

# FCC SAR Test Report

APPLICANT : ASUSTeK COMPUTER INC.  
EQUIPMENT : ASUS Phone (Mobile Phone)  
BRAND NAME : ASUS  
MODEL NAME : ASUS\_AI2401\_E  
FCC ID : MSQAI2401  
STANDARD : FCC 47 CFR Part 2 (2.1093)

We, Sporton International Inc. (Shenzhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been in compliance with the applicable technical standards.

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



Approved by: Si Zhang

**Sporton International Inc. (Shenzhen)**  
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People's Republic of China



Table of Contents

1. Statement of Compliance ..... 4
2. Administration Data ..... 6
3. Guidance Applied ..... 6
4. Equipment Under Test (EUT) Information ..... 7
4.1 General Information..... 7
4.2 Operating Mode for WLAN ..... 10
4.3 General LTE SAR Test and Reporting Considerations ..... 11
4.4 General 5G NR SAR Test and Reporting Considerations ..... 16
5. RF Exposure Limits..... 21
5.1 Uncontrolled Environment ..... 21
5.2 Controlled Environment..... 21
6. Specific Absorption Rate (SAR) ..... 22
6.1 Introduction ..... 22
6.2 SAR Definition ..... 22
7. System Description and Setup..... 23
7.1 E-Field Probe ..... 24
7.2 Data Acquisition Electronics (DAE) ..... 24
7.3 Phantom ..... 25
7.4 Device Holder..... 26
8. Measurement Procedures..... 27
8.1 Spatial Peak SAR Evaluation ..... 27
8.2 Power Reference Measurement..... 28
8.3 Area Scan..... 28
8.4 Zoom Scan..... 29
8.5 Volume Scan Procedures ..... 29
8.6 Power Drift Monitoring ..... 29
9. Test Equipment List ..... 30
10. System Verification ..... 31
10.1 Tissue Simulating Liquids ..... 31
10.2 Tissue Verification ..... 31
10.3 System Performance Check Results..... 33
11. RF Exposure Positions ..... 36
11.1 Ear and handset reference point ..... 36
11.2 Definition of the cheek position..... 37
11.3 Definition of the tilt position ..... 38
11.4 Body Worn Accessory ..... 39
11.5 Product Specific 10g SAR Exposure ..... 40
11.6 Wireless Router ..... 40
12. Conducted RF Output Power (Unit: dBm) ..... 41
13. Antenna Location ..... 60
14. SAR Test Results ..... 61
14.1 Head SAR ..... 64
14.2 Hotspot SAR ..... 99
14.3 Body Worn Accessory SAR ..... 126
14.4 Product specific 10g SAR..... 141
14.5 Repeated SAR Measurement ..... 145
14.6 TDD LTE/NR Linearity Data Analysis ..... 146
15. Simultaneous Transmission Analysis ..... 154
15.1 Head Exposure Conditions..... 156
15.2 Hotspot Exposure Conditions ..... 164
15.3 Body-Worn Accessory Exposure Conditions ..... 181
15.4 Product specific 10g SAR Exposure Conditions..... 195
16. Supplemental tuner tests results ..... 211
16.1 Supplemental Tuner Head & Body SAR Results ..... 211
17. Uncertainty Assessment..... 212
18. References ..... 213
Appendix A. Plots of System Performance Check
Appendix B. Plots of High SAR Measurement
Appendix C. DASy Calibration Certificate
Appendix D. Test Setup Photos
Appendix E. Conducted RF Output Power Table
Appendix F. Supplemental Tuner SAR Results



### Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA391308	Rev. 01	Initial issue of report.	Jan. 18, 2024

### 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ASUSTeK COMPUTER INC., ASUS Phone (Mobile Phone), ASUS AI2401 E**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 15mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.37	0.40	0.43	1.59
		GSM1900	0.23	0.44	0.22	
	WCDMA	WCDMA V	1.08	0.50	0.51	
		WCDMA IV	1.15	0.72	0.35	
		WCDMA II	1.16	0.46	0.23	
	LTE	LTE Band 71	0.45	0.52	0.30	
		LTE Band 12/17	0.95	0.39	0.25	
		LTE Band 5/26	1.06	0.52	0.42	
		LTE Band 4/66	1.10	0.63	0.35	
		LTE Band 2/25	1.15	0.66	0.35	
		LTE Band 30	1.11	0.67	0.28	
		LTE Band 7	1.13	0.83	0.58	
		LTE Band 38/41	0.96	1.18	0.36	
	5G NR	LTE Band 48	1.08	0.94	0.49	
		FR1 n71	0.49	0.48	0.34	
		FR1 n12	1.11	0.42	0.24	
		FR1 n26/5	1.13	0.44	0.35	
		FR1 n66	1.01	0.78	0.24	
		FR1 n25/2	1.13	0.52	0.30	
		FR1 n30	1.18	0.48	0.21	
FR1 n7		1.12	1.04	0.53		
FR1 n38/41		1.09	<b>1.19</b>	0.44		
FR1 n48	1.11	0.88	0.47			
FR1 n77	<b>1.19</b>	0.57	<b>0.63</b>			
DTS	WLAN	2.4GHz WLAN	1.18	0.47	0.35	1.59
NII		5GHz WLAN	1.15	0.43	0.57	1.59
DSS	Bluetooth	2.4GHz Bluetooth	0.55	0.32	<0.10	1.59

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	WCDMA	WCDMA IV	2.93	3.92
		WCDMA II	2.85	
	LTE	LTE Band 4/66	3.16	
		LTE Band 2/25	<b>3.17</b>	
		LTE Band 7	3.16	
		LTE Band 38/41	2.38	
	5G NR	FR1 n66	2.78	
		FR1 n25/2	2.93	
		FR1 n7	3.15	
		FR1 n38/41	2.72	
NII	WLAN	5GHz WLAN	2.99	3.92
Date of Testing:			2023/10/25 ~ 2023/12/16	
<b>Remark:</b>				
<p>1. This device supports LTE B2 / B4 / B5 / B17 / B38 and B25 / B66 / B26 / B12 / B41. Since the supported frequency span for LTE B2 / B4 / B5 / B17 / B38 falls completely within the supports frequency span for LTE B25 / B66 / B26 / B12 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B25 / B66 / B26 / B12 / B41.</p> <p>2. This device supports 5GNR n38/n5/n2 and n41/n26/n25. Since the supported frequency span for 5GNR n78/n38/n5/n2 falls completely within the supports frequency span for n41/n26/n25, both 5GNR bands have the same target power, and both 5GNR bands share the same transmission path; therefore, SAR was only assessed for n41/n26/n25.</p>				

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are 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.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.



### 2. Administration Data

Sporton International Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Testing Laboratory			
Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-SZ	CN1256	421272

Applicant	
Company Name	ASUSTeK COMPUTER INC.
Address	1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan

Manufacturer	
Company Name	ASUSTeK COMPUTER INC.
Address	1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan

### 3. Guidance Applied

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

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



## 4. Equipment Under Test (EUT) Information

### 4.1 General Information

Product Feature & Specification	
Equipment Name	ASUS Phone (Mobile Phone)
Brand Name	ASUS
Model Name	ASUS_AI2401_E
FCC ID	MSQAI2401
IMEI Code	Sample 1: IMEI 1: 356313810100716 IMEI 2: 356313810100724 Sample 2: IMEI 1: 350619900100697 IMEI 2: 350619900100705
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 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 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n12: 699 MHz ~ 716 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n26: 814 MHz ~ 849 MHz 5G NR n30: 2305 MHz ~ 2315 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n48: 3550 MHz ~ 3700 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz WLAN 6GHz U-NII-5: 5925 MHz ~ 6425 MHz WLAN 6GHz U-NII-6: 6425 MHz ~ 6525 MHz WLAN 6GHz U-NII-7: 6525 MHz ~ 6875 MHz WLAN 6GHz U-NII-8: 6875 MHz ~ 7125 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA



	HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR : CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ac/ax VHT20/VHT40/HE20/HE40 WLAN 2.4GHz 802.11be EHT20/EHT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/VHT160 WLAN 5GHz 802.11ax HE20/HE40/HE80/HE160 WLAN 5GHz 802.11be EHT20/EHT40/EHT80/EHT160 WLAN 6GHz 802.11a/ax HE20/HE40/HE80/HE160 WLAN 6GHz 802.11be EHT20/EHT40/EHT80/EHT160/EHT320 Bluetooth BR/EDR/LE NFC: ASK
HW Version	R2.0
SW Version	Android 14
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:**

- This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
- This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
- This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only). WLAN 6GHz has no hotspot function.
- This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 10.
- For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
- The device implements receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). It uses the receiver to indicate whether the user is making a call in head scenario or not. The selection between head and body power levels is based on the receiver detection mechanism. The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E power table and the detail state descriptions of below table.

state	Trigger Conditions	Antenna No.	Exposure conditions	
-	Default power	All Ant	Full power	-
state 6	Receiver on	All Ant	Head Standalone	Head all Position
state 7	Receiver on + WLAN/BT	All Ant	Head Simultaneous	Head all Position
state 8	Hotspot on	All Ant	Hotspot	Body all Position
state 10	Receiver off	All Ant	Body-worn/Extremity Standalone	Body all Position
state 9	Receiver off + WLAN/BT	All Ant	Body-worn/Extremity Simultaneous	Body all Position

- For WLAN when transmit simultaneous with WWAN/BT, power reduction will be activated to head, body-worn, and extremity exposure conditions.
- This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the GSM, WCDMA, LTE and 5G NR modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner and supplemental data for additional information can be referred to section 16 and appendix F.
- The 2.4GHz/5GHz/6GHz WLAN can transmit in SISO and MIMO mode.
- This device supports HPUE for LTE Band 41/5G NR n41/n77 with class 2 level, HPUE power has been measured separately. For HPUE power is higher than power class 3 but with lower duty cycle, the maximum average power for class 2 and class 3 is almost the same, so we chose power class 3 full SAR testing and power class 2 verify the worst case of power class 3 SAR.
- For 5G NR n41/n77 HPUE, 5G NR n41/n77 PC2 Maximum Duty Cycle is 50%, using FTM (Factory Test Mode) with 50% duty cycle is considered during SAR testing. For 5G NR other bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.





12. 5GNR n41 supports UL MIMO for CP-OFDM modulation.
13. The device support additional accessories of AeroActive cooler, they have two accessories of AeroActive cooler, and only suppliers are different. Therefore, only one accessory was chosen to attach the device to do spot check worst case to ensure the RF Exposures compliance.
14. There are four samples. The different between them can be referred to the following Sample list table. According to the differences, we choose sample 1 to perform full SAR testing and sample 2 to verify the worst case of sample 1. For sample 3/4, the differences do not affect the test, so sample 3/4 are not tested.
15. Bluetooth BR/EDR supports SISO and MIMO mode.
16. The device supports WPT RX only.
17. This device has NFC function and the NFC SAR report will be separately submitted.
18. SAR Power density test report for WLAN 6GHz U-NII-5/6/7/8 will be separately submitted. About co-located SAR with WWAN/Bluetooth, always chose higher SAR of WLAN 5GHz U-NII-1/2A/2C/3 and WLAN 6GHz U-NII-5/6/7/8.
19. This device supports 5GNR FR1 bands as following table, including NSA mode and SA mode. NSA and SA mode performed SAR separately.

**<5G NR>**

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n2	FDD	15	5, 10, 15, 20
	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 40
	n12	FDD	15	5, 10, 15
	n25	FDD	15	5, 10, 15, 20, 25, 30, 40
	n30	FDD	15	5, 10
	n66	FDD	15	5, 10, 15, 20, 25, 30, 40
	n71	FDD	15	5, 10, 15, 20
	n41	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
SA	n77	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
	n2	FDD	15	5, 10, 15, 20
	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 40
	n12	FDD	15	5, 10, 15
	n25	FDD	15	5, 10, 15, 20, 25, 30, 40
	n26	FDD	15	5, 10, 15, 20
	n30	FDD	15	5, 10
	n66	FDD	15	5, 10, 15, 20, 25, 30, 40
	n71	FDD	15	5, 10, 15, 20
	n38	TDD	30	10, 15, 20, 25, 30, 40
	n41	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
	n48	TDD	30	10, 15, 20, 30, 40
n77	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100	

Sample list				
	SKU1(Sample 1)	SKU2(Sample 2)	SKU3(Sample 3)	SKU4(Sample 4)
Model	ASUS_AI2401_E	ASUS_AI2401_E	ASUS_AI2401_E	ASUS_AI2401_E
Config.	US(Pro)	US(Entry)	US(Pro)	US(Entry)
RF module board	US(Pro)	US(Entry)	US(Pro)	US(Entry)
LCD+Touch front frame	AI2401 FRONT CASE ASSY	AI2401 FRONT CASE ASSY	AI2401 FRONT CASE ASSY	AI2401 FRONT CASE ASSY
DDR	16G(HYNIX) HYNIX / H58G76BK8HX095	16G(Micron) Micron / MT62F2G64D8ZA-023 WT:C	16G(HYNIX) HYNIX / H58G76BK8HX095	16G(Micron) Micron / MT62F2G64D8ZA-023 WT:C
UFS	1TB(Samsung) Samsung / KLUGGARHHD-B0G1	512G(HYNIX) (UFS4.0) HYNIX / HN8T274EJKX130	1TB(Samsung) Samsung / KLUGGARHHD-B0G1	512G(HYNIX) (UFS4.0) HYNIX / HN8T274EJKX130
MB	AI2401_MB	AI2401_MB	AI2401_MB	AI2401_MB
Back cover	WW Pro(Mini LED)	WW Entry(LGF)	WW Pro(Mini LED)	WW Entry(LGF)
Battery	SCUD / C21P2301	SCUD / C21P2301	SCUD / C21P2301	SCUD / C21P2301
Main 50+13M	SHINETECH / DDN03B	RAYPRUS / CASDJ-000A	RAYPRUS / CASDJ-000A	SHINETECH / DDN03B
Tele 32M	Kunshan Q-TECH / C3HS01	SHINETECH / DHG01B	SHINETECH / DHG01B	Kunshan Q-TECH / C3HS01
Front 32M	TSPRECISSION / TVHF3046	RAYPRUS / CASG-000A	RAYPRUS / CASG-000A	TSPRECISSION / TVHF3046
PCB	COMPEQ	COMPEQ	COMPEQ	COMPEQ
CPU	QUALCOMM SM-8650 MPSP1629	QUALCOMM SM-8650 MPSP1629	QUALCOMM SM-8650 MPSP1629	QUALCOMM SM-8650 MPSP1629
WPC Antenna	ASAP	INPAQ	INPAQ	ASAP
NFC Antenna	ASAP	INPAQ	INPAQ	ASAP
WWAN/WLAN/BT/GPS antenna	INPAQ	ASAP	ASAP	INPAQ

## 4.2 Operating Mode for WLAN

### General Note:

- In order to get better user experience, the device implemented the dynamic antenna swapping which based on specific user interaction for WLAN bands.
- The device has two using scenarios state, one is Normal Mode and the other is Camera Mode. Each mode will be triggered by different detection mechanism to realize the location exchanged by the antenna in different modes.
- For normal mode, when the device is in default setting, the antenna for Chain1 is adapted on Ant4. For camera mode, when the device detect camera is active, the antenna for Chain1 is adapted on Ant6. Below table will summary of the relationship between mode, antenna location and detection mechanism.

Mode	Antenna	Detection mechanism
Normal Mode	Chain0 is adapted on Ant5 Chain1 is adapted on Ant4	Default setting
Camera Mode	Chain0 is adapted on Ant5 Chain1 is adapted on Ant6	When the device Camera is active

For SAR report, the test mode mentioned as following table.

Bands	Head SAR	Hotspot/Body-worn SAR	Extremity SAR
WLAN/BT	Normal Mode	Normal Mode Camera Mode	Normal Mode Camera Mode



4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	MSQAI2401																																																														
Equipment Name	ASUS Phone (Mobile 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 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz																																																														
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 30: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE Release Version	R17, Cat20																																																														
CA Support	Supported, Uplink and Downlink																																																														
LTE MPR permanently built-in by design	<p><b>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N<sub>RB</sub>)</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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 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 <sub>RB</sub> )						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 <sub>RB</sub> )						MPR (dB)																																																								
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																									
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																								
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																								
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																								
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																								
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																								
256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	Yes, when operating in receiver/hotspot detect mechanism, head/body -worn /hotspot/extremity will trigger reduced power for some bands applied to satisfy SAR compliance, the detail please referred to section 12.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 12.																																																														
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for intra-band and inter-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 5 carriers in the downlink and 2 carriers in the uplink.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band																
LTE Band 2																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860				
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880				
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900				
LTE Band 4																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720				
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5				
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745				
LTE Band 5																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844				
LTE Band 7																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560				
LTE Band 12																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711				
LTE Band 17																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)	
L	23755		706.5		23780		709		23780		709		23780		709	
M	23790		710		23790		710		23790		710		23790		710	
H	23825		713.5		23800		711		23800		711		23800		711	
LTE Band 25																
	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	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860				
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880				
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905				
LTE Band 26																
	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	26697	814.7	26705	815.5	26715	816.5	26740	819	26740	819	26765	821.5				
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5				
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26990	844	26965	841.5				
LTE Band 30																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)	
L	27685		2307.5		27710		2310		27710		2310		27710		2310	
M	27710		2310		27710		2310		27710		2310		27710		2310	
H	27735		2312.5		27735		2312.5		27735		2312.5		27735		2312.5	



LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580				
M	38000	2595	38000	2595	38000	2595	38000	2595				
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610				
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506				
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593				
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680				
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 71												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	133147	665.5	133172	668	133197	670.5	133222	673				
M	133247	675.5	133272	678	133297	680.5	133322	683				
H	133447	695.5	133422	693	133397	690.5	133372	688				
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)	Ch. #	Freq. (MHz)
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560				
LM	55810	3607	55815	3607.5	55820	3608	55830	3609				
MH	56170	3643	56165	3642.5	56160	3642	56150	3641				
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690				



<For LTE SA Overlap Bands Description>

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 2	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 25	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

2) LTE Bands tune up:

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
LTE Band 5	Ant 0	26	26	26	26	24.5	26
LTE Band 26	Ant 0	26	26	26	26	24.5	26
LTE Band 12	Ant 0	26	26	26	26	26	26
LTE Band 17	Ant 0	26	26	26	26	26	26

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
LTE Band 2	Ant 1	25	25	25	25	23.5	25
LTE Band 25	Ant 1	25	25	25	25	23.5	25
LTE Band 4	Ant 1	25	25	25	25	25	25
LTE Band 66	Ant 1	25	25	25	25	25	25
LTE Band 38	Ant 1	25	25	25	25	25	25
LTE Band 41	Ant 1	25	25	25	25	25	25

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
LTE Band 2	Ant 2	19	17	23	23	17	25
LTE Band 25	Ant 2	19	17	23	23	17	25
LTE Band 4	Ant 2	18.5	16.5	23	23	16.5	25
LTE Band 66	Ant 2	18.5	16.5	23	23	16.5	25
LTE Band 5	Ant 2	24	22	26	26	22	26
LTE Band 26	Ant 2	24	22	26	26	22	26
LTE Band 12	Ant 2	25	23.5	26	26	23.5	26
LTE Band 17	Ant 2	25	23.5	26	26	23.5	26
LTE Band 38	Ant 2	19.5	17.5	25	25	17.5	25
LTE Band 41	Ant 2	19.5	17.5	25	25	17.5	25

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
LTE Band 2	Ant 7	22.5	20.5	24.5	24.5	20.5	24.5
LTE Band 25	Ant 7	22.5	20.5	24.5	24.5	20.5	24.5
LTE Band 4	Ant 7	23.5	21.5	24.5	24.5	21.5	24.5
LTE Band 66	Ant 7	23.5	21.5	24.5	24.5	21.5	24.5

**<For LTE For Inter CA Overlap Bands Description>**

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 2	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 25	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	

2) LTE Bands tune up:

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
LTE Band 5	Ant 0	23	23	23	23	23	23
LTE Band 26	Ant 0	23	23	23	23	23	23

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
LTE Band 2	Ant 1	22	22	22	22	20	22
LTE Band 25	Ant 1	22	22	22	22	20	22
LTE Band 4	Ant 1	22	22	22	22	22	22
LTE Band 66	Ant 1	22	22	22	22	22	22

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
LTE Band 2	Ant 2	14.5	14.5	22	22	14.5	22
LTE Band 25	Ant 2	14.5	14.5	22	22	14.5	22
LTE Band 4	Ant 2	14.5	14.5	22	22	14.5	22
LTE Band 66	Ant 2	14.5	14.5	22	22	14.5	22
LTE Band 5	Ant 2	20	20	23	23	20	23
LTE Band 26	Ant 2	20	20	23	23	20	23

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
LTE Band 4	Ant 7	19.5	19.5	21.5	21.5	19.5	21.5
LTE Band 66	Ant 7	19.5	19.5	21.5	21.5	19.5	21.5



4.4 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
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 n7: 2500 MHz ~ 2570 MHz 5G NR n12: 699 MHz ~ 716 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n26: 814 MHz ~ 849 MHz 5G NR n30: 2305 MHz ~ 2315 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n48: 3550 MHz ~ 3700 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz
Channel Bandwidth	The detail please refers to section 4.1 5GNR FR1 bands table.
SCS	FDD: SCS15KHz, TDD: SCS30KHz
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 B5/12/30/66
LTE Anchor Bands for n5	LTE B2/7/30/66
LTE Anchor Bands for n7	LTE B5/66
LTE Anchor Bands for n12	LTE B2/30/66
LTE Anchor Bands for n25	LTE B12/66
LTE Anchor Bands for n30	LTE B2/5/12/66
LTE Anchor Bands for n41	LTE B2/66
LTE Anchor Bands for n66	LTE B2/5/7/12/30
LTE Anchor Bands for n71	LTE B2/7/66
LTE Anchor Bands for n77	LTE B2/5/7/12/30/66

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)	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)	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 7														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	504000	2520
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510000	2550
NR Band 12														
	Bandwidth 5MHz		Bandwidth 10MHz				Bandwidth 15MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	140300	701.5	140800	704	141300	706.5								
M	141500	707.5	141500	707.5	141500	707.5								
H	142700	713.5	142200	711	141700	708.5								





NR Band 25														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860	372500	1862.5	373000	1865	374000	1870
M	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5	376500	1882.5
H	382500	1912.5	382000	1910	381500	1907.5	381000	1905	380500	1902.5	380000	1900	379000	1895

NR Band 26								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	163300	816.5			163800	819	164300	821.5
M	166300	831.5			166300	831.5	166300	831.5
H	169300	846.5			168800	844	168300	841.5

NR Band 30				
	Bandwidth 5MHz		Bandwidth 10MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	461500	2307.5		
M	462000	2310		
H	462500	2312.5		

NR Band 66														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720	344500	1722.5	345000	1725	346000	1730
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	353500	1767.5	353000	1765	352000	1760

NR Band 71								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	133100	665.5	133600	668	134100	670.5	134600	673
M	136100	680.5	136100	680.5	136100	680.5	136100	680.5
H	139100	695.5	138600	693	138100	690.5	137600	688

NR Band 38												
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	515004	2575.02	515502	2577.51	516000	2580	516504	2582.52	517002	2585.01	518004	2590.02
M	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595
H	522996	2614.98	522498	2612.49	522000	2610	521496	2607.48	520998	2604.99	519996	2599.98

NR Band 41																								
Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	500202	2501.01	500700	2503.5	501204	2506.02	501700	2508.5	502200	2511	503202	2516.01	504204	2521.02	505200	2526	500202	2501.01	507204	2536.02	508200	2541	509202	2546.01
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	537000	2685	536496	2682.48	535998	2679.99	535500	2677.5	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	537000	2685	529998	2649.99	528996	2644.98	528000	2640

NR Band 48										
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	637000	3555	637168	3557.52	637334	3560.01	637668	3565.02	638000	3570
M	641666	3624.99	641666	3624.99	641666	3624.99	641666	3624.99	641666	3624.99
H	646332	3694.98	646166	3692.49	646000	3690	645666	3684.99	645332	3679.98



NR Band 77 SCS30KHz																								
Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	647000	3705	647168	3707.52	647334	3710.01	647500	3712.5	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	665000	3975	664832	3972.48	664666	3969.99	664500	3967.5	664332	3964.98	664000	3960	663666	3954.99	663332	3949.98	663000	3945	662666	3939.99	662332	3934.98	662000	3930

For <3450 MHz ~ 3550 MHz >

NR Band 77 SCS30KHz																								
Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	630334	3455.01	630550	3457.5	630668	3460.02	630834	3462.54	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02	633000	3495		
M	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98
H	636332	3544.98	636166	3542.49	636000	3540	635832	3537.48	635666	3534.99	635332	3529.98	635000	3525	634666	3519.99	634332	3514.98	634000	3510	633666	3504.99		



<For NR SA Overlap Bands Description>

1) NR Bands BW

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
SA	n2	FDD	15	5, 10, 15, 20
	n5	FDD	15	5, 10, 15, 20
	n25	FDD	15	5, 10, 15, 20, 25, 30, 40
	n26	FDD	15	5, 10, 15, 20
	n38	TDD	30	10, 15, 20, 25, 30, 40
	n41	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100

2) NR Bands Tune up:

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
5G NR n5	Ant 0	26	26	26	26	24.5	26
5G NR n26	Ant 0	26	26	26	26	24.5	26

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
5G NR n2	Ant 1	25	25	25	25	23.5	25
5G NR n25	Ant 1	25	25	25	25	23.5	25
5G NR n38	Ant 1	25	25	22.5	22.5	22.5	25
5G NR n41	Ant 1	25	25	22.5	22.5	22.5	25

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
5G NR n2	Ant 2	19	17	23	23	17	25
5G NR n25	Ant 2	19	17	23	23	17	25
5G NR n5	Ant 2	24.5	22.5	26	26	22.5	26
5G NR n26	Ant 2	24.5	22.5	26	26	22.5	26
5G NR n38	Ant 2	18.5	16.5	23.5	23.5	16.5	25
5G NR n41	Ant 2	18.5	16.5	23.5	23.5	16.5	25

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
5G NR n2	Ant 7	24.5	22.5	24.5	24.5	22.5	24.5
5G NR n25	Ant 7	24.5	22.5	24.5	24.5	22.5	24.5

**<For NR For EN-DC Overlap Bands Description >**

1) Bands BW

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n2	FDD	15	5, 10, 15, 20
	n25	FDD	15	5, 10, 15, 20, 25, 30, 40

2) Bands Tune up:

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
5G NR n2	Ant 1	25	25	25	25	21.5	25
5G NR n25	Ant 1	25	25	25	25	21.5	25

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
5G NR n2	Ant 2	17.5	14	23	23	14	25
5G NR n25	Ant 2	17.5	14	23	23	14	25

Band	Antenna	state 6 Tune-up Limit	state 7 Tune-up Limit	state 10 Tune-up Limit	state 9 Tune-up Limit	state 8 Tune-up Limit	Default Tune-up Limit
5G NR n2	Ant 7	23	19	24.5	24.5	19	24.5
5G NR n25	Ant 7	23	19	24.5	24.5	19	24.5

## 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

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 ( $\rho$ ). The equation description is as below:

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

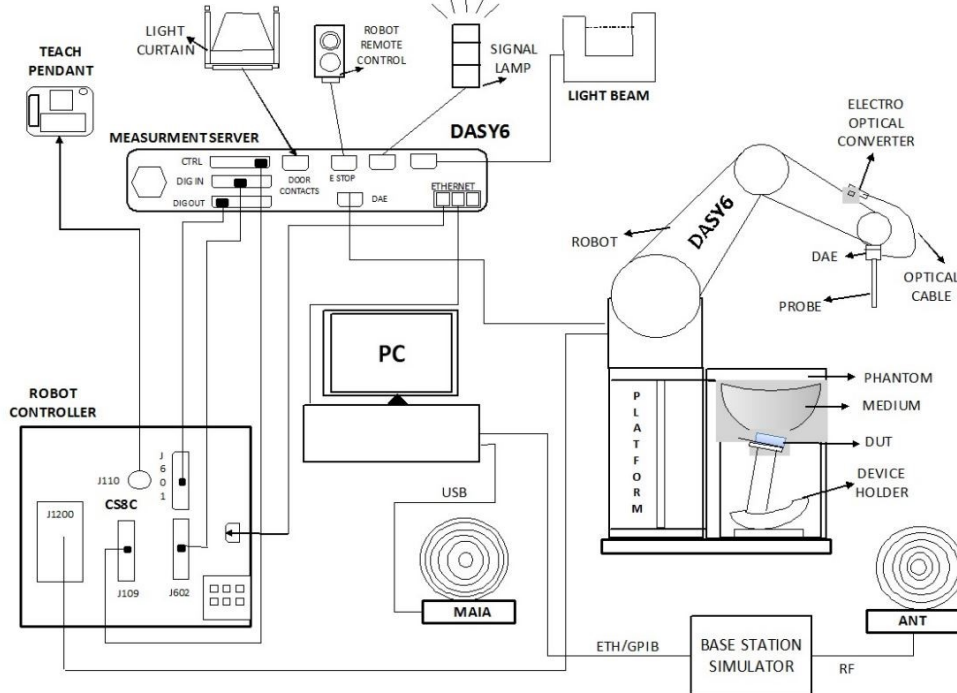
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  is the mass density of the tissue and E is the RMS electrical field strength.

## 7. System Description and Setup

The DASY5 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 Win7 or Win10 and the DASY5 or DASY6 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

**7.1 E-Field Probe**

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

**<EX3DV4 Probe>**

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

**7.2 Data Acquisition Electronics (DAE)**

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

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




**Photo of DAE**



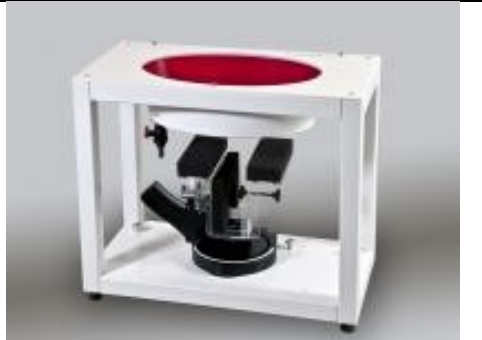
**7.3 Phantom**

**<SAM Twin Phantom>**

<b>Shell Thickness</b>	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
<b>Filling Volume</b>	Approx. 25 liters	
<b>Dimensions</b>	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
<b>Measurement Areas</b>	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>**

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

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices or for evaluating transmitters operating at low frequencies. ELI is fully compatible with standard and all known tissue simulating liquids.

### **7.4 Device Holder**

#### **<Mounting Device for Hand-Held Transmitter>**

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

## 8. Measurement Procedures

The measurement procedures are as follows:

### <Conducted power measurement>

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

### <SAR measurement>

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

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

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

### 8.1 Spatial Peak SAR Evaluation

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

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

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

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values 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 dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

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

	$\leq 3$ GHz	$> 3$ GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	$5 \pm 1$ 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	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$	$\leq 2$ GHz: $\leq 15$ mm $2 - 3$ GHz: $\leq 12$ mm	$3 - 4$ GHz: $\leq 12$ mm $4 - 6$ GHz: $\leq 10$ 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 $\leq$ 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 to 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 whose 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.

		$\leq 3$ GHz	$> 3$ GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}$ , $\Delta y_{Zoom}$		$\leq 2$ GHz: $\leq 8$ mm 2 – 3 GHz: $\leq 5$ mm*	3 – 4 GHz: $\leq 5$ mm* 4 – 6 GHz: $\leq 4$ mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	$\leq 5$ mm	3 – 4 GHz: $\leq 4$ mm 4 – 5 GHz: $\leq 3$ mm 5 – 6 GHz: $\leq 2$ mm	
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	3 – 4 GHz: $\leq 3$ mm 4 – 5 GHz: $\leq 2.5$ mm 5 – 6 GHz: $\leq 2$ 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	$\geq 30$ mm	3 – 4 GHz: $\geq 28$ mm 4 – 5 GHz: $\geq 25$ mm 5 – 6 GHz: $\geq 22$ mm	
<p>Note: <math>\delta</math> is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.</p> <p>* 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 <math>\leq 1.4</math> W/kg, <math>\leq 8</math> mm, <math>\leq 7</math> mm and <math>\leq 5</math> 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.</p>				

### 8.5 Volume Scan Procedures

The volume scan is used to 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 DASYS measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

### 9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Dec. 15, 2021	Dec. 14, 2024
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 17, 2021	Dec. 16, 2024
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Oct. 19, 2021	Oct. 17, 2024
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 20, 2021	Dec. 19, 2024
SPEAG	2300MHz System Validation Kit	D2300V2	1056	Oct. 20, 2021	Oct. 18, 2024
SPEAG	2450MHz System Validation Kit	D2450V2	1040	Apr. 25, 2023	Apr. 24, 2024
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 20, 2021	Dec. 19, 2024
SPEAG	3500MHz System Validation Kit	D3500V2	1076	May 09, 2022	May 08, 2025
SPEAG	3700MHz System Validation Kit	D3700V2	1037	May 09, 2022	May 08, 2025
SPEAG	3900MHz System Validation Kit	D3900V2	1048	Mar. 09, 2023	Mar. 08, 2024
SPEAG	5000MHz System Validation Kit	D5GHzV2	1341	Dec. 13, 2021	Dec. 11, 2024
SPEAG	Data Acquisition Electronics	DAE4	715	Jan. 23, 2023	Jan. 22, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	3975	Jun. 22, 2023	Jun. 21, 2024
SPEAG	SAM Twin Phantom	QD 000 P40 CD	1670	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	Jul. 05, 2023	Jul. 04, 2024
Anritsu	Radio communication analyzer	MT8820C	6201341952	Dec. 27, 2022	Dec. 26, 2023
Anritsu	Radio communication analyzer	MT8821C	6262314715	Jul. 05, 2023	Jul. 04, 2024
Anritsu	Radio communication analyzer	MT8821C	6272278319	Jul. 05, 2023	Jul. 04, 2024
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 05, 2023	Jul. 04, 2024
Keysight	Network Analyzer	E5071C	MY46523671	Oct. 16, 2023	Oct. 15, 2024
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Feb. 20, 2023	Feb. 19, 2024
Agilent	Signal Generator	N5181A	MY50145381	Dec. 27, 2022	Dec. 26, 2023
R&S	Signal Generator	SMB100A	175779	Dec. 28, 2022	Dec. 27, 2023
Anritsu	Power Sensor	MA2411B	1306099	Oct. 16, 2023	Oct. 15, 2024
Anritsu	Power Meter	ML2495A	1349001	Oct. 16, 2023	Oct. 15, 2024
Anritsu	Power Sensor	MA2411B	1542004	Dec. 27, 2022	Dec. 26, 2023
Anritsu	Power Meter	ML2495A	1339473	Dec. 27, 2022	Dec. 26, 2023
R&S	Power Sensor	NRP50S	101254	Apr. 06, 2023	Apr. 05, 2024
R&S	Power Sensor	NRP8S	109228	Apr. 06, 2023	Apr. 05, 2024
R&S	CBT BLUETOOTH TESTER	CBT	100963	Dec. 27, 2022	Dec. 26, 2023
R&S	Spectrum Analyzer	FSP7	100818	Jul. 05, 2023	Jul. 04, 2024
TES	Hygrometer	1310	200505600	Jul. 08, 2023	Jul. 07, 2024
Anymetre	Thermo-Hygrometer	JR593	2015030903	Dec. 30, 2022	Dec. 29, 2023
SPEAG	Device Holder	N/A	N/A	N/A	N/A
AR	Amplifier	5S1G4	0333096	Note 1	
Mini-Circuits	Amplifier	ZVE-3W-83+	599201528	Note 1	
Mini-Circuits	Amplifier	ZVA-183W-S+	726202215	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
ET Industries	Dual Directional Coupler	C-058-10	N/A	Note 1	
Weinschel	Attenuator 1	3M-10	N/A	Note 1	
Weinschel	Attenuator 2	3M-20	N/A	Note 1	

**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
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

## 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. 11.1. 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. 11.2.

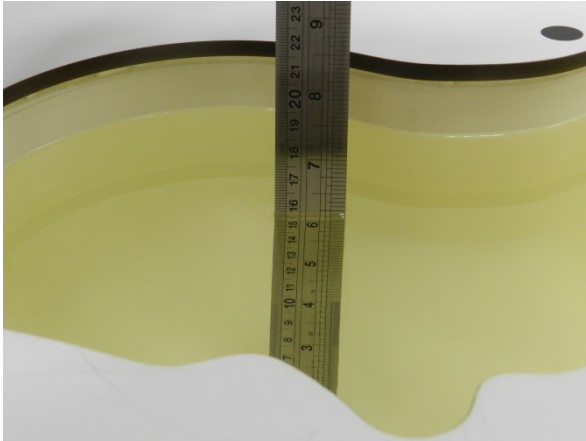


Fig 11.1 Photo of Liquid Height for Head SAR

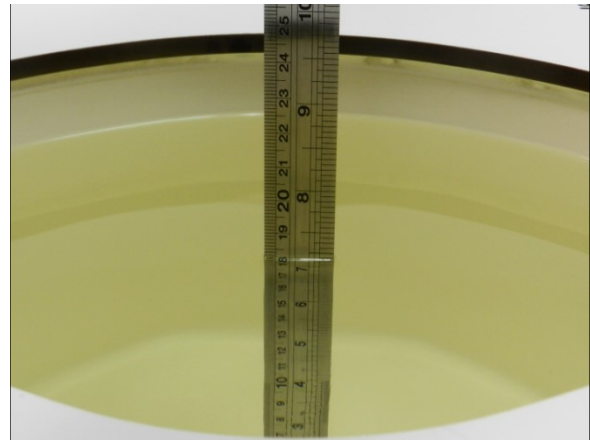


Fig 11.2 Photo of Liquid Height for Body SAR

### 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 ( $\sigma$ )	Permittivity ( $\epsilon_r$ )
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
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)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε <sub>r</sub> )	Conductivity Target (σ)	Permittivity Target (ε <sub>r</sub> )	Delta (σ) (%)	Delta (ε <sub>r</sub> ) (%)	Limit (%)	Date
750	Head	22.5	0.883	40.810	0.89	41.90	-0.79	-2.60	±5	2023/10/25
750	Head	22.6	0.886	41.532	0.89	41.90	-0.45	-0.88	±5	2023/11/11
750	Head	22.3	0.881	41.512	0.89	41.90	-1.01	-0.93	±5	2023/11/30
835	Head	22.4	0.930	42.770	0.90	41.50	3.33	3.06	±5	2023/10/27
835	Head	22.7	0.915	41.529	0.90	41.50	1.67	0.07	±5	2023/11/13
835	Head	22.6	0.913	40.859	0.90	41.50	1.44	-1.54	±5	2023/12/1
1750	Head	22.4	1.388	41.364	1.37	40.10	1.31	3.15	±5	2023/10/30
1750	Head	22.5	1.349	40.211	1.37	40.10	-1.53	0.28	±5	2023/11/14
1750	Head	22.5	1.404	40.106	1.37	40.10	2.48	0.01	±5	2023/12/2
1900	Head	22.4	1.417	40.994	1.40	40.00	1.21	2.49	±5	2023/10/31
1900	Head	22.6	1.426	39.524	1.40	40.00	1.86	-1.19	±5	2023/11/16
1900	Head	22.5	1.411	40.996	1.40	40.00	0.79	2.49	±5	2023/12/4
2300	Head	22.4	1.710	37.893	1.67	39.50	2.40	-4.07	±5	2023/11/2
2300	Head	22.4	1.742	39.850	1.67	39.50	4.31	0.89	±5	2023/11/17
2300	Head	22.6	1.670	37.833	1.67	39.50	0.00	-4.22	±5	2023/12/5
2450	Head	22.6	1.878	40.464	1.80	39.20	4.33	3.22	±5	2023/11/5
2450	Head	22.5	1.792	40.062	1.80	39.20	-0.44	2.20	±5	2023/11/19
2450	Head	22.7	1.821	37.950	1.80	39.20	1.17	-3.19	±5	2023/12/7
2600	Head	22.5	2.056	37.587	1.96	39.00	4.90	-3.62	±5	2023/11/8
2600	Head	22.5	1.922	39.818	1.96	39.00	-1.94	2.10	±5	2023/11/21
2600	Head	22.5	2.042	37.590	1.96	39.00	4.18	-3.62	±5	2023/12/8
3500	Head	22.5	2.909	38.635	2.91	37.90	-0.03	1.94	±5	2023/11/10
3500	Head	22.6	2.892	36.795	2.91	37.90	-0.62	-2.92	±5	2023/11/22
3500	Head	22.7	2.934	39.288	2.91	37.90	0.82	3.66	±5	2023/12/10
3700	Head	22.6	3.054	38.374	3.12	37.70	-2.12	1.79	±5	2023/11/12
3700	Head	22.4	3.039	36.561	3.12	37.70	-2.60	-3.02	±5	2023/11/24
3700	Head	22.5	3.044	37.331	3.12	37.70	-2.44	-0.98	±5	2023/12/11
3900	Head	22.5	3.196	36.353	3.33	37.51	-4.02	-3.08	±5	2023/11/15
3900	Head	22.4	3.199	36.160	3.33	37.51	-3.93	-3.60	±5	2023/11/25
3900	Head	22.6	3.312	36.111	3.33	37.51	-0.54	-3.73	±5	2023/12/12
5250	Head	22.4	4.635	37.362	4.71	35.95	-1.59	3.93	±5	2023/11/18
5250	Head	22.5	4.513	35.179	4.71	35.95	-4.18	-2.14	±5	2023/11/26
5250	Head	22.5	4.668	36.859	4.71	35.95	-0.89	2.53	±5	2023/12/14
5600	Head	22.4	5.004	36.879	5.07	35.50	-1.30	3.88	±5	2023/11/20
5600	Head	22.6	4.905	36.778	5.07	35.50	-3.25	3.60	±5	2023/11/27
5600	Head	22.4	5.036	36.352	5.07	35.50	-0.67	2.40	±5	2023/12/15
5750	Head	22.5	5.165	36.678	5.22	35.35	-1.05	3.76	±5	2023/11/23
5750	Head	22.5	5.039	34.631	5.22	35.35	-3.47	-2.03	±5	2023/11/29
5750	Head	22.4	5.197	36.143	5.22	35.35	-0.44	2.24	±5	2023/12/16





### 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.

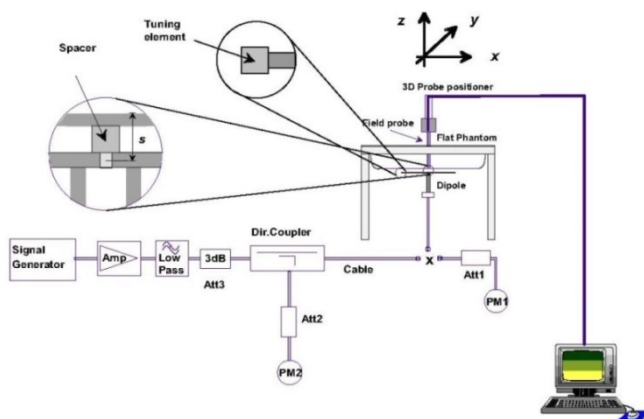
<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2023/10/25	750	Head	250	1099	3975	715	2.280	8.540	9.12	6.79
2023/11/11	750	Head	250	1099	3975	715	2.140	8.540	8.56	0.23
2023/11/30	750	Head	250	1099	3975	715	2.010	8.540	8.04	-5.85
2023/10/27	835	Head	250	4d162	3975	715	2.510	9.640	10.04	4.15
2023/11/13	835	Head	250	4d162	3975	715	2.450	9.640	9.8	1.66
2023/12/1	835	Head	250	4d162	3975	715	2.300	9.640	9.2	-4.56
2023/10/30	1750	Head	250	1137	3975	715	9.400	36.500	37.6	3.01
2023/11/14	1750	Head	250	1137	3975	715	9.700	36.500	38.8	6.30
2023/12/2	1750	Head	250	1137	3975	715	8.840	36.500	35.36	-3.12
2023/10/31	1900	Head	250	5d182	3975	715	10.600	39.600	42.4	7.07
2023/11/16	1900	Head	250	5d182	3975	715	10.400	39.600	41.6	5.05
2023/12/4	1900	Head	250	5d182	3975	715	9.860	39.600	39.44	-0.40
2023/11/2	2300	Head	250	1056	3975	715	12.400	48.800	49.6	1.64
2023/11/17	2300	Head	250	1056	3975	715	12.900	48.800	51.6	5.74
2023/12/5	2300	Head	250	1056	3975	715	11.800	48.800	47.2	-3.28
2023/11/5	2450	Head	250	1040	3975	715	13.700	52.700	54.8	3.98
2023/11/19	2450	Head	250	1040	3975	715	13.300	52.700	53.2	0.95
2023/12/7	2450	Head	250	1040	3975	715	12.500	52.700	50	-5.12
2023/11/8	2600	Head	250	1070	3975	715	14.900	56.200	59.6	6.05
2023/11/21	2600	Head	250	1070	3975	715	15.100	56.200	60.4	7.47
2023/12/8	2600	Head	250	1070	3975	715	13.500	56.200	54	-3.91
2023/11/10	3500	Head	100	1076	3975	715	6.770	66.200	67.7	2.27
2023/11/22	3500	Head	100	1076	3975	715	6.750	66.200	67.5	1.96
2023/12/10	3500	Head	100	1076	3975	715	7.110	66.200	71.1	7.40
2023/11/12	3700	Head	100	1037	3975	715	6.780	66.700	67.8	1.65
2023/11/24	3700	Head	100	1037	3975	715	6.860	66.700	68.6	2.85
2023/12/11	3700	Head	100	1037	3975	715	6.800	66.700	68	1.95
2023/11/15	3900	Head	100	1048	3975	715	7.230	69.100	72.3	4.63
2023/11/25	3900	Head	100	1048	3975	715	7.400	69.100	74	7.09
2023/12/12	3900	Head	100	1048	3975	715	7.310	69.100	73.1	5.79
2023/11/18	5250	Head	100	1341	3975	715	8.500	80.700	85	5.33
2023/11/26	5250	Head	100	1341	3975	715	8.200	80.700	82	1.61
2023/12/14	5250	Head	100	1341	3975	715	8.310	80.700	83.1	2.97
2023/11/20	5600	Head	100	1341	3975	715	9.050	84.500	90.5	7.10
2023/11/27	5600	Head	100	1341	3975	715	8.630	84.500	86.3	2.13
2023/12/15	5600	Head	100	1341	3975	715	8.980	84.500	89.8	6.27
2023/11/23	5750	Head	100	1341	3975	715	8.500	80.600	85	5.46
2023/11/29	5750	Head	100	1341	3975	715	7.930	80.600	79.3	-1.61
2023/12/16	5750	Head	100	1341	3975	715	8.430	80.600	84.3	4.59



<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2023/10/25	750	Head	250	1099	3975	715	1.480	5.650	5.92	4.78
2023/11/11	750	Head	250	1099	3975	715	1.440	5.650	5.76	1.95
2023/11/30	750	Head	250	1099	3975	715	1.320	5.650	5.28	-6.55
2023/10/27	835	Head	250	4d162	3975	715	1.650	6.260	6.6	5.43
2023/11/13	835	Head	250	4d162	3975	715	1.620	6.260	6.48	3.51
2023/12/1	835	Head	250	4d162	3975	715	1.480	6.260	5.92	-5.43
2023/10/30	1750	Head	250	1137	3975	715	4.890	19.200	19.56	1.88
2023/11/14	1750	Head	250	1137	3975	715	5.000	19.200	20	4.17
2023/12/2	1750	Head	250	1137	3975	715	4.690	19.200	18.76	-2.29
2023/10/31	1900	Head	250	5d182	3975	715	5.320	20.200	21.28	5.35
2023/11/16	1900	Head	250	5d182	3975	715	5.080	20.200	20.32	0.59
2023/12/4	1900	Head	250	5d182	3975	715	4.990	20.200	19.96	-1.19
2023/11/2	2300	Head	250	1056	3975	715	5.820	22.800	23.28	2.11
2023/11/17	2300	Head	250	1056	3975	715	6.100	22.800	24.4	7.02
2023/12/5	2300	Head	250	1056	3975	715	5.470	22.800	21.88	-4.04
2023/11/5	2450	Head	250	1040	3975	715	6.590	24.600	26.36	7.15
2023/11/19	2450	Head	250	1040	3975	715	6.230	24.600	24.92	1.30
2023/12/7	2450	Head	250	1040	3975	715	5.720	24.600	22.88	-6.99
2023/11/8	2600	Head	250	1070	3975	715	6.510	24.600	26.04	5.85
2023/11/21	2600	Head	250	1070	3975	715	6.550	24.600	26.2	6.50
2023/12/8	2600	Head	250	1070	3975	715	5.920	24.600	23.68	-3.74
2023/11/10	3500	Head	100	1076	3975	715	2.620	25.500	26.2	2.75
2023/11/22	3500	Head	100	1076	3975	715	2.580	25.500	25.8	1.18
2023/12/10	3500	Head	100	1076	3975	715	2.720	25.500	27.2	6.67
2023/11/12	3700	Head	100	1037	3975	715	2.470	24.600	24.7	0.41
2023/11/24	3700	Head	100	1037	3975	715	2.510	24.600	25.1	2.03
2023/12/11	3700	Head	100	1037	3975	715	2.430	24.600	24.3	-1.22
2023/11/15	3900	Head	100	1048	3975	715	2.460	24.100	24.6	2.07
2023/11/25	3900	Head	100	1048	3975	715	2.590	24.100	25.9	7.47
2023/12/12	3900	Head	100	1048	3975	715	2.530	24.100	25.3	4.98
2023/11/18	5250	Head	100	1341	3975	715	2.490	23.100	24.9	7.79
2023/11/26	5250	Head	100	1341	3975	715	2.380	23.100	23.8	3.03
2023/12/14	5250	Head	100	1341	3975	715	2.420	23.100	24.2	4.76
2023/11/20	5600	Head	100	1341	3975	715	2.570	24.000	25.7	7.08
2023/11/27	5600	Head	100	1341	3975	715	2.470	24.000	24.7	2.92
2023/12/15	5600	Head	100	1341	3975	715	2.520	24.000	25.2	5.00
2023/11/23	5750	Head	100	1341	3975	715	2.450	22.700	24.5	7.93
2023/11/29	5750	Head	100	1341	3975	715	2.320	22.700	23.2	2.20
2023/12/16	5750	Head	100	1341	3975	715	2.420	22.700	24.2	6.61



**Fig 11.3.1 System Performance Check Setup**



**Fig 11.3.2 Setup Photo**

## 11. RF Exposure Positions

### 11.1 Ear and handset reference point

Figure 12.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 12.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 12.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 12.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

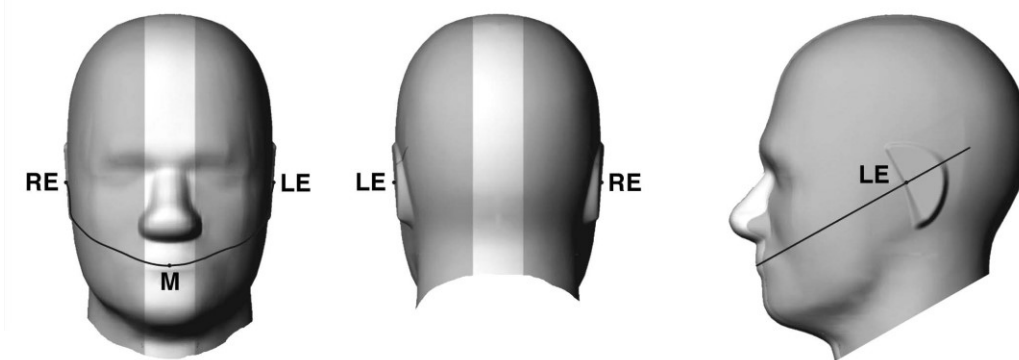


Fig 12.1.1 Front, back, and side views of SAM twin phantom

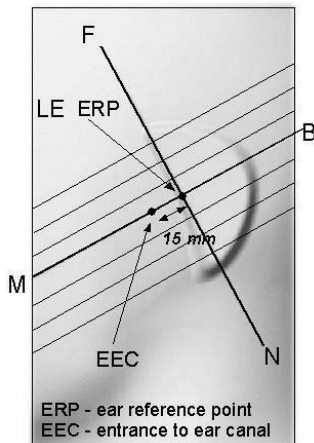


Fig 12.1.2 Close-up side view of phantom showing the ear region.

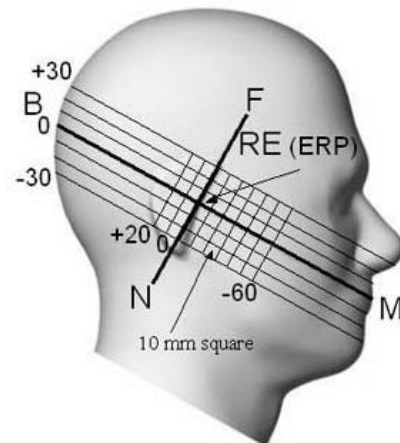


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

### 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 12.2.1 and Figure 12.2.2), 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 12.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 12.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 12.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 12.2.3. The actual rotation angles should be documented in the test report.

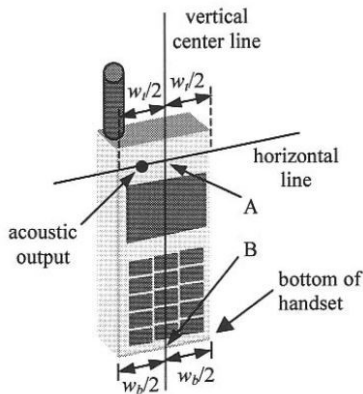


Fig 12.2.1 Handset vertical and horizontal reference lines—“fixed case”

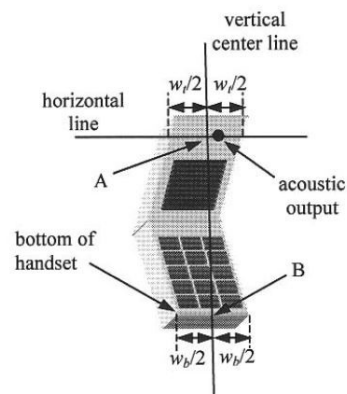


Fig 12.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

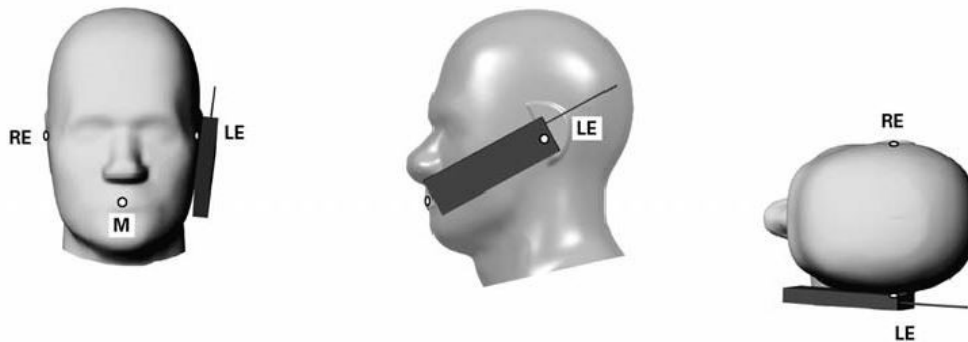


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

### 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 12.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

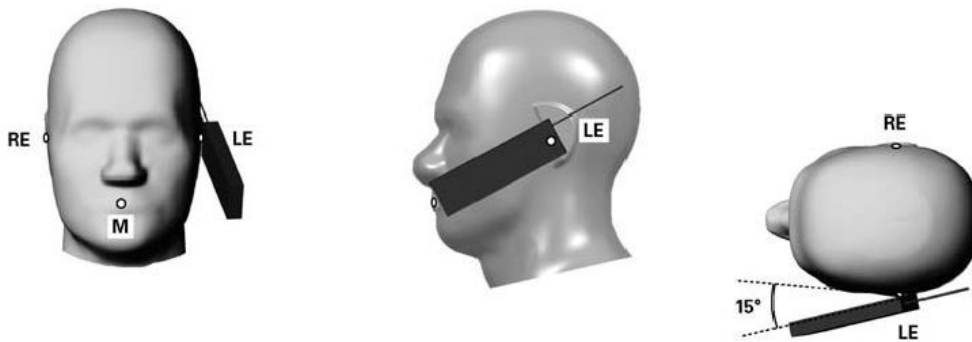


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

## 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 11.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is  $> 1.2$  W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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

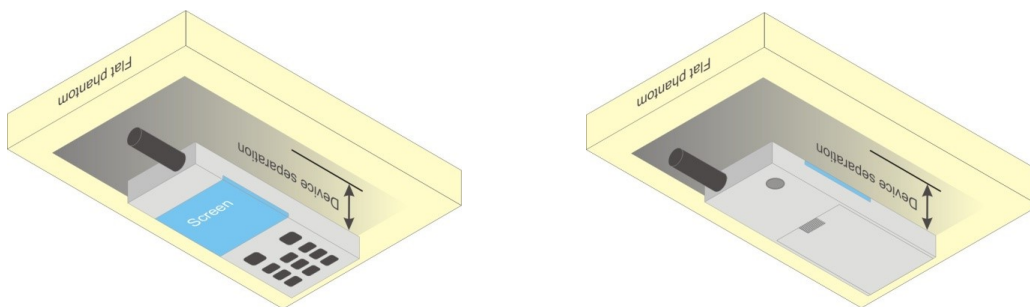


Fig 12.4 Body Worn Position

### 11.5 Product Specific 10g SAR Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, that can provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets and 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  $\leq 25$  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. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

### <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  $\leq 1/4$  dB higher than the primary mode, SAR measurement is not required for the secondary mode.

### <WCDMA Conducted Power>

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

A summary of these settings are illustrated below:

### HSDPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set Gain Factors ( $\beta_c$  and  $\beta_d$ ) 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:  $\beta$  values for transmitter characteristics tests with HS-DPCCH**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_o/\beta_d$	$\beta_{HS}$ (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,  $\Delta_{ACK}$  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  $\beta_o/\beta_d = 12/15, \beta_{HS}/\beta_c = 24/15$ . For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the  $\beta_o/\beta_d$  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 ( $\beta_c$  and  $\beta_d$ ) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
  - iii. Set Cell Power = -86 dBm
  - iv. Set Channel Type = 12.2k + HSPA
  - v. Set UE Target Power
  - vi. Power Ctrl Mode= Alternating bits
  - vii. Set and observe the E-TFCI
  - viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

**Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH**

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

Note 1: For sub-test 1 to 4,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ . For sub-test 5,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  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  $\beta_c/\beta_d$  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, TF0) 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:  $\beta_{ed}$  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:**

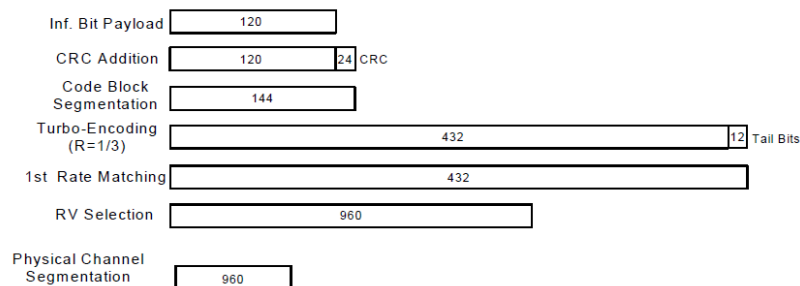
- a. The EUT was connected to Base Station referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set RMC 12.2Kbps + HSDPA mode.
  - ii. Set Cell Power = -25 dBm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

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

**C.8.1.12 Fixed Reference Channel Definition H-Set 12**

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

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



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



**<WCDMA Conducted Power>**

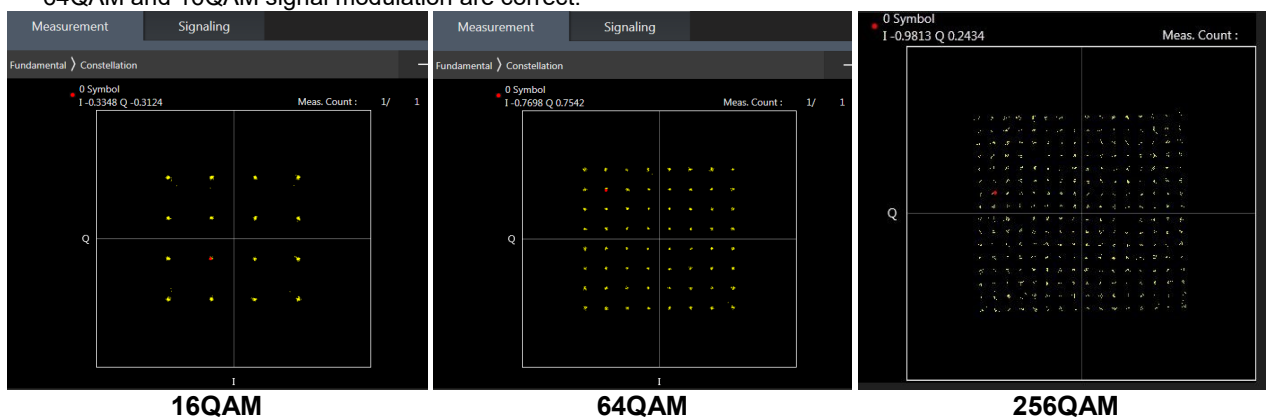
**General Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is  $\leq \frac{1}{4}$  dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is  $\leq 1.2$  W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than  $\frac{1}{4}$  dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

**<LTE Conducted Power>**

**General Note:**

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  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/64QAM/256QAM 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  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM 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  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 / B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE B2 / B4 / B5 / B17 / B38 SAR test was covered by B25 / B66 / B26 / B12 / B41; 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 May 2017 TCB workshop, for 16QAM and 64QAM, 256QAM 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 256QAM, 64QAM and 16QAM signal modulation are correct.



<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.

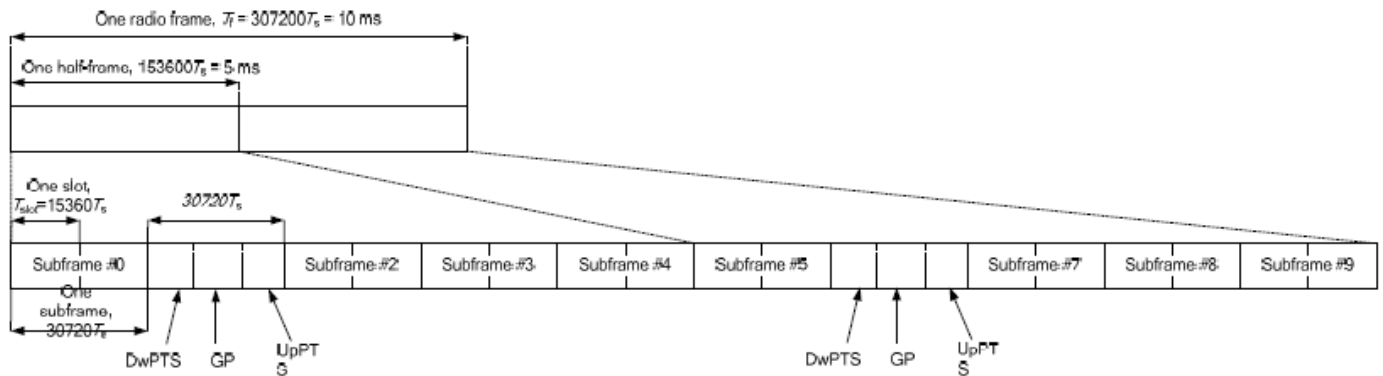


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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 · Ts	2192 · Ts	2560 · Ts	7680 · Ts	2192 · Ts	2560 · Ts	
1	19760 · Ts			20480 · Ts			
2	21952 · Ts			23040 · Ts			
3	24144 · Ts			25600 · Ts			
4	26336 · Ts			7680 · Ts			
5	6592 · Ts	4384 · Ts	5120 · Ts	20480 · Ts	4384 · Ts	5120 · Ts	
6	19760 · Ts			23040 · Ts			
7	21952 · Ts			12800 · Ts			
8	24144 · Ts			-			-
9	13168 · Ts			-			-

Special subframe (30720·T <sub>s</sub> ): 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 <sub>s</sub> ): 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:

For LTE TDD Power class 2

- i. Uplink-downlink configuration: 1. In a half-frame consisted of 5 subframes, uplink operation is in 2 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:  $(2+0.167)/5 = 43.3\%$
- iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is:  $(2+0.143)/5 = 42.9\%$
- v. For TDD LTE SAR measurement, the duty cycle 1:2.33 (42.9 %) was used perform testing and considering the theoretical duty cycle of 43.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 42.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix  $43.3\%/42.9\% = 1.009$  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.

For LTE TDD Power class 3

- 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.

The device can adjust uplink/downlink configuration automatically according to the transmitting power class level, as followings:

LTE TDD Band	Power Class level	support uplink/downlink configuration
LTE Band 41	> 23	1,2,3,4,5
	=23	0,1,2,3,4,5,6
	< 23	0,1,2,3,4,5,6





<LTE Carrier Aggregation>

General Note:

1. This device supports Carrier Aggregation on downlink for inter and intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.
3. The gray color table is covered by other combinations and no need to verify power.

2CC Downlink Carrier Aggregation				3CC Downlink Carrier Aggregation				4CC Downlink Carrier Aggregation				5CC Downlink Carrier Aggregation			
Number	Combination	4X4 MIMO	Covered by Measurement Superset	Number	Combination	4X4 MIMO	Covered by Measurement Superset	Number	Combination	4X4 MIMO	Covered by Measurement Superset	Number	Combination	4X4 MIMO	Covered by Measurement Superset
1	CA_12A-25A	12A-25A		1	CA_12A-30A-66A	12A-30A-66A	4CC-1	1	CA_12A-30A-66A-66A	12A-30A-66A-66A		1	CA_25A-25A-26A-41C	25A-25A-26A-41C	
2	CA_12A-30A	12A-30A	3CC-1	2	CA_12A-66A-66A	12A-66A-66A	4CC-1	2	CA_25A-25A-26A-41A	25A-25A-26A-41A		2	CA_25A-25A-41D	25A-25A-41D	
3	CA_12A-66A	12A-66A	3CC-1	3	CA_12A-66C	12A-66C		3	CA_25A-25A-41C	25A-25A-41C	5CC-1	3	CA_25A-26A-41D	25A-26A-41D	
4	CA_12B	12B	3CC-4	4	CA_12B-66A	12B-66A		4	CA_25A-41D	25A-41D	5CC-2	4	CA_25A-41E	25A-41E	
5	CA_25A-25A	25A-25A	3CC-5	5	CA_25A-25A-25A	25A-25A-25A		5	CA_26A-41D	26A-41D	5CC-3	5	CA_2A-48A-48D	2A-48A-48D	
6	CA_25A-26A	25A-26A	3CC-6	6	CA_25A-25A-26A	25A-25A-26A	4CC-2	6	CA_2A-12A-30A-66A	2A-12A-30A-66A		6	CA_2A-48C-48C	2A-48C-48C	
7	CA_25A-41A	25A-41A	3CC-7	7	CA_25A-25A-41A	25A-25A-41A	4CC-2	7	CA_2A-12A-66A-66A	2A-12A-66A-66A		7	CA_2A-48E	2A-48E	
8	CA_26A-41A	26A-41A	3CC-8	8	CA_25A-26A-41A	25A-26A-41A	4CC-2	8	CA_2A-29A-30A-66A	2A-29A-30A-66A		8	CA_2A-5A-5A-66A-66A	2A-5A-66A-66A	
9	CA_29A-30A	29A-30A	3CC-11	9	CA_25A-41C	25A-41C	4CC-3	9	CA_2A-2A-12A-12A	2A-2A-12A		9	CA_41C-41D	41C-41D	
10	CA_29A-66A	29A-66A	3CC-11	10	CA_26A-41C	26A-41C		10	CA_2A-2A-12A-30A	2A-2A-12A-30A		10	CA_48A-48E	48A-48E	
11	CA_2A-12A	2A-12A	3CC-13	11	CA_29A-30A-66A	29A-30A-66A	4CC-8	11	CA_2A-2A-12A-66A	2A-2A-12A-66A		11	CA_48C-48C-66A	48C-48C-66A	
12	CA_2A-29A	2A-29A	3CC-17	12	CA_29A-66A-66A	29A-66A-66A		12	CA_2A-2A-12B	2A-2A-12B		12	CA_48C-48D	48C-48D	
13	CA_2A-2A	2A-2A	3CC-19	13	CA_2A-12A-12A	2A-12A	4CC-9	13	CA_2A-2A-29A-30A	2A-2A-29A-30A		13	CA_4A-48E	4A-48E	
14	CA_2A-30A	2A-30A	3CC-17	14	CA_2A-12A-30A	2A-12A-30A	4CC-10	14	CA_2A-2A-30A-66A	2A-2A-30A-66A					
15	CA_2A-48A	2A-48A	3CC-27	15	CA_2A-12A-66A	2A-12A-66A	4CC-6	15	CA_2A-2A-4A-12A	2A-2A-4A-12A					
16	CA_2A-4A	2A-4A	3CC-22	16	CA_2A-12B	2A-12B	4CC-12	16	CA_2A-2A-4A-5A	2A-2A-4A-5A					
17	CA_2A-5A	2A-5A	3CC-23	17	CA_2A-29A-30A	2A-29A-30A	4CC-13	17	CA_2A-2A-4A-71A	2A-2A-4A-71A					
18	CA_2A-66A	2A-66A	3CC-15	18	CA_2A-29A-66A	2A-29A-66A	4CC-8	18	CA_2A-2A-5A-30A	2A-2A-5A-30A					
19	CA_2A-71A	2A-71A	3CC-25	19	CA_2A-2A-12A	2A-2A-12A	4CC-9	19	CA_2A-2A-5B	2A-2A-5B					
20	CA_2A-7A	2A-7A		20	CA_2A-2A-29A	2A-2A-29A	4CC-13	20	CA_2A-2A-66A-66A	2A-2A-66A-66A					
21	CA_2C	2C	3CC-46	21	CA_2A-2A-30A	2A-2A-30A	4CC-14	21	CA_2A-2A-66C	2A-2A-66C					
22	CA_30A-66A	30A-66A	3CC-26	22	CA_2A-2A-4A	2A-2A-4A	4CC-15	22	CA_2A-30A-66A-66A	2A-30A-66A-66A					
23	CA_38C	38C		23	CA_2A-2A-5A	2A-2A-5A	4CC-16	23	CA_2A-48A-48C	2A-48A-48C					
24	CA_41A-41A	41A-41A	3CC-52	24	CA_2A-2A-66A	2A-2A-66A	4CC-14	24	CA_2A-48D	2A-48D	5CC-5				
25	CA_41A-48A	41A-48A		25	CA_2A-2A-71A	2A-2A-71A	4CC-17	25	CA_2A-4A-12A-30A	2A-4A-12A-30A					
26	CA_41C	41C	3CC-53	26	CA_2A-30A-66A	2A-30A-66A	4CC-14	26	CA_2A-4A-12B	2A-4A-12B					
27	CA_48A-48A	48A-48A	3CC-27	27	CA_2A-48A-48A	2A-48A-48A	4CC-56	27	CA_2A-4A-4A-12A	2A-4A-4A-12A					
28	CA_48A-66A	48A-66A	3CC-28	28	CA_2A-48A-66A	2A-48A-66A		28	CA_2A-4A-5A-30A	2A-4A-5A-30A					
29	CA_48A-71A	48A-71A	3CC-56	29	CA_2A-48C	2A-48C	4CC-23	29	CA_2A-4A-5B	2A-4A-5B					
30	CA_48B	48B	3CC-61	30	CA_2A-4A-12A	2A-4A-12A	4CC-25	30	CA_2A-5A-30A-66A	2A-5A-30A-66A					
31	CA_48C	48C	3CC-57	31	CA_2A-4A-29A	2A-4A-29A		31	CA_2A-5A-48C	2A-5A-48C					
32	CA_4A-12A	4A-12A	3CC-30	32	CA_2A-4A-30A	2A-4A-30A	4CC-28	32	CA_2A-5A-5A-66A	2A-5A-66A	5CC-8				
33	CA_4A-29A	4A-29A	3CC-31	33	CA_2A-4A-4A	2A-4A-4A	4CC-27	33	CA_2A-5A-66A-66A	2A-5A-66A-66A	5CC-8				
34	CA_4A-30A	4A-30A	3CC-32	34	CA_2A-4A-5A	2A-4A-5A	4CC-28	34	CA_2A-5B-30A	2A-5B-30A					
35	CA_4A-48A	4A-48A		35	CA_2A-4A-71A	2A-4A-71A	4CC-17	35	CA_2A-66A-66A-71A	2A-66A-66A-71A					
36	CA_4A-4A	4A-4A	3CC-70	36	CA_2A-5A-30A	2A-5A-30A	4CC-18	36	CA_2A-66C-71A	2A-66C-71A					
37	CA_4A-5A	4A-5A	3CC-34	37	CA_2A-5A-48A	2A-5A-48A		37	CA_30A-66A-66A-66A	30A-66A-66A-66A					
38	CA_4A-71A	4A-71A	3CC-35	38	CA_2A-5A-5A	2A-5A	4CC-32	38	CA_41A-41A-41C	41A-41A, 41A-41C					
39	CA_5A-25A	5A-25A		39	CA_2A-5A-66A	2A-5A-66A	4CC-32	39	CA_41A-41D	41A-41D					
40	CA_5A-30A	5A-30A	3CC-36	40	CA_2A-5B	2A-5B	4CC-34	40	CA_41C-41C	41C-41C					
41	CA_5A-41A	5A-41A		41	CA_2A-66A-66A	2A-66A-66A	4CC-35	41	CA_41E	41E	5CC-4				
42	CA_5A-48A	5A-48A	3CC-37	42	CA_2A-66A-71A	2A-66A-71A	4CC-35	42	CA_48A-48A-66A-66A	48A-48A-66A-66A					



**FCC SAR Test Report**

**Report No. : FA391308**

43	CA_5A-5A	5A	3CC-38	43	CA_2A-66B	2A-66B		43	CA_48A-48A-66C	48A-48A-66C				
44	CA_5A-66A	5A-66A	3CC-39	44	CA_2A-66C	2A-66C	4CC-36	44	CA_48A-48C-66A	48A-48C-66A				
45	CA_5A-7A	5A-7A		45	CA_2A-7C	2A-7C		45	CA_48A-48D	48A-48D	5CC-5			
46	CA_5B	5B	3CC-40	46	CA_2C-12A	2C-12A		46	CA_48C-48C	48C-48C	5CC-11			
47	CA_66A-66A	66A-66A	3CC-41	47	CA_2C-29A	2C-29A		47	CA_48C-66A-66A	48C-66A-66A				
48	CA_66A-71A	66A-71A	3CC-42	48	CA_2C-30A	2C-30A		48	CA_48C-66C	48C-66C				
49	CA_66B	66B	3CC-43	49	CA_2C-5A	2C-5A		49	CA_48D-66A	48D-66A				
50	CA_66C	66C	3CC-44	50	CA_2C-66A	2C-66A		50	CA_48E	48E	5CC-13			
51	CA_7A-26A	7A-26A		51	CA_30A-66A-66A	30A-66A-66A	4CC-37	51	CA_4A-48D	4A-48D				
52	CA_7A-7A	7A-7A		52	CA_41A-41A-41A	41A-41A-41A		52	CA_5A-30A-66A-66A	5A-30A-66A-66A				
53	CA_7B	7B		53	CA_41A-41C	41A-41C	4CC-38	53	CA_5A-48D	5A-48D				
54	CA_7C	7C	3CC-45	54	CA_41D	41D	4CC-39	54	CA_5B-30A-66A	5B-30A-66A				
				55	CA_48A-48A-66A	48A-48A-66A	4CC-42	55	CA_2A-48A-48A-48A	2A-48A-48A-48A				
				56	CA_48A-48A-71A	48A-48A-71A								
				57	CA_48A-48C	48A-48C	4CC-44							
				58	CA_48A-66A-66A	48A-66A-66A	4CC-42							
				59	CA_48A-66B	48A-66B								
				60	CA_48A-66C	48A-66C	4CC-43							
				61	CA_48B-66A	48B-66A								
				62	CA_48C-66A	48C-66A	4CC-44							
				63	CA_48C-71A	48C-71A								
				64	CA_48D	48D	4CC-51							
				65	CA_4A-12A-12A	4A-12A								
				66	CA_4A-12A-30A	4A-12A-30A								
				67	CA_4A-12B	4A-12B	4CC-26							
				68	CA_4A-29A-30A	4A-29A-30A								
				69	CA_4A-48C	4A-48C								
				70	CA_4A-4A-12A	4A-4A-12A	4CC-27							
				71	CA_4A-4A-29A	4A-4A-29A								
				72	CA_4A-4A-30A	4A-4A-30A								
				73	CA_4A-4A-5A	4A-4A-5A								
				74	CA_4A-4A-71A	4A-4A-71A								
				75	CA_4A-5A-30A	4A-5A-30A	4CC-28							
				76	CA_4A-5B	4A-5B	4CC-29							
				77	CA_5A-30A-66A	5A-30A-66A	4CC-30							
				78	CA_5A-48A-66A	5A-48A-66A								
				79	CA_5A-48C	5A-48C	4CC-31							
				80	CA_5A-5A-66A	5A-66A	4CC-32							
				81	CA_5A-66A-66A	5A-66A-66A	4CC-33							
				82	CA_5A-66B	5A-66B								
				83	CA_5A-66C	5A-66C								
				84	CA_5B-30A	5B-30A	4CC-34							
				85	CA_5B-66A	5B-66A	4CC-54							
				86	CA_66A-66A-66A	66A-66A-66A	4CC-37							
				87	CA_66A-66A-71A	66A-66A-71A	4CC-35							
				88	CA_66A-66B	66A-66B								
				89	CA_66A-66C	66A-66C								
				90	CA_66C-71A	66C-71A	4CC-36							

**LTE Carrier Aggregation Conducted Power (Downlink)**

- 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 five 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 inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.
- vi. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- vii. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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

**LTE 4x4 MIMO (Downlink)**

This device supports downlink 4x4 MIMO operations for LTE Band 2/4/5/7/12/25/26/30/38/41/48/66/71 only. Uplink transmission is limited to a single output stream. Power measurements were performed with downlink 4x4 MIMO active for the configuration with highest measured maximum conducted power with 4x4 downlink MIMO inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

Per FCC Guidance, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive. When carrier aggregation is applicable, power measurements were performed with the downlink carrier aggregation and 4x4 DL MIMO active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

4X4 MIMO	Band
	LTE Band 2/4/5/7/12/25/26/30/38/41/48/66/71

**LTE Carrier Aggregation Conducted Power (Uplink)**

Intra-band	2CC Uplink Carrier Aggregation
CA_2C	Ant 1
	Ant 2
CA_5B	Ant 0
	Ant 2
CA_7C	Ant 1
	Ant 2
CA_66C	Ant 1
	Ant 2
CA_66B	Ant 1
	Ant 2
CA_38C	Ant 1
	Ant 2
CA_41C	Ant 1
	Ant 2
	Ant 8
	Ant 9
CA_48C	Ant 8
	Ant 9
	Ant 7
	Ant 10
CA_48B	Ant 8
	Ant 9
	Ant 7
	Ant 10

**<Intra-band>**

**General Note:**

- i. The device supports intra-band uplink carrier aggregation for LTE B2/5/7/38/41/48/66 with a maximum of two uplink 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 uplink 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 Nov. 2017 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. Additional SAR measurement for LTE UL CA with 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.
- v. LTE CA\_66B, CA\_48B test was covered by CA\_66C, CA\_48C; therefore, SAR was only assessed for CA\_66C, CA\_48C.

**<Inter-band uplink carrier aggregation consideration>**

LTE Uplink CA	Antenna TX		Antenna TX		Antenna TX	
	PCC	SCC	PCC	SCC	PCC	SCC
CA_2A_12A	1	0	2	0	1/2	0/2
CA_2A_4A	1	7	2	7	/	/
CA_2A_5A	1	0	2	0	1/2	0/2
CA_2A_7A	7	1	7	2	/	/
CA_2A_30A	1	7	2	7	/	/
CA_2A_66A	1	7	2	7	/	/
CA_2A_71A	1	0	2	0	1/2	0/2
CA_4A_12A	1	0	2	0	1/2	0/2
CA_4A_5A	1	0	2	0	1/2	0/2
CA_4A_30A	1	7	2	7	/	/
CA_4A_71A	1	0	2	0	1/2	0/2
CA_5A_7A	0	1	2	1	0/2	1/2
CA_5A_25A	0	1	2	1	0/2	1/2
CA_5A_30A	0	1	2	1	0/2	1/2
CA_5A_66A	0	1	2	1	0/2	1/2
CA_7A_26A	1	0	2	0	1/2	0/2
CA_12A_25A	0	1	2	1	0/2	1/2
CA_12A_30A	0	1	2	1	0/2	1/2
CA_12A_66A	0	1	2	1	0/2	1/2
CA_25A_26A	1	0	2	0	1/2	0/2
CA_30A_66A	1	7	2	7	/	/
CA_66A_71A	1	0	2	0	1/2	0/2

**General Note:**

1. For Inter-band ULCA co-located SAR analysis is performed using standalone SAR summed together and they are more conservatively for inter band ULCA.

### 5G NR Output Power (Unit: dBm)

#### General Note:

1. 5G NR n2/n5/n7/n12/n25/n30/n66/n71/n41/n77 is NSA mode.
2. 5G NR n2/n5/n7/n12/n25/n26/n30/n66/n71/n38/n41/n48/n77 is SA mode.
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
  - a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, the CP-OFDM mode will not higher than DFT-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 QPSK and the reported SAR for the DFT-s QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
  - b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, for 16QAM/64QAM/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QAM/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
  - c. SAR testing 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
  - d. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
  - e. 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
  - f. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /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
4. This device supports HPUE for 5G NR n41/n77 with class 2 level, HPUE power has been measured separately. For HPUE power is higher than power class 3 but with lower duty cycle, the maximum average power for class 2 and class 3 is almost the same, so we chose power class 3 full SAR testing and power class 2 verify the worst case of power class 3 SAR.
5. For 5G NR n41/n77 HPUE, 5G NR n41/n77 PC2 Maximum Duty Cycle is 50%, using FTM (Factory Test Mode) with 50% duty cycle is considered during SAR testing. For 5G NR other bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.
6. 5G NR n41 supports UL MIMO for CP-OFDM modulation. MIMO SAR base on standalone SAR summed together as MIMO SAR.
7. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
8. 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time.
9. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
10. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.
11. For 5G NR EN-DC mode, standalone SAR performed for 5G NR NSA band with the maximum power, EN-DC SAR summed EN-DC mode 5G NR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively.
12. For 5G NR Inter-band ULCA co-located SAR analysis is performed using standalone SAR summed together and they are more conservatively for inter band ULCA.

**<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	$\leq 3.5^1$	$\leq 1.2^1$	$\leq 0.2^1$
		$\leq 0.5^2$	$\leq 0.5^2$	0 <sup>2</sup>
	QPSK	$\leq 1$		0
	16 QAM	$\leq 2$		$\leq 1$
	64 QAM	$\leq 2.5$		
CP-OFDM	256 QAM	$\leq 4.5$		
	QPSK	$\leq 3$		$\leq 1.5$
	16 QAM	$\leq 3$		$\leq 2$
	64 QAM		$\leq 3.5$	
	256 QAM		$\leq 6.5$	

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	$\leq 3.5$	$\leq 0.5$	0
	QPSK	$\leq 3.5$	$\leq 1$	0
	16 QAM	$\leq 3.5$	$\leq 2$	$\leq 1$
	64 QAM	$\leq 3.5$	$\leq 2.5$	
	256 QAM	$\leq 4.5$		
CP-OFDM	QPSK	$\leq 3.5$	$\leq 3$	$\leq 1.5$
	16 QAM	$\leq 3.5$	$\leq 3$	$\leq 2$
	64 QAM		$\leq 3.5$	
	256 QAM		$\leq 6.5$	



EN-DC	Main Tx		Div Ant		Div Ant	
	LTE Ant	NR Ant	LTE Ant	NR Ant	LTE Ant	NR Ant
DC_5A_n2A	0	1	2	1	0/2	1/2
DC_12A_n2A	0	1	2	1	0/2	1/2
DC_30A_n2A	1	7	2	7	/	/
DC_66A_n2A	1	7	2	7	/	/
DC_2A_n5A	1	0	2	0	1/2	0/2
DC_7A_n5A	1	0	2	0	1/2	0/2
DC_30A_n5A	1	0	2	0	1/2	0/2
DC_66A_n5A	1	0	2	0	1/2	0/2
DC_5A_n7A	0	1	2	1	0/2	1/2
DC_66A_n7A	7	1	7	2	/	/
DC_2A_n12A	1	0	2	0	1/2	0/2
DC_30A_n12A	1	0	2	0	1/2	0/2
DC_66A_n12A	1	0	2	0	1/2	0/2
DC_2A_n30A	1	7	2	7	/	/
DC_5A_n30A	0	1	2	1	0/2	1/2
DC_12A_n30A	0	1	2	1	0/2	1/2
DC_66A_n30A	1	7	2	7	/	/
DC_2A_n66A	1	7	2	7	/	/
DC_5A_n66A	0	1	2	1	0/2	1/2
DC_7A_n66A	1	7	2	7	/	/
DC_12A_n66A	0	1	2	1	0/2	1/2
DC_30A_n66A	1	7	2	7	/	/
DC_2A_n71A	1	0	2	0	1/2	0/2
DC_7A_n71A	1	0	2	0	1/2	0/2
DC_66A_n71A	1	0	2	0	1/2	0/2
DC_7A_n77A	1	8	2	9	1/2	8/9/7/10
DC_2A_n77A	1	8	2	9	1/2	8/9/7/10
DC_5A_n77A	0	8	2	9	0/2	8/9/7/10
DC_12A_n77A	0	8	2	9	0/2	8/9/7/10
DC_30A_n77A	1	8	2	9	1/2	8/9/7/10
DC_66A_n77A	1	8	2	9	1/2	8/9/7/10
DC_12A_n25A	0	1	2	1	0/2	1/2
DC_66A_n25A	1	7	2	7	/	/
DC_2A_n41A	7	1	7	2	/	/
DC_66A_n41A	7	1	7	2	/	/





**<NR Inter-band consideration>**

NR Uplink CA Inter-Band	Antenna TX		Antenna TX		Antenna TX	
	PCC	SCC	PCC	SCC	PCC	SCC
CA_n2A_n5A	1	0	2	0	1/2	0/2
CA_n2A_n66A	1	7	2	7	/	/
CA_n2A_n77A	1	8	2	9	1/2	8/9/7/10
CA_n2A_n12A	1	0	2	0	1/2	0/2
CA_n2A_n30A	1	7	2	7	/	/
CA_n5A_n30A	0	1	2	1	0/2	1/2
CA_n5A_n66A	0	1	2	1	0/2	1/2
CA_n5A_n77A	0	8	2	9	0/2	8/9/7/10
CA_n12A_n30A	0	1	2	1	0/2	1/2
CA_n12A_n66A	0	1	2	1	0/2	1/2
CA_n12A_n77A	0	8	2	9	0/2	8/9/7/10
CA_n25A_n41A	7	1	7	2	7	1/2/8/9
CA_n30A_n66A	1	7	2	7	/	/
CA_n30A_n77A	1	8	2	9	1/2	8/9/7/10
CA_n66A_n77A	1	8	2	9	1/2	8/9/7/10

**NR UL MIMO Bands Configuration:**

NR UL MIMO	TX Ant	
n41	Ant 1	Ant 8/9
	Ant 2	

### <WLAN Conducted Power>

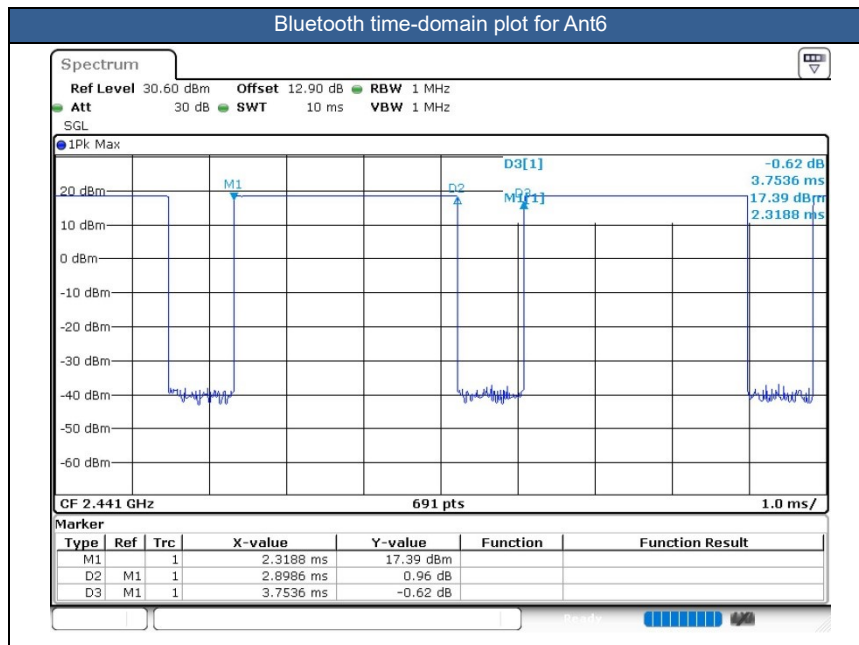
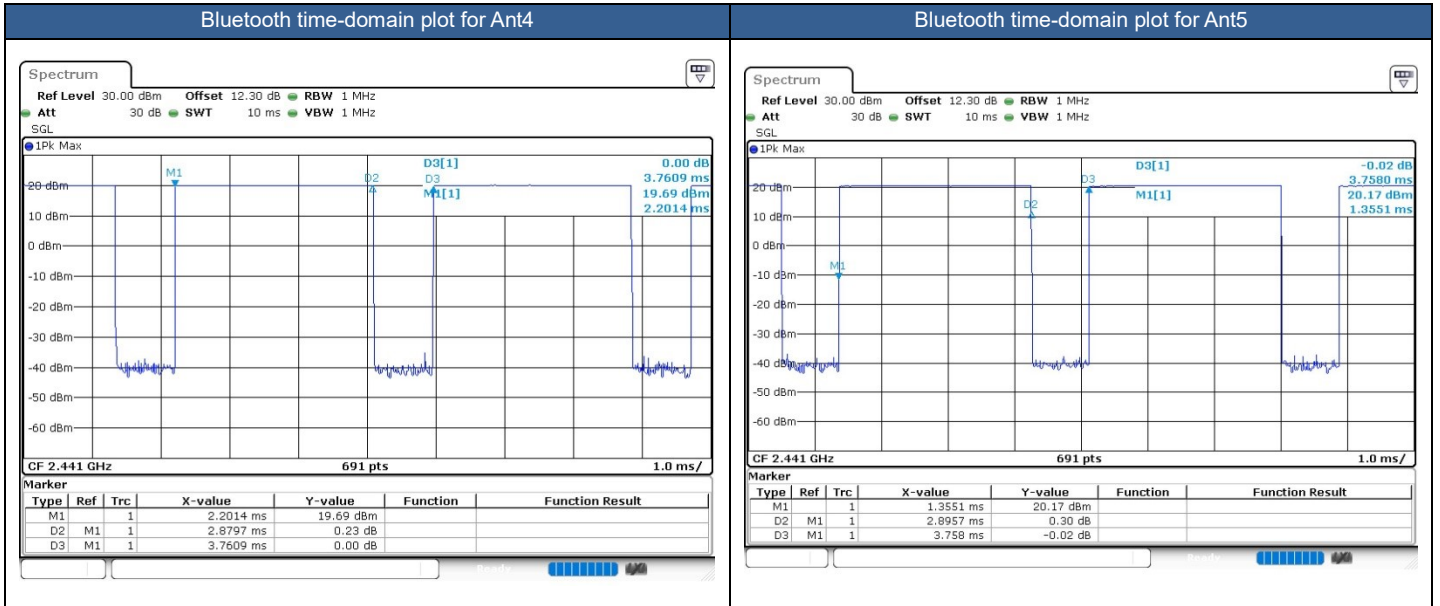
#### General Note:

1. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is  $< 1.6\text{W/kg}$  and SAR peak to location ratio  $\leq 0.04$ , no additional SAR measurements for MIMO.
2. 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. Additional output power measurements were not necessary.
3. 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.
4. 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).
5. 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.
6. 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  $\leq 0.4\text{ W/kg}$ , 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  $> 0.4\text{ W/kg}$ , 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  $\leq 0.8\text{ W/kg}$  or all required test position are tested.
  - c. For all positions/configurations, when the reported SAR is  $> 0.8\text{ W/kg}$ , SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq 1.2\text{ W/kg}$  or all required channels are tested.
7. 802.11 ax supports both full tone size mode and partial tone size mode, after verification on partial tone size mode that partial size tone mode power will not be higher than full tone size mode, therefore, full tone mode power was chosen to be measured in this report.
8. When multiple transmission modes (802.11a/g/n/ac/ax/be) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac then 802.11ax then 802.11be or 802.11g is chosen over 802.11n.
9. The 2.4GHz/5GHz/6GHz WLAN can transmit in SISO and MIMO mode.

**<2.4GHz Bluetooth>**

**General Note:**

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle are 76.57% for Ant4, 77.05% for Ant5 and 77.22% for Ant6 as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 100%, therefore the actual duty cycle will be scaled up to 100% for Bluetooth reported SAR calculation





### **13. Antenna Location**

The detailed antenna location information can refer to SAR Test Setup Photos.

## 14. SAR Test Results

### General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
  - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
  - b. For SAR testing of BT/WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
  - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)\*Tune-up Scaling Factor
  - d. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)\* Duty Cycle scaling factor \* Tune-up scaling factor
  - e. For TDD LTE SAR measurement of power class 3, 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 (W/kg) = Measured SAR (W/kg)\* Tune-up Scaling Factor\* scaling factor for extended cyclic prefix.
  - f. For TDD LTE SAR measurement of power class 2, the duty cycle 1:2.33 (42.9 %) was used perform testing and considering the theoretical duty cycle of 43.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 42.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 43.3%/42.9% = 1.009 is applied to scale-up the measured SAR result. The reported TDD LTE SAR (W/kg) = measured SAR (W/kg)\* Tune-up Scaling Factor\* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
  - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
  - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
  - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The device implements receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). It uses the receiver to indicate whether the user is making a call in head scenario or not. The selection between head and body power levels is based on the receiver detection mechanism. It can determine proximity to head or body and set the relevant power level for 2G&3G&4G&5G and Wi-Fi antennas accordingly. The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table.
5. The 2.4GHz/5GHz/6GHz WLAN can transmit in SISO and MIMO mode.
6. This device supports HPUE for LTE Band 41/5G NR n41/n77 with class 2 level, HPUE power has been measured separately. For HPUE power is higher than power class 3 but with lower duty cycle, the maximum average power for class 2 and class 3 is almost the same, so we chose power class 3 full SAR testing and power class 2 verify the worst case of power class 3 SAR.
7. For 5G NR n41/n77 HPUE, 5G NR n41/n77 PC2 Maximum Duty Cycle is 50%, using FTM (Factory Test Mode) with 50% duty cycle is considered during SAR testing. For 5G NR other bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.
8. 5G NR n41 supports UL MIMO for CP-OFDM modulation. The DFT-s-OFDM modulation power level is higher than CP-OFDM modulation power level, therefore, all UL MIMO SAR tests are performed by using high power SAR to represent low power SAR conservatively.
9. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
  - a. For this device SAR for WWAN/WLAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of WCDMA Band II/IV, LTE Band 2/4/7/25/38/41/66, 5G NR n2/n7/n25/n38/n41/n66, WLAN5.2/5.8GHz, therefore product specific 10g SAR is necessary.



- b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
- c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.

**GSM Note:**

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

**WCDMA Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is  $\leq$  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  $\leq$  1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

**LTE Note:**

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq$  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/64QAM/256QAM output power for each RB allocation configuration is  $>$  not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq$  1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is  $>$  not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq$  1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26 / B38 / B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE B2 / B4 / B5 / B17 / B38 SAR test was covered by B25 / B66 / B26 / B12 / B41; 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

**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 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.
  - b. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
  - c. 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  $\leq 0.8$  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. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not  $\frac{1}{2}$  dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /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  $\leq 1.45$  W/kg, smaller bandwidth SAR testing is not required for this device
- f. For 5G FR1 n5 /n12/n26/n66/n71/n38/n41/n77 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/Bluetooth 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  $\leq 1.2$  W/kg.
- 2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is  $\leq 1.2$  W/kg, SAR is not required for U-NII-1 band.
- 3. When the reported SAR of the test position is  $> 0.4$  W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is  $\leq 0.8$  W/kg or all required test position are tested.
- 4. For all positions / configurations, when the reported SAR is  $> 0.8$  W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq 1.2$  W/kg or all required channels are tested.
- 5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
- 6. When multiple transmission modes (802.11a/g/n/ac/ax/be) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac then 802.11ax then 802.11be or 802.11g is chosen over 802.11n.
- 7. The 2.4GHz/5GHz/6GHz WLAN can transmit in SISO and MIMO mode.

**Power status description:**

The device has the following power state which used at different exposure condition.

Exposure Condition	Power State
Head SAR-Standalone	State 6
Head SAR- Simultaneous	State 7
Body worn/Extremity (Handheld) SAR-Standalone	State 10
Body worn/Extremity (Handheld) SAR- Simultaneous	State 9
Hotspot SAR	State 8







FCC SAR Test Report

Report No. : FA391308

	FR1 n71	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	136100	680.5	1	24.63	26.00	1.371	-	-	-0.05	0.090	0.123
	FR1 n71	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 2	State 6/7	136100	680.5	1	24.54	26.00	1.400	-	-	-0.1	0.346	0.484
	FR1 n71	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 2	State 6/7	136100	680.5	1	24.54	26.00	1.400	-	-	-0.1	0.131	0.183
	FR1 n71	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 2	State 6/7	136100	680.5	1	24.54	26.00	1.400	-	-	0.02	0.135	0.189
	FR1 n71	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	136100	680.5	1	24.54	26.00	1.400	-	-	0.05	0.076	0.106
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 0	State 6/7	141500	707.5	1	24.56	26.00	1.393	-	-	-0.11	0.070	0.098
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 0	State 6/7	141500	707.5	1	24.56	26.00	1.393	-	-	0.09	0.041	0.057
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 0	State 6/7	141500	707.5	1	24.56	26.00	1.393	-	-	0.02	0.044	0.061
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 0	State 6/7	141500	707.5	1	24.56	26.00	1.393	-	-	-0.05	0.024	0.033
	FR1 n12	15M	QPSK	36	22	DFT-15	Right Cheek	0mm	Ant 0	State 6/7	141500	707.5	1	24.52	26.00	1.406	-	-	0.09	0.092	0.129
	FR1 n12	15M	QPSK	36	22	DFT-15	Right Tilted	0mm	Ant 0	State 6/7	141500	707.5	1	24.52	26.00	1.406	-	-	0.13	0.049	0.069
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Cheek	0mm	Ant 0	State 6/7	141500	707.5	1	24.52	26.00	1.406	-	-	0.1	0.055	0.077
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Tilted	0mm	Ant 0	State 6/7	141500	707.5	1	24.52	26.00	1.406	-	-	-0.02	0.033	0.046
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 6	141500	707.5	1	24.56	26.00	1.393	-	-	-0.05	0.718	1.000
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 6	141500	707.5	1	24.56	26.00	1.393	-	-	-0.03	0.224	0.312
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 6	141500	707.5	1	24.56	26.00	1.393	-	-	-0.05	0.299	0.417
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 6	141500	707.5	1	24.56	26.00	1.393	-	-	0.13	0.156	0.217
04	FR1 n12	15M	QPSK	36	22	DFT-15	Right Cheek	0mm	Ant 2	State 6	141500	707.5	1	24.52	26.00	1.406	-	-	-0.03	0.792	1.114
	FR1 n12	15M	QPSK	36	22	DFT-15	Right Tilted	0mm	Ant 2	State 6	141500	707.5	1	24.52	26.00	1.406	-	-	-0.12	0.265	0.373
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Cheek	0mm	Ant 2	State 6	141500	707.5	1	24.52	26.00	1.406	-	-	-0.03	0.334	0.470
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Tilted	0mm	Ant 2	State 6	141500	707.5	1	24.52	26.00	1.406	-	-	-0.05	0.172	0.242
	FR1 n12	15M	QPSK	75	0	DFT-15	Right Cheek	0mm	Ant 2	State 6	141500	707.5	1	23.58	25.00	1.387	-	-	-0.01	0.728	1.010
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 7	141500	707.5	1	22.58	24.00	1.387	-	-	0.13	0.471	0.653
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 7	141500	707.5	1	22.58	24.00	1.387	-	-	0.13	0.160	0.222
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 7	141500	707.5	1	22.58	24.00	1.387	-	-	-0.1	0.187	0.259
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 7	141500	707.5	1	22.58	24.00	1.387	-	-	0.11	0.099	0.137
	FR1 n12	15M	QPSK	36	22	DFT-15	Right Cheek	0mm	Ant 2	State 7	141500	707.5	1	22.55	24.00	1.396	-	-	0.01	0.511	0.714
	FR1 n12	15M	QPSK	36	22	DFT-15	Right Tilted	0mm	Ant 2	State 7	141500	707.5	1	22.55	24.00	1.396	-	-	0.02	0.171	0.239
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Cheek	0mm	Ant 2	State 7	141500	707.5	1	22.55	24.00	1.396	-	-	0.08	0.204	0.285
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Tilted	0mm	Ant 2	State 7	141500	707.5	1	22.55	24.00	1.396	-	-	0.03	0.107	0.149
<b>835MHz</b>																					
05	GSM850	-	-	-	-	GPRS(2 Tx slots)	Right Cheek	0mm	Ant 0	State 6/7	189	836.4	1	32.58	34.00	1.387	-	-	0.07	0.269	0.373
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Right Tilted	0mm	Ant 0	State 6/7	189	836.4	1	32.58	34.00	1.387	-	-	0.11	0.175	0.243
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Left Cheek	0mm	Ant 0	State 6/7	189	836.4	1	32.58	34.00	1.387	-	-	0.07	0.187	0.259
	GSM850	-	-	-	-	GPRS(2 Tx slots)	Left Tilted	0mm	Ant 0	State 6/7	189	836.4	1	32.58	34.00	1.387	-	-	-0.06	0.124	0.172
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	State 6/7	4182	836.4	1	24.72	26.00	1.343	-	-	0.06	0.242	0.325
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	State 6/7	4182	836.4	1	24.72	26.00	1.343	-	-	0.02	0.134	0.180
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	State 6/7	4182	836.4	1	24.72	26.00	1.343	-	-	-0.03	0.142	0.191
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	State 6/7	4182	836.4	1	24.72	26.00	1.343	-	-	0.05	0.093	0.125
06	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	State 6	4182	836.4	1	22.68	24.00	1.355	-	-	0.06	0.793	1.075
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 2	State 6	4182	836.4	1	22.68	24.00	1.355	-	-	0.07	0.250	0.339
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 2	State 6	4182	836.4	1	22.68	24.00	1.355	-	-	-0.12	0.282	0.382
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 2	State 6	4182	836.4	1	22.68	24.00	1.355	-	-	-0.09	0.150	0.203
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	State 6	4132	826.4	1	22.65	24.00	1.365	-	-	0.06	0.765	1.044
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	State 6	4233	846.6	1	22.60	24.00	1.380	-	-	0.03	0.715	0.987
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	State 7	4182	836.4	1	20.74	22.00	1.337	-	-	0.1	0.514	0.687
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 2	State 7	4182	836.4	1	20.74	22.00	1.337	-	-	0.08	0.145	0.194
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 2	State 7	4182	836.4	1	20.74	22.00	1.337	-	-	-0.03	0.166	0.222
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 2	State 7	4182	836.4	1	20.74	22.00	1.337	-	-	-0.13	0.082	0.110
	LTE Band 26	15M	QPSK	1	37	-	Right Cheek	0mm	Ant 0	State 6/7	26865	831.5	1	24.47	26.00	1.422	-	-	0.05	0.204	0.290
	LTE Band 5B	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	State 6/7	20575 20476	836.5 831.6	1	24.26	26.00	1.493	-	-	0.02	0.136	0.203
	LTE Band 26	15M	QPSK	1	37	-	Right Tilted	0mm	Ant 0	State 6/7	26865	831.5	1	24.47	26.00	1.422	-	-	0.04	0.103	0.146
	LTE Band 26	15M	QPSK	1	37	-	Left Cheek	0mm	Ant 0	State 6/7	26865	831.5	1	24.47	26.00	1.422	-	-	0.01	0.108	0.154
	LTE Band 26	15M	QPSK	1	37	-	Left Tilted	0mm	Ant 0	State 6/7	26865	831.5	1	24.47	26.00	1.422	-	-	-0.05	0.077	0.110
	LTE Band 26	15M	QPSK	36	20	-	Right Cheek	0mm	Ant 0	State 6/7	26865	831.5	1	23.56	25.00	1.393	-	-	-0.02	0.164	0.228
	LTE Band 26	15M	QPSK	36	20	-	Right Tilted	0mm	Ant 0	State 6/7	26865	831.5	1	23.56	25.00	1.393	-	-	-0.01	0.085	0.118
	LTE Band 26	15M	QPSK	36	20	-	Left Cheek	0mm	Ant 0	State 6/7	26865	831.5	1	23.56	25.00	1.393	-	-	0.06	0.090	0.125



	LTE Band 26	15M	QPSK	36	20	-	Left Tilted	0mm	Ant 0	State 6/7	26865	831.5	1	23.56	25.00	1.393	-	-	-0.08	0.064	0.089
07	LTE Band 26	15M	QPSK	1	37	-	Right Cheek	0mm	Ant 2	State 6	26865	831.5	1	22.38	24.00	1.452	-	-	0.06	0.728	<b>1.057</b>
	LTE Band 5B	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	State 6	20575 20476	836.5 831.6	1	22.08	24.00	1.556	-	-	-0.05	0.678	1.055
	LTE Band 26	15M	QPSK	1	37	-	Right Tilted	0mm	Ant 2	State 6	26865	831.5	1	22.38	24.00	1.452	-	-	0.07	0.227	0.330
	LTE Band 26	15M	QPSK	1	37	-	Left Cheek	0mm	Ant 2	State 6	26865	831.5	1	22.38	24.00	1.452	-	-	0.1	0.267	0.388
	LTE Band 26	15M	QPSK	1	37	-	Left Tilted	0mm	Ant 2	State 6	26865	831.5	1	22.38	24.00	1.452	-	-	-0.07	0.140	0.203
	LTE Band 26	15M	QPSK	36	20	-	Right Cheek	0mm	Ant 2	State 6	26865	831.5	1	21.48	23.00	1.419	-	-	-0.04	0.575	0.816
	LTE Band 26	15M	QPSK	36	20	-	Right Tilted	0mm	Ant 2	State 6	26865	831.5	1	21.48	23.00	1.419	-	-	0.03	0.184	0.261
	LTE Band 26	15M	QPSK	36	20	-	Left Cheek	0mm	Ant 2	State 6	26865	831.5	1	21.48	23.00	1.419	-	-	0.1	0.213	0.302
	LTE Band 26	15M	QPSK	36	20	-	Left Tilted	0mm	Ant 2	State 6	26865	831.5	1	21.48	23.00	1.419	-	-	-0.12	0.115	0.163
	LTE Band 26	15M	QPSK	75	0	-	Right Cheek	0mm	Ant 2	State 6	26865	831.5	1	21.42	23.00	1.439	-	-	-0.01	0.571	0.822
	LTE Band 26	15M	QPSK	1	37	-	Right Cheek	0mm	Ant 2	State 7	26865	831.5	1	20.50	22.00	1.413	-	-	0.1	0.421	0.595
	LTE Band 5B	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	State 7	20575 20476	836.5 831.6	1	20.38	22.00	1.452	-	-	0.06	0.406	0.590
	LTE Band 26	15M	QPSK	1	37	-	Right Tilted	0mm	Ant 2	State 7	26865	831.5	1	20.50	22.00	1.413	-	-	-0.07	0.142	0.201
	LTE Band 26	15M	QPSK	1	37	-	Left Cheek	0mm	Ant 2	State 7	26865	831.5	1	20.50	22.00	1.413	-	-	-0.04	0.161	0.227
	LTE Band 26	15M	QPSK	1	37	-	Left Tilted	0mm	Ant 2	State 7	26865	831.5	1	20.50	22.00	1.413	-	-	0.12	0.084	0.119
	LTE Band 26	15M	QPSK	36	20	-	Right Cheek	0mm	Ant 2	State 7	26865	831.5	1	19.55	21.00	1.396	-	-	-0.11	0.350	0.489
	LTE Band 26	15M	QPSK	36	20	-	Right Tilted	0mm	Ant 2	State 7	26865	831.5	1	19.55	21.00	1.396	-	-	-0.11	0.114	0.159
	LTE Band 26	15M	QPSK	36	20	-	Left Cheek	0mm	Ant 2	State 7	26865	831.5	1	19.55	21.00	1.396	-	-	0.13	0.120	0.168
	LTE Band 26	15M	QPSK	36	20	-	Left Tilted	0mm	Ant 2	State 7	26865	831.5	1	19.55	21.00	1.396	-	-	-0.07	0.067	0.094
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 0	State 6/7	166300	831.5	1	24.68	26.00	1.355	-	-	0.03	0.191	0.259
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 0	State 6/7	166300	831.5	1	24.68	26.00	1.355	-	-	-0.04	0.102	0.138
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 0	State 6/7	166300	831.5	1	24.68	26.00	1.355	-	-	-0.09	0.106	0.144
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 0	State 6/7	166300	831.5	1	24.68	26.00	1.355	-	-	0.07	0.076	0.103
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 0	State 6/7	166300	831.5	1	24.58	26.00	1.387	-	-	-0.1	0.214	0.297
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 0	State 6/7	166300	831.5	1	24.58	26.00	1.387	-	-	0.08	0.111	0.154
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 0	State 6/7	166300	831.5	1	24.58	26.00	1.387	-	-	-0.06	0.116	0.161
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 0	State 6/7	166300	831.5	1	24.58	26.00	1.387	-	-	0.13	0.083	0.115
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 6	166300	831.5	1	23.20	24.50	1.349	-	-	-0.02	0.776	1.047
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 6	166300	831.5	1	23.20	24.50	1.349	-	-	-0.04	0.272	0.367
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 6	166300	831.5	1	23.20	24.50	1.349	-	-	0.07	0.306	0.413
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 6	166300	831.5	1	23.20	24.50	1.349	-	-	0.06	0.156	0.210
08	FR1 n26	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 2	State 6	166300	831.5	1	22.94	24.50	1.432	-	-	0.02	0.786	<b>1.126</b>
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 2	State 6	166300	831.5	2	22.94	24.50	1.432	-	-	0.05	0.758	1.086
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 2	State 6	166300	831.5	1	22.94	24.50	1.432	-	-	-0.1	0.274	0.392
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 2	State 6	166300	831.5	1	22.94	24.50	1.432	-	-	-0.05	0.310	0.444
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 2	State 6	166300	831.5	1	22.94	24.50	1.432	-	-	0.05	0.160	0.229
	FR1 n26	20M	QPSK	100	0	DFT-15	Right Cheek	0mm	Ant 2	State 6	166300	831.5	1	22.88	24.50	1.452	-	-	0.04	0.746	1.083
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 7	166300	831.5	1	21.18	22.50	1.355	-	-	-0.05	0.497	0.674
	FR1 n26	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 7	166300	831.5	1	21.18	22.50	1.355	-	-	0.09	0.168	0.228
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 7	166300	831.5	1	21.18	22.50	1.355	-	-	0.11	0.193	0.262
	FR1 n26	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 7	166300	831.5	1	21.18	22.50	1.355	-	-	-0.11	0.093	0.126
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 2	State 7	166300	831.5	1	21.15	22.50	1.365	-	-	-0.13	0.492	0.671
	FR1 n26	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 2	State 7	166300	831.5	1	21.15	22.50	1.365	-	-	0.05	0.165	0.225
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 2	State 7	166300	831.5	1	21.15	22.50	1.365	-	-	-0.08	0.184	0.251
	FR1 n26	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 2	State 7	166300	831.5	1	21.15	22.50	1.365	-	-	0.01	0.090	0.123
<b>1750MHz</b>																					
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	State 6/7	1413	1732.6	1	24.10	25.00	1.230	-	-	-0.02	0.128	0.157
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	State 6/7	1413	1732.6	1	24.10	25.00	1.230	-	-	-0.11	0.110	0.135
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	State 6/7	1413	1732.6	1	24.10	25.00	1.230	-	-	0.04	0.242	0.298
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	State 6/7	1413	1732.6	1	24.10	25.00	1.230	-	-	-0.1	0.114	0.140
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	State 6	1413	1732.6	1	17.36	18.50	1.300	-	-	-0.09	0.839	1.091
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 2	State 6	1413	1732.6	1	17.36	18.50	1.300	-	-	0.07	0.163	0.212
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 2	State 6	1413	1732.6	1	17.36	18.50	1.300	-	-	0.06	0.342	0.445
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 2	State 6	1413	1732.6	1	17.36	18.50	1.300	-	-	0.1	0.075	0.098
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	State 6	1312	1712.4	1	17.25	18.50	1.334	-	-	0.12	0.781	1.041
09	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	State 6	1513	1752.6	1	17.16	18.50	1.361	-	-	0.07	0.847	<b>1.153</b>



Table with 20 columns: Modulation, Bandwidth, Power, etc. Contains multiple rows for WCDMA IV, LTE Band 66, and FR1 n66 tests.



FCC SAR Test Report

Report No. : FA391308

Table with columns for device model, power, modulation, bandwidth, frequency, location, antenna, state, channel, and SAR values. Includes sub-sections for 1900MHz and LTE bands.



	LTE Band 25	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 1	State 6/7	26340	1880	1	22.83	24.00	1.309	-	-	-0.04	0.083	0.109
14	LTE Band 25	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	26340	1880	1	17.55	19.00	1.396	-	-	0.12	0.820	1.145
	LTE Band 2C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	State 6	18900 19098	1880 1899.8	1	17.40	19.00	1.445	-	-	0.05	0.758	1.096
	LTE Band 25	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 2	State 6	26340	1880	1	17.55	19.00	1.396	-	-	0.01	0.150	0.209
	LTE Band 25	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 2	State 6	26340	1880	1	17.55	19.00	1.396	-	-	-0.01	0.307	0.429
	LTE Band 25	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 2	State 6	26340	1880	1	17.55	19.00	1.396	-	-	-0.1	0.072	0.101
	LTE Band 25	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	26140	1860	1	17.51	19.00	1.409	-	-	0.09	0.755	1.064
	LTE Band 25	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	26590	1905	1	17.53	19.00	1.403	-	-	-0.09	0.794	1.114
	LTE Band 25	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 2	State 6	26340	1880	1	16.50	18.00	1.413	-	-	0.07	0.661	0.934
	LTE Band 25	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 2	State 6	26340	1880	1	16.50	18.00	1.413	-	-	-0.05	0.124	0.175
	LTE Band 25	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 2	State 6	26340	1880	1	16.50	18.00	1.413	-	-	0.1	0.256	0.362
	LTE Band 25	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 2	State 6	26340	1880	1	16.50	18.00	1.413	-	-	-0.05	0.056	0.079
	LTE Band 25	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 2	State 6	26340	1880	1	16.48	18.00	1.419	-	-	0.07	0.658	0.934
	LTE Band 25	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 7	26340	1880	1	15.78	17.00	1.324	-	-	-0.01	0.511	0.677
	LTE Band 2C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	State 7	18900 19098	1880 1899.8	1	15.33	17.00	1.469	-	-	0.11	0.458	0.673
	LTE Band 25	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 2	State 7	26340	1880	1	15.78	17.00	1.324	-	-	0.09	0.110	0.146
	LTE Band 25	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 2	State 7	26340	1880	1	15.78	17.00	1.324	-	-	-0.03	0.205	0.271
	LTE Band 25	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 2	State 7	26340	1880	1	15.78	17.00	1.324	-	-	0.01	0.045	0.060
	LTE Band 25	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 2	State 7	26340	1880	1	14.75	16.00	1.334	-	-	0.07	0.403	0.537
	LTE Band 25	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 2	State 7	26340	1880	1	14.75	16.00	1.334	-	-	0.04	0.089	0.119
	LTE Band 25	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 2	State 7	26340	1880	1	14.75	16.00	1.334	-	-	0.1	0.161	0.215
	LTE Band 25	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 2	State 7	26340	1880	1	14.75	16.00	1.334	-	-	0.03	0.038	0.051
	LTE Band 25	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 6	26340	1880	1	21.00	22.50	1.413	-	-	-0.09	0.737	1.041
	LTE Band 25	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 6	26340	1880	1	21.00	22.50	1.413	-	-	-0.02	0.507	0.716
	LTE Band 25	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 7	State 6	26340	1880	1	21.00	22.50	1.413	-	-	0.02	0.355	0.501
	LTE Band 25	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 7	State 6	26340	1880	1	21.00	22.50	1.413	-	-	-0.05	0.303	0.428
	LTE Band 25	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 6	26140	1860	1	20.97	22.50	1.422	-	-	0.11	0.789	1.122
	LTE Band 25	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 6	26590	1905	1	20.95	22.50	1.429	-	-	0.03	0.638	0.912
	LTE Band 25	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 7	State 6	26340	1880	1	19.98	21.50	1.419	-	-	0.03	0.580	0.823
	LTE Band 25	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 7	State 6	26340	1880	1	19.98	21.50	1.419	-	-	-0.09	0.398	0.565
	LTE Band 25	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 7	State 6	26340	1880	1	19.98	21.50	1.419	-	-	0.09	0.281	0.399
	LTE Band 25	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 7	State 6	26340	1880	1	19.98	21.50	1.419	-	-	0.11	0.238	0.338
	LTE Band 25	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 7	State 6	26140	1860	1	19.95	21.50	1.429	-	-	-0.09	0.600	0.857
	LTE Band 25	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 7	State 6	26590	1905	1	19.93	21.50	1.435	-	-	0.08	0.515	0.739
	LTE Band 25	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 7	State 6	26340	1880	1	19.93	21.50	1.435	-	-	0.08	0.595	0.854
	LTE Band 25	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 7	26340	1880	1	19.08	20.50	1.387	-	-	0.05	0.491	0.681
	LTE Band 25	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 7	26340	1880	1	19.08	20.50	1.387	-	-	-0.1	0.342	0.474
	LTE Band 25	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 7	State 7	26340	1880	1	19.08	20.50	1.387	-	-	-0.04	0.230	0.319
	LTE Band 25	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 7	State 7	26340	1880	1	19.08	20.50	1.387	-	-	0.07	0.217	0.301
	LTE Band 25	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 7	State 7	26340	1880	1	18.09	19.50	1.384	-	-	0.07	0.394	0.545
	LTE Band 25	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 7	State 7	26340	1880	1	18.09	19.50	1.384	-	-	0	0.286	0.396
	LTE Band 25	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 7	State 7	26340	1880	1	18.09	19.50	1.384	-	-	-0.08	0.184	0.255
	LTE Band 25	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 7	State 7	26340	1880	1	18.09	19.50	1.384	-	-	0.08	0.176	0.244
	FR1 n25	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	State 6/7	376500	1882.5	1	24.53	25.00	1.114	-	-	0.12	0.151	0.168
	FR1 n25	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	State 6/7	376500	1882.5	1	24.53	25.00	1.114	-	-	0.04	0.114	0.127
	FR1 n25	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	State 6/7	376500	1882.5	1	24.53	25.00	1.114	-	-	0.06	0.280	0.312
	FR1 n25	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	State 6/7	376500	1882.5	1	24.53	25.00	1.114	-	-	0.04	0.121	0.135
	FR1 n25	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 1	State 6/7	376500	1882.5	1	24.45	25.00	1.135	-	-	0.01	0.128	0.145
	FR1 n25	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 1	State 6/7	376500	1882.5	1	24.45	25.00	1.135	-	-	-0.13	0.103	0.117
	FR1 n25	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 1	State 6/7	376500	1882.5	1	24.45	25.00	1.135	-	-	0.11	0.272	0.309
	FR1 n25	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 1	State 6/7	376500	1882.5	1	24.45	25.00	1.135	-	-	0.11	0.106	0.120
	FR1 n25	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 6	376500	1882.5	1	18.55	19.00	1.109	-	-	-0.07	0.956	1.060
	FR1 n25	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 6	376500	1882.5	1	18.55	19.00	1.109	-	-	0.11	0.178	0.197
	FR1 n25	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 6	376500	1882.5	1	18.55	19.00	1.109	-	-	0.04	0.365	0.405
	FR1 n25	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 6	376500	1882.5	1	18.55	19.00	1.109	-	-	-0.07	0.091	0.101
	FR1 n25	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 2	State 6	376500	1882.5	1	18.53	19.00	1.114	-	-	-0.05	0.993	1.106
	FR1 n25	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 2	State 6	376500	1882.5	1	18.53	19.00	1.114	-	-	0.01	0.176	0.196



Table with columns for test parameters (FR1 n25, 40M, QPSK, etc.) and SAR results (1.127, 1.105, etc.). Includes a section for 2300MHz LTE Band 30.



	LTE Band 30	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 7	State 6	27710	2310	1	19.68	21.50	1.521	-	-	0.01	0.368	0.560
	LTE Band 30	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 7	State 6	27710	2310	1	19.68	21.50	1.521	-	-	0.09	0.481	0.731
	LTE Band 30	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 7	State 6	27710	2310	1	18.72	20.50	1.507	-	-	0.1	0.553	0.833
	LTE Band 30	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 7	State 6	27710	2310	1	18.72	20.50	1.507	-	-	0.09	0.404	0.609
	LTE Band 30	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 7	State 6	27710	2310	1	18.72	20.50	1.507	-	-	0.04	0.293	0.441
	LTE Band 30	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 7	State 6	27710	2310	1	18.72	20.50	1.507	-	-	-0.01	0.380	0.573
	LTE Band 30	10M	QPSK	50	0	-	Right Cheek	0mm	Ant 7	State 6	27710	2310	1	18.68	20.50	1.521	-	-	-0.04	0.551	0.838
	LTE Band 30	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 7	State 7	27710	2310	1	18.40	20.00	1.445	-	-	0.01	0.476	0.688
	LTE Band 30	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 7	State 7	27710	2310	1	18.40	20.00	1.445	-	-	-0.09	0.386	0.558
	LTE Band 30	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 7	State 7	27710	2310	1	18.40	20.00	1.445	-	-	0.13	0.255	0.369
	LTE Band 30	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 7	State 7	27710	2310	1	18.40	20.00	1.445	-	-	0.05	0.356	0.515
	LTE Band 30	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 7	State 7	27710	2310	1	17.42	19.00	1.439	-	-	0.11	0.376	0.541
	LTE Band 30	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 7	State 7	27710	2310	1	17.42	19.00	1.439	-	-	0.02	0.309	0.445
	LTE Band 30	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 7	State 7	27710	2310	1	17.42	19.00	1.439	-	-	0.1	0.203	0.292
	LTE Band 30	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 7	State 7	27710	2310	1	17.42	19.00	1.439	-	-	0.13	0.285	0.410
	FR1 n30	10M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	State 6/7	462000	2310	1	16.75	18.00	1.334	-	-	-0.08	0.050	0.067
	FR1 n30	10M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	State 6/7	462000	2310	1	16.75	18.00	1.334	-	-	-0.13	0.033	0.044
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	State 6/7	462000	2310	1	16.75	18.00	1.334	-	-	-0.09	0.089	0.119
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	State 6/7	462000	2310	1	16.75	18.00	1.334	-	-	0.12	0.030	0.040
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Cheek	0mm	Ant 1	State 6/7	462000	2310	1	16.72	18.00	1.343	-	-	-0.06	0.041	0.055
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Tilted	0mm	Ant 1	State 6/7	462000	2310	1	16.72	18.00	1.343	-	-	0.09	0.031	0.042
	FR1 n30	10M	QPSK	25	14	DFT-15	Left Cheek	0mm	Ant 1	State 6/7	462000	2310	1	16.72	18.00	1.343	-	-	-0.09	0.078	0.105
	FR1 n30	10M	QPSK	25	14	DFT-15	Left Tilted	0mm	Ant 1	State 6/7	462000	2310	1	16.72	18.00	1.343	-	-	-0.11	0.028	0.038
17	FR1 n30	10M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 6	462000	2310	1	16.75	18.00	1.334	-	-	0.06	0.881	1.175
	FR1 n30	10M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 6	462000	2310	1	16.75	18.00	1.334	-	-	0.11	0.161	0.215
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 6	462000	2310	1	16.75	18.00	1.334	-	-	0.13	0.391	0.521
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 6	462000	2310	1	16.75	18.00	1.334	-	-	0	0.084	0.112
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Cheek	0mm	Ant 2	State 6	462000	2310	1	16.72	18.00	1.343	-	-	0.12	0.868	1.166
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Tilted	0mm	Ant 2	State 6	462000	2310	1	16.72	18.00	1.343	-	-	-0.1	0.156	0.209
	FR1 n30	10M	QPSK	25	14	DFT-15	Left Cheek	0mm	Ant 2	State 6	462000	2310	1	16.72	18.00	1.343	-	-	-0.08	0.387	0.520
	FR1 n30	10M	QPSK	25	14	DFT-15	Left Tilted	0mm	Ant 2	State 6	462000	2310	1	16.72	18.00	1.343	-	-	-0.04	0.081	0.109
	FR1 n30	10M	QPSK	50	0	DFT-15	Right Cheek	0mm	Ant 2	State 6	462000	2310	1	16.71	18.00	1.346	-	-	-0.08	0.816	1.098
	FR1 n30	10M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 7	462000	2310	1	14.78	16.00	1.324	-	-	-0.04	0.548	0.726
	FR1 n30	10M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 7	462000	2310	1	14.78	16.00	1.324	-	-	-0.04	0.100	0.132
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 7	462000	2310	1	14.78	16.00	1.324	-	-	-0.11	0.265	0.351
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 7	462000	2310	1	14.78	16.00	1.324	-	-	-0.1	0.052	0.069
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Cheek	0mm	Ant 2	State 7	462000	2310	1	14.75	16.00	1.334	-	-	0.08	0.531	0.708
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Tilted	0mm	Ant 2	State 7	462000	2310	1	14.75	16.00	1.334	-	-	-0.02	0.097	0.129
	FR1 n30	10M	QPSK	25	14	DFT-15	Left Cheek	0mm	Ant 2	State 7	462000	2310	1	14.75	16.00	1.334	-	-	-0.11	0.241	0.321
	FR1 n30	10M	QPSK	25	14	DFT-15	Left Tilted	0mm	Ant 2	State 7	462000	2310	1	14.75	16.00	1.334	-	-	-0.13	0.045	0.060
	FR1 n30	10M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 7	State 6	462000	2310	1	20.83	22.50	1.469	-	-	0.1	0.792	1.163
	FR1 n30	10M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 7	State 6	462000	2310	1	20.83	22.50	1.469	-	-	-0.13	0.554	0.814
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 7	State 6	462000	2310	1	20.83	22.50	1.469	-	-	-0.06	0.363	0.533
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 7	State 6	462000	2310	1	20.83	22.50	1.469	-	-	0.13	0.485	0.712
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Cheek	0mm	Ant 7	State 6	462000	2310	1	20.80	22.50	1.479	-	-	0.01	0.767	1.134
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Tilted	0mm	Ant 7	State 6	462000	2310	1	20.80	22.50	1.479	-	-	-0.12	0.539	0.797
	FR1 n30	10M	QPSK	25	14	DFT-15	Left Cheek	0mm	Ant 7	State 6	462000	2310	1	20.80	22.50	1.479	-	-	-0.11	0.358	0.530
	FR1 n30	10M	QPSK	25	14	DFT-15	Left Tilted	0mm	Ant 7	State 6	462000	2310	1	20.80	22.50	1.479	-	-	-0.12	0.465	0.688
	FR1 n30	10M	QPSK	50	0	DFT-15	Right Cheek	0mm	Ant 7	State 6	462000	2310	1	20.75	22.50	1.496	-	-	0.04	0.758	1.134
	FR1 n30	10M	QPSK	50	0	DFT-15	Right Tilted	0mm	Ant 7	State 6	462000	2310	1	20.75	22.50	1.496	-	-	-0.09	0.531	0.795
	FR1 n30	10M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 7	State 7	462000	2310	1	18.35	20.00	1.462	-	-	0.11	0.456	0.667
	FR1 n30	10M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 7	State 7	462000	2310	1	18.35	20.00	1.462	-	-	-0.02	0.338	0.494
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 7	State 7	462000	2310	1	18.35	20.00	1.462	-	-	-0.01	0.219	0.320
	FR1 n30	10M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 7	State 7	462000	2310	1	18.35	20.00	1.462	-	-	-0.02	0.279	0.408
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Cheek	0mm	Ant 7	State 7	462000	2310	1	18.33	20.00	1.469	-	-	-0.13	0.437	0.642
	FR1 n30	10M	QPSK	25	14	DFT-15	Right Tilted	0mm	Ant 7	State 7	462000	2310	1	18.33	20.00	1.469	-	-	0.09	0.319	0.469
	FR1 n30	10M	QPSK	25	14	DFT-15	Left Cheek	0mm	Ant 7	State 7	462000	2310	1	18.33	20.00	1.469	-	-	0.12	0.199	0.292



FR1 n30	10M	QPSK	25	14	DFT-15	Left Tilted	0mm	Ant 7	State 7	462000	2310	1	18.33	20.00	1.469	-	-	-0.07	0.268	0.394
<b>2600MHz</b>																				
LTE Band 7	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 1	State 6/7	21100	2535	1	23.84	25.00	1.306	-	-	-0.11	0.099	0.129
LTE Band 7	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 1	State 6/7	21100	2535	1	23.84	25.00	1.306	-	-	0.13	0.057	0.074
LTE Band 7	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 1	State 6/7	21100	2535	1	23.84	25.00	1.306	-	-	0.11	0.173	0.226
LTE Band 7C	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	State 6/7	21100 21298	2535 2554.8	1	23.80	25.00	1.318	-	-	0.03	0.042	0.055
LTE Band 7	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 1	State 6/7	21100	2535	1	23.84	25.00	1.306	-	-	-0.13	0.046	0.060
LTE Band 7	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 1	State 6/7	21100	2535	1	22.87	24.00	1.297	-	-	0.09	0.080	0.104
LTE Band 7	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 1	State 6/7	21100	2535	1	22.87	24.00	1.297	-	-	0.07	0.045	0.058
LTE Band 7	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 1	State 6/7	21100	2535	1	22.87	24.00	1.297	-	-	0.13	0.140	0.182
LTE Band 7	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 1	State 6/7	21100	2535	1	22.87	24.00	1.297	-	-	0.08	0.040	0.052
LTE Band 7	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	21100	2535	1	17.13	18.50	1.371	-	-	-0.01	0.802	1.099
LTE Band 7	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 2	State 6	21100	2535	1	17.13	18.50	1.371	-	-	-0.08	0.173	0.237
LTE Band 7	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 2	State 6	21100	2535	1	17.13	18.50	1.371	-	-	-0.08	0.303	0.415
LTE Band 7	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 2	State 6	21100	2535	1	17.13	18.50	1.371	-	-	-0.12	0.079	0.108
LTE Band 7	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	21350	2560	1	17.10	18.50	1.380	-	-	0.11	0.786	1.085
18 LTE Band 7	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	21350	2560	1	17.08	18.50	1.387	-	-	0.07	0.817	1.133
LTE Band 7C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	State 6	21350 21152	2560 2540.2	1	17.09	18.50	1.384	-	-	0.06	0.746	1.032
LTE Band 7	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 2	State 6	21100	2535	1	16.11	17.50	1.377	-	-	-0.13	0.641	0.883
LTE Band 7	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 2	State 6	21100	2535	1	16.11	17.50	1.377	-	-	-0.02	0.136	0.187
LTE Band 7	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 2	State 6	21100	2535	1	16.11	17.50	1.377	-	-	-0.12	0.242	0.333
LTE Band 7	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 2	State 6	21100	2535	1	16.11	17.50	1.377	-	-	0.02	0.064	0.088
LTE Band 7	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 2	State 6	21100	2535	1	16.08	17.50	1.387	-	-	-0.07	0.648	0.899
LTE Band 7	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 7	21100	2535	1	15.25	16.50	1.334	-	-	-0.1	0.505	0.673
LTE Band 7C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	State 7	21100 21298	2535 2554.8	1	15.15	16.50	1.365	-	-	0.05	0.490	0.669
LTE Band 7	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 2	State 7	21100	2535	1	15.25	16.50	1.334	-	-	-0.05	0.120	0.160
LTE Band 7	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 2	State 7	21100	2535	1	15.25	16.50	1.334	-	-	-0.09	0.212	0.283
LTE Band 7	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 2	State 7	21100	2535	1	15.25	16.50	1.334	-	-	0.13	0.056	0.075
LTE Band 7	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 2	State 7	21100	2535	1	14.26	15.50	1.330	-	-	0.03	0.396	0.527
LTE Band 7	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 2	State 7	21100	2535	1	14.26	15.50	1.330	-	-	-0.04	0.096	0.128
LTE Band 7	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 2	State 7	21100	2535	1	14.26	15.50	1.330	-	-	0.13	0.171	0.228
LTE Band 7	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 2	State 7	21100	2535	1	14.26	15.50	1.330	-	-	-0.04	0.044	0.059
LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 1	State 6/7	41055	2636.5	1	24.48	25.00	1.127	62.9	1.006	-0.13	0.068	0.077
LTE Band 41	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 1	State 6/7	41055	2636.5	1	24.48	25.00	1.127	62.9	1.006	0.03	0.056	0.064
LTE Band 41	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 1	State 6/7	41055	2636.5	1	24.48	25.00	1.127	62.9	1.006	-0.08	0.114	0.129
LTE Band 41C	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	State 6/7	41055 41253	2636.5 2656.3	1	23.90	25.00	1.288	62.9	1.006	0.03	0.055	0.071
LTE Band 41	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 1	State 6/7	41055	2636.5	1	24.48	25.00	1.127	62.9	1.006	0.03	0.049	0.056
LTE Band 41-HPUE	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 1	State 6/7	41055	2636.5	1	26.13	27.50	1.371	42.9	1.009	0.04	0.112	0.155
LTE Band 41C-HPUE	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	State 6/7	41055 41253	2636.5 2656.3	1	25.86	27.50	1.459	42.9	1.009	-0.08	0.051	0.075
LTE Band 41	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 1	State 6/7	41055	2636.5	1	23.23	24.00	1.194	62.9	1.006	0	0.055	0.066
LTE Band 41	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 1	State 6/7	41055	2636.5	1	23.23	24.00	1.194	62.9	1.006	-0.02	0.048	0.058
LTE Band 41	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 1	State 6/7	41055	2636.5	1	23.23	24.00	1.194	62.9	1.006	0.13	0.087	0.105
LTE Band 41	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 1	State 6/7	41055	2636.5	1	23.23	24.00	1.194	62.9	1.006	-0.06	0.040	0.048
LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	41055	2636.5	1	18.58	19.50	1.236	62.9	1.006	0.06	0.513	0.638
LTE Band 41	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 2	State 6	41055	2636.5	1	18.58	19.50	1.236	62.9	1.006	0.04	0.110	0.137
LTE Band 41	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 2	State 6	41055	2636.5	1	18.58	19.50	1.236	62.9	1.006	0.02	0.208	0.259
LTE Band 41	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 2	State 6	41055	2636.5	1	18.58	19.50	1.236	62.9	1.006	-0.1	0.047	0.058
LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	39750	2506	1	18.37	19.50	1.297	62.9	1.006	-0.05	0.638	0.833
LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	40185	2549.5	1	18.24	19.50	1.337	62.9	1.006	0.01	0.642	0.863
LTE Band 41C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	State 6	40185 40383	2549.5 2569.3	1	18.50	19.50	1.259	62.9	1.006	0.05	0.623	0.789
LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	40620	2593	1	18.53	19.50	1.250	62.9	1.006	-0.06	0.614	0.772
LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	41490	2680	1	18.49	19.50	1.262	62.9	1.006	0.05	0.420	0.533
19 LTE Band 41-HPUE	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6	40185	2549.5	1	20.63	22.00	1.371	42.9	1.009	0.01	0.692	0.957
LTE Band 41C-HPUE	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	State 6	40185 40383	2549.5 2569.3	1	20.58	22.00	1.387	42.9	1.009	0.03	0.615	0.861
LTE Band 41	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 2	State 6	41055	2636.5	1	17.68	18.50	1.208	62.9	1.006	-0.11	0.408	0.496
LTE Band 41	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 2	State 6	41055	2636.5	1	17.68	18.50	1.208	62.9	1.006	-0.13	0.086	0.104





FCC SAR Test Report

Report No. : FA391308

Table with columns: Band, Modulation, Power, Frequency, Position, Antenna, State, etc. Includes rows for LTE Band 41 and FR1 n7.



FCC SAR Test Report

Report No. : FA391308

Table with columns for device model (FR1 n7, FR1 n41), power (40M, 100M), modulation (QPSK), bandwidth (1, 108, 135, 270), frequency (DFT-15, DFT-30), body part (Right Tilted, Left Cheek, etc.), antenna (Ant 1, Ant 2, Ant 8, Ant 9), state (State 6, State 7), and various SAR metrics (e.g., 14.95, 16.00, 1.274, etc.).

3500MHz-3900MHz



FCC SAR Test Report

Report No. : FA391308

	LTE Band 48	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 8	State 6/7	55830	3609	1	23.44	25.00	1.432	62.9	1.006	-0.11	0.062	0.089
	LTE Band 48	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 8	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	0	0.121	0.176
	LTE Band 48	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 8	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	0.01	0.074	0.108
	LTE Band 48	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 8	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	0.02	0.185	0.269
	LTE Band 48	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 8	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	0.12	0.050	0.073
	LTE Band 48	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 9	State 6/7	55830	3609	1	23.44	25.00	1.432	62.9	1.006	-0.06	0.035	0.050
	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 9	State 6/7	55830	3609	1	23.44	25.00	1.432	62.9	1.006	-0.05	0.021	0.030
	LTE Band 48	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 9	State 6/7	55830	3609	1	23.44	25.00	1.432	62.9	1.006	-0.01	0.068	0.098
	LTE Band 48C	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 9	State 6/7	55830 56028	3609 3628.8	1	17.41	18.50	1.285	62.9	1.006	0.05	0.013	0.017
	LTE Band 48	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 9	State 6/7	55830	3609	1	23.44	25.00	1.432	62.9	1.006	-0.08	0.014	0.020
	LTE Band 48	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 9	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	-0.13	0.030	0.044
	LTE Band 48	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 9	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	0.13	0.017	0.025
	LTE Band 48	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 9	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	0.09	0.055	0.080
	LTE Band 48	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 9	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	0.04	0.011	0.016
	LTE Band 48	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 6	55830	3609	1	21.98	23.50	1.419	62.9	1.006	-0.04	0.527	0.752
	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 6	55830	3609	1	21.98	23.50	1.419	62.9	1.006	-0.11	0.632	0.902
	LTE Band 48	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 7	State 6	55830	3609	1	21.98	23.50	1.419	62.9	1.006	0.13	0.238	0.340
	LTE Band 48	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 7	State 6	55830	3609	1	21.98	23.50	1.419	62.9	1.006	0.02	0.292	0.417
	LTE Band 48	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 6	55340	3560	1	21.88	23.50	1.452	62.9	1.006	-0.07	0.575	0.840
	LTE Band 48	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 6	56150	3641	1	21.85	23.50	1.462	62.9	1.006	-0.05	0.538	0.791
	LTE Band 48	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 6	56640	3690	1	21.82	23.50	1.472	62.9	1.006	0.01	0.519	0.769
22	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 6	55340	3560	1	21.88	23.50	1.452	62.9	1.006	0.11	0.736	1.075
	LTE Band 48C	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 7	State 6	55340 55538	3560 3579.8	1	17.30	18.50	1.318	62.9	1.006	0.05	0.219	0.290
	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 6	56150	3641	1	21.85	23.50	1.462	62.9	1.006	0.02	0.641	0.943
	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 6	56640	3690	1	21.82	23.50	1.472	62.9	1.006	0.08	0.637	0.943
	LTE Band 48	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 7	State 6	55830	3609	1	20.95	22.50	1.429	62.9	1.006	0.05	0.411	0.591
	LTE Band 48	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 7	State 6	55830	3609	1	20.95	22.50	1.429	62.9	1.006	-0.06	0.516	0.742
	LTE Band 48	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 7	State 6	55830	3609	1	20.95	22.50	1.429	62.9	1.006	-0.13	0.191	0.275
	LTE Band 48	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 7	State 6	55830	3609	1	20.95	22.50	1.429	62.9	1.006	-0.12	0.229	0.329
	LTE Band 48	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 7	State 6	55340	3560	1	20.83	22.50	1.469	62.9	1.006	-0.07	0.594	0.878
	LTE Band 48	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 7	State 6	56150	3641	1	20.80	22.50	1.479	62.9	1.006	-0.11	0.512	0.762
	LTE Band 48	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 7	State 6	56640	3690	1	20.73	22.50	1.503	62.9	1.006	0.01	0.513	0.776
	LTE Band 48	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 7	State 6	55830	3609	1	20.88	22.50	1.452	62.9	1.006	-0.11	0.421	0.615
	LTE Band 48	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 7	State 6	55830	3609	1	20.88	22.50	1.452	62.9	1.006	0.05	0.507	0.741
	LTE Band 48	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 7	55830	3609	1	20.99	22.50	1.416	62.9	1.006	0.12	0.396	0.564
	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 7	55830	3609	1	20.99	22.50	1.416	62.9	1.006	-0.05	0.533	0.759
	LTE Band 48	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 7	State 7	55830	3609	1	20.99	22.50	1.416	62.9	1.006	0.12	0.206	0.293
	LTE Band 48	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 7	State 7	55830	3609	1	20.99	22.50	1.416	62.9	1.006	-0.09	0.247	0.352
	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 7	55340	3560	1	20.94	22.50	1.432	62.9	1.006	-0.01	0.577	0.831
	LTE Band 48C	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 7	State 7	55340 55538	3560 3579.8	1	17.30	18.50	1.318	62.9	1.006	0.05	0.219	0.290
	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 7	56150	3641	1	20.88	22.50	1.452	62.9	1.006	0.03	0.509	0.744
	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 7	56640	3690	1	20.85	22.50	1.462	62.9	1.006	0.09	0.521	0.766
	LTE Band 48	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 7	State 7	55830	3609	1	20.02	21.50	1.406	62.9	1.006	0.02	0.318	0.450
	LTE Band 48	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 7	State 7	55830	3609	1	20.02	21.50	1.406	62.9	1.006	-0.12	0.422	0.597
	LTE Band 48	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 7	State 7	55830	3609	1	20.02	21.50	1.406	62.9	1.006	0.11	0.180	0.255
	LTE Band 48	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 7	State 7	55830	3609	1	20.02	21.50	1.406	62.9	1.006	-0.03	0.209	0.296
	LTE Band 48	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 7	State 7	55830	3609	1	19.97	21.50	1.422	62.9	1.006	0.04	0.303	0.434
	LTE Band 48	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 10	State 6/7	55830	3609	1	23.44	25.00	1.432	62.9	1.006	-0.04	0.147	0.212
	LTE Band 48	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 10	State 6/7	55830	3609	1	23.44	25.00	1.432	62.9	1.006	-0.01	0.102	0.147
	LTE Band 48	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 10	State 6/7	55830	3609	1	23.44	25.00	1.432	62.9	1.006	-0.02	0.233	0.336
	LTE Band 48C	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 10	State 6/7	55830 56028	3609 3628.8	1	17.41	18.50	1.285	62.9	1.006	0.11	0.105	0.136
	LTE Band 48	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 10	State 6/7	55830	3609	1	23.44	25.00	1.432	62.9	1.006	0.03	0.062	0.089
	LTE Band 48	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 10	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	-0.05	0.115	0.167
	LTE Band 48	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 10	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	0.12	0.084	0.122
	LTE Band 48	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 10	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	-0.05	0.183	0.266
	LTE Band 48	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 10	State 6/7	55830	3609	1	22.40	24.00	1.445	62.9	1.006	-0.09	0.050	0.073
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 8	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	-0.07	0.184	0.227



**FCC SAR Test Report**

**Report No. : FA391308**

	FR1 n48	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 8	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	-0.08	0.123	0.152
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 8	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	-0.11	0.275	0.339
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 8	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	-0.03	0.074	0.091
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 8	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	-0.05	0.181	0.228
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 8	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	-0.02	0.117	0.148
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Cheek	0mm	Ant 8	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	0.03	0.289	0.365
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Tilted	0mm	Ant 8	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	0	0.070	0.088
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 9	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	-0.12	0.036	0.044
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 9	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	0	0.018	0.022
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 9	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	-0.04	0.062	0.076
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 9	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	0.03	0.015	0.018
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 9	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	0.06	0.032	0.040
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 9	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	-0.05	0.014	0.018
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Cheek	0mm	Ant 9	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	-0.07	0.061	0.077
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Tilted	0mm	Ant 9	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	0.03	0.013	0.016
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 7	State 6	641666	3624.99	1	21.62	22.50	1.225	-	-	-0.12	0.601	0.736
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 6	641666	3624.99	1	21.62	22.50	1.225	-	-	-0.13	0.772	0.945
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 7	State 6	641666	3624.99	1	21.62	22.50	1.225	-	-	0.1	0.370	0.453
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 7	State 6	641666	3624.99	1	21.62	22.50	1.225	-	-	-0.01	0.456	0.558
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 7	State 6	638000	3570	1	21.36	22.50	1.300	-	-	-0.12	0.676	0.879
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 7	State 6	645332	3679.98	1	21.51	22.50	1.256	-	-	0.08	0.549	0.690
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 6	638000	3570	1	21.36	22.50	1.300	-	-	-0.12	0.811	1.054
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 6	645332	3679.98	1	21.51	22.50	1.256	-	-	0.06	0.787	0.988
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 7	State 6	641666	3624.99	1	21.60	22.50	1.230	-	-	0.01	0.621	0.764
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 7	State 6	641666	3624.99	1	21.60	22.50	1.230	-	-	-0.02	0.786	0.967
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Cheek	0mm	Ant 7	State 6	641666	3624.99	1	21.60	22.50	1.230	-	-	0.08	0.375	0.461
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Tilted	0mm	Ant 7	State 6	641666	3624.99	1	21.60	22.50	1.230	-	-	0.12	0.467	0.575
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 7	State 6	638000	3570	1	21.33	22.50	1.309	-	-	0.03	0.698	0.914
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 7	State 6	645332	3679.98	1	21.48	22.50	1.265	-	-	-0.11	0.551	0.697
23	FR1 n48	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 7	State 6	638000	3570	1	21.33	22.50	1.309	-	-	-0.02	0.849	1.111
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 7	State 6	645332	3679.98	1	21.48	22.50	1.265	-	-	-0.02	0.796	1.007
	FR1 n48	40M	QPSK	100	0	DFT-30	Right Cheek	0mm	Ant 7	State 6	641666	3624.99	1	21.58	22.50	1.236	-	-	0.01	0.616	0.761
	FR1 n48	40M	QPSK	100	0	DFT-30	Right Tilted	0mm	Ant 7	State 6	641666	3624.99	1	21.58	22.50	1.236	-	-	-0.03	0.768	0.949
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 7	State 7	641666	3624.99	1	20.13	21.00	1.222	-	-	-0.11	0.433	0.529
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 7	641666	3624.99	1	20.13	21.00	1.222	-	-	0.12	0.506	0.618
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 7	State 7	641666	3624.99	1	20.13	21.00	1.222	-	-	-0.08	0.267	0.326
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 7	State 7	641666	3624.99	1	20.13	21.00	1.222	-	-	0.13	0.326	0.398
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 7	638000	3570	1	19.95	21.00	1.274	-	-	-0.1	0.568	0.723
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 7	645332	3679.98	1	20.09	21.00	1.233	-	-	0.05	0.557	0.687
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 7	State 7	641666	3624.99	1	20.11	21.00	1.227	-	-	-0.03	0.446	0.547
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 7	State 7	641666	3624.99	1	20.11	21.00	1.227	-	-	0.08	0.528	0.648
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Cheek	0mm	Ant 7	State 7	641666	3624.99	1	20.11	21.00	1.227	-	-	0.06	0.279	0.342
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Tilted	0mm	Ant 7	State 7	641666	3624.99	1	20.11	21.00	1.227	-	-	0.01	0.336	0.412
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 7	State 7	638000	3570	1	19.92	21.00	1.282	-	-	0.01	0.586	0.751
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 7	State 7	645332	3679.98	1	20.05	21.00	1.245	-	-	0.05	0.564	0.702
	FR1 n48	40M	QPSK	100	0	DFT-30	Right Tilted	0mm	Ant 7	State 7	641666	3624.99	1	20.08	21.00	1.236	-	-	0.06	0.520	0.643
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 10	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	-0.11	0.023	0.028
	FR1 n48	40M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 10	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	0.08	0.015	0.018
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 10	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	-0.01	0.041	0.051
	FR1 n48	40M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 10	State 6/7	641666	3624.99	1	22.59	23.50	1.233	-	-	-0.01	0.012	0.015
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Cheek	0mm	Ant 10	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	0.06	0.026	0.033
	FR1 n48	40M	QPSK	50	28	DFT-30	Right Tilted	0mm	Ant 10	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	0.08	0.017	0.021
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Cheek	0mm	Ant 10	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	0.09	0.045	0.057
	FR1 n48	40M	QPSK	50	28	DFT-30	Left Tilted	0mm	Ant 10	State 6/7	641666	3624.99	1	22.49	23.50	1.262	-	-	-0.07	0.014	0.018
	FR1 n77	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 8	State 6/7	656000	3840	1	24.13	25.00	1.222	-	-	0.12	0.243	0.297
	FR1 n77	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 8	State 6/7	656000	3840	1	24.13	25.00	1.222	-	-	0.06	0.120	0.147
	FR1 n77	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 8	State 6/7	656000	3840	1	24.13	25.00	1.222	-	-	-0.01	0.445	0.544



FCC SAR Test Report

Report No. : FA391308

Table with columns for device model, power, modulation, frequency, duration, location, antenna, state, power density, and SAR values. Row 24 is highlighted in yellow with a value of 1.186.



FCC SAR Test Report

Report No. : FA391308

FR1 n77	100M	QPSK	270	0	DFT-30	Right Tilted	0mm	Ant 7	State 6	633332	3499.98	1	21.11	22.50	1.377	-	-	-0.05	0.788	1.085
FR1 n77	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 7	State 7	656000	3840	1	19.68	20.50	1.208	-	-	0.09	0.238	0.287
FR1 n77	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 7	656000	3840	1	19.68	20.50	1.208	-	-	0	0.317	0.383
FR1 n77	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 7	State 7	656000	3840	1	19.68	20.50	1.208	-	-	-0.08	0.134	0.162
FR1 n77	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 7	State 7	656000	3840	1	19.68	20.50	1.208	-	-	-0.08	0.157	0.190
FR1 n77-HPUE	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 7	656000	3840	1	22.38	23.00	1.153	50	1.000	-0.05	0.312	0.360
FR1 n77	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 7	State 7	656000	3840	1	19.65	20.50	1.216	-	-	-0.06	0.145	0.176
FR1 n77	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 7	State 7	656000	3840	1	19.65	20.50	1.216	-	-	-0.09	0.196	0.238
FR1 n77	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 7	State 7	656000	3840	1	19.65	20.50	1.216	-	-	0.06	0.084	0.102
FR1 n77	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 7	State 7	656000	3840	1	19.65	20.50	1.216	-	-	-0.03	0.100	0.122
FR1 n77	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 7	State 7	633332	3499.98	1	19.18	20.50	1.355	-	-	-0.13	0.493	0.668
FR1 n77	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 7	633332	3499.98	1	19.18	20.50	1.355	-	-	-0.12	0.562	0.762
FR1 n77	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 7	State 7	633332	3499.98	1	19.18	20.50	1.355	-	-	-0.13	0.222	0.301
FR1 n77	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 7	State 7	633332	3499.98	1	19.18	20.50	1.355	-	-	-0.13	0.252	0.342
FR1 n77-HPUE	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 7	State 7	633332	3499.98	1	21.90	23.00	1.288	50	1.000	0.05	0.543	0.700
FR1 n77	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 7	State 7	633332	3499.98	1	19.15	20.50	1.365	-	-	-0.07	0.453	0.618
FR1 n77	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 7	State 7	633332	3499.98	1	19.15	20.50	1.365	-	-	-0.01	0.501	0.684
FR1 n77	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 7	State 7	633332	3499.98	1	19.15	20.50	1.365	-	-	-0.12	0.212	0.289
FR1 n77	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 7	State 7	633332	3499.98	1	19.15	20.50	1.365	-	-	-0.08	0.239	0.326
FR1 n77	100M	QPSK	270	0	DFT-30	Right Cheek	0mm	Ant 7	State 7	633332	3499.98	1	19.11	20.50	1.377	-	-	0.03	0.439	0.605
FR1 n77	100M	QPSK	270	0	DFT-30	Right Tilted	0mm	Ant 7	State 7	633332	3499.98	1	19.11	20.50	1.377	-	-	-0.02	0.487	0.671
FR1 n77	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 10	State 6/7	656000	3840	1	24.13	25.00	1.222	-	-	-0.03	0.041	0.050
FR1 n77	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 10	State 6/7	656000	3840	1	24.13	25.00	1.222	-	-	0.04	0.024	0.029
FR1 n77	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 10	State 6/7	656000	3840	1	24.13	25.00	1.222	-	-	-0.04	0.074	0.090
FR1 n77	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 10	State 6/7	656000	3840	1	24.13	25.00	1.222	-	-	-0.04	0.021	0.026
FR1 n77-HPUE	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 10	State 6/7	656000	3840	1	26.82	27.50	1.169	50	1.000	-0.11	0.071	0.083
FR1 n77	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 10	State 6/7	656000	3840	1	23.85	25.00	1.303	-	-	0.13	0.036	0.047
FR1 n77	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 10	State 6/7	656000	3840	1	23.85	25.00	1.303	-	-	0.07	0.021	0.027
FR1 n77	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 10	State 6/7	656000	3840	1	23.85	25.00	1.303	-	-	0.05	0.067	0.087
FR1 n77	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 10	State 6/7	656000	3840	1	23.85	25.00	1.303	-	-	-0.1	0.018	0.023
FR1 n77	100M	QPSK	1	1	DFT-30	Right Cheek	0mm	Ant 10	State 6/7	633332	3499.98	1	23.65	25.00	1.365	-	-	0.05	0.034	0.046
FR1 n77	100M	QPSK	1	1	DFT-30	Right Tilted	0mm	Ant 10	State 6/7	633332	3499.98	1	23.65	25.00	1.365	-	-	-0.02	0.025	0.034
FR1 n77	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 10	State 6/7	633332	3499.98	1	23.65	25.00	1.365	-	-	0.07	0.069	0.094
FR1 n77	100M	QPSK	1	1	DFT-30	Left Tilted	0mm	Ant 10	State 6/7	633332	3499.98	1	23.65	25.00	1.365	-	-	0.04	0.019	0.026
FR1 n77-HPUE	100M	QPSK	1	1	DFT-30	Left Cheek	0mm	Ant 10	State 6/7	633332	3499.98	1	26.38	27.50	1.294	50	1.000	-0.1	0.061	0.079
FR1 n77	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 10	State 6/7	633332	3499.98	1	23.48	25.00	1.419	-	-	0.08	0.031	0.044
FR1 n77	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 10	State 6/7	633332	3499.98	1	23.48	25.00	1.419	-	-	-0.07	0.022	0.031
FR1 n77	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 10	State 6/7	633332	3499.98	1	23.48	25.00	1.419	-	-	0.06	0.062	0.088
FR1 n77	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 10	State 6/7	633332	3499.98	1	23.48	25.00	1.419	-	-	0.02	0.013	0.018



<Inter CA Mode>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
<b>750MHz</b>																			
	LTE Band 71	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 0	State 6/7	133297	680.5	1	21.91	23.00	1.285	0.14	0.063	0.081
	LTE Band 71	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 0	State 6/7	133297	680.5	1	21.91	23.00	1.285	-0.13	0.028	0.036
	LTE Band 71	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 0	State 6/7	133297	680.5	1	21.91	23.00	1.285	-0.11	0.041	0.053
	LTE Band 71	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 0	State 6/7	133297	680.5	1	21.91	23.00	1.285	-0.15	0.023	0.030
	LTE Band 71	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 0	State 6/7	133297	680.5	1	20.85	22.00	1.303	0.01	0.051	0.066
	LTE Band 71	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 0	State 6/7	133297	680.5	1	20.85	22.00	1.303	-0.04	0.022	0.029
	LTE Band 71	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 0	State 6/7	133297	680.5	1	20.85	22.00	1.303	-0.11	0.029	0.038
	LTE Band 71	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 0	State 6/7	133297	680.5	1	20.85	22.00	1.303	-0.12	0.020	0.026
	LTE Band 71	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6/7	133297	680.5	1	21.91	23.00	1.285	0.06	0.180	0.231
	LTE Band 71	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 2	State 6/7	133297	680.5	1	21.91	23.00	1.285	0.06	0.059	0.076
	LTE Band 71	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 2	State 6/7	133297	680.5	1	21.91	23.00	1.285	-0.17	0.068	0.087
	LTE Band 71	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 2	State 6/7	133297	680.5	1	21.91	23.00	1.285	0.13	0.040	0.051
	LTE Band 71	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 2	State 6/7	133297	680.5	1	20.85	22.00	1.303	-0.06	0.154	0.201
	LTE Band 71	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 2	State 6/7	133297	680.5	1	20.85	22.00	1.303	-0.11	0.047	0.061
	LTE Band 71	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 2	State 6/7	133297	680.5	1	20.85	22.00	1.303	0.05	0.055	0.072
	LTE Band 71	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 2	State 6/7	133297	680.5	1	20.85	22.00	1.303	0.02	0.032	0.042
	LTE Band 12	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 0	State 6/7	23095	707.5	1	21.54	23.00	1.400	-0.13	0.043	0.060
	LTE Band 12	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 0	State 6/7	23095	707.5	1	21.54	23.00	1.400	-0.15	0.023	0.032
	LTE Band 12	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 0	State 6/7	23095	707.5	1	21.54	23.00	1.400	0.04	0.029	0.041
	LTE Band 12	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 0	State 6/7	23095	707.5	1	21.54	23.00	1.400	-0.1	0.020	0.028
	LTE Band 12	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 0	State 6/7	23095	707.5	1	20.57	22.00	1.390	-0.11	0.034	0.047
	LTE Band 12	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 0	State 6/7	23095	707.5	1	20.57	22.00	1.390	-0.13	0.018	0.025
	LTE Band 12	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 0	State 6/7	23095	707.5	1	20.57	22.00	1.390	-0.12	0.024	0.033
	LTE Band 12	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 0	State 6/7	23095	707.5	1	20.57	22.00	1.390	-0.07	0.016	0.022
	LTE Band 12	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 2	State 6/7	23095	707.5	1	19.67	21.00	1.358	-0.01	0.279	0.379
	LTE Band 12	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 2	State 6/7	23095	707.5	1	19.67	21.00	1.358	0	0.088	0.119
	LTE Band 12	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 2	State 6/7	23095	707.5	1	19.67	21.00	1.358	0.03	0.105	0.143
	LTE Band 12	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 2	State 6/7	23095	707.5	1	19.67	21.00	1.358	-0.01	0.047	0.063
	LTE Band 12	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 2	State 6/7	23095	707.5	1	18.66	20.00	1.361	-0.09	0.226	0.307
	LTE Band 12	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 2	State 6/7	23095	707.5	1	18.66	20.00	1.361	-0.15	0.068	0.092
	LTE Band 12	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 2	State 6/7	23095	707.5	1	18.66	20.00	1.361	0.1	0.082	0.111
	LTE Band 12	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 2	State 6/7	23095	707.5	1	18.66	20.00	1.361	-0.09	0.039	0.053
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 0	State 6/7	141500	707.5	1	21.66	23.00	1.361	-0.04	0.036	0.049
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 0	State 6/7	141500	707.5	1	21.66	23.00	1.361	0.01	0.020	0.028
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 0	State 6/7	141500	707.5	1	21.66	23.00	1.361	-0.18	0.023	0.031
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 0	State 6/7	141500	707.5	1	21.66	23.00	1.361	0.19	0.012	0.016
	FR1 n12	15M	QPSK	36	22	DFT-15	Right Cheek	0mm	Ant 0	State 6/7	141500	707.5	1	21.51	23.00	1.409	0.11	0.044	0.062
	FR1 n12	15M	QPSK	36	22	DFT-15	Right Tilted	0mm	Ant 0	State 6/7	141500	707.5	1	21.51	23.00	1.409	0.03	0.025	0.035
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Cheek	0mm	Ant 0	State 6/7	141500	707.5	1	21.51	23.00	1.409	0.03	0.029	0.041
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Tilted	0mm	Ant 0	State 6/7	141500	707.5	1	21.51	23.00	1.409	0.09	0.017	0.023
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 6/7	141500	707.5	1	19.66	21.00	1.361	-0.08	0.220	0.300
	FR1 n12	15M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 6/7	141500	707.5	1	19.66	21.00	1.361	-0.14	0.069	0.094
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 6/7	141500	707.5	1	19.66	21.00	1.361	-0.19	0.092	0.125
	FR1 n12	15M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	141500	707.5	1	19.66	21.00	1.361	-0.01	0.050	0.068
	FR1 n12	15M	QPSK	36	22	DFT-15	Right Cheek	0mm	Ant 2	State 6/7	141500	707.5	1	19.51	21.00	1.409	0.14	0.261	0.368
	FR1 n12	15M	QPSK	36	22	DFT-15	Right Tilted	0mm	Ant 2	State 6/7	141500	707.5	1	19.51	21.00	1.409	-0.13	0.088	0.124
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Cheek	0mm	Ant 2	State 6/7	141500	707.5	1	19.51	21.00	1.409	0.17	0.110	0.155
	FR1 n12	15M	QPSK	36	22	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	141500	707.5	1	19.51	21.00	1.409	0.06	0.054	0.076
<b>835MHz</b>																			
	LTE Band 26	15M	QPSK	1	37	-	Right Cheek	0mm	Ant 0	State 6/7	26865	831.5	1	21.62	23.00	1.374	0.07	0.103	0.142
	LTE Band 26	15M	QPSK	1	37	-	Right Tilted	0mm	Ant 0	State 6/7	26865	831.5	1	21.62	23.00	1.374	-0.09	0.052	0.071
	LTE Band 26	15M	QPSK	1	37	-	Left Cheek	0mm	Ant 0	State 6/7	26865	831.5	1	21.62	23.00	1.374	0.15	0.054	0.074



# FCC SAR Test Report

Report No. : FA391308

LTE Band 26	15M	QPSK	1	37	-	Left Tilted	0mm	Ant 0	State 6/7	26865	831.5	1	21.62	23.00	1.374	-0.03	0.037	0.051
LTE Band 26	15M	QPSK	36	20	-	Right Cheek	0mm	Ant 0	State 6/7	26865	831.5	1	20.70	22.00	1.349	0.03	0.078	0.105
LTE Band 26	15M	QPSK	36	20	-	Right Tilted	0mm	Ant 0	State 6/7	26865	831.5	1	20.70	22.00	1.349	0.17	0.044	0.060
LTE Band 26	15M	QPSK	36	20	-	Left Cheek	0mm	Ant 0	State 6/7	26865	831.5	1	20.70	22.00	1.349	-0.07	0.045	0.061
LTE Band 26	15M	QPSK	36	20	-	Left Tilted	0mm	Ant 0	State 6/7	26865	831.5	1	20.70	22.00	1.349	-0.12	0.033	0.045
LTE Band 26	15M	QPSK	1	37	-	Right Cheek	0mm	Ant 2	State 6/7	26865	831.5	1	18.78	20.00	1.324	-0.13	0.281	0.372
LTE Band 26	15M	QPSK	1	37	-	Right Tilted	0mm	Ant 2	State 6/7	26865	831.5	1	18.78	20.00	1.324	-0.18	0.084	0.112
LTE Band 26	15M	QPSK	1	37	-	Left Cheek	0mm	Ant 2	State 6/7	26865	831.5	1	18.78	20.00	1.324	-0.16	0.109	0.144
LTE Band 26	15M	QPSK	1	37	-	Left Tilted	0mm	Ant 2	State 6/7	26865	831.5	1	18.78	20.00	1.324	0	0.059	0.078
LTE Band 26	15M	QPSK	36	20	-	Right Cheek	0mm	Ant 2	State 6/7	26865	831.5	1	17.83	19.00	1.309	-0.03	0.220	0.288
LTE Band 26	15M	QPSK	36	20	-	Right Tilted	0mm	Ant 2	State 6/7	26865	831.5	1	17.83	19.00	1.309	0.13	0.072	0.095
LTE Band 26	15M	QPSK	36	20	-	Left Cheek	0mm	Ant 2	State 6/7	26865	831.5	1	17.83	19.00	1.309	0.09	0.086	0.112
LTE Band 26	15M	QPSK	36	20	-	Left Tilted	0mm	Ant 2	State 6/7	26865	831.5	1	17.83	19.00	1.309	0.16	0.049	0.065
FR1 n5	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 0	State 6/7	167300	836.5	1	21.71	23.00	1.346	0.11	0.114	0.154
FR1 n5	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 0	State 6/7	167300	836.5	1	21.71	23.00	1.346	0.03	0.058	0.078
FR1 n5	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 0	State 6/7	167300	836.5	1	21.71	23.00	1.346	0.04	0.060	0.081
FR1 n5	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 0	State 6/7	167300	836.5	1	21.71	23.00	1.346	0.07	0.042	0.056
FR1 n5	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 0	State 6/7	167300	836.5	1	21.67	23.00	1.358	-0.03	0.128	0.173
FR1 n5	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 0	State 6/7	167300	836.5	1	21.67	23.00	1.358	0.08	0.065	0.089
FR1 n5	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 0	State 6/7	167300	836.5	1	21.67	23.00	1.358	0.16	0.069	0.094
FR1 n5	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 0	State 6/7	167300	836.5	1	21.67	23.00	1.358	-0.08	0.052	0.070
FR1 n5	20M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 6/7	167300	836.5	1	18.89	20.00	1.291	-0.01	0.274	0.354
FR1 n5	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 6/7	167300	836.5	1	18.89	20.00	1.291	0.12	0.089	0.115
FR1 n5	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 6/7	167300	836.5	1	18.89	20.00	1.291	-0.09	0.103	0.133
FR1 n5	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	167300	836.5	1	18.89	20.00	1.291	0.05	0.054	0.070
FR1 n5	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 2	State 6/7	167300	836.5	1	18.76	20.00	1.330	-0.19	0.280	0.373
FR1 n5	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 2	State 6/7	167300	836.5	1	18.76	20.00	1.330	-0.13	0.095	0.126
FR1 n5	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 2	State 6/7	167300	836.5	1	18.76	20.00	1.330	0.06	0.110	0.146
FR1 n5	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	167300	836.5	1	18.76	20.00	1.330	0	0.053	0.071
<b>1750MHz</b>																		
LTE Band 66	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 1	State 6/7	132322	1745	1	21.11	22.00	1.227	0.05	0.068	0.084
LTE Band 66	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 1	State 6/7	132322	1745	1	21.11	22.00	1.227	-0.05	0.064	0.078
LTE Band 66	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 1	State 6/7	132322	1745	1	21.11	22.00	1.227	-0.05	0.139	0.171
LTE Band 66	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 1	State 6/7	132322	1745	1	21.11	22.00	1.227	0.09	0.063	0.078
LTE Band 66	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 1	State 6/7	132322	1745	1	20.11	21.00	1.227	0.1	0.056	0.069
LTE Band 66	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 1	State 6/7	132322	1745	1	20.11	21.00	1.227	0.14	0.048	0.059
LTE Band 66	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 1	State 6/7	132322	1745	1	20.11	21.00	1.227	-0.13	0.106	0.130
LTE Band 66	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 1	State 6/7	132322	1745	1	20.11	21.00	1.227	-0.14	0.054	0.066
LTE Band 66	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 2	State 6/7	132322	1745	1	13.75	14.50	1.189	0.09	0.319	0.379
LTE Band 66	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 2	State 6/7	132322	1745	1	13.75	14.50	1.189	-0.14	0.057	0.068
LTE Band 66	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 2	State 6/7	132322	1745	1	13.75	14.50	1.189	-0.03	0.128	0.152
LTE Band 66	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 2	State 6/7	132322	1745	1	13.75	14.50	1.189	0.16	0.024	0.028
LTE Band 66	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 2	State 6/7	132322	1745	1	12.81	13.50	1.172	-0.15	0.244	0.286
LTE Band 66	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 2	State 6/7	132322	1745	1	12.81	13.50	1.172	0.07	0.052	0.060
LTE Band 66	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 2	State 6/7	132322	1745	1	12.81	13.50	1.172	-0.13	0.104	0.121
LTE Band 66	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 2	State 6/7	132322	1745	1	12.81	13.50	1.172	0.11	0.020	0.023
LTE Band 66	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 7	State 6/7	132322	1745	1	18.36	19.50	1.300	0.02	0.278	0.361
LTE Band 66	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 7	State 6/7	132322	1745	1	18.36	19.50	1.300	-0.04	0.143	0.186
LTE Band 66	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 7	State 6/7	132322	1745	1	18.36	19.50	1.300	0.17	0.110	0.143
LTE Band 66	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 7	State 6/7	132322	1745	1	18.36	19.50	1.300	0.15	0.076	0.099
LTE Band 66	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 7	State 6/7	132322	1745	1	17.43	18.50	1.279	0.03	0.220	0.281
LTE Band 66	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 7	State 6/7	132322	1745	1	17.43	18.50	1.279	-0.11	0.122	0.156
LTE Band 66	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 7	State 6/7	132322	1745	1	17.43	18.50	1.279	0.1	0.087	0.111
LTE Band 66	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 7	State 6/7	132322	1745	1	17.43	18.50	1.279	-0.09	0.056	0.071
FR1 n66	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	State 6/7	349000	1745	1	21.65	22.00	1.084	-0.03	0.067	0.072
FR1 n66	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	State 6/7	349000	1745	1	21.65	22.00	1.084	-0.02	0.055	0.060





FCC SAR Test Report

Report No. : FA391308

Table with 19 columns: Test ID, Frequency, Power, Modulation, Repetition, Duty Cycle, Bandwidth, Location, Distance, Antenna, State, Power Density, Power Flux Density, SAR, and other SAR metrics.

1900MHz

Table with 19 columns: LTE Band, Frequency, Power, Modulation, Repetition, Duty Cycle, Bandwidth, Location, Distance, Antenna, State, Power Density, Power Flux Density, SAR, and other SAR metrics.

Table with 19 columns: Test ID, Frequency, Power, Modulation, Repetition, Duty Cycle, Bandwidth, Location, Distance, Antenna, State, Power Density, Power Flux Density, SAR, and other SAR metrics.



### FCC SAR Test Report

Report No. : FA391308

FR1 n2	20M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 6/7	376000	1880	1	12.53	13.50	1.250	-0.16	0.049	0.061
FR1 n2	20M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 6/7	376000	1880	1	12.53	13.50	1.250	-0.17	0.103	0.129
FR1 n2	20M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	376000	1880	1	12.53	13.50	1.250	-0.19	0.026	0.033
FR1 n2	20M	QPSK	50	28	DFT-15	Right Cheek	0mm	Ant 2	State 6/7	376000	1880	1	12.30	13.50	1.318	0.13	0.287	0.378
FR1 n2	20M	QPSK	50	28	DFT-15	Right Tilted	0mm	Ant 2	State 6/7	376000	1880	1	12.30	13.50	1.318	-0.07	0.053	0.070
FR1 n2	20M	QPSK	50	28	DFT-15	Left Cheek	0mm	Ant 2	State 6/7	376000	1880	1	12.30	13.50	1.318	-0.08	0.103	0.136
FR1 n2	20M	QPSK	50	28	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	376000	1880	1	12.30	13.50	1.318	-0.14	0.023	0.030
FR1 n25	40M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 7	State 6/7	376500	1882.5	1	18.61	20.00	1.377	0.02	0.269	0.370
FR1 n25	40M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 7	State 6/7	376500	1882.5	1	18.61	20.00	1.377	0.1	0.182	0.251
FR1 n25	40M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 7	State 6/7	376500	1882.5	1	18.61	20.00	1.377	-0.09	0.105	0.145
FR1 n25	40M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 7	State 6/7	376500	1882.5	1	18.61	20.00	1.377	-0.18	0.107	0.147
FR1 n25	40M	QPSK	108	54	DFT-15	Right Cheek	0mm	Ant 7	State 6/7	376500	1882.5	1	18.47	20.00	1.422	-0.13	0.268	0.381
FR1 n25	40M	QPSK	108	54	DFT-15	Right Tilted	0mm	Ant 7	State 6/7	376500	1882.5	1	18.47	20.00	1.422	-0.02	0.203	0.289
FR1 n25	40M	QPSK	108	54	DFT-15	Left Cheek	0mm	Ant 7	State 6/7	376500	1882.5	1	18.47	20.00	1.422	-0.18	0.109	0.155
FR1 n25	40M	QPSK	108	54	DFT-15	Left Tilted	0mm	Ant 7	State 6/7	376500	1882.5	1	18.47	20.00	1.422	0.1	0.103	0.146
<b>2300MHz</b>																		
LTE Band 30	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 1	State 6/7	27710	2310	1	14.47	15.00	1.130	0	0.028	0.031
LTE Band 30	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 1	State 6/7	27710	2310	1	14.47	15.00	1.130	0.05	0.019	0.021
LTE Band 30	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 1	State 6/7	27710	2310	1	14.47	15.00	1.130	0.06	0.040	0.045
LTE Band 30	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 1	State 6/7	27710	2310	1	14.47	15.00	1.130	0.17	0.015	0.017
LTE Band 30	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 1	State 6/7	27710	2310	1	13.42	14.00	1.143	0	0.024	0.028
LTE Band 30	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 1	State 6/7	27710	2310	1	13.42	14.00	1.143	-0.03	0.015	0.017
LTE Band 30	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 1	State 6/7	27710	2310	1	13.42	14.00	1.143	-0.08	0.036	0.041
LTE Band 30	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 1	State 6/7	27710	2310	1	13.42	14.00	1.143	-0.06	0.013	0.015
LTE Band 30	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 2	State 6/7	27710	2310	1	13.14	13.50	1.086	-0.17	0.345	0.375
LTE Band 30	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 2	State 6/7	27710	2310	1	13.14	13.50	1.086	-0.06	0.078	0.085
LTE Band 30	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 2	State 6/7	27710	2310	1	13.14	13.50	1.086	0.06	0.164	0.179
LTE Band 30	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 2	State 6/7	27710	2310	1	13.14	13.50	1.086	0.09	0.038	0.041
LTE Band 30	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 2	State 6/7	27710	2310	1	12.04	12.50	1.112	0.18	0.272	0.303
LTE Band 30	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 2	State 6/7	27710	2310	1	12.04	12.50	1.112	0.07	0.060	0.067
LTE Band 30	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 2	State 6/7	27710	2310	1	12.04	12.50	1.112	-0.17	0.132	0.147
LTE Band 30	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 2	State 6/7	27710	2310	1	12.04	12.50	1.112	-0.12	0.030	0.033
LTE Band 30	10M	QPSK	1	25	-	Right Cheek	0mm	Ant 7	State 6/7	27710	2310	1	16.61	18.00	1.377	-0.1	0.277	0.381
LTE Band 30	10M	QPSK	1	25	-	Right Tilted	0mm	Ant 7	State 6/7	27710	2310	1	16.61	18.00	1.377	-0.06	0.237	0.326
LTE Band 30	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 7	State 6/7	27710	2310	1	16.61	18.00	1.377	-0.17	0.163	0.225
LTE Band 30	10M	QPSK	1	25	-	Left Tilted	0mm	Ant 7	State 6/7	27710	2310	1	16.61	18.00	1.377	0.14	0.204	0.282
LTE Band 30	10M	QPSK	25	12	-	Right Cheek	0mm	Ant 7	State 6/7	27710	2310	1	15.66	17.00	1.361	-0.17	0.245	0.333
LTE Band 30	10M	QPSK	25	12	-	Right Tilted	0mm	Ant 7	State 6/7	27710	2310	1	15.66	17.00	1.361	-0.12	0.179	0.244
LTE Band 30	10M	QPSK	25	12	-	Left Cheek	0mm	Ant 7	State 6/7	27710	2310	1	15.66	17.00	1.361	-0.14	0.130	0.177
LTE Band 30	10M	QPSK	25	12	-	Left Tilted	0mm	Ant 7	State 6/7	27710	2310	1	15.66	17.00	1.361	0.16	0.187	0.254
FR1 n30	10M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 1	State 6/7	462000	2310	1	14.03	15.00	1.250	-0.18	0.024	0.030
FR1 n30	10M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 1	State 6/7	462000	2310	1	14.03	15.00	1.250	0.06	0.016	0.020
FR1 n30	10M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 1	State 6/7	462000	2310	1	14.03	15.00	1.250	0.02	0.046	0.057
FR1 n30	10M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 1	State 6/7	462000	2310	1	14.03	15.00	1.250	0.03	0.015	0.019
FR1 n30	10M	QPSK	25	14	DFT-15	Right Cheek	0mm	Ant 1	State 6/7	462000	2310	1	13.89	15.00	1.291	-0.1	0.020	0.026
FR1 n30	10M	QPSK	25	14	DFT-15	Right Tilted	0mm	Ant 1	State 6/7	462000	2310	1	13.89	15.00	1.291	-0.13	0.015	0.020
FR1 n30	10M	QPSK	25	14	DFT-15	Left Cheek	0mm	Ant 1	State 6/7	462000	2310	1	13.89	15.00	1.291	0.11	0.038	0.049
FR1 n30	10M	QPSK	25	14	DFT-15	Left Tilted	0mm	Ant 1	State 6/7	462000	2310	1	13.89	15.00	1.291	0.17	0.015	0.019
FR1 n30	10M	QPSK	1	1	DFT-15	Right Cheek	0mm	Ant 2	State 6/7	462000	2310	1	12.03	13.00	1.250	0.14	0.284	0.355
FR1 n30	10M	QPSK	1	1	DFT-15	Right Tilted	0mm	Ant 2	State 6/7	462000	2310	1	12.03	13.00	1.250	-0.14	0.052	0.065
FR1 n30	10M	QPSK	1	1	DFT-15	Left Cheek	0mm	Ant 2	State 6/7	462000	2310	1	12.03	13.00	1.250	-0.17	0.129	0.161
FR1 n30	10M	QPSK	1	1	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	462000	2310	1	12.03	13.00	1.250	0.02	0.027	0.034
FR1 n30	10M	QPSK	25	14	DFT-15	Right Cheek	0mm	Ant 2	State 6/7	462000	2310	1	11.89	13.00	1.291	0.04	0.285	0.368
FR1 n30	10M	QPSK	25	14	DFT-15	Right Tilted	0mm	Ant 2	State 6/7	462000	2310	1	11.89	13.00	1.291	0.18	0.049	0.063
FR1 n30	10M	QPSK	25	14	DFT-15	Left Cheek	0mm	Ant 2	State 6/7	462000	2310	1	11.89	13.00	1.291	0.13	0.119	0.154
FR1 n30	10M	QPSK	25	14	DFT-15	Left Tilted	0mm	Ant 2	State 6/7	462000	2310	1	11.89	13.00	1.291	-0.15	0.026	0.034