

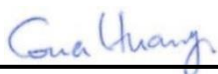
FCC SAR TEST REPORT

FCC ID : E2KFM350GL
Equipment : 5G Module
Brand Name : Fibocom
Model Name : FM350-GL
Applicant : Dell Inc.
One Dell Way Round Rock, TX 78682, USA
Manufacturer : Dell Inc.
One Dell Way Round Rock, TX 78682, USA
Standard : FCC 47 CFR Part 2 (2.1093)

The product was installed into Portable Computer (Brand Name: DELL, Model Name: P178G) during test.

The product was received on Nov. 11, 2022 and testing was started from Dec. 05, 2022 and completed on Dec. 11, 2022. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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



Approved by: Cona Huang / Deputy Manager



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Table of Contents

1. Statement of Compliance	4
2. Guidance Applied.....	5
3. Equipment Under Test (EUT) Information.....	5
3.1 General Information	5
3.2 General LTE SAR Test and Reporting Considerations	7
3.3 General 5G NR SAR Test and Reporting Considerations	10
4. Proximity Sensor Triggering Test.....	12
5. RF Exposure Limits.....	15
5.1 Uncontrolled Environment.....	15
5.2 Controlled Environment.....	15
6. Specific Absorption Rate (SAR).....	16
6.1 Introduction	16
6.2 SAR Definition.....	16
7. System Description and Setup	17
7.1 Test Site Location.....	17
7.2 E-Field Probe	18
7.3 Data Acquisition Electronics (DAE)	18
7.4 Phantom.....	19
7.5 Device Holder.....	20
8. Measurement Procedures	21
8.1 Spatial Peak SAR Evaluation.....	21
8.2 Power Reference Measurement.....	22
8.3 Area Scan	22
8.4 Zoom Scan.....	23
8.5 Volume Scan Procedures.....	23
8.6 Power Drift Monitoring.....	23
9. Test Equipment List.....	24
10. System Verification	25
10.1 Tissue Verification	25
10.2 System Performance Check Results.....	26
11. LTE Output Power (Unit: dBm)	27
12. 5G NR Output Power (Unit: dBm)	81
13. Antenna Location	108
14. SAR Test Results	111
14.1 Body SAR	113
14.2 Repeated SAR Measurement	119
14.3 FR1 n41/n77 Power Class 2 and Power Class 3 Linearity	120
15. Simultaneous Transmission Analysis.....	121
15.1 Body Exposure Conditions.....	122
15.2 SPLSR Evaluation and Analysis.....	122
16. Uncertainty Assessment	124
17. References.....	124
Appendix A. Plots of System Performance Check	
Appendix B. Plots of High SAR Measurement	
Appendix C. DASYS Calibration Certificate	
Appendix D. Test Setup Photos	

History of this test report

Report No.	Version	Description	Issued Date
FA2O2005	01	Initial issue of report	Dec. 30, 2022

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for Dell Inc., 5G Module, FM350-GL, are as follows.

Equipment Class	Frequency Band		Highest SAR Summary	Highest Simultaneous Transmission 1g SAR (W/kg)
			Body	
			1g SAR (W/kg)	
Licensed	WCDMA	WCDMA II	0.34	1.17
		WCDMA IV	0.20	
		WCDMA V	0.21	
	LTE	LTE Band 7	1.04	
		LTE Band 12 / 17	0.07	
		LTE Band 13	0.14	
		LTE Band 14	0.16	
		LTE Band 2 / 25	1.17	
		LTE Band 5 / 26	0.17	
		LTE Band 30	0.11	
		LTE Band 38 / 41	1.14	
		LTE Band 48	1.02	
		LTE Band 4 / 66	1.17	
		LTE Band 71	0.08	
		FR1	FRI n2	
	FRI n5		0.17	
	FRI n7		0.13	
	FRI n25		0.40	
	FRI n30		0.10	
	FRI n38 / n41		1.13	
	FRI n66		1.10	
	FRI n71		0.03	
	FRI n77 / n78	1.16		
Date of Testing:			2022/12/5 ~ 2022/12/11	

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR) 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 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	5G Module
Brand Name	Fibocom
Model Name	FM350-GL
FCC ID	E2KFM350GL
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n30 : 2305 MHz ~ 2315 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77: 3700 MHz ~ 3980 MHz, 3450MHz ~ 3550MHz 5G NR n78: 3700 MHz ~ 3800 MHz, 3450MHz ~ 3550MHz
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM
Remark: 1. When the EN-DC is active only operating at WWAN main and MIMO2 antenna combination and the Sim-Tx analysis include in section15. 2. The device implements the sensor to detect human body proximity and trigger power reduction for SAR compliance in MIMO2 antenna.	

WWAN Antenna Information				
Main Antenna	Manufacturer	Wistron Corporation	Peak gain(dBi)	1.99
	Part number	08RVPD	Type	PIFA
Aux Antenna	Manufacturer	Wistron Corporation	Peak gain(dBi)	1.95
	Part number	08RVPD	Type	PIFA
MIMO2 Antenna	Manufacturer	Wistron Corporation	Peak gain(dBi)	1.96
	Part number	0C75WW	Type	PIFA
MIMO3 Antenna	Manufacturer	Wistron Corporation	Peak gain(dBi)	2.47
	Part number	0C75WW	Type	PIFA

Host Information	
Equipment Name	Portable Computer
Brand Name	DELL
Model Name	P178G
Integrated WLAN Module	Brand Name: Intel Model Name: AX211D2W
Wireless Technology and Frequency Range	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 5.9 GHz Band: 5850 MHz ~ 5895 MHz WLAN 6E: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
EUT Stage	Identical Prototype
Remark: 1. The Intel AX211D2W WLAN/BT module is also integrated into this host. The WLAN 2.4GHz/5GHz and Bluetooth SAR results are referenced from Intel SAR report, report number: 221017-02.TR01 (FCC ID: PD9AX211D2), WLAN 6GHz SAR refers new report No.: 221017-02.TR02 (FCC ID: PD9AX211D2), the result is using for Sim-Tx analysis.	

3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																																													
FCC ID	E2KFM350GL																																																																												
Equipment Name	5G Module																																																																												
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz																																																																												
Channel Bandwidth	LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 14: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 30: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz																																																																												
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM																																																																												
LTE Voice / Data requirements	Data only																																																																												
LTE MPR permanently built-in by design	<table><tr><th colspan="8">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</th></tr><tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr><tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr></table>							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
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	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 11.																																																																												
LTE Carrier Aggregation Additional Information	This device supports maximum of 5 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICl, 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 7														
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510						
M	21100	2535	21100	2535	21100	2535	21100	2535						
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560						
LTE Band 12														
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	23017	699.7	23025	700.5	23035	701.5	23060	704						
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5						
H	23173	715.3	23165	714.5	23155	713.5	23130	711						
LTE Band 13														
	Bandwidth 5 MHz				Bandwidth 10 MHz									
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)							
L	23205		779.5		23230		782							
M	23230		782											
H	23255		784.5											
LTE Band 14														
	Bandwidth 5 MHz				Bandwidth 10 MHz									
	Channel #		Channel #		Channel #		Freq.(MHz)							
L	23305		790.5		23330		793							
M	23330		793											
H	23355		795.5											
LTE Band 17														
	Bandwidth 5 MHz				Bandwidth 10 MHz									
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)							
L	23755		706.5		23780		709							
M	23790		710		23790		710							
H	23825		713.5		23800		711							



LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5		
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5		
LTE Band 30												
	Bandwidth 5 MHz					Bandwidth 10 MHz						
	Channel #			Freq.(MHz)		Channel #				Freq.(MHz)		
L	27685			2307.5		27710				2310		
M	27710			2310								
H	27735			2312.5								
LTE Band 38												
	Bandwidth 5 MHz			Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz				
	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)			
L	37775	2572.5		37800	2575	37825	2577.5	37850	2580			
M	38000	2595		38000	2595	38000	2595	38000	2595			
H	38225	2617.5		38200	2615	38175	2612.5	38150	2610			
LTE Band 41												
	Bandwidth 5 MHz			Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz				
	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)			
L	39675	2498.5		39700	2501	39725	2503.5	39750	2506			
LM	40148	2545.8		40160	2547	40173	2548.3	40185	2549.5			
	40620	2593		40620	2593	40620	2593	40620	2593			
HM	41093	2640.3		41080	2639	41068	2637.8	41055	2636.5			
	41565	2687.5		41540	2685	41515	2682.5	41490	2680			
LTE Band 48												
	Bandwidth 5 MHz			Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz				
	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)			
L	55265	3552.5		55290	3555	55315	3557.5	55340	3560			
LM	55810	3607		55815	3607.5	55820	3608	55830	3609			
	56170	3643		56165	3642.5	56160	3642	56150	3641			
H	56715	3697.5		56690	3695	56665	3692.5	56640	3690			
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 71												
	Bandwidth 5 MHz			Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz				
	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)			
L	133147	665.5		133172	668	133197	670.5	133222	673			
M	133297	680.5		133297	680.5	133297	680.5	133297	680.5			
H	133447	695.5		133422	693	133397	690.5	133372	688			



3.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information								
FCC ID	E2KFM350GL							
Equipment Name	5G Module							
Operating Frequency Range of each 5G NR transmission band	5G NR n2: 1850 MHz ~ 1910 MHz							
	5G NR n5: 824 MHz ~ 849 MHz							
	5G NR n7: 2500 MHz ~ 2570 MHz							
	5G NR n25: 1850 MHz ~ 1915 MHz							
	5G NR n30 : 2305 MHz ~ 2315 MHz							
	5G NR n38: 2570 MHz ~ 2620 MHz							
	5G NR n41: 2496 MHz ~ 2690 MHz							
	5G NR n66: 1710 MHz ~ 1780 MHz							
	5G NR n71: 663 MHz ~ 698 MHz							
	5G NR n77: 3700 MHz ~ 3980 MHz, 3450MHz ~ 3550MHz							
5G NR n78: 3700 MHz ~ 3800 MHz, 3450MHz ~ 3550MHz								
Channel Bandwidth	5G NR n2: 5MHz, 10MHz, 15MHz, 20MHz							
	5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz							
	5G NR n7: 5MHz, 10MHz, 15MHz, 20MHz							
	5G NR n25: 5MHz, 10MHz, 15MHz, 20MHz							
	5G NR n30: 5MHz, 10MHz							
	5G NR n38: 5MHz, 10MHz, 15MHz, 20MHz							
	5G NR n41: 10MHz, 15MHz, 40MHz, 50MHz, 80MHz, 100MHz							
	5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz, 40MHz							
	5G NR n71: 5MHz, 10MHz, 15MHz, 20MHz							
	5G NR n77/n78: 10MHz, 15MHz, 20MHz, 40MHz, 50MHz, 60MHz, 80MHz, 100MHz							
SCS	FDD/TDD: SCS15KHz,: SCS30KHz							
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM							
A-MPR (Additional MPR) disabled for SAR Testing?	Yes							
LTE Anchor Bands for n2	LTE B5/12/13/14							
LTE Anchor Bands for n5	LTE B2/7/30/48/66							
LTE Anchor Bands for n41	LTE B2/41/66							
LTE Anchor Bands for n66	LTE B5/12/13/48							
LTE Anchor Bands for n71	LTE B2/66							
LTE Anchor Bands for n77	LTE B2/5/12/13/14/30/41/66							
LTE Anchor Bands for n78	LTE B2/5/7/38							
NR Band 2								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900
NR Band 5								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839
NR Band 7								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510
M	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560

NR Band 25																
	Bandwidth 5MHz		Bandwidth10MHz				Bandwidth15MHz				Bandwidth20MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)						
L	370500	1852.5	371000	1855		371500	1857.5		372000	1860						
M	376500	1882.5	376500	1882.5		376500	1882.5		376500	1882.5						
H	382500	1912.5	382000	1910		381500	1907.5		381000	1905						
NR Band 30																
	Bandwidth 5MHz				Bandwidth 10MHz											
	Ch. #		Freq. (MHz)		Ch. #				Freq. (MHz)							
L	461500		2307.5		462000				2310							
M	462000		2310													
H	462500		2312.5													
NR Band 38																
	Bandwidth 5MHz		Bandwidth 10MHz				Bandwidth 15MHz		Bandwidth 20MHz							
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)						
L	514500	2572.5	515004	2575.02		515502	2577.51		516000	2580						
M	519000	2595	519000	2595		519000	2595		519000	2595						
H	523500	2617.5	522996	2614.98		522498	2612.49		522000	2610						
NR Band 41																
	Bandwidth10MHz		Bandwidth15MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 80MHz		Bandwidth100MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Ch. #	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	500202	2501.01	500700	2503.5	503202	2516.01	504204	2521.02	507204	2536.02	509202	2546.01				
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99				
H	537000	2685	536496	2682.48	534000	2670	532998	2664.99	529998	2649.99	528000	2640				
NR Band 66																
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		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	346000	1730						
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745						
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	352000	1760						
NR Band 71																
	Bandwidth 5MHz		Bandwidth 10MHz				Bandwidth 15MHz				Bandwidth 20MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)						
L	133100	665.5	133600	668		13410	670.5		134600	673						
M	136100	680.5	136100	680.5		136100	680.5		136100	680.5						
H	139100	695.5	138600	693		13810	690.5		137600	688						
NR Band 77 (3700MHz – 3980MHz)																
	Bandwidth10MHz		Bandwidth15MHz		Bandwidth 20MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		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)
L	647000	3705	647168	3707.52	647334	3710.01	648000	3720	648334	3725.01	648668	3730.02	649334	3740.01	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	665000	3975	664832	3972.48	664666	3969.99	664000	3960	663666	3954.99	663332	3949.98	662666	3939.99	662000	3930
NR Band 78 (3700MHz – 3800MHz)																
	Bandwidth10MHz		Bandwidth15MHz		Bandwidth 20MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		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)
L	647000	3705	647168	3707.52	647334	3710.01	648000	3720	648334	3725.01	648668	3730.02	649334	3740.01		
M	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	653000	3795	652832	3792.48	652666	3789.99	652000	3780	651666	3774.99	651332	3769.98	650666	3759.99		
NR Band 77/78(3450MHz ~ 3550MHz)																
	Bandwidth10MHz		Bandwidth15MHz		Bandwidth 20MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		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)
L	630334	3455.01	630500	3457.5	630668	3460.02	631334	3470.01	631668	3475.02	632000	3480	632668	3490.02		
M	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98	633332	3499.98
H	636332	3544.98	636166	3542.49	636000	3540	635332	3529.98	635000	3525	634666	3519.99	634000	3510		

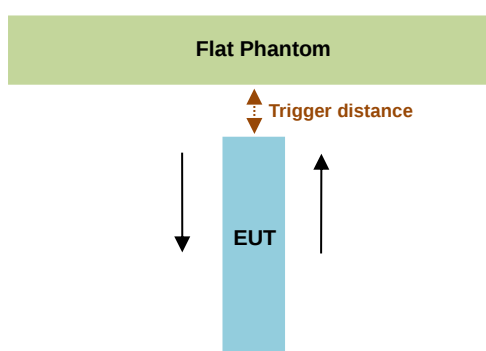
4. Proximity Sensor Triggering Test

<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 Trigger Distance (mm)		
MIMO 2 Antenna		
Position	Bottom of Laptop	
	moving toward	moving away
Minimum	11	12

<Proximity Sensor Triggering Coverage (KDB 616217 D04 section 6.3)>:

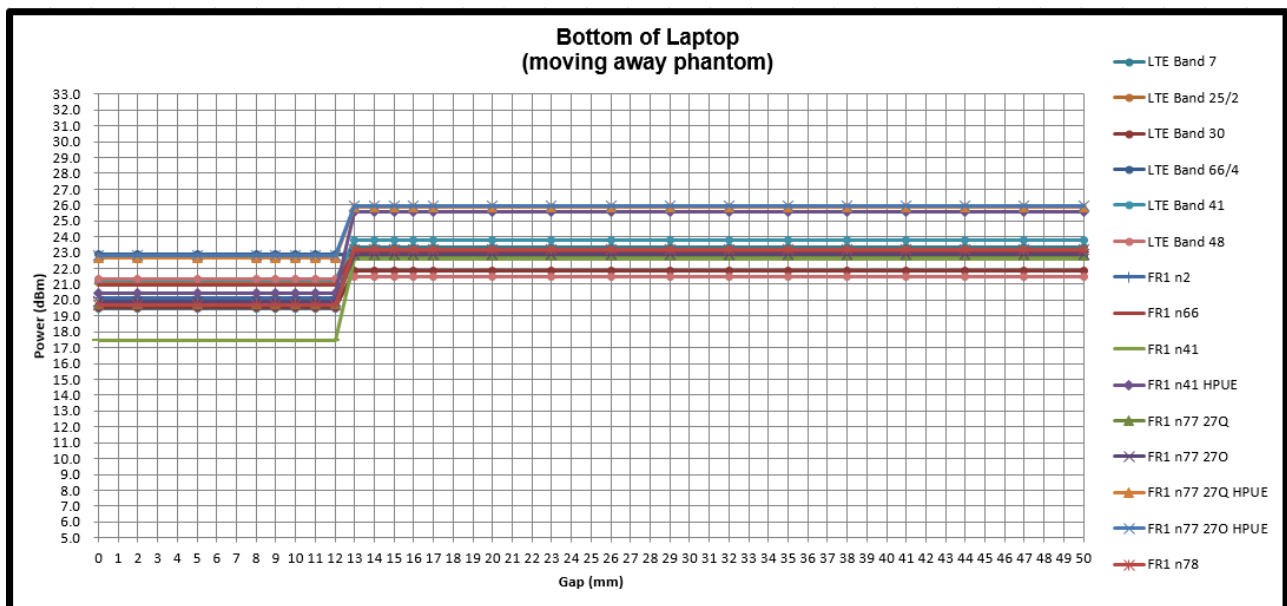
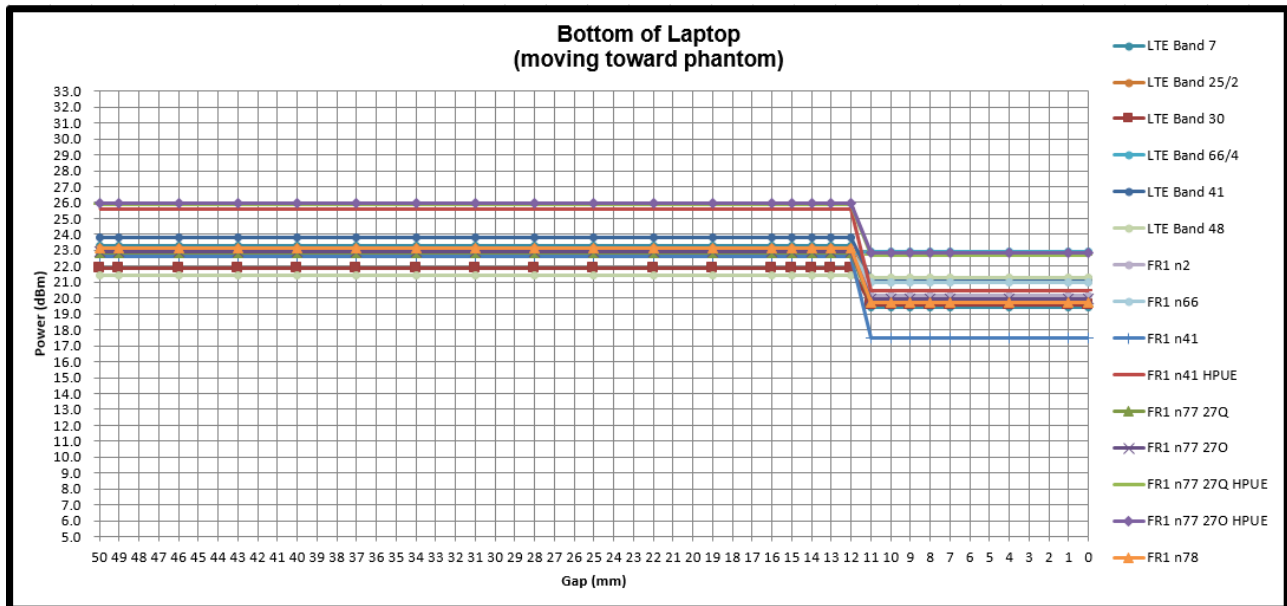
Since the antenna and sensor are collocated and all of the peak SAR location is overlapping with the sensor pad for this device, therefore, According to KDB 616217 section6.3, these procedures do not apply and are not required for this device. due to the antenna and sensor are collocated and the peak SAR location is overlapping with the sensor on this device.

Proximity sensor power reduction

Exposure Position		Bottom of Laptop ⁽¹⁾
wireless mode	Antenna	
LTE Band 7	MIMO2	4dB
LTE Band 2 / 25	MIMO2	2dB
LTE Band 30	MIMO2	1.5dB
LTE Band 41	MIMO2	2dB
LTE Band 48	MIMO2	0.5dB
LTE Band 4 / 66	MIMO2	2dB
FR1 n2	MIMO2	3dB
FR1 n41	MIMO2	6 dB
FR1 n41_HPUE	MIMO2	6 dB
FR1 n66	MIMO2	2dB
FR1 n77 / n78	MIMO2	3.5 dB
FR1 n77_HPUE	MIMO2	3.5 dB

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, 6.3, 6.4 and 6.5 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:
 - Bottom of Laptop: [10 mm](#)

Power Measurement during Sensor Trigger distance testing


5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

6. Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

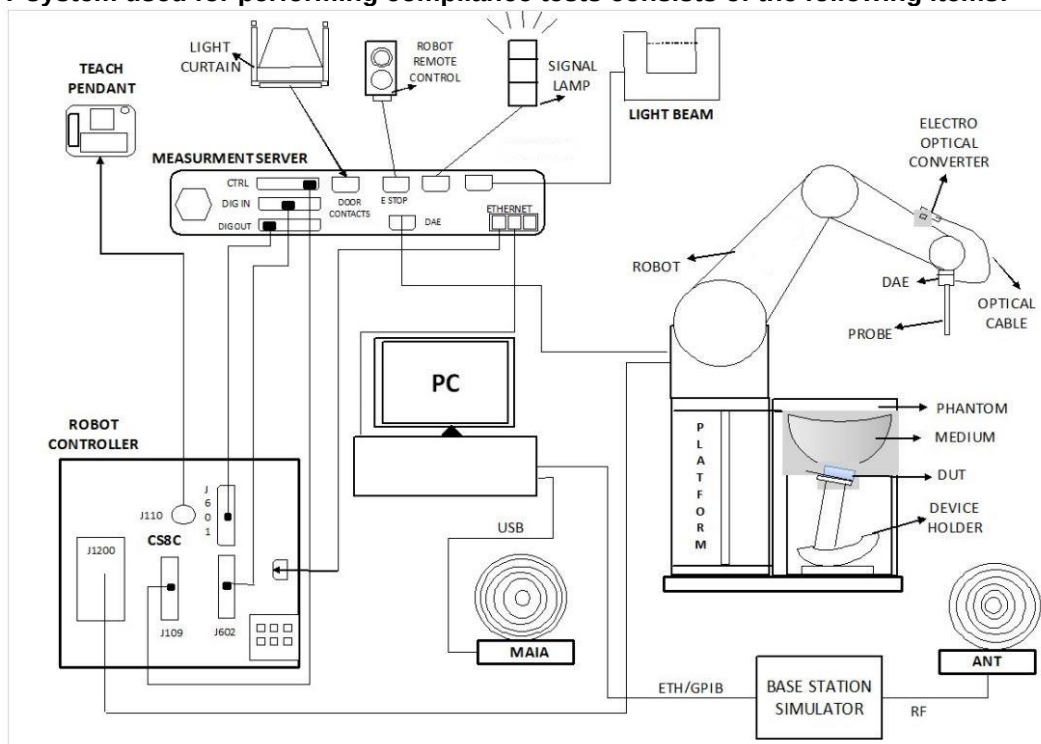
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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



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

7.1 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.

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	SAR16-HY
	SAR06-HY	SAR10-HY	SAR13-HY	SAR14-HY	SAR17-HY

7.2 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

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

7.3 Data Acquisition Electronics (DAE)

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

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



Fig 5.1 Photo of DAE

7.4 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

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

7.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

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

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

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

8.1 Spatial Peak SAR Evaluation

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

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

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

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

8.2 Power Reference Measurement

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

8.3 Area Scan

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
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.	

8.4 Zoom Scan

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

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

			≤ 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.				

8.5 Volume Scan Procedures

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

8.6 Power Drift Monitoring

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

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1107	Jun. 22, 2022	Jun. 21, 2023
SPEAG	835MHz System Validation Kit ⁽²⁾	D835V2	499	Aug. 18, 2021	Aug. 16, 2023
SPEAG	1750MHz System Validation Kit	D1750V2	1120	Mar. 25, 2022	Mar. 24, 2023
SPEAG	1900MHz System Validation Kit	D1900V2	5d093	Mar. 25, 2022	Mar. 24, 2023
SPEAG	1900MHz System Validation Kit	D1900V2	5d185	Jun. 17, 2022	Jun. 16, 2023
SPEAG	2300MHz System Validation Kit	D2300V2	1006	Jan. 18, 2022	Jan. 17, 2023
SPEAG	2600MHz System Validation Kit ⁽²⁾	D2600V2	1008	Aug. 17, 2021	Aug. 15, 2023
SPEAG	2600MHz System Validation Kit	D2600V2	1089	Mar. 24, 2022	Mar. 23, 2023
SPEAG	3500MHz System Validation Kit	D3500V2	1014	Jan. 17, 2022	Jan. 16, 2023
SPEAG	3500MHz System Validation Kit	D3500V2	1036	Mar. 23, 2022	Mar. 22, 2023
SPEAG	3700MHz System Validation Kit	D3700V2	1006	Jun. 20, 2022	Jun. 19, 2023
SPEAG	3900MHz System Validation Kit	D3900V2	1092	Sep. 05, 2022	Sep. 04, 2023
SPEAG	Data Acquisition Electronics	DAE3	393	May. 17, 2022	May. 16, 2023
SPEAG	Data Acquisition Electronics	DAE4	778	May. 30, 2022	May. 29, 2023
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 20, 2022	Jul. 19, 2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	Apr. 29, 2022	Apr. 28, 2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	7439	Mar. 02, 2022	Mar. 01, 2023
Testo	Hygro meter	608-H1	45196600	Nov. 02, 2022	Nov. 01, 2023
Testo	Hygro meter	608-H1	45207528	Nov. 02, 2022	Nov. 01, 2023
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Oct. 31, 2022	Oct. 30, 2023
Keysight	Wireless Communication Test Set	E5515C	MY50266977	May. 10, 2022	May. 09, 2023
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Oct. 12, 2022	Oct. 11, 2023
Keysight	ENA Network Analyzer	E5071C	MY46104758	Sep. 22, 2022	Sep. 21, 2023
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 28, 2022	Sep. 27, 2023
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Oct. 31, 2022	Oct. 30, 2023
Anritsu	Power Meter	ML2495A	1419002	Aug. 16, 2022	Aug. 15, 2023
Anritsu	Power Sensor	MA2411B	1911176	Aug. 16, 2022	Aug. 15, 2023
Anritsu	Power Meter	ML2495A	1804003	Oct. 17, 2022	Oct. 16, 2023
Anritsu	Power Sensor	MA2411B	1726150	Oct. 17, 2022	Oct. 16, 2023
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Jan. 12, 2022	Jan. 11, 2023
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 19, 2021	Aug. 17, 2023
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 14, 2022	Oct. 13, 2023
Mini-Circuits	Power Amplifier	ZVE-8G+	479102029	Sep. 15, 2022	Sep. 14, 2023
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Warison	Directional Coupler	WCOU-10-50S-10	WR889BMC4B1	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General Note:

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

10. System Verification

10.1 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	22.6	0.899	42.465	0.89	41.90	1.01	1.35	± 5	2022/12/7
835	22.6	0.934	42.169	0.90	41.50	3.78	1.61	± 5	2022/12/7
1750	22.5	1.395	40.340	1.37	40.10	1.82	0.60	± 5	2022/12/6
1750	22.5	1.364	40.128	1.37	40.10	-0.44	0.07	± 5	2022/12/9
1900	22.5	1.412	40.087	1.40	40.00	0.86	0.22	± 5	2022/12/6
1900	22.5	1.378	39.875	1.40	40.00	-1.57	-0.31	± 5	2022/12/9
2300	22.3	1.659	40.761	1.67	39.50	-0.66	3.19	± 5	2022/12/8
2300	22.4	1.654	39.913	1.67	39.50	-0.96	1.05	± 5	2022/12/10
2600	22.5	1.969	38.191	1.96	39.00	0.46	-2.07	± 5	2022/12/5
2600	22.3	2.021	39.662	1.96	39.00	3.11	1.70	± 5	2022/12/8
2600	22.4	2.004	38.737	1.96	39.00	2.24	-0.67	± 5	2022/12/10
3500	22.4	2.895	38.917	2.91	37.90	-0.52	2.68	± 5	2022/12/10
3500	22.6	2.996	38.487	2.91	37.90	2.96	1.55	± 5	2022/12/11
3700	22.4	3.078	38.618	3.12	37.70	-1.35	2.44	± 5	2022/12/10
3900	22.6	3.428	38.117	3.33	37.51	2.94	1.62	± 5	2022/12/11

10.2 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 (%)
SAR05	2022/12/7	750	50	D750V3-1107	EX3DV4 - SN3925	DAE4 Sn778	0.400	8.540	8	-6.32
SAR05	2022/12/7	835	50	D835V2-499	EX3DV4 - SN3925	DAE4 Sn778	0.449	9.680	8.98	-7.23
SAR05	2022/12/6	1750	50	D1750V2-1120	EX3DV4 - SN3925	DAE4 Sn778	1.740	36.400	34.8	-4.40
SAR06	2022/12/9	1750	50	D1750V2-1120	EX3DV4 - SN7439	DAE3 Sn393	1.730	36.400	34.6	-4.95
SAR05	2022/12/6	1900	50	D1900V2-5d093	EX3DV4 - SN3925	DAE4 Sn778	1.840	39.900	36.8	-7.77
SAR06	2022/12/9	1900	50	D1900V2-5d185	EX3DV4 - SN7439	DAE3 Sn393	1.780	39.000	35.6	-8.72
SAR05	2022/12/8	2300	50	D2300V2-1006	EX3DV4 - SN3925	DAE4 Sn778	2.210	48.300	44.2	-8.49
SAR06	2022/12/10	2300	50	D2300V2-1006	EX3DV4 - SN7439	DAE3 Sn393	2.240	48.300	44.8	-7.25
SAR06	2022/12/5	2600	50	D2600V2-1089	EX3DV4 - SN7439	DAE4 Sn853	2.730	55.400	54.6	-1.44
SAR05	2022/12/8	2600	50	D2600V2-1008	EX3DV4 - SN3925	DAE4 Sn778	2.650	58.000	53	-8.62
SAR06	2022/12/10	2600	50	D2600V2-1089	EX3DV4 - SN7439	DAE3 Sn393	2.780	55.400	55.6	0.36
SAR06	2022/12/10	3500	50	D3500V2-1014	EX3DV4 - SN7439	DAE3 Sn393	3.250	67.200	65	-3.27
SAR05	2022/12/11	3500	50	D3500V2-1036	EX3DV4 - SN3925	DAE4 Sn778	3.510	67.400	70.2	4.15
SAR06	2022/12/10	3700	50	D3700V2-1006	EX3DV4 - SN7439	DAE3 Sn393	3.270	65.600	65.4	-0.30
SAR05	2022/12/11	3900	50	D3900V2-1092	EX3DV4 - SN3925	DAE4 Sn778	3.580	68.300	71.6	4.83

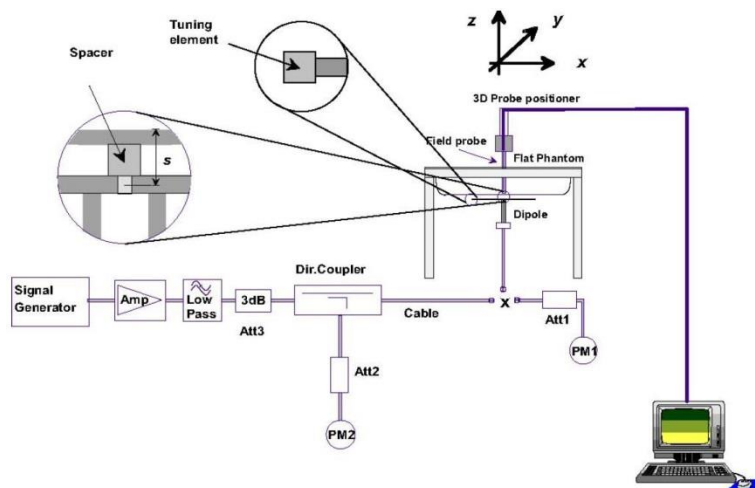


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

11. 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/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; 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

<LTE Band 2 MIMO2 Default Power >							
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	22.69	22.83	23.07	24
20	QPSK	1	49	22.94	22.78	22.92	
20	QPSK	1	99	22.94	22.66	22.81	
20	QPSK	50	0	21.97	22.04	22.22	23
20	QPSK	50	24	21.90	22.15	22.20	
20	QPSK	50	50	22.01	22.21	22.21	
20	QPSK	100	0	21.84	22.13	22.17	23
20	16QAM	1	0	22.08	22.50	22.00	
20	16QAM	1	49	22.18	22.64	22.52	
20	16QAM	1	99	21.86	22.49	22.54	22
20	16QAM	50	0	21.04	21.04	21.18	
20	16QAM	50	24	21.02	21.14	21.34	
20	16QAM	50	50	21.02	21.18	21.27	22
20	16QAM	100	0	21.05	21.18	21.21	
20	64QAM	1	0	20.95	21.37	21.34	22
20	64QAM	1	49	21.02	21.42	21.45	
20	64QAM	1	99	21.30	21.29	21.45	
20	64QAM	50	0	19.98	20.02	20.17	21
20	64QAM	50	24	20.01	20.14	20.22	
20	64QAM	50	50	20.04	20.26	20.24	
20	64QAM	100	0	20.04	20.16	20.26	19
20	256QAM	1	0	17.89	17.70	17.80	
20	256QAM	1	49	17.85	17.80	17.84	
20	256QAM	1	99	17.87	17.71	17.97	19
20	256QAM	50	0	17.77	17.75	17.86	
20	256QAM	50	24	17.92	17.67	17.87	
20	256QAM	50	50	17.74	17.74	17.76	19
20	256QAM	100	0	17.79	17.64	17.79	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	22.67	22.63	22.98	
15	QPSK	1	37	22.83	22.59	22.90	24
15	QPSK	1	74	22.93	22.54	22.80	
15	QPSK	36	0	21.95	21.88	22.11	23
15	QPSK	36	20	21.80	22.14	22.00	
15	QPSK	36	39	21.97	22.20	22.07	
15	QPSK	75	0	21.76	22.00	22.13	23
15	16QAM	1	0	21.89	22.32	21.90	
15	16QAM	1	37	22.08	22.47	22.50	
15	16QAM	1	74	21.74	22.36	22.45	22
15	16QAM	36	0	20.91	20.90	21.12	
15	16QAM	36	20	21.02	20.97	21.16	
15	16QAM	36	39	20.95	21.17	21.11	22
15	16QAM	75	0	21.05	21.16	21.04	
15	64QAM	1	0	20.85	21.36	21.31	
15	64QAM	1	37	20.96	21.39	21.44	22
15	64QAM	1	74	21.11	21.20	21.37	
15	64QAM	36	0	19.87	19.83	19.98	21
15	64QAM	36	20	19.90	19.95	20.02	
15	64QAM	36	39	19.85	20.26	20.22	
15	64QAM	75	0	19.89	20.12	20.17	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	256QAM	1	0	17.88	17.52	17.73	19
15	256QAM	1	37	17.71	17.72	17.70	
15	256QAM	1	74	17.70	17.64	17.97	
15	256QAM	36	0	17.73	17.62	17.70	19
15	256QAM	36	20	17.72	17.66	17.72	
15	256QAM	36	39	17.68	17.55	17.61	
15	256QAM	75	0	17.74	17.62	17.72	Tune-up limit (dBm)
Channel				18650	18900	19150	
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	22.51	22.75	22.99	24
10	QPSK	1	25	22.80	22.75	22.77	
10	QPSK	1	49	22.89	22.53	22.67	
10	QPSK	25	0	21.94	21.90	22.10	23
10	QPSK	25	12	21.83	22.01	22.17	
10	QPSK	25	25	21.95	22.21	22.12	
10	QPSK	50	0	21.73	21.97	22.01	23
10	16QAM	1	0	21.93	22.34	21.86	
10	16QAM	1	25	22.14	22.56	22.48	
10	16QAM	1	49	21.81	22.29	22.44	22
10	16QAM	25	0	20.94	21.03	21.06	
10	16QAM	25	12	20.96	20.95	21.18	
10	16QAM	25	25	20.97	20.98	21.08	22
10	16QAM	50	0	20.95	21.16	21.05	
10	64QAM	1	0	20.89	21.28	21.16	
10	64QAM	1	25	20.82	21.32	21.32	21
10	64QAM	1	49	21.29	21.17	21.38	
10	64QAM	25	0	19.80	19.92	19.97	
10	64QAM	25	12	19.89	20.02	20.03	19
10	64QAM	25	25	20.00	20.10	20.16	
10	64QAM	50	0	20.02	19.96	20.24	
10	256QAM	1	0	17.81	17.67	17.80	19
10	256QAM	1	25	17.72	17.73	17.70	
10	256QAM	1	49	17.70	17.64	17.77	
10	256QAM	25	0	17.74	17.75	17.76	19
10	256QAM	25	12	17.84	17.53	17.79	
10	256QAM	25	25	17.65	17.71	17.73	
10	256QAM	50	0	17.72	17.49	17.66	Tune-up limit (dBm)
Channel				18625	18900	19175	
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	22.62	22.75	23.03	24
5	QPSK	1	12	22.93	22.71	22.88	
5	QPSK	1	24	22.82	22.59	22.66	
5	QPSK	12	0	21.82	22.00	22.03	23
5	QPSK	12	7	21.72	22.15	22.16	
5	QPSK	12	13	21.95	22.12	22.21	
5	QPSK	25	0	21.82	21.99	22.05	23
5	16QAM	1	0	21.92	22.31	21.80	
5	16QAM	1	12	22.18	22.48	22.33	
5	16QAM	1	24	21.82	22.40	22.44	22
5	16QAM	12	0	20.93	20.90	21.06	
5	16QAM	12	7	20.99	21.01	21.16	
5	16QAM	12	13	20.93	21.00	21.15	22
5	16QAM	25	0	20.95	21.14	21.06	
5	64QAM	1	0	20.90	21.32	21.20	
5	64QAM	1	12	20.82	21.38	21.33	22
5	64QAM	1	24	21.16	21.23	21.41	



FCC SAR TEST REPORT

Report No. : FA2O2005

5	64QAM	12	0	19.88	19.88	19.98	21
5	64QAM	12	7	19.99	20.13	20.17	
5	64QAM	12	13	19.91	20.22	20.09	
5	64QAM	25	0	19.96	20.10	20.12	
5	256QAM	1	0	17.82	17.58	17.75	19
5	256QAM	1	12	17.65	17.68	17.64	
5	256QAM	1	24	17.70	17.57	17.90	
5	256QAM	12	0	17.70	17.68	17.74	19
5	256QAM	12	7	17.83	17.59	17.79	
5	256QAM	12	13	17.66	17.54	17.75	
5	256QAM	25	0	17.64	17.64	17.73	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	22.53	22.71	23.06	24
3	QPSK	1	8	22.79	22.71	22.82	
3	QPSK	1	14	22.85	22.47	22.69	
3	QPSK	8	0	21.94	22.04	22.12	23
3	QPSK	8	4	21.70	21.96	22.10	
3	QPSK	8	7	21.86	22.06	22.13	
3	QPSK	15	0	21.70	22.08	21.99	
3	16QAM	1	0	22.02	22.39	21.83	23
3	16QAM	1	8	22.05	22.64	22.43	
3	16QAM	1	14	21.68	22.41	22.54	
3	16QAM	8	0	20.85	20.84	21.06	22
3	16QAM	8	4	20.86	20.94	21.17	
3	16QAM	8	7	20.85	21.07	21.14	
3	16QAM	15	0	20.97	20.99	21.03	
3	64QAM	1	0	20.92	21.33	21.34	22
3	64QAM	1	8	20.94	21.34	21.34	
3	64QAM	1	14	21.20	21.15	21.36	
3	64QAM	8	0	19.81	19.86	20.08	21
3	64QAM	8	4	19.81	19.99	20.18	
3	64QAM	8	7	19.97	20.17	20.06	
3	64QAM	15	0	19.96	20.13	20.18	
3	256QAM	1	0	17.78	17.62	17.72	19
3	256QAM	1	8	17.69	17.64	17.74	
3	256QAM	1	14	17.67	17.53	17.77	
3	256QAM	8	0	17.67	17.59	17.82	19
3	256QAM	8	4	17.89	17.50	17.71	
3	256QAM	8	7	17.61	17.68	17.71	
3	256QAM	15	0	17.61	17.48	17.78	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	22.68	22.92	22.87	24
1.4	QPSK	1	3	22.90	23.00	22.94	
1.4	QPSK	1	5	22.93	22.94	22.76	
1.4	QPSK	3	0	22.59	22.99	23.00	
1.4	QPSK	3	1	22.89	22.95	22.91	
1.4	QPSK	3	3	22.91	22.84	22.90	
1.4	QPSK	6	0	21.83	22.05	22.09	23
1.4	16QAM	1	0	22.05	22.50	21.93	23
1.4	16QAM	1	3	22.17	22.57	22.44	
1.4	16QAM	1	5	21.84	22.44	22.51	
1.4	16QAM	3	0	22.03	22.41	21.96	
1.4	16QAM	3	1	22.10	22.59	22.45	
1.4	16QAM	3	3	21.80	22.48	22.44	

1.4	16QAM	6	0	20.97	21.18	21.19	22
1.4	64QAM	1	0	20.87	21.34	21.32	22
1.4	64QAM	1	3	20.95	21.38	21.35	
1.4	64QAM	1	5	21.21	21.20	21.45	
1.4	64QAM	3	0	20.85	21.37	21.24	
1.4	64QAM	3	1	20.97	21.39	21.36	
1.4	64QAM	3	3	21.22	21.26	21.36	
1.4	64QAM	6	0	20.00	20.12	20.20	21
1.4	256QAM	1	0	17.83	17.70	17.72	19
1.4	256QAM	1	3	17.85	17.76	17.84	
1.4	256QAM	1	5	17.78	17.66	17.89	
1.4	256QAM	3	0	17.83	17.68	17.76	
1.4	256QAM	3	1	17.78	17.72	17.83	
1.4	256QAM	3	3	17.86	17.66	17.89	
1.4	256QAM	6	0	17.69	17.63	17.75	19

<LTE Band 2 MIMO2 Reduced Power >							
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	20.77	20.92	21.00	22
20	QPSK	1	49	20.43	20.62	20.82	
20	QPSK	1	99	20.36	20.75	20.96	
20	QPSK	50	0	20.56	20.97	20.71	22
20	QPSK	50	24	20.71	20.74	20.82	
20	QPSK	50	50	20.48	20.57	20.75	
20	QPSK	100	0	20.77	20.75	20.69	
20	16QAM	1	0	20.49	20.83	20.93	22
20	16QAM	1	49	20.41	20.43	20.69	
20	16QAM	1	99	20.32	20.61	20.99	
20	16QAM	50	0	20.67	20.93	20.88	22
20	16QAM	50	24	20.72	20.65	20.93	
20	16QAM	50	50	20.69	20.68	20.77	
20	16QAM	100	0	20.57	20.77	20.87	
20	64QAM	1	0	20.76	20.62	20.86	22
20	64QAM	1	49	20.56	20.60	20.82	
20	64QAM	1	99	20.45	20.50	20.87	
20	64QAM	50	0	20.70	20.74	20.86	22
20	64QAM	50	24	20.68	20.68	20.80	
20	64QAM	50	50	20.57	20.56	20.77	
20	64QAM	100	0	20.56	20.62	20.88	
20	256QAM	1	0	18.63	18.79	18.78	20
20	256QAM	1	49	18.34	18.67	18.56	
20	256QAM	1	99	18.49	18.64	18.92	
20	256QAM	50	0	19.77	19.83	19.77	20
20	256QAM	50	24	19.44	19.72	19.96	
20	256QAM	50	50	19.56	19.75	19.69	
20	256QAM	100	0	19.47	19.87	19.87	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	20.70	20.85	20.99	22
15	QPSK	1	37	20.40	20.68	20.75	
15	QPSK	1	74	20.37	20.68	20.93	
15	QPSK	36	0	20.66	20.81	20.88	22
15	QPSK	36	20	20.59	20.78	20.78	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	QPSK	36	39	20.61	20.67	20.64	
15	QPSK	75	0	20.79	20.66	20.75	
15	16QAM	1	0	20.48	20.67	20.88	
15	16QAM	1	37	20.31	20.47	20.74	22
15	16QAM	1	74	20.31	20.69	20.97	
15	16QAM	36	0	20.69	20.86	20.82	
15	16QAM	36	20	20.75	20.72	20.85	22
15	16QAM	36	39	20.67	20.56	20.64	
15	16QAM	75	0	20.64	20.71	20.82	
15	64QAM	1	0	20.74	20.65	20.78	22
15	64QAM	1	37	20.60	20.50	20.80	
15	64QAM	1	74	20.57	20.56	20.80	
15	64QAM	36	0	20.72	20.67	20.66	22
15	64QAM	36	20	20.66	20.59	20.88	
15	64QAM	36	39	20.63	20.63	20.67	
15	64QAM	75	0	20.61	20.75	20.83	20
15	256QAM	1	0	18.75	18.78	18.79	
15	256QAM	1	37	18.46	18.56	18.55	
15	256QAM	1	74	18.46	18.72	18.89	20
15	256QAM	36	0	19.78	19.83	19.76	
15	256QAM	36	20	19.43	19.76	19.80	
15	256QAM	36	39	19.67	19.73	19.68	
15	256QAM	75	0	19.67	19.87	19.90	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	20.59	20.91	20.87	22
10	QPSK	1	25	20.49	20.65	20.69	
10	QPSK	1	49	20.30	20.63	20.80	
10	QPSK	25	0	20.73	20.95	20.82	22
10	QPSK	25	12	20.64	20.81	20.84	
10	QPSK	25	25	20.61	20.56	20.67	
10	QPSK	50	0	20.71	20.83	20.70	22
10	16QAM	1	0	20.48	20.79	20.92	
10	16QAM	1	25	20.39	20.58	20.69	
10	16QAM	1	49	20.32	20.61	20.98	22
10	16QAM	25	0	20.68	20.91	20.88	
10	16QAM	25	12	20.65	20.74	20.86	
10	16QAM	25	25	20.60	20.70	20.80	22
10	16QAM	50	0	20.67	20.77	20.87	
10	64QAM	1	0	20.80	20.68	20.74	
10	64QAM	1	25	20.61	20.54	20.77	22
10	64QAM	1	49	20.54	20.65	20.94	
10	64QAM	25	0	20.83	20.78	20.92	
10	64QAM	25	12	20.65	20.56	20.81	22
10	64QAM	25	25	20.59	20.46	20.71	
10	64QAM	50	0	20.57	20.79	20.71	
10	256QAM	1	0	18.72	18.78	18.93	20
10	256QAM	1	25	18.37	18.57	18.65	
10	256QAM	1	49	18.42	18.66	18.94	
10	256QAM	25	0	19.83	19.76	19.84	20
10	256QAM	25	12	19.61	19.78	19.99	
10	256QAM	25	25	19.69	19.66	19.70	
10	256QAM	50	0	19.49	19.93	19.84	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	20.72	20.92	20.89	22



FCC SAR TEST REPORT

Report No. : FA2O2005

5	QPSK	1	12	20.35	20.58	20.83	
5	QPSK	1	24	20.42	20.62	20.80	
5	QPSK	12	0	20.65	20.94	20.89	
5	QPSK	12	7	20.68	20.86	20.77	22
5	QPSK	12	13	20.57	20.52	20.81	
5	QPSK	25	0	20.77	20.69	20.85	
5	16QAM	1	0	20.52	20.84	20.91	22
5	16QAM	1	12	20.40	20.45	20.66	
5	16QAM	1	24	20.30	20.72	20.99	
5	16QAM	12	0	20.84	20.92	20.82	22
5	16QAM	12	7	20.55	20.68	20.76	
5	16QAM	12	13	20.59	20.67	20.80	
5	16QAM	25	0	20.59	20.86	20.81	22
5	64QAM	1	0	20.81	20.61	20.86	
5	64QAM	1	12	20.56	20.48	20.81	
5	64QAM	1	24	20.56	20.62	20.95	22
5	64QAM	12	0	20.67	20.82	20.93	
5	64QAM	12	7	20.62	20.63	20.88	
5	64QAM	12	13	20.58	20.61	20.72	20
5	64QAM	25	0	20.71	20.71	20.70	
5	256QAM	1	0	18.62	18.85	18.87	
5	256QAM	1	12	18.42	18.72	18.57	20
5	256QAM	1	24	18.43	18.72	18.98	
5	256QAM	12	0	19.71	19.85	19.79	
5	256QAM	12	7	19.49	19.75	19.92	20
5	256QAM	12	13	19.58	19.61	19.77	
5	256QAM	25	0	19.49	19.77	19.72	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	20.71	20.95	20.69	22
3	QPSK	1	8	20.55	20.65	20.71	
3	QPSK	1	14	20.42	20.78	20.92	
3	QPSK	8	0	20.60	20.86	20.80	22
3	QPSK	8	4	20.71	20.74	20.95	
3	QPSK	8	7	20.54	20.67	20.78	
3	QPSK	15	0	20.63	20.67	20.77	22
3	16QAM	1	0	20.62	20.70	20.94	
3	16QAM	1	8	20.32	20.56	20.75	
3	16QAM	1	14	20.37	20.62	20.88	22
3	16QAM	8	0	20.66	20.76	20.82	
3	16QAM	8	4	20.58	20.71	20.95	
3	16QAM	8	7	20.69	20.72	20.79	22
3	16QAM	15	0	20.71	20.82	20.82	
3	64QAM	1	0	20.74	20.71	20.78	
3	64QAM	1	8	20.59	20.60	20.70	22
3	64QAM	1	14	20.45	20.54	20.99	
3	64QAM	8	0	20.79	20.70	20.96	
3	64QAM	8	4	20.56	20.72	20.92	22
3	64QAM	8	7	20.53	20.62	20.74	
3	64QAM	15	0	20.71	20.69	20.90	
3	256QAM	1	0	18.63	18.94	18.90	20
3	256QAM	1	8	18.39	18.69	18.61	
3	256QAM	1	14	18.50	18.68	18.93	
3	256QAM	8	0	19.83	19.70	19.80	20
3	256QAM	8	4	19.46	19.75	19.97	
3	256QAM	8	7	19.65	19.62	19.69	



FCC SAR TEST REPORT

Report No. : FA2O2005

3	256QAM	15	0	19.50	19.74	19.89	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	20.70	20.77	20.96	22
1.4	QPSK	1	3	20.41	20.63	20.84	
1.4	QPSK	1	5	20.37	20.74	20.85	
1.4	QPSK	3	0	20.64	20.83	20.79	
1.4	QPSK	3	1	20.70	20.89	20.92	
1.4	QPSK	3	3	20.59	20.68	20.80	
1.4	QPSK	6	0	20.71	20.79	20.78	22
1.4	16QAM	1	0	20.63	20.86	20.81	22
1.4	16QAM	1	3	20.45	20.50	20.69	
1.4	16QAM	1	5	20.29	20.55	20.90	
1.4	16QAM	3	0	20.73	20.85	20.71	
1.4	16QAM	3	1	20.73	20.67	20.80	
1.4	16QAM	3	3	20.52	20.76	20.73	
1.4	16QAM	6	0	20.64	20.82	20.82	22
1.4	64QAM	1	0	20.83	20.78	20.75	22
1.4	64QAM	1	3	20.52	20.58	20.78	
1.4	64QAM	1	5	20.63	20.49	20.80	
1.4	64QAM	3	0	20.72	20.77	20.84	
1.4	64QAM	3	1	20.74	20.71	20.81	
1.4	64QAM	3	3	20.62	20.64	20.64	
1.4	64QAM	6	0	20.69	20.78	20.74	22
1.4	256QAM	1	0	18.77	18.92	18.75	20
1.4	256QAM	1	3	18.49	18.56	18.57	
1.4	256QAM	1	5	18.59	18.70	19.02	
1.4	256QAM	3	0	19.74	19.85	19.75	
1.4	256QAM	3	1	19.43	19.82	19.80	
1.4	256QAM	3	3	19.68	19.75	19.60	
1.4	256QAM	6	0	19.47	19.81	19.87	20

<LTE Band 4 MIMO2 Default Power >							
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	22.78	23.08	23.05	24
20	QPSK	1	49	22.94	23.03	22.95	
20	QPSK	1	99	22.86	22.94	22.82	
20	QPSK	50	0	21.72	22.00	21.97	23
20	QPSK	50	24	21.88	21.99	21.97	
20	QPSK	50	50	21.88	21.95	21.94	
20	QPSK	100	0	21.81	21.92	21.91	23
20	16QAM	1	0	21.94	21.90	22.18	
20	16QAM	1	49	21.81	22.45	22.12	
20	16QAM	1	99	22.08	22.36	22.29	22
20	16QAM	50	0	20.71	20.97	20.83	
20	16QAM	50	24	20.93	20.96	21.03	
20	16QAM	50	50	20.90	20.98	20.94	22
20	16QAM	100	0	20.79	20.96	20.88	
20	64QAM	1	0	21.16	21.09	20.98	
20	64QAM	1	49	20.99	20.80	21.22	22
20	64QAM	1	99	21.02	21.10	20.97	
20	64QAM	50	0	19.64	19.95	19.86	21
20	64QAM	50	24	19.89	19.89	19.93	
20	64QAM	50	50	19.85	19.91	19.99	
20	64QAM	100	0	19.79	19.89	19.91	19
20	256QAM	1	0	17.75	17.21	17.31	
20	256QAM	1	49	17.91	17.89	17.76	
20	256QAM	1	99	17.89	17.68	17.69	19
20	256QAM	50	0	17.67	17.76	17.62	
20	256QAM	50	24	17.69	17.77	17.71	
20	256QAM	50	50	17.79	17.74	17.66	19
20	256QAM	100	0	17.66	17.78	17.63	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	22.60	22.93	22.93	
15	QPSK	1	37	22.87	22.99	22.90	24
15	QPSK	1	74	22.70	22.80	22.66	
15	QPSK	36	0	21.61	21.89	21.91	23
15	QPSK	36	20	21.85	21.84	21.79	
15	QPSK	36	39	21.73	21.84	21.80	
15	QPSK	75	0	21.72	21.87	21.76	23
15	16QAM	1	0	21.74	21.81	22.12	
15	16QAM	1	37	21.69	22.43	22.03	
15	16QAM	1	74	21.98	22.26	22.23	22
15	16QAM	36	0	20.57	20.80	20.80	
15	16QAM	36	20	20.78	20.81	20.88	
15	16QAM	36	39	20.72	20.98	20.88	22
15	16QAM	75	0	20.60	20.96	20.69	
15	64QAM	1	0	21.01	21.08	20.98	
15	64QAM	1	37	20.89	20.71	21.04	22
15	64QAM	1	74	20.84	20.94	20.90	
15	64QAM	36	0	19.50	19.76	19.72	21
15	64QAM	36	20	19.78	19.88	19.82	
15	64QAM	36	39	19.69	19.81	19.95	
15	64QAM	75	0	19.67	19.88	19.91	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	256QAM	1	0	17.58	17.15	17.17	19
15	256QAM	1	37	17.72	17.79	17.60	
15	256QAM	1	74	17.72	17.63	17.55	
15	256QAM	36	0	17.56	17.69	17.42	19
15	256QAM	36	20	17.68	17.57	17.58	
15	256QAM	36	39	17.74	17.63	17.66	
15	256QAM	75	0	17.65	17.77	17.54	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	22.58	23.06	22.90	24
10	QPSK	1	25	22.75	22.90	22.77	
10	QPSK	1	49	22.80	22.75	22.72	
10	QPSK	25	0	21.63	21.85	21.89	23
10	QPSK	25	12	21.82	21.80	21.96	
10	QPSK	25	25	21.80	21.93	21.94	
10	QPSK	50	0	21.68	21.91	21.78	
10	16QAM	1	0	21.82	21.75	22.13	23
10	16QAM	1	25	21.70	22.31	22.07	
10	16QAM	1	49	22.06	22.26	22.17	
10	16QAM	25	0	20.53	20.78	20.73	22
10	16QAM	25	12	20.78	20.85	20.95	
10	16QAM	25	25	20.87	20.98	20.79	
10	16QAM	50	0	20.77	20.92	20.79	
10	64QAM	1	0	21.10	20.94	20.80	22
10	64QAM	1	25	20.84	20.68	21.07	
10	64QAM	1	49	20.82	21.00	20.77	
10	64QAM	25	0	19.63	19.75	19.84	21
10	64QAM	25	12	19.87	19.74	19.82	
10	64QAM	25	25	19.85	19.90	19.89	
10	64QAM	50	0	19.72	19.70	19.84	
10	256QAM	1	0	17.68	17.10	17.28	19
10	256QAM	1	25	17.83	17.79	17.57	
10	256QAM	1	49	17.85	17.55	17.62	
10	256QAM	25	0	17.53	17.63	17.50	19
10	256QAM	25	12	17.59	17.76	17.54	
10	256QAM	25	25	17.59	17.60	17.52	
10	256QAM	50	0	17.52	17.63	17.49	
Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	22.64	22.90	22.91	24
5	QPSK	1	12	22.77	22.83	22.84	
5	QPSK	1	24	22.67	22.92	22.75	
5	QPSK	12	0	21.66	21.83	21.80	23
5	QPSK	12	7	21.76	21.91	21.78	
5	QPSK	12	13	21.69	21.88	21.78	
5	QPSK	25	0	21.75	21.91	21.84	
5	16QAM	1	0	21.88	21.83	22.14	23
5	16QAM	1	12	21.68	22.25	22.01	
5	16QAM	1	24	22.04	22.18	22.12	
5	16QAM	12	0	20.59	20.79	20.68	22
5	16QAM	12	7	20.84	20.90	21.02	
5	16QAM	12	13	20.80	20.92	20.88	
5	16QAM	25	0	20.67	20.90	20.68	
5	64QAM	1	0	21.09	20.93	20.88	22
5	64QAM	1	12	20.89	20.76	21.09	
5	64QAM	1	24	21.00	20.95	20.84	



FCC SAR TEST REPORT

Report No. : FA2O2005

5	64QAM	12	0	19.58	19.93	19.69	21
5	64QAM	12	7	19.78	19.69	19.73	
5	64QAM	12	13	19.77	19.71	19.92	
5	64QAM	25	0	19.76	19.71	19.86	
5	256QAM	1	0	17.71	17.10	17.26	19
5	256QAM	1	12	17.83	17.87	17.60	
5	256QAM	1	24	17.80	17.55	17.58	
5	256QAM	12	0	17.48	17.64	17.43	19
5	256QAM	12	7	17.63	17.77	17.63	
5	256QAM	12	13	17.73	17.70	17.49	
5	256QAM	25	0	17.50	17.61	17.52	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	22.67	23.05	22.91	24
3	QPSK	1	8	22.93	22.95	22.90	
3	QPSK	1	14	22.77	22.83	22.67	
3	QPSK	8	0	21.71	21.99	21.87	23
3	QPSK	8	4	21.68	21.87	21.90	
3	QPSK	8	7	21.69	21.79	21.78	
3	QPSK	15	0	21.75	21.74	21.87	
3	16QAM	1	0	21.78	21.84	22.06	23
3	16QAM	1	8	21.66	22.45	21.92	
3	16QAM	1	14	21.91	22.29	22.27	
3	16QAM	8	0	20.57	20.87	20.80	22
3	16QAM	8	4	20.75	20.84	20.87	
3	16QAM	8	7	20.79	20.97	20.82	
3	16QAM	15	0	20.67	20.87	20.84	
3	64QAM	1	0	20.98	20.91	20.86	22
3	64QAM	1	8	20.95	20.62	21.18	
3	64QAM	1	14	20.90	21.04	20.92	
3	64QAM	8	0	19.58	19.82	19.71	21
3	64QAM	8	4	19.82	19.69	19.83	
3	64QAM	8	7	19.70	19.89	19.87	
3	64QAM	15	0	19.64	19.72	19.75	
3	256QAM	1	0	17.58	17.03	17.27	19
3	256QAM	1	8	17.81	17.79	17.61	
3	256QAM	1	14	17.75	17.59	17.49	
3	256QAM	8	0	17.54	17.58	17.52	19
3	256QAM	8	4	17.59	17.66	17.66	
3	256QAM	8	7	17.73	17.72	17.66	
3	256QAM	15	0	17.46	17.60	17.47	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	22.73	23.01	23.03	24
1.4	QPSK	1	3	22.86	22.94	22.87	
1.4	QPSK	1	5	22.84	22.85	22.77	
1.4	QPSK	3	0	22.74	22.99	22.97	
1.4	QPSK	3	1	22.82	22.91	22.84	
1.4	QPSK	3	3	22.80	22.83	22.72	
1.4	QPSK	6	0	21.77	21.88	21.82	23
1.4	16QAM	1	0	21.85	21.86	22.08	23
1.4	16QAM	1	3	21.77	22.41	22.08	
1.4	16QAM	1	5	21.99	22.33	22.17	
1.4	16QAM	3	0	21.84	21.83	22.08	
1.4	16QAM	3	1	21.78	22.34	22.07	
1.4	16QAM	3	3	22.03	22.30	22.23	



FCC SAR TEST REPORT

Report No. : FA2O2005

1.4	16QAM	6	0	20.74	20.85	20.79	22
1.4	64QAM	1	0	21.09	20.97	20.95	22
1.4	64QAM	1	3	20.90	20.72	21.12	
1.4	64QAM	1	5	20.92	21.06	20.89	
1.4	64QAM	3	0	21.09	20.97	20.94	
1.4	64QAM	3	1	20.88	20.78	21.11	
1.4	64QAM	3	3	20.91	21.06	20.94	
1.4	64QAM	6	0	19.75	19.79	19.87	21
1.4	256QAM	1	0	17.69	17.10	17.22	19
1.4	256QAM	1	3	17.87	17.82	17.64	
1.4	256QAM	1	5	17.87	17.61	17.64	
1.4	256QAM	3	0	17.69	17.15	17.22	
1.4	256QAM	3	1	17.83	17.80	17.66	
1.4	256QAM	3	3	17.80	17.62	17.57	
1.4	256QAM	6	0	17.55	17.69	17.57	19

<LTE Band 4 MIMO2 Reduced Power >							
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	20.84	20.79	20.57	22
20	QPSK	1	49	20.69	20.67	20.65	
20	QPSK	1	99	20.70	20.48	20.58	
20	QPSK	50	0	20.68	20.63	20.52	22
20	QPSK	50	24	20.54	20.58	20.42	
20	QPSK	50	50	20.49	20.54	20.44	
20	QPSK	100	0	20.71	20.42	20.60	
20	16QAM	1	0	20.74	20.60	20.57	22
20	16QAM	1	49	20.59	20.50	20.36	
20	16QAM	1	99	20.60	20.35	20.65	
20	16QAM	50	0	20.72	20.72	20.67	22
20	16QAM	50	24	20.80	20.68	20.53	
20	16QAM	50	50	20.59	20.57	20.68	
20	16QAM	100	0	20.71	20.63	20.50	
20	64QAM	1	0	20.77	20.44	20.64	22
20	64QAM	1	49	20.58	20.45	20.64	
20	64QAM	1	99	20.38	20.65	20.57	
20	64QAM	50	0	20.53	20.46	20.45	22
20	64QAM	50	24	20.47	20.44	20.36	
20	64QAM	50	50	20.54	20.49	20.42	
20	64QAM	100	0	20.69	20.52	20.50	
20	256QAM	1	0	18.80	18.60	18.57	20
20	256QAM	1	49	18.49	18.45	18.49	
20	256QAM	1	99	18.47	18.44	18.52	
20	256QAM	50	0	18.82	18.67	18.73	20
20	256QAM	50	24	18.80	18.53	18.53	
20	256QAM	50	50	18.43	18.50	18.35	
20	256QAM	100	0	18.65	18.42	18.56	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	20.81	20.73	20.42	22
15	QPSK	1	37	20.50	20.60	20.65	
15	QPSK	1	74	20.52	20.37	20.55	
15	QPSK	36	0	20.63	20.45	20.39	22
15	QPSK	36	20	20.38	20.53	20.28	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	QPSK	36	39	20.32	20.39	20.32	
15	QPSK	75	0	20.69	20.41	20.43	
15	16QAM	1	0	20.62	20.45	20.45	
15	16QAM	1	37	20.58	20.39	20.32	22
15	16QAM	1	74	20.48	20.23	20.52	
15	16QAM	36	0	20.63	20.66	20.47	
15	16QAM	36	20	20.70	20.62	20.47	22
15	16QAM	36	39	20.52	20.52	20.57	
15	16QAM	75	0	20.59	20.43	20.45	
15	64QAM	1	0	20.69	20.36	20.60	22
15	64QAM	1	37	20.58	20.38	20.51	
15	64QAM	1	74	20.19	20.57	20.51	
15	64QAM	36	0	20.44	20.46	20.41	22
15	64QAM	36	20	20.43	20.30	20.19	
15	64QAM	36	39	20.47	20.35	20.38	
15	64QAM	75	0	20.51	20.47	20.31	20
15	256QAM	1	0	18.75	18.58	18.47	
15	256QAM	1	37	18.42	18.33	18.47	
15	256QAM	1	74	18.47	18.40	18.47	20
15	256QAM	36	0	18.71	18.58	18.55	
15	256QAM	36	20	18.75	18.37	18.40	
15	256QAM	36	39	18.26	18.41	18.23	
15	256QAM	75	0	18.52	18.39	18.49	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	20.82	20.78	20.44	22
10	QPSK	1	25	20.69	20.47	20.61	
10	QPSK	1	49	20.52	20.47	20.44	
10	QPSK	25	0	20.60	20.43	20.41	22
10	QPSK	25	12	20.42	20.54	20.40	
10	QPSK	25	25	20.40	20.35	20.40	
10	QPSK	50	0	20.64	20.34	20.59	22
10	16QAM	1	0	20.68	20.56	20.38	
10	16QAM	1	25	20.57	20.35	20.20	
10	16QAM	1	49	20.55	20.28	20.50	22
10	16QAM	25	0	20.72	20.59	20.54	
10	16QAM	25	12	20.72	20.60	20.50	
10	16QAM	25	25	20.58	20.43	20.52	22
10	16QAM	50	0	20.62	20.49	20.35	
10	64QAM	1	0	20.67	20.29	20.64	
10	64QAM	1	25	20.48	20.38	20.63	22
10	64QAM	1	49	20.32	20.53	20.39	
10	64QAM	25	0	20.40	20.34	20.38	
10	64QAM	25	12	20.31	20.28	20.25	22
10	64QAM	25	25	20.35	20.29	20.23	
10	64QAM	50	0	20.62	20.48	20.35	
10	256QAM	1	0	18.64	18.43	18.51	20
10	256QAM	1	25	18.48	18.41	18.35	
10	256QAM	1	49	18.30	18.43	18.49	
10	256QAM	25	0	18.64	18.54	18.55	20
10	256QAM	25	12	18.64	18.36	18.42	
10	256QAM	25	25	18.35	18.37	18.24	
10	256QAM	50	0	18.53	18.39	18.41	
Channel				19975	20175	20375	
Frequency (MHz)				1712.5	1732.5	1752.5	Tune-up limit (dBm)
5	QPSK	1	0	20.82	20.77	20.41	22



FCC SAR TEST REPORT

Report No. : FA2O2005

5	QPSK	1	12	20.57	20.53	20.53	
5	QPSK	1	24	20.65	20.48	20.42	
5	QPSK	12	0	20.56	20.57	20.47	
5	QPSK	12	7	20.34	20.51	20.24	22
5	QPSK	12	13	20.49	20.43	20.34	
5	QPSK	25	0	20.64	20.29	20.58	
5	16QAM	1	0	20.65	20.40	20.38	22
5	16QAM	1	12	20.54	20.36	20.23	
5	16QAM	1	24	20.46	20.30	20.54	
5	16QAM	12	0	20.63	20.58	20.64	22
5	16QAM	12	7	20.64	20.66	20.46	
5	16QAM	12	13	20.42	20.48	20.52	
5	16QAM	25	0	20.64	20.44	20.41	22
5	64QAM	1	0	20.59	20.42	20.48	
5	64QAM	1	12	20.58	20.31	20.63	
5	64QAM	1	24	20.32	20.53	20.42	22
5	64QAM	12	0	20.52	20.33	20.44	
5	64QAM	12	7	20.43	20.25	20.34	
5	64QAM	12	13	20.50	20.34	20.25	20
5	64QAM	25	0	20.50	20.40	20.42	
5	256QAM	1	0	18.71	18.58	18.52	
5	256QAM	1	12	18.32	18.37	18.29	20
5	256QAM	1	24	18.38	18.24	18.38	
5	256QAM	12	0	18.62	18.51	18.60	
5	256QAM	12	7	18.73	18.52	18.44	20
5	256QAM	12	13	18.23	18.35	18.32	
5	256QAM	25	0	18.57	18.28	18.56	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	20.81	20.73	20.52	22
3	QPSK	1	8	20.59	20.54	20.53	
3	QPSK	1	14	20.64	20.31	20.47	
3	QPSK	8	0	20.54	20.52	20.37	22
3	QPSK	8	4	20.44	20.54	20.41	
3	QPSK	8	7	20.43	20.44	20.37	
3	QPSK	15	0	20.62	20.32	20.48	22
3	16QAM	1	0	20.66	20.56	20.45	
3	16QAM	1	8	20.58	20.46	20.22	
3	16QAM	1	14	20.54	20.24	20.45	22
3	16QAM	8	0	20.64	20.66	20.65	
3	16QAM	8	4	20.72	20.49	20.44	
3	16QAM	8	7	20.50	20.43	20.57	22
3	16QAM	15	0	20.63	20.48	20.35	
3	64QAM	1	0	20.57	20.40	20.53	
3	64QAM	1	8	20.47	20.45	20.49	22
3	64QAM	1	14	20.38	20.51	20.38	
3	64QAM	8	0	20.45	20.40	20.33	
3	64QAM	8	4	20.46	20.41	20.18	22
3	64QAM	8	7	20.38	20.34	20.37	
3	64QAM	15	0	20.66	20.35	20.47	
3	256QAM	1	0	18.78	18.54	18.50	20
3	256QAM	1	8	18.42	18.36	18.48	
3	256QAM	1	14	18.46	18.41	18.36	
3	256QAM	8	0	18.63	18.56	18.55	20
3	256QAM	8	4	18.67	18.50	18.42	
3	256QAM	8	7	18.32	18.43	18.16	



FCC SAR TEST REPORT

Report No. : FA2O2005

3	256QAM	15	0	18.64	18.28	18.40	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	20.69	20.75	20.54	22
1.4	QPSK	1	3	20.58	20.63	20.61	
1.4	QPSK	1	5	20.53	20.41	20.41	
1.4	QPSK	3	0	20.51	20.49	20.50	
1.4	QPSK	3	1	20.47	20.42	20.29	
1.4	QPSK	3	3	20.44	20.36	20.35	
1.4	QPSK	6	0	20.54	20.32	20.47	22
1.4	16QAM	1	0	20.61	20.60	20.40	22
1.4	16QAM	1	3	20.57	20.45	20.27	
1.4	16QAM	1	5	20.51	20.27	20.53	
1.4	16QAM	3	0	20.63	20.53	20.55	
1.4	16QAM	3	1	20.65	20.58	20.50	
1.4	16QAM	3	3	20.42	20.39	20.57	
1.4	16QAM	6	0	20.62	20.43	20.50	22
1.4	64QAM	1	0	20.67	20.25	20.44	22
1.4	64QAM	1	3	20.51	20.45	20.53	
1.4	64QAM	1	5	20.19	20.49	20.54	
1.4	64QAM	3	0	20.41	20.29	20.28	
1.4	64QAM	3	1	20.29	20.31	20.16	
1.4	64QAM	3	3	20.38	20.48	20.37	
1.4	64QAM	6	0	20.50	20.38	20.32	22
1.4	256QAM	1	0	18.69	18.54	18.48	20
1.4	256QAM	1	3	18.35	18.43	18.40	
1.4	256QAM	1	5	18.40	18.39	18.43	
1.4	256QAM	3	0	18.82	18.61	18.67	
1.4	256QAM	3	1	18.80	18.43	18.35	
1.4	256QAM	3	3	18.41	18.41	18.34	
1.4	256QAM	6	0	18.61	18.24	18.49	20

<LTE Band 7 MIMO2 Default Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20850	21100	21350	
Frequency (MHz)				2510	2535	2560	
20	QPSK	1	0	23.18	23.28	23.32	24
20	QPSK	1	49	23.12	23.06	23.20	
20	QPSK	1	99	23.17	23.17	22.97	
20	QPSK	50	0	22.17	22.29	22.30	23
20	QPSK	50	24	22.07	22.26	22.25	
20	QPSK	50	50	22.02	22.24	22.27	
20	QPSK	100	0	22.05	22.24	22.26	23
20	16QAM	1	0	22.39	22.54	22.27	
20	16QAM	1	49	22.68	22.47	22.27	
20	16QAM	1	99	22.30	22.68	22.77	22
20	16QAM	50	0	20.98	21.19	21.22	
20	16QAM	50	24	21.05	21.28	21.23	
20	16QAM	50	50	21.22	21.22	21.19	22
20	16QAM	100	0	21.03	21.19	21.17	
20	64QAM	1	0	21.09	21.04	21.35	
20	64QAM	1	49	21.27	21.56	21.61	22
20	64QAM	1	99	21.16	21.30	21.46	
20	64QAM	50	0	20.07	20.17	20.19	21
20	64QAM	50	24	20.13	20.25	20.20	
20	64QAM	50	50	20.19	20.27	20.16	
20	64QAM	100	0	20.10	20.23	20.17	19
20	256QAM	1	0	17.87	17.93	18.02	
20	256QAM	1	49	18.03	18.06	18.10	
20	256QAM	1	99	17.96	17.99	18.09	19
20	256QAM	50	0	17.86	18.02	18.12	
20	256QAM	50	24	17.95	17.99	18.06	
20	256QAM	50	50	17.92	17.94	18.05	19
20	256QAM	100	0	17.88	17.94	18.12	
Channel				20825	21100	21375	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	23.07	23.20	23.21	
15	QPSK	1	37	22.95	23.06	23.02	24
15	QPSK	1	74	23.00	23.04	22.86	
15	QPSK	36	0	22.17	22.20	22.27	23
15	QPSK	36	20	21.97	22.16	22.20	
15	QPSK	36	39	21.83	22.05	22.07	
15	QPSK	75	0	21.98	22.14	22.18	23
15	16QAM	1	0	22.39	22.47	22.18	
15	16QAM	1	37	22.55	22.34	22.10	
15	16QAM	1	74	22.26	22.52	22.69	22
15	16QAM	36	0	20.91	21.02	21.07	
15	16QAM	36	20	20.98	21.12	21.23	
15	16QAM	36	39	21.05	21.04	21.07	22
15	16QAM	75	0	21.00	21.14	21.11	
15	64QAM	1	0	21.06	20.93	21.24	
15	64QAM	1	37	21.24	21.38	21.52	22
15	64QAM	1	74	21.13	21.24	21.33	
15	64QAM	36	0	19.92	20.08	20.14	21
15	64QAM	36	20	19.95	20.09	20.16	
15	64QAM	36	39	20.18	20.11	20.13	
15	64QAM	75	0	20.04	20.23	20.02	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	256QAM	1	0	17.81	17.80	17.95	19
15	256QAM	1	37	18.02	17.95	18.00	
15	256QAM	1	74	17.79	17.87	17.92	
15	256QAM	36	0	17.78	17.83	17.94	19
15	256QAM	36	20	17.91	17.79	17.89	
15	256QAM	36	39	17.72	17.77	17.86	
15	256QAM	75	0	17.71	17.75	18.04	
Channel				20800	21100	21400	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	23.08	23.21	23.29	24
10	QPSK	1	25	22.99	23.05	23.10	
10	QPSK	1	49	22.99	23.17	22.77	
10	QPSK	25	0	22.10	22.22	22.14	23
10	QPSK	25	12	21.99	22.13	22.24	
10	QPSK	25	25	21.85	22.13	22.18	
10	QPSK	50	0	21.86	22.19	22.21	
10	16QAM	1	0	22.20	22.37	22.19	23
10	16QAM	1	25	22.58	22.42	22.16	
10	16QAM	1	49	22.30	22.65	22.57	
10	16QAM	25	0	20.89	21.13	21.15	22
10	16QAM	25	12	21.01	21.25	21.13	
10	16QAM	25	25	21.08	21.12	21.02	
10	16QAM	50	0	20.90	21.07	21.09	
10	64QAM	1	0	20.94	20.93	21.20	22
10	64QAM	1	25	21.15	21.55	21.42	
10	64QAM	1	49	21.02	21.15	21.33	
10	64QAM	25	0	20.00	20.09	20.00	21
10	64QAM	25	12	20.01	20.23	20.13	
10	64QAM	25	25	20.05	20.25	20.06	
10	64QAM	50	0	20.04	20.10	20.07	
10	256QAM	1	0	17.71	17.79	17.96	19
10	256QAM	1	25	17.85	17.86	17.92	
10	256QAM	1	49	17.87	17.87	17.92	
10	256QAM	25	0	17.78	17.97	18.07	19
10	256QAM	25	12	17.94	17.92	17.97	
10	256QAM	25	25	17.76	17.79	17.96	
10	256QAM	50	0	17.82	17.75	18.01	
Channel				20775	21100	21425	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	23.14	23.16	23.27	24
5	QPSK	1	12	23.00	22.94	23.03	
5	QPSK	1	24	23.07	23.05	22.95	
5	QPSK	12	0	22.13	22.15	22.20	23
5	QPSK	12	7	21.87	22.24	22.17	
5	QPSK	12	13	21.98	22.22	22.13	
5	QPSK	25	0	21.93	22.06	22.13	
5	16QAM	1	0	22.38	22.53	22.21	23
5	16QAM	1	12	22.55	22.33	22.07	
5	16QAM	1	24	22.19	22.51	22.75	
5	16QAM	12	0	20.91	21.02	21.14	22
5	16QAM	12	7	20.85	21.26	21.12	
5	16QAM	12	13	21.16	21.15	21.08	
5	16QAM	25	0	20.90	21.01	20.98	
5	64QAM	1	0	20.98	20.89	21.34	22
5	64QAM	1	12	21.26	21.51	21.46	
5	64QAM	1	24	21.02	21.19	21.30	

5	64QAM	12	0	20.01	20.02	20.02	21
5	64QAM	12	7	20.00	20.08	20.11	
5	64QAM	12	13	20.12	20.26	20.03	
5	64QAM	25	0	19.96	20.09	20.14	19
5	256QAM	1	0	17.71	17.81	17.84	
5	256QAM	1	12	17.83	17.97	17.95	
5	256QAM	1	24	17.78	17.80	17.90	19
5	256QAM	12	0	17.71	17.97	18.12	
5	256QAM	12	7	17.87	17.92	17.96	
5	256QAM	12	13	17.89	17.79	17.99	
5	256QAM	25	0	17.83	17.83	18.12	

<LTE Band 7 MIMO2 Reduced Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20850	21100	21350	
Frequency (MHz)				2510	2535	2560	
20	QPSK	1	0	19.39	19.42	19.45	20
20	QPSK	1	49	19.22	19.28	19.10	
20	QPSK	1	99	19.15	19.27	19.28	
20	QPSK	50	0	19.33	19.35	19.45	20
20	QPSK	50	24	19.12	19.20	19.25	
20	QPSK	50	50	19.01	19.16	19.43	
20	QPSK	100	0	19.09	19.12	19.20	20
20	16QAM	1	0	19.12	19.37	19.42	
20	16QAM	1	49	19.10	19.37	19.25	
20	16QAM	1	99	19.09	19.26	19.38	20
20	16QAM	50	0	19.18	19.08	19.15	
20	16QAM	50	24	19.14	19.37	19.28	
20	16QAM	50	50	19.19	19.41	19.24	20
20	16QAM	100	0	19.42	19.37	19.31	
20	64QAM	1	0	19.12	19.28	19.38	20
20	64QAM	1	49	19.03	19.34	19.40	
20	64QAM	1	99	19.02	19.36	19.35	
20	64QAM	50	0	18.90	19.35	19.13	20
20	64QAM	50	24	19.09	19.25	19.36	
20	64QAM	50	50	19.18	19.08	18.95	
20	64QAM	100	0	19.11	19.17	19.14	20
20	256QAM	1	0	19.13	19.22	19.23	
20	256QAM	1	49	19.23	19.19	19.15	
20	256QAM	1	99	19.11	19.26	19.25	20
20	256QAM	50	0	18.90	19.21	19.34	
20	256QAM	50	24	19.10	19.12	19.26	
20	256QAM	50	50	19.26	19.19	19.44	20
20	256QAM	100	0	19.12	19.04	19.05	
Channel				20825	21100	21375	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	19.24	19.41	19.32	20
15	QPSK	1	37	19.17	19.20	18.97	
15	QPSK	1	74	19.05	19.18	19.10	
15	QPSK	36	0	19.30	19.15	19.42	20
15	QPSK	36	20	19.03	19.08	19.08	
15	QPSK	36	39	18.86	19.08	19.30	
15	QPSK	75	0	18.89	19.07	19.12	20
15	16QAM	1	0	18.93	19.34	19.37	
15	16QAM	1	37	18.94	19.23	19.18	

**FCC SAR TEST REPORT****Report No. : FA2O2005**

15	16QAM	1	74	19.08	19.20	19.21	
15	16QAM	36	0	19.10	18.93	19.14	
15	16QAM	36	20	19.08	19.19	19.20	
15	16QAM	36	39	19.05	19.33	19.07	
15	16QAM	75	0	19.30	19.24	19.12	
15	64QAM	1	0	19.00	19.23	19.23	
15	64QAM	1	37	18.96	19.28	19.21	
15	64QAM	1	74	18.96	19.31	19.22	
15	64QAM	36	0	18.70	19.25	18.96	
15	64QAM	36	20	19.05	19.18	19.27	
15	64QAM	36	39	19.00	18.94	18.86	
15	64QAM	75	0	19.06	18.97	19.12	
15	256QAM	1	0	19.08	19.08	19.16	
15	256QAM	1	37	19.19	19.00	19.10	
15	256QAM	1	74	18.92	19.09	19.21	
15	256QAM	36	0	18.70	19.01	19.26	
15	256QAM	36	20	19.04	18.95	19.20	
15	256QAM	36	39	19.08	19.13	19.40	
15	256QAM	75	0	19.00	19.01	18.92	
Channel				20800	21100	21400	
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	19.37	19.37	19.28	
10	QPSK	1	25	19.14	19.25	19.08	
10	QPSK	1	49	19.04	19.24	19.19	
10	QPSK	25	0	19.32	19.27	19.42	
10	QPSK	25	12	19.02	19.07	19.09	
10	QPSK	25	25	18.84	19.12	19.35	
10	QPSK	50	0	18.98	19.01	19.04	
10	16QAM	1	0	18.98	19.28	19.38	
10	16QAM	1	25	18.94	19.25	19.19	
10	16QAM	1	49	19.02	19.25	19.23	
10	16QAM	25	0	19.02	18.96	19.06	
10	16QAM	25	12	18.98	19.37	19.28	
10	16QAM	25	25	19.10	19.24	19.10	
10	16QAM	50	0	19.35	19.30	19.15	
10	64QAM	1	0	19.09	19.25	19.31	
10	64QAM	1	25	18.89	19.16	19.31	
10	64QAM	1	49	18.90	19.36	19.30	
10	64QAM	25	0	18.75	19.34	19.01	
10	64QAM	25	12	18.92	19.16	19.31	
10	64QAM	25	25	19.07	18.97	18.95	
10	64QAM	50	0	19.02	19.11	19.14	
10	256QAM	1	0	19.04	19.09	19.13	
10	256QAM	1	25	19.06	19.06	19.00	
10	256QAM	1	49	18.99	19.14	19.14	
10	256QAM	25	0	18.70	19.18	19.33	
10	256QAM	25	12	19.10	19.03	19.08	
10	256QAM	25	25	19.22	19.15	19.40	
10	256QAM	50	0	19.10	18.93	18.99	
Channel				20775	21100	21425	
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	19.37	19.42	19.36	
5	QPSK	1	12	19.18	19.11	18.91	
5	QPSK	1	24	19.06	19.27	19.12	
5	QPSK	12	0	19.13	19.21	19.42	
5	QPSK	12	7	19.08	19.18	19.13	

5	QPSK	12	13	18.94	18.97	19.25	
5	QPSK	25	0	18.95	19.01	19.10	
5	16QAM	1	0	19.00	19.23	19.28	20
5	16QAM	1	12	19.02	19.23	19.16	
5	16QAM	1	24	19.01	19.14	19.38	
5	16QAM	12	0	19.10	19.08	18.97	20
5	16QAM	12	7	18.95	19.17	19.18	
5	16QAM	12	13	19.10	19.28	19.05	
5	16QAM	25	0	19.29	19.25	19.21	20
5	64QAM	1	0	19.02	19.08	19.25	
5	64QAM	1	12	19.03	19.20	19.37	
5	64QAM	1	24	18.88	19.26	19.31	20
5	64QAM	12	0	18.81	19.32	19.07	
5	64QAM	12	7	18.99	19.17	19.25	
5	64QAM	12	13	19.14	18.92	18.85	20
5	64QAM	25	0	19.10	19.17	18.99	
5	256QAM	1	0	19.09	19.09	19.21	
5	256QAM	1	12	19.10	19.07	19.14	20
5	256QAM	1	24	18.94	19.26	19.24	
5	256QAM	12	0	18.76	19.03	19.28	
5	256QAM	12	7	19.06	18.97	19.17	20
5	256QAM	12	13	19.20	19.08	19.32	
5	256QAM	25	0	19.08	18.86	18.92	

<LTE Band 25 MIMO Default Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				26140	26340	26590	
Frequency (MHz)				1860	1880	1905	
20	QPSK	1	0	22.87	22.98	23.11	24
20	QPSK	1	49	22.69	22.81	22.89	
20	QPSK	1	99	22.65	22.87	23.09	
20	QPSK	50	0	21.89	22.00	22.03	23
20	QPSK	50	24	21.82	21.93	22.00	
20	QPSK	50	50	21.77	21.82	21.99	
20	QPSK	100	0	21.86	21.96	21.99	23
20	16QAM	1	0	22.07	21.70	21.83	
20	16QAM	1	49	21.89	21.88	22.05	
20	16QAM	1	99	21.60	21.84	22.27	22
20	16QAM	50	0	20.72	20.81	20.96	
20	16QAM	50	24	20.84	21.00	21.01	
20	16QAM	50	50	20.90	20.96	20.99	22
20	16QAM	100	0	20.76	20.91	21.05	
20	64QAM	1	0	21.06	21.03	21.08	
20	64QAM	1	49	21.07	20.90	21.22	22
20	64QAM	1	99	21.05	21.14	21.05	
20	64QAM	50	0	19.76	19.82	20.03	21
20	64QAM	50	24	19.80	19.98	20.06	
20	64QAM	50	50	19.83	19.96	20.02	
20	64QAM	100	0	19.79	19.86	20.02	19
20	256QAM	1	0	18.10	17.96	17.78	
20	256QAM	1	49	18.11	18.09	18.11	
20	256QAM	1	99	18.04	17.90	17.85	19
20	256QAM	50	0	18.04	17.74	17.73	
20	256QAM	50	24	18.08	17.92	17.88	
20	256QAM	50	50	17.95	17.86	17.64	19
20	256QAM	100	0	18.03	17.80	17.81	
Channel				26115	26340	26615	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1907.5	
15	QPSK	1	0	22.82	22.78	23.01	
15	QPSK	1	37	22.67	22.65	22.82	24
15	QPSK	1	74	22.64	22.68	23.03	
15	QPSK	36	0	21.69	21.84	22.00	23
15	QPSK	36	20	21.67	21.73	21.91	
15	QPSK	36	39	21.66	21.69	21.85	
15	QPSK	75	0	21.77	21.84	21.84	23
15	16QAM	1	0	21.98	21.53	21.75	
15	16QAM	1	37	21.83	21.87	21.98	
15	16QAM	1	74	21.58	21.83	22.19	22
15	16QAM	36	0	20.65	20.78	20.87	
15	16QAM	36	20	20.84	20.81	20.97	
15	16QAM	36	39	20.74	20.79	20.80	22
15	16QAM	75	0	20.56	20.79	20.96	
15	64QAM	1	0	20.87	20.91	21.03	
15	64QAM	1	37	21.06	20.90	21.04	22
15	64QAM	1	74	20.90	21.14	20.87	
15	64QAM	36	0	19.68	19.63	19.99	21
15	64QAM	36	20	19.63	19.91	19.97	
15	64QAM	36	39	19.83	19.94	19.84	
15	64QAM	75	0	19.64	19.70	19.94	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	256QAM	1	0	18.03	17.80	17.60	19
15	256QAM	1	37	18.06	17.95	18.01	
15	256QAM	1	74	18.02	17.84	17.71	
15	256QAM	36	0	17.97	17.61	17.65	19
15	256QAM	36	20	18.05	17.82	17.71	
15	256QAM	36	39	17.78	17.66	17.45	
15	256QAM	75	0	17.95	17.67	17.70	
Channel				26090	26340	26640	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1910	
10	QPSK	1	0	22.69	22.93	22.99	24
10	QPSK	1	25	22.65	22.67	22.84	
10	QPSK	1	49	22.53	22.71	22.93	
10	QPSK	25	0	21.85	21.83	21.83	23
10	QPSK	25	12	21.75	21.89	21.91	
10	QPSK	25	25	21.69	21.67	21.87	
10	QPSK	50	0	21.78	21.76	21.97	
10	16QAM	1	0	21.95	21.69	21.63	23
10	16QAM	1	25	21.81	21.68	22.05	
10	16QAM	1	49	21.40	21.70	22.11	
10	16QAM	25	0	20.59	20.79	20.85	22
10	16QAM	25	12	20.66	20.90	20.96	
10	16QAM	25	25	20.73	20.77	20.81	
10	16QAM	50	0	20.61	20.77	20.86	
10	64QAM	1	0	20.97	20.98	20.98	22
10	64QAM	1	25	21.00	20.88	21.13	
10	64QAM	1	49	20.85	20.99	20.86	
10	64QAM	25	0	19.74	19.68	19.90	21
10	64QAM	25	12	19.65	19.81	19.92	
10	64QAM	25	25	19.75	19.88	19.83	
10	64QAM	50	0	19.73	19.68	19.86	
10	256QAM	1	0	17.99	17.92	17.75	19
10	256QAM	1	25	18.00	18.01	18.01	
10	256QAM	1	49	17.89	17.75	17.77	
10	256QAM	25	0	18.01	17.74	17.67	19
10	256QAM	25	12	18.03	17.72	17.73	
10	256QAM	25	25	17.78	17.75	17.59	
10	256QAM	50	0	17.87	17.77	17.68	
Channel				26065	26340	26665	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1912.5	
5	QPSK	1	0	22.78	22.94	23.06	24
5	QPSK	1	12	22.65	22.62	22.81	
5	QPSK	1	24	22.59	22.81	22.95	
5	QPSK	12	0	21.81	21.83	21.84	23
5	QPSK	12	7	21.66	21.87	21.86	
5	QPSK	12	13	21.59	21.72	21.79	
5	QPSK	25	0	21.74	21.84	21.85	
5	16QAM	1	0	21.91	21.58	21.75	23
5	16QAM	1	12	21.70	21.81	21.85	
5	16QAM	1	24	21.47	21.67	22.23	
5	16QAM	12	0	20.57	20.66	20.79	22
5	16QAM	12	7	20.80	20.98	20.99	
5	16QAM	12	13	20.79	20.93	20.89	
5	16QAM	25	0	20.57	20.72	20.94	
5	64QAM	1	0	20.87	20.95	20.97	22
5	64QAM	1	12	20.98	20.88	21.07	
5	64QAM	1	24	21.00	21.13	20.92	



FCC SAR TEST REPORT

Report No. : FA2O2005

5	64QAM	12	0	19.68	19.73	19.92	21
5	64QAM	12	7	19.69	19.83	20.04	
5	64QAM	12	13	19.80	19.80	19.83	
5	64QAM	25	0	19.61	19.73	20.00	
5	256QAM	1	0	18.03	17.87	17.62	19
5	256QAM	1	12	18.07	17.95	17.98	
5	256QAM	1	24	17.85	17.72	17.66	
5	256QAM	12	0	17.95	17.68	17.58	19
5	256QAM	12	7	18.05	17.75	17.88	
5	256QAM	12	13	17.81	17.85	17.59	
5	256QAM	25	0	18.02	17.65	17.70	
Channel				26055	26340	26675	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1913.5	
3	QPSK	1	0	22.81	22.79	23.06	24
3	QPSK	1	8	22.58	22.70	22.74	
3	QPSK	1	14	22.51	22.87	22.98	
3	QPSK	8	0	21.84	21.97	21.98	23
3	QPSK	8	4	21.75	21.87	21.80	
3	QPSK	8	7	21.66	21.62	21.89	
3	QPSK	15	0	21.76	21.90	21.91	
3	16QAM	1	0	22.05	21.50	21.63	23
3	16QAM	1	8	21.70	21.81	21.95	
3	16QAM	1	14	21.52	21.79	22.27	
3	16QAM	8	0	20.60	20.64	20.87	22
3	16QAM	8	4	20.67	20.80	20.89	
3	16QAM	8	7	20.86	20.86	20.79	
3	16QAM	15	0	20.75	20.80	20.95	
3	64QAM	1	0	20.92	20.89	20.95	22
3	64QAM	1	8	20.96	20.75	21.12	
3	64QAM	1	14	20.95	20.94	20.98	
3	64QAM	8	0	19.72	19.79	19.97	21
3	64QAM	8	4	19.74	19.93	20.00	
3	64QAM	8	7	19.72	19.88	19.93	
3	64QAM	15	0	19.75	19.72	19.82	
3	256QAM	1	0	17.99	17.85	17.64	19
3	256QAM	1	8	18.02	17.97	17.98	
3	256QAM	1	14	17.90	17.71	17.72	
3	256QAM	8	0	18.01	17.63	17.63	19
3	256QAM	8	4	17.97	17.80	17.84	
3	256QAM	8	7	17.85	17.75	17.57	
3	256QAM	15	0	17.83	17.65	17.71	
Channel				26047	26340	26683	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1914.3	
1.4	QPSK	1	0	22.75	22.88	23.05	24
1.4	QPSK	1	3	22.67	22.71	22.77	
1.4	QPSK	1	5	22.60	22.81	22.99	
1.4	QPSK	3	0	22.79	22.88	23.03	
1.4	QPSK	3	1	22.61	22.70	22.78	
1.4	QPSK	3	3	22.55	22.83	23.00	
1.4	QPSK	6	0	21.83	21.85	21.97	23
1.4	16QAM	1	0	22.01	21.68	21.74	23
1.4	16QAM	1	3	21.83	21.84	21.96	
1.4	16QAM	1	5	21.51	21.77	22.15	
1.4	16QAM	3	0	22.03	21.61	21.72	
1.4	16QAM	3	1	21.80	21.76	21.98	
1.4	16QAM	3	3	21.51	21.72	22.23	



FCC SAR TEST REPORT

Report No. : FA2O2005

1.4	16QAM	6	0	20.68	20.85	20.98	22
1.4	64QAM	1	0	20.98	20.95	21.04	22
1.4	64QAM	1	3	20.98	20.87	21.14	
1.4	64QAM	1	5	20.95	21.02	20.93	
1.4	64QAM	3	0	21.03	20.93	21.05	
1.4	64QAM	3	1	20.96	20.87	21.16	
1.4	64QAM	3	3	20.95	21.03	21.02	
1.4	64QAM	6	0	19.72	19.77	19.98	21
1.4	256QAM	1	0	18.07	17.91	17.74	19
1.4	256QAM	1	3	18.00	18.00	18.05	
1.4	256QAM	1	5	17.97	17.80	17.82	
1.4	256QAM	3	0	18.01	17.88	17.69	
1.4	256QAM	3	1	18.07	17.98	18.02	
1.4	256QAM	3	3	17.94	17.87	17.73	
1.4	256QAM	6	0	17.91	17.75	17.71	19

<LTE Band 25 MIMO Reduced Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				26140	26340	26590	
Frequency (MHz)				1860	1880	1905	
20	QPSK	1	0	20.72	20.98	21.09	22
20	QPSK	1	49	20.67	20.62	20.85	
20	QPSK	1	99	20.54	20.74	21.05	
20	QPSK	50	0	20.74	20.81	20.98	22
20	QPSK	50	24	20.72	20.76	20.80	
20	QPSK	50	50	20.71	20.76	20.86	
20	QPSK	100	0	20.66	20.90	20.95	
20	16QAM	1	0	20.86	20.85	21.08	22
20	16QAM	1	49	20.54	20.70	20.74	
20	16QAM	1	99	20.50	20.87	21.00	
20	16QAM	50	0	20.82	20.93	20.97	22
20	16QAM	50	24	20.77	20.86	20.81	
20	16QAM	50	50	20.77	20.78	20.83	
20	16QAM	100	0	20.69	20.93	20.94	
20	64QAM	1	0	20.69	20.93	20.92	22
20	64QAM	1	49	20.53	20.61	20.72	
20	64QAM	1	99	20.48	20.72	20.96	
20	64QAM	50	0	20.82	21.00	20.97	22
20	64QAM	50	24	20.81	20.74	20.90	
20	64QAM	50	50	20.62	20.79	20.85	
20	64QAM	100	0	20.73	20.90	20.92	
20	256QAM	1	0	18.81	18.96	18.95	20
20	256QAM	1	49	18.67	18.74	18.87	
20	256QAM	1	99	18.59	18.70	18.95	
20	256QAM	50	0	19.44	19.69	19.63	20
20	256QAM	50	24	19.28	19.38	19.48	
20	256QAM	50	50	19.59	19.67	19.57	
20	256QAM	100	0	19.18	19.25	19.31	
Channel				26115	26340	26615	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1907.5	
15	QPSK	1	0	20.58	20.84	20.98	22
15	QPSK	1	37	20.61	20.49	20.77	
15	QPSK	1	74	20.50	20.62	20.85	
15	QPSK	36	0	20.73	20.75	20.79	22
15	QPSK	36	20	20.57	20.59	20.63	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	QPSK	36	39	20.54	20.66	20.79	
15	QPSK	75	0	20.54	20.80	20.81	
15	16QAM	1	0	20.71	20.66	20.99	
15	16QAM	1	37	20.51	20.58	20.65	22
15	16QAM	1	74	20.49	20.79	20.90	
15	16QAM	36	0	20.65	20.83	20.95	
15	16QAM	36	20	20.63	20.66	20.61	22
15	16QAM	36	39	20.72	20.66	20.64	
15	16QAM	75	0	20.69	20.87	20.91	
15	64QAM	1	0	20.65	20.80	20.78	22
15	64QAM	1	37	20.43	20.55	20.64	
15	64QAM	1	74	20.45	20.63	20.77	
15	64QAM	36	0	20.64	20.95	20.95	22
15	64QAM	36	20	20.67	20.60	20.84	
15	64QAM	36	39	20.54	20.63	20.71	
15	64QAM	75	0	20.68	20.87	20.91	20
15	256QAM	1	0	18.66	18.92	18.79	
15	256QAM	1	37	18.49	18.70	18.71	
15	256QAM	1	74	18.40	18.64	18.77	20
15	256QAM	36	0	19.28	19.49	19.55	
15	256QAM	36	20	19.15	19.27	19.30	
15	256QAM	36	39	19.49	19.63	19.39	
15	256QAM	75	0	19.03	19.08	19.13	
Channel				26090	26340	26640	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1910	
10	QPSK	1	0	20.54	20.96	21.00	22
10	QPSK	1	25	20.53	20.57	20.69	
10	QPSK	1	49	20.52	20.59	20.89	
10	QPSK	25	0	20.59	20.69	20.81	22
10	QPSK	25	12	20.59	20.73	20.62	
10	QPSK	25	25	20.57	20.76	20.83	
10	QPSK	50	0	20.63	20.84	20.83	22
10	16QAM	1	0	20.66	20.80	20.92	
10	16QAM	1	25	20.38	20.69	20.65	
10	16QAM	1	49	20.49	20.68	20.99	22
10	16QAM	25	0	20.70	20.85	20.88	
10	16QAM	25	12	20.76	20.77	20.74	
10	16QAM	25	25	20.62	20.63	20.76	22
10	16QAM	50	0	20.52	20.86	20.94	
10	64QAM	1	0	20.54	20.83	20.76	
10	64QAM	1	25	20.53	20.61	20.54	22
10	64QAM	1	49	20.28	20.60	20.80	
10	64QAM	25	0	20.82	21.00	20.82	
10	64QAM	25	12	20.74	20.64	20.83	22
10	64QAM	25	25	20.50	20.69	20.67	
10	64QAM	50	0	20.69	20.84	20.81	
10	256QAM	1	0	18.66	18.92	18.94	20
10	256QAM	1	25	18.61	18.65	18.85	
10	256QAM	1	49	18.42	18.64	18.82	
10	256QAM	25	0	19.31	19.67	19.47	20
10	256QAM	25	12	19.11	19.28	19.47	
10	256QAM	25	25	19.59	19.55	19.47	
10	256QAM	50	0	19.17	19.22	19.14	
Channel				26065	26340	26665	
Frequency (MHz)				1852.5	1880	1912.5	
5	QPSK	1	0	20.57	20.86	20.98	22



FCC SAR TEST REPORT

Report No. : FA2O2005

5	QPSK	1	12	20.66	20.62	20.67	
5	QPSK	1	24	20.35	20.70	20.87	
5	QPSK	12	0	20.65	20.80	20.84	
5	QPSK	12	7	20.68	20.67	20.62	22
5	QPSK	12	13	20.66	20.59	20.71	
5	QPSK	25	0	20.63	20.71	20.92	
5	16QAM	1	0	20.68	20.72	21.03	22
5	16QAM	1	12	20.34	20.58	20.72	
5	16QAM	1	24	20.33	20.75	20.94	
5	16QAM	12	0	20.71	20.88	20.92	22
5	16QAM	12	7	20.63	20.73	20.64	
5	16QAM	12	13	20.71	20.61	20.64	
5	16QAM	25	0	20.65	20.91	20.80	22
5	64QAM	1	0	20.58	20.78	20.76	
5	64QAM	1	12	20.44	20.45	20.57	
5	64QAM	1	24	20.30	20.56	20.89	22
5	64QAM	12	0	20.71	20.86	20.94	
5	64QAM	12	7	20.61	20.58	20.71	
5	64QAM	12	13	20.50	20.68	20.69	22
5	64QAM	25	0	20.72	20.75	20.81	
5	256QAM	1	0	18.61	18.95	18.81	20
5	256QAM	1	12	18.57	18.54	18.82	
5	256QAM	1	24	18.57	18.61	18.82	
5	256QAM	12	0	19.33	19.52	19.54	20
5	256QAM	12	7	19.11	19.25	19.38	
5	256QAM	12	13	19.49	19.62	19.47	
5	256QAM	25	0	18.98	19.12	19.21	
Channel				26055	26340	26675	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1913.5	
3	QPSK	1	0	20.69	20.87	20.89	22
3	QPSK	1	8	20.67	20.56	20.83	
3	QPSK	1	14	20.38	20.69	20.97	
3	QPSK	8	0	20.62	20.75	20.92	22
3	QPSK	8	4	20.71	20.59	20.64	
3	QPSK	8	7	20.63	20.75	20.82	
3	QPSK	15	0	20.59	20.75	20.94	22
3	16QAM	1	0	20.66	20.84	20.98	
3	16QAM	1	8	20.36	20.65	20.67	
3	16QAM	1	14	20.36	20.68	20.87	22
3	16QAM	8	0	20.69	20.90	20.86	
3	16QAM	8	4	20.72	20.72	20.73	
3	16QAM	8	7	20.71	20.58	20.83	22
3	16QAM	15	0	20.64	20.81	20.81	
3	64QAM	1	0	20.53	20.91	20.82	
3	64QAM	1	8	20.53	20.52	20.69	22
3	64QAM	1	14	20.43	20.54	20.77	
3	64QAM	8	0	20.81	20.97	20.77	
3	64QAM	8	4	20.62	20.60	20.79	22
3	64QAM	8	7	20.47	20.59	20.80	
3	64QAM	15	0	20.53	20.90	20.85	
3	256QAM	1	0	18.63	18.81	18.86	20
3	256QAM	1	8	18.62	18.63	18.75	
3	256QAM	1	14	18.43	18.65	18.81	
3	256QAM	8	0	19.30	19.56	19.50	20
3	256QAM	8	4	19.14	19.29	19.40	
3	256QAM	8	7	19.39	19.61	19.50	



FCC SAR TEST REPORT

Report No. : FA2O2005

3	256QAM	15	0	19.08	19.09	19.30	
Channel				26047	26340	26683	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1914.3	
1.4	QPSK	1	0	20.71	20.88	20.96	22
1.4	QPSK	1	3	20.63	20.51	20.72	
1.4	QPSK	1	5	20.34	20.73	20.88	
1.4	QPSK	3	0	20.55	20.78	20.94	
1.4	QPSK	3	1	20.69	20.73	20.80	
1.4	QPSK	3	3	20.62	20.58	20.81	
1.4	QPSK	6	0	20.62	20.82	20.80	22
1.4	16QAM	1	0	20.85	20.75	20.88	22
1.4	16QAM	1	3	20.49	20.52	20.71	
1.4	16QAM	1	5	20.33	20.82	20.92	
1.4	16QAM	3	0	20.65	20.82	20.88	
1.4	16QAM	3	1	20.71	20.72	20.76	
1.4	16QAM	3	3	20.65	20.72	20.63	
1.4	16QAM	6	0	20.56	20.81	20.74	22
1.4	64QAM	1	0	20.54	20.90	20.74	22
1.4	64QAM	1	3	20.46	20.55	20.67	
1.4	64QAM	1	5	20.30	20.67	20.93	
1.4	64QAM	3	0	20.81	20.92	20.81	
1.4	64QAM	3	1	20.65	20.61	20.70	
1.4	64QAM	3	3	20.53	20.73	20.67	
1.4	64QAM	6	0	20.60	20.71	20.73	22
1.4	256QAM	1	0	18.74	18.80	18.87	20
1.4	256QAM	1	3	18.49	18.58	18.67	
1.4	256QAM	1	5	18.48	18.51	18.83	
1.4	256QAM	3	0	19.30	19.61	19.47	
1.4	256QAM	3	1	19.16	19.22	19.40	
1.4	256QAM	3	3	19.53	19.60	19.49	
1.4	256QAM	6	0	19.01	19.15	19.21	20

<LTE Band 30 MIMO2 Default Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				27710			
Frequency (MHz)				2310			
10	QPSK	1	0		21.87		23
10	QPSK	1	25		21.85		
10	QPSK	1	49		21.61		
10	QPSK	25	0		20.77		22
10	QPSK	25	12		20.71		
10	QPSK	25	25		20.64		
10	QPSK	50	0		20.76		
10	16QAM	1	0		20.81		22
10	16QAM	1	25		21.21		
10	16QAM	1	49		21.15		
10	16QAM	25	0		19.80		21
10	16QAM	25	12		19.69		
10	16QAM	25	25		19.55		
10	16QAM	50	0		19.79		
10	64QAM	1	0		19.93		21
10	64QAM	1	25		19.93		
10	64QAM	1	49		20.07		
10	64QAM	25	0		18.65		20
10	64QAM	25	12		18.66		

10	64QAM	25	25		18.54		
10	64QAM	50	0		18.69		
10	256QAM	1	0		17.06		
10	256QAM	1	25		16.78		18
10	256QAM	1	49		16.84		
10	256QAM	25	0		16.73		
10	256QAM	25	12		16.48		18
10	256QAM	25	25		16.69		
10	256QAM	50	0		16.54		
Channel				27685	27710	27735	Tune-up limit (dBm)
Frequency (MHz)				2307.5	2310	2312.5	
5	QPSK	1	0	21.86	21.84	21.85	23
5	QPSK	1	12	21.76	21.77	21.78	
5	QPSK	1	24	21.58	21.59	21.59	
5	QPSK	12	0	20.77	20.75	20.71	22
5	QPSK	12	7	20.71	20.66	20.69	
5	QPSK	12	13	20.59	20.63	20.54	
5	QPSK	25	0	20.76	20.73	20.73	22
5	16QAM	1	0	20.81	20.73	20.72	
5	16QAM	1	12	21.13	21.17	21.14	
5	16QAM	1	24	21.05	21.06	21.09	21
5	16QAM	12	0	19.79	19.70	19.76	
5	16QAM	12	7	19.65	19.62	19.67	
5	16QAM	12	13	19.48	19.47	19.54	21
5	16QAM	25	0	19.77	19.69	19.79	
5	64QAM	1	0	19.83	19.91	19.88	21
5	64QAM	1	12	19.93	19.88	19.92	
5	64QAM	1	24	19.97	20.07	20.04	
5	64QAM	12	0	18.58	18.61	18.55	20
5	64QAM	12	7	18.59	18.61	18.57	
5	64QAM	12	13	18.53	18.48	18.49	
5	64QAM	25	0	18.66	18.62	18.69	18
5	256QAM	1	0	16.98	16.99	16.97	
5	256QAM	1	12	16.70	16.78	16.76	
5	256QAM	1	24	16.74	16.80	16.77	18
5	256QAM	12	0	16.63	16.66	16.71	
5	256QAM	12	7	16.39	16.41	16.42	
5	256QAM	12	13	16.67	16.63	16.65	18
5	256QAM	25	0	16.45	16.51	16.48	

<LTE Band 30 MIMO2 Reduced Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				27710			
Frequency (MHz)				2310			
10	QPSK	1	0		19.54		21.5
10	QPSK	1	25		19.51		
10	QPSK	1	49		19.50		
10	QPSK	25	0		19.09		20.5
10	QPSK	25	12		19.04		
10	QPSK	25	25		19.01		
10	QPSK	50	0		19.07		
10	16QAM	1	0		19.06		20.5
10	16QAM	1	25		19.14		
10	16QAM	1	49		19.03		
10	16QAM	25	0		18.40		19.5



FCC SAR TEST REPORT

Report No. : FA2O2005

10	16QAM	25	12		18.33		
10	16QAM	25	25		18.18		
10	16QAM	50	0		18.27		
10	64QAM	1	0		18.35		19.5
10	64QAM	1	25		18.44		
10	64QAM	1	49		19.05		
10	64QAM	25	0		17.22		18.5
10	64QAM	25	12		17.14		
10	64QAM	25	25		17.01		
10	64QAM	50	0		17.10		
10	256QAM	1	0		15.48		16.5
10	256QAM	1	25		15.36		
10	256QAM	1	49		15.38		
10	256QAM	25	0		15.15		16.5
10	256QAM	25	12		15.06		
10	256QAM	25	25		15.18		
10	256QAM	50	0		15.10		
Channel				27685	27710	27735	Tune-up limit (dBm)
Frequency (MHz)				2307.5	2310	2312.5	
5	QPSK	1	0	19.51	19.52	19.50	21.5
5	QPSK	1	12	19.50	19.51	19.50	
5	QPSK	1	24	19.50	19.50	19.50	
5	QPSK	12	0	19.00	19.02	19.03	20.5
5	QPSK	12	7	18.98	18.94	18.96	
5	QPSK	12	13	18.90	18.99	18.85	
5	QPSK	25	0	18.99	18.93	18.97	
5	16QAM	1	0	19.01	18.99	19.02	20.5
5	16QAM	1	12	19.04	19.13	19.00	
5	16QAM	1	24	18.93	18.86	18.94	
5	16QAM	12	0	18.39	18.29	18.23	19.5
5	16QAM	12	7	18.15	18.33	18.33	
5	16QAM	12	13	18.08	18.04	18.18	
5	16QAM	25	0	18.13	18.17	18.18	
5	64QAM	1	0	18.35	18.23	18.21	19.5
5	64QAM	1	12	18.42	18.24	18.42	
5	64QAM	1	24	18.95	18.86	19.00	
5	64QAM	12	0	17.19	17.15	17.12	18.5
5	64QAM	12	7	17.09	17.04	17.04	
5	64QAM	12	13	17.06	17.21	17.05	
5	64QAM	25	0	17.02	17.07	17.06	
5	256QAM	1	0	15.41	15.47	15.44	16.5
5	256QAM	1	12	15.27	15.35	15.21	
5	256QAM	1	24	15.21	15.21	15.18	
5	256QAM	12	0	15.08	15.13	15.11	16.5
5	256QAM	12	7	15.17	15.20	15.21	
5	256QAM	12	13	15.10	15.04	15.04	
5	256QAM	25	0	15.00	15.08	15.05	

<LTE Band 66 MIMO2 Default Power >							
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	22.69	22.82	22.77	24
20	QPSK	1	49	22.61	22.81	22.67	
20	QPSK	1	99	22.66	22.73	22.75	
20	QPSK	50	0	21.90	21.97	21.84	23
20	QPSK	50	24	21.81	21.86	21.77	
20	QPSK	50	50	21.72	21.75	21.71	
20	QPSK	100	0	21.74	21.85	21.70	23
20	16QAM	1	0	22.25	21.79	22.21	
20	16QAM	1	49	22.27	21.97	22.33	
20	16QAM	1	99	21.93	21.76	22.15	22
20	16QAM	50	0	20.84	20.86	20.86	
20	16QAM	50	24	20.88	20.91	20.93	
20	16QAM	50	50	20.87	20.72	20.85	22
20	16QAM	100	0	20.79	20.79	20.97	
20	64QAM	1	0	20.82	20.86	20.92	
20	64QAM	1	49	20.88	21.18	20.95	22
20	64QAM	1	99	21.00	20.98	20.78	
20	64QAM	50	0	19.77	19.86	19.86	
20	64QAM	50	24	19.81	19.81	20.00	21
20	64QAM	50	50	19.88	19.68	19.83	
20	64QAM	100	0	19.81	19.77	19.82	
20	256QAM	1	0	17.84	17.80	17.21	19
20	256QAM	1	49	17.86	17.85	17.83	
20	256QAM	1	99	17.78	17.74	17.80	
20	256QAM	50	0	17.67	17.55	17.70	19
20	256QAM	50	24	17.73	17.66	17.67	
20	256QAM	50	50	17.73	17.63	17.71	
20	256QAM	100	0	17.74	17.62	17.73	Tune-up limit (dBm)
Channel				132047	132322	132597	
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	22.54	22.65	22.65	24
15	QPSK	1	37	22.53	22.72	22.59	
15	QPSK	1	74	22.50	22.59	22.58	
15	QPSK	36	0	21.82	21.77	21.66	23
15	QPSK	36	20	21.76	21.81	21.59	
15	QPSK	36	39	21.64	21.63	21.58	
15	QPSK	75	0	21.55	21.84	21.52	23
15	16QAM	1	0	22.14	21.76	22.02	
15	16QAM	1	37	22.07	21.80	22.13	
15	16QAM	1	74	21.85	21.76	22.14	22
15	16QAM	36	0	20.80	20.80	20.86	
15	16QAM	36	20	20.73	20.77	20.73	
15	16QAM	36	39	20.71	20.65	20.83	22
15	16QAM	75	0	20.60	20.62	20.79	
15	64QAM	1	0	20.71	20.80	20.90	
15	64QAM	1	37	20.69	20.98	20.88	22
15	64QAM	1	74	20.89	20.96	20.74	
15	64QAM	36	0	19.57	19.68	19.74	
15	64QAM	36	20	19.63	19.71	19.90	21
15	64QAM	36	39	19.73	19.68	19.75	
15	64QAM	75	0	19.73	19.69	19.63	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	256QAM	1	0	17.72	17.73	17.15	19
15	256QAM	1	37	17.74	17.82	17.74	
15	256QAM	1	74	17.77	17.61	17.63	
15	256QAM	36	0	17.63	17.50	17.62	19
15	256QAM	36	20	17.68	17.53	17.54	
15	256QAM	36	39	17.63	17.53	17.57	
15	256QAM	75	0	17.58	17.56	17.55	
Channel				132022	132322	132622	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	22.58	22.64	22.72	24
10	QPSK	1	25	22.46	22.64	22.49	
10	QPSK	1	49	22.57	22.68	22.59	
10	QPSK	25	0	21.79	21.80	21.77	23
10	QPSK	25	12	21.76	21.84	21.68	
10	QPSK	25	25	21.56	21.62	21.61	
10	QPSK	50	0	21.68	21.79	21.61	
10	16QAM	1	0	22.25	21.62	22.14	23
10	16QAM	1	25	22.17	21.91	22.22	
10	16QAM	1	49	21.88	21.76	22.11	
10	16QAM	25	0	20.77	20.69	20.68	22
10	16QAM	25	12	20.68	20.83	20.81	
10	16QAM	25	25	20.83	20.64	20.84	
10	16QAM	50	0	20.62	20.65	20.79	
10	64QAM	1	0	20.66	20.68	20.72	22
10	64QAM	1	25	20.82	21.16	20.83	
10	64QAM	1	49	20.99	20.98	20.74	
10	64QAM	25	0	19.74	19.67	19.83	21
10	64QAM	25	12	19.63	19.70	19.89	
10	64QAM	25	25	19.86	19.50	19.71	
10	64QAM	50	0	19.81	19.76	19.62	
10	256QAM	1	0	17.76	17.68	17.05	19
10	256QAM	1	25	17.73	17.67	17.71	
10	256QAM	1	49	17.59	17.67	17.67	
10	256QAM	25	0	17.56	17.39	17.64	19
10	256QAM	25	12	17.67	17.55	17.60	
10	256QAM	25	25	17.66	17.46	17.63	
10	256QAM	50	0	17.73	17.42	17.58	
Channel				131997	132322	132647	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	22.49	22.77	22.59	24
5	QPSK	1	12	22.61	22.78	22.48	
5	QPSK	1	24	22.47	22.70	22.73	
5	QPSK	12	0	21.87	21.89	21.66	23
5	QPSK	12	7	21.72	21.74	21.73	
5	QPSK	12	13	21.64	21.71	21.52	
5	QPSK	25	0	21.69	21.70	21.65	
5	16QAM	1	0	22.16	21.59	22.07	23
5	16QAM	1	12	22.13	21.88	22.14	
5	16QAM	1	24	21.75	21.66	22.05	
5	16QAM	12	0	20.78	20.80	20.66	22
5	16QAM	12	7	20.77	20.77	20.73	
5	16QAM	12	13	20.67	20.61	20.74	
5	16QAM	25	0	20.75	20.71	20.88	
5	64QAM	1	0	20.72	20.71	20.77	22
5	64QAM	1	12	20.88	21.07	20.85	
5	64QAM	1	24	20.88	20.79	20.72	



FCC SAR TEST REPORT

Report No. : FA2O2005

5	64QAM	12	0	19.66	19.76	19.75	21
5	64QAM	12	7	19.64	19.67	19.83	
5	64QAM	12	13	19.80	19.58	19.74	
5	64QAM	25	0	19.73	19.62	19.75	
5	256QAM	1	0	17.73	17.79	17.10	19
5	256QAM	1	12	17.82	17.70	17.70	
5	256QAM	1	24	17.60	17.70	17.60	
5	256QAM	12	0	17.64	17.41	17.57	19
5	256QAM	12	7	17.54	17.50	17.51	
5	256QAM	12	13	17.58	17.59	17.70	
5	256QAM	25	0	17.56	17.59	17.64	
Channel				131987	132322	132657	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	22.67	22.78	22.73	24
3	QPSK	1	8	22.50	22.61	22.59	
3	QPSK	1	14	22.49	22.53	22.66	
3	QPSK	8	0	21.70	21.89	21.72	23
3	QPSK	8	4	21.61	21.67	21.57	
3	QPSK	8	7	21.70	21.71	21.71	
3	QPSK	15	0	21.65	21.74	21.66	
3	16QAM	1	0	22.09	21.72	22.12	23
3	16QAM	1	8	22.15	21.94	22.33	
3	16QAM	1	14	21.81	21.67	21.97	
3	16QAM	8	0	20.68	20.79	20.81	22
3	16QAM	8	4	20.71	20.89	20.83	
3	16QAM	8	7	20.71	20.60	20.80	
3	16QAM	15	0	20.67	20.79	20.81	
3	64QAM	1	0	20.68	20.72	20.87	22
3	64QAM	1	8	20.82	21.15	20.82	
3	64QAM	1	14	21.00	20.94	20.67	
3	64QAM	8	0	19.71	19.67	19.78	
3	64QAM	8	4	19.66	19.74	19.97	21
3	64QAM	8	7	19.71	19.66	19.74	
3	64QAM	15	0	19.75	19.69	19.64	
3	256QAM	1	0	17.83	17.68	17.04	19
3	256QAM	1	8	17.85	17.77	17.79	
3	256QAM	1	14	17.62	17.71	17.69	
3	256QAM	8	0	17.55	17.40	17.58	19
3	256QAM	8	4	17.66	17.65	17.50	
3	256QAM	8	7	17.61	17.54	17.57	
3	256QAM	15	0	17.64	17.51	17.73	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	22.53	22.64	22.66	24
1.4	QPSK	1	3	22.50	22.68	22.49	
1.4	QPSK	1	5	22.52	22.60	22.63	
1.4	QPSK	3	0	22.52	22.70	22.57	
1.4	QPSK	3	1	22.45	22.63	22.55	
1.4	QPSK	3	3	22.50	22.61	22.62	
1.4	QPSK	6	0	21.63	21.66	21.57	23
1.4	16QAM	1	0	22.12	21.62	22.04	23
1.4	16QAM	1	3	22.09	21.77	22.16	
1.4	16QAM	1	5	21.77	21.56	22.00	
1.4	16QAM	3	0	22.13	21.65	22.03	
1.4	16QAM	3	1	22.09	21.82	22.12	
1.4	16QAM	3	3	21.76	21.58	22.00	



FCC SAR TEST REPORT

Report No. : FA2O2005

1.4	16QAM	6	0	20.67	20.61	20.86	22
1.4	64QAM	1	0	20.66	20.74	20.78	22
1.4	64QAM	1	3	20.70	20.98	20.78	
1.4	64QAM	1	5	20.87	20.85	20.57	
1.4	64QAM	3	0	20.68	20.65	20.74	
1.4	64QAM	3	1	20.68	21.05	20.77	
1.4	64QAM	3	3	20.79	20.84	20.60	
1.4	64QAM	6	0	19.62	19.60	19.66	21
1.4	256QAM	1	0	17.71	17.63	17.09	19
1.4	256QAM	1	3	17.74	17.70	17.69	
1.4	256QAM	1	5	17.60	17.60	17.62	
1.4	256QAM	3	0	17.65	17.67	17.10	
1.4	256QAM	3	1	17.66	17.68	17.65	
1.4	256QAM	3	3	17.57	17.59	17.69	
1.4	256QAM	6	0	17.53	17.46	17.58	19

<LTE Band 66 MIMO2 Reduced Power >							
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	20.85	20.88	20.75	22
20	QPSK	1	49	20.71	20.75	20.75	
20	QPSK	1	99	20.71	20.55	20.68	
20	QPSK	50	0	20.71	20.75	20.69	22
20	QPSK	50	24	20.69	20.71	20.61	
20	QPSK	50	50	20.67	20.70	20.61	
20	QPSK	100	0	20.74	20.55	20.61	
20	16QAM	1	0	20.76	20.67	20.69	22
20	16QAM	1	49	20.76	20.54	20.49	
20	16QAM	1	99	20.72	20.52	20.68	
20	16QAM	50	0	20.84	20.80	20.80	22
20	16QAM	50	24	20.84	20.79	20.60	
20	16QAM	50	50	20.59	20.70	20.68	
20	16QAM	100	0	20.85	20.72	20.50	
20	64QAM	1	0	20.77	20.63	20.72	22
20	64QAM	1	49	20.61	20.59	20.64	
20	64QAM	1	99	20.55	20.65	20.61	
20	64QAM	50	0	20.72	20.49	20.59	22
20	64QAM	50	24	20.67	20.60	20.50	
20	64QAM	50	50	20.70	20.61	20.56	
20	64QAM	100	0	20.69	20.71	20.69	
20	256QAM	1	0	18.82	18.66	18.69	20
20	256QAM	1	49	18.64	18.48	18.52	
20	256QAM	1	99	18.63	18.51	18.56	
20	256QAM	50	0	18.82	18.71	18.78	20
20	256QAM	50	24	18.85	18.73	18.61	
20	256QAM	50	50	18.55	18.60	18.53	
20	256QAM	100	0	18.78	18.59	18.62	
Channel				132047	132322	132597	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	20.79	20.82	20.57	22
15	QPSK	1	37	20.54	20.69	20.73	
15	QPSK	1	74	20.56	20.37	20.60	
15	QPSK	36	0	20.53	20.65	20.63	22
15	QPSK	36	20	20.56	20.69	20.46	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	QPSK	36	39	20.59	20.69	20.56	
15	QPSK	75	0	20.54	20.36	20.60	
15	16QAM	1	0	20.68	20.59	20.58	
15	16QAM	1	37	20.59	20.47	20.43	22
15	16QAM	1	74	20.64	20.47	20.48	
15	16QAM	36	0	20.75	20.60	20.75	
15	16QAM	36	20	20.80	20.69	20.58	22
15	16QAM	36	39	20.41	20.68	20.51	
15	16QAM	75	0	20.66	20.66	20.31	
15	64QAM	1	0	20.68	20.60	20.58	22
15	64QAM	1	37	20.60	20.56	20.50	
15	64QAM	1	74	20.42	20.62	20.58	
15	64QAM	36	0	20.56	20.30	20.46	22
15	64QAM	36	20	20.62	20.55	20.46	
15	64QAM	36	39	20.56	20.49	20.49	
15	64QAM	75	0	20.54	20.54	20.57	20
15	256QAM	1	0	18.74	18.56	18.53	
15	256QAM	1	37	18.62	18.42	18.51	
15	256QAM	1	74	18.44	18.39	18.55	20
15	256QAM	36	0	18.66	18.52	18.60	
15	256QAM	36	20	18.84	18.70	18.61	
15	256QAM	36	39	18.38	18.42	18.37	
15	256QAM	75	0	18.70	18.41	18.46	
Channel				132022	132322	132622	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	20.76	20.69	20.75	22
10	QPSK	1	25	20.68	20.61	20.69	
10	QPSK	1	49	20.65	20.38	20.58	
10	QPSK	25	0	20.59	20.61	20.67	22
10	QPSK	25	12	20.59	20.54	20.60	
10	QPSK	25	25	20.66	20.58	20.50	
10	QPSK	50	0	20.66	20.36	20.60	22
10	16QAM	1	0	20.60	20.60	20.61	
10	16QAM	1	25	20.74	20.42	20.31	
10	16QAM	1	49	20.63	20.44	20.62	22
10	16QAM	25	0	20.83	20.71	20.65	
10	16QAM	25	12	20.75	20.64	20.41	
10	16QAM	25	25	20.44	20.52	20.53	22
10	16QAM	50	0	20.72	20.70	20.47	
10	64QAM	1	0	20.77	20.48	20.66	22
10	64QAM	1	25	20.44	20.45	20.64	
10	64QAM	1	49	20.48	20.46	20.50	
10	64QAM	25	0	20.66	20.33	20.46	22
10	64QAM	25	12	20.65	20.48	20.35	
10	64QAM	25	25	20.60	20.54	20.48	
10	64QAM	50	0	20.61	20.67	20.69	20
10	256QAM	1	0	18.82	18.51	18.69	
10	256QAM	1	25	18.55	18.36	18.39	
10	256QAM	1	49	18.43	18.42	18.43	20
10	256QAM	25	0	18.69	18.59	18.58	
10	256QAM	25	12	18.77	18.69	18.55	
10	256QAM	25	25	18.46	18.43	18.41	
10	256QAM	50	0	18.62	18.43	18.44	
Channel				131997	132322	132647	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	20.73	20.70	20.58	22



FCC SAR TEST REPORT

Report No. : FA2O2005

5	QPSK	1	12	20.61	20.59	20.61	
5	QPSK	1	24	20.53	20.43	20.64	
5	QPSK	12	0	20.53	20.57	20.54	
5	QPSK	12	7	20.51	20.56	20.42	22
5	QPSK	12	13	20.51	20.56	20.58	
5	QPSK	25	0	20.60	20.46	20.58	
5	16QAM	1	0	20.63	20.48	20.62	22
5	16QAM	1	12	20.59	20.39	20.31	
5	16QAM	1	24	20.55	20.37	20.64	
5	16QAM	12	0	20.74	20.64	20.77	22
5	16QAM	12	7	20.67	20.67	20.52	
5	16QAM	12	13	20.58	20.66	20.66	
5	16QAM	25	0	20.67	20.70	20.43	22
5	64QAM	1	0	20.75	20.45	20.60	
5	64QAM	1	12	20.53	20.43	20.50	
5	64QAM	1	24	20.37	20.62	20.56	22
5	64QAM	12	0	20.64	20.46	20.52	
5	64QAM	12	7	20.63	20.46	20.46	
5	64QAM	12	13	20.58	20.58	20.49	20
5	64QAM	25	0	20.60	20.66	20.58	
5	256QAM	1	0	18.69	18.55	18.63	
5	256QAM	1	12	18.46	18.33	18.50	20
5	256QAM	1	24	18.56	18.37	18.50	
5	256QAM	12	0	18.73	18.58	18.64	
5	256QAM	12	7	18.65	18.73	18.54	20
5	256QAM	12	13	18.38	18.48	18.44	
5	256QAM	25	0	18.67	18.53	18.47	
Channel				131987	132322	132657	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	20.85	20.85	20.62	22
3	QPSK	1	8	20.65	20.69	20.73	
3	QPSK	1	14	20.51	20.38	20.62	
3	QPSK	8	0	20.61	20.71	20.56	22
3	QPSK	8	4	20.53	20.56	20.48	
3	QPSK	8	7	20.55	20.53	20.44	
3	QPSK	15	0	20.63	20.50	20.47	22
3	16QAM	1	0	20.64	20.62	20.52	
3	16QAM	1	8	20.68	20.38	20.40	
3	16QAM	1	14	20.64	20.33	20.51	22
3	16QAM	8	0	20.68	20.73	20.75	
3	16QAM	8	4	20.74	20.70	20.46	
3	16QAM	8	7	20.45	20.69	20.67	22
3	16QAM	15	0	20.73	20.64	20.48	
3	64QAM	1	0	20.64	20.62	20.71	
3	64QAM	1	8	20.48	20.51	20.45	22
3	64QAM	1	14	20.50	20.47	20.57	
3	64QAM	8	0	20.53	20.45	20.41	
3	64QAM	8	4	20.66	20.52	20.47	22
3	64QAM	8	7	20.56	20.56	20.52	
3	64QAM	15	0	20.57	20.58	20.67	
3	256QAM	1	0	18.71	18.49	18.55	20
3	256QAM	1	8	18.62	18.39	18.44	
3	256QAM	1	14	18.47	18.32	18.44	
3	256QAM	8	0	18.82	18.64	18.66	20
3	256QAM	8	4	18.67	18.59	18.56	
3	256QAM	8	7	18.38	18.60	18.51	



FCC SAR TEST REPORT

Report No. : FA2O2005

3	256QAM	15	0	18.72	18.44	18.62	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	20.69	20.71	20.69	22
1.4	QPSK	1	3	20.60	20.68	20.66	
1.4	QPSK	1	5	20.55	20.39	20.52	
1.4	QPSK	3	0	20.52	20.69	20.58	
1.4	QPSK	3	1	20.59	20.63	20.51	
1.4	QPSK	3	3	20.47	20.50	20.50	
1.4	QPSK	6	0	20.74	20.39	20.41	22
1.4	16QAM	1	0	20.57	20.60	20.65	22
1.4	16QAM	1	3	20.65	20.34	20.43	
1.4	16QAM	1	5	20.55	20.42	20.66	
1.4	16QAM	3	0	20.80	20.76	20.66	
1.4	16QAM	3	1	20.69	20.61	20.41	
1.4	16QAM	3	3	20.53	20.58	20.50	
1.4	16QAM	6	0	20.74	20.58	20.38	22
1.4	64QAM	1	0	20.66	20.62	20.62	22
1.4	64QAM	1	3	20.44	20.52	20.62	
1.4	64QAM	1	5	20.37	20.60	20.55	
1.4	64QAM	3	0	20.64	20.40	20.47	
1.4	64QAM	3	1	20.56	20.60	20.31	
1.4	64QAM	3	3	20.69	20.53	20.52	
1.4	64QAM	6	0	20.65	20.59	20.49	22
1.4	256QAM	1	0	18.72	18.65	18.50	20
1.4	256QAM	1	3	18.51	18.40	18.44	
1.4	256QAM	1	5	18.45	18.34	18.44	
1.4	256QAM	3	0	18.76	18.65	18.65	
1.4	256QAM	3	1	18.84	18.63	18.48	
1.4	256QAM	3	3	18.52	18.54	18.36	
1.4	256QAM	6	0	18.65	18.42	18.44	20

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<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.

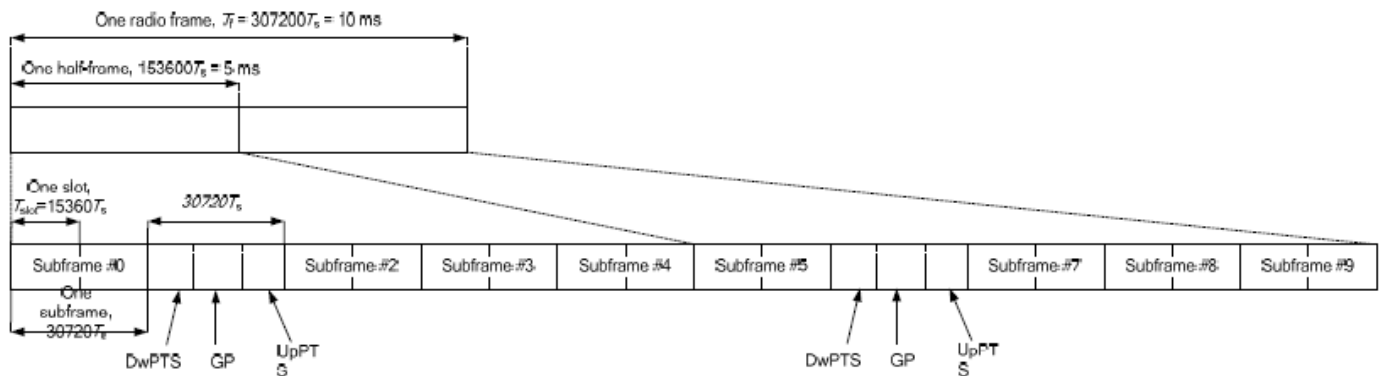


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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:
 $(3+0.143)/5 = 62.9\%$

<u><LTE Band 41 MIMO2 Default Power ></u>									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	23.25	23.72	23.79	23.81	23.59	24
20	QPSK	1	49	23.55	23.63	23.70	23.65	23.74	
20	QPSK	1	99	23.72	23.52	23.59	23.56	23.30	
20	QPSK	50	0	22.69	22.78	22.82	22.85	22.68	23
20	QPSK	50	24	22.58	22.62	22.74	22.77	22.67	
20	QPSK	50	50	22.44	22.52	22.80	22.72	22.61	
20	QPSK	100	0	22.52	22.68	22.71	22.72	22.56	23
20	16QAM	1	0	22.33	22.72	22.64	22.78	22.65	
20	16QAM	1	49	22.61	22.65	22.79	22.64	22.75	
20	16QAM	1	99	22.73	22.55	22.77	22.37	22.40	22
20	16QAM	50	0	21.42	21.77	21.66	21.64	21.74	
20	16QAM	50	24	21.56	21.67	21.61	21.54	21.73	
20	16QAM	50	50	21.67	21.53	21.92	21.52	21.52	22
20	16QAM	100	0	21.55	21.57	21.84	21.53	21.60	
20	64QAM	1	0	21.03	21.48	21.49	21.37	21.33	22
20	64QAM	1	49	21.34	21.37	21.68	21.22	21.38	
20	64QAM	1	99	21.50	21.29	21.73	21.03	21.08	
20	64QAM	50	0	20.42	20.73	20.79	20.60	20.68	21
20	64QAM	50	24	20.53	20.59	20.80	20.59	20.51	
20	64QAM	50	50	20.69	20.54	20.85	20.54	20.47	
20	64QAM	100	0	20.51	20.59	20.87	20.57	20.60	19
20	256QAM	1	0	17.56	17.51	17.67	17.77	17.47	
20	256QAM	1	49	17.63	17.48	17.69	17.64	17.46	
20	256QAM	1	99	17.74	17.57	17.82	17.84	17.41	19
20	256QAM	50	0	17.64	17.57	17.76	17.73	17.59	



FCC SAR TEST REPORT

Report No. : FA2O2005

20	256QAM	50	24	17.64	17.59	17.85	17.72	17.36	
20	256QAM	50	50	17.60	17.67	17.75	17.60	17.61	
20	256QAM	100	0	17.67	17.63	17.65	17.57	17.72	
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	23.12	23.62	23.76	23.78	23.44	24.00
15	QPSK	1	37	23.45	23.62	23.50	23.49	23.55	
15	QPSK	1	74	23.55	23.44	23.50	23.40	23.15	
15	QPSK	36	0	22.62	22.61	22.71	22.72	22.63	23
15	QPSK	36	20	22.54	22.54	22.60	22.58	22.55	
15	QPSK	36	39	22.27	22.40	22.74	22.54	22.59	
15	QPSK	75	0	22.42	22.49	22.59	22.62	22.38	23
15	16QAM	1	0	22.16	22.63	22.47	22.64	22.53	
15	16QAM	1	37	22.60	22.55	22.66	22.57	22.61	
15	16QAM	1	74	22.68	22.40	22.77	22.23	22.28	22
15	16QAM	36	0	21.30	21.58	21.58	21.54	21.58	
15	16QAM	36	20	21.38	21.66	21.56	21.48	21.59	
15	16QAM	36	39	21.62	21.42	21.78	21.37	21.45	22
15	16QAM	75	0	21.44	21.46	21.64	21.36	21.46	
15	64QAM	1	0	21.03	21.34	21.31	21.28	21.13	
15	64QAM	1	37	21.24	21.29	21.62	21.21	21.18	21
15	64QAM	1	74	21.43	21.15	21.55	20.90	20.94	
15	64QAM	36	0	20.22	20.53	20.68	20.58	20.64	
15	64QAM	36	20	20.47	20.56	20.61	20.40	20.46	19
15	64QAM	36	39	20.50	20.45	20.80	20.38	20.40	
15	64QAM	75	0	20.42	20.45	20.70	20.46	20.48	
15	256QAM	1	0	17.37	17.34	17.52	17.57	17.47	19
15	256QAM	1	37	17.44	17.45	17.59	17.50	17.46	
15	256QAM	1	74	17.73	17.41	17.65	17.67	17.37	
15	256QAM	36	0	17.58	17.53	17.67	17.58	17.40	19
15	256QAM	36	20	17.50	17.42	17.74	17.66	17.17	
15	256QAM	36	39	17.54	17.64	17.74	17.59	17.56	
15	256QAM	75	0	17.63	17.53	17.49	17.48	17.72	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	23.25	23.63	23.70	23.78	23.44	24.00
10	QPSK	1	25	23.54	23.53	23.69	23.59	23.74	
10	QPSK	1	49	23.65	23.37	23.56	23.54	23.27	
10	QPSK	25	0	22.66	22.70	22.65	22.84	22.49	23
10	QPSK	25	12	22.46	22.52	22.72	22.74	22.50	
10	QPSK	25	25	22.33	22.52	22.80	22.71	22.58	
10	QPSK	50	0	22.50	22.58	22.70	22.55	22.46	23
10	16QAM	1	0	22.28	22.56	22.53	22.60	22.58	
10	16QAM	1	25	22.55	22.45	22.63	22.63	22.64	
10	16QAM	1	49	22.63	22.37	22.62	22.17	22.30	22
10	16QAM	25	0	21.39	21.62	21.53	21.47	21.73	
10	16QAM	25	12	21.47	21.56	21.43	21.41	21.63	
10	16QAM	25	25	21.62	21.36	21.73	21.34	21.42	22
10	16QAM	50	0	21.44	21.54	21.64	21.35	21.41	
10	64QAM	1	0	20.95	21.47	21.43	21.35	21.20	
10	64QAM	1	25	21.17	21.35	21.51	21.14	21.25	21
10	64QAM	1	49	21.37	21.20	21.57	20.93	21.02	
10	64QAM	25	0	20.23	20.54	20.79	20.51	20.68	
10	64QAM	25	12	20.49	20.43	20.66	20.45	20.45	21
10	64QAM	25	25	20.57	20.34	20.81	20.47	20.39	
10	64QAM	50	0	20.51	20.41	20.80	20.39	20.40	



FCC SAR TEST REPORT

Report No. : FA2O2005

10	256QAM	1	0	17.54	17.32	17.60	17.67	17.39	19
10	256QAM	1	25	17.58	17.42	17.50	17.63	17.45	
10	256QAM	1	49	17.54	17.51	17.66	17.79	17.38	
10	256QAM	25	0	17.51	17.44	17.71	17.61	17.45	19
10	256QAM	25	12	17.57	17.49	17.80	17.55	17.22	
10	256QAM	25	25	17.60	17.54	17.58	17.47	17.42	
10	256QAM	50	0	17.51	17.49	17.50	17.49	17.56	Tune-up limit (dBm)
Channel				39675	40148	40620	41093	41565	
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	23.20	23.62	23.70	23.66	23.54	24.00
5	QPSK	1	12	23.41	23.51	23.54	23.57	23.62	
5	QPSK	1	24	23.59	23.33	23.45	23.47	23.25	
5	QPSK	12	0	22.50	22.58	22.68	22.67	22.58	23
5	QPSK	12	7	22.52	22.60	22.56	22.77	22.61	
5	QPSK	12	13	22.40	22.33	22.65	22.59	22.41	
5	QPSK	25	0	22.51	22.57	22.61	22.61	22.48	23
5	16QAM	1	0	22.22	22.62	22.46	22.59	22.51	
5	16QAM	1	12	22.53	22.46	22.75	22.46	22.60	
5	16QAM	1	24	22.60	22.40	22.64	22.24	22.36	22
5	16QAM	12	0	21.39	21.71	21.50	21.47	21.63	
5	16QAM	12	7	21.42	21.65	21.60	21.36	21.65	
5	16QAM	12	13	21.63	21.53	21.72	21.38	21.40	22
5	16QAM	25	0	21.53	21.37	21.72	21.38	21.55	
5	64QAM	1	0	20.98	21.32	21.32	21.20	21.16	
5	64QAM	1	12	21.31	21.24	21.52	21.07	21.23	21
5	64QAM	1	24	21.33	21.11	21.65	20.97	20.89	
5	64QAM	12	0	20.28	20.60	20.66	20.43	20.52	
5	64QAM	12	7	20.46	20.58	20.76	20.57	20.42	19
5	64QAM	12	13	20.49	20.35	20.85	20.45	20.41	
5	64QAM	25	0	20.47	20.52	20.81	20.38	20.41	
5	256QAM	1	0	17.49	17.45	17.47	17.63	17.42	19
5	256QAM	1	12	17.56	17.33	17.65	17.54	17.39	
5	256QAM	1	24	17.74	17.49	17.81	17.75	17.33	
5	256QAM	12	0	17.44	17.52	17.67	17.54	17.52	19
5	256QAM	12	7	17.54	17.55	17.76	17.52	17.28	
5	256QAM	12	13	17.45	17.47	17.65	17.44	17.58	
5	256QAM	25	0	17.58	17.47	17.55	17.56	17.65	



<LTE Band 41 MIMO2 Reduced Power >									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	21.19	21.20	21.15	21.22	21.11	22
20	QPSK	1	49	21.06	20.90	20.96	21.04	21.05	
20	QPSK	1	99	20.85	20.86	21.00	20.89	20.91	
20	QPSK	50	0	20.87	20.91	20.92	21.02	20.89	22
20	QPSK	50	24	20.82	20.78	20.74	20.98	20.74	
20	QPSK	50	50	20.82	20.84	20.91	20.90	20.71	
20	QPSK	100	0	20.68	20.69	20.83	20.70	20.62	22
20	16QAM	1	0	20.77	20.86	21.12	20.88	21.04	
20	16QAM	1	49	20.70	20.71	20.72	20.76	20.72	
20	16QAM	1	99	20.80	20.87	20.90	21.00	20.79	22
20	16QAM	50	0	21.13	20.97	20.78	20.64	20.79	
20	16QAM	50	24	20.90	20.69	20.90	20.95	20.74	
20	16QAM	50	50	20.82	20.74	20.91	20.91	20.90	22
20	16QAM	100	0	20.96	20.93	20.98	21.08	20.92	
20	64QAM	1	0	20.86	20.77	20.98	20.88	20.88	
20	64QAM	1	49	20.56	20.54	20.74	20.78	20.81	22
20	64QAM	1	99	20.88	20.90	20.90	20.96	21.01	
20	64QAM	50	0	21.08	20.97	21.11	21.14	21.07	
20	64QAM	50	24	20.79	20.77	20.90	20.95	20.74	22
20	64QAM	50	50	20.85	20.70	20.77	20.62	20.86	
20	64QAM	100	0	20.79	20.77	20.90	20.95	20.74	
20	256QAM	1	0	18.66	18.75	18.62	18.73	18.70	20
20	256QAM	1	49	18.83	18.93	18.93	19.06	18.86	
20	256QAM	1	99	18.64	18.59	18.53	18.67	18.64	
20	256QAM	50	0	18.64	18.75	18.74	18.97	18.69	20
20	256QAM	50	24	18.60	18.65	18.55	18.87	18.74	
20	256QAM	50	50	18.90	19.02	18.93	19.00	18.83	
20	256QAM	100	0	18.52	18.52	18.64	18.56	18.70	20
Channel				39725	40173	40620	41068	41515	
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	21.13	21.14	21.06	21.13	21.08	22.00
15	QPSK	1	37	20.98	20.86	20.89	21.04	21.01	
15	QPSK	1	74	20.81	20.85	20.94	20.83	20.89	
15	QPSK	36	0	20.67	20.87	20.87	20.89	20.82	22
15	QPSK	36	20	20.68	20.70	20.59	20.88	20.55	
15	QPSK	36	39	20.78	20.75	20.91	20.85	20.69	
15	QPSK	75	0	20.56	20.63	20.83	20.55	20.46	22
15	16QAM	1	0	20.57	20.76	21.04	20.78	20.86	
15	16QAM	1	37	20.70	20.57	20.52	20.69	20.66	
15	16QAM	1	74	20.65	20.84	20.81	20.94	20.60	22
15	16QAM	36	0	21.13	20.80	20.58	20.61	20.75	
15	16QAM	36	20	20.77	20.67	20.72	20.83	20.59	
15	16QAM	36	39	20.77	20.69	20.76	20.88	20.83	22
15	16QAM	75	0	20.93	20.92	20.87	20.88	20.75	
15	64QAM	1	0	20.85	20.70	20.94	20.71	20.81	
15	64QAM	1	37	20.41	20.49	20.73	20.76	20.72	22
15	64QAM	1	74	20.81	20.88	20.82	20.96	20.85	
15	64QAM	36	0	20.91	20.83	21.10	21.13	20.99	
15	64QAM	36	20	20.59	20.69	20.87	20.80	20.69	22
15	64QAM	36	39	20.74	20.54	20.60	20.43	20.66	
15	64QAM	75	0	20.72	20.70	20.72	20.82	20.69	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	256QAM	1	0	18.51	18.62	18.58	18.57	18.58	20
15	256QAM	1	37	18.77	18.77	18.83	18.93	18.74	
15	256QAM	1	74	18.63	18.41	18.51	18.54	18.52	
15	256QAM	36	0	18.57	18.55	18.54	18.90	18.53	20
15	256QAM	36	20	18.55	18.47	18.38	18.77	18.73	
15	256QAM	36	39	18.88	18.92	18.91	18.83	18.68	
15	256QAM	75	0	18.32	18.35	18.47	18.44	18.64	Tune-up limit (dBm)
Channel				39700	40160	40620	41080	41540	
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	21.13	21.08	21.11	21.21	20.92	22.00
10	QPSK	1	25	20.88	20.87	20.79	20.99	21.04	
10	QPSK	1	49	20.75	20.86	20.85	20.81	20.77	
10	QPSK	25	0	20.82	20.74	20.91	20.91	20.72	22
10	QPSK	25	12	20.77	20.70	20.54	20.82	20.61	
10	QPSK	25	25	20.68	20.70	20.71	20.86	20.65	
10	QPSK	50	0	20.50	20.51	20.72	20.57	20.58	22
10	16QAM	1	0	20.60	20.84	20.93	20.74	20.99	
10	16QAM	1	25	20.60	20.56	20.62	20.67	20.63	
10	16QAM	1	49	20.75	20.69	20.84	20.82	20.66	22
10	16QAM	25	0	21.05	20.85	20.61	20.47	20.62	
10	16QAM	25	12	20.78	20.58	20.86	20.75	20.74	
10	16QAM	25	25	20.81	20.69	20.71	20.79	20.77	22
10	16QAM	50	0	20.77	20.82	20.80	20.95	20.82	
10	64QAM	1	0	20.70	20.66	20.83	20.86	20.81	
10	64QAM	1	25	20.38	20.51	20.65	20.68	20.67	22
10	64QAM	1	49	20.68	20.79	20.79	20.79	20.97	
10	64QAM	25	0	21.07	20.80	20.92	20.98	20.96	
10	64QAM	25	12	20.62	20.72	20.80	20.85	20.54	22
10	64QAM	25	25	20.68	20.60	20.73	20.45	20.80	
10	64QAM	50	0	20.68	20.63	20.86	20.95	20.61	
10	256QAM	1	0	18.49	18.67	18.61	18.68	18.68	20
10	256QAM	1	25	18.65	18.86	18.83	19.01	18.75	
10	256QAM	1	49	18.55	18.55	18.45	18.57	18.44	
10	256QAM	25	0	18.61	18.68	18.66	18.96	18.56	20
10	256QAM	25	12	18.52	18.56	18.48	18.74	18.56	
10	256QAM	25	25	18.77	18.82	18.86	18.85	18.67	
10	256QAM	50	0	18.47	18.33	18.63	18.39	18.55	Tune-up limit (dBm)
Channel				39675	40148	40620	41093	41565	
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	21.10	21.13	20.90	20.97	20.91	22.00
5	QPSK	1	12	20.96	20.69	20.77	20.88	20.99	
5	QPSK	1	24	20.61	20.80	20.86	20.78	20.80	
5	QPSK	12	0	20.52	20.73	20.84	20.73	20.72	22
5	QPSK	12	7	20.66	20.59	20.42	20.70	20.38	
5	QPSK	12	13	20.66	20.68	20.90	20.66	20.65	
5	QPSK	25	0	20.54	20.44	20.75	20.44	20.34	22
5	16QAM	1	0	20.52	20.70	20.94	20.61	20.72	
5	16QAM	1	12	20.52	20.51	20.35	20.55	20.64	
5	16QAM	1	24	20.52	20.84	20.66	20.84	20.48	22
5	16QAM	12	0	20.95	20.77	20.52	20.46	20.65	
5	16QAM	12	7	20.64	20.52	20.69	20.76	20.51	
5	16QAM	12	13	20.66	20.55	20.71	20.86	20.65	22
5	16QAM	25	0	20.85	20.85	20.83	20.78	20.66	
5	64QAM	1	0	20.65	20.52	20.74	20.67	20.72	
5	64QAM	1	12	20.28	20.49	20.63	20.65	20.70	22
5	64QAM	1	24	20.81	20.76	20.82	20.85	20.66	

5	64QAM	12	0	20.85	20.76	21.03	20.96	20.84	22
5	64QAM	12	7	20.43	20.54	20.73	20.64	20.51	
5	64QAM	12	13	20.64	20.45	20.51	20.28	20.54	
5	64QAM	25	0	20.54	20.66	20.57	20.66	20.52	
5	256QAM	1	0	18.46	18.50	18.38	18.48	18.50	20
5	256QAM	1	12	18.57	18.67	18.66	18.81	18.72	
5	256QAM	1	24	18.63	18.35	18.40	18.37	18.43	
5	256QAM	12	0	18.48	18.48	18.36	18.83	18.40	20
5	256QAM	12	7	18.43	18.35	18.21	18.64	18.59	
5	256QAM	12	13	18.74	18.91	18.87	18.66	18.49	
5	256QAM	25	0	18.12	18.15	18.46	18.28	18.51	

<LTE Band 48 MIMO2 Default Power >								
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	21.33	21.46	21.17	20.88	22
20	QPSK	1	49	21.31	21.43	21.06	20.72	
20	QPSK	1	99	21.11	21.21	20.70	20.40	
20	QPSK	50	0	20.39	20.47	20.19	19.83	21
20	QPSK	50	24	20.28	20.45	20.07	19.75	
20	QPSK	50	50	20.23	20.35	19.95	19.65	
20	QPSK	100	0	20.32	20.39	20.06	19.68	
20	16QAM	1	0	20.34	20.57	20.23	19.97	21
20	16QAM	1	49	20.36	20.53	20.14	19.79	
20	16QAM	1	99	20.15	20.33	19.79	19.44	
20	16QAM	50	0	19.33	19.50	19.10	18.88	20
20	16QAM	50	24	19.13	19.43	19.00	18.76	
20	16QAM	50	50	19.06	19.38	18.90	18.63	
20	16QAM	100	0	19.09	19.41	18.96	18.66	
20	64QAM	1	0	19.17	19.20	18.85	18.55	20
20	64QAM	1	49	19.21	19.16	18.73	18.31	
20	64QAM	1	99	19.02	18.89	18.35	18.04	
20	64QAM	50	0	18.47	18.41	18.04	17.78	19
20	64QAM	50	24	18.40	18.35	17.93	17.63	
20	64QAM	50	50	18.34	18.29	17.83	17.47	
20	64QAM	100	0	18.44	18.26	17.95	18.05	
20	256QAM	1	0	15.15	15.52	15.31	15.40	17
20	256QAM	1	49	15.31	15.60	15.47	15.50	
20	256QAM	1	99	15.31	15.42	15.32	15.32	
20	256QAM	50	0	15.46	15.82	15.65	15.70	17
20	256QAM	50	24	15.45	15.79	15.62	15.72	
20	256QAM	50	50	15.57	15.75	15.59	15.62	
20	256QAM	100	0	15.44	15.66	15.54	15.55	
Channel				55315	55820	56160	56665	Tune-up limit (dBm)
Frequency (MHz)				3557.5	3608	3642	3692.5	
15	QPSK	1	0	21.24	21.34	21.15	20.79	22
15	QPSK	1	37	21.28	21.38	20.98	20.62	
15	QPSK	1	74	21.10	21.06	20.67	20.32	
15	QPSK	36	0	20.28	20.43	20.10	19.80	21
15	QPSK	36	20	20.14	20.43	20.05	19.66	
15	QPSK	36	39	20.23	20.33	19.87	19.63	
15	QPSK	75	0	20.13	20.28	19.91	19.59	
15	16QAM	1	0	20.14	20.53	20.07	19.88	21
15	16QAM	1	37	20.30	20.41	19.94	19.65	



FCC SAR TEST REPORT

Report No. : FA2O2005

15	16QAM	1	74	20.04	20.30	19.70	19.24	20
15	16QAM	36	0	19.29	19.37	19.02	18.68	
15	16QAM	36	20	19.10	19.32	18.99	18.63	
15	16QAM	36	39	19.00	19.30	18.89	18.56	
15	16QAM	75	0	19.03	19.32	18.83	18.61	
15	64QAM	1	0	19.15	19.16	18.85	18.52	20
15	64QAM	1	37	19.08	19.10	18.60	18.26	
15	64QAM	1	74	18.84	18.88	18.26	18.25	
15	64QAM	36	0	18.31	18.41	17.87	17.74	19
15	64QAM	36	20	18.36	18.21	17.75	17.58	
15	64QAM	36	39	18.16	18.25	17.63	17.43	
15	64QAM	75	0	18.40	18.20	17.89	17.89	
15	256QAM	1	0	15.09	15.48	15.24	15.34	17
15	256QAM	1	37	15.21	15.40	15.30	15.38	
15	256QAM	1	74	15.29	15.28	15.21	15.19	
15	256QAM	36	0	15.35	15.80	15.53	15.53	17
15	256QAM	36	20	15.42	15.79	15.50	15.54	
15	256QAM	36	39	15.43	15.68	15.46	15.42	
15	256QAM	75	0	15.26	15.46	15.49	15.53	
Channel				55290	55815	56165	56690	Tune-up limit (dBm)
Frequency (MHz)				3555	3607.5	3642.5	3695	
10	QPSK	1	0	21.16	21.45	21.17	20.72	22
10	QPSK	1	25	21.23	21.42	20.89	20.68	
10	QPSK	1	49	21.00	21.12	20.57	20.37	
10	QPSK	25	0	20.31	20.39	20.06	19.76	21
10	QPSK	25	12	20.13	20.33	19.90	19.63	
10	QPSK	25	25	20.16	20.31	19.82	19.48	
10	QPSK	50	0	20.19	20.31	20.01	19.67	
10	16QAM	1	0	20.26	20.40	20.23	19.93	21
10	16QAM	1	25	20.29	20.45	20.08	19.69	
10	16QAM	1	49	20.11	20.27	19.60	19.27	
10	16QAM	25	0	19.31	19.36	18.99	18.82	20
10	16QAM	25	12	18.97	19.33	19.00	18.59	
10	16QAM	25	25	19.01	19.20	18.89	18.57	
10	16QAM	50	0	18.95	19.34	18.85	18.49	
10	64QAM	1	0	19.06	19.16	18.81	18.37	20
10	64QAM	1	25	19.13	19.09	18.70	18.18	
10	64QAM	1	49	18.98	18.73	18.35	18.19	
10	64QAM	25	0	18.47	18.40	18.04	17.77	19
10	64QAM	25	12	18.36	18.23	17.86	17.55	
10	64QAM	25	25	18.33	18.11	17.77	17.34	
10	64QAM	50	0	18.30	18.20	17.75	17.89	
10	256QAM	1	0	15.10	15.47	15.28	15.31	17
10	256QAM	1	25	15.31	15.56	15.32	15.33	
10	256QAM	1	49	15.21	15.42	15.29	15.26	
10	256QAM	25	0	15.45	15.74	15.48	15.59	17
10	256QAM	25	12	15.35	15.72	15.44	15.56	
10	256QAM	25	25	15.49	15.62	15.40	15.42	
10	256QAM	50	0	15.25	15.62	15.37	15.38	
Channel				55265	55810	56170	56715	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	21.25	21.32	20.98	20.78	22
5	QPSK	1	12	21.31	21.29	20.96	20.69	
5	QPSK	1	24	20.95	21.06	20.53	20.40	
5	QPSK	12	0	20.28	20.30	20.03	19.72	21
5	QPSK	12	7	20.28	20.32	20.02	19.63	

5	QPSK	12	13	20.07	20.26	19.93	19.60	
5	QPSK	25	0	20.13	20.38	19.99	19.53	
5	16QAM	1	0	20.32	20.37	20.12	19.81	
5	16QAM	1	12	20.22	20.42	20.05	19.72	21
5	16QAM	1	24	20.09	20.17	19.63	19.37	
5	16QAM	12	0	19.24	19.50	18.98	18.75	
5	16QAM	12	7	19.04	19.40	18.96	18.64	20
5	16QAM	12	13	18.91	19.26	18.72	18.50	
5	16QAM	25	0	18.89	19.32	18.96	18.60	
5	64QAM	1	0	19.09	19.06	18.81	18.48	20
5	64QAM	1	12	19.13	18.97	18.63	18.28	
5	64QAM	1	24	19.02	18.88	18.35	18.18	
5	64QAM	12	0	18.47	18.36	17.89	17.77	19
5	64QAM	12	7	18.32	18.30	17.89	17.57	
5	64QAM	12	13	18.17	18.19	17.82	17.47	
5	64QAM	25	0	18.35	18.23	17.82	18.04	17
5	256QAM	1	0	15.20	15.39	15.15	15.35	
5	256QAM	1	12	15.15	15.40	15.30	15.33	
5	256QAM	1	24	15.15	15.38	15.16	15.13	17
5	256QAM	12	0	15.36	15.79	15.53	15.65	
5	256QAM	12	7	15.25	15.75	15.42	15.53	
5	256QAM	12	13	15.53	15.75	15.51	15.47	17
5	256QAM	25	0	15.40	15.54	15.53	15.43	

<LTE Band 48 MIMO2 Reduced Power >								
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	21.25	21.31	21.13	20.84	21.5
20	QPSK	1	49	21.25	21.29	21.06	20.64	
20	QPSK	1	99	20.99	21.19	20.68	20.26	
20	QPSK	50	0	20.19	20.33	19.99	19.83	20.5
20	QPSK	50	24	20.13	20.25	19.94	19.68	
20	QPSK	50	50	20.08	20.19	19.80	19.55	
20	QPSK	100	0	20.15	20.20	19.92	19.49	20.5
20	16QAM	1	0	20.15	20.41	20.13	19.89	
20	16QAM	1	49	20.29	20.45	20.01	19.79	
20	16QAM	1	99	20.12	20.30	19.79	19.31	19.5
20	16QAM	50	0	19.25	19.48	18.91	18.85	
20	16QAM	50	24	18.97	19.32	18.95	18.74	
20	16QAM	50	50	18.92	19.31	18.71	18.44	19.5
20	16QAM	100	0	19.04	19.40	18.86	18.58	
20	64QAM	1	0	19.12	19.09	18.67	18.52	
20	64QAM	1	49	19.11	19.05	18.64	18.18	19.5
20	64QAM	1	99	18.85	18.74	18.18	18.02	
20	64QAM	50	0	18.46	18.38	17.84	17.68	18.5
20	64QAM	50	24	18.27	18.27	17.89	17.48	
20	64QAM	50	50	18.33	18.15	17.75	17.40	
20	64QAM	100	0	18.44	18.20	17.92	18.05	16.5
20	256QAM	1	0	15.04	15.34	15.14	15.24	
20	256QAM	1	49	15.19	15.41	15.44	15.47	
20	256QAM	1	99	15.20	15.41	15.28	15.17	16.5
20	256QAM	50	0	15.45	15.67	15.60	15.61	
20	256QAM	50	24	15.39	15.66	15.60	15.59	
20	256QAM	50	50	15.44	15.67	15.58	15.50	



FCC SAR TEST REPORT

Report No. : FA2O2005

20	256QAM	100	0	15.31	15.57	15.52	15.37	
Channel				55315	55820	56160	56665	Tune-up limit
Frequency (MHz)				3557.5	3608	3642	3692.5	(dBm)
15	QPSK	1	0	21.16	21.12	21.03	20.79	21.5
15	QPSK	1	37	21.19	21.16	20.91	20.55	
15	QPSK	1	74	20.90	21.19	20.67	20.15	
15	QPSK	36	0	20.13	20.25	19.93	19.75	20.5
15	QPSK	36	20	20.05	20.18	19.83	19.63	
15	QPSK	36	39	20.08	20.14	19.64	19.48	
15	QPSK	75	0	20.03	20.15	19.80	19.36	
15	16QAM	1	0	20.09	20.28	20.02	19.88	20.5
15	16QAM	1	37	20.25	20.43	19.81	19.59	
15	16QAM	1	74	20.03	20.13	19.64	19.11	
15	16QAM	36	0	19.08	19.48	18.84	18.71	19.5
15	16QAM	36	20	18.89	19.30	18.77	18.68	
15	16QAM	36	39	18.83	19.24	18.62	18.44	
15	16QAM	75	0	18.90	19.21	18.74	18.50	
15	64QAM	1	0	19.08	18.93	18.50	18.52	19.5
15	64QAM	1	37	18.99	18.85	18.56	18.03	
15	64QAM	1	74	18.72	18.55	18.16	18.00	
15	64QAM	36	0	18.27	18.20	17.80	17.68	18.5
15	64QAM	36	20	18.18	18.15	17.89	17.32	
15	64QAM	36	39	18.14	18.03	17.64	17.20	
15	64QAM	75	0	18.32	18.18	17.84	17.98	
15	256QAM	1	0	15.04	15.33	15.20	15.05	16.5
15	256QAM	1	37	15.08	15.29	15.28	15.41	
15	256QAM	1	74	15.08	15.23	15.23	15.11	
15	256QAM	36	0	15.34	15.62	15.40	15.61	16.5
15	256QAM	36	20	15.34	15.62	15.50	15.43	
15	256QAM	36	39	15.24	15.66	15.55	15.41	
15	256QAM	75	0	15.25	15.41	15.42	15.28	
Channel				55290	55815	56165	56690	Tune-up limit
Frequency (MHz)				3555	3607.5	3642.5	3695	(dBm)
10	QPSK	1	0	21.05	21.23	20.93	20.67	21.5
10	QPSK	1	25	21.21	21.26	20.99	20.55	
10	QPSK	1	49	20.80	21.16	20.56	20.12	
10	QPSK	25	0	20.00	20.25	19.98	19.74	20.5
10	QPSK	25	12	19.99	20.12	19.82	19.68	
10	QPSK	25	25	20.07	20.08	19.62	19.49	
10	QPSK	50	0	20.09	20.08	19.82	19.43	
10	16QAM	1	0	20.12	20.23	19.98	19.78	20.5
10	16QAM	1	25	20.17	20.30	19.85	19.62	
10	16QAM	1	49	20.06	20.16	19.69	19.21	
10	16QAM	25	0	19.12	19.33	18.85	18.72	
10	16QAM	25	12	18.91	19.23	18.82	18.63	19.5
10	16QAM	25	25	18.82	19.17	18.68	18.40	
10	16QAM	50	0	18.93	19.32	18.66	18.47	
10	64QAM	1	0	18.98	19.08	18.49	18.41	
10	64QAM	1	25	18.91	19.01	18.47	18.11	19.5
10	64QAM	1	49	18.75	18.66	18.12	17.87	
10	64QAM	25	0	18.42	18.18	17.64	17.54	
10	64QAM	25	12	18.17	18.27	17.83	17.43	18.5
10	64QAM	25	25	18.28	18.06	17.59	17.26	
10	64QAM	50	0	18.29	18.19	17.73	17.91	
10	256QAM	1	0	15.00	15.15	15.04	15.15	
10	256QAM	1	25	15.16	15.41	15.37	15.41	16.5



FCC SAR TEST REPORT

Report No. : FA2O2005

10	256QAM	1	49	15.11	15.24	15.16	15.07	
10	256QAM	25	0	15.26	15.51	15.56	15.53	16.5
10	256QAM	25	12	15.34	15.57	15.54	15.39	
10	256QAM	25	25	15.40	15.62	15.39	15.48	
10	256QAM	50	0	15.14	15.54	15.45	15.32	
Channel				55265	55810	56170	56715	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	21.08	21.25	21.06	20.73	21.5
5	QPSK	1	12	21.16	21.23	20.97	20.60	
5	QPSK	1	24	20.94	21.12	20.68	20.22	
5	QPSK	12	0	20.08	20.27	19.91	19.73	20.5
5	QPSK	12	7	20.11	20.14	19.81	19.62	
5	QPSK	12	13	20.02	20.09	19.61	19.40	
5	QPSK	25	0	20.13	20.10	19.81	19.39	
5	16QAM	1	0	20.12	20.30	20.02	19.73	20.5
5	16QAM	1	12	20.15	20.42	19.90	19.64	
5	16QAM	1	24	20.08	20.28	19.70	19.18	
5	16QAM	12	0	19.08	19.31	18.87	18.81	19.5
5	16QAM	12	7	18.81	19.15	18.80	18.55	
5	16QAM	12	13	18.77	19.17	18.53	18.42	
5	16QAM	25	0	19.02	19.20	18.68	18.55	
5	64QAM	1	0	18.95	19.04	18.48	18.40	19.5
5	64QAM	1	12	18.96	19.00	18.58	18.08	
5	64QAM	1	24	18.66	18.68	18.07	17.99	
5	64QAM	12	0	18.32	18.37	17.80	17.57	18.5
5	64QAM	12	7	18.07	18.11	17.86	17.42	
5	64QAM	12	13	18.19	18.06	17.59	17.28	
5	64QAM	25	0	18.28	18.05	17.91	17.91	
5	256QAM	1	0	15.00	15.28	15.14	15.07	16.5
5	256QAM	1	12	15.14	15.22	15.39	15.39	
5	256QAM	1	24	15.20	15.34	15.13	14.98	
5	256QAM	12	0	15.40	15.64	15.56	15.53	16.5
5	256QAM	12	7	15.24	15.62	15.47	15.51	
5	256QAM	12	13	15.29	15.54	15.56	15.46	
5	256QAM	25	0	15.24	15.41	15.49	15.31	

<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.

2CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation			4CC Downlink Carrier Aggregation			5CC Downlink Carrier Aggregation		
NO.	Combination	Covered by measurement superset	NO.	Combination	Covered by measurement superset	NO.	Combination	Covered by measurement superset	NO.	Combination	Covered by measurement superset
	2A-2A			2A-2A-4A			2A-2A-4A-4A			2A-2A-5A-66A-66A	
	2A-4A			2A-2A-5A			2A-2A-4A-5A			2A-2A-5A-66B	
	2A-5A			2A-2A-12A			2A-2A-4A-12A			2A-2A-5A-66C	
	2A-7A			2A-2A-13A			2A-2A-4A-71A			2A-2A-12A-30A-66A	
	2A-12A			2A-2A-14A			2A-2A-5A-66A			2A-2A-12A-66A-66A	
	2A-13A			2A-2A-30A			2A-2A-12A-30A			2A-2A-13A-66A-66A	
	2A-14A			2A-2A-66A			2A-2A-12A-66A			2A-2A-13A-66B	
	2A-30A			2A-2A-71A			2A-2A-13A-66A			2A-2A-14A-30A-66A	
	2A-48A			2A-4A-4A			2A-2A-14A-30A			2A-2A-14A-66A-66A	
	2A-66A			2A-4A-5A			2A-2A-14A-66A			2A-5A-48A-48A-66A	
	2A-71A			2A-4A-7A			2A-2A-30A-66A			2A-5A-48A-48C	
	4A-4A			2A-4A-12A			2A-2A-66A-66A			2A-5A-48C-66A	
	4A-5A			2A-4A-13A			2A-2A-66A-71A			2A-5A-48D	
	4A-7A			2A-4A-30A			2A-2A-66B			2A-5B-30A-66A	
	4A-12A			2A-4A-71A			2A-2A-66C			2A-5B-66A-66A	
	4A-13A			2A-5A-30A			2A-4A-4A-5A			2A-5B-66B	
	4A-30A			2A-5A-48A			2A-4A-4A-12A			2A-5B-66C	
	4A-71A			2A-5A-66A			2A-4A-5A-30A			2A-12A-30A-66A-66A	
	5A-5A			2A-5B			2A-4A-5B			2A-13A-48A-48A-66A	
	5A-7A			2A-12A-30A			2A-4A-12A-30A			2A-13A-48A-48C	
	5A-30A			2A-12A-66A			2A-5A-30A-66A			2A-13A-48C-66A	
	5A-48A			2A-13A-48A			2A-5A-48A-48A			2A-13A-48D	
	5A-66A			2A-13A-66A			2A-5A-48A-66A			2A-14A-30A-66A-66A	
	7A-7A			2A-14A-30A			2A-5A-48C			2A-14A-66A-66A-66A	
	12A-30A			2A-14A-66A			2A-5A-66A-66A			2A-48A-48C-66A	
	12A-66A			2A-30A-66A			2A-5A-66B			2A-48A-48D	
	13A-48A			2A-48A-48A			2A-5A-66C			2A-48C-48C	
	13A-66A			2A-48A-66A			2A-5B-30A			2A-48D-66A	
	14A-30A			2A-48C			2A-5B-66A			2A-48E	
	14A-66A			2A-66A-66A			2A-12A-30A-66A			5A-48A-48C-66A	
	25A-25A			2A-66A-71A			2A-12A-66A-66A			5A-48A-48D	
	25A-26A			2A-66B			2A-12A-66C			5A-48C-48C	
	26A-41A			2A-66C			2A-13A-48A-48A			5A-48D-66A	
	30A-66A			2C-66A			2A-13A-48A-66A			5A-48E	
	38C			4A-4A-5A			2A-13A-48C			13A-48A-48C-66A	
	41A-41A			4A-4A-12A			2A-13A-66A-66A			13A-48C-48C	
	41C			4A-4A-13A			2A-13A-66B			13A-48C-66B	
	48A-48A			4A-4A-30A			2A-13A-66C			13A-48C-66C	
	48A-66A			4A-4A-71A			2A-14A-30A-66A			13A-48D-66A	
	48C			4A-5A-30A			2A-14A-66A-66A			13A-48E	
	66A-66A			4A-5B			2A-30A-66A-66A			41F	
	66A-71A			4A-12A-30A			2A-48A-48A-66A			48A-48A-48D	
	66B			5A-5A-66A			2A-48A-48C			48A-48C-48C	
	66C			5A-7A-7A			2A-48C-66A			48A-48C-66B	
	25A-41A			5A-30A-66A			2A-48D			48A-48C-66C	
	4A-17A			5A-48A-48A			2A-66A-66A-66A			48A-48D-66A	

			5A-48A-66A		2A-66A-66A-71A		48C-48C-66A	
			5A-48C		2A-66C-71A		48C-66A-66A-66A	
			5A-66A-66A		2C-66A-66A		48E-66A	
			5A-66B		4A-4A-5B		48F	
			5A-66C		4A-4A-12A-30A		2A-5A-5A-66A-66A	
			5B-30A		5A-5A-66A-66A		2A-2A-5B-66A	
			5B-66A		5A-5A-66B			
			12A-30A-66A		5A-5A-66C			
			12A-66A-66A		5A-48A-48A-66A			
			13A-48A-48A		5A-48A-48C			
			13A-48A-66A		5A-48C-66A			
			13A-48C		5A-48D			
			13A-66A-66A		5B-30A-66A			
			13A-66B		5B-66A-66A			
			13A-66C		5B-66B			
			14A-30A-66A		5B-66C			
			14A-66A-66A		12A-30A-66A-66A			
			26A-41C		12A-66C			
			30A-66A-66A		13A-48A-48A-66A			
			41A-41C		13A-48A-48C			
			41D		13A-48A-66B			
			48A-48A-48A		13A-48A-66C			
			48A-48A-66A		13A-48C-66A			
			48A-48C		13A-48D			
			48A-66A-66A		14A-30A-66A-66A			
			48A-66B		14A-66A-66A-66A			
			48A-66C		30A-66A-66A-66A			
			48C-66A		41A-41D			
			48D		41C-41C			
			66A-66A-66A		41E			
			66A-66A-71A		48A-48A-48C			
			66A-66C		48A-48A-66A-66A			
			66C-71A		48A-48A-66B			
			2A-5A-5A		48A-48A-66C			
			25A-41C		48A-48C-66A			
					48A-48D			
					48A-66A-66A-66A			
					48C-48C			
					48C-66A-66A			
					48C-66B			
					48C-66C			
					48D-66A			
					48E			
					2A-2A-5A-30A			
					2A-5A-5A-66A			
					5A-30A-66A-66A			
					13A-66A-66A-66A			
					25A-41D			
					2A-2A-5B			

<Power verification when LTE Carrier Aggregation Active>
General Note:

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

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

<Two Carrier power verification>

Configure	CA Configuration (BCS)	PCC								SCC				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset		LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	25A-26A	25	20	1905	26590	QPSK	1	0		26	15	876.5	8865	23.01	23.10
	4A-17A	4	20	1745	20300	QPSK	1	0		17	10	740	5790	22.97	23.02
Intra-Band	Contiguous	38C	38	20	2580	37850	QPSK	1	1	38	20	2599.80	38048	23.04	23.25

<Three Carrier power verification>

Configure	CA Configuration (BCS)	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	2A-4A-7A	2	20	1900	19100	QPSK	1	0		4	20	2132.5	2175	7	20	2655	3100	23.13	23.16
	2A-4A-13A	2	20	1900	19100	QPSK	1	0		4	20	2132.5	2175	13	10	751	5230	23.04	23.15
	5A-7A-7A	5	10	836.5	20525	QPSK	1	0		7	20	2655	3100	7	5	2687.5	3425	23.38	23.53
	26A-41C	26	15	831.5	26865	QPSK	1	0		41	20	2593	40620	41	20	2612.8	40818	23.20	23.25

<Four Carrier power verification>

Configure	CA Configuration (BCS)	PCC								SCC1				SCC2				SCC3				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset		LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2A-2A-4A-71A	2	20	1900	19100	QPSK	1	0		2	5	1980	1100	4	20	2132.5	2175	71	20	634.5	68761	23.15	23.20
	2A-2A-66A-71A	2	20	1900	19100	QPSK	1	0		2	5	1980	1100	66	20	2155	66886	71	20	634.5	68761	23.10	23.22
	2A-4A-5A-30A	2	20	1900	19100	QPSK	1	0		4	20	2132.5	2175	5	10	881.5	2525	30	10	2355	9820	23.06	23.14
	2A-4A-12A-30A	2	20	1900	19100	QPSK	1	0		4	20	2132.5	2175	12	10	737.5	5095	30	10	2355	9820	23.09	23.13
	2A-66C-71A	2	20	1900	19100	QPSK	1	0		66	20	2155	66886	66	20	2139.8	66734	71	20	634.5	68761	23.21	23.25
	25A-41D	25	20	1905	26590	QPSK	1	0		41	20	2593	40620	41	20	2612.8	2175	41	20	2636.2	41052	23.16	23.23

<Five Carrier power verification>

Configure	CA Configuration (BCS)	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	2A-2A-12A-30A-66A	2	20	1900	19100	QPSK	1	0		2	5	1980	1100	12	10	737.5	5095	30	10	2355	9820	66	20	2155	66886	23.07	23.16
	2A-2A-14A-30A-66A	2	20	1900	19100	QPSK	1	0		2	5	1980	1100	14	10	763	5330	30	10	2355	9820	66	20	2155	66886	23.15	23.15
	2A-5A-48C-66A	2	20	1900	19100	QPSK	1	0		5	10	881.5	2525	48	20	3625	55990	48	20	3644.8	56188	66	20	2155	66886	22.99	23.09
	2A-5B-30A-66A	2	20	1900	19100	QPSK	1	0		5	10	881.5	2525	5	10	891.4	2624	30	10	2355	9820	66	20	2155	66886	22.97	23.10
	2A-12A-30A-66A-66A	2	20	1900	19100	QPSK	1	0		12	10	737.5	5095	30	10	2355	9820	66	20	2139.8	66734	66	5	2197.5	67311	23.05	23.16
	2A-13A-48A-48A-66A	2	20	1900	19100	QPSK	1	0		13	10	751	5230	48	20	3625	55990	48	20	3648.6	56226	66	20	2139.8	66734	23.06	23.16
	2A-14A-30A-66A-66A	2	20	1900	19100	QPSK	1	0		14	10	763	5330	30	10	2355	9820	66	20	2155	66886	66	20	2164.8	67084	23.05	23.15

<LTE Uplink carrier aggregation>

2CC Uplink Carrier Aggregation	
Number	Combination
	MIMO2_Ant
1	7C
2	66B
3	66C
4	41C
5	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. 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 Mode>
<MIMO 2>

CA_7C										
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				
20850	21048	QPSK	1	0	0	0	1	0	23.06	24
21100	20902	QPSK	1	0	1	99	2	0	23.11	24
21350	21152	QPSK	1	0	1	99	2	0	23.19	24

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	22.57	24
132322	132229	QPSK	1	0	1	24	2	0	22.63	24
132597	132504	QPSK	1	0	1	24	2	0	22.59	24

CA_66C										
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	22.54	24
132322	132124	QPSK	1	0	1	99	2	0	22.69	24
132572	132374	QPSK	1	0	1	99	2	0	22.56	24

CA_41C										
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				
39750	39948	QPSK	1	0	0	0	1	0	23.15	24
40185	39987	QPSK	1	0	0	0	1	0	23.58	24
40620	40422	QPSK	1	0	0	0	1	0	23.64	24
41055	40857	QPSK	1	0	0	0	1	0	23.72	24
41490	41292	QPSK	1	0	0	0	1	0	23.39	24

CA_48C										
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	21.11	22
55830	55632	QPSK	1	0	1	99	2	0	21.21	22
56150	55952	QPSK	1	0	1	99	2	0	20.79	22
56640	56442	QPSK	1	0	1	99	2	0	20.63	22

<Reduced Power Mode>
<MIMO 2>

CA_7C										
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				
20850	21048	QPSK	1	0	0	0	1	0	19.32	20
21100	20902	QPSK	1	0	1	99	2	0	19.16	20
21350	21152	QPSK	1	0	1	99	2	0	19.25	20

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	20.73	22
132322	132229	QPSK	1	0	1	24	2	0	20.62	22
132597	132504	QPSK	1	0	1	24	2	0	20.52	22

CA_66C										
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	20.76	22
132322	132124	QPSK	1	0	1	99	2	0	20.7	22
132572	132374	QPSK	1	0	1	99	2	0	20.55	22

CA_41C										
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				
39750	39948	QPSK	1	0	0	0	1	0	20.75	22
40185	39987	QPSK	1	0	0	0	1	0	20.66	22
40620	40422	QPSK	1	0	0	0	1	0	20.58	22
41055	40857	QPSK	1	0	0	0	1	0	20.48	22
41490	41292	QPSK	1	0	0	0	1	0	20.55	22

CA_48C										
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	20.7	21.5
55830	55632	QPSK	1	0	1	99	2	0	20.69	21.5
56150	55952	QPSK	1	0	1	99	2	0	20.66	21.5
56640	56442	QPSK	1	0	1	99	2	0	20.59	21.5

12. 5G NR Output Power (Unit: dBm)

General Note:

1. The device support SCS 15KHz and 30KHz for NR FDD and TDD and have the same maximum power, in this report only select SCS 15KHz for NR FDD and SCS 30KHz for NR TDD power measurement, due to SCS 15KHz for FDD and SCS 30KHz for TDD have highest support bandwidth, and the NR SAR is < 1g SAR 1.45W/kg. Output power and SAR measurement for SCS30KHz for FDD and SCS15KHz for TDD shall be not necessary.
2. 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
 - g. The NR n5/41/66/71/77 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.
 - h. The NR n38 SAR test was covered by NR n41; due to SAR test for overlapping LTE bands can be reduced if the maximum power including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion and the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
3. 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		

<FR1 n2 MIMO2 Default Power >							
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	23.06	22.99	23.07	24.0
20	PI/2 BPSK	1	53	22.91	22.69	22.99	
20	PI/2 BPSK	1	104	22.81	22.87	22.86	
20	PI/2 BPSK	50	0	22.15	22.22	22.12	23.5
20	PI/2 BPSK	50	28	23.03	22.94	23.06	24.0
20	PI/2 BPSK	50	56	22.39	22.48	22.40	23.5
20	PI/2 BPSK	100	0	22.36	22.43	22.53	
20	QPSK	1	1	22.57	22.63	22.55	24.0
20	QPSK	1	53	22.88	22.97	22.87	
20	QPSK	1	104	22.78	22.79	22.74	
20	QPSK	50	0	21.71	21.75	21.72	23.0
20	QPSK	50	28	22.21	22.21	22.21	24.0
20	QPSK	50	56	21.93	21.98	21.88	23.0
20	QPSK	100	0	21.81	21.82	21.78	
20	16QAM	1	1	21.55	21.62	21.60	23.0
20	64QAM	1	1	19.73	19.79	19.73	21.5
20	256QAM	1	1	18.19	18.26	18.19	19.5
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	22.88	22.80	22.91	24.0
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	22.87	22.94	22.98	24.0
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	23.05	22.97	23.05	24.0

<FR1 n2 MIMO2 Reduced Power >							
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	20.06	19.96	20.15	21.0
20	PI/2 BPSK	1	53	19.76	19.67	19.98	
20	PI/2 BPSK	1	104	19.65	19.75	19.71	
20	PI/2 BPSK	50	0	19.62	19.57	19.51	21.0
20	PI/2 BPSK	50	28	19.96	19.90	19.86	21.0
20	PI/2 BPSK	50	56	19.79	19.80	19.81	21.0
20	PI/2 BPSK	100	0	19.66	19.85	20.03	
20	QPSK	1	1	19.92	19.84	19.96	21.0
20	QPSK	1	53	19.59	19.47	19.92	
20	QPSK	1	104	19.69	19.51	19.82	
20	QPSK	50	0	19.54	19.54	19.28	21.0
20	QPSK	50	28	19.77	19.94	19.93	21.0
20	QPSK	50	56	19.70	19.69	19.68	21.0
20	QPSK	100	0	19.76	19.64	19.72	
20	16QAM	1	1	19.86	19.74	19.85	21.0
20	64QAM	1	1	19.91	19.84	19.57	21.0
20	256QAM	1	1	19.84	19.57	19.84	21.0
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	19.94	19.80	20.07	21.0
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	19.91	19.77	19.96	21.0
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	19.92	19.82	20.09	21.0

<FR1 n66 MIMO2 Default Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				346000	349000	352000	
Frequency (MHz)				1730	1745	1760	
40	PI/2 BPSK	1	1	22.94	23.02	22.99	24.0
40	PI/2 BPSK	1	108	22.34	23.01	22.74	
40	PI/2 BPSK	1	214	22.61	22.67	22.65	
40	PI/2 BPSK	108	0	22.25	22.27	22.17	23.5
40	PI/2 BPSK	108	54	22.76	22.78	22.68	24.0
40	PI/2 BPSK	108	108	22.41	22.43	22.40	23.5
40	PI/2 BPSK	216	0	22.22	22.36	22.31	
40	QPSK	1	1	22.28	22.38	22.36	24.0
40	QPSK	1	108	22.94	23.00	22.97	
40	QPSK	1	214	22.63	22.69	22.64	
40	QPSK	108	0	21.73	21.81	21.77	23.0
40	QPSK	108	54	22.35	22.42	22.41	24.0
40	QPSK	108	108	21.79	21.89	21.88	23.0
40	QPSK	216	0	21.72	21.77	21.73	
40	16QAM	1	1	21.38	21.41	21.33	23.0
40	64QAM	1	1	19.56	19.66	19.58	21.5
40	256QAM	1	1	18.03	18.11	18.06	19.5
Channel				344000	349000	354000	Tune-up limit (dBm)
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	22.85	22.87	22.79	24.0
Channel				343500	349000	354500	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	22.76	23.01	22.91	24.0
Channel				343000	349000	355000	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	22.76	22.86	22.99	24.0
Channel				342500	349000	355500	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	22.80	22.98	22.86	24.0

<FR1 n66 MIMO2 Reduced Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				346000	349000	352000	
Frequency (MHz)				1730	1745	1760	
40	PI/2 BPSK	1	1	20.78	20.98	20.81	22.0
40	PI/2 BPSK	1	108	20.27	20.98	20.59	
40	PI/2 BPSK	1	214	20.60	20.47	20.50	
40	PI/2 BPSK	108	0	20.68	20.65	20.51	22.0
40	PI/2 BPSK	108	54	20.86	20.94	20.84	22.0
40	PI/2 BPSK	108	108	20.84	20.73	20.74	22.0
40	PI/2 BPSK	216	0	20.63	20.80	20.62	
40	QPSK	1	1	20.86	20.88	20.81	22.0
40	QPSK	1	108	20.31	20.96	20.66	
40	QPSK	1	214	20.52	20.66	20.56	
40	QPSK	108	0	20.60	20.58	20.48	22.0
40	QPSK	108	54	20.64	20.78	20.55	22.0
40	QPSK	108	108	20.85	20.84	20.89	22.0
40	QPSK	216	0	20.60	20.83	20.79	
40	16QAM	1	1	20.78	20.89	20.67	22.0
40	64QAM	1	1	20.59	20.68	20.51	22.0
40	256QAM	1	1	20.81	20.93	20.95	22.0
Channel				344000	349000	354000	Tune-up limit (dBm)
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	20.65	20.92	20.81	22.0
Channel				343500	349000	354500	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	20.78	20.90	20.69	22.0
Channel				343000	349000	355000	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	20.75	20.95	20.79	22.0
Channel				342500	349000	355500	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	20.59	20.85	20.74	22.0

<FR1 n41 MIMO2 Default Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				509202	518598	528000	
Frequency (MHz)				2546.01	2592.99	2640	
100	PI/2 BPSK	1	1	22.53	22.60	22.58	
100	PI/2 BPSK	1	137	22.43	22.48	22.40	24.0
100	PI/2 BPSK	1	271	22.03	22.04	22.13	
100	PI/2 BPSK	135	0	21.98	22.00	21.99	
100	PI/2 BPSK	135	69	22.48	22.57	22.56	24.0
100	PI/2 BPSK	135	138	21.88	21.95	21.95	23.5
100	PI/2 BPSK	270	0	21.92	21.94	21.93	
100	QPSK	1	1	22.04	22.03	22.06	
100	QPSK	1	137	22.42	22.45	22.39	24.0
100	QPSK	1	271	22.05	22.03	22.03	
100	QPSK	135	0	22.06	22.10	22.15	
100	QPSK	135	69	22.46	22.51	22.47	24.0
100	QPSK	135	138	22.00	22.03	22.05	
100	QPSK	270	0	21.33	21.39	21.37	
100	16QAM	1	1	21.03	21.10	21.05	23.0
100	64QAM	1	1	19.55	19.54	19.56	21.5
100	256QAM	1	1	17.83	17.93	17.87	19.5
Channel				507204	518598	529998	Tune-up limit (dBm)
Frequency (MHz)				2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	22.38	22.46	22.49	
Channel				504204	518598	532998	Tune-up limit (dBm)
Frequency (MHz)				2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	22.53	22.41	22.49	
Channel				503202	518598	534000	Tune-up limit (dBm)
Frequency (MHz)				2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	22.46	22.55	22.47	
Channel				500700	518598	536496	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2592.99	2682.48	
15	PI/2 BPSK	1	1	22.49	22.57	22.55	
Channel				500202	518598	537000	Tune-up limit (dBm)
Frequency (MHz)				2501.01	2592.99	2685	
10	PI/2 BPSK	1	1	22.44	22.58	22.40	

<FR1 n41 MIMO2 Reduced Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				509202	518598	528000	
Frequency (MHz)				2546.01	2592.99	2640	
100	PI/2 BPSK	1	1	17.53	17.48	17.37	18.0
100	PI/2 BPSK	1	137	17.43	17.39	17.36	
100	PI/2 BPSK	1	271	16.98	16.81	16.94	
100	PI/2 BPSK	135	0	17.02	16.96	16.86	18.0
100	PI/2 BPSK	135	69	17.44	17.44	17.27	18.0
100	PI/2 BPSK	135	138	17.35	17.30	17.30	18.0
100	PI/2 BPSK	270	0	16.96	16.92	16.89	
100	QPSK	1	1	16.95	16.80	16.76	18.0
100	QPSK	1	137	17.49	17.30	17.36	
100	QPSK	1	271	17.43	17.34	17.29	
100	QPSK	135	0	17.41	17.21	17.27	18.0
100	QPSK	135	69	17.36	17.44	17.18	
100	QPSK	135	138	17.40	17.16	17.25	
100	QPSK	270	0	17.34	17.37	17.22	18.0
100	16QAM	1	1	17.28	17.25	17.19	18.0
100	64QAM	1	1	16.83	16.83	16.67	18.0
100	256QAM	1	1	16.91	16.75	16.68	18.0
Channel				507204	518598	529998	Tune-up limit (dBm)
Frequency (MHz)				2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	17.39	17.37	17.34	18.0
Channel				504204	518598	532998	Tune-up limit (dBm)
Frequency (MHz)				2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	17.51	17.31	17.21	18.0
Channel				503202	518598	534000	Tune-up limit (dBm)
Frequency (MHz)				2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	17.42	17.34	17.23	18.0
Channel				500700	518598	536496	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2592.99	2682.48	
15	PI/2 BPSK	1	1	17.36	17.28	17.31	18.0
Channel				500202	518598	537000	Tune-up limit (dBm)
Frequency (MHz)				2501.01	2592.99	2685	
10	PI/2 BPSK	1	1	17.50	17.35	17.34	18.0

<FR1 n41 MIMO3 Default Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				509202	518598	528000	
Frequency (MHz)				2546.01	2592.99	2640	
100	PI/2 BPSK	1	1	15.79	16.09	15.14	16.5
100	PI/2 BPSK	1	137	15.72	15.78	15.04	
100	PI/2 BPSK	1	271	15.83	15.96	14.97	
100	PI/2 BPSK	135	0	15.82	15.74	15.29	16.5
100	PI/2 BPSK	135	69	15.76	15.92	15.00	16.5
100	PI/2 BPSK	135	138	15.59	15.86	15.19	16.5
100	PI/2 BPSK	270	0	15.80	15.99	15.09	
100	QPSK	1	1	15.61	15.98	15.09	16.5
100	QPSK	1	137	15.78	15.84	15.01	
100	QPSK	1	271	15.77	16.01	14.99	
100	QPSK	135	0	15.78	15.81	15.15	16.5
100	QPSK	135	69	15.66	15.68	14.91	
100	QPSK	135	138	15.71	15.93	15.02	
100	QPSK	270	0	15.79	15.59	15.14	16.5
100	16QAM	1	1	15.59	15.83	14.99	16.5
100	64QAM	1	1	15.83	15.94	15.01	16.5
100	256QAM	1	1	15.78	15.79	15.19	16.5
Channel				507204	518598	529998	Tune-up limit (dBm)
Frequency (MHz)				2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	15.63	15.82	15.55	16.5
Channel				504204	518598	532998	Tune-up limit (dBm)
Frequency (MHz)				2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	15.39	15.84	15.65	16.5
Channel				503202	518598	534000	Tune-up limit (dBm)
Frequency (MHz)				2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	15.30	15.66	15.65	16.5
Channel				500700	518598	536496	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2592.99	2682.48	
15	PI/2 BPSK	1	1	15.50	15.74	15.64	16.5
Channel				500202	518598	537000	Tune-up limit (dBm)
Frequency (MHz)				2501.01	2592.99	2685	
10	PI/2 BPSK	1	1	15.47	15.83	15.75	16.5

<FR1 n41 HPUE MIMO2 Default Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				509202	518598	528000	
Frequency (MHz)				2546.01	2592.99	2640	
100	PI/2 BPSK	1	1	25.60	25.61	25.52	
100	PI/2 BPSK	1	137	25.45	25.47	25.48	27.0
100	PI/2 BPSK	1	271	25.09	25.06	25.11	
100	PI/2 BPSK	135	0	25.01	25.08	24.98	
100	PI/2 BPSK	135	69	25.47	25.55	25.41	27.0
100	PI/2 BPSK	135	138	24.87	25.03	24.99	26.5
100	PI/2 BPSK	270	0	24.95	25.01	24.91	
100	QPSK	1	1	25.00	25.12	25.14	
100	QPSK	1	137	25.42	25.43	25.42	27.0
100	QPSK	1	271	25.04	25.14	25.10	
100	QPSK	135	0	25.01	25.00	25.05	
100	QPSK	135	69	25.32	25.53	25.38	27.0
100	QPSK	135	138	25.04	25.14	25.00	
100	QPSK	270	0	24.32	24.47	24.42	
100	16QAM	1	1	24.14	24.00	24.02	26.0
100	64QAM	1	1	22.52	22.60	22.54	24.5
100	256QAM	1	1	20.88	20.92	20.85	22.5
Channel				507204	518598	529998	Tune-up limit (dBm)
Frequency (MHz)				2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	25.56	25.52	25.36	
Channel				504204	518598	532998	Tune-up limit (dBm)
Frequency (MHz)				2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	25.52	25.57	25.38	
Channel				503202	518598	534000	Tune-up limit (dBm)
Frequency (MHz)				2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	25.56	25.57	25.49	
Channel				500700	518598	536496	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2592.99	2682.48	
15	PI/2 BPSK	1	1	25.58	25.51	25.34	
Channel				500202	518598	537000	Tune-up limit (dBm)
Frequency (MHz)				2501.01	2592.99	2685	
10	PI/2 BPSK	1	1	25.60	25.44	25.42	

<FR1 n41 HPUE MIMO2 Reduced Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				509202	518598	528000	
Frequency (MHz)				2546.01	2592.99	2640	
100	PI/2 BPSK	1	1	20.41	20.46	20.26	21.0
100	PI/2 BPSK	1	137	20.41	20.38	20.28	
100	PI/2 BPSK	1	271	19.95	19.73	19.90	
100	PI/2 BPSK	135	0	19.91	19.80	19.69	21.0
100	PI/2 BPSK	135	69	20.35	20.25	20.10	21.0
100	PI/2 BPSK	135	138	20.29	20.30	20.25	21.0
100	PI/2 BPSK	270	0	19.87	19.75	19.74	
100	QPSK	1	1	19.76	19.63	19.75	21.0
100	QPSK	1	137	20.38	20.30	20.25	
100	QPSK	1	271	20.35	20.25	20.09	
100	QPSK	135	0	20.32	20.09	20.14	21.0
100	QPSK	135	69	20.32	20.27	20.11	
100	QPSK	135	138	20.36	20.16	20.10	
100	QPSK	270	0	20.14	20.19	20.02	21.0
100	16QAM	1	1	20.20	20.11	20.01	21.0
100	64QAM	1	1	19.76	19.83	19.62	21.0
100	256QAM	1	1	19.82	19.60	19.68	21.0
Channel				507204	518598	529998	Tune-up limit (dBm)
Frequency (MHz)				2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	20.22	20.23	20.30	21.0
Channel				504204	518598	532998	Tune-up limit (dBm)
Frequency (MHz)				2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	20.44	20.35	20.22	21.0
Channel				503202	518598	534000	Tune-up limit (dBm)
Frequency (MHz)				2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	20.34	20.29	20.22	21.0
Channel				500700	518598	536496	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2592.99	2682.48	
15	PI/2 BPSK	1	1	20.34	20.35	20.23	21.0
Channel				500202	518598	537000	Tune-up limit (dBm)
Frequency (MHz)				2501.01	2592.99	2685	
10	PI/2 BPSK	1	1	20.34	20.37	20.29	21.0

<FR1 n41 HPUE MIMO3 Default Power >							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				509202	518598	528000	
Frequency (MHz)				2546.01	2592.99	2640	
100	PI/2 BPSK	1	1	18.67	18.99	18.04	19.5
100	PI/2 BPSK	1	137	18.68	18.74	17.86	
100	PI/2 BPSK	1	271	18.74	18.87	17.85	
100	PI/2 BPSK	135	0	18.76	18.60	18.13	19.5
100	PI/2 BPSK	135	69	18.73	18.85	17.87	19.5
100	PI/2 BPSK	135	138	18.47	18.82	18.11	19.5
100	PI/2 BPSK	270	0	18.66	18.92	18.04	
100	QPSK	1	1	18.46	18.94	18.08	19.5
100	QPSK	1	137	18.68	18.81	17.99	
100	QPSK	1	271	18.61	18.93	17.89	
100	QPSK	135	0	18.61	18.72	17.95	19.5
100	QPSK	135	69	18.62	18.56	17.85	
100	QPSK	135	138	18.60	18.87	18.00	
100	QPSK	270	0	18.75	18.40	17.97	19.5
100	16QAM	1	1	18.50	18.75	17.96	19.5
100	64QAM	1	1	18.65	18.80	17.96	19.5
100	256QAM	1	1	18.62	18.78	18.01	19.5
Channel				507204	518598	529998	Tune-up limit (dBm)
Frequency (MHz)				2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	18.44	18.77	18.70	19.5
Channel				504204	518598	532998	Tune-up limit (dBm)
Frequency (MHz)				2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	18.23	18.55	18.03	19.5
Channel				503202	518598	534000	Tune-up limit (dBm)
Frequency (MHz)				2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	18.48	18.81	18.72	19.5
Channel				500700	518598	536496	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2592.99	2682.48	
15	PI/2 BPSK	1	1	18.43	18.78	18.59	19.5
Channel				500202	518598	537000	Tune-up limit (dBm)
Frequency (MHz)				2501.01	2592.99	2685	
10	PI/2 BPSK	1	1	18.31	18.73	18.12	19.5

<FR1 n77 MIMO2 Default Power > (3700-3980MHz Part 270)							
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	22.70	22.89	22.86	24.0
100	PI/2 BPSK	1	137	22.64	22.88	22.83	
100	PI/2 BPSK	1	271	22.42	22.66	22.61	
100	PI/2 BPSK	135	0	22.32	22.55	22.49	23.5
100	PI/2 BPSK	135	69	22.63	22.79	22.71	24.0
100	PI/2 BPSK	135	138	22.56	22.72	22.63	23.5
100	PI/2 BPSK	270	0	22.52	22.70	22.56	
100	QPSK	1	1	22.64	22.86	22.79	24.0
100	QPSK	1	137	22.52	22.71	22.59	
100	QPSK	1	271	22.35	22.55	22.49	
100	QPSK	135	0	22.58	22.79	22.73	24.0
100	QPSK	135	69	22.52	22.71	22.60	
100	QPSK	135	138	22.48	22.68	22.54	
100	QPSK	270	0	21.49	21.70	21.61	23.0
100	16QAM	1	1	21.06	21.08	21.00	23.0
100	64QAM	1	1	20.30	20.49	20.38	21.5
100	256QAM	1	1	18.74	18.89	18.83	19.5
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	22.67	22.76	22.69	24.0
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	22.61	22.88	22.80	24.0
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	22.64	22.80	22.85	24.0
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	22.64	22.79	22.72	24.0
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	22.60	22.85	22.75	24.0
Channel				647168	656000	664832	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3840	3972.48	
15	PI/2 BPSK	1	1	22.62	22.70	22.71	24.0
Channel				647000	656000	665000	Tune-up limit (dBm)
Frequency (MHz)				3705	3840	3975	
10	PI/2 BPSK	1	1	22.54	22.74	22.68	24.0

<FR1 n77 MIMO2 Default Power > (3450-3550MHz Part 27Q)							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel					633332		
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		22.84		24.0
100	PI/2 BPSK	1	137		22.83		
100	PI/2 BPSK	1	271		22.59		
100	PI/2 BPSK	135	0		22.40		23.5
100	PI/2 BPSK	135	69		22.67		24.0
100	PI/2 BPSK	135	138		22.54		23.5
100	PI/2 BPSK	270	0		22.49		
100	QPSK	1	1		22.71		24.0
100	QPSK	1	137		22.52		
100	QPSK	1	271		22.48		
100	QPSK	135	0		22.63		24.0
100	QPSK	135	69		22.54		
100	QPSK	135	138		22.51		
100	QPSK	270	0		21.52		23.0
100	16QAM	1	1		21.00		23.0
100	64QAM	1	1		20.28		21.5
100	256QAM	1	1		18.74		19.5
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	22.75	22.69	22.64	24.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	22.80	22.68	22.83	24.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	22.83	22.67	22.72	24.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	22.76	22.77	22.64	24.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	22.80	22.76	22.68	24.0
Channel				630500	633332	636166	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3499.98	3542.49	
15	PI/2 BPSK	1	1	22.82	22.82	22.80	24.0
Channel				630334	633332	636332	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3499.98	3544.98	
10	PI/2 BPSK	1	1	22.79	22.73	22.69	24.0

<FR1 n77 MIMO2 Reduced Power > (3700-3980MHz Part 270)							
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	19.85	19.93	19.89	20.5
100	PI/2 BPSK	1	137	19.55	19.69	19.51	
100	PI/2 BPSK	1	271	19.07	19.17	19.01	
100	PI/2 BPSK	135	0	19.56	19.71	19.69	20.5
100	PI/2 BPSK	135	69	19.63	19.81	19.69	20.5
100	PI/2 BPSK	135	138	19.46	19.61	19.41	20.5
100	PI/2 BPSK	270	0	19.06	19.22	19.06	
100	QPSK	1	1	19.62	19.62	19.51	20.5
100	QPSK	1	137	19.71	19.88	19.75	
100	QPSK	1	271	19.79	19.85	19.82	
100	QPSK	135	0	19.23	19.33	19.22	20.5
100	QPSK	135	69	19.43	19.68	19.63	
100	QPSK	135	138	19.42	19.61	19.36	
100	QPSK	270	0	19.06	19.05	18.91	20.5
100	16QAM	1	1	19.46	19.64	19.57	20.5
100	64QAM	1	1	19.43	19.68	19.63	20.5
100	256QAM	1	1	19.42	19.61	19.36	20.5
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	19.67	19.87	19.74	20.5
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	19.81	19.89	19.72	20.5
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	19.76	19.74	19.72	20.5
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	19.85	19.83	19.84	20.5
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	19.72	19.85	19.86	20.5
Channel				647168	656000	664832	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3840	3972.48	
15	PI/2 BPSK	1	1	19.71	19.89	19.70	20.5
Channel				647000	656000	665000	Tune-up limit (dBm)
Frequency (MHz)				3705	3840	3975	
10	PI/2 BPSK	1	1	19.65	19.82	19.80	20.5

<FR1 n77 MIMO2 Reduced Power > (3450-3550MHz Part 27Q)							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel					633332		
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		19.74		20.5
100	PI/2 BPSK	1	137		19.54		
100	PI/2 BPSK	1	271		19.13		
100	PI/2 BPSK	135	0		19.55		20.5
100	PI/2 BPSK	135	69		19.67		20.5
100	PI/2 BPSK	135	138		19.42		20.5
100	PI/2 BPSK	270	0		19.05		
100	QPSK	1	1		19.45		20.5
100	QPSK	1	137		19.58		
100	QPSK	1	271		19.62		
100	QPSK	135	0		19.13		20.5
100	QPSK	135	69		19.51		
100	QPSK	135	138		19.25		
100	QPSK	270	0		18.96		20.5
100	16QAM	1	1		19.54		20.5
100	64QAM	1	1		19.51		20.5
100	256QAM	1	1		19.25		20.5
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	19.67	19.56	19.67	20.5
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	19.55	19.72	19.58	20.5
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	19.73	19.59	19.66	20.5
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	19.63	19.54	19.71	20.5
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	19.56	19.70	19.69	20.5
Channel				630500	633332	636166	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3499.98	3542.49	
15	PI/2 BPSK	1	1	19.58	19.60	19.59	20.5
Channel				630334	633332	636332	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3499.98	3544.98	
10	PI/2 BPSK	1	1	19.73	19.67	19.59	20.5

<FR1 n77 MIMO3 Default Power > (3700-3980MHz Part 270)							
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	16.97	17.27	16.32	17.5
100	PI/2 BPSK	1	137	16.90	16.96	16.22	
100	PI/2 BPSK	1	271	17.01	17.14	16.15	
100	PI/2 BPSK	135	0	17.00	16.92	16.47	17.5
100	PI/2 BPSK	135	69	16.94	17.10	16.18	17.5
100	PI/2 BPSK	135	138	16.77	17.04	16.37	17.5
100	PI/2 BPSK	270	0	16.98	17.17	16.27	
100	QPSK	1	1	16.79	17.16	16.27	17.5
100	QPSK	1	137	16.96	17.02	16.19	
100	QPSK	1	271	16.95	17.19	16.17	
100	QPSK	135	0	16.96	16.99	16.33	17.5
100	QPSK	135	69	16.84	16.86	16.09	
100	QPSK	135	138	16.89	17.11	16.20	
100	QPSK	270	0	16.97	16.77	16.32	17.5
100	16QAM	1	1	16.77	17.01	16.17	17.5
100	64QAM	1	1	17.01	17.12	16.19	17.5
100	256QAM	1	1	16.96	16.97	16.37	17.5
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	16.91	17.20	16.17	17.5
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	16.90	17.18	16.20	17.5
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	16.96	17.21	16.27	17.5
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	16.95	17.22	16.27	17.5
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	16.97	17.26	16.16	17.5
Channel				647168	656000	664832	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3840	3972.48	
15	PI/2 BPSK	1	1	16.84	17.23	16.13	17.5
Channel				647000	656000	665000	Tune-up limit (dBm)
Frequency (MHz)				3705	3840	3975	
10	PI/2 BPSK	1	1	16.95	17.25	16.27	17.5

<FR1 n77 MIMO3 Default Power > (3450-3550MHz Part 27Q)							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel					633332		
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		16.69		17.5
100	PI/2 BPSK	1	137		16.54		
100	PI/2 BPSK	1	271		16.47		
100	PI/2 BPSK	135	0		16.59		17.5
100	PI/2 BPSK	135	69		16.61		17.5
100	PI/2 BPSK	135	138		16.57		17.5
100	PI/2 BPSK	270	0		16.49		
100	QPSK	1	1		16.46		17.5
100	QPSK	1	137		16.50		
100	QPSK	1	271		16.38		
100	QPSK	135	0		16.64		17.5
100	QPSK	135	69		16.30		
100	QPSK	135	138		16.43		
100	QPSK	270	0		16.52		17.5
100	16QAM	1	1		16.49		17.5
100	64QAM	1	1		16.31		17.5
100	256QAM	1	1		16.61		17.5
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	16.57	16.51	16.43	17.5
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	16.44	16.62	16.36	17.5
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	16.49	16.63	16.46	17.5
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	16.48	16.51	16.41	17.5
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	16.56	16.58	16.35	17.5
Channel				630500	633332	636166	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3499.98	3542.49	
15	PI/2 BPSK	1	1	16.53	16.60	16.46	17.5
Channel				630334	633332	636332	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3499.98	3544.98	
10	PI/2 BPSK	1	1	16.60	16.68	16.42	17.5

<FR1 n77 HPUE MIMO2 Default Power > (Part 270)							
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	25.79	25.96	25.92	
100	PI/2 BPSK	1	137	25.71	25.94	25.86	27.0
100	PI/2 BPSK	1	271	25.48	25.68	25.66	
100	PI/2 BPSK	135	0	25.32	25.57	25.48	
100	PI/2 BPSK	135	69	25.69	25.78	25.75	26.5
100	PI/2 BPSK	135	138	25.62	25.77	25.64	27.0
100	PI/2 BPSK	270	0	25.55	25.69	25.60	
100	QPSK	1	1	25.64	25.90	25.86	
100	QPSK	1	137	25.56	25.79	25.65	27.0
100	QPSK	1	271	25.40	25.55	25.56	
100	QPSK	135	0	25.67	25.83	25.79	
100	QPSK	135	69	25.51	25.75	25.66	27.0
100	QPSK	135	138	25.53	25.68	25.58	
100	QPSK	270	0	24.55	24.69	24.66	
100	16QAM	1	1	24.01	24.07	24.07	26.0
100	64QAM	1	1	23.29	23.51	23.47	24.5
100	256QAM	1	1	21.80	21.89	21.83	22.5
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	25.65	25.86	25.83	
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	25.74	25.91	25.84	
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	25.67	25.92	25.87	
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	25.72	25.81	25.78	
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	25.71	25.93	25.88	
Channel				647168	656000	664832	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3840	3972.48	
15	PI/2 BPSK	1	1	25.66	25.79	25.83	
Channel				647000	656000	665000	Tune-up limit (dBm)
Frequency (MHz)				3705	3840	3975	
10	PI/2 BPSK	1	1	25.79	25.83	25.73	

<FR1 n77 HPUE MIMO2 Default Power > (Part 27Q)							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel					633332		27.0
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		25.85		27.0
100	PI/2 BPSK	1	137		25.83		
100	PI/2 BPSK	1	271		25.58		
100	PI/2 BPSK	135	0		25.44		26.5
100	PI/2 BPSK	135	69		25.73		27.0
100	PI/2 BPSK	135	138		25.63		26.5
100	PI/2 BPSK	270	0		25.58		
100	QPSK	1	1		25.73		27.0
100	QPSK	1	137		25.57		
100	QPSK	1	271		25.51		
100	QPSK	135	0		25.65		27.0
100	QPSK	135	69		25.59		
100	QPSK	135	138		25.58		
100	QPSK	270	0		24.60		26.0
100	16QAM	1	1		24.06		26.0
100	64QAM	1	1		23.31		24.5
100	256QAM	1	1		21.83		22.5
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	25.73	25.70	25.63	27.0
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	25.70	25.66	25.72	27.0
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	25.81	25.66	25.83	27.0
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	25.64	25.82	25.66	27.0
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	25.73	25.65	25.72	27.0
Channel				630500	633332	636166	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3499.98	3542.49	
15	PI/2 BPSK	1	1	25.81	25.80	25.68	27.0
Channel				630334	633332	636332	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3499.98	3544.98	
10	PI/2 BPSK	1	1	25.63	25.82	25.80	27.0



<FR1 n77 HPUE MIMO2 Reduced Power > (Part 270)							
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	22.69	22.76	22.85	
100	PI/2 BPSK	1	137	22.40	22.61	22.49	23.5
100	PI/2 BPSK	1	271	21.88	22.06	21.87	
100	PI/2 BPSK	135	0	22.46	22.71	22.68	
100	PI/2 BPSK	135	69	22.49	22.78	22.52	23.5
100	PI/2 BPSK	135	138	22.44	22.53	22.26	
100	PI/2 BPSK	270	0	21.89	22.18	21.95	
100	QPSK	1	1	22.44	22.52	22.34	23.5
100	QPSK	1	137	22.60	22.46	22.71	
100	QPSK	1	271	22.63	22.80	22.75	
100	QPSK	135	0	22.19	22.18	22.11	23.5
100	QPSK	135	69	22.24	22.52	22.58	
100	QPSK	135	138	22.28	22.45	22.20	
100	QPSK	270	0	21.89	21.86	21.71	23.5
100	16QAM	1	1	22.37	22.44	22.53	23.5
100	64QAM	1	1	22.25	22.54	22.49	23.5
100	256QAM	1	1	22.28	22.61	22.22	23.5
Channel				649334	656000	662666	23.5
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	22.62	22.60	22.70	
Channel				648668	656000	663332	23.5
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	22.63	22.70	22.68	
Channel				648334	656000	663666	23.5
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	22.56	22.58	22.83	
Channel				648000	656000	664000	23.5
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	22.66	22.56	22.67	
Channel				647334	656000	664666	23.5
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	22.66	22.58	22.71	
Channel				647168	656000	664832	23.5
Frequency (MHz)				3707.52	3840	3972.48	
15	PI/2 BPSK	1	1	22.65	22.66	22.79	
Channel				647000	656000	665000	23.5
Frequency (MHz)				3705	3840	3975	
10	PI/2 BPSK	1	1	22.49	22.58	22.71	

<FR1 n77 HPUE MIMO2 Reduced Power > (Part 27Q)							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel					633332		23.5
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		22.70		23.5
100	PI/2 BPSK	1	137		22.52		
100	PI/2 BPSK	1	271		21.96		
100	PI/2 BPSK	135	0		22.47		23.5
100	PI/2 BPSK	135	69		22.65		23.5
100	PI/2 BPSK	135	138		22.41		23.5
100	PI/2 BPSK	270	0		21.86		
100	QPSK	1	1		22.35		23.5
100	QPSK	1	137		22.46		
100	QPSK	1	271		22.57		
100	QPSK	135	0		21.95		23.5
100	QPSK	135	69		22.31		
100	QPSK	135	138		22.12		
100	QPSK	270	0		21.90		23.5
100	16QAM	1	1		22.38		23.5
100	64QAM	1	1		22.35		23.5
100	256QAM	1	1		22.12		23.5
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	22.52	22.56	22.49	23.5
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	22.62	22.67	22.65	23.5
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	22.61	22.67	22.53	23.5
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	22.55	22.58	22.54	23.5
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	22.68	22.68	22.52	23.5
Channel				630500	633332	636166	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3499.98	3542.49	
15	PI/2 BPSK	1	1	22.65	22.50	22.51	23.5
Channel				630334	633332	636332	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3499.98	3544.98	
10	PI/2 BPSK	1	1	22.67	22.66	22.67	23.5

<FR1 n77 HPUE MIMO3 Default Power > (Part 270)							
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	19.89	20.26	19.23	
100	PI/2 BPSK	1	137	19.79	19.95	19.17	20.5
100	PI/2 BPSK	1	271	19.94	20.01	19.04	
100	PI/2 BPSK	135	0	19.85	19.73	19.37	
100	PI/2 BPSK	135	69	19.74	19.98	18.98	20.5
100	PI/2 BPSK	135	138	19.73	19.86	19.36	20.5
100	PI/2 BPSK	270	0	19.90	20.09	19.08	
100	QPSK	1	1	19.72	20.07	19.24	
100	QPSK	1	137	19.94	19.99	19.10	20.5
100	QPSK	1	271	19.79	20.01	19.13	
100	QPSK	135	0	19.92	19.79	19.22	
100	QPSK	135	69	19.78	19.67	19.07	20.5
100	QPSK	135	138	19.81	19.96	19.06	
100	QPSK	270	0	19.89	19.69	19.30	
100	16QAM	1	1	19.68	19.88	19.04	20.5
100	64QAM	1	1	19.84	20.11	19.15	20.5
100	256QAM	1	1	19.84	19.82	19.29	20.5
Channel				649334	656000	662666	20.5
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	19.71	20.21	19.20	
Channel				648668	656000	663332	20.5
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	19.86	20.22	19.04	
Channel				648334	656000	663666	20.5
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	19.75	20.14	19.19	
Channel				648000	656000	664000	20.5
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	19.86	20.07	19.07	
Channel				647334	656000	664666	20.5
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	19.71	20.13	19.11	
Channel				647168	656000	664832	20.5
Frequency (MHz)				3707.52	3840	3972.48	
15	PI/2 BPSK	1	1	19.69	20.19	19.14	
Channel				647000	656000	665000	20.5
Frequency (MHz)				3705	3840	3975	
10	PI/2 BPSK	1	1	19.69	20.23	19.21	



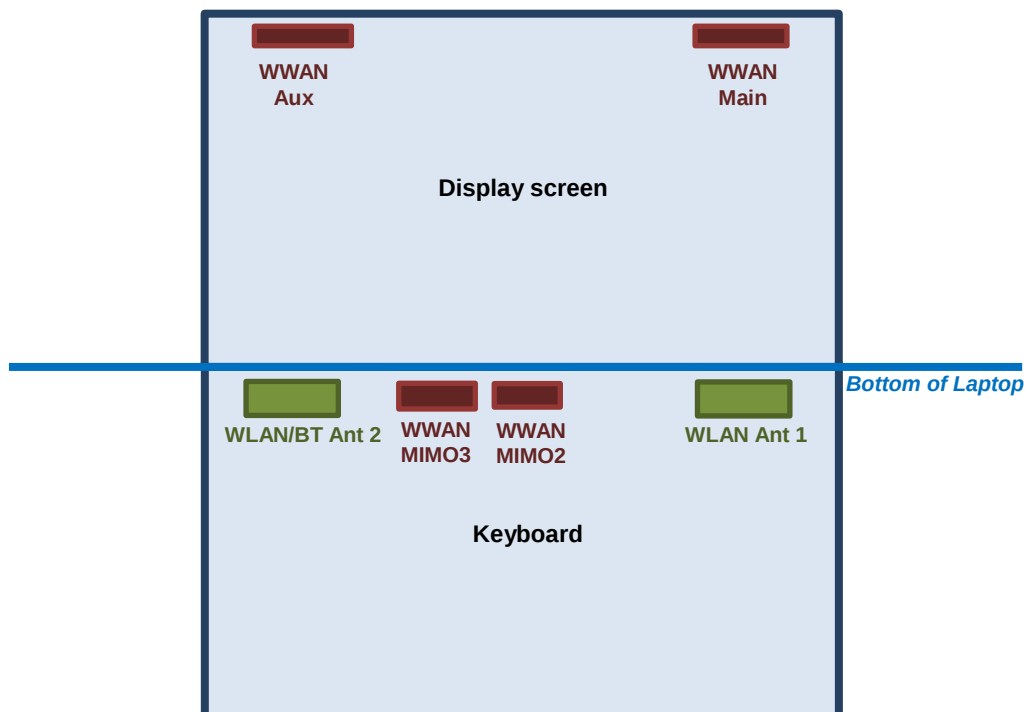
<FR1 n77 HPUE MIMO3 Default Power > (Part 27Q)							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel					633332		
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		19.32		20.5
100	PI/2 BPSK	1	137		19.04		
100	PI/2 BPSK	1	271		19.00		
100	PI/2 BPSK	135	0		19.02		20.5
100	PI/2 BPSK	135	69		19.25		20.5
100	PI/2 BPSK	135	138		19.24		20.5
100	PI/2 BPSK	270	0		19.21		
100	QPSK	1	1		19.12		20.5
100	QPSK	1	137		19.11		
100	QPSK	1	271		19.03		
100	QPSK	135	0		19.31		20.5
100	QPSK	135	69		19.09		
100	QPSK	135	138		19.03		
100	QPSK	270	0		19.14		20.5
100	16QAM	1	1		19.02		20.5
100	64QAM	1	1		19.07		20.5
100	256QAM	1	1		19.30		20.5
Channel				632668	633332	634000	Tune-up limit (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	19.14	19.20	19.11	20.5
Channel				632000	633332	634666	Tune-up limit (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	19.17	19.15	18.97	20.5
Channel				631668	633332	635000	Tune-up limit (dBm)
Frequency (MHz)				3475.02	3499.98	3525	
50	PI/2 BPSK	1	1	19.12	19.28	18.97	20.5
Channel				631334	633332	635332	Tune-up limit (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	19.14	19.21	19.03	20.5
Channel				630668	633332	636000	Tune-up limit (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	19.05	19.20	19.03	20.5
Channel				630500	633332	636166	Tune-up limit (dBm)
Frequency (MHz)				3457.5	3499.98	3542.49	
15	PI/2 BPSK	1	1	19.22	19.19	18.95	20.5
Channel				630334	633332	636332	Tune-up limit (dBm)
Frequency (MHz)				3455.01	3499.98	3544.98	
10	PI/2 BPSK	1	1	19.14	19.24	18.93	20.5

<FR1 n78 MIMO2 Default Power> (Part 270)							
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		
Frequency (MHz)					3750		
100	PI/2 BPSK	1	1		23.17		24.0
100	PI/2 BPSK	1	137		23.02		
100	PI/2 BPSK	1	271		22.45		
100	PI/2 BPSK	135	0		22.28		23.5
100	PI/2 BPSK	135	69		23.05		24.0
100	PI/2 BPSK	135	138		22.37		23.5
100	PI/2 BPSK	270	0		22.27		
100	QPSK	1	1		22.02		24.0
100	QPSK	1	137		22.98		
100	QPSK	1	271		22.40		
100	QPSK	135	0		22.17		24.0
100	QPSK	135	69		22.95		
100	QPSK	135	138		22.00		
100	QPSK	270	0		21.67		23.0
100	16QAM	1	1		21.08		23.0
100	64QAM	1	1		19.52		21.5
100	256QAM	1	1		17.94		19.5
Channel				649334	650000	650666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3759.99	
80	PI/2 BPSK	1	1	23.11	23.13	23.11	24.0
Channel				648668	650000	651332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3769.98	
60	PI/2 BPSK	1	1	23.14	23.09	23.05	24.0
Channel				648334	650000	651666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3774.99	
50	PI/2 BPSK	1	1	23.12	23.14	23.03	24.0
Channel				648000	650000	652000	Tune-up limit (dBm)
Frequency (MHz)				3720	3750	3780	
40	PI/2 BPSK	1	1	23.06	23.15	23.06	24.0
Channel				647334	650000	652666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3789.99	
20	PI/2 BPSK	1	1	23.06	23.09	22.99	24.0
Channel				647168	650000	652832	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3750	3792.48	
15	PI/2 BPSK	1	1	23.02	23.01	23.01	24.0
Channel				647000	650000	653000	Tune-up limit (dBm)
Frequency (MHz)				3705	3750	3795	
10	PI/2 BPSK	1	1	23.00	23.16	23.15	24.0

<FR1 n78 MIMO2 Reduced Power> (Part 270)							
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		
Frequency (MHz)					3750		
100	PI/2 BPSK	1	1		19.69		20.5
100	PI/2 BPSK	1	137		19.37		
100	PI/2 BPSK	1	271		18.86		
100	PI/2 BPSK	135	0		19.37		20.5
100	PI/2 BPSK	135	69		19.48		20.5
100	PI/2 BPSK	135	138		19.37		20.5
100	PI/2 BPSK	270	0		18.77		
100	QPSK	1	1		19.15		20.5
100	QPSK	1	137		19.45		
100	QPSK	1	271		19.38		
100	QPSK	135	0		18.95		20.5
100	QPSK	135	69		19.12		
100	QPSK	135	138		19.10		
100	QPSK	270	0		18.76		20.5
100	16QAM	1	1		19.31		20.5
100	64QAM	1	1		19.24		20.5
100	256QAM	1	1		18.98		20.5
Channel				649334	650000	650666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3759.99	
80	PI/2 BPSK	1	1	19.52	19.66	19.55	20.5
Channel				648668	650000	651332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3769.98	
60	PI/2 BPSK	1	1	19.56	19.61	19.60	20.5
Channel				648334	650000	651666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3774.99	
50	PI/2 BPSK	1	1	19.64	19.62	19.61	20.5
Channel				648000	650000	652000	Tune-up limit (dBm)
Frequency (MHz)				3720	3750	3780	
40	PI/2 BPSK	1	1	19.61	19.55	19.49	20.5
Channel				647334	650000	652666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3789.99	
20	PI/2 BPSK	1	1	19.64	19.57	19.64	20.5
Channel				647168	650000	652832	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3750	3792.48	
15	PI/2 BPSK	1	1	19.62	19.57	19.57	20.5
Channel				647000	650000	653000	Tune-up limit (dBm)
Frequency (MHz)				3705	3750	3795	
10	PI/2 BPSK	1	1	19.66	19.54	19.48	20.5

<FR1 n78 MIMO3 Default Power > (Part 270)							
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		
Frequency (MHz)					3750		
100	PI/2 BPSK	1	1		17.08		17.5
100	PI/2 BPSK	1	137		16.85		
100	PI/2 BPSK	1	271		16.97		
100	PI/2 BPSK	135	0		16.92		17.5
100	PI/2 BPSK	135	69		17.00		17.5
100	PI/2 BPSK	135	138		16.98		17.5
100	PI/2 BPSK	270	0		17.07		
100	QPSK	1	1		16.96		17.5
100	QPSK	1	137		17.02		
100	QPSK	1	271		17.02		
100	QPSK	135	0		16.84		17.5
100	QPSK	135	69		16.84		
100	QPSK	135	138		17.06		
100	QPSK	270	0		16.67		17.5
100	16QAM	1	1		17.01		17.5
100	64QAM	1	1		17.00		17.5
100	256QAM	1	1		16.81		17.5
Channel				649334	650000	650666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3750	3759.99	
80	PI/2 BPSK	1	1	16.83	16.98	16.80	17.5
Channel				648668	650000	651332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3750	3769.98	
60	PI/2 BPSK	1	1	16.95	16.98	16.90	17.5
Channel				648334	650000	651666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3750	3774.99	
50	PI/2 BPSK	1	1	16.88	16.87	16.89	17.5
Channel				648000	650000	652000	Tune-up limit (dBm)
Frequency (MHz)				3720	3750	3780	
40	PI/2 BPSK	1	1	16.94	16.88	16.78	17.5
Channel				647334	650000	652666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3750	3789.99	
20	PI/2 BPSK	1	1	16.82	17.02	16.84	17.5
Channel				647168	650000	652832	Tune-up limit (dBm)
Frequency (MHz)				3707.52	3750	3792.48	
15	PI/2 BPSK	1	1	16.89	16.89	16.76	17.5
Channel				647000	650000	653000	Tune-up limit (dBm)
Frequency (MHz)				3705	3750	3795	
10	PI/2 BPSK	1	1	16.92	16.99	16.75	17.5

13. Antenna Location



The separation distance for antenna to edge :

Antenna	To Bottom of Laptop (mm)
WWAN Main	194.46
WWAN Aux	194.46
WWAN MIMO 2	3
WWAN MIMO 3	3

<SAR test exclusion table>
General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v06, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v06, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. 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:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}$$
 - 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
6. Per KDB 447498 D01v06, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
 - a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm) · (f(MHz)/150)] mW, at 100 MHz to 1500 MHz
 - b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm) · 10] mW at > 1500 MHz and ≤ 6 GHz

<Main Ant>

	Wireless Interface	WCDMA Band V	WCDMA Band IV	WCDMA Band II	LTE Band 71/FRI n71	LTE Band 12	LTE Band 13	LTE Band 14	LTE Band 17	LTE Band 5/FRI n5	LTE Band 26	LTE Band 4	LTE Band 66/FRI n66	LTE Band 2/FRI n2	LTE Band 25/FRI n25	LTE Band 30/FRI n30	LTE Band 7/FRI n7	LTE Band 38/FRI n38	LTE Band 41	FR1 Band n41	FR1 Band n77	FR1 Band n78
Exposure Position	Calculated Frequency (MHz)	846	1750	1907	695	715	784	795	713	848	848	1754	1779	1909	1914	2312	2567	2617	2687	2687	3975	3795
	Maximum power (dBm)	24.5	24.5	24.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	24.0	24.0	24.0	27.0	27.0	24.0
	Maximum rated power(mW)	281.84	281.84	281.84	251.19	251.19	251.19	251.19	251.19	251.19	251.19	251.19	251.19	251.19	251.19	199.53	251.19	251.19	251.19	501.19	501.19	251.19
Bottom of Laptop	Separation distance(mm)	194.46																				
	exclusion threshold	978.0	1558.0	1553.0	849.0	866.0	924.0	934.0	864.0	980.0	980.0	1558.0	1557.0	1553.0	1553.0	1543.0	1538.0	1537.0	1536.0	1536.0	1520.0	1522.0
	Testing required?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

<Aux Ant>

Exposure Position	Wireless Interface	FR1 Band n41	FR1 Band n77	FR1 Band n78
	Calculated Frequency (MHz)	2687	3975	3795
	Maximum power (dBm)	27.0	27.0	24.0
	Maximum rated power(mW)	501.19	501.19	251.19
Bottom of Laptop	Separation distance(mm)	194.46		
	exclusion threshold	1536.0	1520.0	1522.0
	Testing required?	No	No	No

<MIMO 2 Ant>

Exposure Position	Wireless Interface	LTE Band 4	LTE Band 66/FRI n66	LTE Band 2/FRI n2	LTE Band 25	LTE Band 30	LTE Band 7	LTE Band 41	FR1 Band n41	LTE Band 48	FR1 Band n77	FR1 Band n78
	Calculated Frequency (MHz)	1754	1779	1909	1914	2312	2567	2687	2687	3697	3975	3795
	Maximum power (dBm)	24.0	24.0	24.0	24.0	23.0	24.0	24.0	27.0	22.0	27.0	24.0
	Maximum rated power(mW)	251.19	251.19	251.19	251.19	199.53	251.19	251.19	501.19	158.49	501.19	251.19
Bottom of Laptop	Separation distance(mm)	5.00										
	exclusion threshold	66.5	67.0	69.4	69.5	60.7	80.5	82.4	164.3	61.0	199.9	97.9
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

<MIMO 3 Ant>

Exposure Position	Wireless Interface	FR1 Band n41	FR1 Band n77	FR1 Band n78
	Calculated Frequency (MHz)	2687	3975	3795
	Maximum power (dBm)	19.5	20.5	17.5
	Maximum rated power(mW)	89.13	112.20	56.23
Bottom of Laptop	Separation distance(mm)	5.00		
	exclusion threshold	29.2	44.7	21.9
	Testing required?	Yes	Yes	Yes

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of 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 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 with EUT transmitting full power in sensor trigger distance was performed according to section 4. The test results just verification the sensor trigger distance to meet KDB 616217 requirement, when in normal usage will not operate at trigger distance, therefore, these results were not using performed Sim-Tx analysis

UMTS Note:

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

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/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; 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/n41/n66/n71/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. The NR n38/n78 SAR test was covered by NR n41n/77; due to SAR test for overlapping NR bands can be reduced if the maximum power including tolerance, for the smaller band is $\leq$ the larger band to qualify for the SAR test exclusion and the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.
 - g. 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

**14.1 Body SAR****<FDD LTE SAR>**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	21350	2560	WNC	19.45	20.00	1.135	-0.17	0.776	0.881
	LTE Band 7	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	20850	2510	WNC	19.39	20.00	1.151	-0.16	0.707	0.814
	LTE Band 7	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	21100	2535	WNC	19.42	20.00	1.143	-0.02	0.755	0.863
	LTE Band 7	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	21350	2560	WNC	19.45	20.00	1.135	0	0.725	0.823
	LTE Band 7	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	20850	2510	WNC	19.33	20.00	1.167	-0.15	0.710	0.828
	LTE Band 7	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	21100	2535	WNC	19.35	20.00	1.161	-0.04	0.706	0.820
	LTE Band 7	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	21350	2560	WNC	19.20	20.00	1.202	0.01	0.714	0.858
01	LTE Band 7	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	21350	2560	Speed	19.45	20.00	1.135	-0.14	0.919	1.043
	LTE Band 7	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	20850	2510	Speed	19.39	20.00	1.151	-0.14	0.871	1.002
	LTE Band 7	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	21100	2535	Speed	19.42	20.00	1.143	0.02	0.897	1.025
	LTE Band 7	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	21350	2560	Speed	19.45	20.00	1.135	-0.15	0.823	0.934
	LTE Band 7	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	20850	2510	Speed	19.33	20.00	1.167	-0.04	0.807	0.942
	LTE Band 7	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	21100	2535	Speed	19.35	20.00	1.161	0.04	0.769	0.893
	LTE Band 7	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	21350	2560	Speed	19.20	20.00	1.202	0.05	0.783	0.941
	LTE Band 7C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	20850	2510	Speed	19.32	20.00	1.169	0.11	0.785	0.918
	LTE Band 7C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	21100	2535	Speed	19.16	20.00	1.213	0.1	0.746	0.905
	LTE Band 7C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	21350	2560	Speed	19.25	20.00	1.189	-0.02	0.753	0.895
	LTE Band 7	20M	QPSK	1	0	Bottom of Laptop	10mm	MIMO2	OFF	21350	2560	Speed	23.32	24.00	1.169	0.08	0.328	0.384
	LTE Band 7	20M	QPSK	50	0	Bottom of Laptop	10mm	MIMO2	OFF	21350	2560	Speed	22.30	23.00	1.175	0.04	0.265	0.311

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 25	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	26590	1905	WNC	21.09	22.00	1.233	0.02	0.656	0.809
	LTE Band 25	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	26140	1860	WNC	20.72	22.00	1.343	0.18	0.628	0.843
	LTE Band 25	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	26340	1880	WNC	20.98	22.00	1.265	-0.13	0.643	0.813
	LTE Band 25	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	26590	1905	WNC	20.98	22.00	1.265	0.11	0.601	0.760
	LTE Band 25	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	26590	1905	WNC	20.95	22.00	1.274	-0.14	0.591	0.753
	LTE Band 25	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	26590	1905	Speed	21.09	22.00	1.233	0.06	0.913	1.126
	LTE Band 25	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	26140	1860	Speed	20.72	22.00	1.343	-0.18	0.859	1.153
02	LTE Band 25	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	26340	1880	Speed	20.98	22.00	1.265	-0.11	0.921	1.165
	LTE Band 25	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	26590	1905	Speed	20.98	22.00	1.265	0.03	0.867	1.097
	LTE Band 25	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	26140	1860	Speed	20.74	22.00	1.337	-0.1	0.812	1.085
	LTE Band 25	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	26340	1880	Speed	20.81	22.00	1.315	0.18	0.870	1.144
	LTE Band 25	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	26590	1905	Speed	20.95	22.00	1.274	0.04	0.812	1.034
	LTE Band 25	20M	QPSK	1	0	Bottom of Laptop	10mm	MIMO2	OFF	26340	1880	Speed	22.98	24.00	1.265	-0.19	0.179	0.226
	LTE Band 25	20M	QPSK	50	0	Bottom of Laptop	10mm	MIMO2	OFF	26340	1880	Speed	22.00	23.00	1.259	-0.16	0.137	0.172
	LTE Band 30	10M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	27710	2310	WNC	19.54	21.50	1.570	0.09	0.595	0.934
	LTE Band 30	10M	QPSK	25	0	Bottom of Laptop	0mm	MIMO2	ON	27710	2310	WNC	19.09	20.50	1.384	0.15	0.544	0.753
	LTE Band 30	10M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	27710	2310	WNC	19.07	20.50	1.390	0.01	0.520	0.723
03	LTE Band 30	10M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	27710	2310	Speed	19.54	21.50	1.570	-0.02	0.746	1.171
	LTE Band 30	10M	QPSK	25	0	Bottom of Laptop	0mm	MIMO2	ON	27710	2310	Speed	19.09	20.50	1.384	0.14	0.683	0.945
	LTE Band 30	10M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	27710	2310	Speed	19.07	20.50	1.390	0.1	0.652	0.906
	LTE Band 30	10M	QPSK	1	0	Bottom of Laptop	10mm	MIMO2	OFF	27710	2310	Speed	21.87	23.00	1.297	0.08	0.232	0.301
	LTE Band 30	10M	QPSK	25	0	Bottom of Laptop	10mm	MIMO2	OFF	27710	2310	Speed	20.77	22.00	1.327	-0.07	0.186	0.247



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 66	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132322	1745	WNC	20.88	22.00	1.294	-0.13	0.816	1.056
	LTE Band 66	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132072	1720	WNC	20.85	22.00	1.303	0.17	0.746	0.972
	LTE Band 66	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132572	1770	WNC	20.75	22.00	1.334	0.16	0.776	1.035
	LTE Band 66	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	132322	1745	WNC	20.75	22.00	1.334	0.18	0.803	1.071
	LTE Band 66	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	132072	1720	WNC	20.71	22.00	1.346	0.08	0.722	0.972
	LTE Band 66	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	132572	1770	WNC	20.69	22.00	1.352	0.18	0.754	1.019
	LTE Band 66	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	132322	1745	WNC	20.55	22.00	1.396	0.14	0.735	1.026
	LTE Band 66	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132322	1745	Speed	20.88	22.00	1.294	-0.01	0.790	1.022
	LTE Band 66	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132072	1720	Speed	20.85	22.00	1.303	-0.15	0.840	1.095
04	LTE Band 66	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132572	1770	Speed	20.75	22.00	1.334	-0.05	0.880	1.173
	LTE Band 66	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	132322	1745	Speed	20.75	22.00	1.334	-0.13	0.853	1.137
	LTE Band 66	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	132072	1720	Speed	20.71	22.00	1.346	-0.11	0.826	1.112
	LTE Band 66	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	132572	1770	Speed	20.69	22.00	1.352	0.17	0.855	1.156
	LTE Band 66	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	132322	1745	Speed	20.55	22.00	1.396	-0.1	0.839	1.172
	LTE Band 66B	15M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132047	1717.5	Speed	20.73	22.00	1.340	0.03	0.769	1.030
	LTE Band 66B	15M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132322	1745	Speed	20.62	22.00	1.374	0.05	0.744	1.022
	LTE Band 66B	15M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132597	1772.5	Speed	20.52	22.00	1.406	-0.12	0.743	1.045
	LTE Band 66C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132322	1745	Speed	20.76	22.00	1.330	-0.11	0.802	1.067
	LTE Band 66C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132072	1720	Speed	20.70	22.00	1.349	0.03	0.795	1.072
	LTE Band 66C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132572	1770	Speed	20.55	22.00	1.396	0.19	0.788	1.100
	LTE Band 66	20M	QPSK	1	0	Bottom of Laptop	10mm	MIMO2	OFF	132572	1770	Speed	22.77	24.00	1.327	0.12	0.183	0.243
	LTE Band 66	20M	QPSK	50	0	Bottom of Laptop	10mm	MIMO2	OFF	132572	1770	Speed	21.84	23.00	1.306	-0.12	0.144	0.188

**<TDD LTE SAR>**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	41055	2636.5	WNC	21.22	22.00	1.197	62.9	1.006	0	0.787	0.947
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	39750	2506	WNC	21.19	22.00	1.205	62.9	1.006	-0.12	0.629	0.763
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	40185	2549.5	WNC	21.20	22.00	1.202	62.9	1.006	-0.19	0.603	0.729
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	40620	2593	WNC	21.15	22.00	1.216	62.9	1.006	-0.08	0.723	0.885
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	41490	2680	WNC	21.11	22.00	1.227	62.9	1.006	-0.09	0.691	0.853
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	41055	2636.5	WNC	21.02	22.00	1.253	62.9	1.006	-0.17	0.725	0.914
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	39750	2506	WNC	20.87	22.00	1.297	62.9	1.006	-0.02	0.615	0.803
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	40185	2549.5	WNC	20.91	22.00	1.285	62.9	1.006	-0.16	0.675	0.873
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	40620	2593	WNC	20.92	22.00	1.282	62.9	1.006	0.17	0.700	0.903
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	41490	2680	WNC	20.89	22.00	1.291	62.9	1.006	-0.01	0.709	0.921
	LTE Band 41	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	40620	2593	WNC	20.83	22.00	1.309	62.9	1.006	0.08	0.725	0.955
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	41055	2636.5	Speed	21.22	22.00	1.197	62.9	1.006	0.04	0.884	1.064
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	39750	2506	Speed	21.19	22.00	1.205	62.9	1.006	0	0.755	0.915
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	40185	2549.5	Speed	21.20	22.00	1.202	62.9	1.006	0.15	0.645	0.780
05	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	40620	2593	Speed	21.15	22.00	1.216	62.9	1.006	-0.02	0.930	1.138
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	41490	2680	Speed	21.11	22.00	1.227	62.9	1.006	-0.06	0.820	1.013
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	41055	2636.5	Speed	21.02	22.00	1.253	62.9	1.006	0.17	0.862	1.087
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	39750	2506	Speed	20.87	22.00	1.297	62.9	1.006	-0.03	0.733	0.957
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	40185	2549.5	Speed	20.91	22.00	1.285	62.9	1.006	0.08	0.725	0.937
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	40620	2593	Speed	20.92	22.00	1.282	62.9	1.006	-0.01	0.620	0.800
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	41490	2680	Speed	20.89	22.00	1.291	62.9	1.006	-0.18	0.807	1.048
	LTE Band 41	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	40620	2593	Speed	20.83	22.00	1.309	62.9	1.006	-0.02	0.813	1.071
	LTE Band 41C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	39750	2593	Speed	20.75	22.00	1.334	62.9	1.006	-0.02	0.756	1.014
	LTE Band 41C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	40185	2593	Speed	20.66	22.00	1.361	62.9	1.006	0.05	0.744	1.019
	LTE Band 41C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	40620	2593	Speed	20.58	22.00	1.387	62.9	1.006	-0.06	0.723	1.009
	LTE Band 41C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	41055	2593	Speed	20.48	22.00	1.419	62.9	1.006	0.05	0.694	0.991
	LTE Band 41C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	41490	2593	Speed	20.55	22.00	1.396	62.9	1.006	0.11	0.689	0.968
	LTE Band 41	20M	QPSK	1	0	Bottom of Laptop	10mm	MIMO2	OFF	40620	2593	Speed	23.79	24.00	1.050	62.9	1.006	-0.07	0.256	0.270
	LTE Band 41	20M	QPSK	50	0	Bottom of Laptop	10mm	MIMO2	OFF	40620	2593	Speed	22.82	23.00	1.042	62.9	1.006	-0.03	0.211	0.221



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	55830	3609	WNC	21.31	21.50	1.045	62.9	1.006	0.15	0.662	0.696
	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	55340	3560	WNC	21.25	21.50	1.059	62.9	1.006	-0.08	0.667	0.711
	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	56150	3641	WNC	21.13	21.50	1.089	62.9	1.006	0.11	0.688	0.754
	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	56640	3690	WNC	20.84	21.50	1.164	62.9	1.006	0.19	0.811	0.950
	LTE Band 48	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	55830	3609	WNC	20.33	20.50	1.040	62.9	1.006	0.16	0.596	0.624
	LTE Band 48	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	55830	3609	WNC	20.20	20.50	1.072	62.9	1.006	0.12	0.542	0.584
	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	55830	3609	Speed	21.31	21.50	1.045	62.9	1.006	-0.15	0.710	0.746
	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	55340	3560	Speed	21.25	21.50	1.059	62.9	1.006	-0.16	0.729	0.777
	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	56150	3641	Speed	21.13	21.50	1.089	62.9	1.006	-0.06	0.778	0.852
06	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	56640	3690	Speed	20.84	21.50	1.164	62.9	1.006	0.01	0.873	1.022
	LTE Band 48	20M	QPSK	50	0	Bottom of Laptop	0mm	MIMO2	ON	55830	3609	Speed	20.33	20.50	1.040	62.9	1.006	-0.14	0.638	0.667
	LTE Band 48	20M	QPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	55830	3609	Speed	20.20	20.50	1.072	62.9	1.006	-0.03	0.603	0.650
	LTE Band 48C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	55340	3560	Speed	20.70	21.50	1.202	62.9	1.006	0.02	0.718	0.868
	LTE Band 48C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	55830	3609	Speed	20.69	21.50	1.205	62.9	1.006	-0.11	0.755	0.915
	LTE Band 48C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	56150	3641	Speed	20.66	21.50	1.213	62.9	1.006	0.05	0.749	0.914
	LTE Band 48C	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	56640	3690	Speed	20.59	21.50	1.233	62.9	1.006	-0.08	0.769	0.954
	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	10mm	MIMO2	OFF	56640	3690	Speed	20.88	22.00	1.294	62.9	1.006	-0.09	0.131	0.171
	LTE Band 48	20M	QPSK	50	0	Bottom of Laptop	10mm	MIMO2	OFF	56640	3690	Speed	19.83	21.00	1.309	62.9	1.006	-0.1	0.109	0.144

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n2	20M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	380000	1900	WNC	20.15	21.00	1.216	0.16	0.654	0.795
	FR1 n2	20M	BPSK	50	28	Bottom of Laptop	0mm	MIMO2	ON	372000	1860	WNC	19.96	21.00	1.271	-0.08	0.621	0.789
07	FR1 n2	20M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	380000	1900	Speed	20.15	21.00	1.216	-0.01	0.946	1.151
	FR1 n2	20M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	372000	1860	Speed	20.06	21.00	1.242	-0.15	0.842	1.045
	FR1 n2	20M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	376000	1880	Speed	19.96	21.00	1.271	0.06	0.848	1.077
	FR1 n2	20M	BPSK	50	28	Bottom of Laptop	0mm	MIMO2	ON	380000	1900	Speed	19.86	21.00	1.300	0.19	0.827	1.075
	FR1 n2	20M	BPSK	50	28	Bottom of Laptop	0mm	MIMO2	ON	372000	1860	Speed	19.96	21.00	1.271	0.06	0.863	1.097
	FR1 n2	20M	BPSK	50	28	Bottom of Laptop	0mm	MIMO2	ON	376000	1880	Speed	19.90	21.00	1.288	0	0.835	1.076
	FR1 n2	20M	BPSK	100	0	Bottom of Laptop	0mm	MIMO2	ON	380000	1900	Speed	20.03	21.00	1.250	0.19	0.847	1.059
	FR1 n2	20M	BPSK	1	1	Bottom of Laptop	10mm	MIMO2	OFF	380000	1900	Speed	23.07	24.00	1.239	-0.09	0.186	0.230
	FR1 n2	20M	BPSK	50	28	Bottom of Laptop	10mm	MIMO2	OFF	380000	1900	Speed	23.06	24.00	1.242	-0.03	0.151	0.187

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n66	40M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	349000	1745	WNC	20.98	22.00	1.265	0	0.837	1.059
	FR1 n66	40M	BPSK	108	54	Bottom of Laptop	0mm	MIMO2	ON	349000	1745	WNC	20.94	22.00	1.276	-0.12	0.820	1.047
	FR1 n66	40M	BPSK	216	0	Bottom of Laptop	0mm	MIMO2	ON	349000	1745	WNC	20.80	22.00	1.318	0.14	0.793	1.045
08	FR1 n66	40M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	349000	1745	Speed	20.98	22.00	1.265	-0.07	0.870	1.100
	FR1 n66	40M	BPSK	108	54	Bottom of Laptop	0mm	MIMO2	ON	349000	1745	Speed	20.94	22.00	1.276	-0.06	0.856	1.093
	FR1 n66	40M	BPSK	216	0	Bottom of Laptop	0mm	MIMO2	ON	349000	1745	Speed	20.80	22.00	1.318	-0.18	0.817	1.077
	FR1 n66	40M	BPSK	1	1	Bottom of Laptop	10mm	MIMO2	OFF	349000	1745	Speed	23.02	24.00	1.253	0.09	0.175	0.219
	FR1 n66	40M	BPSK	108	54	Bottom of Laptop	10mm	MIMO2	OFF	349000	1745	Speed	22.78	24.00	1.324	0.09	0.138	0.183



FCC SAR TEST REPORT

Report No. : FA2O2005

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
09	FR1 n41	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	518598	2592.99	WNC	17.48	18.00	1.127	0.12	0.796	0.897
	FR1 n41	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO2	ON	518598	2592.99	WNC	17.44	18.00	1.138	0.12	0.721	0.820
	FR1 n41	100M	BPSK	270	0	Bottom of Laptop	0mm	MIMO2	ON	518598	2592.99	WNC	16.92	18.00	1.282	0.12	0.711	0.912
	FR1 n41	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	518598	2592.99	Speed	17.48	18.00	1.127	-0.1	1.000	1.127
	FR1 n41	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO2	ON	518598	2592.99	Speed	17.44	18.00	1.138	-0.07	0.915	1.041
	FR1 n41	100M	BPSK	270	0	Bottom of Laptop	0mm	MIMO2	ON	518598	2592.99	Speed	16.92	18.00	1.282	-0.07	0.826	1.059
	FR1 n41	100M	BPSK	1	1	Bottom of Laptop	10mm	MIMO2	OFF	518598	2592.99	Speed	22.60	24.00	1.380	0.13	0.273	0.377
	FR1 n41	100M	BPSK	135	69	Bottom of Laptop	10mm	MIMO2	OFF	518598	2592.99	Speed	22.57	24.00	1.390	0.16	0.235	0.327
	FR1 n41_HPUE	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	518598	2592.99	Speed	20.46	21.00	1.132	-0.03	0.897	1.016
	FR1 n41	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO3	OFF	518598	2592.99	WNC	16.09	16.50	1.099	0.14	0.284	0.312
	FR1 n41	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO3	OFF	518598	2592.99	WNC	15.92	16.50	1.143	0.04	0.271	0.310
	FR1 n41	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO3	OFF	518598	2592.99	Speed	16.09	16.50	1.099	-0.01	0.300	0.330
	FR1 n41	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO3	OFF	518598	2592.99	Speed	15.92	16.50	1.143	-0.07	0.275	0.314
	FR1 n41_HPUE	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO3	OFF	518598	2592.99	Speed	18.99	19.50	1.125	-0.13	0.273	0.307

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
10	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	656000	3840	WNC	19.93	20.50	1.140	0.17	0.594	0.677
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO2	ON	656000	3840	WNC	19.81	20.50	1.172	0.1	0.581	0.681
	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	656000	3840	Speed	19.93	20.50	1.140	-0.08	1.020	1.163
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO2	ON	656000	3840	Speed	19.81	20.50	1.172	-0.07	0.987	1.157
	FR1 n77	100M	BPSK	270	0	Bottom of Laptop	0mm	MIMO2	ON	656000	3840	Speed	19.22	20.50	1.343	-0.07	0.854	1.147
	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	10mm	MIMO2	OFF	656000	3840	Speed	22.89	24.00	1.291	-0.19	0.222	0.287
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	10mm	MIMO2	OFF	656000	3840	Speed	22.79	24.00	1.321	0.15	0.203	0.268
	FR1 n77_HPUE	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	656000	3840	Speed	22.76	23.50	1.186	-0.06	0.897	1.064
	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	633332	3499.98	WNC	19.74	20.50	1.191	0.02	0.518	0.617
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO2	ON	633332	3499.98	WNC	19.67	20.50	1.211	-0.03	0.499	0.604
	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	633332	3499.98	Speed	19.74	20.50	1.191	-0.05	0.524	0.624
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO2	ON	633332	3499.98	Speed	19.67	20.50	1.211	0.03	0.507	0.614
	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	10mm	MIMO2	OFF	633332	3499.98	Speed	22.84	24.00	1.306	-0.15	0.126	0.165
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	10mm	MIMO2	OFF	633332	3499.98	Speed	22.67	24.00	1.358	0.17	0.117	0.159
	FR1 n77_HPUE	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	633332	3499.98	Speed	22.70	23.50	1.202	-0.1	0.483	0.581
	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO3	OFF	656000	3840	WNC	17.27	17.50	1.054	0.04	0.192	0.202
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO3	OFF	656000	3840	WNC	17.10	17.50	1.096	0.01	0.174	0.191
	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO3	OFF	656000	3840	Speed	17.27	17.50	1.054	0.13	0.221	0.233
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO3	OFF	656000	3840	Speed	17.10	17.50	1.096	-0.03	0.195	0.214
	FR1 n77_HPUE	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO3	OFF	656000	3840	Speed	20.26	20.50	1.057	0.15	0.207	0.219
	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO3	OFF	633332	3499.98	WNC	16.69	17.50	1.205	-0.12	0.248	0.299
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO3	OFF	633332	3499.98	WNC	16.61	17.50	1.227	-0.06	0.215	0.264
	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO3	OFF	633332	3499.98	Speed	16.69	17.50	1.205	0.12	0.288	0.347
	FR1 n77	100M	BPSK	135	69	Bottom of Laptop	0mm	MIMO3	OFF	633332	3499.98	Speed	16.61	17.50	1.227	-0.16	0.251	0.308
	FR1 n77_HPUE	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO3	OFF	633332	3499.98	Speed	19.32	20.50	1.312	0.15	0.241	0.316

14.2 Repeated SAR Measurement

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Antenna Vendor	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 66	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132572	1770	Speed	20.75	22.00	1.334			-0.05	0.880	-	1.173
2nd	LTE Band 66	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	132572	1770	Speed	20.75	22.00	1.334			-0.04	0.837	1.051	1.116
1st	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	56640	3690	Speed	20.84	21.50	1.164	62.9	1.006	0.01	0.873	-	1.022
2nd	LTE Band 48	20M	QPSK	1	0	Bottom of Laptop	0mm	MIMO2	ON	56640	3690	Speed	20.84	21.50	1.164	62.9	1.006	0.09	0.858	1.017	1.005
1st	FR1 n2	20M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	380000	1900	Speed	20.15	21.00	1.216			-0.01	0.946	-	1.151
2nd	FR1 n2	20M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	380000	1900	Speed	20.15	21.00	1.216			-0.15	0.922	1.027	1.121
1st	FR1 n41	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	518598	2592.99	Speed	17.48	18.00	1.127			-0.1	1.000	-	1.127
2nd	FR1 n41	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	518598	2592.99	Speed	17.48	18.00	1.127			-0.03	0.976	1.025	1.100
1st	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	656000	3840	Speed	19.93	20.50	1.140			-0.08	1.020	-	1.163
2nd	FR1 n77	100M	BPSK	1	1	Bottom of Laptop	0mm	MIMO2	ON	656000	3840	Speed	19.93	20.50	1.140			0.01	0.992	1.028	1.131

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR < 1.45 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.

14.3 FR1 n41/n77 Power Class 2 and Power Class 3 Linearity

This device support Power Class 2 and Power Class 3 operations for FR1 n41/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 FR1 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 n41_Ant MIMO2	FR1 n41_Ant MIMO2
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	18	21
Reported 1g SAR (W/kg)	1.127	1.016
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	63.10	62.95
Linearity SAR(W/kg)	1.12	
% deviation from expected linearity		-9.64%

	FR1 n41_Ant MIMO3	FR1 n41_Ant MIMO3
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	16.5	19.5
Reported 1g SAR (W/kg)	0.33	0.307
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	44.67	44.56
Linearity SAR(W/kg)	0.33	
% deviation from expected linearity		-6.75%

	FR1 n77_Ant MIMO2	FR1 n77_Ant MIMO2
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	20.5	23.5
Reported 1g SAR (W/kg)	1.163	1.064
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	112.20	111.94
Linearity SAR(W/kg)	1.16	
% deviation from expected linearity		-8.30%

	FR1 n77_Ant MIMO3	FR1 n77_Ant MIMO3
	(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	17.5	20.5
Reported 1g SAR (W/kg)	0.347	0.316
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	56.23	56.10
Linearity SAR(W/kg)	0.35	
% deviation from expected linearity		-8.72%

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Body
1.	WWAN Main + WWAN MIMO 2 + 2.4GHz WLAN Main + 2.4GHz WLAN Aux	Yes
2.	WWAN Main + WWAN MIMO 2 + 2.4GHz WLAN Main + Bluetooth Aux	Yes
3.	WWAN Main + WWAN MIMO 2 + 5/6GHz WLAN Main + 5/6GHz WLAN Aux + Bluetooth Aux	Yes
4.	WWAN MIMO 3 + 2.4GHz WLAN Main + 2.4GHz WLAN Aux	Yes
5.	WWAN MIMO 3 + 2.4GHz WLAN Main + Bluetooth Aux	Yes
6.	WWAN MIMO 3 + 5/6GHz WLAN Main + 5/6GHz WLAN Aux + Bluetooth Aux	Yes
7.	WWAN Aux+ 2.4GHz WLAN Main + 2.4GHz WLAN Aux	Yes
8.	WWAN Aux + 2.4GHz WLAN Main + Bluetooth Aux	Yes
9.	WWAN Aux + 5/6GHz WLAN Main + 5/6GHz WLAN Aux + Bluetooth Aux	Yes

General Note:

- The Intel AX211D2W WLAN/BT module is also integrated into this host. The WLAN 2.4GHz/5GHz and Bluetooth SAR results are referenced from Intel SAR report, report number: 221017-02.TR01 (FCC ID: PD9AX211D2), WLAN 6GHz SAR refers new report No.: 221017-02.TR02 (FCC ID: PD9AX211D2)
- The worst case SAR from each WWAN transmit antenna is used for Sim-Tx analysis. Therefore, the following summations represent the absolute worst cases for simultaneous transmission for this device and it is conservative.
- The Sim-Tx analysis for EN-DC active is choose the worst case standalone SAR from the WWAN Main and MIMO2 antenna within the exposure positions, regardless of whether the EN-DC combinations. Therefore, the following summations represent the absolute worst cases for simultaneous transmission for this device and it is conservative.
- The Scaled SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - Scalar SAR summation $< 1.6\text{W/kg}$.
 - $\text{SPLSR} = (\text{SAR1} + \text{SAR2})^{1.5} / (\text{min. separation distance, mm})$, 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 $\text{SPLSR} \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band SAR $< 1.6\text{W/kg}$.
 - The SPLSR calculated results please refer to section 15.2.
- For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
 - $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$ for test separation distances $\leq 50 \text{ mm}$; where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.
 - When the minimum separation distance is $< 5\text{mm}$, 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 $> 50 \text{ mm}$.

15.1 Body Exposure Conditions

<WWAN Main + WWAN MIMO 2 + WLAN + Bluetooth>

Exposure Position	1	2	3	4	5	6	7	1+2+3+7 Summed 1g SAR (W/kg)	1+2+3+4 Summed 1g SAR (W/kg)	1+2+5+6+7 Summed 1g SAR (W/kg)	SPLSR	Case No
	WWAN Main Ant Max 1g SAR (W/kg)	WWAN Mimo2 Ant Max 1g SAR (W/kg)	WLAN 2.4GHz Main 1g SAR (W/kg)	WLAN 2.4GHz Aux 1g SAR (W/kg)	WLAN 5/6GHz Main 1g SAR (W/kg)	WLAN 5/6GHz Aux 1g SAR (W/kg)	Bluetooth Aux 1g SAR (W/kg)					
Bottom of Laptop at 0mm	0.400	1.173	0.370	0.130	0.740	0.980	0.170	2.113	2.073	3.463	0.03	1

<WWAN MIMO 3 + WLAN + Bluetooth>

Exposure Position	1	2	3	4	5	6	1+2+6 Summed 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+4+5+6 Summed 1g SAR (W/kg)	SPLSR	Case No
	WWAN MIMO3 Ant Max 1g SAR (W/kg)	WLAN 2.4GHz Main 1g SAR (W/kg)	WLAN 2.4GHz Aux 1g SAR (W/kg)	WLAN 5/6GHz Main 1g SAR (W/kg)	WLAN 5/6GHz Aux 1g SAR (W/kg)	Bluetooth Aux 1g SAR (W/kg)					
Bottom of Laptop at 0mm	0.347	0.370	0.130	0.740	0.980	0.170	0.887	0.847	2.237	0.03	2

<WWAN Aux + WLAN + Bluetooth>

Exposure Position	1	2	3	4	5	6	1+2+6 Summed 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+4+5+6 Summed 1g SAR (W/kg)	SPLSR	Case No
	WWAN Aux Ant Max 1g SAR (W/kg)	WLAN2.4GHz Main 1g SAR (W/kg)	WLAN2.4GHz Aux 1g SAR (W/kg)	WLAN5/6GHz Main 1g SAR (W/kg)	WLAN5/6GHz Aux 1g SAR (W/kg)	Bluetooth Aux 1g SAR (W/kg)					
Bottom of Laptop at 0mm	0.400	0.370	0.130	0.740	0.980	0.170	0.940	0.900	2.290	0.02	3

15.2 SPLSR Evaluation and Analysis

General Note:

- Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration. Therefore, the adjacent transmit antennas will be summed first, and then the SPLSR calculation will be evaluated with the farther transmitted antennas.
- $SPLSR = (SAR_1 + SAR_2)^{1.5} / (\text{min. separation distance, mm})$. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary
- The detail hotspot point for each transmitter in each exposure condition are showing as below figure and the minimum 3D distance for each sum combination is used for SPLSR analysis.

Bottom of laptop hotspot point



	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 1	WWAN MIMO2 Max	Bottom of Laptop	1.173	0mm	96.03	-7.82	2.71	109.7	1.94	0.02	Not required
	WWAN Main+WLAN2.4GHz Main		0.77	0mm	95.6	101.8	-1.7				
	WWAN MIMO2 Max	Bottom of Laptop	1.173	0mm	96.03	-7.82	2.71	105.3	1.30	0.01	Not required
	WLAN2.4GHz Aux		0.13	0mm	93.4	-113	-1.63				
	WWAN MIMO2 Max	Bottom of Laptop	1.173	0mm	96.03	-7.82	2.71	109.7	2.31	0.03	Not required
	WWAN Main+WLAN5/6GHz Main		1.14	0mm	95.6	101.8	-1.7				
	WWAN MIMO2 Max	Bottom of Laptop	1.173	0mm	96.03	-7.82	2.71	105.3	2.15	0.03	Not required
	WLAN5/6GHz Aux		0.98	0mm	93.4	-113	-1.63				
	WWAN MIMO2 Max	Bottom of Laptop	1.173	0mm	96.03	-7.82	2.71	105.3	1.34	0.01	Not required
	Bluetooth Aux		0.17	0mm	93.4	-113	-1.63				
	WWAN Main+WLAN2.4GHz Main	Bottom of Laptop	0.77	0mm	95.6	101.8	-1.7	214.8	0.90	0.00	Not required
	WLAN2.4GHz Aux		0.13	0mm	93.4	-113	-1.63				
Case 2	WWAN MIMO3 Max	Bottom of Laptop	0.347	0mm	103.05	-65.41	2.91	167.4	1.09	0.01	Not required
	WLAN5/6GHz Main		0.74	0mm	95.6	101.8	-1.7				
	WWAN MIMO3 Max	Bottom of Laptop	0.347	0mm	103.05	-65.41	2.91	48.8	1.33	0.03	Not required
	WLAN5/6GHz Aux		0.98	0mm	93.4	-113	-1.63				
	WWAN MIMO3 Max	Bottom of Laptop	0.347	0mm	103.05	-65.41	2.91	48.8	0.52	0.01	Not required
	Bluetooth Aux		0.17	0mm	93.4	-113	-1.63				
	WLAN5/6GHz Main	Bottom of Laptop	0.74	0mm	95.6	101.8	-1.7	214.8	1.89	0.01	Not required
	WLAN5/6GHz Aux+BT		1.15	0mm	93.4	-113	-1.63				
Case 3	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WLAN5/6GHz Main	Bottom of Laptop	0.74	0mm	95.6	101.8	-1.7	214.8	2.29	0.02	Not required
	WWAN Aux+WLAN5/6GHz Aux+BT		1.55	0mm	93.4	-113	-1.63				

Test Engineer : Jay Jian

16. 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.

17. 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 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [6] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", 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 616217 D04 v01r02, "SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers", Oct 2015
- [10] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [11] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.