



TEST REPORT

EUT Description	WWAN module installed on Convertible PC
Brand Name	HP
Model Name	TPN-W155
FCC ID	B94-TNW155GP2KV
Date of Test Start/End	2021-05-06 / 2022-06-13
Features	WWAN (5G NR, LTE, UMTS), WLAN, BT (see section 6)
Description	HP TPN-W155 + INPAQ / HTK antennas

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Reference Standards	FCC 47 CFR Part §2.1093 (see section 1)	
RF Exposure Environment	Portable devices - General population/uncontrolled exposure	
Exposure Conditions	Body worn	
	SAR Result	SAR Limit
Maximum SAR Result & Limit	1.30 W/kg (1g)	1.6 W/kg (1g)
Min. test separation distance	0mm to phantom, 2.10mm to antenna edge	

Test Report identification	220425-01.TR04
Revision Control	Rev. 02 This test report revision replaces any previous test report revision (See section 9)

The test results relate only to the samples tested.
Reference to accreditation shall be used only by full reproduction of test report.

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1. Standards, reference documents and applicable test methods

FCC	<ol style="list-style-type: none">1. FCC Title 47 CFR Part §2.1093 – Radiofrequency radiation exposure evaluation: portable devices. 2019-10-01 Edition2. FCC OET KDB 447498 D01 v06 – RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices.3. FCC OET KDB 616217 D04 v01r02 – SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers.4. FCC OET KDB 865664 D01 v01r04 – SAR Measurement Requirements for 100 MHz to 6 GHz.5. FCC OET KDB 865664 D02 v01r02 – RF Exposure Compliance Reporting and Documentation Considerations.6. FCC OET KDB 941225 D05 v02r05 – SAR Evaluation Considerations for LTE Devices.7. FCC OET KDB 941225 D01 v03r01 – 3G SAR Measurement Procedures.8. IEEE Std 1528-2013 – IEEE Recommended Practice Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques...9. TCB Workshop Nov 2017 71-RF-Exposure-TCB-Slides-LTE UL/DL Carrier Aggregation SAR10. TCB workshop November 2019; RF Exposure Policy Updates (5G NR FR1 NSA EN-DC UE SAR Evaluations), the FCC OET KDB 941225 D05 rules apply.
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2. General conditions, competences and guarantees

- ✓ Tests performed under FCC standards identified in section 1 are covered by A2LA accreditation.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an ISO/IEC 17025:2017 laboratory accredited by the American Association for Laboratory Accreditation (A2LA) with the certificate number 3478.01.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an Accredited Test Firm recognized by the FCC, with Designation Number FR0011.
- ✓ Intel WRF Lab only provides testing services and is committed to providing reliable, unbiased test results and interpretations.
- ✓ Intel WRF Lab is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.
- ✓ Intel WRF Lab has developed calibration and proficiency programs for its measurement equipment to ensure correlated and reliable results to its customers.
- ✓ This report is only referred to the item that has undergone the test.
- ✓ This report does not imply an approval of the product by the Certification Bodies or competent Authorities.

3. Preface

The TPN-W155 Convertible PC includes the Time Averaging SAR (TAS) concept. The TAS algorithm is implemented in the Fibocom M2 FM350-GL modem, which is embedded in the FM350-GL cellular module (FCC ID: ZMOFM350GL).

The implementation details and TAS operating characteristics are described in a separated document [1]. The validation of algorithm operations is performed by Intel Corporation according to the range of commonly used accessible control parameters used for typical host products. The validation results are reported in document [2].

The FCC SAR limit is a time averaged exposure metric. At host level, the normally required SAR test procedures are applicable for SAR compliance testing at upper-threshold values of the algorithm, which is the maximum output power level for continuous time-averaging operations TAS algorithm enforces. The reliability of this has been demonstrated by results in the Algorithm Validation Test Report [2].

The model supports simultaneous transmission of WWAN, BT and WLAN. The TAS algorithm is only applied to WWAN cellular module.

The SAR evaluation of WWAN is performed in this report as well as the RF exposure assessment for simultaneous transmission of WWAN, WLAN and BT.

[1] 210317_TAS_Operational_Report_Rev01

[2] 201029-02.TR01_Rev01_Validation Report for 5G Time Averaging Algorithm

[3] 211216-01.TR05_FCC_IC_WLAN_SAR_HP TPN W155_AX211NGW

[4] 211216-01.TR06_SAR_PD_WiFi_6E_TPN_W155_AX211NGW -Rev01

4. Environmental Conditions

- ✓ At the site where the measurements were performed the following limits were not exceeded during the tests:

Temperature	22.1°C ± 2°C
Humidity	40% ± 20%
Liquid Temperature	21.8°C ± 2°C

5. Test samples

Sample	Control #	Description	Model	Serial #	Date of receipt	Comment
#01	220425-01.S03	WWAN module installed on Convertible PC	TPN-W155	ABC202004T	2021-05-04	HTK antenna Used WCDMA / LTE tests
#02	220425-01.S04	WWAN module installed on Convertible PC	TPN-W155	ABC20100YV	2021-05-04	INPAQ antenna Used WCDMA / LTE tests
#03	220425-01.S07	WWAN module installed on Convertible PC	TPN-W155	8CG1404P5L	2021-05-04	INPAQ antenna Used 5G NR and WCDMA / LTE tests
#04	220425-01.S01	WWAN module installed on Convertible PC	TPN-W155	8CG1404PSK	2021-05-04	HTK antenna Used 5G NR tests
#05	220425-01.S05	WWAN module installed on Convertible PC	TPN-W155	ABC202004S	2021-05-04	HTK antenna Used 5G NR tests

6. EUT Features

The herein information is provided by the customer.

Intel WRF Lab declines any responsibility for the accuracy of the stated customer provided information, especially if it has any impact on the correctness of test results presented in this report.

Brand Name	HP
Model Name	TPN-W155
Prototype / Production	Production
Host Identification	TPN-W155

Supported radios									
WWAN:									
Mode	Bands	Supported Tx Mode							
		RMC	HSDPA	HSUPA	DC-HSDPA				
WCDMA / HSPA+	FDD II (1850.0 – 1910.0 MHz)	✓	✓	✓	✓				
	FDD IV (1710.0 – 1755.0 MHz)	✓	✓	✓	✓				
	FDD V (824.0 – 849.0 MHz)	✓	✓	✓	✓				

FDD/TDD	Bands	Modulations	Bandwidth					
			1.4	3	5	10	15	20
LTE FDD	Band 2 (1850.0 – 1910.0 MHz)	QPSK/16QAM/64QAM/256QAM	✓	✓	✓	✓	✓	✓
	Band 4 (1710.0 – 1755.0 MHz)	QPSK/16QAM/64QAM/256QAM	✓	✓	✓	✓	✓	✓
	Band 5 (824.0 – 849.0 MHz)	QPSK/16QAM/64QAM/256QAM	✓	✓	✓	✓		
	Band 7 (2500.0 – 2570.0 MHz)	QPSK/16QAM/64QAM/256QAM			✓	✓	✓	✓
	Band 12 (699.0 – 716.0 MHz)	QPSK/16QAM/64QAM/256QAM	✓	✓	✓	✓		
	Band 13 (777.0 – 787.0 MHz)	QPSK/16QAM/64QAM/256QAM			✓	✓		
	Band 14 (788.0 – 798.0 MHz)	QPSK/16QAM/64QAM/256QAM			✓	✓		
	Band 17 (704.0 – 716.0 MHz)	QPSK/16QAM/64QAM/256QAM			✓	✓		
	Band 25 (1850.0 – 1915.0 MHz)	QPSK/16QAM/64QAM/256QAM	✓	✓	✓	✓	✓	✓
	Band 26 (814.0 – 849.0 MHz)	QPSK/16QAM/64QAM/256QAM	✓	✓	✓	✓	✓	
	Band 30 (2305.0 – 2315.0 MHz)	QPSK/16QAM/64QAM/256QAM			✓	✓		
	Band 66 (1710.0 – 1780.0 MHz)	QPSK/16QAM/64QAM/256QAM	✓	✓	✓	✓	✓	✓
Band 71 (663.0 – 698.0 MHz)	QPSK/16QAM/64QAM/256QAM			✓	✓	✓	✓	
LTE TDD	Band 38 (2570.0 – 2620.0 MHz)	QPSK/16QAM/64QAM/256QAM			✓	✓	✓	✓
	Band 41 (2496.0 – 2690.0 MHz)	QPSK/16QAM/64QAM/256QAM			✓	✓	✓	✓
	Band 48 (3550.0 – 3700.0 MHz)	QPSK/16QAM/64QAM/256QAM			✓	✓	✓	✓

Bands	Modulation	SCS (KHz)	Bandwidth													
			5	10	15	20	25	30	40	50	60	70	80	90	100	
N2 FDD (1850.0 – 1910.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30	✓	✓	✓	✓										
N5 FDD (824.0 – 849.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30	✓	✓	✓	✓										
N7 FDD (2500.0 – 2570.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30	✓	✓	✓	✓										
N25 FDD (1850.0 – 1915 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30	✓	✓	✓	✓										
N30 FDD (2305.0 – 2315.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30	✓	✓												
N38 TDD (2570.0 – 2620.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30	✓	✓	✓	✓										
N41 TDD (2496.0 – 2690.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30				✓			✓	✓	✓		✓	✓	✓	
N66 FDD (1710.0 – 1780.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30	✓	✓	✓	✓			✓							
N71 FDD (663.0 – 698.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30	✓	✓	✓	✓										
N77 TDD* (3700.0 – 3980.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30		✓	✓	✓			✓	✓	✓		✓	✓	✓	
N78 TDD** (3700.0 – 3800.0 MHz)	PI/2 BPSK QPSK 16QAM 64QAM 256QAM	15 30		✓	✓	✓			✓	✓	✓		✓	✓	✓	

*FCC limits 5G NR B77 to 3700-3980MHz

** FCC limits 5G NR B78 to 3700-3800MHz

UL carrier aggregation LTE (Inter-Band)		UL carrier aggregation LTE (Intra-band)
2A – 5A	5A – 48A	5B
2A – 12A	5A – 66A	7C
2A – 13A	12A – 30A	38C
2A – 14A	12A – 66A	41C
2A – 48A	13A – 48A	48C
4A – 5A	13A – 66A	66B
4A – 12A	14A – 30A	66C
4A – 13A	14A – 66A	
5A – 7A	25A – 26A	
5A – 30A	66A – 66A	

EN/DC possible combinations	
NR 5G Band	Associated LTE Bands
N2A	5, 12, 13, 14
N5A	2, 7, 30, 66, 48
N66A	5, 12, 13, 48
N41A	2, 66, 41
N71A	2, 66
N77A	2, 5, 12, 13, 14, 30, 66, 41
N78A	2, 5, 7, 38

UL carrier aggregation 5G FR1	
	n2A – n5A
	n5A – n66A

WLAN

Mode	UL Freq Range
802.11b/g/n/ax	2.4GHz (2400.0 – 2483.5 MHz)
802.11a/n/ac/ax	5.2GHz (5150.0 – 5250.0 MHz) 5.3GHz (5250.0 – 5350.0 MHz) 5.6GHz (5470.0 – 5725.0 MHz) 5.8GHz (5725.0 – 5850.0 MHz)
802.11ax	6.0GHz (5925.0 – 7125.0 MHz)
Bluetooth v5.2 & BLE	2.4GHz (2400.0 – 2483.5 MHz)

Antenna Information “information provided by the applicant”

The DUTs have 2 WWAN TX antenna ports:

Transmitter	Main (Antenna 5)	Aux (Antenna 8)
Manufacturer	INPAQ	INPAQ
Antenna type	PIFA antenna	PIFA antenna
Part number	025.90206.0001 WA-P-S6G1-02-013	025.90209.0001 WA-P-S6G2-02-026
Transmitter	Main (Antenna 5)	Aux (Antenna 8)
Manufacturer	HighTek	HighTek
Antenna type	PIFA antenna	PIFA antenna
Part number	025.901ZW.0001 OACAR021017N	025.901ZZ.0001 OACAR021020N

See Annex F for more details on antennas location.

WWAN Antenna Mapping		
Configuration	Main (Ant 5)	Aux (Ant 8)
WCDMA	LB / MHB	
LTE	LB / MHB	
		UHB
NR 5G SA	(LB / MHB)	
		UHB
LTE ULCA	LB	MHB / UHB
	MHB	UHB
	B41	UHB
NR 5G ENDC	LB	MHB / B41
	B41	N41
	MHB	B41/N41
	B41/N41	UHB
	MHB	UHB
NR 5G ULCA	LB	MHB

- LB: WCDMA FDD V, LTE B5/12/13/14/17/26/71, 5G NR n5/n71
- MHB: WCDMA FDD II/ FDD IV, LTE B2/4/7/25/30/66/38, 5G NR n2/n7/n25/n30/n38/n66
- UHB: LTE: B41/48; NR 5G: n41/n77/n78

Note: For EN-DC mode the 4G and 5G carriers transmit on separate antennas.
 For inter-bands on LTE and NR 5G ULCA the carriers transmit on separate antennas.

Simultaneous Transmission Configurations

- WWAN Main (Ant5) + WWAN Aux (Ant8) + WLAN 2.4GHz Main + BT Aux
- WWAN Main (Ant5) + WWAN Aux (Ant8) + WLAN 2.4GHz Main + WLAN 2.4GHz Aux
- WWAN Main (Ant5) + WWAN Aux (Ant8) + WLAN 5GHz Main + BT Aux
- WWAN Main (Ant5) + WWAN Aux (Ant8) + WLAN 5GHz Main + WLAN 5GHz Aux
- WWAN Main (Ant5) + WWAN Aux (Ant8) + WLAN 5GHz Main + WLAN 5GHz Aux + BT Aux
- WWAN Main (Ant5) + WWAN Aux (Ant8) + WLAN 6GHz Main + BT Aux
- WWAN Main (Ant5) + WWAN Aux (Ant8) + WLAN 6GHz Main + WLAN 6GHz Aux
- WWAN Main (Ant5) + WWAN Aux (Ant8) + WLAN 6GHz Main + WLAN 6GHz Aux + BT Aux

WLAN transmitter is considered in this report just for the simultaneous transmission evaluation with the WWAN module (See section B.5.5)

Additional information

- 5.60-5.65 GHz band (TDWR) is supported by the device
- Band gap is supported by the device
- Two power settings are implemented in the DUT:
 - Max power for Notebook mode and reduced power Tablet mode
- Maximum Power Reduction (MPR) is implemented according to 3GPP, built-in by design on the tune-up power:

Modulation	Channel bandwidth / #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

The DUT uses the maximum MPR values described in the above tables.

The maximum power reduction is applicable on the tune up tolerance.

- According to 3GPP 38-101-1, the UE is allowed to reduce the maximum output power due to higher order modulations and for channel bandwidths that meets both following criteria:
- Channel bandwidth ≤ 100MHz.
- Relative channel bandwidth ≤ 4% for TDD bands and ≤ 3% for FDD bands

Maximum power reduction (MPR) for power class 3			
Modulation	MPR (Db)		
	Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM PI/2 BPSK	≤ 3.5 ¹	≤ 1.2 ¹	≤ 0.2 ¹
	0.5 ²	0.5 ²	0 ²
DFT-s-OFDM QPSK	≤ 1		0
DFT-s-OFDM 16 QAM	≤ 2		≤ 1
DFT-s-OFDM 64 QAM	≤ 2.5		
DFT-s-OFDM 256 QAM	4.5		
CP-OFDM QPSK	≤ 3	≤ 1.5	
CP-OFDM 16 QAM	≤ 3	≤ 2	
CP-OFDM 64 QAM	≤ 3.5		
CP-OFDM 256 QAM	≤ 6.5		

NOTE 1: Applicable for UE operating in TDD mode with PI/2 BPSK modulation and if the IE [P-Boost-BPSK] is set to 1 and 40% or less slots in radio frame are used for UL transmission for bands n40, n77, n78 and n79.
 NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n77, n78 and n79 and if the IE [Pboost-BPSK] is set to 0 and if more than 40% of slots in radio frame are used for UL transmission for bands n40, n77, n78 and n79.

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

The DUT uses the maximum MPR values described in the above tables.

The maximum power reduction is applicable on the tune up tolerance.

The following tables indicates the power levels and tolerance for laptop & tablet modes:

Maximum Output power specification + Tune up tolerance

Mode	Tx Ant	Technology	Bands	Class	Nominal (dBm)	Tolerance dB	Lower Tolerance (dBm)	Upper Tolerance (dBm)	
Laptop	Ant 5	WCDMA/HSPA	FDD II (1850.0 – 1910.0 MHz)	3	20.0	±1	19.0	21.0	
		WCDMA/HSPA	FDD IV (1710.0 – 1755.0 MHz)	3	20.0	±1	19.0	21.0	
		WCDMA/HSPA	FDD V (824.0 – 849.0 MHz)	3	20.5	±1	19.5	21.5	
		LTE	B2 (1850.0 – 1910.0 MHz)	3	19.5	±1	18.5	20.5	
		LTE	B4 (1710.0 – 1755.0 MHz)	3	20.0	±1	19.0	21.0	
		LTE	B5 (824.0 – 849.0 MHz)	3	20.5	±1	19.5	21.5	
		LTE	B7 (2500.0 – 2570.0 MHz)	3	18.5	±1	17.5	19.5	
		LTE	B12 (699.0 – 716.0 MHz)	3	20.5	±1	19.5	21.5	
		LTE	B13 (777.0 – 787.0 MHz)	3	20.5	±1	19.5	21.5	
		LTE	B14 (788.0 – 798.0 MHz)	3	20.5	±1	19.5	21.5	
		LTE	B17 (704.0 – 716.0 MHz)	3	20.5	±1	19.5	21.5	
		LTE	B25 (1850.0 – 1915.0 MHz)	3	19.5	±1	18.5	20.5	
		LTE	B26 (814.0 – 849.0 MHz)	3	20.5	±1	19.5	21.5	
		LTE	B30 (2305.0 – 2315.0 MHz)	3	19.0	±1	18.0	20.0	
		LTE	B38 (2570.0 – 2620.0 MHz)	3	18.5	±1	17.5	19.5	
		LTE	B41 (2496.0 – 2690.0 MHz)	3	18.5	±1	17.5	19.5	
		LTE	B41-HPUE (2496.0 – 2690.0 MHz)	2	18.5	±1	17.5	19.5	
		LTE	B66 (1710.0 – 1780.0 MHz)	3	20.0	±1	19.0	21.0	
		LTE	B71 (663.0 – 698.0 MHz)	3	20.5	±1	19.5	21.5	
	Ant 8	LTE	B2 (1850.0 – 1910.0 MHz)	3	23.0	±1	22.0	24.0	
		LTE	B4 (1710.0 – 1755.0 MHz)	3	23.0	±1	22.0	24.0	
		LTE	B7 (2500.0 – 2570.0 MHz)	3	23.0	±1	22.0	24.0	
		LTE	B25 (1850.0 – 1915.0 MHz)	3	23.0	±1	22.0	24.0	
		LTE	B30 (2305.0 – 2315.0 MHz)	3	22.0	±1	21.0	23.0	
		LTE	B41 (2496.0 – 2690.0 MHz)	3	26.0	±1	25.0	27.0	
		LTE	B41-HPUE(2496.0 – 2690.0 MHz)	2	26.0	±1	25.0	27.0	
		LTE	B48 (3550.0 – 3700.0 MHz)	3	21.0	±1	20.0	22.0	
	Ant 5	5G NR	N2 (1850.0 – 1910.0 MHz)	3	19.5	±1	18.5	20.5	
		5G NR	N5 (824.0 – 849.0 MHz)	3	20.0	±1	19.0	21.0	
		5G NR	N7 (2500.0 – 2570.0 MHz)	3	18.0	±1	17.0	19.0	
		5G NR	N25 (1850.0 – 1915.0 MHz)	3	19.5	±1	18.5	20.5	
		5G NR	N30 (2305.0 – 2315.0 MHz)	3	17.5	±1	16.5	18.5	
		5G NR	N38 (2570.0 – 2620.0 MHz)	3	18.5	±1	17.5	19.5	
		5G NR	N41 (2496.0 – 2690.0 MHz)	3	18.5	±1	17.5	19.5	
		5G NR	N41-HPUE(2496.0 – 2690.0 MHz)	2	18.5	±1	17.5	19.5	
		5G NR	N66 (1710.0 – 1780.0 MHz)	3	19.0	±1	18.0	20.0	
		5G NR	N71 (663.0 – 698.0 MHz)	3	20.5	±1	19.5	21.5	
		5G NR	N77 (3700.0 – 3980.0 MHz)	3	17.5	±1	16.5	18.5	
		5G NR	N77-HPUE(3700.0 – 3980.0 MHz)	2	17.5	±1	16.5	18.5	
		5G NR	N78 (3700.0 – 3800.0 MHz)	3	17.5	±1	16.5	18.5	
		5G NR	N78-HPUE(3700.0 – 3800.0 MHz)	3	17.5	±1	16.5	18.5	
		Ant 8	5G NR	N2 (1850.0 – 1910.0 MHz)	3	23.0	±1	22.0	24.0
			5G NR	N41 (2496.0 – 2690.0 MHz)	3	23.0	±1	22.0	24.0
	5G NR		N41-HPUE(2496.0 – 2690.0 MHz)	2	26.0	±1	25.0	27.0	
	5G NR		N66 (1710.0 – 1780.0 MHz)	3	23.0	±1	22.0	24.0	
5G NR	N77 (3700.0 – 3980.0 MHz)		3	23.0	±1	22.0	24.0		
5G NR	N77-HPUE(3700.0 – 3980.0 MHz)		2	26.0	±1	25.0	27.0		
5G NR	N78 (3700.0 – 3800.0 MHz)		3	23.0	±1	22.0	24.0		
5G NR	N78-HPUE(3700.0 – 3800.0 MHz)		3	26.0	±1	25.0	27.0		

Mode	Tx Ant	Technology	Bands	Class	Nominal (dBm)	Tolerance dB	Lower Tolerance (dBm)	Upper Tolerance (dBm)
Tablet	Ant 5	WCDMA/HSPA	FDD II (1850.0 – 1910.0 MHz)	3	15.5	±1	14.5	16.5
		WCDMA/HSPA	FDD IV (1710.0 – 1755.0 MHz)	3	15.5	±1	14.5	16.5
		WCDMA/HSPA	FDD V (824.0 – 849.0 MHz)	3	18.0	±1	17.0	19.0
		LTE	B2 (1850.0 – 1910.0 MHz)	3	15.5	±1	14.5	16.5
		LTE	B4 (1710.0 – 1755.0 MHz)	3	15.5	±1	14.5	16.5
		LTE	B5 (824.0 – 849.0 MHz)	3	18.0	±1	17.0	19.0
		LTE	B7 (2500.0 – 2570.0 MHz)	3	15.0	±1	14.0	16.0
		LTE	B12 (699.0 – 716.0 MHz)	3	18.0	±1	17.0	19.0
		LTE	B13 (777.0 – 787.0 MHz)	3	18.0	±1	17.0	19.0
		LTE	B14 (788.0 – 798.0 MHz)	3	18.0	±1	17.0	19.0
		LTE	B17 (704.0 – 716.0 MHz)	3	18.0	±1	17.0	19.0
		LTE	B25 (1850.0 – 1915.0 MHz)	3	15.5	±1	14.5	16.5
		LTE	B26 (814.0 – 849.0 MHz)	3	18.0	±1	17.0	19.0
		LTE	B30 (2305.0 – 2315.0 MHz)	3	15.5	±1	14.5	16.5
		LTE	B38 (2570.0 – 2620.0 MHz)	3	15.0	±1	14.0	16.0
		LTE	B41 (2496.0 – 2690.0 MHz)	3	15.0	±1	14.0	16.0
		LTE	B41-HPUE (2496.0 – 2690.0 MHz)	2	15.0	±1	14.0	16.0
		LTE	B66 (1710.0 – 1780.0 MHz)	3	15.5	±1	14.5	16.5
	LTE	B71 (663.0 – 698.0 MHz)	3	18.0	±1	17.0	19.0	
	Ant 8	LTE	B2 (1850.0 – 1910.0 MHz)	3	15.5	±1	14.5	16.5
		LTE	B4 (1710.0 – 1755.0 MHz)	3	15.5	±1	14.5	16.5
		LTE	B7 (2500.0 – 2570.0 MHz)	3	17.5	±1	16.5	18.5
		LTE	B25 (1850.0 – 1915.0 MHz)	3	15.5	±1	14.5	16.5
		LTE	B30 (2305.0 – 2315.0 MHz)	3	17.5	±1	16.5	18.5
		LTE	B41 (2496.0 – 2690.0 MHz)	3	17.5	±1	16.5	18.5
		LTE	B41-HPUE(2496.0 – 2690.0 MHz)	2	17.5	±1	16.5	18.5
		LTE	B48 (3550.0 – 3700.0 MHz)	3	13.5	±1	12.5	14.5
	LTE	B66 (1710.0 – 1780.0 MHz)	3	15.5	±1	14.5	16.5	
	Ant 5	5G NR	N2 (1850.0 – 1910.0 MHz)	3	15.5	±1	14.5	16.5
		5G NR	N5 (824.0 – 849.0 MHz)	3	18.0	±1	17.0	19.0
		5G NR	N7 (2500.0 – 2570.0 MHz)	3	15.0	±1	14.0	16.0
		5G NR	N25 (1850.0 – 1915.0 MHz)	3	15.5	±1	14.5	16.5
		5G NR	N30 (2305.0 – 2315.0 MHz)	3	15.5	±1	14.5	16.5
		5G NR	N38 (2570.0 – 2620.0 MHz)	3	15.0	±1	14.0	16.0
		5G NR	N41 (2496.0 – 2690.0 MHz)	3	15.0	±1	14.0	16.0
		5G NR	N41-HPUE(2496.0 – 2690.0 MHz)	2	15.0	±1	14.0	16.0
		5G NR	N66 (1710.0 – 1780.0 MHz)	3	15.5	±1	14.5	16.5
		5G NR	N71 (663.0 – 698.0 MHz)	3	18.0	±1	17.0	19.0
		5G NR	N77 (3700.0 – 3980.0 MHz)	3	14.0	±1	13.0	15.0
		5G NR	N77-HPUE(3700.0 – 3980.0 MHz)	2	14.0	±1	13.0	15.0
5G NR		N78 (3700.0 – 3800.0 MHz)	3	14.0	±1	13.0	15.0	
5G NR		N78-HPUE(3700.0 – 3800.0 MHz)	3	14.0	±1	13.0	15.0	
Ant 8	5G NR	N2 (1850.0 – 1910.0 MHz)	3	15.5	±1	14.5	16.5	
	5G NR	N41 (2496.0 – 2690.0 MHz)	3	17.5	±1	16.5	18.5	
	5G NR	N41-HPUE(2496.0 – 2690.0 MHz)	2	17.5	±1	16.5	18.5	
	5G NR	N66 (1710.0 – 1780.0 MHz)	3	15.5	±1	14.5	16.5	
	5G NR	N77 (3700.0 – 3980.0 MHz)	3	13.0	±1	12.0	14.0	
	5G NR	N77-HPUE(3700.0 – 3980.0 MHz)	2	13.0	±1	12.0	14.0	
	5G NR	N78 (3700.0 – 3800.0 MHz)	3	13.0	±1	12.0	14.0	
5G NR	N78-HPUE(3700.0 – 3800.0 MHz)	2	13.0	±1	12.0	14.0		

As mentioned in Section 3, the SAR compliance testing is performed at upper-threshold values of the algorithm, which is the maximum output power level for continuous time-averaging operations TAS algorithm enforces.

In TAS operation, the control parameters including the upper-threshold value are stored in NVM. They are inaccessible to the normal users and no other interface is available for changing these control parameters.

The table below shows the upper-threshold values used as continuous power for SAR testing as well as the different TAS parameters defined in [1] and [2] of section 3, to be embedded in the host:

Mode	Tx Ant.	Technology	Bands	Class	Nominal Full Power (dBm)	Upper Threshold (dBm)	Lower Threshold (dBm)	DPR_ON Power (dBm)
Laptop	Ant 5	WCDMA/HSPA	FDD II (1850.0 – 1910.0 MHz)	3	23.5	20.0	19.0	18.0
		WCDMA/HSPA	FDD IV (1710.0 – 1755.0 MHz)	3	23.5	20.0	19.0	18.0
		WCDMA/HSPA	FDD V (824.0 – 849.0 MHz)	3	23.5	20.5	19.5	18.5
		LTE	B2 (1850.0 – 1910.0 MHz)	3	23.0	19.5	18.5	17.5
		LTE	B4 (1710.0 – 1755.0 MHz)	3	23.0	20.0	19.0	18.0
		LTE	B5 (824.0 – 849.0 MHz)	3	23.0	20.5	19.5	18.5
		LTE	B7 (2500.0 – 2570.0 MHz)	3	23.0	18.5	17.5	16.5
		LTE	B12 (699.0 – 716.0 MHz)	3	23.0	20.5	19.5	18.5
		LTE	B13 (777.0 – 787.0 MHz)	3	23.0	20.5	19.5	18.5
		LTE	B14 (788.0 – 798.0 MHz)	3	23.0	20.5	19.5	18.5
		LTE	B17 (704.0 – 716.0 MHz)	3	23.0	20.5	19.5	18.5
		LTE	B25 (1850.0 – 1915.0 MHz)	3	23.0	19.5	18.5	17.5
		LTE	B26 (814.0 – 849.0 MHz)	3	23.0	20.5	19.5	18.5
		LTE	B30 (2305.0 – 2315.0 MHz)	3	22.0	19.0	18.0	17.0
		LTE	B38 (2570.0 – 2620.0 MHz)	3	23.0	18.5	17.5	16.5
		LTE	B41 (2496.0 – 2690.0 MHz)	3	23.0	18.5	17.5	16.5
		LTE	B41-HPUE(2496.0 – 2690.0 MHz)	2	26.0	18.5	17.5	16.5
		LTE	B66 (1710.0 – 1780.0 MHz)	3	23.0	20.0	19.0	18.0
	LTE	B71 (663.0 – 698.0 MHz)	3	23.0	20.5	19.5	18.5	
	LTE	B2 (1850.0 – 1910.0 MHz)	3	23.0	23.0	22.0	21.0	
	LTE	B4 (1710.0 – 1755.0 MHz)	3	23.0	23.0	22.0	21.0	
	LTE	B7 (2500.0 – 2570.0 MHz)	3	23.0	23.0	22.0	21.0	
	LTE	B25 (1850.0 – 1915.0 MHz)	3	23.0	23.0	22.0	21.0	
	LTE	B30 (2305.0 – 2315.0 MHz)	3	22.0	22.0	21.0	20.0	
	LTE	B41 (2496.0 – 2690.0 MHz)	3	23.0	26.0	25.0	24.0	
	LTE	B41-HPUE(2496.0 – 2690.0 MHz)	2	26.0	26.0	25.0	24.0	
	LTE	B48 (3550.0 – 3700.0 MHz)	3	21.0	21.0	20.0	19.0	
	LTE	B66 (1710.0 – 1780.0 MHz)	3	23.0	23.0	22.0	21.0	
	LTE	B2 (1850.0 – 1910.0 MHz)	3	23.0	19.5	18.5	17.5	
	LTE	N5 (824.0 – 849.0 MHz)	3	23.0	20.0	19.0	18.0	
	LTE	N7 (2500.0 – 2570.0 MHz)	3	23.0	18.0	17.0	16.0	
	LTE	N25 (1850.0 – 1915.0 MHz)	3	23.0	19.5	18.5	17.5	
	LTE	N30 (2305.0 – 2315.0 MHz)	3	22.0	17.5	16.5	15.5	
	LTE	N38 (2570.0 – 2620.0 MHz)	3	23.0	18.5	17.5	16.5	
	LTE	N41 (2496.0 – 2690.0 MHz)	3	23.0	18.5	17.5	16.5	
	LTE	N41-HPUE(2496.0 – 2690.0 MHz)	2	26.0	18.5	17.5	16.5	
	LTE	N66 (1710.0 – 1780.0 MHz)	3	23.0	19.0	18.0	17.0	
	LTE	N71 (663.0 – 698.0 MHz)	3	23.0	20.5	19.5	18.5	
	LTE	N77 (3700.0 – 3980.0 MHz)	3	23.0	17.5	16.5	15.5	
	LTE	N77-HPUE(3700.0 – 3980.0 MHz)	2	25.0	17.5	16.5	15.5	
	LTE	N78 (3700.0 – 3800.0 MHz)	3	23.0	17.5	16.5	15.5	
	LTE	N78-HPUE(3700.0 – 3800.0 MHz)	3	26.0	17.5	16.5	15.5	
LTE	N2 (1850.0 – 1910.0 MHz)	3	23.0	23.0	22.0	21.0		
LTE	N41 (2496.0 – 2690.0 MHz)	3	23.0	23.0	22.0	21.0		
LTE	N41-HPUE(2496.0 – 2690.0 MHz)	2	26.0	26.0	25.0	24.0		
LTE	N66 (1710.0 – 1780.0 MHz)	3	23.0	23.0	22.0	21.0		
LTE	N77 (3700.0 – 3980.0 MHz)	3	23.0	23.0	22.0	21.0		
LTE	N77-HPUE(3700.0 – 3980.0 MHz)	2	26.0	26.0	25.0	24.0		
LTE	N78 (3700.0 – 3800.0 MHz)	3	23.0	23.0	22.0	21.0		
LTE	N78-HPUE(3700.0 – 3800.0 MHz)	2	26.0	26.0	25.0	24.0		

Mode	Tx Ant.	Technology	Bands	Class	Nominal Full Power (dBm)	Upper Threshold (dBm)	Lower Threshold (dBm)	DPR_ON Power (dBm)
Tablet	Ant 5	WCDMA/HSPA	FDD II (1850.0 – 1910.0 MHz)	3	23.5	15.5	14.5	13.5
		WCDMA/HSPA	FDD IV (1710.0 – 1755.0 MHz)	3	23.5	15.5	14.5	13.5
		WCDMA/HSPA	FDD V (824.0 – 849.0 MHz)	3	23.5	18.0	17.0	16.0
		LTE	B2 (1850.0 – 1910.0 MHz)	3	23.0	15.5	14.5	13.5
		LTE	B4 (1710.0 – 1755.0 MHz)	3	23.0	15.5	14.5	13.5
		LTE	B5 (824.0 – 849.0 MHz)	3	23.0	18.0	17.0	16.0
		LTE	B7 (2500.0 – 2570.0 MHz)	3	23.0	15.0	14.0	13.0
		LTE	B12 (699.0 – 716.0 MHz)	3	23.0	18.0	17.0	16.0
		LTE	B13 (777.0 – 787.0 MHz)	3	23.0	18.0	17.0	16.0
		LTE	B14 (788.0 – 798.0 MHz)	3	23.0	18.0	17.0	16.0
		LTE	B17 (704.0 – 716.0 MHz)	3	23.0	18.0	17.0	16.0
		LTE	B25 (1850.0 – 1915.0 MHz)	3	23.0	15.5	14.5	13.5
		LTE	B26 (814.0 – 849.0 MHz)	3	23.0	18.0	17.0	16.0
		LTE	B30 (2305.0 – 2315.0 MHz)	3	22.0	15.5	14.5	13.5
		LTE	B38 (2570.0 – 2620.0 MHz)	3	23.0	15.0	14.0	13.0
		LTE	B41 (2496.0 – 2690.0 MHz)	3	23.0	15.0	14.0	13.0
		LTE	B41-HPUE(2496.0 – 2690.0 MHz)	2	26.0	15.0	14.0	13.0
		LTE	B66 (1710.0 – 1780.0 MHz)	3	23.0	15.5	14.5	13.5
		LTE	B71 (663.0 – 698.0 MHz)	3	23.0	18.0	17.0	16.0
	LTE	B2 (1850.0 – 1910.0 MHz)	3	23.0	15.5	14.5	13.5	
	LTE	B4 (1710.0 – 1755.0 MHz)	3	23.0	15.5	14.5	13.5	
	LTE	B7 (2500.0 – 2570.0 MHz)	3	23.0	17.5	16.5	15.5	
	LTE	B25 (1850.0 – 1915.0 MHz)	3	23.0	15.5	14.5	13.5	
	LTE	B30 (2305.0 – 2315.0 MHz)	3	22.0	17.5	16.5	15.5	
	LTE	B41 (2496.0 – 2690.0 MHz)	3	23.0	17.5	16.5	15.5	
	LTE	B41-HPUE(2496.0 – 2690.0 MHz)	3	26.0	17.5	16.5	15.5	
	LTE	B48 (3550.0 – 3700.0 MHz)	2	21.0	13.5	12.5	11.5	
	LTE	B66 (1710.0 – 1780.0 MHz)	3	23.0	15.5	14.5	13.5	
	LTE	B2 (1850.0 – 1910.0 MHz)	3	23.0	15.5	14.5	13.5	
	LTE	N5 (824.0 – 849.0 MHz)	3	23.0	18.0	17.0	16.0	
	LTE	N7 (2500.0 – 2570.0 MHz)	3	23.0	15.0	14.0	13.0	
	LTE	N25 (1850.0 – 1915.0 MHz)	3	23.0	15.5	14.5	13.5	
	LTE	N30 (2305.0 – 2315.0 MHz)	3	22.0	15.5	14.5	13.5	
	LTE	N38 (2570.0 – 2620.0 MHz)	3	23.0	15.0	14.0	13.0	
	LTE	N41 (2496.0 – 2690.0 MHz)	3	23.0	15.0	14.0	13.0	
	LTE	N41-HPUE(2496.0 – 2690.0 MHz)	2	26.0	15.0	14.0	13.0	
	LTE	N66 (1710.0 – 1780.0 MHz)	3	23.0	15.5	14.5	13.5	
	LTE	N71 (663.0 – 698.0 MHz)	3	23.0	18.0	17.0	16.0	
	LTE	N77 (3700.0 – 3980.0 MHz)	3	23.0	14.0	13.0	12.0	
	LTE	N77-HPUE(3700.0 – 3980.0 MHz)	2	25.0	14.0	13.0	12.0	
LTE	N78 (3700.0 – 3800.0 MHz)	3	23.0	14.0	13.0	12.0		
LTE	N78-HPUE(3700.0 – 3800.0 MHz)	2	26.0	14.0	13.0	12.0		
LTE	N2 (1850.0 – 1910.0 MHz)	3	23.0	15.5	14.5	13.5		
LTE	N41 (2496.0 – 2690.0 MHz)	3	23.0	17.5	16.5	15.5		
LTE	N41-HPUE(2496.0 – 2690.0 MHz)	2	26.0	17.5	16.5	15.5		
LTE	N66 (1710.0 – 1780.0 MHz)	3	23.0	15.5	14.5	13.5		
LTE	N77 (3700.0 – 3980.0 MHz)	3	23.0	13.0	12.0	11.0		
LTE	N77-HPUE(3700.0 – 3980.0 MHz)	2	26.0	13.0	12.0	11.0		
LTE	N78 (3700.0 – 3800.0 MHz)	3	23.0	13.0	12.0	11.0		
LTE	N78-HPUE(3700.0 – 3800.0 MHz)	2	26.0	13.0	12.0	11.0		

SAR compliance is demonstrated with the *Reported SAR: Reported SAR = measured 1gSAR @ Reported Upper Threshold < FCC SAR limit where, Reported Upper Threshold = Upper Threshold (stored in NVM) + Tolerance*

7. Remarks and comments

1. Only the plots for the test positions with the highest measured SAR per band/mode are included in Annex C as required per FCC OET KDB 865664 D02, paragraph 2.3.h.
2. Maximum transmission power on modulations 64QAM and 256QAM for LTE and 5G NR, are lower than other QPSK and 16QAM modulations. Therefore, higher power modulations were chosen to perform all tests shown in this test report.
3. The same conducted power measurements were used on both samples since the same WWAN module has been used on the samples under test during SAR measurements.

8. Test Verdicts summary

The statement of conformity to applicable standards in the table below are based on the measured values, without taking into account the measurement uncertainties.

Mode	Band (UL)	Highest Reported SAR (1g) (W/kg)	Verdict
WCDMA	FDD II (1850.0 – 1910.0 MHz)	0.73	P
	FDD IV (1710.0 – 1755.0 MHz)	0.58	P
	FDD V (824.0 – 849.0 MHz)	0.97	P
LTE FDD	Band 2 (1850.0 – 1910.0 MHz)	NM	NA
	Band 4 (1710.0 – 1755.0 MHz)	NM	NA
	Band 5 (824.0 – 849.0 MHz)	NM	NA
	Band 7 (2500.0 – 2570.0 MHz)	0.79	P
	Band 12 (699.0 – 716.0 MHz)	1.11	P
	Band 13 (777.0 – 787.0 MHz)	1.19	P
	Band 14 (788.0 – 798.0 MHz)	0.98	P
	Band 17 (704.0 – 716.0 MHz)	NM	NA
	Band 25 (1850.0 – 1915.0 MHz)	0.79	P
	Band 26 (814.0 – 849.0 MHz)	1.09	P
	Band 30 (2305.0 – 2315.0 MHz)	0.87	P
	Band 66 (1710.0 – 1780.0 MHz)	1.05	P
	Band71 (663.0 – 698.0 MHz)	1.06	P
	LTE TDD	Band 38 (2570.0 – 2620.0 MHz)	NM
Band 41 (2496.0 – 2690.0 MHz)		0.56	P
Band 48 (3550.0 – 3700.0 MHz)		1.12	P
5G NR FR1 FDD	Band 2 (1850.0 – 1910.0 MHz)	0.99	P
	Band 5 (824.0 – 849.0 MHz)	1.02	P
	Band 7 (2500.0 – 2570.0 MHz)	1.19	P
	Band 25 (1850.0 – 1915.0 MHz)	1.20	P
	Band 30 (2305.0 – 2315.0 MHz)	1.08	P
	Band 66 (1710.0 – 1780.0 MHz)	1.12	P
	Band71 (663.0 – 698.0 MHz)	0.98	P
5G NR FR1 TDD	Band 38 (2570.0 – 2620.0 MHz)	NM	NA
	Band 41 (2496.0 – 2690.0 MHz)	1.09	P
	Band 77 (3700.0 – 3980.0 MHz)	1.30	P
	Band 78 (3700.0 – 3800.0 MHz)	NM	NA

P: Pass
 F: Fail
 NM: Not Measured
 NA: Not Applicable

According to the FCC OET KDB 690783 D01, this is the summary of the values for the Grant Listing:

Exposure Condition	Highest Reported SAR (1g) (W/kg)			
	Equipment Class			
	PCE	DTS	DSS	U-NII
Body Worn	1.30	0.98	0.16	0.48
Simultaneous Tx	Sum-SAR: 2.69 SPLSR: 0.03	Sum-SAR: 2.69 SPLSR: 0.03	Sum-SAR: 2.69 SPLSR: 0.03	Sum-SAR: 2.56 SPLSR: 0.01

Considering the results of the performed test according to FCC 47CFR Part 2.1093 the item under test is IN COMPLIANCE with the requested specifications specified in Section1. Standards, reference documents and applicable test methods

9. Document Revision History

Revision #	Modified by	Revision Details
Rev. 00	E. Garcia	First Issue
Rev. 01	E. Garcia	Update EUT Features Added LTE71 and NR71 tests and results Added LTE ULCA 5B, 7C, 38C, 48C tests and results
Rev.02	E. Garcia	Typo's corrections and TAS table

Annex A. Test & System Description

A.1 SAR Definition

Specific Absorption rate is defined as the time derivative of the incremental energy (dW) absorbed by (dissipated in) and incremental mass (dm) contained in a volume element (dV) of a given density (ρ).

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

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

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

Where:

σ = Conductivity of the tissue (S/m)

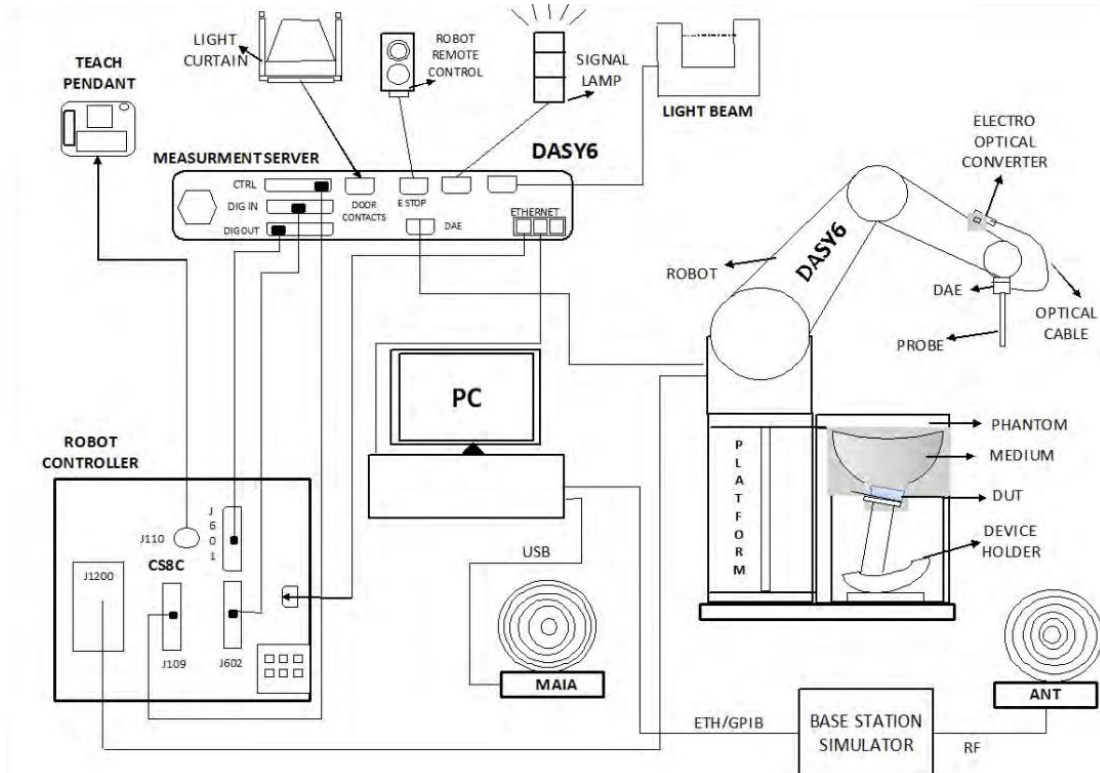
ρ = Mass density of the tissue (kg/m³)

E = RMS electric field strength (V/m)

A.2 SAR Measurement System

A.2.1 SAR Measurement Setup

The DASY6 system for performing compliance tests consists of the following items:



- ✓ A standard high precision 6-axis robot (Stäubli TX/RX family) with controller, teach pendant and software. It includes an arm extension for accommodating the data acquisition electronics (DAE)
- ✓ An isotropic field probe optimized and calibrated for the targeted measurements.
- ✓ 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. 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 movements interrupts.
- ✓ The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- ✓ A computer running Win7 professional operating system and the DASY6 software.
- ✓ Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- ✓ The phantom, the device holder and other accessories according to the targeted measurement.
- ✓ MAIA is a hardware interface (Antenna) used to evaluate the modulation and audio interference characteristics of RF signals.
- ✓ ANT is an ultra-wideband antenna for use with the base station simulators over 698 MHz to 6GHz.
- ✓ The base station simulator is an equipment used for SAR cellular tests in order to emulate the cellular signals characteristics and behavior between a regular base station and the equipment under test.
- ✓ Tissue simulating liquid.
- ✓ System Validation dipoles.
- ✓ Network emulator.

A.2.2 E-Field Measurement Probe

The probe is constructed using three orthogonal dipole sensors arranged on an interlocking, triangular prism core. The probe has built-in shielding against static charges and is contained within a PEEK cylindrical enclosure material at the tip.



The probe's characteristics are:

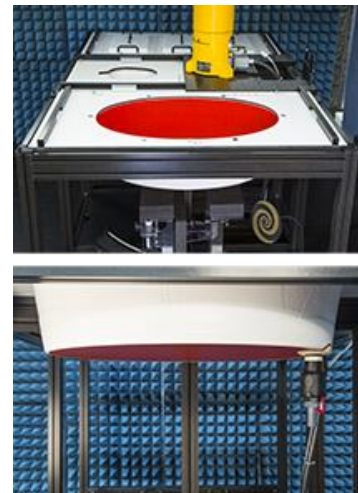
Frequency Range	30MHz – 6GHz
Length	337 mm
Probe tip external diameter	2.5 mm
Typical distance between dipoles and the probe tip	1 mm
Axial Isotropy (in human-equivalent liquids)	±0.3 dB
Hemispherical Isotropy (in human-equivalent liquids)	±0.5 dB
Linearity	±0.2 dB
Maximum operating SAR	100 W/kg
Lower SAR detection threshold	0.001 W/kg

A.2.3 Flat Phantom

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.

The phantom's characteristics are:

Material	Vinylester, glass fiber reinforced (VE-GF)
Shell thickness	2 mm ± 0.2 mm
Filling volume	30 Liters approx.
Dimensions	Major axis: 600mm / Minor axis: 400mm



A.2.4 Device Positioner

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of 0.5 mm would produce a SAR uncertainty of 20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.



The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon=3$ and loss tangent $\delta=0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

A simple but effective and easy-to-use extension for the Mounting Device; facilitates testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.); lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin SAM, ELI and other Flat Phantoms.



A.3 Data Evaluation

- **Power Reference measurement**

The robot measures the E field in a specified reference position that can be either the selected section's grid reference point or a user point in this section at 4mm of the inner surface of the phantom, 2mm for frequencies above 3GHz.

- **Area Scan**

Measurement procedures for evaluating SAR from wireless handsets typically start with a coarse measurement grid to determine the approximate location of the local peak SAR values. This is known as the area-scan procedure. The SAR distribution is scanned along the inside surface of one side of the phantom head, at least for an area larger than the projection of the handset and antenna. The distance between the measured points and phantom surface should be less than 8 mm, and should remain constant (with variation less than ± 1 mm) during the entire scan in order to determine the locations of the local peak SAR with sufficient accuracy. The angle between the probe axis and the surface normal line is recommended but not required to be less than 30° . If this angle is larger than 30° and the closest point on the probe-tip housing to the phantom surface is closer than a probe diameter, the boundary effect may become larger and polarization dependent. This additional uncertainty needs to be analyzed and accounted for. To achieve this, modified test procedures and additional uncertainty analyses not described in this recommended practice may be required. The measurement and interpolation point spacing should be chosen such as to allow identification of the local peak locations to within one-half of the linear dimension of a side of the zoom-scan volume. Because a local peak having specific amplitude and steep gradients may produce a lower peak spatial-average SAR compared to peaks with slightly lower amplitude and less steep gradients, it is necessary to evaluate these other peaks as well. However, since the spatial gradients of local SAR peaks are a function of the wavelength inside the tissue-equivalent liquid and the incident magnetic field strength, it is not necessary to evaluate local peaks that are less than 2 dB or more below the global maximum peak. Two-dimensional spline algorithms (Brishoual et al. 2001; Press et al., 1996) are typically used to determine the peaks and gradients within the scanned area. If a peak is found at a distance from the scan border of less than one-half the edge dimension of the desired 1 g or 10 g cube, the measurement area should be enlarged if possible.

- **Zoom Scan**

To evaluate the peak spatial-average SAR values for 1 g or 10 g cubes, fine resolution volume scans, called zoom scans, are performed at the peak SAR locations identified during the area scan. The minimum zoom scan volume size should extend at least 1.5 times the edge dimension of a 1 g cube in all directions from the center of the scan volume, for both 1 g and 10 g peak spatial-average SAR evaluations. Along the phantom curved surfaces, the front face of the volume facing the tissue/liquid interface conforms to the curved boundary, to ensure that all SAR peaks are captured. The back face should be equally distorted to maintain the correct averaging mass. The flatness and orientation of the four side faces are unchanged from that of a cube whose orientation is within $\pm 30^\circ$ of the line normal to the phantom at the center of the cube face next to the phantom surface. The peak local SAR locations that were determined in the area scan (interpolated values) should be used for the centers of the zoom scans. If a scan volume cannot be centered due to proximity of a phantom shape feature, the probe should be tilted to allow scan volume enlargement. If probe tilt is not feasible, the zoom-scan origin may be shifted, but not by more than half of the 1 g or 10 g cube edge dimension.

After the zoom-scan measurement, extrapolations from the closest measured points to the surface, for example along lines parallel to the zoom-scan centerline, and interpolations to a finer resolution between all measured and extrapolated points are performed. Extrapolation algorithm considerations are described in 6.5.3, and 3-D spline methods (Brishoual et al., 2001; Kreyszig, 1983; Press et al., 1996) can be used for interpolation. The peak spatial-average SAR is finally determined by a numerical averaging of the local SAR values in the interpolation grid, using for example a trapezoidal algorithm for the integration (averaging).

In some areas of the phantom, such as the jaw and upper head regions, the angle of the probe with respect to the line normal to the surface may be relatively large, e.g., greater than $\pm 30^\circ$, which could increase the boundary effect error to a larger level. In these cases, during the zoom scan a change in the orientation of the probe, the phantom, or both is recommended but not required for the duration of the zoom scan, so that the angle between the probe axis and the line normal to the surface is within 30° for all measurement points.

- **Power Drift measurement**

The robot re-measures the E-Field in the same reference location measured at the Power Reference. The drift measurement gives the field difference in dB from the first to the last reference reading. This allows a user to monitor the power drift of the device under test that must remain within a maximum variation of $\pm 5\%$.

- **Post-processing**

The procedure for spatial peak SAR evaluation has been implemented according to the IEEE1528 and IEC 62209-1/2 standards. It can be conducted for 1g and 10g.

The software allows evaluations that combine measured data and robot positions, such as:

- ✓ Maximum search
- ✓ Extrapolation
- ✓ Boundary correction
- ✓ Peak search for averaged SAR

Interpolation between the measured points is performed when the resolution of the grid is not fine enough to compute the average SAR over a given mass.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation.

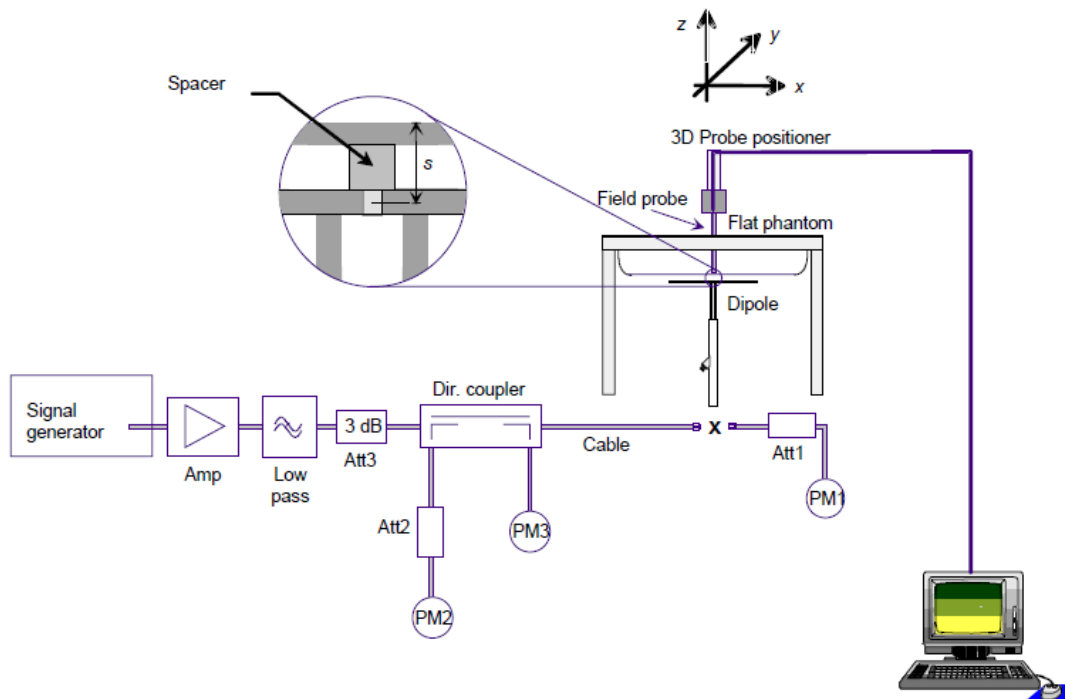
A.4 System and Liquid Check

A.4.1 System Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results.

The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

In the simplified setup for system check, the EUT is replaced by a calibrated dipole and the power source is replaced by a controlled continuous wave generated by a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the phantom at the correct distance.



The equipment setup is shown below:

- ✓ Signal Generator
- ✓ Amplifier
- ✓ Directional coupler
- ✓ Power meter
- ✓ Calibrated dipole

First, the power meter PM1 (including attenuator Att1) is connected to the cable to measure the forward power at the location of the connector (x) to the system check source. The signal generator is adjusted for the desired forward power at the connector as read by power meter PM1 after attenuation Att1 and also as coupled through Att2 to PM2. After connecting the cable to the source, the signal generator is readjusted for the same reading at power meter PM2.

SAR results are normalized to a forward power of 1W to compare the values with the calibration reports results as described at IEEE 1528 and IEC 62209 standards.

A.4.2 Liquid Check

The dielectric parameters check is done prior to the use of the tissue simulating liquid. The verification is made by comparing the relative permittivity and conductivity to the values recommended by the applicable standards.

The liquid verification was performed using the following test setup:

- ✓ VNA (Vector Network Analyzer)
- ✓ Open-Short-Load calibration kit
- ✓ RF Cable
- ✓ Open-Ended Coaxial probe
- ✓ DAK software tool
- ✓ SAR Liquid
- ✓ De-ionized water
- ✓ Thermometer

These are the target dielectric properties of the tissue-equivalent liquid material as defined in FCC OET KDB 865664 D01.

Frequency (MHz)	Body SAR	
	ϵ_r (F/m)	σ (S/m)
150	61.9	0.80
300	58.2	0.92
450	56.7	0.94
835	55.2	0.97
900	55.0	1.05
1450	54.0	1.30
1800-2000	53.3	1.52
2450	52.7	1.95
3000	52.0	2.73
5800	48.2	6.00

(ϵ_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m³)

The measurement system implement a SAR error compensation algorithm as documented in IEEE Std 1528-2013 (equivalent to draft standard IEEE P1528-2011) to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters (applied to only scale up the measured SAR, and not downward) so, according to FCC OET KDB 865664 D01, the tolerance for ϵ_r and σ may be relaxed to $\pm 10\%$.

A.5 Test Equipment List

A.5.1 SAR System #2*

ID #	Device	Type/Model	Serial Number	Manufacturer	Cal. Date	Cal. Due Date
001-017	Data Acquisition Electronics	DAE4	1703	SPEAG	2022-04-28	2023-04-28
002-000	6-axis Robot	TX60 L	F16/55FXA1/A/01	STAÜBLI	n/a	n/a
002-001	Robot Controller	CS8C	F16/55FXA1/C/01	STAÜBLI	n/a	n/a
002-002	Measurement Server	DASY6 P/N: SE UMS 028 BB	1489	SPEAG	n/a	n/a
002-003	Electro-Optical Converter	EOC60	1098	SPEAG	n/a	n/a
002-004	Light Beam Unit	SE UKS 030 AA	-	Di-soric	n/a	n/a
002-005	Oval Flat Phantom	ELI v8.0	2048	SPEAG	n/a	n/a
002-007	Measurement SW	DASY v6.14	9-5DEE27C2	SPEAG	n/a	n/a
002-006	Laptop Holder	P/N SM LH1 001 CD	-	SPEAG	n/a	n/a

*Used for WCDMA and LTE tests

A.5.2 SAR System #4**

ID #	Device	Type/Model	Serial Number	Manufacturer	Cal. Date	Cal. Due Date
004-000	6-Axis Robot	TX90XL	F11/5JL2A1/A/01	SPEAG	NA	NA
004-001	Robot Controller	CS8C	F11/5JL2A1/C/01	SPEAG	NA	NA
004-002	Oval Flat Phantom	ELI V8.0	2124	SPEAG	NA	NA
004-003	Measurement Server	SE UMS 028 BB	N/A	SPEAG	NA	NA
004-004	Light Beam Unit	SE UKS 030 AA	1030	SPEAG	NA	NA
004-005	DASY6 Software	DASY6 Software	9-658E90FA	SPEAG	NA	NA
004-014	Data Acquisition Electronics	DAE4	1704	SPEAG	2022-04-29	2023-04-29
004-008	MAIA Antenna	MAIA	1292	SPEAG	NA	NA
004-009	ANT Antenna	ANT	1112	SPEAG	NA	NA

**Used for 5G NR tests

A.5.3 Shared Instrumentation

ID #	Device	Type/Model	Serial Number	Manufacturer	Cal. Date	Cal. Due Date
123-000	USB Power Sensor	NRP-Z81	102278	R&S	2021-04-13	2023-04-13
124-000	USB Power Sensor	NRP-Z81	102279	R&S	2021-04-13	2023-04-13
135-000	Network Emulator	CMW500	152721	R&S	2022-03-29	2024-03-29
023-000	5G Network Emulator	CMX500	101444	R&S	2020-08-24	2022-08-24
451-000	Reflectometer	R140	21190006	Copper Mountain	2021-11-09	2023-11-09
126-000	Vector Signal Generator	ESG E4438C	MY45092885	Agilent	2021-05-27	2023-05-27
099-000	Liquid measurement SW	DAK-3.5 V2.6.0.5	9-2687B491	SPEAG	n/a	n/a
071-000	750 MHz System Validation Dipole	D750V3	1136	SPEAG	2021-01-21	2023-01-21
072-000	835 MHz System Validation Dipole	D835V2	4d192	SPEAG	2021-01-21	2023-01-21
073-000	1750 MHz System Validation Dipole	D1750V2	1133	SPEAG	2021-01-14	2023-01-14
074-000	1900 MHz System Validation Dipole	D1900V2	5d197	SPEAG	2021-01-14	2023-01-14
075-000	2300 MHz System Validation Dipole	D2300V2	1046	SPEAG	2021-01-13	2023-01-13
076-000	2600 MHz System Validation Dipole	D2600V2	1100	SPEAG	2021-01-13	2023-01-13
404-000	3700 MHz System Validation Dipole	D3700V2	1093	SPEAG	2021-05-21	2023-05-21
327-000	Temperature & Humidity Logger	RA32E-TH1-RAS	RA32-F0DED9	AVTECH	2021-03-09	2023-03-09
398-000	Thermometer	922	33622932/208	Testo	2021-11-09	2023-11-19
198-000	0.8-21GHz RF amplifier	TVA-82-213A	2004003	Mini-Circuits	2021-08-13	2022-08-13
078-000	RF Cable	ST-18/SMAm/SMAm/48	1158830	Huber & Suhner	2021-08-13	2022-08-01
079-000	RF Cable	ST-18/SMAm/SMAm/48	1158831	Huber & Suhner	2021-08-13	2022-08-01
077-000	Coupler	CD0.5-8-20-30	1251-002	Amd-group	2021-08-13	2022-08-01
002-009	Dosimetric E-Field probe	EX3DV4	7604	SPEAG	2021-08-16	2022-08-16
086-000	Dosimetric E-Field probe	EX3DV4	7455	SPEAG	2022-03-21	2023-03-21
003-007	Dosimetric E-Field probe	EX3DV4	7465	SPEAG	2022-07-21	2022-07-21

A.5.4 Tissue Simulant Liquid

TSL	Manufacturer / Model	Freq Range (MHz)	Main Ingredients	Note
Body WideBand System2	SPEAG MBBL600-6000V6 Batch 160603-01	600-6000	Ethanediol, Sodium petroleum sulfonate, Hexylene Glycol / 2-Methyl-pentane-2.4-diol, Alkoxyated alcohol	Used for WCDMA and LTE tests
Body WideBand System4	SPEAG MBBL600-6000V6 Batch 160630-01	600-6000	Ethanediol, Sodium petroleum sulfonate, Hexylene Glycol / 2-Methyl-pentane-2.4-diol, Alkoxyated alcohol	Used for 5G NR tests

A.6 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the table below with a coverage factor of $k = 2$ to indicate a 95% level of confidence:

SPEAG DASY6 Uncertainty Budget								
According to IEC/IEEE 62209-1528 (4 MHz - 6 GHz)								
including IEEE 1528-2013 and IEC 62209-1/2016, IEC 62209-2/2010								
Symbol	Error Description	Uncert. Value	Prob Dist.	Div.	(ci) 1g	(ci) 10g	Std Unc. (1g)	Std Unc. (10g)
Measurement System Errors								
CF	Probe Calibration	±14.0 %	N	2	1	1	±7.0 %	±7.0 %
CF _{drift}	Probe Calibration Drift	±1.0 %	N	1	1	1	±1.0 %	±1.0 %
LIN	Probe Linearity	±4.7 %	R	√3	1	1	±2.7 %	±2.7 %
BBS	Broadband Signal	±3.0 %	N	2	1	1	±1.5 %	±1.5 %
ISO	Axial Isotropy	±4.7 %	R	√3	0.5	0.5	±1.4 %	±1.4 %
ISO	Hemispherical Isotropy	±9.6 %	R	√3	0.5	0.5	±2.8 %	±2.8 %
DAE	Data Acquisition	±0.3 %	N	1	1	1	±0.3 %	±0.3 %
AMB	RF Ambient	±1.8 %	N	1	1	1	±1.8 %	±1.8 %
Δ _{sys}	Probe Positioning	±0.2 %	N	1	0.33	0.33	±0.1 %	±0.1 %
DAT	Data Processing	±2.3 %	N	1	1	1	±2.3 %	±2.3 %
Phantom and Device Errors								
LIQ(σ)	Conductivity (meas.) _{DAK}	±2.5 %	N	1	0.78	0.71	±2.0 %	±1.8 %
LIQ(T _σ)	Conductivity (temp.) _{BB}	±3.4 %	R	√3	0.78	0.71	±1.5 %	±1.4 %
EPS	Phantom Permittivity	±14.0 %	R	√3	0.25	0.25	±2.0 %	±2.0 %
DAS	Distance DUT - TSL	±2.0 %	N	1	2	2	±4.0 %	±4.0 %
H	Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %
MOD	DUT Modulation _m	±2.4 %	R	√3	1	1	±1.4 %	±1.4 %
TAS	Time-average SAR	±2.6 %	R	√3	1	1	±1.5 %	±1.5 %
RF _{drift}	DUT drift	±5.0 %	N	1	1	1	±2.9 %	±2.9 %
Correction to the SAR results								
C(ε, σ)	Deviation to Target	±1.9 %	N	1	1	0.84	±1.9 %	±1.6 %
Combined Std. Uncertainty							±11.5 %	±11.4 %
Expanded STD Uncertainty							±23.1 %	±22.9 %

A.7 RF Exposure Limits

SAR assessments have been made in line with the requirements of FCC 47 CFR Part 2.1093 on the limitation of exposure of the general population / uncontrolled exposure for portable devices.

Exposure Type	General Population / Uncontrolled Environment
Peak spatial-average SAR (averaged over any 1 gram of tissue)	1.6 W/kg
Whole body average SAR	0.08 W/kg
Peak spatial-average SAR (extremities) (averaged over any 10 grams of tissue)	4.0 W/kg

Annex B. Test Results

The herein test results were performed by:

Test case measurement	Test Personnel
SAR measurement	E. Garcia, R. Luciani
Conducted measurement	F. Heurtematte

B.1 Test Conditions

B.1.1 Test SAR Test positions relative to the phantom

The device under test was a Convertible PC host platform (HP) TPN-W155 using FM350-GL WWAN module with PIFA antennas. The card was operated utilizing proprietary software (RD Tool v1.0.3.6) and each channel was measured using a communication tester to determine the maximum average power.

The device has 2 power settings:

- Laptop mode
- Tablet mode

See section 6 for details about power values for the configuration

See Annex F.3 for information about the platform antenna configuration

Laptop mode

According to FCC OET KDB 616217 D04, laptop position should be tested for SAR compliance with the display screen opened at an angle of 90° to the keyboard compartment and the notebook bottom surface must be touching the phantom.

Notebook	WWAN Ant 5
Position	<ul style="list-style-type: none"> • Laptop

Tablet mode

According to FCC OET KDB 616217 D04, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR Test Exclusion Threshold in FCC OET KDB 447498 D01 can be applied to determine SAR test exclusion for adjacent edge configurations. (See section 6 for power specifications)

The reduced power values shown on section 6 and the closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

Considering the antenna location diagrams in Annex F and the test exclusions described before, the surfaces/edges to be measured for each antenna are:

Tablet	WWAN Ant 5	WWAN Ant 8
Position	<ul style="list-style-type: none"> • Top Edge • Back Face • Left Edge 	<ul style="list-style-type: none"> • Top Edge • Back Face

See B.1.3.1 for a more detailed list of the applied reductions.

See Annex F.2 section for more information on the tested positions.

B.1.2 Test signal, Output power and Test Frequencies

B.1.2.1 LTE TDD consideration

According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

LTE TDD Bands support 3GPP TS 36.211 section 4.2 for Type 2 Frame structure and table 2 for uplink-downlink configurations and table 1 for special subframe configurations

Table 1

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 T _S	(1+X) 2192 T _S	(1+X) 2560 T _S	7680 · T _S	(1+X) 2192 T _S	(1+X) 2560 T _S
1	19760 T _S			20480 T _S		
2	21952 T _S			23040 T _S		
3	24144 T _S			25600 T _S		
4	26336 T _S			7680 T _S		
5	6592 T _S	(2+X) 2192 T _S	(2+X) 2560 T _S	20480 T _S	(2+X) 2192 T _S	(2+X) 2560 T _S
6	19760 T _S			23040 T _S		
7	21952 T _S			12800 T _S		
8	24144 T _S			-		
9	13168 T _S			-		
10	13168 T _S	13150 T _S	12800 T _S	-	-	-

Table2

Uplink-Downlink Config.	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.3%
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.3%
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.3%
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.7%
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.7%
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.7%
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.3%

Calculated duty cycle = Extended cyclic prefix in uplink *(TS)*# of S + # of U / period
 The configuration used for SAR testing was the number 0 which corresponds to the highest duty cycle (Power Class 3)

B.1.2.2 5G NR TDD consideration

Table3

Subframe Number																			
Radio Frame 0																			
SF0	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF0	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
D	s	U	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U
Radio Frame 1-2																			
SF0	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF0	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
S	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U
Radio Frame 3																			
SF0	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF0	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
S	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U	S	U

“D”: Full DL slot, “s”: partial slot, “S”: partial slot for PUSCH, “U”: full UL slot
 Frame structure and maximal measured duty cycle (91%) for NR 5G FR1 are described in the table 3

B.1.3 Evaluation Exclusion and Test Reductions

B.1.3.1 SAR evaluation exclusion

The SAR Test Exclusion Threshold in FCC OET KDB 447498 D01 v06 can be applied to determine SAR test exclusion for adjacent edge configurations. For 100MHz to 6GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following formula:

$$\left[\frac{\text{(max. power of channel, including tune – up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot \left[\sqrt{f_{\text{(GHz)}}} \right] \quad (1)$$

≤ 3.0 for 1g SAR, and ≤ 7.5 for 10g extremity SAR

Where:

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as numeric thresholds

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

For test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined using the following formulas:

$$\langle (\text{Power allowed at numeric threshold for 50 mm in (1)}) + (\text{test separation distance} - 50 \text{ mm}) \cdot (f_{\text{MHz}}/150) \rangle \text{mW}, \quad (2)$$

for 100MHz to 1500MHz

$$\langle (\text{Power allowed at numeric threshold for 50 mm in (1)}) + (\text{test separation distance} - 50 \text{ mm}) \cdot 10 \rangle \text{mW}, \quad (3)$$

for 1500MHz and ≤ 6 GHz

Test Exclusion

Antenna	Band Name	Output power				Back Face	Top Edge	Left Edge	Right Edge	Bottom Edge	Laptop	Back Face	Top Edge	Left Edge	Right Edge	Bottom Edge	Laptop
		Notebook		Tablet													
		dBm	mW	dBm	mW												
WWAN Ant 5	WCDMA II	21.0	125.9	16.5	44.7	>50	<50	>50	>50	>50	<50	T	T	T	R	R	T
	WCDMA IV	21.0	125.9	16.5	44.7	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	WCDMA V	21.5	141.3	19.0	79.4	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 2	20.5	112.2	16.5	44.7	<50	<50	<50	>50	>50	<50	R	R	R	R	R	R
	LTE 4	21.0	125.9	16.5	44.7	<50	<50	<50	>50	>50	<50	R	R	R	R	R	R
	LTE 5	21.5	141.3	19.0	79.4	<50	<50	<50	>50	>50	<50	R	R	R	R	R	R
	LTE 7	19.5	89.1	16.0	39.8	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 12	21.5	141.3	19.0	79.4	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 13	21.5	141.3	19.0	79.4	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 14	21.5	141.3	19.0	79.4	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 17	21.5	141.3	19.0	79.4	<50	<50	<50	>50	>50	<50	R	R	R	R	R	R
	LTE 25	20.5	112.2	16.5	44.7	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 26	21.5	141.3	19.0	79.4	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 30	20.0	100.0	16.5	44.7	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 38	19.5	89.1	16.0	39.8	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 41	19.5	89.1	16.0	39.8	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 66	21.0	125.9	16.5	44.7	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	LTE 71	21.5	141.3	19.0	79.4	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
	NR 2	20.5	112.2	16.5	44.7	<50	<50	<50	>50	>50	<50	T	T	T	R	R	R
	NR 5	21.0	125.9	19.0	79.4	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T
NR 7	19.0	79.4	16.0	39.8	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T	
NR 25	20.5	112.2	16.5	44.7	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T	
NR 30	18.5	70.8	16.5	44.7	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T	
NR 41	19.5	89.1	16.0	39.8	<50	<50	<50	>50	>50	<50	R	R	R	R	R	R	
NR 66	18.0	63.1	16.0	39.8	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T	
NR 71	21.5	141.3	19.0	79.4	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T	
NR 77	20.0	100.0	16.5	44.7	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T	
NR 78	18.5	70.8	15.0	31.6	<50	<50	<50	>50	>50	<50	T	T	T	R	R	T	

T: Tested position
R: Reduced

See Annex F for a more detailed explanation of the separation distance related to the platform.

Antenna	Band Name	Output power				Back Face	Top Edge	Left Edge	Right Edge	Bottom Edge	Laptop	Back Face	Top Edge	Left Edge	Right Edge	Bottom Edge	Laptop
		Notebook		Tablet													
		dBm	mW	dBm	mW												
WWAN Ant 8	LTE 2	24.0	251.2	16.5	44.7	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	LTE 4	24.0	251.2	16.5	44.7	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	LTE 25	24.0	251.2	16.5	44.7	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	LTE 30	23.0	199.5	18.5	70.8	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	LTE 41	27.0	501.2	18.5	70.8	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	LTE 48	22.0	158.5	14.5	28.2	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	LTE 66	22.0	158.5	14.5	28.2	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	NR 2	24.0	251.2	16.5	44.7	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	NR 41	27.0	501.2	18.5	70.8	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	NR 66	24.0	251.2	16.5	44.7	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
	NR 77	27.0	501.2	14.0	25.1	<50	<50	>50	>50	>50	>50	T	T	R	R	R	R
NR 78	27.0	501.2	14.0	25.1	<50	<50	>50	>50	>50	>50	R	R	R	R	R	R	

T: Tested position
R: Reduced

See Annex F for a more detailed explanation of the separation distance related to the platform.

SAR test exclusion is applied for notebook and tablet position on each antenna transmitter: bottom edge, right and left (only in tablet mode at ant5) edges where the separation distance passes the 50mm limit, equations (2) and (3) are used with the corresponding frequencies for each band, the user distances for the bottom edge, left and right edges respectively for ant8 and ant5 position and with the power values described on Section 6. The table below shows all cellular bands evaluated in this report grouped by frequency band, separation distances and the corresponding power threshold in mW for each combination (distance and frequency)

Bands	Frequency	Separation distance to the body on mm										Threshold values in mW
		60	70	80	90	100	110	160	170	190	200	
LTE 12,13, 14, 17, 71	750	223	273	323	373	423	473	723	773	873	923	
FDD V LTE 5, 26 NR 5	835	220	275	331	387	442	498	776	832	943	999	
FDD IV LTE 4, 66 NR 66	1750	213	313	413	513	613	713	1213	1313	1513	1613	
FDD II LTE 2, 25 NR 2, 25	1900	209	309	409	509	609	709	1209	1309	1509	1609	
LTE 30 NR 30	2300	199	299	399	499	599	699	1199	1299	1499	1599	
LTE 7, 38, 41 NR 7, 38, 41	2600	193	293	393	493	593	693	1193	1293	1493	1593	
LTE 48 NR 77, 78	3700	180	280	380	480	580	680	1180	1280	1480	1580	

The highest output power for all bands is 501.2 mW for notebook mode and 79.4mW for tablet mode which are smaller than all the values of the table, for distances >200mm and >70mm respectively. Refer to annex F3 for antenna position and its adjacent edges.

B.1.3.2 General SAR test reduction

According to FCC OET KDB 447498 D01, 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

WWAN SAR Test reduction

Transmission Mode	SAR test exclusion/reduction
HSDPA	According to FCC OET KDB 941225 D01, SAR evaluation is not required when the maximum average output power is < ¼ dB higher than the measured on the corresponding channels without HSDPA, using 12.2kbps RMC, and the maximum SAR for 12.2kbps RMC is < 1.2 W/kg.
HSUPA	According to FCC OET KDB 941225 D01, SAR evaluation is not required when the maximum average output power is < ¼ dB higher than the measured on the corresponding channels without HSUPA, using 12.2kbps RMC, and the maximum SAR for 12.2kbps RMC is < 1.2 W/kg.
DC+HSDPA	According to FCC OET KDB 941225 D01, SAR evaluation is not required when the maximum average output power is < ¼ dB higher than the measured on the corresponding channels without DC+HSDPA, using 12.2kbps RMC, and the maximum SAR for 12.2kbps RMC is < 1.2 W/kg.
LTE	<p>According to FCC OET KDB 941225 D05, testing of 100% RB allocation, higher order modulations or lower BW is not required when these conditions are met:</p> <ul style="list-style-type: none"> ○ 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. ○ For each modulation besides QPSK, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg. ○ For lower BW, only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg. <p>For LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing; therefore, the requirement for H, M, and L channels may not fully apply</p>
5G NR	According to TCB workshop November 2019; RF Exposure Policy Updates (5G NR FR1 NSA EN-DC UE SAR Evaluations), the FCC OET KDB 941225 D05 rules apply.

B.2 Conducted Power Measurements

B.2.1 WCDMA / HSPA / DC-HSPA

B.2.1.1 WCDMA Band II - Laptop Mode – Antenna Ant 5

Mode	Channel Number	Freq (MHz)	Subset	Average Power Measured (dBm)	Factory Upper Tolerance (dBm)
RMC	9262	1852.4	-	20.57	21.00
	9400	1880	-	20.40	21.00
	9538	1907.6	-	20.51	21.00
HSDPA	9262	1852.4	1	20.59	21.00
			2	20.31	21.00
			3	20.13	21.00
			4	20.66	21.00
	9400	1880	1	20.92	21.00
			2	20.98	21.00
			3	20.68	21.00
			4	20.92	21.00
	9538	1907.6	1	20.20	21.00
			2	20.61	21.00
			3	20.62	21.00
			4	20.23	21.00
HSUPA	9262	1852.4	1	20.67	21.00
			2	20.73	21.00
			3	20.42	21.00
			4	20.44	21.00
			5	20.52	21.00
	9400	1880	1	20.18	21.00
			2	20.98	21.00
			3	20.22	21.00
			4	20.39	21.00
			5	20.38	21.00
	9538	1907.6	1	20.09	21.00
			2	20.64	21.00
			3	20.49	21.00
			4	20.50	21.00
			5	20.04	21.00
DC-HSDPA	9262	1852.4	1	20.46	21.00
			2	20.02	21.00
			3	20.73	21.00
			4	20.66	21.00
	9400	1880	1	20.39	21.00
			2	20.18	21.00
			3	20.88	21.00
			4	20.57	21.00
	9538	1907.6	1	20.40	21.00
			2	20.51	21.00
			3	20.59	21.00
			4	20.31	21.00

B.2.1.2 WCDMA Band II - Tablet Mode – Antenna Ant 5

Mode	Channel Number	Freq (MHz)	Subset	Average Power Measured (dBm)	Factory Upper Tolerance (dBm)
RMC	9262	1852.4	-	16.23	16.50
	9400	1880	-	16.31	16.50
	9538	1907.6	-	16.26	16.50
HSDPA	9262	1852.4	1	16.28	16.50
			2	16.46	16.50
			3	16.13	16.50
			4	16.14	16.50
	9400	1880	1	16.17	16.50
			2	16.31	16.50
			3	16.43	16.50
			4	16.48	16.50
	9538	1907.6	1	16.40	16.50
			2	16.17	16.50
			3	16.00	16.50
			4	16.42	16.50
HSUPA	9262	1852.4	1	16.13	16.50
			2	16.38	16.50
			3	16.39	16.50
			4	16.18	16.50
			5	16.05	16.50
	9400	1880	1	16.35	16.50
			2	16.44	16.50
			3	16.22	16.50
			4	16.32	16.50
			5	16.21	16.50
	9538	1907.6	1	16.21	16.50
			2	16.26	16.50
			3	16.21	16.50
			4	16.09	16.50
			5	16.84	16.50
DC-HSDPA	9262	1852.4	1	16.06	16.50
			2	16.67	16.50
			3	16.02	16.50
			4	16.20	16.50
	9400	1880	1	16.24	16.50
			2	16.10	16.50
			3	16.44	16.50
			4	16.13	16.50
	9538	1907.6	1	16.01	16.50
			2	16.26	16.50
			3	16.08	16.50
			4	16.06	16.50

B.2.1.3 WCDMA Band IV - Laptop Mode – Antenna Ant 5

Mode	Channel Number	Freq (MHz)	Subset	Average Power Measured (dBm)	Factory Upper Tolerance (dBm)
RMC	1312	1712.4	-	20.83	21.00
	1413	1732.6	-	20.99	21.00
	1513	1752.6	-	20.27	21.00
HSDPA	1312	1712.4	1	20.01	21.00
			2	20.13	21.00
			3	20.99	21.00
			4	20.44	21.00
	1413	1732.6	1	20.74	21.00
			2	20.98	21.00
			3	20.14	21.00
			4	20.85	21.00
	1513	1752.6	1	20.09	21.00
			2	20.24	21.00
			3	20.70	21.00
			4	20.83	21.00
HSUPA	1312	1712.4	1	21.00	21.00
			2	20.58	21.00
			3	20.07	21.00
			4	20.26	21.00
			5	20.72	21.00
	1413	1732.6	1	20.23	21.00
			2	20.31	21.00
			3	20.45	21.00
			4	20.91	21.00
			5	20.40	21.00
	1513	1752.6	1	20.41	21.00
			2	20.86	21.00
			3	20.51	21.00
			4	20.56	21.00
			5	20.38	21.00
DC-HSDPA	1312	1712.4	1	20.15	21.00
			2	20.56	21.00
			3	20.19	21.00
			4	20.86	21.00
	1413	1732.6	1	20.23	21.00
			2	20.01	21.00
			3	20.23	21.00
			4	20.83	21.00
	1513	1752.6	1	20.99	21.00
			2	20.27	21.00
			3	20.01	21.00
			4	20.13	21.00

B.2.1.4 WCDMA Band IV - Tablet Mode – Antenna Ant 5

Mode	Channel Number	Freq (MHz)	Subset	Average Power Measured (dBm)	Factory Upper Tolerance (dBm)
RMC	1312	1712.4	-	16.29	16.50
	1413	1732.6	-	16.36	16.50
	1513	1752.6	-	16.24	16.50
HSDPA	1312	1712.4	1	15.80	16.50
			2	16.23	16.50
			3	15.71	16.50
			4	16.10	16.50
	1413	1732.6	1	15.68	16.50
			2	15.86	16.50
			3	15.66	16.50
			4	15.58	16.50
	1513	1752.6	1	16.25	16.50
			2	15.95	16.50
			3	15.66	16.50
			4	16.13	16.50
HSUPA	1312	1712.4	1	15.68	16.50
			2	16.29	16.50
			3	15.99	16.50
			4	15.86	16.50
			5	16.04	16.50
	1413	1732.6	1	16.10	16.50
			2	15.83	16.50
			3	16.05	16.50
			4	16.07	16.50
			5	16.24	16.50
	1513	1752.6	1	16.36	16.50
			2	15.52	16.50
			3	15.63	16.50
			4	15.95	16.50
			5	15.72	16.50
DC-HSDPA	1312	1712.4	1	16.04	16.50
			2	15.82	16.50
			3	15.81	16.50
			4	15.82	16.50
	1413	1732.6	1	16.47	16.50
			2	15.82	16.50
			3	16.02	16.50
			4	15.80	16.50
	1513	1752.6	1	15.63	16.50
			2	16.24	16.50
			3	15.80	16.50
			4	16.23	16.50

B.2.1.5 WCDMA Band V - Laptop Mode – Antenna Ant 5

Mode	Channel Number	Freq (MHz)	Subset	Average Power Measured (dBm)	Factory Upper Tolerance (dBm)
RMC	4132	826.4	-	21.17	21.50
	4183	836.6	-	21.37	21.50
	4233	846.6	-	21.30	21.50
HSDPA	4132	826.4	1	21.38	21.50
			2	21.02	21.50
			3	20.73	21.50
			4	20.62	21.50
	4183	836.6	1	20.64	21.50
			2	21.10	21.50
			3	21.47	21.50
			4	20.80	21.50
	4233	846.6	1	20.63	21.50
			2	20.73	21.50
			3	21.30	21.50
			4	21.49	21.50
HSUPA	4132	826.4	1	21.38	21.50
			2	20.74	21.50
			3	21.10	21.50
			4	20.94	21.50
			5	20.76	21.50
	4183	836.6	1	20.63	21.50
			2	21.46	21.50
			3	20.94	21.50
			4	20.92	21.50
			5	21.49	21.50
	4233	846.6	1	20.67	21.50
			2	20.92	21.50
			3	21.26	21.50
			4	21.01	21.50
			5	21.34	21.50
DC-HSDPA	4132	826.4	1	21.26	21.50
			2	21.01	21.50
			3	20.98	21.50
			4	21.04	21.50
	4183	836.6	1	21.38	21.50
			2	21.31	21.50
			3	21.20	21.50
			4	21.17	21.50
	4233	846.6	1	21.37	21.50
			2	20.52	21.50
			3	21.38	21.50
			4	21.02	21.50

B.2.1.6 WCDMA Band V - Tablet Mode – Antenna Ant 5

Mode	Channel Number	Freq (MHz)	Subset	Average Power Measured (dBm)	Factory Upper Tolerance (dBm)
RMC	4132	826.4	-	18.82	19.00
	4183	836.6	-	18.66	19.00
	4233	846.6	-	18.89	19.00
HSDPA	4132	826.4	1	18.04	19.00
			2	18.49	19.00
			3	18.50	19.00
			4	18.91	19.00
	4183	836.6	1	18.44	19.00
			2	18.15	19.00
			3	18.44	19.00
			4	18.08	19.00
	4233	846.6	1	18.81	19.00
			2	18.49	19.00
			3	18.78	19.00
			4	18.18	19.00
HSUPA	4132	826.4	1	18.30	19.00
			2	18.67	19.00
			3	18.51	19.00
			4	18.22	19.00
			5	18.22	19.00
	4183	836.6	1	18.28	19.00
			2	18.89	19.00
			3	18.65	19.00
			4	18.74	19.00
			5	18.23	19.00
	4233	846.6	1	18.95	19.00
			2	18.69	19.00
			3	18.61	19.00
			4	18.83	19.00
			5	18.83	19.00
DC-HSDPA	4132	826.4	1	18.78	19.00
			2	18.02	19.00
			3	18.38	19.00
			4	18.02	19.00
	4183	836.6	1	18.78	19.00
			2	18.45	19.00
			3	18.76	19.00
			4	18.44	19.00
	4233	846.6	1	18.16	19.00
			2	18.41	19.00
			3	18.04	19.00
			4	18.49	19.00

B.2.2 LTE

B.2.2.1 LTE Band 2 FDD – Laptop / Tablet Modes – Antennas 5 & 8

SAR Measurement for LTE Band 2 FDD (Frequency range: 1850 – 1910MHz) is covered by LTE Band 25 FDD (Frequency range: 1850 – 1915MHz) due to overlapping frequency range, same maximum tune-up and same bandwidth.

B.2.2.2 LTE Band 4 FDD – Laptop / Tablet Modes – Antennas 5 & 8

SAR Measurement for LTE Band 4 FDD (Frequency range: 1710 – 1755MHz) is covered by LTE Band 66 FDD (Frequency range: 1710 – 1780MHz) due to overlapping frequency range, same maximum tune-up and same bandwidth.

B.2.2.3 LTE Band 5 FDD – Laptop / Tablet Modes – Antennas 5 & 8

SAR Measurement for LTE Band 5 FDD (Frequency range: 824 – 849MHz) is covered by LTE Band 26 FDD (Frequency range: 814 – 849MHz) due to overlapping frequency range, same maximum tune-up and same bandwidth.

B.2.2.4 LTE Band 7 FDD – Laptop Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM			
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	
LTE 7	20 MHz	20850	2510	1RB Low	1 Pos 0	19.50	0	17.97	19.50	1	17.10	
				1RB Mid	1 Pos 50	19.50	0	18.08	19.50	1	17.25	
				1RB High	1 Pos 99	19.50	0	18.02	19.50	1	17.17	
				50% RB Low	50 Pos 0	19.50	1	17.00	19.50	2	15.97	
				50% RB Mid	50 Pos 24	19.50	1	17.06	19.50	2	16.00	
				50% RB High	50 Pos 50	19.50	1	17.11	19.50	2	16.04	
		100% RB	100 Pos 0	19.50	1	17.09	19.50	2	16.05			
		21100	2535	1RB Low	1 Pos 0	19.50	0	17.98	19.50	1	17.40	
				1RB Mid	1 Pos 50	19.50	0	18.12	19.50	1	17.55	
				1RB High	1 Pos 99	19.50	0	17.99	19.50	1	17.46	
				50% RB Low	50 Pos 0	19.50	1	17.19	19.50	2	16.18	
				50% RB Mid	50 Pos 24	19.50	1	17.11	19.50	2	16.10	
				50% RB High	50 Pos 50	19.50	1	17.13	19.50	2	16.12	
		100% RB	100 Pos 0	19.50	1	17.14	19.50	2	16.14			
		21350	2560	1RB Low	1 Pos 0	19.50	0	17.94	19.50	1	17.06	
				1RB Mid	1 Pos 50	19.50	0	18.18	19.50	1	17.24	
				1RB High	1 Pos 99	19.50	0	18.17	19.50	1	17.25	
				50% RB Low	50 Pos 0	19.50	1	17.19	19.50	2	16.13	
				50% RB Mid	50 Pos 24	19.50	1	17.15	19.50	2	16.11	
				50% RB High	50 Pos 50	19.50	1	17.14	19.50	2	16.10	
		100% RB	100 Pos 0	19.50	1	17.18	19.50	2	16.12			
		15 MHz	20825	2507.5	1RB Low	1 Pos 0	19.50	0	17.92	19.50	1	17.53
					1RB Mid	1 Pos 38	19.50	0	18.03	19.50	1	17.61
					1RB High	1 Pos 74	19.50	0	18.01	19.50	1	17.56
	50% RB Low				38 Pos 0	19.50	1	16.98	19.50	2	16.02	
	50% RB Mid				38 Pos 19	19.50	1	17.02	19.50	2	15.98	
	50% RB High				38 Pos 39	19.50	1	17.10	19.50	2	16.06	
	100% RB		75 Pos 0	19.50	1	17.06	19.50	2	16.04			
	21100		2535	1RB Low	1 Pos 0	19.50	0	18.02	19.50	1	17.29	
				1RB Mid	1 Pos 38	19.50	0	18.11	19.50	1	17.32	
				1RB High	1 Pos 74	19.50	0	18.01	19.50	1	17.25	
				50% RB Low	38 Pos 0	19.50	1	17.14	19.50	2	16.10	
				50% RB Mid	38 Pos 19	19.50	1	17.13	19.50	2	16.09	
				50% RB High	38 Pos 39	19.50	1	17.11	19.50	2	16.06	
	100% RB		75 Pos 0	19.50	1	17.14	19.50	2	16.10			
	21375		2562.5	1RB Low	1 Pos 0	19.50	0	17.94	19.50	1	17.55	
				1RB Mid	1 Pos 38	19.50	0	18.11	19.50	1	17.70	
				1RB High	1 Pos 74	19.50	0	18.15	19.50	1	17.70	
				50% RB Low	38 Pos 0	19.50	1	17.11	19.50	2	16.06	
				50% RB Mid	38 Pos 19	19.50	1	17.17	19.50	2	16.12	
				50% RB High	38 Pos 39	19.50	1	17.18	19.50	2	16.13	
	100% RB		75 Pos 0	19.50	1	17.18	19.50	2	16.13			
	10 MHz		20800	2505	1RB Low	1 Pos 0	19.50	0	18.05	19.50	1	17.59
					1RB Mid	1 Pos 24	19.50	0	18.09	19.50	1	17.65
					1RB High	1 Pos 49	19.50	0	18.11	19.50	1	17.61
		50% RB Low			25 Pos 0	19.50	1	17.03	19.50	2	16.04	
		50% RB Mid			25 Pos 12	19.50	1	17.08	19.50	2	16.09	
		50% RB High			25 Pos 25	19.50	1	17.05	19.50	2	16.11	
		100% RB	50 Pos0	19.50	1	17.12	19.50	2	16.06			
		21100	2535	1RB Low	1 Pos 0	19.50	0	18.12	19.50	1	16.89	
				1RB Mid	1 Pos 24	19.50	0	18.17	19.50	1	16.95	
				1RB High	1 Pos 49	19.50	0	18.10	19.50	1	16.92	
				50% RB Low	25 Pos 0	19.50	1	17.15	19.50	2	16.20	
				50% RB Mid	25 Pos 12	19.50	1	17.10	19.50	2	16.21	
				50% RB High	25 Pos 25	19.50	1	17.07	19.50	2	16.17	
		100% RB	50 Pos0	19.50	1	17.16	19.50	2	16.16			
		21400	2565	1RB Low	1 Pos 0	19.50	0	18.10	19.50	1	17.09	
				1RB Mid	1 Pos 24	19.50	0	18.19	19.50	1	17.21	
				1RB High	1 Pos 49	19.50	0	18.17	19.50	1	17.21	
				50% RB Low	25 Pos 0	19.50	1	17.18	19.50	2	16.15	
				50% RB Mid	25 Pos 12	19.50	1	17.18	19.50	2	16.16	
				50% RB High	25 Pos 25	19.50	1	17.17	19.50	2	16.19	
		100% RB	50 Pos0	19.50	1	17.20	19.50	2	16.15			

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 7	5 MHz	20775	2502.5	1RB Low	1 Pos 0	19.50	0	18.16	19.50	1	16.87
				1RB Mid	1 Pos 12	19.50	0	18.21	19.50	1	16.87
				1RB High	1 Pos 24	19.50	0	18.20	19.50	1	16.91
				50% RB Low	12 Pos 0	19.50	1	17.06	19.50	2	15.97
				50% RB Mid	12 Pos 6	19.50	1	17.06	19.50	2	16.02
				50% RB High	12 Pos 11	19.50	1	17.08	19.50	2	16.02
		21100	2535	100% RB	25 Pos 0	19.50	1	17.08	19.50	2	16.10
				1RB Low	1 Pos 0	19.50	0	18.16	19.50	1	17.01
				1RB Mid	1 Pos 12	19.50	0	18.16	19.50	1	16.98
				1RB High	1 Pos 24	19.50	0	18.13	19.50	1	16.99
				50% RB Low	12 Pos 0	19.50	1	17.18	19.50	2	16.05
				50% RB Mid	12 Pos 6	19.50	1	17.14	19.50	2	16.03
		21425	2567.5	50% RB High	12 Pos 11	19.50	1	17.08	19.50	2	15.98
				100% RB	25 Pos 0	19.50	1	17.14	19.50	2	16.12
				1RB Low	1 Pos 0	19.50	0	18.19	19.50	1	17.32
				1RB Mid	1 Pos 12	19.50	0	18.23	19.50	1	17.36
				1RB High	1 Pos 24	19.50	0	18.27	19.50	1	17.43
				50% RB Low	12 Pos 0	19.50	1	17.19	19.50	2	16.19
		50% RB Mid	12 Pos 6	19.50	1	17.14	19.50	2	16.13		
		50% RB High	12 Pos 11	19.50	1	17.18	19.50	2	16.20		
		100% RB	25 Pos 0	19.50	1	17.18	19.50	2	16.14		

B.2.2.5 LTE Band 7 FDD – Tablet mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 7	20 MHz	20850	2510	1RB Low	1 Pos 0	16.00	0	14.86	16.00	1	14.08
				1RB Mid	1 Pos 50	16.00	0	14.98	16.00	1	14.22
				1RB High	1 Pos 99	16.00	0	14.95	16.00	1	14.12
				50% RB Low	50 Pos 0	16.00	1	13.93	16.00	2	12.89
				50% RB Mid	50 Pos 24	16.00	1	13.96	16.00	2	12.95
				50% RB High	50 Pos 50	16.00	1	14.05	16.00	2	13.01
		100% RB	100 Pos 0	16.00	1	13.99	16.00	2	12.95		
		21100	2535	1RB Low	1 Pos 0	16.00	0	14.92	16.00	1	14.12
				1RB Mid	1 Pos 50	16.00	0	15.21	16.00	1	14.30
				1RB High	1 Pos 99	16.00	0	14.98	16.00	1	14.18
				50% RB Low	50 Pos 0	16.00	1	14.12	16.00	2	13.08
				50% RB Mid	50 Pos 24	16.00	1	14.18	16.00	2	13.02
				50% RB High	50 Pos 50	16.00	1	14.06	16.00	2	13.06
		100% RB	100 Pos 0	16.00	1	14.08	16.00	2	13.03		
		21350	2560	1RB Low	1 Pos 0	16.00	0	14.87	16.00	1	14.09
				1RB Mid	1 Pos 50	16.00	0	15.06	16.00	1	14.28
				1RB High	1 Pos 99	16.00	0	15.10	16.00	1	14.30
				50% RB Low	50 Pos 0	16.00	1	14.11	16.00	2	13.06
	50% RB Mid			50 Pos 24	16.00	1	14.10	16.00	2	13.07	
	50% RB High			50 Pos 50	16.00	1	14.07	16.00	2	13.06	
	100% RB	100 Pos 0	16.00	1	14.12	16.00	2	13.05			
	15 MHz	20825	2507.5	1RB Low	1 Pos 0	16.00	0	14.85	16.00	1	14.15
				1RB Mid	1 Pos 38	16.00	0	14.95	16.00	1	14.26
				1RB High	1 Pos 74	16.00	0	14.91	16.00	1	14.23
				50% RB Low	38 Pos 0	16.00	1	13.90	16.00	2	12.92
				50% RB Mid	38 Pos 19	16.00	1	13.95	16.00	2	12.96
				50% RB High	38 Pos 39	16.00	1	14.01	16.00	2	13.01
		100% RB	75 Pos 0	16.00	1	14.01	16.00	2	12.97		
		21100	2535	1RB Low	1 Pos 0	16.00	0	14.97	16.00	1	14.29
				1RB Mid	1 Pos 38	16.00	0	15.04	16.00	1	14.33
				1RB High	1 Pos 74	16.00	0	14.97	16.00	1	14.25
				50% RB Low	38 Pos 0	16.00	1	14.08	16.00	2	13.05
				50% RB Mid	38 Pos 19	16.00	1	14.04	16.00	2	13.01
				50% RB High	38 Pos 39	16.00	1	14.05	16.00	2	13.01
		100% RB	75 Pos 0	16.00	1	14.09	16.00	2	13.05		
		21375	2562.5	1RB Low	1 Pos 0	16.00	0	14.92	16.00	1	14.20
				1RB Mid	1 Pos 38	16.00	0	15.06	16.00	1	14.36
				1RB High	1 Pos 74	16.00	0	15.07	16.00	1	14.36
				50% RB Low	38 Pos 0	16.00	1	14.03	16.00	2	13.00
	50% RB Mid			38 Pos 19	16.00	1	14.08	16.00	2	13.04	
	50% RB High			38 Pos 39	16.00	1	14.05	16.00	2	13.07	
	100% RB	75 Pos 0	16.00	1	14.10	16.00	2	13.09			
	10 MHz	20800	2505	1RB Low	1 Pos 0	16.00	0	15.01	16.00	1	14.28
				1RB Mid	1 Pos 24	16.00	0	15.01	16.00	1	14.33
				1RB High	1 Pos 49	16.00	0	15.03	16.00	1	14.28
				50% RB Low	25 Pos 0	16.00	1	13.94	16.00	2	13.01
				50% RB Mid	25 Pos 12	16.00	1	13.96	16.00	2	13.05
				50% RB High	25 Pos 25	16.00	1	14.02	16.00	2	13.06
		100% RB	50 Pos0	16.00	1	14.03	16.00	2	12.98		
		21100	2535	1RB Low	1 Pos 0	16.00	0	15.05	16.00	1	14.35
				1RB Mid	1 Pos 24	16.00	0	15.09	16.00	1	14.35
				1RB High	1 Pos 49	16.00	0	15.05	16.00	1	14.31
				50% RB Low	25 Pos 0	16.00	1	14.08	16.00	2	13.16
				50% RB Mid	25 Pos 12	16.00	1	14.07	16.00	2	13.14
				50% RB High	25 Pos 25	16.00	1	14.05	16.00	2	13.11
		100% RB	50 Pos0	16.00	1	14.12	16.00	2	13.07		
		21400	2565	1RB Low	1 Pos 0	16.00	0	15.05	16.00	1	14.33
				1RB Mid	1 Pos 24	16.00	0	15.10	16.00	1	14.40
				1RB High	1 Pos 49	16.00	0	15.17	16.00	1	14.43
				50% RB Low	25 Pos 0	16.00	1	14.09	16.00	2	13.15
50% RB Mid	25 Pos 12			16.00	1	14.10	16.00	2	13.16		
50% RB High	25 Pos 25			16.00	1	14.10	16.00	2	13.16		
100% RB	50 Pos0	16.00	1	14.14	16.00	2	13.07				

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 7	5 MHz	20775	2502.5	1RB Low	1 Pos 0	16.00	0	15.05	16.00	1	14.32
				1RB Mid	1 Pos 12	16.00	0	15.06	16.00	1	14.33
				1RB High	1 Pos 24	16.00	0	15.06	16.00	1	14.34
				50% RB Low	12 Pos 0	16.00	1	14.00	16.00	2	12.89
				50% RB Mid	12 Pos 6	16.00	1	13.98	16.00	2	12.93
				50% RB High	12 Pos 11	16.00	1	13.97	16.00	2	12.93
		21100	2535	100% RB	25 Pos 0	16.00	1	14.01	16.00	2	12.99
				1RB Low	1 Pos 0	16.00	0	15.11	16.00	1	14.40
				1RB Mid	1 Pos 12	16.00	0	15.12	16.00	1	14.40
				1RB High	1 Pos 24	16.00	0	15.09	16.00	1	14.38
				50% RB Low	12 Pos 0	16.00	1	14.06	16.00	2	13.02
				50% RB Mid	12 Pos 6	16.00	1	14.07	16.00	2	13.01
		21425	2567.5	50% RB High	12 Pos 11	16.00	1	14.02	16.00	2	12.94
				100% RB	25 Pos 0	16.00	1	14.04	16.00	2	13.06
				1RB Low	1 Pos 0	16.00	0	15.12	16.00	1	14.42
				1RB Mid	1 Pos 12	16.00	0	15.19	16.00	1	14.47
				1RB High	1 Pos 24	16.00	0	15.21	16.00	1	14.47
				50% RB Low	12 Pos 0	16.00	1	14.10	16.00	2	13.03
		50% RB Mid	12 Pos 6	16.00	1	14.13	16.00	2	13.04		
		50% RB High	12 Pos 11	16.00	1	14.15	16.00	2	13.09		
		100% RB	25 Pos 0	16.00	1	14.15	16.00	2	13.14		

B.2.2.6 LTE Band 7 FDD – Tablet mode – Antenna 8

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 7	20 MHz	20850	2510	1RB Low	1 Pos 0	18.50	0	16.60	18.50	1	15.82
				1RB Mid	1 Pos 50	18.50	0	16.73	18.50	1	15.97
				1RB High	1 Pos 99	18.50	0	16.70	18.50	1	15.88
				50% RB Low	50 Pos 0	18.50	1	15.71	18.50	2	14.69
				50% RB Mid	50 Pos 24	18.50	1	15.72	18.50	2	14.71
				50% RB High	50 Pos 50	18.50	1	15.79	18.50	2	14.76
		100% RB	100 Pos 0	18.50	1	15.76	18.50	2	14.71		
		21100	2535	1RB Low	1 Pos 0	18.50	0	16.63	18.50	1	15.87
				1RB Mid	1 Pos 50	18.50	0	16.81	18.50	1	16.05
				1RB High	1 Pos 99	18.50	0	16.74	18.50	1	15.95
				50% RB Low	50 Pos 0	18.50	1	15.86	18.50	2	14.82
				50% RB Mid	50 Pos 24	18.50	1	15.81	18.50	2	14.85
				50% RB High	50 Pos 50	18.50	1	15.78	18.50	2	14.78
		100% RB	100 Pos 0	18.50	1	15.82	18.50	2	14.78		
		21350	2560	1RB Low	1 Pos 0	18.50	0	16.64	18.50	1	15.86
				1RB Mid	1 Pos 50	18.50	0	16.80	18.50	1	16.06
				1RB High	1 Pos 99	18.50	0	16.81	18.50	1	16.03
				50% RB Low	50 Pos 0	18.50	1	15.82	18.50	2	14.80
	50% RB Mid			50 Pos 24	18.50	1	15.88	18.50	2	14.86	
	50% RB High			50 Pos 50	18.50	1	15.91	18.50	2	14.87	
	100% RB	100 Pos 0	18.50	1	15.89	18.50	2	14.83			
	15 MHz	20825	2507.5	1RB Low	1 Pos 0	18.50	0	16.62	18.50	1	15.92
				1RB Mid	1 Pos 38	18.50	0	16.71	18.50	1	16.03
				1RB High	1 Pos 74	18.50	0	16.66	18.50	1	15.97
				50% RB Low	38 Pos 0	18.50	1	15.65	18.50	2	14.64
				50% RB Mid	38 Pos 19	18.50	1	15.69	18.50	2	14.74
				50% RB High	38 Pos 39	18.50	1	15.70	18.50	2	14.76
		100% RB	75 Pos 0	18.50	1	15.74	18.50	2	14.72		
		21100	2535	1RB Low	1 Pos 0	18.50	0	16.69	18.50	1	16.01
				1RB Mid	1 Pos 38	18.50	0	16.78	18.50	1	16.09
				1RB High	1 Pos 74	18.50	0	16.72	18.50	1	16.04
				50% RB Low	38 Pos 0	18.50	1	15.85	18.50	2	14.82
				50% RB Mid	38 Pos 19	18.50	1	15.81	18.50	2	14.79
				50% RB High	38 Pos 39	18.50	1	15.80	18.50	2	14.77
		100% RB	75 Pos 0	18.50	1	15.83	18.50	2	14.79		
		21375	2562.5	1RB Low	1 Pos 0	18.50	0	16.67	18.50	1	15.96
				1RB Mid	1 Pos 38	18.50	0	16.83	18.50	1	16.11
				1RB High	1 Pos 74	18.50	0	16.79	18.50	1	16.11
				50% RB Low	38 Pos 0	18.50	1	15.74	18.50	2	14.78
	50% RB Mid			38 Pos 19	18.50	1	15.87	18.50	2	14.83	
	50% RB High			38 Pos 39	18.50	1	15.85	18.50	2	14.84	
	100% RB	75 Pos 0	18.50	1	15.89	18.50	2	14.85			
	10 MHz	20800	2505	1RB Low	1 Pos 0	18.50	0	16.69	18.50	1	15.99
				1RB Mid	1 Pos 24	18.50	0	16.77	18.50	1	16.06
				1RB High	1 Pos 49	18.50	0	16.73	18.50	1	16.02
				50% RB Low	25 Pos 0	18.50	1	15.71	18.50	2	14.77
				50% RB Mid	25 Pos 12	18.50	1	15.77	18.50	2	14.79
				50% RB High	25 Pos 25	18.50	1	15.72	18.50	2	14.77
		100% RB	50 Pos0	18.50	1	15.77	18.50	2	14.71		
		21100	2535	1RB Low	1 Pos 0	18.50	0	16.80	18.50	1	16.09
				1RB Mid	1 Pos 24	18.50	0	16.83	18.50	1	16.11
				1RB High	1 Pos 49	18.50	0	16.82	18.50	1	16.11
				50% RB Low	25 Pos 0	18.50	1	15.86	18.50	2	14.91
				50% RB Mid	25 Pos 12	18.50	1	15.83	18.50	2	14.91
				50% RB High	25 Pos 25	18.50	1	15.84	18.50	2	14.89
		100% RB	50 Pos0	18.50	1	15.87	18.50	2	14.81		
		21400	2565	1RB Low	1 Pos 0	18.50	0	16.80	18.50	1	16.07
				1RB Mid	1 Pos 24	18.50	0	16.85	18.50	1	16.13
				1RB High	1 Pos 49	18.50	0	16.90	18.50	1	16.18
				50% RB Low	25 Pos 0	18.50	1	15.84	18.50	2	14.90
50% RB Mid	25 Pos 12			18.50	1	15.90	18.50	2	14.94		
50% RB High	25 Pos 25			18.50	1	15.94	18.50	2	14.98		
100% RB	50 Pos0	18.50	1	15.92	18.50	2	14.85				

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 7	5 MHz	20775	2502.5	1RB Low	1 Pos 0	18.50	0	16.80	18.50	1	16.06
				1RB Mid	1 Pos 12	18.50	0	16.81	18.50	1	16.06
				1RB High	1 Pos 24	18.50	0	16.84	18.50	1	16.09
				50% RB Low	12 Pos 0	18.50	1	15.69	18.50	2	14.68
				50% RB Mid	12 Pos 6	18.50	1	15.74	18.50	2	14.70
				50% RB High	12 Pos 11	18.50	1	15.75	18.50	2	14.70
		21100	2535	100% RB	25 Pos 0	18.50	1	15.73	18.50	2	14.74
				1RB Low	1 Pos 0	18.50	0	16.86	18.50	1	16.15
				1RB Mid	1 Pos 12	18.50	0	16.88	18.50	1	16.19
				1RB High	1 Pos 24	18.50	0	16.84	18.50	1	16.14
				50% RB Low	12 Pos 0	18.50	1	15.86	18.50	2	14.77
				50% RB Mid	12 Pos 6	18.50	1	15.83	18.50	2	14.76
		21425	2567.5	50% RB High	12 Pos 11	18.50	1	15.81	18.50	2	14.72
				100% RB	25 Pos 0	18.50	1	15.81	18.50	2	14.80
				1RB Low	1 Pos 0	18.50	0	16.91	18.50	1	16.18
				1RB Mid	1 Pos 12	18.50	0	16.96	18.50	1	16.21
				1RB High	1 Pos 24	18.50	0	16.98	18.50	1	16.23
				50% RB Low	12 Pos 0	18.50	1	15.92	18.50	2	14.85
		50% RB Mid	12 Pos 6	18.50	1	15.89	18.50	2	14.83		
		50% RB High	12 Pos 11	18.50	1	15.91	18.50	2	14.86		
		100% RB	25 Pos 0	18.50	1	15.93	18.50	2	14.93		

B.2.2.7 LTE Band 12 FDD – Laptop mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 12	10 MHz	23095	707.5	1RB Low	1 Pos 0	21.50	0	20.19	21.50	1	19.71
				1RB Mid	1 Pos 24	21.50	0	20.21	21.50	1	19.77
				1RB High	1 Pos 49	21.50	0	20.15	21.50	1	19.69
				50% RB Low	25 Pos 0	21.50	1	19.19	21.50	2	18.26
				50% RB Mid	25 Pos 12	21.50	1	19.17	21.50	2	18.23
				50% RB High	25 Pos 24	21.50	1	19.21	21.50	2	18.26
				100% RB	50 Pos 0	21.50	1	19.19	21.50	2	18.20
	5 MHz	23035	701.5	1RB Low	1 Pos 0	21.50	0	20.29	21.50	1	19.03
				1RB Mid	1 Pos 12	21.50	0	20.28	21.50	1	18.99
				1RB High	1 Pos 24	21.50	0	20.31	21.50	1	19.07
				50% RB Low	12 Pos 0	21.50	1	19.21	21.50	2	18.22
				50% RB Mid	12 Pos 6	21.50	1	19.19	21.50	2	18.19
				50% RB High	12 Pos 11	21.50	1	19.17	21.50	2	18.12
		23095	707.5	100% RB	25 Pos 0	21.50	1	19.18	21.50	2	18.22
				1RB Low	1 Pos 0	21.50	0	20.21	21.50	1	19.11
				1RB Mid	1 Pos 12	21.50	0	20.23	21.50	1	19.11
				1RB High	1 Pos 24	21.50	0	20.21	21.50	1	19.08
				50% RB Low	12 Pos 0	21.50	1	19.20	21.50	2	18.09
				50% RB Mid	12 Pos 6	21.50	1	19.22	21.50	2	18.14
				50% RB High	12 Pos 11	21.50	1	19.18	21.50	2	18.13
				100% RB	25 Pos 0	21.50	1	19.20	21.50	2	18.23
				23155	713.5	1RB Low	1 Pos 0	21.50	0	20.22	21.50
		1RB Mid	1 Pos 12			21.50	0	20.19	21.50	1	19.31
		1RB High	1 Pos 24			21.50	0	20.17	21.50	1	19.30
		50% RB Low	12 Pos 0			21.50	1	19.16	21.50	2	18.17
		50% RB Mid	12 Pos 6			21.50	1	19.10	21.50	2	18.08
		50% RB High	12 Pos 11			21.50	1	19.11	21.50	2	18.06
		3 MHz	23025	700.5	100% RB	25 Pos 0	21.50	1	19.10	21.50	2
	1RB Low				1 Pos 0	21.50	0	20.20	21.50	1	19.78
	1RB Mid				1 Pos 7	21.50	0	20.16	21.50	1	19.72
	1RB High				1 Pos 14	21.50	0	20.15	21.50	1	19.66
	50% RB Low				8 Pos 0	21.50	1	19.20	21.50	2	18.36
	50% RB Mid				8 Pos 4	21.50	1	19.16	21.50	2	18.32
	23095		707.5	50% RB High	8 Pos 7	21.50	1	19.15	21.50	2	18.30
				100% RB	15 Pos 0	21.50	1	19.19	21.50	2	18.23
				1RB Low	1 Pos 0	21.50	0	20.18	21.50	1	19.79
				1RB Mid	1 Pos 7	21.50	0	20.16	21.50	1	19.73
				1RB High	1 Pos 14	21.50	0	20.18	21.50	1	19.73
				50% RB Low	8 Pos 0	21.50	1	19.16	21.50	2	18.32
				50% RB Mid	8 Pos 4	21.50	1	19.20	21.50	2	18.34
				50% RB High	8 Pos 7	21.50	1	19.18	21.50	2	18.31
				100% RB	15 Pos 0	21.50	1	19.17	21.50	2	18.23
	23165		714.5	1RB Low	1 Pos 0	21.50	0	20.10	21.50	1	19.68
				1RB Mid	1 Pos 7	21.50	0	20.08	21.50	1	19.64
				1RB High	1 Pos 14	21.50	0	20.05	21.50	1	19.58
				50% RB Low	8 Pos 0	21.50	1	19.08	21.50	2	18.27
				50% RB Mid	8 Pos 4	21.50	1	19.05	21.50	2	18.22
				50% RB High	8 Pos 7	21.50	1	19.13	21.50	2	18.25
100% RB				15 Pos 0	21.50	1	19.13	21.50	2	18.17	

B.2.2.8 LTE Band 12 FDD – Tablet mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 12	10 MHz	23095	707.5	1RB Low	1 Pos 0	19.00	0	18.13	19.00	1	17.41
				1RB Mid	1 Pos 24	19.00	0	18.16	19.00	1	17.43
				1RB High	1 Pos 49	19.00	0	18.09	19.00	1	17.38
				50% RB Low	25 Pos 0	19.00	1	17.12	19.00	2	16.18
				50% RB Mid	25 Pos 12	19.00	1	17.08	19.00	2	16.15
				50% RB High	25 Pos 24	19.00	1	17.12	19.00	2	16.19
				100% RB	50 Pos 0	19.00	1	17.12	19.00	2	16.11
	5 MHz	23035	701.5	1RB Low	1 Pos 0	19.00	0	18.24	19.00	1	17.36
				1RB Mid	1 Pos 12	19.00	0	18.23	19.00	1	17.34
				1RB High	1 Pos 24	19.00	0	18.29	19.00	1	17.44
				50% RB Low	12 Pos 0	19.00	1	17.14	19.00	2	16.10
				50% RB Mid	12 Pos 6	19.00	1	17.11	19.00	2	16.05
				50% RB High	12 Pos 11	19.00	1	17.07	19.00	2	16.01
		23095	707.5	100% RB	25 Pos 0	19.00	1	17.09	19.00	2	16.13
				1RB Low	1 Pos 0	19.00	0	18.07	19.00	1	17.32
				1RB Mid	1 Pos 12	19.00	0	18.16	19.00	1	17.38
				1RB High	1 Pos 24	19.00	0	18.12	19.00	1	17.35
				50% RB Low	12 Pos 0	19.00	1	17.05	19.00	2	16.06
				50% RB Mid	12 Pos 6	19.00	1	17.12	19.00	2	16.13
				50% RB High	12 Pos 11	19.00	1	17.11	19.00	2	16.12
				100% RB	25 Pos 0	19.00	1	17.12	19.00	2	16.11
				23155	713.5	1RB Low	1 Pos 0	19.00	0	18.10	19.00
		1RB Mid	1 Pos 12			19.00	0	18.11	19.00	1	17.26
		1RB High	1 Pos 24			19.00	0	18.13	19.00	1	17.23
		50% RB Low	12 Pos 0			19.00	1	17.10	19.00	2	16.01
		50% RB Mid	12 Pos 6			19.00	1	17.03	19.00	2	15.94
		50% RB High	12 Pos 11			19.00	1	17.02	19.00	2	15.94
		3 MHz	23025	700.5	100% RB	25 Pos 0	19.00	1	17.03	19.00	2
	1RB Low				1 Pos 0	19.00	0	18.16	19.00	1	17.44
	1RB Mid				1 Pos 7	19.00	0	18.15	19.00	1	17.49
	1RB High				1 Pos 14	19.00	0	18.09	19.00	1	17.40
	50% RB Low				8 Pos 0	19.00	1	17.11	19.00	2	16.12
	50% RB Mid				8 Pos 4	19.00	1	17.11	19.00	2	16.12
	23095		707.5	50% RB High	8 Pos 7	19.00	1	17.08	19.00	2	16.08
				100% RB	15 Pos 0	19.00	1	17.09	19.00	2	16.07
				1RB Low	1 Pos 0	19.00	0	18.12	19.00	1	17.42
				1RB Mid	1 Pos 7	19.00	0	18.14	19.00	1	17.43
				1RB High	1 Pos 14	19.00	0	18.06	19.00	1	17.40
				50% RB Low	8 Pos 0	19.00	1	17.06	19.00	2	16.07
				50% RB Mid	8 Pos 4	19.00	1	17.10	19.00	2	16.11
				50% RB High	8 Pos 7	19.00	1	17.07	19.00	2	16.06
				100% RB	15 Pos 0	19.00	1	17.06	19.00	2	16.05
	23165		714.5	1RB Low	1 Pos 0	19.00	0	18.06	19.00	1	17.35
				1RB Mid	1 Pos 7	19.00	0	18.08	19.00	1	17.37
				1RB High	1 Pos 14	19.00	0	18.01	19.00	1	17.31
				50% RB Low	8 Pos 0	19.00	1	17.00	19.00	2	16.03
				50% RB Mid	8 Pos 4	19.00	1	17.00	19.00	2	16.00
				50% RB High	8 Pos 7	19.00	1	16.98	19.00	2	15.99
100% RB	15 Pos 0		19.00	1	17.02	19.00	2	15.98			

B.2.2.9 LTE Band 13 FDD – Laptop Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 13	10 MHz	23230	782	1RB Low	1 Pos 0	21.50	0	20.30	21.50	1	19.75
				1RB Mid	1 Pos 24	21.50	0	20.33	21.50	1	19.86
				1RB High	1 Pos 49	21.50	0	20.33	21.50	1	19.85
				50% RB Low	25 Pos 0	21.50	1	19.19	21.50	2	18.23
				50% RB Mid	25 Pos 12	21.50	1	19.31	21.50	2	18.35
				50% RB High	25 Pos 24	21.50	1	19.38	21.50	2	18.43
				100% RB	50 Pos 0	21.50	1	19.33	21.50	2	18.27
	5.0 MHz	23230	782	1RB Low	1 Pos 0	21.50	0	20.42	21.50	1	19.07
				1RB Mid	1 Pos 12	21.50	0	20.41	21.50	1	19.09
				1RB High	1 Pos 24	21.50	0	20.34	21.50	1	19.05
				50% RB Low	12 Pos 0	21.50	1	19.27	21.50	2	18.23
				50% RB Mid	12 Pos 6	21.50	1	19.29	21.50	2	18.25
				50% RB High	12 Pos 11	21.50	1	19.26	21.50	2	18.22
				100% RB	25 Pos 0	21.50	1	19.26	21.50	2	18.29

B.2.2.10 LTE Band 13 FDD – Tablet Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 13	10 MHz	23230	782	1RB Low	1 Pos 0	19.00	0	18.25	19.00	1	17.41
				1RB Mid	1 Pos 24	19.00	0	18.30	19.00	1	17.54
				1RB High	1 Pos 49	19.00	0	18.25	19.00	1	17.52
				50% RB Low	25 Pos 0	19.00	1	17.07	19.00	2	16.18
				50% RB Mid	25 Pos 12	19.00	1	17.20	19.00	2	16.27
				50% RB High	25 Pos 24	19.00	1	17.26	19.00	2	16.35
				100% RB	50 Pos 0	19.00	1	17.19	19.00	2	16.18
	5.0 MHz	23230	782	1RB Low	1 Pos 0	19.00	0	18.17	19.00	1	17.30
				1RB Mid	1 Pos 12	19.00	0	18.33	19.00	1	17.43
				1RB High	1 Pos 24	19.00	0	18.27	19.00	1	17.40
				50% RB Low	12 Pos 0	19.00	1	17.18	19.00	2	16.12
				50% RB Mid	12 Pos 6	19.00	1	17.17	19.00	2	16.15
				50% RB High	12 Pos 11	19.00	1	17.17	19.00	2	16.14
				100% RB	25 Pos 0	19.00	1	17.17	19.00	2	16.19

B.2.2.11 LTE Band 14 FDD – Laptop Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 14	10 MHz	23330	793	1RB Low	1 Pos 0	21.50	0	20.25	21.50	1	19.71
				1RB Mid	1 Pos 24	21.50	0	20.27	21.50	1	19.83
				1RB High	1 Pos 49	21.50	0	20.24	21.50	1	19.76
				50% RB Low	25 Pos 0	21.50	1	19.23	21.50	2	18.26
				50% RB Mid	25 Pos 12	21.50	1	19.24	21.50	2	18.32
				50% RB High	25 Pos 24	21.50	1	19.33	21.50	2	18.35
				100% RB	50 Pos 0	21.50	1	19.28	21.50	2	18.26
	5.0 MHz	23330	793	1RB Low	1 Pos 0	21.50	0	20.27	21.50	1	19.12
				1RB Mid	1 Pos 12	21.50	0	20.26	21.50	1	19.14
				1RB High	1 Pos 24	21.50	0	20.26	21.50	1	19.14
				50% RB Low	12 Pos 0	21.50	1	19.25	21.50	2	18.20
				50% RB Mid	12 Pos 6	21.50	1	19.23	21.50	2	18.16
				50% RB High	12 Pos 11	21.50	1	19.21	21.50	2	18.15
				100% RB	25 Pos 0	21.50	1	19.24	21.50	2	18.27

B.2.2.12 LTE Band 14 FDD – Tablet Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 14	10 MHz	23330	793	1RB Low	1 Pos 0	19.00	0	18.23	19.00	1	17.42
				1RB Mid	1 Pos 24	19.00	0	18.27	19.00	1	17.54
				1RB High	1 Pos 49	19.00	0	18.22	19.00	1	17.48
				50% RB Low	25 Pos 0	19.00	1	17.16	19.00	2	16.24
				50% RB Mid	25 Pos 12	19.00	1	17.23	19.00	2	16.25
				50% RB High	25 Pos 24	19.00	1	17.24	19.00	2	16.29
				100% RB	50 Pos 0	19.00	1	17.22	19.00	2	16.19
	5.0 MHz	23330	793	1RB Low	1 Pos 0	19.00	0	18.18	19.00	1	17.38
				1RB Mid	1 Pos 12	19.00	0	18.23	19.00	1	17.44
				1RB High	1 Pos 24	19.00	0	18.17	19.00	1	17.40
				50% RB Low	12 Pos 0	19.00	1	17.15	19.00	2	16.19
				50% RB Mid	12 Pos 6	19.00	1	17.15	19.00	2	16.17
				50% RB High	12 Pos 11	19.00	1	17.16	19.00	2	16.19
				100% RB	25 Pos 0	19.00	1	17.17	19.00	2	16.18

B.2.2.13 LTE Band 17 FDD – Laptop / Tablet Modes – Antennas 5 & 8

SAR Measurement for LTE Band 17 FDD (Frequency range: 704 – 716MHz) is covered by LTE Band 12 FDD (Frequency range: 699 – 716MHz) due to overlapping frequency range, same maximum tune-up and same bandwidth.

B.2.2.14 LTE Band 25 FDD – Laptop Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 25	20 MHz	26140	1860.0	1RB Low	1 Pos 0	20.50	0	19.01	20.50	1	18.19
				1RB Mid	1 Pos 50	20.50	0	19.19	20.50	1	18.35
				1RB High	1 Pos 99	20.50	0	19.13	20.50	1	18.27
				50% RB Low	50 Pos 0	20.50	1	18.09	20.50	2	17.03
				50% RB Mid	50 Pos 24	20.50	1	18.15	20.50	2	17.10
				50% RB High	50 Pos 50	20.50	1	17.99	20.50	2	16.99
		100% RB	100 Pos 0	20.50	1	18.07	20.50	2	17.04		
		26365	1882.5	1RB Low	1 Pos 0	20.50	0	19.04	20.50	1	18.45
				1RB Mid	1 Pos 50	20.50	0	19.11	20.50	1	18.57
				1RB High	1 Pos 99	20.50	0	19.06	20.50	1	18.42
				50% RB Low	50 Pos 0	20.50	1	18.00	20.50	2	16.94
				50% RB Mid	50 Pos 24	20.50	1	18.11	20.50	2	17.11
				50% RB High	50 Pos 50	20.50	1	18.10	20.50	2	17.06
		100% RB	100 Pos 0	20.50	1	18.02	20.50	2	16.97		
		26590	1905.0	1RB Low	1 Pos 0	20.50	0	19.00	20.50	1	18.08
				1RB Mid	1 Pos 50	20.50	0	19.04	20.50	1	18.11
				1RB High	1 Pos 99	20.50	0	18.94	20.50	1	18.05
				50% RB Low	50 Pos 0	20.50	1	17.99	20.50	2	16.96
	50% RB Mid			50 Pos 24	20.50	1	18.05	20.50	2	17.01	
	50% RB High			50 Pos 50	20.50	1	17.86	20.50	2	16.85	
	100% RB	100 Pos 0	20.50	1	17.88	20.50	2	16.91			
	15 MHz	26115	1857.5	1RB Low	1 Pos 0	20.50	0	19.04	20.50	1	18.64
				1RB Mid	1 Pos 38	20.50	0	19.10	20.50	1	18.68
				1RB High	1 Pos 74	20.50	0	19.02	20.50	1	18.69
				50% RB Low	38 Pos 0	20.50	1	18.04	20.50	2	17.04
				50% RB Mid	38 Pos 19	20.50	1	18.11	20.50	2	17.10
				50% RB High	38 Pos 39	20.50	1	18.05	20.50	2	17.00
		100% RB	75 Pos 0	20.50	1	18.06	20.50	2	17.06		
		26365	1882.5	1RB Low	1 Pos 0	20.50	0	19.04	20.50	1	18.31
				1RB Mid	1 Pos 38	20.50	0	19.09	20.50	1	18.28
				1RB High	1 Pos 74	20.50	0	19.01	20.50	1	18.27
				50% RB Low	38 Pos 0	20.50	1	17.99	20.50	2	17.00
				50% RB Mid	38 Pos 19	20.50	1	18.08	20.50	2	17.07
				50% RB High	38 Pos 39	20.50	1	18.01	20.50	2	17.04
		100% RB	75 Pos 0	20.50	1	18.00	20.50	2	16.99		
		26615	1907.5	1RB Low	1 Pos 0	20.50	0	19.00	20.50	1	18.03
				1RB Mid	1 Pos 38	20.50	0	18.98	20.50	1	18.00
				1RB High	1 Pos 74	20.50	0	18.94	20.50	1	17.95
				50% RB Low	38 Pos 0	20.50	1	17.93	20.50	2	16.93
	50% RB Mid			38 Pos 19	20.50	1	17.97	20.50	2	16.96	
	50% RB High			38 Pos 39	20.50	1	17.92	20.50	2	16.89	
	100% RB	75 Pos 0	20.50	1	17.92	20.50	2	16.92			
	10 MHz	26090	1855.0	1RB Low	1 Pos 0	20.50	0	19.12	20.50	1	18.65
				1RB Mid	1 Pos 24	20.50	0	19.11	20.50	1	18.63
				1RB High	1 Pos 49	20.50	0	19.17	20.50	1	18.69
				50% RB Low	25 Pos 0	20.50	1	18.02	20.50	2	17.07
				50% RB Mid	25 Pos 12	20.50	1	18.09	20.50	2	17.12
				50% RB High	25 Pos 25	20.50	1	18.11	20.50	2	17.13
100% RB		50 Pos0	20.50	1	18.10	20.50	2	17.06			
26365		1882.5	1RB Low	1 Pos 0	20.50	0	19.07	20.50	1	17.90	
			1RB Mid	1 Pos 24	20.50	0	19.13	20.50	1	17.95	
			1RB High	1 Pos 49	20.50	0	19.10	20.50	1	17.93	
			50% RB Low	25 Pos 0	20.50	1	18.04	20.50	2	17.12	
			50% RB Mid	25 Pos 12	20.50	1	18.12	20.50	2	17.20	
			50% RB High	25 Pos 25	20.50	1	18.18	20.50	2	17.23	
100% RB		50 Pos0	20.50	1	18.13	20.50	2	17.15			
26640		1910.0	1RB Low	1 Pos 0	20.50	0	18.96	20.50	1	17.95	
			1RB Mid	1 Pos 24	20.50	0	18.99	20.50	1	17.97	
			1RB High	1 Pos 49	20.50	0	18.98	20.50	1	17.97	
			50% RB Low	25 Pos 0	20.50	1	18.03	20.50	2	17.03	
	50% RB Mid		25 Pos 12	20.50	1	17.96	20.50	2	16.98		
	50% RB High		25 Pos 25	20.50	1	17.89	20.50	2	16.89		
100% RB	50 Pos0	20.50	1	17.94	20.50	2	16.94				

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE25	5 MHz	26065	1852.5	1RB Low	1 Pos 0	20.50	0	19.20	20.50	1	17.95
				1RB Mid	1 Pos 38	20.50	0	19.18	20.50	1	17.97
				1RB High	1 Pos 74	20.50	0	19.13	20.50	1	17.93
				50% RB Low	38 Pos 0	20.50	1	18.03	20.50	2	17.03
				50% RB Mid	38 Pos 19	20.50	1	18.06	20.50	2	17.01
				50% RB High	38 Pos 39	20.50	1	18.08	20.50	2	17.04
		100% RB	75 Pos 0	20.50	1	18.07	20.50	2	17.12		
		26365	1882.5	1RB Low	1 Pos 0	20.50	0	19.16	20.50	1	18.03
				1RB Mid	1 Pos 38	20.50	0	19.15	20.50	1	18.02
				1RB High	1 Pos 74	20.50	0	19.13	20.50	1	18.00
				50% RB Low	38 Pos 0	20.50	1	18.09	20.50	2	17.01
				50% RB Mid	38 Pos 19	20.50	1	18.08	20.50	2	17.02
				50% RB High	38 Pos 39	20.50	1	18.06	20.50	2	17.02
		100% RB	75 Pos 0	20.50	1	18.10	20.50	2	17.12		
		26665	1912.5	1RB Low	1 Pos 0	20.50	0	19.01	20.50	1	18.16
				1RB Mid	1 Pos 38	20.50	0	19.02	20.50	1	18.14
				1RB High	1 Pos 74	20.50	0	19.00	20.50	1	18.11
				50% RB Low	38 Pos 0	20.50	1	18.02	20.50	2	16.95
	50% RB Mid			38 Pos 19	20.50	1	17.98	20.50	2	16.95	
	50% RB High			38 Pos 39	20.50	1	17.90	20.50	2	16.89	
	100% RB	75 Pos 0	20.50	1	17.99	20.50	2	16.95			
	3 MHz	26055	1851.5	1RB Low	1 Pos 0	20.50	0	19.15	20.50	1	18.66
				1RB Mid	1 Pos 24	20.50	0	19.08	20.50	1	18.65
				1RB High	1 Pos 49	20.50	0	19.03	20.50	1	18.61
				50% RB Low	25 Pos 0	20.50	1	18.06	20.50	2	17.19
				50% RB Mid	25 Pos 12	20.50	1	18.06	20.50	2	17.22
				50% RB High	25 Pos 24	20.50	1	18.07	20.50	2	17.21
		100% RB	50 Pos 0	20.50	1	18.07	20.50	2	17.11		
		26365	1882.5	1RB Low	1 Pos 0	20.50	0	19.08	20.50	1	18.65
				1RB Mid	1 Pos 24	20.50	0	19.06	20.50	1	18.65
				1RB High	1 Pos 49	20.50	0	19.04	20.50	1	18.61
				50% RB Low	25 Pos 0	20.50	1	18.04	20.50	2	17.21
				50% RB Mid	25 Pos 12	20.50	1	18.00	20.50	2	17.19
				50% RB High	25 Pos 24	20.50	1	18.00	20.50	2	17.16
		100% RB	50 Pos 0	20.50	1	18.00	20.50	2	17.08		
		26675	1913.5	1RB Low	1 Pos 0	20.50	0	18.97	20.50	1	18.45
				1RB Mid	1 Pos 24	20.50	0	18.96	20.50	1	18.47
				1RB High	1 Pos 49	20.50	0	18.94	20.50	1	18.41
				50% RB Low	25 Pos 0	20.50	1	17.93	20.50	2	17.09
	50% RB Mid			25 Pos 12	20.50	1	17.90	20.50	2	17.08	
	50% RB High			25 Pos 24	20.50	1	17.91	20.50	2	17.06	
	100% RB	50 Pos 0	20.50	1	17.92	20.50	2	17.00			
	1.4 MHz	26047	1850.7	1RB Low	1 Pos 0	20.50	0	19.15	20.50	1	17.89
				1RB Mid	1 Pos 12	20.50	0	19.17	20.50	1	17.87
				1RB High	1 Pos 24	20.50	0	19.08	20.50	1	17.83
				50% RB Low	12 Pos 0	20.50	0	19.15	20.50	1	18.26
				50% RB Mid	12 Pos 6	20.50	0	19.15	20.50	1	18.26
				50% RB High	12 Pos 11	20.50	0	19.13	20.50	1	18.28
100% RB		25 Pos 0	20.50	1	18.08	20.50	2	17.04			
26365		1882.5	1RB Low	1 Pos 0	20.50	0	19.05	20.50	1	17.80	
			1RB Mid	1 Pos 12	20.50	0	19.09	20.50	1	17.84	
			1RB High	1 Pos 24	20.50	0	19.10	20.50	1	17.79	
			50% RB Low	12 Pos 0	20.50	0	19.11	20.50	1	18.20	
			50% RB Mid	12 Pos 6	20.50	0	19.09	20.50	1	18.19	
			50% RB High	12 Pos 11	20.50	0	19.05	20.50	1	18.17	
100% RB		25 Pos 0	20.50	1	18.03	20.50	2	17.00			
26683		1914.3	1RB Low	1 Pos 0	20.50	0	18.93	20.50	1	17.64	
			1RB Mid	1 Pos 12	20.50	0	18.97	20.50	1	17.68	
			1RB High	1 Pos 24	20.50	0	18.91	20.50	1	17.65	
			50% RB Low	12 Pos 0	20.50	0	18.95	20.50	1	18.06	
	50% RB Mid		12 Pos 6	20.50	0	18.97	20.50	1	18.08		
	50% RB High		12 Pos 11	20.50	0	18.96	20.50	1	18.11		
100% RB	25 Pos 0	20.50	1	17.95	20.50	2	16.85				

B.2.2.15 LTE Band 25 FDD – Tablet Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 25	20 MHz	26140	1860.0	1RB Low	1 Pos 0	16.50	0	14.96	16.50	1	14.09
				1RB Mid	1 Pos 50	16.50	0	15.06	16.50	1	14.27
				1RB High	1 Pos 99	16.50	0	14.95	16.50	1	14.20
				50% RB Low	50 Pos 0	16.50	1	14.07	16.50	2	13.06
				50% RB Mid	50 Pos 24	16.50	1	14.07	16.50	2	13.10
				50% RB High	50 Pos 50	16.50	1	13.95	16.50	2	12.99
		100% RB	100 Pos 0	16.50	1	14.01	16.50	2	12.97		
		26365	1882.5	1RB Low	1 Pos 0	16.50	0	14.96	16.50	1	14.17
				1RB Mid	1 Pos 50	16.50	0	15.10	16.50	1	14.22
				1RB High	1 Pos 99	16.50	0	14.99	16.50	1	14.12
				50% RB Low	50 Pos 0	16.50	1	13.94	16.50	2	12.94
				50% RB Mid	50 Pos 24	16.50	1	14.06	16.50	2	13.04
				50% RB High	50 Pos 50	16.50	1	14.00	16.50	2	13.01
		100% RB	100 Pos 0	16.50	1	13.93	16.50	2	12.89		
		26590	1905.0	1RB Low	1 Pos 0	16.50	0	14.88	16.50	1	14.04
				1RB Mid	1 Pos 50	16.50	0	15.03	16.50	1	14.14
				1RB High	1 Pos 99	16.50	0	14.86	16.50	1	14.00
				50% RB Low	50 Pos 0	16.50	1	13.92	16.50	2	12.92
	50% RB Mid			50 Pos 24	16.50	1	14.00	16.50	2	12.94	
	50% RB High			50 Pos 50	16.50	1	13.82	16.50	2	12.76	
	100% RB	100 Pos 0	16.50	1	13.85	16.50	2	12.84			
	15 MHz	26115	1857.5	1RB Low	1 Pos 0	16.50	0	14.99	16.50	1	14.30
				1RB Mid	1 Pos 38	16.50	0	15.04	16.50	1	14.33
				1RB High	1 Pos 74	16.50	0	14.98	16.50	1	14.26
				50% RB Low	38 Pos 0	16.50	1	14.02	16.50	2	13.01
				50% RB Mid	38 Pos 19	16.50	1	14.03	16.50	2	13.03
				50% RB High	38 Pos 39	16.50	1	13.97	16.50	2	12.96
		100% RB	75 Pos 0	16.50	1	13.99	16.50	2	12.97		
		26365	1882.5	1RB Low	1 Pos 0	16.50	0	15.02	16.50	1	14.33
				1RB Mid	1 Pos 38	16.50	0	15.07	16.50	1	14.37
				1RB High	1 Pos 74	16.50	0	14.97	16.50	1	14.29
				50% RB Low	38 Pos 0	16.50	1	13.96	16.50	2	12.97
				50% RB Mid	38 Pos 19	16.50	1	14.06	16.50	2	13.08
				50% RB High	38 Pos 39	16.50	1	13.99	16.50	2	13.01
		100% RB	75 Pos 0	16.50	1	14.02	16.50	2	12.99		
		26615	1907.5	1RB Low	1 Pos 0	16.50	0	14.91	16.50	1	14.20
				1RB Mid	1 Pos 38	16.50	0	14.97	16.50	1	14.22
				1RB High	1 Pos 74	16.50	0	14.86	16.50	1	14.16
				50% RB Low	38 Pos 0	16.50	1	13.92	16.50	2	12.88
	50% RB Mid			38 Pos 19	16.50	1	13.93	16.50	2	12.93	
	50% RB High			38 Pos 39	16.50	1	13.82	16.50	2	12.84	
	100% RB	75 Pos 0	16.50	1	13.91	16.50	2	12.84			
	10 MHz	26090	1855.0	1RB Low	1 Pos 0	16.50	0	15.06	16.50	1	14.35
				1RB Mid	1 Pos 24	16.50	0	15.06	16.50	1	14.33
				1RB High	1 Pos 49	16.50	0	15.06	16.50	1	14.33
				50% RB Low	25 Pos 0	16.50	1	13.98	16.50	2	13.05
				50% RB Mid	25 Pos 12	16.50	1	14.05	16.50	2	13.13
				50% RB High	25 Pos 25	16.50	1	14.06	16.50	2	13.11
100% RB		50 Pos0	16.50	1	14.02	16.50	2	12.99			
26365		1882.5	1RB Low	1 Pos 0	16.50	0	15.07	16.50	1	14.33	
			1RB Mid	1 Pos 24	16.50	0	15.11	16.50	1	14.37	
			1RB High	1 Pos 49	16.50	0	15.07	16.50	1	14.32	
			50% RB Low	25 Pos 0	16.50	1	13.99	16.50	2	13.08	
			50% RB Mid	25 Pos 12	16.50	1	14.04	16.50	2	13.14	
			50% RB High	25 Pos 25	16.50	1	14.11	16.50	2	13.20	
100% RB		50 Pos0	16.50	1	14.05	16.50	2	13.04			
26640		1910.0	1RB Low	1 Pos 0	16.50	0	14.96	16.50	1	14.20	
			1RB Mid	1 Pos 24	16.50	0	14.97	16.50	1	14.25	
			1RB High	1 Pos 49	16.50	0	14.90	16.50	1	14.18	
			50% RB Low	25 Pos 0	16.50	1	14.00	16.50	2	13.04	
	50% RB Mid		25 Pos 12	16.50	1	13.95	16.50	2	12.98		
	50% RB High		25 Pos 25	16.50	1	13.83	16.50	2	12.90		
100% RB	50 Pos0	16.50	1	13.94	16.50	2	12.91				

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE25	5 MHz	26065	1852.5	1RB Low	1 Pos 0	16.50	0	15.16	16.50	1	14.35
				1RB Mid	1 Pos 38	16.50	0	15.13	16.50	1	14.32
				1RB High	1 Pos 74	16.50	0	15.10	16.50	1	14.27
				50% RB Low	38 Pos 0	16.50	1	13.99	16.50	2	12.96
				50% RB Mid	38 Pos 19	16.50	1	14.00	16.50	2	12.96
				50% RB High	38 Pos 39	16.50	1	14.04	16.50	2	12.95
		100% RB	75 Pos 0	16.50	1	14.02	16.50	2	13.04		
		26365	1882.5	1RB Low	1 Pos 0	16.50	0	15.15	16.50	1	14.33
				1RB Mid	1 Pos 38	16.50	0	15.16	16.50	1	14.30
				1RB High	1 Pos 74	16.50	0	15.16	16.50	1	14.28
				50% RB Low	38 Pos 0	16.50	1	14.00	16.50	2	13.01
				50% RB Mid	38 Pos 19	16.50	1	14.03	16.50	2	13.00
				50% RB High	38 Pos 39	16.50	1	14.03	16.50	2	13.01
		100% RB	75 Pos 0	16.50	1	14.07	16.50	2	13.09		
		26665	1912.5	1RB Low	1 Pos 0	16.50	0	15.02	16.50	1	14.22
				1RB Mid	1 Pos 38	16.50	0	15.02	16.50	1	14.20
				1RB High	1 Pos 74	16.50	0	15.02	16.50	1	14.20
				50% RB Low	38 Pos 0	16.50	1	13.95	16.50	2	12.92
	50% RB Mid			38 Pos 19	16.50	1	13.91	16.50	2	12.87	
	50% RB High			38 Pos 39	16.50	1	13.88	16.50	2	12.83	
	100% RB	75 Pos 0	16.50	1	13.97	16.50	2	12.97			
	3 MHz	26055	1851.5	1RB Low	1 Pos 0	16.50	0	15.03	16.50	1	14.37
				1RB Mid	1 Pos 24	16.50	0	14.99	16.50	1	14.32
				1RB High	1 Pos 49	16.50	0	14.99	16.50	1	14.33
				50% RB Low	25 Pos 0	16.50	1	13.98	16.50	2	13.01
				50% RB Mid	25 Pos 12	16.50	1	14.04	16.50	2	13.02
				50% RB High	25 Pos 24	16.50	1	14.02	16.50	2	13.00
		100% RB	50 Pos 0	16.50	1	14.03	16.50	2	12.99		
		26365	1882.5	1RB Low	1 Pos 0	16.50	0	15.04	16.50	1	14.30
				1RB Mid	1 Pos 24	16.50	0	15.03	16.50	1	14.35
				1RB High	1 Pos 49	16.50	0	15.01	16.50	1	14.31
				50% RB Low	25 Pos 0	16.50	1	13.98	16.50	2	13.01
				50% RB Mid	25 Pos 12	16.50	1	13.95	16.50	2	12.99
				50% RB High	25 Pos 24	16.50	1	13.97	16.50	2	12.96
		100% RB	50 Pos 0	16.50	1	13.97	16.50	2	12.95		
		26675	1913.5	1RB Low	1 Pos 0	16.50	0	14.88	16.50	1	14.23
				1RB Mid	1 Pos 24	16.50	0	14.89	16.50	1	14.25
				1RB High	1 Pos 49	16.50	0	14.85	16.50	1	14.21
				50% RB Low	25 Pos 0	16.50	1	13.89	16.50	2	12.93
	50% RB Mid			25 Pos 12	16.50	1	13.91	16.50	2	12.90	
	50% RB High			25 Pos 24	16.50	1	13.87	16.50	2	12.89	
	100% RB	50 Pos 0	16.50	1	13.87	16.50	2	12.84			
	1.4 MHz	26047	1850.7	1RB Low	1 Pos 0	16.50	0	15.13	16.50	1	14.03
				1RB Mid	1 Pos 12	16.50	0	15.17	16.50	1	14.11
				1RB High	1 Pos 24	16.50	0	15.08	16.50	1	14.01
				50% RB Low	12 Pos 0	16.50	0	15.05	16.50	1	14.21
				50% RB Mid	12 Pos 6	16.50	0	15.03	16.50	1	14.21
				50% RB High	12 Pos 11	16.50	0	15.04	16.50	1	14.23
100% RB		25 Pos 0	16.50	1	14.05	16.50	2	13.01			
26365		1882.5	1RB Low	1 Pos 0	16.50	0	15.03	16.50	1	13.94	
			1RB Mid	1 Pos 12	16.50	0	15.05	16.50	1	14.03	
			1RB High	1 Pos 24	16.50	0	15.05	16.50	1	13.93	
			50% RB Low	12 Pos 0	16.50	0	14.97	16.50	1	14.19	
			50% RB Mid	12 Pos 6	16.50	0	14.99	16.50	1	14.17	
			50% RB High	12 Pos 11	16.50	0	14.96	16.50	1	14.16	
100% RB		25 Pos 0	16.50	1	14.00	16.50	2	13.03			
26683		1914.3	1RB Low	1 Pos 0	16.50	0	14.94	16.50	1	13.87	
			1RB Mid	1 Pos 12	16.50	0	15.00	16.50	1	13.94	
			1RB High	1 Pos 24	16.50	0	14.90	16.50	1	13.87	
			50% RB Low	12 Pos 0	16.50	0	14.90	16.50	1	14.02	
	50% RB Mid		12 Pos 6	16.50	0	14.90	16.50	1	14.05		
	50% RB High		12 Pos 11	16.50	0	14.89	16.50	1	14.04		
100% RB	25 Pos 0	16.50	1	13.87	16.50	2	12.89				

B.2.2.16 LTE Band 25 FDD – Tablet Mode – Antenna 8

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE 25	20 MHz	26140	1860.0	1RB Low	1 Pos 0	16.50	0	15.61	16.50	1	14.76
				1RB Mid	1 Pos 50	16.50	0	15.72	16.50	1	14.94
				1RB High	1 Pos 99	16.50	0	15.60	16.50	1	14.84
				50% RB Low	50 Pos 0	16.50	1	14.66	16.50	2	13.66
				50% RB Mid	50 Pos 24	16.50	1	14.77	16.50	2	13.72
				50% RB High	50 Pos 50	16.50	1	14.68	16.50	2	13.65
		100% RB	100 Pos 0	16.50	1	14.69	16.50	2	13.66		
		26365	1882.5	1RB Low	1 Pos 0	16.50	0	15.63	16.50	1	14.80
				1RB Mid	1 Pos 50	16.50	0	15.75	16.50	1	14.88
				1RB High	1 Pos 99	16.50	0	15.62	16.50	1	14.78
				50% RB Low	50 Pos 0	16.50	1	14.59	16.50	2	13.60
				50% RB Mid	50 Pos 24	16.50	1	14.73	16.50	2	13.70
				50% RB High	50 Pos 50	16.50	1	14.71	16.50	2	13.69
		100% RB	100 Pos 0	16.50	1	14.65	16.50	2	13.66		
		26590	1905.0	1RB Low	1 Pos 0	16.50	0	15.55	16.50	1	14.72
				1RB Mid	1 Pos 50	16.50	0	15.67	16.50	1	14.83
				1RB High	1 Pos 99	16.50	0	15.60	16.50	1	14.71
				50% RB Low	50 Pos 0	16.50	1	14.62	16.50	2	13.62
	50% RB Mid			50 Pos 24	16.50	1	14.67	16.50	2	13.69	
	50% RB High			50 Pos 50	16.50	1	14.54	16.50	2	13.49	
	100% RB	100 Pos 0	16.50	1	14.58	16.50	2	13.56			
	15 MHz	26115	1857.5	1RB Low	1 Pos 0	16.50	0	15.64	16.50	1	14.95
				1RB Mid	1 Pos 38	16.50	0	15.68	16.50	1	14.99
				1RB High	1 Pos 74	16.50	0	15.60	16.50	1	14.94
				50% RB Low	38 Pos 0	16.50	1	14.65	16.50	2	13.67
				50% RB Mid	38 Pos 19	16.50	1	14.68	16.50	2	13.69
				50% RB High	38 Pos 39	16.50	1	14.67	16.50	2	13.66
		100% RB	75 Pos 0	16.50	1	14.69	16.50	2	13.71		
		26365	1882.5	1RB Low	1 Pos 0	16.50	0	15.63	16.50	1	14.94
				1RB Mid	1 Pos 38	16.50	0	15.69	16.50	1	14.98
				1RB High	1 Pos 74	16.50	0	15.62	16.50	1	14.95
				50% RB Low	38 Pos 0	16.50	1	14.67	16.50	2	13.66
				50% RB Mid	38 Pos 19	16.50	1	14.73	16.50	2	13.73
				50% RB High	38 Pos 39	16.50	1	14.67	16.50	2	13.68
		100% RB	75 Pos 0	16.50	1	14.68	16.50	2	13.71		
		26615	1907.5	1RB Low	1 Pos 0	16.50	0	15.58	16.50	1	14.87
				1RB Mid	1 Pos 38	16.50	0	15.70	16.50	1	14.92
				1RB High	1 Pos 74	16.50	0	15.56	16.50	1	14.87
				50% RB Low	38 Pos 0	16.50	1	14.58	16.50	2	13.61
	50% RB Mid			38 Pos 19	16.50	1	14.61	16.50	2	13.62	
	50% RB High			38 Pos 39	16.50	1	14.56	16.50	2	13.51	
	100% RB	75 Pos 0	16.50	1	14.59	16.50	2	13.58			
	10 MHz	26090	1855.0	1RB Low	1 Pos 0	16.50	0	15.68	16.50	1	14.99
				1RB Mid	1 Pos 24	16.50	0	15.67	16.50	1	14.98
				1RB High	1 Pos 49	16.50	0	15.67	16.50	1	15.02
				50% RB Low	25 Pos 0	16.50	1	14.66	16.50	2	13.72
				50% RB Mid	25 Pos 12	16.50	1	14.67	16.50	2	13.77
				50% RB High	25 Pos 25	16.50	1	14.71	16.50	2	13.76
100% RB		50 Pos0	16.50	1	14.73	16.50	2	13.71			
26365		1882.5	1RB Low	1 Pos 0	16.50	0	15.68	16.50	1	14.97	
			1RB Mid	1 Pos 24	16.50	0	15.72	16.50	1	15.00	
			1RB High	1 Pos 49	16.50	0	15.68	16.50	1	14.99	
			50% RB Low	25 Pos 0	16.50	1	14.68	16.50	2	13.76	
			50% RB Mid	25 Pos 12	16.50	1	14.73	16.50	2	13.81	
			50% RB High	25 Pos 25	16.50	1	14.77	16.50	2	13.84	
100% RB		50 Pos0	16.50	1	14.76	16.50	2	13.74			
26640		1910.0	1RB Low	1 Pos 0	16.50	0	15.68	16.50	1	14.94	
			1RB Mid	1 Pos 24	16.50	0	15.70	16.50	1	14.95	
			1RB High	1 Pos 49	16.50	0	15.60	16.50	1	14.91	
			50% RB Low	25 Pos 0	16.50	1	14.71	16.50	2	13.77	
	50% RB Mid		25 Pos 12	16.50	1	14.65	16.50	2	13.70		
	50% RB High		25 Pos 25	16.50	1	14.59	16.50	2	13.59		
100% RB	50 Pos0	16.50	1	14.65	16.50	2	13.62				

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE25	5 MHz	26065	1852.5	1RB Low	1 Pos 0	16.50	0	15.82	16.50	1	15.02
				1RB Mid	1 Pos 38	16.50	0	15.81	16.50	1	14.96
				1RB High	1 Pos 74	16.50	0	15.76	16.50	1	14.97
				50% RB Low	38 Pos 0	16.50	1	14.70	16.50	2	13.62
				50% RB Mid	38 Pos 19	16.50	1	14.66	16.50	2	13.65
				50% RB High	38 Pos 39	16.50	1	14.71	16.50	2	13.66
		100% RB	75 Pos 0	16.50	1	14.73	16.50	2	13.72		
		26365	1882.5	1RB Low	1 Pos 0	16.50	0	15.77	16.50	1	14.95
				1RB Mid	1 Pos 38	16.50	0	15.79	16.50	1	14.93
				1RB High	1 Pos 74	16.50	0	15.82	16.50	1	14.91
				50% RB Low	38 Pos 0	16.50	1	14.70	16.50	2	13.66
				50% RB Mid	38 Pos 19	16.50	1	14.71	16.50	2	13.65
				50% RB High	38 Pos 39	16.50	1	14.68	16.50	2	13.64
		100% RB	75 Pos 0	16.50	1	14.74	16.50	2	13.77		
		26665	1912.5	1RB Low	1 Pos 0	16.50	0	15.75	16.50	1	14.89
				1RB Mid	1 Pos 38	16.50	0	15.73	16.50	1	14.88
				1RB High	1 Pos 74	16.50	0	15.78	16.50	1	14.90
				50% RB Low	38 Pos 0	16.50	1	14.67	16.50	2	13.68
	50% RB Mid			38 Pos 19	16.50	1	14.69	16.50	2	13.62	
	50% RB High			38 Pos 39	16.50	1	14.63	16.50	2	13.57	
	100% RB	75 Pos 0	16.50	1	14.71	16.50	2	13.70			
	3 MHz	26055	1851.5	1RB Low	1 Pos 0	16.50	0	15.70	16.50	1	15.01
				1RB Mid	1 Pos 24	16.50	0	15.69	16.50	1	14.99
				1RB High	1 Pos 49	16.50	0	15.63	16.50	1	14.97
				50% RB Low	25 Pos 0	16.50	1	14.64	16.50	2	13.69
				50% RB Mid	25 Pos 12	16.50	1	14.68	16.50	2	13.68
				50% RB High	25 Pos 24	16.50	1	14.69	16.50	2	13.67
		100% RB	50 Pos 0	16.50	1	14.68	16.50	2	13.66		
		26365	1882.5	1RB Low	1 Pos 0	16.50	0	15.65	16.50	1	14.99
				1RB Mid	1 Pos 24	16.50	0	15.69	16.50	1	14.99
				1RB High	1 Pos 49	16.50	0	15.62	16.50	1	14.95
				50% RB Low	25 Pos 0	16.50	1	14.66	16.50	2	13.69
				50% RB Mid	25 Pos 12	16.50	1	14.63	16.50	2	13.66
				50% RB High	25 Pos 24	16.50	1	14.60	16.50	2	13.66
		100% RB	50 Pos 0	16.50	1	14.67	16.50	2	13.62		
		26675	1913.5	1RB Low	1 Pos 0	16.50	0	15.62	16.50	1	14.95
				1RB Mid	1 Pos 24	16.50	0	15.64	16.50	1	14.95
				1RB High	1 Pos 49	16.50	0	15.58	16.50	1	14.94
				50% RB Low	25 Pos 0	16.50	1	14.62	16.50	2	13.66
	50% RB Mid			25 Pos 12	16.50	1	14.59	16.50	2	13.68	
	50% RB High			25 Pos 24	16.50	1	14.60	16.50	2	13.61	
	100% RB	50 Pos 0	16.50	1	14.62	16.50	2	13.61			
	1.4 MHz	26047	1850.7	1RB Low	1 Pos 0	16.50	0	15.64	16.50	1	14.63
				1RB Mid	1 Pos 12	16.50	0	15.68	16.50	1	14.74
				1RB High	1 Pos 24	16.50	0	15.61	16.50	1	14.64
				50% RB Low	12 Pos 0	16.50	0	15.58	16.50	1	14.85
				50% RB Mid	12 Pos 6	16.50	0	15.60	16.50	1	14.84
				50% RB High	12 Pos 11	16.50	0	15.61	16.50	1	14.85
100% RB		25 Pos 0	16.50	1	14.65	16.50	2	13.65			
26365		1882.5	1RB Low	1 Pos 0	16.50	0	15.64	16.50	1	14.61	
			1RB Mid	1 Pos 12	16.50	0	15.66	16.50	1	14.66	
			1RB High	1 Pos 24	16.50	0	15.62	16.50	1	14.60	
			50% RB Low	12 Pos 0	16.50	0	15.59	16.50	1	14.83	
			50% RB Mid	12 Pos 6	16.50	0	15.61	16.50	1	14.84	
			50% RB High	12 Pos 11	16.50	0	15.56	16.50	1	14.81	
100% RB		25 Pos 0	16.50	1	14.72	16.50	2	13.74			
26683		1914.3	1RB Low	1 Pos 0	16.50	0	15.60	16.50	1	14.58	
			1RB Mid	1 Pos 12	16.50	0	15.67	16.50	1	14.65	
			1RB High	1 Pos 24	16.50	0	15.59	16.50	1	14.59	
			50% RB Low	12 Pos 0	16.50	0	15.57	16.50	1	14.80	
	50% RB Mid		12 Pos 6	16.50	0	15.58	16.50	1	14.79		
	50% RB High		12 Pos 11	16.50	0	15.57	16.50	1	14.82		
100% RB	25 Pos 0	16.50	1	14.63	16.50	2	13.68				

B.2.2.17 LTE Band 26 FDD – Laptop Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE26	15 MHz	26775	821.5	1RB Low	1 Pos 0	21.50	0	20.24	21.50	1	19.79
				1RB Mid	1 Pos 38	21.50	0	20.35	21.50	1	19.86
				1RB High	1 Pos 74	21.50	0	20.22	21.50	1	19.73
				50% RB Low	38 Pos 0	21.50	1	19.29	21.50	2	18.32
				50% RB Mid	38 Pos 19	21.50	1	19.27	21.50	2	18.29
				50% RB High	38 Pos 39	21.50	1	19.30	21.50	2	18.28
		100% RB	75 Pos 0	21.50	1	19.27	21.50	2	18.27		
		26865	831.5	1RB Low	1 Pos 0	21.50	0	20.21	21.50	1	19.46
				1RB Mid	1 Pos 38	21.50	0	20.21	21.50	1	19.41
				1RB High	1 Pos 74	21.50	0	20.12	21.50	1	19.31
				50% RB Low	38 Pos 0	21.50	1	19.20	21.50	2	18.24
				50% RB Mid	38 Pos 19	21.50	1	19.19	21.50	2	18.18
				50% RB High	38 Pos 39	21.50	1	19.14	21.50	2	18.18
		100% RB	75 Pos 0	21.50	1	19.19	21.50	2	18.16		
		26965	841.5	1RB Low	1 Pos 0	21.50	0	20.15	21.50	1	19.11
				1RB Mid	1 Pos 38	21.50	0	20.20	21.50	1	19.21
				1RB High	1 Pos 74	21.50	0	20.16	21.50	1	19.19
				50% RB Low	38 Pos 0	21.50	1	19.22	21.50	2	18.21
	50% RB Mid			38 Pos 19	21.50	1	19.24	21.50	2	18.20	
	50% RB High			38 Pos 39	21.50	1	19.22	21.50	2	18.16	
	100% RB	75 Pos 0	21.50	1	19.21	21.50	2	18.21			
	10 MHz	26750	820	1RB Low	1 Pos 0	21.50	0	20.34	21.50	1	19.85
				1RB Mid	1 Pos 24	21.50	0	20.29	21.50	1	19.79
				1RB High	1 Pos 49	21.50	0	20.32	21.50	1	19.84
				50% RB Low	25 Pos 0	21.50	1	19.30	21.50	2	18.36
				50% RB Mid	25 Pos 12	21.50	1	19.32	21.50	2	18.33
				50% RB High	25 Pos 24	21.50	1	19.27	21.50	2	18.31
		100% RB	50 Pos 0	21.50	1	19.31	21.50	2	18.30		
		26865	831.5	1RB Low	1 Pos 0	21.50	0	20.24	21.50	1	19.06
				1RB Mid	1 Pos 24	21.50	0	20.24	21.50	1	19.04
				1RB High	1 Pos 49	21.50	0	20.13	21.50	1	19.02
				50% RB Low	25 Pos 0	21.50	1	19.24	21.50	2	18.33
				50% RB Mid	25 Pos 12	21.50	1	19.19	21.50	2	18.28
				50% RB High	25 Pos 24	21.50	1	19.17	21.50	2	18.25
		100% RB	50 Pos 0	21.50	1	19.23	21.50	2	18.25		
		26990	844	1RB Low	1 Pos 0	21.50	0	20.20	21.50	1	19.24
				1RB Mid	1 Pos 24	21.50	0	20.22	21.50	1	19.22
				1RB High	1 Pos 49	21.50	0	20.20	21.50	1	19.21
				50% RB Low	25 Pos 0	21.50	1	19.28	21.50	2	18.30
	50% RB Mid			25 Pos 12	21.50	1	19.19	21.50	2	18.21	
	50% RB High			25 Pos 24	21.50	1	19.24	21.50	2	18.18	
	100% RB	50 Pos 0	21.50	1	19.21	21.50	2	18.26			
	5.0 MHz	26715	816.5	1RB Low	1 Pos 0	21.50	0	20.41	21.50	1	19.10
				1RB Mid	1 Pos 12	21.50	0	20.41	21.50	1	19.13
				1RB High	1 Pos 24	21.50	0	20.39	21.50	1	19.15
				50% RB Low	12 Pos 0	21.50	1	19.30	21.50	2	18.27
				50% RB Mid	12 Pos 6	21.50	1	19.30	21.50	2	18.27
				50% RB High	12 Pos 11	21.50	1	19.28	21.50	2	18.24
		100% RB	25 Pos 0	21.50	1	19.29	21.50	2	18.35		
		26865	831.5	1RB Low	1 Pos 0	21.50	0	20.30	21.50	1	19.17
				1RB Mid	1 Pos 12	21.50	0	20.25	21.50	1	19.08
				1RB High	1 Pos 24	21.50	0	20.28	21.50	1	19.10
				50% RB Low	12 Pos 0	21.50	1	19.25	21.50	2	18.17
				50% RB Mid	12 Pos 6	21.50	1	19.23	21.50	2	18.17
				50% RB High	12 Pos 11	21.50	1	19.20	21.50	2	18.12
		100% RB	25 Pos 0	21.50	1	19.23	21.50	2	18.28		
		27015	846.5	1RB Low	1 Pos 0	21.50	0	20.24	21.50	1	19.38
				1RB Mid	1 Pos 12	21.50	0	20.22	21.50	1	19.37
				1RB High	1 Pos 24	21.50	0	20.23	21.50	1	19.38
				50% RB Low	12 Pos 0	21.50	1	19.18	21.50	2	18.17
50% RB Mid	12 Pos 6			21.50	1	19.19	21.50	2	18.18		
50% RB High	12 Pos 11			21.50	1	19.18	21.50	2	18.18		
100% RB	25 Pos 0	21.50	1	19.23	21.50	2	18.23				

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE26	3.0 MHz	26705	815.5	1RB Low	1 Pos 0	21.50	0	20.28	21.50	1	19.83
				1RB Mid	1 Pos 7	21.50	0	20.29	21.50	1	19.82
				1RB High	1 Pos 14	21.50	0	20.27	21.50	1	19.79
				50% RB Low	8 Pos 0	21.50	1	19.27	21.50	2	18.45
				50% RB Mid	8 Pos 4	21.50	1	19.25	21.50	2	18.41
				50% RB High	8 Pos 7	21.50	1	19.29	21.50	2	18.43
		100% RB	15 Pos 0	21.50	1	19.26	21.50	2	18.34		
		26865	831.5	1RB Low	1 Pos 0	21.50	0	20.19	21.50	1	19.72
				1RB Mid	1 Pos 7	21.50	0	20.19	21.50	1	19.73
				1RB High	1 Pos 14	21.50	0	20.16	21.50	1	19.68
				50% RB Low	8 Pos 0	21.50	1	19.19	21.50	2	18.39
				50% RB Mid	8 Pos 4	21.50	1	19.16	21.50	2	18.35
				50% RB High	8 Pos 7	21.50	1	19.17	21.50	2	18.34
		100% RB	15 Pos 0	21.50	1	19.22	21.50	2	18.28		
		27025	847.5	1RB Low	1 Pos 0	21.50	0	20.21	21.50	1	19.69
				1RB Mid	1 Pos 7	21.50	0	20.23	21.50	1	19.69
				1RB High	1 Pos 14	21.50	0	20.19	21.50	1	19.68
				50% RB Low	8 Pos 0	21.50	1	19.20	21.50	2	18.40
	50% RB Mid			8 Pos 4	21.50	1	19.19	21.50	2	18.39	
	50% RB High			8 Pos 7	21.50	1	19.13	21.50	2	18.35	
	100% RB	15 Pos 0	21.50	1	19.19	21.50	2	18.25			
	1.4 MHz	26697	814.7	1RB Low	1 Pos 0	21.50	0	20.09	21.50	1	19.08
				1RB Mid	1 Pos 2	21.50	0	20.09	21.50	1	19.07
				1RB High	1 Pos 5	21.50	0	20.06	21.50	1	19.05
				50% RB Low	3 Pos 0	21.50	0	20.14	21.50	1	19.37
				50% RB Mid	3 Pos 1	21.50	0	20.17	21.50	1	19.39
				50% RB High	3 Pos 2	21.50	0	20.15	21.50	1	19.42
		100% RB	6 Pos 0	21.50	1	19.28	21.50	2	18.24		
		26865	831.5	1RB Low	1 Pos 0	21.50	0	20.06	21.50	1	18.97
				1RB Mid	1 Pos 2	21.50	0	20.06	21.50	1	18.99
				1RB High	1 Pos 5	21.50	0	20.00	21.50	1	18.96
				50% RB Low	3 Pos 0	21.50	0	20.06	21.50	1	19.32
				50% RB Mid	3 Pos 1	21.50	0	20.08	21.50	1	19.33
				50% RB High	3 Pos 2	21.50	0	20.04	21.50	1	19.31
		100% RB	6 Pos 0	21.50	1	19.20	21.50	2	18.16		
		27033	848.3	1RB Low	1 Pos 0	21.50	0	19.97	21.50	1	19.05
				1RB Mid	1 Pos 2	21.50	0	19.97	21.50	1	19.04
				1RB High	1 Pos 5	21.50	0	19.94	21.50	1	19.01
				50% RB Low	3 Pos 0	21.50	0	20.07	21.50	1	19.30
	50% RB Mid			3 Pos 1	21.50	0	20.08	21.50	1	19.29	
	50% RB High			3 Pos 2	21.50	0	20.05	21.50	1	19.30	
	100% RB	6 Pos 0	21.50	1	19.20	21.50	2	18.14			

B.2.2.18 LTE Band 26 FDD – Tablet Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE26	15 MHz	26775	821.5	1RB Low	1 Pos 0	19.00	0	18.20	19.00	1	17.46
				1RB Mid	1 Pos 38	19.00	0	18.26	19.00	1	17.56
				1RB High	1 Pos 74	19.00	0	18.12	19.00	1	17.43
				50% RB Low	38 Pos 0	19.00	1	17.21	19.00	2	16.23
				50% RB Mid	38 Pos 19	19.00	1	17.18	19.00	2	16.20
				50% RB High	38 Pos 39	19.00	1	17.17	19.00	2	16.18
		100% RB	75 Pos 0	19.00	1	17.24	19.00	2	16.20		
		26865	831.5	1RB Low	1 Pos 0	19.00	0	18.23	19.00	1	17.21
				1RB Mid	1 Pos 38	19.00	0	18.41	19.00	1	17.18
				1RB High	1 Pos 74	19.00	0	18.13	19.00	1	17.09
				50% RB Low	38 Pos 0	19.00	1	17.15	19.00	2	16.15
				50% RB Mid	38 Pos 19	19.00	1	17.12	19.00	2	16.10
				50% RB High	38 Pos 39	19.00	1	17.07	19.00	2	16.04
		100% RB	75 Pos 0	19.00	1	17.13	19.00	2	16.13		
		26965	841.5	1RB Low	1 Pos 0	19.00	0	18.08	19.00	1	17.17
				1RB Mid	1 Pos 38	19.00	0	18.14	19.00	1	17.28
				1RB High	1 Pos 74	19.00	0	18.06	19.00	1	17.18
				50% RB Low	38 Pos 0	19.00	1	17.11	19.00	2	16.15
	50% RB Mid			38 Pos 19	19.00	1	17.12	19.00	2	16.17	
	50% RB High			38 Pos 39	19.00	1	17.08	19.00	2	16.14	
	100% RB	75 Pos 0	19.00	1	17.13	19.00	2	16.14			
	10 MHz	26750	820	1RB Low	1 Pos 0	19.00	0	18.30	19.00	1	17.53
				1RB Mid	1 Pos 24	19.00	0	18.27	19.00	1	17.53
				1RB High	1 Pos 49	19.00	0	18.22	19.00	1	17.54
				50% RB Low	25 Pos 0	19.00	1	17.26	19.00	2	16.35
				50% RB Mid	25 Pos 12	19.00	1	17.24	19.00	2	16.30
				50% RB High	25 Pos 24	19.00	1	17.24	19.00	2	16.26
		100% RB	50 Pos 0	19.00	1	17.23	19.00	2	16.23		
		26865	831.5	1RB Low	1 Pos 0	19.00	0	18.23	19.00	1	17.09
				1RB Mid	1 Pos 24	19.00	0	18.25	19.00	1	17.11
				1RB High	1 Pos 49	19.00	0	18.15	19.00	1	17.02
				50% RB Low	25 Pos 0	19.00	1	17.18	19.00	2	16.19
				50% RB Mid	25 Pos 12	19.00	1	17.17	19.00	2	16.15
				50% RB High	25 Pos 24	19.00	1	17.13	19.00	2	16.11
		100% RB	50 Pos 0	19.00	1	17.16	19.00	2	16.13		
		26990	844	1RB Low	1 Pos 0	19.00	0	18.22	19.00	1	17.21
				1RB Mid	1 Pos 24	19.00	0	18.23	19.00	1	17.33
				1RB High	1 Pos 49	19.00	0	18.09	19.00	1	17.20
				50% RB Low	25 Pos 0	19.00	1	17.16	19.00	2	16.20
	50% RB Mid			25 Pos 12	19.00	1	17.12	19.00	2	16.14	
	50% RB High			25 Pos 24	19.00	1	17.12	19.00	2	16.13	
	100% RB	50 Pos 0	19.00	1	17.17	19.00	2	16.12			
	5.0 MHz	26715	816.5	1RB Low	1 Pos 0	19.00	0	18.18	19.00	1	17.43
				1RB Mid	1 Pos 12	19.00	0	18.19	19.00	1	17.42
				1RB High	1 Pos 24	19.00	0	18.13	19.00	1	17.37
				50% RB Low	12 Pos 0	19.00	1	17.15	19.00	2	16.18
				50% RB Mid	12 Pos 6	19.00	1	17.16	19.00	2	16.16
				50% RB High	12 Pos 11	19.00	1	17.13	19.00	2	16.16
100% RB		25 Pos 0	19.00	1	17.17	19.00	2	16.15			
26865		831.5	1RB Low	1 Pos 0	19.00	0	18.15	19.00	1	17.37	
			1RB Mid	1 Pos 12	19.00	0	18.24	19.00	1	17.35	
			1RB High	1 Pos 24	19.00	0	18.28	19.00	1	17.34	
			50% RB Low	12 Pos 0	19.00	1	17.14	19.00	2	16.06	
			50% RB Mid	12 Pos 6	19.00	1	17.17	19.00	2	16.10	
			50% RB High	12 Pos 11	19.00	1	17.14	19.00	2	16.06	
100% RB		25 Pos 0	19.00	1	17.11	19.00	2	16.07			
27015		846.5	1RB Low	1 Pos 0	19.00	0	18.18	19.00	1	17.43	
			1RB Mid	1 Pos 12	19.00	0	18.19	19.00	1	17.42	
			1RB High	1 Pos 24	19.00	0	18.13	19.00	1	17.37	
			50% RB Low	12 Pos 0	19.00	1	17.15	19.00	2	16.18	
	50% RB Mid		12 Pos 6	19.00	1	17.16	19.00	2	16.16		
	50% RB High		12 Pos 11	19.00	1	17.13	19.00	2	16.16		
100% RB	25 Pos 0	19.00	1	17.17	19.00	2	16.15				

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE26	3.0 MHz	26705	815.5	1RB Low	1 Pos 0	19.00	0	18.27	19.00	1	17.53
				1RB Mid	1 Pos 7	19.00	0	18.27	19.00	1	17.61
				1RB High	1 Pos 14	19.00	0	18.21	19.00	1	17.53
				50% RB Low	8 Pos 0	19.00	1	17.21	19.00	2	16.23
				50% RB Mid	8 Pos 4	19.00	1	17.22	19.00	2	16.23
				50% RB High	8 Pos 7	19.00	1	17.23	19.00	2	16.22
		100% RB	15 Pos 0	19.00	1	17.18	19.00	2	16.18		
		26865	831.5	1RB Low	1 Pos 0	19.00	0	18.15	19.00	1	17.46
				1RB Mid	1 Pos 7	19.00	0	18.18	19.00	1	17.48
				1RB High	1 Pos 14	19.00	0	18.10	19.00	1	17.44
				50% RB Low	8 Pos 0	19.00	1	17.12	19.00	2	16.16
				50% RB Mid	8 Pos 4	19.00	1	17.11	19.00	2	16.12
				50% RB High	8 Pos 7	19.00	1	17.15	19.00	2	16.12
		100% RB	15 Pos 0	19.00	1	17.13	19.00	2	16.09		
		27025	847.5	1RB Low	1 Pos 0	19.00	0	18.03	19.00	1	17.34
				1RB Mid	1 Pos 7	19.00	0	18.23	19.00	1	17.52
				1RB High	1 Pos 14	19.00	0	18.17	19.00	1	17.46
				50% RB Low	8 Pos 0	19.00	1	17.15	19.00	2	16.15
	50% RB Mid			8 Pos 4	19.00	1	17.15	19.00	2	16.15	
	50% RB High			8 Pos 7	19.00	1	17.09	19.00	2	16.11	
	100% RB	15 Pos 0	19.00	1	17.15	19.00	2	16.12			
	1.4 MHz	26697	814.7	1RB Low	1 Pos 0	19.00	0	18.25	19.00	1	17.18
				1RB Mid	1 Pos 2	19.00	0	18.29	19.00	1	17.23
				1RB High	1 Pos 5	19.00	0	18.28	19.00	1	17.18
				50% RB Low	3 Pos 0	19.00	0	18.20	19.00	1	17.39
				50% RB Mid	3 Pos 1	19.00	0	18.21	19.00	1	17.40
				50% RB High	3 Pos 2	19.00	0	18.23	19.00	1	17.41
		100% RB	6 Pos 0	19.00	1	17.21	19.00	2	16.25		
		26865	831.5	1RB Low	1 Pos 0	19.00	0	18.19	19.00	1	17.13
				1RB Mid	1 Pos 2	19.00	0	18.25	19.00	1	17.20
				1RB High	1 Pos 5	19.00	0	18.18	19.00	1	17.13
				50% RB Low	3 Pos 0	19.00	0	18.14	19.00	1	17.32
				50% RB Mid	3 Pos 1	19.00	0	18.17	19.00	1	17.33
				50% RB High	3 Pos 2	19.00	0	18.13	19.00	1	17.29
		100% RB	6 Pos 0	19.00	1	17.16	19.00	2	16.17		
		27033	848.3	1RB Low	1 Pos 0	19.00	0	18.12	19.00	1	17.05
				1RB Mid	1 Pos 2	19.00	0	18.14	19.00	1	17.10
				1RB High	1 Pos 5	19.00	0	18.09	19.00	1	17.07
				50% RB Low	3 Pos 0	19.00	0	18.09	19.00	1	17.31
	50% RB Mid			3 Pos 1	19.00	0	18.11	19.00	1	17.31	
	50% RB High			3 Pos 2	19.00	0	18.10	19.00	1	17.33	
	100% RB	6 Pos 0	19.00	1	17.13	19.00	2	16.21			

B.2.2.19 LTE Band 30 FDD – Laptop Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE30	10 MHz	27710	2310	1RB Low	1 Pos 0	20.00	0	18.32	20.00	1	17.95
				1RB Mid	1 Pos 24	20.00	0	18.33	20.00	1	17.85
				1RB High	1 Pos 49	20.00	0	18.28	20.00	1	17.89
				50% RB Low	25 Pos 0	20.00	1	17.20	20.00	2	16.23
				50% RB Mid	25 Pos 12	20.00	1	17.28	20.00	2	16.32
				50% RB High	25 Pos 24	20.00	1	17.12	20.00	2	16.17
				100% RB	50 Pos 0	20.00	1	17.19	20.00	2	16.16
	5.0 MHz	27710	2310	1RB Low	1 Pos 0	20.00	0	18.36	20.00	1	17.23
				1RB Mid	1 Pos 12	20.00	0	18.35	20.00	1	17.21
				1RB High	1 Pos 24	20.00	0	18.36	20.00	1	17.21
				50% RB Low	12 Pos 0	20.00	1	17.29	20.00	2	16.20
				50% RB Mid	12 Pos 6	20.00	1	17.28	20.00	2	16.19
				50% RB High	12 Pos 11	20.00	1	17.20	20.00	2	16.15
				100% RB	25 Pos 0	20.00	1	17.24	20.00	2	16.25

B.2.2.20 LTE Band 30 FDD – Tablet Mode – Antenna 5

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE30	10 MHz	27710	2310	1RB Low	1 Pos 0	16.50	0	15.28	16.50	1	14.54
				1RB Mid	1 Pos 24	16.50	0	15.26	16.50	1	14.53
				1RB High	1 Pos 49	16.50	0	15.25	16.50	1	14.50
				50% RB Low	25 Pos 0	16.50	1	14.09	16.50	2	13.18
				50% RB Mid	25 Pos 12	16.50	1	14.18	16.50	2	13.27
				50% RB High	25 Pos 24	16.50	1	14.03	16.50	2	13.14
				100% RB	50 Pos 0	16.50	1	14.08	16.50	2	13.08
	5.0 MHz	27710	2310	1RB Low	1 Pos 0	16.50	0	15.29	16.50	1	14.49
				1RB Mid	1 Pos 12	16.50	0	15.32	16.50	1	14.52
				1RB High	1 Pos 24	16.50	0	15.32	16.50	1	14.46
				50% RB Low	12 Pos 0	16.50	1	14.14	16.50	2	13.19
				50% RB Mid	12 Pos 6	16.50	1	14.18	16.50	2	13.16
				50% RB High	12 Pos 11	16.50	1	14.13	16.50	2	13.13
				100% RB	25 Pos 0	16.50	1	14.15	16.50	2	13.23

B.2.2.21 LTE Band 30 FDD – Tablet Mode – Antenna 8

Band	BW	Channel #	Freq (MHz)	% RB Allocation	RB Position	QPSK			16 QAM		
						Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)	Factory Upper Tolerance (dBm)	M P R	Measured Output Power (dBm)
LTE30	10 MHz	27710	2310	1RB Low	1 Pos 0	18.50	0	17.02	18.50	1	16.27
				1RB Mid	1 Pos 24	18.50	0	16.98	18.50	1	16.27
				1RB High	1 Pos 49	18.50	0	16.95	18.50	1	16.23
				50% RB Low	25 Pos 0	18.50	1	15.83	18.50	2	14.89
				50% RB Mid	25 Pos 12	18.50	1	15.96	18.50	2	14.98
				50% RB High	25 Pos 24	18.50	1	15.78	18.50	2	14.86
				100% RB	50 Pos 0	18.50	1	15.82	18.50	2	14.78
	5.0 MHz	27710	2310	1RB Low	1 Pos 0	18.50	0	17.02	18.50	1	16.24
				1RB Mid	1 Pos 12	18.50	0	17.06	18.50	1	16.21
				1RB High	1 Pos 24	18.50	0	17.05	18.50	1	16.22
				50% RB Low	12 Pos 0	18.50	1	15.91	18.50	2	14.87
				50% RB Mid	12 Pos 6	18.50	1	15.92	18.50	2	14.85
				50% RB High	12 Pos 11	18.50	1	15.90	18.50	2	14.81
				100% RB	25 Pos 0	18.50	1	15.84	18.50	2	14.89