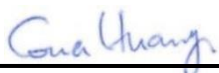


FCC SAR TEST REPORT

FCC ID : IHDT56AA6
Equipment : Wearable Cellular Device
Brand Name : Motorola
Model Name : XT2209-1
Applicant : Motorola Mobility, LLC
222 W Merchandise Mart Plaza, Suite 1800,
Chicago, IL 60654, United States
Standard : FCC 47 CFR Part 2 (2.1093)

The product was received on Nov. 01, 2021 and testing was started from Nov. 10, 2021 and completed on Nov. 24, 2021. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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



Approved by: Cona Huang / Deputy Manager



Sporton International Inc. EMC & Wireless Communications Laboratory
No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan



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[illegible]

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Motorola Mobility, LLC, Wearable Cellular Device, XT2209-1, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary	Highest Simultaneous Transmission 1g SAR (W/kg)
		Body	
		1g SAR (W/kg)	
Licensed	LTE Band 2	1.37	1.58
	LTE Band 4	0.12	
	LTE Band 5	1.14	
	LTE Band 13	1.29	
	LTE Band 48	1.24	
	LTE Band 66	1.19	
	FR1 n2	1.11	
	FR1 n5	1.15	
	FR1 n66	1.24	
	FR1 n77	1.39	
DTS	2.4GHz WLAN	0.52	1.58
NII	5GHz WLAN	0.76	1.58
6XD	6GHz WLAN	0.18	1.58
DSS	Bluetooth	0.09	1.51
Date of Testing:		2021/11/10~2021/11/24	

Equipment Class	Frequency Band		Reported SAR	APD	Reported PD
			Body 1g SAR (W/kg)	Body (W/m ²)	Body (W/m ²)
6XD	WLAN	6GHz WLAN	0.18	1.55	3.59
Date of Testing:			2021/11/10 ~ 2021/11/24		

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

Reviewed by: Jason Wang
Report Producer: Paula Chen

2. Guidance Applied

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Wearable Cellular Device
Brand Name	Motorola
Model Name	XT2209-1
FCC ID	IHDT56AA6
Wireless Technology and Frequency Range	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n260 : 37 GHz~40 GHz 5G NR n261 : 27.5 GHz~28.35 GHz WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz WLAN 6E: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
HW Version	EVT1
EUT Stage	Identical Prototype
Remark: 1. A non-standard setup was used for SAR testing and the device implements the power management and sensor detection for SAR compliance at different exposure condition based on guidance from the FCC. The Qualcomm smart transmit will also manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description.	

3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05								
FCC ID	IHDT56AA6							
Equipment Name	WEARABLE Cellular Device							
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz							
Channel Bandwidth	LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz							
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM							
LTE Voice / Data requirements	Data only							
LTE MPR permanently built-in by design	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3							
	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)
		1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5	
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)							
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.							
Power reduction applied to satisfy SAR compliance	Yes, Proximity Sensor.							
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 12.							
LTE Carrier Aggregation Additional Information	This device supports maximum of 6 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.							

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 13												
	Bandwidth 5 MHz					Bandwidth 10 MHz						
	Channel #		Freq.(MHz)			Channel #		Freq.(MHz)				
L	23205		779.5			23230		782				
M	23230		782									
H	23255		784.5									
LTE Band 48												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560				
L	55810	3607	55815	3607.5	55820	3608	55830	3609				
M	56170	3643	56165	3642.5	56160	3642	56150	3641				
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690				
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

3.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information																						
FCC ID	IHDT56AA6																					
Equipment Name	Wearable Cellular Device																					
Operating Frequency Range of each 5G NR transmission band	5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n77: 3700 MHz ~ 3980 MHz																					
Channel Bandwidth	5G NR n2: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz, 30MHz, 40MHz 5G NR n77: 10MHz, 15MHz, 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 90MHz, 100MHz																					
SCS	FDD: SCS15KHz, TDD: SCS30KHz																					
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM																					
A-MPR (Additional MPR) disabled for SAR Testing?	Yes																					
LTE Anchor Bands for n2	LTE B5/13/66																					
LTE Anchor Bands for n5	LTE B2/48/66																					
LTE Anchor Bands for n66	LTE B2/5/13																					
LTE Anchor Bands for n77	LTE B2/5/13/66																					
NR Band 2																						
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz															
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)														
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860														
M	376000	1880	376000	1880	376000	1880	376000	1880														
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900														
NR Band 5																						
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz															
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)														
L	165300	826.5	165800	829	166300	831.5	166800	834														
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5														
H	169300	846.5	168800	844	168300	841.5	167800	839														
NR Band 66																						
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz											
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)										
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720	345000	1725	346000	1730										
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745										
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	353000	1765	352000	1760										
NR Band 77 (3700-3980)																						
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647000	3705	647168	3707.52	647334	3710.01	647668	664334	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	665000	3975	664832	3972.48	664668	3970.02	3715.02	3965.01	664000	3960	663668	3955.02	663334	3950.01	663000	3945	662668	3940.02	662334	3935.01	662000	3930

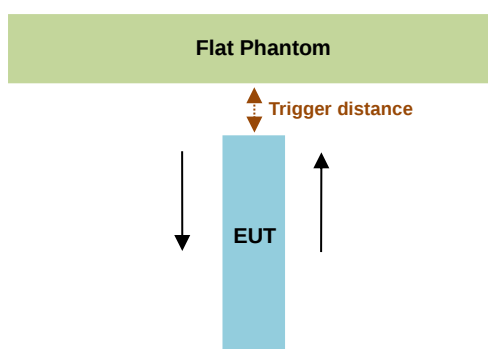
4. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance (KDB 616217 D04 section 6.2)>

For the device is fully integrated, touch sensing capacitive sensor. It uses a charge transfer capacitive acquisition method that is capable of near range proximity detection. In this device offers a state of the art capacitive sensing engine with an embedded sampling capacitor and voltage regulator allowing the overall solution cost to be reduced and improving system immunity in noisy environments.

Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed. The details are illustrated as following, and the shortest triggering distances were reported and used for SAR assessment.

In the preliminary triggering distance testing, the tissue-equivalent medium for different frequency bands were used for verification; no other frequency bands tissue-equivalent medium was found to result in shortest triggering distance than that for 1900MHz, and the tissue-equivalent medium for 1900MHz was used for formal proximity sensor triggering testing.



Proximity sensor power reduction
FrontPod

Exposure Position / wireless mode	Front Surface ⁽¹⁾
LTE Band 2_Ant 1	7.5dB
LTE Band 4_Ant 1	7.5dB
LTE Band 48_Ant 1	6.5dB
LTE Band 66_Ant 1	7.5dB
FR1 n2_Ant 1	8.5dB
FR1 n66_Ant 1	6.5dB
FR1 n77_Ant 1	8.5dB
FR1 n77_HPUE_Ant 1	8.5dB
FR1 n77_Ant 2	6.0dB
FR1 n77_HPUE_Ant 2	6.0dB
FR1 n77_Ant 3	7.0dB
FR1 n77_HPUE_Ant 3	7.0dB

RearPod

Exposure Position / wireless mode	Long Edge ⁽¹⁾
LTE Band 2_Ant 0	0.0dB
LTE Band 4_Ant 0	0.0dB
LTE Band 5_Ant 0	1.2dB
LTE Band 13_Ant 0	0.0dB
LTE Band 48_Ant 0	0.5dB
FR1 n2_Ant 0	0.0dB
FR1 n5_Ant 0	0.0dB
FR1 n77_Ant 0	3.5dB
FR1 n77_HPUE_Ant 0	3.5dB

Remark:

- ⁽¹⁾: Reduced maximum limit applied by activation of proximity sensor.
- Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, and compliant results are shown as below
- For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:

RearPod Antenna 0

- Long Edge: [14 mm](#)

FrontPod Antenna 1

- Front Surface: [14 mm](#)

FrontPod Antenna 2

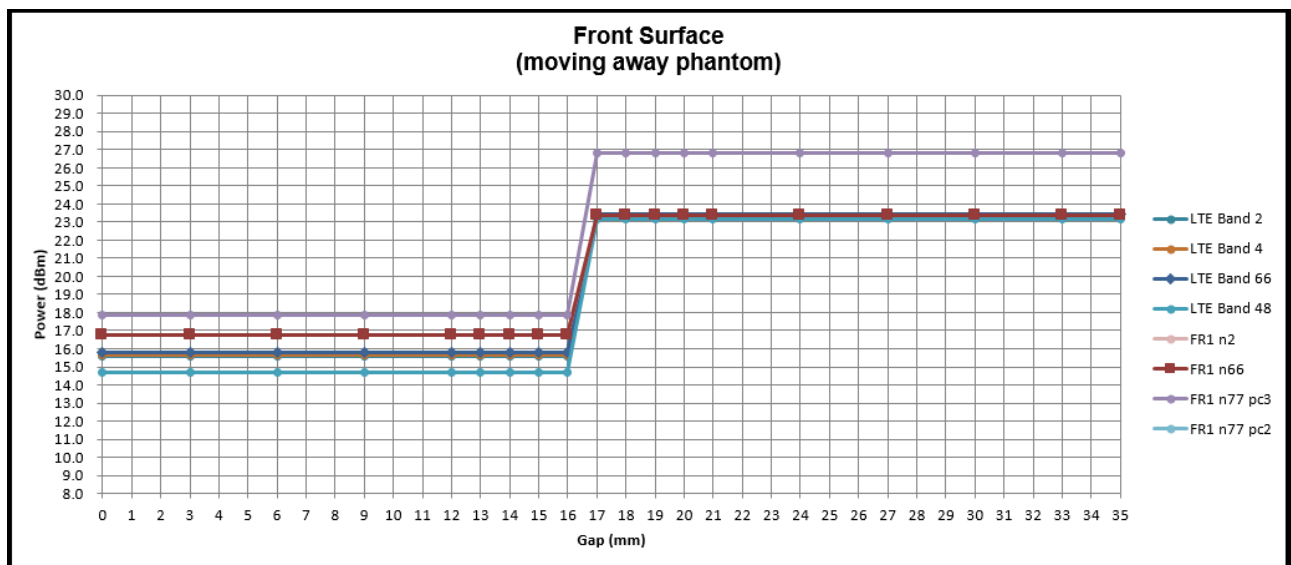
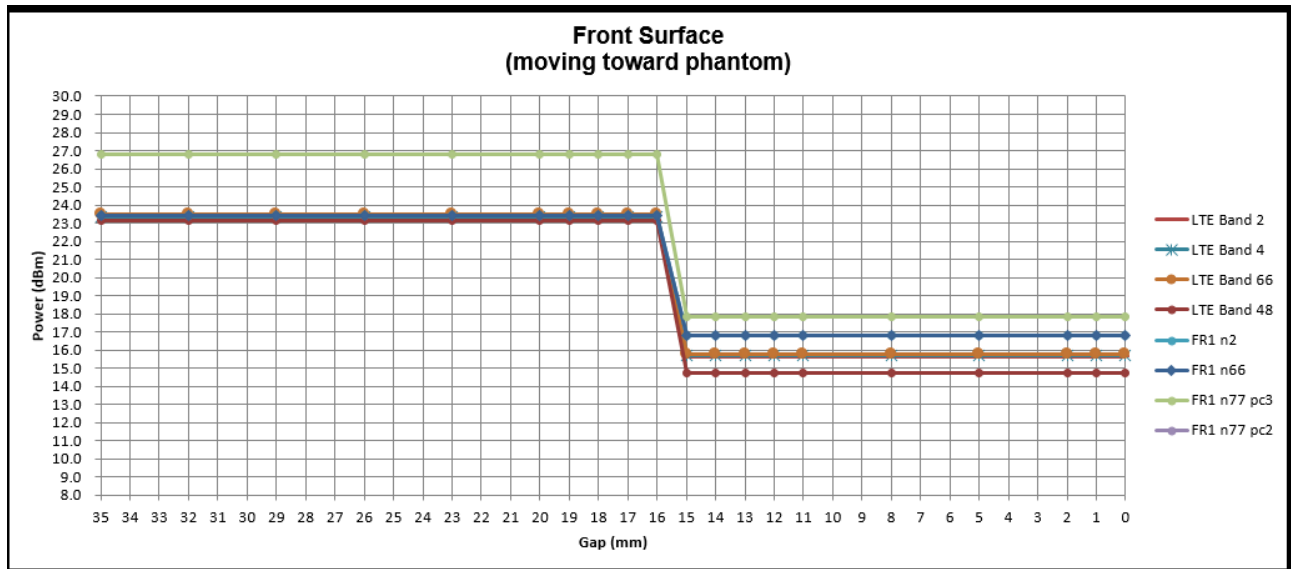
- Front Surface: [14 mm](#)

FrontPod Antenna 3

- Front Surface: [14 mm](#)

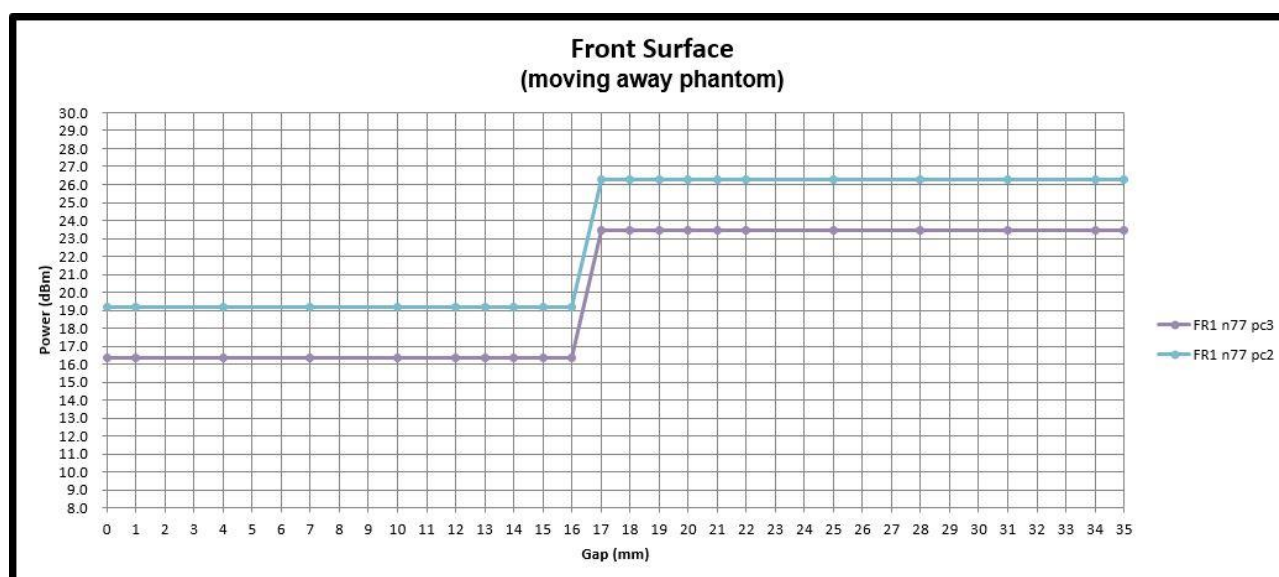
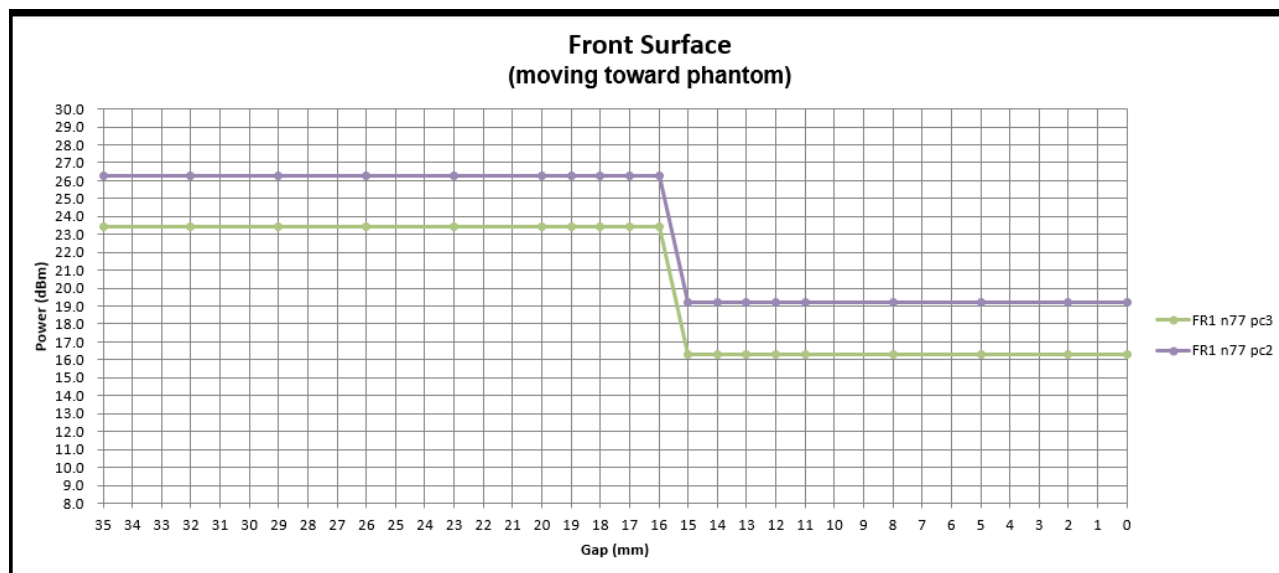
Power Measurement during Sensor Trigger distance testing
FrontPod

WWAN Antenna 1		
Proximity Sensor Trigger Distance (mm)		
Exposure Position	Front Surface	
	moving toward	moving away
Minimum	15	16



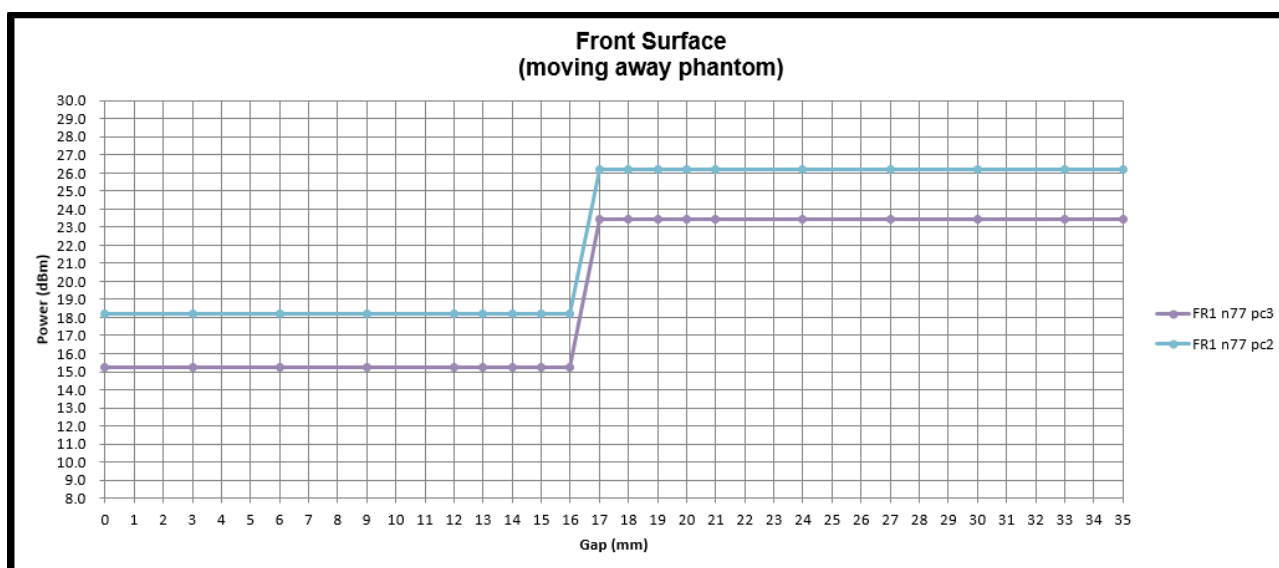
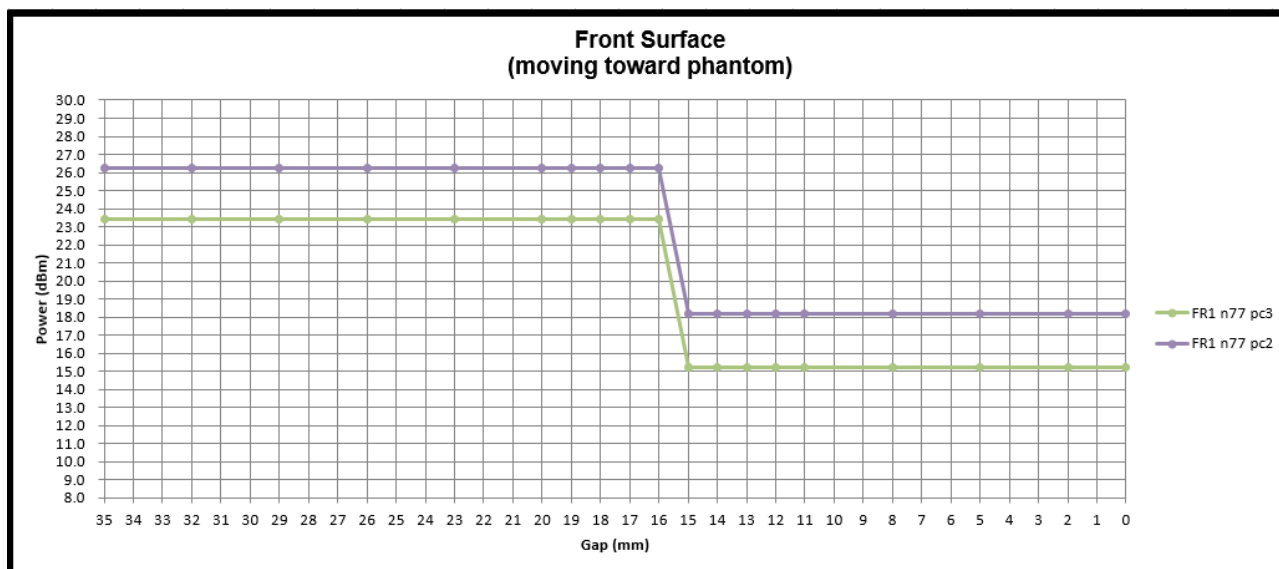
FrontPod

WWAN Antenna 2		
Proximity Sensor Trigger Distance (mm)		
Exposure Position	Front Surface	
	moving toward	moving away
Minimum	15	16



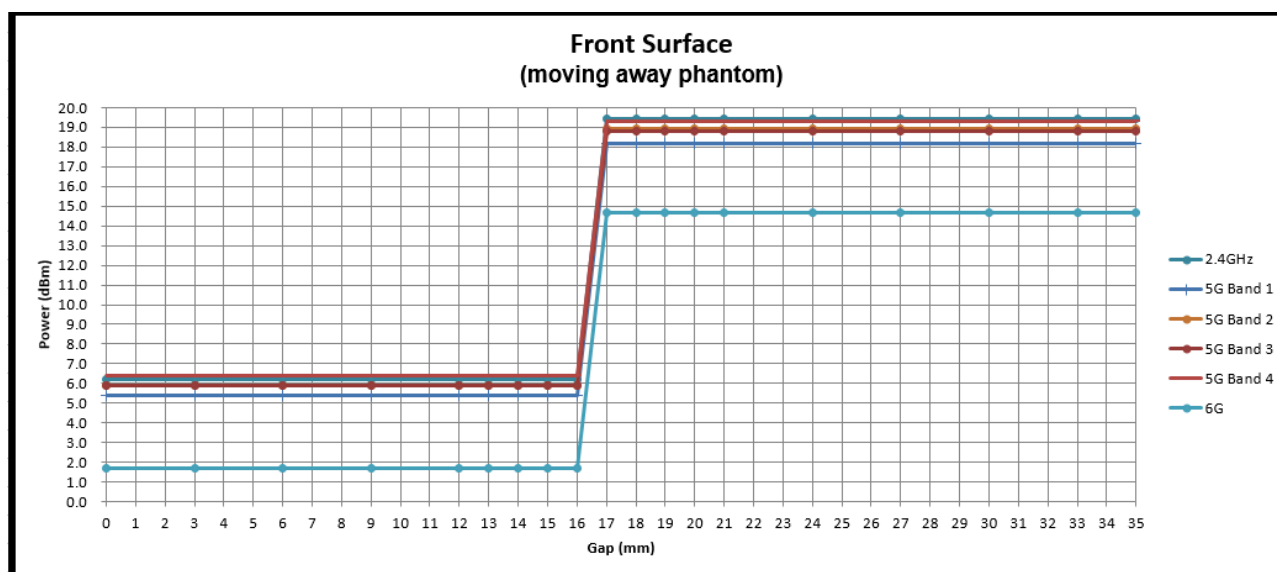
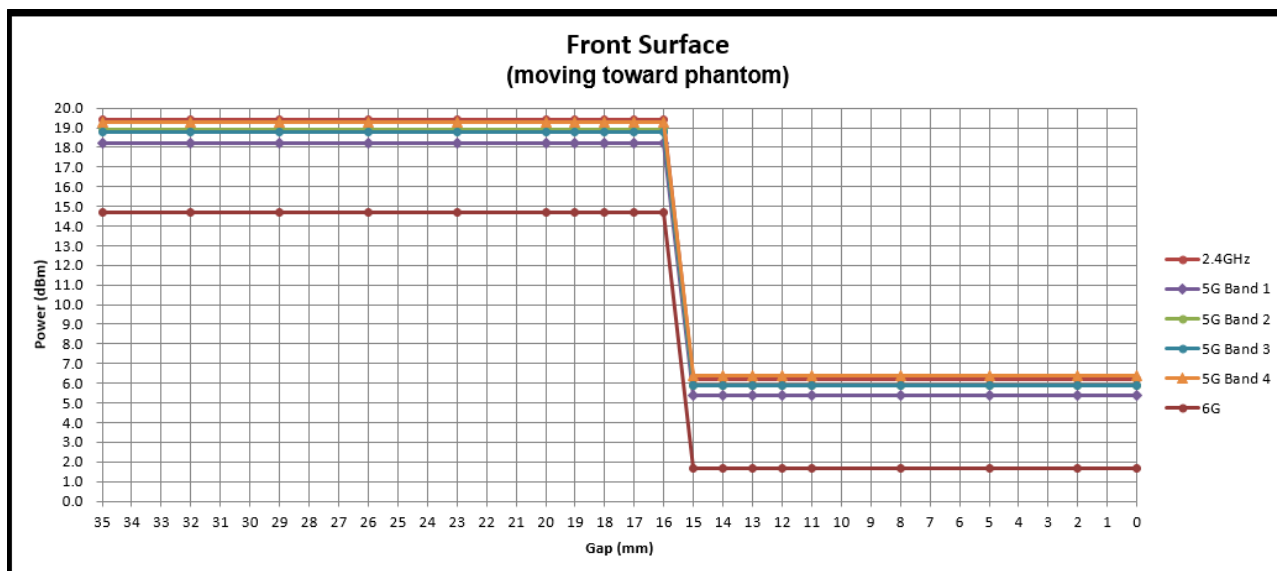
FrontPod

WWAN Antenna 3		
Proximity Sensor Trigger Distance (mm)		
Exposure Position	Front Surface	
	moving toward	moving away
Minimum	15	16



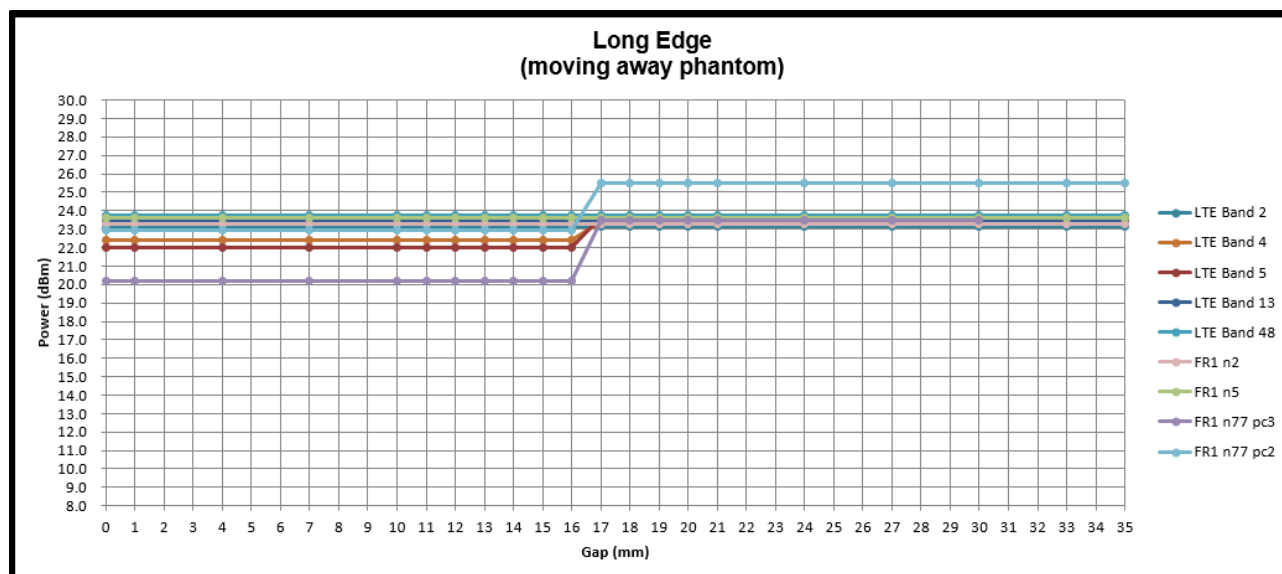
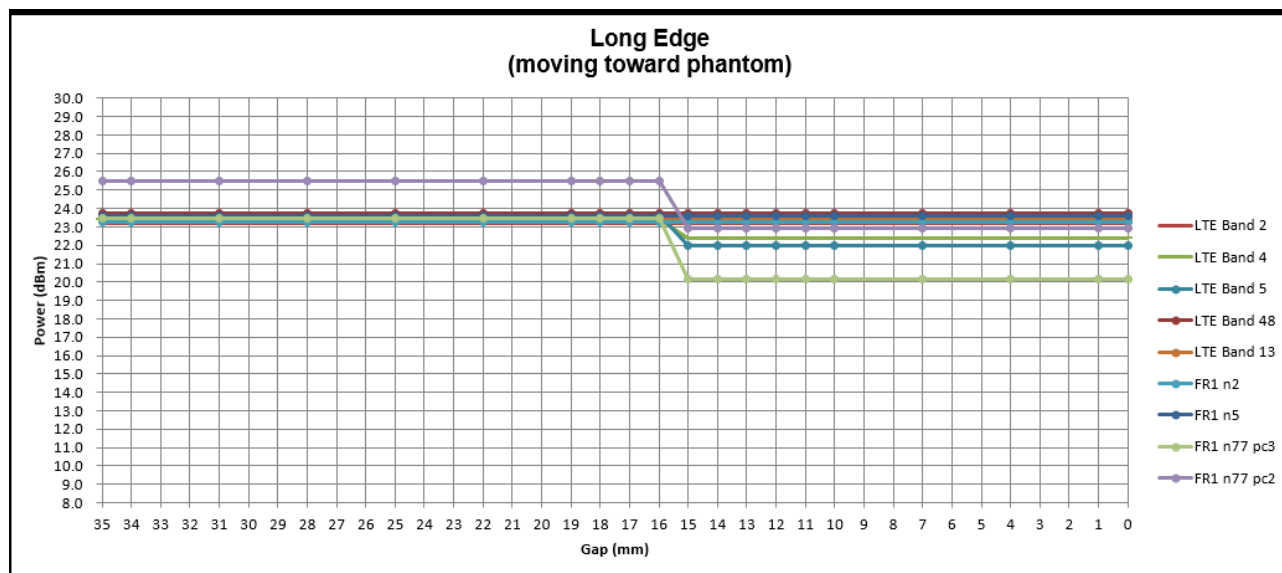
FrontPod

WLAN Antenna 4		
Proximity Sensor Trigger Distance (mm)		
Exposure Position	Front Surface	
	moving toward	moving away
Minimum	15	16



RearPod

WWAN Antenna 0		
Proximity Sensor Trigger Distance (mm)		
Exposure Position	Long Edge	
	moving toward	moving away
Minimum	15	16



5. Smart Transmit feature for RF Exposure compliance

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

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

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

Band	Antenna	Duty Cycle (%)	Body Sensor not detected	Body Sensor detected (Frontpod not detected, RearPod detected)	Body Sensor detected (Frontpod detected, RearPod not detected)		Body Sensor detected (Frontpod detected, RearPod detected)		Pmax
			(DSI2)	(DSI3)	(DSI4)		(DSI5)		
					WIFI OFF	WIFI On_Back Off level(dB)	WIFI OFF	WIFI On_Back Off level(dB)	
LTE Band 2	Ant 0	100%	31	31	31	-	31	-	23
LTE Band 4	Ant 0	100%	37	37	37	-	37	-	23
LTE Band 5	Ant 0	100%	30	21.8	30	-	21.8	-	23
LTE Band 13	Ant 0	100%	29	25	29	-	25	-	23
LTE Band 48	Ant 0	63.3%	31	20.5	31	-	20.5	-	21
FR1 n2	Ant 0	100%	31	25	31	-	25	-	23
FR1 n5	Ant 0	100%	32	25	32	-	25	-	23
FR1 N77 PC3	Ant 0	100%	31	19.5	31	-	19.5	-	23
FR1 N77 PC2	Ant 0	50%	31	19.5	31	-	19.5	-	23
LTE Band 2	Ant 1	100%	28	28	15.5	13	15.5	13	23
LTE Band 66	Ant 1	100%	30	30	15.5	13	15.5	13	23
LTE Band 48	Ant 1	100%	28	30	14.5	13	14.5	13	21
FR1 n2	Ant 1	100%	28	28	14.5	13	14.5	13	23
FR1 n66	Ant 1	100%	32	32	16.5	13	16.5	13	23
FR1 N77 PC3	Ant 1	100%	26	26	14.5	13	14.5	13	23
FR1 N77 PC2	Ant 1	50%	26	26	14.5	13	14.5	13	23
FR1 N77 PC3	Ant 2 (SRS)	100%	26	26	17	13	17	13	23
FR1 N77 PC2	Ant 2 (SRS)	50%	26	26	17	13	17	13	23
FR1 N77 PC3	Ant 3 (SRS)	100%	28	28	16	13	16	13	23
FR1 N77 PC2	Ant 3 (SRS)	50%	28	28	16	13	16	13	23

1. Pmax is used for RF tune up procedure. The maximum allowed output power is equal to Pmax + TXAGX uncertainty.
2. All Plimit / Pmax power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM & LTE TDD & NR TDD).
3. The Plimit values, corresponding to SAR_design_target.
4. Maximum target power, P_{max} , is configured in NV settings in EUT to limit maximum transmitting power. This power is converted into peak power in NV settings for TDD schemes. The EUT maximum allowed output power is equal to $P_{max} + 1.0\text{dB TXAGC}$ uncertainty.
5. Ant 2 and Ant 3 are used as SRS dedicated antennas, i.e., the antenna(s) are used for receive and Sound Reference Signal transmission (SRS) only (not traffic transmission).

6. RF Exposure Limits

6.1 Uncontrolled Environment

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

6.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6.3 RF Exposure limit for above 6GHz

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

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

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

7. Specific Absorption Rate (SAR)

7.1 Introduction

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

7.2 SAR Definition

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

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

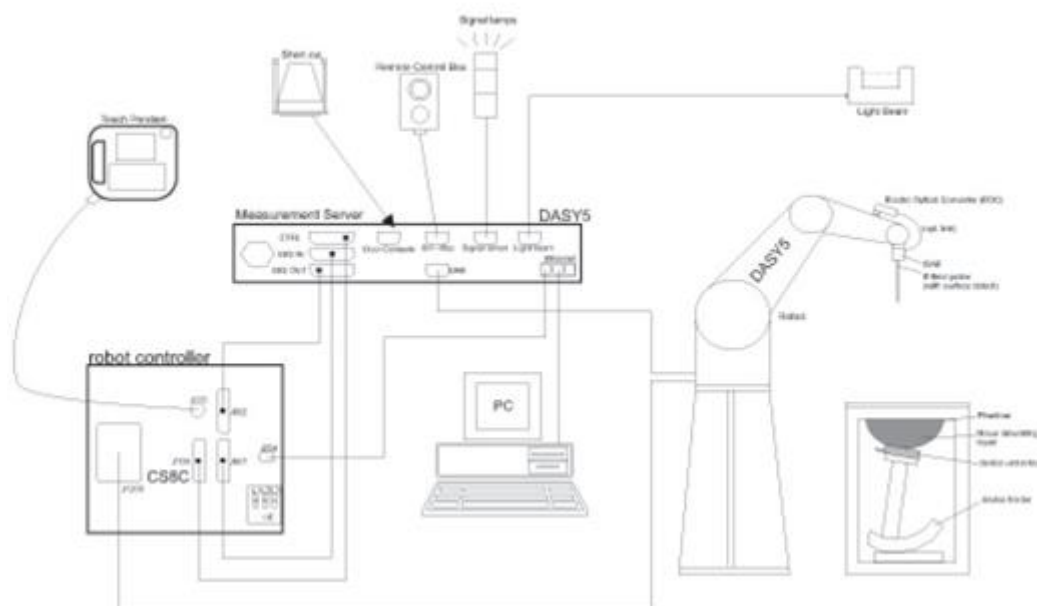
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

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



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

8.1 Test Site Location

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

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

8.2 E-Field Probe

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

<ES3DV3 Probe>

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



<EX3DV4 Probe>

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



8.3 Data Acquisition Electronics (DAE)

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

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

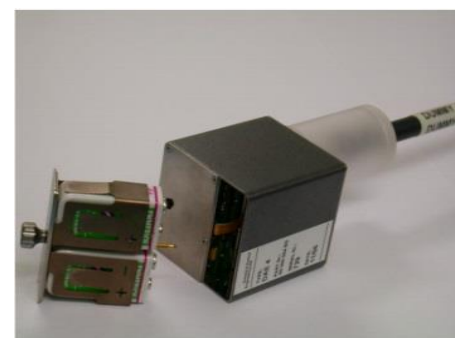


Fig 5.1 Photo of DAE

8.4 Phantom

<SAM Twin Phantom>

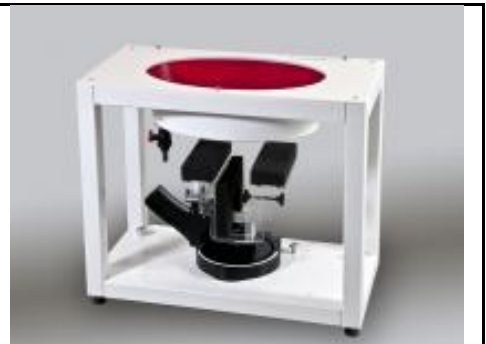
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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

<ELI Phantom>

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



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

8.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

9.1 Spatial Peak SAR Evaluation

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

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

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

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

9.2 Power Reference Measurement

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

9.3 Area Scan

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

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

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

9.4 Zoom Scan

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

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

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

9.5 Volume Scan Procedures

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

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit ⁽²⁾	D750V3	1107	Mar. 08, 2019	Mar. 05, 2022
SPEAG	835MHz System Validation Kit ⁽²⁾	D835V2	4d167	Nov. 25, 2019	Nov. 23, 2021
SPEAG	1750MHz System Validation Kit ⁽²⁾	D1750V2	1112	Mar. 07, 2019	Mar. 04, 2022
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Aug. 19, 2021	Aug. 18, 2022
SPEAG	1900MHz System Validation Kit ⁽²⁾	D1900V2	5d185	Mar. 07, 2019	Mar. 04, 2022
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 17, 2021	Aug. 17, 2022
SPEAG	3500MHz System Validation Kit ⁽²⁾	D3500V2	1014	Jan. 29, 2019	Jan. 26, 2022
SPEAG	3700MHz System Validation Kit ⁽²⁾	D3700V2	1006	Mar. 05, 2019	Mar. 02, 2022
SPEAG	3900MHz System Validation Kit ⁽²⁾	D3900V2	1017	Apr. 29, 2019	Apr. 26, 2022
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 15, 2021	Sep. 14, 2022
SPEAG	6500MHz System Validation Kit	D6.5GHzV2	1003	Sep. 24, 2021	Sep. 23, 2022
SPEAG	EUMmWV Probe Tip Protection	EUMmWV4	9461	Oct. 22, 2021	Oct. 21, 2022
SPEAG	Data Acquisition Electronics	DAE4	778	May. 21, 2021	May. 20, 2022
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 14, 2021	Jul. 13, 2022
SPEAG	Data Acquisition Electronics	DAE4	854	Aug. 19, 2021	Aug. 18, 2022
SPEAG	Data Acquisition Electronics	DAE4	1311	Aug. 20, 2021	Aug. 19, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	3642	Apr. 26, 2021	Apr. 25, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 26, 2021	Jul. 25, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	7590	Mar. 25, 2021	Mar. 24, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	3578	Jun. 23, 2021	Jun. 22, 2022
Testo	Hygro meter	608-H1	45196600	Oct. 22, 2021	Oct. 21, 2022
Testo	Hygro meter	608-H1	45207528	Oct. 22, 2021	Oct. 21, 2022
RCPTWN	Thermometer	HTC-1	TM685-1	Oct. 28, 2021	Oct. 27, 2022
RCPTWN	Thermometer	HTC-1	TM560-2	Oct. 28, 2021	Oct. 27, 2022
Anritsu	Radio Communication Analyzer	MT8821C	6201074414	Jul. 21, 2021	Jul. 20, 2022
Keysight	Wireless Communication Test Set	E5515C	MY50266977	May. 12, 2021	May. 11, 2022
R&S	BT Base Station	CBT	100815	Feb. 19, 2021	Feb. 18, 2022
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3692A	212506	Jul. 20, 2021	Jul. 19, 2022
Keysight	ENA Network Analyzer	E5071C	MY46104758	Sep. 07, 2021	Sep. 06, 2022
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 24, 2021	Sep. 23, 2022
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3252	Jul. 15, 2021	Jul. 14, 2022
Anritsu	Power Meter	ML2495A	1419002	Aug. 18, 2021	Aug. 17, 2022
Anritsu	Power Sensor	MA2411B	1911176	Aug. 18, 2021	Aug. 17, 2022
Anritsu	Power Meter	ML2495A	1804003	Oct. 09, 2021	Oct. 08, 2022
Anritsu	Power Sensor	MA2411B	1726150	Oct. 09, 2021	Oct. 08, 2022
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jul. 16, 2021	Jul. 15, 2022
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Jan. 15, 2021	Jan. 14, 2022
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 12, 2021	Oct. 11, 2022
Mini-Circuits	Power Amplifier	ZVE-8G+	479102029	Sep. 06, 2021	Sep. 05, 2022
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Warison	Directional Coupler	WCOU-10-50S-10	WR889BMC4B1	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005-3	N/A	Note 1	

General Note:

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



11. System Verification

11.1 Tissue Verification

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

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
750	22.5	0.890	43.009	0.89	41.90	0.00	2.65	± 5	2021/11/19
835	22.5	0.924	42.713	0.90	41.50	2.67	2.92	± 5	2021/11/19
835	22.5	0.926	42.880	0.90	41.50	2.89	3.33	± 5	2021/11/20
1750	22.5	1.369	40.523	1.37	40.10	-0.07	1.05	± 5	2021/11/19
1750	22.5	1.389	40.296	1.37	40.10	1.39	0.49	± 5	2021/11/20
1900	22.5	1.439	40.330	1.40	40.00	2.79	0.82	± 5	2021/11/19
1900	22.5	1.405	40.193	1.40	40.00	0.36	0.48	± 5	2021/11/20
2450	22.5	1.845	39.760	1.80	39.20	2.50	1.43	± 5	2021/11/23
3500	22.5	2.914	37.958	2.91	37.90	0.14	0.15	± 5	2021/11/21
3500	22.5	2.903	37.858	2.91	37.90	-0.24	-0.11	± 5	2021/11/24
3700	22.5	3.119	37.728	3.12	37.70	-0.03	0.07	± 5	2021/11/21
3700	22.5	3.105	37.648	3.12	37.70	-0.48	-0.14	± 5	2021/11/24
3900	22.5	3.324	37.497	3.33	37.51	-0.18	-0.03	± 5	2021/11/21
5250	22.5	4.601	35.923	4.71	35.95	-2.31	-0.08	± 5	2021/11/22
5600	22.5	4.934	35.463	5.07	35.50	-2.68	-0.10	± 5	2021/11/22
5750	22.5	5.095	35.231	5.22	35.35	-2.39	-0.34	± 5	2021/11/22
6500	22.5	6.070	35.300	6.07	34.50	0.00	2.32	± 5	2021/11/23

11.2 System Performance Check Results

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

Test Site	Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
SAR10	2021/11/19	750	50	D750V3-1107	EX3DV4 - SN3578	DAE4 Sn854	0.426	8.32	8.52	2.40
SAR05	2021/11/19	835	50	D835V2-4d167	EX3DV4 - SN7590	DAE4 Sn853	0.442	9.55	8.84	-7.43
SAR04	2021/11/20	835	50	D835V2-4d167	EX3DV4 - SN7306	DAE4 Sn1311	0.465	9.55	9.3	-2.62
SAR05	2021/11/19	1750	50	D1750V2-1112	EX3DV4 - SN7590	DAE4 Sn853	1.860	36.70	37.2	1.36
SAR04	2021/11/20	1750	50	D1750V2-1112	EX3DV4 - SN7306	DAE4 Sn1311	1.820	36.70	36.4	-0.82
SAR05	2021/11/19	1900	50	D1900V2-5d185	EX3DV4 - SN7590	DAE4 Sn853	2.030	39.40	40.6	3.05
SAR04	2021/11/20	1900	50	D1900V2-5d041	EX3DV4 - SN7306	DAE4 Sn1311	1.880	40.60	37.6	-7.39
SAR10	2021/11/23	2450	50	D2450V2-736	EX3DV4 - SN3578	DAE4 Sn1311	2.780	54.20	55.6	2.58
SAR10	2021/11/21	3500	100	D3500V2-1014	EX3DV4 - SN3578	DAE4 Sn1311	6.310	67.90	63.1	-7.07
SAR10	2021/11/24	3500	100	D3500V2-1014	EX3DV4 - SN3578	DAE4 Sn1311	6.390	67.90	63.9	-5.89
SAR10	2021/11/21	3700	100	D3700V2-1006	EX3DV4 - SN3578	DAE4 Sn1311	6.540	67.30	65.4	-2.82
SAR10	2021/11/24	3700	100	D3700V2-1006	EX3DV4 - SN3578	DAE4 Sn1311	6.610	67.30	66.1	-1.78
SAR10	2021/11/21	3900	50	D3900V2-1017-3900	EX3DV4 - SN3578	DAE4 Sn1311	3.550	69.50	71	2.16
SAR10	2021/11/22	5250	50	D5GHzV2-1006-5250	EX3DV4 - SN3578	DAE4 Sn1311	3.660	80.70	73.2	-9.29
SAR10	2021/11/22	5600	50	D5GHzV2-1006-5600	EX3DV4 - SN3578	DAE4 Sn1311	3.790	83.30	75.8	-9.00
SAR10	2021/11/22	5750	50	D5GHzV2-1006-5750	EX3DV4 - SN3578	DAE4 Sn1311	3.680	80.40	73.6	-8.46
SAR08	2021/11/23	6500	100	D6.5GHzV2-1003	EX3DV4 - SN3642	DAE4 Sn853	27.300	299.00	273	-8.70

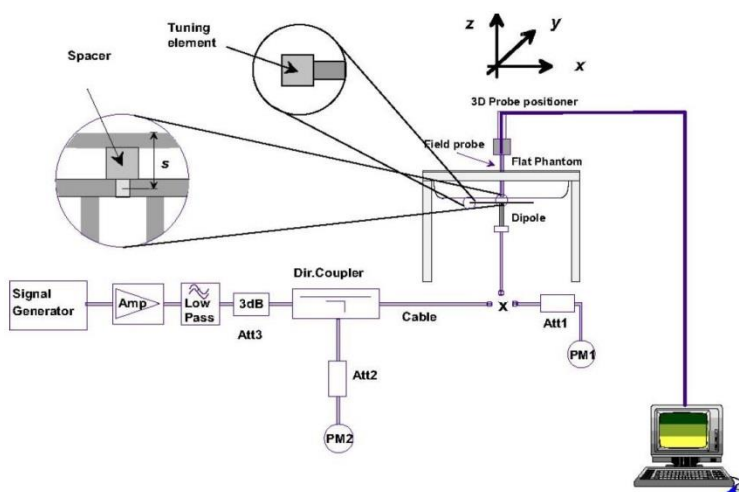


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

11.3 PD System Performance Check Results

The system was verified to be within ± 0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check. The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.

Test Location	Frequency (GHz)	5G Verification Source	Probe S/N	DAE S/N	Distance (mm)	Measured 4 cm ² (W/m ²)	Targeted 4 cm ² (W/m ²)	Deviation (dB)	Date
SAR05	10G	10GHz_1020	9461	778	10	44	42.2	0.18	2021/11/10

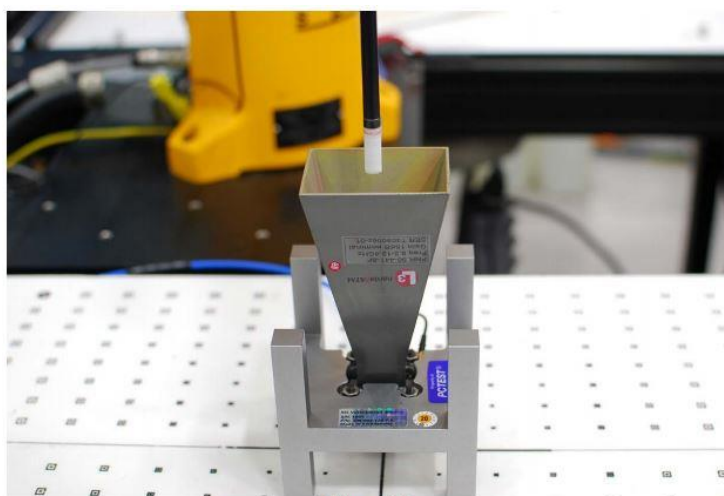


Figure 4-3
System Verification Setup Photo

System Performance Check Setup

12. LTE Output Power (Unit: dBm)

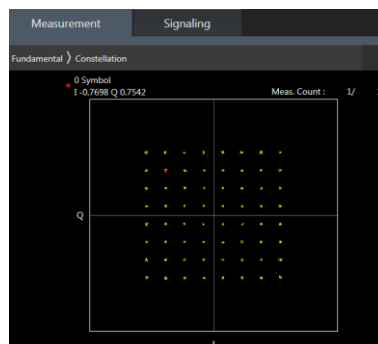
<LTE Conducted Power>

General Note:

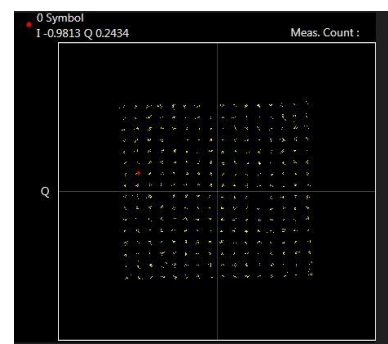
1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 4 SAR test was covered by Band 66; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is $\leq$ the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 16QAM, 64QAM, 256QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



16QAM



64QAM



256QAM



<LTE Band 2_Ant0_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	23.14	23.17	23.16	24
20	QPSK	1	49	23.07	23.13	23.06	
20	QPSK	1	99	23.04	23.10	22.99	
20	QPSK	50	0	22.12	22.19	22.14	23
20	QPSK	50	24	22.16	22.29	22.24	
20	QPSK	50	50	22.23	22.30	22.19	
20	QPSK	100	0	22.27	22.33	22.25	23
20	16QAM	1	0	22.18	22.23	22.15	
20	16QAM	1	49	22.17	22.21	22.18	
20	16QAM	1	99	22.04	22.13	22.09	22
20	16QAM	50	0	21.12	21.18	21.09	
20	16QAM	50	24	21.17	21.26	21.19	
20	16QAM	50	50	21.17	21.23	21.22	22
20	16QAM	100	0	21.23	21.35	21.34	
20	64QAM	1	0	21.28	21.33	21.22	22
20	64QAM	1	49	21.16	21.27	21.16	
20	64QAM	1	99	21.11	21.18	21.14	
20	64QAM	50	0	20.08	20.18	20.10	21
20	64QAM	50	24	20.15	20.25	20.23	
20	64QAM	50	50	20.11	20.24	20.16	
20	64QAM	100	0	20.27	20.31	20.26	19
20	256QAM	1	0	17.86	17.97	17.91	
20	256QAM	1	49	17.97	18.01	17.96	
20	256QAM	1	99	17.95	18.01	17.97	19
20	256QAM	50	0	18.07	18.10	18.05	
20	256QAM	50	24	18.16	18.22	18.16	
20	256QAM	50	50	18.22	18.28	18.23	19
20	256QAM	100	0	18.26	18.31	18.26	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	23.13	23.15	23.08	24
15	QPSK	1	37	22.98	23.11	23.02	
15	QPSK	1	74	22.98	23.01	22.94	
15	QPSK	36	0	22.04	22.09	22.13	23
15	QPSK	36	20	22.15	22.25	22.14	
15	QPSK	36	39	22.22	22.27	22.13	
15	QPSK	75	0	22.26	22.30	22.20	23
15	16QAM	1	0	22.17	22.19	22.14	
15	16QAM	1	37	22.08	22.11	22.09	
15	16QAM	1	74	22.01	22.03	22.07	22
15	16QAM	36	0	21.08	21.08	20.99	
15	16QAM	36	20	21.16	21.18	21.12	
15	16QAM	36	39	21.09	21.17	21.20	22
15	16QAM	75	0	21.14	21.26	21.25	
15	64QAM	1	0	21.25	21.25	21.13	
15	64QAM	1	37	21.06	21.20	21.10	22
15	64QAM	1	74	21.07	21.17	21.08	
15	64QAM	36	0	20.05	20.10	20.03	
15	64QAM	36	20	20.06	20.24	20.21	21
15	64QAM	36	39	20.05	20.14	20.15	
15	64QAM	75	0	20.17	20.25	20.16	



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15	256QAM	1	0	17.80	17.94	17.89	19
15	256QAM	1	37	17.89	17.95	17.90	
15	256QAM	1	74	17.87	18.01	17.95	
15	256QAM	36	0	18.04	18.07	17.99	19
15	256QAM	36	20	18.06	18.22	18.08	
15	256QAM	36	39	18.21	18.18	18.20	
15	256QAM	75	0	18.17	18.23	18.21	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	23.05	23.16	23.15	24
10	QPSK	1	25	23.04	23.03	22.99	
10	QPSK	1	49	22.98	23.10	22.95	
10	QPSK	25	0	22.10	22.11	22.05	23
10	QPSK	25	12	22.15	22.20	22.22	
10	QPSK	25	25	22.15	22.23	22.18	
10	QPSK	50	0	22.21	22.26	22.15	
10	16QAM	1	0	22.10	22.15	22.12	23
10	16QAM	1	25	22.10	22.14	22.17	
10	16QAM	1	49	21.97	22.11	22.08	
10	16QAM	25	0	21.04	21.14	21.09	22
10	16QAM	25	12	21.12	21.22	21.09	
10	16QAM	25	25	21.11	21.16	21.21	
10	16QAM	50	0	21.13	21.29	21.30	
10	64QAM	1	0	21.24	21.30	21.21	22
10	64QAM	1	25	21.11	21.25	21.09	
10	64QAM	1	49	21.02	21.09	21.07	
10	64QAM	25	0	20.08	20.15	20.10	21
10	64QAM	25	12	20.13	20.23	20.23	
10	64QAM	25	25	20.04	20.18	20.15	
10	64QAM	50	0	20.21	20.30	20.26	
10	256QAM	1	0	17.81	17.94	17.90	19
10	256QAM	1	25	17.91	18.00	17.94	
10	256QAM	1	49	17.91	17.91	17.95	
10	256QAM	25	0	17.99	18.09	17.96	19
10	256QAM	25	12	18.16	18.12	18.10	
10	256QAM	25	25	18.17	18.24	18.18	
10	256QAM	50	0	18.21	18.21	18.19	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	23.07	23.10	23.08	24
5	QPSK	1	12	22.99	23.08	23.05	
5	QPSK	1	24	22.99	23.08	22.99	
5	QPSK	12	0	22.11	22.17	22.13	23
5	QPSK	12	7	22.09	22.28	22.16	
5	QPSK	12	13	22.17	22.24	22.18	
5	QPSK	25	0	22.19	22.28	22.15	
5	16QAM	1	0	22.15	22.16	22.06	23
5	16QAM	1	12	22.08	22.20	22.08	
5	16QAM	1	24	21.97	22.13	22.02	
5	16QAM	12	0	21.04	21.17	21.00	22
5	16QAM	12	7	21.10	21.20	21.17	
5	16QAM	12	13	21.07	21.18	21.21	
5	16QAM	25	0	21.13	21.33	21.26	
5	64QAM	1	0	21.23	21.29	21.20	22
5	64QAM	1	12	21.08	21.23	21.14	
5	64QAM	1	24	21.06	21.12	21.09	



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5	64QAM	12	0	20.06	20.09	20.05	21
5	64QAM	12	7	20.06	20.16	20.22	
5	64QAM	12	13	20.08	20.23	20.11	
5	64QAM	25	0	20.23	20.29	20.25	
5	256QAM	1	0	17.84	17.96	17.87	19
5	256QAM	1	12	17.97	17.93	17.92	
5	256QAM	1	24	17.91	17.93	17.87	
5	256QAM	12	0	17.99	18.09	18.05	19
5	256QAM	12	7	18.16	18.12	18.10	
5	256QAM	12	13	18.15	18.19	18.18	
5	256QAM	25	0	18.16	18.24	18.23	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	23.13	23.12	23.08	24
3	QPSK	1	8	23.00	23.03	22.98	
3	QPSK	1	14	22.99	23.07	22.98	
3	QPSK	8	0	22.05	22.19	22.09	23
3	QPSK	8	4	22.13	22.25	22.18	
3	QPSK	8	7	22.14	22.23	22.17	
3	QPSK	15	0	22.18	22.26	22.17	
3	16QAM	1	0	22.18	22.18	22.15	23
3	16QAM	1	8	22.13	22.21	22.08	
3	16QAM	1	14	22.00	22.12	22.04	
3	16QAM	8	0	21.04	21.14	21.03	22
3	16QAM	8	4	21.14	21.21	21.17	
3	16QAM	8	7	21.08	21.21	21.16	
3	16QAM	15	0	21.19	21.35	21.24	
3	64QAM	1	0	21.28	21.31	21.21	22
3	64QAM	1	8	21.14	21.20	21.13	
3	64QAM	1	14	21.06	21.11	21.07	
3	64QAM	8	0	20.02	20.14	20.01	21
3	64QAM	8	4	20.07	20.24	20.22	
3	64QAM	8	7	20.02	20.15	20.11	
3	64QAM	15	0	20.18	20.26	20.16	
3	256QAM	1	0	17.85	17.93	17.88	19
3	256QAM	1	8	17.95	17.95	17.95	
3	256QAM	1	14	17.91	17.97	17.91	
3	256QAM	8	0	17.97	18.02	18.02	19
3	256QAM	8	4	18.12	18.17	18.08	
3	256QAM	8	7	18.12	18.21	18.16	
3	256QAM	15	0	18.20	18.28	18.26	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	23.08	23.07	23.08	24
1.4	QPSK	1	3	22.99	23.08	23.00	
1.4	QPSK	1	5	23.03	23.07	22.96	
1.4	QPSK	3	0	23.05	23.16	23.12	
1.4	QPSK	3	1	23.07	23.04	23.06	
1.4	QPSK	3	3	23.02	23.05	22.96	
1.4	QPSK	6	0	22.06	22.14	22.07	23
1.4	16QAM	1	0	22.08	22.18	22.10	23
1.4	16QAM	1	3	22.11	22.12	22.18	
1.4	16QAM	1	5	22.00	22.09	22.01	
1.4	16QAM	3	0	22.15	22.17	22.07	
1.4	16QAM	3	1	22.07	22.12	22.10	
1.4	16QAM	3	3	21.98	22.03	22.04	



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1.4	16QAM	6	0	21.06	21.16	21.09	22
1.4	64QAM	1	0	21.22	21.33	21.16	22
1.4	64QAM	1	3	21.08	21.23	21.07	
1.4	64QAM	1	5	21.02	21.14	21.09	
1.4	64QAM	3	0	21.27	21.29	21.16	
1.4	64QAM	3	1	21.16	21.22	21.09	
1.4	64QAM	3	3	21.05	21.18	21.08	
1.4	64QAM	6	0	20.08	20.10	20.02	21
1.4	256QAM	1	0	17.83	17.91	17.88	19
1.4	256QAM	1	3	17.90	17.95	17.86	
1.4	256QAM	1	5	17.90	17.92	17.89	
1.4	256QAM	3	0	17.78	17.88	17.88	
1.4	256QAM	3	1	17.88	17.95	17.91	
1.4	256QAM	3	3	17.85	17.91	17.89	
1.4	256QAM	6	0	18.05	18.06	18.00	19

<LTE Band 2_Ant1_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	23.34	23.29	23.28	24
20	QPSK	1	49	23.24	23.26	23.24	
20	QPSK	1	99	23.27	23.27	23.22	
20	QPSK	50	0	22.21	22.26	22.19	23
20	QPSK	50	24	22.31	22.35	22.34	
20	QPSK	50	50	22.47	22.43	22.42	
20	QPSK	100	0	22.38	22.37	22.26	
20	16QAM	1	0	22.67	22.64	22.59	23
20	16QAM	1	49	22.61	22.57	22.53	
20	16QAM	1	99	22.40	22.44	22.42	
20	16QAM	50	0	21.32	21.32	21.26	22
20	16QAM	50	24	21.39	21.39	21.37	
20	16QAM	50	50	21.45	21.40	21.37	
20	16QAM	100	0	21.43	21.39	21.36	
20	64QAM	1	0	21.50	21.46	21.39	22
20	64QAM	1	49	21.58	21.56	21.45	
20	64QAM	1	99	21.57	21.55	21.50	
20	64QAM	50	0	20.13	20.16	20.08	21
20	64QAM	50	24	20.34	20.37	20.36	
20	64QAM	50	50	20.36	20.34	20.24	
20	64QAM	100	0	20.38	20.38	20.35	
20	256QAM	1	0	18.06	18.29	18.12	19
20	256QAM	1	49	18.00	18.20	18.01	
20	256QAM	1	99	17.91	18.26	18.12	
20	256QAM	50	0	18.03	18.04	18.08	19
20	256QAM	50	24	17.92	18.01	17.94	
20	256QAM	50	50	17.90	17.93	18.05	
20	256QAM	100	0	17.85	18.01	17.96	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	23.25	23.27	23.25	24
15	QPSK	1	37	23.18	23.23	23.17	
15	QPSK	1	74	23.26	23.21	23.12	
15	QPSK	36	0	22.19	22.23	22.19	23
15	QPSK	36	20	22.27	22.29	22.28	



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15	QPSK	36	39	22.43	22.41	22.38	
15	QPSK	75	0	22.32	22.31	22.22	
15	16QAM	1	0	22.59	22.59	22.53	
15	16QAM	1	37	22.52	22.57	22.44	23
15	16QAM	1	74	22.40	22.35	22.41	
15	16QAM	36	0	21.26	21.29	21.19	
15	16QAM	36	20	21.31	21.33	21.28	22
15	16QAM	36	39	21.42	21.40	21.35	
15	16QAM	75	0	21.41	21.37	21.31	
15	64QAM	1	0	21.41	21.42	21.38	22
15	64QAM	1	37	21.54	21.47	21.38	
15	64QAM	1	74	21.52	21.45	21.46	
15	64QAM	36	0	20.05	20.08	20.07	21
15	64QAM	36	20	20.34	20.30	20.27	
15	64QAM	36	39	20.36	20.29	20.20	
15	64QAM	75	0	20.28	20.28	20.27	19
15	256QAM	1	0	17.98	18.21	18.09	
15	256QAM	1	37	17.92	18.18	17.97	
15	256QAM	1	74	17.86	18.20	18.04	19
15	256QAM	36	0	17.99	17.98	18.02	
15	256QAM	36	20	17.84	18.00	17.84	
15	256QAM	36	39	17.88	17.90	18.00	
15	256QAM	75	0	17.82	17.95	17.86	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	23.26	23.26	23.28	24
10	QPSK	1	25	23.17	23.22	23.21	
10	QPSK	1	49	23.21	23.18	23.14	
10	QPSK	25	0	22.13	22.22	22.13	23
10	QPSK	25	12	22.25	22.34	22.26	
10	QPSK	25	25	22.46	22.40	22.36	
10	QPSK	50	0	22.33	22.29	22.19	23
10	16QAM	1	0	22.58	22.60	22.50	
10	16QAM	1	25	22.51	22.51	22.48	
10	16QAM	1	49	22.32	22.41	22.38	22
10	16QAM	25	0	21.29	21.27	21.22	
10	16QAM	25	12	21.34	21.29	21.35	
10	16QAM	25	25	21.37	21.38	21.36	22
10	16QAM	50	0	21.42	21.32	21.31	
10	64QAM	1	0	21.41	21.44	21.33	
10	64QAM	1	25	21.57	21.50	21.35	21
10	64QAM	1	49	21.49	21.45	21.47	
10	64QAM	25	0	20.13	20.07	20.07	
10	64QAM	25	12	20.25	20.34	20.26	19
10	64QAM	25	25	20.29	20.27	20.20	
10	64QAM	50	0	20.29	20.29	20.33	
10	256QAM	1	0	18.05	18.26	18.08	19
10	256QAM	1	25	17.93	18.14	17.99	
10	256QAM	1	49	17.81	18.16	18.06	
10	256QAM	25	0	18.02	17.99	18.07	19
10	256QAM	25	12	17.83	17.95	17.90	
10	256QAM	25	25	17.89	17.91	18.04	
10	256QAM	50	0	17.84	17.91	17.89	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	23.33	23.23	23.26	24



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5	QPSK	1	12	23.19	23.23	23.19	
5	QPSK	1	24	23.18	23.17	23.21	
5	QPSK	12	0	22.11	22.20	22.14	
5	QPSK	12	7	22.21	22.26	22.32	23
5	QPSK	12	13	22.37	22.40	22.38	
5	QPSK	25	0	22.29	22.31	22.17	
5	16QAM	1	0	22.64	22.58	22.57	23
5	16QAM	1	12	22.58	22.56	22.50	
5	16QAM	1	24	22.37	22.43	22.39	
5	16QAM	12	0	21.25	21.27	21.22	22
5	16QAM	12	7	21.34	21.35	21.35	
5	16QAM	12	13	21.40	21.37	21.37	
5	16QAM	25	0	21.35	21.34	21.32	22
5	64QAM	1	0	21.49	21.39	21.39	
5	64QAM	1	12	21.52	21.48	21.45	
5	64QAM	1	24	21.57	21.55	21.46	21
5	64QAM	12	0	20.05	20.16	20.03	
5	64QAM	12	7	20.32	20.32	20.32	
5	64QAM	12	13	20.30	20.31	20.23	19
5	64QAM	25	0	20.28	20.35	20.25	
5	256QAM	1	0	18.04	18.22	18.02	
5	256QAM	1	12	17.92	18.10	17.96	19
5	256QAM	1	24	17.87	18.20	18.07	
5	256QAM	12	0	18.03	18.01	18.02	
5	256QAM	12	7	17.83	18.01	17.84	19
5	256QAM	12	13	17.83	17.83	17.95	
5	256QAM	25	0	17.80	17.99	17.88	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	23.32	23.27	23.24	24
3	QPSK	1	8	23.16	23.17	23.23	
3	QPSK	1	14	23.17	23.24	23.13	
3	QPSK	8	0	22.14	22.25	22.12	23
3	QPSK	8	4	22.26	22.34	22.30	
3	QPSK	8	7	22.45	22.33	22.34	
3	QPSK	15	0	22.33	22.33	22.23	23
3	16QAM	1	0	22.64	22.57	22.50	
3	16QAM	1	8	22.57	22.56	22.50	
3	16QAM	1	14	22.35	22.37	22.42	22
3	16QAM	8	0	21.30	21.32	21.23	
3	16QAM	8	4	21.38	21.35	21.30	
3	16QAM	8	7	21.42	21.31	21.28	22
3	16QAM	15	0	21.42	21.39	21.30	
3	64QAM	1	0	21.42	21.42	21.31	
3	64QAM	1	8	21.55	21.46	21.42	21
3	64QAM	1	14	21.48	21.47	21.42	
3	64QAM	8	0	20.04	20.13	20.08	
3	64QAM	8	4	20.28	20.34	20.30	19
3	64QAM	8	7	20.31	20.31	20.14	
3	64QAM	15	0	20.31	20.38	20.28	
3	256QAM	1	0	17.97	18.19	18.02	19
3	256QAM	1	8	17.91	18.10	17.95	
3	256QAM	1	14	17.82	18.25	18.04	
3	256QAM	8	0	17.93	17.97	17.99	19
3	256QAM	8	4	17.91	18.00	17.92	
3	256QAM	8	7	17.85	17.84	17.97	



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3	256QAM	15	0	17.84	18.00	17.92	Tune-up limit (dBm)
Channel				18607	18900	19193	
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	23.26	23.26	23.25	24
1.4	QPSK	1	3	23.19	23.23	23.16	
1.4	QPSK	1	5	23.21	23.19	23.19	
1.4	QPSK	3	0	23.24	23.19	23.22	
1.4	QPSK	3	1	23.14	23.20	23.19	
1.4	QPSK	3	3	23.27	23.21	23.19	
1.4	QPSK	6	0	22.13	22.23	22.16	23
1.4	16QAM	1	0	22.63	22.58	22.54	23
1.4	16QAM	1	3	22.53	22.50	22.51	
1.4	16QAM	1	5	22.40	22.44	22.37	
1.4	16QAM	3	0	22.58	22.54	22.58	
1.4	16QAM	3	1	22.58	22.53	22.46	
1.4	16QAM	3	3	22.37	22.40	22.41	
1.4	16QAM	6	0	21.32	21.22	21.24	22
1.4	64QAM	1	0	21.46	21.42	21.32	22
1.4	64QAM	1	3	21.57	21.48	21.44	
1.4	64QAM	1	5	21.49	21.50	21.49	
1.4	64QAM	3	0	21.44	21.39	21.29	
1.4	64QAM	3	1	21.52	21.46	21.42	
1.4	64QAM	3	3	21.47	21.54	21.46	
1.4	64QAM	6	0	20.11	20.12	20.08	21
1.4	256QAM	1	0	18.02	18.23	18.03	19
1.4	256QAM	1	3	17.93	18.17	17.96	
1.4	256QAM	1	5	17.87	18.24	18.08	
1.4	256QAM	3	0	17.98	17.96	18.07	
1.4	256QAM	3	1	17.87	18.01	17.85	
1.4	256QAM	3	3	17.85	17.92	17.96	
1.4	256QAM	6	0	17.77	18.00	17.89	19

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	15.48	15.56	15.60	16.5
20	QPSK	1	49	15.37	15.42	15.51	
20	QPSK	1	99	15.35	15.44	15.48	
20	QPSK	50	0	15.42	15.43	15.52	16.5
20	QPSK	50	24	15.35	15.32	15.43	
20	QPSK	50	50	15.25	15.24	15.36	
20	QPSK	100	0	15.38	15.32	15.46	16.5
20	16QAM	1	0	15.36	15.36	15.44	
20	16QAM	1	49	15.25	15.21	15.31	
20	16QAM	1	99	15.15	15.21	15.28	16.5
20	16QAM	50	0	15.36	15.29	15.40	
20	16QAM	50	24	15.20	15.15	15.29	
20	16QAM	50	50	15.08	15.07	15.21	16.5
20	16QAM	100	0	15.21	15.23	15.31	
20	64QAM	1	0	15.23	15.31	15.36	
20	64QAM	1	49	15.19	15.20	15.24	16.5
20	64QAM	1	99	15.16	15.09	15.21	
20	64QAM	50	0	15.23	15.20	15.30	
20	64QAM	50	24	15.16	15.15	15.22	16.5



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20	64QAM	50	50	15.06	15.14	15.18	
20	64QAM	100	0	15.16	15.16	15.24	
20	256QAM	1	0	15.18	15.12	15.26	
20	256QAM	1	49	15.14	15.15	15.20	16.5
20	256QAM	1	99	15.03	15.06	15.16	
20	256QAM	50	0	15.06	15.10	15.20	
20	256QAM	50	24	15.01	15.00	15.10	16.5
20	256QAM	50	50	15.00	15.00	15.03	
20	256QAM	100	0	15.00	15.03	15.11	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	15.45	15.43	15.51	16.5
15	QPSK	1	37	15.33	15.39	15.47	
15	QPSK	1	74	15.24	15.38	15.45	
15	QPSK	36	0	15.35	15.33	15.45	16.5
15	QPSK	36	20	15.30	15.21	15.32	
15	QPSK	36	39	15.15	15.15	15.29	
15	QPSK	75	0	15.31	15.23	15.38	16.5
15	16QAM	1	0	15.29	15.29	15.32	
15	16QAM	1	37	15.15	15.18	15.28	
15	16QAM	1	74	15.12	15.18	15.17	16.5
15	16QAM	36	0	15.33	15.22	15.37	
15	16QAM	36	20	15.15	15.02	15.20	
15	16QAM	36	39	15.05	14.94	15.12	16.5
15	16QAM	75	0	15.09	15.16	15.28	
15	64QAM	1	0	15.10	15.28	15.28	
15	64QAM	1	37	15.07	15.15	15.17	16.5
15	64QAM	1	74	15.05	15.01	15.17	
15	64QAM	36	0	15.12	15.07	15.25	
15	64QAM	36	20	15.07	15.07	15.11	16.5
15	64QAM	36	39	14.93	15.10	15.08	
15	64QAM	75	0	15.13	15.09	15.17	
15	256QAM	1	0	15.07	15.01	15.23	16.5
15	256QAM	1	37	15.06	15.08	15.11	
15	256QAM	1	74	14.98	14.95	15.03	
15	256QAM	36	0	15.03	14.99	15.07	16.5
15	256QAM	36	20	14.88	14.92	14.97	
15	256QAM	36	39	14.88	14.96	14.90	
15	256QAM	75	0	14.94	14.97	15.07	16.5
Channel				18650	18900	19150	
Frequency (MHz)				1855	1880	1905	Tune-up limit (dBm)
10	QPSK	1	0	15.32	15.39	15.47	16.5
10	QPSK	1	25	15.28	15.36	15.42	
10	QPSK	1	49	15.15	15.29	15.39	
10	QPSK	25	0	15.27	15.23	15.40	16.5
10	QPSK	25	12	15.26	15.17	15.20	
10	QPSK	25	25	15.09	15.10	15.20	
10	QPSK	50	0	15.27	15.18	15.26	16.5
10	16QAM	1	0	15.21	15.20	15.19	
10	16QAM	1	25	15.11	15.12	15.23	
10	16QAM	1	49	15.09	15.07	15.09	16.5
10	16QAM	25	0	15.20	15.10	15.32	
10	16QAM	25	12	15.06	14.99	15.16	
10	16QAM	25	25	14.95	14.87	15.01	16.5
10	16QAM	50	0	15.03	15.04	15.22	
10	64QAM	1	0	14.97	15.15	15.15	



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10	64QAM	1	25	14.96	15.07	15.08	
10	64QAM	1	49	14.97	14.88	15.13	
10	64QAM	25	0	15.00	14.97	15.19	
10	64QAM	25	12	15.02	15.02	14.98	16.5
10	64QAM	25	25	14.83	15.06	14.96	
10	64QAM	50	0	15.06	15.00	15.08	
10	256QAM	1	0	14.99	14.95	15.17	16.5
10	256QAM	1	25	14.94	14.96	15.00	
10	256QAM	1	49	14.93	14.86	14.90	
10	256QAM	25	0	14.95	14.88	15.03	16.5
10	256QAM	25	12	14.75	14.89	14.90	
10	256QAM	25	25	14.80	14.89	14.78	
10	256QAM	50	0	14.82	14.91	14.96	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	15.20	15.28	15.36	16.5
5	QPSK	1	12	15.20	15.32	15.32	
5	QPSK	1	24	15.04	15.24	15.31	
5	QPSK	12	0	15.14	15.10	15.30	16.5
5	QPSK	12	7	15.18	15.08	15.12	
5	QPSK	12	13	15.05	15.02	15.17	
5	QPSK	25	0	15.20	15.15	15.21	
5	16QAM	1	0	15.08	15.13	15.10	16.5
5	16QAM	1	12	14.98	15.08	15.18	
5	16QAM	1	24	14.97	15.02	15.02	
5	16QAM	12	0	15.11	15.03	15.23	16.5
5	16QAM	12	7	15.03	14.88	15.09	
5	16QAM	12	13	14.85	14.75	14.93	
5	16QAM	25	0	15.00	14.96	15.11	
5	64QAM	1	0	14.93	15.06	15.11	16.5
5	64QAM	1	12	14.93	14.95	15.05	
5	64QAM	1	24	14.91	14.82	15.05	
5	64QAM	12	0	14.87	14.91	15.16	16.5
5	64QAM	12	7	14.99	14.97	14.91	
5	64QAM	12	13	14.79	14.94	14.85	
5	64QAM	25	0	14.93	14.93	14.96	
5	256QAM	1	0	14.92	14.83	15.06	16.5
5	256QAM	1	12	14.86	14.92	14.92	
5	256QAM	1	24	14.85	14.76	14.85	
5	256QAM	12	0	14.85	14.79	14.93	16.5
5	256QAM	12	7	14.67	14.84	14.86	
5	256QAM	12	13	14.77	14.83	14.68	
5	256QAM	25	0	14.79	14.79	14.91	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	15.16	15.19	15.31	16.5
3	QPSK	1	8	15.11	15.29	15.21	
3	QPSK	1	14	14.99	15.17	15.24	
3	QPSK	8	0	15.07	15.03	15.22	16.5
3	QPSK	8	4	15.10	15.01	15.01	
3	QPSK	8	7	14.92	14.90	15.08	
3	QPSK	15	0	15.10	15.12	15.13	
3	16QAM	1	0	14.96	15.05	15.04	16.5
3	16QAM	1	8	14.95	14.97	15.05	
3	16QAM	1	14	14.87	14.94	14.89	
3	16QAM	8	0	15.01	15.00	15.20	16.5



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3	16QAM	8	4	14.98	14.78	14.98	
3	16QAM	8	7	14.78	14.66	14.89	
3	16QAM	15	0	14.88	14.83	15.07	
3	64QAM	1	0	14.85	14.99	15.00	16.5
3	64QAM	1	8	14.89	14.83	14.99	
3	64QAM	1	14	14.85	14.76	14.97	
3	64QAM	8	0	14.84	14.80	15.05	16.5
3	64QAM	8	4	14.90	14.93	14.87	
3	64QAM	8	7	14.69	14.91	14.78	
3	64QAM	15	0	14.89	14.84	14.92	16.5
3	256QAM	1	0	14.85	14.74	14.99	
3	256QAM	1	8	14.82	14.80	14.80	
3	256QAM	1	14	14.73	14.65	14.74	16.5
3	256QAM	8	0	14.75	14.72	14.85	
3	256QAM	8	4	14.55	14.81	14.81	
3	256QAM	8	7	14.73	14.75	14.61	16.5
3	256QAM	15	0	14.74	14.71	14.88	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	15.05	15.07	15.26	16.5
1.4	QPSK	1	3	14.99	15.17	15.11	
1.4	QPSK	1	5	14.88	15.04	15.16	
1.4	QPSK	3	0	14.98	14.99	15.18	
1.4	QPSK	3	1	15.01	14.95	14.90	
1.4	QPSK	3	3	14.89	14.77	14.95	
1.4	QPSK	6	0	15.07	15.08	15.01	16.5
1.4	16QAM	1	0	14.86	14.95	14.94	16.5
1.4	16QAM	1	3	14.88	14.85	15.02	
1.4	16QAM	1	5	14.80	14.87	14.83	
1.4	16QAM	3	0	14.94	14.96	15.10	
1.4	16QAM	3	1	14.89	14.72	14.95	
1.4	16QAM	3	3	14.66	14.60	14.82	
1.4	16QAM	6	0	14.78	14.76	14.94	16.5
1.4	64QAM	1	0	14.80	14.96	14.89	16.5
1.4	64QAM	1	3	14.78	14.78	14.90	
1.4	64QAM	1	5	14.80	14.69	14.91	
1.4	64QAM	3	0	14.77	14.67	14.96	
1.4	64QAM	3	1	14.77	14.83	14.79	
1.4	64QAM	3	3	14.62	14.81	14.72	
1.4	64QAM	6	0	14.78	14.80	14.83	16.5
1.4	256QAM	1	0	14.82	14.68	14.90	16.5
1.4	256QAM	1	3	14.71	14.69	14.70	
1.4	256QAM	1	5	14.62	14.58	14.68	
1.4	256QAM	3	0	14.65	14.67	14.79	
1.4	256QAM	3	1	14.45	14.68	14.71	
1.4	256QAM	3	3	14.66	14.65	14.54	
1.4	256QAM	6	0	14.69	14.60	14.80	16.5

**<LTE Band 4_Ant0_DSI 2>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20050	20175	20300	
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	23.19	23.41	23.10	24
20	QPSK	1	49	23.11	23.17	23.00	
20	QPSK	1	99	23.03	23.09	22.95	
20	QPSK	50	0	21.95	22.24	21.87	23
20	QPSK	50	24	21.90	22.20	21.88	
20	QPSK	50	50	21.84	22.16	21.77	
20	QPSK	100	0	21.92	22.23	21.86	23
20	16QAM	1	0	21.88	22.20	21.82	
20	16QAM	1	49	21.91	22.22	21.88	
20	16QAM	1	99	21.79	22.03	21.71	22
20	16QAM	50	0	21.02	21.32	20.99	
20	16QAM	50	24	20.97	21.28	20.92	
20	16QAM	50	50	21.03	21.25	20.94	22
20	16QAM	100	0	20.99	21.21	20.87	
20	64QAM	1	0	21.10	21.33	21.03	22
20	64QAM	1	49	21.03	21.27	20.93	
20	64QAM	1	99	20.95	21.21	20.88	
20	64QAM	50	0	20.02	20.29	19.98	21
20	64QAM	50	24	19.86	20.18	19.82	
20	64QAM	50	50	19.94	20.21	19.85	
20	64QAM	100	0	19.88	20.15	19.84	19
20	256QAM	1	0	17.85	18.12	17.74	
20	256QAM	1	49	17.76	18.07	17.71	
20	256QAM	1	99	17.78	18.10	17.78	19
20	256QAM	50	0	18.00	18.27	17.90	
20	256QAM	50	24	17.96	18.26	17.89	
20	256QAM	50	50	18.02	18.24	17.91	19
20	256QAM	100	0	17.98	18.25	17.91	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	23.15	23.28	23.04	24
15	QPSK	1	37	22.98	23.08	22.92	
15	QPSK	1	74	22.99	22.96	22.84	
15	QPSK	36	0	21.89	22.20	21.78	23
15	QPSK	36	20	21.77	22.16	21.75	
15	QPSK	36	39	21.75	22.09	21.73	
15	QPSK	75	0	21.86	22.14	21.73	23
15	16QAM	1	0	21.77	22.14	21.77	
15	16QAM	1	37	21.84	22.18	21.81	
15	16QAM	1	74	21.73	21.99	21.63	22
15	16QAM	36	0	20.97	21.23	20.87	
15	16QAM	36	20	20.92	21.18	20.85	
15	16QAM	36	39	20.94	21.21	20.90	22
15	16QAM	75	0	20.86	21.08	20.81	
15	64QAM	1	0	21.04	21.28	21.00	
15	64QAM	1	37	20.92	21.24	20.89	22
15	64QAM	1	74	20.82	21.11	20.77	
15	64QAM	36	0	19.89	20.19	19.85	21
15	64QAM	36	20	19.81	20.11	19.79	
15	64QAM	36	39	19.87	20.10	19.81	
15	64QAM	75	0	19.76	20.09	19.77	



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15	256QAM	1	0	17.81	18.05	17.61	19
15	256QAM	1	37	17.70	18.02	17.62	
15	256QAM	1	74	17.72	18.00	17.68	
15	256QAM	36	0	17.88	18.24	17.86	19
15	256QAM	36	20	17.85	18.18	17.79	
15	256QAM	36	39	17.97	18.13	17.87	
15	256QAM	75	0	17.90	18.19	17.86	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	23.02	23.20	22.94	24
10	QPSK	1	25	22.87	23.02	22.86	
10	QPSK	1	49	22.90	22.89	22.81	
10	QPSK	25	0	21.80	22.14	21.65	23
10	QPSK	25	12	21.74	22.03	21.70	
10	QPSK	25	25	21.63	22.02	21.62	
10	QPSK	50	0	21.82	22.03	21.60	
10	16QAM	1	0	21.66	22.07	21.65	23
10	16QAM	1	25	21.78	22.15	21.69	
10	16QAM	1	49	21.64	21.91	21.59	
10	16QAM	25	0	20.93	21.14	20.81	22
10	16QAM	25	12	20.86	21.13	20.80	
10	16QAM	25	25	20.82	21.09	20.82	
10	16QAM	50	0	20.78	21.01	20.73	
10	64QAM	1	0	20.98	21.20	20.96	22
10	64QAM	1	25	20.82	21.11	20.86	
10	64QAM	1	49	20.76	21.07	20.67	
10	64QAM	25	0	19.82	20.12	19.72	21
10	64QAM	25	12	19.75	19.99	19.68	
10	64QAM	25	25	19.74	20.03	19.75	
10	64QAM	50	0	19.65	19.98	19.70	
10	256QAM	1	0	17.78	17.98	17.53	19
10	256QAM	1	25	17.65	17.92	17.55	
10	256QAM	1	49	17.63	17.95	17.61	
10	256QAM	25	0	17.76	18.20	17.74	19
10	256QAM	25	12	17.77	18.05	17.73	
10	256QAM	25	25	17.93	18.05	17.80	
10	256QAM	50	0	17.77	18.10	17.83	
Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	22.89	23.17	22.90	24
5	QPSK	1	12	22.81	22.95	22.81	
5	QPSK	1	24	22.79	22.81	22.78	
5	QPSK	12	0	21.77	22.08	21.60	23
5	QPSK	12	7	21.67	21.91	21.58	
5	QPSK	12	13	21.57	21.91	21.57	
5	QPSK	25	0	21.79	21.98	21.47	
5	16QAM	1	0	21.55	21.99	21.57	23
5	16QAM	1	12	21.74	22.09	21.60	
5	16QAM	1	24	21.53	21.80	21.48	
5	16QAM	12	0	20.85	21.06	20.74	22
5	16QAM	12	7	20.73	21.01	20.74	
5	16QAM	12	13	20.74	20.96	20.75	
5	16QAM	25	0	20.67	20.94	20.62	
5	64QAM	1	0	20.86	21.17	20.83	22
5	64QAM	1	12	20.74	21.07	20.80	
5	64QAM	1	24	20.64	20.98	20.57	



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5	64QAM	12	0	19.73	20.08	19.59	21
5	64QAM	12	7	19.70	19.96	19.64	
5	64QAM	12	13	19.65	19.98	19.63	
5	64QAM	25	0	19.54	19.91	19.58	
5	256QAM	1	0	17.67	17.92	17.44	19
5	256QAM	1	12	17.54	17.88	17.45	
5	256QAM	1	24	17.56	17.83	17.56	
5	256QAM	12	0	17.67	18.08	17.69	19
5	256QAM	12	7	17.66	18.00	17.70	
5	256QAM	12	13	17.81	18.02	17.67	
5	256QAM	25	0	17.67	17.97	17.71	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	22.82	23.08	22.81	24
3	QPSK	1	8	22.75	22.92	22.78	
3	QPSK	1	14	22.74	22.76	22.72	
3	QPSK	8	0	21.64	21.96	21.50	23
3	QPSK	8	4	21.56	21.84	21.53	
3	QPSK	8	7	21.48	21.84	21.45	
3	QPSK	15	0	21.70	21.95	21.43	
3	16QAM	1	0	21.46	21.92	21.50	23
3	16QAM	1	8	21.68	22.00	21.48	
3	16QAM	1	14	21.45	21.67	21.45	
3	16QAM	8	0	20.74	21.02	20.70	22
3	16QAM	8	4	20.70	20.95	20.67	
3	16QAM	8	7	20.69	20.88	20.62	
3	16QAM	15	0	20.64	20.84	20.57	
3	64QAM	1	0	20.77	21.14	20.80	22
3	64QAM	1	8	20.70	21.02	20.75	
3	64QAM	1	14	20.57	20.88	20.53	
3	64QAM	8	0	19.62	19.99	19.53	21
3	64QAM	8	4	19.64	19.91	19.55	
3	64QAM	8	7	19.59	19.85	19.53	
3	64QAM	15	0	19.41	19.85	19.55	
3	256QAM	1	0	17.58	17.79	17.32	19
3	256QAM	1	8	17.50	17.83	17.41	
3	256QAM	1	14	17.50	17.77	17.47	
3	256QAM	8	0	17.63	18.03	17.64	19
3	256QAM	8	4	17.55	17.96	17.63	
3	256QAM	8	7	17.74	17.89	17.62	
3	256QAM	15	0	17.61	17.93	17.67	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	22.97	23.01	23.03	24
1.4	QPSK	1	3	22.88	22.96	22.96	
1.4	QPSK	1	5	22.92	22.96	22.93	
1.4	QPSK	3	0	22.98	23.10	23.06	
1.4	QPSK	3	1	22.98	23.00	22.96	
1.4	QPSK	3	3	22.96	22.93	22.84	
1.4	QPSK	6	0	21.93	22.05	21.97	23
1.4	16QAM	1	0	21.95	22.13	22.05	23
1.4	16QAM	1	3	22.06	21.99	22.12	
1.4	16QAM	1	5	21.89	22.00	21.96	
1.4	16QAM	3	0	22.10	22.09	22.02	
1.4	16QAM	3	1	21.99	22.03	22.04	
1.4	16QAM	3	3	21.94	21.92	21.92	

1.4	16QAM	6	0	20.97	21.12	21.03	22
1.4	64QAM	1	0	21.16	21.21	21.12	22
1.4	64QAM	1	3	20.95	21.11	20.95	
1.4	64QAM	1	5	20.89	21.01	20.98	
1.4	64QAM	3	0	21.24	21.16	21.13	
1.4	64QAM	3	1	21.07	21.14	21.00	
1.4	64QAM	3	3	20.98	21.05	20.96	
1.4	64QAM	6	0	20.00	20.00	19.91	21
1.4	256QAM	1	0	17.77	17.85	17.82	19
1.4	256QAM	1	3	17.78	17.84	17.81	
1.4	256QAM	1	5	17.82	17.89	17.83	
1.4	256QAM	3	0	17.65	17.83	17.83	
1.4	256QAM	3	1	17.85	17.83	17.82	
1.4	256QAM	3	3	17.76	17.81	17.80	
1.4	256QAM	6	0	17.96	18.01	17.97	19

<LTE Band 4_Ant1_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20050	20175	20300	
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	23.34	23.29	23.27	24
20	QPSK	1	49	23.29	23.33	23.24	
20	QPSK	1	99	23.30	23.28	23.17	
20	QPSK	50	0	22.34	22.34	22.31	23
20	QPSK	50	24	22.38	22.35	22.31	
20	QPSK	50	50	22.26	22.27	22.18	
20	QPSK	100	0	22.37	22.32	22.28	
20	16QAM	1	0	22.70	22.70	22.63	23
20	16QAM	1	49	22.60	22.60	22.54	
20	16QAM	1	99	22.55	22.51	22.48	
20	16QAM	50	0	21.31	21.35	21.32	22
20	16QAM	50	24	21.39	21.37	21.30	
20	16QAM	50	50	21.36	21.32	21.26	
20	16QAM	100	0	21.37	21.35	21.31	
20	64QAM	1	0	21.69	21.64	21.62	22
20	64QAM	1	49	21.53	21.53	21.47	
20	64QAM	1	99	21.41	21.38	21.26	
20	64QAM	50	0	20.44	20.40	20.29	21
20	64QAM	50	24	20.34	20.36	20.25	
20	64QAM	50	50	20.36	20.32	20.23	
20	64QAM	100	0	20.36	20.35	20.26	
20	256QAM	1	0	18.13	18.28	18.27	19
20	256QAM	1	49	18.03	18.24	18.18	
20	256QAM	1	99	18.10	18.12	18.15	
20	256QAM	50	0	18.02	18.04	18.04	19
20	256QAM	50	24	17.83	17.93	17.95	
20	256QAM	50	50	18.01	17.89	17.86	
20	256QAM	100	0	18.00	17.97	17.91	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	23.28	23.26	23.19	24
15	QPSK	1	37	23.20	23.32	23.22	
15	QPSK	1	74	23.25	23.22	23.08	
15	QPSK	36	0	22.28	22.32	22.29	23
15	QPSK	36	20	22.28	22.31	22.28	



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15	QPSK	36	39	22.25	22.22	22.10	
15	QPSK	75	0	22.35	22.23	22.25	
15	16QAM	1	0	22.60	22.62	22.59	
15	16QAM	1	37	22.53	22.57	22.44	23
15	16QAM	1	74	22.47	22.48	22.38	
15	16QAM	36	0	21.24	21.35	21.25	
15	16QAM	36	20	21.37	21.27	21.23	22
15	16QAM	36	39	21.35	21.24	21.19	
15	16QAM	75	0	21.29	21.31	21.23	
15	64QAM	1	0	21.60	21.63	21.52	22
15	64QAM	1	37	21.43	21.49	21.42	
15	64QAM	1	74	21.32	21.31	21.17	
15	64QAM	36	0	20.42	20.34	20.20	21
15	64QAM	36	20	20.31	20.28	20.15	
15	64QAM	36	39	20.30	20.31	20.15	
15	64QAM	75	0	20.35	20.34	20.25	19
15	256QAM	1	0	18.04	18.26	18.23	
15	256QAM	1	37	17.98	18.23	18.10	
15	256QAM	1	74	18.09	18.07	18.13	19
15	256QAM	36	0	17.95	17.97	18.04	
15	256QAM	36	20	17.76	17.92	17.92	
15	256QAM	36	39	17.95	17.86	17.80	
15	256QAM	75	0	17.91	17.87	17.86	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	23.31	23.25	23.24	24
10	QPSK	1	25	23.27	23.28	23.23	
10	QPSK	1	49	23.28	23.22	23.10	
10	QPSK	25	0	22.30	22.31	22.22	23
10	QPSK	25	12	22.26	22.26	22.27	
10	QPSK	25	25	22.24	22.19	22.14	
10	QPSK	50	0	22.37	22.27	22.23	23
10	16QAM	1	0	22.70	22.65	22.54	
10	16QAM	1	25	22.52	22.50	22.45	
10	16QAM	1	49	22.52	22.45	22.47	22
10	16QAM	25	0	21.23	21.29	21.25	
10	16QAM	25	12	21.39	21.33	21.28	
10	16QAM	25	25	21.33	21.32	21.19	22
10	16QAM	50	0	21.28	21.31	21.29	
10	64QAM	1	0	21.64	21.58	21.52	
10	64QAM	1	25	21.49	21.52	21.40	21
10	64QAM	1	49	21.31	21.34	21.20	
10	64QAM	25	0	20.43	20.31	20.19	
10	64QAM	25	12	20.31	20.26	20.21	19
10	64QAM	25	25	20.33	20.23	20.21	
10	64QAM	50	0	20.27	20.31	20.17	
10	256QAM	1	0	18.08	18.24	18.18	19
10	256QAM	1	25	18.02	18.16	18.11	
10	256QAM	1	49	18.02	18.11	18.14	
10	256QAM	25	0	18.02	17.95	17.98	19
10	256QAM	25	12	17.78	17.87	17.92	
10	256QAM	25	25	17.97	17.80	17.79	
10	256QAM	50	0	17.97	17.95	17.87	
Channel				19975	20175	20375	
Frequency (MHz)				1712.5	1732.5	1752.5	Tune-up limit (dBm)
5	QPSK	1	0	23.33	23.26	23.27	24



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5	QPSK	1	12	23.21	23.25	23.17	
5	QPSK	1	24	23.26	23.25	23.09	
5	QPSK	12	0	22.34	22.33	22.29	
5	QPSK	12	7	22.34	22.31	22.24	23
5	QPSK	12	13	22.24	22.19	22.11	
5	QPSK	25	0	22.31	22.22	22.18	
5	16QAM	1	0	22.67	22.64	22.58	23
5	16QAM	1	12	22.56	22.59	22.46	
5	16QAM	1	24	22.53	22.46	22.44	
5	16QAM	12	0	21.25	21.27	21.30	22
5	16QAM	12	7	21.30	21.37	21.25	
5	16QAM	12	13	21.29	21.24	21.21	
5	16QAM	25	0	21.37	21.35	21.22	22
5	64QAM	1	0	21.60	21.62	21.62	
5	64QAM	1	12	21.48	21.43	21.47	
5	64QAM	1	24	21.38	21.33	21.26	21
5	64QAM	12	0	20.37	20.39	20.24	
5	64QAM	12	7	20.29	20.33	20.18	
5	64QAM	12	13	20.31	20.28	20.16	19
5	64QAM	25	0	20.27	20.29	20.25	
5	256QAM	1	0	18.05	18.27	18.22	
5	256QAM	1	12	17.97	18.18	18.13	19
5	256QAM	1	24	18.07	18.07	18.05	
5	256QAM	12	0	17.94	18.00	17.99	
5	256QAM	12	7	17.76	17.88	17.85	19
5	256QAM	12	13	17.92	17.88	17.78	
5	256QAM	25	0	17.97	17.97	17.90	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	23.26	23.19	23.27	24
3	QPSK	1	8	23.29	23.26	23.22	
3	QPSK	1	14	23.23	23.23	23.13	
3	QPSK	8	0	22.32	22.33	22.22	23
3	QPSK	8	4	22.29	22.33	22.26	
3	QPSK	8	7	22.18	22.17	22.13	
3	QPSK	15	0	22.34	22.29	22.18	23
3	16QAM	1	0	22.70	22.66	22.58	
3	16QAM	1	8	22.59	22.52	22.50	
3	16QAM	1	14	22.52	22.50	22.46	22
3	16QAM	8	0	21.24	21.32	21.22	
3	16QAM	8	4	21.30	21.32	21.28	
3	16QAM	8	7	21.29	21.30	21.24	22
3	16QAM	15	0	21.29	21.33	21.24	
3	64QAM	1	0	21.65	21.63	21.53	
3	64QAM	1	8	21.52	21.47	21.42	22
3	64QAM	1	14	21.35	21.35	21.16	
3	64QAM	8	0	20.39	20.40	20.27	21
3	64QAM	8	4	20.32	20.34	20.21	
3	64QAM	8	7	20.31	20.29	20.21	
3	64QAM	15	0	20.31	20.34	20.22	19
3	256QAM	1	0	18.13	18.27	18.19	
3	256QAM	1	8	17.98	18.24	18.10	
3	256QAM	1	14	18.08	18.11	18.06	19
3	256QAM	8	0	17.98	18.00	18.01	
3	256QAM	8	4	17.79	17.84	17.93	
3	256QAM	8	7	17.96	17.84	17.81	



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3	256QAM	15	0	17.99	17.90	17.83	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	23.25	23.23	23.26	24
1.4	QPSK	1	3	23.28	23.23	23.14	
1.4	QPSK	1	5	23.24	23.26	23.10	
1.4	QPSK	3	0	23.30	23.28	23.23	
1.4	QPSK	3	1	23.25	23.33	23.14	
1.4	QPSK	3	3	23.27	23.18	23.08	
1.4	QPSK	6	0	22.29	22.24	22.24	23
1.4	16QAM	1	0	22.69	22.70	22.55	23
1.4	16QAM	1	3	22.60	22.55	22.49	
1.4	16QAM	1	5	22.49	22.50	22.41	
1.4	16QAM	3	0	22.65	22.65	22.62	
1.4	16QAM	3	1	22.50	22.52	22.48	
1.4	16QAM	3	3	22.50	22.48	22.45	
1.4	16QAM	6	0	21.26	21.25	21.23	22
1.4	64QAM	1	0	21.62	21.55	21.54	22
1.4	64QAM	1	3	21.47	21.51	21.41	
1.4	64QAM	1	5	21.38	21.29	21.23	
1.4	64QAM	3	0	21.63	21.55	21.56	
1.4	64QAM	3	1	21.48	21.44	21.41	
1.4	64QAM	3	3	21.38	21.34	21.18	
1.4	64QAM	6	0	20.38	20.33	20.21	21
1.4	256QAM	1	0	18.03	18.20	18.21	19
1.4	256QAM	1	3	17.96	18.17	18.18	
1.4	256QAM	1	5	18.10	18.09	18.05	
1.4	256QAM	3	0	18.00	18.00	18.04	
1.4	256QAM	3	1	17.74	17.90	17.87	
1.4	256QAM	3	3	18.00	17.85	17.86	
1.4	256QAM	6	0	18.00	17.97	17.90	19



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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20450	20525	20600	
Frequency (MHz)				829	836.5	844	
10	QPSK	1	0	23.50	23.49	23.67	24
10	QPSK	1	25	23.60	23.62	23.63	
10	QPSK	1	49	23.65	23.64	23.65	
10	QPSK	25	0	22.55	22.62	22.79	23
10	QPSK	25	12	22.62	22.67	22.78	
10	QPSK	25	25	22.69	22.75	22.87	
10	QPSK	50	0	22.59	22.64	22.77	23
10	16QAM	1	0	22.84	22.85	22.96	
10	16QAM	1	25	22.98	23.00	22.97	
10	16QAM	1	49	22.96	22.97	22.95	22
10	16QAM	25	0	21.62	21.61	21.78	
10	16QAM	25	12	21.68	21.70	21.88	
10	16QAM	25	25	21.75	21.75	21.92	22
10	16QAM	50	0	21.62	21.64	21.76	
10	64QAM	1	0	21.68	21.76	21.86	22
10	64QAM	1	25	21.95	21.97	21.96	
10	64QAM	1	49	21.88	21.96	21.95	
10	64QAM	25	0	20.71	20.72	20.81	21
10	64QAM	25	12	20.72	20.75	20.93	
10	64QAM	25	25	20.86	20.85	20.95	
10	64QAM	50	0	20.71	20.75	20.84	19
10	256QAM	1	0	18.82	18.80	18.96	
10	256QAM	1	25	18.63	18.65	18.77	
10	256QAM	1	49	18.82	18.76	18.86	19
10	256QAM	25	0	18.76	18.72	18.77	
10	256QAM	25	12	18.67	18.72	18.66	
10	256QAM	25	25	18.62	18.53	18.60	19
10	256QAM	50	0	18.59	18.66	18.74	
Channel				20425	20525	20625	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	23.47	23.42	23.66	24
5	QPSK	1	12	23.50	23.57	23.57	
5	QPSK	1	24	23.63	23.55	23.63	
5	QPSK	12	0	22.52	22.59	22.79	23
5	QPSK	12	7	22.61	22.60	22.74	
5	QPSK	12	13	22.63	22.71	22.79	
5	QPSK	25	0	22.54	22.58	22.73	23
5	16QAM	1	0	22.75	22.81	22.92	
5	16QAM	1	12	22.88	22.91	22.95	
5	16QAM	1	24	22.92	22.89	22.87	22
5	16QAM	12	0	21.52	21.54	21.77	
5	16QAM	12	7	21.60	21.62	21.79	
5	16QAM	12	13	21.70	21.73	21.92	22
5	16QAM	25	0	21.60	21.54	21.76	
5	64QAM	1	0	21.61	21.69	21.78	
5	64QAM	1	12	21.92	21.91	21.96	22
5	64QAM	1	24	21.83	21.94	21.95	
5	64QAM	12	0	20.64	20.70	20.71	21
5	64QAM	12	7	20.70	20.71	20.92	
5	64QAM	12	13	20.78	20.84	20.91	
5	64QAM	25	0	20.70	20.65	20.74	



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5	256QAM	1	0	18.80	18.73	18.86	19
5	256QAM	1	12	18.61	18.59	18.71	
5	256QAM	1	24	18.76	18.76	18.77	
5	256QAM	12	0	18.67	18.70	18.74	19
5	256QAM	12	7	18.67	18.72	18.64	
5	256QAM	12	13	18.53	18.44	18.55	
5	256QAM	25	0	18.53	18.64	18.71	
Channel				20415	20525	20635	Tune-up limit (dBm)
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	23.44	23.40	23.61	24
3	QPSK	1	8	23.51	23.61	23.62	
3	QPSK	1	14	23.58	23.59	23.58	
3	QPSK	8	0	22.49	22.57	22.69	23
3	QPSK	8	4	22.53	22.61	22.72	
3	QPSK	8	7	22.67	22.70	22.83	
3	QPSK	15	0	22.56	22.57	22.72	
3	16QAM	1	0	22.80	22.85	22.92	23
3	16QAM	1	8	22.95	22.96	22.88	
3	16QAM	1	14	22.92	22.95	22.92	
3	16QAM	8	0	21.56	21.55	21.74	22
3	16QAM	8	4	21.62	21.67	21.88	
3	16QAM	8	7	21.75	21.72	21.86	
3	16QAM	15	0	21.62	21.56	21.72	
3	64QAM	1	0	21.66	21.69	21.84	22
3	64QAM	1	8	21.95	21.95	21.89	
3	64QAM	1	14	21.85	21.86	21.87	
3	64QAM	8	0	20.62	20.62	20.77	21
3	64QAM	8	4	20.67	20.67	20.88	
3	64QAM	8	7	20.80	20.76	20.92	
3	64QAM	15	0	20.68	20.75	20.74	
3	256QAM	1	0	18.74	18.76	18.95	19
3	256QAM	1	8	18.58	18.61	18.68	
3	256QAM	1	14	18.73	18.68	18.85	
3	256QAM	8	0	18.71	18.66	18.76	19
3	256QAM	8	4	18.67	18.70	18.60	
3	256QAM	8	7	18.59	18.53	18.54	
3	256QAM	15	0	18.54	18.59	18.65	
Channel				20407	20525	20643	Tune-up limit (dBm)
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	23.46	23.39	23.67	24
1.4	QPSK	1	3	23.57	23.61	23.61	
1.4	QPSK	1	5	23.60	23.63	23.59	
1.4	QPSK	3	0	23.41	23.42	23.57	
1.4	QPSK	3	1	23.58	23.55	23.56	
1.4	QPSK	3	3	23.64	23.54	23.64	
1.4	QPSK	6	0	22.48	22.52	22.72	23
1.4	16QAM	1	0	22.74	22.82	22.95	23
1.4	16QAM	1	3	22.97	22.96	22.93	
1.4	16QAM	1	5	22.87	22.96	22.94	
1.4	16QAM	3	0	22.77	22.83	22.93	
1.4	16QAM	3	1	22.92	22.96	22.88	
1.4	16QAM	3	3	22.86	22.89	22.90	
1.4	16QAM	6	0	21.62	21.54	21.70	22
1.4	64QAM	1	0	21.63	21.67	21.78	22
1.4	64QAM	1	3	21.93	21.91	21.96	
1.4	64QAM	1	5	21.84	21.89	21.92	



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1.4	64QAM	3	0	21.64	21.72	21.85	
1.4	64QAM	3	1	21.94	21.93	21.95	
1.4	64QAM	3	3	21.79	21.96	21.85	
1.4	64QAM	6	0	20.71	20.65	20.77	21
1.4	256QAM	1	0	18.78	18.79	18.92	19
1.4	256QAM	1	3	18.62	18.55	18.70	
1.4	256QAM	1	5	18.75	18.70	18.85	
1.4	256QAM	3	0	18.69	18.72	18.77	
1.4	256QAM	3	1	18.66	18.72	18.63	
1.4	256QAM	3	3	18.55	18.51	18.55	19
1.4	256QAM	6	0	18.50	18.59	18.70	

<LTE Band 5_Ant0_DSI 3/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20450	20525	20600	
Frequency (MHz)				829	836.5	844	
10	QPSK	1	0	21.94	22.01	21.96	22.8
10	QPSK	1	25	21.79	21.88	21.84	
10	QPSK	1	49	21.72	21.76	21.75	
10	QPSK	25	0	21.89	22.00	21.90	22.8
10	QPSK	25	12	21.81	21.86	21.81	
10	QPSK	25	25	21.69	21.75	21.68	
10	QPSK	50	0	21.62	21.70	21.64	22.8
10	16QAM	1	0	21.51	21.53	21.51	
10	16QAM	1	25	21.36	21.39	21.28	
10	16QAM	1	49	21.24	21.35	21.32	22
10	16QAM	25	0	21.25	21.28	21.25	
10	16QAM	25	12	21.13	21.12	21.03	
10	16QAM	25	25	21.04	21.15	21.03	22
10	16QAM	50	0	21.28	21.31	21.28	
10	64QAM	1	0	21.09	21.11	20.98	22
10	64QAM	1	25	20.97	21.05	21.03	
10	64QAM	1	49	20.96	21.07	21.04	
10	64QAM	25	0	20.00	20.04	20.01	21
10	64QAM	25	12	19.78	19.79	19.72	
10	64QAM	25	25	19.71	19.74	19.68	
10	64QAM	50	0	19.61	19.70	19.62	19
10	256QAM	1	0	18.18	18.18	18.12	
10	256QAM	1	25	17.88	17.95	17.92	
10	256QAM	1	49	17.85	17.90	17.78	19
10	256QAM	25	0	17.80	17.90	17.76	
10	256QAM	25	12	17.89	17.98	17.89	
10	256QAM	25	25	17.84	17.88	17.87	19
10	256QAM	50	0	17.76	17.89	17.75	
Channel				20425	20525	20625	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	21.75	21.79	21.69	22.8
5	QPSK	1	12	21.52	21.64	21.66	
5	QPSK	1	24	21.48	21.54	21.51	
5	QPSK	12	0	21.68	21.79	21.63	22.8
5	QPSK	12	7	21.55	21.66	21.61	
5	QPSK	12	13	21.43	21.55	21.44	
5	QPSK	25	0	21.36	21.43	21.36	22.8
5	16QAM	1	0	21.30	21.34	21.29	
5	16QAM	1	12	21.16	21.17	21.09	22.8



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5	16QAM	1	24	21.02	21.07	21.05	22
5	16QAM	12	0	21.04	21.10	20.97	
5	16QAM	12	7	20.95	20.86	20.85	
5	16QAM	12	13	20.83	20.96	20.85	
5	16QAM	25	0	21.07	21.04	21.02	22
5	64QAM	1	0	20.87	20.90	20.72	
5	64QAM	1	12	20.72	20.79	20.78	
5	64QAM	1	24	20.71	20.79	20.79	
5	64QAM	12	0	19.75	19.84	19.79	21
5	64QAM	12	7	19.57	19.61	19.49	
5	64QAM	12	13	19.43	19.50	19.48	
5	64QAM	25	0	19.39	19.42	19.40	
5	256QAM	1	0	17.95	17.98	17.85	19
5	256QAM	1	12	17.61	17.67	17.68	
5	256QAM	1	24	17.61	17.71	17.52	
5	256QAM	12	0	17.62	17.71	17.54	
5	256QAM	12	7	17.69	17.71	17.64	19
5	256QAM	12	13	17.58	17.69	17.68	
5	256QAM	25	0	17.50	17.70	17.51	
Channel				20415	20525	20635	Tune-up limit (dBm)
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	21.49	21.52	21.47	22.8
3	QPSK	1	8	21.28	21.38	21.45	
3	QPSK	1	14	21.25	21.29	21.26	
3	QPSK	8	0	21.41	21.59	21.43	22.8
3	QPSK	8	4	21.32	21.46	21.38	
3	QPSK	8	7	21.24	21.28	21.21	
3	QPSK	15	0	21.17	21.18	21.08	
3	16QAM	1	0	21.08	21.15	21.10	22.8
3	16QAM	1	8	20.90	20.90	20.82	
3	16QAM	1	14	20.84	20.80	20.81	
3	16QAM	8	0	20.80	20.91	20.71	
3	16QAM	8	4	20.68	20.64	20.62	22
3	16QAM	8	7	20.62	20.73	20.62	
3	16QAM	15	0	20.85	20.86	20.82	
3	64QAM	1	0	20.59	20.70	20.49	
3	64QAM	1	8	20.52	20.59	20.57	22
3	64QAM	1	14	20.51	20.53	20.53	
3	64QAM	8	0	19.47	19.62	19.59	
3	64QAM	8	4	19.29	19.40	19.27	
3	64QAM	8	7	19.19	19.30	19.26	21
3	64QAM	15	0	19.12	19.17	19.19	
3	256QAM	1	0	17.69	17.73	17.67	
3	256QAM	1	8	17.41	17.49	17.46	
3	256QAM	1	14	17.36	17.50	17.29	19
3	256QAM	8	0	17.44	17.48	17.29	
3	256QAM	8	4	17.48	17.43	17.37	
3	256QAM	8	7	17.37	17.43	17.44	
3	256QAM	15	0	17.31	17.52	17.26	Tune-up limit (dBm)
Channel				20407	20525	20643	
Frequency (MHz)				824.7	836.5	848.3	22.8
1.4	QPSK	1	0	21.47	21.47	21.44	
1.4	QPSK	1	3	21.22	21.33	21.46	
1.4	QPSK	1	5	21.22	21.22	21.24	
1.4	QPSK	3	0	21.33	21.61	21.40	
1.4	QPSK	3	1	21.28	21.44	21.30	



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1.4	QPSK	3	3	21.23	21.27	21.15	
1.4	QPSK	6	0	21.12	21.17	21.02	22.8
1.4	16QAM	1	0	21.20	21.33	21.26	22.8
1.4	16QAM	1	3	21.09	21.12	21.00	
1.4	16QAM	1	5	20.96	21.02	20.93	
1.4	16QAM	3	0	20.94	21.07	20.93	
1.4	16QAM	3	1	20.83	20.81	20.82	
1.4	16QAM	3	3	20.82	20.90	20.84	
1.4	16QAM	6	0	20.85	20.82	20.80	22
1.4	64QAM	1	0	20.56	20.71	20.51	22
1.4	64QAM	1	3	20.47	20.58	20.56	
1.4	64QAM	1	5	20.52	20.54	20.55	
1.4	64QAM	3	0	20.44	20.46	20.44	
1.4	64QAM	3	1	20.32	20.41	20.30	
1.4	64QAM	3	3	20.31	20.39	20.28	
1.4	64QAM	6	0	19.08	19.10	19.13	21
1.4	256QAM	1	0	17.71	17.72	17.66	19
1.4	256QAM	1	3	17.34	17.43	17.45	
1.4	256QAM	1	5	17.38	17.52	17.22	
1.4	256QAM	3	0	17.38	17.43	17.24	
1.4	256QAM	3	1	17.49	17.40	17.32	
1.4	256QAM	3	3	17.34	17.42	17.43	
1.4	256QAM	6	0	17.30	17.52	17.25	19

<LTE Band 13_Ant0_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23230			
Frequency (MHz)				782			
10	QPSK	1	0		23.46		24
10	QPSK	1	25		23.45		
10	QPSK	1	49		23.43		
10	QPSK	25	0		22.45		23
10	QPSK	25	12		22.48		
10	QPSK	25	25		22.52		
10	QPSK	50	0		22.58		23
10	16QAM	1	0		22.83		
10	16QAM	1	25		22.92		
10	16QAM	1	49		22.88		22
10	16QAM	25	0		21.44		
10	16QAM	25	12		21.48		
10	16QAM	25	25		21.56		22
10	16QAM	50	0		21.56		
10	64QAM	1	0		21.75		22
10	64QAM	1	25		21.89		
10	64QAM	1	49		21.80		
10	64QAM	25	0		20.47		21
10	64QAM	25	12		20.53		
10	64QAM	25	25		20.56		
10	64QAM	50	0		20.61		19
10	256QAM	1	0		18.52		
10	256QAM	1	25		18.44		
10	256QAM	1	49		18.36		19
10	256QAM	25	0		18.42		
10	256QAM	25	12		18.24		
10	256QAM	25	25		18.22		

10	256QAM	50	0		18.37		
Channel				23205	23230	23255	Tune-up limit (dBm)
Frequency (MHz)				779.5	782	784.5	
5	QPSK	1	0	23.37	23.45	23.39	24
5	QPSK	1	12	23.43	23.41	23.38	
5	QPSK	1	24	23.36	23.34	23.37	
5	QPSK	12	0	22.39	22.35	22.44	23
5	QPSK	12	7	22.41	22.45	22.46	
5	QPSK	12	13	22.50	22.45	22.51	
5	QPSK	25	0	22.55	22.48	22.57	23
5	16QAM	1	0	22.77	22.77	22.76	
5	16QAM	1	12	22.89	22.86	22.89	
5	16QAM	1	24	22.79	22.88	22.85	22
5	16QAM	12	0	21.37	21.37	21.39	
5	16QAM	12	7	21.48	21.47	21.41	
5	16QAM	12	13	21.51	21.52	21.56	22
5	16QAM	25	0	21.55	21.53	21.47	
5	64QAM	1	0	21.73	21.75	21.68	
5	64QAM	1	12	21.82	21.89	21.89	21
5	64QAM	1	24	21.75	21.72	21.79	
5	64QAM	12	0	20.46	20.45	20.40	
5	64QAM	12	7	20.48	20.51	20.44	21
5	64QAM	12	13	20.47	20.52	20.47	
5	64QAM	25	0	20.51	20.56	20.51	
5	256QAM	1	0	18.43	18.51	18.48	19
5	256QAM	1	12	18.44	18.42	18.36	
5	256QAM	1	24	18.29	18.28	18.34	
5	256QAM	12	0	18.36	18.38	18.39	19
5	256QAM	12	7	18.23	18.21	18.20	
5	256QAM	12	13	18.21	18.20	18.22	
5	256QAM	25	0	18.37	18.34	18.34	

<LTE Band 66_Ant1_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				132072	132322	132572	
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	23.46	23.39	23.37	24
20	QPSK	1	49	23.45	23.35	23.35	
20	QPSK	1	99	23.32	23.32	23.29	
20	QPSK	50	0	22.44	22.40	22.35	23
20	QPSK	50	24	22.45	22.40	22.36	
20	QPSK	50	50	22.47	22.44	22.38	
20	QPSK	100	0	22.40	22.39	22.32	23
20	16QAM	1	0	22.67	22.64	22.57	
20	16QAM	1	49	22.82	22.84	22.80	
20	16QAM	1	99	22.66	22.65	22.64	22
20	16QAM	50	0	21.41	21.41	21.38	
20	16QAM	50	24	21.40	21.44	21.38	
20	16QAM	50	50	21.49	21.47	21.47	22
20	16QAM	100	0	21.43	21.40	21.33	
20	64QAM	1	0	21.67	21.67	21.61	
20	64QAM	1	49	21.69	21.63	21.65	22
20	64QAM	1	99	21.67	21.64	21.63	
20	64QAM	50	0	20.43	20.43	20.44	21
20	64QAM	50	24	20.39	20.42	20.41	



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20	64QAM	50	50	20.48	20.42	20.40	
20	64QAM	100	0	20.42	20.41	20.34	
20	256QAM	1	0	18.17	18.18	18.11	
20	256QAM	1	49	18.14	18.03	17.93	19
20	256QAM	1	99	18.06	18.00	17.97	
20	256QAM	50	0	18.07	18.02	18.10	
20	256QAM	50	24	18.05	17.87	18.00	19
20	256QAM	50	50	18.06	17.87	17.92	
20	256QAM	100	0	17.93	17.99	18.05	
Channel				132047	132322	132597	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	23.44	23.30	23.34	24
15	QPSK	1	37	23.41	23.40	23.34	
15	QPSK	1	74	23.22	23.31	23.19	
15	QPSK	36	0	22.44	22.35	22.35	23
15	QPSK	36	20	22.40	22.35	22.30	
15	QPSK	36	39	22.37	22.42	22.31	
15	QPSK	75	0	22.36	22.36	22.31	23
15	16QAM	1	0	22.59	22.59	22.51	
15	16QAM	1	37	22.76	22.80	22.75	
15	16QAM	1	74	22.66	22.62	22.58	22
15	16QAM	36	0	21.37	21.34	21.36	
15	16QAM	36	20	21.30	21.38	21.28	
15	16QAM	36	39	21.47	21.43	21.39	22
15	16QAM	75	0	21.37	21.35	21.25	
15	64QAM	1	0	21.65	21.57	21.58	22
15	64QAM	1	37	21.60	21.55	21.56	
15	64QAM	1	74	21.67	21.57	21.60	
15	64QAM	36	0	20.40	20.43	20.41	21
15	64QAM	36	20	20.36	20.36	20.36	
15	64QAM	36	39	20.43	20.36	20.37	
15	64QAM	75	0	20.39	20.36	20.30	19
15	256QAM	1	0	18.16	18.12	18.02	
15	256QAM	1	37	18.07	17.97	17.90	
15	256QAM	1	74	18.03	17.96	17.87	19
15	256QAM	36	0	18.04	17.96	18.09	
15	256QAM	36	20	18.04	17.83	18.00	
15	256QAM	36	39	18.00	17.85	17.87	19
15	256QAM	75	0	17.92	17.90	17.99	
Channel				132022	132322	132622	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	23.44	23.33	23.35	24
10	QPSK	1	25	23.37	23.32	23.32	
10	QPSK	1	49	23.32	23.23	23.27	
10	QPSK	25	0	22.41	22.38	22.30	23
10	QPSK	25	12	22.40	22.33	22.28	
10	QPSK	25	25	22.34	22.42	22.31	
10	QPSK	50	0	22.36	22.34	22.32	23
10	16QAM	1	0	22.62	22.60	22.52	
10	16QAM	1	25	22.76	22.84	22.73	
10	16QAM	1	49	22.62	22.59	22.63	22
10	16QAM	25	0	21.39	21.31	21.31	
10	16QAM	25	12	21.37	21.40	21.38	
10	16QAM	25	25	21.40	21.46	21.38	22
10	16QAM	50	0	21.43	21.32	21.23	
10	64QAM	1	0	21.61	21.61	21.53	



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10	64QAM	1	25	21.59	21.60	21.56	
10	64QAM	1	49	21.59	21.58	21.57	
10	64QAM	25	0	20.36	20.41	20.37	
10	64QAM	25	12	20.37	20.35	20.32	21
10	64QAM	25	25	20.44	20.39	20.36	
10	64QAM	50	0	20.37	20.32	20.34	
10	256QAM	1	0	18.12	18.10	18.05	19
10	256QAM	1	25	18.09	18.01	17.88	
10	256QAM	1	49	18.06	17.95	17.88	
10	256QAM	25	0	17.99	17.92	18.05	19
10	256QAM	25	12	18.04	17.87	18.00	
10	256QAM	25	25	17.99	17.85	17.87	
10	256QAM	50	0	17.88	17.94	18.05	
Channel				131997	132322	132647	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	23.44	23.27	23.31	24
5	QPSK	1	12	23.41	23.38	23.25	
5	QPSK	1	24	23.26	23.23	23.28	
5	QPSK	12	0	22.39	22.32	22.30	23
5	QPSK	12	7	22.45	22.36	22.30	
5	QPSK	12	13	22.44	22.37	22.35	
5	QPSK	25	0	22.31	22.29	22.29	
5	16QAM	1	0	22.58	22.59	22.55	23
5	16QAM	1	12	22.73	22.83	22.71	
5	16QAM	1	24	22.61	22.63	22.61	
5	16QAM	12	0	21.34	21.39	21.36	22
5	16QAM	12	7	21.38	21.35	21.32	
5	16QAM	12	13	21.48	21.44	21.42	
5	16QAM	25	0	21.39	21.34	21.31	
5	64QAM	1	0	21.58	21.63	21.56	22
5	64QAM	1	12	21.62	21.63	21.56	
5	64QAM	1	24	21.61	21.62	21.53	
5	64QAM	12	0	20.33	20.43	20.43	21
5	64QAM	12	7	20.35	20.36	20.34	
5	64QAM	12	13	20.44	20.35	20.39	
5	64QAM	25	0	20.37	20.37	20.27	
5	256QAM	1	0	18.16	18.12	18.01	19
5	256QAM	1	12	18.09	17.95	17.85	
5	256QAM	1	24	18.00	17.95	17.92	
5	256QAM	12	0	17.97	18.02	18.04	19
5	256QAM	12	7	17.99	17.83	18.00	
5	256QAM	12	13	18.04	17.79	17.88	
5	256QAM	25	0	17.92	17.89	18.04	
Channel				131987	132322	132657	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	23.41	23.28	23.29	24
3	QPSK	1	8	23.42	23.32	23.28	
3	QPSK	1	14	23.24	23.30	23.27	
3	QPSK	8	0	22.44	22.36	22.31	23
3	QPSK	8	4	22.37	22.39	22.35	
3	QPSK	8	7	22.43	22.43	22.31	
3	QPSK	15	0	22.31	22.36	22.30	
3	16QAM	1	0	22.63	22.62	22.56	23
3	16QAM	1	8	22.77	22.83	22.78	
3	16QAM	1	14	22.66	22.61	22.59	
3	16QAM	8	0	21.40	21.39	21.28	22

3	16QAM	8	4	21.31	21.44	21.35	
3	16QAM	8	7	21.46	21.40	21.42	
3	16QAM	15	0	21.43	21.33	21.32	
3	64QAM	1	0	21.67	21.64	21.61	22
3	64QAM	1	8	21.60	21.55	21.63	
3	64QAM	1	14	21.63	21.59	21.55	
3	64QAM	8	0	20.40	20.38	20.40	21
3	64QAM	8	4	20.31	20.40	20.31	
3	64QAM	8	7	20.38	20.40	20.37	
3	64QAM	15	0	20.35	20.35	20.33	19
3	256QAM	1	0	18.08	18.09	18.01	
3	256QAM	1	8	18.08	17.93	17.86	
3	256QAM	1	14	18.00	17.92	17.97	19
3	256QAM	8	0	18.05	17.97	18.00	
3	256QAM	8	4	17.95	17.87	17.98	
3	256QAM	8	7	18.06	17.84	17.88	19
3	256QAM	15	0	17.85	17.91	18.05	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	23.39	23.35	23.34	24
1.4	QPSK	1	3	23.43	23.34	23.35	
1.4	QPSK	1	5	23.31	23.27	23.28	
1.4	QPSK	3	0	23.38	23.32	23.36	
1.4	QPSK	3	1	23.45	23.34	23.29	
1.4	QPSK	3	3	23.32	23.30	23.29	
1.4	QPSK	6	0	22.41	22.34	22.30	23
1.4	16QAM	1	0	22.62	22.56	22.48	23
1.4	16QAM	1	3	22.72	22.80	22.73	
1.4	16QAM	1	5	22.63	22.55	22.55	
1.4	16QAM	3	0	22.59	22.59	22.56	
1.4	16QAM	3	1	22.76	22.75	22.77	
1.4	16QAM	3	3	22.60	22.63	22.61	
1.4	16QAM	6	0	21.36	21.32	21.36	22
1.4	64QAM	1	0	21.65	21.66	21.60	22
1.4	64QAM	1	3	21.65	21.61	21.64	
1.4	64QAM	1	5	21.59	21.61	21.61	
1.4	64QAM	3	0	21.59	21.65	21.54	
1.4	64QAM	3	1	21.60	21.61	21.61	
1.4	64QAM	3	3	21.59	21.62	21.60	
1.4	64QAM	6	0	20.39	20.36	20.38	21
1.4	256QAM	1	0	18.17	18.13	18.06	19
1.4	256QAM	1	3	18.06	17.99	17.89	
1.4	256QAM	1	5	18.00	17.90	17.96	
1.4	256QAM	3	0	18.03	17.93	18.06	
1.4	256QAM	3	1	18.04	17.79	17.95	
1.4	256QAM	3	3	18.04	17.78	17.84	
1.4	256QAM	6	0	17.91	17.92	18.00	19



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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				132072	132322	132572	
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	15.61	15.78	15.65	16.5
20	QPSK	1	49	15.41	15.42	15.47	
20	QPSK	1	99	15.33	15.46	15.51	
20	QPSK	50	0	15.51	15.52	15.40	16.5
20	QPSK	50	24	15.41	15.41	15.30	
20	QPSK	50	50	15.24	15.33	15.23	
20	QPSK	100	0	15.38	15.45	15.29	16.5
20	16QAM	1	0	15.32	15.46	15.31	
20	16QAM	1	49	15.23	15.33	15.22	
20	16QAM	1	99	15.13	15.29	15.23	16.5
20	16QAM	50	0	15.26	15.33	15.31	
20	16QAM	50	24	15.18	15.27	15.22	
20	16QAM	50	50	15.11	15.15	15.07	16.5
20	16QAM	100	0	15.20	15.26	15.28	
20	64QAM	1	0	15.27	15.37	15.28	16.5
20	64QAM	1	49	15.18	15.21	15.28	
20	64QAM	1	99	15.10	15.17	15.06	
20	64QAM	50	0	15.20	15.32	15.20	16.5
20	64QAM	50	24	15.21	15.18	15.10	
20	64QAM	50	50	15.07	15.19	15.16	
20	64QAM	100	0	15.18	15.26	15.20	16.5
20	256QAM	1	0	15.10	15.23	15.20	
20	256QAM	1	49	15.21	15.17	15.20	
20	256QAM	1	99	15.11	15.13	15.06	16.5
20	256QAM	50	0	15.11	15.19	15.11	
20	256QAM	50	24	15.02	15.09	15.01	
20	256QAM	50	50	15.08	15.11	15.04	16.5
20	256QAM	100	0	15.02	15.14	15.03	
Channel				15.49	15.56	15.59	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	15.48	15.58	15.53	16.5
15	QPSK	1	37	15.27	15.21	15.34	
15	QPSK	1	74	15.24	15.39	15.27	
15	QPSK	36	0	15.33	15.43	15.28	16.5
15	QPSK	36	20	15.20	15.25	15.14	
15	QPSK	36	39	15.10	15.14	15.01	
15	QPSK	75	0	15.24	15.34	15.18	16.5
15	16QAM	1	0	15.19	15.32	15.15	
15	16QAM	1	37	15.04	15.26	15.03	
15	16QAM	1	74	14.94	15.09	15.06	16.5
15	16QAM	36	0	15.03	15.11	15.15	
15	16QAM	36	20	15.05	15.04	15.07	
15	16QAM	36	39	15.03	15.00	14.91	16.5
15	16QAM	75	0	15.05	15.06	15.11	
15	64QAM	1	0	15.14	15.21	15.11	
15	64QAM	1	37	15.06	15.08	15.11	16.5
15	64QAM	1	74	14.94	15.10	14.97	
15	64QAM	36	0	15.08	15.14	15.04	
15	64QAM	36	20	15.03	15.03	14.91	16.5
15	64QAM	36	39	14.89	15.03	14.98	
15	64QAM	75	0	15.03	15.04	15.08	



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15	256QAM	1	0	14.86	15.13	15.06	16.5
15	256QAM	1	37	15.04	15.04	15.01	
15	256QAM	1	74	14.88	14.88	14.95	
15	256QAM	36	0	14.96	15.07	14.98	16.5
15	256QAM	36	20	14.85	15.02	14.92	
15	256QAM	36	39	14.89	14.96	14.90	
15	256QAM	75	0	14.80	14.95	14.95	
Channel				132022	132322	132622	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	15.45	15.53	15.50	16.5
10	QPSK	1	25	15.16	15.12	15.27	
10	QPSK	1	49	15.20	15.31	15.23	
10	QPSK	25	0	15.22	15.34	15.17	16.5
10	QPSK	25	12	15.11	15.12	15.07	
10	QPSK	25	25	14.98	15.02	14.95	
10	QPSK	50	0	15.13	15.30	15.15	
10	16QAM	1	0	15.06	15.25	15.04	16.5
10	16QAM	1	25	14.98	15.22	14.90	
10	16QAM	1	49	14.88	14.97	14.94	
10	16QAM	25	0	14.93	15.02	15.04	16.5
10	16QAM	25	12	14.92	14.99	15.02	
10	16QAM	25	25	14.94	14.90	14.86	
10	16QAM	50	0	14.97	15.03	15.08	
10	64QAM	1	0	15.08	15.08	15.00	16.5
10	64QAM	1	25	14.93	14.97	15.05	
10	64QAM	1	49	14.85	15.07	14.91	
10	64QAM	25	0	14.99	15.01	14.96	16.5
10	64QAM	25	12	14.96	14.94	14.80	
10	64QAM	25	25	14.80	14.91	14.85	
10	64QAM	50	0	14.96	14.92	15.05	
10	256QAM	1	0	14.75	15.01	15.00	16.5
10	256QAM	1	25	15.01	14.93	14.94	
10	256QAM	1	49	14.81	14.84	14.86	
10	256QAM	25	0	14.91	15.02	14.85	16.5
10	256QAM	25	12	14.80	14.95	14.82	
10	256QAM	25	25	14.76	14.91	14.84	
10	256QAM	50	0	14.72	14.92	14.89	
Channel				131997	132322	132647	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	15.32	15.47	15.47	16.5
5	QPSK	1	12	15.08	15.05	15.16	
5	QPSK	1	24	15.10	15.21	15.10	
5	QPSK	12	0	15.10	15.26	15.11	16.5
5	QPSK	12	7	15.03	14.99	15.03	
5	QPSK	12	13	14.94	14.97	14.90	
5	QPSK	25	0	15.09	15.17	15.07	
5	16QAM	1	0	14.97	15.21	15.01	16.5
5	16QAM	1	12	14.90	15.16	14.78	
5	16QAM	1	24	14.85	14.93	14.86	
5	16QAM	12	0	14.83	14.91	14.94	16.5
5	16QAM	12	7	14.79	14.95	14.93	
5	16QAM	12	13	14.89	14.85	14.80	
5	16QAM	25	0	14.90	14.93	14.99	
5	64QAM	1	0	15.00	15.01	14.97	16.5
5	64QAM	1	12	14.89	14.88	15.01	
5	64QAM	1	24	14.74	14.98	14.87	



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5	64QAM	12	0	14.93	14.96	14.91	16.5
5	64QAM	12	7	14.91	14.83	14.77	
5	64QAM	12	13	14.74	14.82	14.81	
5	64QAM	25	0	14.90	14.85	15.02	
5	256QAM	1	0	14.68	14.97	14.91	16.5
5	256QAM	1	12	14.94	14.83	14.91	
5	256QAM	1	24	14.71	14.80	14.83	
5	256QAM	12	0	14.80	14.93	14.80	16.5
5	256QAM	12	7	14.68	14.87	14.72	
5	256QAM	12	13	14.71	14.82	14.74	
5	256QAM	25	0	14.60	14.79	14.76	
Channel				131987	132322	132657	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	15.25	15.40	15.36	16.5
3	QPSK	1	8	15.02	14.99	15.03	
3	QPSK	1	14	15.05	15.14	15.07	
3	QPSK	8	0	15.04	15.13	15.04	16.5
3	QPSK	8	4	14.99	14.86	14.98	
3	QPSK	8	7	14.84	14.85	14.86	
3	QPSK	15	0	14.97	15.12	15.00	
3	16QAM	1	0	14.85	15.15	14.91	16.5
3	16QAM	1	8	14.77	15.12	14.65	
3	16QAM	1	14	14.82	14.81	14.78	
3	16QAM	8	0	14.76	14.83	14.90	16.5
3	16QAM	8	4	14.74	14.85	14.89	
3	16QAM	8	7	14.79	14.73	14.71	
3	16QAM	15	0	14.81	14.85	14.88	
3	64QAM	1	0	14.88	14.95	14.88	16.5
3	64QAM	1	8	14.84	14.77	14.92	
3	64QAM	1	14	14.71	14.95	14.81	
3	64QAM	8	0	14.89	14.92	14.87	16.5
3	64QAM	8	4	14.80	14.73	14.74	
3	64QAM	8	7	14.62	14.76	14.78	
3	64QAM	15	0	14.80	14.72	14.89	
3	256QAM	1	0	14.59	14.88	14.81	16.5
3	256QAM	1	8	14.83	14.77	14.88	
3	256QAM	1	14	14.61	14.69	14.77	
3	256QAM	8	0	14.74	14.89	14.72	16.5
3	256QAM	8	4	14.65	14.80	14.64	
3	256QAM	8	7	14.59	14.76	14.66	
3	256QAM	15	0	14.55	14.67	14.69	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	15.20	15.31	15.29	16.5
1.4	QPSK	1	3	14.96	14.86	14.98	
1.4	QPSK	1	5	15.00	15.09	14.97	
1.4	QPSK	3	0	14.99	15.05	14.96	
1.4	QPSK	3	1	14.87	14.76	14.91	
1.4	QPSK	3	3	14.73	14.73	14.79	
1.4	QPSK	6	0	14.89	15.00	14.88	16.5
1.4	16QAM	1	0	14.78	15.10	14.83	16.5
1.4	16QAM	1	3	14.68	15.05	14.55	
1.4	16QAM	1	5	14.72	14.70	14.65	
1.4	16QAM	3	0	14.71	14.77	14.84	
1.4	16QAM	3	1	14.71	14.82	14.80	
1.4	16QAM	3	3	14.74	14.62	14.68	



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1.4	16QAM	6	0	14.70	14.77	14.77	16.5
1.4	64QAM	1	0	14.77	14.83	14.84	16.5
1.4	64QAM	1	3	14.76	14.68	14.86	
1.4	64QAM	1	5	14.61	14.86	14.68	
1.4	64QAM	3	0	14.80	14.89	14.80	
1.4	64QAM	3	1	14.71	14.63	14.61	
1.4	64QAM	3	3	14.50	14.65	14.74	
1.4	64QAM	6	0	14.72	14.59	14.80	16.5
1.4	256QAM	1	0	14.52	14.83	14.72	16.5
1.4	256QAM	1	3	14.75	14.73	14.78	
1.4	256QAM	1	5	14.52	14.59	14.70	
1.4	256QAM	3	0	14.68	14.83	14.68	
1.4	256QAM	3	1	14.59	14.68	14.56	
1.4	256QAM	3	3	14.54	14.73	14.57	
1.4	256QAM	6	0	14.51	14.61	14.63	16.5

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

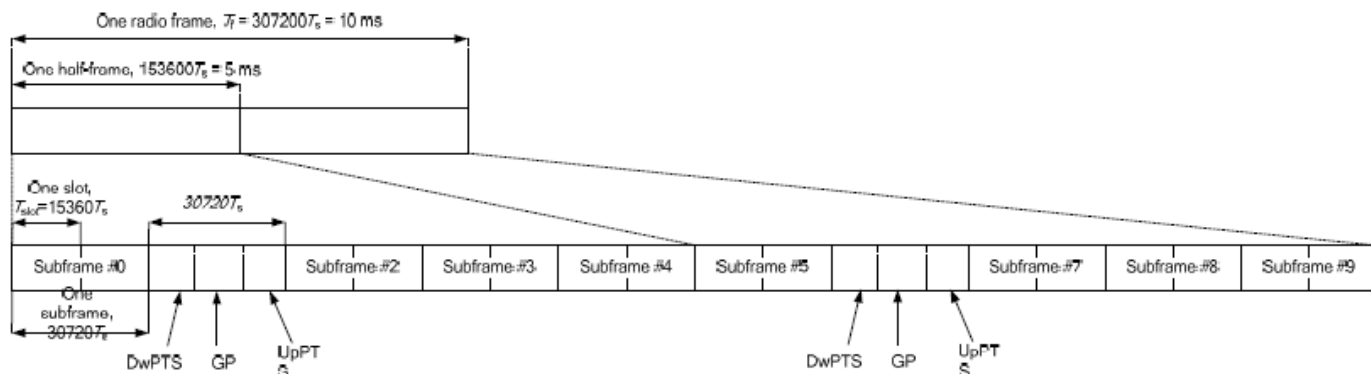


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

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



<LTE Band 48_Ant0_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				55340	55830	56150	56640	Tune-up limit (dBm)
Frequency (MHz)				3560	3609	3641	3690	
20	QPSK	1	0	23.75	23.77	23.76	23.72	24
20	QPSK	1	49	23.60	23.70	23.63	23.60	
20	QPSK	1	99	23.47	23.57	23.47	23.45	
20	QPSK	50	0	22.67	22.70	22.61	22.64	23
20	QPSK	50	24	22.72	22.76	22.75	22.72	
20	QPSK	50	50	22.67	22.78	22.66	22.68	
20	QPSK	100	0	22.64	22.74	22.65	22.64	23
20	16QAM	1	0	22.77	22.87	22.85	22.78	
20	16QAM	1	49	22.94	22.96	22.88	22.89	
20	16QAM	1	99	22.62	22.69	22.67	22.58	22
20	16QAM	50	0	21.68	21.70	21.60	21.66	
20	16QAM	50	24	21.69	21.76	21.75	21.72	
20	16QAM	50	50	21.73	21.75	21.71	21.68	22
20	16QAM	100	0	21.62	21.73	21.65	21.61	
20	64QAM	1	0	21.61	21.63	21.52	21.52	22
20	64QAM	1	49	21.51	21.60	21.56	21.50	
20	64QAM	1	99	21.47	21.49	21.47	21.45	
20	64QAM	50	0	20.59	20.68	20.67	20.60	21
20	64QAM	50	24	20.69	20.74	20.70	20.67	
20	64QAM	50	50	20.64	20.73	20.62	20.64	
20	64QAM	100	0	20.63	20.72	20.64	20.65	19
20	256QAM	1	0	18.17	18.11	17.97	18.00	
20	256QAM	1	49	18.17	18.03	17.92	17.90	
20	256QAM	1	99	18.15	18.02	17.93	17.96	19
20	256QAM	50	0	17.95	18.06	18.06	18.05	
20	256QAM	50	24	17.87	18.02	18.05	18.05	
20	256QAM	50	50	17.87	18.01	18.06	17.98	19
20	256QAM	100	0	17.87	17.97	18.04	18.05	
Channel				55315	55820	56160	56665	Tune-up limit (dBm)
Frequency (MHz)				3557.5	3608	3642	3692.5	
15	QPSK	1	0	23.75	23.72	23.71	23.71	24
15	QPSK	1	37	23.51	23.65	23.63	23.50	
15	QPSK	1	74	23.44	23.47	23.42	23.37	
15	QPSK	36	0	22.58	22.62	22.55	22.62	23
15	QPSK	36	20	22.68	22.74	22.66	22.72	
15	QPSK	36	39	22.59	22.68	22.60	22.64	
15	QPSK	75	0	22.60	22.74	22.58	22.57	23
15	16QAM	1	0	22.72	22.77	22.77	22.77	
15	16QAM	1	37	22.93	22.86	22.81	22.87	
15	16QAM	1	74	22.61	22.61	22.58	22.56	22
15	16QAM	36	0	21.66	21.61	21.58	21.58	
15	16QAM	36	20	21.63	21.72	21.72	21.68	
15	16QAM	36	39	21.70	21.73	21.68	21.68	22
15	16QAM	75	0	21.52	21.68	21.64	21.60	
15	64QAM	1	0	21.57	21.54	21.47	21.46	
15	64QAM	1	37	21.45	21.56	21.55	21.44	22
15	64QAM	1	74	21.46	21.44	21.42	21.37	
15	64QAM	36	0	20.52	20.67	20.61	20.50	
15	64QAM	36	20	20.60	20.64	20.64	20.61	21
15	64QAM	36	39	20.62	20.71	20.59	20.59	
15	64QAM	75	0	20.59	20.67	20.58	20.63	



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15	256QAM	1	0	18.10	18.07	17.87	18.00	19
15	256QAM	1	37	18.12	18.00	17.88	17.80	
15	256QAM	1	74	18.15	17.92	17.87	17.88	
15	256QAM	36	0	17.85	17.99	18.03	18.00	19
15	256QAM	36	20	17.83	17.93	17.97	17.97	
15	256QAM	36	39	17.80	17.94	17.98	17.93	
15	256QAM	75	0	17.86	17.97	18.03	18.04	
Channel				55290	55815	56165	56690	Tune-up limit (dBm)
Frequency (MHz)				3555	3607.5	3642.5	3695	
10	QPSK	1	0	23.73	23.73	23.69	23.62	24
10	QPSK	1	25	23.59	23.64	23.61	23.50	
10	QPSK	1	49	23.45	23.57	23.37	23.38	
10	QPSK	25	0	22.61	22.60	22.61	22.61	23
10	QPSK	25	12	22.67	22.67	22.67	22.65	
10	QPSK	25	25	22.58	22.75	22.58	22.58	
10	QPSK	50	0	22.54	22.65	22.59	22.58	
10	16QAM	1	0	22.71	22.84	22.84	22.68	23
10	16QAM	1	25	22.94	22.96	22.86	22.87	
10	16QAM	1	49	22.59	22.64	22.62	22.53	
10	16QAM	25	0	21.66	21.65	21.57	21.61	22
10	16QAM	25	12	21.59	21.72	21.75	21.70	
10	16QAM	25	25	21.70	21.66	21.71	21.64	
10	16QAM	50	0	21.59	21.67	21.55	21.61	
10	64QAM	1	0	21.51	21.63	21.43	21.51	22
10	64QAM	1	25	21.44	21.59	21.53	21.44	
10	64QAM	1	49	21.40	21.39	21.44	21.38	
10	64QAM	25	0	20.51	20.67	20.66	20.53	21
10	64QAM	25	12	20.69	20.69	20.63	20.65	
10	64QAM	25	25	20.63	20.68	20.60	20.55	
10	64QAM	50	0	20.53	20.68	20.60	20.63	
10	256QAM	1	0	18.07	18.03	17.92	17.94	19
10	256QAM	1	25	18.12	18.02	17.91	17.87	
10	256QAM	1	49	18.06	18.00	17.88	17.87	
10	256QAM	25	0	17.85	18.02	18.02	18.04	19
10	256QAM	25	12	17.80	18.02	18.03	17.99	
10	256QAM	25	25	17.85	18.00	18.05	17.94	
10	256QAM	50	0	17.84	17.91	18.02	17.96	
Channel				55265	55810	56170	56715	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	23.65	23.76	23.68	23.72	24
5	QPSK	1	12	23.52	23.67	23.58	23.51	
5	QPSK	1	24	23.46	23.57	23.41	23.43	
5	QPSK	12	0	22.60	22.65	22.54	22.54	23
5	QPSK	12	7	22.72	22.73	22.75	22.68	
5	QPSK	12	13	22.57	22.68	22.57	22.66	
5	QPSK	25	0	22.62	22.64	22.55	22.60	
5	16QAM	1	0	22.77	22.80	22.79	22.77	23
5	16QAM	1	12	22.89	22.96	22.79	22.81	
5	16QAM	1	24	22.52	22.59	22.65	22.53	
5	16QAM	12	0	21.68	21.68	21.52	21.61	22
5	16QAM	12	7	21.59	21.71	21.72	21.62	
5	16QAM	12	13	21.71	21.75	21.70	21.64	
5	16QAM	25	0	21.62	21.69	21.58	21.52	
5	64QAM	1	0	21.51	21.55	21.49	21.51	22
5	64QAM	1	12	21.45	21.52	21.56	21.50	
5	64QAM	1	24	21.41	21.46	21.37	21.43	

5	64QAM	12	0	20.52	20.61	20.61	20.54	21
5	64QAM	12	7	20.66	20.72	20.65	20.66	
5	64QAM	12	13	20.63	20.65	20.56	20.59	
5	64QAM	25	0	20.53	20.69	20.62	20.64	
5	256QAM	1	0	18.12	18.01	17.93	17.95	19
5	256QAM	1	12	18.17	17.93	17.82	17.84	
5	256QAM	1	24	18.15	18.02	17.92	17.92	
5	256QAM	12	0	17.94	18.03	18.06	18.01	19
5	256QAM	12	7	17.78	17.92	17.99	17.99	
5	256QAM	12	13	17.77	18.01	18.05	17.97	
5	256QAM	25	0	17.86	17.89	18.03	17.95	

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				55340	55830	56150	56640	Tune-up limit (dBm)
Frequency (MHz)				3560	3609	3641	3690	
20	QPSK	1	0	23.05	23.24	23.14	23.22	23.5
20	QPSK	1	49	22.87	23.22	23.20	23.13	
20	QPSK	1	99	22.82	22.90	22.77	22.80	
20	QPSK	50	0	22.00	22.13	21.89	22.16	22.5
20	QPSK	50	24	22.14	22.22	22.23	22.09	
20	QPSK	50	50	22.09	22.31	22.21	22.17	
20	QPSK	100	0	21.94	22.19	22.10	22.00	22.5
20	16QAM	1	0	22.22	22.35	22.20	22.13	
20	16QAM	1	49	22.36	22.40	22.24	22.32	
20	16QAM	1	99	22.15	21.97	22.22	22.11	21.5
20	16QAM	50	0	20.95	20.99	20.97	21.17	
20	16QAM	50	24	21.17	21.10	21.26	21.01	
20	16QAM	50	50	21.07	21.18	21.13	21.09	
20	16QAM	100	0	20.95	21.26	20.94	21.18	21.5
20	64QAM	1	0	21.11	20.93	21.04	20.93	
20	64QAM	1	49	20.93	21.00	20.83	20.81	
20	64QAM	1	99	20.92	21.02	20.97	20.84	20.5
20	64QAM	50	0	20.06	20.11	20.06	20.10	
20	64QAM	50	24	20.15	20.06	20.19	20.16	
20	64QAM	50	50	20.00	20.01	20.03	20.04	
20	64QAM	100	0	20.18	20.26	20.09	20.02	18.5
20	256QAM	1	0	17.47	17.64	17.50	17.39	
20	256QAM	1	49	17.46	17.48	17.49	17.36	
20	256QAM	1	99	17.71	17.57	17.47	17.34	18.5
20	256QAM	50	0	17.36	17.55	17.38	17.48	
20	256QAM	50	24	17.36	17.45	17.42	17.54	
20	256QAM	50	50	17.14	17.46	17.63	17.47	
20	256QAM	100	0	17.28	17.47	17.48	17.38	Tune-up limit (dBm)
Channel				55315	55820	56160	56665	
Frequency (MHz)				3557.5	3608	3642	3692.5	Tune-up limit (dBm)
15	QPSK	1	0	23.14	23.22	23.12	23.09	23.5
15	QPSK	1	37	23.01	23.05	23.15	22.89	
15	QPSK	1	74	22.83	23.00	22.72	22.64	
15	QPSK	36	0	21.93	21.93	22.04	21.97	22.5
15	QPSK	36	20	22.24	22.09	22.22	22.00	
15	QPSK	36	39	22.12	22.05	22.11	22.06	
15	QPSK	75	0	21.99	22.06	21.86	22.08	
15	16QAM	1	0	22.28	22.27	22.30	22.16	22.5
15	16QAM	1	37	22.23	22.31	22.22	22.16	



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15	16QAM	1	74	21.94	21.96	22.10	22.04	21.5
15	16QAM	36	0	21.00	21.10	21.03	20.87	
15	16QAM	36	20	20.91	21.11	21.06	21.14	
15	16QAM	36	39	21.27	21.20	21.22	21.02	
15	16QAM	75	0	20.82	21.25	20.92	21.17	
15	64QAM	1	0	21.01	21.03	20.76	21.03	21.5
15	64QAM	1	37	20.99	21.04	20.83	20.97	
15	64QAM	1	74	20.79	20.93	20.74	20.74	
15	64QAM	36	0	20.09	20.10	19.91	19.90	20.5
15	64QAM	36	20	20.06	20.03	20.20	19.95	
15	64QAM	36	39	20.11	20.18	20.00	19.91	
15	64QAM	75	0	19.87	20.06	19.95	20.10	
15	256QAM	1	0	17.47	17.52	17.34	17.36	18.5
15	256QAM	1	37	17.69	17.30	17.39	17.17	
15	256QAM	1	74	17.48	17.29	17.14	17.43	
15	256QAM	36	0	17.42	17.42	17.50	17.29	18.5
15	256QAM	36	20	17.15	17.20	17.32	17.42	
15	256QAM	36	39	17.21	17.27	17.49	17.44	
15	256QAM	75	0	17.24	17.29	17.44	17.41	
Channel				55290	55815	56165	56690	Tune-up limit (dBm)
Frequency (MHz)				3555	3607.5	3642.5	3695	
10	QPSK	1	0	23.12	23.09	23.22	23.14	23.5
10	QPSK	1	25	23.06	22.99	23.02	22.87	
10	QPSK	1	49	22.80	22.86	22.72	22.95	
10	QPSK	25	0	22.02	22.10	21.91	21.89	22.5
10	QPSK	25	12	22.12	22.17	22.15	22.20	
10	QPSK	25	25	22.14	22.30	21.85	22.02	
10	QPSK	50	0	22.08	22.02	21.93	21.98	
10	16QAM	1	0	22.07	22.24	22.41	22.09	22.5
10	16QAM	1	25	22.35	22.48	22.15	22.42	
10	16QAM	1	49	21.89	22.01	22.07	21.80	
10	16QAM	25	0	21.01	20.97	20.86	21.14	21.5
10	16QAM	25	12	21.06	21.20	21.28	20.97	
10	16QAM	25	25	21.00	20.94	21.03	20.92	
10	16QAM	50	0	21.16	21.20	20.87	20.95	
10	64QAM	1	0	20.92	20.91	20.75	20.90	21.5
10	64QAM	1	25	20.74	20.91	21.10	20.71	
10	64QAM	1	49	20.85	20.91	20.93	20.95	
10	64QAM	25	0	20.07	20.07	19.99	20.03	20.5
10	64QAM	25	12	20.01	20.22	19.99	20.16	
10	64QAM	25	25	20.18	20.19	19.89	19.94	
10	64QAM	50	0	20.05	20.03	20.14	19.90	
10	256QAM	1	0	17.42	17.56	17.22	17.41	18.5
10	256QAM	1	25	17.62	17.48	17.27	17.14	
10	256QAM	1	49	17.36	17.45	17.27	17.17	
10	256QAM	25	0	17.34	17.36	17.43	17.32	18.5
10	256QAM	25	12	17.28	17.33	17.32	17.54	
10	256QAM	25	25	17.26	17.37	17.47	17.45	
10	256QAM	50	0	17.16	17.42	17.46	17.45	
Channel				55265	55810	56170	56715	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	23.04	23.20	22.98	23.05	23.5
5	QPSK	1	12	22.97	23.19	22.87	22.99	
5	QPSK	1	24	22.74	22.98	22.97	22.78	
5	QPSK	12	0	21.90	22.12	22.04	22.10	22.5
5	QPSK	12	7	22.16	22.00	22.03	22.09	



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5	QPSK	12	13	22.10	22.06	22.01	22.09	22.5
5	QPSK	25	0	21.95	22.13	22.00	22.11	
5	16QAM	1	0	22.31	22.26	22.11	22.15	
5	16QAM	1	12	22.43	22.46	22.36	22.34	21.5
5	16QAM	1	24	21.79	21.99	21.98	21.87	
5	16QAM	12	0	21.20	21.20	20.95	21.15	
5	16QAM	12	7	20.99	21.09	21.23	21.11	21.5
5	16QAM	12	13	21.12	21.10	21.27	21.17	
5	16QAM	25	0	21.03	21.26	20.85	20.86	
5	64QAM	1	0	21.02	21.05	21.03	20.84	21.5
5	64QAM	1	12	20.94	20.79	20.96	20.95	
5	64QAM	1	24	20.95	20.73	20.83	20.87	
5	64QAM	12	0	19.84	20.03	19.98	19.90	20.5
5	64QAM	12	7	19.98	20.26	20.05	20.09	
5	64QAM	12	13	20.10	20.02	19.87	19.98	
5	64QAM	25	0	19.90	20.20	19.95	19.91	18.5
5	256QAM	1	0	17.44	17.48	17.47	17.37	
5	256QAM	1	12	17.45	17.44	17.29	17.21	
5	256QAM	1	24	17.63	17.50	17.31	17.21	18.5
5	256QAM	12	0	17.33	17.41	17.61	17.37	
5	256QAM	12	7	17.10	17.43	17.26	17.26	
5	256QAM	12	13	17.29	17.39	17.57	17.54	18.5
5	256QAM	25	0	17.41	17.34	17.45	17.37	

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				55340	55830	56150	56640	
Frequency (MHz)				3560	3609	3641	3690	
20	QPSK	1	0	22.23	22.47	22.60	22.75	24
20	QPSK	1	49	22.20	22.35	22.50	22.68	
20	QPSK	1	99	22.18	22.36	22.47	22.67	
20	QPSK	50	0	21.14	21.33	21.54	21.56	23
20	QPSK	50	24	21.12	21.32	21.47	21.55	
20	QPSK	50	50	21.02	21.20	21.47	21.57	
20	QPSK	100	0	21.11	21.33	21.56	21.69	
20	16QAM	1	0	21.37	21.61	21.79	21.97	23
20	16QAM	1	49	21.42	21.61	21.76	21.93	
20	16QAM	1	99	21.30	21.57	21.73	21.86	
20	16QAM	50	0	20.09	20.40	20.50	20.68	22
20	16QAM	50	24	20.01	20.27	20.49	20.59	
20	16QAM	50	50	19.98	20.26	20.38	20.56	
20	16QAM	100	0	20.08	20.35	20.53	20.64	
20	64QAM	1	0	20.47	20.65	20.87	21.03	22
20	64QAM	1	49	20.43	20.69	20.80	20.99	
20	64QAM	1	99	20.37	20.56	20.81	20.91	
20	64QAM	50	0	19.20	19.38	19.57	19.75	21
20	64QAM	50	24	19.15	19.30	19.52	19.68	
20	64QAM	50	50	19.13	19.28	19.49	19.63	
20	64QAM	100	0	19.12	19.38	19.53	19.72	
20	256QAM	1	0	17.34	17.50	17.73	17.86	19
20	256QAM	1	49	17.26	17.55	17.74	17.85	
20	256QAM	1	99	17.28	17.45	17.66	17.83	
20	256QAM	50	0	17.20	17.40	17.64	17.74	19
20	256QAM	50	24	17.09	17.30	17.49	17.68	
20	256QAM	50	50	17.06	17.30	17.49	17.62	



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20	256QAM	100	0	17.15	17.39	17.58	17.70	
Channel				55315	55820	56160	56665	Tune-up limit (dBm)
Frequency (MHz)				3557.5	3608	3642	3692.5	
15	QPSK	1	0	21.98	22.47	22.35	22.59	24
15	QPSK	1	37	22.17	22.34	22.20	22.65	
15	QPSK	1	74	22.18	22.23	22.21	22.45	
15	QPSK	36	0	21.10	21.24	21.25	21.69	23
15	QPSK	36	20	20.92	21.15	21.27	21.50	
15	QPSK	36	39	20.85	21.11	21.24	21.34	
15	QPSK	75	0	20.94	21.29	21.34	21.47	
15	16QAM	1	0	21.14	21.40	21.75	21.95	23
15	16QAM	1	37	21.39	21.36	21.65	21.89	
15	16QAM	1	74	21.01	21.52	21.65	21.69	
15	16QAM	36	0	20.01	20.12	20.28	20.48	22
15	16QAM	36	20	19.84	20.24	20.46	20.47	
15	16QAM	36	39	19.93	20.19	20.13	20.52	
15	16QAM	75	0	19.95	20.12	20.30	20.53	
15	64QAM	1	0	20.32	20.57	20.82	20.88	22
15	64QAM	1	37	20.41	20.41	20.78	20.81	
15	64QAM	1	74	20.37	20.55	20.75	20.86	
15	64QAM	36	0	19.18	19.22	19.31	19.48	21
15	64QAM	36	20	19.02	19.13	19.38	19.43	
15	64QAM	36	39	19.09	19.19	19.42	19.42	
15	64QAM	75	0	19.12	19.12	19.40	19.54	
15	256QAM	1	0	17.33	17.37	17.70	17.68	19
15	256QAM	1	37	17.00	17.34	17.48	17.55	
15	256QAM	1	74	17.01	17.32	17.48	17.71	
15	256QAM	36	0	16.93	17.21	17.61	17.70	19
15	256QAM	36	20	16.97	17.08	17.43	17.49	
15	256QAM	36	39	16.92	17.18	17.34	17.51	
15	256QAM	75	0	16.98	17.39	17.40	17.50	
Channel				55290	55815	56165	56690	Tune-up limit (dBm)
Frequency (MHz)				3555	3607.5	3642.5	3695	
10	QPSK	1	0	21.95	22.45	22.35	22.66	24
10	QPSK	1	25	21.92	22.31	22.20	22.57	
10	QPSK	1	49	22.03	22.13	22.46	22.43	
10	QPSK	25	0	21.11	21.23	21.40	21.47	23
10	QPSK	25	12	20.90	21.28	21.17	21.56	
10	QPSK	25	25	20.77	20.99	21.23	21.46	
10	QPSK	50	0	21.09	21.22	21.27	21.60	
10	16QAM	1	0	21.07	21.37	21.57	21.77	23
10	16QAM	1	25	21.23	21.57	21.64	21.73	
10	16QAM	1	49	21.07	21.53	21.51	21.56	
10	16QAM	25	0	19.98	20.37	20.22	20.66	22
10	16QAM	25	12	19.93	20.12	20.43	20.45	
10	16QAM	25	25	19.92	20.20	20.11	20.56	
10	16QAM	50	0	19.86	20.12	20.48	20.62	
10	64QAM	1	0	20.42	20.37	20.68	20.92	22
10	64QAM	1	25	20.42	20.40	20.50	20.85	
10	64QAM	1	49	20.09	20.29	20.51	20.66	
10	64QAM	25	0	19.19	19.31	19.27	19.63	21
10	64QAM	25	12	18.93	19.15	19.25	19.48	
10	64QAM	25	25	18.95	19.26	19.47	19.53	
10	64QAM	50	0	19.10	19.28	19.36	19.62	
10	256QAM	1	0	17.14	17.23	17.49	17.60	19
10	256QAM	1	25	17.19	17.43	17.63	17.63	

10	256QAM	1	49	17.11	17.22	17.49	17.81	19
10	256QAM	25	0	17.05	17.18	17.38	17.74	
10	256QAM	25	12	17.05	17.27	17.43	17.57	
10	256QAM	25	25	17.01	17.28	17.48	17.56	
10	256QAM	50	0	16.91	17.29	17.32	17.65	
Channel				55265	55810	56170	56715	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	22.06	22.27	22.43	22.48	24
5	QPSK	1	12	22.08	22.14	22.49	22.50	
5	QPSK	1	24	21.91	22.13	22.24	22.59	
5	QPSK	12	0	20.93	21.31	21.25	21.40	23
5	QPSK	12	7	20.88	21.07	21.27	21.58	
5	QPSK	12	13	20.92	21.04	21.22	21.41	
5	QPSK	25	0	21.10	21.16	21.49	21.52	
5	16QAM	1	0	21.10	21.42	21.60	21.75	23
5	16QAM	1	12	21.41	21.43	21.76	21.78	
5	16QAM	1	24	21.23	21.55	21.66	21.60	
5	16QAM	12	0	19.79	20.19	20.38	20.50	22
5	16QAM	12	7	19.91	19.97	20.45	20.54	
5	16QAM	12	13	19.92	20.16	20.13	20.38	
5	16QAM	25	0	19.93	20.32	20.53	20.60	
5	64QAM	1	0	20.45	20.36	20.71	20.98	22
5	64QAM	1	12	20.15	20.50	20.78	20.83	
5	64QAM	1	24	20.33	20.28	20.57	20.75	
5	64QAM	12	0	18.96	19.18	19.57	19.48	21
5	64QAM	12	7	19.11	19.28	19.39	19.67	
5	64QAM	12	13	18.94	19.18	19.43	19.61	
5	64QAM	25	0	18.88	19.27	19.31	19.65	
5	256QAM	1	0	17.25	17.40	17.56	17.70	19
5	256QAM	1	12	17.23	17.30	17.56	17.84	
5	256QAM	1	24	17.22	17.23	17.58	17.74	
5	256QAM	12	0	17.10	17.11	17.51	17.72	19
5	256QAM	12	7	17.07	17.09	17.25	17.52	
5	256QAM	12	13	16.80	17.09	17.33	17.35	
5	256QAM	25	0	17.02	17.34	17.49	17.40	

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				55340	55830	56150	56640	
Frequency (MHz)				3560	3609	3641	3690	
20	QPSK	1	0	17.11	17.24	17.00	16.89	17.5
20	QPSK	1	49	17.20	17.05	17.05	17.13	
20	QPSK	1	99	17.14	17.10	17.17	17.05	
20	QPSK	50	0	17.15	17.16	17.13	17.09	17.5
20	QPSK	50	24	17.11	17.07	17.11	17.05	
20	QPSK	50	50	17.03	17.06	17.10	17.06	
20	QPSK	100	0	17.07	17.14	17.12	17.03	
20	16QAM	1	0	17.18	17.15	17.13	17.03	17.5
20	16QAM	1	49	17.01	17.01	17.06	17.17	
20	16QAM	1	99	17.06	17.01	17.01	17.11	
20	16QAM	50	0	17.03	17.16	17.02	17.17	17.5
20	16QAM	50	24	17.11	17.00	17.11	17.09	
20	16QAM	50	50	17.08	17.17	17.10	17.01	
20	16QAM	100	0	17.13	17.20	17.10	17.07	
20	64QAM	1	0	17.02	17.08	17.11	17.11	17.5

20	64QAM	1	49	17.06	17.00	17.05	17.05	
20	64QAM	1	99	17.00	17.01	17.18	17.06	
20	64QAM	50	0	17.19	17.13	17.12	17.00	
20	64QAM	50	24	17.00	17.08	17.02	17.01	17.5
20	64QAM	50	50	17.13	17.07	17.07	17.11	
20	64QAM	100	0	17.10	17.13	17.20	17.00	
20	256QAM	1	0	17.19	17.07	17.13	17.15	17.5
20	256QAM	1	49	17.16	17.11	17.04	17.05	
20	256QAM	1	99	17.10	17.19	17.16	17.19	
20	256QAM	50	0	17.14	17.17	17.19	17.09	17.5
20	256QAM	50	24	17.05	17.15	17.19	17.12	
20	256QAM	50	50	17.15	17.15	17.06	17.16	
20	256QAM	100	0	17.14	17.00	17.09	17.08	
Channel				55315	55820	56160	56665	Tune-up limit (dBm)
Frequency (MHz)				3557.5	3608	3642	3692.5	
15	QPSK	1	0	17.12	17.06	17.11	17.16	17.5
15	QPSK	1	37	17.17	17.19	17.03	17.02	
15	QPSK	1	74	17.17	17.19	17.11	17.02	
15	QPSK	36	0	17.01	17.16	17.15	17.09	17.5
15	QPSK	36	20	17.03	17.18	17.11	17.05	
15	QPSK	36	39	17.06	17.07	17.03	17.03	
15	QPSK	75	0	17.03	17.03	17.04	17.08	
15	16QAM	1	0	17.02	17.19	17.03	17.12	17.5
15	16QAM	1	37	17.03	17.01	17.20	17.19	
15	16QAM	1	74	17.04	17.00	17.15	17.18	
15	16QAM	36	0	17.14	17.20	17.05	17.15	17.5
15	16QAM	36	20	17.13	17.18	17.11	17.11	
15	16QAM	36	39	17.11	17.03	17.06	17.10	
15	16QAM	75	0	17.01	17.14	17.13	17.01	
15	64QAM	1	0	17.12	17.17	17.00	17.13	17.5
15	64QAM	1	37	17.17	17.02	17.00	17.02	
15	64QAM	1	74	17.17	17.09	17.11	17.00	
15	64QAM	36	0	17.13	17.00	17.08	17.09	17.5
15	64QAM	36	20	17.16	17.08	17.10	17.16	
15	64QAM	36	39	17.12	17.02	17.04	17.04	
15	64QAM	75	0	17.08	17.05	17.03	17.09	
15	256QAM	1	0	17.13	17.08	17.16	17.05	17.5
15	256QAM	1	37	17.11	17.07	17.00	17.05	
15	256QAM	1	74	17.13	17.01	17.08	17.02	
15	256QAM	36	0	17.01	17.13	17.14	17.19	17.5
15	256QAM	36	20	17.17	17.03	17.10	17.12	
15	256QAM	36	39	17.20	17.01	17.06	17.12	
15	256QAM	75	0	17.04	17.10	17.10	17.02	
Channel				55290	55815	56165	56690	Tune-up limit (dBm)
Frequency (MHz)				3555	3607.5	3642.5	3695	
10	QPSK	1	0	17.15	17.18	17.16	17.03	17.5
10	QPSK	1	25	17.16	17.00	17.15	17.06	
10	QPSK	1	49	17.19	17.06	17.17	17.13	
10	QPSK	25	0	17.10	17.10	17.04	17.01	17.5
10	QPSK	25	12	17.00	17.12	17.05	17.09	
10	QPSK	25	25	17.03	17.19	17.01	17.06	
10	QPSK	50	0	17.06	17.02	17.20	17.12	
10	16QAM	1	0	17.19	17.19	17.06	17.00	17.5
10	16QAM	1	25	17.08	17.20	17.18	17.00	
10	16QAM	1	49	17.04	17.15	17.16	17.04	
10	16QAM	25	0	17.06	17.19	17.01	17.20	17.5



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10	16QAM	25	12	17.13	17.15	17.10	17.04	
10	16QAM	25	25	17.19	17.18	17.00	17.16	
10	16QAM	50	0	17.18	17.04	17.00	17.09	
10	64QAM	1	0	17.12	17.20	17.20	17.06	17.5
10	64QAM	1	25	17.04	17.10	17.15	17.14	
10	64QAM	1	49	17.10	17.04	17.16	17.12	
10	64QAM	25	0	17.12	17.03	17.18	17.16	17.5
10	64QAM	25	12	17.10	17.11	17.20	17.10	
10	64QAM	25	25	17.16	17.06	17.15	17.18	
10	64QAM	50	0	17.08	17.11	17.03	17.18	
10	256QAM	1	0	17.19	17.12	17.09	17.12	17.5
10	256QAM	1	25	17.15	17.08	17.16	17.12	
10	256QAM	1	49	17.13	17.15	17.14	17.00	
10	256QAM	25	0	17.15	17.03	17.03	17.19	17.5
10	256QAM	25	12	17.07	17.05	17.13	17.12	
10	256QAM	25	25	17.14	17.04	17.11	17.18	
10	256QAM	50	0	17.04	17.16	17.08	17.08	
Channel				55265	55810	56170	56715	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	17.05	17.06	17.20	17.19	17.5
5	QPSK	1	12	17.02	17.00	17.09	17.05	
5	QPSK	1	24	17.07	17.02	17.19	17.06	
5	QPSK	12	0	17.00	17.18	17.05	17.03	17.5
5	QPSK	12	7	17.01	17.01	17.01	17.05	
5	QPSK	12	13	17.00	17.09	17.08	17.16	
5	QPSK	25	0	17.15	17.17	17.01	17.10	
5	16QAM	1	0	17.11	17.13	17.07	17.04	17.5
5	16QAM	1	12	17.02	17.17	17.08	17.17	
5	16QAM	1	24	17.18	17.15	17.12	17.06	
5	16QAM	12	0	17.07	17.11	17.13	17.04	17.5
5	16QAM	12	7	17.16	17.05	17.20	17.18	
5	16QAM	12	13	17.06	17.11	17.20	17.08	
5	16QAM	25	0	17.04	17.01	17.18	17.15	
5	64QAM	1	0	17.19	17.20	17.20	17.16	17.5
5	64QAM	1	12	17.19	17.07	17.09	17.05	
5	64QAM	1	24	17.05	17.04	17.09	17.01	
5	64QAM	12	0	17.07	17.02	17.17	17.04	17.5
5	64QAM	12	7	17.05	17.06	17.16	17.03	
5	64QAM	12	13	17.02	17.09	17.15	17.16	
5	64QAM	25	0	17.09	17.04	17.17	17.08	
5	256QAM	1	0	17.16	17.18	17.07	17.02	17.5
5	256QAM	1	12	17.10	17.14	17.15	17.13	
5	256QAM	1	24	17.03	17.08	17.17	17.16	
5	256QAM	12	0	17.13	17.17	17.03	17.11	17.5
5	256QAM	12	7	17.20	17.00	17.05	17.07	
5	256QAM	12	13	17.15	17.19	17.05	17.00	
5	256QAM	25	0	17.09	17.10	17.00	17.09	

**<LTE Carrier Aggregation combinations>****General Note:**

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

FCC DL 2CA			FCC DL 3CA			FCC DL 4CA			FCC DL 5CA			FCC DL 6CA		
NO.	Combination	Covered by measurement superset	NO.	Combination	Covered by measurement superset	NO.	Combination	Covered by measurement superset	NO.	Combination	Covered by measurement superset	NO.	Combination	Covered by measurement superset
1	2A-2A	24	23	2A-2A-4A	69	68	2A-2A-4A-4A		123	2A-2A-5A-66B		156	2A-48E-66A	
2	2A-4A	24	24	2A-2A-5A	72	69	2A-2A-4A-5A		124	2A-2A-5A-66C				
3	2A-5A	32	25	2A-2A-13A	127	70	2A-2A-5B		125	2A-2A-5A-66A-66A				
4	2A-13A	26	26	2A-2A-66A	76	71	2A-2A-5A-66A	125	126	2A-2A-13A-66A-66A				
5	2A-48A	37	27	2A-4A-4A	77	72	2A-2A-13A-66A	126	127	2A-5B-66B				
6	2A-66A	27	28	2A-4A-5A	70	73	2A-2A-66B	123	128	2A-5B-66C				
7	4A-4A	28	29	2A-4A-13A		74	2A-2A-66C	124	129	2A-5B-66A-66A				
8	4A-5A	29	30	2A-5B	71	75	2A-2A-66A-66A	125	130	2A-5A-48D				
9	4A-13A	30	31	2A-5A-48A	81	76	2A-4A-4A-5A		131	2A-5A-48C-66A				
10	4A-48A	44	32	2A-5A-66A	72	77	2A-4A-5B		132	2A-13A-48D				
11	5B	31	33	2A-13A-48A	134	78	2A-5B-66A	129	133	2A-13A-48A-48C				
12	5A-5A	46	34	2A-13A-66A	89	79	2A-5A-48C	130	134	2A-13A-48C-66A				
13	5A-48A	48	35	2A-48C	138	80	2A-5A-48A-66A	131	135	2A-13A-48A-48A-66A				
14	5A-66A	51	36	2A-48A-48A	93	81	2A-5A-66B	123	136	2A-13A-66A-66B				
15	13A-48A	53	37	2A-48A-66A	80	82	2A-5A-66C	124	137	2A-48C-48C	156			
16	13A-66A	112	38	2A-66B	74	83	2A-5A-66A-66A	125	138	2A-48E	156			
17	48C	107	39	2A-66C	75	84	2A-13A-48A-48A	135	139	2A-48A-48D	156			
18	48A-48A	60	40	66A-66A	95	85	2A-13A-48A-66A	135	140	2A-48D-66A	156			
19	48A-66A	65	41	4A-4A-5A	77	86	2A-13A-66B	136	141	2A-48A-48C-66A	156			
20	66B	49	42	4A-4A-13A	96	87	2A-13A-66C		142	4A-48E				
21	66C	56	43	4A-5B	78	88	2A-13A-66A-66A	136	143	5A-48D-66A				
22	66A	41	44	4A-48C	96	89	2A-48D	140	144	13A-48C-48C				
			45	5A-5A-66A	102	90	2A-48A-48C	141	145	13A-48E				
			46	5A-48C	79	91	2A-48C-66A	140	146	13A-48A-48D				
			47	5A-48A-66A	80	92	2A-48A-48A-66A	141	147	13A-48D-66A				
			48	5A-66B	81	93	2A-66A-66B	136	148	13A-48A-48C-66A				
			49	5A-66C	82	94	2A-66A-66A-66A	136	149	48C-48D				
			50	5A-66A-66A	83	95	4A-4A-5B		150	48A-48E				
			51	13A-48C	107	96	4A-48D	142	151	48C-48C-66A	156			
			52	13A-48A-48A	106	97	5B-66B	127	152	48E-66A	156			
			53	13A-48A-66A	85	98	5B-66C	128	153	48A-48D-66A	156			
			54	13A-66B	86	99	5B-66A-66A	129	154	48A-48C-66B				
			55	13A-66C	87	100	5A-5A-66B	127	155	48A-48C-66C				
			56	13A-66A-66A	88	101	5A-5A-66C	128						
			57	48D	103	102	5A-5A-66A-66A	127						
			58	48A-48C	106	103	5A-48D	143						
			59	48A-48A-48A	113	104	5A-48C-66A	143						
			60	48C-66A	91	105	13A-48D	147						
			61	48A-48A-66A	92	106	13A-48A-48C	146						
			62	48A-66B	109	107	13A-48C-66A	147						
			63	48A-66C	110	108	13A-48A-48A-66A	148						
			64	48A-66A-66A	122	109	13A-48A-66B							
			65	66A-66B	93	110	13A-48A-66C							
			66	66A-66C		111	13A-66A-66B	136						
			67	66A-66A-66A	94	112	48C-48C	149						

						113	48E	150						
						114	48A-48D	149						
						115	48D-66A	152						
						116	48A-48C-66A	155						
						117	48C-66B	154						
						118	48C-66C	155						
						119	48C-66A-66A	154						
						120	48A-48A-66B	154						
						121	48A-48A-66C	155						
						122	48A-48A-66A-66A	155						

<Power verification when LTE Carrier Aggregation Active>

General Note:

- According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
- The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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

<Three Carrier power verification>

Configure		PCC							SCC1				SCC2				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band		2	20	1880	18900	QPSK	1	0	4	20	2132.5	2175	13	10	751	5230	23.01	23.17
Intra-Band	Non-Contiguous	66	20	1720	132072	QPSK	1	0	66	20	2190	67236	66	20	2170.2	67038	23.46	23.46

<Four Carrier power verification>

Configure	PCC							SCC1				SCC2				SCC3				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2	20	1880	18900	QPSK	1	0	2	20	1960	900	4	20	2132.5	2175	4	20	2145	2300	23.09	23.17
	2	20	1880	18900	QPSK	1	0	2	20	1960	900	4	20	2132.5	2175	5	10	881.5	2525	23.01	23.17
	2	20	1880	18900	QPSK	1	0	2	20	1960	900	5	10	881.5	2525	5	10	889	2600	23.14	23.17
	2	20	1880	18900	QPSK	1	0	4	20	2132.5	2175	4	20	2145	2300	5	10	881.5	2525	22.98	23.17
	2	20	1880	18900	QPSK	1	0	4	20	2132.5	2175	5	10	881.5	2525	5	10	889	2600	23.13	23.17
	2	20	1880	18900	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	20	2174.8	67084	23.16	23.17
	4	20	1720	20050	QPSK	1	0	4	20	2145	2300	5	10	881.5	2525	5	10	889	2600	23.27	23.34
	13	10	782	23230	QPSK	1	0	48	20	3641	56150	66	20	2155	66886	66	20	2174.8	67084	23.28	23.46
	13	10	782	23230	QPSK	1	0	48	20	3641	56150	66	20	2155	66886	66	20	2174.8	67084	23.32	23.46

<Five Carrier power verification>

Configure	PCC							SCC1				SCC2				SCC3				SCC4				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2	20	1880	18900	QPSK	1	0	2	20	1960	900	5	10	881.5	2525	66	20	2155	66886	66	20	2174.8	67084	23.12	23.17
	2	20	1880	18900	QPSK	1	0	2	20	1960	900	5	10	881.5	2525	66	20	2155	66886	66	20	2174.8	67084	23.03	23.17
	2	20	1880	18900	QPSK	1	0	2	20	1960	900	5	10	881.5	2525	66	20	2155	66886	66	20	2190	67236	23.15	23.17
	2	20	1880	18900	QPSK	1	0	2	20	1960	900	13	10	751	5230	66	20	2155	66886	66	20	2190	67236	23.14	23.17
	2	20	1880	18900	QPSK	1	0	5	10	881.5	2525	5	10	889	2600	66	20	2155	66886	66	20	2174.8	67084	23.04	23.17
	2	20	1880	18900	QPSK	1	0	5	10	881.5	2525	5	10	889	2600	66	20	2155	66886	66	20	2174.8	67084	23.10	23.17
	2	20	1880	18900	QPSK	1	0	5	10	881.5	2525	5	10	889	2600	66	20	2155	66886	66	20	2190	67236	23.13	23.17
	2	20	1880	18900	QPSK	1	0	5	10	881.5	2525	48	20	3641	56150	48	20	3621.2	55952	48	20	3601.4	55754	22.99	23.17
	2	20	1880	18900	QPSK	1	0	5	10	881.5	2525	48	20	3641	56150	48	20	3621.2	55952	66	20	2155	66886	23.09	23.17
	2	20	1880	18900	QPSK	1	0	13	10	751	5230	48	20	3641	56150	48	20	3621.2	55952	48	20	3601.4	55754	22.99	23.17
	2	20	1880	18900	QPSK	1	0	13	10	751	5230	48	20	3641	56150	48	20	3560	55340	48	20	3579.8	55538	23.09	23.17
	2	20	1880	18900	QPSK	1	0	13	10	751	5230	48	20	3641	56150	48	20	3621.2	55952	66	20	2155	66886	23.04	23.17
	2	20	1880	18900	QPSK	1	0	13	10	751	5230	48	20	3641	56150	48	20	3560	55340	66	20	2155	66886	23.11	23.17
	2	20	1880	18900	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	20	2190	67236	66	20	2170.2	67038	23.15	23.17
	4	20	1720	20050	QPSK	1	0	48	20	3641	56150	48	20	3621.2	56130.2	48	20	3601.4	55932.2	48	20	3581.6	55734.2	23.16	23.34
	5	10	844	20600	QPSK	1	0	48	20	3641	56150	48	20	3621.2	56130.2	48	20	3601.4	55932.2	66	20	2155	66886	23.59	23.67
	13	10	782	23230	QPSK	1	0	48	20	3641	56150	48	20	3621.2	56130.2	48	20	3690	56640	48	20	3670.2	56442	23.41	23.46
	13	10	782	23230	QPSK	1	0	48	20	3641	56150	48	20	3621.2	55952	48	20	3601.4	55754	48	20	3581.6	55556	23.34	23.46
	13	10	782	23230	QPSK	1	0	48	20	3641	56150	48	20	3621.2	56130.2	48	20	3601.4	55932.2	48	20	3581.6	55734.2	23.38	23.46
	13	10	782	23230	QPSK	1	0	48	20	3641	56150	48	20	3621.2	56130.2	48	20	3601.4	55932.2	66	20	2155	66886	23.42	23.46
	13	10	782	23230	QPSK	1	0	48	20	3641	56150	48	20	3560	55340	48	20	3579.8	55538	66	20	2155	66886	23.40	23.46
Intra-Band	48	20	3609	55830	QPSK	1	0	48	20	3690	56640	48	20	3670.2	56442	48	20	3650.4	56244	48	20	3630.6	56046	23.67	23.77
	48	20	3609	55830	QPSK	1	0	48	20	3690	56640	48	20	3670.2	56442	48	20	3650.4	56244	48	20	3630.6	56046	23.61	23.77

<Six Carrier power verification>

Configure	PCC							SCC1				SCC2				SCC3				SCC4				SCC5				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2	20	1880	18900	QPSK	1	0	48	20	3641	56150	48	20	3621.2	55952	48	20	3601.4	3423.2	48	20	3581.6	3225.2	66	20	2155	66886	23.10	23.17

<LTE Uplink carrier aggregation>

2CC Uplink Carrier Aggregation	
Number	Combination
1	5B
2	66B
3	66C
4	48C

<Intra-band>
General Note:

- i. The device supports intra-band uplink carrier aggregation for LTE B66/B41/B48 with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.
- ii. The device supports uplink carrier aggregation with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.
- iii. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- iv. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- v. Additional SAR measurement for LTE UL CA whit other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

<Default power>

CA_5B_Ant 0										
Combination 10MHz+10MHz (50RB+50RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20450	20549	QPSK	1	0	0	0	1	0	23.62	24
20575	20476	QPSK	1	0	1	49	2	0	23.64	24
20600	20501	QPSK	1	0	1	49	2	0	23.61	24

CA_66B_Ant 1										
Combination 15MHz+5MHz (75RB+25RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132047	132140	QPSK	1	0	0	0	1	0	23.54	24
132322	132229	QPSK	1	0	1	24	2	0	23.48	24
132597	132504	QPSK	1	0	1	24	2	0	23.52	24

CA_66C_Ant 1										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132072	132270	QPSK	1	0	0	0	1	0	23.58	24
132322	132124	QPSK	1	0	1	99	2	0	23.54	24
132572	132374	QPSK	1	0	1	99	2	0	23.55	24

CA_48C_Ant 0										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
55340	55538	QPSK	1	0	0	0	1	0	23.58	24
55830	55632	QPSK	1	0	1	99	2	0	23.54	24
56150	55952	QPSK	1	0	1	99	2	0	23.56	24
56640	56442	QPSK	1	0	1	99	2	0	23.55	24

CA_48C_Ant 1										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
55340	55538	QPSK	1	0	0	0	1	0	23.54	24
55830	55632	QPSK	1	0	1	99	2	0	23.52	24
56150	55952	QPSK	1	0	1	99	2	0	23.48	24
56640	56442	QPSK	1	0	1	99	2	0	23.5	24

<Reduced Power>

CA_5B_Ant 0										
Combination 10MHz+10MHz (50RB+50RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20450	20549	QPSK	1	0	0	0	1	0	21.57	22.8
20575	20476	QPSK	1	0	1	49	2	0	21.54	22.8
20600	20501	QPSK	1	0	1	49	2	0	21.5	22.8

CA_66B										
Combination 15MHz+5MHz (75RB+25RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132047	132140	QPSK	1	0	0	0	1	0	15.76	16.5
132322	132229	QPSK	1	0	1	24	2	0	15.71	16.5
132597	132504	QPSK	1	0	1	24	2	0	15.68	16.5

CA_66C_Ant 1										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
132072	132270	QPSK	1	0	0	0	1	0	15.76	16.5
132322	132124	QPSK	1	0	1	99	2	0	15.72	16.5
132572	132374	QPSK	1	0	1	99	2	0	15.74	16.5

CA_48C_Ant 1										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
55340	55538	QPSK	1	0	0	0	1	0	16.68	17.5
55830	55632	QPSK	1	0	1	99	2	0	16.65	17.5
56150	55952	QPSK	1	0	1	99	2	0	16.64	17.5
56640	56442	QPSK	1	0	1	99	2	0	16.62	17.5

13. 5G NR Output Power (Unit: dBm)

General Note:

1. Referencing the procedure in KDB 941225, the test procedures are outlined as below
 - a. For DFT-OFDM output power measurement, full measurement was done for Pi/2 BPSK and QPSK and for the largest supported bandwidth, repeat test for 16QAM/64QAM/256QAM under 1RB 1Offset configuration. For smaller bandwidth, measure conducted power for Pi/2 BPSK and 1RB 1Offset configuration.
 - b. According to the tune-up, CP-OFDM output power is not ½ dB higher than DFT-OFDM mode, and the reported SAR of DFT-OFDM mode reported SAR is ≤ 1.45 W/kg, SAR test and thus conducted power for CP-OFDM mode is not required.
 - c. To start SAR test for the largest channel bandwidth for Pi/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. Also do SAR test for 50% RB allocation for Pi/2 BPSK SAR testing using 1RB Pi/2 BPSK allocation procedure
 - d. For Pi/2 BPSK with 100% RB allocation, SAR test is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
 - e. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not ½ dB higher than the same configuration in Pi/2 BPSK, also reported SAR for the Pi/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - f. Smaller bandwidth output power for each RB allocation configuration for this device is not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
2. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission. And only for TDD power class2 was performed using Factory Test Mode software to establish the connection and perform SAR with 50% transmission

<3GPP 38.101 MPR for EN-DC>
Table 6.2.2-1 Maximum power reduction (MPR) for power class 3

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

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

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

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

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

<n2_Ant0_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376000	380000	
Frequency (MHz)				1860	1880	1900	
20	PI/2 BPSK	1	1	23.24	23.26	23.10	
20	PI/2 BPSK	1	53	23.11	23.17	22.98	24.0
20	PI/2 BPSK	1	104	23.06	23.17	22.96	
20	PI/2 BPSK	50	0	22.82	22.90	22.68	
20	PI/2 BPSK	50	28	23.10	23.14	22.88	24.0
20	PI/2 BPSK	50	56	22.79	22.83	22.62	23.5
20	PI/2 BPSK	100	0	22.85	22.87	22.69	
20	QPSK	1	1	23.09	23.11	22.90	
20	QPSK	1	53	23.03	23.14	22.90	24.0
20	QPSK	1	104	22.97	23.09	22.86	
20	QPSK	50	0	22.29	22.40	22.15	
20	QPSK	50	28	23.04	23.15	22.93	24.0
20	QPSK	50	56	22.26	22.35	22.15	23.0
20	QPSK	100	0	22.34	22.39	22.22	
20	16QAM	1	1	22.65	22.74	22.50	
20	64QAM	1	1	21.27	21.33	21.17	21.5
20	256QAM	1	1	18.67	18.77	18.60	19.5
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	23.17	23.19	22.94	
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	23.13	23.23	22.90	
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	23.18	23.20	22.87	

<n2_Ant1_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376000	380000	
Frequency (MHz)				1860	1880	1900	
20	PI/2 BPSK	1	1	23.13	23.15	22.95	
20	PI/2 BPSK	1	53	23.04	23.07	22.84	24.0
20	PI/2 BPSK	1	104	23.01	23.05	22.80	
20	PI/2 BPSK	50	0	22.72	22.72	22.55	
20	PI/2 BPSK	50	28	22.97	23.05	22.83	23.5
20	PI/2 BPSK	50	56	22.68	22.71	22.45	24.0
20	PI/2 BPSK	100	0	22.79	22.78	22.56	
20	QPSK	1	1	23.11	23.12	22.88	
20	QPSK	1	53	23.05	23.12	22.91	23.0
20	QPSK	1	104	22.98	23.03	22.82	
20	QPSK	50	0	22.16	22.21	21.96	
20	QPSK	50	28	23.00	23.07	22.89	23.0
20	QPSK	50	56	22.24	22.24	22.07	
20	QPSK	100	0	22.25	22.30	22.08	
20	16QAM	1	1	22.41	22.48	22.29	21.5
20	64QAM	1	1	20.99	21.06	20.80	19.5
20	256QAM	1	1	18.85	18.86	18.62	
Channel				371500	376000	380500	
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	23.07	23.04	22.68	
Channel				371000	376000	381000	
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	23.05	23.02	22.74	
Channel				370500	376000	381500	
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	23.06	23.11	22.76	



<n2_Ant1_DSI 4/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376000	380000	
Frequency (MHz)				1860	1880	1900	
20	PI/2 BPSK	1	1	14.59	14.72	14.64	
20	PI/2 BPSK	1	53	14.57	14.68	14.60	15.5
20	PI/2 BPSK	1	104	14.54	14.62	14.58	
20	PI/2 BPSK	50	0	14.57	14.67	14.60	15.5
20	PI/2 BPSK	50	28	14.62	14.69	14.60	15.5
20	PI/2 BPSK	50	56	14.52	14.56	14.49	15.5
20	PI/2 BPSK	100	0	14.51	14.55	14.53	
20	QPSK	1	1	14.48	14.46	14.45	15.5
20	QPSK	1	53	14.39	14.42	14.37	
20	QPSK	1	104	14.39	14.38	14.39	
20	QPSK	50	0	14.43	14.44	14.45	15.5
20	QPSK	50	28	14.25	14.31	14.31	15.5
20	QPSK	50	56	14.23	14.26	14.25	15.5
20	QPSK	100	0	14.30	14.33	14.27	
20	16QAM	1	1	14.18	14.20	14.18	15.5
20	64QAM	1	1	14.19	14.13	14.16	15.5
20	256QAM	1	1	14.01	14.11	14.04	15.5
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	14.36	14.42	14.31	15.5
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	14.33	14.40	14.26	15.5
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	14.31	14.34	14.28	15.5



<n5_Ant0_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				166800	167300	167800	Tune-up limit (dBm)
Frequency (MHz)				834	836.5	839	
20	PI/2 BPSK	1	1	23.51	23.52	23.60	24.0
20	PI/2 BPSK	1	53	23.45	23.50	23.49	
20	PI/2 BPSK	1	104	23.40	23.47	23.49	
20	PI/2 BPSK	50	0	23.09	23.14	23.12	23.5
20	PI/2 BPSK	50	28	23.57	23.59	23.61	24.0
20	PI/2 BPSK	50	56	23.19	23.22	23.23	23.5
20	PI/2 BPSK	100	0	23.12	23.18	23.18	
20	QPSK	1	1	23.39	23.47	23.48	24.0
20	QPSK	1	53	23.54	23.56	23.56	
20	QPSK	1	104	23.40	23.50	23.57	
20	QPSK	50	0	22.50	22.60	22.58	23.0
20	QPSK	50	28	23.51	23.57	23.59	24.0
20	QPSK	50	56	22.66	22.67	22.71	23.0
20	QPSK	100	0	22.65	22.67	22.67	
20	16QAM	1	1	22.33	22.36	22.39	23.0
20	64QAM	1	1	21.22	21.23	21.26	21.5
20	256QAM	1	1	19.10	19.17	19.20	19.5
Channel				166300	167300	168300	Tune-up limit (dBm)
Frequency (MHz)				831.5	836.5	841.5	
15	PI/2 BPSK	1	1	23.45	23.51	23.51	24.0
Channel				165800	167300	168800	Tune-up limit (dBm)
Frequency (MHz)				829	836.5	844	
10	PI/2 BPSK	1	1	23.41	23.51	23.52	24.0
Channel				165300	167300	169300	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	PI/2 BPSK	1	1	23.45	23.52	23.57	24.0



<n66_Ant1_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				345000	349000	353000	24.0
Frequency (MHz)				1725	1745	1765	
30	PI/2 BPSK	1	1	23.39	23.26	23.34	
30	PI/2 BPSK	1	80	23.27	23.24	23.23	23.5
30	PI/2 BPSK	1	158	23.31	23.29	23.27	
30	PI/2 BPSK	80	0	23.26	23.27	23.25	
30	PI/2 BPSK	80	40	23.37	23.36	23.35	24.0
30	PI/2 BPSK	80	80	23.37	23.36	23.34	
30	PI/2 BPSK	160	0	23.36	23.35	23.37	
30	QPSK	1	1	23.30	23.29	23.37	23.0
30	QPSK	1	80	23.29	23.22	23.21	
30	QPSK	1	158	23.24	23.19	23.25	
30	QPSK	80	0	22.40	22.39	22.44	24.0
30	QPSK	80	40	23.34	23.27	23.34	
30	QPSK	80	80	22.48	22.37	22.36	
30	QPSK	160	0	22.51	22.42	22.50	23.0
30	16QAM	1	1	22.64	22.60	22.63	
30	64QAM	1	1	20.88	20.77	20.83	
30	256QAM	1	1	18.95	18.94	18.97	19.5
Channel				344000	349000	354000	24.0
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	23.35	23.26	23.24	
Channel				343500	349000	354500	24.0
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	23.34	23.16	23.27	
Channel				343000	349000	355000	24.0
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	23.32	23.21	23.33	
Channel				342500	349000	355500	24.0
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	23.28	23.19	23.27	



<n66_Ant1_DSI 4/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				345000	349000	353000	17.5
Frequency (MHz)				1725	1745	1765	
30	PI/2 BPSK	1	1	16.70	16.78	16.73	
30	PI/2 BPSK	1	80	16.70	16.69	16.70	17.5
30	PI/2 BPSK	1	158	16.59	16.61	16.63	
30	PI/2 BPSK	80	0	16.60	16.70	16.64	
30	PI/2 BPSK	80	40	16.61	16.71	16.59	17.5
30	PI/2 BPSK	80	80	16.45	16.53	16.50	17.5
30	PI/2 BPSK	160	0	16.68	16.65	16.67	
30	QPSK	1	1	16.41	16.54	16.47	
30	QPSK	1	80	16.56	16.51	16.53	17.5
30	QPSK	1	158	16.38	16.42	16.45	
30	QPSK	80	0	16.53	16.52	16.55	
30	QPSK	80	40	16.35	16.44	16.38	17.5
30	QPSK	80	80	16.28	16.31	16.28	17.5
30	QPSK	160	0	16.47	16.44	16.44	
30	16QAM	1	1	16.26	16.29	16.30	
30	64QAM	1	1	16.27	16.27	16.26	17.5
30	256QAM	1	1	16.16	16.18	16.15	17.5
Channel				344000	349000	354000	17.5
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	16.40	16.41	16.28	
Channel				343500	349000	354500	17.5
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	16.24	16.32	16.21	
Channel				343000	349000	355000	17.5
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	16.16	16.30	16.11	
Channel				342500	349000	355500	17.5
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	16.14	16.23	16.10	

<n77_Ant0_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	23.28	23.49	23.30	
100	PI/2 BPSK	1	137	23.21	22.97	23.09	24.0
100	PI/2 BPSK	1	271	23.08	23.09	23.10	
100	PI/2 BPSK	135	0	22.26	22.54	22.40	
100	PI/2 BPSK	135	69	23.12	22.90	23.22	23.5
100	PI/2 BPSK	135	138	22.51	22.20	22.38	24.0
100	PI/2 BPSK	270	0	22.44	22.53	22.25	
100	QPSK	1	1	22.91	23.15	23.25	
100	QPSK	1	137	23.22	23.12	23.06	23.0
100	QPSK	1	271	23.20	23.09	22.93	
100	QPSK	135	0	22.36	22.60	22.57	
100	QPSK	135	69	23.16	23.04	22.91	23.0
100	QPSK	135	138	22.45	22.49	22.40	
100	QPSK	270	0	22.48	22.20	22.28	
100	16QAM	1	1	22.56	22.58	22.32	21.5
100	64QAM	1	1	20.54	20.47	20.44	21.0
100	256QAM	1	1	20.33	20.24	20.35	
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	23.28	23.31	23.39	
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	23.20	23.33	23.31	
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	23.21	23.21	23.24	
Channel				647668	656000	664332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	23.08	23.11	23.14	
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	23.18	23.19	23.17	

<n77_HPUE_Ant0_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	27.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	25.51	25.43	25.28	
100	PI/2 BPSK	1	137	25.06	25.32	25.31	27.0
100	PI/2 BPSK	1	271	25.16	25.33	25.40	
100	PI/2 BPSK	135	0	24.43	24.34	24.59	
100	PI/2 BPSK	135	69	25.21	25.28	25.22	27.0
100	PI/2 BPSK	135	138	24.56	24.83	24.71	27.0
100	PI/2 BPSK	270	0	24.88	24.56	24.68	
100	QPSK	1	1	25.40	25.11	25.00	
100	QPSK	1	137	25.34	25.13	25.14	27.0
100	QPSK	1	271	25.16	25.27	25.04	
100	QPSK	135	0	24.38	24.17	24.13	
100	QPSK	135	69	25.22	25.04	25.27	27.0
100	QPSK	135	138	24.26	24.53	24.21	27.0
100	QPSK	270	0	24.56	24.36	24.50	
100	16QAM	1	1	24.49	24.53	24.38	
100	64QAM	1	1	23.34	23.06	23.01	27.0
100	256QAM	1	1	23.36	23.00	23.36	27.0
Channel				649334	656000	662666	27.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	25.28	25.31	25.39	
Channel				648668	656000	663332	27.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	25.20	25.33	25.36	
Channel				648000	656000	664000	27.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	25.27	25.34	25.41	
Channel				647668	656000	664332	27.0
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	25.27	25.33	25.40	
Channel				647334	656000	664666	27.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	25.21	25.34	25.39	



<n77_Ant0_DSI 3/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	20.5
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	20.09	20.19	20.14	20.5
100	PI/2 BPSK	1	137	19.61	19.47	19.68	
100	PI/2 BPSK	1	271	19.81	19.77	19.73	
100	PI/2 BPSK	135	0	19.72	19.99	19.95	20.5
100	PI/2 BPSK	135	69	19.89	19.42	19.89	20.5
100	PI/2 BPSK	135	138	19.93	19.43	19.76	20.5
100	PI/2 BPSK	270	0	19.43	19.93	19.62	
100	QPSK	1	1	19.91	19.81	19.57	20.5
100	QPSK	1	137	19.57	19.85	20.02	
100	QPSK	1	271	19.64	19.73	19.77	
100	QPSK	135	0	19.67	19.93	19.84	19.5
100	QPSK	135	69	19.81	19.63	19.76	20.5
100	QPSK	135	138	19.72	19.91	19.58	19.5
100	QPSK	270	0	19.62	19.67	19.50	
100	16QAM	1	1	19.77	19.53	19.81	20.5
100	64QAM	1	1	19.65	19.75	19.84	20.5
100	256QAM	1	1	19.79	19.95	19.60	20.5
Channel				649334	656000	662666	20.5
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	20.00	19.60	19.68	20.5
Channel				648668	656000	663332	20.5
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	19.48	19.66	19.61	20.5
Channel				648000	656000	664000	20.5
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	19.71	19.12	19.62	20.5
Channel				647668	656000	664332	20.5
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	19.59	19.58	19.20	20.5
Channel				647334	656000	664666	20.5
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	19.15	19.50	19.72	20.5



<n77_HPUE_Ant0_DSI 3/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	23.5
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	22.84	22.91	22.92	23.5
100	PI/2 BPSK	1	137	22.42	22.34	22.72	
100	PI/2 BPSK	1	271	22.67	22.43	22.45	
100	PI/2 BPSK	135	0	22.33	22.82	22.76	23.5
100	PI/2 BPSK	135	69	22.47	22.51	22.34	23.5
100	PI/2 BPSK	135	138	22.49	22.44	22.40	23.5
100	PI/2 BPSK	270	0	22.49	22.42	22.65	
100	QPSK	1	1	22.54	22.48	22.43	23.5
100	QPSK	1	137	22.41	22.50	22.32	
100	QPSK	1	271	22.78	22.72	22.24	
100	QPSK	135	0	22.81	22.44	22.27	23.5
100	QPSK	135	69	22.44	22.55	22.63	23.5
100	QPSK	135	138	22.40	22.44	22.79	23.5
100	QPSK	270	0	22.38	22.83	22.34	
100	16QAM	1	1	22.36	22.31	22.37	23.5
100	64QAM	1	1	22.49	22.29	22.54	23.5
100	256QAM	1	1	22.63	22.43	22.60	23.5
Channel				649334	656000	662666	23.5
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	22.27	22.07	22.10	23.5
Channel				648668	656000	663332	23.5
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	22.27	21.97	22.14	23.5
Channel				648000	656000	664000	23.5
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	22.49	21.95	22.42	23.5
Channel				647668	656000	664332	23.5
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	22.46	22.44	22.15	23.5
Channel				647334	656000	664666	23.5
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	21.95	22.25	22.31	23.5

<n77_Ant1_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	24.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	23.94	23.81	23.74	24.0
100	PI/2 BPSK	1	137	23.28	22.88	23.18	
100	PI/2 BPSK	1	271	23.06	23.11	23.16	
100	PI/2 BPSK	135	0	22.16	22.56	22.37	23.5
100	PI/2 BPSK	135	69	23.09	22.97	23.32	24.0
100	PI/2 BPSK	135	138	22.56	22.27	22.39	23.5
100	PI/2 BPSK	270	0	22.35	22.47	22.21	
100	QPSK	1	1	22.82	23.22	23.29	24.0
100	QPSK	1	137	23.14	23.18	23.00	
100	QPSK	1	271	23.27	23.19	23.00	
100	QPSK	135	0	22.27	22.54	22.54	23.0
100	QPSK	135	69	23.25	23.01	23.00	24.0
100	QPSK	135	138	22.39	22.59	22.40	23.0
100	QPSK	270	0	22.54	22.29	22.35	
100	16QAM	1	1	22.50	22.64	22.27	23.0
100	64QAM	1	1	20.62	20.53	20.43	21.5
100	256QAM	1	1	20.40	20.17	20.31	21.0
Channel				649334	656000	662666	24.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	23.66	23.64	23.51	24.0
Channel				648668	656000	663332	24.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	23.54	23.24	23.26	24.0
Channel				648000	656000	664000	24.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	23.64	23.54	23.52	24.0
Channel				647668	656000	664332	24.0
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	23.58	23.24	23.52	24.0
Channel				647334	656000	664666	24.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	23.61	23.52	23.42	24.0



<n77_HPUE_Ant1_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	27.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	26.80	26.77	26.54	
100	PI/2 BPSK	1	137	26.04	26.27	26.33	26.5
100	PI/2 BPSK	1	271	26.10	26.24	26.44	
100	PI/2 BPSK	135	0	25.41	25.41	25.54	
100	PI/2 BPSK	135	69	26.27	26.26	26.30	27.0
100	PI/2 BPSK	135	138	25.64	25.89	25.73	
100	PI/2 BPSK	270	0	25.88	25.52	25.62	
100	QPSK	1	1	26.41	26.07	26.02	26.0
100	QPSK	1	137	26.32	26.10	26.15	
100	QPSK	1	271	26.23	26.21	25.96	
100	QPSK	135	0	25.40	25.08	25.21	27.0
100	QPSK	135	69	26.22	26.04	26.24	
100	QPSK	135	138	25.17	25.55	25.11	
100	QPSK	270	0	25.63	25.40	25.50	26.0
100	16QAM	1	1	25.49	25.48	25.33	
100	64QAM	1	1	24.39	23.96	24.06	
100	256QAM	1	1	24.41	24.09	24.46	24.0
Channel				649334	656000	662666	27.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	26.73	26.71	26.44	
Channel				648668	656000	663332	27.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	26.74	26.76	26.48	
Channel				648000	656000	664000	27.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	26.70	26.75	26.48	
Channel				647668	656000	664332	27.0
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	26.71	26.73	26.52	
Channel				647334	656000	664666	27.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	26.73	26.67	26.54	



<n77_Ant1_DSI 4/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	15.5
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	15.04	15.14	15.09	15.5
100	PI/2 BPSK	1	137	14.99	15.10	15.02	
100	PI/2 BPSK	1	271	14.93	15.08	15.01	
100	PI/2 BPSK	135	0	14.83	15.02	14.90	15.5
100	PI/2 BPSK	135	69	15.01	15.12	15.05	15.5
100	PI/2 BPSK	135	138	14.94	15.07	14.97	15.5
100	PI/2 BPSK	270	0	14.89	15.01	14.96	
100	QPSK	1	1	14.82	15.02	14.96	15.5
100	QPSK	1	137	14.93	15.10	15.02	
100	QPSK	1	271	14.94	15.09	14.94	
100	QPSK	135	0	13.96	14.12	13.99	14.5
100	QPSK	135	69	14.98	15.08	15.03	15.5
100	QPSK	135	138	14.02	14.15	14.02	14.5
100	QPSK	270	0	13.91	14.08	13.98	
100	16QAM	1	1	14.91	15.10	15.02	15.5
100	64QAM	1	1	14.91	15.11	15.02	15.5
100	256QAM	1	1	14.99	15.12	15.01	15.5
Channel				649334	656000	662666	15.5
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	15.00	15.13	14.99	15.5
Channel				648668	656000	663332	15.5
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	15.01	15.11	15.07	15.5
Channel				648000	656000	664000	15.5
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	14.94	15.07	15.03	15.5
Channel				647668	656000	664332	15.5
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	15.00	15.06	15.02	15.5
Channel				647334	656000	664666	15.5
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	14.96	15.11	15.02	15.5

<n77_HPUE_Ant1_DSI 4/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	18.5
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	17.81	17.84	17.69	18.5
100	PI/2 BPSK	1	137	17.70	17.82	17.62	
100	PI/2 BPSK	1	271	17.76	17.81	17.63	
100	PI/2 BPSK	135	0	17.78	17.83	17.64	18.5
100	PI/2 BPSK	135	69	17.69	17.80	17.65	18.5
100	PI/2 BPSK	135	138	17.75	17.78	17.62	18.5
100	PI/2 BPSK	270	0	17.63	17.75	17.58	
100	QPSK	1	1	17.74	17.81	17.57	18.5
100	QPSK	1	137	17.69	17.76	17.58	
100	QPSK	1	271	17.76	17.82	17.65	
100	QPSK	135	0	16.85	16.88	16.71	17.5
100	QPSK	135	69	17.69	17.72	17.47	18.5
100	QPSK	135	138	16.68	16.75	16.53	17.5
100	QPSK	270	0	16.73	16.85	16.62	
100	16QAM	1	1	17.68	17.73	17.56	18.5
100	64QAM	1	1	17.68	17.75	17.60	18.5
100	256QAM	1	1	17.78	17.82	17.62	18.5
Channel				649334	656000	662666	18.5
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	17.77	17.82	17.69	18.5
Channel				648668	656000	663332	18.5
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	17.76	17.74	17.68	18.5
Channel				648000	656000	664000	18.5
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	17.75	17.76	17.62	18.5
Channel				647668	656000	664332	18.5
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	17.78	17.75	17.63	18.5
Channel				647334	656000	664666	18.5
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	17.78	17.82	17.67	18.5

<n77_Ant2_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	24.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	23.41	23.44	22.83	24.0
100	PI/2 BPSK	1	137	23.30	23.41	22.79	
100	PI/2 BPSK	1	271	23.34	23.37	22.68	
100	PI/2 BPSK	135	0	22.88	22.97	22.34	23.5
100	PI/2 BPSK	135	69	23.30	23.35	22.72	24.0
100	PI/2 BPSK	135	138	22.70	22.82	22.21	23.5
100	PI/2 BPSK	270	0	22.85	22.92	22.29	
100	QPSK	1	1	23.33	23.37	22.74	24.0
100	QPSK	1	137	23.30	23.40	22.73	
100	QPSK	1	271	23.31	23.36	22.72	
100	QPSK	135	0	22.30	22.42	21.77	23.0
100	QPSK	135	69	23.32	23.37	22.67	24.0
100	QPSK	135	138	22.30	22.43	21.80	23.0
100	QPSK	270	0	22.33	22.38	21.72	
100	16QAM	1	1	22.36	22.42	21.73	23.0
100	64QAM	1	1	20.80	20.92	20.21	21.5
100	256QAM	1	1	20.41	20.47	19.86	21.0
Channel				649334	656000	662666	24.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	23.32	23.40	22.81	24.0
Channel				648668	656000	663332	24.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	23.36	23.34	22.80	24.0
Channel				648000	656000	664000	24.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	23.41	23.36	22.79	24.0
Channel				647668	656000	664332	24.0
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	23.32	23.44	22.82	24.0
Channel				647334	656000	664666	24.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	23.36	23.36	22.76	24.0

<n77_HPUE_Ant2_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	26.58	26.29	25.99	
100	PI/2 BPSK	1	137	26.51	26.24	25.90	27.0
100	PI/2 BPSK	1	271	26.39	26.19	25.84	
100	PI/2 BPSK	135	0	25.98	25.75	25.42	
100	PI/2 BPSK	135	69	26.47	26.23	25.87	26.5
100	PI/2 BPSK	135	138	25.99	25.73	25.43	27.0
100	PI/2 BPSK	270	0	25.99	25.70	25.36	
100	QPSK	1	1	26.42	26.23	25.84	
100	QPSK	1	137	26.42	26.19	25.82	26.0
100	QPSK	1	271	26.45	26.25	25.87	
100	QPSK	135	0	25.57	25.28	24.90	
100	QPSK	135	69	26.47	26.21	25.84	26.0
100	QPSK	135	138	25.50	25.23	24.88	
100	QPSK	270	0	25.48	25.19	24.88	
100	16QAM	1	1	25.49	25.23	24.87	24.5
100	64QAM	1	1	23.93	23.72	23.41	24.0
100	256QAM	1	1	23.47	23.24	22.90	
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	26.52	26.28	25.96	
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	26.57	26.22	25.93	
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	26.55	26.26	25.97	
Channel				647668	656000	664332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	26.54	26.29	25.92	
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	26.52	26.20	25.95	



<n77_Ant2_DSI 4/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	18.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	17.27	17.32	17.41	18.0
100	PI/2 BPSK	1	137	17.17	17.28	17.27	
100	PI/2 BPSK	1	271	17.18	17.24	17.27	
100	PI/2 BPSK	135	0	17.16	17.31	17.40	18.0
100	PI/2 BPSK	135	69	17.08	17.23	17.25	18.0
100	PI/2 BPSK	135	138	17.05	17.19	17.23	18.0
100	PI/2 BPSK	270	0	17.07	17.22	17.23	
100	QPSK	1	1	17.16	17.24	17.27	18.0
100	QPSK	1	137	17.20	17.28	17.27	
100	QPSK	1	271	17.26	17.31	17.34	
100	QPSK	135	0	16.13	16.24	16.23	17.0
100	QPSK	135	69	17.18	17.31	17.33	18.0
100	QPSK	135	138	16.24	16.32	16.36	17.0
100	QPSK	270	0	16.14	16.28	16.35	
100	16QAM	1	1	17.22	17.31	17.40	18.0
100	64QAM	1	1	17.11	17.22	17.28	18.0
100	256QAM	1	1	17.22	17.27	17.35	18.0
Channel				649334	656000	662666	18.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	17.23	17.26	17.31	18.0
Channel				648668	656000	663332	18.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	17.20	17.28	17.36	18.0
Channel				648000	656000	664000	18.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	17.25	17.30	17.38	18.0
Channel				647668	656000	664332	18.0
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	17.19	17.31	17.35	18.0
Channel				647334	656000	664666	18.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	17.25	17.32	17.33	18.0

< n77_HPUE_Ant2_DSI 4/5 >

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	21.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	20.28	20.20	20.24	21.0
100	PI/2 BPSK	1	137	20.19	20.17	20.21	
100	PI/2 BPSK	1	271	20.27	20.19	20.22	
100	PI/2 BPSK	135	0	20.18	20.15	20.10	21.0
100	PI/2 BPSK	135	69	20.16	20.09	20.11	21.0
100	PI/2 BPSK	135	138	20.26	20.18	20.13	21.0
100	PI/2 BPSK	270	0	20.16	20.14	20.08	
100	QPSK	1	1	20.25	20.18	20.13	21.0
100	QPSK	1	137	20.19	20.15	20.18	
100	QPSK	1	271	20.17	20.13	20.07	
100	QPSK	135	0	19.25	19.22	19.19	20.0
100	QPSK	135	69	20.22	20.18	20.19	21.0
100	QPSK	135	138	19.19	19.21	19.15	20.0
100	QPSK	270	0	19.24	19.24	19.28	
100	16QAM	1	1	20.26	20.18	20.20	21.0
100	64QAM	1	1	20.10	20.12	20.11	21.0
100	256QAM	1	1	20.13	20.08	20.05	21.0
Channel				649334	656000	662666	21.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	20.23	20.18	20.19	21.0
Channel				648668	656000	663332	21.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	20.19	20.14	20.20	21.0
Channel				648000	656000	664000	21.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	20.21	20.17	20.24	21.0
Channel				647668	656000	664332	21.0
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	20.20	20.15	20.22	21.0
Channel				647334	656000	664666	21.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	20.19	20.17	20.16	21.0

<n77_Ant3_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	23.71	23.41	22.95	
100	PI/2 BPSK	1	137	23.61	23.38	22.83	24.0
100	PI/2 BPSK	1	271	23.59	23.32	22.79	
100	PI/2 BPSK	135	0	23.05	22.82	22.26	
100	PI/2 BPSK	135	69	23.60	23.34	22.85	23.5
100	PI/2 BPSK	135	138	22.98	22.78	22.25	24.0
100	PI/2 BPSK	270	0	23.07	22.83	22.27	
100	QPSK	1	1	23.62	23.36	22.84	
100	QPSK	1	137	23.64	23.34	22.80	24.0
100	QPSK	1	271	23.64	23.40	22.92	
100	QPSK	135	0	22.64	22.38	21.88	
100	QPSK	135	69	23.61	23.35	22.84	23.0
100	QPSK	135	138	22.61	22.34	21.88	24.0
100	QPSK	270	0	22.72	22.42	21.95	
100	16QAM	1	1	22.60	22.37	21.83	
100	64QAM	1	1	21.13	20.84	20.33	23.0
100	256QAM	1	1	20.68	20.38	19.89	21.5
Channel				649334	656000	662666	21.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	23.69	23.40	22.88	
Channel				648668	656000	663332	24.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	23.70	23.38	22.86	
Channel				648000	656000	664000	24.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	23.69	23.33	22.89	
Channel				647668	656000	664332	24.0
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	23.63	23.34	22.92	
Channel				647334	656000	664666	24.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	23.70	23.34	22.95	



<n77_HPUE_Ant3_DSI 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	27.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	26.80	26.23	25.91	27.0
100	PI/2 BPSK	1	137	26.69	26.14	25.74	
100	PI/2 BPSK	1	271	26.74	26.22	25.84	
100	PI/2 BPSK	135	0	26.28	25.74	25.41	26.5
100	PI/2 BPSK	135	69	26.71	26.15	25.75	27.0
100	PI/2 BPSK	135	138	26.28	25.72	25.34	26.5
100	PI/2 BPSK	270	0	26.31	25.81	25.42	
100	QPSK	1	1	26.71	26.14	25.74	27.0
100	QPSK	1	137	26.61	26.12	25.72	
100	QPSK	1	271	26.75	26.21	25.89	
100	QPSK	135	0	25.75	25.24	24.83	26.0
100	QPSK	135	69	26.68	26.18	25.76	27.0
100	QPSK	135	138	25.80	25.24	24.91	26.0
100	QPSK	270	0	25.66	25.18	24.86	
100	16QAM	1	1	25.77	25.25	24.88	26.0
100	64QAM	1	1	24.24	23.76	23.34	24.5
100	256QAM	1	1	23.78	23.21	22.84	24.0
Channel				649334	656000	662666	27.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	26.80	26.19	25.90	27.0
Channel				648668	656000	663332	27.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	26.70	26.13	25.85	27.0
Channel				648000	656000	664000	27.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	26.70	26.17	25.83	27.0
Channel				647668	656000	664332	27.0
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	26.71	26.14	25.84	27.0
Channel				647334	656000	664666	27.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	26.76	26.17	25.84	27.0



<n77_Ant3_DSI 4/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	16.21	16.24	16.22	
100	PI/2 BPSK	1	137	16.13	16.18	16.11	17.0
100	PI/2 BPSK	1	271	16.17	16.22	16.11	
100	PI/2 BPSK	135	0	16.12	16.15	16.09	
100	PI/2 BPSK	135	69	16.16	16.21	16.12	17.0
100	PI/2 BPSK	135	138	16.13	16.18	16.13	17.0
100	PI/2 BPSK	270	0	16.19	16.22	16.17	
100	QPSK	1	1	16.09	16.14	16.03	
100	QPSK	1	137	16.06	16.18	16.14	17.0
100	QPSK	1	271	16.10	16.16	16.06	
100	QPSK	135	0	15.14	15.23	15.17	
100	QPSK	135	69	16.12	16.21	16.09	17.0
100	QPSK	135	138	15.22	15.27	15.21	16.0
100	QPSK	270	0	15.11	15.21	15.16	
100	16QAM	1	1	16.08	16.20	16.13	
100	64QAM	1	1	16.13	16.18	16.12	17.0
100	256QAM	1	1	16.07	16.15	16.13	17.0
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	16.18	16.24	16.19	
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	16.18	16.20	16.13	
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	16.20	16.24	16.17	
Channel				647668	656000	664332	Tune-up limit (dBm)
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	16.19	16.17	16.22	
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	16.11	16.18	16.22	



<n77_HPUE_Ant3_DSI 4/5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	20.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	19.19	19.20	19.11	20.0
100	PI/2 BPSK	1	137	19.04	19.15	19.03	
100	PI/2 BPSK	1	271	19.10	19.18	19.03	
100	PI/2 BPSK	135	0	19.02	19.08	18.95	20.0
100	PI/2 BPSK	135	69	19.05	19.09	18.97	20.0
100	PI/2 BPSK	135	138	19.10	19.16	18.99	20.0
100	PI/2 BPSK	270	0	18.98	19.08	18.92	
100	QPSK	1	1	19.12	19.14	18.99	20.0
100	QPSK	1	137	19.13	19.16	19.07	
100	QPSK	1	271	19.07	19.14	19.03	
100	QPSK	135	0	18.12	18.23	18.09	19.0
100	QPSK	135	69	19.11	19.15	18.96	20.0
100	QPSK	135	138	18.14	18.21	18.12	19.0
100	QPSK	270	0	18.22	18.25	18.10	
100	16QAM	1	1	18.98	19.08	18.96	20.0
100	64QAM	1	1	19.06	19.12	19.02	20.0
100	256QAM	1	1	18.97	19.06	18.92	20.0
Channel				649334	656000	662666	20.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	19.10	19.13	19.10	20.0
Channel				648668	656000	663332	20.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	19.17	19.18	19.08	20.0
Channel				648000	656000	664000	20.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	19.11	19.15	19.06	20.0
Channel				647668	656000	664332	20.0
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	19.09	19.17	19.06	20.0
Channel				647334	656000	664666	20.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	19.13	19.15	19.06	20.0

14. WiFi/Bluetooth Output Power (Unit: dBm)

General Note:

1. The device only support MIMO operation
2. Per KDB 248227 D01v02r02, for WLAN SAR was perform single antenna and do the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is $< 1.6\text{W/kg}$ and SAR peak to location ratio ≤ 0.04 , no additional SAR measurements for MIMO.
3. According to Tune-up document, the TxBF output power is less than non-TxBF mode, according to KDB 248227 for OFDM mode the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, therefore, TxBF SAR is not necessary.
4. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, additional output power measurements were not necessary.
5. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
6. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
7. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
8. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is $\leq 0.4\text{ W/kg}$, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is $> 0.4\text{ W/kg}$, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is $\leq 0.8\text{ W/kg}$ or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is $> 0.8\text{ W/kg}$, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is $\leq 1.2\text{ W/kg}$ or all required channels are tested.
9. Per 201904 TCBC workshops, General principles of FCC KDB Publication 248227 D01 can be applied to determine the SAR Initial Test Configurations and test reduction for 802.11ax SAR testing. For the table below the 802.11ax maximum power is SU (non-OFDMA), and the SU maximum power also higher than RU (OFDMA)
10. In applying the test guidance, the IEEE 802.11 mode with the maximum output power (out of all modes) should be considered for testing
11. For modes with the same maximum output power, the guidance from section 5.3.2 a) of FCC KDB Publication 248227 D01 should be applied, with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency bands
12. When SAR testing for 802.11ax is required
 - a. If the maximum output power is highest for OFDMA scenarios, choose the tone size with the maximum number of tones and the highest maximum output power
 - b. Otherwise, consider the fully allocated channel for SAR testing
 - c. When SAR testing is required on RU sizes less than the fully allocated channel, use the RU number closest to the middle of the channel, choosing the higher RU number when two RUs are equidistant to the middle of the channel

<Power Table 1/2>

2.4GHz WLAN				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	18.90	19.50	99.50	19.30	19.50	99.50	not required	22.50	not required
		6	2437	18.80	19.50		19.40	19.50			22.50	
		11	2462	18.50	19.50		18.80	19.50			22.50	
	802.11g 6Mbps	1	2412	not required	19.50	not required	not required	19.50	not required		22.50	
		6	2437		19.50			19.50			22.50	
		11	2462		18.50			18.50			21.50	
	802.11n-HT20 MCS0	1	2412		19.50			19.50			22.50	
		6	2437		19.50			19.50			22.50	
		11	2462		17.00			17.00			20.00	
	802.11n-HT40 MCS0	3	2422		18.50			18.50			21.50	
		6	2437		18.50			18.50			21.50	
		9	2452		15.50			15.50			18.50	
	802.11ac-VHT20 MCS0	1	2412		19.00			19.00			22.00	
		6	2437		19.00			19.00			22.00	
		11	2462		16.50			16.50			19.50	
	802.11ac-VHT40 MCS0	3	2422		18.50			18.50			21.50	
		6	2437		18.50			18.50			21.50	
		9	2452		15.50			15.50			18.50	
	802.11ax-HE20 MCS0	1	2412		19.50			19.50			22.50	
		6	2437		19.50			19.50			22.50	
		11	2462		17.00			17.00			20.00	
	802.11ax-HE40 MCS0	3	2422		18.50			18.50			21.50	
		6	2437		18.50			18.50			21.50	
		9	2452		15.50			15.50			18.50	

5.2GHz WLAN				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	17.80	18.50	99.20	18.10	18.50	99.20	not required	21.50	not required
		40	5200	17.70	18.50		17.90	18.50			21.50	
		44	5220	17.80	18.50		18.00	18.50			21.50	
		48	5240	17.80	18.50		17.90	18.50			21.50	
		802.11n-HT20 MCS0	36	5180	not required		18.50	not required			not required	
	40	5200	18.50	18.50		21.50						
	44	5220	18.50	18.50		21.50						
	48	5240	18.50	18.50		21.50						
	802.11n-HT40 MCS0	38	5190	17.00		17.00	20.00					
		46	5230	18.00		18.00	21.00					
	802.11ac-VHT20 MCS0	36	5180	18.50		18.50	21.50					
		40	5200	18.50		18.50	21.50					
		44	5220	18.50		18.50	21.50					
	802.11ac-VHT40 MCS0	48	5240	18.50		18.50	21.50					
		38	5190	17.00		17.00	20.00					
		46	5230	18.00		18.00	21.00					
	802.11ac-VHT80 MCS0	42	5210	17.00		17.00	20.00					
	802.11ax-HE20 MCS0	36	5180	17.50		17.50	20.50					
		40	5200	18.50		18.50	21.50					
		44	5220	18.50		18.50	21.50					
		48	5240	18.50		18.50	21.50					
	802.11ax-HE40 MCS0	38	5190	17.00		17.00	20.00					
		46	5230	18.00		18.00	21.00					
	802.11ax-HE80 MCS0	42	5210	17.00		17.00	20.00					

5.3GHz WLAN				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	18.30	19.00	99.20	18.10	19.00	99.20	not required	22.00	not required
		56	5280	18.40	19.00		17.70	19.00			22.00	
		60	5300	18.50	19.00		17.80	19.00			22.00	
		64	5320	18.40	19.00		18.20	19.00			22.00	
	802.11n-HT20 MCS0	52	5260	not required	19.00	not required	not required	19.00	not required		22.00	
		56	5280		19.00			19.00			22.00	
		60	5300		19.00			19.00			22.00	
		64	5320		19.00			19.00			22.00	
	802.11n-HT40 MCS0	54	5270		18.00			18.00			21.00	
		62	5310		16.00			16.00			19.00	
	802.11ac-VHT20 MCS0	52	5260		19.00			19.00			22.00	
		56	5280		19.00			19.00			22.00	
		60	5300		19.00			19.00			22.00	
		64	5320		19.00			19.00			22.00	
	802.11ac-VHT40 MCS0	54	5270		18.00			18.00			21.00	
		62	5310		16.00			16.00			19.00	
	802.11ac-VHT80 MCS0	58	5290		16.00			16.00			19.00	
	802.11ac-VHT160 MCS0	50	5250		15.50			16.00			18.50	
	802.11ax-HE20 MCS0	52	5260		19.00			19.00			22.00	
		56	5280		19.00			19.00			22.00	
		60	5300		19.00			19.00			22.00	
		64	5320		19.00			19.00			22.00	
	802.11ax-HE40 MCS0	54	5270		18.00			18.00			21.00	
		62	5310		16.00			16.00			19.00	
	802.11ax-HE80 MCS0	58	5290		16.00			16.00			19.00	
	802.11ax-HE160 MCS0	50	5250		15.50			15.50			18.50	

5.5GHz WLAN				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	18.90	19.00	99.20	18.10	19.00	99.20	not required	22.00	not required
		116	5580	18.80	19.00		17.80	19.00			22.00	
		124	5620	18.70	19.00		17.70	19.00			22.00	
		132	5660	18.70	19.00		17.70	19.00			22.00	
		144	5720	18.70	19.00		17.70	19.00			22.00	
	802.11n-HT20 MCS0	100	5500	not required	19.00	not required	not required	19.00	not required		22.00	
		116	5580		19.00			19.00			22.00	
		124	5620		19.00			19.00			22.00	
		132	5660		19.00			19.00			22.00	
		144	5720		19.00			19.00			22.00	
	802.11n-HT40 MCS0	102	5510		17.00			17.00			20.00	
		110	5550		18.00			18.00			21.00	
		126	5630		18.50			18.50			21.50	
		134	5670		18.00			18.00			21.00	
		142	5710		18.50			18.50			21.50	
	802.11ac-VHT20 MCS0	100	5500		19.00			19.00			22.00	
		116	5580		19.00			19.00			22.00	
		124	5620		19.00			19.00			22.00	
		132	5660		19.00			19.00			22.00	
		144	5720		19.00			19.00			22.00	
	802.11ac-VHT40 MCS0	102	5510		17.00			17.00			20.00	
		110	5550		18.00			18.00			21.00	
		126	5630		18.00			18.00			21.00	
		134	5670		18.00			18.00			21.00	
		142	5710		18.50			18.50			21.50	
	802.11ac-VHT80 MCS0	106	5530		17.00			17.00			20.00	
		122	5610		17.00			17.00			20.00	
		138	5690		17.00			17.00			20.00	
	802.11ac-VHT160 MCS0	114	5570		16.00			16.00			19.00	
	802.11ax-HE20 MCS0	100	5500		19.00			19.00			22.00	
		116	5580		19.00			19.00			22.00	
		124	5620		19.00			19.00			22.00	
		132	5660		19.00			19.00			22.00	
		144	5720		19.00			19.00			22.00	
	802.11ax-HE40 MCS0	102	5510		17.00			17.00			20.00	
		110	5550		18.00			18.00			21.00	
		126	5630		18.50			18.50			21.50	
		134	5670		18.00			18.00			21.00	
		142	5710		18.50			18.50			21.50	
	802.11ax-HE80 MCS0	106	5530		17.00			17.00			20.00	
		122	5610		17.00			17.00			20.00	
		138	5690		17.00			17.00			20.00	
	802.11ax-HE160 MCS0	114	5570		16.00			16.00			19.00	

5.8GHz WLAN				Ant 4			Ant 5			Ant 4+5		
5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune- Up Limit	Duty Cycle %	Average power (dBm)	Tune- Up Limit	Duty Cycle %	Average power (dBm)	Tune- Up Limit	Duty Cycle %
	802.11a 6Mbps	149	5745	18.90	19.50	99.20	18.00	19.50	99.20	not required	22.50	not required
		157	5785	18.70	19.50		17.80	19.50			22.50	
		165	5825	19.00	19.50		18.00	19.50			22.50	
	802.11n-HT20 MCS0	149	5745	not required	19.50	not required	not required	19.50	not required		22.50	
		157	5785		19.50			19.50			22.50	
		165	5825		19.50			19.50			22.50	
	802.11n-HT40 MCS0	151	5755		19.00			19.00			22.00	
		159	5795		18.00			18.00			21.00	
	802.11ac-VHT20 MCS0	149	5745		19.50			19.50			22.50	
		157	5785		19.50			19.50			22.50	
		165	5825		19.50			19.50			22.50	
	802.11ac-VHT40 MCS0	151	5755		19.00			19.00			22.00	
		159	5795		18.00			18.00			21.00	
	802.11ac-VHT80 MCS0	155	5775		17.50			17.50			20.50	
		149	5745		19.50			19.50			22.50	
	802.11ax-HE20 MCS0	157	5785		19.50			19.50			22.50	
		165	5825		19.50			19.50			22.50	
		151	5755		19.00			19.00			22.00	
	802.11ax-HE40 MCS0	159	5795		18.00			18.00			21.00	
155		5775	17.50		17.50			20.50				

WiFi 6E				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
WiFi 6E	802.11a 6Mbps	1	5955	not required	6.00	not required	not required	6.00	not required	not required	9.00	not required
		57	6235		6.50			6.00			9.00	
		113	6515		4.00			4.00			7.00	
		173	6815		4.50			4.50			7.50	
		233	7115		5.00			5.00			8.00	
	802.11ax-HE20 MCS0	1	5955		6.00			6.00			9.00	
		57	6235		6.50			4.00			7.00	
		113	6515		4.00			4.00			7.00	
		173	6815		4.50			4.50			7.50	
		233	7115		-4.00			-5.50			-1.50	
	802.11ax-HE40 MCS0	3	5965		9.00			9.00			12.00	
		59	6245		6.50			4.00			8.00	
		107	6485		4.00			4.00			7.00	
		171	6805		7.50			7.50			10.50	
		227	7085		7.50			7.50			10.50	
	802.11ax-HE80 MCS0	7	5985		12.00			12.00			15.00	
		71	6305		12.00			12.00			15.00	
		119	6545		10.50			10.50			13.50	
		167	6785		10.50			10.50			13.50	
		215	7025		11.00			11.00			14.00	
	802.11ax-HE160 MCS0	15	6025	14.37	14.50	99.10	13.07	13.50	99.10	16.78	17.00	99.10
		47	6185	14.77	15.00		12.47	12.50		16.78	17.00	
		111	6505	12.97	13.00		11.97	12.00		15.17	15.50	
		175	6825	13.27	13.50		11.67	12.00		15.55	16.00	
		207	6985	13.57	14.00		11.97	12.50		15.85	16.50	

<2.4GHz Bluetooth>

Ant 4					
Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	16.28	not required	not required
	CH 39	2441	16.32		
	CH 78	2480	15.82		
Tune-up Limit			17.5	15	15

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	not required	not required
	CH 19	2440		
	CH 39	2480		
Tune-up Limit			10.5	10.5

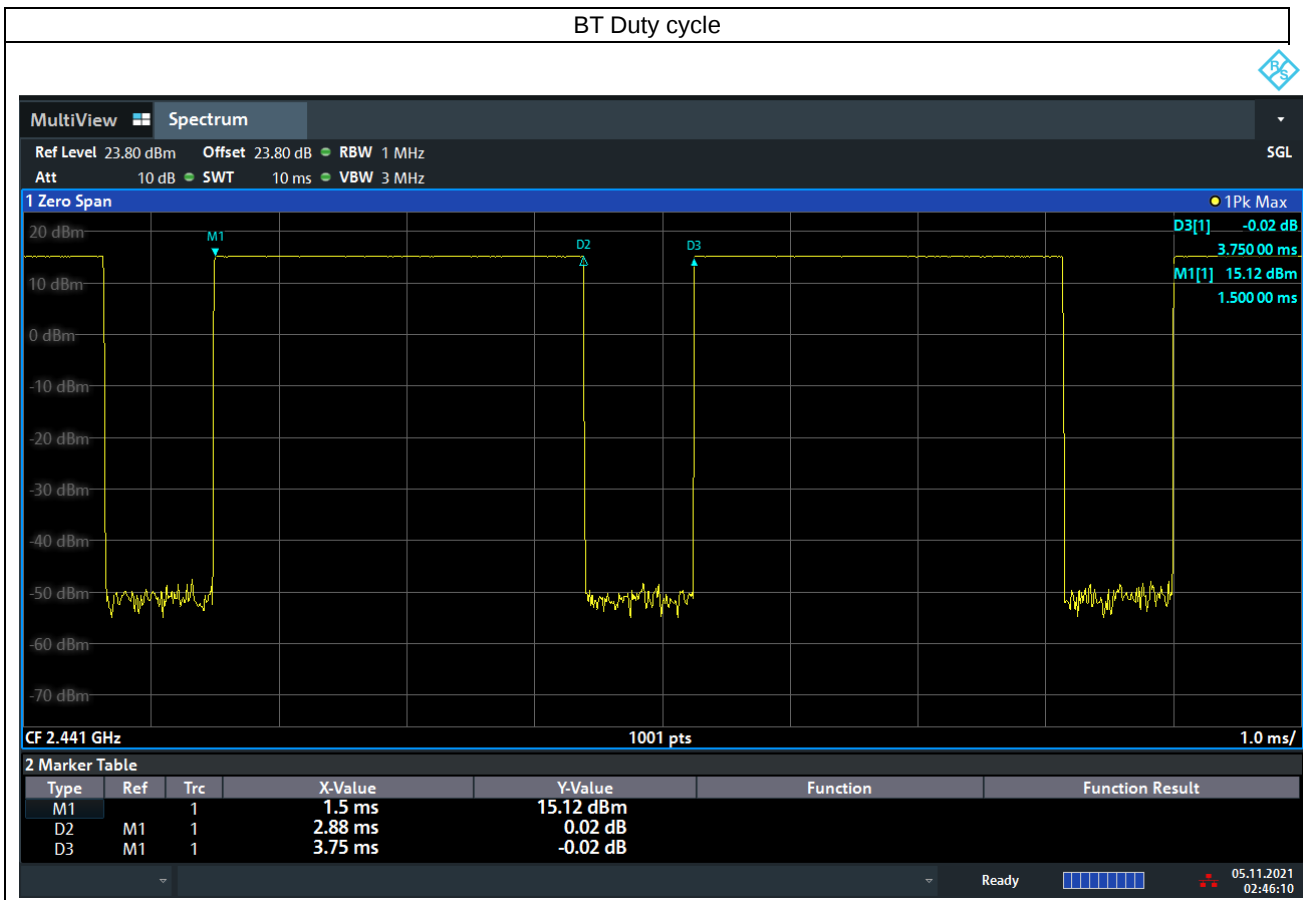
Ant 5					
Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	15.62	not required	not required
	CH 39	2441	15.52		
	CH 78	2480	15.49		
Tune-up Limit			16.5	14	14

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	not required	not required
	CH 19	2440		
	CH 39	2480		
Tune-up Limit			10	10

General Note:

- For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.83% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.

BT Duty cycle



<Power Table 3/4>

2.4GHz WLAN				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	not required	19.50	not required	not required	19.50	not required	not required	22.50	not required
		6	2437		19.50			19.50			22.50	
		11	2462		19.50			19.50			22.50	
	802.11g 6Mbps	1	2412		19.50			19.50			22.50	
		6	2437		19.50			19.50			22.50	
		11	2462		18.50			18.50			21.50	
	802.11n-HT20 MCS0	1	2412		19.50			19.50			22.50	
		6	2437		19.50			19.50			22.50	
		11	2462		17.00			17.00			21.50	
	802.11n-HT40 MCS0	3	2422		18.50			18.50			21.50	
		6	2437		18.50			18.50			21.50	
		9	2452		15.50			15.50			21.50	
	802.11ac-VHT20 MCS0	1	2412		19.00			19.00			22.50	
		6	2437		19.00			19.00			22.50	
		11	2462		16.50			16.50			21.50	
	802.11ac-VHT40 MCS0	3	2422		18.50			18.50			21.50	
		6	2437		18.50			18.50			21.50	
		9	2452		15.50			15.50			21.50	
	802.11ax-HE20 MCS0	1	2412		19.50			19.50			22.50	
		6	2437		19.50			19.50			22.50	
		11	2462		17.00			17.00			21.50	
	802.11ax-HE40 MCS0	3	2422		18.50			18.50			21.50	
		6	2437		18.50			18.50			21.50	
		9	2452		15.50			15.50			21.50	



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5.2GHz WLAN				Ant 4			Ant 5			Ant 4+5		
5.2GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune- Up Limit	Duty Cycle %	Average power (dBm)	Tune- Up Limit	Duty Cycle %	Average power (dBm)	Tune- Up Limit	Duty Cycle %
	802.11a 6Mbps	36	5180	not required	15.50	not required	not required	18.50	not required	not required	20.50	not required
		40	5200		15.50			18.50			20.50	
		44	5220		15.50			18.50			20.50	
		48	5240		15.50			18.50			20.50	
	802.11n-HT20 MCS0	36	5180		15.50			18.50			20.50	
		40	5200		15.50			18.50			20.50	
		44	5220		15.50			18.50			20.50	
		48	5240		15.50			18.50			20.50	
	802.11n-HT40 MCS0	38	5190		15.50			17.00			20.00	
		46	5230		15.50			18.00			20.00	
	802.11ac-VHT20 MCS0	36	5180		15.50			18.50			20.50	
		40	5200		15.50			18.50			20.50	
		44	5220		15.50			18.50			20.50	
		48	5240		15.50			18.50			20.50	
	802.11ac-VHT40 MCS0	38	5190		15.50			17.00			20.00	
		46	5230		15.50			18.00			20.00	
	802.11ac-VHT80 MCS0	42	5210	15.40	15.50	99.70		17.00			20.00	
	802.11ax-HE20 MCS0	36	5180	not required	15.50	not required		17.50			20.00	
		40	5200		15.50			18.50			20.50	
		44	5220		15.50			18.50			20.50	
		48	5240		15.50			18.50			20.50	
	802.11ax-HE40 MCS0	38	5190		15.50			17.00			20.00	
		46	5230		15.50			18.00			20.00	
	802.11ax-HE80 MCS0	42	5210		15.50			17.00			20.00	

5.3GHz WLAN				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	not required	16.00	not required	not required	19.00	not required	not required	21.00	not required
		56	5280		16.00			19.00			21.00	
		60	5300		16.00			19.00			21.00	
		64	5320		16.00			19.00			21.00	
	802.11n-HT20 MCS0	52	5260		16.00			19.00			21.00	
		56	5280		16.00			19.00			21.00	
		60	5300		16.00			19.00			21.00	
		64	5320		16.00			19.00			21.00	
	802.11n-HT40 MCS0	54	5270		16.00			18.00			20.50	
		62	5310		16.00			16.00			19.50	
	802.11ac-VHT20 MCS0	52	5260		16.00			19.00			21.00	
		56	5280		16.00			19.00			21.00	
		60	5300		16.00			19.00			21.00	
		64	5320		16.00			19.00			21.00	
	802.11ac-VHT40 MCS0	54	5270		16.00			18.00			20.50	
		62	5310		16.00			16.00			19.50	
	802.11ac-VHT80 MCS0	58	5290	15.60	16.00	99.70		16.00			19.50	
	802.11ac-VHT160 MCS0	50	5250	not required	15.50	not required		16.00			18.50	
	802.11ax-HE20 MCS0	52	5260		16.00			19.00			21.00	
		56	5280		16.00			19.00			21.00	
		60	5300		16.00			19.00			21.00	
		64	5320		16.00			19.00			21.00	
	802.11ax-HE40 MCS0	54	5270		16.00			18.00			20.50	
		62	5310		16.00			16.00			19.50	
	802.11ax-HE80 MCS0	58	5290		16.00			16.00			19.50	
	802.11ax-HE160 MCS0	50	5250		15.50			15.50			18.50	

5.5GHz WLAN				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	not required	16.00	not required	not required	19.00	not required	not required	21.00	not required
		116	5580		16.00			19.00			21.00	
		124	5620		16.00			19.00			21.00	
		132	5660		16.00			19.00			21.00	
		144	5720		16.00			19.00			21.00	
	802.11n-HT20 MCS0	100	5500		16.00			19.00			21.00	
		116	5580		16.00			19.00			21.00	
		124	5620		16.00			19.00			21.00	
		132	5660		16.00			19.00			21.00	
		144	5720		16.00			19.00			21.00	
	802.11n-HT40 MCS0	102	5510		16.00			17.00			20.00	
		110	5550		16.00			18.00			20.50	
		126	5630		16.00			18.50			20.50	
		134	5670		16.00			18.00			20.50	
		142	5710		16.00			18.50			20.50	
	802.11ac-VHT20 MCS0	100	5500		16.00			19.00			21.00	
		116	5580		16.00			19.00			21.00	
		124	5620		16.00			19.00			21.00	
		132	5660		16.00			19.00			21.00	
		144	5720		16.00			19.00			21.00	
	802.11ac-VHT40 MCS0	102	5510		16.00			17.00			20.00	
		110	5550		16.00			18.00			20.50	
		126	5630		16.00			18.00			20.50	
		134	5670		16.00			18.00			20.50	
		142	5710		16.00			18.50			20.50	
	802.11ac-VHT80 MCS0	106	5530		16.00			17.00			20.00	
		122	5610		16.00			17.00			20.00	
		138	5690		16.00			17.00			20.00	
	802.11ac-VHT160 MCS0	114	5570	15.70	16.00	99.70	16.00			19.50		
	802.11ax-HE20 MCS0	100	5500	not required	16.00	not required	19.00	21.00				
		116	5580		16.00		19.00	21.00				
		124	5620		16.00		19.00	21.00				
		132	5660		16.00		19.00	21.00				
		144	5720		16.00		19.00	21.00				
	802.11ax-HE40 MCS0	102	5510		16.00		17.00	20.00				
		110	5550		16.00		18.00	20.50				
		126	5630		16.00		18.50	20.50				
		134	5670		16.00		18.50	20.50				
		142	5710		16.00		18.50	20.50				
	802.11ax-HE80 MCS0	106	5530		16.00		17.00	20.00				
		122	5610		16.00		17.00	20.00				
		138	5690		16.00		17.00	20.00				
	802.11ax-HE160 MCS0	114	5570		16.00				19.50			

5.8GHz WLAN				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	not required	16.50	not required	not required	19.50	not required	not required	21.50	not required
		157	5785		16.50			19.50			21.50	
		165	5825		16.50			19.50			21.50	
	802.11n-HT20 MCS0	149	5745		16.50			19.50			21.50	
		157	5785		16.50			19.50			21.50	
		165	5825		16.50			19.50			21.50	
	802.11n-HT40 MCS0	151	5755		16.50			19.00			21.00	
		159	5795		16.50			18.00			20.50	
	802.11ac-VHT20 MCS0	149	5745		16.50			19.50			21.50	
		157	5785		16.50			19.50			21.50	
		165	5825		16.50			19.50			21.50	
	802.11ac-VHT40 MCS0	151	5755		16.50			19.00			21.00	
		159	5795	16.50	18.00	20.50						
	802.11ac-VHT80 MCS0	155	5775	16.40	16.50	99.70	17.50	20.50				
	802.11ax-HE20 MCS0	149	5745	not required	16.50	not required	19.50	21.50				
		157	5785		16.50		19.50	21.50				
		165	5825		16.50		19.50	21.50				
	802.11ax-HE40 MCS0	151	5755		16.50		19.00	21.00				
		159	5795		16.50		18.00	20.50				
	802.11ax-HE80 MCS0	155	5775		16.50		17.50	20.50				

WiFi 6E				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
WiFi 6E	802.11a 6Mbps	1	5955	not required	6.00	not required	not required	6.00	not required	not required	9.00	not required
		57	6235		6.50			6.00			9.00	
		113	6515		4.00			4.00			7.00	
		173	6815		4.50			4.50			7.50	
		233	7115		5.00			5.00			8.00	
	802.11ax-HE20 MCS0	1	5955		6.00			6.00			9.00	
		57	6235		6.50			4.00			7.00	
		113	6515		4.00			4.00			7.00	
		173	6815		4.50			4.50			7.50	
		233	7115		-4.00			-5.50			-1.50	
	802.11ax-HE40 MCS0	3	5965		9.00			9.00			12.00	
		59	6245		6.50			4.00			8.00	
		107	6485		4.00			4.00			7.00	
		171	6805		7.50			7.50			10.50	
		227	7085		7.50			7.50			10.50	
	802.11ax-HE80 MCS0	7	5985		12.00			12.00			15.00	
		71	6305		12.00			12.00			15.00	
		119	6545		10.50			10.50			13.50	
		167	6785		10.50			10.50			13.50	
		215	7025		11.00			11.00			14.00	
	802.11ax-HE160 MCS0	15	6025		14.50			13.50			17.00	
		47	6185		15.00			12.50			17.00	
		111	6505		13.00			12.00			15.50	
		175	6825		13.50			12.00			16.00	
		207	6985		14.00			12.50			16.50	

<2.4GHz Bluetooth>

Ant 4					
Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	not required	not required	not required
	CH 39	2441			
	CH 78	2480			
Tune-up Limit			17.5	15	15

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	not required	not required
	CH 19	2440		
	CH 39	2480		
Tune-up Limit			10.5	10.5

Ant 5					
Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	not required	not required	not required
	CH 39	2441			
	CH 78	2480			
Tune-up Limit			16.5	14	14

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	not required	not required
	CH 19	2440		
	CH 39	2480		
Tune-up Limit			10	10

General Note:

- For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.83% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.

<Power Table 5>

2.4GHz WLAN				Ant 4			Ant 5			Ant 4+5				
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %		
2.4GHz WLAN	802.11b 1Mbps	1	2412	6.20	6.50	99.50	not required	19.50	not required	not required	20.00	not required		
		6	2437	6.10	6.50			19.50			20.00			
		11	2462	6.10	6.50			19.50			20.00			
	802.11g 6Mbps	1	2412	not required	6.50	not required		19.50	99.30		20.00			
		6	2437		6.50			19.50			20.00			
		11	2462		6.50			18.50			19.00			
	802.11n-HT20 MCS0	1	2412		6.50			19.50	99.70		20.00			
		6	2437		6.50			19.50			20.00			
		11	2462		6.50			18.50			19.00			
	802.11n-HT40 MCS0	3	2422		6.50			18.50	99.70		19.00			
		6	2437		6.50			18.50			19.00			
		9	2452		6.50			18.50			19.00			
	802.11ac-VHT20 MCS0	1	2412		not required			6.50	not required		19.50		99.70	20.00
		6	2437					6.50			19.50			20.00
		11	2462					6.50			18.50			19.00
	802.11ac-VHT40 MCS0	3	2422					6.50			18.50		99.70	19.00
		6	2437					6.50			18.50			19.00
		9	2452					6.50			18.50			19.00
	802.11ax-HE20 MCS0	1	2412					6.50			19.50		99.70	20.00
		6	2437					6.50			19.50			20.00
		11	2462					6.50			18.50			20.00
	802.11ax-HE40 MCS0	3	2422					6.50			18.50		99.70	19.00
		6	2437					6.50			18.50			19.00
		9	2452					6.50			18.50			19.00

5.2GHz WLAN				Ant 4			Ant 5			Ant 4+5				
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %		
5.2GHz WLAN	802.11a 6Mbps	36	5180	not required	5.50	not required	not required	18.50	not required	not required	19.00	not required		
		40	5200		5.50			18.50			19.00			
		44	5220		5.50			18.50			19.00			
		48	5240		5.50			18.50			19.00			
	802.11n-HT20 MCS0	36	5180		5.50			18.50			19.00			
		40	5200		5.50			18.50			19.00			
		44	5220		5.50			18.50			19.00			
		48	5240		5.50			18.50			19.00			
	802.11n-HT40 MCS0	38	5190		5.50			17.00			17.50			
		46	5230		5.50			18.00			18.50			
	802.11ac-VHT20 MCS0	36	5180		5.50			18.50			19.00			
		40	5200		5.50			18.50			19.00			
		44	5220		5.50			18.50			19.00			
		48	5240		5.50			18.50			19.00			
	802.11ac-VHT40 MCS0	38	5190		5.50			17.00			17.50			
		46	5230		5.50			18.00			18.50			
	802.11ac-VHT80 MCS0	42	5210		5.40			5.50			99.70		17.00	17.50
	802.11ax-HE20 MCS0	36	5180		not required			5.50			not required		17.50	18.00
		40	5200					5.50					18.50	19.00
		44	5220					5.50					18.50	19.00
		48	5240					5.50					18.50	19.00
	802.11ax-HE40 MCS0	38	5190					5.50					17.00	17.50
		46	5230					5.50					18.00	18.50
	802.11ax-HE80 MCS0	42	5210					5.50					17.00	17.50

5.3GHz WLAN				Ant 4			Ant 5			Ant 4+5		
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	not required	6.00	not required	not required	19.00	not required	not required	19.50	not required
		56	5280		6.00			19.00			19.50	
		60	5300		6.00			19.00			19.50	
		64	5320		6.00			19.00			19.50	
	802.11n-HT20 MCS0	52	5260		6.00			19.00			19.50	
		56	5280		6.00			19.00			19.50	
		60	5300		6.00			19.00			19.50	
		64	5320		6.00			19.00			19.50	
	802.11n-HT40 MCS0	54	5270		6.00			18.00			18.50	
		62	5310		6.00			16.00			16.50	
	802.11ac-VHT20 MCS0	52	5260		6.00			19.00			19.50	
		56	5280		6.00			19.00			19.50	
		60	5300		6.00			19.00			19.50	
		64	5320		6.00		not required	19.00	not required	not required	19.50	not required
	802.11ac-VHT40 MCS0	54	5270		6.00		18.00	18.50				
		62	5310		6.00		16.00	16.50				
	802.11ac-VHT80 MCS0	58	5290		6.00		16.00	16.50				
	802.11ac-VHT160 MCS0	50	5250	5.7	6.00	99.7	15.00	16.00				
	802.11ax-HE20 MCS0	52	5260	not required	6.00	not required	19.00	19.50				
		56	5280		6.00		19.00	19.50				
		60	5300		6.00		19.00	19.50				
		64	5320		6.00		19.00	19.50				
	802.11ax-HE40 MCS0	54	5270		6.00		18.00	18.50				
		62	5310		6.00		16.00	16.50				
	802.11ax-HE80 MCS0	58	5290		6.00		16.00	16.50				
	802.11ax-HE160 MCS0	50	5250		6.00		15.00	16.00				

5.5GHz WLAN				Ant 4			Ant 5			Ant 4+5			
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.5GHz WLAN	802.11a 6Mbps	100	5500	not required	6.00	not required	not required	19.00	not required	not required	19.50	not required	
		116	5580		6.00			19.00			19.50		
		124	5620		6.00			19.00			19.50		
		132	5660		6.00			19.00			19.50		
		144	5720		6.00			19.00			19.50		
	802.11n-HT20 MCS0	100	5500		6.00			19.00			19.50		
		116	5580		6.00			19.00			19.50		
		124	5620		6.00			19.00			19.50		
		132	5660		6.00			19.00			19.50		
		144	5720		6.00			19.00			19.50		
	802.11n-HT40 MCS0	102	5510		6.00			17.00			17.50		
		110	5550		6.00			18.00			18.50		
		126	5630		6.00			18.50			19.00		
		134	5670		6.00			18.00			18.50		
		142	5710		6.00			18.50			19.00		
	802.11ac-VHT20 MCS0	100	5500		6.00			19.00			19.50		
		116	5580		6.00			19.00			19.50		
		124	5620		6.00			19.00			19.50		
		132	5660		6.00			19.00			19.50		
		144	5720		6.00			19.00			19.50		
	802.11ac-VHT40 MCS0	102	5510		6.00		not required	17.00	not required	not required	17.50	not required	
		110	5550		6.00			18.00			18.50		
		126	5630		6.00			18.00			18.50		
		134	5670		6.00			18.00			18.50		
		142	5710		6.00			18.50			19.00		
	802.11ac-VHT80 MCS0	106	5530		6.00			17.00			17.50		
		122	5610		6.00			17.00			17.50		
		138	5690		6.00			17.00			17.50		
	802.11ac-VHT160 MCS0	114	5570	5.90	6.00	99.70		16.00			16.50		
	802.11ax-HE20 MCS0	100	5500	not required	6.00	not required		19.00			19.50		
		116	5580		6.00			19.00			19.50		
		124	5620		6.00			19.00			19.50		
		132	5660		6.00			19.00			19.50		
		144	5720		6.00			19.00			19.50		
	802.11ax-HE40 MCS0	102	5510		6.00			17.00			17.50		
		110	5550		6.00			18.00			18.50		
		126	5630		6.00			18.50			19.00		
		134	5670		6.00			18.50			19.00		
		142	5710		6.00			18.50			19.00		
	802.11ax-HE80 MCS0	106	5530		6.00			17.00			17.50		
		122	5610		6.00			17.00			17.50		
		138	5690		6.00			17.00			17.50		
	802.11ax-HE160 MCS0	114	5570		6.00			16.00			16.50		

5.8GHz WLAN				Ant 4			Ant 5			Ant 4+5		
5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a 6Mbps	149	5745	not required	6.50	not required	not required	19.50	not required	not required	20.00	not required
		157	5785		6.50			19.50			20.00	
		165	5825		6.50			19.50			20.00	
	802.11n-HT20 MCS0	149	5745		6.50			19.50			20.00	
		157	5785		6.50			19.50			20.00	
		165	5825		6.50			19.50			20.00	
	802.11n-HT40 MCS0	151	5755		6.50			19.00			19.50	
		159	5795		6.50			18.00			18.50	
	802.11ac-VHT20 MCS0	149	5745		6.50			19.50			20.00	
		157	5785		6.50			19.50			20.00	
		165	5825		6.50			19.50			20.00	
	802.11ac-VHT40 MCS0	151	5755		6.50			19.00			19.50	
		159	5795		6.50			18.00			18.50	
	802.11ac-VHT80 MCS0	155	5775	6.40	6.50	99.70	17.50			18.00		
	802.11ax-HE20 MCS0	149	5745	not required	6.50	not required	19.50	20.00				
		157	5785		6.50		19.50	20.00				
165		5825	6.50		19.50		20.00					
802.11ax-HE40 MCS0	151	5755	19.00		19.50							
	159	5795	18.00		18.50							
802.11ax-HE80 MCS0	155	5775	6.50		17.50		18.00					

WiFi 6E				Ant 4			Ant 5			Ant 4+5				
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %		
WiFi 6E	802.11a 6Mbps	1	5955	not required	not required	not required	not required	not required	not required	not required	6.50	not required		
		57	6235								7.00			
		113	6515								4.50			
		173	6815								5.00			
		233	7115								5.50			
	802.11ax-HE20 MCS0	1	5955								-7.00		6.00	6.50
		57	6235								-6.50		4.00	7.00
		113	6515								-9.00		4.00	4.50
		173	6815								-8.50		4.50	8.00
		233	7115								-8.00		-5.50	5.50
	802.11ax-HE40 MCS0	3	5965								-4.00		9.00	9.50
		59	6245								-4.00		4.00	9.50
		107	6485								-6.00		4.00	7.50
		171	6805								-8.50		7.50	5.00
		227	7085								-5.50		7.50	8.00
	802.11ax-HE80 MCS0	7	5985								-1.00		12.00	12.50
		71	6305								-5.50		12.00	8.00
		119	6545								-3.00		10.50	10.50
		167	6785								-2.50		10.50	11.00
		215	7025								-2.00		11.00	11.50
	802.11ax-HE160 MCS0	15	6025	1.37	1.50	13.50	14.00							
		47	6185	1.67	2.00	12.50	13.00							
		111	6505	-0.03	0.00	12.00	12.50							
		175	6825	0.37	0.50	12.00	12.50							
		207	6985	0.97	1.00	12.50	15.00							

<2.4GHz Bluetooth>

Ant 4					
Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	9.72	not required	not required
	CH 39	2441	9.57		
	CH 78	2480	8.57		
Tune-up Limit			10	7.5	7.5

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	not required	not required
	CH 19	2440		
	CH 39	2480		
Tune-up Limit			3	3

Ant 5					
Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	not required	not required	not required
	CH 39	2441			
	CH 78	2480			
Tune-up Limit			9	6.5	6.5

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	not required	not required
	CH 19	2440		
	CH 39	2480		
Tune-up Limit			2.5	2.5

General Note:

- For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.83% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.

15. Exclusions Applied

Note:

- When the P-sensor on the Frontpod is triggered and WiFi is ON, the WWAN transmitter on Ant 1 is low, SAR test exclusion can be applied per KDB 447498 D01v06.
- Per KDB 447498 D01v06, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. When the test exclusion threshold ≤ 3 , SAR testing is not required.
- Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$
for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
 - 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

Band	Exposure Position	Distance (mm)	Tune-up limit (dBm)	Exclusion thresholds	Limit thresholds	SAR Required
LTE B2 Ant 1	Front Surface	< 5	3.5	0.083	3	No
LTE B48 Ant 1			4.5	0.145	3	No
LTE B66 Ant 1			3.5	0.080	3	No
FR1 n2 Ant 1			2.5	0.066	3	No
FR1 n66 Ant 1			4.5	0.100	3	No
FR1 n77 Ant 1			5.5	0.095	3	No
FR1 n77 Ant 2			8.0	0.168	3	No
FR1 n77 Ant 3			7.0	0.134	3	No

16. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
4. For the exposure positions that proximity sensor power reduction is applied for SAR compliance, additional SAR testing was performed with EUT transmitting full power at the sensor trigger distance per KDB 616217.
5. Antenna 1, 2, 3,4, x, y are located in the Frontpod, and Antenna 0, 5, z, z1 are located in the Rearpod

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 4 SAR test was covered by Band 66; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. The maximum output power, including tolerance, for the smaller band is $\leq$ the larger band to qualify for the SAR test exclusion.
 - b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

5G NR Note:

1. Referencing the procedure in KDB 941225, the test procedures are outlined as below:
 - a. To start SAR test for the largest channel bandwidth for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. Also do SAR test for 50% RB allocation for PI/2 BPSK SAR testing using 1RB PI/2 BPSK allocation procedure
 - b. For PI/2 BPSK with 100% RB allocation, SAR test is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
 - c. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not $\frac{1}{2}$ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - d. Smaller bandwidth output power for each RB allocation configuration for this device is not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
 - e. For 5G FR1 n5/n77, the maximum channel bandwidth does not support three non-overlapping channels in the frequency band, the middle channel of the group of overlapping channels were selected for testing.
 - f. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission duty factor, except for TDD power class 2 that 50% transmission duty factor is set

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, WLAN5.2GHz SAR testing is not required when the WLAN5.3GHz band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for WLAN5.2GHz band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6 W/kg and SAR peak to location ratio ≤ 0.04 , no additional SAR measurements for MIMO.
6. Per KDB 248227 D01v02r02, for WLAN SAR was perform single antenna and do the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6 W/kg and SAR peak to location ratio ≤ 0.04 , no additional SAR measurements for MIMO.
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

WLAN PD Note:

1. The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
2. Batteries are fully charged at the beginning of the measurements. The DUT was connected to a wall charger for some measurements due to the test duration. It was confirmed that the charger plugged into this DUT did not impact the near-field PD test results.
3. Absorbed power density (APD) using a 4cm² averaging area is reported based on SAR measurements.
4. Power density was calculated by repeated E-field measurements on two measurement planes separated by $\lambda/4$.
5. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools.
6. Per FCC guidance and equipment manufacturer guidance, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 2.68 dB (85.4%) was used to determine the psPD measurement scaling factor.
7. The measurement procedure consists of measuring the PD_{inc} at two different distances: 2 mm (compliance distance) and $\lambda/5$. The grid extents should be large enough to fully capture the transmitted energy. The grid step should be fine enough to demonstrate that the integrated Power Density iPD_n fulfill the criterion described below. Since iPD ratio between the two distances is ≥ -1 dB, the grid step (0.0625) was sufficient for determining compliance at d=2mm.

$$10 \cdot \log_{10} \frac{iPD_n(2mm)}{iPD_n(\lambda/5)} \geq -1$$

SAR Test Position:

Transmit Antenna	Physical device	SAR Test positions
WWAN Ant. 0	RearPod	Long Edge, Inner Surface
WWAN Ant. 1	FrontPod	Front Surface, Back Surface
WWAN Ant. 2	FrontPod	Front Surface, Back Surface
WWAN Ant. 3	FrontPod	Front Surface, Back Surface
WiFi /BT Ant. 4	FrontPod	Long Edge, Inner Surface
WiFi /BT Ant. 5	RearPod	Front Surface, Back Surface

Remark: The Test positions are confirmed by FCC in the KDB inquiry, and the positioning details are available in the setup photo

**16.1 Body SAR****<FDD LTE SAR>**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power State	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2_Ant 0	20M	QPSK	1	0	Long Edge	0mm	DSI 2	Rearpod	18900	1880	23.17	24.00	1.211	1.000	-0.17	0.142	0.172
	LTE Band 2_Ant 0	20M	QPSK	50	50	Long Edge	0mm	DSI 2	Rearpod	18900	1880	22.30	23.00	1.175	1.000	0.18	0.117	0.137
	LTE Band 2_Ant 0	20M	QPSK	1	0	Inner Surface	0mm	DSI 2	Rearpod	18900	1880	23.17	24.00	1.211	1.000	-0.1	0.047	0.057
	LTE Band 2_Ant 0	20M	QPSK	50	50	Inner Surface	0mm	DSI 2	Rearpod	18900	1880	22.30	23.00	1.175	1.000	-0.09	0.040	0.047
01	LTE Band 2_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	19100	1900	15.60	16.50	1.230	1.000	0.1	1.110	1.366
	LTE Band 2_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	18700	1860	15.48	16.50	1.265	1.000	0.07	1.060	1.341
	LTE Band 2_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	18900	1880	15.56	16.50	1.242	1.000	0.03	0.996	1.237
	LTE Band 2_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	19100	1900	15.52	16.50	1.253	1.000	0.07	1.020	1.278
	LTE Band 2_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	18700	1860	15.42	16.50	1.282	1.000	0.09	0.958	1.228
	LTE Band 2_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	18900	1880	15.43	16.50	1.279	1.000	-0.06	0.941	1.204
	LTE Band 2_Ant 1	20M	QPSK	100	0	Front Surface	0mm	DSI 4/5	Frontpod	19100	1900	15.46	16.50	1.271	1.000	-0.11	0.900	1.144
	LTE Band 2_Ant 1	20M	QPSK	1	0	Back Surface	0mm	DSI 2	Frontpod	18700	1860	23.34	24.00	1.164	1.000	0.01	0.239	0.278
	LTE Band 2_Ant 1	20M	QPSK	50	50	Back Surface	0mm	DSI 2	Frontpod	18700	1860	22.47	23.00	1.130	1.000	0.07	0.201	0.227
	LTE Band 2_Ant 1	20M	QPSK	1	0	Front Surface	14mm	DSI 2	Frontpod	18700	1860	23.34	24.00	1.164	1.000	0.12	0.365	0.425
	LTE Band 2_Ant 1	20M	QPSK	50	50	Front Surface	14mm	DSI 2	Frontpod	18700	1860	22.47	23.00	1.130	1.000	0.17	0.308	0.348
02	LTE Band 4_Ant 0	20M	QPSK	1	0	Long Edge	0mm	DSI 2	Rearpod	20175	1732.5	23.41	24.00	1.146	1.000	-0.11	0.108	0.124
	LTE Band 4_Ant 0	20M	QPSK	50	0	Long Edge	0mm	DSI 2	Rearpod	20175	1732.5	22.24	23.00	1.191	1.000	0.06	0.086	0.102
	LTE Band 4_Ant 0	20M	QPSK	1	0	Inner Surface	0mm	DSI 2	Rearpod	20175	1732.5	23.41	24.00	1.146	1.000	0.15	0.003	0.003
	LTE Band 4_Ant 0	20M	QPSK	50	0	Inner Surface	0mm	DSI 2	Rearpod	20175	1732.5	22.24	23.00	1.191	1.000	-0.12	0.001	0.001
03	LTE Band 5_Ant 0	10M	QPSK	1	0	Long Edge	0mm	DSI 3/5	Rearpod	20525	836.5	22.01	22.80	1.199	1.000	-0.07	0.954	1.144
	LTE Band 5_Ant 0	10M	QPSK	25	0	Long Edge	0mm	DSI 3/5	Rearpod	20525	836.5	22.00	22.80	1.202	1.000	0.03	0.912	1.096
	LTE Band 5_Ant 0	10M	QPSK	50	0	Long Edge	0mm	DSI 3/5	Rearpod	20525	836.5	21.70	22.80	1.288	1.000	0.11	0.808	1.041
17	LTE Band 5_Ant 0	10M	QPSK	1	0	Inner Surface	0mm	DSI 2	Rearpod	20525	836.5	23.49	24.00	1.125	1.000	-0.03	0.256	0.288
	LTE Band 5_Ant 0	10M	QPSK	25	25	Inner Surface	0mm	DSI 2	Rearpod	20525	836.5	22.75	23.00	1.059	1.000	-0.18	0.189	0.200
	LTE Band 5_Ant 0	10M	QPSK	1	0	Long Edge	14mm	DSI 2	Rearpod	20525	836.5	23.49	24.00	1.125	1.000	0.12	0.132	0.148
	LTE Band 5_Ant 0	10M	QPSK	25	25	Long Edge	14mm	DSI 2	Rearpod	20525	836.5	22.75	23.00	1.059	1.000	0.05	0.124	0.131
	LTE Band 5B_Ant 0	10M	QPSK	1	0	Long Edge	0mm	DSI 3/5	Rearpod	20450	829	21.57	22.80	1.327	1.000	0.12	0.862	1.144
04	LTE Band 13_Ant 0	10M	QPSK	1	0	Long Edge	0mm	DSI 2	Rearpod	23230	782	23.46	24.00	1.132	1.000	0.09	1.140	1.291
	LTE Band 13_Ant 0	10M	QPSK	25	25	Long Edge	0mm	DSI 2	Rearpod	23230	782	22.52	23.00	1.117	1.000	-0.01	0.950	1.061
	LTE Band 13_Ant 0	10M	QPSK	50	0	Long Edge	0mm	DSI 2	Rearpod	23230	782	22.58	23.00	1.102	1.000	-0.01	0.961	1.059
	LTE Band 13_Ant 0	10M	QPSK	1	0	Inner Surface	0mm	DSI 2	Rearpod	23230	782	23.46	24.00	1.132	1.000	-0.04	0.502	0.568
	LTE Band 13_Ant 0	10M	QPSK	25	25	Inner Surface	0mm	DSI 2	Rearpod	23230	782	22.52	23.00	1.117	1.000	-0.19	0.424	0.474
05	LTE Band 66_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	132322	1745	15.78	16.50	1.180	1.000	0.05	1.010	1.192
	LTE Band 66_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	132072	1720	15.61	16.50	1.227	1.000	0.07	0.966	1.186
	LTE Band 66_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	132572	1770	15.65	16.50	1.216	1.000	-0.12	0.979	1.191
	LTE Band 66_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	132322	1745	15.52	16.50	1.253	1.000	-0.11	0.941	1.179
	LTE Band 66_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	132072	1720	15.51	16.50	1.256	1.000	0.13	0.925	1.162
	LTE Band 66_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	132572	1770	15.40	16.50	1.288	1.000	-0.04	0.914	1.177
	LTE Band 66_Ant 1	20M	QPSK	100	0	Front Surface	0mm	DSI 4/5	Frontpod	132322	1745	15.45	16.50	1.274	1.000	0.05	0.900	1.146
	LTE Band 66_Ant 1	20M	QPSK	1	0	Back Surface	0mm	DSI 2	Frontpod	132072	1720	23.46	24.00	1.132	1.000	-0.11	0.163	0.185
	LTE Band 66_Ant 1	20M	QPSK	50	50	Back Surface	0mm	DSI 2	Frontpod	132072	1720	22.47	23.00	1.130	1.000	-0.12	0.137	0.155
	LTE Band 66_Ant 1	20M	QPSK	1	0	Front Surface	14mm	DSI 2	Frontpod	132072	1720	23.46	24.00	1.132	1.000	0.04	0.038	0.043
	LTE Band 66_Ant 1	20M	QPSK	50	50	Front Surface	14mm	DSI 2	Frontpod	132072	1720	22.47	23.00	1.130	1.000	0.01	0.031	0.035
	LTE Band 66B_Ant 1	15M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	132047	1717.5	15.76	16.50	1.186	1.000	0.11	0.932	1.105
	LTE Band 66C_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	132072	1720	15.76	16.50	1.186	1.000	0.01	0.940	1.115

**<TDD LTE SAR>**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power State	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	LTE Band 48_Ant 0	20M	QPSK	1	0	Long Edge	0mm	DSI 3/5	Rearpod	55830	3609	23.24	23.50	1.062	62.9	1.006	-0.04	1.160	1.239
	LTE Band 48_Ant 0	20M	QPSK	1	0	Long Edge	0mm	DSI 3/5	Rearpod	55340	3560	23.05	23.50	1.109	62.9	1.006	0.08	1.010	1.127
	LTE Band 48_Ant 0	20M	QPSK	1	0	Long Edge	0mm	DSI 3/5	Rearpod	56150	3641	23.14	23.50	1.086	62.9	1.006	-0.18	1.120	1.224
	LTE Band 48_Ant 0	20M	QPSK	1	0	Long Edge	0mm	DSI 3/5	Rearpod	56640	3690	23.22	23.50	1.067	62.9	1.006	-0.15	1.110	1.191
	LTE Band 48_Ant 0	20M	QPSK	50	50	Long Edge	0mm	DSI 3/5	Rearpod	55830	3609	22.31	22.50	1.045	62.9	1.006	-0.02	0.989	1.039
	LTE Band 48_Ant 0	20M	QPSK	50	50	Long Edge	0mm	DSI 3/5	Rearpod	55340	3560	22.09	22.50	1.099	62.9	1.006	-0.03	0.884	0.977
	LTE Band 48_Ant 0	20M	QPSK	50	50	Long Edge	0mm	DSI 3/5	Rearpod	56150	3641	22.21	22.50	1.069	62.9	1.006	0.12	0.891	0.958
	LTE Band 48_Ant 0	20M	QPSK	50	50	Long Edge	0mm	DSI 3/5	Rearpod	56640	3690	22.17	22.50	1.079	62.9	1.006	0.07	0.962	1.044
	LTE Band 48_Ant 0	20M	QPSK	100	0	Long Edge	0mm	DSI 3/5	Rearpod	55830	3609	22.19	22.50	1.074	62.9	1.006	-0.09	0.832	0.899
	LTE Band 48_Ant 0	20M	QPSK	1	0	Long Edge	14mm	DSI 2	Rearpod	55830	3609	23.77	24.00	1.054	62.9	1.006	0.11	0.233	0.247
	LTE Band 48_Ant 0	20M	QPSK	1	0	Long Edge	14mm	DSI 2	Rearpod	55830	3609	23.77	24.00	1.054	62.9	1.006	-0.15	0.211	0.224
	LTE Band 48_Ant 0	20M	QPSK	1	0	Inner Surface	0mm	DSI 2	Rearpod	55830	3609	23.77	24.00	1.054	62.9	1.006	0.09	0.125	0.133
	LTE Band 48_Ant 0	20M	QPSK	50	50	Inner Surface	0mm	DSI 2	Rearpod	55830	3609	22.78	23.00	1.052	62.9	1.006	0.12	0.103	0.109
	LTE Band 48C_Ant 0	20M	QPSK	1	0	Long Edge	0mm	DSI 2	Rearpod	55340	3560	23.58	24.00	1.102	62.9	1.006	0.07	1.100	1.219
	LTE Band 48_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	55830	3609	17.24	17.50	1.062	62.9	1.006	0.1	1.120	1.196
	LTE Band 48_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	55340	3560	17.11	17.50	1.094	62.9	1.006	0.08	0.998	1.098
	LTE Band 48_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	56150	3641	17.00	17.50	1.122	62.9	1.006	-0.18	1.040	1.174
	LTE Band 48_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	56640	3690	16.89	17.50	1.151	62.9	1.006	-0.15	0.881	1.020
	LTE Band 48_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	55830	3609	17.16	17.50	1.081	62.9	1.006	-0.02	0.939	1.022
	LTE Band 48_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	55340	3560	17.15	17.50	1.084	62.9	1.006	0.01	0.812	0.885
	LTE Band 48_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	56150	3641	17.13	17.50	1.089	62.9	1.006	-0.03	0.824	0.903
	LTE Band 48_Ant 1	20M	QPSK	50	0	Front Surface	0mm	DSI 4/5	Frontpod	56640	3690	17.09	17.50	1.099	62.9	1.006	0.12	0.784	0.867
	LTE Band 48_Ant 1	20M	QPSK	100	0	Front Surface	0mm	DSI 4/5	Frontpod	55830	3609	17.14	17.50	1.086	62.9	1.006	0.15	0.831	0.908
	LTE Band 48_Ant 1	20M	QPSK	1	0	Back Surface	0mm	DSI 2	Frontpod	56640	3690	22.75	24.00	1.334	62.9	1.006	0.01	0.490	0.657
	LTE Band 48_Ant 1	20M	QPSK	1	0	Back Surface	0mm	DSI 2	Frontpod	55340	3560	22.23	24.00	1.503	62.9	1.006	-0.03	0.452	0.683
	LTE Band 48_Ant 1	20M	QPSK	1	0	Back Surface	0mm	DSI 2	Frontpod	56150	3641	22.60	24.00	1.380	62.9	1.006	0.11	0.441	0.612
	LTE Band 48_Ant 1	20M	QPSK	1	0	Back Surface	0mm	DSI 2	Frontpod	55830	3609	22.47	24.00	1.422	62.9	1.006	0.12	0.466	0.667
	LTE Band 48_Ant 1	20M	QPSK	50	50	Back Surface	0mm	DSI 2	Frontpod	56640	3690	21.57	23.00	1.390	62.9	1.006	0.14	0.382	0.534
	LTE Band 48_Ant 1	20M	QPSK	50	50	Back Surface	0mm	DSI 2	Frontpod	55340	3560	21.02	23.00	1.578	62.9	1.006	0.09	0.341	0.541
	LTE Band 48_Ant 1	20M	QPSK	50	50	Back Surface	0mm	DSI 2	Frontpod	56150	3641	21.47	23.00	1.422	62.9	1.006	-0.03	0.332	0.475
	LTE Band 48_Ant 1	20M	QPSK	50	50	Back Surface	0mm	DSI 2	Frontpod	55830	3609	21.20	23.00	1.514	62.9	1.006	0.17	0.370	0.563
	LTE Band 48_Ant 1	20M	QPSK	100	0	Back Surface	0mm	DSI 2	Frontpod	56640	3690	21.69	23.00	1.352	62.9	1.006	0.09	0.342	0.465
	LTE Band 48_Ant 1	20M	QPSK	1	0	Front Surface	14mm	DSI 2	Frontpod	56640	3690	22.75	24.00	1.334	62.9	1.006	0.04	0.365	0.490
	LTE Band 48_Ant 1	20M	QPSK	50	50	Front Surface	14mm	DSI 2	Frontpod	56640	3690	21.57	23.00	1.390	62.9	1.006	0.04	0.263	0.368
	LTE Band 48C_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	55340	3560	16.68	17.50	1.208	62.9	1.006	0.01	1.000	1.215



<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power State	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n2_Ant 0	20M	BPSK	1	1	Long Edge	0mm	DSI 2	Rearpod	376000	1880	23.26	24.00	1.186	1.000	-0.12	0.236	0.280
	FR1 n2_Ant 0	20M	BPSK	50	28	Long Edge	0mm	DSI 2	Rearpod	376000	1880	23.14	24.00	1.219	1.000	0.03	0.222	0.271
	FR1 n2_Ant 0	20M	BPSK	1	1	Inner Surface	0mm	DSI 2	Rearpod	376000	1880	23.26	24.00	1.186	1.000	0.19	0.061	0.072
	FR1 n2_Ant 0	20M	BPSK	50	28	Inner Surface	0mm	DSI 2	Rearpod	376000	1880	23.14	24.00	1.219	1.000	0.13	0.059	0.072
07	FR1 n2_Ant 1	20M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	376000	1880	14.72	15.50	1.197	1.000	0.1	0.927	1.109
	FR1 n2_Ant 1	20M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	372000	1860	14.59	15.50	1.233	1.000	0.03	0.891	1.099
	FR1 n2_Ant 1	20M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	380000	1900	14.64	15.50	1.219	1.000	-0.04	0.884	1.078
	FR1 n2_Ant 1	20M	BPSK	50	28	Front Surface	0mm	DSI 4/5	Frontpod	376000	1880	14.69	15.50	1.205	1.000	0.11	0.841	1.013
	FR1 n2_Ant 1	20M	BPSK	50	28	Front Surface	0mm	DSI 4/5	Frontpod	372000	1860	14.62	15.50	1.225	1.000	-0.09	0.833	1.020
	FR1 n2_Ant 1	20M	BPSK	50	28	Front Surface	0mm	DSI 4/5	Frontpod	380000	1900	14.60	15.50	1.230	1.000	0.12	0.830	1.021
	FR1 n2_Ant 1	20M	BPSK	100	0	Front Surface	0mm	DSI 4/5	Frontpod	376000	1880	14.55	15.50	1.245	1.000	0.14	0.796	0.991
	FR1 n2_Ant 1	20M	BPSK	1	1	Back Surface	0mm	DSI 2	Frontpod	376000	1880	23.15	24.00	1.216	1.000	-0.15	0.528	0.642
	FR1 n2_Ant 1	20M	BPSK	50	28	Back Surface	0mm	DSI 2	Frontpod	376000	1880	23.05	24.00	1.245	1.000	0.02	0.510	0.635
	FR1 n2_Ant 1	20M	BPSK	1	1	Front Surface	14mm	DSI 2	Frontpod	376000	1880	23.15	24.00	1.216	1.000	-0.08	0.399	0.485
	FR1 n2_Ant 1	20M	BPSK	50	28	Front Surface	14mm	DSI 2	Frontpod	376000	1880	23.05	24.00	1.245	1.000	-0.14	0.382	0.475
08	FR1 n5_Ant 0	20M	BPSK	1	1	Long Edge	0mm	DSI 2	Rearpod	167300	836.5	23.52	24.00	1.117	1.000	-0.11	1.030	1.150
	FR1 n5_Ant 0	20M	BPSK	50	28	Long Edge	0mm	DSI 2	Rearpod	167300	836.5	23.59	24.00	1.099	1.000	0.09	0.957	1.052
	FR1 n5_Ant 0	20M	BPSK	100	0	Long Edge	0mm	DSI 2	Rearpod	167300	836.5	23.18	23.50	1.076	1.000	0.04	0.900	0.969
	FR1 n5_Ant 0	20M	BPSK	1	1	Inner Surface	0mm	DSI 2	Rearpod	167300	836.5	23.52	24.00	1.117	1.000	-0.02	0.222	0.248
	FR1 n5_Ant 0	20M	BPSK	50	28	Inner Surface	0mm	DSI 2	Rearpod	167300	836.5	23.59	24.00	1.099	1.000	-0.04	0.236	0.259
09	FR1 n66_Ant 1	30M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	349000	1745	16.78	17.50	1.180	1.000	0.08	1.050	1.239
	FR1 n66_Ant 1	30M	BPSK	80	40	Front Surface	0mm	DSI 4/5	Frontpod	349000	1745	16.71	17.50	1.199	1.000	0.09	1.000	1.199
	FR1 n66_Ant 1	30M	BPSK	160	0	Front Surface	0mm	DSI 4/5	Frontpod	349000	1745	16.65	17.50	1.216	1.000	-0.12	0.961	1.169
	FR1 n66_Ant 1	30M	BPSK	1	1	Back Surface	0mm	DSI 2	Frontpod	349000	1745	23.26	24.00	1.186	1.000	0.16	0.170	0.202
	FR1 n66_Ant 1	30M	BPSK	80	40	Back Surface	0mm	DSI 2	Frontpod	349000	1745	23.36	24.00	1.159	1.000	-0.14	0.166	0.192
	FR1 n66_Ant 1	30M	BPSK	1	1	Front Surface	14mm	DSI 2	Frontpod	349000	1745	23.26	24.00	1.186	1.000	-0.16	0.202	0.240
	FR1 n66_Ant 1	30M	BPSK	80	40	Front Surface	14mm	DSI 2	Frontpod	349000	1745	23.36	24.00	1.159	1.000	-0.03	0.194	0.225



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power State	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n77_Ant 0	100M	BPSK	1	1	Long Edge	0mm	DSI 3/5	Rearpod	656000	3840	20.19	20.50	1.074	1.000	-0.1	1.140	1.224
	FR1 n77_Ant 0	100M	BPSK	135	0	Long Edge	0mm	DSI 3/5	Rearpod	656000	3840	19.99	20.50	1.125	1.000	0.09	0.926	1.041
	FR1 n77_Ant 0	100M	BPSK	270	0	Long Edge	0mm	DSI 3/5	Rearpod	656000	3840	19.93	20.50	1.140	1.000	0.12	0.909	1.036
	FR1 n77_Ant 0	100M	BPSK	1	1	Inner Surface	0mm	DSI 2	Rearpod	656000	3840	23.49	24.00	1.125	1.000	0.06	0.153	0.172
	FR1 n77_Ant 0	100M	BPSK	135	69	Inner Surface	0mm	DSI 2	Rearpod	656000	3840	22.90	24.00	1.288	1.000	0.14	0.131	0.169
	FR1 n77_HPUE_Ant 0	100M	BPSK	1	1	Long Edge	0mm	DSI 3/5	Rearpod	656000	3840	22.91	23.50	1.146	1.000	0.04	1.011	1.158
	FR1 n77_Ant 0	100M	BPSK	1	1	Long Edge	14mm	DSI 2	Rearpod	656000	3840	23.49	24.00	1.125	1.000	-0.18	0.216	0.243
	FR1 n77_Ant 0	100M	BPSK	135	69	Long Edge	14mm	DSI 2	Rearpod	656000	3840	22.90	24.00	1.288	1.000	-0.08	0.193	0.249
	FR1 n77_Ant 1	100M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	15.14	15.50	1.086	1.000	0.02	1.140	1.239
	FR1 n77_Ant 1	100M	BPSK	135	69	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	15.12	15.50	1.091	1.000	0.07	1.020	1.113
	FR1 n77_Ant 1	100M	BPSK	270	0	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	15.01	15.50	1.119	1.000	-0.06	0.992	1.110
	FR1 n77_Ant 1	100M	BPSK	1	1	Back Surface	0mm	DSI 2	Frontpod	656000	3840	23.81	24.00	1.045	1.000	-0.02	0.690	0.721
	FR1 n77_Ant 1	100M	BPSK	135	69	Back Surface	0mm	DSI 2	Frontpod	656000	3840	22.97	24.00	1.268	1.000	0.1	0.548	0.695
	FR1 n77_Ant 1	100M	BPSK	270	0	Back Surface	0mm	DSI 2	Frontpod	656000	3840	22.47	23.50	1.268	1.000	-0.13	0.561	0.711
	FR1 n77_HPUE_Ant 1	100M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	17.84	18.50	1.164	1.000	0.11	1.020	1.187
	FR1 n77_Ant 1	100M	BPSK	1	1	Front Surface	14mm	DSI 2	Frontpod	656000	3840	23.81	24.00	1.045	1.000	-0.05	0.578	0.604
	FR1 n77_Ant 1	100M	BPSK	135	69	Front Surface	14mm	DSI 2	Frontpod	656000	3840	22.97	24.00	1.268	1.000	-0.12	0.480	0.608
10	FR1 n77_Ant 2	100M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	17.32	18.00	1.169	1.000	-0.11	1.190	1.392
	FR1 n77_Ant 2	100M	BPSK	135	0	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	17.31	18.00	1.172	1.000	0.04	1.010	1.184
	FR1 n77_Ant 2	100M	BPSK	270	0	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	17.22	18.00	1.197	1.000	0.11	0.996	1.192
	FR1 n77_Ant 2	100M	BPSK	1	1	Back Surface	0mm	DSI 2	Frontpod	656000	3840	23.44	24.00	1.138	1.000	-0.02	0.632	0.719
	FR1 n77_Ant 2	100M	BPSK	135	69	Back Surface	0mm	DSI 2	Frontpod	656000	3840	23.35	24.00	1.161	1.000	-0.06	0.615	0.714
	FR1 n77_Ant 2	100M	BPSK	270	0	Back Surface	0mm	DSI 2	Frontpod	656000	3840	22.92	23.50	1.143	1.000	0.02	0.611	0.698
	FR1 n77_HPUE_Ant 2	100M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	20.20	21.00	1.202	1.000	0.11	1.080	1.298
	FR1 n77_Ant 2	100M	BPSK	1	1	Front Surface	14mm	DSI 2	Frontpod	656000	3840	23.44	24.00	1.138	1.000	-0.01	0.502	0.571
	FR1 n77_Ant 2	100M	BPSK	135	69	Front Surface	14mm	DSI 2	Frontpod	656000	3840	23.35	24.00	1.161	1.000	-0.06	0.466	0.541
	FR1 n77_Ant 3	100M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	16.24	17.00	1.191	1.000	-0.09	1.050	1.251
	FR1 n77_Ant 3	100M	BPSK	135	69	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	16.21	17.00	1.199	1.000	0.09	0.969	1.162
	FR1 n77_Ant 3	100M	BPSK	270	0	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	16.22	17.00	1.197	1.000	-0.03	0.954	1.142
	FR1 n77_Ant 3	100M	BPSK	1	1	Back Surface	0mm	DSI 2	Frontpod	656000	3840	23.41	24.00	1.146	1.000	0.11	0.499	0.572
	FR1 n77_Ant 3	100M	BPSK	135	69	Back Surface	0mm	DSI 2	Frontpod	656000	3840	23.34	24.00	1.164	1.000	-0.14	0.481	0.560
	FR1 n77_HPUE_Ant 3	100M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	19.20	20.00	1.202	1.000	0.11	1.020	1.226
	FR1 n77_Ant 3	100M	BPSK	1	1	Front Surface	14mm	DSI 2	Frontpod	656000	3840	23.41	24.00	1.146	1.000	0.15	0.632	0.724
	FR1 n77_Ant 3	100M	BPSK	135	69	Front Surface	14mm	DSI 2	Frontpod	656000	3840	23.34	24.00	1.164	1.000	0.07	0.611	0.711



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	6	2437	19.40	19.50	1.023	99.5	1.005	0.01	0.102	0.105
	WLAN2.4GHz	802.11b 1Mbps	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	6	2437	19.40	19.50	1.023	99.5	1.005	-0.19	0.218	0.224
11	WLAN2.4GHz	802.11b 1Mbps	Back Surface	0mm	Ant 4	1/2/3/4/5	Frontpod	1	2412	18.90	19.50	1.148	99.5	1.005	0.04	0.448	0.517
	WLAN2.4GHz	802.11b 1Mbps	Front Surface	14mm	Ant 4	1/2/3/4	Frontpod	1	2412	18.90	19.50	1.148	99.5	1.005	0.07	0.158	0.182
	WLAN2.4GHz	802.11b 1Mbps	Front Surface	0mm	Ant 4	5	Frontpod	1	2412	6.20	6.50	1.072	99.5	1.005	0.05	0.125	0.135
	WLAN5GHz	802.11a 6Mbps	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	64	5320	18.20	19.00	1.202	99.2	1.008	0.09	0.188	0.228
	WLAN5GHz	802.11a 6Mbps	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	64	5320	18.20	19.00	1.202	99.2	1.008	-0.12	0.394	0.477
	WLAN5GHz	802.11a 6Mbps	Back Surface	0mm	Ant 4	1/2	Frontpod	60	5300	18.50	19.00	1.122	99.2	1.008	0.01	0.610	0.690
12	WLAN5GHz	802.11a 6Mbps	Front Surface	14mm	Ant 4	1/2	Frontpod	60	5300	18.50	19.00	1.122	99.2	1.008	-0.06	0.659	0.745
	WLAN5GHz	802.11a 6Mbps	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	100	5500	18.10	19.00	1.230	99.2	1.008	-0.09	0.148	0.184
	WLAN5GHz	802.11a 6Mbps	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	100	5500	18.10	19.00	1.230	99.2	1.008	-0.01	0.410	0.508
13	WLAN5GHz	802.11a 6Mbps	Back Surface	0mm	Ant 4	1/2	Frontpod	100	5500	18.90	19.00	1.023	99.2	1.008	0.03	0.545	0.562
	WLAN5GHz	802.11a 6Mbps	Front Surface	14mm	Ant 4	1/2	Frontpod	100	5500	18.90	19.00	1.023	99.2	1.008	-0.12	0.369	0.381
	WLAN5GHz	802.11a 6Mbps	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	165	5825	18.00	19.50	1.413	99.2	1.008	0.01	0.145	0.206
18	WLAN5GHz	802.11a 6Mbps	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	165	5825	18.00	19.50	1.413	99.2	1.008	-0.07	0.449	0.639
	WLAN5GHz	802.11a 6Mbps	Back Surface	0mm	Ant 4	1/2	Frontpod	165	5825	19.00	19.50	1.122	99.2	1.008	-0.06	0.621	0.702
14	WLAN5GHz	802.11a 6Mbps	Front Surface	14mm	Ant 4	1/2	Frontpod	165	5825	19.00	19.50	1.122	99.2	1.008	-0.03	0.670	0.758
	WLAN5GHz	802.11ac-VHT80 MCS0	Back Surface	0mm	Ant 4	3/4	Frontpod	58	5290	15.60	16.00	1.096	99.7	1.003	0.07	0.304	0.334
	WLAN5GHz	802.11ac-VHT80 MCS0	Front Surface	14mm	Ant 4	3/4	Frontpod	58	5290	15.60	16.00	1.096	99.7	1.003	-0.06	0.377	0.415
	WLAN5GHz	802.11ac-VHT160 MCS0	Back Surface	0mm	Ant 4	3/4	Frontpod	114	5570	15.70	16.00	1.072	99.7	1.003	-0.11	0.344	0.370
	WLAN5GHz	802.11ac-VHT160 MCS0	Front Surface	14mm	Ant 4	3/4	Frontpod	114	5570	15.70	16.00	1.072	99.7	1.003	0.13	0.389	0.418
	WLAN5GHz	802.11ac-VHT80 MCS0	Back Surface	0mm	Ant 4	3/4	Frontpod	155	5775	16.40	16.50	1.023	99.7	1.003	-0.13	0.262	0.269
	WLAN5GHz	802.11ac-VHT80 MCS0	Front Surface	14mm	Ant 4	3/4	Frontpod	155	5775	16.40	16.50	1.023	99.7	1.003	0.14	0.289	0.297
	WLAN5GHz	802.11ac-VHT160 MCS0	Front Surface	0mm	Ant 4	5	Frontpod	50	5250	5.70	6.00	1.072	99.7	1.003	-0.12	0.379	0.407
	WLAN5GHz	802.11ac-VHT160 MCS0	Front Surface	0mm	Ant 4	5	Frontpod	114	5570	5.90	6.00	1.023	99.7	1.003	0.07	0.321	0.329
	WLAN5GHz	802.11ac-VHT80 MCS0	Front Surface	0mm	Ant 4	5	Frontpod	155	5775	6.40	6.50	1.023	99.7	1.003	-0.01	0.232	0.238

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	00	2402	15.62	16.50	1.223	76.83	1.084	-0.03	0.001	0.001
	Bluetooth	1Mbps	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	00	2402	15.62	16.50	1.223	76.83	1.084	0.03	0.015	0.020
15	Bluetooth	1Mbps	Back Surface	0mm	Ant 4	1/2/3/4/5	Frontpod	39	2441	16.32	17.50	1.311	76.83	1.084	0.08	0.064	0.091
	Bluetooth	1Mbps	Front Surface	14mm	Ant 4	1/2/3/4	Frontpod	39	2441	16.32	17.50	1.311	76.83	1.084	0.12	0.001	0.001
	Bluetooth	1Mbps	Front Surface	0mm	Ant 4	5	Frontpod	00	2402	9.72	10.00	1.067	76.8	1.085	0.11	0.067	0.078

16.2 6GHz WLAN SAR Test Result

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	APD
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	15	6025	13.07	13.50	1.104	99.1	1.009	0.03	0.038	0.042	0.301
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	47	6185	12.47	12.50	1.007	99.1	1.009	0.15	0.021	0.021	0.200
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	111	6505	11.97	12.00	1.007	99.1	1.009	0.07	0.029	0.029	0.251
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	175	6825	11.67	12.00	1.079	99.1	1.009	-0.12	0.044	0.048	0.451
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	0mm	Ant 5	1/2/3/4/5	Rearpod	207	6985	11.97	12.50	1.130	99.1	1.009	0.09	0.052	0.059	0.627
	WLAN6GHz	802.11ax-HE160 MCS0	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	15	6025	13.07	13.50	1.104	99.1	1.009	0.01	0.097	0.108	0.777
	WLAN6GHz	802.11ax-HE160 MCS0	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	47	6185	12.47	12.50	1.007	99.1	1.009	-0.19	0.080	0.081	1.050
	WLAN6GHz	802.11ax-HE160 MCS0	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	111	6505	11.97	12.00	1.007	99.1	1.009	0.16	0.085	0.086	0.852
	WLAN6GHz	802.11ax-HE160 MCS0	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	175	6825	11.67	12.00	1.079	99.1	1.009	-0.19	0.096	0.105	1.000
	WLAN6GHz	802.11ax-HE160 MCS0	Inner Surface	0mm	Ant 5	1/2/3/4/5	Rearpod	207	6985	11.97	12.50	1.130	99.1	1.009	0.05	0.079	0.090	0.702
	WLAN6GHz	802.11ax-HE160 MCS0	Back Surface	0mm	Ant 4	1/2/3/4	Frontpod	47	6185	14.77	15.00	1.054	99.1	1.009	-0.05	0.062	0.066	0.727
	WLAN6GHz	802.11ax-HE160 MCS0	Back Surface	0mm	Ant 4	1/2/3/4	Frontpod	15	6025	14.37	14.50	1.030	99.1	1.009	-0.04	0.054	0.056	0.652
	WLAN6GHz	802.11ax-HE160 MCS0	Back Surface	0mm	Ant 4	1/2/3/4	Frontpod	111	6505	12.97	13.00	1.007	99.1	1.009	-0.06	0.045	0.046	0.601
	WLAN6GHz	802.11ax-HE160 MCS0	Back Surface	0mm	Ant 4	1/2/3/4	Frontpod	175	6825	13.27	13.50	1.054	99.1	1.009	-0.14	0.063	0.067	0.802
	WLAN6GHz	802.11ax-HE160 MCS0	Back Surface	0mm	Ant 4	1/2/3/4	Frontpod	207	6985	13.57	14.00	1.104	99.1	1.009	0.05	0.036	0.040	0.526
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	1/2/3/4	Frontpod	47	6185	14.77	15.00	1.054	99.1	1.009	0.08	0.154	0.164	1.300
16	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	1/2/3/4	Frontpod	15	6025	14.37	14.50	1.030	99.1	1.009	0.13	0.177	0.184	1.550
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	1/2/3/4	Frontpod	111	6505	12.97	13.00	1.007	99.1	1.009	-0.13	0.083	0.084	0.952
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	1/2/3/4	Frontpod	175	6825	13.27	13.50	1.054	99.1	1.009	0.05	0.074	0.079	0.802
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	1/2/3/4	Frontpod	207	6985	13.57	14.00	1.104	99.1	1.009	0.13	0.134	0.149	1.230
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	0mm	Ant 4	5	Frontpod	47	6185	1.67	2.00	1.079	99.1	1.009	0.11	0.059	0.064	0.526
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	0mm	Ant 4	5	Frontpod	15	6025	1.37	2.00	1.156	99.1	1.009	0.12	0.071	0.083	1.053
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	0mm	Ant 4	5	Frontpod	111	6505	-0.03	2.00	1.596	99.1	1.009	-0.03	0.041	0.066	0.301
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	0mm	Ant 4	5	Frontpod	175	6825	0.37	2.00	1.455	99.1	1.009	0.07	0.100	0.147	1.380
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	0mm	Ant 4	5	Frontpod	207	6985	0.97	2.00	1.268	99.1	1.009	-0.04	0.076	0.097	1.130

16.3 6GHz PD Test Result

Band	Mode	Test Position	Gap (mm)	Antenna	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Grip Step (A)	iPDn	iPD ratio (≥ -1)	Normal psPD (W/m ²)	Total psPD (W/m ²)
WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	2mm	Ant 5	Rearpod	15	6025	13.07	0.0625	1.73	-0.96407648	0.265	0.291
WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	10mm	Ant 5	Rearpod	15	6025	13.07	0.25	2.16		0.364	0.374
WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	2mm	Ant 5	Rearpod	207	6985	11.97	0.0625	1.28	-0.77481461	0.181	0.191
WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	8.59mm	Ant 5	Rearpod	207	6985	11.97	0.25	1.53		0.363	0.375

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Grip Step (A)	Scaling Factor for measurement uncertainty	Power Drift (dB)	Normal psPD (W/m ²)	Scaled Normal psPD (W/m ²)	Total psPD (W/m ²)	Scaled Total psPD (W/m ²)
01	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	Frontpod	15	6025	14.37	14.50	99.10	0.0625	1.5535	-0.18	1.95	3.15	2.22	3.59
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	Frontpod	47	6185	14.77	15.00	99.10	0.0625	1.5535	-0.04	1.72	2.84	2.06	3.40
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	Frontpod	111	6505	12.97	13.00	99.10	0.0625	1.5535	-0.15	0.575	0.91	0.642	1.01
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	Frontpod	175	6825	13.27	13.50	99.10	0.0625	1.5535	0.12	0.787	1.30	0.829	1.37
	WLAN6GHz	802.11ax-HE160 MCS0	Front Surface	14mm	Ant 4	Frontpod	207	6985	13.57	14.00	99.10	0.0625	1.5535	-0.03	0.933	1.61	0.994	1.72
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	2mm	Ant 5	Rearpod	15	6025	13.07	13.50	99.10	0.0625	1.5535	-0.13	0.265	0.46	0.291	0.50
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	2mm	Ant 5	Rearpod	47	6185	12.47	12.50	99.10	0.0625	1.5535	-0.13	0.31	0.49	0.338	0.53
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	2mm	Ant 5	Rearpod	111	6505	11.77	12.00	99.10	0.0625	1.5535	0.17	0.259	0.43	0.285	0.47
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	2mm	Ant 5	Rearpod	175	6825	11.67	12.00	99.10	0.0625	1.5535	0.19	0.309	0.52	0.33	0.56
	WLAN6GHz	802.11ax-HE160 MCS0	Long Edge	2mm	Ant 5	Rearpod	207	6985	11.97	12.50	99.10	0.0625	1.5535	0.13	0.181	0.32	0.191	0.34

16.4 Repeated SAR Measurement

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power State	Ant. Location	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 2_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	19100	1900	15.60	16.50	1.230		1.000	0.1	1.110	-	1.366
2nd	LTE Band 2_Ant 1	20M	QPSK	1	0	Front Surface	0mm	DSI 4/5	Frontpod	19100	1900	15.60	16.50	1.230		1.000	0.04	1.070	1.037	1.316
1st	LTE Band 13_Ant 0	10M	QPSK	1	0	Long Edge	0mm	DSI 2	Rearpod	23230	782	23.46	24.00	1.132		1.000	0.09	1.140	-	1.291
2nd	LTE Band 13_Ant 0	10M	QPSK	1	0	Long Edge	0mm	DSI 2	Rearpod	23230	782	23.46	24.00	1.132		1.000	-0.08	1.110	1.027	1.257
1st	LTE Band 48_Ant 0	20M	QPSK	1	0	Long Edge	0mm	DSI 3/5	Rearpod	55830	3609	23.24	23.50	1.062	62.9	1.006	-0.04	1.160	-	1.239
2nd	LTE Band 48_Ant 0	20M	QPSK	1	0	Long Edge	0mm	DSI 3/5	Rearpod	55830	3609	23.24	23.50	1.062	62.9	1.006	-0.14	1.110	1.045	1.186
1st	FR1 n5_Ant 0	20M	BPSK	1	1	Long Edge	0mm	DSI 2	Rearpod	167300	836.5	23.52	24.00	1.117		1.000	-0.11	1.030	-	1.150
2nd	FR1 n5_Ant 0	20M	BPSK	1	1	Long Edge	0mm	DSI 2	Rearpod	167300	836.5	23.52	24.00	1.117		1.000	0.12	1.000	1.030	1.117
1st	FR1 n66_Ant 1	30M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	349000	1745	16.78	17.50	1.180		1.000	0.08	1.050	-	1.239
2nd	FR1 n66_Ant 1	30M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	349000	1745	16.70	17.50	1.202		1.000	0.13	1.020	1.029	1.226
1st	FR1 n77_Ant 2	100M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	17.32	18.00	1.169		1.000	-0.11	1.190	-	1.392
2nd	FR1 n77_Ant 2	100M	BPSK	1	1	Front Surface	0mm	DSI 4/5	Frontpod	656000	3840	17.32	18.00	1.169		1.000	0.17	1.150	1.034	1.345

General Note:

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

16.5 n77 Power Class 2 and Power Class 3 Linearity

This device support Power Class 2 and Power Class 3 operations for FR1 n77. The highest available duty cycle for Power Class 2 operation is 50% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each LTE configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg, Separate SAR testing for Power Class 2 is not required.

Use PC3 power level and SAR to estimated PC2 SAR linearly, and check if the deviation from the measured PC2 SAR is <10%.

	FR1 n77_Ant 0	FR1 n77_Ant 0
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	20.5	23.5
Reported 1g SAR (W/kg)	1.224	1.158
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	112.20	111.94
Linearity SAR(W/kg)	1.22	
% deviation from expected linearity		-5.17%

	FR1 n77_Ant 1	FR1 n77_Ant 1
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	15.5	18.5
Reported 1g SAR (W/kg)	1.239	1.187
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	35.48	35.40
Linearity SAR(W/kg)	1.24	
% deviation from expected linearity		-3.97%

	FR1 n77_Ant 2	FR1 n77_Ant 2
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	18	21
Reported 1g SAR (W/kg)	1.392	1.298
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	63.10	62.95
Linearity SAR(W/kg)	1.39	
% deviation from expected linearity		-6.53%

	FR1 n77_Ant 3	FR1 n77_Ant 3
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	17	20
Reported 1g SAR (W/kg)	1.251	1.226
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	50.12	50.00
Linearity SAR(W/kg)	1.25	
% deviation from expected linearity		-1.77%

17. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Exposure Positions
		Body
1.	WiFi 5G/6G MIMO + Bluetooth (Ant 4) + WWAN	Yes
2.	WiFi 5G/6G MIMO + Bluetooth (Ant 5) + WWAN	Yes
3.	WiFi 2.4G MIMO + WWAN	Yes
4.	WiFi 2.4G MIMO + WiFi 5G/6G MIMO + WWAN	Yes

General Note:

- The Scaled SAR summation is calculated based on the same configuration and test position.
- Considering the physical separation of 18.5 cm between Frontpod and Rearpod, the antennas on the Frontpod are deemed to have no RF exposure contribution on the Rearpod, and the opposite holds true. Therefore, the simultaneous transmission analysis is performed on the Frontpod and on the Rearpod separately.
- The 2nd generation of Smart Transmit (GEN2) operates based on pre-defined sub6 antenna groups (AG) was implemented on this device
 - Sub6 antenna groups (Group 0 and 1) can operate independently if each antenna (i) from AG (0) and each antenna (k) from AG (1) meet current KDB SPLSR requirements.
 - In this case, the antenna 0 as antenna group 0, the antenna 1/2/3 as antenna group 1, due to the antenna 0 and Antenna 1/2/3 are in physically separated devices, and each antenna group has its own SAR evaluation planes, unlike conventional devices where the sub-6 antennas are collocated in the same physical device and share the same SAR evaluation plane, therefore SPLSR analysis for the antenna group 0 and antenna group 1 is not required.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - Scalar SAR summation < 1.6W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
- For Antenna 1/2/3 on the Frontpod, when the proximity sensor is triggered and when WiFi is ON, the TX power is low and exempt from standalone SAR test. According to KDB 447498, estimated SAR values are calculated for simultaneous transmission analysis
 - (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm) · $[\sqrt{f(\text{GHz})}/x]$ W/kg for test separation distances ≤ 50 mm; where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
 - When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
 - 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

Frontpod p-sensor detected (DSI 4, DSI 5)			
Band	Tune-up limit(dBm)	Exposure Position	Estimated 1g SAR (W/kg)
LTE B2 Ant 1	3.5	Front Surface	0.083
LTE B48 Ant 1	4.5		0.145
LTE B66 Ant 1	3.5		0.080
FR1 n2 Ant 1	2.5		0.066
FR1 n66 Ant 1	4.5		0.100
FR1 n77 Ant 1	5.5		0.189
FR1 n77 Ant 2	8.0		0.336
FR1 n77 Ant 3	7.0		0.267

**17.1 5G NR + LTE + WLAN + BT Sim-Tx analysis**

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

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

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

$$x\% * A + (100-x)\% * B \leq 1.0,$$

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and $A \leq 1.0$; B is normalized reported time-averaged exposure ratio from 5G NR (i.e., PD exposure for mmW NR or SAR exposure for sub6 NR), and $B \leq 1.0$.

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

$$x\% * A + (100-x)\% * B + C \leq 1.0 \quad (1)$$

$$x\% * A + (100-x)\% * B \leq x\% * \max(A, B) + (100-x)\% * \max(A, B) \leq \max(A, B)$$

$$x\% * A + (100-x)\% * B + C \leq \max(A, B) + C \leq 1.0 \quad (2)$$

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

Step 1: Prove total exposure ratio (TER) of LTE + WLAN + BT < 1

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

Else, if $A + C > 1.0$ and/or $B + C > 1.0$, then the followings need to hold true for compliance:

- i. A and C are decoupled based on the SPLSR criteria , and
- ii. $(100-x)\% * B + C \leq 1.0$, and
- iii. $x\% * A + (100-x)\% * B \leq 1.0$

Note iii. is covered in Part 2 report; i. and ii. should be addressed in Part 2 report.

Smart Transmit EFS version 16 (or higher) with backoff in WWAN/FR2 when WLAN/BT is ON:

Smart Transmit EFS version 16 (or higher) provides the option to backoff WWAN radio when WLAN/BT ON. This WWAN/FR2 backoff can be configured per tech/band/antenna (or mmW module)/DSI of WWAN radios. The analysis performed above in this section is still applicable after applying the backoff to WWAN radio exposures, i.e., **A**, and **B** should be replaced as shown below:

normalized exposure of WWAN primary radio: A → replaced with " $A * 10^{(-\text{WWAN backoff in dB for A when WLAN/BT ON})/10}$ ".

normalized exposure of 5G NR secondary radio: B → replaced with " $B * 10^{(-\text{WWAN backoff in dB for B when WLAN/BT ON})/10}$ ".

17.2 Body Exposure Conditions

<DBS>

<FrondPod>

WWAN Band	Exposure Position	1	3	5	1+3+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	5GHz/6GHz WLAN Ant 4	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
LTE Band 2 Ant 1	Front Surface at 0mm	0.083	0.135	0.407	0.625
	Back Surface at 0mm	0.278	0.517	0.334	1.129
LTE Band 48 Ant 1	Front Surface at 0mm	0.145	0.135	0.407	0.687
	Back Surface at 0mm	0.683	0.517	0.334	1.534
LTE Band 66 Ant 1	Front Surface at 0mm	0.080	0.135	0.407	0.622
	Back Surface at 0mm	0.185	0.517	0.334	1.036
FR1 n2 Ant 1	Front Surface at 0mm	0.066	0.135	0.407	0.608
	Back Surface at 0mm	0.642	0.517	0.334	1.493
FR1 n66 Ant 1	Front Surface at 0mm	0.100	0.135	0.407	0.642
	Back Surface at 0mm	0.202	0.517	0.334	1.053
FR1 n77 Ant 1	Front Surface at 0mm	0.189	0.135	0.407	0.731
	Back Surface at 0mm	0.721	0.517	0.334	1.572
FR1 n77 Ant 2	Front Surface at 0mm	0.336	0.135	0.407	0.878
	Back Surface at 0mm	0.719	0.517	0.334	1.053
FR1 n77 Ant 3	Front Surface at 0mm	0.267	0.135	0.407	0.809
	Back Surface at 0mm	0.572	0.517	0.334	0.906

<RearPod>

WWAN Band	Exposure Position	1	2	4	1+2+4 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 5	5GHz/6GHz WLAN Ant 5	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
LTE Band 2 Ant 0	Long Edge at 0mm	0.172	0.105	0.184	0.461
	Inner Surface at 0mm	0.057	0.224	0.639	0.920
LTE Band 4 Ant 0	Long Edge at 0mm	0.124	0.105	0.184	0.413
	Inner Surface at 0mm	0.003	0.224	0.639	0.866
LTE Band 5 Ant 0	Long Edge at 0mm	1.144	0.105	0.184	1.433
	Inner Surface at 0mm	0.288	0.224	0.639	1.151
LTE Band 13 Ant 0	Long Edge at 0mm	1.291	0.105	0.184	1.580
	Inner Surface at 0mm	0.568	0.224	0.639	1.431
LTE Band 48 Ant 0	Long Edge at 0mm	1.239	0.105	0.184	1.528
	Inner Surface at 0mm	0.133	0.224	0.639	0.996
FR1 n2 Ant 0	Long Edge at 0mm	0.280	0.105	0.184	0.569
	Inner Surface at 0mm	0.072	0.224	0.639	0.935
FR1 n5 Ant 0	Long Edge at 0mm	1.150	0.105	0.184	1.439
	Inner Surface at 0mm	0.259	0.224	0.639	1.122
FR1 n77 Ant 0	Long Edge at 0mm	1.224	0.105	0.184	1.513
	Inner Surface at 0mm	0.172	0.224	0.639	1.035

<Non-DBS>
<FrontPod>

WWAN Band	Exposure Position	1	3	5	7	1+3 Summed 1g SAR (W/kg)	1+5+7 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	5GHz/6GHz WLAN Ant 4	Bluetooth Ant 4		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
LTE Band 2 Ant 1	Front Surface at 0mm	0.083	0.135	0.407	0.078	0.218	0.568
	Back Surface at 0mm	0.278	0.517	0.702	0.091	0.795	1.071
LTE Band 48 Ant 1	Front Surface at 0mm	0.145	0.135	0.407	0.078	0.280	0.630
	Back Surface at 0mm	0.683	0.517	0.702	0.091	1.200	1.476
LTE Band 66 Ant 1	Front Surface at 0mm	0.080	0.135	0.407	0.078	0.215	0.565
	Back Surface at 0mm	0.185	0.517	0.702	0.091	0.702	0.978
FR1 n2 Ant 1	Front Surface at 0mm	0.066	0.135	0.407	0.078	0.201	0.551
	Back Surface at 0mm	0.642	0.517	0.702	0.091	1.159	1.435
FR1 n66 Ant 1	Front Surface at 0mm	0.100	0.135	0.407	0.078	0.235	0.585
	Back Surface at 0mm	0.202	0.517	0.702	0.091	0.719	0.995
FR1 n77 Ant 1	Front Surface at 0mm	0.189	0.135	0.407	0.078	0.324	0.674
	Back Surface at 0mm	0.721	0.517	0.702	0.091	1.238	1.514
FR1 n77 Ant 2	Front Surface at 0mm	0.336	0.135	0.407	0.078	0.471	0.821
	Back Surface at 0mm	0.719	0.517	0.702	0.091	1.236	1.512
FR1 n77 Ant 3	Front Surface at 0mm	0.267	0.135	0.407	0.078	0.402	0.752
	Back Surface at 0mm	0.572	0.517	0.702	0.091	1.089	1.365

<RearPod>

WWAN Band	Exposure Position	1	2	4	6	1+2 Summed 1g SAR (W/kg)	1+4+6 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 5	5GHz/6GHz WLAN Ant 5	Bluetooth Ant 5		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
LTE Band 2 Ant 0	Long Edge at 0mm	0.172	0.105	0.184	0.001	0.277	0.357
	Inner Surface at 0mm	0.057	0.224	0.639	0.020	0.281	0.716
LTE Band 4 Ant 0	Long Edge at 0mm	0.124	0.105	0.184	0.001	0.229	0.309
	Inner Surface at 0mm	0.003	0.224	0.639	0.020	0.227	0.662
LTE Band 5 Ant 0	Long Edge at 0mm	1.144	0.105	0.184	0.001	1.249	1.329
	Inner Surface at 0mm	0.288	0.224	0.639	0.020	0.512	0.947
LTE Band 13 Ant 0	Long Edge at 0mm	1.291	0.105	0.184	0.001	1.396	1.476
	Inner Surface at 0mm	0.568	0.224	0.639	0.020	0.792	1.227
LTE Band 48 Ant 0	Long Edge at 0mm	1.239	0.105	0.184	0.001	1.344	1.424
	Inner Surface at 0mm	0.133	0.224	0.639	0.020	0.357	0.792
FR1 n2 Ant 0	Long Edge at 0mm	0.280	0.105	0.184	0.001	0.385	0.465
	Inner Surface at 0mm	0.072	0.224	0.639	0.020	0.296	0.731
FR1 n5 Ant 0	Long Edge at 0mm	1.150	0.105	0.184	0.001	1.255	1.335
	Inner Surface at 0mm	0.259	0.224	0.639	0.020	0.483	0.918
FR1 n77 Ant 0	Long Edge at 0mm	1.224	0.105	0.184	0.001	1.329	1.409
	Inner Surface at 0mm	0.172	0.224	0.639	0.020	0.396	0.831

Test Engineer : Jay Jian and Jimmy Lu

18. Uncertainty Assessment

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

Declaration of Conformity:

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

Comments and Explanations:

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

19. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 248227 D01 v02r02, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Oct 2015.
- [6] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [7] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [8] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [9] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [10] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.