




FCC SAR TEST REPORT

FCC ID : 2AJOTTA-1257
Equipment : Smart Phone
Brand Name : NOKIA
Model Name : TA-1257
Applicant : HMD Global Oy
Bertel Jungin aukio 9, 02600 Espoo, Finland
Manufacturer : HMD Global Oy
Bertel Jungin aukio 9, 02600 Espoo, Finland
Standard : FCC 47 CFR Part 2 (2.1093)

The product was received on Jun. 10, 2020 and testing was started from Jul. 25, 2020 and completed on Aug. 26, 2020. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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



Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA060302B	01	Initial issue of report	Sep. 07, 2020



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for HMD Global Oy, Smart Phone, TA-1257, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	Product Specific (Separation 0mm)	
		1g SAR (W/kg)			10g SAR (W/kg)	
Licensed	GSM850	0.57	0.34	0.34		1.37
	GSM1900	0.53	0.29	0.49		
	WCDMA II	0.97	0.47	0.93		
	WCDMA IV	0.98	0.44	0.62		
	WCDMA V	0.33	0.46	0.46		
	LTE Band 2	0.97	0.43	0.68		
	LTE Band 5	0.70	0.35	0.35		
	LTE Band 7	0.95	0.59	0.79		
	LTE Band 12	0.45	0.15	0.16		
	LTE Band 13	0.44	0.18	0.18		
	LTE Band 48	0.84	0.31	0.75		
	LTE Band 4 / 66	0.96	0.39	0.55		
	FR1 n2	0.94	0.39	0.62		
	FR1 n5	0.23	0.23	0.23		
FR1 n66	0.96	0.27	0.39			
DTS	2.4GHz WLAN	0.82	0.24	0.08		1.34
NII	5GHz WLAN	0.39	1.20	0.84	2.37	1.37
DSS	Bluetooth	0.20	0.06	0.08		1.37
Date of Testing:		2020/7/25 ~ 2020/8/26				

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: Wan Liu



2. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, if the KDB standards were not list within TAF approval, because it is include in the FCC KDB 447498.

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

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Smart Phone
Brand Name	NOKIA
Model Name	TA-1257
FCC ID	2AJOTTA-1257
IMEI Code	353139110020277
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n260 : 37 GHz~40 GHz 5G NR n261 : 27.5 GHz~28.35 GHz WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN: 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark:	
<ol style="list-style-type: none"> 1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications. 2. The device implements the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot and extremity) and the Qualcomm smart transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision are provided in the operational description. 	



3.2 Maximum Tune-up Limit

General Note:

1. For each cellular band, the device has several WWAN antennas, the antenna selection is based on the connection quality condition, and only one antenna will transmit at a time.
2. The device implements the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) by DSI and the Qualcomm Smart Transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision are provided in the operational description.
3. Below table shows maximum tune up output power configured for this EUT for various transmit conditions (Device State Index DSI) by manufacturer, and the detail power measurement and tune-up limit refer to appendix D
4. In the table below which the DSI may have difference output power level. If some DSI output power measurement was not include in the appendix D, because the same output power level has been presented within the other DSI and use the same level to do SAR tested.

Antenna configuration	
Antenna	Support transmit antenna and band
ANT 0	GSM850, WCDMA B5, LTE B5/B12/B13/B48, 5G NR n5
ANT 1	GSM850, WCDMA B5, LTE B5/B12/B13, 5G NR n5
ANT 2	GSM1900, WCDMA B2/B4, LTE B2/B4/B7/B66, 5G NR n2/n66
ANT 4	LTE B48
ANT 6	GSM1900, WCDMA B2/B4, LTE B2/B4/B7/B66, 5G NR n2/n66

Config0		Maximum Transmit Power Level (dBm)		
Radio Tech	Antenna name	DSI_2	DSI_4	DSI_3
		Head	Hotspot	Body-worn
GSM1Tx	0	32.00	32.00	32.00
GSM2Tx	0	30.00	30.00	30.00
GSM3Tx	0	28.00	28.00	28.00
GSM4Tx	0	26.00	26.00	26.00
GSM1Tx	2	29.50	29.50	29.50
GSM2Tx	2	27.50	27.50	27.50
GSM3Tx	2	25.50	25.50	25.50
GSM4Tx	2	23.00	23.00	23.00
WCDMA II RMC/AMR	2	24.00	24.00	24.00
WCDMA II HSPA	2	23.50	23.50	23.50
WCDMA IV RMC/AMR	2	24.00	24.00	24.00
WCDMA IV HSPA	2	23.50	23.50	23.50
WCDMA V RMC/AMR	0	24.00	24.00	24.00
WCDMA V HSPA	0	23.50	23.50	23.50
LTE B2	2	23.00	23.00	23.00
LTE B66/4	0	23.00	23.00	23.00
LTE B5	2	23.00	23.00	23.00
LTE B7	2	23.00	23.00	23.00
LTE B12/B17	0	23.00	23.00	23.00
LTE B13	2	23.00	23.00	23.00
LTE B48**	0	18.30	21.00	23.00
FR1 n2	0	24.00	24.00	24.00
FR1 n5	4	24.00	24.00	24.00
FR1 n66	2	24.00	24.00	24.00



Config1		Maximum Transmit Power Level (dBm)		
Radio Tech	Antenna name	DSI_2	DSI_4	DSI_3
		Head	Hotspot	Body-worn
GSM1Tx	1	32.00	32.00	32.00
GSM2Tx	1	29.00	29.00	29.00
GSM3Tx	1	27.00	27.00	27.00
GSM4Tx	1	26.00	26.00	26.00
GSM1Tx	6	28.80	29.00	29.00
GSM2Tx	6	26.80	27.00	27.00
GSM3Tx	6	24.80	25.00	25.00
GSM4Tx	6	22.80	23.00	23.00
WCDMA II RMC/AMR	6	21.60	23.50	23.50
WCDMA II HSPA	6	20.60	23.00	23.00
WCDMA IV RMC/AMR	6	21.40	23.50	23.50
WCDMA IV HSPA	6	20.40	23.00	23.00
WCDMA V RMC/AMR	1	23.50	23.50	23.50
WCDMA V HSPA	1	23.00	23.00	23.00
LTE B2	6	21.90	23.00	23.00
LTE B66/4	6	20.20	23.00	23.00
LTE B5	1	23.00	23.00	23.00
LTE B7	6	18.90	23.00	23.00
LTE B12/B17	1	23.00	23.00	23.00
LTE B13	1	23.00	23.00	23.00
LTE B48**	0	23.00	23.00	23.00
FR1 n2	6	22.30	24.00	24.00
FR1 n5	1	23.00	23.00	23.00
FR1 n66	6	21.70	23.00	23.00

<WLAN Maximum Power>

General Note:

1. The device implements the power management for WLAN SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The control logic about the power management decision is provided in the operational description.
2. The WLAN power table relate to each exposure condition is description below:
 - a. Power Table 1: WLAN is transmitting and WWAN off.
 - b. Power Table 2: WLAN is transmitting and WWAN on.

<Power Table1>

<2.4GHz WLAN>

2.4GHz WLA	Transmit Antenna			SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 8 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 8+10(8) Tune-Up Limit	Ant 8+10(10) Tune-Up Limit	Ant 8+10 Tune-Up Limit
802.11b 1Mbps		1	2412	18.0	18.0	18.0	18.0	21.0
		6	2437	18.0	18.0	18.0	18.0	21.0
		11	2462	18.0	18.0	18.0	18.0	21.0
802.11g 6Mbps		1	2412	17.5	17.5	17.5	17.5	20.5
		6	2437	17.5	17.5	17.5	17.5	20.5
		11	2462	17.5	17.5	17.5	17.5	20.5
802.11n-HT20 MCS0		1	2412	16.0	16.0	16.0	16.0	19.0
		6	2437	16.0	16.0	16.0	16.0	19.0
		11	2462	16.0	16.0	16.0	16.0	19.0



<5GHz WLAN>

Transmit Antenna				SISO	SISO	MIMO		
5.2GHz WLAN	Mode	Channel	Frequency (MHz)	Ant 9 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10 Tune-Up Limit
	802.11a 6Mbps	36	5180	17.5	17.5	17.5	17.5	20.5
		40	5200	17.5	17.5	17.5	17.5	20.5
		44	5220	17.5	17.5	17.5	17.5	20.5
		48	5240	17.5	17.5	17.5	17.5	20.5
	802.11n-HT20 MCS0	36	5180	17.5	17.5	17.5	17.5	20.5
		40	5200	17.5	17.5	17.5	17.5	20.5
		44	5220	17.5	17.5	17.5	17.5	20.5
	802.11n-HT40 MCS0	38	5190	17.0	17.0	17.0	17.0	20.0
		46	5230	17.0	17.0	17.0	17.0	20.0
802.11ac-VHT20 MCS0	36	5180	17.5	17.5	17.5	17.5	20.5	
	40	5200	17.5	17.5	17.5	17.5	20.5	
	44	5220	17.5	17.5	17.5	17.5	20.5	
802.11ac-VHT40 MCS0	38	5190	16.5	16.5	16.5	16.5	19.5	
	46	5230	16.5	16.5	16.5	16.5	19.5	
802.11ac-VHT80 MCS0	42	5210	16.5	16.5	16.5	16.5	19.5	

Transmit Antenna				SISO	SISO	MIMO		
5.3GHz WLAN	Mode	Channel	Frequency (MHz)	Ant 9 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10(10) Tune-Up Limit	Ant 9+10 Tune-Up Limit
	802.11a 6Mbps	52	5260	17.5	17.5	17.5	17.5	20.5
		56	5280	17.5	17.5	17.5	17.5	20.5
		60	5300	17.5	17.5	17.5	17.5	20.5
		64	5320	17.5	17.5	17.5	17.5	20.5
	802.11n-HT20 MCS0	52	5260	17.5	17.5	17.5	17.5	20.5
		56	5280	17.5	17.5	17.5	17.5	20.5
		60	5300	17.5	17.5	17.5	17.5	20.5
	802.11n-HT40 MCS0	54	5270	17.0	17.0	17.0	17.0	20.0
		62	5310	17.0	17.0	17.0	17.0	20.0
	802.11ac-VHT20 MCS0	52	5260	17.5	17.5	17.5	17.5	20.5
		56	5280	17.5	17.5	17.5	17.5	20.5
		60	5300	17.5	17.5	17.5	17.5	20.5
	802.11ac-VHT40 MCS0	54	5270	16.5	16.5	16.5	16.5	19.5
62		5310	16.5	16.5	16.5	16.5	19.5	
802.11ac-VHT80 MCS0	58	5290	16.5	16.5	16.5	16.5	19.5	



Transmit Antenna				SISO	SISO	MIMO		
Mode	Channel	Frequency (MHz)	Ant 9 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10(10) Tune-Up Limit	Ant 9+10 Tune-Up Limit	
5.5GHz WLAN	802.11a 6Mbps	100	5500	18.0	18.0	18.0	18.0	21.0
		116	5580	18.0	18.0	18.0	18.0	21.0
		124	5620	18.0	18.0	18.0	18.0	21.0
		132	5660	18.0	18.0	18.0	18.0	21.0
		140	5700	18.0	18.0	18.0	18.0	21.0
		144	5720	18.0	18.0	18.0	18.0	21.0
	802.11n-HT20 MCS0	100	5500	17.5	17.5	17.5	17.5	20.5
		116	5580	17.5	17.5	17.5	17.5	20.5
		124	5620	17.5	17.5	17.5	17.5	20.5
		132	5660	17.5	17.5	17.5	17.5	20.5
		140	5700	17.5	17.5	17.5	17.5	20.5
		144	5720	17.5	17.5	17.5	17.5	20.5
	802.11n-HT40 MCS0	102	5510	17.0	17.0	17.0	17.0	20.0
		110	5550	17.0	17.0	17.0	17.0	20.0
		126	5630	17.0	17.0	17.0	17.0	20.0
		134	5670	17.0	17.0	17.0	17.0	20.0
		142	5710	17.0	17.0	17.0	17.0	20.0
	802.11ac-VHT20 MCS0	100	5500	17.5	17.5	17.5	17.5	20.5
		116	5580	17.5	17.5	17.5	17.5	20.5
		124	5620	17.5	17.5	17.5	17.5	20.5
		132	5660	17.5	17.5	17.5	17.5	20.5
		140	5700	17.5	17.5	17.5	17.5	20.5
		144	5720	17.5	17.5	17.5	17.5	20.5
	802.11ac-VHT40 MCS0	102	5510	16.0	16.0	16.0	16.0	19.0
		110	5550	16.0	16.0	16.0	16.0	19.0
		126	5630	16.0	16.0	16.0	16.0	19.0
		134	5670	16.0	16.0	16.0	16.0	19.0
		142	5710	16.0	16.0	16.0	16.0	19.0
802.11ac-VHT80 MCS0	106	5530	16.5	16.5	16.5	16.5	19.5	
	122	5610	16.5	16.5	16.5	16.5	19.5	
	138	5690	16.5	16.5	16.5	16.5	19.5	

Transmit Antenna				SISO	SISO	MIMO		
Mode	Channel	Frequency (MHz)	Ant 9 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10(10) Tune-Up Limit	Ant 9+10 Tune-Up Limit	
5.8GHz WLAN	802.11a 6Mbps	149	5745	18.0	18.0	18.0	18.0	21.0
		157	5785	18.0	18.0	18.0	18.0	21.0
		165	5825	18.0	18.0	18.0	18.0	21.0
	802.11n-HT20 MCS0	149	5745	17.5	17.5	17.5	17.5	20.5
		157	5785	17.5	17.5	17.5	17.5	20.5
		165	5825	17.5	17.5	17.5	17.5	20.5
	802.11n-HT40 MCS0	151	5755	17.0	17.0	17.0	17.0	20.0
		159	5795	17.0	17.0	17.0	17.0	20.0
	802.11ac-VHT20 MCS0	149	5745	17.5	17.5	17.5	17.5	20.5
		157	5785	17.5	17.5	17.5	17.5	20.5
		165	5825	17.5	17.5	17.5	17.5	20.5
	802.11ac-VHT40 MCS0	151	5755	16.5	16.5	16.5	16.5	19.5
		159	5795	16.5	16.5	16.5	16.5	19.5
	802.11ac-VHT80 MCS0	155	5775	16.5	16.5	16.5	16.5	19.5



<Power Table 2>

<2.4GHz WLAN>

Transmit Antenna				SISO	SISO	MIMO		
Mode	Channel	Frequency (MHz)		Ant 8 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 8+10(8) Tune-Up Limit	Ant 8+10(10) Tune-Up Limit	Ant 8+10 Tune-Up Limit
2.4GHz WLA	802.11b 1Mbps	1	2412	14.5	14.5	14.5	14.5	17.5
		6	2437	14.5	14.5	14.5	14.5	17.5
		11	2462	14.5	14.5	14.5	14.5	17.5
	802.11g 6Mbps	1	2412	14.5	14.5	14.5	14.5	17.5
		6	2437	14.5	14.5	14.5	14.5	17.5
		11	2462	14.5	14.5	14.5	14.5	17.5
802.11n-HT20 MCS0	1	2412	14.5	14.5	14.5	14.5	17.5	
	6	2437	14.5	14.5	14.5	14.5	17.5	
	11	2462	14.5	14.5	14.5	14.5	17.5	

<5GHz WLAN>

Transmit Antenna				SISO	SISO	MIMO		
Mode	Channel	Frequency (MHz)		Ant 9 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10 Tune-Up Limit
5.2GHz WLAN	802.11a 6Mbps	36	5180	11.5	11.5	11.5	11.5	14.5
		40	5200	11.5	11.5	11.5	11.5	14.5
		44	5220	11.5	11.5	11.5	11.5	14.5
		48	5240	11.5	11.5	11.5	11.5	14.5
	802.11n-HT20 MCS0	36	5180	11.5	11.5	11.5	11.5	14.5
		40	5200	11.5	11.5	11.5	11.5	14.5
		44	5220	11.5	11.5	11.5	11.5	14.5
		48	5240	11.5	11.5	11.5	11.5	14.5
	802.11n-HT40 MCS0	38	5190	11.5	11.5	11.5	11.5	14.5
		46	5230	11.5	11.5	11.5	11.5	14.5
	802.11ac-VHT20 MCS0	36	5180	11.5	11.5	11.5	11.5	14.5
		40	5200	11.5	11.5	11.5	11.5	14.5
		44	5220	11.5	11.5	11.5	11.5	14.5
	802.11ac-VHT40 MCS0	48	5240	11.5	11.5	11.5	11.5	14.5
		38	5190	11.5	11.5	11.5	11.5	14.5
		46	5230	11.5	11.5	11.5	11.5	14.5
	802.11ac-VHT80 MCS0	42	5210	11.5	11.5	11.5	11.5	14.5

Transmit Antenna				SISO	SISO	MIMO		
Mode	Channel	Frequency (MHz)		Ant 9 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10(10) Tune-Up Limit	Ant 9+10 Tune-Up Limit
5.3GHz WLAN	802.11a 6Mbps	52	5260	10.0	10.0	10.0	10.0	13.0
		56	5280	10.0	10.0	10.0	10.0	13.0
		60	5300	10.0	10.0	10.0	10.0	13.0
		64	5320	10.0	10.0	10.0	10.0	13.0
	802.11n-HT20 MCS0	52	5260	10.0	10.0	10.0	10.0	13.0
		56	5280	10.0	10.0	10.0	10.0	13.0
		60	5300	10.0	10.0	10.0	10.0	13.0
		64	5320	10.0	10.0	10.0	10.0	13.0
	802.11n-HT40 MCS0	54	5270	10.0	10.0	10.0	10.0	13.0
		62	5310	10.0	10.0	10.0	10.0	13.0
	802.11ac-VHT20 MCS0	52	5260	10.0	10.0	10.0	10.0	13.0
		56	5280	10.0	10.0	10.0	10.0	13.0
		60	5300	10.0	10.0	10.0	10.0	13.0
		64	5320	10.0	10.0	10.0	10.0	13.0
	802.11ac-VHT40 MCS0	54	5270	10.0	10.0	10.0	10.0	13.0
		62	5310	10.0	10.0	10.0	10.0	13.0
	802.11ac-VHT80 MCS0	58	5290	10.0	10.0	10.0	10.0	13.0



Transmit Antenna				SISO	SISO	MIMO		
Mode	Channel	Frequency (MHz)	Ant 9 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10(10) Tune-Up Limit	Ant 9+10 Tune-Up Limit	
5.5GHz WLAN	802.11a 6Mbps	100	5500	13.5	13.5	13.5	13.5	16.5
		116	5580	13.5	13.5	13.5	13.5	16.5
		124	5620	13.5	13.5	13.5	13.5	16.5
		132	5660	13.5	13.5	13.5	13.5	16.5
		140	5700	13.5	13.5	13.5	13.5	16.5
		144	5720	13.5	13.5	13.5	13.5	16.5
	802.11n-HT20 MCS0	100	5500	13.5	13.5	13.5	13.5	16.5
		116	5580	13.5	13.5	13.5	13.5	16.5
		124	5620	13.5	13.5	13.5	13.5	16.5
		132	5660	13.5	13.5	13.5	13.5	16.5
		140	5700	13.5	13.5	13.5	13.5	16.5
	802.11n-HT40 MCS0	102	5510	13.5	13.5	13.5	13.5	16.5
		110	5550	13.5	13.5	13.5	13.5	16.5
		126	5630	13.5	13.5	13.5	13.5	16.5
		134	5670	13.5	13.5	13.5	13.5	16.5
	802.11ac-VHT20 MCS0	100	5500	13.5	13.5	13.5	13.5	16.5
		116	5580	13.5	13.5	13.5	13.5	16.5
		124	5620	13.5	13.5	13.5	13.5	16.5
		132	5660	13.5	13.5	13.5	13.5	16.5
		140	5700	13.5	13.5	13.5	13.5	16.5
	802.11ac-VHT40 MCS0	102	5510	13.5	13.5	13.5	13.5	16.5
		110	5550	13.5	13.5	13.5	13.5	16.5
		126	5630	13.5	13.5	13.5	13.5	16.5
		134	5670	13.5	13.5	13.5	13.5	16.5
	802.11ac-VHT80 MCS0	106	5530	13.5	13.5	13.5	13.5	16.5
		122	5610	13.5	13.5	13.5	13.5	16.5
		138	5690	13.5	13.5	13.5	13.5	16.5

Transmit Antenna				SISO	SISO	MIMO		
Mode	Channel	Frequency (MHz)	Ant 9 Tune-Up Limit	Ant 10 Tune-Up Limit	Ant 9+10(9) Tune-Up Limit	Ant 9+10(10) Tune-Up Limit	Ant 9+10 Tune-Up Limit	
5.8GHz WLAN	802.11a 6Mbps	149	5745	13.5	13.5	13.5	13.5	16.5
		157	5785	13.5	13.5	13.5	13.5	16.5
		165	5825	13.5	13.5	13.5	13.5	16.5
	802.11n-HT20 MCS0	149	5745	13.5	13.5	13.5	13.5	16.5
		157	5785	13.5	13.5	13.5	13.5	16.5
		165	5825	13.5	13.5	13.5	13.5	16.5
	802.11n-HT40 MCS0	151	5755	13.5	13.5	13.5	13.5	16.5
		159	5795	13.5	13.5	13.5	13.5	16.5
	802.11ac-VHT20 MCS0	149	5745	13.5	13.5	13.5	13.5	16.5
		157	5785	13.5	13.5	13.5	13.5	16.5
		165	5825	13.5	13.5	13.5	13.5	16.5
	802.11ac-VHT40 MCS0	151	5755	13.5	13.5	13.5	13.5	16.5
		159	5795	13.5	13.5	13.5	13.5	16.5
	802.11ac-VHT80 MCS0	155	5775	13.5	13.5	13.5	13.5	16.5

<Default Power Table>

Mode	Average power (dBm)				
	BR / EDR			LE	
	1Mbps	2Mbps	3Mbps	1Mbps	2Mbps
Tune-up Limit	13.00	12.50	12.50	7.50	7.50



3.3 General 5G NR and LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																																										
FCC ID	2AJOTTA-1257																																																																									
Equipment Name	Smart Phone																																																																									
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 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 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																																									
uplink modulations used	QPSK / 16QAM / 64QAM																																																																									
LTE Voice / Data requirements	Voice and Data																																																																									
LTE MPR permanently built-in by design	<p align="center">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>												Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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	The device has several different power modes for head / hotspot conditions SAR compliance; power selection is determined by the device's positioning and usage scenarios.																																																																									
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section13																																																																									
LTE Carrier Aggregation Additional Information	This device supports maximum of 4 carriers in the downlink and 2 carriers in the uplink. 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)	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)	Ch. #	Freq. (MHz)		
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				
LTE Band 12												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	23017	699.7	23025	700.5	23035	701.5	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711				
LTE Band 13												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)					
L	23205		779.5		23230		782					
M	23230		782									
H	23255		784.5									
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 48												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560				
L	55810	3607	55815	3607.5	55820	3608	55830	3609				
M	56170	3643	56165	3642.5	56160	3642	56150	3641				
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690				



5G NR Information								
FCC ID	2AJOTTA-1257							
Equipment Name	Smart Phone							
Operating Frequency Range of each 5G NR transmission band	5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz							
Channel Bandwidth	5G NR n2: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz							
SCS	FDD: SCS15KHz							
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM							
A-MPR (Additional MPR) disabled for SAR Testing?	Yes							
LTE Anchor Bands for n2	LTE B5/13/66							
LTE Anchor Bands for n5	LTE B2/66							
LTE Anchor Bands for n66	LTE B2/5/13/66							
Transmission (H, M, L) channel numbers and frequencies in each 5G NR band								
NR Band 2								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900
NR Band 5								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839
NR Band 66								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720
M	349000	1745	349000	1745	349000	1745	349000	1745
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770

4. Smart Transmit feature for RF Exposure compliance

The FCC RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 6GHz). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for Smart Transmit. SAR char will be entered via the Embedded File System (EFS) to enable the Smart Transmit Feature.

<Terminologies in this report>

P_{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P_{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory power density limit to account for all device design related uncertainties.
SAR char	P_{limit} for all the technologies/bands for all applicable DSI

<SAR Characterization>

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for $f < 6$ GHz.

<SAR design target and uncertainty>

Exposure conditions	Trigger Conditions	DSI	SAR design target	W/kg	Remark
Head	Earpiece on	2	1g SAR design target	0.79	Head
Body Worn	n/a	3	1g SAR design target	0.79	Body Worn
Hotspot	Hotspot om	4	1g SAR design target	0.79	Hotspot

Item	Uncertainty dB (k=2)
Total uncertainty	1.0

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR_{design_target} < SAR_{regulatory_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target or PD_design_target, below the predefined time-averaged power limit (i.e., input.power.limit for 5G mmW NR), for each characterized technology and band (refer to RF exposure part0 report)

Smart Transmit allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI).

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

Config 0

Band	Antenna	Head	Hotspot	Body Worn	Pmax*
		(DSI:2)	(DSI4)	(DSI3)	
GSM850(2 Tx slots)**	0	31.2	29.2	29.2	23.0
GSM1900(2 Tx slots)**	2	32.6	25.1	27.4	20.5
WCDMA II	2	31.5	25.0	27.1	23.0
WCDMA IV	2	33.3	26.5	28.3	23.0
WCDMA V	0	30.0	27.4	27.4	23.0
LTE B2	2	31.7	24.9	27.3	22.0
LTE B66/4	2	32.1	25.5	27.6	22.0
LTE B5	0	30.2	27.5	27.5	22.0
LTE B7	2	31.2	25.1	25.8	22.0
LTE B12/B17	0	33.7	31.8	31.8	22.0
LTE B13	0	32.8	31.3	30.3	22.0
LTE B48**	4	15.3	18.0	22.8	20.0
FR1 n2	2	34.2	25.1	27.8	23.0
FR1 n5	0	37.6	32.7	32.7	23.0
FR1 n66	2	34.3	27.8	29.4	23.0

Config 1

Band	Antenna	Head	Hotspot	Body Worn	Pmax*
		(DSI:2)	(DSI4)	(DSI3)	
GSM850(2 Tx slots)**	1	24.2	27.7	27.7	22.0
GSM1900(2 Tx slots)**	6	19.8	29.2	29.3	20.0
WCDMA II	6	20.6	27.5	28.6	22.5
WCDMA IV	6	20.4	26.4	28.6	22.5
WCDMA V	1	27.3	29.3	29.3	22.5
LTE B2	6	20.9	27.5	29.2	22.0
LTE B66/4	6	19.2	26.4	29.2	22.0
LTE B5	1	23.0	27.7	27.7	22.0
LTE B7	6	17.9	23.1	25.1	22.0
LTE B12/B17	1	24.8	30.5	30.4	22.0
LTE B13	1	25.1	29.9	29.9	22.0
LTE B48**	0	43.8	26.3	28.0	20.0
FR1 n2	6	21.3	28.8	29.8	23.0
FR1 n5	1	28.4	32.6	32.6	22.0
FR1 n66	6	20.7	27.0	29.5	22.0

* P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to $P_{max} + 1\text{dB}$ uncertainty.

**All P_{limit} power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM & LTE TDD & NR TDD).

The max allowed output power is the $P_{limit} + 1\text{dB}$ device uncertainty, and if P_{limit} is higher than P_{max} , the device output power will be P_{max} instead.



5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

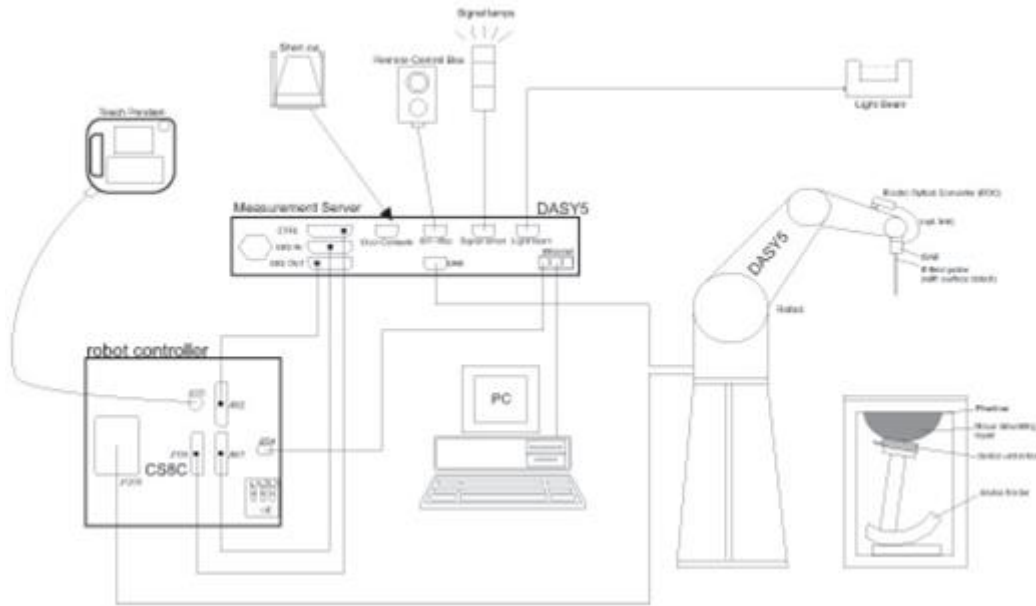
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

The DASYS 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 DASYS software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

7.1 Test Side Location


Sporton Lab and below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 0007) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

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


7.2 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

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

7.3 Data Acquisition Electronics (DAE)

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


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



Fig 5.1 Photo of DAE


7.4 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

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

7.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

8.1 Spatial Peak SAR Evaluation

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

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

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

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

8.2 Power Reference Measurement

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

8.3 Area Scan

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

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

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

8.4 Zoom Scan

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

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

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

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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



9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit ⁽²⁾	D750V3	1107	Mar. 08, 2019	Mar. 06, 2021
SPEAG	835MHz System Validation Kit	D835V2	4d167	Nov. 25, 2019	Nov. 24, 2020
SPEAG	1750MHz System Validation Kit ⁽²⁾	D1750V2	1112	Mar. 07, 2019	Mar. 05, 2021
SPEAG	1900MHz System Validation Kit ⁽²⁾	D1900V2	5d185	Mar. 07, 2019	Mar. 05, 2021
SPEAG	2450MHz System Validation Kit ⁽²⁾	D2450V2	736	Aug. 31, 2018	Aug. 29, 2020
SPEAG	2600MHz System Validation Kit ⁽²⁾	D2600V2	1078	Mar. 06, 2019	Mar. 04, 2021
SPEAG	3700MHz System Validation Kit ⁽²⁾	D3700V2	1006	Mar. 05, 2019	Mar. 03, 2021
SPEAG	5GHz System Validation Kit ⁽²⁾	D5GHzV2	1006	Sep. 27, 2018	Sep. 25, 2020
SPEAG	Data Acquisition Electronics	DAE4	316	Dec. 20, 2019	Dec. 19, 2020
SPEAG	Data Acquisition Electronics	DAE4	778	Jun. 04, 2020	Jun. 03, 2021
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 23, 2020	Jul. 22, 2021
SPEAG	Data Acquisition Electronics	DAE4	1311	Aug. 27, 2019	Aug. 26, 2020
SPEAG	Dosimetric E-Field Probe	ES3DV3	3124	Dec. 18, 2019	Dec. 17, 2020
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	Sep. 20, 2019	Sep. 19, 2020
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 26, 2019	Sep. 25, 2020
RCPTWN	Thermometer	HTC-1	TM685-1	Nov. 12, 2019	Nov. 11, 2020
RCPTWN	Thermometer	HTC-1	TM560-2	Nov. 12, 2019	Nov. 11, 2020
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Oct. 31, 2019	Oct. 30, 2020
Agilent	Wireless Communication Test Set	E5515C	MY50267236	Mar. 18, 2020	Mar. 17, 2021
R&S	BT Base Station	CBT	100815	Feb. 15, 2020	Feb. 14, 2021
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Nov. 20, 2019	Nov. 19, 2020
Agilent	ENA Network Analyzer	E5071C	MY46104758	Sep. 06, 2019	Sep. 05, 2020
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 18, 2019	Sep. 17, 2020
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Nov. 18, 2019	Nov. 17, 2020
Anritsu	Power Meter	ML2495A	0932001	Oct. 03, 2019	Oct. 02, 2020
Anritsu	Power Sensor	MA2411B	0846202	Oct. 03, 2019	Oct. 02, 2020
Anritsu	Power Meter	ML2495A	1218006	Oct. 14, 2019	Oct. 13, 2020
Anritsu	Power Sensor	MA2411B	1207363	Oct. 14, 2019	Oct. 13, 2020
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 27, 2019	Aug. 26, 2020
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Mar. 12, 2020	Mar. 11, 2021
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 16, 2019	Oct. 15, 2020
Mini-Circuits	Power Amplifier	ZHL-42W+	321501827	Aug. 06, 2020	Aug. 05, 2021
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005-3	N/A	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

10. System Verification

10.1 Tissue 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.

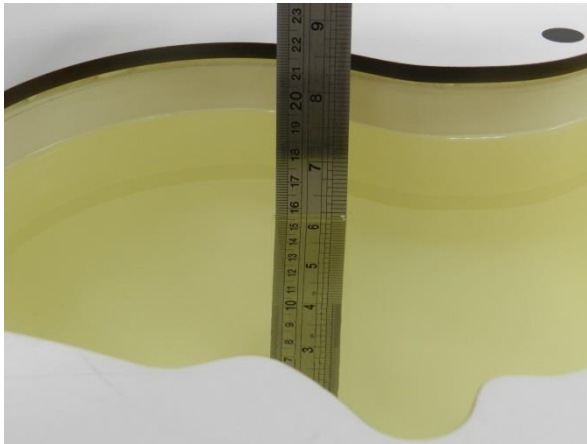


Fig 10.1 Photo of Liquid Height for Head SAR

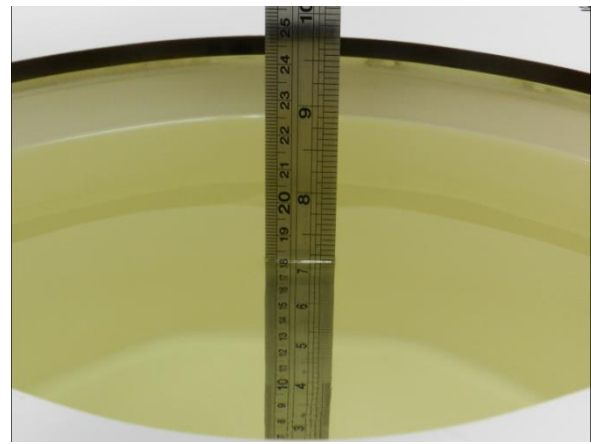


Fig 10.2 Photo of Liquid Height for Body SAR

**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 (ϵ_r)
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

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)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
750	22.6	0.894	43.269	0.89	41.90	0.45	3.27	±5	2020/8/4
750	22.5	0.899	43.718	0.89	41.90	1.01	4.34	±5	2020/8/5
750	22.4	0.898	42.908	0.89	41.90	0.90	2.41	±5	2020/8/10
835	22.5	0.934	43.410	0.90	41.50	3.78	4.60	±5	2020/7/27
835	22.5	0.875	41.872	0.90	41.50	-2.78	0.90	±5	2020/7/31
835	22.5	0.901	42.474	0.90	41.50	0.11	2.35	±5	2020/8/1
835	22.5	0.894	42.600	0.90	41.50	-0.67	2.65	±5	2020/8/10
835	22.5	0.870	42.657	0.90	41.50	-3.33	2.79	±5	2020/8/26
1750	22.5	1.404	40.700	1.37	40.10	2.48	1.50	±5	2020/7/27
1750	22.5	1.348	40.856	1.37	40.10	-1.61	1.89	±5	2020/7/31
1750	22.3	1.349	40.468	1.37	40.10	-1.53	0.92	±5	2020/8/3
1750	22.5	1.371	41.630	1.37	40.10	0.07	3.82	±5	2020/8/5
1750	22.6	1.360	40.072	1.37	40.10	-0.73	-0.07	±5	2020/8/11
1750	22.4	1.373	40.944	1.37	40.10	0.22	2.10	±5	2020/8/25
1900	22.5	1.390	38.710	1.40	40.00	-0.71	-3.23	±5	2020/7/27
1900	22.5	1.425	39.537	1.40	40.00	1.79	-1.16	±5	2020/7/28
1900	22.5	1.416	39.159	1.40	40.00	1.14	-2.10	±5	2020/8/2
1900	22.4	1.405	38.726	1.40	40.00	0.36	-3.19	±5	2020/8/8
1900	22.6	1.453	39.427	1.40	40.00	3.79	-1.43	±5	2020/8/11
1900	22.4	1.452	38.360	1.40	40.00	3.71	-4.10	±5	2020/8/25
2450	22.3	1.830	38.675	1.80	39.20	1.67	-1.34	±5	2020/7/26
2450	22.5	1.773	38.515	1.80	39.20	-1.50	-1.75	±5	2020/8/26
2600	22.6	1.969	38.151	1.96	39.00	0.46	-2.18	±5	2020/8/4
2600	22.6	2.004	38.426	1.96	39.00	2.24	-1.47	±5	2020/8/11
2600	22.4	1.944	38.151	1.96	39.00	-0.82	-2.18	±5	2020/8/25
3700	22.7	3.103	37.498	3.12	37.70	-0.54	-0.54	±5	2020/8/24
3700	22.4	3.119	37.698	3.12	37.70	-0.03	-0.01	±5	2020/8/25
5250	22.5	4.502	35.631	4.71	35.95	-4.42	-0.89	±5	2020/7/25
5250	22.3	4.538	36.189	4.71	35.95	-3.65	0.66	±5	2020/7/26
5250	22.6	4.621	37.433	4.71	35.95	-1.89	4.13	±5	2020/7/28
5250	22.5	4.619	35.835	4.71	35.95	-1.93	-0.32	±5	2020/8/22
5250	22.4	4.530	36.815	4.71	35.95	-3.82	2.41	±5	2020/8/23
5250	22.2	4.541	36.991	4.71	35.95	-3.59	2.90	±5	2020/8/25
5600	22.5	4.835	35.173	5.07	35.50	-4.64	-0.92	±5	2020/7/25
5600	22.3	4.873	35.620	5.07	35.50	-3.89	0.34	±5	2020/7/26
5600	22.6	4.981	36.949	5.07	35.50	-1.76	4.08	±5	2020/7/28
5600	22.5	4.960	35.324	5.07	35.50	-2.17	-0.50	±5	2020/8/22
5600	22.4	4.877	36.328	5.07	35.50	-3.81	2.33	±5	2020/8/23
5600	22.2	4.880	36.479	5.07	35.50	-3.75	2.76	±5	2020/8/25
5750	22.5	4.987	34.987	5.22	35.35	-4.46	-1.03	±5	2020/7/25
5750	22.3	5.053	35.610	5.22	35.35	-3.20	0.74	±5	2020/7/26
5750	22.6	5.136	36.687	5.22	35.35	-1.61	3.78	±5	2020/7/28
5750	22.5	5.116	35.117	5.22	35.35	-1.99	-0.66	±5	2020/8/22
5750	22.4	5.029	36.130	5.22	35.35	-3.66	2.21	±5	2020/8/23
5750	22.2	5.043	36.259	5.22	35.35	-3.39	2.57	±5	2020/8/25



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)	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 (%)
2020/8/4	750	250	D750V3-1107	EX3DV4 - SN3931	DAE4 Sn1311	2.01	8.32	8.04	-3.37
2020/8/5	750	250	D750V3-1107	EX3DV4 - SN3931	DAE4 Sn1311	2.02	8.32	8.08	-2.88
2020/8/10	750	250	D750V3-1107	ES3DV3 - SN3124	DAE4 Sn316	2.05	8.32	8.2	-1.44
2020/7/27	835	250	D835V2-4d167	EX3DV4 - SN3931	DAE4 Sn1311	2.43	9.55	9.72	1.78
2020/7/31	835	250	D835V2-4d167	EX3DV4 - SN3931	DAE4 Sn1311	2.28	9.55	9.12	-4.50
2020/8/1	835	50	D835V2-4d167	EX3DV4 - SN3931	DAE4 Sn1311	0.474	9.55	9.48	-0.73
2020/8/10	835	250	D835V2-4d167	ES3DV3 - SN3124	DAE4 Sn316	2.38	9.55	9.52	-0.31
2020/8/26	835	250	D835V2-4d167	EX3DV4 - SN3925	DAE4 Sn778	2.34	9.55	9.36	-1.99
2020/7/27	1750	250	D1750V2-1112	EX3DV4 - SN3931	DAE4 Sn1311	9.22	36.70	36.88	0.49
2020/7/31	1750	250	D1750V2-1112	EX3DV4 - SN3931	DAE4 Sn1311	8.85	36.70	35.4	-3.54
2020/8/3	1750	250	D1750V2-1112	EX3DV4 - SN3931	DAE4 Sn1311	9.39	36.70	37.56	2.34
2020/8/5	1750	250	D1750V2-1112	EX3DV4 - SN3931	DAE4 Sn1311	9.00	36.70	36	-1.91
2020/8/11	1750	250	D1750V2-1112	ES3DV3 - SN3124	DAE4 Sn316	8.89	36.70	35.56	-3.11
2020/8/25	1750	250	D1750V2-1112	EX3DV4 - SN3925	DAE4 Sn778	9.36	36.70	37.44	2.02
2020/7/27	1900	250	D1900V2-5d185	EX3DV4 - SN3931	DAE4 Sn1311	9.75	39.40	39	-1.02
2020/7/28	1900	250	D1900V2-5d185	EX3DV4 - SN3931	DAE4 Sn1311	10.00	39.40	40	1.52
2020/8/2	1900	50	D1900V2-5d185	EX3DV4 - SN3931	DAE4 Sn1311	2.05	39.40	41	4.06
2020/8/8	1900	50	D1900V2-5d185	EX3DV4 - SN3931	DAE4 Sn1311	2.03	39.40	40.6	3.05
2020/8/11	1900	250	D1900V2-5d185	ES3DV3 - SN3124	DAE4 Sn316	9.87	39.40	39.48	0.20
2020/8/25	1900	250	D1900V2-5d185	EX3DV4 - SN3925	DAE4 Sn778	9.90	39.40	39.6	0.51
2020/7/26	2450	250	D2450V2-736	EX3DV4 - SN3931	DAE4 Sn1311	13.40	52.70	53.6	1.71
2020/8/26	2450	250	D2450V2-736	EX3DV4 - SN3925	DAE4 Sn778	12.30	52.70	49.2	-6.64
2020/8/4	2600	250	D2600V2-1078	EX3DV4 - SN3931	DAE4 Sn1311	14.40	57.60	57.6	0.00
2020/8/11	2600	250	D2600V2-1078	ES3DV3 - SN3124	DAE4 Sn316	13.60	57.60	54.4	-5.56
2020/8/25	2600	250	D2600V2-1078	EX3DV4 - SN3925	DAE4 Sn778	13.50	57.60	54	-6.25
2020/8/24	3700	100	D3700V2-1006	EX3DV4 - SN3931	DAE4 Sn853	6.70	67.30	67	-0.45
2020/8/25	3700	100	D3700V2-1006	EX3DV4 - SN3925	DAE4 Sn778	7.14	67.30	71.4	6.09
2020/7/25	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn1311	8.77	80.70	87.7	8.67
2020/7/26	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn1311	8.10	80.70	81	0.37
2020/7/28	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn1311	7.75	80.70	77.5	-3.97
2020/8/22	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn853	7.97	80.70	79.7	-1.24
2020/8/23	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn853	8.23	80.70	82.3	1.98
2020/8/25	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn853	8.45	80.70	84.5	4.71
2020/7/25	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn1311	8.08	83.30	80.8	-3.00
2020/7/26	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn1311	8.16	83.30	81.6	-2.04
2020/7/28	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn1311	8.34	83.30	83.4	0.12
2020/8/22	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn853	8.43	83.30	84.3	1.20
2020/8/23	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn853	8.47	83.30	84.7	1.68
2020/8/25	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn853	8.87	83.30	88.7	6.48
2020/7/25	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn1311	7.44	80.40	74.4	-7.46
2020/7/26	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn1311	7.59	80.40	75.9	-5.60
2020/7/28	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn1311	7.31	80.40	73.1	-9.08
2020/8/22	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn853	8.00	80.40	80	-0.50
2020/8/23	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn853	7.96	80.40	79.6	-1.00
2020/8/25	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn853	7.96	80.40	79.6	-1.00

Date	Frequency (MHz)	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 (%)
2020/7/28	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn1311	2.24	23.20	22.4	-3.45
2020/7/28	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn1311	2.36	23.80	23.6	-0.84

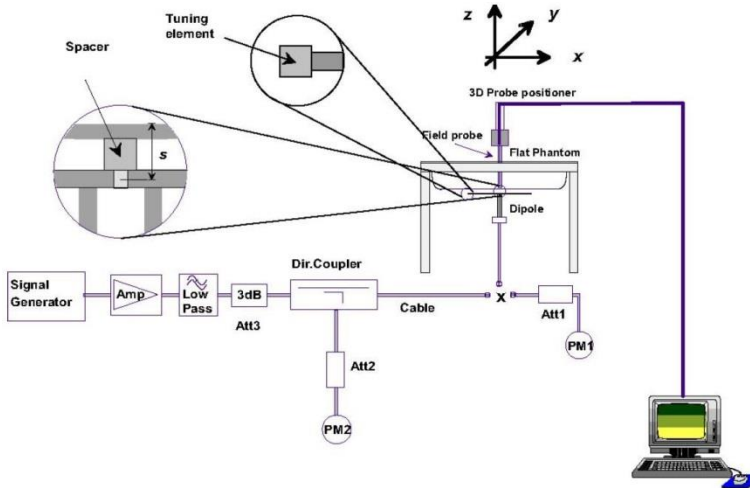


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

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

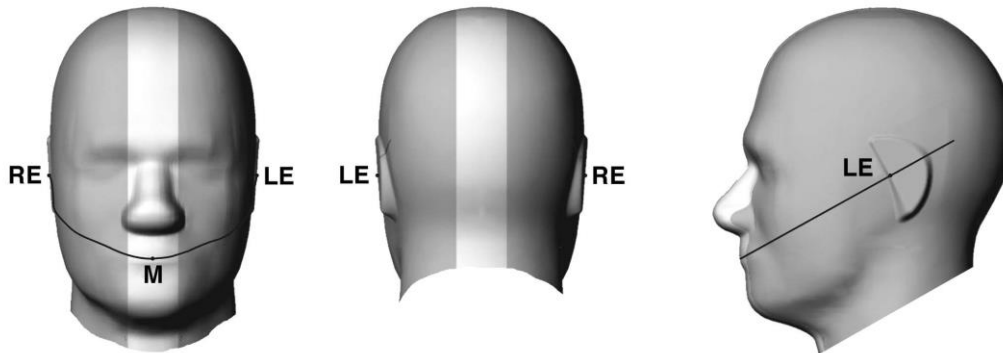


Fig 9.1.1 Front, back, and side views of SAM twin phantom

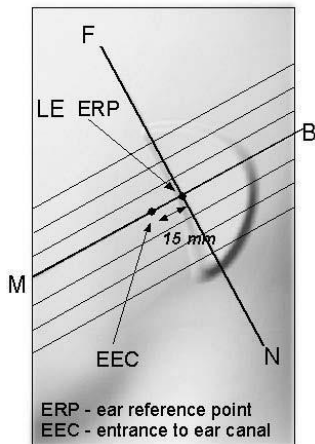


Fig 9.1.2 Close-up side view of phantom showing the ear region.

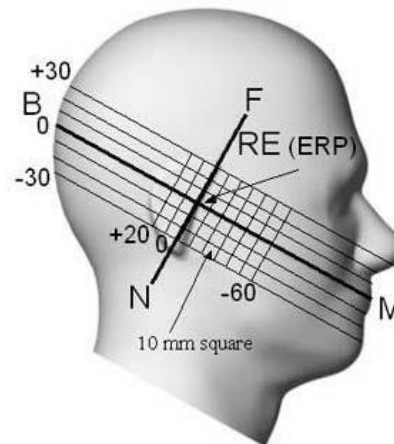


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

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

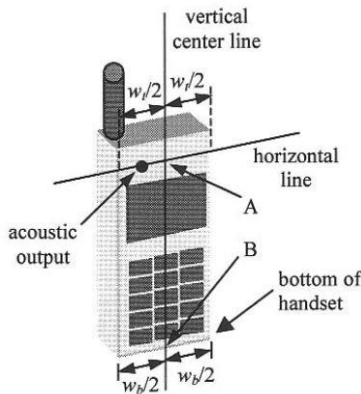


Fig 9.2.1 Handset vertical and horizontal reference lines—“fixed case”

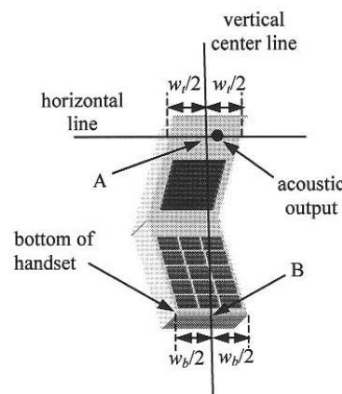


Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

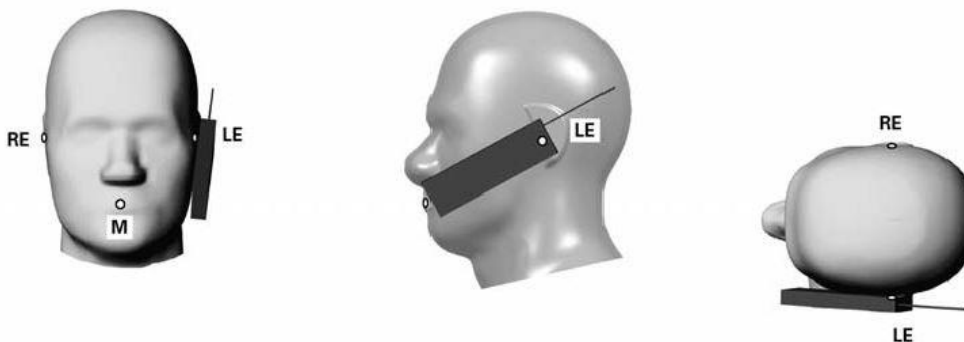


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

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

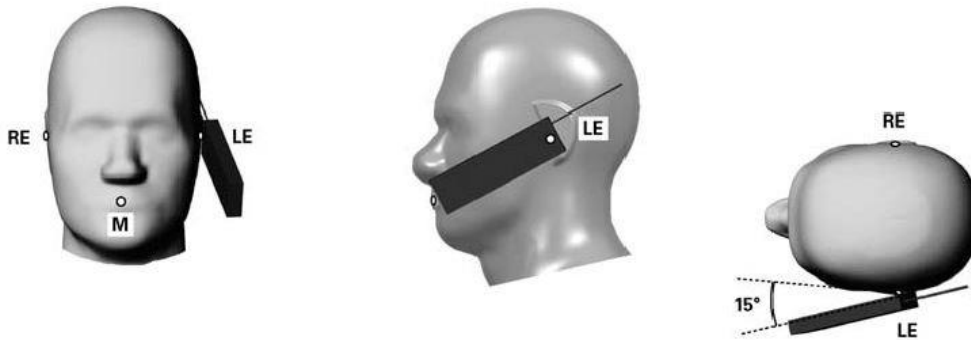


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

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

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

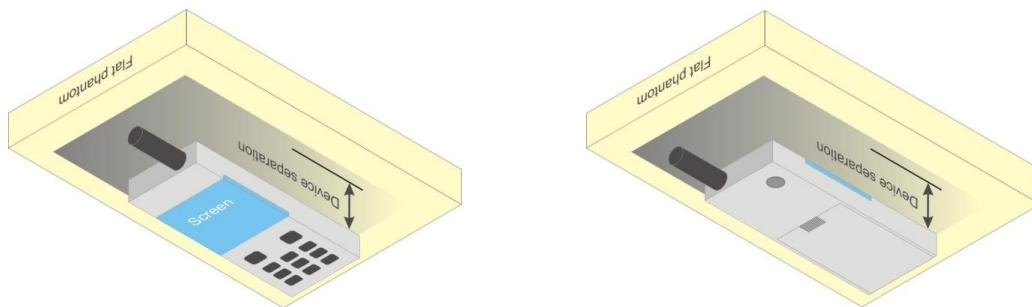


Fig 9.4 Body Worn Position



11.5 Product Specific Exposure

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

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

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets ($L \times W \geq 9$ 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 from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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



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

Power measurements for licensed transmitters are performed using a base station simulator under digital average power, and the detail output power measurement include in appendix D

<GSM Conducted Power>

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.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode, SAR measurement is not required for the secondary mode

<WCDMA Conducted Power>

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than $\frac{1}{4}$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.
3. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
4. 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.
5. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCl
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

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

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

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

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

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

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

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

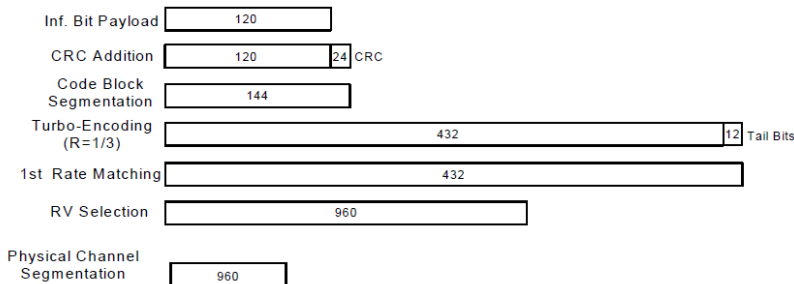
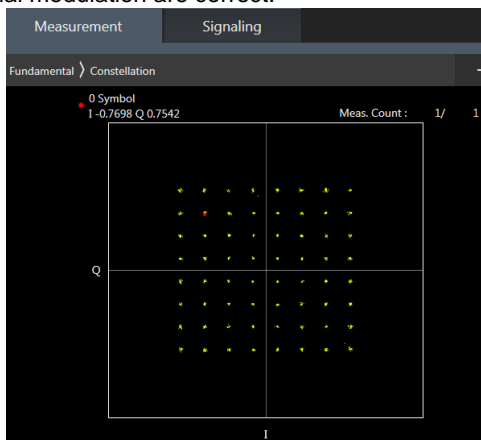


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

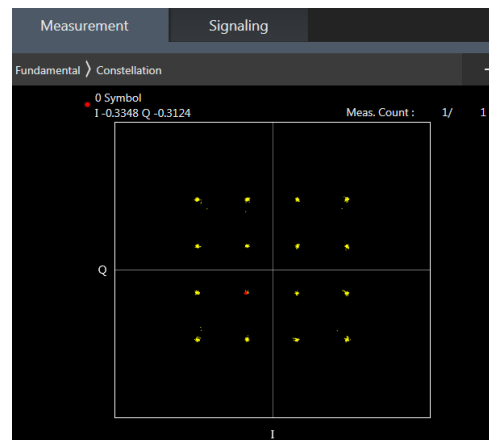
Setup Configuration

<LTE Note>

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B5/B12 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 \leq the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

- a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
- c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

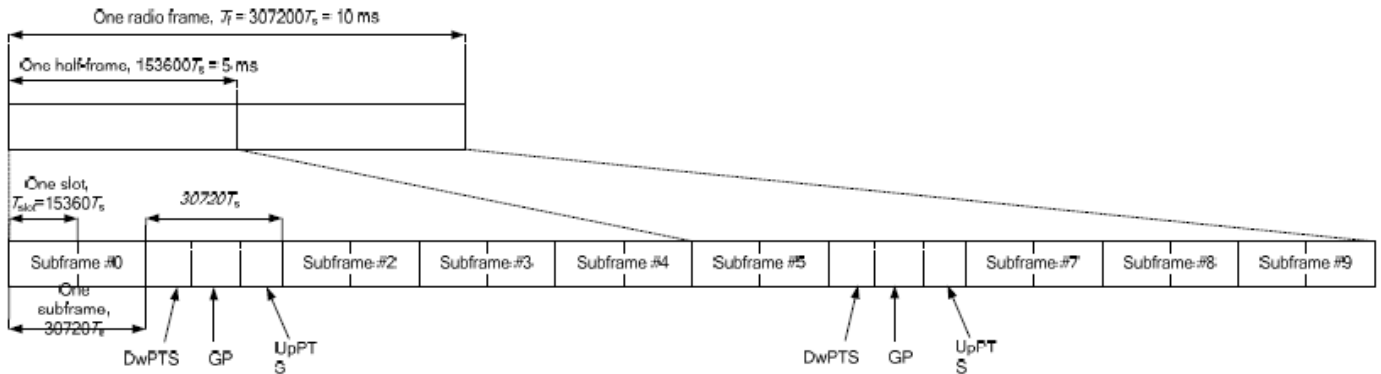


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

- i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subframes, uplink operation is in 3 uplink subframes and 1 special subframe.
- ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
- iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.167)/5 = 63.3\%$
- iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.143)/5 = 62.9\%$
- v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

<5G FR1 Note>

1. NR implementation of n2, n5 and n66 EN-DC operations with LTE Bands 2/5/13/66 acting as anchor bands, SAR tests for NR Bands and LTE Anchors Bands were performed separately due to limitations in SAR probe calibration factors. The detail EN-DC combination includes in section3.3, and only 5G FR1 n2 support NSA and SA mode.
2. 5G NR support SCS 15KHz for FDD, DFT-s/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM and support Bandwidth include in section3.3
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
 - a. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 2 and 3, the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-s-Pi/2 BPSK and the reported SAR for the DFT-s-Pi/2 BPSK configuration is ≤ 1.45 W/kg; CP-OFDM measurement is unnecessary.
 - b. For DFT-s-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, full measurement on Pi/2 BPSK/QPSK with larger bandwidth, for 16QAM/64QMA/256QAM output power will spot check 1RB 1offset configuration to ensure output power will not ½ dB higher than Pi/ BPSK. For smaller bandwidth output power will spot check 1RB 1offset configuration at Pi/2 BPSK to ensure output power will not ½ dB higher than largest supported bandwidth.
 - c. SAR testing start with the largest channel bandwidth and measure SAR for Pi/2 BPSK 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.
 - d. 50% RB allocation for Pi/2 BPSK SAR testing follows 1RB Pi/2 BPSK allocation procedure
 - e. Pi/2 BPSK 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.
 - f. QPSK/16QAM/64QAM/256QAM output powers are not ½ dB higher than the same configuration in Pi/2 BPSK, also reported SAR for the Pi/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - g. Smaller bandwidth output power for each RB allocation configuration for this device will 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, smaller bandwidth SAR testing is not required for this device

<3GPP 38.101 MPR for EN-DC>

Table 6.2.2-1 Maximum power reduction (MPR) for power class 3

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5 ¹	≤ 1.2 ¹	≤ 0.2 ¹
		≤ 0.5 ²	≤ 0.5 ²	0 ²
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM		≤ 2.5	
CP-OFDM	256 QAM		≤ 4.5	
		QPSK	≤ 3	≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM		≤ 3.5	
	256 QAM		≤ 6.5	

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26 dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

Table 6.2.2-2 Maximum power reduction (MPR) for power class 2

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5	≤ 0.5	0
	QPSK	≤ 3.5	≤ 1	0
	16 QAM	≤ 3.5	≤ 2	≤ 1
	64 QAM	≤ 3.5		≤ 2.5
	256 QAM		≤ 4.5	
CP-OFDM	QPSK	≤ 3.5	≤ 3	≤ 1.5
		16 QAM	≤ 3.5	≤ 3
	64 QAM		≤ 3.5	
	256 QAM		≤ 6.5	

**<WLAN>**

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

<Bluetooth>

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.75% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation, for the duty cycle figure include in appendix D.



13. DL/UL carrier aggregation

<LTE Carrier Aggregation combinations>

General Note:

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

2CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation			4CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset
1	13A-4A		26	2A-2A-4A	82	82	2A-2A-4A-4A	
2	13A-66A		27	2A-2A-5A	84	83	2A-2A-4A-5A	
3	13A-2A		28	2A-2A-13A	85	84	2A-2A-5A-66A	
4	2A-2A	26	29	2A-2A-66A	86	85	2A-2A-13A-66A	
5	2A-4A	30	30	2A-4A-4A	89	86	2A-2A-66A-66A	
6	2A-66A	36	31	2A-4A-5A	90	87	2A-2A-66B	88
7	2A-5A	33	32	2A-4A-13A		88	2A-2A-66C	
8	4A-5A	41	33	2A-5A-66A	91	89	2A-4A-4A-5A	
9	5A-66A	43	34	2A-5B	90	90	2A-4A-5B	
10	4A-4A	39	35	2A-13A-66A	95	91	2A-5A-66A-66A	
11	5B	37	36	2A-66A-66A	104	92	2A-5A-66B	93
12	5A-5A	42	37	2A-66B	28	93	2A-5A-66C	
13	66A-66A	51	38	2A-66C	96	94	2A-13A-66A-66A	
14	66B	15	39	4A-4A-5A	97	95	2A-13A-66B	96
15	66C	38	40	4A-4A-13A		96	2A-13A-66C	
16	2A-46A	52	41	4A-5B	97	97	4A-4A-5B	
17	4A-46A	54	42	5A-5A-66A	98	98	5A-5A-66A-66A	
18	13A-46A	57	43	5A-66A-66A	101	99	5A-5A-66B	100
19	5A-46A	62	44	5A-66B	35	100	5A-5A-66C	
20	2A-48A	66	45	5A-66C	103	101	5B-66A-66A	
21	4A-48A	67	46	5B-66A	102	102	5B-66B	103
22	13A-48A	68	47	13A-66A-66A	105	103	5B-66C	
23	48A-66A	72	48	13A-66B	39	104	2A-66A-66A-66A	
24	48C	76	49	13A-66C	126	105	13A-66A-66A-66A	
25	5A-48A	81	50	66A-66C		106	2A-46A-46C	
			51	66A-66A-66A	104	107	2A-2A-46C	
			52	2A-46A-46A	106	108	5B-46C	
			53	2A-46C	109	109	2A-46D	
			54	4A-46A-46A	110	110	4A-46A-46C	
			55	4A-46C	111	111	4A-46D	
			56	5A-46C	112	112	5A-46D	
			57	13A-46C	113	113	13A-46D	
			58	2A-5A-46A	114	114	2A-5A-46C	
			59	2A-13A-46A	115	115	2A-13A-46C	
			60	2A-46A-66A	116	116	2A-46C-66A	
			61	5A-46A-66A	117	117	5A-46C-66A	
			62	5B-46A	108	118	13A-46C-66A	
			63	13A-46A-66A	118	119	2A-13A-48C	
			64	2A-48A-48A	120	120	2A-48A-48C	
			65	2A-48A-66A	121	121	2A-48C-66A	
			66	2A-48C	123	122	4A-48D	
			67	4A-48C	122	123	2A-48D	



			68	13A-48A-48A	127	124	13A-48C-66A	
			69	13A-48A-66A	125	125	13A-48A-66B	126
			70	13A-48C	124	126	13A-48A-66C	
			71	48A-48A-66A	128	127	13A-48A-48C	
			72	48A-66A-66A	132	128	48A-48A-66A-66A	
			73	48A-66B	135	129	48A-48A-66B	130
			74	48A-66C	136	130	48A-48A-66C	
			75	48C-66A	136	131	48A-48C-66A	
			76	48D	134	132	48A-66A-66A-66A	
			77	2A-13A-48A	119	133	48C-66A-66A	
			78	2A-5A-48A	137	134	48D-66A	135
			79	5A-48A-48A	138	135	48C-66B	136
			80	5A-48A-66A	139	136	48C-66C	
			81	5A-48C	139	137	2A-5A-48C	
						138	5A-48A-48C	
						139	5A-48C-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.

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

<Ant 0>

<DSI 0>

<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)
Inter-Band	13A-4A	13	10	782	23230	QPSK	1	0	4	20	2132.5	2175	22.47	22.61
	13A-66A	13	10	782	23230	QPSK	1	0	66	20	2155	66886	22.56	22.61
	13A-2A	13	10	782	23230	QPSK	1	0	2	20	1960	900	22.71	22.61

<Four Carrier power verification>

Configure	CA Configuration (BCS)	PCC								SCC1				SCC2				SCC3				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)	
Inter-Band	5A-5A-66A-66A	5	10	829	20450	QPSK	1	0	5	5	891.5	2625	66	20	2155	66886	66	5	2197.5	67311	21.70	21.87	
	5A-5A-66C	5	10	829	20450	QPSK	1	0	5	5	891.5	2625	66	20	2155	66886	66	20	2174.8	67084	21.73	21.87	
	5B-66A-66A	5	10	829	20450	QPSK	1	0	5	10	898.9	2699	66	20	2155	66886	66	5	2197.5	67311	21.97	21.87	
	5B-66C	5	10	829	20450	QPSK	1	0	5	10	838.9	20549	66	20	2155	66886	66	20	2190	67236	21.96	21.87	
	13A-66A-66A-66A	13	10	782	23230	QPSK	1	0	66	20	2155	66886	66	20	2199.3	67329	66	5	2197.5	67311	22.45	22.61	
	5B-46C	5	10	829	20450	QPSK	1	0	5	10	838.9	20549	46	20	5537.5	50665	46	20	5557.3	50883	21.76	21.87	
	5A-46D	5	10	829	20450	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	22.07	21.87	
	13A-46D	13	10	782	23230	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	22.55	22.61	
	5A-46C-66A	5	10	829	20450	QPSK	1	0	46	20	5537.5	50665	46	20	5557.3	50883	66	20	2155	66886	21.79	21.87	
	13A-46C-66A	13	10	782	23230	QPSK	1	0	46	20	5537.5	50665	46	20	5557.3	50883	66	20	2155	66886	22.69	22.61	
	13A-48C-66A	13	10	782	23230	QPSK	1	0	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	22.68	22.61	
	13A-48A-66C	13	10	782	23230	QPSK	1	0	48	20	3625	55990	66	20	2155	66886	66	20	2174.8	67084	22.74	22.61	
	13A-48A-48C	13	10	782	23230	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	22.57	22.61	
	5A-48A-48C	5	10	829	20450	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	21.88	21.87	
	5A-48C-66A	5	10	829	20450	QPSK	1	0	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	21.70	21.87	



<Ant 1>

<DSI 0>

<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)
Inter-Band	13A-4A	13	10	782	23230	QPSK	1	0	4	20	2132.5	2175	22.25	22.31
	13A-66A	13	10	782	23230	QPSK	1	0	66	20	2155	66886	22.18	22.31
	13A-2A	13	10	782	23230	QPSK	1	0	2	20	1960	900	22.51	22.31

<Four Carrier power verification>

Configure	CA Configuration (BCS)	PCC								SCC1				SCC2				SCC3				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)	
Inter-Band	5A-5A-66A-66A	5	10	829	20450	QPSK	1	0	5	5	891.5	2625	66	20	2155	66886	66	5	2197.5	67311	21.64	21.45	
	5A-5A-66C	5	10	829	20450	QPSK	1	0	5	5	891.5	2625	66	20	2155	66886	66	20	2174.8	67084	21.47	21.45	
	5B-66A-66A	5	10	829	20450	QPSK	1	0	5	10	838.9	20449	66	20	2155	66886	66	5	2197.5	67311	21.49	21.45	
	5B-66C	5	10	829	20450	QPSK	1	0	5	10	838.9	20449	66	20	2155	66886	66	20	2174.8	67084	21.55	21.45	
	13A-66A-66A-66A	13	10	782	23230	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	66	20	2120	66536	22.46	22.31	
	5B-46C	5	10	829	20450	QPSK	1	0	5	10	838.9	20549	46	20	5537.5	50665	46	20	5557.3	50883	21.51	21.45	
	5A-46D	5	10	829	20450	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	21.52	21.45	
	13A-46D	13	10	782	23230	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	22.28	22.31	
	5A-46C-66A	5	10	829	20450	QPSK	1	0	46	20	5537.5	50665	46	20	5557.3	50883	66	20	2155	66886	21.41	21.45	
	13A-46C-66A	13	10	782	23230	QPSK	1	0	46	20	5537.5	50665	46	20	5557.3	50883	66	20	2155	66886	22.31	22.31	
	13A-48C-66A	13	10	782	23230	QPSK	1	0	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	22.30	22.31	
	13A-48A-66C	13	10	782	23230	QPSK	1	0	48	20	3625	55990	66	20	2155	66886	66	20	2174.8	67084	22.11	22.31	
	13A-48A-48C	13	10	782	23230	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	22.33	22.31	
	5A-48A-48C	5	10	829	20450	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	21.35	21.45	
5A-48C-66A	5	10	829	20450	QPSK	1	0	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	21.26	21.45		



<Ant 2>

<DSI 0>

<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-4A-13A	2	20	1900	19100	QPSK	1	0	4	20	2132.5	2175	13	10	751	5230	22.31	22.36
	4A-4A-13A	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	13	10	751	5230	22.44	22.62
	66A-66C	66	20	1770	132572	QPSK	1	0	66	20	2155	66886	66	20	2174.8	67084	22.66	22.60

<Four Carrier power verification>

Configure	CA Configuration (BCS)	PCC								SCC1				SCC2				SCC3				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)	
Inter-Band	2A-2A-4A-4A	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	4	20	2132.5	2175	4	5	2152.5	2375	22.43	22.36	
	2A-2A-4A-5A	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	4	20	2132.5	2175	5	10	881.5	2525	22.55	22.36	
	2A-2A-5A-66A	2	20	1900	19100	QPSK	1	0	2	20	1980	1100	5	10	881.5	2525	66	20	2155	66886	22.48	22.36	
	2A-2A-13A-66A	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	13	10	751	5230	66	20	2155	66886	22.48	22.36	
	2A-2A-66A-66A	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	66	20	2155	66886	66	5	2197.5	67311	22.45	22.36	
	2A-2A-66C	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	66	20	2155	66886	66	20	2174.8	67084	22.19	22.36	
	2A-4A-4A-5A	2	20	1900	19100	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	5	10	881.5	2525	22.52	22.36	
	2A-4A-5B	2	20	1900	19100	QPSK	1	0	4	20	2132.5	2175	5	10	881.5	2525	5	10	991.4	2624	22.40	22.36	
	2A-5A-66A-66A	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	66	20	2155	66886	66	5	2197.5	67311	22.30	22.36	
	2A-5A-66C	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	66	20	2155	66886	66	20	2174.8	67084	22.17	22.36	
	2A-13A-66A-66A	2	20	1900	19100	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	5	2197.5	67311	22.53	22.36	
	2A-13A-66C	2	20	1900	19100	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	20	2174.8	67084	22.24	22.36	
	4A-4A-5B	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	5	10	881.5	2525	5	10	991.4	2624	22.55	22.62	
	2A-66A-66A-66A	2	20	1900	19100	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	66	20	2120	66536	22.53	22.36	
	2A-46A-46C	2	20	1900	19100	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	22.16	22.36	
	2A-2A-46C	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	46	20	5537.5	50665	46	20	5557.3	50883	22.39	22.36	
	2A-46D	2	20	1900	19100	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	22.52	22.36	
	4A-46A-46C	4	20	1720	20050	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	22.50	22.62	
	4A-46D	4	20	1720	20050	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	22.60	22.62	
	2A-5A-46C	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	46	20	5537.5	50665	46	20	5557.3	50883	22.53	22.36	
	2A-13A-46C	2	20	1900	19100	QPSK	1	0	13	10	751	5230	46	20	5537.5	50665	46	20	5557.3	50883	22.43	22.36	
	2A-46C-66A	2	20	1900	19100	QPSK	1	0	46	20	5537.5	50665	46	20	5557.3	50883	66	20	2155	66886	22.54	22.36	
	2A-13A-48C	2	20	1900	19100	QPSK	1	0	13	10	751	5230	48	20	3625	55990	48	20	3644.8	56188	22.35	22.36	
	2A-48A-48C	2	20	1900	19100	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	22.20	22.36	
	2A-48C-66A	2	20	1900	19100	QPSK	1	0	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	22.49	22.36	
	4A-48D	4	20	1720	20050	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	22.57	22.62	
	2A-48D	2	20	1900	19100	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	22.22	22.36	
	2A-5A-48C	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	48	20	3625	55990	48	20	3644.8	56188	22.46	22.36	



<Ant 4>

<DSI 0>

<Four Carrier power verification>

Configure	CA Configuration (BCS)	PCC							SCC1				SCC2				SCC3				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	48A-48A-66A-66A	48	20	3609	55830	QPSK	1	0	48	20	3560	55340	66	20	2155	66886	66	5	2197.5	67311	22.34	22.51
	48A-48A-66C	48	20	3609	55830	QPSK	1	0	48	20	3560	55340	66	20	2155	66886	66	20	2174.8	67084	22.41	22.51
	48A-48C-66A	48	20	3609	55830	QPSK	1	0	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	22.38	22.51
	48A-66A-66A-66A	48	20	3609	55830	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	66	20	2120	66536	22.53	22.51
	48C-66A-66A	48	20	3609	55830	QPSK	1	0	48	20	3628.8	56028	66	20	2155	66886	66	5	2197.5	67311	22.64	22.51
	48C-66C	48	20	3609	55830	QPSK	1	0	48	20	3628.8	56028	66	20	2155	66886	66	20	2174.8	67084	22.61	22.51

<DSI 2>

<Four Carrier power verification>

Configure	CA Configuration (BCS)	PCC							SCC1				SCC2				SCC3				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	48A-48A-66A-66A	48	20	3690	56640	QPSK	1	0	48	20	3560	55340	66	20	2155	66886	66	5	2197.5	67311	17.68	17.61
	48A-48A-66C	48	20	3690	56640	QPSK	1	0	48	20	3560	55340	66	20	2155	66886	66	20	2174.8	67084	17.78	17.61
	48A-48C-66A	48	20	3690	56640	QPSK	1	0	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	17.59	17.61
	48A-66A-66A-66A	48	20	3690	56640	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	66	20	2120	66536	17.75	17.61
	48C-66A-66A	48	20	3690	56640	QPSK	1	0	48	20	3628.8	56028	66	20	2155	66886	66	5	2197.5	67311	17.50	17.61
	48C-66C	48	20	3690	56640	QPSK	1	0	48	20	3628.8	56028	66	20	2155	66886	66	5	2197.5	67311	17.69	17.61



<Ant 6>

<DSI 0>

<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-4A-13A	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	13	10	751	5230	21.39	21.50
	4A-4A-13A	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	13	10	751	5230	21.21	21.32
	66A-66C	66	20	1770	132572	QPSK	1	0	66	20	2155	66886	66	20	2174.8	67084	21.59	21.77

<Four Carrier power verification>

Configure	CA Configuration (BCS)	PCC								SCC1				SCC2				SCC3				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)	
Inter-Band	2A-2A-4A-4A	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	4	20	2132.5	2175	4	5	2152.5	2375	21.57	21.50	
	2A-2A-4A-5A	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	4	20	2132.5	2175	5	10	881.5	2525	21.54	21.50	
	2A-2A-5A-66A	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1100	5	10	881.5	2525	66	20	2155	66886	21.65	21.50	
	2A-2A-13A-66A	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1100	13	10	751	5230	66	20	2155	66886	21.52	21.50	
	2A-2A-66A-66A	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1100	66	20	2155	66886	66	5	2197.5	67311	21.36	21.50	
	2A-2A-66C	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1100	66	20	2155	66886	66	20	2174.8	67084	21.48	21.50	
	2A-4A-4A-5A	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	5	10	881.5	2525	21.37	21.50	
	2A-4A-5B	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	5	10	881.5	2525	5	10	991.4	2624	21.45	21.50	
	2A-5A-66A-66A	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	66	20	2155	66886	66	5	2197.5	67311	21.41	21.50	
	2A-5A-66C	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	66	20	2155	66886	66	20	2174.8	67084	21.59	21.50	
	2A-13A-66A-66A	2	20	1860	18700	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	20	2190	67236	21.67	21.50	
	2A-13A-66C	2	20	1860	18700	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	20	2174.8	67084	21.57	21.50	
	4A-4A-5B	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	5	10	881.5	2525	5	10	991.4	2624	21.45	21.32	
	2A-66A-66A-66A	2	20	1860	18700	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	66	20	2120	66536	21.65	21.50	
	2A-46A-46C	2	20	1860	18700	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	21.65	21.50	
	2A-2A-46C	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	46	20	5537.5	50665	46	20	5557.3	50883	21.30	21.50	
	2A-46D	2	20	1860	18700	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	21.56	21.50	
	4A-46A-46C	4	20	1720	20050	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	21.17	21.32	
	4A-46D	4	20	1720	20050	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	21.14	21.32	
	2A-5A-46C	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	46	20	5537.5	50665	46	20	5557.3	50883	21.46	21.50	
	2A-13A-46C	2	20	1860	18700	QPSK	1	0	13	10	751	5230	46	20	5537.5	50665	46	20	5557.3	50883	21.56	21.50	
	2A-46C-66A	2	20	1860	18700	QPSK	1	0	46	20	5537.5	50665	46	20	5557.3	50883	66	20	2155	66886	21.35	21.50	
	2A-13A-48C	2	20	1860	18700	QPSK	1	0	13	10	751	5230	48	20	3625	55990	48	20	3644.8	56188	21.66	21.50	
	2A-48A-48C	2	20	1860	18700	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	21.44	21.50	
	2A-48C-66A	2	20	1860	18700	QPSK	1	0	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	21.63	21.50	
	4A-48D	4	20	1720	20050	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	21.30	21.32	
	2A-48D	2	20	1860	18700	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	21.36	21.50	
	2A-5A-48C	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	48	20	3625	55990	48	20	3644.8	56188	21.66	21.50	



<DSI 2>

<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-4A-13A	2	20	1900	19100	QPSK	1	0	4	20	2132.5	2175	13	10	751	5230	18.54	18.37
	4A-4A-13A	4	20	1732.5	20175	QPSK	1	0	4	5	2152.5	2375	13	10	751	5230	18.60	18.61
	66A-66C	66	20	1770	132572	QPSK	1	0	66	20	2155	66886	66	20	2174.8	67084	18.50	18.59

<Four Carrier power verification>

Configure	CA Configuration (BCS)	PCC							SCC1				SCC2				SCC3				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2A-2A-4A-4A	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	4	20	2132.5	2175	4	5	2152.5	2375	18.55	18.37
	2A-2A-4A-5A	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	4	20	2132.5	2175	5	10	881.5	2525	18.17	18.37
	2A-2A-5A-66A	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	5	10	881.5	2525	66	20	2155	66886	18.55	18.37
	2A-2A-13A-66A	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	13	10	751	5230	66	20	2155	66886	18.46	18.37
	2A-2A-66A-66A	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	66	20	2155	66886	66	5	2197.5	67311	18.17	18.37
	2A-2A-66C	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	66	20	2155	66886	66	20	2174.8	67084	18.56	18.37
	2A-4A-4A-5A	2	20	1900	19100	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	5	10	881.5	2525	18.31	18.37
	2A-4A-5B	2	20	1900	19100	QPSK	1	0	4	20	2132.5	2175	5	10	881.5	2525	5	10	991.4	2624	18.20	18.37
	2A-5A-66A-66A	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	66	20	2155	66886	66	5	2197.5	67311	18.32	18.37
	2A-5A-66C	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	66	20	2155	66886	66	20	2174.8	67084	18.36	18.37
	2A-13A-66A-66A	2	20	1900	19100	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	20	2190	67236	18.52	18.37
	2A-13A-66C	2	20	1900	19100	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	20	2174.8	67084	18.38	18.37
	4A-4A-5B	4	20	1732.5	20175	QPSK	1	0	4	5	2152.5	2375	5	10	881.5	2525	5	10	991.4	2624	18.68	18.61
	2A-66A-66A-66A	2	20	1900	19100	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	66	20	2120	66536	18.41	18.37
	2A-46A-46C	2	20	1900	19100	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	18.25	18.37
	2A-2A-46C	2	20	1900	19100	QPSK	1	0	2	5	1932.5	625	46	20	5537.5	50665	46	20	5557.3	50883	18.36	18.37
	2A-46D	2	20	1900	19100	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	18.38	18.37
	4A-46A-46C	4	20	1732.5	20175	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	18.41	18.61
	4A-46D	4	20	1732.5	20175	QPSK	1	0	46	20	5537.5	50665	46	20	5537.5	50665	46	20	5557.3	50883	18.46	18.61
	2A-5A-46C	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	46	20	5537.5	50665	46	20	5557.3	50883	18.51	18.37
	2A-13A-46C	2	20	1900	19100	QPSK	1	0	13	10	751	5230	46	20	5537.5	50665	46	20	5557.3	50883	18.28	18.37
	2A-46C-66A	2	20	1900	19100	QPSK	1	0	46	20	5537.5	50665	46	20	5557.3	50883	66	20	2155	66886	18.28	18.37
	2A-13A-48C	2	20	1900	19100	QPSK	1	0	13	10	751	5230	48	20	3625	55990	48	20	3644.8	56188	18.27	18.37
	2A-48A-48C	2	20	1900	19100	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	18.38	18.37
	2A-48C-66A	2	20	1900	19100	QPSK	1	0	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	18.47	18.37
	4A-48D	4	20	1732.5	20175	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	18.75	18.61
	2A-48D	2	20	1900	19100	QPSK	1	0	48	20	3625	55990	48	20	3625	55990	48	20	3644.8	56188	18.37	18.37
	2A-5A-48C	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	48	20	3625	55990	48	20	3644.8	56188	18.29	18.37



<Uplink Carrier Aggregation Active>

<Intra-Band Uplink carrier aggregation>

2CC Uplink Carrier Aggregation				
Number	Combination	4X4 MIMO	Restriction	Covered by Measurement Superset
1	5B			
2	66B			
3	66C	66C,66A		

<Intra-band>

General Note:

- i. The device supports intra-band uplink carrier aggregation for LTE B66/B5 with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.
- ii. The device supports uplink carrier aggregation with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.
- iii. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- iv. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- v. Additional SAR measurement for LTE UL CA whit other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.



<DSI 0>

<Ant 0>

CA_5B_ANT 0										
Combination 10MHz+10MHz (50RB+50RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20450	20549	QPSK	1	49	1	0	1	0	22.21	23
20575	20476	QPSK	1	0	1	49	2	0	22.35	23
20600	20501	QPSK	1	0	1	49	2	0	22.3	23

<Ant 1>

CA_5B_ANT 1										
Combination 10MHz+10MHz (50RB+50RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20450	20549	QPSK	1	49	1	0	1	0	21.42	23
20575	20476	QPSK	1	0	1	49	2	0	22.61	23
20600	20501	QPSK	1	0	1	49	2	0	21.59	23

<Ant 2>

CA_66B_ANT 2										
Combination 15MHz+5MHz (75RB+25RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132047	132140	QPSK	1	74	1	0	1	0	22.85	23
132322	132229	QPSK	1	0	1	24	2	0	22.64	23
132597	132504	QPSK	1	0	1	24	2	0	22.61	23

CA_66C_ANT2										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132072	132270	QPSK	1	99	1	0	1	0	22.94	23
132322	132124	QPSK	1	0	1	99	2	0	22.99	23
132572	132374	QPSK	1	0	1	99	2	0	22.88	23

<Ant 6>

CA_66B_ANT 6										
Combination 15MHz+5MHz (75RB+25RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132047	132140	QPSK	1	74	1	0	1	0	21.4	23
132322	132229	QPSK	1	0	1	24	2	0	21.29	23
132597	132504	QPSK	1	0	1	24	2	0	21.24	23

CA_66C_ANT 6										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132072	132270	QPSK	1	99	1	0	1	0	21.71	23
132322	132124	QPSK	1	0	1	99	2	0	21.57	23
132572	132374	QPSK	1	0	1	99	2	0	21.39	23



<DSI 2>
<Ant 6>

CA_66B_ANT 6										
Combination 15MHz+5MHz (75RB+25RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132047	132140	QPSK	1	74	1	0	1	0	18.68	20.2
132322	132229	QPSK	1	0	1	24	2	0	18.44	20.2
132597	132504	QPSK	1	0	1	24	2	0	18.25	20.2

CA_66C_ANT 6										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132072	132270	QPSK	1	99	1	0	1	0	18.91	20.2
132322	132124	QPSK	1	0	1	99	2	0	18.51	20.2
132572	132374	QPSK	1	0	1	99	2	0	18.32	20.2

14. RF Exposure position consideration

Distance of the Antenna to the EUT surface/edge						
Antennas	Front	Back	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant 0	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm	≤ 25mm
WWAN Ant 1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
WWAN Ant 2	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	>25mm
WWAN Ant 4	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm
WWAN Ant 6	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
2.4GHz WLAN/BT Ant 8	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
2.4GHz WLAN Ant 10	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
2.4GHz WLAN Ant 8+10	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm
5GHz WLAN Ant 9	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
5GHz WLAN/BT Ant 10	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
5GHz WLAN Ant 9+10	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Front	Back	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant 0	Yes	Yes	No	No	Yes	Yes
WWAN Ant 1	Yes	Yes	Yes	No	Yes	No
WWAN Ant 2	Yes	Yes	No	Yes	Yes	No
WWAN Ant 4	Yes	Yes	Yes	No	Yes	Yes
WWAN Ant 6	Yes	Yes	Yes	No	No	Yes
2.4GHz WLAN/BT Ant 8	Yes	Yes	Yes	No	No	Yes
2.4GHz WLAN Ant 10	Yes	Yes	Yes	No	Yes	No
2.4GHz WLAN Ant 8+10	Yes	Yes	Yes	No	Yes	Yes
5GHz WLAN Ant 9	Yes	Yes	Yes	No	No	Yes
5GHz WLAN/BT Ant 10	Yes	Yes	Yes	No	Yes	No
5GHz WLAN Ant 9+10	Yes	Yes	Yes	No	Yes	Yes

General Note:

- Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge
- The detail antenna location refers to operation description.



15. SAR Test Results

General Note:

- Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - 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.
 - 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)"
 - For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result.
The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
- 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
- Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
- Per KDB648474 D04v01r03, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.
- Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15cm or an overall diagonal dimension > 16cm, 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, in this report all the hotspot mode results are < 1.2W/kg.
- For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is > 16cm.

GSM Note:

- Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
- Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850 ANT 0, GPRS (4Tx slots) for GSM850 ANT 4, GPRS (2Tx slots) GSM1900 is considered as the primary mode.
- Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode

UMTS Note:

- Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
- 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.

**LTE Note:**

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B5/B12 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 \leq the larger band to qualify for the SAR test exclusion.
 - b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

5G NR Note:

1. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
 - a. SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK 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.
 - b. 50% RB allocation for PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure
 - c. PI/2 BPSK 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.
 - d. QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not $\frac{1}{2}$ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - e. Smaller bandwidth output power for each RB allocation configuration for this device will not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
 - f. For 5G FR1 n5/n12/n41/n71 the maximum bandwidth does not support three non-overlapping channels, 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.



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. For power table 1, 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. For power table 2, per KDB 248227 D01v02r02, U-NII-2A SAR testing is not required when the U-NII-1 band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-2A band.
4. 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.
5. 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.
- 6.
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.



15.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850_Ant 0	GPRS (2 Tx slots)	Right Cheek	0mm	DSI 2	189	836.4	29.93	30.00	1.016	0.03	0.068	0.069
	GSM850_Ant 0	GPRS (2 Tx slots)	Right Tilted	0mm	DSI 2	189	836.4	29.93	30.00	1.016	-0.08	0.054	0.055
	GSM850_Ant 0	GPRS (2 Tx slots)	Left Cheek	0mm	DSI 2	189	836.4	29.93	30.00	1.016	0.09	0.109	0.111
	GSM850_Ant 0	GPRS (2 Tx slots)	Left Tilted	0mm	DSI 2	189	836.4	29.93	30.00	1.016	0.05	0.053	0.054
	GSM850_Ant 1	GPRS (4 Tx slots)	Right Cheek	0mm	DSI 2	251	848.8	25.02	26.00	1.253	0.05	0.306	0.383
	GSM850_Ant 1	GPRS (4 Tx slots)	Right Tilted	0mm	DSI 2	251	848.8	25.02	26.00	1.253	0.01	0.265	0.332
01	GSM850_Ant 1	GPRS (4 Tx slots)	Left Cheek	0mm	DSI 2	251	848.8	25.02	26.00	1.253	-0.11	0.455	0.570
	GSM850_Ant 1	GPRS (4 Tx slots)	Left Tilted	0mm	DSI 2	251	848.8	25.02	26.00	1.253	0.08	0.377	0.472
	GSM1900_Ant 2	GPRS (2 Tx slots)	Right Cheek	0mm	DSI 2	661	1880	27.09	27.50	1.099	0.16	0.062	0.068
	GSM1900_Ant 2	GPRS (2 Tx slots)	Right Tilted	0mm	DSI 2	661	1880	27.09	27.50	1.099	0.01	0.042	0.046
	GSM1900_Ant 2	GPRS (2 Tx slots)	Left Cheek	0mm	DSI 2	661	1880	27.09	27.50	1.099	0.06	0.053	0.058
	GSM1900_Ant 2	GPRS (2 Tx slots)	Left Tilted	0mm	DSI 2	661	1880	27.09	27.50	1.099	-0.13	0.017	0.019
02	GSM1900_Ant 6	GPRS (2 Tx slots)	Right Cheek	0mm	DSI 2	661	1880	25.47	26.80	1.358	0.15	0.391	0.531
	GSM1900_Ant 6	GPRS (2 Tx slots)	Right Tilted	0mm	DSI 2	661	1880	25.47	26.80	1.358	-0.06	0.264	0.359
	GSM1900_Ant 6	GPRS (2 Tx slots)	Left Cheek	0mm	DSI 2	661	1880	25.47	26.80	1.358	0.01	0.012	0.016
	GSM1900_Ant 6	GPRS (2 Tx slots)	Left Tilted	0mm	DSI 2	661	1880	25.47	26.80	1.358	-0.08	0.002	0.003

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_Ant 2	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	9538	1907.6	23.55	24.00	1.109	0.11	0.104	0.115
	WCDMA II_Ant 2	RMC 12.2Kbps	Right Tilted	0mm	DSI 2	9538	1907.6	23.55	24.00	1.109	0.07	0.082	0.091
	WCDMA II_Ant 2	RMC 12.2Kbps	Left Cheek	0mm	DSI 2	9538	1907.6	23.55	24.00	1.109	-0.12	0.085	0.094
	WCDMA II_Ant 2	RMC 12.2Kbps	Left Tilted	0mm	DSI 2	9538	1907.6	23.55	24.00	1.109	-0.13	0.078	0.087
03	WCDMA II_Ant 6	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	9400	1880	20.16	21.60	1.393	-0.12	0.697	0.971
	WCDMA II_Ant 6	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	9262	1852.4	20.10	21.60	1.413	-0.15	0.643	0.908
	WCDMA II_Ant 6	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	9538	1907.6	20.12	21.60	1.406	0.03	0.672	0.945
	WCDMA II_Ant 6	RMC 12.2Kbps	Right Tilted	0mm	DSI 2	9400	1880	20.16	21.60	1.393	0.07	0.141	0.196
	WCDMA II_Ant 6	RMC 12.2Kbps	Left Cheek	0mm	DSI 2	9400	1880	20.16	21.60	1.393	0.05	0.207	0.288
	WCDMA II_Ant 6	RMC 12.2Kbps	Left Tilted	0mm	DSI 2	9400	1880	20.16	21.60	1.393	0	0.056	0.078
	WCDMA IV_Ant 2	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	1312	1712.4	23.69	24.00	1.074	-0.05	0.073	0.078
	WCDMA IV_Ant 2	RMC 12.2Kbps	Right Tilted	0mm	DSI 2	1312	1712.4	23.69	24.00	1.074	0.17	0.046	0.049
	WCDMA IV_Ant 2	RMC 12.2Kbps	Left Cheek	0mm	DSI 2	1312	1712.4	23.69	24.00	1.074	-0.13	0.069	0.074
	WCDMA IV_Ant 2	RMC 12.2Kbps	Left Tilted	0mm	DSI 2	1312	1712.4	23.69	24.00	1.074	-0.11	0.036	0.039
	WCDMA IV_Ant 6	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	1413	1732.6	20.11	21.40	1.346	0.09	0.662	0.892
	WCDMA IV_Ant 6	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	1312	1712.4	20.06	21.40	1.361	-0.11	0.608	0.828
04	WCDMA IV_Ant 6	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	1513	1752.6	20.06	21.40	1.361	-0.13	0.723	0.984
	WCDMA IV_Ant 6	RMC 12.2Kbps	Right Tilted	0mm	DSI 2	1413	1732.6	20.11	21.40	1.346	-0.02	0.150	0.202
	WCDMA IV_Ant 6	RMC 12.2Kbps	Left Cheek	0mm	DSI 2	1413	1732.6	20.11	21.40	1.346	0.03	0.225	0.303
	WCDMA IV_Ant 6	RMC 12.2Kbps	Left Tilted	0mm	DSI 2	1413	1732.6	20.11	21.40	1.346	-0.04	0.076	0.102
	WCDMA V_Ant 0	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	4182	836.4	23.14	24.00	1.219	0.01	0.121	0.147
	WCDMA V_Ant 0	RMC 12.2Kbps	Right Tilted	0mm	DSI 2	4182	836.4	23.14	24.00	1.219	-0.14	0.076	0.093
	WCDMA V_Ant 0	RMC 12.2Kbps	Left Cheek	0mm	DSI 2	4182	836.4	23.14	24.00	1.219	-0.05	0.162	0.197
	WCDMA V_Ant 0	RMC 12.2Kbps	Left Tilted	0mm	DSI 2	4182	836.4	23.14	24.00	1.219	-0.15	0.073	0.089
	WCDMA V_Ant 1	RMC 12.2Kbps	Right Cheek	0mm	DSI 2	4182	836.4	22.84	23.50	1.164	0.02	0.191	0.222
	WCDMA V_Ant 1	RMC 12.2Kbps	Right Tilted	0mm	DSI 2	4182	836.4	22.84	23.50	1.164	-0.01	0.139	0.162
05	WCDMA V_Ant 1	RMC 12.2Kbps	Left Cheek	0mm	DSI 2	4182	836.4	22.84	23.50	1.164	-0.06	0.283	0.329
	WCDMA V_Ant 1	RMC 12.2Kbps	Left Tilted	0mm	DSI 2	4182	836.4	22.84	23.50	1.164	0.15	0.205	0.239



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	19100	1900	22.36	23.00	1.159	-0.19	0.057	0.066
	LTE Band 2_Ant 2	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	19100	1900	21.40	22.00	1.148	-0.13	0.049	0.056
	LTE Band 2_Ant 2	20M	QPSK	1	0	Right Tilted	0mm	DSI 2	19100	1900	22.36	23.00	1.159	-0.16	0.043	0.050
	LTE Band 2_Ant 2	20M	QPSK	50	0	Right Tilted	0mm	DSI 2	19100	1900	21.40	22.00	1.148	-0.1	0.033	0.038
	LTE Band 2_Ant 2	20M	QPSK	1	0	Left Cheek	0mm	DSI 2	19100	1900	22.36	23.00	1.159	-0.1	0.054	0.063
	LTE Band 2_Ant 2	20M	QPSK	50	0	Left Cheek	0mm	DSI 2	19100	1900	21.40	22.00	1.148	-0.13	0.043	0.049
	LTE Band 2_Ant 2	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	19100	1900	22.36	23.00	1.159	-0.12	0.052	0.060
	LTE Band 2_Ant 2	20M	QPSK	50	0	Left Tilted	0mm	DSI 2	19100	1900	21.40	22.00	1.148	-0.18	0.045	0.052
06	LTE Band 2_Ant 6	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	19100	1900	20.23	21.90	1.469	-0.1	0.661	0.971
	LTE Band 2_Ant 6	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	18700	1860	20.17	21.90	1.489	0.11	0.642	0.956
	LTE Band 2_Ant 6	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	18900	1880	20.18	21.90	1.486	-0.06	0.650	0.966
	LTE Band 2_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	19100	1900	20.19	21.90	1.483	0.15	0.641	0.950
	LTE Band 2_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	18700	1860	20.12	21.90	1.507	0.1	0.622	0.937
	LTE Band 2_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	18900	1880	20.07	21.90	1.524	0.04	0.617	0.940
	LTE Band 2_Ant 6	20M	QPSK	100	0	Right Cheek	0mm	DSI 2	19100	1900	20.08	21.90	1.521	0.15	0.620	0.943
	LTE Band 2_Ant 6	20M	QPSK	1	0	Right Tilted	0mm	DSI 2	19100	1900	20.23	21.90	1.469	0.13	0.119	0.175
	LTE Band 2_Ant 6	20M	QPSK	50	0	Right Tilted	0mm	DSI 2	19100	1900	20.19	21.90	1.483	0.02	0.106	0.157
	LTE Band 2_Ant 6	20M	QPSK	1	0	Left Cheek	0mm	DSI 2	19100	1900	20.23	21.90	1.469	-0.09	0.201	0.295
	LTE Band 2_Ant 6	20M	QPSK	50	0	Left Cheek	0mm	DSI 2	19100	1900	20.19	21.90	1.483	0	0.194	0.288
	LTE Band 2_Ant 6	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	19100	1900	20.23	21.90	1.469	0.03	0.065	0.095
	LTE Band 2_Ant 6	20M	QPSK	50	0	Left Tilted	0mm	DSI 2	19100	1900	20.19	21.90	1.483	0.08	0.062	0.092
	LTE Band 5_Ant 0	10M	QPSK	1	0	Right Cheek	0mm	DSI 2	20525	836.5	21.77	23.00	1.327	0.07	0.071	0.094
	LTE Band 5_Ant 0	10M	QPSK	25	0	Right Cheek	0mm	DSI 2	20525	836.5	20.91	22.00	1.285	0.07	0.058	0.075
	LTE Band 5_Ant 0	10M	QPSK	1	0	Right Tilted	0mm	DSI 2	20525	836.5	21.77	23.00	1.327	-0.05	0.046	0.061
	LTE Band 5_Ant 0	10M	QPSK	25	0	Right Tilted	0mm	DSI 2	20525	836.5	20.91	22.00	1.285	-0.01	0.037	0.048
	LTE Band 5_Ant 0	10M	QPSK	1	0	Left Cheek	0mm	DSI 2	20525	836.5	21.77	23.00	1.327	0.13	0.105	0.139
	LTE Band 5_Ant 0	10M	QPSK	25	0	Left Cheek	0mm	DSI 2	20525	836.5	20.91	22.00	1.285	0.07	0.086	0.111
	LTE Band 5_Ant 0	10M	QPSK	1	0	Left Tilted	0mm	DSI 2	20525	836.5	21.77	23.00	1.327	-0.04	0.048	0.064
	LTE Band 5_Ant 0	10M	QPSK	25	0	Left Tilted	0mm	DSI 2	20525	836.5	20.91	22.00	1.285	0.05	0.042	0.054
	LTE Band 5B_Ant 0	10M	QPSK	1	0	Left Cheek	0mm	DSI 2	20575+20476	837	22.35	23.00	1.161	0.06	0.115	0.134
	LTE Band 5_Ant 1	10M	QPSK	1	0	Right Cheek	0mm	DSI 2	20525	836.5	21.30	23.00	1.479	-0.06	0.291	0.430
	LTE Band 5_Ant 1	10M	QPSK	25	0	Right Cheek	0mm	DSI 2	20525	836.5	20.42	22.00	1.439	0.07	0.239	0.344
	LTE Band 5_Ant 1	10M	QPSK	1	0	Right Tilted	0mm	DSI 2	20525	836.5	21.30	23.00	1.479	-0.01	0.233	0.345
	LTE Band 5_Ant 1	10M	QPSK	25	0	Right Tilted	0mm	DSI 2	20525	836.5	20.42	22.00	1.439	-0.13	0.193	0.278
07	LTE Band 5_Ant 1	10M	QPSK	1	0	Left Cheek	0mm	DSI 2	20525	836.5	21.30	23.00	1.479	0.04	0.472	0.698
	LTE Band 5_Ant 1	10M	QPSK	25	0	Left Cheek	0mm	DSI 2	20525	836.5	20.42	22.00	1.439	0.03	0.388	0.558
	LTE Band 5_Ant 1	10M	QPSK	1	0	Left Tilted	0mm	DSI 2	20525	836.5	21.30	23.00	1.479	-0.01	0.372	0.550
	LTE Band 5_Ant 1	10M	QPSK	25	0	Left Tilted	0mm	DSI 2	20525	836.5	20.42	22.00	1.439	-0.05	0.303	0.436
	LTE Band 5B_Ant 1	10M	QPSK	1	0	Left Cheek	0mm	DSI 2	20575+20476	837	22.61	23.00	1.094	0.14	0.606	0.663



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	21350	2560	22.60	23.00	1.096	0.08	0.155	0.170
	LTE Band 7_Ant 2	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	21350	2560	21.76	22.00	1.057	0.03	0.051	0.054
	LTE Band 7_Ant 2	20M	QPSK	1	0	Right Tilted	0mm	DSI 2	21350	2560	22.60	23.00	1.096	-0.01	0.101	0.111
	LTE Band 7_Ant 2	20M	QPSK	50	0	Right Tilted	0mm	DSI 2	21350	2560	21.76	22.00	1.057	0.01	0.110	0.116
	LTE Band 7_Ant 2	20M	QPSK	1	0	Left Cheek	0mm	DSI 2	21350	2560	22.60	23.00	1.096	-0.02	0.138	0.151
	LTE Band 7_Ant 2	20M	QPSK	50	0	Left Cheek	0mm	DSI 2	21350	2560	21.76	22.00	1.057	0	0.051	0.054
	LTE Band 7_Ant 2	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	21350	2560	22.60	23.00	1.096	-0.03	0.101	0.111
	LTE Band 7_Ant 2	20M	QPSK	50	0	Left Tilted	0mm	DSI 2	21350	2560	21.76	22.00	1.057	0.01	0.110	0.116
08	LTE Band 7_Ant 6	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	21100	2535	17.55	18.90	1.365	-0.19	0.697	0.951
	LTE Band 7_Ant 6	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	20850	2510	17.49	18.90	1.384	0.03	0.659	0.912
	LTE Band 7_Ant 6	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	21350	2560	17.44	18.90	1.400	-0.11	0.641	0.897
	LTE Band 7_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	21100	2535	17.52	18.90	1.374	0.12	0.633	0.870
	LTE Band 7_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	20850	2510	17.46	18.90	1.393	0.03	0.626	0.872
	LTE Band 7_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	21350	2560	17.40	18.90	1.413	-0.08	0.619	0.874
	LTE Band 7_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	21100	2535	17.48	18.90	1.387	0.01	0.613	0.850
	LTE Band 7_Ant 6	20M	QPSK	1	0	Right Tilted	0mm	DSI 2	21100	2535	17.55	18.90	1.365	-0.05	0.161	0.220
	LTE Band 7_Ant 6	20M	QPSK	50	0	Right Tilted	0mm	DSI 2	21100	2535	17.52	18.90	1.374	-0.05	0.001	0.001
	LTE Band 7_Ant 6	20M	QPSK	1	0	Left Cheek	0mm	DSI 2	21100	2535	17.55	18.90	1.365	0.02	0.236	0.323
	LTE Band 7_Ant 6	20M	QPSK	50	0	Left Cheek	0mm	DSI 2	21100	2535	17.52	18.90	1.374	0.16	0.001	0.001
	LTE Band 7_Ant 6	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	21100	2535	17.55	18.90	1.365	0.08	0.065	0.089
	LTE Band 7_Ant 6	20M	QPSK	50	0	Left Tilted	0mm	DSI 2	21100	2535	17.52	18.90	1.374	-0.04	0.001	0.001
	LTE Band 12_Ant 0	10M	QPSK	1	0	Right Cheek	0mm	DSI 2	23095	707.5	22.14	23.00	1.219	0.05	0.042	0.051
	LTE Band 12_Ant 0	10M	QPSK	25	0	Right Cheek	0mm	DSI 2	23095	707.5	21.22	22.00	1.197	0.12	0.035	0.042
	LTE Band 12_Ant 0	10M	QPSK	1	0	Right Tilted	0mm	DSI 2	23095	707.5	22.14	23.00	1.219	-0.03	0.001	0.001
	LTE Band 12_Ant 0	10M	QPSK	25	0	Right Tilted	0mm	DSI 2	23095	707.5	21.22	22.00	1.197	0.06	0.001	0.001
	LTE Band 12_Ant 0	10M	QPSK	1	0	Left Cheek	0mm	DSI 2	23095	707.5	22.14	23.00	1.219	0.1	0.060	0.073
	LTE Band 12_Ant 0	10M	QPSK	25	0	Left Cheek	0mm	DSI 2	23095	707.5	21.22	22.00	1.197	0.02	0.052	0.062
	LTE Band 12_Ant 0	10M	QPSK	1	0	Left Tilted	0mm	DSI 2	23095	707.5	22.14	23.00	1.219	0.05	0.001	0.001
	LTE Band 12_Ant 0	10M	QPSK	25	0	Left Tilted	0mm	DSI 2	23095	707.5	21.22	22.00	1.197	0.01	0.001	0.001
	LTE Band 12_Ant 1	10M	QPSK	1	0	Right Cheek	0mm	DSI 2	23095	707.5	21.57	23.00	1.390	-0.02	0.184	0.256
	LTE Band 12_Ant 1	10M	QPSK	25	0	Right Cheek	0mm	DSI 2	23095	707.5	20.68	22.00	1.355	0.04	0.150	0.203
	LTE Band 12_Ant 1	10M	QPSK	1	0	Right Tilted	0mm	DSI 2	23095	707.5	21.57	23.00	1.390	-0.08	0.152	0.211
	LTE Band 12_Ant 1	10M	QPSK	25	0	Right Tilted	0mm	DSI 2	23095	707.5	20.68	22.00	1.355	0.04	0.124	0.168
09	LTE Band 12_Ant 1	10M	QPSK	1	0	Left Cheek	0mm	DSI 2	23095	707.5	21.57	23.00	1.390	0.05	0.326	0.453
	LTE Band 12_Ant 1	10M	QPSK	25	0	Left Cheek	0mm	DSI 2	23095	707.5	20.68	22.00	1.355	0.01	0.266	0.360
	LTE Band 12_Ant 1	10M	QPSK	1	0	Left Tilted	0mm	DSI 2	23095	707.5	21.57	23.00	1.390	-0.09	0.250	0.347
	LTE Band 12_Ant 1	10M	QPSK	25	0	Left Tilted	0mm	DSI 2	23095	707.5	20.68	22.00	1.355	-0.04	0.204	0.276



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 13_Ant 0	10M	QPSK	1	0	Right Cheek	0mm	DSI 2	23230	782	22.61	23.00	1.094	0.09	0.053	0.058
	LTE Band 13_Ant 0	10M	QPSK	25	0	Right Cheek	0mm	DSI 2	23230	782	21.65	22.00	1.084	0.06	0.042	0.046
	LTE Band 13_Ant 0	10M	QPSK	1	0	Right Tilted	0mm	DSI 2	23230	782	22.61	23.00	1.094	0.11	0.001	0.001
	LTE Band 13_Ant 0	10M	QPSK	25	0	Right Tilted	0mm	DSI 2	23230	782	21.65	22.00	1.084	-0.1	0.001	0.001
	LTE Band 13_Ant 0	10M	QPSK	1	0	Left Cheek	0mm	DSI 2	23230	782	22.61	23.00	1.094	0.08	0.075	0.082
	LTE Band 13_Ant 0	10M	QPSK	25	0	Left Cheek	0mm	DSI 2	23230	782	21.65	22.00	1.084	0.02	0.060	0.065
	LTE Band 13_Ant 0	10M	QPSK	1	0	Left Tilted	0mm	DSI 2	23230	782	22.61	23.00	1.094	0.16	0.001	0.001
	LTE Band 13_Ant 0	10M	QPSK	25	0	Left Tilted	0mm	DSI 2	23230	782	21.65	22.00	1.084	-0.01	0.001	0.001
	LTE Band 13_Ant 1	10M	QPSK	1	0	Right Cheek	0mm	DSI 2	23230	782	22.31	23.00	1.172	0.07	0.240	0.281
	LTE Band 13_Ant 1	10M	QPSK	25	0	Right Cheek	0mm	DSI 2	23230	782	21.32	22.00	1.169	0.08	0.191	0.223
	LTE Band 13_Ant 1	10M	QPSK	1	0	Right Tilted	0mm	DSI 2	23230	782	22.31	23.00	1.172	0.01	0.184	0.216
	LTE Band 13_Ant 1	10M	QPSK	25	0	Right Tilted	0mm	DSI 2	23230	782	21.32	22.00	1.169	0.04	0.146	0.171
10	LTE Band 13_Ant 1	10M	QPSK	1	0	Left Cheek	0mm	DSI 2	23230	782	22.31	23.00	1.172	0.02	0.374	0.438
	LTE Band 13_Ant 1	10M	QPSK	25	0	Left Cheek	0mm	DSI 2	23230	782	21.32	22.00	1.169	0.01	0.298	0.349
	LTE Band 13_Ant 1	10M	QPSK	1	0	Left Tilted	0mm	DSI 2	23230	782	22.31	23.00	1.172	0.01	0.301	0.353
	LTE Band 13_Ant 1	10M	QPSK	25	0	Left Tilted	0mm	DSI 2	23230	782	21.32	22.00	1.169	0.02	0.240	0.281
	LTE Band 66_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	132572	1770	22.60	23.00	1.096	0.18	0.071	0.078
	LTE Band 66_Ant 2	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	132572	1770	21.61	22.00	1.094	0.08	0.057	0.062
	LTE Band 66_Ant 2	20M	QPSK	1	0	Right Tilted	0mm	DSI 2	132572	1770	22.60	23.00	1.096	0.18	0.049	0.054
	LTE Band 66_Ant 2	20M	QPSK	50	0	Right Tilted	0mm	DSI 2	132572	1770	21.61	22.00	1.094	0.15	0.039	0.043
	LTE Band 66_Ant 2	20M	QPSK	1	0	Left Cheek	0mm	DSI 2	132572	1770	22.60	23.00	1.096	0.07	0.056	0.061
	LTE Band 66_Ant 2	20M	QPSK	50	0	Left Cheek	0mm	DSI 2	132572	1770	21.61	22.00	1.094	0.05	0.045	0.049
	LTE Band 66_Ant 2	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	132572	1770	22.60	23.00	1.096	0.08	0.045	0.049
	LTE Band 66_Ant 2	20M	QPSK	50	0	Left Tilted	0mm	DSI 2	132572	1770	21.61	22.00	1.094	0.03	0.036	0.039
	LTE Band 66C_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	132322+132124	1745	22.99	23.00	1.002	0.09	0.076	0.076
11	LTE Band 66_Ant 6	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	132572	1770	18.59	20.20	1.449	-0.15	0.660	0.956
	LTE Band 66_Ant 6	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	132072	1720	18.54	20.20	1.466	0.13	0.584	0.856
	LTE Band 66_Ant 6	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	132322	1745	18.56	20.20	1.459	-0.04	0.595	0.868
	LTE Band 66_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	132572	1770	18.57	20.20	1.455	0.02	0.633	0.921
	LTE Band 66_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	132072	1720	18.49	20.20	1.483	0.09	0.561	0.832
	LTE Band 66_Ant 6	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	132322	1745	18.53	20.20	1.469	-0.01	0.571	0.839
	LTE Band 66_Ant 6	20M	QPSK	100	0	Right Cheek	0mm	DSI 2	132572	1770	18.55	20.20	1.462	0.12	0.559	0.817
	LTE Band 66_Ant 6	20M	QPSK	1	0	Right Tilted	0mm	DSI 2	132572	1770	18.59	20.20	1.449	0.12	0.129	0.188
	LTE Band 66_Ant 6	20M	QPSK	50	0	Right Tilted	0mm	DSI 2	132572	1770	18.57	20.20	1.455	0.17	0.123	0.179
	LTE Band 66_Ant 6	20M	QPSK	1	0	Left Cheek	0mm	DSI 2	132572	1770	18.59	20.20	1.449	-0.09	0.205	0.296
	LTE Band 66_Ant 6	20M	QPSK	50	0	Left Cheek	0mm	DSI 2	132572	1770	18.57	20.20	1.455	0.13	0.199	0.290
	LTE Band 66_Ant 6	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	132572	1770	18.59	20.20	1.449	0.02	0.079	0.114
	LTE Band 66_Ant 6	20M	QPSK	50	0	Left Tilted	0mm	DSI 2	132572	1770	18.57	20.20	1.455	0.02	0.071	0.103
	LTE Band 66C_Ant 6	20M	QPSK	1	99	Right Cheek	0mm	DSI 2	132072+132270	1720	18.91	20.20	1.346	0.04	0.691	0.930



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 48_Ant 4	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	56640	3690	17.61	18.30	1.172	62.9	1.006	0.02	0.429	0.506
	LTE Band 48_Ant 4	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	56640	3690	17.60	18.30	1.175	62.9	1.006	0.12	0.394	0.466
	LTE Band 48_Ant 4	20M	QPSK	1	0	Right Tilted	0mm	DSI 2	56640	3690	17.61	18.30	1.172	62.9	1.006	0.14	0.604	0.712
	LTE Band 48_Ant 4	20M	QPSK	50	0	Right Tilted	0mm	DSI 2	56640	3690	17.60	18.30	1.175	62.9	1.006	0.08	0.563	0.665
	LTE Band 48_Ant 4	20M	QPSK	1	0	Left Cheek	0mm	DSI 2	56640	3690	17.61	18.30	1.172	62.9	1.006	-0.08	0.528	0.623
	LTE Band 48_Ant 4	20M	QPSK	50	0	Left Cheek	0mm	DSI 2	56640	3690	17.60	18.30	1.175	62.9	1.006	-0.13	0.506	0.598
12	LTE Band 48_Ant 4	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	56640	3690	17.61	18.30	1.172	62.9	1.006	0.01	0.714	0.842
	LTE Band 48_Ant 4	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	55340	3560	17.18	18.30	1.294	62.9	1.006	0.19	0.604	0.786
	LTE Band 48_Ant 4	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	55830	3609	17.40	18.30	1.230	62.9	1.006	0.03	0.665	0.823
	LTE Band 48_Ant 4	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	56150	3641	17.54	18.30	1.191	62.9	1.006	0.02	0.697	0.835
	LTE Band 48_Ant 4	20M	QPSK	50	0	Left Tilted	0mm	DSI 2	56640	3690	17.60	18.30	1.175	62.9	1.006	0.03	0.662	0.782
	LTE Band 48_Ant 4	20M	QPSK	100	0	Left Tilted	0mm	DSI 2	56640	3690	17.52	18.30	1.197	62.9	1.006	0.12	0.640	0.771
	LTE Band 48_Ant 0	20M	QPSK	1	0	Right Cheek	0mm	DSI 2	55830	3609	22.84	23.00	1.038	62.9	1.006	0.02	0.005	0.005
	LTE Band 48_Ant 0	20M	QPSK	50	0	Right Cheek	0mm	DSI 2	55830	3609	21.99	22.00	1.002	62.9	1.006	0.01	0.003	0.003
	LTE Band 48_Ant 0	20M	QPSK	1	0	Right Tilted	0mm	DSI 2	55830	3609	22.84	23.00	1.038	62.9	1.006	0.09	0.001	0.001
	LTE Band 48_Ant 0	20M	QPSK	50	0	Right Tilted	0mm	DSI 2	55830	3609	21.99	22.00	1.002	62.9	1.006	-0.05	0.001	0.001
	LTE Band 48_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	DSI 2	55830	3609	22.84	23.00	1.038	62.9	1.006	0.03	0.001	0.001
	LTE Band 48_Ant 0	20M	QPSK	50	0	Left Cheek	0mm	DSI 2	55830	3609	21.99	22.00	1.002	62.9	1.006	-0.01	0.001	0.001
	LTE Band 48_Ant 0	20M	QPSK	1	0	Left Tilted	0mm	DSI 2	55830	3609	22.84	23.00	1.038	62.9	1.006	0.17	0.001	0.001
	LTE Band 48_Ant 0	20M	QPSK	50	0	Left Tilted	0mm	DSI 2	55830	3609	21.99	22.00	1.002	62.9	1.006	0.15	0.001	0.001

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n2_Ant 2	20M	BPSK	1	1	Right Cheek	0mm	DSI 2	372000	1860	23.98	24.00	1.005	-0.13	0.075	0.075
	FR1 n2_Ant 2	20M	BPSK	50	28	Right Cheek	0mm	DSI 2	372000	1860	23.85	24.00	1.035	0.02	0.069	0.071
	FR1 n2_Ant 2	20M	BPSK	1	1	Right Tilted	0mm	DSI 2	372000	1860	23.98	24.00	1.005	-0.17	0.059	0.059
	FR1 n2_Ant 2	20M	BPSK	50	28	Right Tilted	0mm	DSI 2	372000	1860	23.85	24.00	1.035	0.03	0.049	0.051
	FR1 n2_Ant 2	20M	BPSK	1	1	Left Cheek	0mm	DSI 2	372000	1860	23.98	24.00	1.005	0.13	0.061	0.061
	FR1 n2_Ant 2	20M	BPSK	50	28	Left Cheek	0mm	DSI 2	372000	1860	23.85	24.00	1.035	-0.08	0.055	0.057
	FR1 n2_Ant 2	20M	BPSK	1	1	Left Tilted	0mm	DSI 2	372000	1860	23.98	24.00	1.005	0.08	0.074	0.074
	FR1 n2_Ant 2	20M	BPSK	50	28	Left Tilted	0mm	DSI 2	372000	1860	23.85	24.00	1.035	0.01	0.062	0.064
13	FR1 n2_Ant 6	20M	BPSK	1	1	Right Cheek	0mm	DSI 2	372000	1860	21.40	22.30	1.230	0.15	0.762	0.937
	FR1 n2_Ant 6	20M	BPSK	1	1	Right Cheek	0mm	DSI 2	376000	1880	21.39	22.30	1.233	0.12	0.751	0.926
	FR1 n2_Ant 6	20M	BPSK	1	1	Right Cheek	0mm	DSI 2	380000	1900	21.38	22.30	1.236	0.13	0.728	0.900
	FR1 n2_Ant 6	20M	BPSK	50	28	Right Cheek	0mm	DSI 2	372000	1860	21.33	22.30	1.250	0.03	0.721	0.901
	FR1 n2_Ant 6	20M	BPSK	50	28	Right Cheek	0mm	DSI 2	376000	1880	21.22	22.30	1.282	-0.05	0.709	0.909
	FR1 n2_Ant 6	20M	BPSK	50	28	Right Cheek	0mm	DSI 2	380000	1900	21.31	22.30	1.256	0.15	0.699	0.878
	FR1 n2_Ant 6	20M	BPSK	100	0	Right Cheek	0mm	DSI 2	372000	1860	21.25	22.30	1.274	0.01	0.701	0.893
	FR1 n2_Ant 6	20M	BPSK	1	1	Right Tilted	0mm	DSI 2	372000	1860	21.40	22.30	1.230	0.17	0.159	0.196
	FR1 n2_Ant 6	20M	BPSK	50	28	Right Tilted	0mm	DSI 2	372000	1860	21.33	22.30	1.250	0.05	0.142	0.178
	FR1 n2_Ant 6	20M	BPSK	1	1	Left Cheek	0mm	DSI 2	372000	1860	21.40	22.30	1.230	-0.11	0.222	0.273
	FR1 n2_Ant 6	20M	BPSK	50	28	Left Cheek	0mm	DSI 2	372000	1860	21.33	22.30	1.250	0.01	0.199	0.249
	FR1 n2_Ant 6	20M	BPSK	1	1	Left Tilted	0mm	DSI 2	372000	1860	21.40	22.30	1.230	-0.1	0.066	0.081
	FR1 n2_Ant 6	20M	BPSK	50	28	Left Tilted	0mm	DSI 2	372000	1860	21.33	22.30	1.250	0.06	0.054	0.068



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n5_Ant 0	20M	BPSK	1	1	Right Cheek	0mm	DSI 2	167300	836.5	22.91	24.00	1.285	-0.01	0.028	0.036
	FR1 n5_Ant 0	20M	BPSK	50	28	Right Cheek	0mm	DSI 2	167300	836.5	22.85	24.00	1.303	0.01	0.022	0.029
	FR1 n5_Ant 0	20M	BPSK	1	1	Right Tilted	0mm	DSI 2	167300	836.5	22.91	24.00	1.285	-0.01	0.032	0.041
	FR1 n5_Ant 0	20M	BPSK	50	28	Right Tilted	0mm	DSI 2	167300	836.5	22.85	24.00	1.303	0.04	0.030	0.039
	FR1 n5_Ant 0	20M	BPSK	1	1	Left Cheek	0mm	DSI 2	167300	836.5	22.91	24.00	1.285	-0.17	0.073	0.094
	FR1 n5_Ant 0	20M	BPSK	50	28	Left Cheek	0mm	DSI 2	167300	836.5	22.85	24.00	1.303	-0.02	0.064	0.083
	FR1 n5_Ant 0	20M	BPSK	1	1	Left Tilted	0mm	DSI 2	167300	836.5	22.91	24.00	1.285	-0.08	0.035	0.045
	FR1 n5_Ant 0	20M	BPSK	50	28	Left Tilted	0mm	DSI 2	167300	836.5	22.85	24.00	1.303	0.01	0.029	0.038
	FR1 n5_Ant 1	20M	BPSK	1	1	Right Cheek	0mm	DSI 2	167300	836.5	22.88	23.00	1.028	0.01	0.126	0.130
	FR1 n5_Ant 1	20M	BPSK	50	28	Right Cheek	0mm	DSI 2	167300	836.5	22.68	23.00	1.076	-0.01	0.105	0.113
	FR1 n5_Ant 1	20M	BPSK	1	1	Right Tilted	0mm	DSI 2	167300	836.5	22.88	23.00	1.028	-0.12	0.104	0.107
	FR1 n5_Ant 1	20M	BPSK	50	28	Right Tilted	0mm	DSI 2	167300	836.5	22.68	23.00	1.076	0.07	0.081	0.087
14	FR1 n5_Ant 1	20M	BPSK	1	1	Left Cheek	0mm	DSI 2	167300	836.5	22.88	23.00	1.028	-0.14	0.227	0.233
	FR1 n5_Ant 1	20M	BPSK	50	28	Left Cheek	0mm	DSI 2	167300	836.5	22.68	23.00	1.076	-0.05	0.204	0.220
	FR1 n5_Ant 1	20M	BPSK	1	1	Left Tilted	0mm	DSI 2	167300	836.5	22.88	23.00	1.028	-0.13	0.225	0.231
	FR1 n5_Ant 1	20M	BPSK	50	28	Left Tilted	0mm	DSI 2	167300	836.5	22.68	23.00	1.076	0.03	0.190	0.205
	FR1 n66_Ant 2	40M	BPSK	1	1	Right Cheek	0mm	DSI 2	349000	1745	23.89	24.00	1.026	-0.01	0.119	0.122
	FR1 n66_Ant 2	40M	BPSK	108	0	Right Cheek	0mm	DSI 2	349000	1745	23.76	24.00	1.057	0	0.101	0.107
	FR1 n66_Ant 2	40M	BPSK	1	1	Right Tilted	0mm	DSI 2	349000	1745	23.89	24.00	1.026	-0.04	0.037	0.038
	FR1 n66_Ant 2	40M	BPSK	108	0	Right Tilted	0mm	DSI 2	349000	1745	23.76	24.00	1.057	-0.08	0.029	0.031
	FR1 n66_Ant 2	40M	BPSK	1	1	Left Cheek	0mm	DSI 2	349000	1745	23.89	24.00	1.026	-0.12	0.092	0.094
	FR1 n66_Ant 2	40M	BPSK	108	0	Left Cheek	0mm	DSI 2	349000	1745	23.76	24.00	1.057	0.01	0.076	0.080
	FR1 n66_Ant 2	40M	BPSK	1	1	Left Tilted	0mm	DSI 2	349000	1745	23.89	24.00	1.026	-0.03	0.039	0.040
	FR1 n66_Ant 2	40M	BPSK	108	0	Left Tilted	0mm	DSI 2	349000	1745	23.76	24.00	1.057	-0.04	0.026	0.027
15	FR1 n66_Ant 6	40M	BPSK	1	1	Right Cheek	0mm	DSI 2	349000	1745	21.10	21.70	1.148	-0.04	0.835	0.959
	FR1 n66_Ant 6	40M	BPSK	108	0	Right Cheek	0mm	DSI 2	349000	1745	21.04	21.70	1.164	0.06	0.785	0.914
	FR1 n66_Ant 6	40M	BPSK	216	0	Right Cheek	0mm	DSI 2	349000	1745	21.00	21.70	1.175	-0.11	0.797	0.936
	FR1 n66_Ant 6	40M	BPSK	1	1	Right Tilted	0mm	DSI 2	349000	1745	21.10	21.70	1.148	-0.18	0.180	0.207
	FR1 n66_Ant 6	40M	BPSK	108	0	Right Tilted	0mm	DSI 2	349000	1745	21.04	21.70	1.164	-0.11	0.156	0.182
	FR1 n66_Ant 6	40M	BPSK	1	1	Left Cheek	0mm	DSI 2	349000	1745	21.10	21.70	1.148	-0.04	0.215	0.247
	FR1 n66_Ant 6	40M	BPSK	108	0	Left Cheek	0mm	DSI 2	349000	1745	21.04	21.70	1.164	-0.11	0.200	0.233
	FR1 n66_Ant 6	40M	BPSK	1	1	Left Tilted	0mm	DSI 2	349000	1745	21.10	21.70	1.148	-0.11	0.077	0.088
	FR1 n66_Ant 6	40M	BPSK	108	0	Left Tilted	0mm	DSI 2	349000	1745	21.04	21.70	1.164	0.05	0.069	0.080



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power table	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	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8	1	6	2437	17.92	18.00	1.019	100	1.000	0.06	0.786	0.801
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8	1	1	2412	17.87	18.00	1.030	100	1.000	-0.08	0.800	0.824
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8	1	11	2462	17.62	18.00	1.091	100	1.000	-0.14	0.628	0.685
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 8	1	6	2437	17.92	18.00	1.019	100	1.000	-0.11	0.463	0.472
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 8	1	6	2437	17.92	18.00	1.019	100	1.000	0.05	0.338	0.344
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8	1	6	2437	17.92	18.00	1.019	100	1.000	0.09	0.394	0.402
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8+10	1	1	2412	20.91	21.00	1.022	100	1.000	-0.06	0.751	0.768
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 8+10	1	1	2412	20.91	21.00	1.022	100	1.000	0.03	0.483	0.494
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 8+10	1	1	2412	20.91	21.00	1.022	100	1.000	0.15	0.395	0.404
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8+10	1	1	2412	20.91	21.00	1.022	100	1.000	-0.14	0.447	0.457
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	-0.18	0.301	0.306
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	-0.11	0.199	0.202
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	0.05	0.145	0.147
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	0.09	0.169	0.172
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	-0.12	0.330	0.337
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	0.03	0.212	0.217
WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	0.15	0.174	0.177	
WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	-0.14	0.197	0.201	
17	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	-0.04	0.155	0.175
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	0.03	0.076	0.086
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	-0.05	0.051	0.058
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	0.19	0.043	0.049
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	0.16	0.151	0.167
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	0.03	0.080	0.089
WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	-0.04	0.058	0.064	
WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	0.11	0.055	0.061	
18	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	-0.14	0.372	0.387
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	0.03	0.183	0.191
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	-0.05	0.123	0.128
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	0.19	0.104	0.109
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	0.16	0.315	0.378
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	0.03	0.182	0.219
WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	-0.04	0.131	0.157	
WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	0.11	0.125	0.150	



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	0.02	0.261	0.294
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	0.09	0.135	0.152
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	-0.14	0.111	0.125
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	0.12	0.109	0.123
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	0.01	0.001	0.001
19	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	0.19	0.253	0.325
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	0.03	0.117	0.150
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	-0.11	0.092	0.118
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	0.05	0.083	0.107
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	0.05	0.104	0.147
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	0.09	0.054	0.076
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	-0.14	0.044	0.063
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	0.12	0.044	0.062
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	-0.14	0.146	0.183
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	0.03	0.066	0.082
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	-0.11	0.057	0.072
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	0.05	0.045	0.057
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 9	1	165	5825	17.93	18.00	1.017	98.28	1.018	0.05	0.113	0.117
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 9	1	165	5825	17.93	18.00	1.017	98.28	1.018	0.02	0.105	0.109
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 9	1	165	5825	17.93	18.00	1.017	98.28	1.018	-0.14	0.097	0.100
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 9	1	165	5825	17.93	18.00	1.017	98.28	1.018	0.13	0.087	0.090
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 10	1	165	5825	17.70	18.00	1.073	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 10	1	165	5825	17.70	18.00	1.073	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 10	1	165	5825	17.70	18.00	1.073	98.28	1.018	0.01	0.001	0.001
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 10	1	165	5825	17.70	18.00	1.073	98.28	1.018	0.01	0.001	0.001
20	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 9+10	1	165	5825	20.82	21.00	1.042	98.28	1.018	0.16	0.136	0.144
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 9+10	1	165	5825	20.82	21.00	1.042	98.28	1.018	0.06	0.113	0.120
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 9+10	1	165	5825	20.82	21.00	1.042	98.28	1.018	0.02	0.092	0.098
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 9+10	1	165	5825	20.82	21.00	1.042	98.28	1.018	-0.14	0.086	0.091
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	-0.06	0.079	0.108
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	0.02	0.060	0.083
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	-0.14	0.056	0.077
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	0.13	0.050	0.069
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	0.01	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	-0.08	0.074	0.090
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	0.06	0.061	0.075
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	0.02	0.050	0.061
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	-0.14	0.046	0.057



<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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)
21	Bluetooth	1Mbps	Right Cheek	0mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	0.13	0.173	0.201
	Bluetooth	1Mbps	Right Tilted	0mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	-0.03	0.166	0.193
	Bluetooth	1Mbps	Left Cheek	0mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	-0.16	0.074	0.086
	Bluetooth	1Mbps	Left Tilted	0mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	-0.04	0.110	0.128

15.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850_Ant 0	GPRS (2 Tx slots)	Front	10mm	DSI 4	189	836.4	29.93	30.00	1.016	-0.18	0.207	0.210
	GSM850_Ant 0	GPRS (2 Tx slots)	Back	10mm	DSI 4	189	836.4	29.93	30.00	1.016	-0.02	0.218	0.222
	GSM850_Ant 0	GPRS (2 Tx slots)	Left Side	10mm	DSI 4	189	836.4	29.93	30.00	1.016	-0.19	0.169	0.172
	GSM850_Ant 0	GPRS (2 Tx slots)	Right Side	10mm	DSI 4	189	836.4	29.93	30.00	1.016	-0.14	0.041	0.042
	GSM850_Ant 0	GPRS (2 Tx slots)	Bottom Side	10mm	DSI 4	189	836.4	29.93	30.00	1.016	0	0.262	0.266
	GSM850_Ant 1	GPRS (4 Tx slots)	Front	10mm	DSI 4	251	848.8	25.02	26.00	1.253	-0.11	0.223	0.279
22	GSM850_Ant 1	GPRS (4 Tx slots)	Back	10mm	DSI 4	251	848.8	25.02	26.00	1.253	-0.03	0.273	0.342
	GSM850_Ant 1	GPRS (4 Tx slots)	Right Side	10mm	DSI 4	251	848.8	25.02	26.00	1.253	0.05	0.164	0.206
	GSM850_Ant 1	GPRS (4 Tx slots)	Top Side	10mm	DSI 4	251	848.8	25.02	26.00	1.253	-0.09	0.214	0.268
	GSM1900_Ant 2	GPRS (2 Tx slots)	Front	10mm	DSI 4	661	1880	27.09	27.50	1.099	-0.03	0.192	0.211
	GSM1900_Ant 2	GPRS (2 Tx slots)	Back	10mm	DSI 4	661	1880	27.09	27.50	1.099	-0.03	0.259	0.285
	GSM1900_Ant 2	GPRS (2 Tx slots)	Right Side	10mm	DSI 4	661	1880	27.09	27.50	1.099	-0.02	0.183	0.201
23	GSM1900_Ant 2	GPRS (2 Tx slots)	Bottom Side	10mm	DSI 4	661	1880	27.09	27.50	1.099	-0.03	0.446	0.490
	GSM1900_Ant 6	GPRS (2 Tx slots)	Front	10mm	DSI 4	661	1880	26.64	27.00	1.086	-0.09	0.115	0.125
	GSM1900_Ant 6	GPRS (2 Tx slots)	Back	10mm	DSI 4	661	1880	26.64	27.00	1.086	-0.07	0.160	0.174
	GSM1900_Ant 6	GPRS (2 Tx slots)	Left Side	10mm	DSI 4	661	1880	26.64	27.00	1.086	-0.09	0.267	0.290
	GSM1900_Ant 6	GPRS (2 Tx slots)	Top Side	10mm	DSI 4	661	1880	26.64	27.00	1.086	0.08	0.067	0.073



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_Ant 2	RMC 12.2Kbps	Front	10mm	DSI 4	9538	1907.6	23.55	24.00	1.109	0.18	0.391	0.434
	WCDMA II_Ant 2	RMC 12.2Kbps	Back	10mm	DSI 4	9538	1907.6	23.55	24.00	1.109	0.01	0.425	0.471
	WCDMA II_Ant 2	RMC 12.2Kbps	Right Side	10mm	DSI 4	9538	1907.6	23.55	24.00	1.109	0.03	0.330	0.366
24	WCDMA II_Ant 2	RMC 12.2Kbps	Bottom Side	10mm	DSI 4	9538	1907.6	23.55	24.00	1.109	-0.06	0.835	0.926
	WCDMA II_Ant 2	RMC 12.2Kbps	Bottom Side	10mm	DSI 4	9262	1852.4	23.53	24.00	1.114	-0.09	0.770	0.858
	WCDMA II_Ant 2	RMC 12.2Kbps	Bottom Side	10mm	DSI 4	9400	1880	23.51	24.00	1.119	-0.07	0.825	0.924
	WCDMA II_Ant 6	RMC 12.2Kbps	Front	10mm	DSI 4	9538	1907.6	23.23	23.50	1.064	-0.1	0.243	0.259
	WCDMA II_Ant 6	RMC 12.2Kbps	Back	10mm	DSI 4	9538	1907.6	23.23	23.50	1.064	-0.01	0.314	0.334
	WCDMA II_Ant 6	RMC 12.2Kbps	Left Side	10mm	DSI 4	9538	1907.6	23.23	23.50	1.064	-0.14	0.396	0.421
	WCDMA II_Ant 6	RMC 12.2Kbps	Top Side	10mm	DSI 4	9538	1907.6	23.23	23.50	1.064	-0.1	0.126	0.134
	WCDMA IV_Ant 2	RMC 12.2Kbps	Front	10mm	DSI 4	1312	1712.4	23.69	24.00	1.074	-0.01	0.290	0.311
	WCDMA IV_Ant 2	RMC 12.2Kbps	Back	10mm	DSI 4	1312	1712.4	23.69	24.00	1.074	0.01	0.407	0.437
	WCDMA IV_Ant 2	RMC 12.2Kbps	Right Side	10mm	DSI 4	1312	1712.4	23.69	24.00	1.074	-0.05	0.264	0.284
	WCDMA IV_Ant 2	RMC 12.2Kbps	Bottom Side	10mm	DSI 4	1312	1712.4	23.69	24.00	1.074	-0.04	0.506	0.543
	WCDMA IV_Ant 6	RMC 12.2Kbps	Front	10mm	DSI 4	1413	1732.6	23.17	23.50	1.079	-0.09	0.304	0.328
	WCDMA IV_Ant 6	RMC 12.2Kbps	Back	10mm	DSI 4	1413	1732.6	23.17	23.50	1.079	-0.03	0.383	0.413
25	WCDMA IV_Ant 6	RMC 12.2Kbps	Left Side	10mm	DSI 4	1413	1732.6	23.17	23.50	1.079	-0.04	0.570	0.615
	WCDMA IV_Ant 6	RMC 12.2Kbps	Top Side	10mm	DSI 4	1413	1732.6	23.17	23.50	1.079	-0.15	0.120	0.129
	WCDMA V_Ant 0	RMC 12.2Kbps	Front	10mm	DSI 4	4182	836.4	23.14	24.00	1.219	-0.14	0.335	0.408
26	WCDMA V_Ant 0	RMC 12.2Kbps	Back	10mm	DSI 4	4182	836.4	23.14	24.00	1.219	-0.15	0.373	0.455
	WCDMA V_Ant 0	RMC 12.2Kbps	Left Side	10mm	DSI 4	4182	836.4	23.14	24.00	1.219	-0.11	0.204	0.249
	WCDMA V_Ant 0	RMC 12.2Kbps	Right Side	10mm	DSI 4	4182	836.4	23.14	24.00	1.219	-0.07	0.072	0.088
	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom Side	10mm	DSI 4	4182	836.4	23.14	24.00	1.219	-0.1	0.298	0.363
	WCDMA V_Ant 1	RMC 12.2Kbps	Front	10mm	DSI 4	4182	836.4	22.84	23.50	1.164	0.01	0.152	0.177
	WCDMA V_Ant 1	RMC 12.2Kbps	Back	10mm	DSI 4	4182	836.4	22.84	23.50	1.164	-0.02	0.180	0.210
	WCDMA V_Ant 1	RMC 12.2Kbps	Right Side	10mm	DSI 4	4182	836.4	22.84	23.50	1.164	-0.05	0.144	0.168
	WCDMA V_Ant 1	RMC 12.2Kbps	Top Side	10mm	DSI 4	4182	836.4	22.84	23.50	1.164	0.06	0.145	0.169



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2_Ant 2	20M	QPSK	1	0	Front	10mm	DSI 4	19100	1900	22.36	23.00	1.159	-0.07	0.313	0.363
	LTE Band 2_Ant 2	20M	QPSK	50	0	Front	10mm	DSI 4	19100	1900	21.40	22.00	1.148	-0.1	0.307	0.352
	LTE Band 2_Ant 2	20M	QPSK	1	0	Back	10mm	DSI 4	19100	1900	22.36	23.00	1.159	-0.01	0.371	0.430
	LTE Band 2_Ant 2	20M	QPSK	50	0	Back	10mm	DSI 4	19100	1900	21.40	22.00	1.148	-0.14	0.293	0.336
	LTE Band 2_Ant 2	20M	QPSK	1	0	Right Side	10mm	DSI 4	19100	1900	22.36	23.00	1.159	-0.04	0.232	0.269
	LTE Band 2_Ant 2	20M	QPSK	50	0	Right Side	10mm	DSI 4	19100	1900	21.40	22.00	1.148	-0.17	0.211	0.242
27	LTE Band 2_Ant 2	20M	QPSK	1	0	Bottom Side	10mm	DSI 4	19100	1900	22.36	23.00	1.159	-0.06	0.589	0.683
	LTE Band 2_Ant 2	20M	QPSK	50	0	Bottom Side	10mm	DSI 4	19100	1900	21.40	22.00	1.148	-0.01	0.457	0.525
	LTE Band 2_Ant 6	20M	QPSK	1	0	Front	10mm	DSI 4	18700	1860	21.50	23.00	1.413	-0.02	0.165	0.233
	LTE Band 2_Ant 6	20M	QPSK	50	0	Front	10mm	DSI 4	18700	1860	20.20	22.00	1.514	-0.08	0.141	0.213
	LTE Band 2_Ant 6	20M	QPSK	1	0	Back	10mm	DSI 4	18700	1860	21.50	23.00	1.413	-0.1	0.188	0.266
	LTE Band 2_Ant 6	20M	QPSK	50	0	Back	10mm	DSI 4	18700	1860	20.20	22.00	1.514	-0.1	0.179	0.271
	LTE Band 2_Ant 6	20M	QPSK	1	0	Left Side	10mm	DSI 4	18700	1860	21.50	23.00	1.413	-0.05	0.243	0.343
	LTE Band 2_Ant 6	20M	QPSK	50	0	Left Side	10mm	DSI 4	18700	1860	20.20	22.00	1.514	0.06	0.221	0.334
	LTE Band 2_Ant 6	20M	QPSK	1	0	Top Side	10mm	DSI 4	18700	1860	21.50	23.00	1.413	-0.02	0.113	0.160
	LTE Band 2_Ant 6	20M	QPSK	25	0	Top Side	10mm	DSI 4	18700	1860	20.20	22.00	1.514	-0.06	0.092	0.139
	LTE Band 5_Ant 0	10M	QPSK	1	0	Front	10mm	DSI 4	20525	836.5	21.77	23.00	1.327	-0.03	0.250	0.332
	LTE Band 5_Ant 0	10M	QPSK	25	0	Front	10mm	DSI 4	20525	836.5	20.91	22.00	1.285	-0.02	0.134	0.172
28	LTE Band 5_Ant 0	10M	QPSK	1	0	Back	10mm	DSI 4	20525	836.5	21.77	23.00	1.327	-0.03	0.263	0.349
	LTE Band 5_Ant 0	10M	QPSK	25	0	Back	10mm	DSI 4	20525	836.5	20.91	22.00	1.285	-0.02	0.200	0.257
	LTE Band 5_Ant 0	10M	QPSK	1	0	Left Side	10mm	DSI 4	20525	836.5	21.77	23.00	1.327	-0.04	0.156	0.207
	LTE Band 5_Ant 0	10M	QPSK	25	0	Left Side	10mm	DSI 4	20525	836.5	20.91	22.00	1.285	-0.09	0.115	0.148
	LTE Band 5_Ant 0	10M	QPSK	1	0	Right Side	10mm	DSI 4	20525	836.5	21.77	23.00	1.327	-0.06	0.053	0.070
	LTE Band 5_Ant 0	10M	QPSK	25	0	Right Side	10mm	DSI 4	20525	836.5	20.91	22.00	1.285	-0.12	0.038	0.049
	LTE Band 5_Ant 0	10M	QPSK	1	0	Bottom Side	10mm	DSI 4	20525	836.5	21.77	23.00	1.327	-0.01	0.214	0.284
	LTE Band 5_Ant 0	10M	QPSK	25	0	Bottom Side	10mm	DSI 4	20525	836.5	20.91	22.00	1.285	-0.04	0.148	0.190
	LTE Band 5B_Ant 0	10M	QPSK	1	0	Back	10mm	DSI 4	20575+20476	837	22.35	23.00	1.161	0.16	0.289	0.336
	LTE Band 5_Ant 1	10M	QPSK	1	0	Front	10mm	DSI 4	20525	836.5	21.30	23.00	1.479	-0.09	0.160	0.237
	LTE Band 5_Ant 1	10M	QPSK	25	0	Front	10mm	DSI 4	20525	836.5	20.42	22.00	1.439	-0.1	0.132	0.190
	LTE Band 5_Ant 1	10M	QPSK	1	0	Back	10mm	DSI 4	20525	836.5	21.30	23.00	1.479	-0.04	0.189	0.280
	LTE Band 5_Ant 1	10M	QPSK	25	0	Back	10mm	DSI 4	20525	836.5	20.42	22.00	1.439	-0.08	0.163	0.235
	LTE Band 5_Ant 1	10M	QPSK	1	0	Right Side	10mm	DSI 4	20525	836.5	21.30	23.00	1.479	0	0.169	0.250
	LTE Band 5_Ant 1	10M	QPSK	25	0	Right Side	10mm	DSI 4	20525	836.5	20.42	22.00	1.439	-0.1	0.137	0.197
	LTE Band 5_Ant 1	10M	QPSK	1	0	Top Side	10mm	DSI 4	20525	836.5	21.30	23.00	1.479	0.06	0.155	0.229
	LTE Band 5_Ant 1	10M	QPSK	25	0	Top Side	10mm	DSI 4	20525	836.5	20.42	22.00	1.439	-0.18	0.130	0.187
	LTE Band 5B_Ant 1	10M	QPSK	1	0	Back	10mm	DSI 4	20575+20476	837	22.61	23.00	1.094	0.07	0.243	0.266



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7_Ant 2	20M	QPSK	1	0	Front	10mm	DSI 4	21350	2560	22.60	23.00	1.096	-0.16	0.467	0.512
	LTE Band 7_Ant 2	20M	QPSK	50	0	Front	10mm	DSI 4	21350	2560	21.76	22.00	1.057	-0.11	0.377	0.398
	LTE Band 7_Ant 2	20M	QPSK	1	0	Back	10mm	DSI 4	21350	2560	22.60	23.00	1.096	-0.02	0.518	0.568
	LTE Band 7_Ant 2	20M	QPSK	50	0	Back	10mm	DSI 4	21350	2560	21.76	22.00	1.057	-0.16	0.434	0.459
	LTE Band 7_Ant 2	20M	QPSK	1	0	Right Side	10mm	DSI 4	21350	2560	22.60	23.00	1.096	-0.04	0.119	0.130
	LTE Band 7_Ant 2	20M	QPSK	50	0	Right Side	10mm	DSI 4	21350	2560	21.76	22.00	1.057	-0.14	0.097	0.103
	LTE Band 7_Ant 2	20M	QPSK	1	0	Bottom Side	10mm	DSI 4	21350	2560	22.60	23.00	1.096	0.01	0.646	0.708
	LTE Band 7_Ant 2	20M	QPSK	50	0	Bottom Side	10mm	DSI 4	21350	2560	21.76	22.00	1.057	-0.14	0.549	0.580
	LTE Band 7_Ant 6	20M	QPSK	1	0	Front	10mm	DSI 4	21350	2560	21.30	23.00	1.479	-0.01	0.334	0.494
	LTE Band 7_Ant 6	20M	QPSK	50	0	Front	10mm	DSI 4	21350	2560	20.47	22.00	1.422	0.11	0.265	0.377
	LTE Band 7_Ant 6	20M	QPSK	1	0	Back	10mm	DSI 4	21350	2560	21.30	23.00	1.479	0.16	0.397	0.587
	LTE Band 7_Ant 6	20M	QPSK	50	0	Back	10mm	DSI 4	21350	2560	20.47	22.00	1.422	0.13	0.349	0.496
29	LTE Band 7_Ant 6	20M	QPSK	1	0	Left Side	10mm	DSI 4	21350	2560	21.30	23.00	1.479	0.17	0.536	0.793
	LTE Band 7_Ant 6	20M	QPSK	50	0	Left Side	10mm	DSI 4	21350	2560	20.47	22.00	1.422	0.11	0.525	0.747
	LTE Band 7_Ant 6	20M	QPSK	1	0	Top Side	10mm	DSI 4	21350	2560	21.30	23.00	1.479	-0.11	0.084	0.124
	LTE Band 7_Ant 6	20M	QPSK	50	0	Top Side	10mm	DSI 4	21350	2560	20.47	22.00	1.422	-0.11	0.071	0.101
	LTE Band 12_Ant 0	10M	QPSK	1	0	Front	10mm	DSI 4	23095	707.5	22.14	23.00	1.219	-0.13	0.083	0.101
	LTE Band 12_Ant 0	10M	QPSK	25	0	Front	10mm	DSI 4	23095	707.5	21.22	22.00	1.197	-0.09	0.079	0.095
	LTE Band 12_Ant 0	10M	QPSK	1	0	Back	10mm	DSI 4	23095	707.5	22.14	23.00	1.219	-0.13	0.093	0.113
	LTE Band 12_Ant 0	10M	QPSK	25	0	Back	10mm	DSI 4	23095	707.5	21.22	22.00	1.197	-0.12	0.074	0.089
	LTE Band 12_Ant 0	10M	QPSK	1	0	Left Side	10mm	DSI 4	23095	707.5	22.14	23.00	1.219	-0.11	0.123	0.150
	LTE Band 12_Ant 0	10M	QPSK	25	0	Left Side	10mm	DSI 4	23095	707.5	21.22	22.00	1.197	-0.09	0.112	0.134
	LTE Band 12_Ant 0	10M	QPSK	1	0	Right Side	10mm	DSI 4	23095	707.5	22.14	23.00	1.219	-0.12	0.060	0.073
	LTE Band 12_Ant 0	10M	QPSK	25	0	Right Side	10mm	DSI 4	23095	707.5	21.22	22.00	1.197	-0.1	0.047	0.056
	LTE Band 12_Ant 0	10M	QPSK	1	0	Bottom Side	10mm	DSI 4	23095	707.5	22.14	23.00	1.219	-0.13	0.087	0.106
	LTE Band 12_Ant 0	10M	QPSK	25	0	Bottom Side	10mm	DSI 4	23095	707.5	21.22	22.00	1.197	-0.14	0.074	0.089
	LTE Band 12_Ant 1	10M	QPSK	1	0	Front	10mm	DSI 4	23095	707.5	21.57	23.00	1.390	0.17	0.090	0.125
	LTE Band 12_Ant 1	10M	QPSK	25	0	Front	10mm	DSI 4	23095	707.5	20.68	22.00	1.355	-0.18	0.082	0.111
	LTE Band 12_Ant 1	10M	QPSK	1	0	Back	10mm	DSI 4	23095	707.5	21.57	23.00	1.390	-0.12	0.105	0.146
	LTE Band 12_Ant 1	10M	QPSK	25	0	Back	10mm	DSI 4	23095	707.5	20.68	22.00	1.355	-0.12	0.102	0.138
30	LTE Band 12_Ant 1	10M	QPSK	1	0	Right Side	10mm	DSI 4	23095	707.5	21.57	23.00	1.390	0.07	0.113	0.157
	LTE Band 12_Ant 1	10M	QPSK	25	0	Right Side	10mm	DSI 4	23095	707.5	20.68	22.00	1.355	-0.16	0.096	0.130
	LTE Band 12_Ant 1	10M	QPSK	1	0	Top Side	10mm	DSI 4	23095	707.5	21.57	23.00	1.390	-0.15	0.108	0.150
	LTE Band 12_Ant 1	10M	QPSK	25	0	Top Side	10mm	DSI 4	23095	707.5	20.68	22.00	1.355	-0.14	0.091	0.123



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 13_Ant 0	10M	QPSK	1	0	Front	10mm	DSI 4	23230	782	22.61	23.00	1.094	-0.05	0.157	0.172
	LTE Band 13_Ant 0	10M	QPSK	25	0	Front	10mm	DSI 4	23230	782	21.65	22.00	1.084	-0.19	0.146	0.158
31	LTE Band 13_Ant 0	10M	QPSK	1	0	Back	10mm	DSI 4	23230	782	22.61	23.00	1.094	0.07	0.167	0.183
	LTE Band 13_Ant 0	10M	QPSK	25	0	Back	10mm	DSI 4	23230	782	21.65	22.00	1.084	-0.14	0.142	0.154
	LTE Band 13_Ant 0	10M	QPSK	1	0	Left Side	10mm	DSI 4	23230	782	22.61	23.00	1.094	-0.09	0.143	0.156
	LTE Band 13_Ant 0	10M	QPSK	25	0	Left Side	10mm	DSI 4	23230	782	21.65	22.00	1.084	-0.18	0.128	0.139
	LTE Band 13_Ant 0	10M	QPSK	1	0	Right Side	10mm	DSI 4	23230	782	22.61	23.00	1.094	-0.03	0.056	0.061
	LTE Band 13_Ant 0	10M	QPSK	25	0	Right Side	10mm	DSI 4	23230	782	21.65	22.00	1.084	-0.12	0.052	0.056
	LTE Band 13_Ant 0	10M	QPSK	1	0	Bottom Side	10mm	DSI 4	23230	782	22.61	23.00	1.094	-0.09	0.157	0.172
	LTE Band 13_Ant 0	10M	QPSK	25	0	Bottom Side	10mm	DSI 4	23230	782	21.65	22.00	1.084	-0.17	0.134	0.145
	LTE Band 13_Ant 1	10M	QPSK	1	0	Front	10mm	DSI 4	23230	782	22.31	23.00	1.172	0.01	0.104	0.122
	LTE Band 13_Ant 1	10M	QPSK	25	0	Front	10mm	DSI 4	23230	782	21.32	22.00	1.169	0.05	0.095	0.111
	LTE Band 13_Ant 1	10M	QPSK	1	0	Back	10mm	DSI 4	23230	782	22.31	23.00	1.172	-0.06	0.135	0.158
	LTE Band 13_Ant 1	10M	QPSK	25	0	Back	10mm	DSI 4	23230	782	21.32	22.00	1.169	0	0.126	0.147
	LTE Band 13_Ant 1	10M	QPSK	1	0	Right Side	10mm	DSI 4	23230	782	22.31	23.00	1.172	-0.09	0.115	0.135
	LTE Band 13_Ant 1	10M	QPSK	25	0	Right Side	10mm	DSI 4	23230	782	21.32	22.00	1.169	-0.11	0.094	0.110
	LTE Band 13_Ant 1	10M	QPSK	1	0	Top Side	10mm	DSI 4	23230	782	22.31	23.00	1.172	-0.07	0.089	0.104
	LTE Band 13_Ant 1	10M	QPSK	25	0	Top Side	10mm	DSI 4	23230	782	21.32	22.00	1.169	-0.16	0.078	0.091
	LTE Band 66_Ant 2	20M	QPSK	1	0	Front	10mm	DSI 4	132572	1770	22.60	23.00	1.096	-0.09	0.313	0.343
	LTE Band 66_Ant 2	20M	QPSK	50	0	Front	10mm	DSI 4	132572	1770	21.61	22.00	1.094	-0.05	0.305	0.334
	LTE Band 66_Ant 2	20M	QPSK	1	0	Back	10mm	DSI 4	132572	1770	22.60	23.00	1.096	-0.02	0.357	0.391
	LTE Band 66_Ant 2	20M	QPSK	50	0	Back	10mm	DSI 4	132572	1770	21.61	22.00	1.094	-0.16	0.275	0.301
	LTE Band 66_Ant 2	20M	QPSK	1	0	Right Side	10mm	DSI 4	132572	1770	22.60	23.00	1.096	-0.18	0.278	0.305
	LTE Band 66_Ant 2	20M	QPSK	50	0	Right Side	10mm	DSI 4	132572	1770	21.61	22.00	1.094	-0.12	0.273	0.299
32	LTE Band 66_Ant 2	20M	QPSK	1	0	Bottom Side	10mm	DSI 4	132572	1770	22.60	23.00	1.096	-0.06	0.505	0.554
	LTE Band 66_Ant 2	20M	QPSK	50	0	Bottom Side	10mm	DSI 4	132572	1770	21.61	22.00	1.094	-0.01	0.405	0.443
	LTE Band 66C_Ant 2	20M	QPSK	1	0	Bottom Side	10mm	DSI 4	132322+132124	1745	22.99	23.00	1.002	0.05	0.532	0.533
	LTE Band 66_Ant 6	20M	QPSK	1	0	Front	10mm	DSI 4	132572	1770	21.77	23.00	1.327	-0.15	0.185	0.246
	LTE Band 66_Ant 6	20M	QPSK	50	0	Front	10mm	DSI 4	132572	1770	20.92	22.00	1.282	0.12	0.171	0.219
	LTE Band 66_Ant 6	20M	QPSK	1	0	Back	10mm	DSI 4	132572	1770	21.77	23.00	1.327	0.16	0.227	0.301
	LTE Band 66_Ant 6	20M	QPSK	50	0	Back	10mm	DSI 4	132572	1770	20.92	22.00	1.282	-0.18	0.194	0.249
	LTE Band 66_Ant 6	20M	QPSK	1	0	Left Side	10mm	DSI 4	132572	1770	21.77	23.00	1.327	0.12	0.298	0.396
	LTE Band 66_Ant 6	20M	QPSK	50	0	Left Side	10mm	DSI 4	132572	1770	20.92	22.00	1.282	0.03	0.252	0.323
	LTE Band 66_Ant 6	20M	QPSK	1	0	Top Side	10mm	DSI 4	132572	1770	21.77	23.00	1.327	0.04	0.116	0.154
	LTE Band 66_Ant 6	20M	QPSK	50	0	Top Side	10mm	DSI 4	132572	1770	20.92	22.00	1.282	0.17	0.099	0.127
	LTE Band 66C_Ant 6	20M	QPSK	1	99	Left Side	10mm	DSI 4	132072+132270	1720	21.71	23.00	1.346	0.15	0.273	0.367



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 48_Ant 4	20M	QPSK	1	0	Front	10mm	DSI 4	55830	3609	20.89	21.00	1.026	62.9	1.006	-0.11	0.272	0.281
	LTE Band 48_Ant 4	20M	QPSK	50	0	Front	10mm	DSI 4	55830	3609	20.86	21.00	1.033	62.9	1.006	-0.07	0.221	0.230
	LTE Band 48_Ant 4	20M	QPSK	1	0	Back	10mm	DSI 4	55830	3609	20.89	21.00	1.026	62.9	1.006	-0.04	0.297	0.306
	LTE Band 48_Ant 4	20M	QPSK	50	0	Back	10mm	DSI 4	55830	3609	20.86	21.00	1.033	62.9	1.006	-0.16	0.246	0.256
	LTE Band 48_Ant 4	20M	QPSK	1	0	Left Side	10mm	DSI 4	55830	3609	20.89	21.00	1.026	62.9	1.006	0.13	0.045	0.046
	LTE Band 48_Ant 4	20M	QPSK	50	0	Left Side	10mm	DSI 4	55830	3609	20.86	21.00	1.033	62.9	1.006	-0.11	0.039	0.041
	LTE Band 48_Ant 4	20M	QPSK	1	0	Right Side	10mm	DSI 4	55830	3609	20.89	21.00	1.026	62.9	1.006	0.09	0.082	0.085
	LTE Band 48_Ant 4	20M	QPSK	50	0	Right Side	10mm	DSI 4	55830	3609	20.86	21.00	1.033	62.9	1.006	0.17	0.067	0.070
	LTE Band 48_Ant 4	20M	QPSK	1	0	Top Side	10mm	DSI 4	55830	3609	20.89	21.00	1.026	62.9	1.006	-0.02	0.706	0.728
	LTE Band 48_Ant 4	20M	QPSK	1	0	Top Side	10mm	DSI 4	55340	3560	20.78	21.00	1.052	62.9	1.006	-0.02	0.651	0.689
	LTE Band 48_Ant 4	20M	QPSK	1	0	Top Side	10mm	DSI 4	56150	3641	20.84	21.00	1.038	62.9	1.006	-0.13	0.678	0.708
33	LTE Band 48_Ant 4	20M	QPSK	1	0	Top Side	10mm	DSI 4	56640	3690	20.85	21.00	1.035	62.9	1.006	0.03	0.723	0.753
	LTE Band 48_Ant 4	20M	QPSK	50	0	Top Side	10mm	DSI 4	55830	3609	20.86	21.00	1.033	62.9	1.006	-0.09	0.679	0.705
	LTE Band 48_Ant 4	20M	QPSK	50	0	Top Side	10mm	DSI 4	55340	3560	20.76	21.00	1.057	62.9	1.006	-0.06	0.633	0.673
	LTE Band 48_Ant 4	20M	QPSK	50	0	Top Side	10mm	DSI 4	56150	3641	20.81	21.00	1.045	62.9	1.006	-0.11	0.634	0.666
	LTE Band 48_Ant 4	20M	QPSK	50	0	Top Side	10mm	DSI 4	56640	3690	20.78	21.00	1.052	62.9	1.006	-0.1	0.682	0.722
	LTE Band 48_Ant 4	20M	QPSK	100	0	Top Side	10mm	DSI 4	55830	3609	20.76	21.00	1.057	62.9	1.006	-0.09	0.659	0.701
	LTE Band 48_Ant 0	20M	QPSK	1	0	Front	10mm	DSI 4	55830	3609	22.84	23.00	1.038	62.9	1.006	0.1	0.076	0.079
	LTE Band 48_Ant 0	20M	QPSK	50	0	Front	10mm	DSI 4	55830	3609	21.99	22.00	1.002	62.9	1.006	0.16	0.062	0.063
	LTE Band 48_Ant 0	20M	QPSK	1	0	Back	10mm	DSI 4	55830	3609	22.84	23.00	1.038	62.9	1.006	0.04	0.138	0.144
	LTE Band 48_Ant 0	20M	QPSK	50	0	Back	10mm	DSI 4	55830	3609	21.99	22.00	1.002	62.9	1.006	-0.04	0.121	0.122
	LTE Band 48_Ant 0	20M	QPSK	1	0	Left Side	10mm	DSI 4	55830	3609	22.84	23.00	1.038	62.9	1.006	-0.1	0.016	0.017
	LTE Band 48_Ant 0	20M	QPSK	50	0	Left Side	10mm	DSI 4	55830	3609	21.99	22.00	1.002	62.9	1.006	0.03	0.011	0.011
	LTE Band 48_Ant 0	20M	QPSK	1	0	Right Side	10mm	DSI 4	55830	3609	22.84	23.00	1.038	62.9	1.006	0.01	0.029	0.030
	LTE Band 48_Ant 0	20M	QPSK	50	0	Right Side	10mm	DSI 4	55830	3609	21.99	22.00	1.002	62.9	1.006	-0.08	0.023	0.023
	LTE Band 48_Ant 0	20M	QPSK	1	0	Bottom Side	10mm	DSI 4	55830	3609	22.84	23.00	1.038	62.9	1.006	0.01	0.180	0.188
	LTE Band 48_Ant 0	20M	QPSK	50	0	Bottom Side	10mm	DSI 4	55830	3609	21.99	22.00	1.002	62.9	1.006	0.14	0.142	0.143



<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n2_Ant 2	20M	BPSK	1	1	Front	10mm	DSI 4	372000	1860	23.98	24.00	1.005	0.02	0.266	0.267
	FR1 n2_Ant 2	20M	BPSK	50	28	Front	10mm	DSI 4	372000	1860	23.85	24.00	1.035	0.08	0.236	0.244
	FR1 n2_Ant 2	20M	BPSK	1	1	Back	10mm	DSI 4	372000	1860	23.98	24.00	1.005	0.04	0.392	0.394
	FR1 n2_Ant 2	20M	BPSK	50	28	Back	10mm	DSI 4	372000	1860	23.85	24.00	1.035	-0.03	0.364	0.377
	FR1 n2_Ant 2	20M	BPSK	1	1	Right Side	10mm	DSI 4	372000	1860	23.98	24.00	1.005	0.19	0.197	0.198
	FR1 n2_Ant 2	20M	BPSK	50	28	Right Side	10mm	DSI 4	372000	1860	23.85	24.00	1.035	-0.01	0.171	0.177
34	FR1 n2_Ant 2	20M	BPSK	1	1	Bottom Side	10mm	DSI 4	372000	1860	23.98	24.00	1.005	0.04	0.614	0.617
	FR1 n2_Ant 2	20M	BPSK	50	28	Bottom Side	10mm	DSI 4	372000	1860	23.85	24.00	1.035	0	0.514	0.532
	FR1 n2_Ant 6	20M	BPSK	1	1	Front	10mm	DSI 4	372000	1860	23.64	24.00	1.086	0.16	0.123	0.134
	FR1 n2_Ant 6	20M	BPSK	50	28	Front	10mm	DSI 4	372000	1860	23.31	24.00	1.172	0.08	0.104	0.122
	FR1 n2_Ant 6	20M	BPSK	1	1	Back	10mm	DSI 4	372000	1860	23.64	24.00	1.086	0.01	0.172	0.187
	FR1 n2_Ant 6	20M	BPSK	50	28	Back	10mm	DSI 4	372000	1860	23.31	24.00	1.172	-0.04	0.152	0.178
	FR1 n2_Ant 6	20M	BPSK	1	1	Left Side	10mm	DSI 4	372000	1860	23.64	24.00	1.086	0.14	0.274	0.298
	FR1 n2_Ant 6	20M	BPSK	50	28	Left Side	10mm	DSI 4	372000	1860	23.31	24.00	1.172	0.07	0.248	0.291
	FR1 n2_Ant 6	20M	BPSK	1	1	Top Side	10mm	DSI 4	372000	1860	23.64	24.00	1.086	0.18	0.093	0.101
	FR1 n2_Ant 6	20M	BPSK	50	28	Top Side	10mm	DSI 4	372000	1860	23.31	24.00	1.172	0.12	0.072	0.084
	FR1 n5_Ant 0	20M	BPSK	1	1	Front	10mm	DSI 4	167300	836.5	22.91	24.00	1.285	0.13	0.146	0.188
	FR1 n5_Ant 0	20M	BPSK	50	28	Front	10mm	DSI 4	167300	836.5	22.85	24.00	1.303	0.02	0.112	0.146
35	FR1 n5_Ant 0	20M	BPSK	1	1	Back	10mm	DSI 4	167300	836.5	22.91	24.00	1.285	-0.18	0.181	0.233
	FR1 n5_Ant 0	20M	BPSK	50	28	Back	10mm	DSI 4	167300	836.5	22.85	24.00	1.303	0.05	0.163	0.212
	FR1 n5_Ant 0	20M	BPSK	1	1	Left Side	10mm	DSI 4	167300	836.5	22.91	24.00	1.285	-0.12	0.086	0.111
	FR1 n5_Ant 0	20M	BPSK	50	28	Left Side	10mm	DSI 4	167300	836.5	22.85	24.00	1.303	-0.04	0.065	0.085
	FR1 n5_Ant 0	20M	BPSK	1	1	Right Side	10mm	DSI 4	167300	836.5	22.91	24.00	1.285	0.1	0.030	0.039
	FR1 n5_Ant 0	20M	BPSK	50	28	Right Side	10mm	DSI 4	167300	836.5	22.85	24.00	1.303	0.03	0.024	0.031
	FR1 n5_Ant 0	20M	BPSK	1	1	Bottom Side	10mm	DSI 4	167300	836.5	22.91	24.00	1.285	0.12	0.119	0.153
	FR1 n5_Ant 0	20M	BPSK	50	28	Bottom Side	10mm	DSI 4	167300	836.5	22.85	24.00	1.303	0	0.098	0.128
	FR1 n5_Ant 1	20M	BPSK	1	1	Front	10mm	DSI 4	167300	836.5	22.88	23.00	1.028	0.16	0.074	0.076
	FR1 n5_Ant 1	20M	BPSK	50	28	Front	10mm	DSI 4	167300	836.5	22.68	23.00	1.076	0.01	0.062	0.067
	FR1 n5_Ant 1	20M	BPSK	1	1	Back	10mm	DSI 4	167300	836.5	22.88	23.00	1.028	0.02	0.080	0.082
	FR1 n5_Ant 1	20M	BPSK	50	28	Back	10mm	DSI 4	167300	836.5	22.68	23.00	1.076	0.01	0.060	0.065
	FR1 n5_Ant 1	20M	BPSK	1	1	Right Side	10mm	DSI 4	167300	836.5	22.88	23.00	1.028	0.18	0.063	0.065
	FR1 n5_Ant 1	20M	BPSK	50	28	Right Side	10mm	DSI 4	167300	836.5	22.68	23.00	1.076	0.01	0.050	0.054
	FR1 n5_Ant 1	20M	BPSK	1	1	Top Side	10mm	DSI 4	167300	836.5	22.88	23.00	1.028	0.01	0.052	0.053
	FR1 n5_Ant 1	20M	BPSK	50	28	Top Side	10mm	DSI 4	167300	836.5	22.68	23.00	1.076	0.02	0.040	0.043
	FR1 n66_Ant 2	40M	BPSK	1	1	Front	10mm	DSI 4	349000	1745	23.89	24.00	1.026	0.14	0.221	0.227
	FR1 n66_Ant 2	40M	BPSK	108	0	Front	10mm	DSI 4	349000	1745	23.76	24.00	1.057	0.01	0.180	0.190
	FR1 n66_Ant 2	40M	BPSK	1	1	Back	10mm	DSI 4	349000	1745	23.89	24.00	1.026	-0.06	0.261	0.268
	FR1 n66_Ant 2	40M	BPSK	108	0	Back	10mm	DSI 4	349000	1745	23.76	24.00	1.057	-0.12	0.226	0.239
	FR1 n66_Ant 2	40M	BPSK	1	1	Right Side	10mm	DSI 4	349000	1745	23.89	24.00	1.026	0.16	0.223	0.229
	FR1 n66_Ant 2	40M	BPSK	108	0	Right Side	10mm	DSI 4	349000	1745	23.76	24.00	1.057	-0.02	0.187	0.198
36	FR1 n66_Ant 2	40M	BPSK	1	1	Bottom Side	10mm	DSI 4	349000	1745	23.89	24.00	1.026	0.04	0.380	0.390
	FR1 n66_Ant 2	40M	BPSK	108	0	Bottom Side	10mm	DSI 4	349000	1745	23.76	24.00	1.057	0.03	0.348	0.368
	FR1 n66_Ant 6	40M	BPSK	1	1	Front	10mm	DSI 4	349000	1745	22.81	23.00	1.045	0.17	0.141	0.147
	FR1 n66_Ant 6	40M	BPSK	108	0	Front	10mm	DSI 4	349000	1745	22.79	23.00	1.050	-0.09	0.120	0.126
	FR1 n66_Ant 6	40M	BPSK	1	1	Back	10mm	DSI 4	349000	1745	22.81	23.00	1.045	0.07	0.178	0.186
	FR1 n66_Ant 6	40M	BPSK	108	0	Back	10mm	DSI 4	349000	1745	22.79	23.00	1.050	0.05	0.159	0.167
	FR1 n66_Ant 6	40M	BPSK	1	1	Left Side	10mm	DSI 4	349000	1745	22.81	23.00	1.045	-0.09	0.241	0.252
	FR1 n66_Ant 6	40M	BPSK	108	0	Left Side	10mm	DSI 4	349000	1745	22.79	23.00	1.050	0	0.207	0.217
	FR1 n66_Ant 6	40M	BPSK	1	1	Top Side	10mm	DSI 4	349000	1745	22.81	23.00	1.045	-0.15	0.046	0.048
	FR1 n66_Ant 6	40M	BPSK	108	0	Top Side	10mm	DSI 4	349000	1745	22.79	23.00	1.050	-0.04	0.035	0.037



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power table	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	10mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	-0.16	0.051	0.052
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	-0.11	0.048	0.049
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	0.15	0.033	0.034
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	-0.12	0.071	0.072
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	0.03	0.048	0.049
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	-0.06	0.051	0.052
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	-0.11	0.041	0.042
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	0	0.001	0.001
37	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	-0.13	0.082	0.084
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	0.09	0.045	0.051
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	-0.12	0.071	0.080
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	-0.03	0.107	0.121
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	0	0.036	0.040
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	0.03	0.030	0.033
38	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	-0.01	0.261	0.286
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	0.18	0.064	0.070
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	-0.16	0.054	0.059
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	0.06	0.102	0.113
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	-0.04	0.247	0.274
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	-0.01	0.123	0.136
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	0.11	0.068	0.075
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	0.13	0.179	0.199
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	0.09	0.043	0.059
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	0.17	0.173	0.237
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	0	0.148	0.203
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	0.03	0.083	0.114
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	0.02	0.048	0.053
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	-0.15	0.264	0.292
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	-0.14	0.064	0.071
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	0.08	0.034	0.038
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	0.03	0.074	0.090
39	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	-0.06	0.282	0.345
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	-0.08	0.125	0.153
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	-0.06	0.062	0.076
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	0	0.130	0.159

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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	10mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	-0.02	0.050	0.058
	Bluetooth	1Mbps	Back	10mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	0.05	0.044	0.051
	Bluetooth	1Mbps	Left Side	10mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	-0.04	0.001	0.001
40	Bluetooth	1Mbps	Top Side	10mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	-0.18	0.069	0.080



15.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850_Ant 0	GPRS (2 Tx slots)	Front	10mm	DSI3	189	836.4	29.93	30.00	1.016	-0.18	0.207	0.210
	GSM850_Ant 0	GPRS (2 Tx slots)	Back	10mm	DSI3	189	836.4	29.93	30.00	1.016	-0.02	0.218	0.222
	GSM850_Ant 1	GPRS (4 Tx slots)	Front	10mm	DSI3	251	848.8	25.02	26.00	1.253	-0.11	0.223	0.279
41	GSM850_Ant 1	GPRS (4 Tx slots)	Back	10mm	DSI3	251	848.8	25.02	26.00	1.253	-0.03	0.273	0.342
	GSM1900_Ant 2	GPRS (2 Tx slots)	Front	10mm	DSI3	661	1880	27.09	27.50	1.099	-0.03	0.192	0.211
42	GSM1900_Ant 2	GPRS (2 Tx slots)	Back	10mm	DSI3	661	1880	27.09	27.50	1.099	-0.03	0.259	0.285
	GSM1900_Ant 6	GPRS (2 Tx slots)	Front	10mm	DSI3	661	1880	26.64	27.00	1.086	-0.09	0.115	0.125
	GSM1900_Ant 6	GPRS (2 Tx slots)	Back	10mm	DSI3	661	1880	26.64	27.00	1.086	-0.07	0.160	0.174

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_Ant 2	RMC 12.2Kbps	Front	10mm	DSI3	9538	1907.6	23.55	24.00	1.109	0.18	0.391	0.434
43	WCDMA II_Ant 2	RMC 12.2Kbps	Back	10mm	DSI3	9538	1907.6	23.55	24.00	1.109	0.01	0.425	0.471
	WCDMA II_Ant 6	RMC 12.2Kbps	Front	10mm	DSI3	9538	1907.6	23.23	23.50	1.064	-0.1	0.243	0.259
	WCDMA II_Ant 6	RMC 12.2Kbps	Back	10mm	DSI3	9538	1907.6	23.23	23.50	1.064	-0.01	0.314	0.334
	WCDMA IV_Ant 2	RMC 12.2Kbps	Front	10mm	DSI3	1312	1712.4	23.69	24.00	1.074	-0.01	0.290	0.311
44	WCDMA IV_Ant 2	RMC 12.2Kbps	Back	10mm	DSI3	1312	1712.4	23.69	24.00	1.074	0.01	0.407	0.437
	WCDMA IV_Ant 6	RMC 12.2Kbps	Front	10mm	DSI3	1413	1732.6	23.17	23.50	1.079	-0.09	0.304	0.328
	WCDMA IV_Ant 6	RMC 12.2Kbps	Back	10mm	DSI3	1413	1732.6	23.17	23.50	1.079	-0.03	0.383	0.413
	WCDMA V_Ant 0	RMC 12.2Kbps	Front	10mm	DSI3	4182	836.4	23.14	24.00	1.219	-0.14	0.335	0.408
45	WCDMA V_Ant 0	RMC 12.2Kbps	Back	10mm	DSI3	4182	836.4	23.14	24.00	1.219	-0.15	0.373	0.455
	WCDMA V_Ant 1	RMC 12.2Kbps	Front	10mm	DSI3	4182	836.4	22.84	23.50	1.164	0.01	0.152	0.177
	WCDMA V_Ant 1	RMC 12.2Kbps	Back	10mm	DSI3	4182	836.4	22.84	23.50	1.164	-0.02	0.180	0.210



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2_Ant 2	20M	QPSK	1	0	Front	10mm	DSI3	19100	1900	22.36	23.00	1.159	-0.07	0.313	0.363
	LTE Band 2_Ant 2	20M	QPSK	50	0	Front	10mm	DSI3	19100	1900	21.40	22.00	1.148	-0.1	0.307	0.352
46	LTE Band 2_Ant 2	20M	QPSK	1	0	Back	10mm	DSI3	19100	1900	22.36	23.00	1.159	-0.01	0.371	0.430
	LTE Band 2_Ant 2	20M	QPSK	50	0	Back	10mm	DSI3	19100	1900	21.40	22.00	1.148	-0.14	0.293	0.336
	LTE Band 2_Ant 6	20M	QPSK	1	0	Front	10mm	DSI3	18700	1860	21.50	23.00	1.413	-0.02	0.165	0.233
	LTE Band 2_Ant 6	20M	QPSK	50	0	Front	10mm	DSI3	18700	1860	20.20	22.00	1.514	-0.08	0.141	0.213
	LTE Band 2_Ant 6	20M	QPSK	1	0	Back	10mm	DSI3	18700	1860	21.50	23.00	1.413	-0.1	0.188	0.266
	LTE Band 2_Ant 6	20M	QPSK	50	0	Back	10mm	DSI3	18700	1860	20.20	22.00	1.514	-0.1	0.179	0.271
	LTE Band 5_Ant 0	10M	QPSK	1	0	Front	10mm	DSI3	20525	836.5	21.77	23.00	1.327	-0.03	0.250	0.332
	LTE Band 5_Ant 0	10M	QPSK	25	0	Front	10mm	DSI3	20525	836.5	20.91	22.00	1.285	-0.02	0.134	0.172
47	LTE Band 5_Ant 0	10M	QPSK	1	0	Back	10mm	DSI3	20525	836.5	21.77	23.00	1.327	-0.03	0.263	0.349
	LTE Band 5_Ant 0	10M	QPSK	25	0	Back	10mm	DSI3	20525	836.5	20.91	22.00	1.285	-0.02	0.200	0.257
	LTE Band 5B_Ant 0	10M	QPSK	1	0	Back	10mm	DSI3	20575+20476	837	22.35	23.00	1.161	0.16	0.289	0.336
	LTE Band 5_Ant 1	10M	QPSK	1	0	Front	10mm	DSI3	20525	836.5	21.30	23.00	1.479	-0.09	0.160	0.237
	LTE Band 5_Ant 1	10M	QPSK	25	0	Front	10mm	DSI3	20525	836.5	20.42	22.00	1.439	-0.1	0.132	0.190
	LTE Band 5_Ant 1	10M	QPSK	1	0	Back	10mm	DSI3	20525	836.5	21.30	23.00	1.479	-0.04	0.189	0.280
	LTE Band 5_Ant 1	10M	QPSK	25	0	Back	10mm	DSI3	20525	836.5	20.42	22.00	1.439	-0.08	0.163	0.235
	LTE Band 5B_Ant 1	10M	QPSK	1	0	Back	10mm	DSI3	20575+20476	837	22.61	23.00	1.094	0.07	0.243	0.266
	LTE Band 7_Ant 2	20M	QPSK	1	0	Front	10mm	DSI3	21350	2560	22.60	23.00	1.096	-0.16	0.467	0.512
	LTE Band 7_Ant 2	20M	QPSK	50	0	Front	10mm	DSI3	21350	2560	21.76	22.00	1.057	-0.11	0.377	0.398
	LTE Band 7_Ant 2	20M	QPSK	1	0	Back	10mm	DSI3	21350	2560	22.60	23.00	1.096	-0.02	0.518	0.568
	LTE Band 7_Ant 2	20M	QPSK	50	0	Back	10mm	DSI3	21350	2560	21.76	22.00	1.057	-0.16	0.434	0.459
	LTE Band 7_Ant 6	20M	QPSK	1	0	Front	10mm	DSI3	21350	2560	21.30	23.00	1.479	-0.01	0.334	0.494
	LTE Band 7_Ant 6	20M	QPSK	50	0	Front	10mm	DSI3	21350	2560	20.47	22.00	1.422	0.11	0.265	0.377
48	LTE Band 7_Ant 6	20M	QPSK	1	0	Back	10mm	DSI3	21350	2560	21.30	23.00	1.479	0.16	0.397	0.587
	LTE Band 7_Ant 6	20M	QPSK	50	0	Back	10mm	DSI3	21350	2560	20.47	22.00	1.422	0.13	0.349	0.496
	LTE Band 12_Ant 0	10M	QPSK	1	0	Front	10mm	DSI3	23095	707.5	22.14	23.00	1.219	-0.13	0.083	0.101
	LTE Band 12_Ant 0	10M	QPSK	25	0	Front	10mm	DSI3	23095	707.5	21.22	22.00	1.197	-0.09	0.079	0.095
	LTE Band 12_Ant 0	10M	QPSK	1	0	Back	10mm	DSI3	23095	707.5	22.14	23.00	1.219	-0.13	0.093	0.113
	LTE Band 12_Ant 0	10M	QPSK	25	0	Back	10mm	DSI3	23095	707.5	21.22	22.00	1.197	-0.12	0.074	0.089
	LTE Band 12_Ant 1	10M	QPSK	1	0	Front	10mm	DSI3	23095	707.5	21.57	23.00	1.390	0.17	0.090	0.125
	LTE Band 12_Ant 1	10M	QPSK	25	0	Front	10mm	DSI3	23095	707.5	20.68	22.00	1.355	-0.18	0.082	0.111
49	LTE Band 12_Ant 1	10M	QPSK	1	0	Back	10mm	DSI3	23095	707.5	21.57	23.00	1.390	-0.12	0.105	0.146
	LTE Band 12_Ant 1	10M	QPSK	25	0	Back	10mm	DSI3	23095	707.5	20.68	22.00	1.355	-0.12	0.102	0.138
	LTE Band 13_Ant 0	10M	QPSK	1	0	Front	10mm	DSI3	23230	782	22.61	23.00	1.094	-0.05	0.157	0.172
	LTE Band 13_Ant 0	10M	QPSK	25	0	Front	10mm	DSI3	23230	782	21.65	22.00	1.084	-0.19	0.146	0.158
50	LTE Band 13_Ant 0	10M	QPSK	1	0	Back	10mm	DSI3	23230	782	22.61	23.00	1.094	0.07	0.167	0.183
	LTE Band 13_Ant 0	10M	QPSK	25	0	Back	10mm	DSI3	23230	782	21.65	22.00	1.084	-0.14	0.142	0.154
	LTE Band 13_Ant 1	10M	QPSK	1	0	Front	10mm	DSI3	23230	782	22.31	23.00	1.172	0.01	0.104	0.122
	LTE Band 13_Ant 1	10M	QPSK	25	0	Front	10mm	DSI3	23230	782	21.32	22.00	1.169	0.05	0.095	0.111
	LTE Band 13_Ant 1	10M	QPSK	1	0	Back	10mm	DSI3	23230	782	22.31	23.00	1.172	-0.06	0.135	0.158
	LTE Band 13_Ant 1	10M	QPSK	25	0	Back	10mm	DSI3	23230	782	21.32	22.00	1.169	0	0.126	0.147
	LTE Band 66_Ant 2	20M	QPSK	1	0	Front	10mm	DSI3	132572	1770	22.60	23.00	1.096	-0.09	0.313	0.343
	LTE Band 66_Ant 2	20M	QPSK	50	0	Front	10mm	DSI3	132572	1770	21.61	22.00	1.094	-0.05	0.305	0.334
51	LTE Band 66_Ant 2	20M	QPSK	1	0	Back	10mm	DSI3	132572	1770	22.60	23.00	1.096	-0.02	0.357	0.391
	LTE Band 66_Ant 2	20M	QPSK	50	0	Back	10mm	DSI3	132572	1770	21.61	22.00	1.094	-0.16	0.275	0.301
	LTE Band 66C_Ant 2	20M	QPSK	1	0	Back	10mm	DSI3	132322+132124	1745	22.99	23.00	1.002	0.08	0.337	0.338
	LTE Band 66_Ant 6	20M	QPSK	1	0	Front	10mm	DSI3	132572	1770	21.77	23.00	1.327	-0.15	0.185	0.246
	LTE Band 66_Ant 6	20M	QPSK	50	0	Front	10mm	DSI3	132572	1770	20.92	22.00	1.282	0.12	0.171	0.219
	LTE Band 66_Ant 6	20M	QPSK	1	0	Back	10mm	DSI3	132572	1770	21.77	23.00	1.327	0.16	0.227	0.301
	LTE Band 66_Ant 6	20M	QPSK	50	0	Back	10mm	DSI3	132572	1770	20.92	22.00	1.282	-0.18	0.194	0.249
	LTE Band 66C_Ant 6	20M	QPSK	1	99	Back	10mm	DSI3	132072+132270	1720	21.71	23.00	1.346	0.04	0.209	0.281



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 48_Ant 4	20M	QPSK	1	0	Front	10mm	DSI3	55830	3609	22.51	23.00	1.119	62.9	1.006	-0.11	0.445	0.501
	LTE Band 48_Ant 4	20M	QPSK	50	0	Front	10mm	DSI3	55830	3609	21.61	22.00	1.094	62.9	1.006	-0.07	0.289	0.318
52	LTE Band 48_Ant 4	20M	QPSK	1	0	Back	10mm	DSI3	55830	3609	22.51	23.00	1.119	62.9	1.006	-0.04	0.486	0.547
	LTE Band 48_Ant 4	20M	QPSK	50	0	Back	10mm	DSI3	55830	3609	21.61	22.00	1.094	62.9	1.006	-0.16	0.322	0.354
	LTE Band 48_Ant 0	20M	QPSK	1	0	Front	10mm	DSI3	55830	3609	22.84	23.00	1.038	62.9	1.006	0.1	0.076	0.079
	LTE Band 48_Ant 0	20M	QPSK	50	0	Front	10mm	DSI3	55830	3609	21.99	22.00	1.002	62.9	1.006	0.16	0.062	0.063
	LTE Band 48_Ant 0	20M	QPSK	1	0	Back	10mm	DSI3	55830	3609	22.84	23.00	1.038	62.9	1.006	0.04	0.138	0.144
	LTE Band 48_Ant 0	20M	QPSK	50	0	Back	10mm	DSI3	55830	3609	21.99	22.00	1.002	62.9	1.006	-0.04	0.121	0.122

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n2_Ant 2	20M	BPSK	1	1	Front	10mm	DSI3	372000	1860	23.98	24.00	1.005	0.02	0.266	0.267
	FR1 n2_Ant 2	20M	BPSK	50	28	Front	10mm	DSI3	372000	1860	23.85	24.00	1.035	0.08	0.236	0.244
53	FR1 n2_Ant 2	20M	BPSK	1	1	Back	10mm	DSI3	372000	1860	23.98	24.00	1.005	0.04	0.392	0.394
	FR1 n2_Ant 2	20M	BPSK	50	28	Back	10mm	DSI3	372000	1860	23.85	24.00	1.035	-0.03	0.364	0.377
	FR1 n2_Ant 6	20M	BPSK	1	1	Front	10mm	DSI3	372000	1860	23.64	24.00	1.086	0.16	0.123	0.134
	FR1 n2_Ant 6	20M	BPSK	50	28	Front	10mm	DSI3	372000	1860	23.31	24.00	1.172	0.08	0.104	0.122
	FR1 n2_Ant 6	20M	BPSK	1	1	Back	10mm	DSI3	372000	1860	23.64	24.00	1.086	0.01	0.172	0.187
	FR1 n2_Ant 6	20M	BPSK	50	28	Back	10mm	DSI3	372000	1860	23.31	24.00	1.172	-0.04	0.152	0.178
	FR1 n5_Ant 0	20M	BPSK	1	1	Front	10mm	DSI3	167300	836.5	22.91	24.00	1.285	0.13	0.146	0.188
	FR1 n5_Ant 0	20M	BPSK	50	28	Front	10mm	DSI3	167300	836.5	22.85	24.00	1.303	0.02	0.112	0.146
54	FR1 n5_Ant 0	20M	BPSK	1	1	Back	10mm	DSI3	167300	836.5	22.91	24.00	1.285	-0.18	0.181	0.233
	FR1 n5_Ant 0	20M	BPSK	50	28	Back	10mm	DSI3	167300	836.5	22.85	24.00	1.303	0.05	0.163	0.212
	FR1 n5_Ant 1	20M	BPSK	1	1	Front	10mm	DSI3	167300	836.5	22.88	23.00	1.028	0.16	0.074	0.076
	FR1 n5_Ant 1	20M	BPSK	50	28	Front	10mm	DSI3	167300	836.5	22.68	23.00	1.076	0.01	0.062	0.067
	FR1 n5_Ant 1	20M	BPSK	1	1	Back	10mm	DSI3	167300	836.5	22.88	23.00	1.028	0.02	0.080	0.082
	FR1 n5_Ant 1	20M	BPSK	50	28	Back	10mm	DSI3	167300	836.5	22.68	23.00	1.076	0.01	0.060	0.065
	FR1 n66_Ant 2	40M	BPSK	1	1	Front	10mm	DSI3	349000	1745	23.89	24.00	1.026	0.14	0.221	0.227
	FR1 n66_Ant 2	40M	BPSK	108	0	Front	10mm	DSI3	349000	1745	23.76	24.00	1.057	0.01	0.180	0.190
55	FR1 n66_Ant 2	40M	BPSK	1	1	Back	10mm	DSI3	349000	1745	23.89	24.00	1.026	-0.06	0.261	0.268
	FR1 n66_Ant 2	40M	BPSK	108	0	Back	10mm	DSI3	349000	1745	23.76	24.00	1.057	-0.12	0.226	0.239
	FR1 n66_Ant 6	40M	BPSK	1	1	Front	10mm	DSI3	349000	1745	22.81	23.00	1.045	0.17	0.141	0.147
	FR1 n66_Ant 6	40M	BPSK	108	0	Front	10mm	DSI3	349000	1745	22.79	23.00	1.050	-0.09	0.120	0.126
	FR1 n66_Ant 6	40M	BPSK	1	1	Back	10mm	DSI3	349000	1745	22.81	23.00	1.045	0.07	0.178	0.186
	FR1 n66_Ant 6	40M	BPSK	108	0	Back	10mm	DSI3	349000	1745	22.79	23.00	1.050	0.05	0.159	0.167

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power table	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	10mm	Ant 8	1	6	2437	17.92	18.00	1.019	100	1.000	-0.05	0.159	0.162
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 8	1	6	2437	17.92	18.00	1.019	100	1.000	0.04	0.139	0.142
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 8+10	1	1	2412	20.91	21.00	1.022	100	1.000	0.06	0.213	0.218
56	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 8+10	1	1	2412	20.91	21.00	1.022	100	1.000	-0.09	0.232	0.237
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	-0.16	0.051	0.052
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 8	2	11	2462	14.43	14.50	1.016	100	1.000	-0.11	0.048	0.049
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	0.03	0.048	0.049
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 8+10	2	11	2462	17.41	17.50	1.021	100	1.000	-0.06	0.051	0.052
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	0.09	0.045	0.051
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9	2	42	5210	11.29	11.50	1.050	93.08	1.074	-0.12	0.071	0.080
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	0.03	0.030	0.033
57	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 10	2	42	5210	11.41	11.50	1.021	93.08	1.074	-0.01	0.261	0.286
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	0.06	0.102	0.113
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9+10	2	42	5210	14.36	14.50	1.033	93.08	1.074	-0.04	0.247	0.274
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	0.03	0.121	0.126
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	-0.02	0.241	0.251
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	-0.02	0.110	0.145
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	0	0.870	1.145
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 10	1	52	5260	16.04	17.50	1.401	98.28	1.018	0.06	0.829	1.182
58	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 10	1	56	5280	16.11	17.50	1.379	98.28	1.018	0.04	0.854	1.199
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 10	1	64	5320	16.36	17.50	1.302	98.28	1.018	-0.13	0.856	1.134
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	0.02	0.105	0.126
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	0.12	0.944	1.133
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	1	56	5280	19.75	20.50	1.188	98.28	1.018	0.04	0.918	1.110
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	1	60	5300	19.77	20.50	1.183	98.28	1.018	0	0.905	1.090
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	1	64	5320	19.68	20.50	1.207	98.28	1.018	-0.13	0.896	1.101
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	0.06	0.086	0.097
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	-0.11	0.164	0.185
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	0.04	0.081	0.100
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	-0.02	0.579	0.721
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	0.01	0.113	0.145
59	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	0.03	0.660	0.848
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	0.06	0.102	0.144
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	0.03	0.195	0.276
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	0.04	0.059	0.066
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	0.11	0.311	0.346
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	0.01	0.143	0.180
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	0.18	0.267	0.335



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 9	1	165	5825	17.93	18.00	1.017	98.28	1.018	-0.05	0.129	0.133
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9	1	165	5825	17.93	18.00	1.017	98.28	1.018	-0.14	0.374	0.387
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 10	1	165	5825	17.70	18.00	1.073	98.28	1.018	0.02	0.115	0.126
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 10	1	165	5825	17.70	18.00	1.073	98.28	1.018	0.02	0.593	0.648
	WLAN5GHz	802.11a 6Mbps	Front	10mm	Ant 9+10	1	165	5825	20.82	21.00	1.042	98.28	1.018	0.03	0.246	0.261
60	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	1	165	5825	20.82	21.00	1.042	98.28	1.018	-0.07	0.787	0.835
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	1	149	5745	20.64	21.00	1.087	98.28	1.018	0.03	0.723	0.800
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	1	157	5785	20.54	21.00	1.113	98.28	1.018	-0.11	0.735	0.833
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	0.09	0.043	0.059
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9	2	155	5775	12.44	13.50	1.276	93.08	1.074	0.17	0.173	0.237
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	0.02	0.048	0.053
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 10	2	155	5775	13.37	13.50	1.030	93.08	1.074	-0.15	0.264	0.292
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	0.03	0.074	0.090
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 9+10	2	155	5775	15.94	16.50	1.138	93.08	1.074	-0.06	0.282	0.345

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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)
61	Bluetooth	1Mbps	Front	10mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	-0.02	0.050	0.058
	Bluetooth	1Mbps	Back	10mm	Ant 8	39	2441	12.71	13.00	1.069	76.75	1.085	0.05	0.044	0.051

15.4 Product Specific SAR

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power table	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)
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	0.09	0.412	0.429
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	-0.03	0.967	1.006
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	-0.01	0.856	0.890
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 9	1	52	5260	17.41	17.50	1.022	98.28	1.018	0.14	0.264	0.275
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	-0.05	0.027	0.036
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	-0.13	1.350	1.776
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	0.17	0.100	0.132
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 10	1	60	5300	16.39	17.50	1.293	98.28	1.018	-0.05	0.124	0.163
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	0.08	0.768	0.922
62	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	-0.12	1.970	2.365
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 9+10	1	60	5300	19.77	20.50	1.183	98.28	1.018	0.03	1.840	2.216
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	-0.03	0.741	0.889
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	0.01	0.149	0.179
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 9+10	1	52	5260	19.78	20.50	1.179	98.28	1.018	0.08	0.200	0.240
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 9	2	58	5290	9.46	10.00	1.132	93.08	1.074	0.09	0.092	0.112
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 9	2	58	5290	9.46	10.00	1.132	93.08	1.074	-0.02	0.179	0.218
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 9	2	58	5290	9.46	10.00	1.132	93.08	1.074	-0.01	0.142	0.173
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 9	2	58	5290	9.46	10.00	1.132	93.08	1.074	0.14	0.060	0.073
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 10	2	58	5290	9.61	10.00	1.094	93.08	1.074	-0.05	0.014	0.016
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 10	2	58	5290	9.61	10.00	1.094	93.08	1.074	-0.07	0.438	0.515
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 10	2	58	5290	9.61	10.00	1.094	93.08	1.074	0.17	0.040	0.047
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 10	2	58	5290	9.61	10.00	1.094	93.08	1.074	-0.05	0.051	0.060
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 9+10	2	58	5290	12.55	13.00	1.109	93.08	1.074	0.08	0.185	0.220
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 9+10	2	58	5290	12.55	13.00	1.109	93.08	1.074	0.04	0.473	0.563
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 9+10	2	58	5290	12.55	13.00	1.109	93.08	1.074	-0.03	0.114	0.136
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 9+10	2	58	5290	12.55	13.00	1.109	93.08	1.074	0.01	0.035	0.042
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 9+10	2	58	5290	12.55	13.00	1.109	93.08	1.074	0.08	0.043	0.051



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power table	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)
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	0.09	0.246	0.277
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	-0.04	0.796	0.896
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	0.09	0.648	0.729
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 9	1	100	5500	17.57	18.00	1.105	98.28	1.018	0.13	0.163	0.184
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	0.17	0.109	0.136
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	-0.19	1.170	1.457
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	0.05	0.035	0.044
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 10	1	116	5580	17.13	18.00	1.223	98.28	1.018	-0.08	0.119	0.148
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	0.01	0.122	0.157
63	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	-0.08	1.370	1.759
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	-0.08	0.351	0.451
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	0.15	0.083	0.106
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 9+10	1	100	5500	19.99	21.00	1.261	98.28	1.018	0	0.127	0.162
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	0.09	0.188	0.266
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	-0.03	0.559	0.791
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	0.09	0.425	0.602
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 9	2	138	5690	12.30	13.50	1.318	93.08	1.074	0.13	0.096	0.136
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	0.17	0.072	0.080
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	-0.13	0.828	0.921
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	0.06	0.048	0.053
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 10	2	106	5530	13.35	13.50	1.035	93.08	1.074	-0.08	0.079	0.088
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	-0.14	0.080	0.100
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	0.07	0.784	0.985
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	-0.08	0.229	0.288
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	0.15	0.054	0.068
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 9+10	2	106	5530	15.82	16.50	1.169	93.08	1.074	0	0.083	0.104



15.5 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	FR1 n66_Ant 6	40M_BPSK_1_1	Right Cheek	0mm	-	349000	1745	21.10	21.70	1.148	-	-	-0.04	0.835	-	0.959
2nd	FR1 n66_Ant 6	40M_BPSK_1_1	Right Cheek	0mm	-	349000	1745	21.10	21.70	1.148	-	-	0.16	0.819	1.02	0.940
1st	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8	1	2412	17.87	18.00	1.030	100	1.000	-0.08	0.800	-	0.824
2nd	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 8	1	2412	17.87	18.00	1.030	100	1.000	0.06	0.791	1.01	0.815
1st	WCDMA II_Ant 2	RMC 12.2Kbps	Bottom Side	10mm	-	9538	1907.6	23.55	24.00	1.109	-	-	-0.06	0.835	-	0.926
2nd	WCDMA II_Ant 2	RMC 12.2Kbps	Bottom Side	10mm	-	9538	1907.6	23.55	24.00	1.109	-	-	-0.03	0.814	1.03	0.903
1st	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	52	5260	19.78	20.50	1.179	98.28	1.018	0.12	0.944	-	1.133
2nd	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 9+10	52	5260	19.78	20.50	1.179	98.28	1.018	0.04	0.914	1.03	1.097

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8W/kg$.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR $< 1.45W/kg$, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Head	Hotspot	Body-worn	Product Specific
1.	WWAN + NR + Bluetooth	Yes	Yes	Yes	Yes
2.	WWAN + NR + WLAN2.4GHz ANT 8	Yes	Yes	Yes	Yes
3.	WWAN + NR + WLAN5GHz ANT9	Yes	Yes	Yes	Yes
4.	WWAN + NR + WLAN2.4GHz ANT 8+10	Yes	Yes	Yes	Yes
5.	WWAN + NR + WLAN5GHz ANT9+10	Yes	Yes	Yes	Yes
6.	WWAN + NR + WLAN2.4GHz ANT 8 + WLAN5GHz ANT10	Yes	Yes	Yes	Yes
7.	WWAN + NR + WLAN5GHz ANT9 + Bluetooth	Yes	Yes	Yes	Yes
8.	WWAN + NR + WLAN5GHz ANT9+10 + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
2. All licensed modes share the same antenna part and cannot transmit simultaneously.
3. The Scaled SAR summation is calculated based on the same configuration and test position.
4. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) Scalar SAR summation < 1.6W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - iii) If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.



16.1 5G NR + LTE + WLAN + BT Sim-Tx analysis

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by Qualcomm® Smart Transmit, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.

Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values.

Smart Transmit current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x%, then the exposure margin left for 5G NR is capped to (100-x)%. Thus, the compliance equation for LTE + 5G NR is

x% * A + (100-x)% * B ≤ 1.0,

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and A ≤ 1.0; B is normalized reported time-averaged exposure ratio from 5G NR (i.e., PD exposure for 5G FR2 or SAR exposure for 5G FR1), and B ≤ 1.0.

Let C = normalized reported SAR exposure ratio from WLAN+BT, then for compliance,

x% * A + (100-x)% * B + C ≤ 1.0 (1)

x% * A + (100-x)% * B ≤ x% * max(A, B) + (100-x)% * max(A, B) ≤ max(A, B)

x% * A + (100-x)% * B + C ≤ max(A, B) + C ≤ 1.0 (2)

if A + C ≤ 1.0 and B + C ≤ 1.0 can be proven, then “x% * A + (100-x)% * B + C ≤ 1.0”. Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

- Step 1: Prove total exposure ratio (TER) of LTE + WLAN + BT < 1
Step 2: Prove total exposure ratio (TER) of 5G NR + WLAN + BT < 1



16.2 Head Exposure Conditions

<WWAN OFF>

Exposure Position	1	2	3	4	5	6	1+4 Summed 1g SAR (W/kg)	3+6 Summed 1g SAR (W/kg)	5+6 Summed 1g SAR (W/kg)
	2.4GHz WLAN Ant 8	2.4GHz WLAN Ant 8+10	5GHz WLAN Ant 9	5GHz WLAN Ant 10	5GHz WLAN Ant 9+10	Bluetooth Ant 8			
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
Right Cheek	0.824	0.768	0.387	0.001	0.378	0.201	0.825	0.588	0.579
Right Tilted	0.472	0.494	0.191	0.001	0.219	0.193	0.473	0.384	0.412
Left Cheek	0.344	0.404	0.128	0.001	0.157	0.086	0.345	0.214	0.243
Left Tilted	0.402	0.457	0.123	0.001	0.150	0.128	0.403	0.251	0.278

<WWAN ON>

WWAN Band	Exposure Position	1	2	3	4	5	6	7	1+7 Summed 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+4+7 Summed 1g SAR (W/kg)	1+6+7 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 8	2.4GHz WLAN Ant 8+10	5GHz WLAN Ant 9	5GHz WLAN Ant 10	5GHz WLAN Ant 9+10	Bluetooth Ant 8								
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)								
GSM850_Ant 0	Right Cheek	0.069	0.306	0.337	0.175	0.001	0.183	0.201	0.270	0.375	0.244	0.406	0.252	0.376	0.445	0.453
	Right Tilted	0.055	0.202	0.217	0.086	0.001	0.089	0.193	0.248	0.257	0.141	0.272	0.144	0.258	0.334	0.337
	Left Cheek	0.111	0.147	0.177	0.077	0.001	0.072	0.086	0.197	0.258	0.188	0.288	0.183	0.259	0.274	0.269
	Left Tilted	0.054	0.172	0.201	0.069	0.001	0.061	0.128	0.182	0.226	0.123	0.255	0.115	0.227	0.251	0.243
GSM850_Ant 1	Right Cheek	0.383	0.306	0.337	0.175	0.001	0.183	0.201	0.584	0.689	0.558	0.720	0.566	0.690	0.759	0.767
	Right Tilted	0.332	0.202	0.217	0.086	0.001	0.089	0.193	0.525	0.534	0.418	0.549	0.421	0.535	0.611	0.614
	Left Cheek	0.570	0.147	0.177	0.077	0.001	0.072	0.086	0.656	0.717	0.647	0.747	0.642	0.718	0.733	0.728
	Left Tilted	0.472	0.172	0.201	0.069	0.001	0.061	0.128	0.600	0.644	0.541	0.673	0.533	0.645	0.669	0.661
GSM1900_Ant 2	Right Cheek	0.068	0.306	0.337	0.175	0.001	0.183	0.201	0.269	0.374	0.243	0.405	0.251	0.375	0.444	0.452
	Right Tilted	0.046	0.202	0.217	0.086	0.001	0.089	0.193	0.239	0.248	0.132	0.263	0.135	0.249	0.325	0.328
	Left Cheek	0.058	0.147	0.177	0.077	0.001	0.072	0.086	0.144	0.205	0.135	0.235	0.130	0.206	0.221	0.216
	Left Tilted	0.019	0.172	0.201	0.069	0.001	0.061	0.128	0.147	0.191	0.088	0.220	0.080	0.192	0.216	0.208
GSM1900_Ant 6	Right Cheek	0.531	0.306	0.337	0.175	0.001	0.183	0.201	0.732	0.837	0.706	0.868	0.714	0.838	0.907	0.915
	Right Tilted	0.359	0.202	0.217	0.086	0.001	0.089	0.193	0.552	0.561	0.445	0.576	0.448	0.562	0.638	0.641
	Left Cheek	0.016	0.147	0.177	0.077	0.001	0.072	0.086	0.102	0.163	0.093	0.193	0.088	0.164	0.179	0.174
	Left Tilted	0.003	0.172	0.201	0.069	0.001	0.061	0.128	0.131	0.175	0.072	0.204	0.064	0.176	0.200	0.192
WCDMA II_Ant 2	Right Cheek	0.115	0.306	0.337	0.175	0.001	0.183	0.201	0.316	0.421	0.290	0.452	0.298	0.422	0.491	0.499
	Right Tilted	0.091	0.202	0.217	0.086	0.001	0.089	0.193	0.284	0.293	0.177	0.308	0.180	0.294	0.370	0.373
	Left Cheek	0.094	0.147	0.177	0.077	0.001	0.072	0.086	0.180	0.241	0.171	0.271	0.166	0.242	0.257	0.252
	Left Tilted	0.087	0.172	0.201	0.069	0.001	0.061	0.128	0.215	0.259	0.156	0.288	0.148	0.260	0.284	0.276
WCDMA II_Ant 6	Right Cheek	0.971	0.306	0.337	0.175	0.001	0.183	0.201	1.172	1.277	1.146	1.308	1.154	1.278	1.347	1.355
	Right Tilted	0.196	0.202	0.217	0.086	0.001	0.089	0.193	0.389	0.398	0.282	0.413	0.285	0.399	0.475	0.478
	Left Cheek	0.288	0.147	0.177	0.077	0.001	0.072	0.086	0.374	0.435	0.365	0.465	0.360	0.436	0.451	0.446
	Left Tilted	0.078	0.172	0.201	0.069	0.001	0.061	0.128	0.206	0.250	0.147	0.279	0.139	0.251	0.275	0.267
WCDMA IV_Ant 2	Right Cheek	0.078	0.306	0.337	0.175	0.001	0.183	0.201	0.279	0.384	0.253	0.415	0.261	0.385	0.454	0.462
	Right Tilted	0.049	0.202	0.217	0.086	0.001	0.089	0.193	0.242	0.251	0.135	0.266	0.138	0.252	0.328	0.331
	Left Cheek	0.074	0.147	0.177	0.077	0.001	0.072	0.086	0.160	0.221	0.151	0.251	0.146	0.222	0.237	0.232
	Left Tilted	0.039	0.172	0.201	0.069	0.001	0.061	0.128	0.167	0.211	0.108	0.240	0.100	0.212	0.236	0.228
WCDMA IV_Ant 6	Right Cheek	0.984	0.306	0.337	0.175	0.001	0.183	0.201	1.185	1.290	1.159	1.321	1.167	1.291	1.360	1.368
	Right Tilted	0.202	0.202	0.217	0.086	0.001	0.089	0.193	0.395	0.404	0.288	0.419	0.291	0.405	0.481	0.484
	Left Cheek	0.303	0.147	0.177	0.077	0.001	0.072	0.086	0.389	0.450	0.380	0.480	0.375	0.451	0.466	0.461
	Left Tilted	0.102	0.172	0.201	0.069	0.001	0.061	0.128	0.230	0.274	0.171	0.303	0.163	0.275	0.299	0.291
WCDMA V_Ant 0	Right Cheek	0.147	0.306	0.337	0.175	0.001	0.183	0.201	0.348	0.453	0.322	0.484	0.330	0.454	0.523	0.531
	Right Tilted	0.093	0.202	0.217	0.086	0.001	0.089	0.193	0.286	0.295	0.179	0.310	0.182	0.296	0.372	0.375
	Left Cheek	0.197	0.147	0.177	0.077	0.001	0.072	0.086	0.283	0.344	0.274	0.374	0.269	0.345	0.360	0.355
	Left Tilted	0.089	0.172	0.201	0.069	0.001	0.061	0.128	0.217	0.261	0.158	0.290	0.150	0.262	0.286	0.278



FCC SAR TEST REPORT

Report No. : FA060302B

WCDMA V_Ant 1	Right Cheek	0.222	0.306	0.337	0.175	0.001	0.183	0.201	0.423	0.528	0.397	0.559	0.405	0.529	0.598	0.606
	Right Tilted	0.162	0.202	0.217	0.086	0.001	0.089	0.193	0.355	0.364	0.248	0.379	0.251	0.365	0.441	0.444
	Left Cheek	0.329	0.147	0.177	0.077	0.001	0.072	0.086	0.415	0.476	0.406	0.506	0.401	0.477	0.492	0.487
	Left Tilted	0.239	0.172	0.201	0.069	0.001	0.061	0.128	0.367	0.411	0.308	0.440	0.300	0.412	0.436	0.428
LTE Band 2_Ant 2	Right Cheek	0.066	0.306	0.337	0.175	0.001	0.183	0.201	0.267	0.372	0.241	0.403	0.249	0.373	0.442	0.450
	Right Tilted	0.050	0.202	0.217	0.086	0.001	0.089	0.193	0.243	0.252	0.136	0.267	0.139	0.253	0.329	0.332
	Left Cheek	0.063	0.147	0.177	0.077	0.001	0.072	0.086	0.149	0.210	0.140	0.240	0.135	0.211	0.226	0.221
	Left Tilted	0.060	0.172	0.201	0.069	0.001	0.061	0.128	0.188	0.232	0.129	0.261	0.121	0.233	0.257	0.249
LTE Band 2_Ant 6	Right Cheek	0.971	0.306	0.337	0.175	0.001	0.183	0.201	1.172	1.277	1.146	1.308	1.154	1.278	1.347	1.355
	Right Tilted	0.175	0.202	0.217	0.086	0.001	0.089	0.193	0.368	0.377	0.261	0.392	0.264	0.378	0.454	0.457
	Left Cheek	0.295	0.147	0.177	0.077	0.001	0.072	0.086	0.381	0.442	0.372	0.472	0.367	0.443	0.458	0.453
	Left Tilted	0.095	0.172	0.201	0.069	0.001	0.061	0.128	0.223	0.267	0.164	0.296	0.156	0.268	0.292	0.284
LTE Band 5_Ant 0	Right Cheek	0.094	0.306	0.337	0.175	0.001	0.183	0.201	0.295	0.400	0.269	0.431	0.277	0.401	0.470	0.478
	Right Tilted	0.061	0.202	0.217	0.086	0.001	0.089	0.193	0.254	0.263	0.147	0.278	0.150	0.264	0.340	0.343
	Left Cheek	0.139	0.147	0.177	0.077	0.001	0.072	0.086	0.225	0.286	0.216	0.316	0.211	0.287	0.302	0.297
	Left Tilted	0.064	0.172	0.201	0.069	0.001	0.061	0.128	0.192	0.236	0.133	0.265	0.125	0.237	0.261	0.253
LTE Band 5_Ant 1	Right Cheek	0.430	0.306	0.337	0.175	0.001	0.183	0.201	0.631	0.736	0.605	0.767	0.613	0.737	0.806	0.814
	Right Tilted	0.345	0.202	0.217	0.086	0.001	0.089	0.193	0.538	0.547	0.431	0.562	0.434	0.548	0.624	0.627
	Left Cheek	0.698	0.147	0.177	0.077	0.001	0.072	0.086	0.784	0.845	0.775	0.875	0.770	0.846	0.861	0.856
	Left Tilted	0.550	0.172	0.201	0.069	0.001	0.061	0.128	0.678	0.722	0.619	0.751	0.611	0.723	0.747	0.739
LTE Band 7_Ant 2	Right Cheek	0.170	0.306	0.337	0.175	0.001	0.183	0.201	0.371	0.476	0.345	0.507	0.353	0.477	0.546	0.554
	Right Tilted	0.116	0.202	0.217	0.086	0.001	0.089	0.193	0.309	0.318	0.202	0.333	0.205	0.319	0.395	0.398
	Left Cheek	0.151	0.147	0.177	0.077	0.001	0.072	0.086	0.237	0.298	0.228	0.328	0.223	0.299	0.314	0.309
	Left Tilted	0.116	0.172	0.201	0.069	0.001	0.061	0.128	0.244	0.288	0.185	0.317	0.177	0.289	0.313	0.305
LTE Band 7_Ant 6	Right Cheek	0.951	0.306	0.337	0.175	0.001	0.183	0.201	1.152	1.257	1.126	1.288	1.134	1.258	1.327	1.335
	Right Tilted	0.220	0.202	0.217	0.086	0.001	0.089	0.193	0.413	0.422	0.306	0.437	0.309	0.423	0.499	0.502
	Left Cheek	0.323	0.147	0.177	0.077	0.001	0.072	0.086	0.409	0.470	0.400	0.500	0.395	0.471	0.486	0.481
	Left Tilted	0.089	0.172	0.201	0.069	0.001	0.061	0.128	0.217	0.261	0.158	0.290	0.150	0.262	0.286	0.278
LTE Band 12_Ant 0	Right Cheek	0.051	0.306	0.337	0.175	0.001	0.183	0.201	0.252	0.357	0.226	0.388	0.234	0.358	0.427	0.435
	Right Tilted	0.001	0.202	0.217	0.086	0.001	0.089	0.193	0.194	0.203	0.087	0.218	0.090	0.204	0.280	0.283
	Left Cheek	0.073	0.147	0.177	0.077	0.001	0.072	0.086	0.159	0.220	0.150	0.250	0.145	0.221	0.236	0.231
	Left Tilted	0.001	0.172	0.201	0.069	0.001	0.061	0.128	0.129	0.173	0.070	0.202	0.062	0.174	0.198	0.190
LTE Band 12_Ant 1	Right Cheek	0.256	0.306	0.337	0.175	0.001	0.183	0.201	0.457	0.562	0.431	0.593	0.439	0.563	0.632	0.640
	Right Tilted	0.211	0.202	0.217	0.086	0.001	0.089	0.193	0.404	0.413	0.297	0.428	0.300	0.414	0.490	0.493
	Left Cheek	0.453	0.147	0.177	0.077	0.001	0.072	0.086	0.539	0.600	0.530	0.630	0.525	0.601	0.616	0.611
	Left Tilted	0.347	0.172	0.201	0.069	0.001	0.061	0.128	0.475	0.519	0.416	0.548	0.408	0.520	0.544	0.536
LTE Band 13_Ant 0	Right Cheek	0.058	0.306	0.337	0.175	0.001	0.183	0.201	0.259	0.364	0.233	0.395	0.241	0.365	0.434	0.442
	Right Tilted	0.001	0.202	0.217	0.086	0.001	0.089	0.193	0.194	0.203	0.087	0.218	0.090	0.204	0.280	0.283
	Left Cheek	0.082	0.147	0.177	0.077	0.001	0.072	0.086	0.168	0.229	0.159	0.259	0.154	0.230	0.245	0.240
	Left Tilted	0.001	0.172	0.201	0.069	0.001	0.061	0.128	0.129	0.173	0.070	0.202	0.062	0.174	0.198	0.190
LTE Band 13_Ant 1	Right Cheek	0.281	0.306	0.337	0.175	0.001	0.183	0.201	0.482	0.587	0.456	0.618	0.464	0.588	0.657	0.665
	Right Tilted	0.216	0.202	0.217	0.086	0.001	0.089	0.193	0.409	0.418	0.302	0.433	0.305	0.419	0.495	0.498
	Left Cheek	0.438	0.147	0.177	0.077	0.001	0.072	0.086	0.524	0.585	0.515	0.615	0.510	0.586	0.601	0.596
	Left Tilted	0.353	0.172	0.201	0.069	0.001	0.061	0.128	0.481	0.525	0.422	0.554	0.414	0.526	0.550	0.542
LTE Band 48_Ant 4	Right Cheek	0.506	0.306	0.337	0.175	0.001	0.183	0.201	0.707	0.812	0.681	0.843	0.689	0.813	0.882	0.890
	Right Tilted	0.712	0.202	0.217	0.086	0.001	0.089	0.193	0.905	0.914	0.798	0.929	0.801	0.915	0.991	0.994
	Left Cheek	0.623	0.147	0.177	0.077	0.001	0.072	0.086	0.709	0.770	0.700	0.800	0.695	0.771	0.786	0.781
	Left Tilted	0.842	0.172	0.201	0.069	0.001	0.061	0.128	0.970	1.014	0.911	1.043	0.903	1.015	1.039	1.031
LTE Band 48_Ant 0	Right Cheek	0.005	0.306	0.337	0.175	0.001	0.183	0.201	0.206	0.311	0.180	0.342	0.188	0.312	0.381	0.389
	Right Tilted	0.001	0.202	0.217	0.086	0.001	0.089	0.193	0.194	0.203	0.087	0.218	0.090	0.204	0.280	0.283
	Left Cheek	0.001	0.147	0.177	0.077	0.001	0.072	0.086	0.087	0.148	0.078	0.178	0.073	0.149	0.164	0.159
	Left Tilted	0.001	0.172	0.201	0.069	0.001	0.061	0.128	0.129	0.173	0.070	0.202	0.062	0.174	0.198	0.190
LTE Band 66_Ant 2	Right Cheek	0.078	0.306	0.337	0.175	0.001	0.183	0.201	0.279	0.384	0.253	0.415	0.261	0.385	0.454	0.462
	Right Tilted	0.054	0.202	0.217	0.086	0.001	0.089	0.193	0.247	0.256	0.140	0.271	0.143	0.257	0.333	0.336
	Left Cheek	0.061	0.147	0.177	0.077	0.001	0.072	0.086	0.147	0.208	0.138	0.238	0.133	0.209	0.224	0.219
	Left Tilted	0.049	0.172	0.201	0.069	0.001	0.061	0.128	0.177	0.221	0.118	0.250	0.110	0.222	0.246	0.238



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LTE Band 66_Ant 6	Right Cheek	0.956	0.306	0.337	0.175	0.001	0.183	0.201	1.157	1.262	1.131	1.293	1.139	1.263	1.332	1.340
	Right Tilted	0.188	0.202	0.217	0.086	0.001	0.089	0.193	0.381	0.390	0.274	0.405	0.277	0.391	0.467	0.470
	Left Cheek	0.296	0.147	0.177	0.077	0.001	0.072	0.086	0.382	0.443	0.373	0.473	0.368	0.444	0.459	0.454
	Left Tilted	0.114	0.172	0.201	0.069	0.001	0.061	0.128	0.242	0.286	0.183	0.315	0.175	0.287	0.311	0.303



16.3 Hotspot Exposure Conditions

<WWAN ON>

WWAN Band	Exposure Position	1	2	3	4	5	6	7	1+7 Summed 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+4+7 Summed 1g SAR (W/kg)	1+6+7 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 8	2.4GHz WLAN Ant 8+10	5GHz WLAN Ant 9	5GHz WLAN Ant 10	5GHz WLAN Ant 9+10	Bluetooth Ant 8								
GSM850_Ant 0	Front	0.210	0.052	0.049	0.059	0.053	0.113	0.058	0.268	0.262	0.269	0.259	0.323	0.315	0.327	0.381
	Back	0.222	0.049	0.052	0.237	0.292	0.345	0.051	0.273	0.271	0.459	0.274	0.567	0.563	0.510	0.618
	Left side	0.172	0.034	0.042	0.203		0.153	0.001	0.173	0.206	0.375	0.214	0.325	0.206	0.376	0.326
	Right side	0.042		0.001		0.071	0.076		0.042	0.042	0.042	0.043	0.118	0.113	0.042	0.118
	Top side		0.072	0.084	0.114	0.059	0.199	0.080	0.080	0.072	0.114	0.084	0.199	0.131	0.194	0.279
	Bottom side	0.266								0.266	0.266	0.266	0.266	0.266	0.266	0.266
GSM850_Ant 1	Front	0.279	0.052	0.049	0.059	0.053	0.113	0.058	0.337	0.331	0.338	0.328	0.392	0.384	0.396	0.450
	Back	0.342	0.049	0.052	0.237	0.292	0.345	0.051	0.393	0.391	0.579	0.394	0.667	0.683	0.630	0.738
	Left side		0.034	0.042	0.203		0.153	0.001	0.001	0.034	0.203	0.042	0.153	0.034	0.204	0.154
	Right side	0.206		0.001		0.071	0.076		0.206	0.206	0.206	0.207	0.282	0.277	0.206	0.282
	Top side	0.268	0.072	0.084	0.114	0.059	0.199	0.080	0.348	0.340	0.382	0.352	0.467	0.399	0.462	0.547
	Bottom side								0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GSM1900_Ant 2	Front	0.211	0.052	0.049	0.059	0.053	0.113	0.058	0.269	0.263	0.270	0.260	0.324	0.316	0.328	0.382
	Back	0.285	0.049	0.052	0.237	0.292	0.345	0.051	0.336	0.334	0.522	0.337	0.630	0.626	0.573	0.681
	Left side		0.034	0.042	0.203		0.153	0.001	0.001	0.034	0.203	0.042	0.153	0.034	0.204	0.154
	Right side	0.201		0.001		0.071	0.076		0.201	0.201	0.201	0.202	0.277	0.272	0.201	0.277
	Top side		0.072	0.084	0.114	0.059	0.199	0.080	0.080	0.072	0.114	0.084	0.199	0.131	0.194	0.279
	Bottom side	0.490							0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
GSM1900_Ant 6	Front	0.125	0.052	0.049	0.059	0.053	0.113	0.058	0.183	0.177	0.184	0.174	0.238	0.230	0.242	0.296
	Back	0.174	0.049	0.052	0.237	0.292	0.345	0.051	0.225	0.223	0.411	0.226	0.519	0.515	0.462	0.570
	Left side	0.290	0.034	0.042	0.203		0.153	0.001	0.291	0.324	0.493	0.332	0.443	0.324	0.494	0.444
	Right side			0.001		0.071	0.076		0.000	0.000	0.000	0.001	0.076	0.071	0.000	0.076
	Top side	0.073	0.072	0.084	0.114	0.059	0.199	0.080	0.153	0.145	0.187	0.157	0.272	0.204	0.267	0.352
	Bottom side								0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA II_Ant 2	Front	0.434	0.052	0.049	0.059	0.053	0.113	0.058	0.492	0.486	0.493	0.483	0.547	0.539	0.551	0.605
	Back	0.471	0.049	0.052	0.237	0.292	0.345	0.051	0.522	0.520	0.708	0.523	0.816	0.812	0.759	0.867
	Left side		0.034	0.042	0.203		0.153	0.001	0.001	0.034	0.203	0.042	0.153	0.034	0.204	0.154
	Right side	0.366		0.001		0.071	0.076		0.366	0.366	0.366	0.367	0.442	0.437	0.366	0.442
	Top side		0.072	0.084	0.114	0.059	0.199	0.080	0.080	0.072	0.114	0.084	0.199	0.131	0.194	0.279
	Bottom side	0.926							0.926	0.926	0.926	0.926	0.926	0.926	0.926	0.926
WCDMA II_Ant 6	Front	0.259	0.052	0.049	0.059	0.053	0.113	0.058	0.317	0.311	0.318	0.308	0.372	0.364	0.376	0.430
	Back	0.334	0.049	0.052	0.237	0.292	0.345	0.051	0.385	0.383	0.571	0.386	0.679	0.675	0.622	0.730
	Left side	0.421	0.034	0.042	0.203		0.153	0.001	0.422	0.455	0.624	0.463	0.574	0.455	0.625	0.575
	Right side			0.001		0.071	0.076		0.000	0.000	0.000	0.001	0.076	0.071	0.000	0.076
	Top side	0.134	0.072	0.084	0.114	0.059	0.199	0.080	0.214	0.206	0.248	0.218	0.333	0.265	0.328	0.413
	Bottom side								0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA IV_Ant 2	Front	0.311	0.052	0.049	0.059	0.053	0.113	0.058	0.369	0.363	0.370	0.360	0.424	0.416	0.428	0.482
	Back	0.437	0.049	0.052	0.237	0.292	0.345	0.051	0.488	0.486	0.674	0.489	0.782	0.778	0.725	0.833
	Left side		0.034	0.042	0.203		0.153	0.001	0.001	0.034	0.203	0.042	0.153	0.034	0.204	0.154
	Right side	0.284		0.001		0.071	0.076		0.284	0.284	0.284	0.285	0.360	0.355	0.284	0.360
	Top side		0.072	0.084	0.114	0.059	0.199	0.080	0.080	0.072	0.114	0.084	0.199	0.131	0.194	0.279
	Bottom side	0.543							0.543	0.543	0.543	0.543	0.543	0.543	0.543	0.543
WCDMA IV_Ant 6	Front	0.328	0.052	0.049	0.059	0.053	0.113	0.058	0.386	0.380	0.387	0.377	0.441	0.433	0.445	0.499
	Back	0.413	0.049	0.052	0.237	0.292	0.345	0.051	0.464	0.462	0.650	0.465	0.758	0.754	0.701	0.809
	Left side	0.615	0.034	0.042	0.203		0.153	0.001	0.616	0.649	0.818	0.657	0.768	0.649	0.819	0.769
	Right side			0.001		0.071	0.076		0.000	0.000	0.000	0.001	0.076	0.071	0.000	0.076
	Top side	0.129	0.072	0.084	0.114	0.059	0.199	0.080	0.209	0.201	0.243	0.213	0.328	0.260	0.323	0.408
	Bottom side								0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



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	Left side		0.034	0.042	0.203		0.153	0.001	0.001	0.034	0.203	0.042	0.153	0.034	0.204	0.154
	Right side	0.157		0.001		0.071	0.076		0.157	0.157	0.157	0.158	0.233	0.228	0.157	0.233
	Top side	0.150	0.072	0.084	0.114	0.059	0.199	0.080	0.230	0.222	0.264	0.234	0.349	0.281	0.344	0.429
	Bottom side								0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 13_Ant 0	Front	0.172	0.052	0.049	0.059	0.053	0.113	0.058	0.230	0.224	0.231	0.221	0.285	0.277	0.289	0.343
	Back	0.183	0.049	0.052	0.237	0.292	0.345	0.051	0.234	0.232	0.420	0.235	0.528	0.524	0.471	0.579
	Left side	0.156	0.034	0.042	0.203		0.153	0.001	0.157	0.190	0.359	0.198	0.309	0.190	0.360	0.310
	Right side	0.061		0.001		0.071	0.076		0.061	0.061	0.061	0.062	0.137	0.132	0.061	0.137
	Top side		0.072	0.084	0.114	0.059	0.199	0.080	0.080	0.072	0.114	0.084	0.199	0.131	0.194	0.279
	Bottom side	0.172							0.172	0.172	0.172	0.172	0.172	0.172	0.172	0.172
LTE Band 13_Ant 1	Front	0.122	0.052	0.049	0.059	0.053	0.113	0.058	0.180	0.174	0.181	0.171	0.235	0.227	0.239	0.293
	Back	0.158	0.049	0.052	0.237	0.292	0.345	0.051	0.209	0.207	0.395	0.210	0.503	0.499	0.446	0.554
	Left side		0.034	0.042	0.203		0.153	0.001	0.001	0.034	0.203	0.042	0.153	0.034	0.204	0.154
	Right side	0.135		0.001		0.071	0.076		0.135	0.135	0.135	0.136	0.211	0.206	0.135	0.211
	Top side	0.104	0.072	0.084	0.114	0.059	0.199	0.080	0.184	0.176	0.218	0.188	0.303	0.235	0.298	0.383
	Bottom side								0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 48_Ant 4	Front	0.281	0.052	0.049	0.059	0.053	0.113	0.058	0.339	0.333	0.340	0.330	0.394	0.386	0.398	0.452
	Back	0.306	0.049	0.052	0.237	0.292	0.345	0.051	0.357	0.355	0.543	0.358	0.651	0.647	0.594	0.702
	Left side	0.046	0.034	0.042	0.203		0.153	0.001	0.047	0.080	0.249	0.088	0.199	0.080	0.250	0.200
	Right side	0.085		0.001		0.071	0.076		0.085	0.085	0.085	0.086	0.161	0.156	0.085	0.161
	Top side	0.753	0.072	0.084	0.114	0.059	0.199	0.080	0.833	0.825	0.867	0.837	0.952	0.884	0.947	1.032
	Bottom side								0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 48_Ant 0	Front	0.079	0.052	0.049	0.059	0.053	0.113	0.058	0.137	0.131	0.138	0.128	0.192	0.184	0.196	0.250
	Back	0.144	0.049	0.052	0.237	0.292	0.345	0.051	0.195	0.193	0.381	0.196	0.489	0.485	0.432	0.540
	Left side	0.017	0.034	0.042	0.203		0.153	0.001	0.018	0.051	0.220	0.059	0.170	0.051	0.221	0.171
	Right side	0.030		0.001		0.071	0.076		0.030	0.030	0.030	0.031	0.106	0.101	0.030	0.106
	Top side		0.072	0.084	0.114	0.059	0.199	0.080	0.080	0.072	0.114	0.084	0.199	0.131	0.194	0.279
	Bottom side	0.188							0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188
LTE Band 66_Ant 2	Front	0.343	0.052	0.049	0.059	0.053	0.113	0.058	0.401	0.395	0.402	0.392	0.456	0.448	0.460	0.514
	Back	0.391	0.049	0.052	0.237	0.292	0.345	0.051	0.442	0.440	0.628	0.443	0.736	0.732	0.679	0.787
	Left side		0.034	0.042	0.203		0.153	0.001	0.001	0.034	0.203	0.042	0.153	0.034	0.204	0.154
	Right side	0.305		0.001		0.071	0.076		0.305	0.305	0.305	0.306	0.381	0.376	0.305	0.381
	Top side		0.072	0.084	0.114	0.059	0.199	0.080	0.080	0.072	0.114	0.084	0.199	0.131	0.194	0.279
	Bottom side	0.554							0.554	0.554	0.554	0.554	0.554	0.554	0.554	0.554
LTE Band 66_Ant 6	Front	0.246	0.052	0.049	0.059	0.053	0.113	0.058	0.304	0.298	0.305	0.295	0.359	0.351	0.363	0.417
	Back	0.301	0.049	0.052	0.237	0.292	0.345	0.051	0.352	0.350	0.538	0.353	0.646	0.642	0.589	0.697
	Left side	0.396	0.034	0.042	0.203		0.153	0.001	0.397	0.430	0.599	0.438	0.549	0.430	0.600	0.550
	Right side			0.001		0.071	0.076		0.000	0.000	0.000	0.001	0.076	0.071	0.000	0.076
	Top side	0.154	0.072	0.084	0.114	0.059	0.199	0.080	0.234	0.226	0.268	0.238	0.353	0.285	0.348	0.433
	Bottom side								0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



16.4 Body-Worn Accessory Exposure Conditions

<WWAN OFF>

Exposure Position	1	2	3	4	5	6	1+4 Summed 1g SAR (W/kg)	3+6 Summed 1g SAR (W/kg)	5+6 Summed 1g SAR (W/kg)
	2.4GHz WLAN Ant 8	2.4GHz WLAN Ant 8+10	5GHz WLAN Ant 9	5GHz WLAN Ant 10	5GHz WLAN Ant 9+10	Bluetooth Ant 8			
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
Front	0.162	0.218	0.133	0.145	0.261	0.058	0.307	0.191	0.319
Back	0.142	0.237	0.387	1.199	1.133	0.051	1.341	0.438	1.184

<WWAN ON>

WWAN Band	Exposure Position	1	2	3	4	5	6	7	1+7 Summed 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+4+7 Summed 1g SAR (W/kg)	1+6+7 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 8	2.4GHz WLAN Ant 8+10	5GHz WLAN Ant 9	5GHz WLAN Ant 10	5GHz WLAN Ant 9+10	Bluetooth Ant 8								
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)								
GSM850_Ant 0	Front	0.210	0.052	0.049	0.144	0.066	0.180	0.058	0.268	0.262	0.354	0.259	0.390	0.328	0.412	0.448
	Back	0.222	0.049	0.052	0.276	0.346	0.345	0.051	0.273	0.271	0.498	0.274	0.567	0.617	0.549	0.618
GSM850_Ant 1	Front	0.279	0.052	0.049	0.144	0.066	0.180	0.058	0.337	0.331	0.423	0.328	0.459	0.397	0.481	0.517
	Back	0.342	0.049	0.052	0.276	0.346	0.345	0.051	0.393	0.391	0.618	0.394	0.687	0.737	0.669	0.738
GSM1900_Ant 2	Front	0.211	0.052	0.049	0.144	0.066	0.180	0.058	0.269	0.263	0.355	0.260	0.391	0.329	0.413	0.449
	Back	0.285	0.049	0.052	0.276	0.346	0.345	0.051	0.336	0.334	0.561	0.337	0.630	0.680	0.612	0.681
GSM1900_Ant 6	Front	0.125	0.052	0.049	0.144	0.066	0.180	0.058	0.183	0.177	0.269	0.174	0.305	0.243	0.327	0.363
	Back	0.174	0.049	0.052	0.276	0.346	0.345	0.051	0.225	0.223	0.450	0.226	0.519	0.569	0.501	0.570
WCDMA II_Ant 2	Front	0.434	0.052	0.049	0.144	0.066	0.180	0.058	0.492	0.486	0.578	0.483	0.614	0.552	0.636	0.672
	Back	0.471	0.049	0.052	0.276	0.346	0.345	0.051	0.522	0.520	0.747	0.523	0.816	0.866	0.798	0.867
WCDMA II_Ant 6	Front	0.259	0.052	0.049	0.144	0.066	0.180	0.058	0.317	0.311	0.403	0.308	0.439	0.377	0.461	0.497
	Back	0.334	0.049	0.052	0.276	0.346	0.345	0.051	0.385	0.383	0.610	0.386	0.679	0.729	0.661	0.730
WCDMA IV_Ant 2	Front	0.311	0.052	0.049	0.144	0.066	0.180	0.058	0.369	0.363	0.455	0.360	0.491	0.429	0.513	0.549
	Back	0.437	0.049	0.052	0.276	0.346	0.345	0.051	0.488	0.486	0.713	0.489	0.782	0.832	0.764	0.833
WCDMA IV_Ant 6	Front	0.328	0.052	0.049	0.144	0.066	0.180	0.058	0.386	0.380	0.472	0.377	0.508	0.446	0.530	0.566
	Back	0.413	0.049	0.052	0.276	0.346	0.345	0.051	0.464	0.462	0.689	0.465	0.758	0.808	0.740	0.809
WCDMA V_Ant 0	Front	0.408	0.052	0.049	0.144	0.066	0.180	0.058	0.466	0.460	0.552	0.457	0.588	0.526	0.610	0.646
	Back	0.455	0.049	0.052	0.276	0.346	0.345	0.051	0.506	0.504	0.731	0.507	0.800	0.850	0.782	0.851
WCDMA V_Ant 1	Front	0.177	0.052	0.049	0.144	0.066	0.180	0.058	0.235	0.229	0.321	0.226	0.357	0.295	0.379	0.415
	Back	0.210	0.049	0.052	0.276	0.346	0.345	0.051	0.261	0.259	0.486	0.262	0.555	0.605	0.537	0.606
LTE Band 2_Ant 2	Front	0.363	0.052	0.049	0.144	0.066	0.180	0.058	0.421	0.415	0.507	0.412	0.543	0.481	0.565	0.601
	Back	0.430	0.049	0.052	0.276	0.346	0.345	0.051	0.481	0.479	0.706	0.482	0.775	0.825	0.757	0.826
LTE Band 2_Ant 6	Front	0.233	0.052	0.049	0.144	0.066	0.180	0.058	0.291	0.285	0.377	0.282	0.413	0.351	0.435	0.471
	Back	0.271	0.049	0.052	0.276	0.346	0.345	0.051	0.322	0.320	0.547	0.323	0.616	0.666	0.598	0.667
LTE Band 5_Ant 0	Front	0.332	0.052	0.049	0.144	0.066	0.180	0.058	0.390	0.384	0.476	0.381	0.512	0.450	0.534	0.570
	Back	0.349	0.049	0.052	0.276	0.346	0.345	0.051	0.400	0.398	0.625	0.401	0.694	0.744	0.676	0.745
LTE Band 5_Ant 1	Front	0.237	0.052	0.049	0.144	0.066	0.180	0.058	0.295	0.289	0.381	0.286	0.417	0.355	0.439	0.475
	Back	0.280	0.049	0.052	0.276	0.346	0.345	0.051	0.331	0.329	0.556	0.332	0.625	0.675	0.607	0.676
LTE Band 7_Ant 2	Front	0.512	0.052	0.049	0.144	0.066	0.180	0.058	0.570	0.564	0.656	0.561	0.692	0.630	0.714	0.750
	Back	0.568	0.049	0.052	0.276	0.346	0.345	0.051	0.619	0.617	0.844	0.620	0.913	0.963	0.895	0.964
LTE Band 7_Ant 6	Front	0.494	0.052	0.049	0.144	0.066	0.180	0.058	0.552	0.546	0.638	0.543	0.674	0.612	0.696	0.732
	Back	0.587	0.049	0.052	0.276	0.346	0.345	0.051	0.638	0.636	0.863	0.639	0.932	0.982	0.914	0.983
LTE Band 12_Ant 0	Front	0.101	0.052	0.049	0.144	0.066	0.180	0.058	0.159	0.153	0.245	0.150	0.281	0.219	0.303	0.339
	Back	0.113	0.049	0.052	0.276	0.346	0.345	0.051	0.164	0.162	0.389	0.165	0.458	0.508	0.440	0.509
LTE Band 12_Ant 1	Front	0.125	0.052	0.049	0.144	0.066	0.180	0.058	0.183	0.177	0.269	0.174	0.305	0.243	0.327	0.363
	Back	0.146	0.049	0.052	0.276	0.346	0.345	0.051	0.197	0.195	0.422	0.198	0.491	0.541	0.473	0.542
LTE Band 13_Ant 0	Front	0.172	0.052	0.049	0.144	0.066	0.180	0.058	0.230	0.224	0.316	0.221	0.352	0.290	0.374	0.410
	Back	0.183	0.049	0.052	0.276	0.346	0.345	0.051	0.234	0.232	0.459	0.235	0.528	0.578	0.510	0.579



LTE Band 13_Ant 1	Front	0.122	0.052	0.049	0.144	0.066	0.180	0.058	0.180	0.174	0.266	0.171	0.302	0.240	0.324	0.360
	Back	0.158	0.049	0.052	0.276	0.346	0.345	0.051	0.209	0.207	0.434	0.210	0.503	0.553	0.485	0.554
LTE Band 48_Ant 4	Front	0.281	0.052	0.049	0.144	0.066	0.180	0.058	0.339	0.333	0.425	0.330	0.461	0.399	0.483	0.519
	Back	0.306	0.049	0.052	0.276	0.346	0.345	0.051	0.357	0.355	0.582	0.358	0.651	0.701	0.633	0.702
LTE Band 48_Ant 0	Front	0.079	0.052	0.049	0.144	0.066	0.180	0.058	0.137	0.131	0.223	0.128	0.259	0.197	0.281	0.317
	Back	0.144	0.049	0.052	0.276	0.346	0.345	0.051	0.195	0.193	0.420	0.196	0.489	0.539	0.471	0.540
LTE Band 66_Ant 2	Front	0.343	0.052	0.049	0.144	0.066	0.180	0.058	0.401	0.395	0.487	0.392	0.523	0.461	0.545	0.581
	Back	0.391	0.049	0.052	0.276	0.346	0.345	0.051	0.442	0.440	0.667	0.443	0.736	0.786	0.718	0.787
LTE Band 66_Ant 6	Front	0.246	0.052	0.049	0.144	0.066	0.180	0.058	0.304	0.298	0.390	0.295	0.426	0.364	0.448	0.484
	Back	0.301	0.049	0.052	0.276	0.346	0.345	0.051	0.352	0.350	0.577	0.353	0.646	0.696	0.628	0.697

16.5 Product Specific Exposure Conditions

<WWAN OFF>

Exposure Position	1	2	3	4	5	6	1+4 Summed 1g SAR (W/kg)	3+6 Summed 1g SAR (W/kg)	5+6 Summed 1g SAR (W/kg)
	2.4GHz WLAN Ant 8	2.4GHz WLAN Ant 8+10	5GHz WLAN Ant 9	5GHz WLAN Ant 10	5GHz WLAN Ant 9+10	Bluetooth Ant 8			
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
Front at 0mm			0.429	0.136	0.922		0.136	0.429	0.922
Back at 0mm			1.006	1.776	2.365		1.776	1.006	2.365
Left side at 0m			0.890		0.889		0.000	0.890	0.889
Right side at 0mm				0.132	0.179		0.132	0.000	0.179
Top side at 0mm			0.275	0.163	0.240		0.163	0.275	0.240

<WWAN ON>

Exposure Position	1	2	3	4	5	6	7	1+7 Summed 10g SAR (W/kg)	1+2 Summed 10g SAR (W/kg)	1+4 Summed 10g SAR (W/kg)	1+3 Summed 10g SAR (W/kg)	1+6 Summed 10g SAR (W/kg)	1+2+5 Summed 10g SAR (W/kg)	1+4+7 Summed 10g SAR (W/kg)	1+6+7 Summed 10g SAR (W/kg)
	WWAN	2.4GHz WLAN Ant 8	2.4GHz WLAN Ant 8+10	5GHz WLAN Ant 9	5GHz WLAN Ant 10	5GHz WLAN Ant 9+10	Bluetooth Ant 8								
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)								
Front at 0mm				0.266	0.080	0.100		0.000	0.000	0.266	0.000	0.100	0.080	0.266	0.100
Back at 0mm				0.791	0.921	0.985		0.000	0.000	0.791	0.000	0.985	0.921	0.791	0.985
Left side at 0mm				0.602		0.288		0.000	0.000	0.602	0.000	0.288	0.000	0.602	0.288
Right side at 0mm					0.053	0.068		0.000	0.000	0.000	0.000	0.068	0.053	0.000	0.068
Top side at 0mm				0.136	0.088	0.104		0.000	0.000	0.136	0.000	0.104	0.088	0.136	0.104



17. Supplemental Antenna tuner tests results

General Note:

1. This device implements antenna tuning techniques in the antenna0 for GSM850, UMTS B5, LTE B5/12/13 and 5G FR1 n5. SAR test proposal was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing and this design will provide the highest power at different user scenarios and would not influence to the antenna characteristics other than impedance matching.
2. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values.
3. To evaluate all of the tuner states, the 192 tuner states are divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination.
4. The 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).

Head Exposure Condition

Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																	
									Auto-Tune (State 179)	0	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	
GSM850_Ant 0	GPRS (2 Tx slots)	836.4	189	N/A	N/A	Left Cheek	0 mm	0.109	0.122	0.11	0.12	0.082	0.034	0.091	0.091	0.044	0.091	0.044	0.063	0.101	0.006	0.034	0.072	0.053	0.053	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																	
WCDMA B5_Ant 0	RMC12.2K	836.4	4182	N/A	N/A	Left Cheek	0 mm	0.162	0.191	0.132	0.179	0.065	0.037	0.008	0.008	0.122	0.122	0.16	0.151	0.16	0.018	0.151	0.037	0.018	0.037	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																	
LTE B5_Ant 0	QPSK	836.5	20525	1	0	Left Cheek	0 mm	0.105	0.114	0.055	0.083	0.074	0.036	0.093	0.112	0.055	0.026	0.102	0.093	0.045	0.102	0.017	0.074	0.026	0.045	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																	
LTE Band 12_Ant 0	QPSK	707.5	23095	1	0	Left Cheek	0 mm	0.06	0.0653	0.025	0.035	0.006	0.063	0.0653	0.025	0.025	0.035	0.006	0.016	0.006	0.016	0.054	0.054	0.063	0.016	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																	
LTE Band 13_Ant 0	QPSK	782	23230	1	0	Left Cheek	0 mm	0.075	0.0824	0.023	0.061	0.042	0.033	0.061	0.023	0.023	0.071	0.023	0.033	0.023	0.023	0.014	0.014	0.023	0.033	



Body Exposure Condition

Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																
									Auto-Tune (State 179)	5	17	29	41	53	65	77	89	101	113	125	137	149	161	173	185
FR1 N5_Ant 0	BPSK	839	167800	1	1	Back	10 mm	0.073	0.0854	0.074	0.045	0.017	0.045	0.064	0.083	0.074	0.036	0.083	0.074	0.045	0.017	0.007	0.055	0.007	0.026
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																
									Auto-Tune (State 179)	6	18	30	42	54	66	78	90	102	114	126	138	150	162	174	186
GSM850_Ant 0	GPRS (2 Tx slots)	824.7	1013	N/A	N/A	Bottom Side	10 mm	0.262	0.411	0.352	0.323	0.161	0.38	0.228	0.104	0.209	0.39	0.247	0.18	0.342	0.285	0.199	0.228	0.019	0.285
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																
									Auto-Tune (State 44)	7	19	31	43	55	67	79	91	103	115	127	139	151	163	175	187
WCDMA B5_Ant 0	RMC12.2K	836.4	4182	N/A	N/A	Back	10 mm	0.373	0.544	0.475	0.056	0.418	0.237	0.342	0.513	0.39	0.066	0.237	0.342	0.38	0.18	0.323	0.056	0.037	0.037
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																
									Auto-Tune (State 44)	8	20	32	44	56	68	80	92	104	116	128	140	152	164	176	188
LTE B5_Ant 0	QPSK	836.5	20525	1	0	Back	10 mm	0.263	0.38	0.245	0.064	0.368	0.378	0.368	0.349	0.168	0.302	0.14	0.359	0.178	0.273	0.292	0.026	0.349	0.235
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																
									Auto-Tune (State 51)	9	21	33	45	57	69	81	93	105	117	129	141	153	165	177	189
LTE Band 12_Ant 0	QPSK	707.5	23095	1	0	Left Side	10 mm	0.123	0.191	0.037	0.056	0.103	0.151	0.094	0.16	0.151	0.018	0.018	0.132	0.132	0.084	0.008	0.065	0.094	0.17
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																
									Auto-Tune (State 70)	10	22	34	46	58	70	82	94	106	118	130	142	154	166	178	190
LTE Band 13_Ant 0	QPSK	782	23230	1	0	Back	10 mm	0.167	0.248	0.179	0.208	0.198	0.027	0.198	0.247	0.046	0.227	0.132	0.151	0.036	0.227	0.208	0.246	0.151	0.132
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)																
									Auto-Tune (State 179)	11	23	35	47	59	71	83	95	107	119	131	143	155	167	179	191
FR1 N5_Ant 0	BPSK	839	167800	1	1	Back	10 mm	0.181	0.302	0.119	0.252	0.043	0.195	0.071	0.167	0.129	0.176	0.129	0.205	0.033	0.186	0.119	0.224	0.301	0.3

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18. Uncertainty Assessment

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

Declaration of Conformity:

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

Comments and Explanations:

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

19. 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 616217 D04 v01r02, "SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers", Oct 2015
- [13] FCC KDB 941225 D07 v01r02, " SAR Evaluation Procedures for UMPC Mini-Tablet Devices", Oct 2015.
- [14] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [15] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.