**0.828**	**1.471**	**1.327**						
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.530	0.218		0.424		0.182	**0.748**	**0.748**	**0.954**	**0.712**	**0.954**	**0.712**						
		Bottom side	0.607	0.241	0.004	0.518	0.001	0.238	**0.852**	**0.849**	**1.129**	**0.849**	**1.126**	**0.846**						
	WCDMA V	Front	0.474	0.237	0.018	0.614	0.025	0.223	**0.729**	**0.736**	**1.106**	**0.715**	**1.113**	**0.722**						
		Back	0.936	0.091	0.183	0.266	0.682	0.122	**1.210**	**1.709**	**1.385**	**1.241**	**1.884**	**1.740**	0.03	Case 35	0.04	Case36	0.03	Case 37
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.485	0.218		0.424		0.182	**0.703**	**0.703**	**0.909**	**0.667**	**0.909**	**0.667**						
		Bottom side	0.371	0.241	0.004	0.518	0.001	0.238	**0.616**	**0.613**	**0.893**	**0.613**	**0.890**	**0.610**						
CDMA	CDMA BC0	Front	0.578	0.237	0.018	0.614	0.025	0.223	**0.833**	**0.840**	**1.210**	**0.819**	**1.217**	**0.826**						
		Back	0.883	0.091	0.183	0.266	0.682	0.122	**1.157**	**1.656**	**1.332**	**1.188**	**1.831**	**1.687**	0.03	Case 38	0.04	Case 39	0.03	Case 59
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.256	0.218		0.424		0.182	**0.474**	**0.474**	**0.680**	**0.438**	**0.680**	**0.438**						
		Bottom side	0.300	0.241	0.004	0.518	0.001	0.238	**0.545**	**0.542**	**0.822**	**0.542**	**0.819**	**0.539**						
	CDMA BC1	Front	0.770	0.237	0.018	0.614	0.025	0.223	**1.025**	**1.032**	**1.402**	**1.011**	**1.409**	**1.018**						
		Back	0.606	0.091	0.183	0.266	0.682	0.122	**0.880**	**1.379**	**1.055**	**0.911**	**1.554**	**1.410**						
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.653	0.218		0.424		0.182	**0.871**	**0.871**	**1.077**	**0.835**	**1.077**	**0.835**						
		Bottom side	0.774	0.241	0.004	0.518	0.001	0.238	**1.019**	**1.016**	**1.296**	**1.016**	**1.293**	**1.013**						
LTE	LTE Band 2	Front	0.583	0.237	0.018	0.614	0.025	0.223	**0.838**	**0.845**	**1.215**	**0.824**	**1.222**	**0.831**						
		Back	0.631	0.091	0.183	0.266	0.682	0.122	**0.905**	**1.404**	**1.080**	**0.936**	**1.579**	**1.435**						
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.663	0.218		0.424		0.182	**0.881**	**0.881**	**1.087**	**0.845**	**1.087**	**0.845**						
		Bottom side	0.696	0.241	0.004	0.518	0.001	0.238	**0.941**	**0.938**	**1.218**	**0.938**	**1.215**	**0.935**						
	LTE Band 5	Front	0.545	0.237	0.018	0.614	0.025	0.223	**0.800**	**0.807**	**1.177**	**0.786**	**1.184**	**0.793**						
		Back	0.947	0.091	0.183	0.266	0.682	0.122	**1.221**	**1.720**	**1.396**	**1.252**	**1.895**	**1.751**	0.03	Case 41	0.04	Case 42	0.03	Case 43
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.440	0.218		0.424		0.182	**0.658**	**0.658**	**0.864**	**0.622**	**0.864**	**0.622**						
		Bottom side	0.409	0.241	0.004	0.518	0.001	0.238	**0.654**	**0.651**	**0.931**	**0.651**	**0.928**	**0.648**						
	LTE Band 7	Front	0.255	0.237	0.018	0.614	0.025	0.223	**0.510**	**0.517**	**0.887**	**0.496**	**0.894**	**0.503**						
		Back	0.442	0.091	0.183	0.266	0.682	0.122	**0.716**	**1.215**	**0.891**	**0.747**	**1.390**	**1.246**						
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.489	0.218		0.424		0.182	**0.707**	**0.707**	**0.913**	**0.671**	**0.913**	**0.671**						
		Bottom side	0.236	0.241	0.004	0.518	0.001	0.238	**0.481**	**0.478**	**0.758**	**0.478**	**0.755**	**0.475**						

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	1+2+5 SPLSR	1+2+5 Case No	1+4+5 SPLSR	1+4+5 Case No	1+5+6 SPLSR	1+5+6 Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1												
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)												
LTE	LTE Band 13	Front	0.383	0.237	0.018	0.614	0.025	0.223	**0.638**	**0.645**	**1.015**	**0.624**	**1.022**	**0.631**						
		Back	0.714	0.091	0.183	0.266	0.682	0.122	**0.988**	**1.487**	**1.163**	**1.019**	**1.662**	**1.518**			0.03	Case 44		
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.339	0.218		0.424		0.182	**0.557**	**0.557**	**0.763**	**0.521**	**0.763**	**0.521**						
		Bottom side	0.206	0.241	0.004	0.518	0.001	0.238	**0.451**	**0.448**	**0.728**	**0.448**	**0.725**	**0.445**						
	LTE Band 66	Front	0.447	0.237	0.018	0.614	0.025	0.223	**0.702**	**0.709**	**1.079**	**0.688**	**1.086**	**0.695**						
		Back	0.383	0.091	0.183	0.266	0.682	0.122	**0.657**	**1.156**	**0.832**	**0.688**	**1.331**	**1.187**						
		Left side			0.148		0.512		**0.148**	**0.512**	**0.148**	**0.148**	**0.512**	**0.512**						
		Right side	0.499	0.218		0.424		0.182	**0.717**	**0.717**	**0.923**	**0.681**	**0.923**	**0.681**						
		Bottom side	0.537	0.241	0.004	0.518	0.001	0.238	**0.782**	**0.779**	**1.059**	**0.779**	**1.056**	**0.776**						

15.3 Body-Worn Accessory Exposure Conditions

<Close Mode>

WWAN Band	Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 2 1g SAR (W/kg)	4 5GHz WLAN Ant 1 1g SAR (W/kg)	5 5GHz WLAN Ant 2 1g SAR (W/kg)	6 Bluetooth Ant 1 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	1+2+5 SPLSR	1+2+5 Case No	1+4+5 SPLSR	1+4+5 Case No	1+5+6 SPLSR	1+5+6 Case No
GSM850	Front	0.728	0.260	0.010	0.587	0.001	0.242	**0.998**	**0.989**	**1.325**	**0.980**	**1.316**	**0.971**						
	Back	0.836	0.115	0.197	0.288	0.657	0.149	**1.148**	**1.608**	**1.321**	**1.182**	**1.781**	**1.642**	0.030	Case 17	0.040	Case 18	0.030	Case 59
GSM1900	Front	0.908	0.260	0.010	0.587	0.001	0.242	**1.178**	**1.169**	**1.505**	**1.160**	**1.496**	**1.151**						
	Back	0.632	0.115	0.197	0.288	0.657	0.149	**0.944**	**1.404**	**1.117**	**0.978**	**1.577**	**1.438**						
WCDMA II	Front	0.892	0.260	0.010	0.587	0.001	0.242	**1.162**	**1.153**	**1.489**	**1.144**	**1.480**	**1.135**						
	Back	0.696	0.115	0.197	0.288	0.657	0.149	**1.008**	**1.468**	**1.181**	**1.042**	**1.641**	**1.502**			0.030	Case 19		
WCDMA V	Front	0.830	0.260	0.010	0.587	0.001	0.242	**1.100**	**1.091**	**1.427**	**1.082**	**1.418**	**1.073**						
	Back	0.962	0.115	0.197	0.288	0.657	0.149	**1.274**	**1.734**	**1.447**	**1.308**	**1.907**	**1.768**	0.040	Case 21	0.040	Case 22	0.040	Case 23
CDMA BC0	Front	0.628	0.260	0.010	0.587	0.001	0.242	**0.898**	**0.889**	**1.225**	**0.880**	**1.216**	**0.871**						
	Back	0.965	0.115	0.197	0.288	0.657	0.149	**1.277**	**1.737**	**1.450**	**1.311**	**1.910**	**1.771**	0.040	Case 53	0.040	Case 54	0.040	Case 55
CDMA BC1	Front	0.979	0.260	0.010	0.587	0.001	0.242	**1.249**	**1.240**	**1.576**	**1.231**	**1.567**	**1.222**						
	Back	0.771	0.115	0.197	0.288	0.657	0.149	**1.083**	**1.543**	**1.256**	**1.117**	**1.716**	**1.577**			0.040	Case 56		
LTE Band 2	Front	0.936	0.260	0.010	0.587	0.001	0.242	**1.206**	**1.197**	**1.533**	**1.188**	**1.524**	**1.179**						
	Back	0.568	0.115	0.197	0.288	0.657	0.149	**0.880**	**1.340**	**1.053**	**0.914**	**1.513**	**1.374**						
LTE Band 5	Front	0.818	0.260	0.010	0.587	0.001	0.242	**1.088**	**1.079**	**1.415**	**1.070**	**1.406**	**1.061**						
	Back	0.951	0.115	0.197	0.288	0.657	0.149	**1.263**	**1.723**	**1.436**	**1.297**	**1.896**	**1.757**	0.030	Case 25	0.040	Case 26	0.040	Case 27
LTE Band 7	Front	0.236	0.260	0.010	0.587	0.001	0.242	**0.506**	**0.497**	**0.833**	**0.488**	**0.824**	**0.479**						
	Back	0.551	0.115	0.197	0.288	0.657	0.149	**0.863**	**1.323**	**1.036**	**0.897**	**1.496**	**1.357**						
LTE Band 13	Front	0.875	0.260	0.010	0.587	0.001	0.242	**1.145**	**1.136**	**1.472**	**1.127**	**1.463**	**1.118**						
	Back	0.964	0.115	0.197	0.288	0.657	0.149	**1.276**	**1.736**	**1.449**	**1.310**	**1.909**	**1.770**	0.030	Case 29	0.040	Case 30	0.040	Case 31
LTE Band 66	Front	0.937	0.260	0.010	0.587	0.001	0.242	**1.207**	**1.198**	**1.534**	**1.189**	**1.525**	**1.180**						
	Back	0.554	0.115	0.197	0.288	0.657	0.149	**0.866**	**1.326**	**1.039**	**0.900**	**1.499**	**1.360**						

<Open Mode>

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+3+6 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	1+4+5 SPLSR	1+4+5 Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1								
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)								
GSM	GSM850	Front	0.361	0.237	0.018	0.648	0.017	0.223	**0.616**	**0.615**	**1.027**	**0.602**	**1.026**	**0.601**		
		Back	0.773	0.091	0.183	0.266	0.522	0.122	**1.047**	**1.386**	**1.222**	**1.078**	**1.561**	**1.417**		
	GSM1900	Front	0.702	0.237	0.018	0.648	0.017	0.223	**0.957**	**0.956**	**1.368**	**0.943**	**1.367**	**0.942**		
		Back	0.580	0.091	0.183	0.266	0.522	0.122	**0.854**	**1.193**	**1.029**	**0.885**	**1.368**	**1.224**		
WCDMA	WCDMA II	Front	0.625	0.237	0.018	0.648	0.017	0.223	**0.880**	**0.879**	**1.291**	**0.866**	**1.290**	**0.865**		
		Back	0.523	0.091	0.183	0.266	0.522	0.122	**0.797**	**1.136**	**0.972**	**0.828**	**1.311**	**1.167**		
	WCDMA V	Front	0.474	0.237	0.018	0.648	0.017	0.223	**0.729**	**0.728**	**1.140**	**0.715**	**1.139**	**0.714**		
		Back	0.936	0.091	0.183	0.266	0.522	0.122	**1.210**	**1.549**	**1.385**	**1.241**	**1.724**	**1.580**	0.030	Case 45
CDMA	CDMA BC0	Front	0.477	0.237	0.018	0.648	0.017	0.223	**0.732**	**0.731**	**1.143**	**0.718**	**1.142**	**0.717**		
		Back	0.723	0.091	0.183	0.266	0.522	0.122	**0.997**	**1.336**	**1.172**	**1.028**	**1.511**	**1.367**		
	CDMA BC1	Front	0.798	0.237	0.018	0.648	0.017	0.223	**1.053**	**1.052**	**1.464**	**1.039**	**1.463**	**1.038**		
		Back	0.627	0.091	0.183	0.266	0.522	0.122	**0.901**	**1.240**	**1.076**	**0.932**	**1.415**	**1.271**		
LTE	LTE Band 2	Front	0.583	0.237	0.018	0.648	0.017	0.223	**0.838**	**0.837**	**1.249**	**0.824**	**1.248**	**0.823**		
		Back	0.631	0.091	0.183	0.266	0.522	0.122	**0.905**	**1.244**	**1.080**	**0.936**	**1.419**	**1.275**		
	LTE Band 5	Front	0.545	0.237	0.018	0.648	0.017	0.223	**0.800**	**0.799**	**1.211**	**0.786**	**1.210**	**0.785**		
		Back	0.947	0.091	0.183	0.266	0.522	0.122	**1.221**	**1.560**	**1.396**	**1.252**	**1.735**	**1.591**	0.030	Case 46
	LTE Band 7	Front	0.255	0.237	0.018	0.648	0.017	0.223	**0.510**	**0.509**	**0.921**	**0.496**	**0.920**	**0.495**		
		Back	0.442	0.091	0.183	0.266	0.522	0.122	**0.716**	**1.055**	**0.891**	**0.747**	**1.230**	**1.086**		
	LTE Band 13	Front	0.383	0.237	0.018	0.648	0.017	0.223	**0.638**	**0.637**	**1.049**	**0.624**	**1.048**	**0.623**		
		Back	0.714	0.091	0.183	0.266	0.522	0.122	**0.988**	**1.327**	**1.163**	**1.019**	**1.502**	**1.358**		
	LTE Band 66	Front	0.447	0.237	0.018	0.648	0.017	0.223	**0.702**	**0.701**	**1.113**	**0.688**	**1.112**	**0.687**		
		Back	0.383	0.091	0.183	0.266	0.522	0.122	**0.657**	**0.996**	**0.832**	**0.688**	**1.171**	**1.027**		

15.4 Product Specific Exposure Conditions

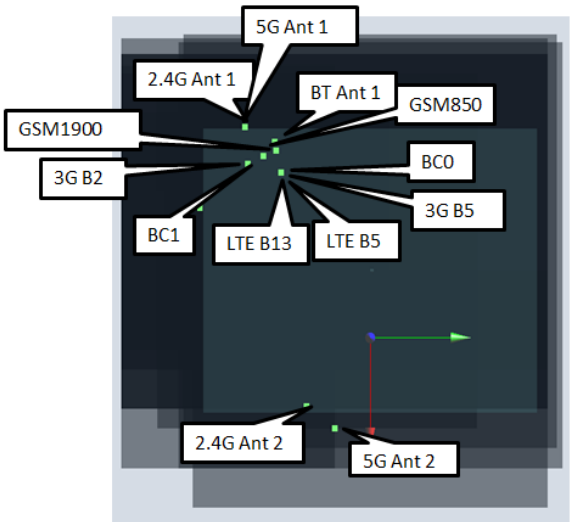
WWAN Band		Exposure Position	1 WWAN 10g SAR (W/kg)	2 5GHz WLAN Ant 1 10g SAR (W/kg)	3 5GHz WLAN Ant 2 10g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)
WCDMA	WCDMA II	Front		0.922	0.016	**0.938**
		Back		0.294	0.715	**1.009**
		Left Side			0.593	**0.593**
		Right Side	2.743	0.677		**3.420**
		Bottom Side	0.676	0.323	0.003	**1.002**
CDMA	CDMA2000 BC1	Front		0.922	0.016	**0.938**
		Back		0.294	0.715	**1.009**
		Left Side			0.593	**0.593**
		Right Side	2.867	0.677		**3.544**
		Bottom Side	2.343	0.323	0.003	**2.669**
LTE	LTE Band 2	Front		0.922	0.016	**0.938**
		Back		0.294	0.715	**1.009**
		Left Side			0.593	**0.593**
		Right Side	3.198	0.677		**3.875**
		Bottom Side	2.259	0.323	0.003	**2.585**
	LTE Band 7	Front		0.922	0.016	**0.938**
		Back		0.294	0.715	**1.009**
		Left Side			0.593	**0.593**
		Left Side	3.052	0.677		**3.729**
		Bottom Side	2.15	0.323	0.003	**2.476**
	LTE Band 66	Front		0.922	0.016	**0.938**
		Back		0.294	0.715	**1.009**
		Left Side			0.593	**0.593**
		Right Side	1.543	0.677		**2.220**
		Bottom Side	2.15	0.323	0.003	**2.476**

15.5 SPLSR Evaluation and Analysis

General Note:

1. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
2. Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration. Therefore, the adjacent transmit antennas will be summed first, and then the SPLSR calculation will be evaluated with the farther transmitted antennas
3. The detail hotspot point for each transmitter in each exposure condition are showing as below figure and the minimum 3D distance for each sum combination is used for SPLSR analysis.

Close Hotspot Mode



Case 1	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850+2.4G Ant1	Back	0.951	5	-30.5	-28.1	-3.83	66.2	1.69	0.03	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 2	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850+5G Ant1	Back	1.077	5	-30.5	-28.1	-3.83	66.2	1.81	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 57	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850+BT Ant1	Back	0.985	5	-30.5	-28.1	-3.83	66.2	1.72	0.03	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 3	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM1900+5G Ant 1	Back	0.873	5	-29	-34.8	-3.47	66.8	1.61	0.03	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 4	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B2+5G Ant 1	Back	0.937	5	-27	-34.5	-3.44	64.8	1.67	0.03	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 6	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+2.4G Ant 1	Back	1.077	5	-29.8	-28.2	-4.01	65.5	1.81	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 7	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+5G Ant 1	Back	1.203	5	-29.8	-28.2	-4.01	65.5	1.94	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 8	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+BT Ant 1	Back	1.111	5	-29.8	-28.2	-4.01	65.5	1.85	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 10	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+2.4G Ant 1	Back	1.066	5	-29.8	-29.8	-3.99	66.0	1.80	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 11	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+5G Ant 1	Back	1.192	5	-29.8	-29.8	-3.99	66.0	1.93	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 12	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+BT Ant 1	Back	1.1	5	-29.8	-29.8	-3.99	66.0	1.84	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 14	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B13+2.4G Ant 1	Back	1.079	5	-29.8	-31.4	-3.96	66.4	1.82	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 15	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B13+5G Ant 1	Back	1.205	5	-29.8	-31.4	-3.96	66.4	1.94	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 16	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B13+BT Ant 1	Back	1.113	5	-29.8	-31.4	-3.96	66.4	1.85	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 48	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC0+2.4G Ant 1	Back	1.13	5	-29.8	-29.8	-4.03	66.0	1.87	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

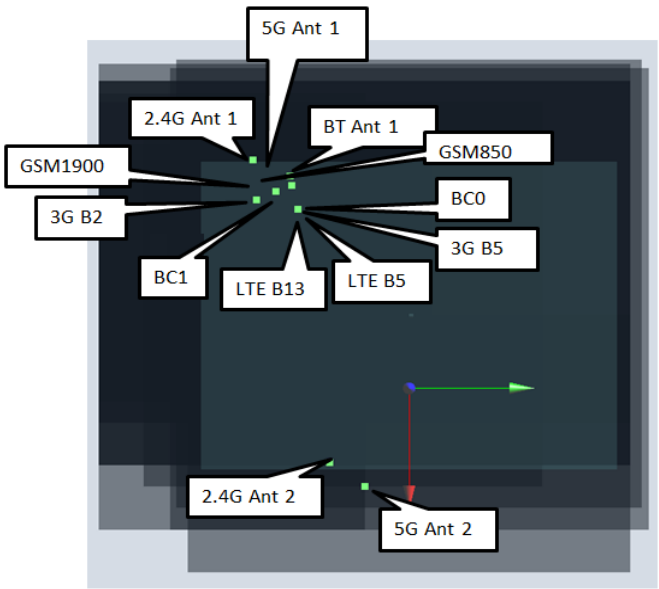
Case 49	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC0+5G Ant 1	Back	1.256	5	-29.8	-29.8	-4.03	66.0	1.99	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 50	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC0+BT Ant 1	Back	1.164	5	-29.8	-29.8	-4.03	66.0	1.90	0.04	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 51	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC1+5G Ant 1	Back	0.964	5	-28.6	-36.2	-0.364	67.0	1.70	0.03	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Case 58	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC1+BT Ant1	Back	0.872	5	-28.6	-36.2	-0.364	67.0	1.61	0.03	Not required
	5G Ant 2		0.736	5	33.6	-11.6	-3.25				

Close BodyWorn Mode



Case 17	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850+2.4G Ant 1	Back	0.951	5	-30.5	-28.1	-3.83	65.8	1.61	0.03	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 18	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850+5G Ant 1	Back	1.124	5	-13.4	-46	-3.23	59.4	1.78	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 59	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850+5G Ant 1	Back	0.985	5	-30.5	-28.1	-3.83	65.8	1.64	0.03	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 19	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B2+5G Ant 1	Back	0.984	5	-13.4	-46	-3.23	59.4	1.64	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 21	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+2.4G Ant 1	Back	1.077	5	-29.8	-28.2	-4.01	65.2	1.73	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 22	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+5G Ant 1	Back	1.25	5	-13.4	-46	-3.23	59.4	1.91	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 23	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+BT Ant 1	Back	1.111	5	-29.8	-28.2	-4.01	65.2	1.77	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 25	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+2.4G Ant 1	Back	1.066	5	-29.8	-29.8	-3.99	65.7	1.72	0.03	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 26	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+5G Ant 1	Back	1.239	5	-13.4	-46	-3.23	59.4	1.90	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 27	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+BT Ant 1	Back	1.1	5	-29.8	-29.8	-3.99	65.7	1.76	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 29	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B13+2.4G Ant 1	Back	1.079	5	-29.8	-29.8	-3.99	65.7	1.74	0.03	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 30	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B13+5G Ant 1	Back	1.252	5	-13.4	-46	-3.23	59.4	1.91	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 31	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B13+BT Ant 1	Back	1.113	5	-29.8	-29.8	-3.99	65.7	1.77	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

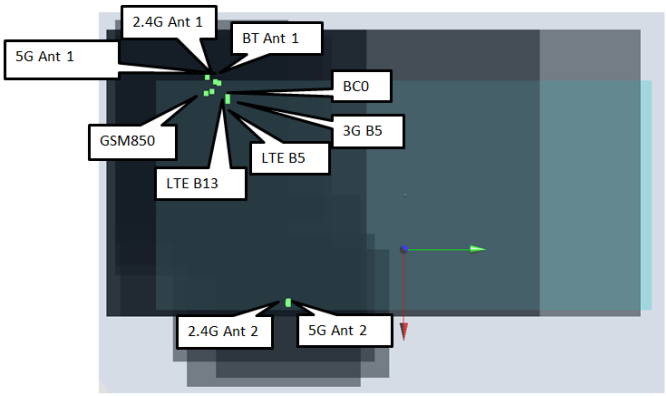
Case 53	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC0+2.4G Ant 1	Back	1.08	5	-29.8	-28.2	-4.02	65.2	1.74	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 54	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC0+5G Ant 1	Back	1.253	5	-13.4	-46	-3.23	59.4	1.91	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 55	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC0+BT Ant 1	Back	1.114	5	-29.8	-28.2	-4.02	65.2	1.77	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Case 56	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC1+5G Ant 1	Back	1.059	5	-13.4	-46	-3.23	59.4	1.72	0.04	Not required
	5G Ant 2		0.657	5	32.2	-8	-3.27				

Open Mode



Case 33	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850+5G Ant 1	Back	1.039	5	-32	-66.9	-3.44	71.0	1.72	0.03	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 35	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+2.4G Ant 1	Back	1.027	5	-29.5	-62.6	-3.65	67.0	1.71	0.03	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 36	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+5G Ant 1	Back	1.202	5	-29.5	-62.6	-3.65	67.0	1.88	0.04	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 37	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+BT Ant 1	Back	1.058	5	-29.5	-62.6	-3.65	67.0	1.74	0.03	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 38	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC0+2.4G Ant 1	Back	0.974	5	-31	-62.6	-3.64	68.4	1.66	0.03	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 39	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC0+5G Ant 1	Back	1.149	5	-31	-62.6	-3.64	68.4	1.83	0.04	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 59	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	BC0+BT Ant 1	Back	1.005	5	-31	-62.6	-3.64	68.4	1.69	0.03	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 41	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+2.4G Ant 1	Back	1.038	5	-31	-62.6	-3.64	68.4	1.72	0.03	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 42	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+5G Ant 1	Back	1.213	5	-31	-62.6	-3.64	68.4	1.90	0.04	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 43	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+BT Ant 1	Back	1.069	5	-33.2	-62	-3.42	70.3	1.75	0.03	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 44	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+5G Ant 1	Back	0.98	5	-30.9	-64.9	-3.61	69.2	1.66	0.03	Not required
	5G Ant 2		0.682	5	33	-38.4	-3.13				

Case 45	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	3G B5+5G Ant 1	Back	1.202	5	-30.9	-64.9	-3.61	68.5	1.72	0.03	Not required
	5G Ant 2		0.522	5	31.6	-36.8	-3.11				

Case 46	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE B5+5G Ant 1	Back	1.213	5	-31	-62.6	-3.64	67.7	1.74	0.03	Not required
	5G Ant 2		0.522	5	31.6	-36.8	-3.11				

16. Supplemental tuner tests results

General Note:

1. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
2. To evaluate all of the tuner states, the 144 tuner states are divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination.
3. The tuner state was established remotely through Wi-Fi so that the device is not moved for the entire series of single point SAR for the tuner states in each combination (band, mode, exposure conditions).
4. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

16.1 Supplemental Head SAR results

Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																																			
									0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	140
WCDMA B5	RMC12.2K	826.4	4132	N/A	N/A	Left Cheek	0mm	0.398	0.032	0.207	0.406	0.398	0.203	0.099	0.355	0.398	0.206	0.006	0.019	0.037	0.082	0.002	0.009	0.02	0.064	0.104	0.124	0.125	0.123	0.116	0.069	0.07	0.07	0.068	0.015	0.046	0.095	0.178	0.057	0.023	0.055	0.177	0.311	0.12

Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																																			
									1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69	73	77	81	85	89	93	97	101	105	109	113	117	121	125	129	133	137	141
CDMA BC0	1xRTT RC3 SO55	824.7	1013	N/A	N/A	Left Cheek	0mm	0.321	0.05	0.225	0.366	0.335	0.015	0.123	0.321	0.305	0.113	0.008	0.02	0.042	0.09	0.003	0.011	0.024	0.074	0.11	0.122	0.121	0.119	0.054	0.069	0.07	0.068	0.061	0.019	0.051	0.104	0.179	0.008	0.028	0.069	0.19	0.215	0.066

Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																																			
									2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70	74	78	82	86	90	94	98	102	106	110	114	118	122	126	130	134	138	142
LTE B5	QPSK	836.5	20525	1	0	Right Cheek	0mm	0.136	0.025	0.128	0.142	0.085	0.008	0.077	0.152	0.058	0.0005	0.002	0.004	0.009	0.035	0.001	0.002	0.006	0.027	0.018	0.019	0.02	0.021	0.008	0.009	0.009	0.009	0.001	0.005	0.012	0.033	0.049	0.002	0.007	0.021	0.073	0.017	0.056

Mode	Service/ Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																																			
									3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71	75	79	83	87	91	95	99	103	107	111	115	119	123	127	131	135	139	143
LTE B13	QPSK	782	23230	1	0	Left Cheek	0mm	0.167	0.076	0.126	0.163	0.189	0.037	0.077	0.108	0.135	0.01	0.032	0.056	0.111	0.004	0.016	0.033	0.08	0.186	0.046	0.073	0.096	0.123	0.022	0.041	0.056	0.076	0.019	0.056	0.093	0.157	0.006	0.0289	0.059	0.121	0.177	0.126	0.161

16.2 Supplemental Body SAR results

Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																																			
							0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	140
826.4	4132	N/A	N/A	Back	5mm	0.84	0.088	0.668	1.258	0.987	0.46	0.324	1.243	0.961	0.445	0.015	0.041	0.086	0.193	0.005	0.02	0.045	0.155	0.219	0.254	0.261	0.264	0.259	0.141	0.146	0.148	0.149	0.036	0.114	0.242	0.457	0.013	0.058	0.141	0.482	0.742	0.266

Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																																			
							1	5	9	13	17	21	25	29	33	37	41	45	49	53	57	61	65	69	73	77	81	85	89	93	97	101	105	109	113	117	121	125	129	133	137	141
824.7	1013	N/A	N/A	Back	5mm	0.833	0.166	0.878	1.252	0.844	0.048	0.512	1.258	0.716	0.25	0.019	0.048	0.101	0.222	0.008	0.025	0.059	0.191	0.224	0.242	0.247	0.251	0.115	0.135	0.138	0.141	0.135	0.049	0.133	0.282	0.417	0.02	0.073	0.193	0.545	0.471	0.141

Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																																			
							2	6	10	14	18	22	26	30	34	38	42	46	50	54	58	62	66	70	74	78	82	86	90	94	98	102	106	110	114	118	122	126	130	134	138	142
836.5	20525	1	0	Back	5mm	0.817	0.239	1.225	1.127	0.669	0.076	0.785	1.162	0.436	0.003	0.016	0.034	0.08	0.292	0.007	0.018	0.047	0.24	0.139	0.156	0.164	0.172	0.061	0.072	0.076	0.081	0.009	0.045	0.102	0.291	0.403	0.019	0.062	0.194	0.61	0.151	0.477

Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																																			
							3	7	11	15	19	23	27	31	35	39	43	47	51	55	59	63	67	71	75	79	83	87	91	95	99	103	107	111	115	119	123	127	131	135	139	143
782	23230	25	0	Back	5mm	0.748	0.337	0.674	1.015	1.323	0.153	0.396	0.681	1.042	0.041	0.143	0.246	0.503	0.018	0.069	0.142	0.344	1.058	0.382	0.636	0.848	1.053	0.18	0.371	0.531	0.71	0.069	0.226	0.391	0.747	0.027	0.113	0.233	0.536	1.17	0.564	0.818

Test Engineer： Mood Huang, Jay Jian, Willy Yu and White Huang

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. Therefore, the measurement uncertainty table is not required in this report.

18. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[6] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[8] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[9] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[10] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

[12] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[13] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.