

FCC SAR TEST REPORT

FCC ID : A4RGE9DP
Equipment : Phone
Model Name : GE9DP
Applicant : Google LLC
1600 Amphitheatre Parkway,
Mountain View, California, 94043 USA
Standard : FCC 47 CFR Part 2 (2.1093)

The product was received on Apr. 14, 2023 and testing was started from May 01, 2023 and completed on Jun. 11, 2023. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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



Approved by: Cona Huang / Deputy Manager



Sporton International Inc. EMC & Wireless Communications Laboratory

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Table of Contents

1. Statement of Compliance 4

2. Data Reuse Approach 5

3. Model Difference Information 5

4. Reference detail Section 6

5. Equipment Under Test (EUT) Information 7

 5.1 General Information 7

 5.2 Maximum Tune-up Limit 8

 5.3 General LTE SAR Test and Reporting Considerations 12

 5.4 General 5G NR SAR Test and Reporting Considerations 15

6. TAS feature for RF Exposure compliance 17

 6.1 SAR Characterization – Power Table 18

7. RF Exposure Limits 21

 7.1 Uncontrolled Environment 21

 7.2 Controlled Environment 21

8. Guidance Applied 22

9. Specific Absorption Rate (SAR) 23

 9.1 Introduction 23

 9.2 SAR Definition 23

10. System Description and Setup 24

 10.1 Test Site Location 24

 10.2 E-Field Probe 25

 10.3 Data Acquisition Electronics (DAE) 25

 10.4 Phantom 26

 10.5 Device Holder 27

11. Measurement Procedures 28

 11.1 Spatial Peak SAR Evaluation 28

 11.2 Power Reference Measurement 29

 11.3 Area Scan 29

 11.4 Zoom Scan 30

 11.5 Volume Scan Procedures 30

 11.6 Power Drift Monitoring 30

12. Test Equipment List 31

13. System Verification 32

 13.1 Tissue Verification 32

 13.2 System Performance Check Results 33

14. RF Exposure Positions 35

 14.1 Ear and handset reference point 35

 14.2 Definition of the cheek position 36

 14.3 Definition of the tilt position 37

 14.4 Body Worn Accessory 37

 14.5 Product Specific Exposure 38

 14.6 Wireless Router 38

15. LTE Output Power (Unit: dBm) 39

16. Spot Check SAR Results 51

 16.1 Head SAR 51

 16.2 Hotspot SAR 55

 16.3 Body-Worn SAR 58

 16.4 Product Specific SAR 62

17. SAR Test Results 63

 17.1 Head SAR 64

18. Uncertainty Assessment 65

19. References 68

Appendix A. Plots of System Performance Check

Appendix B. Plots of High SAR Measurement

Appendix C. DASy Calibration Certificate

Appendix D. Test Setup Photos and Antenna Location



History of this test report

Report No.	Version	Description	Issued Date
FA2D0206-02C	01	Initial issue of report	Jul. 05, 2023
FA2D0206-02C	02	Update Section 5.2, 6.1 and 16	Jul. 18, 2023
FA2D0206-02C	03	Update Section 5.2	Aug. 22, 2023



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for Google LLC, Phone, GE9DP, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)	Highest Simultaneous Transmission 10g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	Product Specific (Separation 0mm)		
		1g SAR (W/kg)			10g SAR (W/kg)		
Licensed	GSM850	0.87	0.99	0.85		1.59	2.48
	GSM1900	0.56	0.63	0.82			
	WCDMA II	0.75	0.95	0.84	2.46		
	WCDMA IV	0.47	0.70	0.74			
	WCDMA V	0.94	0.68	0.72			
	LTE Band 2	0.99	0.51	0.77			
	LTE Band 7	0.76	0.92	0.78	1.73		
	LTE Band 12 / 17	0.99	0.46	0.48			
	LTE Band 13	0.81	0.49	0.48			
	LTE Band 14	0.85	0.45	0.48			
	LTE Band 25	0.79	0.70	0.74	2.34		
	LTE Band 5 / 26	0.88	0.72	0.72			
	LTE Band 30	0.22	0.93	0.85	2.48		
	LTE Band 38 / 41	0.46	0.65	0.78			
	LTE Band 48	0.59	0.64	0.79			
	LTE Band 4 / 66	0.94	0.70	0.83	2.47		
	LTE Band 71	0.98	0.40	0.56			
	FR1 n2	1.00	0.69	0.84			
	FR1 n7	0.73	0.96	0.76	2.04		
	FR1 n12	0.96	0.38	0.52			
FR1 n25	0.84	0.69	0.85	2.45			
FR1 n5	0.77	0.72	0.72				
FR1 n30	0.44	0.96	0.82	2.32			
FR1 n66	0.99	0.76	0.82	2.25			
FR1 n71	0.97	0.31	0.49				
FR1 n38 / 41	0.90	0.98	0.84				
FR1 n77 / n78	0.94	0.63	0.82				
DTS	2.4GHz WLAN	1.12	1.02	0.63		1.59	
NII	5GHz WLAN	1.05	0.71	0.61	2.24	1.59	2.48
6CD	6GHz WLAN	0.29	0.27		0.38	1.59	2.48
DSS	Bluetooth	0.21	0.35	0.29		1.59	
DXX	13.56MHz				0.09		2.48
Equipment Class	Frequency Band	Head Reported APD (mW/cm ²)	Body-worn Reported APD (mW/cm ²)	Product Specific Reported APD (mW/cm ²)	Reported PD (mW/cm ²)		
6CD	6GHz WLAN	0.19	0.19	0.88	0.55		
Date of Testing:		2023/4/18 ~ 2023/6/11					

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093), Human Exposure to RF Radiation Limits (1.0 mW/cm²=10 W/m²) specified in FCC 47 CFR part 1.1310 and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

Reviewed by: Jason Wang
Report Producer: Daisy Peng



2. Data Reuse Approach

FCC ID: A4RG1MNW (reference model) and FCC ID: A4RGE9DP (variant model)

- **PCB:** The PCB layout is identical with parent model.
- **Component Positions:** The position of the components on the PCB is not changed
- **Enclosure, Materials, and From Factor:** the Enclosure, Materials, and From Factor are exactly the same

Due to the same design are identical between parent model and variant model, SAR data reuse is requested and spot check data in this report is used to justify the SAR data reuse.

For variant model 1g SAR and 10g spot check SAR result does not exceed 30% and 1g SAR < 1.2W/kg, 10g SAR < 3.0W/kg of the reference model, the WWAN max SAR summary are identical with parent model.

The applicant should take full responsibility that the test data as referenced in this report represent compliance for this FCC ID: A4RGE9DP

3. Model Difference Information

A4RG1MNW and A4RGE9DP use the identical internal printed circuit board layout, and the major differences which may relate to RF are listed below:

- 5G FR2 mmWave related components does not support US band
- Higher P_{limit} power index 2/3 for LTE B41 Ant0 and Ant2
- Populated module and transceiver for FR1 n79

The details of similarity and difference can be found in the confidential documents.



4. Reference detail Section

Rule Part	Equipment Class	Wireless Technology	Frequency Band (MHz)	FCC ID (Reference)	Type Grant/ Permissive Change	Reference Title	FCC ID Filling (Variant)	Test on the variant	
Part 2.1093 SAR	DXX	WPT	110.1KHz ~ 148.5KHz	A4RG1MNW	Original Grant	FA2D0206-02B	A4RGE9DP	Full test	
	DXX	NFC	13.56	A4RG1MNW	Original Grant	FA2D0206-02B	A4RGE9DP	Spot check	
	UWB	UWB	6489.6, 7987.2	A4RG1MNW	Original Grant	FA2D0206-02F	A4RGE9DP	1mW Low power exclusion	
	DSS	Bluetooth	2400~2483.5	A4RG1MNW	Original Grant	FA2D0206-02F	A4RGE9DP	Spot check	
	DTS	BLE WiFi	2400~2483.5	A4RG1MNW	Original Grant	FA2D0206-02F	A4RGE9DP	Spot check	
	NII	Wi-Fi	5150 ~ 5250 5250 ~ 5350 5470 ~ 5725 5725 ~ 5850 5850 ~ 5895	A4RG1MNW	Original Grant	FA2D0206-02F	A4RGE9DP	Spot check	
	6CD	Wi-Fi	5925 ~ 6425 6425 ~ 6525 6525 ~ 6875 6875 ~ 7125	A4RG1MNW	Original Grant	FA2D0206-02F	A4RGE9DP	Spot check	
	PCB CBE	GSM		850/1900	A4RG1MNW	Original Grant	FA2D0206-02F	A4RGE9DP	Spot check
		WCDMA		B2/4/5	A4RG1MNW	Original Grant	FA2D0206-02F	A4RGE9DP	Spot check
		LTE		B2/4/5/7/12/13/ 14/17/25/26/30/ 38/41/48/66/71	A4RG1MNW	Original Grant	FA2D0206-02F	A4RGE9DP	Spot check except LTE B41 antenna 0,2, full test on head SAR
5G FR1			n2/5/7/12/25//30 38/41/66/71/77/78	A4RG1MNW	Original Grant	FA2D0206-02F	A4RGE9DP	Spot check	



5. Equipment Under Test (EUT) Information

5.1 General Information

Product Feature & Specification	
Equipment Name	Phone
Model Name	GE9DP
FCC ID	A4RGE9DP
S / N	33161FDJG000ZM,33161FDJG000ZQ,35121FDJG000H9
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 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 n30 : 2305 MHz ~ 2315 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2G Band: 5150 MHz ~ 5250 MHz WLAN 5.3G Band: 5250 MHz ~ 5350 MHz WLAN 5.5G Band: 5470 MHz ~ 5725 MHz WLAN 5.8G Band: 5725 MHz ~ 5850 MHz WLAN 5.9G Band: 5850 MHz ~ 5895 MHz WLAN 6E: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC: 13.56 MHz WPT: 110.1 KHz ~ 148.5 KHz UWB: 6489.6 MHz, 7987.2 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN: 802.11a/b/g/n/ac/ax/be HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160/EHT20/EHT40/EHT80/EHT160 Bluetooth BR/EDR/LE/HR NFC: ASK WPT: ASK UWB: BPM-BPSK
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.



5.2 Maximum Tune-up Limit

General Note:

- 1. In the report PC3 as power class3
2. For each cellular band, the device has several WWAN antennas, the antenna selection is based on the connection quality condition.
3. The following table shows maximum output power configurations for various exposure conditions (output power index) with tune-up tolerance accounted.
4. The max power conditions use case were evaluated in the reference model G1MNV, the report exhibit of G1MNV_Part 1 SAR Report_Appendix G
5. SAR compliance for the scenario, when device in next-to-ear voice call with hotspot enabled, is justified via head SAR test at Power Index 3.
6. The device additionally support uplink MIMO on n41/n77/n78, the TAS feature will control the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit, the uplink MIMO compliance is validated include in the TAS Part2 report No.: FA2D0206-02C.

Table with 2 columns: Transmit switching diversity configuration, Support transmit antenna and band. Rows include TX 0 and TX 1 configurations with antenna details.



Maximum Transmit Burst Average Power (dBm)								
Band	Antenna	Duty	Maximum Power	Head		Hotspot	Body-worn/Extremity	
		cycle		Standalone	Simultaneous	Simultaneous	Standalone	Simultaneous
			Index 1	Index 2	Index 3	Index 4	Index 5	Index 6
GSM850 GPRS 1TX	0	12.50%	33.5	33.5	33.5	33.5	33.5	33.5
GSM850 GPRS 2TX	0	25.00%	32.5	32.5	32.1	31.9	32.5	32.4
GSM850 GPRS 3TX	0	37.50%	31.5	31.0	30.3	30.1	31.3	30.6
GSM850 GPRS 4TX	0	50.00%	30.5	29.8	29.1	28.9	30.1	29.4
GSM850 EDGE 1TX	0	12.50%	28.0	28.0	28.0	28.0	28.0	28.0
GSM850 EDGE 2TX	0	25.00%	27.5	27.5	27.5	27.5	27.5	27.5
GSM850 EDGE 3TX	0	37.50%	27.5	27.5	27.5	27.5	27.5	27.5
GSM850 EDGE 4TX	0	50.00%	25.5	25.5	25.5	25.5	25.5	25.5
GSM850 GPRS 1TX	1	12.50%	33.1	31.2	30.5	33.1	33.1	33.1
GSM850 GPRS 2TX	1	25.00%	32.1	28.2	27.5	31.9	32.1	31.9
GSM850 GPRS 3TX	1	37.50%	31.1	26.4	25.7	30.1	30.8	30.1
GSM850 GPRS 4TX	1	50.00%	30.1	25.2	24.5	28.9	29.6	28.9
GSM850 EDGE 1TX	1	12.50%	27.6	27.6	27.6	27.6	27.6	27.6
GSM850 EDGE 2TX	1	25.00%	27.1	27.1	27.1	27.1	27.1	27.1
GSM850 EDGE 3TX	1	37.50%	27.1	26.4	25.7	27.1	27.1	27.1
GSM850 EDGE 4TX	1	50.00%	25.1	25.1	24.5	25.1	25.1	25.1
GSM1900 GPRS 1TX	0	12.50%	30.2	30.2	30.2	28.5	30.0	29.3
GSM1900 GPRS 2TX	0	25.00%	28.7	28.7	28.7	25.5	27.0	26.3
GSM1900 GPRS 3TX	0	37.50%	28.2	28.2	28.2	23.7	25.2	24.5
GSM1900 GPRS 4TX	0	50.00%	27.2	27.2	27.2	22.5	24.0	23.3
GSM1900 EDGE 1TX	0	12.50%	25.2	25.2	25.2	25.2	25.2	25.2
GSM1900 EDGE 2TX	0	25.00%	24.2	24.2	24.2	24.2	24.2	24.2
GSM1900 EDGE 3TX	0	37.50%	24.2	24.2	24.2	23.7	24.2	24.2
GSM1900 EDGE 4TX	0	50.00%	23.2	23.2	23.2	22.5	23.2	23.2
GSM1900 GPRS 1TX	2	12.50%	31.0	31.0	31.0	29.5	30.2	29.5
GSM1900 GPRS 2TX	2	25.00%	29.5	29.5	29.5	26.5	27.2	26.5
GSM1900 GPRS 3TX	2	37.50%	29.0	29.0	29.0	24.7	25.4	24.7
GSM1900 GPRS 4TX	2	50.00%	28.0	28.0	28.0	23.5	24.2	23.5
GSM1900 EDGE 1TX	2	12.50%	26.0	26.0	26.0	26.0	26.0	26.0
GSM1900 EDGE 2TX	2	25.00%	25.0	25.0	25.0	25.0	25.0	25.0
GSM1900 EDGE 3TX	2	37.50%	25.0	25.0	25.0	24.7	25.0	24.7
GSM1900 EDGE 4TX	2	50.00%	24.0	24.0	24.0	23.5	24.0	23.5
WCDMA B2	0	100.00%	25.2	25.2	25.2	18.7	20.8	20.1
WCDMA B2	2	100.00%	25.4	25.4	25.4	20.7	21.4	20.7
WCDMA B4	0	100.00%	25.2	25.2	25.2	19.0	19.7	19.0
WCDMA B4	2	100.00%	25.4	25.4	25.4	20.7	21.4	20.7
WCDMA B5	0	100.00%	25.4	25.4	25.4	25.4	25.4	25.4
WCDMA B5	1	100.00%	25.5	22.7	22.0	25.5	25.5	25.5



Maximum Transmit Burst Average Power (dBm)								
Band	Antenna	Duty cycle	Maximum Power	Head		Hotspot	Body-worn/Extremity	
				Standalone	Simultaneous	Simultaneous	Standalone	Simultaneous
		Index 1	Index 2	Index 3	Index 4	Index 5	Index 6	
LTE B2	1	100.00%	25.4	17.0	16.3	20.8	21.5	20.8
LTE B2	5	100.00%	25.2	19.6	18.9	21.7	22.4	21.7
LTE B7	0	100.00%	25.0	25.0	25.0	17.7	22.0	21.3
LTE B7	2	100.00%	25.4	25.4	25.4	21.5	22.2	21.5
LTE B12/17	0	100.00%	25.4	25.4	25.4	25.4	25.4	25.4
LTE B12/17	1	100.00%	25.5	23.2	22.5	25.5	25.5	25.5
LTE B13	0	100.00%	25.4	25.4	25.4	25.4	25.4	25.4
LTE B13	1	100.00%	25.5	24.2	23.5	25.5	25.5	25.5
LTE B14	0	100.00%	25.4	25.4	25.4	25.4	25.4	25.4
LTE B14	1	100.00%	25.5	23.3	22.6	25.5	25.5	25.5
LTE B25/2	0	100.00%	25.2	25.2	25.2	18.2	20.5	19.8
LTE B25/2	2	100.00%	25.4	25.4	25.4	21.0	21.7	21.0
LTE B26/5	0	100.00%	25.4	25.4	25.4	25.4	25.4	25.4
LTE B26/5	1	100.00%	25.4	21.8	21.1	25.4	25.4	25.4
LTE B30	0	100.00%	23.4	23.4	23.4	18.2	20.8	20.1
LTE B30	2	100.00%	23.1	23.1	23.1	20.9	21.6	20.9
LTE B41/38 PC3	0	63.30%	25.0	25.0	25.0	19.3	23.1	22.4
LTE B41/38 PC3	2	63.30%	25.4	25.4	25.4	23.2	23.9	23.2
LTE B48 PC3	6	63.30%	22.4	22.4	22.4	20.7	21.4	20.7
LTE B48 PC3	7	63.30%	24.7	24.7	24.7	23.7	24.4	23.7
LTE B66/4	0	100.00%	25.2	25.2	25.2	18.4	19.9	19.2
LTE B66/4	1	100.00%	25.4	18.0	17.3	22.0	22.7	22.0
LTE B66/4	2	100.00%	25.4	25.4	25.4	21.0	21.7	21.0
LTE B66/4	5	100.00%	25.2	20.5	19.8	22.4	23.1	22.4
LTE B71	0	100.00%	25.4	25.4	25.4	25.4	25.4	25.4
LTE B71	1	100.00%	25.5	23.9	23.2	25.5	25.5	25.5



Maximum Transmit Burst Average Power (dBm)								
Band	Antenna	Duty cycle	Maximum Power	Head		Hotspot	Body-worn/Extremity	
				Standalone	Simultaneous	Simultaneous	Standalone	Simultaneous
				Index 1	Index 2	Index 3	Index 4	Index 5
FR1 n2	1	100.00%	25.4	17.2	16.5	20.8	21.6	20.9
FR1 n2	5	100.00%	25.2	18.7	18.0	21.6	23.0	22.3
FR1 n5	0	100.00%	25.4	25.4	25.4	25.4	25.4	25.4
FR1 n5	1	100.00%	25.4	22.6	21.9	25.4	25.4	25.4
FR1 n7	0	100.00%	24.3	24.3	24.3	18.4	21.9	21.2
FR1 n7	2	100.00%	25.4	25.4	25.4	22.1	22.8	22.1
FR1 n12	0	100.00%	25.4	25.4	25.4	25.4	25.4	25.4
FR1 n12	1	100.00%	25.2	25.2	24.6	25.2	25.2	25.2
FR1 n25/2	0	100.00%	25.2	25.2	25.2	18.8	20.6	19.9
FR1 n25/2	2	100.00%	25.4	25.4	25.4	20.6	21.3	20.6
FR1 n30	0	100.00%	23.4	23.4	23.4	18.2	20.7	20.0
FR1 n30	2	100.00%	23.1	23.1	23.1	21.6	22.3	21.6
FR1 n38 PC3	0	100.00%	25.0	25.0	25.0	18.8	22.4	21.7
FR1 n38 PC3	1	100.00%	25.4	17.7	17.0	21.1	23.0	22.3
FR1 n38 PC3	2	100.00%	25.4	25.4	25.4	21.2	21.9	21.2
FR1 n38 PC3	5	100.00%	25.0	21.1	20.4	20.4	22.3	21.6
FR1 n41 PC3	0	100.00%	23.5	23.5	23.5	18.8	23.0	22.3
FR1 n41 PC3	1	100.00%	23.9	17.7	17.0	21.1	21.9	21.2
FR1 n41 PC3	2	100.00%	23.9	23.9	23.9	21.2	22.3	21.6
FR1 n41 PC3	5	100.00%	23.5	21.1	20.4	20.4	21.1	20.4
FR1 n66	0	100.00%	25.2	25.2	25.2	18.9	19.6	18.9
FR1 n66	1	100.00%	25.4	18.4	17.7	22.3	23.0	22.3
FR1 n66	2	100.00%	25.4	25.4	25.4	22.1	22.8	22.1
FR1 n66	5	100.00%	25.2	19.7	19.0	22.6	23.3	22.6
FR1 n71	0	100.00%	25.4	25.4	25.4	25.4	25.4	25.4
FR1 n71	1	100.00%	25.2	25.2	24.5	25.2	25.2	25.2
FR1 n77 PC3	1	100.00%	24.1	17.6	16.9	18.0	21.7	21.0
FR1 n77 PC3	5	100.00%	23.6	20.9	20.2	20.8	23.6	22.9
FR1 n77 PC3	6	100.00%	24.1	24.1	24.1	21.7	22.4	21.7
FR1 n77 PC3	7	100.00%	24.0	24.0	24.0	24.0	24.0	24.0
FR1 n78 PC3	1	100.00%	24.1	17.6	16.9	18.0	21.7	21.0
FR1 n78 PC3	5	100.00%	24.3	20.9	20.2	20.8	23.6	22.9
FR1 n78 PC3	6	100.00%	24.1	24.1	24.1	21.7	22.4	21.7
FR1 n78 PC3	7	100.00%	24.0	24.0	24.0	24.0	24.0	24.0



5.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	A4RGE9DP																																																														
Equipment Name	Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 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 13: 5MHz, 10MHz LTE Band 14: 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 MPR permanently built-in by design	<p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6" style="text-align: center;">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)																																																								
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																									
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																								
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																								
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																								
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																								
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																								
256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	The device has several different power modes for each exposure conditions SAR compliance; power selection is determined by the device's positioning and usage scenarios. Detail refer to operational description.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to FCC ID: A4RG1MNW, Sporton Report No. FA2D0206-01F section 13.																																																														
LTE Carrier Aggregation Additional Information	This device supports maximum of 6 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band																
LTE Band 2																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860				
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880				
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900				
LTE Band 4																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720				
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5				
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745				
LTE Band 5																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844				
LTE Band 7																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560				
LTE Band 12																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711				
LTE Band 13																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782		23255		784.5		23280		787	
M	23230		782		23255		784.5		23280		787		23305		789.5	
H	23255		784.5		23280		787		23305		789.5		23330		792	
LTE Band 14																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Channel #		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23305		790.5		23330		793		23355		795.5		23380		798	
M	23330		793		23355		795.5		23380		798		23405		800.5	
H	23355		795.5		23380		798		23405		800.5		23430		803	
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		23805		711.5		23830		714	
M	23790		710		23815		713		23840		715.5		23865		718	
H	23825		713.5		23850		716		23875		718.5		23900		721	



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	26765	821.5	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	26965	841.5	26965	841.5
LTE Band 30												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)					
L	27685		2307.5		27710		2310					
M	27710		2310									
H	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)				
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580				
M	38000	2595	38000	2595	38000	2595	38000	2595				
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610				
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506				
L	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593				
H	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680				
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)				
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560				
L	55810	3607	55815	3607.5	55820	3608	55830	3609				
M	56170	3643	56165	3642.5	56160	3642	56150	3641				
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690				
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 71												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	133147	665.5	133172	668	133197	670.5	133222	673				
M	133297	680.5	133297	680.5	133297	680.5	133297	680.5				
H	133447	695.5	133422	693	133397	690.5	133372	688				



5.4 General 5G NR SAR Test and Reporting Considerations

5G NR Information								
FCC ID	A4RGE9DP							
Equipment Name	Phone							
Operating Frequency Range of each 5G NR transmission band	5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n12: 699 MHz ~ 716 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n30 : 2305 MHz ~ 2315 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3700 MHz ~ 3980 MHz, 3450MHz ~ 3550MHz 5G NR n78: 3700 MHz ~ 3800 MHz, 3450MHz ~ 3550MHz							
Channel Bandwidth	5G NR n2: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n7: 5MHz, 10MHz, 15MHz, 20MHz, 25 MHz, 30MHz, 40MHz, 50MHz 5G NR n12: 5MHz, 10MHz, 15MHz 5G NR n25: 5MHz, 10MHz, 15MHz, 20MHz, 25 MHz, 30MHz, 40MHz 5G NR n30: 5MHz, 10MHz 5G NR n38: 10MHz, 15MHz, 20MHz 5G NR n41: 10MHz, 15MHz, 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz, 25 MHz, 30MHz, 40MHz 5G NR n71: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n77/78: 10MHz, 15MHz, 20MHz, 25 MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz							
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 B2/4/5/7/12/13/14/30/48/66/71							
LTE Anchor Bands for n5	LTE B2/7/30/48/66							
LTE Anchor Bands for n7	LTE B2/5/12/13/66/71							
LTE Anchor Bands for n12	LTE B2/7/66							
LTE Anchor Bands for n25	LTE B2/12/13/26/48/66							
LTE Anchor Bands for n30	LTE B2/5/12/14/66							
LTE Anchor Bands for n38	LTE B2/4/5/12/66/71							
LTE Anchor Bands for n41	LTE B2/4/5/12/25/26/66/71							
LTE Anchor Bands for n66	LTE B2/5/7/12/13/14/25/30/48/66/71							
LTE Anchor Bands for n71	LTE B2/7/66							
LTE Anchor Bands for n77	LTE B2/5/7/12/13/14/25/26/30/41/66							
LTE Anchor Bands for n78	LTE B2/4/5/7/12/13/25/38/41/66/71							
NR Band 2								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900
NR Band 5								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839



NR Band 7																								
Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz										
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	500500	2502.5	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	504000	2520	505000	2525								
M	507000	2535	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	509000	2545								
NR Band 12																								
Bandwidth 5MHz				Bandwidth 10MHz				Bandwidth 15MHz																
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 30																								
Bandwidth 5MHz				Bandwidth 10MHz																				
Ch. #		Freq. (MHz)		Ch. #		Freq. (MHz)																		
L	461500		2307.5		462000		2310																	
M	462000		2310																					
H	462500		2312.5																					
NR Band 38																								
Bandwidth 10MHz				Bandwidth 15MHz				Bandwidth 20MHz																
Ch. #		Freq. (MHz)		Ch. #		Freq. (MHz)		Ch. #		Freq. (MHz)														
L	515004		2575.02		515502		2577.51		516000		2580													
M	519000		2595		519000		2595		519000		2595													
H	522996		2614.98		522498		2612.49		522000		2610													
NR Band 41																								
Bandwidth10MHz		Bandwidth15MHz		Bandwidth20MHz		Bandwidth30MHz		Bandwidth40MHz		Bandwidth50MHz		Bandwidth60MHz		Bandwidth70MHz		Bandwidth80MHz		Bandwidth90MHz		Bandwidth100MHz				
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	502200	2511	503202	2516.01	504204	2521.02	505200	2526	506202	2531.01	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		
H	537000	2685	536496	2682.48	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	531000	2655	529998	2649.99	528996	2644.98	528000	2640		
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		13410		670.5		134600		673									
M	136100		680.5		136100		680.5		136100		680.5		136100		680.5									
H	139100		695.5		138600		693		13810		690.5		137600		688									
NR Band 77																								
Bandwidth10MHz		Bandwidth15MHz		Bandwidth20MHz		Bandwidth25MHz		Bandwidth30MHz		Bandwidth40MHz		Bandwidth50MHz		Bandwidth60MHz		Bandwidth70MHz		Bandwidth80MHz		Bandwidth90MHz		Bandwidth100MHz		
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	3967.50	664332	3964.98	664000	3960	663666	3954.99	663332	3949.98	663000	3945	662666	3939.99	662332	3934.98	662000	3930



NR Band 78																											
	Bandwidth10MHz		Bandwidth15MHz		Bandwidth 20MHz		Bandwidth25MHz		Bandwidth30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth100MHz				
	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	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	
H	653000	3795	652832	3792.48	652666	3789.99	652500	3787.50	652332	3784.98	652000	3780	651666	3774.99	651332	3769.98	651000	3765	650666	3759.99	650332	3754.98	650000	3750			
NR Band 77/78(3450MHz ~ 3550MHz)																											
	Bandwidth10MHz		Bandwidth15MHz		Bandwidth 20MHz		Bandwidth25MHz		Bandwidth30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth100MHz				
	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	630500	3457.5	630668	3460.02	630834	3462.51	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	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					

6. TAS feature for RF Exposure compliance

The FCC RF exposure limit is based on time-averaged RF exposure. SAR regulatory specifications are defined over certain measurement duration allowing for time-averaging. The Samsung S.LSI proprietary TAS (Time Average SAR) algorithm has been designed to meet the compliance limits over the required duration, while still allowing dynamic control of transmit power for meeting system performance. Under the control of TAS algorithm, the device can transmit at high power up to Pmax for certain interval, but the average power will be maintained not exceeding the pre-defined averaged level (Plimit), and thus maintain the time-averaged RF exposure compliance

The following table shows Plimit and maximum tune up output power Pmax, for all exposure and transmit conditions (output power index).

Pmax	Maximum Tx power that can be transmitted physically from RFIC for a given RAT
SAR_FCC_limit	SAR limit specified by FCC 1.6 W/kg averaged over 1-gram, for head and body exposure, and 4 W/kg averaged over 10-gram, for extremity exposure
Plimit	The time-averaged RF power that corresponds to SAR_target.



6.1 SAR Characterization – Power Table

General Note:

1. The P_{limit} values correspond to SAR_{design target}.
2. GSM and WCDMA don't support time average feature of dynamic power varying, the power will be fixed at the static reduce power level at different exposure conditions for RF exposure compliance. For the GSM (TDD) P_{limit} power levels in the table correspond to the burst average power levels which don't account for TX duty cycle.
3. The device additionally support UL MIMO mode on n41/48/77/78
4. LTE and 5GNR TDD: P_{limit} power levels in the table correspond to the time-averaged power levels which accounts for TX duty cycle.
5. Maximum target power, P_{max}, is configured in NV settings in EUT to limit maximum transmitting power. This power is converted into peak power in NV settings for TDD schemes.

<P_{limit} for supported technologies and bands (P_{limit} corresponding to SAR design target)>

Wireless technology/ band (No Accounting duty cycle)	Antenna	Duty cycle	Maximum Power Conditions	Head		Hotspot	Body-worn /Extremity		P _{Max} Burst average power (dBm)	
				Standalone	Simultaneous	Simultaneous	Standalone	Simultaneous		
				Index 1	Index 2	Index 3	Index 4	Index 5		Index 6
				P limit						Burst average power (dBm)
GSM850 GPRS 1TX	0	12.50%	32.5	34.8	34.1	33.9	35.1	34.4	32.5	
GSM850 GPRS 2TX	0	25.00%	31.5	31.8	31.1	30.9	32.1	31.4	31.5	
GSM850 GPRS 3TX	0	37.50%	30.5	30.0	29.3	29.1	30.3	29.6	30.5	
GSM850 GPRS 4TX	0	50.00%	29.5	28.8	28.1	27.9	29.1	28.4	29.5	
GSM850 EDGE 1TX	0	12.50%	27.0	34.8	34.1	33.9	35.1	34.4	27.0	
GSM850 EDGE 2TX	0	25.00%	26.5	31.8	31.1	30.9	32.1	31.4	26.5	
GSM850 EDGE 3TX	0	37.50%	26.5	30.0	29.3	29.1	30.3	29.6	26.5	
GSM850 EDGE 4TX	0	50.00%	24.5	28.8	28.1	27.9	29.1	28.4	24.5	
GSM850 GPRS 1TX	1	12.50%	32.1	30.2	29.5	33.9	34.6	33.9	32.1	
GSM850 GPRS 2TX	1	25.00%	31.1	27.2	26.5	30.9	31.6	30.9	31.1	
GSM850 GPRS 3TX	1	37.50%	30.1	25.4	24.7	29.1	29.8	29.1	30.1	
GSM850 GPRS 4TX	1	50.00%	29.1	24.2	23.5	27.9	28.6	27.9	29.1	
GSM850 EDGE 1TX	1	12.50%	26.6	30.2	29.5	33.9	34.6	33.9	26.6	
GSM850 EDGE 2TX	1	25.00%	26.1	27.2	26.5	30.9	31.6	30.9	26.1	
GSM850 EDGE 3TX	1	37.50%	26.1	25.4	24.7	29.1	29.8	29.1	26.1	
GSM850 EDGE 4TX	1	50.00%	24.1	24.2	23.5	27.9	28.6	27.9	24.1	
GSM1900 GPRS 1TX	0	12.50%	29.2	45.6	44.9	27.5	29.0	28.3	29.2	
GSM1900 GPRS 2TX	0	25.00%	27.7	42.6	41.9	24.5	26.0	25.3	27.7	
GSM1900 GPRS 3TX	0	37.50%	27.2	40.8	40.1	22.7	24.2	23.5	27.2	
GSM1900 GPRS 4TX	0	50.00%	26.2	39.6	38.9	21.5	23.0	22.3	26.2	
GSM1900 EDGE 1TX	0	12.50%	24.2	45.6	44.9	27.5	29.0	28.3	24.2	
GSM1900 EDGE 2TX	0	25.00%	23.2	42.6	41.9	24.5	26.0	25.3	23.2	
GSM1900 EDGE 3TX	0	37.50%	23.2	40.8	40.1	22.7	24.2	23.5	23.2	
GSM1900 EDGE 4TX	0	50.00%	22.2	39.6	38.9	21.5	23.0	22.3	22.2	
GSM1900 GPRS 1TX	2	12.50%	30.0	35.5	34.8	28.5	29.2	28.5	30.0	
GSM1900 GPRS 2TX	2	25.00%	28.5	32.5	31.8	25.5	26.2	25.5	28.5	
GSM1900 GPRS 3TX	2	37.50%	28.0	30.7	30.0	23.7	24.4	23.7	28.0	
GSM1900 GPRS 4TX	2	50.00%	27.0	29.5	28.8	22.5	23.2	22.5	27.0	
GSM1900 EDGE 1TX	2	12.50%	25.0	35.5	34.8	28.5	29.2	28.5	25.0	
GSM1900 EDGE 2TX	2	25.00%	24.0	32.5	31.8	25.5	26.2	25.5	24.0	
GSM1900 EDGE 3TX	2	37.50%	24.0	30.7	30.0	23.7	24.4	23.7	24.0	
GSM1900 EDGE 4TX	2	50.00%	23.0	29.5	28.8	22.5	23.2	22.5	23.0	
WCDMA B2	0	100.00%	23.8	35.2	34.5	17.3	19.4	18.7	23.8	
WCDMA B2	2	100.00%	24.6	26.4	25.7	19.9	20.6	19.9	24.6	
WCDMA B4	0	100.00%	23.8	34.5	33.8	17.6	18.3	17.6	23.8	
WCDMA B4	2	100.00%	24.6	27.9	27.2	19.9	20.6	19.9	24.6	
WCDMA B5	0	100.00%	24.7	29.4	28.7	25.0	25.7	25.0	24.7	
WCDMA B5	1	100.00%	24.3	21.5	20.8	26.8	27.5	26.8	24.3	



<P_{limit} for supported technologies and bands (P_{limit} corresponding to SAR design target)>

Wireless technology/ band (Accounting duty cycle)	Antenna	Duty cycle	Maximum Power Conditions Index 1	Head		Hotspot	Body-worn / Extremity		PMax Time average power (dBm)
				Standalone	Simultaneous	Simultaneous	Standalone	Simultaneous	
				Index 2	Index 3	Index 4	Index 5	Index 6	
				P limit					
Time average power (dBm)									
LTE B2	1	100.00%	24.6	16.2	15.5	20.0	20.7	20.0	24.6
LTE B2	5	100.00%	23.8	18.2	17.5	20.3	21.0	20.3	23.8
LTE B7	0	100.00%	23.5	29.2	28.5	16.2	20.5	19.8	23.5
LTE B7	2	100.00%	24.5	25.9	25.2	20.6	21.3	20.6	24.5
LTE B12/17	0	100.00%	24.7	30.7	30.0	27.2	28.5	27.8	24.7
LTE B12/17	1	100.00%	24.3	22.0	21.3	27.8	28.5	27.8	24.3
LTE B13	0	100.00%	24.7	30.2	29.5	25.8	26.5	25.8	24.7
LTE B13	1	100.00%	24.3	23.0	22.3	28.5	29.2	28.5	24.3
LTE B14	0	100.00%	24.7	30.1	29.4	25.6	26.3	25.6	24.7
LTE B14	1	100.00%	24.3	22.1	21.4	28.3	29.0	28.3	24.3
LTE B25/2	0	100.00%	23.8	34.2	33.5	16.8	19.1	18.4	23.8
LTE B25/2	2	100.00%	24.6	25.7	25.0	20.2	20.9	20.2	24.6
LTE B26/5	0	100.00%	24.7	29.1	28.4	25.4	26.1	25.4	24.7
LTE B26/5	1	100.00%	24.3	20.7	20.0	26.9	27.6	26.9	24.3
LTE B30	0	100.00%	21.9	33.7	33.0	16.7	19.3	18.6	21.9
LTE B30	2	100.00%	22.2	26.8	26.1	20.0	20.7	20.0	22.2
LTE B41/38 PC3	0	63.30%	21.5	30.2	29.5	15.8	19.6	18.9	21.5
LTE B41/38 PC3	2	63.30%	22.5	26.3	25.6	20.3	21.0	20.3	22.5
LTE B48 PC3	6	63.30%	19.3	28.8	28.1	17.6	18.3	17.6	19.3
LTE B48 PC3	7	63.30%	21.7	24.5	23.8	20.7	21.4	20.7	21.7
LTE B66/4	0	100.00%	23.8	33.7	33.0	17.0	18.5	17.8	23.8
LTE B66/4	1	100.00%	24.6	17.2	16.5	21.2	21.9	21.2	24.6
LTE B66/4	2	100.00%	24.6	27.5	26.8	20.2	20.9	20.2	24.6
LTE B66/4	5	100.00%	23.8	19.1	18.4	21.0	21.7	21.0	23.8
LTE B71	0	100.00%	24.7	31.3	30.6	26.9	28.3	27.6	24.7
LTE B71	1	100.00%	24.3	22.7	22.0	28.0	28.7	28.0	24.3



<P_{limit} for supported technologies and bands (P_{limit} corresponding to SAR design target)>

Wireless technology/ band (Accounting duty cycle)	Antenna	Duty cycle	Maximum Power Conditions Index 1	Head		Hotspot	Body-worn		PMax Time average power (dBm)
				Standalone	Simultaneous	Simultaneous	Standalone	Simultaneous	
				Index 2	Index 3	Index 4	Index 5	Index 6	
				P limit					
Time average power (dBm)									
FR1 n2	1	100.00%	24.6	16.4	15.7	20.0	20.8	20.1	24.6
FR1 n2	5	100.00%	23.8	17.3	16.6	20.2	21.6	20.9	23.8
FR1 n5	0	100.00%	24.7	29.2	28.5	26.1	27.4	26.7	24.7
FR1 n5	1	100.00%	24.3	21.5	20.8	25.2	25.9	25.2	24.3
FR1 n7	0	100.00%	23.2	27.8	27.1	17.3	20.8	20.1	23.2
FR1 n7	2	100.00%	24.5	25.5	24.8	21.2	21.9	21.2	24.5
FR1 n12	0	100.00%	24.7	30.8	30.1	26.6	27.3	26.6	24.7
FR1 n12	1	100.00%	24.3	24.4	23.7	28.1	28.8	28.1	24.3
FR1 n25/2	0	100.00%	23.8	33.5	32.8	17.4	19.2	18.5	23.8
FR1 n25/2	2	100.00%	24.6	25.3	24.6	19.8	20.5	19.8	24.6
FR1 n30	0	100.00%	21.9	28.5	27.8	16.7	19.2	18.5	21.9
FR1 n30	2	100.00%	22.2	24.9	24.2	20.7	21.4	20.7	22.2
FR1 n38 PC3	0	100.00%	23.5	29.7	29.0	17.3	20.9	20.2	23.5
FR1 n38 PC3	1	100.00%	24.5	16.8	16.1	21.4	22.1	21.4	24.5
FR1 n38 PC3	2	100.00%	24.5	26.5	25.8	20.3	21.0	20.3	24.5
FR1 n38 PC3	5	100.00%	23.5	19.6	18.9	20.1	20.8	20.1	23.5
FR1 n41 PC3	0	100.00%	22.0	27.5	26.8	17.3	20.9	20.2	22.0
FR1 n41 PC3	1	100.00%	23.0	16.8	16.1	21.4	22.1	21.4	23.0
FR1 n41 PC3	2	100.00%	23.0	25.5	24.8	20.3	21.0	20.3	23.0
FR1 n41 PC3	5	100.00%	22.0	19.6	18.9	20.1	20.8	20.1	22.0
FR1 n66	0	100.00%	23.8	31.8	31.1	17.5	18.2	17.5	23.8
FR1 n66	1	100.00%	24.6	17.6	16.9	21.5	22.2	21.5	24.6
FR1 n66	2	100.00%	24.6	27.8	27.1	21.3	22.0	21.3	24.6
FR1 n66	5	100.00%	23.8	18.3	17.6	21.2	21.9	21.2	23.8
FR1 n71	0	100.00%	24.7	32.6	31.9	26.7	27.4	26.7	24.7
FR1 n71	1	100.00%	24.1	24.1	23.4	28.7	29.4	28.7	24.1
FR1 n77 PC3	1	100.00%	23.0	16.5	15.8	19.9	20.6	19.9	23.0
FR1 n77 PC3	5	100.00%	22.5	19.8	19.1	21.8	22.5	21.8	22.5
FR1 n77 PC3	6	100.00%	23.0	27.7	27.0	20.6	21.3	20.6	23.0
FR1 n77 PC3	7	100.00%	21.9	27.9	27.2	23.3	24.6	23.9	21.9
FR1 n78 PC3	1	100.00%	23.0	16.5	15.8	19.9	20.6	19.9	23.0
FR1 n78 PC3	5	100.00%	21.9	18.5	17.8	20.5	21.2	20.5	21.9
FR1 n78 PC3	6	100.00%	23.0	28.7	28.0	20.6	21.3	20.6	23.0
FR1 n78 PC3	7	100.00%	21.9	28.2	27.5	22.6	23.3	22.6	21.9



7. RF Exposure Limits

7.1 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.

7.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm² per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

8. Guidance Applied

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01
- FCC KDB 941225 D07 UMPC Mini Tablet v01r02
- IEC/IEEE 62209-1528:2020
- SPEAG DASY6 System Handbook
- SPEAG DASY6 Application Note (Interim Procedure for Device Operation at 6GHz-10GHz)

9. Specific Absorption Rate (SAR)

9.1 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.

9.2 SAR Definition

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

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

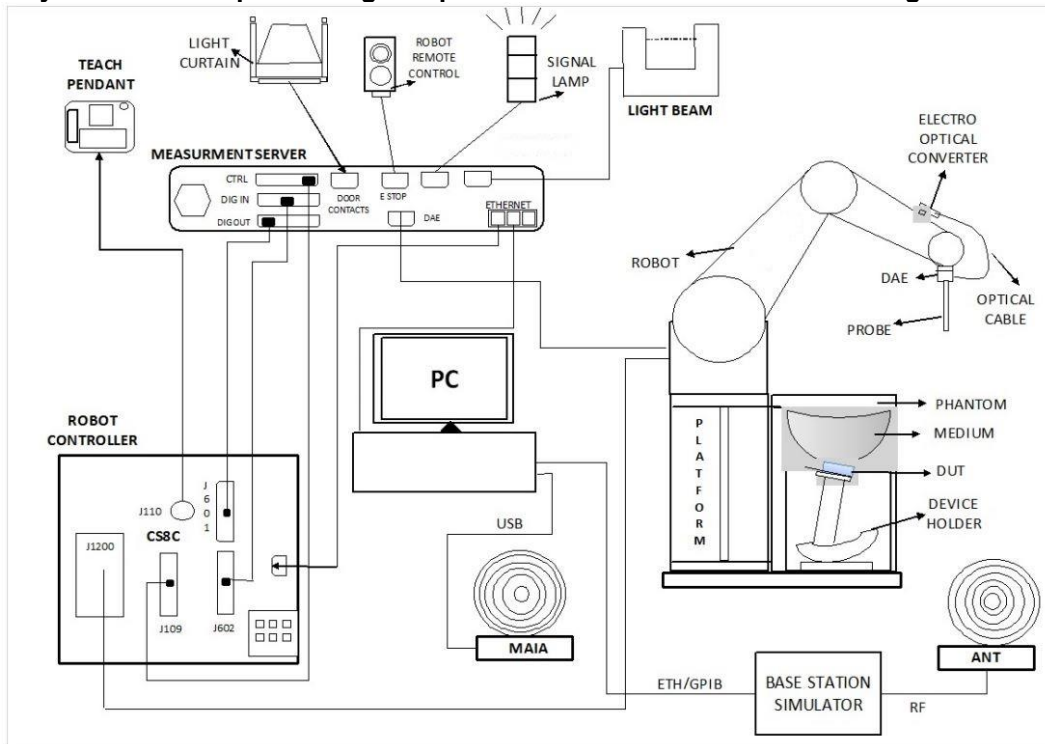
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

10. System Description and Setup

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



- The DASY system in SAR Configuration is shown above
- 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 windows software and the DASY 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.

10.1 Test Site Location


The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 3786) and the FCC designation No. TW1190 and TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. In system validation list test site number, if the test site number is include in the Wensan Laboratory, that's mean the test data are subcontracted to Sporton International Inc. Wensan Laboratory.

Test Site	EMC & Wireless Communications Laboratory		Wensan Laboratory		
	TW1190		TW3786		
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan		No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan		
Test Site No.	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY	SAR15-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY	SAR16-HY
	SAR06-HY	SAR10-HY	SAR13-HY	SAR14-HY	SAR17-HY


10.2 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

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

10.3 Data Acquisition Electronics (DAE)

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

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

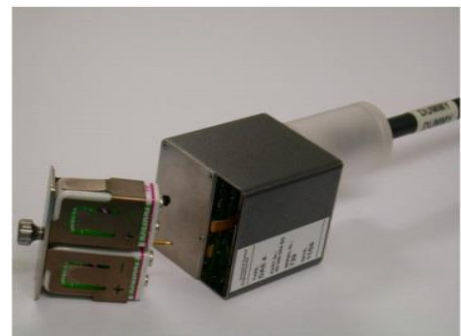



Fig 5.1 Photo of DAE


10.4 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

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

10.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops



11. Measurement Procedures

The measurement procedures are as follows:

- (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

11.1 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



11.2 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.

11.3 Area Scan

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

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

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

11.4 Zoom Scan

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

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

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

11.5 Volume Scan Procedures

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

11.6 Power Drift Monitoring

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



12. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit ⁽²⁾	D750V3	1012	Aug. 18, 2021	Aug. 16, 2023
SPEAG	835MHz System Validation Kit ⁽²⁾	D835V2	4d060	Mar. 24, 2022	Mar. 22, 2024
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 21, 2022	Nov. 20, 2023
SPEAG	1900MHz System Validation Kit ⁽²⁾	D1900V2	5d093	Mar. 25, 2022	Mar. 23, 2024
SPEAG	2300MHz System Validation Kit ⁽²⁾	D2300V2	1088	Jul. 13, 2021	Jul. 11, 2023
SPEAG	2450MHz System Validation Kit ⁽²⁾	D2450V2	736	Aug. 17, 2021	Aug. 15, 2023
SPEAG	2600MHz System Validation Kit ⁽²⁾	D2600V2	1008	Aug. 17, 2021	Aug. 15, 2023
SPEAG	2600MHz System Validation Kit ⁽²⁾	D2600V2	1089	Mar. 24, 2022	Mar. 22, 2024
SPEAG	3500MHz System Validation Kit ⁽²⁾	D3500V2	1036	Mar. 23, 2022	Mar. 21, 2024
SPEAG	3700MHz System Validation Kit ⁽²⁾	D3700V2	1022	Jul. 14, 2021	Jul. 12, 2023
SPEAG	3900MHz System Validation Kit ⁽²⁾	D3900V2	1017	Apr. 22, 2022	Apr. 20, 2024
SPEAG	5GHz System Validation Kit ⁽²⁾	D5GHzV2	1171	Apr. 20, 2021	Apr. 17, 2024
SPEAG	6500MHz System Validation Kit	D6.5GHzV2	1003	Mar. 15, 2023	Mar. 14, 2024
SPEAG	13MHz System Validation Kit	CLA13	1011	Jul. 08, 2020	Jul. 05, 2023
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 20, 2022	Jul. 19, 2023
SPEAG	Data Acquisition Electronics	DAE4	854	Aug. 24, 2022	Aug. 23, 2023
SPEAG	Data Acquisition Electronics	DAE4	1694	Nov. 18, 2022	Nov. 17, 2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	3642	Apr. 26, 2023	Apr. 25, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	Apr. 25, 2023	Apr. 24, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 28, 2022	Jul. 27, 2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	7439	Feb. 21, 2023	Feb. 20, 2024
RCPTWN	Thermometer	HTC-1	TM685-1	Jun. 27, 2022	Jun. 26, 2023
RCPTWN	Thermometer	HTC-1	TM560-2	Mar. 21, 2023	Mar. 20, 2024
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Oct. 31, 2022	Oct. 30, 2023
Keysight	5G Wireless Test Platform	E7515B	MY59321826	Apr. 26, 2023	Apr. 25, 2024
R&S	BT Base Station	CBT32	101136	Oct. 25, 2022	Oct. 24, 2023
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Oct. 12, 2022	Oct. 11, 2023
Keysight	ENA Network Analyzer	E5071C	MY46104758	Sep. 22, 2022	Sep. 21, 2023
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 28, 2022	Sep. 27, 2023
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3796	Jan. 13, 2023	Jan. 12, 2024
Anritsu	Power Meter	ML2495A	1419002	Aug. 16, 2022	Aug. 15, 2023
Anritsu	Power Sensor	MA2411B	1911176	Aug. 16, 2022	Aug. 15, 2023
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jul. 21, 2022	Jul. 20, 2023
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 14, 2022	Oct. 13, 2023
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Warison	Directional Coupler	WCOU-10-50S-10	WR889BMC4B1	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005-3	N/A	Note 1	

General Note:

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



13. System Verification

13.1 Tissue Verification

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

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
750	22.6	0.895	43.500	0.89	41.90	0.56	3.82	±5	2023/5/8
750	22.5	0.888	43.200	0.89	41.90	-0.22	3.10	±5	2023/5/12
750	22.5	0.903	43.800	0.89	41.90	1.46	4.53	±5	2023/5/28
835	22.3	0.926	42.900	0.90	41.50	2.89	3.37	±5	2023/5/5
835	22.5	0.919	42.700	0.90	41.50	2.11	2.89	±5	2023/5/12
1750	22.6	1.360	40.100	1.37	40.10	-0.73	0.00	±5	2023/5/13
1750	22.3	1.380	40.700	1.37	40.10	0.73	1.50	±5	2023/5/23
1750	22.4	1.360	40.700	1.37	40.10	-0.73	1.50	±5	2023/5/24
1750	22.6	1.380	40.800	1.37	40.10	0.73	1.75	±5	2023/5/25
1750	22.6	1.350	40.400	1.37	40.10	-1.46	0.75	±5	2023/5/26
1900	22.2	1.430	39.300	1.40	40.00	2.14	-1.75	±5	2023/5/1
1900	22.4	1.440	39.100	1.40	40.00	2.86	-2.25	±5	2023/5/2
1900	22.3	1.460	40.900	1.40	40.00	4.29	2.25	±5	2023/5/3
1900	22.5	1.430	39.100	1.40	40.00	2.14	-2.25	±5	2023/5/4
1900	22.6	1.430	40.000	1.40	40.00	2.14	0.00	±5	2023/5/13
2300	22.3	1.600	39.700	1.67	39.50	-4.19	0.51	±5	2023/5/9
2300	22.5	1.640	40.500	1.67	39.50	-1.80	2.53	±5	2023/5/10
2300	22.7	1.650	39.000	1.67	39.50	-1.20	-1.27	±5	2023/5/14
2600	22.6	1.930	39.000	1.96	39.00	-1.53	0.00	±5	2023/5/6
2600	22.6	1.970	39.500	1.96	39.00	0.51	1.28	±5	2023/5/7
2600	22.2	1.950	39.400	1.96	39.00	-0.51	1.03	±5	2023/5/11
2600	22.5	1.970	39.200	1.96	39.00	0.51	0.51	±5	2023/5/12
2600	22.7	2.000	37.900	1.96	39.00	2.04	-2.82	±5	2023/5/14
2600	22.4	2.020	40.000	1.96	39.00	3.06	2.56	±5	2023/5/15
2600	22.7	1.970	39.600	1.96	39.00	0.51	1.54	±5	2023/5/16
2600	22.1	1.920	38.600	1.96	39.00	-2.04	-1.03	±5	2023/5/17
2600	22.2	1.950	39.300	1.96	39.00	-0.51	0.77	±5	2023/5/18
3500	22.7	2.910	38.100	2.91	37.90	0.00	0.53	±5	2023/5/14
3500	22.7	2.920	38.000	2.91	37.90	0.34	0.26	±5	2023/5/29
3500	22.8	2.960	38.100	2.91	37.90	1.72	0.53	±5	2023/5/30
3500	22.4	2.990	38.400	2.91	37.90	2.75	1.32	±5	2023/5/31
3500	22.5	3.000	38.700	2.91	37.90	3.09	2.11	±5	2023/6/1
3700	22.7	3.110	37.700	3.12	37.70	-0.32	0.00	±5	2023/5/14
3700	22.7	3.120	37.800	3.12	37.70	0.00	0.27	±5	2023/5/29
3700	22.8	3.200	37.500	3.12	37.70	2.56	-0.53	±5	2023/5/30
3700	22.4	3.210	38.200	3.12	37.70	2.88	1.33	±5	2023/5/31
3700	22.5	3.190	38.400	3.12	37.70	2.24	1.86	±5	2023/6/1
3900	22.7	3.330	37.600	3.33	37.51	0.00	0.24	±5	2023/5/29
3900	22.8	3.340	37.800	3.33	37.51	0.30	0.77	±5	2023/5/30
3900	22.4	3.420	38.000	3.33	37.51	2.70	1.31	±5	2023/5/31
3900	22.5	3.390	38.100	3.33	37.51	1.80	1.57	±5	2023/6/1
2450	22.5	1.800	39.400	1.80	39.20	0.00	0.51	±5	2023/6/10
5250	22.7	4.750	37.000	4.71	35.95	0.85	2.92	±5	2023/6/11
5600	22.7	5.120	36.500	5.07	35.50	0.99	2.82	±5	2023/6/11
5750	22.7	5.290	36.300	5.22	35.35	1.34	2.69	±5	2023/6/11
5850	22.7	5.400	36.100	5.32	35.25	1.50	2.41	±5	2023/6/11
6500	22.7	6.160	34.700	6.07	34.50	1.48	0.58	±5	2023/6/11
13	22.5	0.757	53.600	0.75	55.00	0.93	-2.55	±5	2023/4/18



13.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)	Test Site
2023/5/8	750	250	D750V3-1012	EX3DV4 - SN7439	DAE4 Sn854	2.090	8.560	8.36	-2.34	1.360	5.560	5.44	-2.16	SAR01
2023/5/12	750	50	D750V3-1012	EX3DV4 - SN3925	DAE4 Sn853	0.416	8.560	8.32	-2.80	0.276	5.560	5.52	-0.72	SAR06
2023/5/28	750	250	D750V3-1012	EX3DV4 - SN7439	DAE4 Sn854	2.200	8.560	8.8	2.80	1.420	5.560	5.68	2.16	SAR01
2023/5/5	835	100	D835V2-4d060	EX3DV4 - SN7439	DAE4 Sn854	0.968	9.730	9.68	-0.51	0.629	6.390	6.29	-1.56	SAR01
2023/5/12	835	50	D835V2-4d060	EX3DV4 - SN3925	DAE4 Sn853	0.501	9.730	10.02	2.98	0.329	6.390	6.58	2.97	SAR06
2023/5/13	1750	50	D1750V2-1068	EX3DV4 - SN3925	DAE4 Sn853	1.780	36.700	35.6	-3.00	0.958	19.300	19.16	-0.73	SAR06
2023/5/23	1750	250	D1750V2-1068	EX3DV4 - SN7439	DAE4 Sn854	9.660	36.700	38.64	5.29	5.090	19.300	20.36	5.49	SAR01
2023/5/24	1750	250	D1750V2-1068	EX3DV4 - SN7439	DAE4 Sn854	9.780	36.700	39.12	6.59	5.150	19.300	20.6	6.74	SAR01
2023/5/25	1750	250	D1750V2-1068	EX3DV4 - SN7439	DAE4 Sn854	9.370	36.700	37.48	2.13	4.930	19.300	19.72	2.18	SAR01
2023/5/26	1750	250	D1750V2-1068	EX3DV4 - SN7439	DAE4 Sn854	9.510	36.700	38.04	3.65	5.000	19.300	20	3.63	SAR01
2023/5/1	1900	100	D1900V2-5d093	EX3DV4 - SN7439	DAE4 Sn854	4.350	39.900	43.5	9.02	2.230	20.700	22.3	7.73	SAR01
2023/5/2	1900	100	D1900V2-5d093	EX3DV4 - SN7439	DAE4 Sn854	4.190	39.900	41.9	5.01	2.150	20.700	21.5	3.86	SAR01
2023/5/3	1900	100	D1900V2-5d093	EX3DV4 - SN7439	DAE4 Sn854	4.370	39.900	43.7	9.52	2.240	20.700	22.4	8.21	SAR01
2023/5/4	1900	100	D1900V2-5d093	EX3DV4 - SN7439	DAE4 Sn854	4.240	39.900	42.4	6.27	2.170	20.700	21.7	4.83	SAR01
2023/5/13	1900	50	D1900V2-5d093	EX3DV4 - SN3925	DAE4 Sn853	2.050	39.900	41	2.76	1.080	20.700	21.6	4.35	SAR06
2023/5/9	2300	100	D2300V2-1088	EX3DV4 - SN7439	DAE4 Sn854	4.870	49.700	48.7	-2.01	2.360	24.100	23.6	-2.07	SAR01
2023/5/10	2300	100	D2300V2-1088	EX3DV4 - SN7439	DAE4 Sn854	4.860	49.700	48.6	-2.21	2.350	24.100	23.5	-2.49	SAR01
2023/5/14	2300	50	D2300V2-1088	EX3DV4 - SN3925	DAE4 Sn853	2.340	49.700	46.8	-5.84	1.130	24.100	22.6	-6.22	SAR06
2023/5/6	2600	100	D2600V2-1089	EX3DV4 - SN7439	DAE4 Sn854	5.890	55.400	58.9	6.32	2.630	24.600	26.3	6.91	SAR01
2023/5/7	2600	100	D2600V2-1089	EX3DV4 - SN7439	DAE4 Sn854	5.710	55.400	57.1	3.07	2.550	24.600	25.5	3.66	SAR01
2023/5/11	2600	100	D2600V2-1089	EX3DV4 - SN7439	DAE4 Sn854	5.910	55.400	59.1	6.68	2.630	24.600	26.3	6.91	SAR01
2023/5/12	2600	100	D2600V2-1089	EX3DV4 - SN7439	DAE4 Sn854	5.840	55.400	58.4	5.42	2.600	24.600	26	5.69	SAR01
2023/5/14	2600	50	D2600V2-1008	EX3DV4 - SN3925	DAE4 Sn853	2.850	58.000	57	-1.72	1.300	25.800	26	0.78	SAR06
2023/5/15	2600	100	D2600V2-1089	EX3DV4 - SN7439	DAE4 Sn854	5.550	55.400	55.5	0.18	2.470	24.600	24.7	0.41	SAR01
2023/5/16	2600	100	D2600V2-1089	EX3DV4 - SN7439	DAE4 Sn854	5.130	55.400	51.3	-7.40	2.280	24.600	22.8	-7.32	SAR01
2023/5/17	2600	100	D2600V2-1089	EX3DV4 - SN7439	DAE4 Sn854	5.430	55.400	54.3	-1.99	2.420	24.600	24.2	-1.63	SAR01
2023/5/18	2600	100	D2600V2-1089	EX3DV4 - SN7439	DAE4 Sn854	5.510	55.400	55.1	-0.54	2.460	24.600	24.6	0.00	SAR01
2023/5/14	3500	50	D3500V2-1036	EX3DV4 - SN3925	DAE4 Sn853	3.470	67.400	69.4	2.97	1.350	25.100	27	7.57	SAR06
2023/5/29	3500	100	D3500V2-1036	EX3DV4 - SN3642	DAE4 Sn1694	6.830	67.400	68.3	1.34	2.640	25.100	26.4	5.18	SAR10
2023/5/30	3500	100	D3500V2-1036	EX3DV4 - SN3642	DAE4 Sn1694	7.020	67.400	70.2	4.15	2.710	25.100	27.1	7.97	SAR10
2023/5/31	3500	100	D3500V2-1036	EX3DV4 - SN3642	DAE4 Sn1694	7.070	67.400	70.7	4.90	2.730	25.100	27.3	8.76	SAR10
2023/6/1	3500	100	D3500V2-1036	EX3DV4 - SN3642	DAE4 Sn1694	7.090	67.400	70.9	5.19	2.740	25.100	27.4	9.16	SAR10
2023/5/14	3700	50	D3700V2-1022	EX3DV4 - SN3925	DAE4 Sn853	3.470	68.200	69.4	1.76	1.320	24.700	26.4	6.88	SAR06
2023/5/29	3700	100	D3700V2-1022	EX3DV4 - SN3642	DAE4 Sn1694	6.680	68.200	66.8	-2.05	2.510	24.700	25.1	1.62	SAR10
2023/5/30	3700	100	D3700V2-1022	EX3DV4 - SN3642	DAE4 Sn1694	6.780	68.200	67.8	-0.59	2.550	24.700	25.5	3.24	SAR10
2023/5/31	3700	100	D3700V2-1022	EX3DV4 - SN3642	DAE4 Sn1694	6.740	68.200	67.4	-1.17	2.540	24.700	25.4	2.83	SAR10
2023/6/1	3700	100	D3700V2-1022	EX3DV4 - SN3642	DAE4 Sn1694	6.660	68.200	66.6	-2.35	2.510	24.700	25.1	1.62	SAR10
2023/5/29	3900	100	D3900V2-1017-3900	EX3DV4 - SN3642	DAE4 Sn1694	6.930	68.700	69.3	0.87	2.550	23.900	25.5	6.69	SAR10
2023/5/30	3900	100	D3900V2-1017-3900	EX3DV4 - SN3642	DAE4 Sn1694	7.020	68.700	70.2	2.18	2.580	23.900	25.8	7.95	SAR10
2023/5/31	3900	100	D3900V2-1017-3900	EX3DV4 - SN3642	DAE4 Sn1694	7.140	68.700	71.4	3.93	2.610	23.900	26.1	9.21	SAR10
2023/6/1	3900	100	D3900V2-1017-3900	EX3DV4 - SN3642	DAE4 Sn1694	7.000	68.700	70	1.89	2.570	23.900	25.7	7.53	SAR10
2023/6/10	2450	50	D2450V2-736	EX3DV4 - SN7306	DAE4 Sn1694	2.530	54.200	50.6	-6.64	1.190	25.300	23.8	-5.93	SAR05
2023/6/11	5250	50	D5GHZV2-1171-5250	EX3DV4 - SN7306	DAE4 Sn1694	3.660	80.300	73.2	-8.84	1.070	23.000	21.4	-6.96	SAR05
2023/6/11	5600	50	D5GHZV2-1171-5600	EX3DV4 - SN7306	DAE4 Sn1694	4.130	83.400	82.6	-0.96	1.190	23.700	23.8	0.42	SAR05
2023/6/11	5750	50	D5GHZV2-1171-5750	EX3DV4 - SN7306	DAE4 Sn1694	3.650	80.400	73	-9.20	1.060	22.800	21.2	-7.02	SAR05
2023/6/11	5850	100	D5GHZV2-1171-5850	EX3DV4 - SN3642	DAE4 Sn1694	8.580	82.300	85.8	4.25	2.420	23.100	24.2	4.76	SAR10
2023/6/11	6500	100	D6.5GHZV2-1003	EX3DV4 - SN3642	DAE4 Sn1694	31.400	297.000	314	5.72	5.800	54.500	58	6.42	SAR10
2023/4/18	13	250	CLA13-1011	EX3DV4 - SN7306	DAE4 Sn1694	0.147	0.555	0.588	5.00	0.091	0.343	0.364	7.06	SAR05

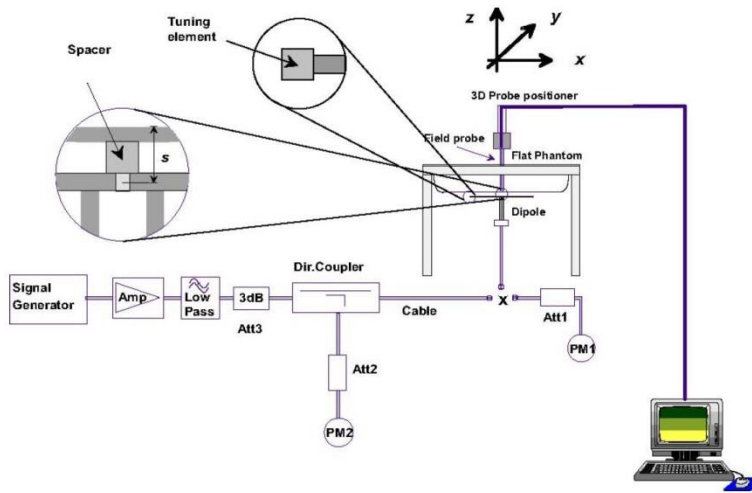


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

14. RF Exposure Positions

14.1 Ear and handset reference point

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

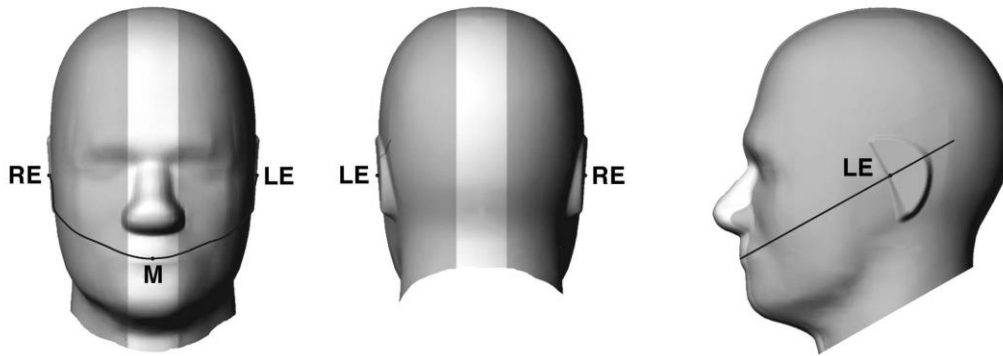


Fig 9.1.1 Front, back, and side views of SAM twin phantom

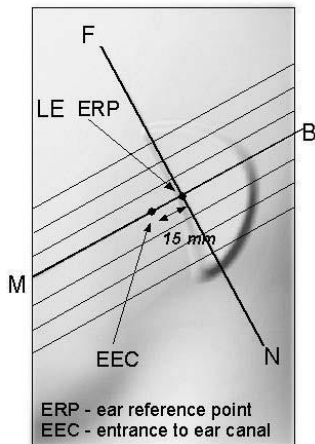


Fig 9.1.2 Close-up side view of phantom showing the ear region.

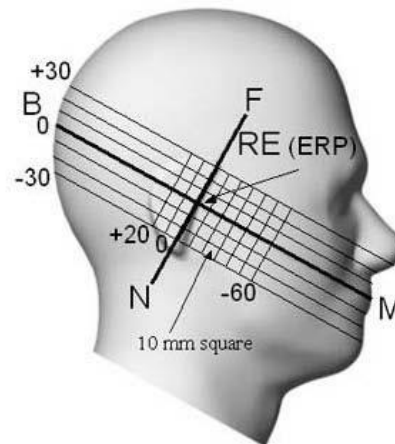


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

14.2 Definition of the cheek position

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

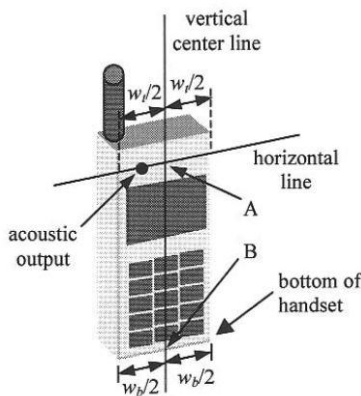


Fig 9.2.1 Handset vertical and horizontal reference lines—“fixed case”

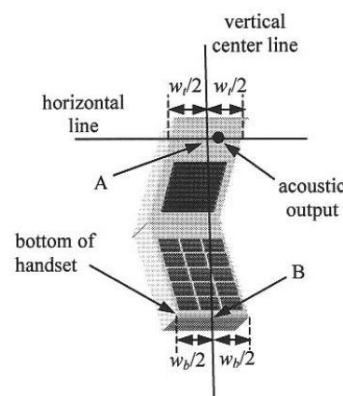


Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

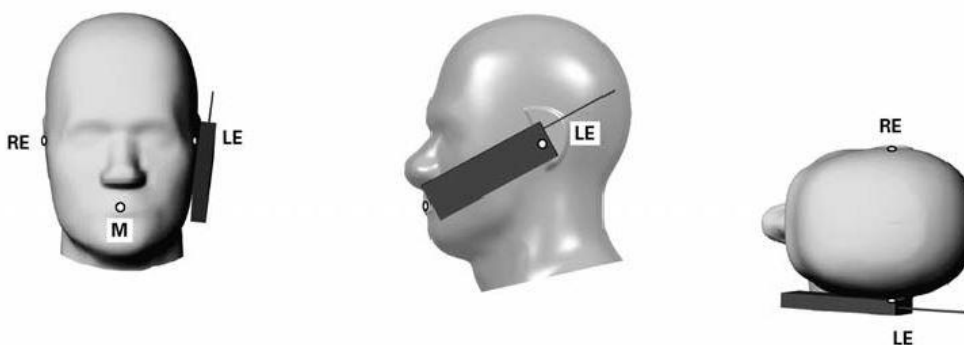


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

14.3 Definition of the tilt position

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

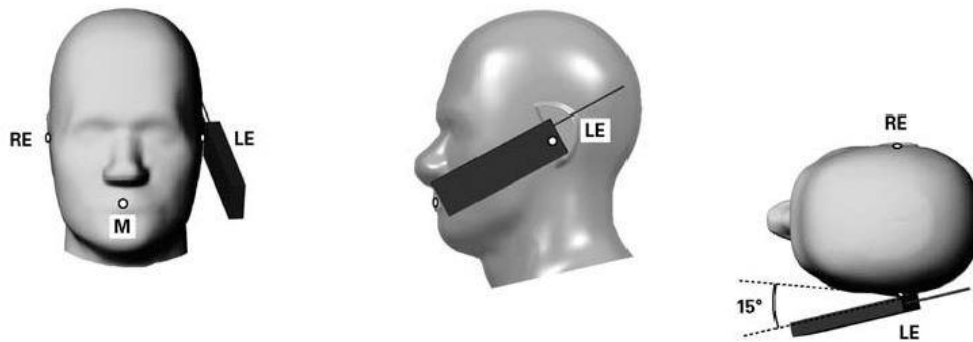


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

14.4 Body Worn Accessory

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

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

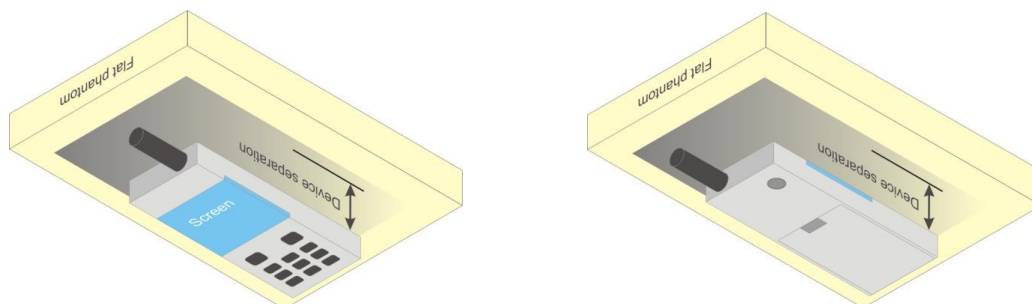


Fig 9.4 Body Worn Position



14.5 Product Specific Exposure

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

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

14.6 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.

15. LTE Output Power (Unit: dBm)

<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.

- 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- “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
- Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

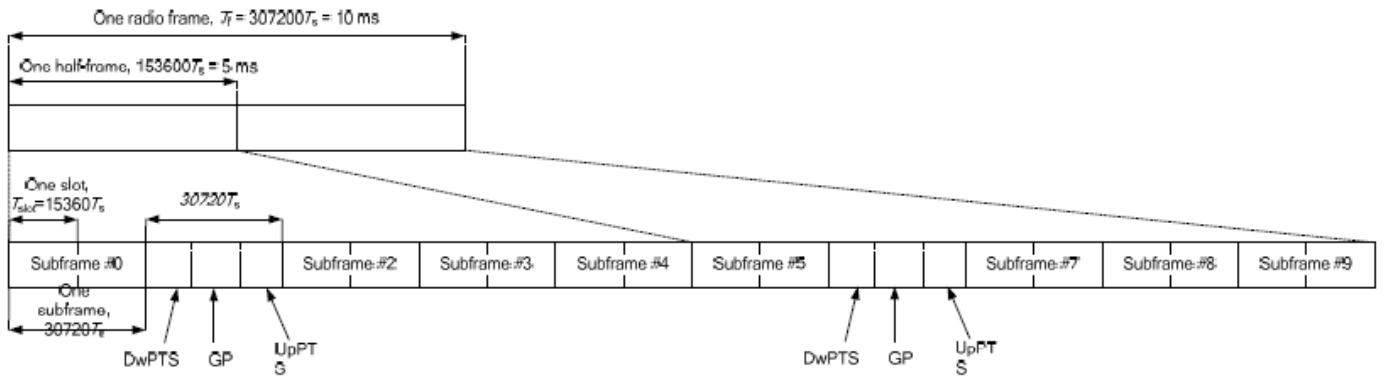


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

- i. 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.



<LTE Band 41_Ant 2_Index 2>									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	24.74	24.55	24.58	24.65	24.43	25.4
20	QPSK	1	49	24.60	24.40	24.36	24.41	24.31	
20	QPSK	1	99	24.73	24.38	24.32	24.36	24.39	
20	QPSK	50	0	23.74	23.34	23.50	23.47	23.51	24.4
20	QPSK	50	24	23.63	23.50	23.63	23.37	23.50	
20	QPSK	50	50	23.52	23.35	23.38	23.46	23.54	
20	QPSK	100	0	23.41	23.24	23.33	23.43	23.47	24.4
20	16QAM	1	0	24.04	24.01	23.98	24.02	24.08	
20	16QAM	1	49	24.08	23.88	24.00	24.10	24.20	
20	16QAM	1	99	24.03	23.86	23.98	24.09	24.11	23.4
20	16QAM	50	0	22.97	22.71	22.77	22.72	22.70	
20	16QAM	50	24	22.93	22.71	22.93	22.67	22.76	
20	16QAM	50	50	22.90	22.68	22.57	22.78	22.81	23.4
20	16QAM	100	0	22.65	22.51	22.62	22.59	22.78	
20	64QAM	1	0	23.06	22.98	23.04	23.05	23.02	
20	64QAM	1	49	23.07	22.95	22.91	22.98	23.03	23.4
20	64QAM	1	99	23.13	22.89	23.03	23.02	23.10	
20	64QAM	50	0	22.24	21.74	21.84	21.86	22.03	
20	64QAM	50	24	22.07	21.90	21.97	21.86	21.96	22.4
20	64QAM	50	50	22.01	21.86	21.88	21.94	22.08	
20	64QAM	100	0	21.88	21.69	21.87	21.88	21.99	
20	256QAM	1	0	19.75	19.74	19.63	19.73	19.77	20.4
20	256QAM	1	49	19.84	19.71	19.66	19.70	19.73	
20	256QAM	1	99	19.78	19.64	19.75	19.68	19.80	
20	256QAM	50	0	20.18	19.67	19.91	19.94	19.90	20.4
20	256QAM	50	24	20.02	19.85	20.06	19.81	19.81	
20	256QAM	50	50	19.90	19.83	19.74	19.94	19.93	
20	256QAM	100	0	19.88	19.70	19.75	19.94	19.92	
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	24.68	24.50	24.52	24.58	24.35	25.40
15	QPSK	1	37	24.57	24.35	24.30	24.28	24.27	
15	QPSK	1	74	24.68	24.36	24.26	24.22	24.23	
15	QPSK	36	0	23.59	23.34	23.40	23.39	23.37	24.4
15	QPSK	36	20	23.56	23.50	23.45	23.28	23.38	
15	QPSK	36	39	23.48	23.27	23.38	23.39	23.41	
15	QPSK	75	0	23.39	23.19	23.19	23.23	23.35	24.4
15	16QAM	1	0	23.94	23.85	23.92	24.01	23.96	
15	16QAM	1	37	24.07	23.84	23.84	23.93	24.06	
15	16QAM	1	74	24.00	23.80	23.90	24.05	24.02	23.4
15	16QAM	36	0	22.86	22.56	22.70	22.59	22.66	
15	16QAM	36	20	22.81	22.63	22.86	22.52	22.63	
15	16QAM	36	39	22.70	22.62	22.40	22.65	22.64	23.4
15	16QAM	75	0	22.62	22.47	22.46	22.52	22.75	
15	64QAM	1	0	22.87	22.83	22.95	22.91	22.98	
15	64QAM	1	37	22.93	22.95	22.71	22.87	23.00	23.4
15	64QAM	1	74	23.00	22.72	23.02	22.88	22.93	
15	64QAM	36	0	22.13	21.57	21.81	21.68	21.98	
15	64QAM	36	20	22.05	21.80	21.81	21.79	21.83	22.4



15	64QAM	36	39	21.98	21.66	21.72	21.78	22.01	
15	64QAM	75	0	21.79	21.56	21.69	21.75	21.95	
15	256QAM	1	0	19.63	19.55	19.60	19.72	19.57	20.4
15	256QAM	1	37	19.79	19.56	19.66	19.64	19.57	
15	256QAM	1	74	19.74	19.48	19.62	19.57	19.68	
15	256QAM	36	0	20.14	19.58	19.84	19.78	19.89	
15	256QAM	36	20	19.93	19.78	19.98	19.78	19.62	20.4
15	256QAM	36	39	19.78	19.66	19.54	19.90	19.90	
15	256QAM	75	0	19.76	19.69	19.63	19.85	19.82	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	24.63	24.45	24.34	24.55	24.19	25.40
10	QPSK	1	25	24.50	24.19	24.13	24.15	24.26	
10	QPSK	1	49	24.65	24.21	24.16	24.18	24.14	
10	QPSK	25	0	23.46	23.27	23.22	23.36	23.36	24.4
10	QPSK	25	12	23.49	23.31	23.42	23.13	23.27	
10	QPSK	25	25	23.43	23.07	23.18	23.34	23.41	
10	QPSK	50	0	23.29	23.15	22.99	23.12	23.16	
10	16QAM	1	0	23.85	23.70	23.76	23.85	23.93	24.4
10	16QAM	1	25	23.91	23.68	23.75	23.86	24.06	
10	16QAM	1	49	23.80	23.73	23.72	23.96	23.83	
10	16QAM	25	0	22.73	22.55	22.60	22.46	22.64	23.4
10	16QAM	25	12	22.72	22.44	22.81	22.41	22.62	
10	16QAM	25	25	22.70	22.57	22.29	22.51	22.49	
10	16QAM	50	0	22.49	22.45	22.30	22.41	22.70	
10	64QAM	1	0	22.69	22.64	22.79	22.74	22.90	23.4
10	64QAM	1	25	22.90	22.77	22.56	22.87	22.96	
10	64QAM	1	49	22.89	22.63	23.01	22.81	22.78	
10	64QAM	25	0	21.93	21.45	21.74	21.59	21.88	22.4
10	64QAM	25	12	22.02	21.62	21.78	21.71	21.78	
10	64QAM	25	25	21.86	21.55	21.59	21.65	21.90	
10	64QAM	50	0	21.78	21.53	21.67	21.72	21.85	
10	256QAM	1	0	19.56	19.39	19.56	19.54	19.44	20.4
10	256QAM	1	25	19.69	19.52	19.56	19.49	19.46	
10	256QAM	1	49	19.66	19.48	19.44	19.37	19.49	
10	256QAM	25	0	19.99	19.53	19.69	19.77	19.70	20.4
10	256QAM	25	12	19.82	19.58	19.84	19.61	19.46	
10	256QAM	25	25	19.66	19.57	19.52	19.90	19.87	
10	256QAM	50	0	19.64	19.61	19.57	19.72	19.70	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	24.52	24.32	24.24	24.41	23.99	25.40
5	QPSK	1	12	24.32	23.99	24.11	23.99	24.13	
5	QPSK	1	24	24.45	24.15	24.11	24.01	24.06	
5	QPSK	12	0	23.45	23.15	23.08	23.34	23.36	24.4
5	QPSK	12	7	23.46	23.24	23.31	22.98	23.13	
5	QPSK	12	13	23.26	22.93	23.12	23.34	23.32	
5	QPSK	25	0	23.28	23.14	22.80	23.05	23.04	
5	16QAM	1	0	23.76	23.83	23.80	23.94	23.85	24.4
5	16QAM	1	12	24.01	23.66	23.64	23.92	23.87	
5	16QAM	1	24	23.89	23.75	23.79	24.03	23.86	
5	16QAM	12	0	22.82	22.47	22.68	22.39	22.54	23.4
5	16QAM	12	7	22.79	22.45	22.78	22.44	22.49	
5	16QAM	12	13	22.50	22.59	22.25	22.48	22.46	
5	16QAM	25	0	22.55	22.43	22.31	22.48	22.60	
5	64QAM	1	0	22.81	22.74	22.87	22.80	22.80	23.4



5	64QAM	1	12	22.91	22.77	22.55	22.77	23.00	
5	64QAM	1	24	22.83	22.61	22.99	22.71	22.75	
5	64QAM	12	0	22.06	21.55	21.70	21.48	21.79	
5	64QAM	12	7	22.00	21.65	21.64	21.79	21.63	22.4
5	64QAM	12	13	21.78	21.48	21.52	21.75	21.97	
5	64QAM	25	0	21.64	21.56	21.58	21.55	21.94	
5	256QAM	1	0	19.57	19.35	19.51	19.60	19.41	20.4
5	256QAM	1	12	19.69	19.45	19.56	19.54	19.41	
5	256QAM	1	24	19.59	19.32	19.53	19.57	19.52	
5	256QAM	12	0	19.94	19.49	19.64	19.70	19.83	20.4
5	256QAM	12	7	19.73	19.58	19.86	19.73	19.58	
5	256QAM	12	13	19.60	19.55	19.34	19.89	19.71	
5	256QAM	25	0	19.66	19.63	19.57	19.71	19.82	

<LTE Band 41_Ant 0_Index 2>									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	23.92	23.49	23.63	23.66	23.94	25
20	QPSK	1	49	23.78	23.44	23.61	23.44	23.60	
20	QPSK	1	99	23.78	23.47	23.45	23.41	23.57	
20	QPSK	50	0	22.45	22.45	22.79	22.56	22.80	24
20	QPSK	50	24	22.71	22.41	22.53	22.60	22.73	
20	QPSK	50	50	22.78	22.44	22.44	22.48	22.68	
20	QPSK	100	0	22.61	22.35	22.34	22.33	22.55	24
20	16QAM	1	0	22.78	22.56	22.52	22.62	22.79	
20	16QAM	1	49	22.79	22.53	22.72	22.73	22.79	
20	16QAM	1	99	22.77	22.68	22.68	22.66	22.76	23
20	16QAM	50	0	21.79	21.79	22.09	21.89	22.30	
20	16QAM	50	24	22.03	21.82	21.96	21.98	22.13	
20	16QAM	50	50	22.25	21.94	21.91	21.83	22.02	23
20	16QAM	100	0	22.10	21.81	21.77	21.96	22.16	
20	64QAM	1	0	21.98	21.92	21.85	22.08	22.08	
20	64QAM	1	49	22.00	21.91	21.82	22.06	22.10	23
20	64QAM	1	99	22.03	21.86	21.97	22.07	22.09	
20	64QAM	50	0	20.91	20.81	21.25	21.09	21.24	
20	64QAM	50	24	21.24	20.80	21.02	21.12	21.14	22
20	64QAM	50	50	21.27	20.80	20.84	20.85	21.05	
20	64QAM	100	0	21.20	20.96	20.84	20.86	21.22	
20	256QAM	1	0	18.94	19.00	19.08	18.84	19.31	20
20	256QAM	1	49	19.02	18.88	19.00	18.92	19.04	
20	256QAM	1	99	19.20	19.01	18.80	18.69	18.99	
20	256QAM	50	0	19.14	19.21	19.43	19.17	19.51	20
20	256QAM	50	24	19.41	19.20	19.33	19.22	19.34	
20	256QAM	50	50	19.58	19.23	19.17	19.09	19.37	
20	256QAM	100	0	19.01	18.71	18.76	18.88	18.90	
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	23.84	23.29	23.55	23.66	23.85	25.00
15	QPSK	1	37	23.75	23.26	23.43	23.30	23.59	
15	QPSK	1	74	23.75	23.29	23.32	23.34	23.44	
15	QPSK	36	0	22.32	22.31	22.70	22.39	22.71	24
15	QPSK	36	20	22.58	22.40	22.37	22.46	22.66	
15	QPSK	36	39	22.71	22.29	22.44	22.44	22.64	



FCC SAR TEST REPORT

Report No. : FA2D0206-02C

15	QPSK	75	0	22.46	22.35	22.15	22.15	22.37	
15	16QAM	1	0	22.75	22.38	22.50	22.51	22.65	24
15	16QAM	1	37	22.75	22.49	22.70	22.70	22.78	
15	16QAM	1	74	22.77	22.55	22.68	22.51	22.75	
15	16QAM	36	0	21.72	21.65	21.96	21.72	22.15	23
15	16QAM	36	20	21.96	21.69	21.80	21.95	21.93	
15	16QAM	36	39	22.11	21.94	21.87	21.66	21.88	
15	16QAM	75	0	21.93	21.69	21.72	21.77	22.14	
15	64QAM	1	0	21.78	21.81	21.73	21.91	21.94	23
15	64QAM	1	37	21.93	21.89	21.69	22.01	21.96	
15	64QAM	1	74	21.97	21.72	21.92	21.94	21.98	
15	64QAM	36	0	20.74	20.67	21.19	20.91	21.18	22
15	64QAM	36	20	21.24	20.70	21.00	21.02	20.98	
15	64QAM	36	39	21.13	20.68	20.83	20.69	20.99	
15	64QAM	75	0	21.01	20.86	20.79	20.83	21.21	
15	256QAM	1	0	18.83	18.92	18.94	18.82	19.24	20
15	256QAM	1	37	19.00	18.70	18.91	18.72	18.98	
15	256QAM	1	74	19.08	19.00	18.68	18.51	18.94	
15	256QAM	36	0	19.00	19.04	19.25	19.02	19.49	20
15	256QAM	36	20	19.30	19.00	19.27	19.05	19.28	
15	256QAM	36	39	19.58	19.12	19.02	18.90	19.28	
15	256QAM	75	0	18.84	18.70	18.66	18.70	18.86	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	23.80	23.28	23.51	23.52	23.74	25.00
10	QPSK	1	25	23.69	23.21	23.27	23.26	23.59	
10	QPSK	1	49	23.67	23.22	23.25	23.22	23.31	
10	QPSK	25	0	22.19	22.24	22.54	22.35	22.55	24
10	QPSK	25	12	22.45	22.38	22.21	22.35	22.61	
10	QPSK	25	25	22.65	22.20	22.44	22.42	22.45	
10	QPSK	50	0	22.37	22.33	22.40	22.09	22.32	
10	16QAM	1	0	22.71	22.29	22.47	22.37	22.59	24
10	16QAM	1	25	22.74	22.45	22.58	22.61	22.68	
10	16QAM	1	49	22.72	22.45	22.66	22.32	22.63	
10	16QAM	25	0	21.70	21.63	21.87	21.52	22.07	23
10	16QAM	25	12	21.79	21.59	21.75	21.81	21.90	
10	16QAM	25	25	22.05	21.80	21.82	21.59	21.74	
10	16QAM	50	0	21.80	21.62	21.61	21.62	22.13	
10	64QAM	1	0	21.58	21.70	21.56	21.84	21.76	23
10	64QAM	1	25	21.92	21.69	21.49	21.84	21.76	
10	64QAM	1	49	21.95	21.72	21.85	21.74	21.78	
10	64QAM	25	0	20.72	20.47	21.18	20.89	20.98	22
10	64QAM	25	12	21.24	20.67	20.87	20.91	20.80	
10	64QAM	25	25	21.01	20.61	20.70	20.59	20.80	
10	64QAM	50	0	20.89	20.78	20.77	20.65	21.05	
10	256QAM	1	0	18.77	18.73	18.81	18.80	19.05	20
10	256QAM	1	25	18.96	18.52	18.72	18.66	18.93	
10	256QAM	1	49	18.95	18.85	18.61	18.37	18.74	
10	256QAM	25	0	18.99	18.96	19.14	18.90	19.38	20
10	256QAM	25	12	19.13	18.93	19.10	18.98	19.22	
10	256QAM	25	25	19.57	19.01	18.92	18.85	19.13	
10	256QAM	50	0	18.83	18.56	18.49	18.57	18.78	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	23.78	23.12	23.33	23.47	23.59	25.00
5	QPSK	1	12	23.55	23.05	23.22	23.08	23.52	



5	QPSK	1	24	23.54	23.20	23.22	23.03	23.20	
5	QPSK	12	0	22.16	22.07	22.53	22.30	22.36	24
5	QPSK	12	7	22.31	22.19	22.11	22.15	22.46	
5	QPSK	12	13	22.46	22.15	22.40	22.35	22.36	
5	QPSK	25	0	22.18	22.20	22.12	22.09	22.21	
5	16QAM	1	0	22.62	22.20	22.32	22.39	22.46	24
5	16QAM	1	12	22.68	22.43	22.65	22.59	22.73	
5	16QAM	1	24	22.57	22.42	22.59	22.34	22.55	
5	16QAM	12	0	21.68	21.64	21.80	21.65	22.13	23
5	16QAM	12	7	21.83	21.60	21.66	21.89	21.83	
5	16QAM	12	13	22.08	21.94	21.83	21.55	21.76	
5	16QAM	25	0	21.79	21.61	21.54	21.67	22.03	
5	64QAM	1	0	21.76	21.64	21.59	21.88	21.81	23
5	64QAM	1	12	21.77	21.82	21.64	21.91	21.83	
5	64QAM	1	24	21.80	21.71	21.74	21.78	21.78	
5	64QAM	12	0	20.59	20.66	21.01	20.88	21.10	22
5	64QAM	12	7	21.17	20.52	20.81	20.98	20.82	
5	64QAM	12	13	20.93	20.55	20.81	20.49	20.85	
5	64QAM	25	0	20.90	20.70	20.74	20.65	21.17	
5	256QAM	1	0	18.80	18.89	18.81	18.64	19.13	20
5	256QAM	1	12	18.90	18.50	18.72	18.60	18.94	
5	256QAM	1	24	19.02	18.99	18.61	18.45	18.94	
5	256QAM	12	0	18.80	18.97	19.18	18.96	19.34	20
5	256QAM	12	7	19.27	18.88	19.25	19.01	19.26	
5	256QAM	12	13	19.45	18.94	18.98	18.74	19.27	
5	256QAM	25	0	18.79	18.51	18.47	18.59	18.84	

<LTE Band 41_Ant 2_Index 3>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	24.74	24.55	24.58	24.65	24.43	25.4
20	QPSK	1	49	24.60	24.40	24.36	24.41	24.31	
20	QPSK	1	99	24.73	24.38	24.32	24.36	24.39	
20	QPSK	50	0	23.74	23.34	23.50	23.47	23.51	24.4
20	QPSK	50	24	23.63	23.50	23.63	23.37	23.50	
20	QPSK	50	50	23.52	23.35	23.38	23.46	23.54	
20	QPSK	100	0	23.41	23.24	23.33	23.43	23.47	
20	16QAM	1	0	24.04	24.01	23.98	24.02	24.08	24.4
20	16QAM	1	49	24.08	23.88	24.00	24.10	24.20	
20	16QAM	1	99	24.03	23.86	23.98	24.09	24.11	
20	16QAM	50	0	22.97	22.71	22.77	22.72	22.70	23.4
20	16QAM	50	24	22.93	22.71	22.93	22.67	22.76	
20	16QAM	50	50	22.90	22.68	22.57	22.78	22.81	
20	16QAM	100	0	22.65	22.51	22.62	22.59	22.78	
20	64QAM	1	0	23.06	22.98	23.04	23.05	23.02	23.4
20	64QAM	1	49	23.07	22.95	22.91	22.98	23.03	
20	64QAM	1	99	23.13	22.89	23.03	23.02	23.10	
20	64QAM	50	0	22.24	21.74	21.84	21.86	22.03	22.4
20	64QAM	50	24	22.07	21.90	21.97	21.86	21.96	
20	64QAM	50	50	22.01	21.86	21.88	21.94	22.08	
20	64QAM	100	0	21.88	21.69	21.87	21.88	21.99	
20	256QAM	1	0	19.75	19.74	19.63	19.73	19.77	20.4
20	256QAM	1	49	19.84	19.71	19.66	19.70	19.73	



20	256QAM	1	99	19.78	19.64	19.75	19.68	19.80	
20	256QAM	50	0	20.18	19.67	19.91	19.94	19.90	20.4
20	256QAM	50	24	20.02	19.85	20.06	19.81	19.81	
20	256QAM	50	50	19.90	19.83	19.74	19.94	19.93	
20	256QAM	100	0	19.88	19.70	19.75	19.94	19.92	
Channel				39725	40173	40620	41068	41515	
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	24.68	24.50	24.52	24.58	24.35	25.40
15	QPSK	1	37	24.57	24.35	24.30	24.28	24.27	
15	QPSK	1	74	24.68	24.36	24.26	24.22	24.23	
15	QPSK	36	0	23.59	23.34	23.40	23.39	23.37	24.4
15	QPSK	36	20	23.56	23.50	23.45	23.28	23.38	
15	QPSK	36	39	23.48	23.27	23.38	23.39	23.41	
15	QPSK	75	0	23.39	23.19	23.19	23.23	23.35	24.4
15	16QAM	1	0	23.94	23.85	23.92	24.01	23.96	
15	16QAM	1	37	24.07	23.84	23.84	23.93	24.06	
15	16QAM	1	74	24.00	23.80	23.90	24.05	24.02	23.4
15	16QAM	36	0	22.86	22.56	22.70	22.59	22.66	
15	16QAM	36	20	22.81	22.63	22.86	22.52	22.63	
15	16QAM	36	39	22.70	22.62	22.40	22.65	22.64	23.4
15	16QAM	75	0	22.62	22.47	22.46	22.52	22.75	
15	64QAM	1	0	22.87	22.83	22.95	22.91	22.98	
15	64QAM	1	37	22.93	22.95	22.71	22.87	23.00	23.4
15	64QAM	1	74	23.00	22.72	23.02	22.88	22.93	
15	64QAM	36	0	22.13	21.57	21.81	21.68	21.98	
15	64QAM	36	20	22.05	21.80	21.81	21.79	21.83	22.4
15	64QAM	36	39	21.98	21.66	21.72	21.78	22.01	
15	64QAM	75	0	21.79	21.56	21.69	21.75	21.95	
15	256QAM	1	0	19.63	19.55	19.60	19.72	19.57	20.4
15	256QAM	1	37	19.79	19.56	19.66	19.64	19.57	
15	256QAM	1	74	19.74	19.48	19.62	19.57	19.68	
15	256QAM	36	0	20.14	19.58	19.84	19.78	19.89	20.4
15	256QAM	36	20	19.93	19.78	19.98	19.78	19.62	
15	256QAM	36	39	19.78	19.66	19.54	19.90	19.90	
15	256QAM	75	0	19.76	19.69	19.63	19.85	19.82	Tune-up limit (dBm)
Channel				39700	40160	40620	41080	41540	
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	24.63	24.45	24.34	24.55	24.19	25.40
10	QPSK	1	25	24.50	24.19	24.13	24.15	24.26	
10	QPSK	1	49	24.65	24.21	24.16	24.18	24.14	
10	QPSK	25	0	23.46	23.27	23.22	23.36	23.36	24.4
10	QPSK	25	12	23.49	23.31	23.42	23.13	23.27	
10	QPSK	25	25	23.43	23.07	23.18	23.34	23.41	
10	QPSK	50	0	23.29	23.15	22.99	23.12	23.16	24.4
10	16QAM	1	0	23.85	23.70	23.76	23.85	23.93	
10	16QAM	1	25	23.91	23.68	23.75	23.86	24.06	
10	16QAM	1	49	23.80	23.73	23.72	23.96	23.83	23.4
10	16QAM	25	0	22.73	22.55	22.60	22.46	22.64	
10	16QAM	25	12	22.72	22.44	22.81	22.41	22.62	
10	16QAM	25	25	22.70	22.57	22.29	22.51	22.49	23.4
10	16QAM	50	0	22.49	22.45	22.30	22.41	22.70	
10	64QAM	1	0	22.69	22.64	22.79	22.74	22.90	
10	64QAM	1	25	22.90	22.77	22.56	22.87	22.96	23.4
10	64QAM	1	49	22.89	22.63	23.01	22.81	22.78	
10	64QAM	25	0	21.93	21.45	21.74	21.59	21.88	
10	64QAM	25	12	22.02	21.62	21.78	21.71	21.78	22.4



10	64QAM	25	25	21.86	21.55	21.59	21.65	21.90	
10	64QAM	50	0	21.78	21.53	21.67	21.72	21.85	
10	256QAM	1	0	19.56	19.39	19.56	19.54	19.44	20.4
10	256QAM	1	25	19.69	19.52	19.56	19.49	19.46	
10	256QAM	1	49	19.66	19.48	19.44	19.37	19.49	
10	256QAM	25	0	19.99	19.53	19.69	19.77	19.70	20.4
10	256QAM	25	12	19.82	19.58	19.84	19.61	19.46	
10	256QAM	25	25	19.66	19.57	19.52	19.90	19.87	
10	256QAM	50	0	19.64	19.61	19.57	19.72	19.70	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	24.52	24.32	24.24	24.41	23.99	25.40
5	QPSK	1	12	24.32	23.99	24.11	23.99	24.13	
5	QPSK	1	24	24.45	24.15	24.11	24.01	24.06	
5	QPSK	12	0	23.45	23.15	23.08	23.34	23.36	24.4
5	QPSK	12	7	23.46	23.24	23.31	22.98	23.13	
5	QPSK	12	13	23.26	22.93	23.12	23.34	23.32	
5	QPSK	25	0	23.28	23.14	22.80	23.05	23.04	24.4
5	16QAM	1	0	23.76	23.83	23.80	23.94	23.85	
5	16QAM	1	12	24.01	23.66	23.64	23.92	23.87	
5	16QAM	1	24	23.89	23.75	23.79	24.03	23.86	23.4
5	16QAM	12	0	22.82	22.47	22.68	22.39	22.54	
5	16QAM	12	7	22.79	22.45	22.78	22.44	22.49	
5	16QAM	12	13	22.50	22.59	22.25	22.48	22.46	23.4
5	16QAM	25	0	22.55	22.43	22.31	22.48	22.60	
5	64QAM	1	0	22.81	22.74	22.87	22.80	22.80	
5	64QAM	1	12	22.91	22.77	22.55	22.77	23.00	23.4
5	64QAM	1	24	22.83	22.61	22.99	22.71	22.75	
5	64QAM	12	0	22.06	21.55	21.70	21.48	21.79	
5	64QAM	12	7	22.00	21.65	21.64	21.79	21.63	22.4
5	64QAM	12	13	21.78	21.48	21.52	21.75	21.97	
5	64QAM	25	0	21.64	21.56	21.58	21.55	21.94	
5	256QAM	1	0	19.57	19.35	19.51	19.60	19.41	20.4
5	256QAM	1	12	19.69	19.45	19.56	19.54	19.41	
5	256QAM	1	24	19.59	19.32	19.53	19.57	19.52	
5	256QAM	12	0	19.94	19.49	19.64	19.70	19.83	20.4
5	256QAM	12	7	19.73	19.58	19.86	19.73	19.58	
5	256QAM	12	13	19.60	19.55	19.34	19.89	19.71	
5	256QAM	25	0	19.66	19.63	19.57	19.71	19.82	



<LTE Band 41_Ant 0_Index 3>									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	23.92	23.49	23.63	23.66	23.94	25
20	QPSK	1	49	23.78	23.44	23.61	23.44	23.60	
20	QPSK	1	99	23.78	23.47	23.45	23.41	23.57	
20	QPSK	50	0	22.45	22.45	22.79	22.56	22.80	24
20	QPSK	50	24	22.71	22.41	22.53	22.60	22.73	
20	QPSK	50	50	22.78	22.44	22.44	22.48	22.68	
20	QPSK	100	0	22.61	22.35	22.34	22.33	22.55	24
20	16QAM	1	0	22.78	22.56	22.52	22.62	22.79	
20	16QAM	1	49	22.79	22.53	22.72	22.73	22.79	
20	16QAM	1	99	22.77	22.68	22.68	22.66	22.76	23
20	16QAM	50	0	21.79	21.79	22.09	21.89	22.30	
20	16QAM	50	24	22.03	21.82	21.96	21.98	22.13	
20	16QAM	50	50	22.25	21.94	21.91	21.83	22.02	23
20	16QAM	100	0	22.10	21.81	21.77	21.96	22.16	
20	64QAM	1	0	21.98	21.92	21.85	22.08	22.08	
20	64QAM	1	49	22.00	21.91	21.82	22.06	22.10	23
20	64QAM	1	99	22.03	21.86	21.97	22.07	22.09	
20	64QAM	50	0	20.91	20.81	21.25	21.09	21.24	
20	64QAM	50	24	21.24	20.80	21.02	21.12	21.14	22
20	64QAM	50	50	21.27	20.80	20.84	20.85	21.05	
20	64QAM	100	0	21.20	20.96	20.84	20.86	21.22	
20	256QAM	1	0	18.94	19.00	19.08	18.84	19.31	20
20	256QAM	1	49	19.02	18.88	19.00	18.92	19.04	
20	256QAM	1	99	19.20	19.01	18.80	18.69	18.99	
20	256QAM	50	0	19.14	19.21	19.43	19.17	19.51	20
20	256QAM	50	24	19.41	19.20	19.33	19.22	19.34	
20	256QAM	50	50	19.58	19.23	19.17	19.09	19.37	
20	256QAM	100	0	19.01	18.71	18.76	18.88	18.90	
Channel				39725	40173	40620	41068	41515	
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	Tune-up limit (dBm)
15	QPSK	1	0	23.84	23.29	23.55	23.66	23.85	25.00
15	QPSK	1	37	23.75	23.26	23.43	23.30	23.59	
15	QPSK	1	74	23.75	23.29	23.32	23.34	23.44	
15	QPSK	36	0	22.32	22.31	22.70	22.39	22.71	24
15	QPSK	36	20	22.58	22.40	22.37	22.46	22.66	
15	QPSK	36	39	22.71	22.29	22.44	22.44	22.64	
15	QPSK	75	0	22.46	22.35	22.15	22.15	22.37	24
15	16QAM	1	0	22.75	22.38	22.50	22.51	22.65	
15	16QAM	1	37	22.75	22.49	22.70	22.70	22.78	
15	16QAM	1	74	22.77	22.55	22.68	22.51	22.75	23
15	16QAM	36	0	21.72	21.65	21.96	21.72	22.15	
15	16QAM	36	20	21.96	21.69	21.80	21.95	21.93	
15	16QAM	36	39	22.11	21.94	21.87	21.66	21.88	23
15	16QAM	75	0	21.93	21.69	21.72	21.77	22.14	
15	64QAM	1	0	21.78	21.81	21.73	21.91	21.94	
15	64QAM	1	37	21.93	21.89	21.69	22.01	21.96	23
15	64QAM	1	74	21.97	21.72	21.92	21.94	21.98	
15	64QAM	36	0	20.74	20.67	21.19	20.91	21.18	
15	64QAM	36	20	21.24	20.70	21.00	21.02	20.98	22
15	64QAM	36	39	21.13	20.68	20.83	20.69	20.99	



FCC SAR TEST REPORT

Report No. : FA2D0206-02C

15	64QAM	75	0	21.01	20.86	20.79	20.83	21.21	
15	256QAM	1	0	18.83	18.92	18.94	18.82	19.24	20
15	256QAM	1	37	19.00	18.70	18.91	18.72	18.98	
15	256QAM	1	74	19.08	19.00	18.68	18.51	18.94	
15	256QAM	36	0	19.00	19.04	19.25	19.02	19.49	20
15	256QAM	36	20	19.30	19.00	19.27	19.05	19.28	
15	256QAM	36	39	19.58	19.12	19.02	18.90	19.28	
15	256QAM	75	0	18.84	18.70	18.66	18.70	18.86	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	23.80	23.28	23.51	23.52	23.74	25.00
10	QPSK	1	25	23.69	23.21	23.27	23.26	23.59	
10	QPSK	1	49	23.67	23.22	23.25	23.22	23.31	
10	QPSK	25	0	22.19	22.24	22.54	22.35	22.55	24
10	QPSK	25	12	22.45	22.38	22.21	22.35	22.61	
10	QPSK	25	25	22.65	22.20	22.44	22.42	22.45	
10	QPSK	50	0	22.37	22.33	22.40	22.09	22.32	
10	16QAM	1	0	22.71	22.29	22.47	22.37	22.59	24
10	16QAM	1	25	22.74	22.45	22.58	22.61	22.68	
10	16QAM	1	49	22.72	22.45	22.66	22.32	22.63	
10	16QAM	25	0	21.70	21.63	21.87	21.52	22.07	23
10	16QAM	25	12	21.79	21.59	21.75	21.81	21.90	
10	16QAM	25	25	22.05	21.80	21.82	21.59	21.74	
10	16QAM	50	0	21.80	21.62	21.61	21.62	22.13	
10	64QAM	1	0	21.58	21.70	21.56	21.84	21.76	23
10	64QAM	1	25	21.92	21.69	21.49	21.84	21.76	
10	64QAM	1	49	21.95	21.72	21.85	21.74	21.78	
10	64QAM	25	0	20.72	20.47	21.18	20.89	20.98	22
10	64QAM	25	12	21.24	20.67	20.87	20.91	20.80	
10	64QAM	25	25	21.01	20.61	20.70	20.59	20.80	
10	64QAM	50	0	20.89	20.78	20.77	20.65	21.05	
10	256QAM	1	0	18.77	18.73	18.81	18.80	19.05	20
10	256QAM	1	25	18.96	18.52	18.72	18.66	18.93	
10	256QAM	1	49	18.95	18.85	18.61	18.37	18.74	
10	256QAM	25	0	18.99	18.96	19.14	18.90	19.38	20
10	256QAM	25	12	19.13	18.93	19.10	18.98	19.22	
10	256QAM	25	25	19.57	19.01	18.92	18.85	19.13	
10	256QAM	50	0	18.83	18.56	18.49	18.57	18.78	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	23.78	23.12	23.33	23.47	23.59	25.00
5	QPSK	1	12	23.55	23.05	23.22	23.08	23.52	
5	QPSK	1	24	23.54	23.20	23.22	23.03	23.20	
5	QPSK	12	0	22.16	22.07	22.53	22.30	22.36	24
5	QPSK	12	7	22.31	22.19	22.11	22.15	22.46	
5	QPSK	12	13	22.46	22.15	22.40	22.35	22.36	
5	QPSK	25	0	22.18	22.20	22.12	22.09	22.21	
5	16QAM	1	0	22.62	22.20	22.32	22.39	22.46	24
5	16QAM	1	12	22.68	22.43	22.65	22.59	22.73	
5	16QAM	1	24	22.57	22.42	22.59	22.34	22.55	
5	16QAM	12	0	21.68	21.64	21.80	21.65	22.13	23
5	16QAM	12	7	21.83	21.60	21.66	21.89	21.83	
5	16QAM	12	13	22.08	21.94	21.83	21.55	21.76	
5	16QAM	25	0	21.79	21.61	21.54	21.67	22.03	
5	64QAM	1	0	21.76	21.64	21.59	21.88	21.81	23
5	64QAM	1	12	21.77	21.82	21.64	21.91	21.83	



5	64QAM	1	24	21.80	21.71	21.74	21.78	21.78	22
5	64QAM	12	0	20.59	20.66	21.01	20.88	21.10	
5	64QAM	12	7	21.17	20.52	20.81	20.98	20.82	
5	64QAM	12	13	20.93	20.55	20.81	20.49	20.85	
5	64QAM	25	0	20.90	20.70	20.74	20.65	21.17	
5	256QAM	1	0	18.80	18.89	18.81	18.64	19.13	20
5	256QAM	1	12	18.90	18.50	18.72	18.60	18.94	
5	256QAM	1	24	19.02	18.99	18.61	18.45	18.94	
5	256QAM	12	0	18.80	18.97	19.18	18.96	19.34	20
5	256QAM	12	7	19.27	18.88	19.25	19.01	19.26	
5	256QAM	12	13	19.45	18.94	18.98	18.74	19.27	
5	256QAM	25	0	18.79	18.51	18.47	18.59	18.84	



16. Spot Check SAR Results

General Note:

- SAR spot check verification on the worst cases from the original model was performed to demonstrate the test data from original model remains representative for the variant model.
- If the 1-g SAR spot check result "does not exceed 30%, but larger than 1.2 W/kg", more spot check on the next-higher exposure position until the spot check result does not exceed 1.2 W/kg.
- The spot check results don't show the SAR increase more than 30%, therefore referring to the guidance in the KDB inquiry, SAR data reuse is justified.

1st as parent model
2nd as variant model

16.1 Head SAR

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Power Index	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation
	1st	GSM850_Ant 0	GPRS (4 Tx slots)	Left Cheek	0mm	Index 2/3	251	848.8	28.81	29.80	1.256			0.01	0.398	0.500	-25.20%
	2nd	GSM850_Ant 0	GPRS (4 Tx slots)	Left Cheek	0mm	Index 2/3	251	848.8	29.07	29.80	1.183			0.18	0.316	0.374	
	1st	GSM850_Ant 1	GPRS (4 Tx slots)	Right Cheek	0mm	Index 2	128	824.2	24.28	25.20	1.236			0.15	0.703	0.869	-2.07%
01	2nd	GSM850_Ant 1	GPRS (4 Tx slots)	Right Cheek	0mm	Index 2	128	824.2	24.46	25.20	1.186			0	0.718	0.851	
	1st	GSM1900_Ant 2	GPRS (4 Tx slots)	Right Cheek	0mm	Index 2/3	512	1850.2	26.74	28.00	1.337			0.13	0.419	0.560	0.00%
02	2nd	GSM1900_Ant 2	GPRS (4 Tx slots)	Right Cheek	0mm	Index 2/3	512	1850.2	26.94	28.00	1.276			0.01	0.439	0.560	
	1st	GSM1900_Ant 0	GPRS (4 Tx slots)	Right Cheek	0mm	Index 2/3	661	1880	26.10	27.20	1.288			0	0.048	0.062	-4.84%
	2nd	GSM1900_Ant 0	GPRS (4 Tx slots)	Right Cheek	0mm	Index 2/3	661	1880	26.12	27.20	1.282			0.14	0.046	0.059	
	1st	WCDMA_II_Ant 2	RMC 12.2Kbps	Right Cheek	0mm	Index 2/3	9538	1907.6	24.91	25.40	1.119			0	0.671	0.751	0.00%
03	2nd	WCDMA_II_Ant 2	RMC 12.2Kbps	Right Cheek	0mm	Index 2/3	9538	1907.6	25.03	25.40	1.089			0.03	0.690	0.751	
	1st	WCDMA_II_Ant 0	RMC 12.2Kbps	Right Cheek	0mm	Index 2/3	9400	1880	24.47	25.20	1.183			-0.12	0.069	0.082	-3.66%
	2nd	WCDMA_II_Ant 0	RMC 12.2Kbps	Right Cheek	0mm	Index 2/3	9400	1880	24.24	25.20	1.247			-0.01	0.063	0.079	
	1st	WCDMA_IV_Ant 2	RMC 12.2Kbps	Right Cheek	0mm	Index 2/3	1513	1752.6	24.88	25.40	1.127			0.01	0.413	0.466	-2.36%
04	2nd	WCDMA_IV_Ant 2	RMC 12.2Kbps	Right Cheek	0mm	Index 2/3	1513	1752.6	24.94	25.40	1.112			0.01	0.409	0.455	
	1st	WCDMA_IV_Ant 0	RMC 12.2Kbps	Right Cheek	0mm	Index 2/3	1413	1732.6	24.62	25.20	1.143			0.01	0.104	0.119	-0.84%
	2nd	WCDMA_IV_Ant 0	RMC 12.2Kbps	Right Cheek	0mm	Index 2/3	1413	1732.6	24.69	25.20	1.125			-0.02	0.105	0.118	
	1st	WCDMA_V_Ant 0	RMC 12.2Kbps	Left Cheek	0mm	Index 2/3	4182	836.4	25.02	25.40	1.091			-0.12	0.294	0.321	-1.87%
	2nd	WCDMA_V_Ant 0	RMC 12.2Kbps	Left Cheek	0mm	Index 2/3	4182	836.4	25.11	25.40	1.069			0.07	0.295	0.315	
	1st	WCDMA_V_Ant 1	RMC 12.2Kbps	Right Cheek	0mm	Index 2	4182	836.4	21.02	22.70	1.472			0.01	0.635	0.935	-17.22%
05	2nd	WCDMA_V_Ant 1	RMC 12.2Kbps	Right Cheek	0mm	Index 2	4182	836.4	20.73	22.70	1.574			0	0.492	0.774	
	1st	LTE_Band_2_Ant 1	20M_QPSK_1_0	Right Tilted	0mm	Index 2	18900	1880	15.80	17.00	1.318			-0.06	0.749	0.987	-21.88%
06	2nd	LTE_Band_2_Ant 1	20M_QPSK_1_0	Right Tilted	0mm	Index 2	18900	1880	15.86	17.00	1.300			0.01	0.593	0.771	
	1st	LTE_Band_2_Ant 5	20M_QPSK_1_0	Left Cheek	0mm	Index 2	19100	1900	18.08	19.60	1.419			-0.05	0.459	0.651	-10.91%
	2nd	LTE_Band_2_Ant 5	20M_QPSK_1_0	Left Cheek	0mm	Index 2	19100	1900	17.95	19.60	1.462			-0.03	0.397	0.580	
	1st	LTE_Band_7_Ant 2	20M_QPSK_1_0	Right Cheek	0mm	Index 2/3	21100	2535	24.91	25.40	1.119			-0.01	0.679	0.760	-1.32%
07	2nd	LTE_Band_7_Ant 2	20M_QPSK_1_0	Right Cheek	0mm	Index 2/3	21100	2535	24.82	25.40	1.143			-0.07	0.656	0.750	
	1st	LTE_Band_7_Ant 0	20M_QPSK_1_0	Left Cheek	0mm	Index 2/3	21100	2535	23.93	25.00	1.279			0.02	0.210	0.269	-1.86%
	2nd	LTE_Band_7_Ant 0	20M_QPSK_1_0	Left Cheek	0mm	Index 2/3	21100	2535	23.73	25.00	1.340			0.02	0.197	0.264	
	1st	LTE_Band_12_Ant 0	10M_QPSK_1_0	Left Cheek	0mm	Index 2/3	23095	707.5	24.93	25.40	1.114			0.02	0.221	0.246	-4.07%
	2nd	LTE_Band_12_Ant 0	10M_QPSK_1_0	Left Cheek	0mm	Index 2/3	23095	707.5	25.15	25.40	1.059			-0.08	0.223	0.236	
	1st	LTE_Band_12_Ant 1	10M_QPSK_1_0	Right Cheek	0mm	Index 2	23095	707.5	21.81	23.20	1.377			-0.03	0.722	0.994	-3.42%
08	2nd	LTE_Band_12_Ant 1	10M_QPSK_1_0	Right Cheek	0mm	Index 2	23095	707.5	21.65	23.20	1.429			0.03	0.672	0.960	
	1st	LTE_Band_13_Ant 0	10M_QPSK_1_0	Left Cheek	0mm	Index 2/3	23230	782	24.76	25.40	1.159			-0.05	0.243	0.282	-24.47%
	2nd	LTE_Band_13_Ant 0	10M_QPSK_1_0	Left Cheek	0mm	Index 2/3	23230	782	25.14	25.40	1.062			-0.04	0.201	0.213	
	1st	LTE_Band_13_Ant 1	10M_QPSK_1_0	Right Cheek	0mm	Index 2	23230	782	23.16	24.20	1.271			-0.05	0.638	0.811	-2.84%
09	2nd	LTE_Band_13_Ant 1	10M_QPSK_1_0	Right Cheek	0mm	Index 2	23230	782	23.48	24.20	1.180			0	0.668	0.788	
	1st	LTE_Band_14_Ant 0	10M_QPSK_1_0	Left Cheek	0mm	Index 2/3	23330	793	24.77	25.40	1.156			-0.01	0.248	0.287	-20.91%
	2nd	LTE_Band_14_Ant 0	10M_QPSK_1_0	Left Cheek	0mm	Index 2/3	23330	793	25.09	25.40	1.074			0.12	0.211	0.227	
	1st	LTE_Band_14_Ant 1	10M_QPSK_1_0	Right Cheek	0mm	Index 2	23330	793	22.12	23.30	1.312			0.03	0.647	0.849	-2.71%
10	2nd	LTE_Band_14_Ant 1	10M_QPSK_1_0	Right Cheek	0mm	Index 2	23330	793	22.35	23.30	1.245			0.03	0.664	0.826	



FCC SAR TEST REPORT

Report No. : FA2D0206-02C

Table with 17 columns: Row ID, Port, Antenna, Modulation, Position, Distance, Index, Power, SAR, SAR, SAR, SAR, SAR, SAR, SAR, SAR, SAR. Contains test results for various antenna configurations and modulation schemes.



FCC SAR TEST REPORT

Report No. : FA2D0206-02C

	1st	FR1 n41_Ant 2	100M_QPSK_1_0	Right Cheek	0mm	Index 3	518598	2592.99	23.85	23.90	1.012			0.05	0.552	0.558	
	2nd	FR1 n41_Ant 2	100M_QPSK_1_0	Right Cheek	0mm	Index 3	518598	2592.99	23.71	23.90	1.045			0.07	0.513	0.536	-3.94%
	1st	FR1 n41_Ant 0	100M_QPSK_1_0	Left Cheek	0mm	Index 3	518598	2592.99	22.61	23.50	1.227			-0.14	0.241	0.296	
	2nd	FR1 n41_Ant 0	100M_QPSK_1_0	Left Cheek	0mm	Index 3	518598	2592.99	22.65	23.50	1.216			-0.18	0.143	0.174	-41.22%
	1st	FR1 n41_Ant 1	100M_QPSK_1_0	Right Tilted	0mm	Index 2	518598	2592.99	16.58	17.70	1.294			-0.02	0.693	0.897	
24	2nd	FR1 n41_Ant 1	100M_QPSK_1_0	Right Tilted	0mm	Index 2	518598	2592.99	16.63	17.70	1.279			0.01	0.679	0.869	-3.12%
	1st	FR1 n41_Ant 5	100M_QPSK_1_0	Left Cheek	0mm	Index 2	518598	2592.99	19.96	21.10	1.300			0.08	0.526	0.684	
	2nd	FR1 n41_Ant 5	100M_QPSK_1_0	Left Cheek	0mm	Index 2	518598	2592.99	20.26	21.10	1.213			-0.06	0.430	0.522	-23.68%
	1st	FR1 n66_Ant 2	40M_QPSK_1_0	Right Cheek	0mm	Index 3	349000	1745	24.79	25.40	1.151			0	0.430	0.495	
	2nd	FR1 n66_Ant 2	40M_QPSK_1_0	Right Cheek	0mm	Index 3	349000	1745	24.75	25.40	1.161			-0.1	0.389	0.452	-8.69%
	1st	FR1 n66_Ant 0	40M_QPSK_1_0	Right Cheek	0mm	Index 3	349000	1745	23.66	25.20	1.426			0.13	0.110	0.157	
	2nd	FR1 n66_Ant 0	40M_QPSK_1_0	Right Cheek	0mm	Index 3	349000	1745	23.73	25.20	1.403			-0.13	0.103	0.144	-8.28%
	1st	FR1 n66_Ant 1	40M_QPSK_1_0	Right Tilted	0mm	Index 2	349000	1745	16.98	18.40	1.387			-0.12	0.710	0.985	
25	2nd	FR1 n66_Ant 1	40M_QPSK_1_0	Right Tilted	0mm	Index 2	349000	1745	16.99	18.40	1.384			-0.05	0.695	0.962	-2.34%
	1st	FR1 n66_Ant 5	40M_QPSK_1_0	Left Cheek	0mm	Index 2	349000	1745	18.38	19.70	1.355			-0.07	0.506	0.686	
	2nd	FR1 n66_Ant 5	40M_QPSK_1_0	Left Cheek	0mm	Index 2	349000	1745	18.37	19.70	1.358			-0.14	0.479	0.651	-5.10%
	1st	FR1 n71_Ant 0	20M_QPSK_1_0	Left Cheek	0mm	Index 3	136100	680.5	24.58	25.40	1.208			-0.12	0.224	0.271	
	2nd	FR1 n71_Ant 0	20M_QPSK_1_0	Left Cheek	0mm	Index 3	136100	680.5	24.56	25.40	1.213			-0.05	0.198	0.240	-11.44%
	1st	FR1 n71_Ant 1	20M_QPSK_1_0	Right Cheek	0mm	Index 2	136100	680.5	24.50	25.20	1.175			-0.11	0.829	0.974	
26	2nd	FR1 n71_Ant 1	20M_QPSK_1_0	Right Cheek	0mm	Index 2	136100	680.5	24.46	25.20	1.186			-0.15	0.813	0.964	-1.03%
	1st	FR1 n77_Ant 6	100M_QPSK_1_0	Left Cheek	0mm	Index 3	656000	3840	23.99	24.6	1.151			-0.02	0.257	0.296	
	2nd	FR1 n77_Ant 6	100M_QPSK_1_0	Left Cheek	0mm	Index 3	656000	3840	24.02	24.60	1.143			-0.12	0.209	0.239	-19.26%
	1st	FR1 n77_Ant 6	100M_QPSK_1_0	Left Cheek	0mm	Index 3	633332	3499.98	24.05	24.6	1.135			0.13	0.158	0.179	
	2nd	FR1 n77_Ant 6	100M_QPSK_1_0	Left Cheek	0mm	Index 3	633332	3499.98	24.12	24.60	1.117			-0.02	0.124	0.138	-22.91%
	1st	FR1 n77_Ant 7	100M_QPSK_1_0	Right Cheek	0mm	Index 3	656000	3840	22.68	24	1.355			0	0.181	0.245	
	2nd	FR1 n77_Ant 7	100M_QPSK_1_0	Right Cheek	0mm	Index 3	656000	3840	22.63	24.00	1.371			0.11	0.145	0.199	-18.78%
	1st	FR1 n77_Ant 7	100M_QPSK_1_0	Right Cheek	0mm	Index 3	633332	3499.98	23.05	24	1.245			-0.04	0.200	0.249	
	2nd	FR1 n77_Ant 7	100M_QPSK_1_0	Right Cheek	0mm	Index 3	633332	3499.98	23.12	24.00	1.225			0.11	0.137	0.168	-32.53%
	1st	FR1 n77_Ant 1	100M_QPSK_1_0	Right Cheek	0mm	Index 2	656000	3840	16.6	17.6	1.259			0	0.748	0.942	
27	2nd	FR1 n77_Ant 1	100M_QPSK_1_0	Right Cheek	0mm	Index 2	656000	3840	16.58	17.60	1.265			0.01	0.728	0.921	-2.23%
	1st	FR1 n77_Ant 1	100M_QPSK_1_0	Right Cheek	0mm	Index 2	633332	3499.98	16.51	17.6	1.285			0	0.582	0.748	
	2nd	FR1 n77_Ant 1	100M_QPSK_1_0	Right Cheek	0mm	Index 2	633332	3499.98	16.45	17.60	1.303			0.18	0.555	0.723	-3.34%
	1st	FR1 n77_Ant 5	100M_QPSK_1_0	Left Cheek	0mm	Index 2	656000	3840	19.98	20.90	1.236			0.14	0.557	0.688	
	2nd	FR1 n77_Ant 5	100M_QPSK_1_0	Left Cheek	0mm	Index 2	656000	3840	20.08	20.90	1.208			-0.06	0.507	0.612	-11.05%
	1st	FR1 n77_Ant 5	100M_QPSK_1_0	Left Cheek	0mm	Index 2	633332	3499.98	20.16	20.90	1.186			0.03	0.172	0.204	
	2nd	FR1 n77_Ant 5	100M_QPSK_1_0	Left Cheek	0mm	Index 2	633332	3499.98	20.12	20.90	1.197			0.07	0.121	0.145	-28.92%



Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Index	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Measured APD (W/m ²)	Reported APD (W/m ²)	Deviation
	1st	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 4	Index 1	11	2462	15.40	16.00	1.148	98.90	1.011	-0.01	0.963	1.118			
28	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 4	Index 1	11	2462	15.60	16.00	1.096	98.90	1.011	0.04	0.956	1.060			-5.19%
	1st	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 3	Index 1	11	2462	19.80	20.00	1.047	98.90	1.011	-0.02	0.930	0.985			
	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 3	Index 1	11	2462	20.00	20.00	1.000	98.90	1.011	0.02	0.899	0.909			-7.72%
	1st	WLAN2.4GHz	802.11g 6Mbps	Left Tilted	0mm	Ant 4+3(4)	Index 1	11	2462	15.60	16.00	1.096	93.46	1.070	0	0.880	1.032			
		WLAN2.4GHz	802.11g 6Mbps	Left Tilted	0mm	Ant 4+3(3)	Index 1	11	2462	15.00	16.00	1.259	93.46	1.070	0	0.001	0.001			
	2nd	WLAN2.4GHz	802.11g 6Mbps	Left Tilted	0mm	Ant 4+3(4)	Index 1	11	2462	15.70	16.00	1.072	93.46	1.070	-0.08	0.879	1.008			-2.33%
		WLAN2.4GHz	802.11g 6Mbps	Left Tilted	0mm	Ant 4+3(3)	Index 1	11	2462	15.30	16.00	1.175	93.46	1.070	0	0.001	0.001			
	1st	WLAN5/6GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	54	5270	17.80	19.00	1.318	96.15	1.040	-0.01	0.607	0.832			
		WLAN5/6GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	54	5270	17.30	19.00	1.479	96.15	1.040	0.01	0.451	0.694			
29	2nd	WLAN5/6GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	54	5270	17.70	19.00	1.349	96.15	1.040	-0.01	0.395	0.554			
		WLAN5/6GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	54	5270	18.00	19.00	1.259	96.15	1.040	-0.14	0.640	0.838			
	1st	WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	122	5610	17.30	18.00	1.175	85.54	1.169	0.04	0.304	0.418			
		WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	122	5610	16.80	18.00	1.318	85.54	1.169	-0.04	0.584	0.900			
30	2nd	WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	122	5610	16.70	18.00	1.349	85.54	1.169	0.03	0.454	0.716			
		WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	122	5610	16.90	18.00	1.288	85.54	1.169	0.12	0.615	0.926			2.89%
	1st	WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	155	5775	17.00	19.00	1.585	85.54	1.169	-0.16	0.438	0.812			
		WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	155	5775	17.20	19.00	1.514	85.54	1.169	-0.03	0.595	1.053			
31	2nd	WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	155	5775	17.00	19.00	1.585	85.54	1.169	-0.01	0.329	0.610			
		WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	155	5775	17.10	19.00	1.549	85.54	1.169	0	0.519	0.940			-10.73%
	1st	WLAN5/6GHz	802.11ac-VHT160 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	163	5815	15.80	17.50	1.479	87.95	1.137	0.11	0.412	0.693			
		WLAN5/6GHz	802.11ac-VHT160 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	163	5815	16.40	17.50	1.288	87.95	1.137	0.12	0.543	0.795			
32	2nd	WLAN5/6GHz	802.11ac-VHT160 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	163	5815	16.40	17.50	1.288	87.95	1.137	0.02	0.544	0.797			
		WLAN5/6GHz	802.11ac-VHT160 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	163	5815	16.40	17.50	1.288	87.95	1.137	0.02	0.487	0.713			0.25%
	1st	WLAN5/6GHz	802.11ax-HE160 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	143	6665	15.50	16.00	1.122	86.11	1.161	0	0.226	0.294	1.390	1.811	
		WLAN5/6GHz	802.11ax-HE160 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	143	6665	15.50	16.00	1.122	86.11	1.161	0.13	0.187	0.244	1.280	1.667	
33	2nd	WLAN5/6GHz	802.11ax-HE160 MCS0	Left Cheek	0mm	Ant 4+3(4)	Index 1	143	6665	15.10	16.00	1.230	86.11	1.161	-0.09	0.197	0.281	1.150	1.643	
		WLAN5/6GHz	802.11ax-HE160 MCS0	Left Cheek	0mm	Ant 4+3(3)	Index 1	143	6665	16.00	16.00	1.000	86.11	1.161	0.12	0.157	0.182	1.120	1.300	
	1st	Bluetooth	1Mbps	Left Tilted	0mm	Ant 4	Index 1	39	2441	8.70	9.00	1.072	76.86	1.084	0.1	0.165	0.192			
	2nd	Bluetooth	1Mbps	Left Tilted	0mm	Ant 4	Index 1	39	2441	8.50	9.00	1.122	76.86	1.084	-0.02	0.113	0.137			
	1st	Bluetooth	1Mbps	Left Cheek	0mm	Ant 3	Index 1	78	2480	8.60	9.00	1.096	77.07	1.081	0	0.121	0.143			
	2nd	Bluetooth	1Mbps	Left Cheek	0mm	Ant 3	Index 1	78	2480	8.40	9.00	1.148	77.07	1.081	-0.11	0.103	0.128			
	1st	Bluetooth	1Mbps	Left Tilted	0mm	Ant 4+3(4)	Index 1	39	2441	8.90	9.00	1.023	77.07	1.081	-0.11	0.188	0.208			
		Bluetooth	1Mbps	Left Tilted	0mm	Ant 4+3(3)	Index 1	39	2441	8.30	9.00	1.175	77.07	1.081	-0.03	0.005	0.006			
34	2nd	Bluetooth	1Mbps	Left Tilted	0mm	Ant 4+3(4)	Index 1	39	2441	8.60	9.00	1.096	77.07	1.081	0.03	0.175	0.207			
		Bluetooth	1Mbps	Left Tilted	0mm	Ant 4+3(3)	Index 1	39	2441	8.20	9.00	1.202	77.07	1.081	0.04	0.008	0.010			



16.2 Hotspot SAR

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation
	1st	GSM850_Ant 0	GPRS (4 Tx slots)	Bottom Side	10mm	Index 4	128	824.2	28.81	28.90	1.021			-0.01	0.831	0.848	
35	2nd	GSM850_Ant 0	GPRS (4 Tx slots)	Bottom Side	10mm	Index 4	128	824.2	29.07	28.90	0.962			-0.08	0.745	0.716	-15.57%
	1st	GSM850_Ant 1	GPRS (4 Tx slots)	Back	10mm	Index 4	189	836.4	28.25	28.90	1.161			0.11	0.725	0.842	-43.35%
	2nd	GSM850_Ant 1	GPRS (4 Tx slots)	Back	10mm	Index 4	189	836.4	28.61	28.90	1.069			-0.08	0.446	0.477	
	1st	GSM1900_Ant 2	GPRS (4 Tx slots)	Right Side	10mm	Index 4	661	1880	22.35	23.50	1.303			-0.04	0.293	0.382	-7.59%
	2nd	GSM1900_Ant 2	GPRS (4 Tx slots)	Right Side	10mm	Index 4	661	1880	22.59	23.50	1.233			-0.04	0.286	0.353	
	1st	GSM1900_Ant 0	GPRS (4 Tx slots)	Bottom Side	10mm	Index 4	512	1850.2	22.15	22.50	1.084			0.03	0.753	0.816	-6.37%
36	2nd	GSM1900_Ant 0	GPRS (4 Tx slots)	Bottom Side	10mm	Index 4	512	1850.2	22.59	22.50	0.979			0.03	0.780	0.764	
	1st	WCDMA II_Ant 2	RMC 12.2Kbps	Right Side	10mm	Index 4	9538	1907.6	20.70	20.70	1.000			-0.02	0.460	0.460	-14.35%
	2nd	WCDMA II_Ant 2	RMC 12.2Kbps	Right Side	10mm	Index 4	9538	1907.6	20.63	20.70	1.016			0.07	0.388	0.394	
	1st	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom Side	10mm	Index 4	9538	1907.6	18.31	18.70	1.094			-0.11	0.764	0.836	-2.63%
37	2nd	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom Side	10mm	Index 4	9538	1907.6	18.21	18.70	1.119			-0.14	0.727	0.814	
	1st	WCDMA IV_Ant 2	RMC 12.2Kbps	Back	10mm	Index 4	1413	1732.6	20.20	20.70	1.122			0.01	0.284	0.319	-10.03%
	2nd	WCDMA IV_Ant 2	RMC 12.2Kbps	Back	10mm	Index 4	1413	1732.6	20.26	20.70	1.107			-0.1	0.259	0.287	
	1st	WCDMA IV_Ant 0	RMC 12.2Kbps	Bottom Side	10mm	Index 4	1413	1732.6	18.83	19.00	1.040			-0.06	0.715	0.744	-3.63%
38	2nd	WCDMA IV_Ant 0	RMC 12.2Kbps	Bottom Side	10mm	Index 4	1413	1732.600	18.92	19.00	1.019			-0.01	0.704	0.717	
	1st	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom Side	10mm	Index 4	4233	846.6	24.88	25.40	1.127			0.07	0.638	0.719	-5.29%
39	2nd	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom Side	10mm	Index 4	4233	846.6	25.27	25.40	1.030			0	0.661	0.681	
	1st	WCDMA V_Ant 1	RMC 12.2Kbps	Back	10mm	Index 4	4132	826.4	24.69	25.50	1.205			-0.02	0.561	0.676	-3.11%
	2nd	WCDMA V_Ant 1	RMC 12.2Kbps	Back	10mm	Index 4	4132	826.4	24.53	25.50	1.250			-0.16	0.524	0.655	
	1st	LTE Band 2_Ant 1	20M_QPSK_1_0	Top Side	10mm	Index 4	18900	1880	20.39	20.80	1.099			-0.01	0.699	0.768	-1.17%
40	2nd	LTE Band 2_Ant 1	20M_QPSK_1_0	Top Side	10mm	Index 4	18900	1880	20.41	20.80	1.094			0.01	0.694	0.759	
	1st	LTE Band 2_Ant 5	20M_QPSK_1_0	Right Side	10mm	Index 4	18700	1860	21.52	21.70	1.042			-0.02	0.619	0.645	-11.78%
	2nd	LTE Band 2_Ant 5	20M_QPSK_1_0	Right Side	10mm	Index 4	18700	1860	21.73	21.70	0.993			0.01	0.573	0.569	
	1st	LTE Band 7_Ant 2	20M_QPSK_1_0	Right Side	10mm	Index 4	21350	2560	21.33	21.50	1.040			-0.02	0.582	0.605	-2.64%
	2nd	LTE Band 7_Ant 2	20M_QPSK_1_0	Right Side	10mm	Index 4	21350	2560	21.21	21.50	1.069			-0.04	0.551	0.589	
	1st	LTE Band 7_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	20850	2510	17.62	17.70	1.019			0.04	0.761	0.775	-14.19%
41	2nd	LTE Band 7_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	20850	2510	17.60	17.70	1.023			-0.08	0.650	0.665	
	1st	LTE Band 12_Ant 0	10M_QPSK_1_0	Left Side	10mm	Index 4	23095	707.5	24.93	25.40	1.114			-0.06	0.428	0.477	-2.31%
42	2nd	LTE Band 12_Ant 0	10M_QPSK_1_0	Left Side	10mm	Index 4	23095	707.5	24.92	25.40	1.117			-0.08	0.417	0.466	
	1st	LTE Band 12_Ant 1	10M_QPSK_1_0	Back	10mm	Index 4	23095	707.5	24.70	25.50	1.202			0	0.386	0.464	-6.47%
	2nd	LTE Band 12_Ant 1	10M_QPSK_1_0	Back	10mm	Index 4	23095	707.5	24.63	25.50	1.222			-0.02	0.355	0.434	
	1st	LTE Band 13_Ant 0	10M_QPSK_1_0	Left Side	10mm	Index 4	23230	782	24.76	25.40	1.159			-0.02	0.415	0.481	-7.28%
43	2nd	LTE Band 13_Ant 0	10M_QPSK_1_0	Left Side	10mm	Index 4	23230	782	25.14	25.40	1.062			-0.06	0.420	0.446	
	1st	LTE Band 13_Ant 1	10M_QPSK_1_0	Back	10mm	Index 4	23230	782	24.74	25.50	1.191			-0.09	0.371	0.442	-16.52%
	2nd	LTE Band 13_Ant 1	10M_QPSK_1_0	Back	10mm	Index 4	23230	782	24.76	25.50	1.186			-0.03	0.311	0.369	
	1st	LTE Band 14_Ant 0	10M_QPSK_1_0	Bottom Side	10mm	Index 4	23330	793	24.77	25.40	1.156			-0.05	0.411	0.475	-11.79%
44	2nd	LTE Band 14_Ant 0	10M_QPSK_1_0	Bottom Side	10mm	Index 4	23330	793	25.09	25.40	1.074			-0.07	0.390	0.419	
	1st	LTE Band 14_Ant 1	10M_QPSK_1_0	Back	10mm	Index 4	23330	793	24.77	25.50	1.183			-0.06	0.372	0.440	-15.00%
	2nd	LTE Band 14_Ant 1	10M_QPSK_1_0	Back	10mm	Index 4	23330	793	24.80	25.50	1.175			-0.03	0.318	0.374	
	1st	LTE Band 25_Ant 2	20M_QPSK_1_0	Right Side	10mm	Index 4	26340	1880	20.98	21.00	1.005			-0.02	0.438	0.440	-0.91%
	2nd	LTE Band 25_Ant 2	20M_QPSK_1_0	Right Side	10mm	Index 4	26340	1880	20.96	21.00	1.009			-0.04	0.432	0.436	
	1st	LTE Band 25_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	26590	1905	18.09	18.20	1.026			0.01	0.722	0.741	-12.82%
45	2nd	LTE Band 25_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	26590	1905	17.82	18.20	1.091			-0.05	0.592	0.646	
	1st	LTE Band 26_Ant 0	15M_QPSK_1_0	Back	10mm	Index 4	26865	831.5	24.39	25.40	1.262			-0.02	0.568	0.717	-17.29%
	2nd	LTE Band 26_Ant 0	15M_QPSK_1_0	Back	10mm	Index 4	26865	831.5	24.65	25.40	1.189			0.06	0.499	0.593	
	1st	LTE Band 26_Ant 1	15M_QPSK_1_0	Back	10mm	Index 4	26865	831.5	24.33	25.40	1.279			0	0.539	0.690	-3.04%
46	2nd	LTE Band 26_Ant 1	15M_QPSK_1_0	Back	10mm	Index 4	26865	831.5	24.33	25.40	1.279			-0.15	0.523	0.669	
	1st	LTE Band 30_Ant 2	10M_QPSK_1_0	Right Side	10mm	Index 4	27710	2310	20.56	20.90	1.081			-0.04	0.443	0.479	-0.63%
	2nd	LTE Band 30_Ant 2	10M_QPSK_1_0	Right Side	10mm	Index 4	27710	2310	20.48	20.90	1.102			-0.01	0.432	0.476	
	1st	LTE Band 30_Ant 0	10M_QPSK_1_0	Bottom Side	10mm	Index 4	27710	2310	18.16	18.20	1.009			-0.09	0.839	0.847	-7.32%
47	2nd	LTE Band 30_Ant 0	10M_QPSK_1_0	Bottom Side	10mm	Index 4	27710	2310	17.99	18.20	1.050			-0.11	0.748	0.785	



FCC SAR TEST REPORT

Report No. : FA2D0206-02C

	1st	LTE Band 41_Ant 2	20M_QPSK_1_0	Right Side	10mm	Index 4	40620	2593	22.77	23.20	1.104	62.9	1.006	-0.05	0.453	0.503	-1.99%
	2nd	LTE Band 41_Ant 2	20M_QPSK_1_0	Right Side	10mm	Index 4	40620	2593	22.80	23.20	1.096	62.9	1.006	-0.05	0.447	0.493	-1.99%
48	1st	LTE Band 41_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	39750	2506	19.16	19.30	1.033	62.9	1.006	0.02	0.755	0.784	-1.53%
	2nd	LTE Band 41_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	39750	2506	19.01	19.30	1.069	62.9	1.006	-0.09	0.718	0.772	-1.53%
	1st	LTE Band 48_Ant 6	20M_QPSK_1_0	Left Side	10mm	Index 4	55830	3609	20.44	20.70	1.062	62.9	1.006	0.11	0.332	0.355	-29.58%
	2nd	LTE Band 48_Ant 6	20M_QPSK_1_0	Left Side	10mm	Index 4	55830	3609	20.59	20.70	1.026	62.9	1.006	-0.1	0.242	0.250	-29.58%
	1st	LTE Band 48_Ant 7	20M_QPSK_1_0	Right Side	10mm	Index 4	55830	3609	22.88	23.70	1.208	62.9	1.006	0.08	0.653	0.793	-12.23%
49	2nd	LTE Band 48_Ant 7	20M_QPSK_1_0	Right Side	10mm	Index 4	55830	3609	23.65	23.70	1.012	62.9	1.006	-0.04	0.684	0.696	-12.23%
	1st	LTE Band 66_Ant 2	20M_QPSK_1_0	Right Side	10mm	Index 4	132572	1770	20.56	21.00	1.107			0.05	0.362	0.401	-9.23%
	2nd	LTE Band 66_Ant 2	20M_QPSK_1_0	Right Side	10mm	Index 4	132572	1770	20.88	21.00	1.028			0.08	0.354	0.364	-9.23%
	1st	LTE Band 66_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	132572	1770	18.38	18.40	1.005			-0.02	0.816	0.820	-12.80%
50	2nd	LTE Band 66_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	132572	1770	18.36	18.40	1.009			-0.04	0.708	0.715	-12.80%
	1st	LTE Band 66_Ant 1	20M_QPSK_1_0	Top Side	10mm	Index 4	132322	1745	21.80	22.00	1.047			0.01	0.792	0.829	-14.72%
	2nd	LTE Band 66_Ant 1	20M_QPSK_1_0	Top Side	10mm	Index 4	132322	1745	21.89	22.00	1.026			0	0.689	0.707	-14.72%
	1st	LTE Band 66_Ant 5	20M_QPSK_1_0	Right Side	10mm	Index 4	132322	1745	21.74	22.40	1.164			0	0.502	0.584	-0.51%
	2nd	LTE Band 66_Ant 5	20M_QPSK_1_0	Right Side	10mm	Index 4	132322	1745	21.81	22.40	1.146			-0.01	0.507	0.581	-0.51%
	1st	LTE Band 71_Ant 0	20M_QPSK_1_0	Left Side	10mm	Index 4	133297	680.5	24.61	25.40	1.199			-0.01	0.463	0.555	-3.96%
51	2nd	LTE Band 71_Ant 0	20M_QPSK_1_0	Left Side	10mm	Index 4	133297	680.5	24.82	25.40	1.143			-0.01	0.466	0.533	-3.96%
	1st	LTE Band 71_Ant 1	20M_QPSK_1_0	Back	10mm	Index 4	133297	680.5	24.45	25.50	1.274			-0.1	0.316	0.402	-18.91%
	2nd	LTE Band 71_Ant 1	20M_QPSK_1_0	Back	10mm	Index 4	133297	680.5	24.43	25.50	1.279			-0.07	0.255	0.326	-18.91%
	1st	FR1 n2_Ant 1	20M_QPSK_1_0	Top Side	10mm	Index 4	380000	1900	20.55	20.80	1.059			-0.14	0.795	0.842	-23.52%
	2nd	FR1 n2_Ant 1	20M_QPSK_1_0	Top Side	10mm	Index 4	380000	1900	20.25	20.80	1.135			-0.1	0.567	0.644	-23.52%
	1st	FR1 n2_Ant 5	20M_QPSK_1_0	Right Side	10mm	Index 4	372000	1860	21.36	21.60	1.057			0.1	0.795	0.840	-13.21%
52	2nd	FR1 n2_Ant 5	20M_QPSK_1_0	Right Side	10mm	Index 4	372000	1860	21.35	21.60	1.059			-0.13	0.688	0.729	-13.21%
	1st	FR1 n26_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	166300	831.5	24.49	25.40	1.233			-0.03	0.546	0.673	-12.04%
	2nd	FR1 n5_Ant 0	20M_QPSK_1_0	Bottom Side	10mm	Index 4	167300	836.5	24.55	25.40	1.216			-0.05	0.487	0.592	-12.04%
	1st	FR1 n26_Ant 1	20M_QPSK_1_0	Back	10mm	Index 4	166300	831.5	24.33	25.40	1.279			-0.15	0.562	0.719	-13.77%
53	2nd	FR1 n5_Ant 1	20M_QPSK_1_0	Back	10mm	Index 4	167300	836.5	24.31	25.40	1.285			-0.1	0.482	0.620	-13.77%
	1st	FR1 n7_Ant 2	50M_QPSK_1_0	Right Side	10mm	Index 4	507000	2535	21.94	22.10	1.038			-0.08	0.660	0.685	-6.57%
	2nd	FR1 n7_Ant 2	50M_QPSK_1_0	Right Side	10mm	Index 4	507000	2535	21.83	22.10	1.064			-0.04	0.601	0.640	-6.57%
	1st	FR1 n7_Ant 0	50M_QPSK_1_0	Bottom Side	10mm	Index 4	507000	2535	17.76	18.40	1.159			-0.16	0.655	0.759	-15.55%
54	2nd	FR1 n7_Ant 0	50M_QPSK_1_0	Bottom Side	10mm	Index 4	507000	2535	17.79	18.40	1.151			-0.12	0.557	0.641	-15.55%
	1st	FR1 n12_Ant 0	15M_QPSK_1_0	Left Side	10mm	Index 4	141500	707.5	24.53	25.40	1.222			-0.12	0.426	0.520	-0.58%
55	2nd	FR1 n12_Ant 0	15M_QPSK_1_0	Left Side	10mm	Index 4	141500	707.5	24.51	25.40	1.227			-0.13	0.421	0.517	-0.58%
	1st	FR1 n12_Ant 1	15M_QPSK_1_0	Back	10mm	Index 4	141500	707.5	24.81	25.20	1.094			-0.19	0.243	0.266	-2.63%
	2nd	FR1 n12_Ant 1	15M_QPSK_1_0	Back	10mm	Index 4	141500	707.5	24.31	25.20	1.227			-0.09	0.211	0.259	-2.63%
	1st	FR1 n25_Ant 2	40M_QPSK_1_0	Right Side	10mm	Index 4	376500	1882.5	19.90	20.60	1.175			-0.13	0.449	0.528	-11.17%
	2nd	FR1 n25_Ant 2	40M_QPSK_1_0	Right Side	10mm	Index 4	376500	1882.5	19.85	20.60	1.189			-0.1	0.395	0.469	-11.17%
	1st	FR1 n25_Ant 0	40M_QPSK_1_0	Bottom Side	10mm	Index 4	376500	1882.5	18.21	18.80	1.146			-0.1	0.739	0.847	-6.14%
56	2nd	FR1 n25_Ant 0	40M_QPSK_1_0	Bottom Side	10mm	Index 4	376500	1882.5	18.24	18.80	1.138			-0.05	0.699	0.795	-6.14%
	1st	FR1 n30_Ant 2	10M_QPSK_1_0	Right Side	10mm	Index 4	462000	2310	20.77	21.60	1.211			-0.04	0.500	0.605	-16.36%
	2nd	FR1 n30_Ant 2	10M_QPSK_1_0	Right Side	10mm	Index 4	462000	2310	20.71	21.60	1.227			-0.11	0.412	0.506	-16.36%
	1st	FR1 n30_Ant 0	10M_QPSK_1_0	Bottom Side	10mm	Index 4	462000	2310	18.16	18.20	1.009			-0.06	0.808	0.815	-8.47%
57	2nd	FR1 n30_Ant 0	10M_QPSK_1_0	Bottom Side	10mm	Index 4	462000	2310	18.19	18.20	1.002			-0.02	0.744	0.746	-8.47%
	1st	FR1 n41_Ant 2	100M_QPSK_1_0	Right Side	10mm	Index 4	518598	2592.99	20.65	21.20	1.135			-0.17	0.515	0.585	-6.32%
	2nd	FR1 n41_Ant 2	100M_QPSK_1_0	Right Side	10mm	Index 4	518598	2592.99	20.70	21.20	1.122			-0.17	0.488	0.548	-6.32%
	1st	FR1 n41_Ant 0	100M_QPSK_1_0	Bottom Side	10mm	Index 4	518598	2592.99	18.38	18.80	1.102			-0.02	0.764	0.842	-9.74%
58	2nd	FR1 n41_Ant 0	100M_QPSK_1_0	Bottom Side	10mm	Index 4	518598	2592.99	18.40	18.80	1.096			-0.02	0.693	0.760	-9.74%
	1st	FR1 n41_Ant 1	100M_QPSK_1_0	Top Side	10mm	Index 4	518598	2592.99	20.50	21.10	1.148			0	0.476	0.547	-15.36%
	2nd	FR1 n41_Ant 1	100M_QPSK_1_0	Top Side	10mm	Index 4	518598	2592.99	20.34	21.10	1.191			-0.07	0.389	0.463	-15.36%
	1st	FR1 n41_Ant 5	100M_QPSK_1_0	Right Side	10mm	Index 4	518598	2592.99	20.05	20.40	1.084			-0.07	0.408	0.442	-9.28%
	2nd	FR1 n41_Ant 5	100M_QPSK_1_0	Right Side	10mm	Index 4	518598	2592.99	20.15	20.40	1.059			0	0.379	0.401	-9.28%
	1st	FR1 n66_Ant 2	40M_QPSK_1_0	Back	10mm	Index 4	349000	1745	21.45	22.10	1.161			-0.08	0.441	0.512	-8.79%
	2nd	FR1 n66_Ant 2	40M_QPSK_1_0	Back	10mm	Index 4	349000	1745	21.42	22.10	1.169			-0.1	0.399	0.467	-8.79%
	1st	FR1 n66_Ant 0	40M_QPSK_1_0	Bottom Side	10mm	Index 4	349000	1745	18.61	18.90	1.069			0.18	0.766	0.819	-5.86%
59	2nd	FR1 n66_Ant 0	40M_QPSK_1_0	Bottom Side	10mm	Index 4	349000	1745	18.65	18.90	1.059			-0.03	0.728	0.771	-5.86%



FCC SAR TEST REPORT

Report No. : FA2D0206-02C

	1st	FR1 n66_Ant 1	40M_QPSK_1_0	Top Side	10mm	Index 4	349000	1745	21.96	22.30	1.081				-0.16	0.685	0.741	
	2nd	FR1 n66_Ant 1	40M_QPSK_1_0	Top Side	10mm	Index 4	349000	1745	21.98	22.30	1.076				-0.15	0.666	0.717	-3.24%
	1st	FR1 n66_Ant 5	40M_QPSK_1_0	Right Side	10mm	Index 4	349000	1745	22.29	22.60	1.074				-0.13	0.760	0.816	
	2nd	FR1 n66_Ant 5	40M_QPSK_1_0	Right Side	10mm	Index 4	349000	1745	22.25	22.60	1.084				-0.17	0.672	0.728	-10.78%
	1st	FR1 n71_Ant 0	20M_QPSK_1_0	Left Side	10mm	Index 4	136100	680.5	24.58	25.40	1.208				-0.09	0.409	0.494	
60	2nd	FR1 n71_Ant 0	20M_QPSK_1_0	Left Side	10mm	Index 4	136100	680.5	24.56	25.40	1.213				-0.11	0.354	0.430	-12.96%
	1st	FR1 n71_Ant 1	20M_QPSK_1_0	Back	10mm	Index 4	136100	680.5	24.50	25.20	1.175				-0.17	0.235	0.276	
	2nd	FR1 n71_Ant 1	20M_QPSK_1_0	Back	10mm	Index 4	136100	680.5	24.46	25.20	1.186				-0.15	0.168	0.199	-27.90%
	1st	FR1 n77_Ant 6	100M_QPSK_1_0	Left Side	10mm	Index 4	656000	3840	21.55	21.70	1.035				0.01	0.491	0.508	
	2nd	FR1 n77_Ant 6	100M_QPSK_1_0	Left Side	10mm	Index 4	656000	3840	21.34	21.70	1.086				0.06	0.304	0.330	-35.04%
	1st	FR1 n77_Ant 6	100M_QPSK_1_0	Left Side	10mm	Index 4	633332	3499.98	21.62	21.70	1.019				-0.01	0.465	0.474	
	2nd	FR1 n77_Ant 6	100M_QPSK_1_0	Left Side	10mm	Index 4	633332	3499.98	21.58	21.70	1.028				-0.02	0.302	0.310	-34.60%
	1st	FR1 n77_Ant 7	100M_QPSK_1_0	Back	10mm	Index 4	656000	3840	22.68	24	1.355				-0.09	0.462	0.626	
	2nd	FR1 n77_Ant 7	100M_QPSK_1_0	Back	10mm	Index 4	656000	3840	22.59	24.00	1.384				-0.01	0.388	0.537	-14.22%
	1st	FR1 n77_Ant 7	100M_QPSK_1_0	Right Side	10mm	Index 4	633332	3499.98	23.05	24	1.245				-0.05	0.655	0.815	
61	2nd	FR1 n77_Ant 7	100M_QPSK_1_0	Right Side	10mm	Index 4	633332	3499.98	23.11	24.00	1.227				-0.11	0.625	0.767	-5.89%
	1st	FR1 n77_Ant 1	100M_QPSK_1_0	Left Side	10mm	Index 4	656000	3840	17.74	18.00	1.062				-0.01	0.260	0.276	
	2nd	FR1 n77_Ant 1	100M_QPSK_1_0	Left Side	10mm	Index 4	656000	3840	17.72	18.00	1.067				-0.02	0.253	0.270	-2.17%
	1st	FR1 n77_Ant 1	100M_QPSK_1_0	Left Side	10mm	Index 4	633332	3499.98	17.55	18.00	1.109				0.02	0.201	0.223	
	2nd	FR1 n77_Ant 1	100M_QPSK_1_0	Left Side	10mm	Index 4	633332	3499.98	17.52	18.00	1.117				-0.18	0.167	0.187	-16.14%
	1st	FR1 n77_Ant 5	100M_QPSK_1_0	Right Side	10mm	Index 4	656000	3840	20.17	20.8	1.156				0.05	0.213	0.246	
	2nd	FR1 n77_Ant 5	100M_QPSK_1_0	Right Side	10mm	Index 4	656000	3840	20.21	20.80	1.146				-0.03	0.204	0.234	-4.88%
	1st	FR1 n77_Ant 5	100M_QPSK_1_0	Right Side	10mm	Index 4	633332	3499.98	20.26	20.8	1.132				-0.03	0.210	0.238	
	2nd	FR1 n77_Ant 5	100M_QPSK_1_0	Right Side	10mm	Index 4	633332	3499.98	20.30	20.80	1.122				-0.02	0.190	0.213	-10.50%

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation
	1st	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 4	Index 7	6	2437	19.70	20.00	1.072	98.90	1.011	0.01	0.496	0.537	
	2nd	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 4	Index 7	6	2437	19.70	20.00	1.072	98.90	1.011	0	0.486	0.526	-2.05%
	1st	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 3	Index 7	6	2437	22.30	22.50	1.047	98.90	1.011	-0.04	0.599	0.634	
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 3	Index 7	6	2437	22.00	22.50	1.122	98.90	1.011	0.03	0.522	0.592	-6.62%
	1st	WLAN2.4GHz	802.11g 6Mbps	Top Side	10mm	Ant 4+3(4)	Index 7	6	2437	18.90	19.00	1.023	93.46	1.070	-0.02	0.552	0.604	
62	2nd	WLAN2.4GHz	802.11g 6Mbps	Top Side	10mm	Ant 4+3(4)	Index 7	6	2437	19.50	20.00	1.122	93.46	1.070	0.01	0.501	0.601	-0.50%
	1st	WLAN5/6GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 4+3(3)	Index 7	46	5230	18.60	19.00	1.096	96.15	1.040	-0.05	0.313	0.357	
63	2nd	WLAN5/6GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 4+3(3)	Index 7	46	5230	18.40	19.00	1.148	96.15	1.040	0.12	0.251	0.300	-15.97%
	1st	WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(4)	Index 7	155	5775	19.20	20.00	1.202	85.54	1.169	-0.11	0.431	0.606	
	2nd	WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(3)	Index 7	155	5775	19.80	20.00	1.047	85.54	1.169	-0.14	0.171	0.209	
64	1st	WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(4)	Index 7	155	5775	19.20	20.00	1.202	85.54	1.169	0.19	0.423	0.595	-1.82%
	2nd	WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(3)	Index 7	155	5775	19.40	20.00	1.148	85.54	1.169	0.14	0.198	0.266	
	1st	Bluetooth	1Mbps	Top Side	10mm	Ant 4	Index 3/4	78	2480	18.40	18.50	1.023	76.86	1.084	-0.09	0.258	0.286	
65	2nd	Bluetooth	1Mbps	Top Side	10mm	Ant 4	Index 3/4	78	2480	18.30	18.50	1.047	76.86	1.084	-0.17	0.249	0.283	-1.05%
	1st	Bluetooth	1Mbps	Left Side	10mm	Ant 3	Index 3/4	78	2480	20.13	21.00	1.221	77.07	1.081	-0.1	0.201	0.265	
	2nd	Bluetooth	1Mbps	Left Side	10mm	Ant 3	Index 3/4	78	2480	20.20	21.00	1.202	77.07	1.081	-0.01	0.199	0.259	-2.26%
	1st	Bluetooth	1Mbps	Left Side	10mm	Ant 4+3(3)	Index 3/4	0	2402	17.29	18.50	1.320	77.07	1.081	-0.18	0.199	0.284	
	2nd	Bluetooth	1Mbps	Left Side	10mm	Ant 4+3(3)	Index 3/4	0	2402	17.20	18.50	1.349	77.07	1.081	0.11	0.142	0.207	-27.11%



16.3 Body-Worn SAR

Table with 18 columns: Plot No., No., Band, Mode, Test Position, Gap (mm), Power State, Ch., Freq. (MHz), Average Power (dBm), Tune-Up Limit (dBm), Tune-up Scaling Factor, Duty Cycle %, Duty Cycle Scaling Factor, Power Drift (dB), Measured 1g SAR (W/kg), Reported 1g SAR (W/kg), Deviation. Rows include various GSM, WCDMA, and LTE bands.



FCC SAR TEST REPORT

Report No. : FA2D0206-02C

	1st	LTE Band 30_Ant 0	10M_QPSK_1_0	Front	10mm	Index 5	27710	2310	20.07	20.80	1.183			-0.01	0.788	0.932	
78	2nd	LTE Band 30_Ant 0	10M_QPSK_1_0	Front	10mm	Index 5	27710	2310	20.03	20.80	1.194			-0.15	0.707	0.844	-9.44%
	1st	LTE Band 41_Ant 2	20M_QPSK_1_0	Front	10mm	Index 5	40620	2593	22.77	23.90	1.297	62.9	1.006	-0.06	0.380	0.496	-5.65%
	2nd	LTE Band 41_Ant 2	20M_QPSK_1_0	Front	10mm	Index 5	40620	2593	22.80	23.90	1.288	62.9	1.006	-0.09	0.361	0.468	
	1st	LTE Band 41_Ant 0	20M_QPSK_1_0	Front	10mm	Index 5	39750	2506	22.10	23.10	1.259	62.9	1.006	0.02	0.511	0.647	-9.12%
79	2nd	LTE Band 41_Ant 0	20M_QPSK_1_0	Front	10mm	Index 5	39750	2506	22.04	23.10	1.276	62.9	1.006	-0.05	0.458	0.588	
	1st	LTE Band 48_Ant 6	20M_QPSK_1_0	Front	10mm	Index 5	55340	3560	20.55	21.40	1.216	62.9	1.006	-0.08	0.255	0.312	-1.60%
	2nd	LTE Band 48_Ant 6	20M_QPSK_1_0	Front	10mm	Index 5	55340	3560	19.90	21.40	1.413	62.9	1.006	0.09	0.216	0.307	
	1st	LTE Band 48_Ant 7	20M_QPSK_1_0	Back	10mm	Index 5	55830	3609	22.88	24.40	1.419	62.9	1.006	-0.05	0.448	0.640	-14.84%
80	2nd	LTE Band 48_Ant 7	20M_QPSK_1_0	Back	10mm	Index 5	55830	3609	23.65	24.40	1.189	62.9	1.006	0.01	0.456	0.545	
	1st	LTE Band 66_Ant 2	20M_QPSK_1_0	Back	10mm	Index 5	132572	1770	20.56	21.70	1.300			-0.13	0.307	0.399	-5.26%
	2nd	LTE Band 66_Ant 2	20M_QPSK_1_0	Back	10mm	Index 5	132572	1770	20.88	21.70	1.208			-0.03	0.313	0.378	
	1st	LTE Band 66_Ant 0	20M_QPSK_1_0	Front	10mm	Index 5	132322	1745	18.75	19.90	1.303			-0.06	0.536	0.698	-8.74%
81	2nd	LTE Band 66_Ant 0	20M_QPSK_1_0	Front	10mm	Index 5	132322	1745	18.69	19.90	1.321			-0.11	0.482	0.637	
	1st	LTE Band 66_Ant 1	20M_QPSK_1_0	Back	10mm	Index 5	132322	1745	21.80	22.70	1.230			0.01	0.393	0.483	-10.97%
	2nd	LTE Band 66_Ant 1	20M_QPSK_1_0	Back	10mm	Index 5	132322	1745	21.89	22.70	1.205			-0.02	0.357	0.430	
	1st	LTE Band 66_Ant 5	20M_QPSK_1_0	Back	10mm	Index 5	132322	1745	21.74	23.10	1.368			-0.02	0.272	0.372	-6.18%
	2nd	LTE Band 66_Ant 5	20M_QPSK_1_0	Back	10mm	Index 5	132322	1745	21.81	23.10	1.346			-0.04	0.259	0.349	
	1st	LTE Band 71_Ant 0	20M_QPSK_1_0	Back	10mm	Index 5/6	133297	680.5	24.61	25.40	1.199			-0.01	0.294	0.353	-13.31%
	2nd	LTE Band 71_Ant 0	20M_QPSK_1_0	Back	10mm	Index 5/6	133297	680.5	24.82	25.40	1.143			-0.01	0.268	0.306	
	1st	LTE Band 71_Ant 1	20M_QPSK_1_0	Back	10mm	Index 5/6	133297	680.5	24.45	25.50	1.274			-0.1	0.316	0.402	-18.91%
82	2nd	LTE Band 71_Ant 1	20M_QPSK_1_0	Back	10mm	Index 5/6	133297	680.5	24.43	25.50	1.279			-0.07	0.255	0.326	
	1st	FR1 n2_Ant 1	20M_QPSK_1_0	Back	10mm	Index 5	380000	1900	20.55	21.60	1.274			0.13	0.459	0.585	-16.41%
	2nd	FR1 n2_Ant 1	20M_QPSK_1_0	Back	10mm	Index 5	380000	1900	20.25	21.60	1.365			-0.05	0.358	0.489	
	1st	FR1 n2_Ant 5	20M_QPSK_1_0	Back	10mm	Index 5	372000	1860	21.36	23.00	1.459			-0.07	0.471	0.687	-12.08%
83	2nd	FR1 n2_Ant 5	20M_QPSK_1_0	Back	10mm	Index 5	372000	1860	21.35	23.00	1.462			-0.02	0.413	0.604	
	1st	FR1 n26_Ant 0	20M_QPSK_1_0	Back	10mm	Index 6	166300	831.5	24.49	25.40	1.233			-0.12	0.488	0.602	-4.82%
	2nd	FR1 n5_Ant 0	20M_QPSK_1_0	Back	10mm	Index 6	167300	836.5	24.55	25.40	1.216			-0.09	0.471	0.573	
	1st	FR1 n26_Ant 1	20M_QPSK_1_0	Back	10mm	Index 6	166300	831.5	24.33	25.40	1.279			-0.15	0.562	0.719	-13.77%
84	2nd	FR1 n5_Ant 1	20M_QPSK_1_0	Back	10mm	Index 6	167300	836.5	24.31	25.40	1.285			-0.1	0.482	0.620	
	1st	FR1 n7_Ant 2	50M_QPSK_1_0	Front	10mm	Index 5	507000	2535	21.94	22.80	1.219			-0.12	0.621	0.757	-3.70%
	2nd	FR1 n7_Ant 2	50M_QPSK_1_0	Front	10mm	Index 5	507000	2535	21.83	22.80	1.250			-0.09	0.583	0.729	
	1st	FR1 n7_Ant 0	50M_QPSK_1_0	Front	10mm	Index 5	507000	2535	20.95	21.90	1.245			-0.17	0.771	0.960	-20.10%
85	2nd	FR1 n7_Ant 0	50M_QPSK_1_0	Front	10mm	Index 5	507000	2535	20.92	21.90	1.253			-0.13	0.612	0.767	
	1st	FR1 n12_Ant 0	15M_QPSK_1_0	Back	10mm	Index 6	141500	707.5	24.53	25.40	1.222			-0.17	0.311	0.380	-6.84%
86	2nd	FR1 n12_Ant 0	15M_QPSK_1_0	Back	10mm	Index 6	141500	707.5	24.51	25.40	1.227			-0.19	0.288	0.354	
	1st	FR1 n12_Ant 1	15M_QPSK_1_0	Back	10mm	Index 6	141500	707.5	24.81	25.20	1.094			-0.19	0.243	0.266	-9.40%
	2nd	FR1 n12_Ant 1	15M_QPSK_1_0	Back	10mm	Index 6	141500	707.5	24.76	25.20	1.107			-0.09	0.218	0.241	
	1st	FR1 n25_Ant 2	40M_QPSK_1_0	Front	10mm	Index 5	376500	1882.5	19.90	21.30	1.380			-0.13	0.368	0.508	-15.94%
	2nd	FR1 n25_Ant 2	40M_QPSK_1_0	Front	10mm	Index 5	376500	1882.5	19.85	21.30	1.396			-0.14	0.306	0.427	
	1st	FR1 n25_Ant 0	40M_QPSK_1_0	Front	10mm	Index 5	376500	1882.5	19.26	20.60	1.361			-0.14	0.503	0.685	-36.20%
87	2nd	FR1 n25_Ant 0	40M_QPSK_1_0	Front	10mm	Index 5	376500	1882.5	19.31	20.60	1.346			-0.1	0.325	0.437	
	1st	FR1 n30_Ant 2	10M_QPSK_1_0	Front	10mm	Index 5	462000	2310	20.77	22.30	1.422			-0.02	0.396	0.563	-1.42%
	2nd	FR1 n30_Ant 2	10M_QPSK_1_0	Front	10mm	Index 5	462000	2310	20.71	22.30	1.442			-0.02	0.385	0.555	
	1st	FR1 n30_Ant 0	10M_QPSK_1_0	Back	10mm	Index 5	462000	2310	19.41	20.70	1.346			-0.13	0.714	0.961	-5.41%
88	2nd	FR1 n30_Ant 0	10M_QPSK_1_0	Back	10mm	Index 5	462000	2310	19.62	20.70	1.282			-0.09	0.709	0.909	
	1st	FR1 n41_Ant 2	100M_QPSK_1_0	Front	10mm	Index 5	518598	2592.99	20.65	21.90	1.334			-0.11	0.468	0.624	-1.28%
	2nd	FR1 n41_Ant 2	100M_QPSK_1_0	Front	10mm	Index 5	518598	2592.99	20.70	21.90	1.318			-0.16	0.467	0.616	
	1st	FR1 n41_Ant 0	100M_QPSK_1_0	Front	10mm	Index 5	518598	2592.99	21.61	22.40	1.199			-0.13	0.815	0.978	-3.58%
89	2nd	FR1 n41_Ant 0	100M_QPSK_1_0	Front	10mm	Index 5	518598	2592.99	21.62	22.40	1.197			-0.16	0.788	0.943	
	1st	FR1 n41_Ant 1	100M_QPSK_1_0	Back	10mm	Index 5	518598	2592.99	21.70	23.00	1.349			-0.19	0.382	0.515	-10.10%
	2nd	FR1 n41_Ant 1	100M_QPSK_1_0	Back	10mm	Index 5	518598	2592.99	21.54	23.00	1.400			-0.15	0.331	0.463	
	1st	FR1 n41_Ant 5	100M_QPSK_1_0	Back	10mm	Index 5	518598	2592.99	21.25	22.30	1.274			-0.04	0.345	0.439	-4.78%
	2nd	FR1 n41_Ant 5	100M_QPSK_1_0	Back	10mm	Index 5	518598	2592.99	21.35	22.30	1.245			-0.14	0.336	0.418	
	1st	FR1 n66_Ant 2	40M_QPSK_1_0	Back	10mm	Index 5	349000	1745	21.45	22.80	1.365			-0.08	0.441	0.602	-8.97%
	2nd	FR1 n66_Ant 2	40M_QPSK_1_0	Back	10mm	Index 5	349000	1745	21.42	22.80	1.374			-0.1	0.399	0.548	



FCC SAR TEST REPORT

Report No. : FA2D0206-02C

	1st	FR1 n66_Ant 0	40M_QPSK_1_0	Front	10mm	Index 5	349000	1745	18.61	19.60	1.256			-0.06	0.601	0.755	
90	2nd	FR1 n66_Ant 0	40M_QPSK_1_0	Front	10mm	Index 5	349000	1745	18.65	19.60	1.245			-0.01	0.509	0.633	-16.16%
	1st	FR1 n66_Ant 1	40M_QPSK_1_0	Back	10mm	Index 5	349000	1745	21.96	23.00	1.271			-0.03	0.385	0.489	-0.41%
	2nd	FR1 n66_Ant 1	40M_QPSK_1_0	Back	10mm	Index 5	349000	1745	21.98	23.00	1.265			-0.03	0.385	0.487	
	1st	FR1 n66_Ant 5	40M_QPSK_1_0	Back	10mm	Index 5	349000	1745	22.29	23.30	1.262			-0.15	0.424	0.535	-11.40%
	2nd	FR1 n66_Ant 5	40M_QPSK_1_0	Back	10mm	Index 5	349000	1745	22.25	23.30	1.274			-0.15	0.372	0.474	
	1st	FR1 n71_Ant 0	20M_QPSK_1_0	Back	10mm	Index 6	136100	680.5	24.58	25.40	1.208			-0.14	0.260	0.314	-5.73%
91	2nd	FR1 n71_Ant 0	20M_QPSK_1_0	Back	10mm	Index 6	136100	680.5	24.56	25.40	1.213			-0.13	0.244	0.296	
	1st	FR1 n71_Ant 1	20M_QPSK_1_0	Back	10mm	Index 6	136100	680.5	24.50	25.20	1.175			-0.17	0.235	0.276	-27.90%
	2nd	FR1 n71_Ant 1	20M_QPSK_1_0	Back	10mm	Index 6	136100	680.5	24.46	25.20	1.186			-0.15	0.168	0.199	
	1st	FR1 n77_Ant 6	100M_QPSK_1_0	Front	10mm	Index 5	656000	3840	21.55	22.40	1.216			0	0.339	0.412	-35.92%
	2nd	FR1 n77_Ant 6	100M_QPSK_1_0	Front	10mm	Index 5	656000	3840	21.34	22.40	1.276			-0.1	0.207	0.264	
	1st	FR1 n77_Ant 6	100M_QPSK_1_0	Front	10mm	Index 5	633332	3499.98	21.62	22.40	1.197			-0.02	0.361	0.432	-41.67%
	2nd	FR1 n77_Ant 6	100M_QPSK_1_0	Front	10mm	Index 5	633332	3499.98	21.58	22.40	1.208			-0.06	0.209	0.252	
	1st	FR1 n77_Ant 7	100M_QPSK_1_0	Back	10mm	Index 6	656000	3840	22.68	24	1.355			-0.09	0.462	0.626	-14.22%
92	2nd	FR1 n77_Ant 7	100M_QPSK_1_0	Back	10mm	Index 6	656000	3840	22.59	24.00	1.384			-0.01	0.388	0.537	
	1st	FR1 n77_Ant 7	100M_QPSK_1_0	Back	10mm	Index 6	633332	3499.98	23.05	24	1.245			-0.09	0.264	0.329	-21.58%
	2nd	FR1 n77_Ant 7	100M_QPSK_1_0	Back	10mm	Index 6	633332	3499.98	23.11	24.00	1.227			-0.13	0.210	0.258	
	1st	FR1 n77_Ant 1	100M_QPSK_1_0	Back	10mm	Index 5	656000	3840	20.74	21.70	1.247			-0.08	0.397	0.495	-2.63%
	2nd	FR1 n77_Ant 1	100M_QPSK_1_0	Back	10mm	Index 5	656000	3840	20.72	21.70	1.253			0	0.385	0.482	
	1st	FR1 n77_Ant 1	100M_QPSK_1_0	Back	10mm	Index 5	633332	3499.98	20.55	21.70	1.303			0	0.245	0.319	-9.09%
	2nd	FR1 n77_Ant 1	100M_QPSK_1_0	Back	10mm	Index 5	633332	3499.98	20.52	21.70	1.312			-0.01	0.221	0.290	
	1st	FR1 n77_Ant 5	100M_QPSK_1_0	Front	10mm	Index 5	656000	3840	22.27	23.60	1.358			0.19	0.161	0.219	-26.03%
	2nd	FR1 n77_Ant 5	100M_QPSK_1_0	Front	10mm	Index 5	656000	3840	22.31	23.60	1.346			0.12	0.120	0.162	
	1st	FR1 n77_Ant 5	100M_QPSK_1_0	Front	10mm	Index 5	633332	3499.98	22.36	23.60	1.330			-0.01	0.174	0.231	-15.15%
	2nd	FR1 n77_Ant 5	100M_QPSK_1_0	Front	10mm	Index 5	633332	3499.98	22.40	23.60	1.318			-0.09	0.149	0.196	



Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Measured APD (W/m ²)	Reported APD (W/m ²)	Deviation
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 4	Index 5	11	2462	22.40	22.50	1.023	98.90	1.011	-0.02	0.988	1.022			
93	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 4	Index 5	11	2462	22.10	22.50	1.096	98.90	1.011	-0.12	0.858	0.951			-6.95%
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 3	Index 5	11	2462	22.30	22.50	1.047	98.90	1.011	-0.02	0.433	0.458			
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 3	Index 5	11	2462	22.50	22.50	1.000	98.90	1.011	0.01	0.422	0.427			-6.77%
	1st	WLAN2.4GHz	802.11g 6Mbps	Back	10mm	Ant 4+3(4)	Index 5	6	2437	22.00	22.00	1.000	93.46	1.070	0.01	0.889	0.951			
		WLAN2.4GHz	802.11g 6Mbps	Back	10mm	Ant 4+3(3)	Index 5	6	2437	21.30	22.00	1.175	93.46	1.070	0.01	0.310	0.390			
	2nd	WLAN2.4GHz	802.11g 6Mbps	Back	10mm	Ant 4+3(4)	Index 5	6	2437	21.90	22.00	1.023	93.46	1.070	0.17	0.639	0.700			
		WLAN2.4GHz	802.11g 6Mbps	Back	10mm	Ant 4+3(3)	Index 5	6	2437	21.30	22.00	1.175	93.46	1.070	-0.05	0.318	0.400			
	1st	WLAN5/6GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4+3(4)	Index 5	54	5270	19.90	20.00	1.023	96.15	1.040	-0.14	0.263	0.280			
		WLAN5/6GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4+3(3)	Index 5	54	5270	19.60	20.00	1.096	96.15	1.040	-0.09	0.180	0.205			
94	2nd	WLAN5/6GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4+3(4)	Index 5	54	5270	20.00	20.00	1.000	96.15	1.040	0.05	0.261	0.271			-3.21%
		WLAN5/6GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4+3(3)	Index 5	54	5270	19.90	20.00	1.023	96.15	1.040	0.06	0.143	0.152			
	1st	WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(4)	Index 5	138	5690	19.80	20.00	1.047	85.54	1.169	-0.12	0.390	0.477			
		WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(3)	Index 5	138	5690	19.60	20.00	1.096	85.54	1.169	-0.1	0.193	0.247			
95	2nd	WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(4)	Index 5	138	5690	19.50	20.00	1.122	85.54	1.169	0.14	0.363	0.476			-0.21%
		WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(3)	Index 5	138	5690	19.70	20.00	1.072	85.54	1.169	0.19	0.197	0.247			
	1st	WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(4)	Index 5	155	5775	19.20	20.00	1.202	85.54	1.169	-0.11	0.431	0.606			
		WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(3)	Index 5	155	5775	19.80	20.00	1.047	85.54	1.169	-0.14	0.171	0.209			
96	2nd	WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(4)	Index 5	155	5775	19.20	20.00	1.202	85.54	1.169	0.19	0.423	0.595			-1.82%
		WLAN5/6GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 4+3(3)	Index 5	155	5775	19.40	20.00	1.148	85.54	1.169	0.14	0.198	0.266			
	1st	WLAN5/6GHz	802.11ac-VHT160 MCS0	Back	10mm	Ant 4+3(4)	Index 5	163	5815	18.20	19.50	1.349	87.95	1.137	0.1	0.465	0.713			
		WLAN5/6GHz	802.11ac-VHT160 MCS0	Back	10mm	Ant 4+3(3)	Index 5	163	5815	18.80	19.50	1.175	87.95	1.137	-0.17	0.190	0.254			
97	2nd	WLAN5/6GHz	802.11ac-VHT160 MCS0	Back	10mm	Ant 4+3(4)	Index 5	163	5815	18.80	19.50	1.175	87.95	1.137	0.14	0.512	0.684			-4.07%
		WLAN5/6GHz	802.11ac-VHT160 MCS0	Back	10mm	Ant 4+3(3)	Index 5	163	5815	19.00	19.50	1.122	87.95	1.137	0.17	0.164	0.209			
	1st	WLAN5/6GHz	802.11ax-HE160 MCS0	Back	10mm	Ant 4+3(4)	Index 5	15	6025	16.80	17.00	1.047	86.11	1.161	-0.08	0.220	0.267	1.580	1.921	
		WLAN5/6GHz	802.11ax-HE160 MCS0	Back	10mm	Ant 4+3(3)	Index 5	15	6025	16.50	17.00	1.122	86.11	1.161	-0.09	0.085	0.111	0.660	0.860	
98	2nd	WLAN5/6GHz	802.11ax-HE160 MCS0	Back	10mm	Ant 4+3(4)	Index 5	15	6025	16.40	17.00	1.148	86.11	1.161	0.11	0.146	0.195	1.110	1.480	-26.97%
		WLAN5/6GHz	802.11ax-HE160 MCS0	Back	10mm	Ant 4+3(3)	Index 5	15	6025	16.50	17.00	1.122	86.11	1.161	-0.17	0.098	0.128	0.803	1.046	
	1st	Bluetooth	1Mbps	Back	10mm	Ant 4	Index 2	0	2402	19.28	20.00	1.180	76.86	1.084	-0.14	0.274	0.350			
	2nd	Bluetooth	1Mbps	Back	10mm	Ant 4	Index 2	0	2402	19.70	20.00	1.072	76.86	1.084	0.13	0.191	0.222			-36.57%
	1st	Bluetooth	1Mbps	Back	10mm	Ant 3	Index 2	39	2441	20.24	21.00	1.191	77.07	1.081	-0.15	0.155	0.200			
	2nd	Bluetooth	1Mbps	Back	10mm	Ant 3	Index 2	39	2441	20.40	21.00	1.148	77.07	1.081	-0.12	0.159	0.197			-1.50%
	1st	Bluetooth	1Mbps	Back	10mm	Ant 4+3(4)	Index 2	0	2402	16.64	18.50	1.534	77.07	1.081	-0.02	0.193	0.320			
		Bluetooth	1Mbps	Back	10mm	Ant 4+3(3)	Index 2	0	2402	17.29	18.50	1.320	77.07	1.081	-0.02	0.109	0.156			
99	2nd	Bluetooth	1Mbps	Back	10mm	Ant 4+3(4)	Index 2	0	2402	16.80	18.50	1.479	77.07	1.081	-0.11	0.158	0.253			-20.94%
		Bluetooth	1Mbps	Back	10mm	Ant 4+3(3)	Index 2	0	2402	17.20	18.50	1.349	77.07	1.081	-0.03	0.114	0.166			



16.4 Product Specific SAR

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	Deviation
	1st	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom Side	0mm	Index 5	9400	1880	19.71	20.80	1.285	1.910	2.455	
100	2nd	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom Side	0mm	Index 5	9400	1880	20.17	20.80	1.156	1.960	2.266	-7.70%
	1st	LTE Band 7_Ant 0	20M_QPSK_1_0	Bottom Side	0mm	Index 5	20850	2510	21.24	22.00	1.191	1.450	1.727	
101	2nd	LTE Band 7_Ant 0	20M_QPSK_1_0	Bottom Side	0mm	Index 5	20850	2510	21.22	22.00	1.197	1.370	1.640	-5.04%
	1st	LTE Band 25_Ant 0	20M_QPSK_1_0	Bottom Side	0mm	Index 5	26340	1880	19.58	20.50	1.236	1.890	2.336	
102	2nd	LTE Band 25_Ant 0	20M_QPSK_1_0	Bottom Side	QPSK	Index 5	26340	1880	19.48	20.50	1.265	1.840	2.327	-0.39%
	1st	LTE Band 30_Ant 0	10M_QPSK_1_0	Bottom Side	0mm	Index 5	27710	2310	21.07	21.80	1.183	2.100	2.484	
103	2nd	LTE Band 30_Ant 0	10M_QPSK_1_0	Bottom Side	0mm	Index 5	27710	2310	21.03	21.80	1.194	2.030	2.424	-2.42%
	1st	LTE Band 66_Ant 0	20M_QPSK_1_0	Bottom Side	0mm	Index 5	132572	1770	18.99	19.90	1.233	2.000	2.466	
104	2nd	LTE Band 66_Ant 0	20M_QPSK_1_0	Bottom Side	0mm	Index 5	132572	1770	18.96	19.90	1.242	1.950	2.421	-1.82%
	1st	FR1 n7_Ant 0	50M_QPSK_1_0	Bottom Side	0mm	Index 5	507000	2535	20.95	21.90	1.245	1.640	2.041	
105	2nd	FR1 n7_Ant 0	50M_QPSK_1_0	Bottom Side	0mm	Index 5	507000	2535	20.92	21.90	1.253	1.270	1.591	-22.05%
	1st	FR1 n25_Ant 0	40M_QPSK_1_0	Bottom Side	0mm	Index 5	376500	1882.5	19.26	20.60	1.361	1.800	2.451	
106	2nd	FR1 n25_Ant 0	40M_QPSK_1_0	Bottom Side	0mm	Index 5	376500	1882.5	19.31	20.60	1.346	1.680	2.261	-7.75%
	1st	FR1 n30_Ant 0	10M_QPSK_1_0	Bottom Side	0mm	Index 5	462000	2310	19.41	20.70	1.346	1.720	2.315	
107	2nd	FR1 n30_Ant 0	10M_QPSK_1_0	Bottom Side	0mm	Index 5	462000	2310	19.62	20.70	1.282	1.460	1.872	-19.14%
	1st	FR1 n66_Ant 0	40M_QPSK_1_0	Bottom Side	0mm	Index 5	349000	1745	18.61	19.60	1.256	1.790	2.248	
108	2nd	FR1 n66_Ant 0	40M_QPSK_1_0	Bottom Side	0mm	Index 5	349000	1745	18.65	19.60	1.245	1.530	1.904	-15.30%

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	Measured APD (W/m ²)	Reported APD (W/m ²)	Deviation
	1st	WLAN5/6GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 4+3(3)	Index 5	54	5270	19.60	20.00	1.096	96.15	1.040	0.1	1.960	2.235			
109	2nd	WLAN5/6GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 4+3(3)	Index 5	54	5270	19.90	20.00	1.023	96.15	1.040	-0.02	1.990	2.118			-5.23%
	1st	WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 4+3(3)	Index 5	122	5610	19.60	20.00	1.096	85.54	1.169	-0.02	1.400	1.794			
110	2nd	WLAN5/6GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 4+3(3)	Index 5	122	5610	19.80	20.00	1.047	85.54	1.169	0.01	1.520	1.861			3.73%
	1st	WLAN5/6GHz	802.11ac-VHT160 MCS0	Right Side	0mm	Ant 4+3(4)	Index 5	163	5815	18.20	19.50	1.349	87.95	1.137	0.05	1.020	1.564			
111	2nd	WLAN5/6GHz	802.11ac-VHT160 MCS0	Right Side	0mm	Ant 4+3(4)	Index 5	163	5815	18.80	19.50	1.175	87.95	1.137	0	0.997	1.332			-14.83%
	1st	WLAN5/6GHz	802.11ax-HE160 MCS0	Top Side	0mm	Ant 4+3(4)	Index 5	207	6985	18.70	19.50	1.202	86.11	1.161	-0.05	0.270	0.377	6.310	8.808	
112	2nd	WLAN5/6GHz	802.11ax-HE160 MCS0	Top Side	0mm	Ant 4+3(4)	Index 5	207	6985	18.90	19.50	1.148	86.11	1.161	0.03	0.279	0.372	6.590	8.785	-1.33%

Plot No.	No.	Band	Test Position	Gap (mm)	Freq. (MHz)	Power Drift (dB)	Measured 10g SAR (W/kg)	Deviation
	1st	NFC	Back	0mm	13.56	-0.07	0.093	
113	2nd	NFC	Back	0mm	13.56	0.03	0.087	-6.45%

Conclusion:

The spot check results don't show the SAR increase more than 30%, and all below 1.2W/kg for 1-g SAR, below 3W/kg for 10-g SAR. Referring to the guidance in the KDB inquiry, SAR data reuse is justified.



17. SAR Test Results

General Note:

4. 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 TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
5. 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
6. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
7. Since the LTE B41 power index 2/3 was higher than reference model, therefore, additional Power index 2/3 Head SAR testing, and the additional power index 2/3 test results are lower than reference model, therefore, the Sim-Tx analysis was not performed.

LTE Note:

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



17.1 Head SAR

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Index	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	Index 2/3	39750	2506	24.74	25.40	1.164	62.9	1.006	0.11	0.391	0.458
114	LTE Band 41_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	Index 2/3	40185	2549.5	24.55	25.40	1.216	62.9	1.006	-0.06	0.379	0.464
	LTE Band 41_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	Index 2/3	40620	2593	24.58	25.40	1.208	62.9	1.006	-0.11	0.324	0.394
	LTE Band 41_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	Index 2/3	41055	2636.5	24.65	25.40	1.189	62.9	1.006	-0.15	0.272	0.325
	LTE Band 41_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	Index 2/3	41490	2680	24.43	25.40	1.250	62.9	1.006	-0.06	0.228	0.287
	LTE Band 41_Ant 2	20M	QPSK	50	0	Right Cheek	0mm	Index 2/3	39750	2506	23.74	24.40	1.164	62.9	1.006	0.03	0.376	0.440
	LTE Band 41_Ant 2	20M	QPSK	1	0	Right Tilted	0mm	Index 2/3	39750	2506	24.74	25.40	1.164	62.9	1.006	-0.05	0.139	0.163
	LTE Band 41_Ant 2	20M	QPSK	50	0	Right Tilted	0mm	Index 2/3	39750	2506	23.74	24.40	1.164	62.9	1.006	-0.11	0.123	0.144
	LTE Band 41_Ant 2	20M	QPSK	1	0	Left Cheek	0mm	Index 2/3	39750	2506	24.74	25.40	1.164	62.9	1.006	-0.04	0.183	0.214
	LTE Band 41_Ant 2	20M	QPSK	50	0	Left Cheek	0mm	Index 2/3	39750	2506	23.74	24.40	1.164	62.9	1.006	0.18	0.164	0.192
	LTE Band 41_Ant 2	20M	QPSK	1	0	Left Tilted	0mm	Index 2/3	39750	2506	24.74	25.40	1.164	62.9	1.006	-0.01	0.170	0.199
	LTE Band 41_Ant 2	20M	QPSK	50	0	Left Tilted	0mm	Index 2/3	39750	2506	23.74	24.40	1.164	62.9	1.006	0.013	0.159	0.186
	LTE Band 41_Ant 0	20M	QPSK	1	0	Right Cheek	0mm	Index 2/3	41490	2680	23.94	25.00	1.276	62.9	1.006	-0.12	0.039	0.050
	LTE Band 41_Ant 0	20M	QPSK	50	0	Right Cheek	0mm	Index 2/3	41490	2680	22.80	24.00	1.318	62.9	1.006	0.015	0.032	0.042
	LTE Band 41_Ant 0	20M	QPSK	1	0	Right Tilted	0mm	Index 2/3	41490	2680	23.94	25.00	1.276	62.9	1.006	0.17	0.031	0.040
	LTE Band 41_Ant 0	20M	QPSK	50	0	Right Tilted	0mm	Index 2/3	41490	2680	22.80	24.00	1.318	62.9	1.006	-0.09	0.028	0.037
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	Index 2/3	41490	2680	23.94	25.00	1.276	62.9	1.006	-0.07	0.106	0.136
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	Index 2/3	39750	2506	23.92	25.00	1.282	62.9	1.006	-0.04	0.126	0.163
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	Index 2/3	40185	2549.5	23.49	25.00	1.416	62.9	1.006	0.13	0.090	0.128
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	Index 2/3	40620	2593	23.63	25.00	1.371	62.9	1.006	-0.15	0.094	0.130
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	Index 2/3	41055	2636.5	23.66	25.00	1.361	62.9	1.006	-0.1	0.103	0.141
	LTE Band 41_Ant 0	20M	QPSK	50	0	Left Cheek	0mm	Index 2/3	41490	2680	22.80	24.00	1.318	62.9	1.006	-0.07	0.091	0.121
	LTE Band 41_Ant 0	20M	QPSK	1	0	Left Tilted	0mm	Index 2/3	41490	2680	23.94	25.00	1.276	62.9	1.006	-0.01	0.024	0.031
	LTE Band 41_Ant 0	20M	QPSK	50	0	Left Tilted	0mm	Index 2/3	41490	2680	22.80	24.00	1.318	62.9	1.006	-0.07	0.018	0.024

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18. Uncertainty Assessment

Declaration of Conformity:

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

Comments and Explanations:

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

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture’s specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor ^(a)	1/k ^(b)	1/√3	1/√6	1/√2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual “root-sum-squares” (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.



Applicable for SAR Measurements:

Uncertainty Budget (4 MHz - 10 GHz range)							
Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	18.60	N	2	1	1	9.3	9.3
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Linearity	4.70	R	1.732	1	1	2.7	2.7
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Boundary Effects	2.00	R	1.732	1	1	1.2	1.2
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	6.70	R	1.732	1	1	3.9	3.9
Post-processing	4.00	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Holder	3.60	N	1	1	1	3.6	3.6
Test sample Positioning	3.03	N	1	1	1	3.0	3.0
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Phantom and Setup							
Phantom Uncertainty	7.60	R	1.732	1	1	4.4	4.4
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.77	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.77	2.3	2.2
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.77	1.1	1.1
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.77	1.7	1.6
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						14.5%	14.2%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						29.0%	28.4%



Applicable for Power Density Measurements:

Error Description	Uncertainty Value (±dB)	Probability	Divisor	(Ci)	Standard Uncertainty (±dB)
Probe Calibration	0.49	N	1	1	0.49
Probe correction	0.00	R	1.732	1	0.00
Frequency response (BW ≤ 1 GHz)	0.20	R	1.732	1	0.12
Sensor cross coupling	0.00	R	1.732	1	0.00
Isotropy	0.50	R	1.732	1	0.29
Linearity	0.20	R	1.732	1	0.12
Probe scattering	0.00	R	1.732	1	0.00
Probe positioning offset	0.30	R	1.732	1	0.17
Probe positioning repeatability	0.04	R	1.732	1	0.02
Sensor mechanical offset	0.00	R	1.732	1	0.00
Probe spatial resolution	0.00	R	1.732	1	0.00
Field impedance dependence	0.00	R	1.732	1	0.00
Amplitude and phase drift	0.00	R	1.732	1	0.00
Amplitude and phase noise	0.04	R	1.732	1	0.02
Measurement area truncation	0.00	R	1.732	1	0.00
Data acquisition	0.03	N	1	1	0.03
Sampling	0.00	R	1.732	1	0.00
Field reconstruction	2.00	R	1.732	1	1.15
Forward transformation	0.00	R	1.732	1	0.00
Power density scaling	0.00	R	1.732	1	0.00
Spatial averaging	0.10	R	1.732	1	0.06
System detection limit	0.04	R	1.732	1	0.02
Uncertainty terms dependent on the DUT and environmental factors					
Probe coupling with DUT	0.00	R	1.732	1	0.0
Modulation response	0.40	R	1.732	1	0.2
Integration time	0.00	R	1.732	1	0.0
Response time	0.00	R	1.732	1	0.0
Device holder influence	0.10	R	1.732	1	0.1
DUT alignment	0.00	R	1.732	1	0.0
RF ambient conditions	0.04	R	1.732	1	0.0
Ambient reflections	0.04	R	1.732	1	0.0
Immunity / secondary reception	0.00	R	1.732	1	0.0
Drift of the DUT		R	1.732	1	
Combined Std. Uncertainty					1.34
Expanded STD Uncertainty (95%)					2.68



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