FCC Test Report

(Part 27 – WCDMA B4, LTE B4/B7/B12/B13/B17/B38/B41)

Report No.: RFBEAD-WTW-P21060534-8

FCC ID: M82-AIM78S6

Test Model: AIM-78S-6

Series Model: AIM-78H-6, AIM-78H-6XXXXXXXXXXXXXXXX, AIM-78S-6XXXXXXXXXXXXXXXX (X: maybe 1-9, A-Z, or blank) (refer to item 3.1 for more details)

Received Date: Jun. 16, 2021

Test Date: Aug. 12 ~ Sep. 16, 2021

Issued Date: Dec. 27, 2021

Applicant: ADVANTECH CO., LTD

Address: No. 1, Alley 20, Lane 26, Rueiguang Rd, Neihu District, Taipei, Taiwan 114

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location(1): No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan

FCC Registration / Designation Number(1): 788550 / TW0003

Test Location(2): B2F., No. 215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan

FCC Registration / Designation Number(2): 427177 / TW0011

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Release Control Record

Issue No.	Description	Date Issued
RFBEAD-WTW-P21060534-8	Original release.	Dec. 27, 2021

1 Certificate of Conformity

Product: 10.1" Tablet PC

Brand: ADVANTECH

Test Model: AIM-78S-6

Series Model: AIM-78H-6, AIM-78H-6XXXXXXXXXXXXXXXX, AIM-78S-6XXXXXXXXXXXXXXXX
(X: maybe 1-9, A-Z, or blank) (refer to item 3.1 for more details)

Sample Status: Engineering sample

Applicant: ADVANTECH CO., LTD

Test Date: Aug. 12 ~ Sep. 16, 2021

Standards: FCC Part 27, Subpart C, F, H, L, M, N

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** Dec. 27, 2021

Celine Chou / Senior Specialist

Approved by : Jeremy Lin , **Date:** Dec. 27, 2021

Jeremy Lin / Project Engineer

2 Summary of Test Results

For WCDMA B4, LTE Band 4

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50 (d)	Equivalent Isotropically radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	Pass	Meet the requirement
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Emission Bandwidth	Pass	Meet the requirement of limit.
2.1051 27.53 (h)	Out of Band Emission Measurements	Pass	Meet the requirement of limit.
27.50 (d)(5)	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1051 27.53 (h)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53 (h)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -37.29dB at 2465.20MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

For LTE Band 7, LTE Band 38, LTE Band 41

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50 (h)(2)	Equivalent Isotropically radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	Pass	Meet the requirement
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Emission Bandwidth	Pass	Meet the requirement of limit.
2.1051 27.53 (m)(4)(6)	Channel Edge / Out of Band Emission Measurements	Pass	Meet the requirement of limit.
--	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1051 27.53 (m)(4)(6)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53 (m)(4)(6)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -11.14dB at 10040.00MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

For LTE Band 12, LTE Band 17

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50 (c)	Equivalent radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	Pass	Meet the requirement
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Emission Bandwidth	Pass	Meet the requirement of limit.
2.1051 27.53 (g)	Out of Band Emission Measurements	Pass	Meet the requirement of limit.
--	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1051 27.53 (g)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53 (g)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -27.86dB at 196.32MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

For LTE Band 13

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50 (b)	Equivalent radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	Pass	Meet the requirement
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Emission Bandwidth	Pass	Meet the requirement of limit.
2.1051 27.53 (c)	Out of Band Emission Measurements	Pass	Meet the requirement of limit.
--	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1051 27.53 (c)(f)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53 (c)(f))	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -13.20dB at 1564.00MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	2.0153 dB
	200MHz ~1000MHz	2.0224 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.0121 dB
	18GHz ~ 40GHz	1.1508 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Agilent Technologies	N9038A	MY52260177	Aug. 24, 2020	Aug. 23, 2021
			Sep. 01, 2021	Aug. 31, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSW43	101582	Apr. 01, 2021	Mar. 31, 2022
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 09, 2020	Nov. 08, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 22, 2020	Nov. 21, 2021
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 13, 2021	Apr. 12, 2022
Loop Antenna	EM-6879	269	Sep. 17, 2020	Sep. 16, 2021
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2020	Nov. 24, 2021
Preamplifier Agilent	310N	187226	Jun. 17, 2021	Jun. 16, 2022
Preamplifier Agilent	83017A	MY39501357	Jun. 17, 2021	Jun. 16, 2022
Preamplifier EMCI	EMC 184045	980116	Oct. 07, 2020	Oct. 06, 2021
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 17, 2021	Jun. 16, 2022
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 17, 2021	Jun. 16, 2022
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	Dec. 24, 2020	Dec. 23, 2021
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	Jun. 02, 2021	Jun. 01, 2022
DC power supply Keysight	U8002A	MY56330015	NA	NA
Radio Communication Analyzer Anritsu	MT8820C	6201010284	Dec. 28, 2020	Dec. 27, 2021
Universal Radio Communication Tester R&S	CMU200	101095	Nov. 18, 2020	Nov. 17, 2021

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Xindian Chamber 6.

3 General Information

3.1 General Description of EUT

Product	10.1” Tablet PC	
Brand	ADVANTECH	
Test Model	AIM-78S-6	
Series Model	AIM-78H-6, AIM-78H-6XXXXXXXXXXXXXXXX, AIM-78S-6XXXXXXXXXXXXXXXX (X: maybe 1-9, A-Z, or blank)	
Model Difference	Refer to note	
Sample Status	Engineering sample	
Power Supply Rating	10.8Vdc (Battery) 19Vdc (Adapter)	
Modulation Type	WCDMA: BPSK, QPSK HSDPA: BPSK HSUPA: QPSK LTE: QPSK, 16QAM, 64QAM	
Operating Frequency	WCDMA Band 4	1712.4MHz ~ 1752.6MHz
	LTE Band 4 (Channel Bandwidth 1.4MHz)	1710.7MHz ~ 1754.3MHz
	LTE Band 4 (Channel Bandwidth 3MHz)	1711.5MHz ~ 1753.5MHz
	LTE Band 4 (Channel Bandwidth 5MHz)	1712.5MHz ~ 1752.5MHz
	LTE Band 4 (Channel Bandwidth 10MHz)	1715.0MHz ~ 1750.0MHz
	LTE Band 4 (Channel Bandwidth 15MHz)	1717.5MHz ~ 1747.5MHz
	LTE Band 4 (Channel Bandwidth 20MHz)	1720.0MHz ~ 1745.0MHz
	LTE Band 7 (Channel Bandwidth 5MHz)	2502.5MHz ~ 2567.5MHz
	LTE Band 7 (Channel Bandwidth 10MHz)	2505.0MHz ~ 2565.0MHz
	LTE Band 7 (Channel Bandwidth 15MHz)	2507.5MHz ~ 2562.5MHz
	LTE Band 7 (Channel Bandwidth 20MHz)	2510.0MHz ~ 2560.0MHz
	LTE Band 12 (Channel Bandwidth 1.4MHz)	699.7MHz ~ 715.3MHz
	LTE Band 12 (Channel Bandwidth 3MHz)	700.5MHz ~ 714.5MHz
	LTE Band 12 (Channel Bandwidth 5MHz)	701.5MHz ~ 713.5MHz
	LTE Band 12 (Channel Bandwidth 10MHz)	704.0MHz ~ 711.0MHz
	LTE Band 13 (Channel Bandwidth 5MHz)	779.5MHz ~ 784.5MHz
	LTE Band 13 (Channel Bandwidth 10MHz)	782.0MHz
	LTE Band 17 (Channel Bandwidth 5MHz)	706.5MHz ~ 713.5MHz
	LTE Band 17 (Channel Bandwidth 10MHz)	709.0MHz ~ 711.0MHz
	LTE Band 38 (Channel Bandwidth 5MHz)	2572.5MHz ~ 2617.5MHz
	LTE Band 38 (Channel Bandwidth 10MHz)	2575.0MHz ~ 2615.0MHz
	LTE Band 38 (Channel Bandwidth 15MHz)	2577.5MHz ~ 2612.5MHz
	LTE Band 38 (Channel Bandwidth 20MHz)	2580.0MHz ~ 2610.0MHz
	LTE Band 41 (Channel Bandwidth 5MHz)	2498.5MHz ~ 2687.5MHz
	LTE Band 41 (Channel Bandwidth 10MHz)	2501.0MHz ~ 2685.0 MHz
	LTE Band 41 (Channel Bandwidth 15MHz)	2503.5MHz ~ 2682.5MHz
	LTE Band 41 (Channel Bandwidth 20MHz)	2506.0MHz ~ 2680.0 MHz

Max. EIRP Power	WCDMA Band 4	454.988mW (26.58dBm)		
		QPSK	16QAM	64QAM
	LTE Band 4 (Channel Bandwidth 1.4MHz)	399.945mW (26.02dBm)	321.366mW (25.07dBm)	254.097mW (24.05dBm)
	LTE Band 4 (Channel Bandwidth 3MHz)	400.867mW (26.03dBm)	319.154mW (25.04dBm)	250.035mW (23.98dBm)
	LTE Band 4 (Channel Bandwidth 5MHz)	411.150mW (26.14dBm)	319.154mW (25.04dBm)	252.348mW (24.02dBm)
	LTE Band 4 (Channel Bandwidth 10MHz)	405.509mW (26.08dBm)	316.228mW (25.00dBm)	258.226mW (24.12dBm)
	LTE Band 4 (Channel Bandwidth 15MHz)	408.319mW (26.11dBm)	320.627mW (25.06dBm)	258.226mW (24.12dBm)
	LTE Band 4 (Channel Bandwidth 20MHz)	414.954mW (26.18dBm)	329.610mW (25.18dBm)	260.016mW (24.15dBm)
	LTE Band 7 (Channel Bandwidth 5MHz)	266.073mW (24.25dBm)	211.349mW (23.25dBm)	167.494mW (22.24dBm)
	LTE Band 7 (Channel Bandwidth 10MHz)	265.461mW (24.24dBm)	208.449mW (23.19dBm)	167.494mW (22.24dBm)
	LTE Band 7 (Channel Bandwidth 15MHz)	267.917mW (24.28dBm)	209.894mW (23.22dBm)	168.267mW (22.26dBm)
	LTE Band 7 (Channel Bandwidth 20MHz)	271.019mW (24.33dBm)	213.304mW (23.29dBm)	169.824mW (22.30dBm)
	LTE Band 38 (Channel Bandwidth 5MHz)	328.095mW (25.16dBm)	250.035mW (23.98dBm)	199.526mW (23.00dBm)
	LTE Band 38 (Channel Bandwidth 10MHz)	321.366mW (25.07dBm)	257.632mW (24.11dBm)	204.644mW (23.11dBm)
	LTE Band 38 (Channel Bandwidth 15MHz)	328.095mW (25.16dBm)	256.448mW (24.09dBm)	203.704mW (23.09dBm)
	LTE Band 38 (Channel Bandwidth 20MHz)	330.370mW (25.19dBm)	259.418mW (24.14dBm)	207.491mW (23.17dBm)
	LTE Band 41 (Channel Bandwidth 5MHz)	357.273mW (25.53dBm)	287.078mW (24.58dBm)	228.560mW (23.59dBm)
	LTE Band 41 (Channel Bandwidth 10MHz)	358.922mW (25.55dBm)	289.734mW (24.62dBm)	226.464mW (23.55dBm)
	LTE Band 41 (Channel Bandwidth 15MHz)	362.243mW (25.59dBm)	289.068mW (24.61dBm)	230.144mW (23.62dBm)
	LTE Band 41 (Channel Bandwidth 20MHz)	368.129mW (25.66dBm)	286.418mW (24.57dBm)	231.739mW (23.65dBm)

		QPSK	16QAM	64QAM
Max. ERP Power	LTE Band 12 (Channel Bandwidth 1.4MHz)	59.293mW (17.73dBm)	46.881mW (16.71dBm)	37.325mW (15.72dBm)
	LTE Band 12 (Channel Bandwidth 3MHz)	57.280mW (17.58dBm)	46.026mW (16.63dBm)	36.392mW (15.61dBm)
	LTE Band 12 (Channel Bandwidth 5MHz)	59.566mW (17.75dBm)	46.559mW (16.68dBm)	37.497mW (15.74dBm)
	LTE Band 12 (Channel Bandwidth 10MHz)	60.117mW (17.79dBm)	46.989mW (16.72dBm)	37.844mW (15.78dBm)
	LTE Band 13 (Channel Bandwidth 5MHz)	154.525mW (21.89dBm)	120.781mW (20.82dBm)	96.161mW (19.83dBm)
	LTE Band 13 (Channel Bandwidth 10MHz)	155.239mW (21.91dBm)	122.180mW (20.87dBm)	97.051mW (19.87dBm)
	LTE Band 17 (Channel Bandwidth 5MHz)	59.704mW (17.76dBm)	47.863mW (16.80dBm)	37.757mW (15.77dBm)
	LTE Band 17 (Channel Bandwidth 10MHz)	59.841mW (17.77dBm)	48.084mW (16.82dBm)	37.931mW (15.79dBm)

Emission Designator	WCDMA Band 4	4M15F9W		
		QPSK	16QAM	64QAM
	LTE Band 4 (Channel Bandwidth 1.4MHz)	1M09G7D	1M09D7W	1M09D7W
	LTE Band 4 (Channel Bandwidth 3MHz)	2M70G7D	2M70D7W	2M70D7W
	LTE Band 4 (Channel Bandwidth 5MHz)	4M49G7D	4M50D7W	4M51D7W
	LTE Band 4 (Channel Bandwidth 10MHz)	8M98G7D	8M98D7W	8M99D7W
	LTE Band 4 (Channel Bandwidth 15MHz)	13M5G7D	13M5D7W	13M5D7W
	LTE Band 4 (Channel Bandwidth 20MHz)	18M0G7D	18M0D7W	18M0D7W
	LTE Band 7 (Channel Bandwidth 5MHz)	4M50G7D	4M50D7W	4M50D7W
	LTE Band 7 (Channel Bandwidth 10MHz)	8M98G7D	8M99D7W	8M99D7W
	LTE Band 7 (Channel Bandwidth 15MHz)	13M5G7D	13M5D7W	13M4D7W
	LTE Band 7 (Channel Bandwidth 20MHz)	17M9G7D	18M0D7W	18M0D7W
	LTE Band 12 (Channel Bandwidth 1.4MHz)	1M09G7D	1M09D7W	1M09D7W
	LTE Band 12 (Channel Bandwidth 3MHz)	2M70G7D	2M70D7W	2M70D7W
	LTE Band 12 (Channel Bandwidth 5MHz)	4M50G7D	4M50D7W	4M51D7W
	LTE Band 12 (Channel Bandwidth 10MHz)	9M00G7D	9M00D7W	9M00D7W
	LTE Band 13 (Channel Bandwidth 5MHz)	4M50G7D	4M50D7W	4M51D7W
	LTE Band 13 (Channel Bandwidth 10MHz)	8M95G7D	8M95D7W	8M96D7W
	LTE Band 17 (Channel Bandwidth 5MHz)	4M50G7D	4M50D7W	4M51D7W
	LTE Band 17 (Channel Bandwidth 10MHz)	9M00G7D	9M01D7W	9M00D7W
	LTE Band 38 (Channel Bandwidth 5MHz)	4M50G7D	4M49D7W	4M50D7W
	LTE Band 38 (Channel Bandwidth 10MHz)	8M96G7D	8M98D7W	8M97D7W
	LTE Band 38 (Channel Bandwidth 15MHz)	13M5G7D	13M4D7W	13M5D7W
	LTE Band 38 (Channel Bandwidth 20MHz)	17M9G7D	17M9D7W	17M9D7W
	LTE Band 41 (Channel Bandwidth 5MHz)	4M50G7D	4M49D7W	4M49D7W
	LTE Band 41 (Channel Bandwidth 10MHz)	8M96G7D	8M97D7W	8M97D7W
	LTE Band 41 (Channel Bandwidth 15MHz)	13M4G7D	13M4D7W	13M4D7W
	LTE Band 41 (Channel Bandwidth 20MHz)	17M9G7D	17M9D7W	17M9D7W
Antenna Type	Refer to note			
Antenna Connector	Refer to note			
Accessory Device	Refer to note			
Cable Supplied	Refer to note			

Note:

1. The following models are provided to this EUT. The model of the AIM-78S-6 was chosen for final test.

Model	Description
AIM-78S-6, AIM-78H-6, AIM-78H-6XXXXXXXXXXXXXXXX, AIM-78S-6XXXXXXXXXXXXXXXX (X: maybe 1-9, A-Z, or blank)	For marketing purpose

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter 1	Tamura	XEW1934N	Input: 100-240Vac~1.5A , 50/60Hz Output: 19Vdc / 3.42A Power Line: AC: 1.5m cable without core DC: 1.2m cable without core
Adapter 2 (option)	FSP	FSP065-DBCM1	Input: 100-240Vac~ 2.0-1.0A, 50-60Hz Output: 19Vdc / 3.43A Power Line: AC: 1.5m cable without core DC: 1.5m cable with 1 core
Battery	Advantech	AIM-BAT-10	Rating: 10.8Vdc, 24.84Wh, 2300mAh
WWAN+WLAN module	USI	MS-01 Pro	-
Docking Station (option)	Advantech	AIM-DOC-0001	Rating: 19Vdc, 3.42A (VESA Dock)
Docking Station (option)	Advantech	AIM-VED0	Rating: 9 ~ 32Vdc (Vehicle Dock)
Docking Station (option)	Advantech	AIM-OFD-0000	Rating: 19Vdc (Office Dock)
Extension Modules-Barcode scanner (20°) (option)	Advantech	AIM-EXT0-0040 (20 degree)	Sensor: 640 x 480 CMOS sensor
Extension Modules-Barcode scanner (70°) (option)	Advantech	AIM-EXT0-0041 (70 degree)	Sensor: 640 x 480 CMOS sensor

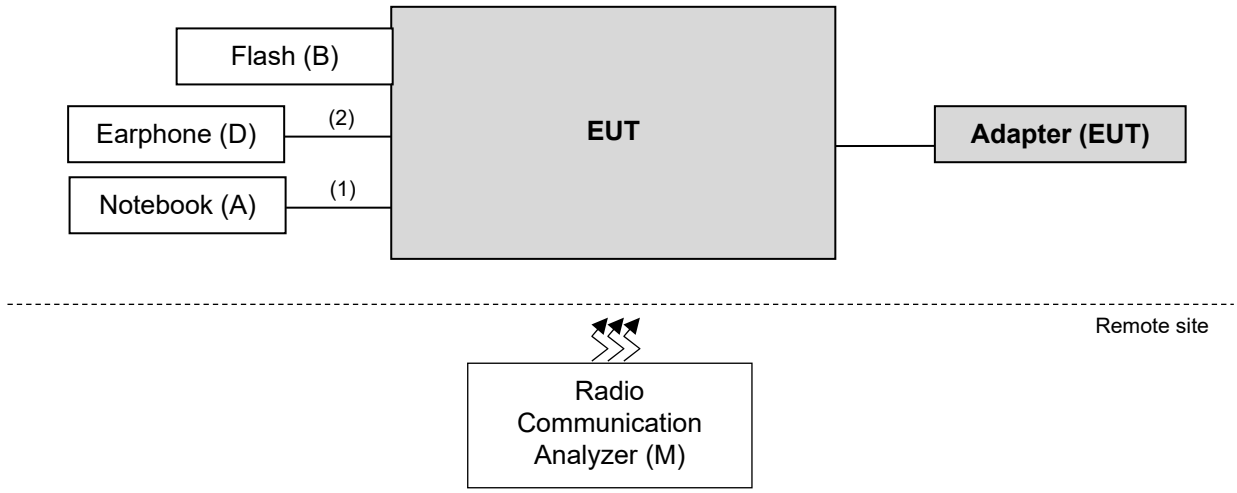
3. The following antennas were provided to the EUT.

Ant. Type	PIFA														
Ant. Connector	I-PEX_IV														
WWAN_Main															
Frequency (MHz)	704	710	716	734	740	746	751	756	777	782	787	791	806	821	824
Gain (dBi)	-3.77	-3.47	-3.24	-1.68	-1.24	-0.99	-0.45	-0.07	0.40	0.44	0.57	0.52	0.76	0.51	0.37
Frequency (MHz)	836	849	862	869	880	894	900	915	925	940	960	1710	1730	1750	1770
Gain (dBi)	0.02	0.10	0.10	0.16	0.19	-0.35	-0.83	-1.68	-2.29	-2.41	-2.39	1.67	2.19	2.73	3.25
Frequency (MHz)	1785	1805	1840	1850	1880	1910	1920	1930	1950	1960	1980	1990	2010	2018	2025
Gain (dBi)	3.52	3.43	2.63	1.99	-0.63	-0.88	-0.47	-0.20	0.84	1.18	2.07	2.17	2.48	2.14	1.91
Frequency (MHz)	2110	2140	2170	2300	2325	2350	2375	2400	2500	2515	2535	2555	2570	2595	2620
Gain (dBi)	1.08	1.00	1.14	0.05	-0.28	0.23	0.70	1.43	0.57	0.31	0.05	0.51	0.86	1.38	1.37
Frequency (MHz)	2630	2655	2680	2690											
Gain (dBi)	1.47	1.92	1.95	1.87											
WWAN_Aux (only RX)															
Frequency (MHz)	704	710	716	734	740	746	751	756	777	782	787	791	806	821	824
Gain (dBi)	-11.59	-11.10	-11.03	-9.89	-9.75	-9.54	-9.49	-9.59	-9.46	-9.38	-9.51	-9.28	-8.58	-7.57	-7.56
Frequency (MHz)	836	849	862	869	880	894	900	915	925	940	960	1710	1730	1750	1770
Gain (dBi)	-7.09	-6.80	-6.17	-5.74	-5.00	-4.53	-4.54	-4.52	-4.55	-4.26	-3.49	1.68	1.77	2.06	2.35
Frequency (MHz)	1785	1805	1840	1850	1880	1910	1920	1930	1950	1960	1980	1990	2010	2018	2025
Gain (dBi)	2.73	2.82	2.96	3.11	3.31	3.84	4.01	4.13	4.51	4.59	4.37	4.23	4.09	4.06	3.90
Frequency (MHz)	2110	2140	2170	2300	2325	2350	2375	2400	2500	2515	2535	2555	2570	2595	2620
Gain (dBi)	3.30	3.55	3.24	2.93	2.63	2.47	2.11	2.67	3.99	3.94	3.96	3.89	3.48	3.40	3.31
Frequency (MHz)	2630	2655	2680	2690											
Gain (dBi)	3.01	3.16	3.57	3.27											

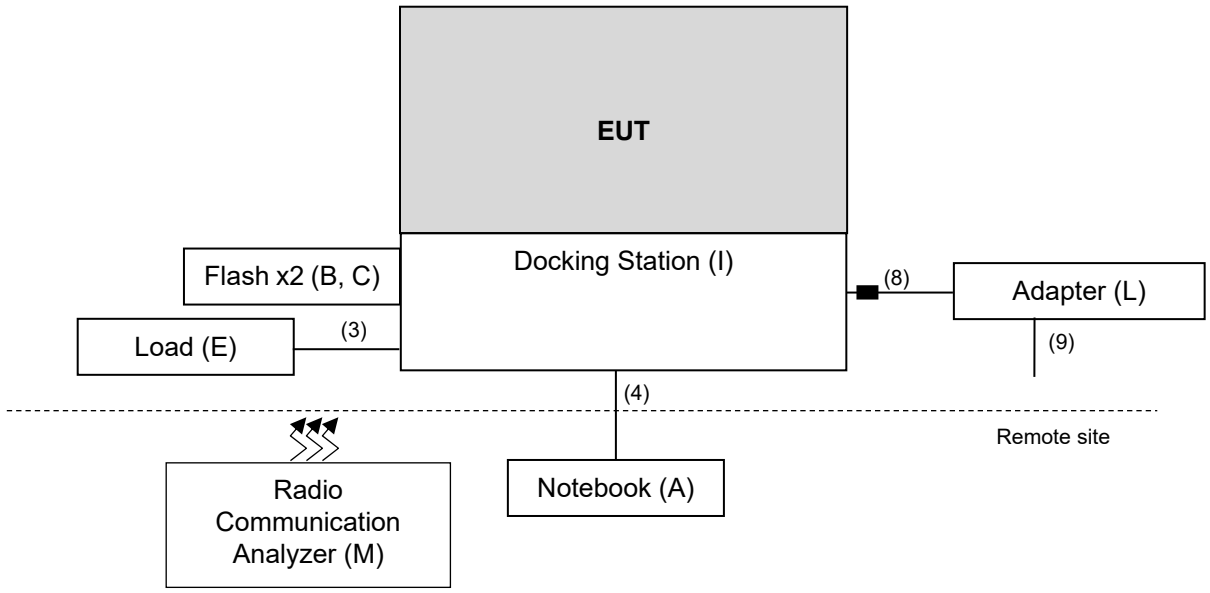
* The max. gain (Main Antenna) was chosen for final tests.
* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Configuration of System under Test

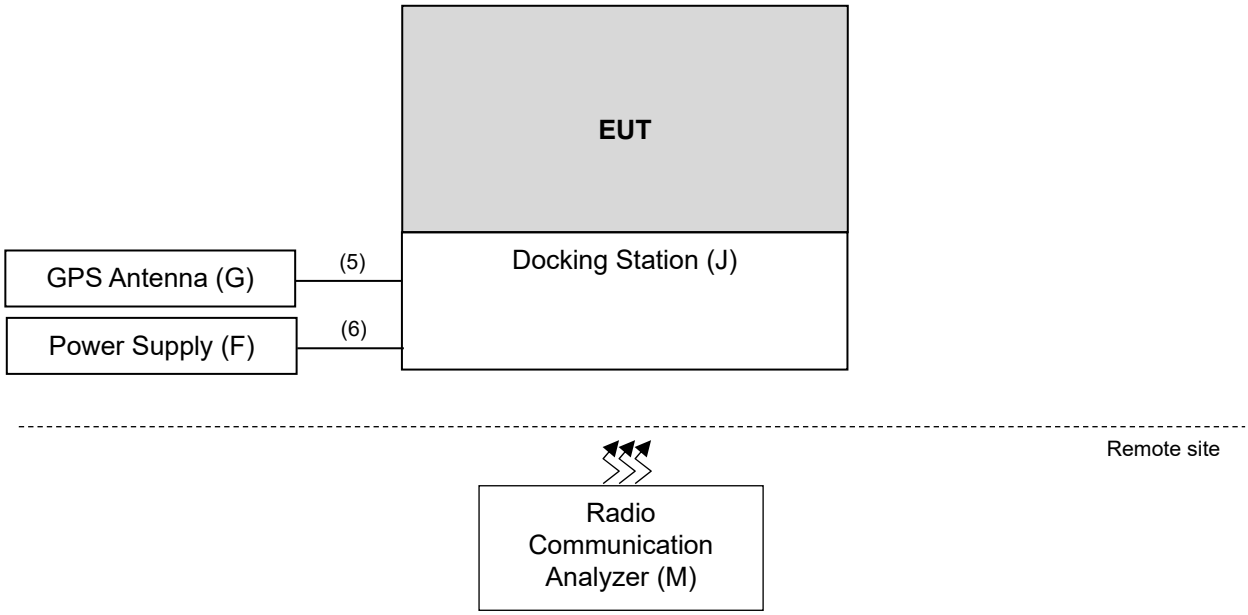
Test Mode A



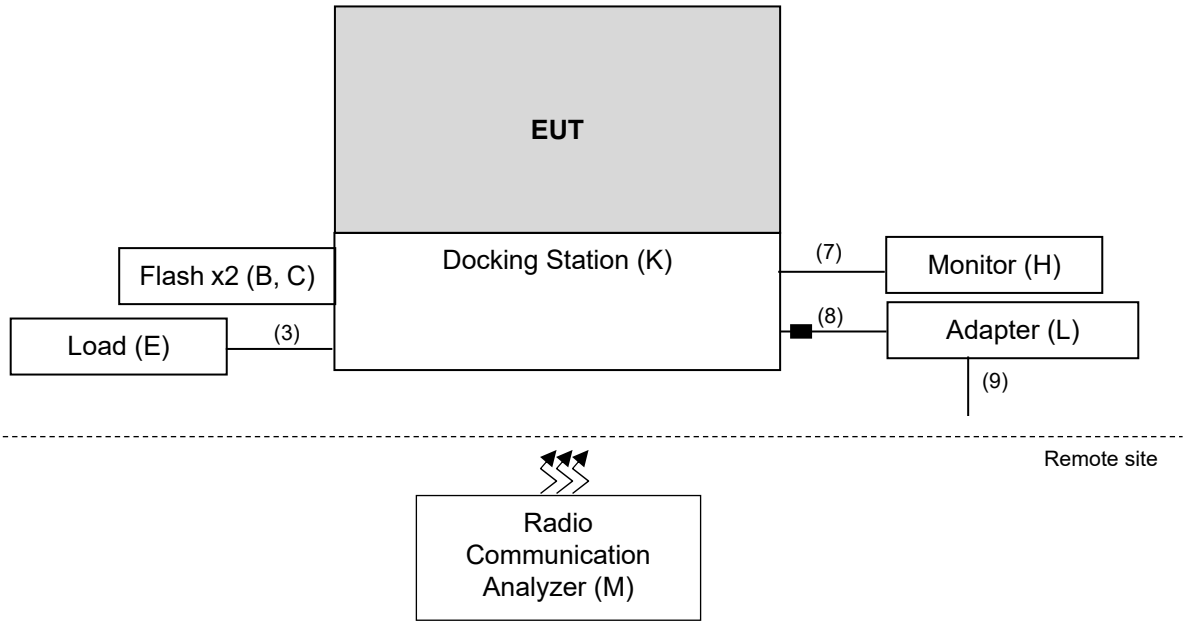
Test Mode B



Test Mode C



Test Mode D



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	Lenovo	20J4 MD A003TW	PF-11H9AK	FCC DoC Approved	-
B.	Flash	HP	v250W	05	NA	Type-A
C.	Flash	HP	v250W	03	NA	Type-A
D.	Earphone	APPLE	NA	NA	NA	-
E.	Load	NA	NA	NA	NA	-
F.	Power Supply	TOPWARD	6306D	809760	NA	-
G.	GPS Antenna	Connectec	SP070809-001	3-6004-031R000	NA	Provided by client
H.	Monitor	DELL	SE2416Hc	CN-OWJKMC-64180-66D-013B-A00	NA	-
I.	Docking Station	Advantech	AIM-DOC-0001	NA	NA	Provided by client
J.	Docking Station	Advantech	AIM-VED0	NA	NA	Provided by client
K.	Docking Station	Advantech	AIM-OFD-0000	NA	NA	Provided by client
L.	Adapter	FSP	FSP065-DBCM1	NA	NA	Provided by client
M.	Radio Communication Analyzer	Anritsu	MT8821C	6261806803	NA	-
			MT8820C	6201010284	NA	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A and M acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Type C cable	1	1	Y	0	-
2.	Audio cable	1	1.2	N	0	-
3.	RS232 cable	1	1.5	N	0	-
4.	LAN cable	1	7	N	0	RJ45, Cat.5e
5.	Antenna cable	1	5	N	0	Provided by client
6.	Power cable	1	1	N	0	Provided by client
7.	HDMI cable	1	2.0	Y	0	Provided by Lab. (Brand: Amber, Model: HDMI-AA120)
8.	DC Power cable	1	1.28	N	1	Provided by client
9.	AC Power cable	1	0.93	N	0	Provided by client

Note: The core(s) is(are) originally attached to the cable(s).

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	Radiated Emission
WCDMA Band 4	X-plane
LTE Band 4	X-plane
LTE Band 7	X-plane
LTE Band 12	Z-plane
LTE Band 13	Z-plane
LTE Band 17	Z-plane
LTE Band 38	Z-plane
LTE Band 41	Z-plane

For radiated emission test item, the worst case (Test Mode A) was tested under radiated emission below 1GHz and above 1GHz. Test mode B, C and D were select the worst radiated emission mode (LTE Band 7 mode) for radiated emission below 1GHz tested only.

Test Mode	Test Condition
A	EUT + Adapter
B	EUT + VESA Dock
C	EUT + Vehicle Dock
D	EUT + Office Dock

WCDMA Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA, HSDPA, HSUPA
-	Modulation Characteristics	1312 to 1513	1413 (1732.6MHz)	WCDMA, HSDPA, HSUPA
-	Frequency Stability	1312 to 1513	1312 (1712.4MHz), 1513 (1752.6MHz)	WCDMA
-	Occupied Bandwidth	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA, HSDPA, HSUPA
-	Band Edge	1312 to 1513	1312 (1712.4MHz), 1513 (1752.6MHz)	WCDMA, HSDPA, HSUPA
-	Peak To Average Ratio	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA, HSDPA, HSUPA
-	Conducted Emission	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA, HSDPA, HSUPA
-	Radiated Emission	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA

Note: For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.

LTE Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20393 (1754.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 50 RB Offset 1 RB / 99 RB Offset 50 RB / 0 RB Offset 50 RB / 25 RB Offset 50 RB / 50 RB Offset 100 RB / 0 RB Offset
-	Modulation Characteristics	20050 to 20300	20175 (1732.5MHz)	20MHz	QPSK / 16QAM / 64QAM	100 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Frequency Stability	19957 to 20393	19957 (1710.7MHz), 20393 (1754.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20350 (1750.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	75 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20300 (1745.0MHz)	20MHz	QPSK	100 RB / 0 RB Offset
-	Emission Bandwidth	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20393 (1754.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	6 RB / 0RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK / 16QAM / 64QAM	15 RB / 0RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK / 16QAM / 64QAM	25RB / 0RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK / 16QAM / 64QAM	50RB / 0RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK / 16QAM / 64QAM	75 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK / 16QAM / 64QAM	100 RB / 0 RB Offset
-	Band Edge	19957 to 20393	19957 (1710.7MHz), 20393 (1754.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20350 (1750.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20300 (1745.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Peak To Average Ratio	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20393 (1754.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
-	Conducted Emission	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20393 (1754.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20393 (1754.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 7

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	EIRP	20775 to 21425	20775 (2502.5MHz), 21100 (2535.0MHz), 21425 (2567.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		20800 to 21400	20800 (2505.0MHz), 21100 (2535.0MHz), 21400 (2565.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		20825 to 21375	20825 (2507.5MHz), 21100 (2535.0MHz), 21375 (2562.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
		20850 to 21350	20850 (2510.0MHz), 21100 (2535.0MHz), 21350 (2560.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 50 RB Offset 1 RB / 99 RB Offset 50 RB / 0 RB Offset 50 RB / 25 RB Offset 50 RB / 50 RB Offset 100 RB / 0 RB Offset
-	Modulation Characteristics	20850 to 21350	21100 (2535.0MHz)	20MHz	QPSK / 16QAM / 64QAM	100 RB / 0 RB Offset
-	Frequency Stability	20775 to 21425	20775 (2502.5MHz), 21425 (2567.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		20800 to 21400	20800 (2505.0MHz), 21400 (2565.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
		20825 to 21375	20825 (2507.5MHz), 21375 (2562.5MHz)	15MHz	QPSK	75 RB / 0 RB Offset
		20850 to 21350	20850 (2510.0MHz), 21350 (2560.0MHz)	20MHz	QPSK	100 RB / 0 RB Offset
-	Emission Bandwidth	20775 to 21425	20775 (2502.5MHz), 21100 (2535.0MHz), 21425 (2567.5MHz)	5MHz	QPSK / 16QAM / 64QAM	25 RB / 0 RB Offset
		20800 to 21400	20800 (2505.0MHz), 21100 (2535.0MHz), 21400 (2565.0MHz)	10MHz	QPSK / 16QAM / 64QAM	50 RB / 0 RB Offset
		20825 to 21375	20825 (2507.5MHz), 21100 (2535.0MHz), 21375 (2562.5MHz)	15MHz	QPSK / 16QAM / 64QAM	75 RB / 0 RB Offset
		20850 to 21350	20850 (2510.0MHz), 21100 (2535.0MHz), 21350 (2560.0MHz)	20MHz	QPSK / 16QAM / 64QAM	100 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Out-of-Band Emissions	20775 to 21425	20775 (2502.5MHz), 21425 (2567.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		20800 to 21400	20800 (2505.0MHz), 21400 (2565.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		20825 to 21375	20825 (2507.5MHz), 21375 (2562.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
		20850 to 21350	20850 (2510.0MHz), 21350 (2560.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset
-	Peak to Average Ratio	20775 to 21425	20775 (2502.5MHz), 21100 (2535.0MHz), 21425 (2567.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 12 RB Offset
		20800 to 21400	20800 (2505.0MHz), 21100 (2535.0MHz), 21400 (2565.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 24 RB Offset
		20825 to 21375	20825 (2507.5MHz), 21100 (2535.0MHz), 21375 (2562.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		20850 to 21350	20850 (2510.0MHz), 21100 (2535.0MHz), 21350 (2560.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
-	Conducted Emission	20775 to 21425	20775 (2502.5MHz), 21100 (2535.0MHz), 21425 (2567.5MHz)	5MHz	QPSK	1 RB / 12 RB Offset
		20800 to 21400	20800 (2505.0MHz), 21100 (2535.0MHz), 21400 (2565.0MHz)	10MHz	QPSK	1 RB / 24 RB Offset
		20825 to 21375	20825 (2507.5MHz), 21100 (2535.0MHz), 21375 (2562.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	20850 (2510.0MHz), 21100 (2535.0MHz), 21350 (2560.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	20775 to 21425	20775 (2502.5MHz), 21100 (2535.0MHz), 21425 (2567.5MHz)	5MHz	QPSK	12 RB / 0 RB Offset
		20850 to 21350	20850 (2510.0MHz), 21100 (2535.0MHz), 21350 (2560.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 12

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0 MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
-	Modulation Characteristics	23060 to 23130	23095 (707.5MHz)	10MHz	QPSK / 16QAM / 64QAM	50 RB / 0 RB Offset
-	Frequency Stability	23017 to 23173	23017 (699.7MHz), 23173 (715.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23165 (714.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23155 (713.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23130 (711.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
-	Emission Bandwidth	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM / 64QAM	15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM / 64QAM	25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK / 16QAM / 64QAM	50 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	23017 to 23173	23017 (699.7MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23165 (714.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23130 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
-	Peak to Average Ratio	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	3 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
-	Conducted Emission	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	3 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	3 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 13

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
-	Modulation Characteristics	23230	23230 (782.0MHz),	10MHz	QPSK / 16QAM / 64QAM	50 RB / 0 RB Offset
-	Frequency Stability	23205 to 23255	23205 (779.5MHz), 23255 (784.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		23230	23230 (782.0MHz),	10MHz	QPSK	50 RB / 0 RB Offset
-	Emission Bandwidth	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK / 16QAM / 64QAM	25 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK / 16QAM / 64QAM	50 RB / 0 RB Offset
-	Band Edge	23205 to 23255	23205 (779.5MHz), 23255 (784.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
-	Peak to Average Ratio	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK / 16QAM / 64QAM	12 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
-	Conducted Emission	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK	12 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK	12 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 17

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	23755 to 23825	23755 (706.5MHz), 23790 (710.0MHz), 23825 (713.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		23780 to 23800	23780 (709.0MHz), 23790 (710.0MHz), 23800 (711.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
-	Modulation Characteristics	23780 to 23800	23790 (710.0MHz)	10MHz	QPSK / 16QAM / 64QAM	50 RB / 0 RB Offset
-	Frequency Stability	23755 to 23825	23755 (706.5MHz), 23825 (713.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		23780 to 23800	23780 (709.0MHz), 23800 (711.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
-	Emission Bandwidth	23755 to 23825	23755 (706.5MHz), 23790 (710.0MHz), 23825 (713.5MHz)	5MHz	QPSK / 16QAM / 64QAM	25 RB / 0 RB Offset
		23780 to 23800	23780 (709.0MHz), 23790 (710.0MHz), 23800 (711.0MHz)	10MHz	QPSK / 16QAM / 64QAM	50 RB / 0 RB Offset
-	Band Edge	23755 to 23825	23755 (706.5MHz), 23825 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23780 to 23800	23780 (709.0MHz), 23800 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
-	Peak to Average Ratio	23755 to 23825	23755 (706.5MHz), 23790 (710.0MHz), 23825 (713.5MHz)	5MHz	QPSK / 16QAM / 64QAM	12 RB / 0 RB Offset
		23780 to 23800	23780 (709.0MHz), 23790 (710.0MHz), 23800 (711.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
-	Conducted Emission	23755 to 23825	23755 (706.5MHz), 23790 (710.0MHz), 23825 (713.5MHz)	5MHz	QPSK	12 RB / 0 RB Offset
		23780 to 23800	23780 (709.0MHz), 23790 (710.0MHz), 23800 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission	23755 to 23825	23755 (706.5MHz), 23790 (710.0MHz), 23825 (713.5MHz)	5MHz	QPSK	12 RB / 0 RB Offset
		23780 to 23800	23780 (709.0MHz), 23790 (710.0MHz), 23800 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 38

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	EIRP	37775 to 38225	37775 (2572.5MHz), 38000 (2595.0MHz), 38225 (2617.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		37800 to 38200	37800 (2575.0MHz), 38000 (2595.0MHz), 38200 (2615.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		37825 to 38175	37825 (2577.5MHz), 38000 (2595.0MHz), 38175 (2612.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
		37850 to 38150	37850 (2580.0MHz), 38000 (2595.0MHz), 38150 (2610.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 50 RB Offset 1 RB / 99 RB Offset 50 RB / 0 RB Offset 50 RB / 25 RB Offset 50 RB / 50 RB Offset 100 RB / 0 RB Offset
-	Modulation Characteristics	37850 to 38150	38000 (2595.0MHz)	20MHz	QPSK / 16QAM / 64QAM	100 RB / 0 RB Offset
-	Frequency Stability	37775 to 38225	37775 (2572.5MHz), 38225 (2617.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		37800 to 38200	37800 (2575.0MHz), 38200 (2615.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
		37825 to 38175	37825 (2577.5MHz), 38175 (2612.5MHz)	15MHz	QPSK	75 RB / 0 RB Offset
		37850 to 38150	37850 (2580.0MHz), 38150 (2610.0MHz)	20MHz	QPSK	100 RB / 0 RB Offset
-	Emission Bandwidth	37775 to 38225	37775 (2572.5MHz), 38000 (2595.0MHz), 38225 (2617.5MHz)	5MHz	QPSK / 16QAM / 64QAM	25 RB / 0 RB Offset
		37800 to 38200	37800 (2575.0MHz), 38000 (2595.0MHz), 38200 (2615.0MHz)	10MHz	QPSK / 16QAM / 64QAM	50 RB / 0 RB Offset
		37825 to 38175	37825 (2577.5MHz), 38000 (2595.0MHz), 38175 (2612.5MHz)	15MHz	QPSK / 16QAM / 64QAM	75 RB / 0 RB Offset
		37850 to 38150	37850 (2580.0MHz), 38000 (2595.0MHz), 38150 (2610.0MHz)	20MHz	QPSK / 16QAM / 64QAM	100 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Out-of-Band Emissions	37775 to 38225	37775 (2572.5MHz), 38225 (2617.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		37800 to 38200	37800 (2575.0MHz), 38200 (2615.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		37825 to 38175	37825 (2577.5MHz), 38175 (2612.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
		37850 to 38150	37850 (2580.0MHz), 38150 (2610.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset
-	Peak to Average Ratio	37775 to 38225	37775 (2572.5MHz), 38000 (2595.0MHz), 38225 (2617.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		37800 to 38200	37800 (2575.0MHz), 38000 (2595.0MHz), 38200 (2615.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		37825 to 38175	37825 (2577.5MHz), 38000 (2595.0MHz), 38175 (2612.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		37850 to 38150	37850 (2580.0MHz), 38000 (2595.0MHz), 38150 (2610.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
-	Conducted Emission	37775 to 38225	37775 (2572.5MHz), 38000 (2595.0MHz), 38225 (2617.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		37800 to 38200	37800 (2575.0MHz), 38000 (2595.0MHz), 38200 (2615.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		37825 to 38175	37825 (2577.5MHz), 38000 (2595.0MHz), 38175 (2612.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		37850 to 38150	37850 (2580.0MHz), 38000 (2595.0MHz), 38150 (2610.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	37775 to 38225	37775 (2572.5MHz), 38000 (2595.0MHz), 38225 (2617.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		37850 to 38150	37850 (2580.0MHz), 38000 (2595.0MHz), 38150 (2610.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 41

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	EIRP	39675 to 41565	39675 (2498.5MHz), 40620 (2593.0MHz), 41565 (2687.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		39700 to 41540	39700 (2501.0MHz), 40620 (2593.0MHz), 41540 (2685.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		39725 to 41515	39725 (2503.5MHz), 40620 (2593.0MHz), 41515 (2682.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
		39750 to 41490	39750 (2506.0MHz), 40620 (2593.0MHz), 41490 (2680.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset 1 RB / 50 RB Offset 1 RB / 99 RB Offset 50 RB / 0 RB Offset 50 RB / 25 RB Offset 50 RB / 50 RB Offset 100 RB / 0 RB Offset
-	Modulation Characteristics	39750 to 41490	40620 (2593.0MHz)	20MHz	QPSK / 16QAM / 64QAM	100 RB / 0 RB Offset
-	Frequency Stability	39675 to 41565	39675 (2498.5MHz), 41565 (2687.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		39700 to 41540	39700 (2501.0MHz), 41540 (2685.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
		39725 to 41515	39725 (2503.5MHz), 41515 (2682.5MHz)	15MHz	QPSK	75 RB / 0 RB Offset
		39750 to 41490	39750 (2506.0MHz), 41490 (2680.0MHz)	20MHz	QPSK	100 RB / 0 RB Offset
-	Emission Bandwidth	39675 to 41565	39675 (2498.5MHz), 40620 (2593.0MHz), 41565 (2687.5MHz)	5MHz	QPSK / 16QAM / 64QAM	25 RB / 0 RB Offset
		39700 to 41540	39700 (2501.0MHz), 40620 (2593.0MHz), 41540 (2685.0MHz)	10MHz	QPSK / 16QAM / 64QAM	50 RB / 0 RB Offset
		39725 to 41515	39725 (2503.5MHz), 40620 (2593.0MHz), 41515 (2682.5MHz)	15MHz	QPSK / 16QAM / 64QAM	75 RB / 0 RB Offset
		39750 to 41490	39750 (2506.0MHz), 40620 (2593.0MHz), 41490 (2680.0MHz)	20MHz	QPSK / 16QAM / 64QAM	100 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Out-of-Band Emissions	39675 to 41565	39675 (2498.5MHz), 41565 (2687.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		39700 to 41540	39700 (2501.0MHz), 41540 (2685.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		39725 to 41515	39725 (2503.5MHz), 41515 (2682.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
		39750 to 41490	39750 (2506.0MHz), 41490 (2680.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset
-	Peak to Average Ratio	39675 to 41565	39675 (2498.5MHz), 40620 (2593.0MHz), 41565 (2687.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		39700 to 41540	39700 (2501.0MHz), 40620 (2593.0MHz), 41540 (2685.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
		39725 to 41515	39725 (2503.5MHz), 40620 (2593.0MHz), 41515 (2682.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 RB / 74 RB Offset
		39750 to 41490	39750 (2506.0MHz), 40620 (2593.0MHz), 41490 (2680.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 RB / 0 RB Offset
-	Conducted Emission	39675 to 41565	39675 (2498.5MHz), 40620 (2593.0MHz), 41565 (2687.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		39700 to 41540	39700 (2501.0MHz), 40620 (2593.0MHz), 41540 (2685.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		39725 to 41515	39725 (2503.5MHz), 40620 (2593.0MHz), 41515 (2682.5MHz)	15MHz	QPSK	1 RB / 74 RB Offset
		39750 to 41490	39750 (2506.0MHz), 40620 (2593.0MHz), 41490 (2680.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	39675 to 41565	39675 (2498.5MHz), 40620 (2593.0MHz), 41565 (2687.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		39750 to 41490	39750 (2506.0MHz), 40620 (2593.0MHz), 41490 (2680.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP / ERP	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Modulation Characteristics	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Frequency Stability	25deg. C, 60%RH	10.80Vdc	Willy Cheng
Occupied Bandwidth	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Band Edge	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Peak To Average Ratio	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Conducted Emission	25deg. C, 60%RH	120Vac, 60Hz	Willy Cheng
Radiated Emission	22deg. C, 66%RH	120Vac, 60Hz	Harry Hsueh Charles Hsiao Karl Lee

3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.5 General Description of Applied Standards and References

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and References:

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 27

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

For WCDMA Band 4, LTE Band 4:
Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

For LTE Band 7, LTE Band 38, LTE Band 41:
Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

For LTE Band 12, LTE Band 17:
Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.
Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

For LTE Band 13:
Control stations and mobile stations in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands and fixed stations transmitting in the 787-788 MHz and 805-806 MHz bands are limited to 30 watts ERP.
Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

4.1.2 Test Procedures

Conducted Power Measurement:

The EUT was set up for the maximum power with WCDMA, LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

Maximum EIRP / ERP

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$EIRP = P_{Meas} + G_T$

$ERP = P_{Meas} + G_T - 2.15$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, e.g., dBm or dBW)

P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

4.1.3 Test Setup

Conducted Power Measurement:

4.1.4 Test Results

Conducted Output Power (dBm)

Band	WCDMA IV		
TX Channel	1312	1413	1513
Rx Channel	1537	1638	1738
Frequency	1712.4	1732.6	1752.6
RMC 12.2K	23.85	23.76	23.71
HSDPA Subtest-1	22.45	22.36	22.32
HSDPA Subtest-2	22.41	22.32	22.28
HSDPA Subtest-3	21.87	21.78	21.74
HSDPA Subtest-4	21.98	21.89	21.85
DC-HSDPA Subtest-1	22.42	22.33	22.29
DC-HSDPA Subtest-2	22.38	22.29	22.25
DC-HSDPA Subtest-3	21.84	21.75	21.71
DC-HSDPA Subtest-4	21.95	21.86	21.82
HSUPA Subtest-1	22.57	22.48	22.44
HSUPA Subtest-2	20.60	20.51	20.47
HSUPA Subtest-3	21.76	21.67	21.63
HSUPA Subtest-4	20.62	20.53	20.49
HSUPA Subtest-5	22.09	22.00	21.96
HSPA+ Subtest-1	20.10	20.01	19.97

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20050	20175	20300
		Frequency (MHz)		1720	1732.5	1745
20M	QPSK	1	0	23.40	23.45	23.36
		1	50	23.29	23.34	23.25
		1	99	23.32	23.37	23.28
		50	0	22.37	22.42	22.33
		50	25	22.33	22.38	22.29
		50	50	22.34	22.39	22.30
		100	0	22.32	22.37	22.28
20M	16QAM	1	0	22.38	22.45	22.27
		1	50	22.25	22.30	22.24
		1	99	22.32	22.37	22.22
		50	0	21.27	21.40	21.29
		50	25	21.33	21.35	21.26
		50	50	21.33	21.30	21.27
		100	0	21.23	21.37	21.26
20M	64QAM	1	0	21.39	21.42	21.31
		1	50	21.27	21.34	21.16
		1	99	21.32	21.28	21.22
		50	0	20.29	20.41	20.24
		50	25	20.26	20.30	20.24
		50	50	20.34	20.34	20.20
		100	0	20.28	20.32	20.22

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20025	20175	20325
		Frequency (MHz)		1717.5	1732.5	1747.5
15M	QPSK	1	0	23.38	23.36	23.32
		1	37	23.23	23.24	23.23
		1	74	23.23	23.29	23.23
		36	0	22.36	22.39	22.32
		36	19	22.24	22.36	22.22
		36	39	22.33	22.33	22.29
		75	0	22.27	22.34	22.28
15M	16QAM	1	0	22.30	22.33	22.20
		1	37	22.16	22.33	22.18
		1	74	22.14	22.30	22.15
		36	0	21.23	21.24	21.28
		36	19	21.23	21.33	21.24
		36	39	21.20	21.20	21.19
		75	0	21.29	21.25	21.18
15M	64QAM	1	0	21.28	21.39	21.27
		1	37	21.17	21.29	21.16
		1	74	21.12	21.32	21.13
		36	0	20.29	20.37	20.33
		36	19	20.27	20.30	20.12
		36	39	20.24	20.28	20.18
		75	0	20.22	20.23	20.11

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20000	20175	20350
		Frequency (MHz)		1715	1732.5	1750
10M	QPSK	1	0	23.35	23.23	23.21
		1	24	23.13	23.12	23.15
		1	49	23.08	23.21	23.07
		25	0	22.15	22.33	22.31
		25	12	22.08	22.24	22.12
		25	25	22.21	22.27	22.16
		50	0	22.08	22.18	22.18
10M	16QAM	1	0	22.27	22.17	22.09
		1	24	22.23	22.24	22.03
		1	49	22.06	22.18	22.01
		25	0	21.23	21.19	21.19
		25	12	21.12	21.20	21.17
		25	25	21.12	21.20	21.12
		50	0	21.23	21.11	21.13
10M	64QAM	1	0	21.14	21.39	21.07
		1	24	21.13	21.12	21.13
		1	49	21.16	21.24	20.94
		25	0	20.09	20.15	20.19
		25	12	20.22	20.20	20.03
		25	25	20.04	20.24	20.14
		50	0	20.14	20.21	20.08

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		19975	20175	20375
		Frequency (MHz)		1712.5	1732.5	1752.5
5M	QPSK	1	0	23.25	23.41	23.16
		1	12	23.17	23.28	23.05
		1	24	23.28	23.16	23.14
		12	0	22.35	22.34	22.09
		12	6	22.25	22.23	22.11
		12	13	22.33	22.25	22.18
		25	0	22.10	22.21	22.07
5M	16QAM	1	0	22.25	22.27	22.31
		1	12	22.06	22.18	22.04
		1	24	22.15	22.13	22.06
		12	0	21.13	21.25	21.14
		12	6	21.19	21.16	21.21
		12	13	21.22	21.20	21.14
		25	0	21.11	21.23	21.06
5M	64QAM	1	0	21.29	21.21	21.20
		1	12	21.09	21.25	21.04
		1	24	21.29	21.24	21.13
		12	0	20.31	20.12	20.20
		12	6	20.25	20.28	20.06
		12	13	20.09	20.18	20.07
		25	0	20.21	20.10	20.11

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		19965	20175	20385
		Frequency (MHz)		1711.5	1732.5	1753.5
3M	QPSK	1	0	23.25	23.28	23.30
		1	7	23.24	23.21	23.16
		1	14	23.12	23.25	23.12
		8	0	22.23	22.23	22.14
		8	3	22.22	22.29	22.25
		8	7	22.23	22.26	22.20
		15	0	22.22	22.32	22.14
3M	16QAM	1	0	22.23	22.31	22.27
		1	7	22.18	22.19	22.06
		1	14	22.23	22.16	22.13
		8	0	21.23	21.30	21.12
		8	3	21.11	21.25	21.19
		8	7	21.21	21.23	21.12
		15	0	21.00	21.28	21.12
3M	64QAM	1	0	21.25	21.25	21.15
		1	7	21.05	21.20	21.12
		1	14	21.09	21.08	21.01
		8	0	20.22	20.15	20.07
		8	3	20.12	20.13	20.12
		8	7	20.16	20.29	20.10
		15	0	20.10	20.11	20.07

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		19957	20175	20393
		Frequency (MHz)		1710.7	1732.5	1754.3
1.4M	QPSK	1	0	23.19	23.29	23.26
		1	2	23.26	23.18	23.09
		1	5	23.18	23.25	23.05
		3	0	23.21	23.20	23.26
		3	1	23.27	23.20	23.13
		3	3	23.29	23.22	23.16
		6	0	22.26	22.28	22.16
1.4M	16QAM	1	0	22.34	22.34	22.17
		1	2	22.17	22.12	22.05
		1	5	22.24	22.26	22.06
		3	0	22.30	22.18	22.19
		3	1	22.15	22.14	22.15
		3	3	22.07	22.27	22.09
		6	0	21.20	21.16	21.13
1.4M	64QAM	1	0	21.27	21.31	21.18
		1	2	21.14	21.10	21.08
		1	5	21.25	21.21	21.12
		3	0	21.14	21.32	21.08
		3	1	21.13	21.22	21.20
		3	3	21.04	21.16	21.07
		6	0	20.11	20.15	20.12

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20850	21100	21350
		Frequency (MHz)		2510	2535	2560
20M	QPSK	1	0	23.45	23.43	23.47
		1	50	23.44	23.42	23.46
		1	99	23.37	23.35	23.39
		50	0	22.42	22.40	22.44
		50	25	22.37	22.35	22.39
		50	50	22.38	22.36	22.40
		100	0	22.40	22.38	22.42
20M	16QAM	1	0	22.37	22.40	22.38
		1	50	22.36	22.40	22.43
		1	99	22.33	22.35	22.31
		50	0	21.41	21.31	21.39
		50	25	21.31	21.34	21.35
		50	50	21.31	21.34	21.32
		100	0	21.39	21.28	21.32
20M	64QAM	1	0	21.41	21.38	21.44
		1	50	21.36	21.33	21.43
		1	99	21.32	21.30	21.39
		50	0	20.34	20.33	20.36
		50	25	20.35	20.32	20.35
		50	50	20.31	20.29	20.33
		100	0	20.37	20.29	20.42

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20825	21100	21375
		Frequency (MHz)		2507.5	2535	2562.5
15M	QPSK	1	0	23.42	23.36	23.42
		1	37	23.38	23.42	23.38
		1	74	23.37	23.25	23.29
		36	0	22.39	22.38	22.37
		36	19	22.35	22.31	22.35
		36	39	22.33	22.33	22.40
		75	0	22.40	22.32	22.39
15M	16QAM	1	0	22.34	22.30	22.36
		1	37	22.27	22.34	22.31
		1	74	22.29	22.22	22.22
		36	0	21.36	21.33	21.32
		36	19	21.31	21.24	21.28
		36	39	21.18	21.35	21.28
		75	0	21.32	21.34	21.32
15M	64QAM	1	0	21.35	21.32	21.35
		1	37	21.36	21.28	21.40
		1	74	21.28	21.23	21.35
		36	0	20.39	20.30	20.32
		36	19	20.20	20.18	20.28
		36	39	20.28	20.23	20.34
		75	0	20.35	20.29	20.35

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20800	21100	21400
		Frequency (MHz)		2505	2535	2565
10M	QPSK	1	0	23.32	23.37	23.25
		1	24	23.36	23.38	23.34
		1	49	23.16	23.21	23.21
		25	0	22.38	22.19	22.19
		25	12	22.30	22.15	22.19
		25	25	22.32	22.16	22.36
		50	0	22.26	22.21	22.26
10M	16QAM	1	0	22.30	22.24	22.28
		1	24	22.25	22.33	22.26
		1	49	22.25	22.15	22.21
		25	0	21.27	21.27	21.31
		25	12	21.18	21.19	21.33
		25	25	21.21	21.14	21.20
		50	0	21.24	21.25	21.26
10M	64QAM	1	0	21.25	21.22	21.36
		1	24	21.38	21.28	21.29
		1	49	21.22	21.10	21.22
		25	0	20.16	20.25	20.26
		25	12	20.22	20.23	20.23
		25	25	20.20	20.34	20.36
		50	0	20.14	20.32	20.39

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20775	21100	21425
		Frequency (MHz)		2502.5	2535	2567.5
5M	QPSK	1	0	23.32	23.31	23.26
		1	12	23.39	23.30	23.21
		1	24	23.21	23.25	23.24
		12	0	22.17	22.21	22.36
		12	6	22.28	22.19	22.15
		12	13	22.26	22.24	22.23
		25	0	22.36	22.22	22.22
5M	16QAM	1	0	22.15	22.35	22.39
		1	12	22.19	22.36	22.29
		1	24	22.21	22.24	22.19
		12	0	21.29	21.22	21.37
		12	6	21.22	21.08	21.18
		12	13	21.16	21.19	21.20
		25	0	21.23	21.22	21.25
5M	64QAM	1	0	21.16	21.36	21.30
		1	12	21.23	21.37	21.38
		1	24	21.22	21.19	21.20
		12	0	20.30	20.10	20.15
		12	6	20.04	20.14	20.26
		12	13	20.28	20.22	20.29
		25	0	20.37	20.18	20.17

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23060	23095	23130
		Frequency (MHz)		704	707.5	711
10M	QPSK	1	0	23.13	23.18	23.15
		1	24	23.06	23.11	23.08
		1	49	22.94	22.99	22.96
		25	0	22.14	22.19	22.16
		25	12	22.09	22.14	22.11
		25	25	22.05	22.10	22.07
		50	0	22.08	22.13	22.10
10M	16QAM	1	0	22.11	22.11	22.08
		1	24	22.02	22.07	22.01
		1	49	21.90	21.91	21.89
		25	0	21.11	21.13	21.09
		25	12	21.01	21.06	21.09
		25	25	21.03	21.08	21.03
		50	0	21.01	21.07	21.04
10M	64QAM	1	0	21.10	21.17	21.08
		1	24	20.97	21.11	21.00
		1	49	20.91	20.89	20.91
		25	0	20.12	20.09	20.12
		25	12	20.04	20.04	20.02
		25	25	19.97	20.07	19.98
		50	0	19.99	20.05	20.04

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23035	23095	23155
		Frequency (MHz)		701.5	707.5	713.5
5M	QPSK	1	0	23.09	23.14	23.11
		1	12	23.02	23.07	23.04
		1	24	22.90	22.95	22.92
		12	0	22.10	22.15	22.12
		12	6	22.05	22.10	22.07
		12	13	22.01	22.06	22.03
		25	0	22.04	22.09	22.06
5M	16QAM	1	0	22.07	22.07	22.04
		1	12	21.98	22.03	21.97
		1	24	21.86	21.87	21.85
		12	0	21.07	21.09	21.05
		12	6	20.97	21.02	21.05
		12	13	20.99	21.04	20.99
		25	0	20.97	21.03	21.00
5M	64QAM	1	0	21.06	21.13	21.04
		1	12	20.93	21.07	20.96
		1	24	20.87	20.85	20.87
		12	0	20.08	20.05	20.08
		12	6	20.00	20.00	19.98
		12	13	19.93	20.03	19.94
		25	0	19.95	20.01	20.00

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23025	23095	23165
		Frequency (MHz)		700.5	707.5	714.5
3M	QPSK	1	0	22.93	22.96	22.97
		1	7	22.94	22.89	22.97
		1	14	22.88	22.92	22.78
		8	0	22.01	22.10	22.03
		8	3	22.04	22.03	22.00
		8	7	21.87	21.95	22.00
		15	0	22.03	21.97	21.89
3M	16QAM	1	0	22.01	22.01	22.02
		1	7	21.88	22.00	21.92
		1	14	21.76	21.84	21.81
		8	0	20.91	21.09	20.92
		8	3	20.87	20.99	21.00
		8	7	20.97	20.93	20.95
		15	0	20.89	20.97	20.89
3M	64QAM	1	0	20.90	20.95	20.96
		1	7	20.93	21.00	20.76
		1	14	20.70	20.85	20.81
		8	0	20.05	20.16	20.12
		8	3	19.94	19.94	19.82
		8	7	19.79	20.00	19.94
		15	0	19.95	19.94	19.88

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23017	23095	23173
		Frequency (MHz)		699.7	707.5	715.3
1.4M	QPSK	1	0	23.09	23.04	23.03
		1	2	22.95	23.00	22.97
		1	5	22.85	22.85	22.83
		3	0	22.97	23.12	23.03
		3	1	22.99	22.95	22.96
		3	3	22.82	23.04	22.91
		6	0	22.00	21.88	21.96
1.4M	16QAM	1	0	21.91	22.08	21.96
		1	2	21.85	21.92	21.92
		1	5	21.87	21.79	21.72
		3	0	21.95	21.99	22.10
		3	1	21.85	21.92	22.03
		3	3	21.87	21.91	21.85
		6	0	20.99	21.06	20.89
1.4M	64QAM	1	0	20.90	20.97	20.97
		1	2	20.92	20.88	20.78
		1	5	20.68	20.77	20.90
		3	0	20.96	21.11	20.99
		3	1	20.86	20.93	21.01
		3	3	21.02	20.86	21.03
		6	0	19.77	19.94	19.80

LTE Band 13				
BW	MCS Index	RB Size	RB Offset	Low
		Channel		23230
		Frequency (MHz)		782
10M	QPSK	1	0	23.49
		1	24	23.47
		1	49	23.42
		25	0	22.47
		25	12	22.48
		25	25	22.45
		50	0	22.4
10M	16QAM	1	0	22.45
		1	24	22.40
		1	49	22.40
		25	0	21.50
		25	12	21.38
		25	25	21.39
		50	0	21.30
10M	64QAM	1	0	21.41
		1	24	21.45
		1	49	21.33
		25	0	20.45
		25	12	20.48
		25	25	20.39
		50	0	20.34

LTE Band 13						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23205	23230	23255
		Frequency (MHz)		779.5	782	784.5
5M	QPSK	1	0	23.43	23.44	23.36
		1	12	23.47	23.43	23.34
		1	24	23.34	23.42	23.25
		12	0	22.48	22.47	22.47
		12	6	22.40	22.38	22.34
		12	13	22.36	22.38	22.27
		25	0	22.36	22.34	22.32
5M	16QAM	1	0	22.39	22.40	22.30
		1	12	22.39	22.37	22.24
		1	24	22.27	22.27	22.34
		12	0	21.46	21.49	21.43
		12	6	21.47	21.37	21.23
		12	13	21.27	21.37	21.24
		25	0	21.23	21.27	21.26
5M	64QAM	1	0	21.41	21.31	21.20
		1	12	21.37	21.41	21.28
		1	24	21.31	21.30	21.23
		12	0	20.45	20.43	20.39
		12	6	20.35	20.46	20.19
		12	13	20.27	20.30	20.28
		25	0	20.29	20.29	20.20

LTE Band 17						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23780	23790	23800
		Frequency (MHz)		709	710	711
10M	QPSK	1	0	23.13	23.16	23.12
		1	24	23.12	23.14	23.11
		1	49	23.10	23.13	23.09
		25	0	22.24	22.33	22.23
		25	12	22.20	22.29	22.19
		25	25	22.11	22.20	22.10
		50	0	22.15	22.24	22.14
10M	16QAM	1	0	22.11	22.21	22.11
		1	24	22.05	22.14	22.09
		1	49	22.10	22.14	22.00
		25	0	21.16	21.31	21.23
		25	12	21.11	21.29	21.09
		25	25	21.09	21.19	21.09
		50	0	21.05	21.21	21.05
10M	64QAM	1	0	21.13	21.18	21.02
		1	24	21.07	21.18	21.10
		1	49	21.04	21.16	21.08
		25	0	20.15	20.33	20.20
		25	12	20.14	20.27	20.09
		25	25	20.04	20.20	20.09
		50	0	20.05	20.18	20.05

LTE Band 17						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23755	23790	23825
		Frequency (MHz)		706.5	710	713.5
5M	QPSK	1	0	23.13	23.11	23.12
		1	12	23.12	23.15	23.11
		1	24	23.10	22.95	23.09
		12	0	22.24	22.33	22.23
		12	6	22.20	22.29	22.19
		12	13	22.11	22.20	22.10
		25	0	22.15	22.24	22.14
5M	16QAM	1	0	22.09	22.19	22.09
		1	12	22.03	22.12	22.07
		1	24	22.08	22.12	21.98
		12	0	21.14	21.29	21.21
		12	6	21.09	21.27	21.07
		12	13	21.07	21.17	21.07
		25	0	21.03	21.19	21.03
5M	64QAM	1	0	21.11	21.16	21.00
		1	12	21.05	21.16	21.08
		1	24	21.02	21.14	21.06
		12	0	20.13	20.31	20.18
		12	6	20.12	20.25	20.07
		12	13	20.02	20.18	20.07
		25	0	20.03	20.16	20.03

LTE Band 38						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		37850	38000	38150
		Frequency (MHz)		2580	2595	2610
20M	QPSK	1	0	23.70	23.79	23.81
		1	50	23.57	23.66	23.68
		1	99	23.61	23.70	23.72
		50	0	22.72	22.81	22.83
		50	25	22.64	22.73	22.75
		50	50	22.61	22.70	22.72
		100	0	22.66	22.75	22.77
20M	16QAM	1	0	22.63	22.76	22.75
		1	50	22.57	22.56	22.63
		1	99	22.55	22.61	22.66
		50	0	21.67	21.71	21.76
		50	25	21.56	21.64	21.70
		50	50	21.57	21.62	21.64
		100	0	21.59	21.74	21.73
20M	64QAM	1	0	21.67	21.79	21.77
		1	50	21.49	21.62	21.68
		1	99	21.61	21.66	21.71
		50	0	20.70	20.78	20.77
		50	25	20.61	20.73	20.71
		50	50	20.59	20.67	20.66
		100	0	20.61	20.66	20.68

LTE Band 38						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		37825	38000	38175
		Frequency (MHz)		2577.5	2595	2612.5
15M	QPSK	1	0	23.63	23.78	23.76
		1	37	23.52	23.61	23.61
		1	74	23.61	23.67	23.70
		36	0	22.66	22.76	22.81
		36	19	22.59	22.66	22.66
		36	39	22.51	22.64	22.65
		75	0	22.64	22.66	22.74
15M	16QAM	1	0	22.69	22.70	22.71
		1	37	22.56	22.59	22.60
		1	74	22.49	22.57	22.69
		36	0	21.63	21.71	21.81
		36	19	21.51	21.66	21.67
		36	39	21.46	21.60	21.58
		75	0	21.55	21.71	21.63
15M	64QAM	1	0	21.60	21.69	21.71
		1	37	21.45	21.56	21.57
		1	74	21.48	21.51	21.60
		36	0	20.60	20.76	20.73
		36	19	20.54	20.63	20.60
		36	39	20.50	20.55	20.59
		75	0	20.62	20.65	20.64

LTE Band 38						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		37800	38000	38200
		Frequency (MHz)		2575	2595	2615
10M	QPSK	1	0	23.64	23.69	23.63
		1	24	23.50	23.53	23.54
		1	49	23.47	23.62	23.56
		25	0	22.59	22.79	22.68
		25	12	22.48	22.69	22.52
		25	25	22.42	22.50	22.65
		50	0	22.47	22.58	22.67
10M	16QAM	1	0	22.48	22.73	22.58
		1	24	22.44	22.36	22.52
		1	49	22.49	22.45	22.50
		25	0	21.65	21.56	21.67
		25	12	21.35	21.68	21.64
		25	25	21.50	21.43	21.64
		50	0	21.45	21.57	21.67
10M	64QAM	1	0	21.50	21.61	21.73
		1	24	21.44	21.44	21.38
		1	49	21.43	21.47	21.59
		25	0	20.54	20.50	20.69
		25	12	20.43	20.60	20.59
		25	25	20.45	20.55	20.57
		50	0	20.55	20.73	20.54

LTE Band 38						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		37775	38000	38225
		Frequency (MHz)		2572.5	2595	2617.5
5M	QPSK	1	0	23.57	23.78	23.76
		1	12	23.49	23.63	23.45
		1	24	23.57	23.56	23.43
		12	0	22.71	22.71	22.63
		12	6	22.55	22.52	22.46
		12	13	22.48	22.56	22.44
		25	0	22.57	22.71	22.65
5M	16QAM	1	0	22.47	22.58	22.60
		1	12	22.45	22.51	22.53
		1	24	22.47	22.53	22.49
		12	0	21.51	21.62	21.65
		12	6	21.47	21.54	21.64
		12	13	21.49	21.51	21.57
		25	0	21.50	21.57	21.47
5M	64QAM	1	0	21.46	21.60	21.62
		1	12	21.46	21.54	21.46
		1	24	21.42	21.50	21.49
		12	0	20.53	20.61	20.64
		12	6	20.51	20.53	20.56
		12	13	20.47	20.62	20.56
		25	0	20.61	20.60	20.60

LTE Band 41						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		39750	40620	41490
		Frequency (MHz)		2506	2593	2680
20M	QPSK	1	0	23.41	23.71	23.60
		1	50	23.34	23.64	23.53
		1	99	23.36	23.66	23.55
		50	0	22.43	22.73	22.62
		50	25	22.37	22.67	22.56
		50	50	22.36	22.66	22.55
		100	0	22.40	22.70	22.59
20M	16QAM	1	0	22.35	22.62	22.51
		1	50	22.26	22.56	22.53
		1	99	22.36	22.59	22.49
		50	0	21.33	21.67	21.55
		50	25	21.30	21.59	21.48
		50	50	21.36	21.63	21.48
		100	0	21.35	21.68	21.55
20M	64QAM	1	0	21.33	21.70	21.56
		1	50	21.24	21.55	21.48
		1	99	21.35	21.66	21.53
		50	0	20.41	20.71	20.52
		50	25	20.37	20.64	20.49
		50	50	20.36	20.58	20.47
		100	0	20.35	20.63	20.57

LTE Band 41						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		39725	40620	41515
		Frequency (MHz)		2503.5	2593	2682.5
15M	QPSK	1	0	23.37	23.62	23.50
		1	37	23.31	23.60	23.46
		1	74	23.31	23.64	23.49
		36	0	22.40	22.66	22.53
		36	19	22.33	22.67	22.51
		36	39	22.28	22.65	22.51
		75	0	22.30	22.70	22.59
15M	16QAM	1	0	22.38	22.66	22.56
		1	37	22.25	22.55	22.53
		1	74	22.35	22.56	22.46
		36	0	21.39	21.64	21.52
		36	19	21.35	21.58	21.47
		36	39	21.35	21.59	21.52
		75	0	21.39	21.61	21.58
15M	64QAM	1	0	21.41	21.67	21.58
		1	37	21.34	21.61	21.50
		1	74	21.35	21.63	21.53
		36	0	20.34	20.64	20.58
		36	19	20.31	20.64	20.52
		36	39	20.30	20.58	20.45
		75	0	20.37	20.66	20.56

LTE Band 41						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		39700	40620	41540
		Frequency (MHz)		2501	2593	2685
10M	QPSK	1	0	23.32	23.60	23.50
		1	24	23.20	23.56	23.41
		1	49	23.22	23.55	23.48
		25	0	22.38	22.63	22.52
		25	12	22.26	22.55	22.47
		25	25	22.21	22.54	22.44
		50	0	22.28	22.60	22.48
10M	16QAM	1	0	22.38	22.67	22.45
		1	24	22.26	22.57	22.43
		1	49	22.27	22.60	22.46
		25	0	21.34	21.71	21.54
		25	12	21.29	21.49	21.51
		25	25	21.18	21.61	21.38
		50	0	21.29	21.57	21.43
10M	64QAM	1	0	21.38	21.60	21.51
		1	24	21.25	21.58	21.35
		1	49	21.18	21.54	21.49
		25	0	20.34	20.70	20.54
		25	12	20.33	20.48	20.52
		25	25	20.22	20.54	20.40
		50	0	20.36	20.61	20.45

LTE Band 41						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		39675	40620	41565
		Frequency (MHz)		2498.5	2593	2687.5
5M	QPSK	1	0	23.27	23.58	23.52
		1	12	23.25	23.50	23.35
		1	24	23.26	23.57	23.44
		12	0	22.34	22.67	22.52
		12	6	22.17	22.59	22.46
		12	13	22.25	22.51	22.41
		25	0	22.23	22.60	22.44
5M	16QAM	1	0	22.33	22.63	22.54
		1	12	22.27	22.52	22.36
		1	24	22.26	22.62	22.52
		12	0	21.39	21.60	21.53
		12	6	21.24	21.57	21.52
		12	13	21.23	21.52	21.45
		25	0	21.26	21.63	21.47
5M	64QAM	1	0	21.25	21.64	21.53
		1	12	21.31	21.51	21.40
		1	24	21.30	21.56	21.48
		12	0	20.32	20.57	20.51
		12	6	20.22	20.61	20.48
		12	13	20.26	20.54	20.47
		25	0	20.26	20.61	20.50

EIRP / ERP Power (dBm)

Band	WCDMA IV		
TX Channel	1312	1413	1513
Rx Channel	1537	1638	1738
Frequency	1712.4	1732.6	1752.6
RMC 12.2K	26.58	26.49	26.44
HSDPA Subtest-1	25.18	25.09	25.05
HSDPA Subtest-2	25.14	25.05	25.01
HSDPA Subtest-3	24.60	24.51	24.47
HSDPA Subtest-4	24.71	24.62	24.58
DC-HSDPA Subtest-1	25.15	25.06	25.02
DC-HSDPA Subtest-2	25.11	25.02	24.98
DC-HSDPA Subtest-3	24.57	24.48	24.44
DC-HSDPA Subtest-4	24.68	24.59	24.55
HSUPA Subtest-1	25.30	25.21	25.17
HSUPA Subtest-2	23.33	23.24	23.20
HSUPA Subtest-3	24.49	24.40	24.36
HSUPA Subtest-4	23.35	23.26	23.22
HSUPA Subtest-5	24.82	24.73	24.69
HSPA+ Subtest-1	22.83	22.74	22.70

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20050	20175	20300
		Frequency (MHz)		1720	1732.5	1745
20M	QPSK	1	0	26.13	26.18	26.09
		1	50	26.02	26.07	25.98
		1	99	26.05	26.10	26.01
		50	0	25.10	25.15	25.06
		50	25	25.06	25.11	25.02
		50	50	25.07	25.12	25.03
		100	0	25.05	25.10	25.01
20M	16QAM	1	0	25.11	25.18	25.00
		1	50	24.98	25.03	24.97
		1	99	25.05	25.10	24.95
		50	0	24.00	24.13	24.02
		50	25	24.06	24.08	23.99
		50	50	24.06	24.03	24.00
		100	0	23.96	24.10	23.99
20M	64QAM	1	0	24.12	24.15	24.04
		1	50	24.00	24.07	23.89
		1	99	24.05	24.01	23.95
		50	0	23.02	23.14	22.97
		50	25	22.99	23.03	22.97
		50	50	23.07	23.07	22.93
		100	0	23.01	23.05	22.95

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20025	20175	20325
		Frequency (MHz)		1717.5	1732.5	1747.5
15M	QPSK	1	0	26.11	26.09	26.05
		1	37	25.96	25.97	25.96
		1	74	25.96	26.02	25.96
		36	0	25.09	25.12	25.05
		36	19	24.97	25.09	24.95
		36	39	25.06	25.06	25.02
		75	0	25.00	25.07	25.01
15M	16QAM	1	0	25.03	25.06	24.93
		1	37	24.89	25.06	24.91
		1	74	24.87	25.03	24.88
		36	0	23.96	23.97	24.01
		36	19	23.96	24.06	23.97
		36	39	23.93	23.93	23.92
		75	0	24.02	23.98	23.91
15M	64QAM	1	0	24.01	24.12	24.00
		1	37	23.90	24.02	23.89
		1	74	23.85	24.05	23.86
		36	0	23.02	23.10	23.06
		36	19	23.00	23.03	22.85
		36	39	22.97	23.01	22.91
		75	0	22.95	22.96	22.84

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20000	20175	20350
		Frequency (MHz)		1715	1732.5	1750
10M	QPSK	1	0	26.08	25.96	25.94
		1	24	25.86	25.85	25.88
		1	49	25.81	25.94	25.80
		25	0	24.88	25.06	25.04
		25	12	24.81	24.97	24.85
		25	25	24.94	25.00	24.89
		50	0	24.81	24.91	24.91
10M	16QAM	1	0	25.00	24.90	24.82
		1	24	24.96	24.97	24.76
		1	49	24.79	24.91	24.74
		25	0	23.96	23.92	23.92
		25	12	23.85	23.93	23.90
		25	25	23.85	23.93	23.85
		50	0	23.96	23.84	23.86
10M	64QAM	1	0	23.87	24.12	23.80
		1	24	23.86	23.85	23.86
		1	49	23.89	23.97	23.67
		25	0	22.82	22.88	22.92
		25	12	22.95	22.93	22.76
		25	25	22.77	22.97	22.87
		50	0	22.87	22.94	22.81

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		19975	20175	20375
		Frequency (MHz)		1712.5	1732.5	1752.5
5M	QPSK	1	0	25.98	26.14	25.89
		1	12	25.90	26.01	25.78
		1	24	26.01	25.89	25.87
		12	0	25.08	25.07	24.82
		12	6	24.98	24.96	24.84
		12	13	25.06	24.98	24.91
		25	0	24.83	24.94	24.80
5M	16QAM	1	0	24.98	25.00	25.04
		1	12	24.79	24.91	24.77
		1	24	24.88	24.86	24.79
		12	0	23.86	23.98	23.87
		12	6	23.92	23.89	23.94
		12	13	23.95	23.93	23.87
		25	0	23.84	23.96	23.79
5M	64QAM	1	0	24.02	23.94	23.93
		1	12	23.82	23.98	23.77
		1	24	24.02	23.97	23.86
		12	0	23.04	22.85	22.93
		12	6	22.98	23.01	22.79
		12	13	22.82	22.91	22.80
		25	0	22.94	22.83	22.84

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		19965	20175	20385
		Frequency (MHz)		1711.5	1732.5	1753.5
3M	QPSK	1	0	25.98	26.01	26.03
		1	7	25.97	25.94	25.89
		1	14	25.85	25.98	25.85
		8	0	24.96	24.96	24.87
		8	3	24.95	25.02	24.98
		8	7	24.96	24.99	24.93
		15	0	24.95	25.05	24.87
3M	16QAM	1	0	24.96	25.04	25.00
		1	7	24.91	24.92	24.79
		1	14	24.96	24.89	24.86
		8	0	23.96	24.03	23.85
		8	3	23.84	23.98	23.92
		8	7	23.94	23.96	23.85
		15	0	23.73	24.01	23.85
3M	64QAM	1	0	23.98	23.98	23.88
		1	7	23.78	23.93	23.85
		1	14	23.82	23.81	23.74
		8	0	22.95	22.88	22.80
		8	3	22.85	22.86	22.85
		8	7	22.89	23.02	22.83
		15	0	22.83	22.84	22.80

LTE Band 4						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		19957	20175	20393
		Frequency (MHz)		1710.7	1732.5	1754.3
1.4M	QPSK	1	0	25.92	26.02	25.99
		1	2	25.99	25.91	25.82
		1	5	25.91	25.98	25.78
		3	0	25.94	25.93	25.99
		3	1	26.00	25.93	25.86
		3	3	26.02	25.95	25.89
		6	0	24.99	25.01	24.89
1.4M	16QAM	1	0	25.07	25.07	24.90
		1	2	24.90	24.85	24.78
		1	5	24.97	24.99	24.79
		3	0	25.03	24.91	24.92
		3	1	24.88	24.87	24.88
		3	3	24.80	25.00	24.82
		6	0	23.93	23.89	23.86
1.4M	64QAM	1	0	24.00	24.04	23.91
		1	2	23.87	23.83	23.81
		1	5	23.98	23.94	23.85
		3	0	23.87	24.05	23.81
		3	1	23.86	23.95	23.93
		3	3	23.77	23.89	23.80
		6	0	22.84	22.88	22.85

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20850	21100	21350
		Frequency (MHz)		2510	2535	2560
20M	QPSK	1	0	24.31	24.29	24.33
		1	50	24.30	24.28	24.32
		1	99	24.23	24.21	24.25
		50	0	23.28	23.26	23.30
		50	25	23.23	23.21	23.25
		50	50	23.24	23.22	23.26
		100	0	23.26	23.24	23.28
20M	16QAM	1	0	23.23	23.26	23.24
		1	50	23.22	23.26	23.29
		1	99	23.19	23.21	23.17
		50	0	22.27	22.17	22.25
		50	25	22.17	22.20	22.21
		50	50	22.17	22.20	22.18
		100	0	22.25	22.14	22.18
20M	64QAM	1	0	22.27	22.24	22.30
		1	50	22.22	22.19	22.29
		1	99	22.18	22.16	22.25
		50	0	21.20	21.19	21.22
		50	25	21.21	21.18	21.21
		50	50	21.17	21.15	21.19
		100	0	21.23	21.15	21.28

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20825	21100	21375
		Frequency (MHz)		2507.5	2535	2562.5
15M	QPSK	1	0	24.28	24.22	24.28
		1	37	24.24	24.28	24.24
		1	74	24.23	24.11	24.15
		36	0	23.25	23.24	23.23
		36	19	23.21	23.17	23.21
		36	39	23.19	23.19	23.26
		75	0	23.26	23.18	23.25
15M	16QAM	1	0	23.20	23.16	23.22
		1	37	23.13	23.20	23.17
		1	74	23.15	23.08	23.08
		36	0	22.22	22.19	22.18
		36	19	22.17	22.10	22.14
		36	39	22.04	22.21	22.14
		75	0	22.18	22.20	22.18
15M	64QAM	1	0	22.21	22.18	22.21
		1	37	22.22	22.14	22.26
		1	74	22.14	22.09	22.21
		36	0	21.25	21.16	21.18
		36	19	21.06	21.04	21.14
		36	39	21.14	21.09	21.20
		75	0	21.21	21.15	21.21

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20800	21100	21400
		Frequency (MHz)		2505	2535	2565
10M	QPSK	1	0	24.18	24.23	24.11
		1	24	24.22	24.24	24.20
		1	49	24.02	24.07	24.07
		25	0	23.24	23.05	23.05
		25	12	23.16	23.01	23.05
		25	25	23.18	23.02	23.22
		50	0	23.12	23.07	23.12
10M	16QAM	1	0	23.16	23.10	23.14
		1	24	23.11	23.19	23.12
		1	49	23.11	23.01	23.07
		25	0	22.13	22.13	22.17
		25	12	22.04	22.05	22.19
		25	25	22.07	22.00	22.06
		50	0	22.10	22.11	22.12
10M	64QAM	1	0	22.11	22.08	22.22
		1	24	22.24	22.14	22.15
		1	49	22.08	21.96	22.08
		25	0	21.02	21.11	21.12
		25	12	21.08	21.09	21.09
		25	25	21.06	21.20	21.22
		50	0	21.00	21.18	21.25

LTE Band 7						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20775	21100	21425
		Frequency (MHz)		2502.5	2535	2567.5
5M	QPSK	1	0	24.18	24.17	24.12
		1	12	24.25	24.16	24.07
		1	24	24.07	24.11	24.10
		12	0	23.03	23.07	23.22
		12	6	23.14	23.05	23.01
		12	13	23.12	23.10	23.09
		25	0	23.22	23.08	23.08
5M	16QAM	1	0	23.01	23.21	23.25
		1	12	23.05	23.22	23.15
		1	24	23.07	23.10	23.05
		12	0	22.15	22.08	22.23
		12	6	22.08	21.94	22.04
		12	13	22.02	22.05	22.06
		25	0	22.09	22.08	22.11
5M	64QAM	1	0	22.02	22.22	22.16
		1	12	22.09	22.23	22.24
		1	24	22.08	22.05	22.06
		12	0	21.16	20.96	21.01
		12	6	20.90	21.00	21.12
		12	13	21.14	21.08	21.15
		25	0	21.23	21.04	21.03

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23060	23095	23130
		Frequency (MHz)		704	707.5	711
10M	QPSK	1	0	17.74	17.79	17.76
		1	24	17.67	17.72	17.69
		1	49	17.55	17.60	17.57
		25	0	16.75	16.80	16.77
		25	12	16.70	16.75	16.72
		25	25	16.66	16.71	16.68
		50	0	16.69	16.74	16.71
10M	16QAM	1	0	16.72	16.72	16.69
		1	24	16.63	16.68	16.62
		1	49	16.51	16.52	16.50
		25	0	15.72	15.74	15.70
		25	12	15.62	15.67	15.70
		25	25	15.64	15.69	15.64
		50	0	15.62	15.68	15.65
10M	64QAM	1	0	15.71	15.78	15.69
		1	24	15.58	15.72	15.61
		1	49	15.52	15.50	15.52
		25	0	14.73	14.70	14.73
		25	12	14.65	14.65	14.63
		25	25	14.58	14.68	14.59
		50	0	14.60	14.66	14.65

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23035	23095	23155
		Frequency (MHz)		701.5	707.5	713.5
5M	QPSK	1	0	17.70	17.75	17.72
		1	12	17.63	17.68	17.65
		1	24	17.51	17.56	17.53
		12	0	16.71	16.76	16.73
		12	6	16.66	16.71	16.68
		12	13	16.62	16.67	16.64
		25	0	16.65	16.70	16.67
5M	16QAM	1	0	16.68	16.68	16.65
		1	12	16.59	16.64	16.58
		1	24	16.47	16.48	16.46
		12	0	15.68	15.70	15.66
		12	6	15.58	15.63	15.66
		12	13	15.60	15.65	15.60
		25	0	15.58	15.64	15.61
5M	64QAM	1	0	15.67	15.74	15.65
		1	12	15.54	15.68	15.57
		1	24	15.48	15.46	15.48
		12	0	14.69	14.66	14.69
		12	6	14.61	14.61	14.59
		12	13	14.54	14.64	14.55
		25	0	14.56	14.62	14.61

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23025	23095	23165
		Frequency (MHz)		700.5	707.5	714.5
3M	QPSK	1	0	17.54	17.57	17.58
		1	7	17.55	17.50	17.58
		1	14	17.49	17.53	17.39
		8	0	16.62	16.71	16.64
		8	3	16.65	16.64	16.61
		8	7	16.48	16.56	16.61
		15	0	16.64	16.58	16.50
3M	16QAM	1	0	16.62	16.62	16.63
		1	7	16.49	16.61	16.53
		1	14	16.37	16.45	16.42
		8	0	15.52	15.70	15.53
		8	3	15.48	15.60	15.61
		8	7	15.58	15.54	15.56
		15	0	15.50	15.58	15.50
3M	64QAM	1	0	15.51	15.56	15.57
		1	7	15.54	15.61	15.37
		1	14	15.31	15.46	15.42
		8	0	14.66	14.77	14.73
		8	3	14.55	14.55	14.43
		8	7	14.40	14.61	14.55
		15	0	14.56	14.55	14.49

LTE Band 12						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23017	23095	23173
		Frequency (MHz)		699.7	707.5	715.3
1.4M	QPSK	1	0	17.70	17.65	17.64
		1	2	17.56	17.61	17.58
		1	5	17.46	17.46	17.44
		3	0	17.58	17.73	17.64
		3	1	17.60	17.56	17.57
		3	3	17.43	17.65	17.52
		6	0	16.61	16.49	16.57
1.4M	16QAM	1	0	16.52	16.69	16.57
		1	2	16.46	16.53	16.53
		1	5	16.48	16.40	16.33
		3	0	16.56	16.60	16.71
		3	1	16.46	16.53	16.64
		3	3	16.48	16.52	16.46
		6	0	15.60	15.67	15.50
1.4M	64QAM	1	0	15.51	15.58	15.58
		1	2	15.53	15.49	15.39
		1	5	15.29	15.38	15.51
		3	0	15.57	15.72	15.60
		3	1	15.47	15.54	15.62
		3	3	15.63	15.47	15.64
		6	0	14.38	14.55	14.41

LTE Band 13				
BW	MCS Index	RB Size	RB Offset	Low
		Channel		23230
		Frequency (MHz)		782
10M	QPSK	1	0	21.91
		1	24	21.89
		1	49	21.84
		25	0	20.89
		25	12	20.90
		25	25	20.87
		50	0	20.82
10M	16QAM	1	0	20.87
		1	24	20.82
		1	49	20.82
		25	0	19.92
		25	12	19.80
		25	25	19.81
		50	0	19.72
10M	64QAM	1	0	19.83
		1	24	19.87
		1	49	19.75
		25	0	18.87
		25	12	18.90
		25	25	18.81
		50	0	18.76

LTE Band 13						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23205	23230	23255
		Frequency (MHz)		779.5	782	784.5
5M	QPSK	1	0	21.85	21.86	21.78
		1	12	21.89	21.85	21.76
		1	24	21.76	21.84	21.67
		12	0	20.90	20.89	20.89
		12	6	20.82	20.80	20.76
		12	13	20.78	20.80	20.69
		25	0	20.78	20.76	20.74
5M	16QAM	1	0	20.81	20.82	20.72
		1	12	20.81	20.79	20.66
		1	24	20.69	20.69	20.76
		12	0	19.88	19.91	19.85
		12	6	19.89	19.79	19.65
		12	13	19.69	19.79	19.66
		25	0	19.65	19.69	19.68
5M	64QAM	1	0	19.83	19.73	19.62
		1	12	19.79	19.83	19.70
		1	24	19.73	19.72	19.65
		12	0	18.87	18.85	18.81
		12	6	18.77	18.88	18.61
		12	13	18.69	18.72	18.70
		25	0	18.71	18.71	18.62

LTE Band 17						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23780	23790	23800
		Frequency (MHz)		709	710	711
10M	QPSK	1	0	17.74	17.77	17.73
		1	24	17.73	17.75	17.72
		1	49	17.71	17.74	17.70
		25	0	16.85	16.94	16.84
		25	12	16.81	16.90	16.80
		25	25	16.72	16.81	16.71
		50	0	16.76	16.85	16.75
10M	16QAM	1	0	16.72	16.82	16.72
		1	24	16.66	16.75	16.70
		1	49	16.71	16.75	16.61
		25	0	15.77	15.92	15.84
		25	12	15.72	15.90	15.70
		25	25	15.70	15.80	15.70
		50	0	15.66	15.82	15.66
10M	64QAM	1	0	15.74	15.79	15.63
		1	24	15.68	15.79	15.71
		1	49	15.65	15.77	15.69
		25	0	14.76	14.94	14.81
		25	12	14.75	14.88	14.70
		25	25	14.65	14.81	14.70
		50	0	14.66	14.79	14.66

LTE Band 17						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23755	23790	23825
		Frequency (MHz)		706.5	710	713.5
5M	QPSK	1	0	17.74	17.72	17.73
		1	12	17.73	17.76	17.72
		1	24	17.71	17.56	17.70
		12	0	16.85	16.94	16.84
		12	6	16.81	16.90	16.80
		12	13	16.72	16.81	16.71
		25	0	16.76	16.85	16.75
5M	16QAM	1	0	16.70	16.80	16.70
		1	12	16.64	16.73	16.68
		1	24	16.69	16.73	16.59
		12	0	15.75	15.90	15.82
		12	6	15.70	15.88	15.68
		12	13	15.68	15.78	15.68
		25	0	15.64	15.80	15.64
5M	64QAM	1	0	15.72	15.77	15.61
		1	12	15.66	15.77	15.69
		1	24	15.63	15.75	15.67
		12	0	14.74	14.92	14.79
		12	6	14.73	14.86	14.68
		12	13	14.63	14.79	14.68
		25	0	14.64	14.77	14.64

LTE Band 38						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		37850	38000	38150
		Frequency (MHz)		2580	2595	2610
20M	QPSK	1	0	25.08	25.17	25.19
		1	50	24.95	25.04	25.06
		1	99	24.99	25.08	25.10
		50	0	24.10	24.19	24.21
		50	25	24.02	24.11	24.13
		50	50	23.99	24.08	24.10
		100	0	24.04	24.13	24.15
20M	16QAM	1	0	24.01	24.14	24.13
		1	50	23.95	23.94	24.01
		1	99	23.93	23.99	24.04
		50	0	23.05	23.09	23.14
		50	25	22.94	23.02	23.08
		50	50	22.95	23.00	23.02
		100	0	22.97	23.12	23.11
20M	64QAM	1	0	23.05	23.17	23.15
		1	50	22.87	23.00	23.06
		1	99	22.99	23.04	23.09
		50	0	22.08	22.16	22.15
		50	25	21.99	22.11	22.09
		50	50	21.97	22.05	22.04
		100	0	21.99	22.04	22.06

LTE Band 38						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		37825	38000	38175
		Frequency (MHz)		2577.5	2595	2612.5
15M	QPSK	1	0	25.01	25.16	25.14
		1	37	24.90	24.99	24.99
		1	74	24.99	25.05	25.08
		36	0	24.04	24.14	24.19
		36	19	23.97	24.04	24.04
		36	39	23.89	24.02	24.03
		75	0	24.02	24.04	24.12
15M	16QAM	1	0	24.07	24.08	24.09
		1	37	23.94	23.97	23.98
		1	74	23.87	23.95	24.07
		36	0	23.01	23.09	23.19
		36	19	22.89	23.04	23.05
		36	39	22.84	22.98	22.96
		75	0	22.93	23.09	23.01
15M	64QAM	1	0	22.98	23.07	23.09
		1	37	22.83	22.94	22.95
		1	74	22.86	22.89	22.98
		36	0	21.98	22.14	22.11
		36	19	21.92	22.01	21.98
		36	39	21.88	21.93	21.97
		75	0	22.00	22.03	22.02

LTE Band 38						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		37800	38000	38200
		Frequency (MHz)		2575	2595	2615
10M	QPSK	1	0	25.02	25.07	25.01
		1	24	24.88	24.91	24.92
		1	49	24.85	25.00	24.94
		25	0	23.97	24.17	24.06
		25	12	23.86	24.07	23.90
		25	25	23.80	23.88	24.03
		50	0	23.85	23.96	24.05
10M	16QAM	1	0	23.86	24.11	23.96
		1	24	23.82	23.74	23.90
		1	49	23.87	23.83	23.88
		25	0	23.03	22.94	23.05
		25	12	22.73	23.06	23.02
		25	25	22.88	22.81	23.02
		50	0	22.83	22.95	23.05
10M	64QAM	1	0	22.88	22.99	23.11
		1	24	22.82	22.82	22.76
		1	49	22.81	22.85	22.97
		25	0	21.92	21.88	22.07
		25	12	21.81	21.98	21.97
		25	25	21.83	21.93	21.95
		50	0	21.93	22.11	21.92

LTE Band 38						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		37775	38000	38225
		Frequency (MHz)		2572.5	2595	2617.5
5M	QPSK	1	0	24.95	25.16	25.14
		1	12	24.87	25.01	24.83
		1	24	24.95	24.94	24.81
		12	0	24.09	24.09	24.01
		12	6	23.93	23.90	23.84
		12	13	23.86	23.94	23.82
		25	0	23.95	24.09	24.03
5M	16QAM	1	0	23.85	23.96	23.98
		1	12	23.83	23.89	23.91
		1	24	23.85	23.91	23.87
		12	0	22.89	23.00	23.03
		12	6	22.85	22.92	23.02
		12	13	22.87	22.89	22.95
		25	0	22.88	22.95	22.85
5M	64QAM	1	0	22.84	22.98	23.00
		1	12	22.84	22.92	22.84
		1	24	22.80	22.88	22.87
		12	0	21.91	21.99	22.02
		12	6	21.89	21.91	21.94
		12	13	21.85	22.00	21.94
		25	0	21.99	21.98	21.98

LTE Band 41						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		39750	40620	41490
		Frequency (MHz)		2506	2593	2680
20M	QPSK	1	0	25.36	25.66	25.55
		1	50	25.29	25.59	25.48
		1	99	25.31	25.61	25.50
		50	0	24.38	24.68	24.57
		50	25	24.32	24.62	24.51
		50	50	24.31	24.61	24.50
		100	0	24.35	24.65	24.54
20M	16QAM	1	0	24.30	24.57	24.46
		1	50	24.21	24.51	24.48
		1	99	24.31	24.54	24.44
		50	0	23.28	23.62	23.50
		50	25	23.25	23.54	23.43
		50	50	23.31	23.58	23.43
		100	0	23.30	23.63	23.50
20M	64QAM	1	0	23.28	23.65	23.51
		1	50	23.19	23.50	23.43
		1	99	23.30	23.61	23.48
		50	0	22.36	22.66	22.47
		50	25	22.32	22.59	22.44
		50	50	22.31	22.53	22.42
		100	0	22.30	22.58	22.52

LTE Band 41						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		39725	40620	41515
		Frequency (MHz)		2503.5	2593	2682.5
15M	QPSK	1	0	25.32	25.57	25.45
		1	37	25.26	25.55	25.41
		1	74	25.26	25.59	25.44
		36	0	24.35	24.61	24.48
		36	19	24.28	24.62	24.46
		36	39	24.23	24.60	24.46
		75	0	24.25	24.65	24.54
15M	16QAM	1	0	24.33	24.61	24.51
		1	37	24.20	24.50	24.48
		1	74	24.30	24.51	24.41
		36	0	23.34	23.59	23.47
		36	19	23.30	23.53	23.42
		36	39	23.30	23.54	23.47
		75	0	23.34	23.56	23.53
15M	64QAM	1	0	23.36	23.62	23.53
		1	37	23.29	23.56	23.45
		1	74	23.30	23.58	23.48
		36	0	22.29	22.59	22.53
		36	19	22.26	22.59	22.47
		36	39	22.25	22.53	22.40
		75	0	22.32	22.61	22.51

LTE Band 41						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		39700	40620	41540
		Frequency (MHz)		2501	2593	2685
10M	QPSK	1	0	25.27	25.55	25.45
		1	24	25.15	25.51	25.36
		1	49	25.17	25.50	25.43
		25	0	24.33	24.58	24.47
		25	12	24.21	24.50	24.42
		25	25	24.16	24.49	24.39
		50	0	24.23	24.55	24.43
10M	16QAM	1	0	24.33	24.62	24.40
		1	24	24.21	24.52	24.38
		1	49	24.22	24.55	24.41
		25	0	23.29	23.66	23.49
		25	12	23.24	23.44	23.46
		25	25	23.13	23.56	23.33
		50	0	23.24	23.52	23.38
10M	64QAM	1	0	23.33	23.55	23.46
		1	24	23.20	23.53	23.30
		1	49	23.13	23.49	23.44
		25	0	22.29	22.65	22.49
		25	12	22.28	22.43	22.47
		25	25	22.17	22.49	22.35
		50	0	22.31	22.56	22.40

LTE Band 41						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		39675	40620	41565
		Frequency (MHz)		2498.5	2593	2687.5
5M	QPSK	1	0	25.22	25.53	25.47
		1	12	25.20	25.45	25.30
		1	24	25.21	25.52	25.39
		12	0	24.29	24.62	24.47
		12	6	24.12	24.54	24.41
		12	13	24.20	24.46	24.36
		25	0	24.18	24.55	24.39
5M	16QAM	1	0	24.28	24.58	24.49
		1	12	24.22	24.47	24.31
		1	24	24.21	24.57	24.47
		12	0	23.34	23.55	23.48
		12	6	23.19	23.52	23.47
		12	13	23.18	23.47	23.40
		25	0	23.21	23.58	23.42
5M	64QAM	1	0	23.20	23.59	23.48
		1	12	23.26	23.46	23.35
		1	24	23.25	23.51	23.43
		12	0	22.27	22.52	22.46
		12	6	22.17	22.56	22.43
		12	13	22.21	22.49	22.42
		25	0	22.21	22.56	22.45

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

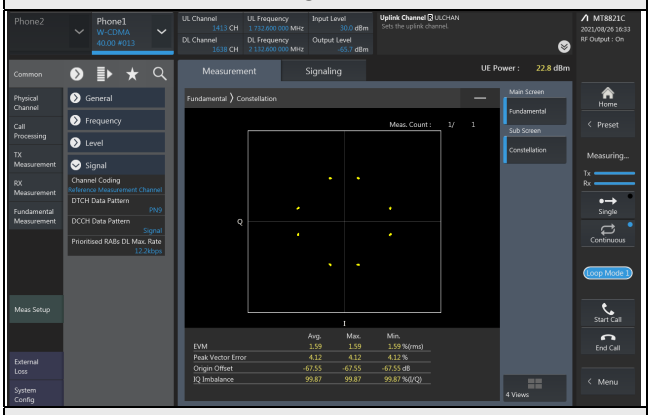
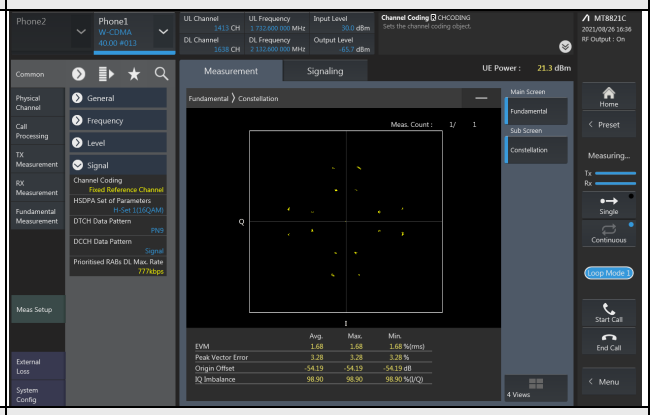
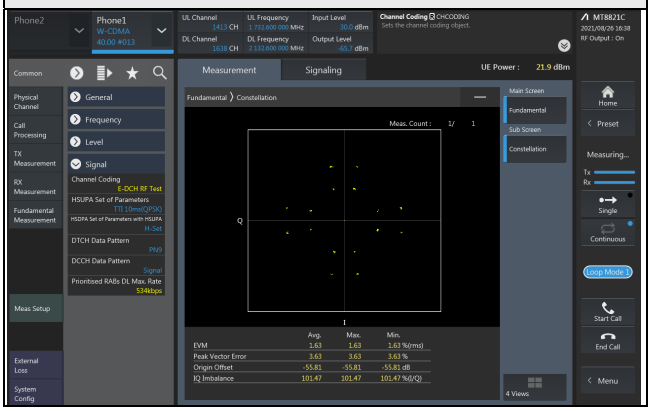
N/A

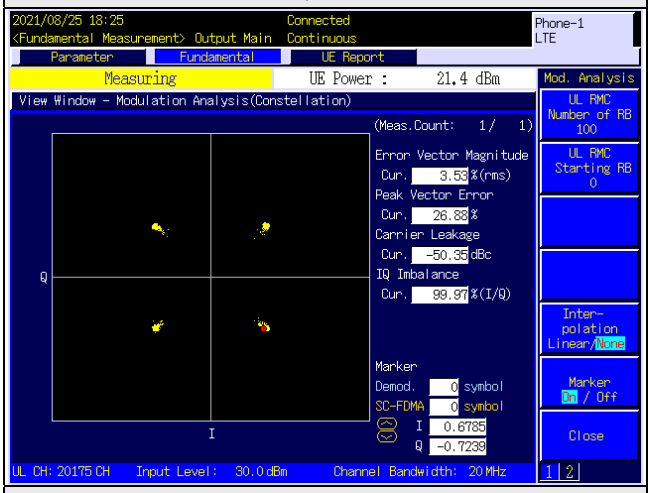
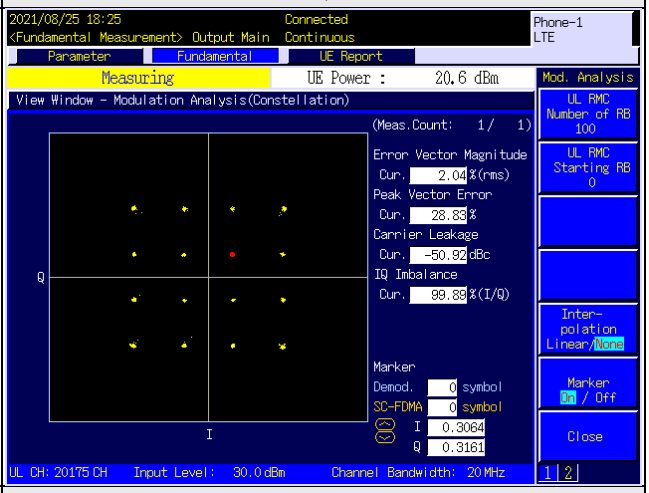
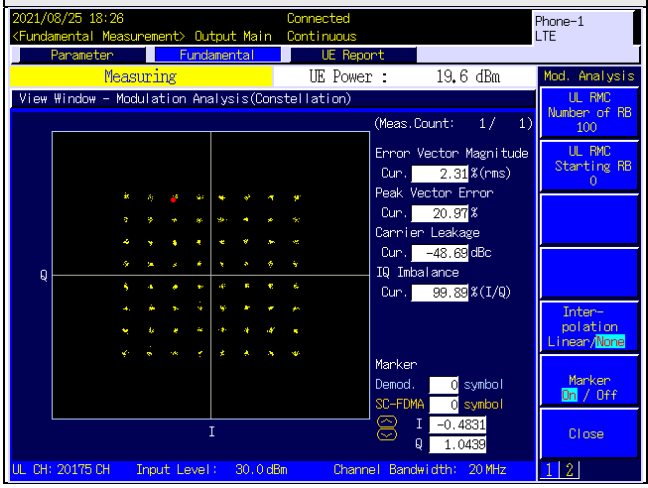
4.2.2 Test Procedure

Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

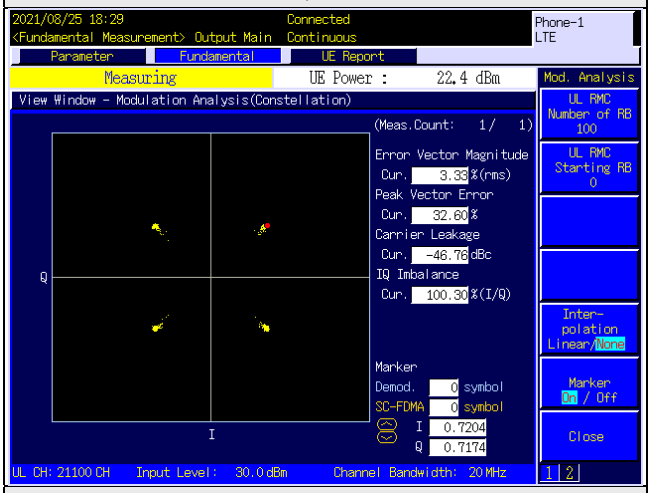
4.2.3 Test Setup

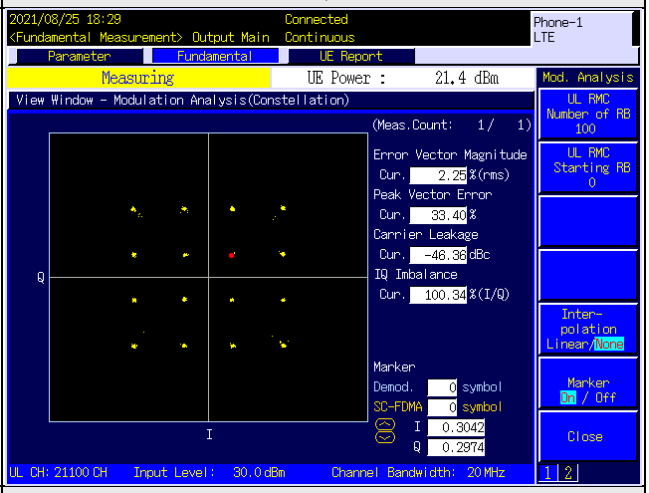
4.2.4 Test Results

WCDMA Band 4	
Spectrum Plot of Measurement Value	
Channel: 1413 / Frequency (MHz): 1732.6MHz	
WCDMA	HSDPA
	
HSUPA	
	

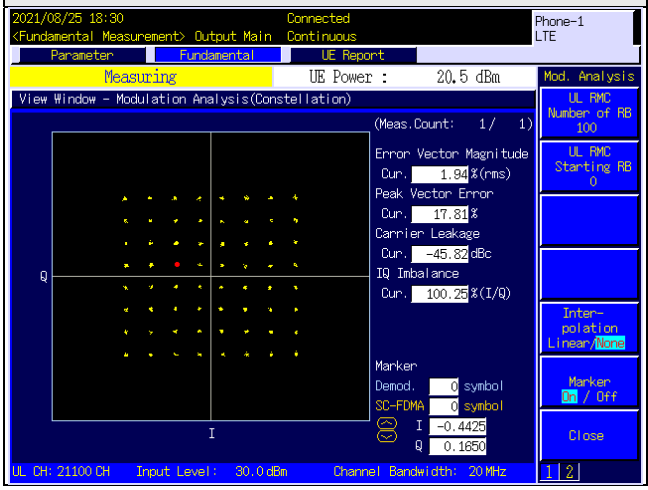
LTE Band 4	
Spectrum Plot of Measurement Value	
Channel: 20175 / Frequency (MHz): 1732.5MHz	
QPSK	16QAM
	
64QAM	
	

LTE Band 7	
Spectrum Plot of Measurement Value	
Channel: 21100 / Frequency (MHz): 2535.0MHz	
QPSK	16QAM

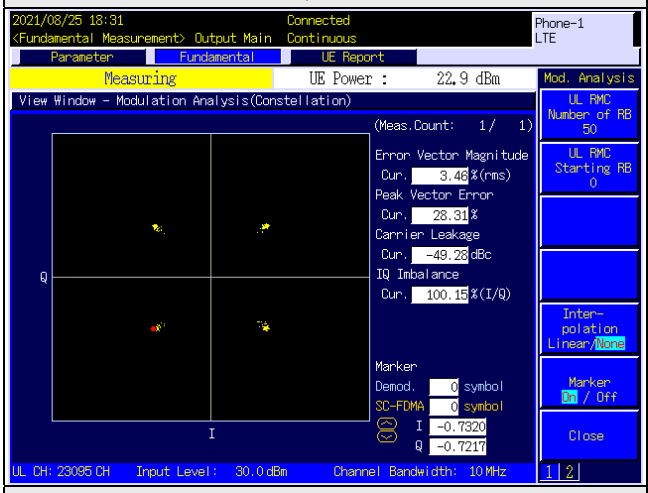


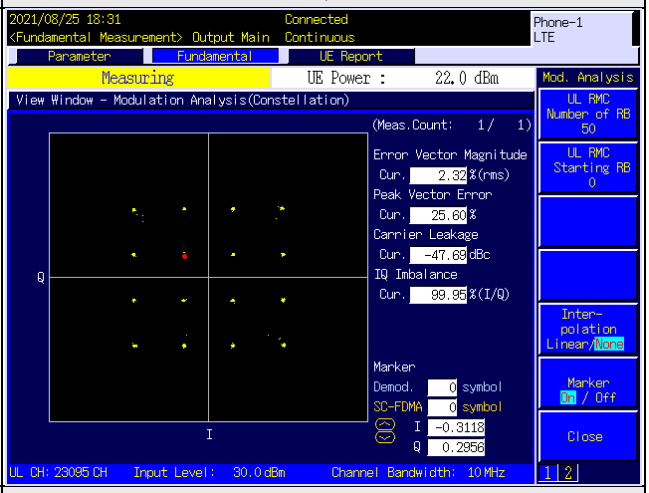


64QAM

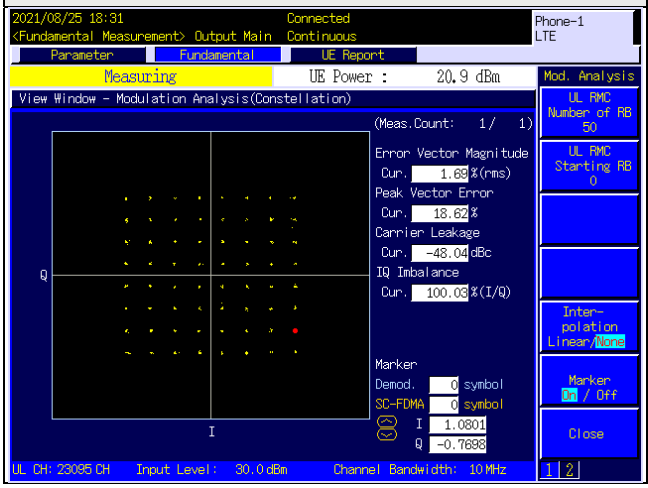


LTE Band 12	
Spectrum Plot of Measurement Value	
Channel: 23095 / Frequency (MHz): 707.5MHz	
QPSK	16QAM

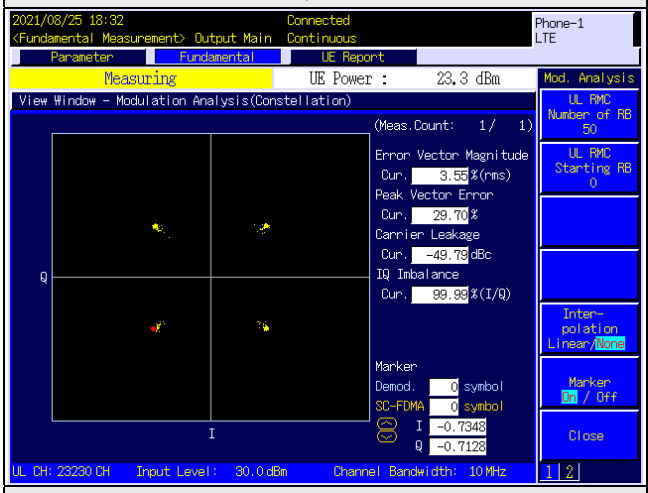


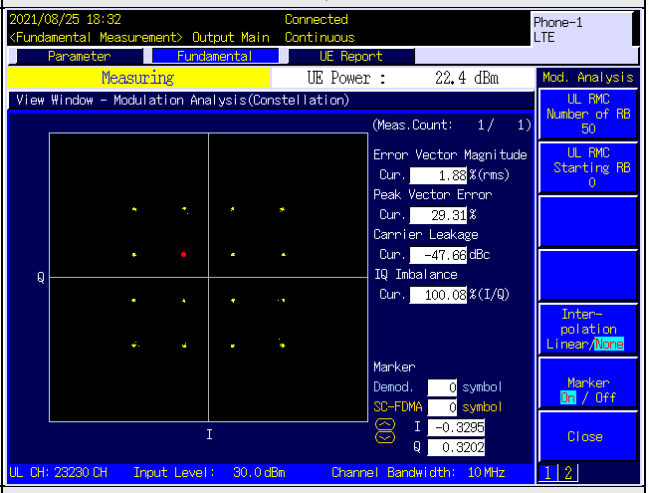


64QAM

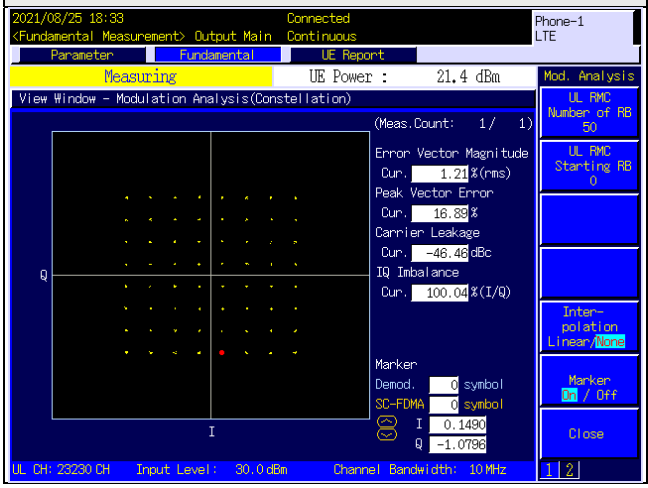


LTE Band 13	
Spectrum Plot of Measurement Value	
Channel: 23230 / Frequency (MHz): 782.0MHz	
QPSK	16QAM

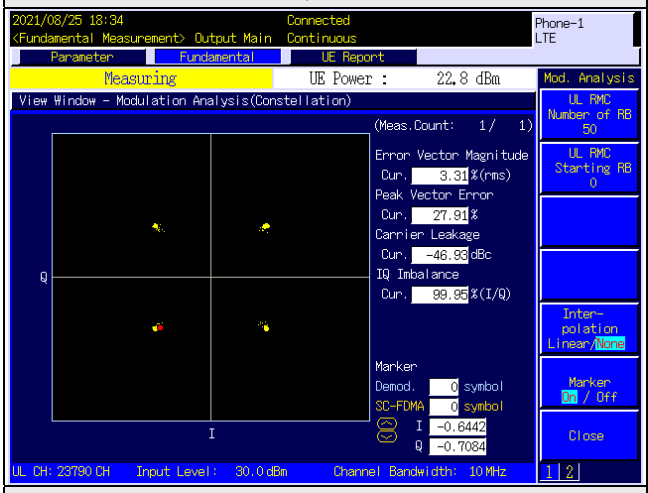


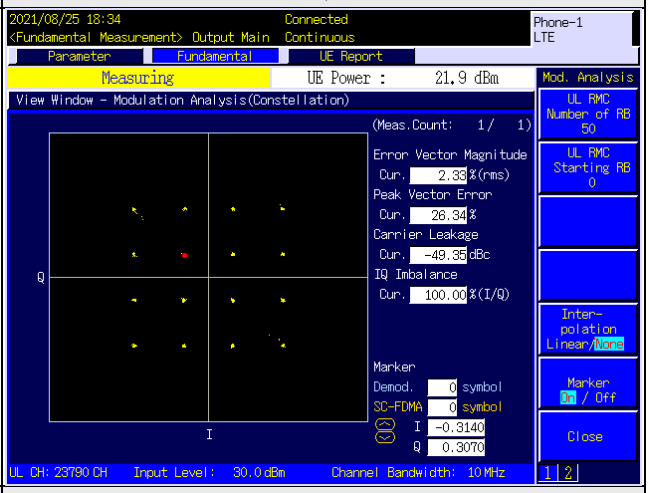


64QAM

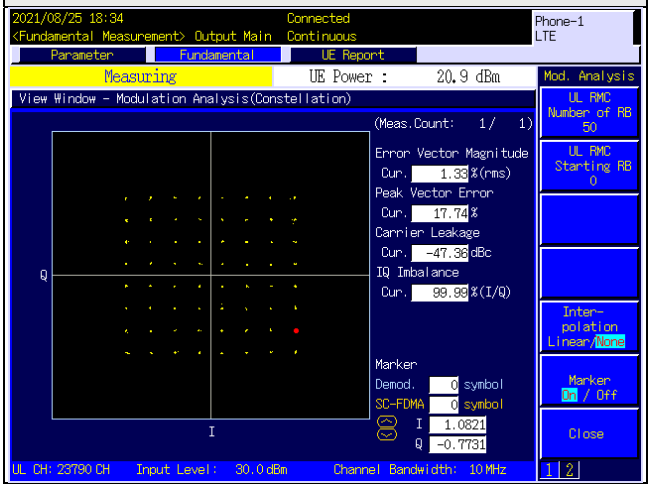


LTE Band 17	
Spectrum Plot of Measurement Value	
Channel: 23790 / Frequency (MHz): 710.0MHz	
QPSK	16QAM

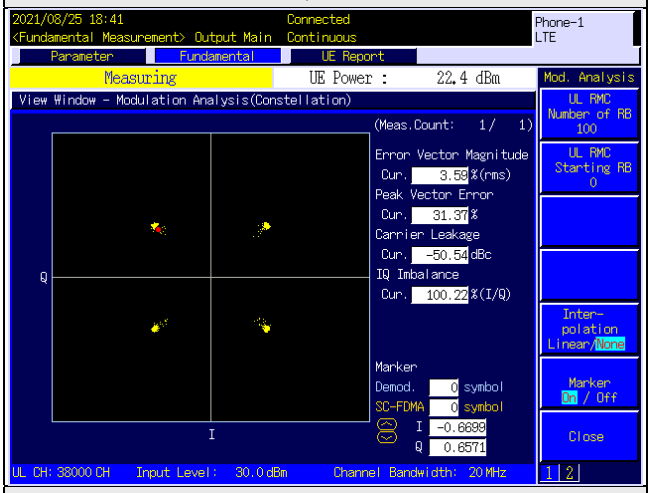


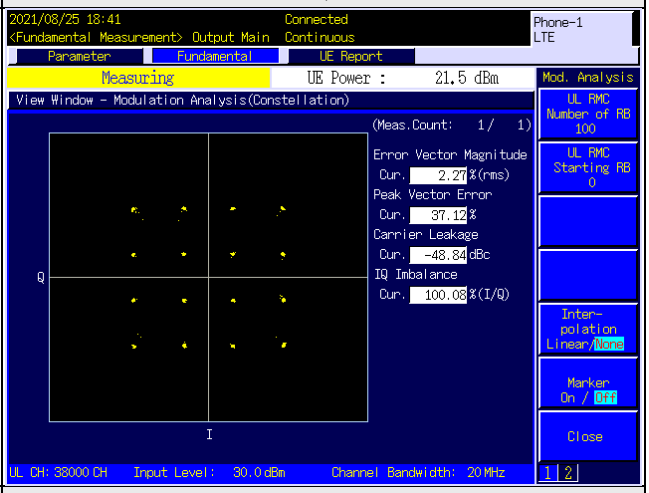


64QAM

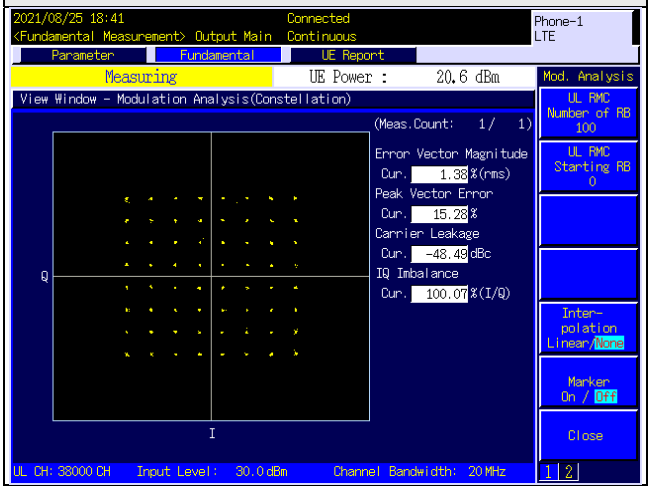


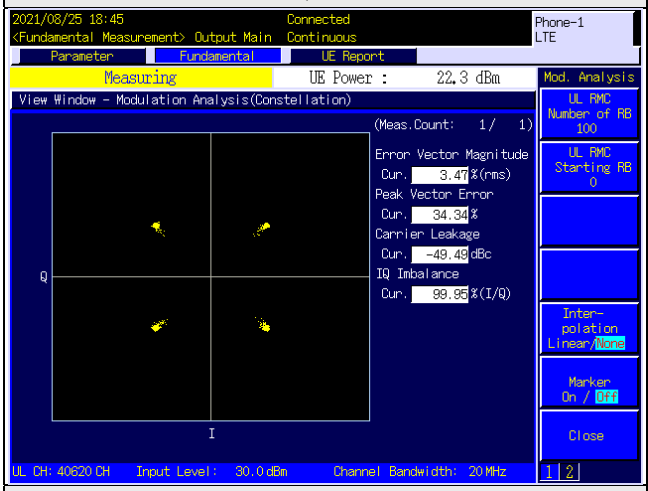
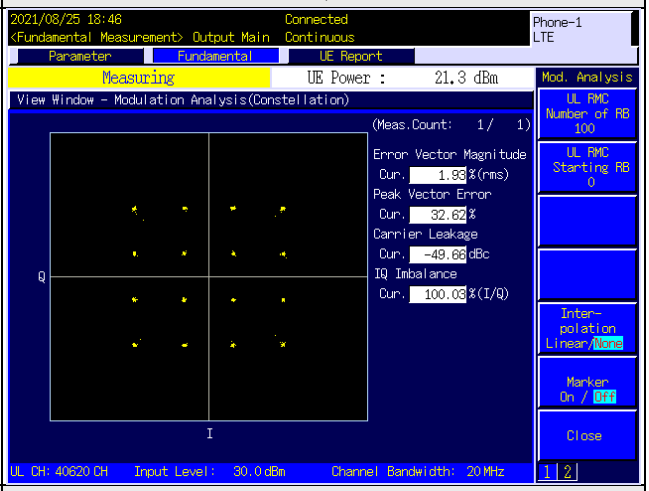
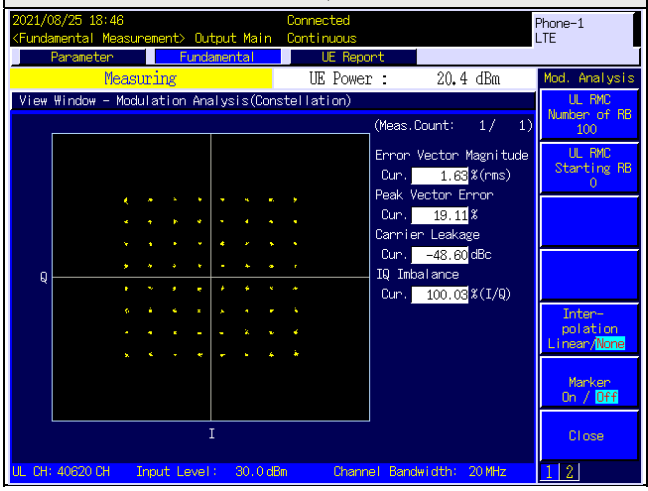
LTE Band 38	
Spectrum Plot of Measurement Value	
Channel: 38000 / Frequency (MHz): 2595.0MHz	
QPSK	16QAM





64QAM



LTE Band 41	
Spectrum Plot of Measurement Value	
Channel: 40620 / Frequency (MHz): 2593.0MHz	
QPSK	16QAM
	
64QAM	
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT -30℃ ~ 50℃.

4.3.2 Test Procedure

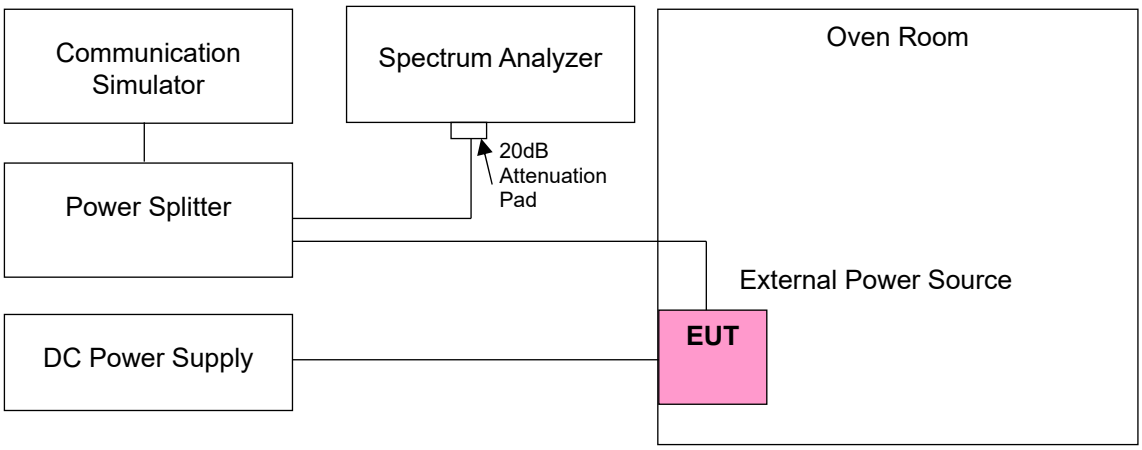
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.

c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

Note: The frequency error was recorded frequency error from the communication simulator.

4.3.3 Test Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Vdc)	WCDMA Band 4			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	1712.400005	0.0029	1752.600004	0.0023
10.80	1712.400003	0.0018	1752.600002	0.0011
12.42	1712.400002	0.0012	1752.600001	0.0006

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	WCDMA Band 4			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.400005	0.0029	1752.600002	0.0011
-20	1712.400006	0.0035	1752.600003	0.0017
-10	1712.400003	0.0018	1752.600004	0.0023
0	1712.400004	0.0023	1752.600002	0.0011
10	1712.400005	0.0029	1752.600001	0.0007
20	1712.400007	0.0041	1752.599998	-0.0011
30	1712.399999	-0.0006	1752.599993	-0.0040
40	1712.399998	-0.0012	1752.599994	-0.0034
50	1712.399999	-0.0006	1752.599998	-0.0011

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	1710.700002	0.0012	1754.300001	0.0006
10.80	1710.700001	0.0006	1754.300006	0.0034
12.42	1710.700004	0.0023	1754.300005	0.0029

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1710.700002	0.0012	1754.300004	0.0023
-20	1710.700001	0.0006	1754.300003	0.0017
-10	1710.700003	0.0018	1754.300002	0.0011
0	1710.700004	0.0023	1754.300005	0.0029
10	1710.700006	0.0035	1754.300006	0.0034
20	1710.699998	-0.0012	1754.299993	-0.0040
30	1710.699999	-0.0006	1754.299995	-0.0029
40	1710.699997	-0.0018	1754.299998	-0.0011
50	1710.699999	-0.0006	1754.299999	-0.0006

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	1711.500007	0.0041	1753.500004	0.0023
10.80	1711.500004	0.0023	1753.500002	0.0011
12.42	1711.500003	0.0018	1753.500001	0.0006

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1711.500008	0.0047	1753.500002	0.0011
-20	1711.500005	0.0029	1753.500001	0.0006
-10	1711.500002	0.0012	1753.500003	0.0017
0	1711.500001	0.0006	1753.500006	0.0034
10	1711.500002	0.0012	1753.500007	0.0040
20	1711.499999	-0.0006	1753.499992	-0.0046
30	1711.499997	-0.0018	1753.499996	-0.0023
40	1711.499998	-0.0012	1753.499998	-0.0011
50	1711.499996	-0.0023	1753.499999	-0.0006

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	1712.500002	0.0012	1752.500004	0.0023
10.80	1712.500001	0.0006	1752.500003	0.0017
12.42	1712.500002	0.0012	1752.500002	0.0011

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.500005	0.0029	1752.500003	0.0017
-20	1712.500004	0.0023	1752.500004	0.0023
-10	1712.500003	0.0018	1752.500004	0.0023
0	1712.500002	0.0012	1752.500002	0.0011
10	1712.500002	0.0012	1752.500001	0.0006
20	1712.499999	-0.0006	1752.499999	-0.0006
30	1712.499994	-0.0035	1752.499998	-0.0011
40	1712.499993	-0.0041	1752.499999	-0.0006
50	1712.499997	-0.0018	1752.499997	-0.0017

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	1715.000002	0.0012	1750.000007	0.0040
10.80	1715.000001	0.0006	1750.000005	0.0029
12.42	1715.000003	0.0017	1750.000002	0.0011

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1715.000006	0.0035	1750.000004	0.0023
-20	1715.000007	0.0041	1750.000005	0.0029
-10	1715.000002	0.0012	1750.000001	0.0006
0	1715.000003	0.0017	1750.000002	0.0011
10	1715.000002	0.0012	1750.000002	0.0011
20	1714.999997	-0.0017	1749.999995	-0.0029
30	1714.999998	-0.0012	1749.999997	-0.0017
40	1714.999999	-0.0006	1749.999995	-0.0029
50	1714.999999	-0.0006	1749.999998	-0.0011

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	1717.500003	0.0017	1747.500002	0.0011
10.80	1717.500004	0.0023	1747.500001	0.0006
12.42	1717.500001	0.0006	1747.500002	0.0011

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1717.500003	0.0017	1747.500002	0.0011
-20	1717.500002	0.0012	1747.500003	0.0017
-10	1717.500001	0.0006	1747.500004	0.0023
0	1717.500002	0.0012	1747.500003	0.0017
10	1717.500005	0.0029	1747.500005	0.0029
20	1717.499995	-0.0029	1747.499996	-0.0023
30	1717.499999	-0.0006	1747.499999	-0.0006
40	1717.499997	-0.0017	1747.499999	-0.0006
50	1717.499998	-0.0012	1747.499998	-0.0011

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 4			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	1720.000003	0.0017	1745.000001	0.0006
10.80	1720.000001	0.0006	1745.000002	0.0011
12.42	1720.000002	0.0012	1745.000001	0.0006

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1720.000006	0.0035	1745.000003	0.0017
-20	1720.000007	0.0041	1745.000004	0.0023
-10	1720.000001	0.0006	1745.000002	0.0011
0	1720.000002	0.0012	1745.000003	0.0017
10	1720.000002	0.0012	1745.000002	0.0011
20	1719.999997	-0.0017	1744.999999	-0.0006
30	1719.999995	-0.0029	1744.999999	-0.0006
40	1719.999999	-0.0006	1744.999998	-0.0011
50	1719.999999	-0.0006	1744.999996	-0.0023

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 7			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2502.500001	0.0004	2567.500004	0.0016
10.80	2502.500002	0.0008	2567.500003	0.0012
12.42	2502.500003	0.0012	2567.500003	0.0012

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2502.500003	0.0012	2567.500003	0.0012
-20	2502.500003	0.0012	2567.500002	0.0008
-10	2502.500004	0.0016	2567.500004	0.0016
0	2502.500001	0.0004	2567.500003	0.0012
10	2502.500002	0.0008	2567.500002	0.0008
20	2502.499999	-0.0004	2567.499998	-0.0008
30	2502.499996	-0.0016	2567.499997	-0.0012
40	2502.499998	-0.0008	2567.499995	-0.0019
50	2502.499999	-0.0004	2567.499996	-0.0016

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 7			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2505.000003	0.0012	2565.000002	0.0008
10.80	2505.000001	0.0004	2565.000003	0.0012
12.42	2505.000001	0.0004	2565.000002	0.0008

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2505.000003	0.0012	2565.000004	0.0016
-20	2505.000004	0.0016	2565.000005	0.0019
-10	2505.000002	0.0008	2565.000007	0.0027
0	2505.000004	0.0016	2565.000008	0.0031
10	2505.000005	0.0020	2565.000002	0.0008
20	2504.999999	-0.0004	2564.999999	-0.0004
30	2504.999998	-0.0008	2564.999995	-0.0019
40	2504.999997	-0.0012	2564.999997	-0.0012
50	2504.999996	-0.0016	2564.999999	-0.0004

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 7			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2507.500003	0.0012	2562.500001	0.0004
10.80	2507.500002	0.0008	2562.500003	0.0012
12.42	2507.500003	0.0012	2562.500004	0.0016

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2507.500004	0.0016	2562.500004	0.0016
-20	2507.500003	0.0012	2562.500002	0.0008
-10	2507.500002	0.0008	2562.500001	0.0004
0	2507.500001	0.0004	2562.500003	0.0012
10	2507.500002	0.0008	2562.500003	0.0012
20	2507.499997	-0.0012	2562.499999	-0.0004
30	2507.499998	-0.0008	2562.499999	-0.0004
40	2507.499996	-0.0016	2562.499998	-0.0008
50	2507.499999	-0.0004	2562.499996	-0.0016

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 7			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2510.000003	0.0012	2560.000003	0.0012
10.80	2510.000002	0.0008	2560.000001	0.0004
12.42	2510.000003	0.0012	2560.000001	0.0004

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 7			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2510.000003	0.0012	2560.000007	0.0027
-20	2510.000004	0.0016	2560.000002	0.0008
-10	2510.000001	0.0004	2560.000005	0.0020
0	2510.000002	0.0008	2560.000004	0.0016
10	2510.000002	0.0008	2560.000002	0.0008
20	2509.999995	-0.0020	2559.999999	-0.0004
30	2509.999994	-0.0024	2559.999995	-0.0020
40	2509.999997	-0.0012	2559.999999	-0.0004
50	2509.999999	-0.0004	2559.999996	-0.0016

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 12			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	699.700003	0.0043	715.300004	0.0056
10.80	699.700002	0.0029	715.300003	0.0042
12.42	699.700003	0.0043	715.300001	0.0014

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	699.700004	0.0057	715.300001	0.0014
-20	699.700005	0.0071	715.300005	0.0070
-10	699.700003	0.0043	715.300004	0.0056
0	699.700001	0.0014	715.300002	0.0028
10	699.700007	0.0100	715.300003	0.0042
20	699.699999	-0.0014	715.299998	-0.0028
30	699.699996	-0.0057	715.299996	-0.0056
40	699.699996	-0.0057	715.299996	-0.0056
50	699.699998	-0.0029	715.299999	-0.0014

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 12			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	700.500003	0.0043	714.500004	0.0056
10.80	700.500002	0.0029	714.500002	0.0028
12.42	700.500001	0.0014	714.500002	0.0028

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	700.500003	0.0043	714.500003	0.0042
-20	700.500004	0.0057	714.500002	0.0028
-10	700.500005	0.0071	714.500001	0.0014
0	700.500006	0.0086	714.500007	0.0098
10	700.500001	0.0014	714.500003	0.0042
20	700.499998	-0.0029	714.499999	-0.0014
30	700.499996	-0.0057	714.499998	-0.0028
40	700.499998	-0.0029	714.499999	-0.0014
50	700.499999	-0.0014	714.499995	-0.0070

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 12			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	701.500002	0.0029	713.500001	0.0014
10.80	701.500004	0.0057	713.500005	0.0070
12.42	701.500008	0.0114	713.500007	0.0098

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	701.500006	0.0086	713.500005	0.0070
-20	701.500007	0.0100	713.500006	0.0084
-10	701.500005	0.0071	713.500004	0.0056
0	701.500001	0.0014	713.500003	0.0042
10	701.500002	0.0029	713.500001	0.0014
20	701.499999	-0.0014	713.499999	-0.0014
30	701.499996	-0.0057	713.499997	-0.0042
40	701.499995	-0.0071	713.499998	-0.0028
50	701.499994	-0.0086	713.499995	-0.0070

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 12			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	704.000002	0.0028	711.000004	0.0056
10.80	704.000003	0.0043	711.000001	0.0014
12.42	704.000003	0.0043	711.000001	0.0014

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	704.000001	0.0014	711.000001	0.0014
-20	704.000004	0.0057	711.000003	0.0042
-10	704.000002	0.0028	711.000004	0.0056
0	704.000003	0.0043	711.000005	0.0070
10	704.000004	0.0057	711.000007	0.0098
20	703.999999	-0.0014	710.999997	-0.0042
30	703.999998	-0.0028	710.999996	-0.0056
40	703.999997	-0.0043	710.999995	-0.0070
50	703.999996	-0.0057	710.999999	-0.0014

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 13			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	779.500003	0.0038	784.500003	0.0038
10.80	779.500005	0.0064	784.500004	0.0051
12.42	779.500002	0.0026	784.500008	0.0102

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 13			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	779.500003	0.0038	784.500001	0.0013
-20	779.500001	0.0013	784.500005	0.0064
-10	779.500002	0.0026	784.500006	0.0076
0	779.500007	0.0090	784.500007	0.0089
10	779.500005	0.0064	784.500002	0.0025
20	779.499999	-0.0013	784.499999	-0.0013
30	779.499998	-0.0026	784.499995	-0.0064
40	779.499997	-0.0038	784.499997	-0.0038
50	779.499996	-0.0051	784.499999	-0.0013

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 13	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
9.18	782.000001	0.0013
10.80	782.000005	0.0064
12.42	782.000004	0.0051

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 13	
	Channel Bandwidth 10MHz	
	Frequency (MHz)	Frequency Error (ppm)
-30	782.000007	0.0090
-20	782.000002	0.0026
-10	782.000005	0.0064
0	782.000001	0.0013
10	782.000003	0.0038
20	781.999996	-0.0051
30	781.999997	-0.0038
40	781.999999	-0.0013
50	782.000002	0.0026

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 17			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	706.500001	0.0014	713.500007	0.0098
10.80	706.500002	0.0028	713.500005	0.0070
12.42	706.500004	0.0057	713.500002	0.0028

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 17			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	706.500006	0.0085	713.500004	0.0056
-20	706.500005	0.0071	713.500005	0.0070
-10	706.500007	0.0099	713.500006	0.0084
0	706.500001	0.0014	713.500007	0.0098
10	706.500002	0.0028	713.500001	0.0014
20	706.499999	-0.0014	713.499996	-0.0056
30	706.499997	-0.0042	713.499999	-0.0014
40	706.499996	-0.0057	713.499998	-0.0028
50	706.499997	-0.0042	713.499999	-0.0014

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 17			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	709.000001	0.0014	711.000003	0.0042
10.80	709.000003	0.0042	711.000002	0.0028
12.42	709.000002	0.0028	711.000001	0.0014

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 17			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	709.000002	0.0028	711.000002	0.0028
-20	709.000004	0.0056	711.000002	0.0028
-10	709.000005	0.0071	711.000001	0.0014
0	709.000003	0.0042	711.000004	0.0056
10	709.000001	0.0014	711.000002	0.0028
20	708.999998	-0.0028	710.999996	-0.0056
30	708.999997	-0.0042	710.999998	-0.0028
40	708.999998	-0.0028	710.999996	-0.0056
50	708.999998	-0.0028	710.999998	-0.0028

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 38			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2572.500002	0.0008	2617.500004	0.0015
10.80	2572.500003	0.0012	2617.500003	0.0011
12.42	2572.500004	0.0016	2617.500002	0.0008

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2572.500004	0.0016	2617.500002	0.0008
-20	2572.500001	0.0004	2617.500003	0.0011
-10	2572.500002	0.0008	2617.500005	0.0019
0	2572.500003	0.0012	2617.500001	0.0004
10	2572.500002	0.0008	2617.500002	0.0008
20	2572.499996	-0.0016	2617.499997	-0.0011
30	2572.499996	-0.0016	2617.499999	-0.0004
40	2572.499997	-0.0012	2617.499998	-0.0008
50	2572.499996	-0.0016	2617.499997	-0.0011

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 38			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2575.000001	0.0004	2615.000001	0.0004
10.80	2575.000003	0.0012	2615.000004	0.0015
12.42	2575.000004	0.0016	2615.000003	0.0011

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2575.000001	0.0004	2615.000003	0.0011
-20	2575.000002	0.0008	2615.000001	0.0004
-10	2575.000003	0.0012	2615.000002	0.0008
0	2575.000004	0.0016	2615.000002	0.0008
10	2575.000003	0.0012	2615.000005	0.0019
20	2574.999997	-0.0012	2614.999996	-0.0015
30	2574.999999	-0.0004	2614.999999	-0.0004
40	2574.999998	-0.0008	2614.999999	-0.0004
50	2574.999999	-0.0004	2614.999998	-0.0008

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 38			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2577.500003	0.0012	2612.500005	0.0019
10.80	2577.500003	0.0012	2612.500002	0.0008
12.42	2577.500002	0.0008	2612.500004	0.0015

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2577.500004	0.0016	2612.500001	0.0004
-20	2577.500004	0.0016	2612.500003	0.0011
-10	2577.500001	0.0004	2612.500003	0.0011
0	2577.500002	0.0008	2612.500002	0.0008
10	2577.500004	0.0016	2612.500002	0.0008
20	2577.499999	-0.0004	2612.499998	-0.0008
30	2577.499999	-0.0004	2612.499997	-0.0011
40	2577.499996	-0.0016	2612.499998	-0.0008
50	2577.499997	-0.0012	2612.499999	-0.0004

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 38			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2580.000004	0.0016	2610.000004	0.0015
10.80	2580.000002	0.0008	2610.000004	0.0015
12.42	2580.000001	0.0004	2610.000000	0.0008

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 38			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2580.000001	0.0004	2610.000004	0.0015
-20	2580.000003	0.0012	2610.000002	0.0008
-10	2580.000004	0.0016	2610.000003	0.0011
0	2580.000002	0.0008	2610.000002	0.0008
10	2580.000001	0.0004	2610.000003	0.0011
20	2579.999999	-0.0004	2609.999997	-0.0011
30	2579.999998	-0.0008	2609.999998	-0.0008
40	2579.999999	-0.0004	2609.999997	-0.0011
50	2579.999999	-0.0004	2609.999996	-0.0015

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 41			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2498.500003	0.0012	2687.500004	0.0015
10.80	2498.500001	0.0004	2687.500003	0.0011
12.42	2498.500004	0.0016	2687.500004	0.0015

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41			
	Channel Bandwidth 5MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2498.500003	0.0012	2687.500001	0.0004
-20	2498.500001	0.0004	2687.500001	0.0004
-10	2498.500002	0.0008	2687.500002	0.0007
0	2498.500003	0.0012	2687.500003	0.0011
10	2498.500003	0.0012	2687.500004	0.0015
20	2498.499997	-0.0012	2687.499999	-0.0004
30	2498.499998	-0.0008	2687.499998	-0.0007
40	2498.499999	-0.0004	2687.499996	-0.0015
50	2498.499996	-0.0016	2687.499997	-0.0011

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 41			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2501.000003	0.0012	2685.000002	0.0007
10.80	2501.000003	0.0012	2685.000001	0.0004
12.42	2501.000002	0.0008	2685.000002	0.0007

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41			
	Channel Bandwidth 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2501.000003	0.0012	2685.000001	0.0004
-20	2501.000004	0.0016	2685.000003	0.0011
-10	2501.000004	0.0016	2685.000002	0.0007
0	2501.000002	0.0008	2685.000003	0.0011
10	2501.000002	0.0008	2685.000002	0.0007
20	2500.999999	-0.0004	2684.999996	-0.0015
30	2500.999998	-0.0008	2684.999999	-0.0004
40	2500.999997	-0.0012	2684.999997	-0.0011
50	2500.999997	-0.0012	2684.999997	-0.0011

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 41			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2503.500001	0.0004	2682.500002	0.0007
10.80	2503.500003	0.0012	2682.500003	0.0011
12.42	2503.500003	0.0012	2682.500002	0.0007

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41			
	Channel Bandwidth 15MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2503.500003	0.0012	2682.500001	0.0004
-20	2503.500003	0.0012	2682.500002	0.0007
-10	2503.500002	0.0008	2682.500003	0.0011
0	2503.500003	0.0012	2682.500004	0.0015
10	2503.500003	0.0012	2682.500003	0.0011
20	2503.499997	-0.0012	2682.499996	-0.0015
30	2503.499999	-0.0004	2682.499997	-0.0011
40	2503.499996	-0.0016	2682.499996	-0.0015
50	2503.499996	-0.0016	2682.499997	-0.0011

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 41			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
9.18	2506.000002	0.0008	2680.000003	0.0011
10.80	2506.000004	0.0016	2680.000002	0.0007
12.42	2506.000003	0.0012	2680.000001	0.0004

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 41			
	Channel Bandwidth 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2506.000003	0.0012	2680.000007	0.0026
-20	2506.000002	0.0008	2680.000004	0.0015
-10	2506.000003	0.0012	2680.000005	0.0019
0	2506.000001	0.0004	2680.000002	0.0007
10	2506.000005	0.0020	2680.000004	0.0015
20	2505.999995	-0.0020	2679.999997	-0.0011
30	2505.999996	-0.0016	2679.999999	-0.0004
40	2505.999997	-0.0012	2679.999998	-0.0007
50	2505.999998	-0.0008	2679.999999	-0.0004

4.4 Emission Bandwidth Measurement

4.4.1 Limits of Emission Bandwidth Measurement

According to FCC 2.1049, the occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission.

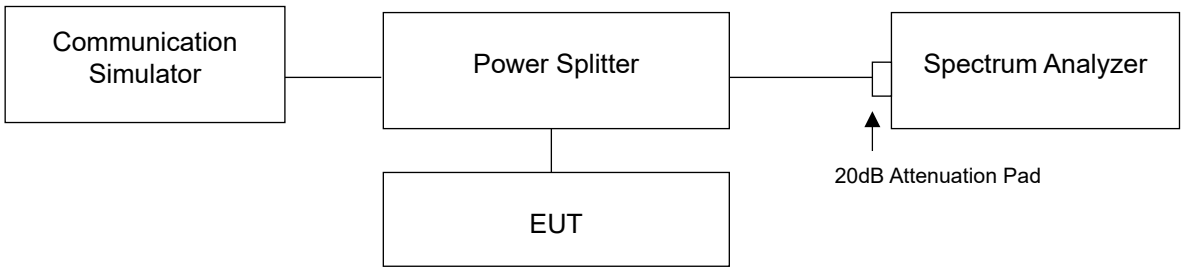
4.4.2 Test Procedure

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.
c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target "−X dB" requirement, i.e., if the requirement calls for measuring the −26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
f) Determine the following reference values: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
g) Determine the "−X dB amplitude" as equal to (Reference Value − X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.
h) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "−X dB amplitude" determined in step f). If a marker is below this "−X dB amplitude" value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers.
i) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

For the occupied bandwidth measurement method, please refer to section 5.4.4 of ANSI C63.26.

4.4.3 Test Setup



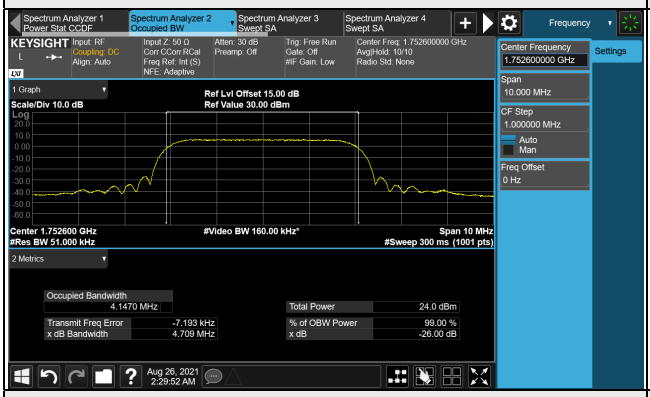
4.4.4 Test Result

Occupied Bandwidth

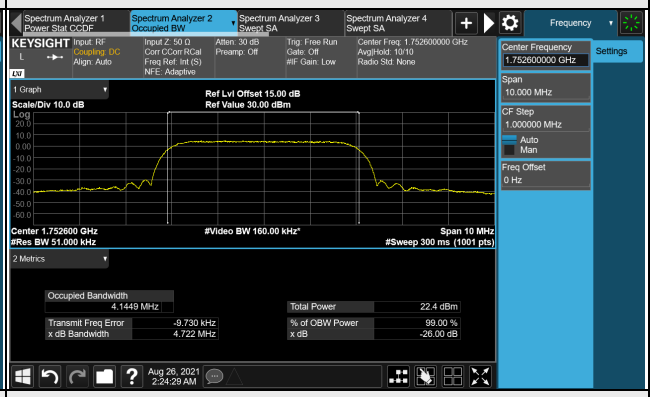
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
1312	1712.4	4.13	4.14	4.14
1413	1732.6	4.14	4.14	4.14
1513	1752.6	4.15	4.14	4.15

Spectrum Plot of Worst Value

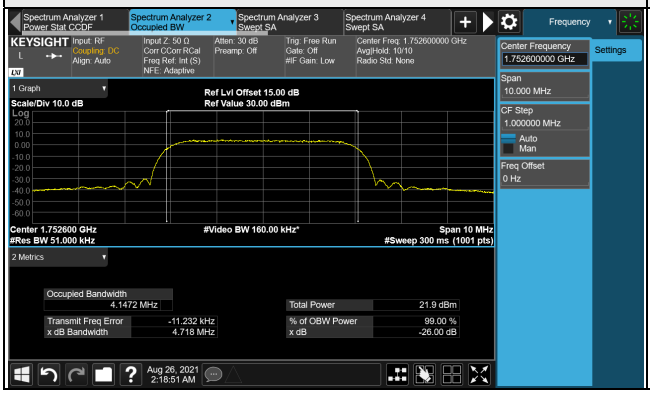
WCDMA



HSDPA



HSUPA

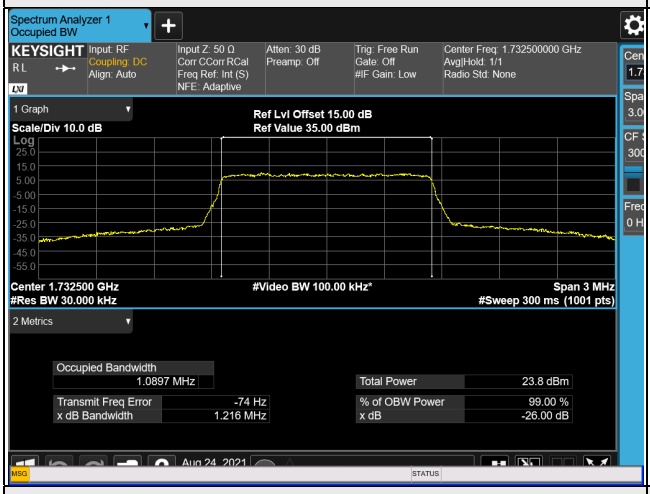


LTE Band 4, Channel Bandwidth 1.4MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
19957	1710.7	1.09	1.09	1.09
20175	1732.5	1.09	1.09	1.09
20393	1754.3	1.09	1.09	1.09
LTE Band 4, Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
19965	1711.5	2.70	2.70	2.70
20175	1732.5	2.70	2.70	2.70
20385	1753.5	2.70	2.70	2.70
LTE Band 4, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
19975	1712.5	4.49	4.49	4.50
20175	1732.5	4.49	4.50	4.51
20375	1752.5	4.49	4.50	4.51
LTE Band 4, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20000	1715.0	8.96	8.96	8.96
20175	1732.5	8.98	8.98	8.99
20350	1750.0	8.97	8.97	8.97
LTE Band 4, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20025	1717.5	13.42	13.42	13.42
20175	1732.5	13.49	13.47	13.46
20325	1747.5	13.41	13.40	13.40

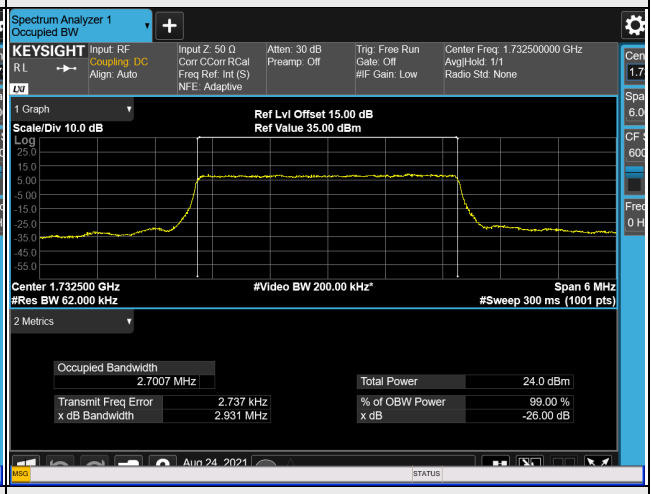
LTE Band 4, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20050	1720.0	17.89	17.91	17.91
20175	1732.5	17.98	18.01	18.00
20300	1745.0	17.82	17.85	17.85

Spectrum Plot of Worst Value

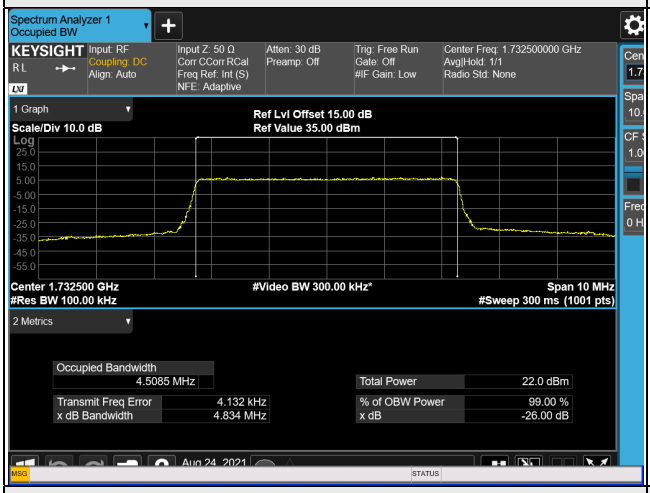
1.4MHz / 16QAM



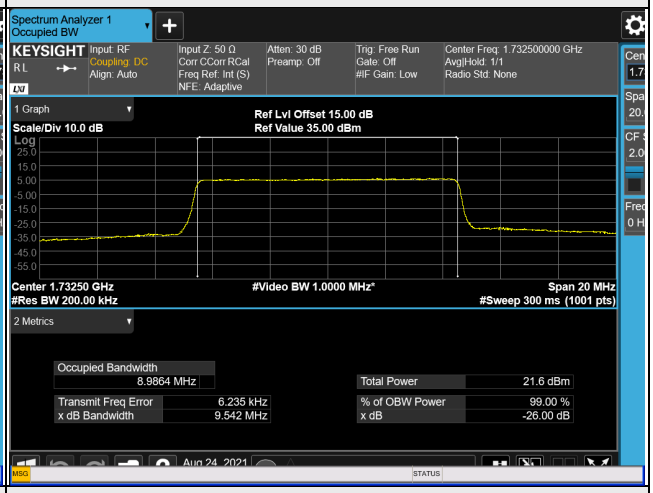
3MHz / QPSK



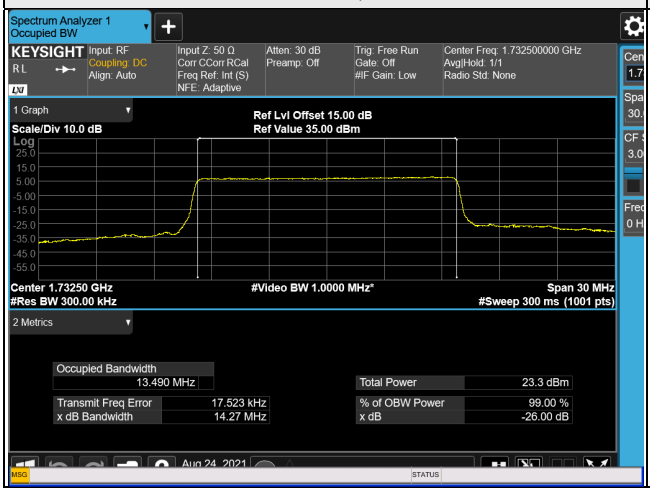
5MHz / 64QAM



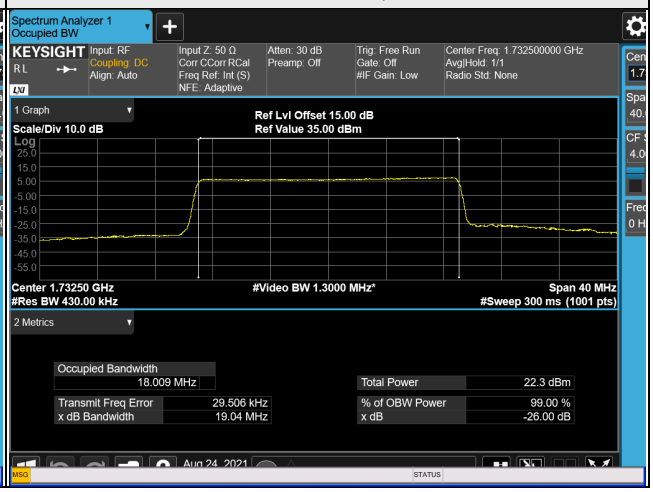
10MHz / 64QAM



15MHz / QPSK



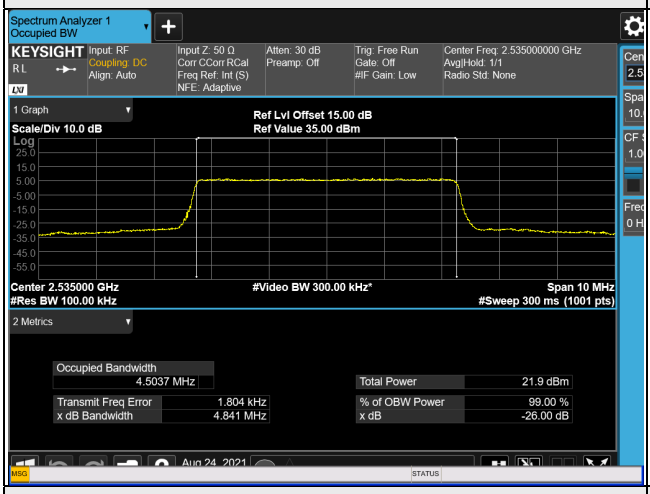
20MHz / 16QAM



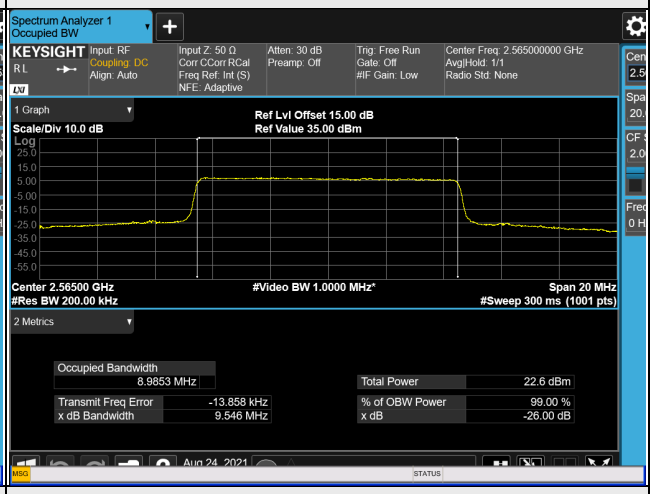
LTE Band 7, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20775	2502.5	4.49	4.49	4.50
21100	2535.0	4.49	4.49	4.50
21425	2567.5	4.50	4.50	4.50
LTE Band 7, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20800	2505.0	8.96	8.97	8.97
21100	2535.0	8.97	8.98	8.99
21400	2565.0	8.98	8.99	8.98
LTE Band 7, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20825	2507.5	13.43	13.42	13.42
21100	2535.0	13.45	13.45	13.44
21375	2562.5	13.47	13.45	13.44
LTE Band 7, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20850	2510.0	17.88	17.90	17.90
21100	2535.0	17.92	17.95	17.95
21350	2560.0	17.92	17.93	17.93

Spectrum Plot of Worst Value

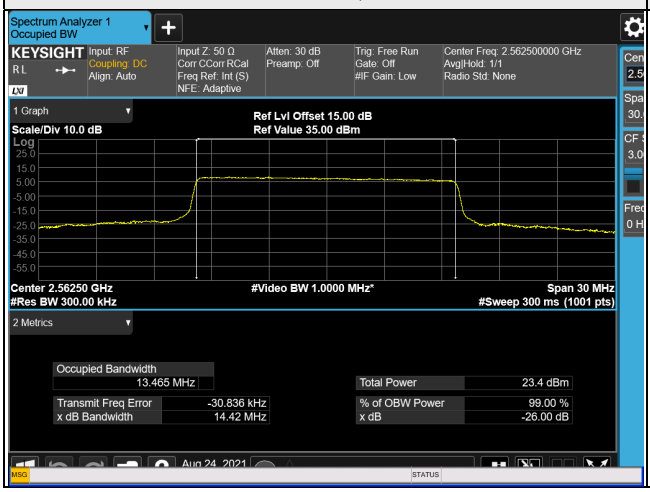
5MHz / 64QAM



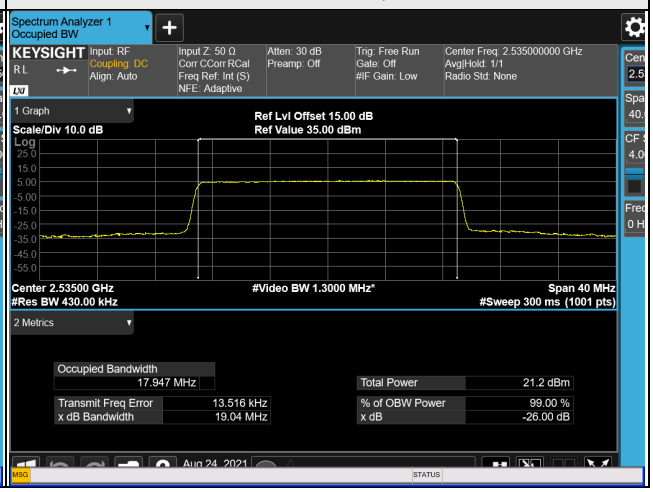
10MHz / 16QAM



15MHz / QPSK



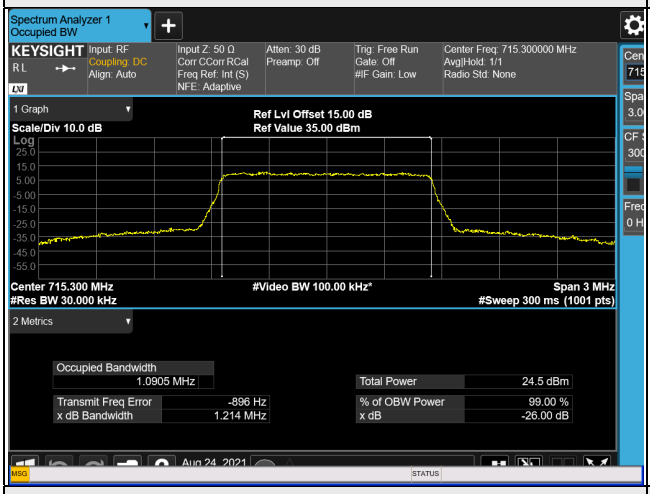
20MHz / 64QAM



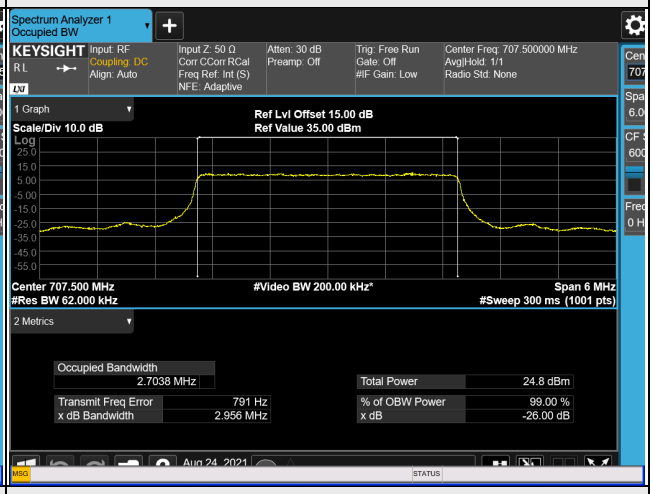
LTE Band 12, Channel Bandwidth 1.4MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23017	699.7	1.09	1.09	1.09
23095	707.5	1.09	1.09	1.09
23173	715.3	1.09	1.09	1.09
LTE Band 12, Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23025	700.5	2.70	2.70	2.70
23095	707.5	2.70	2.70	2.70
23165	714.5	2.70	2.69	2.69
LTE Band 12, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23035	701.5	4.48	4.48	4.49
23095	707.5	4.50	4.50	4.51
23155	713.5	4.48	4.48	4.49
LTE Band 12, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23060	704.0	8.93	8.93	8.93
23095	707.5	9.00	9.00	9.00
23130	711.0	8.97	8.98	8.98

Spectrum Plot of Worst Value

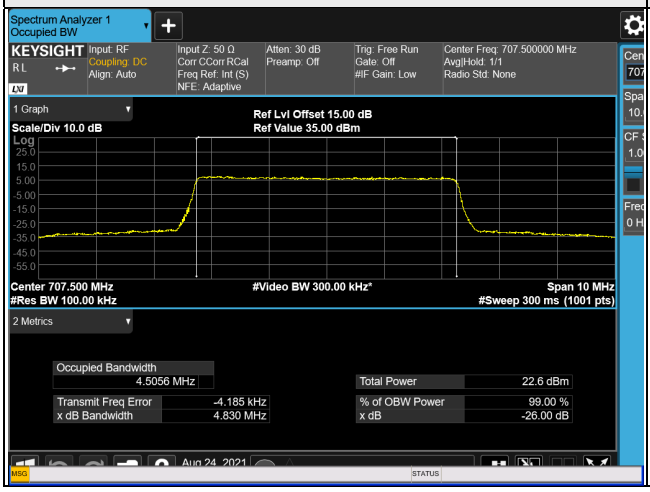
1.4MHz / 16QAM



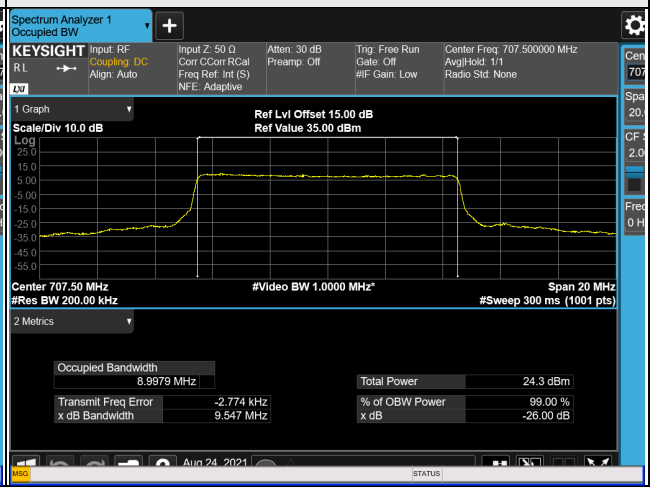
3MHz / QPSK



5MHz / 64QAM



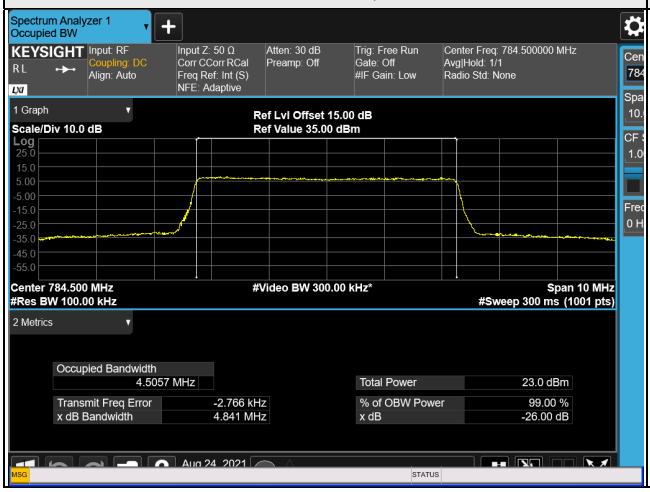
10MHz / QPSK



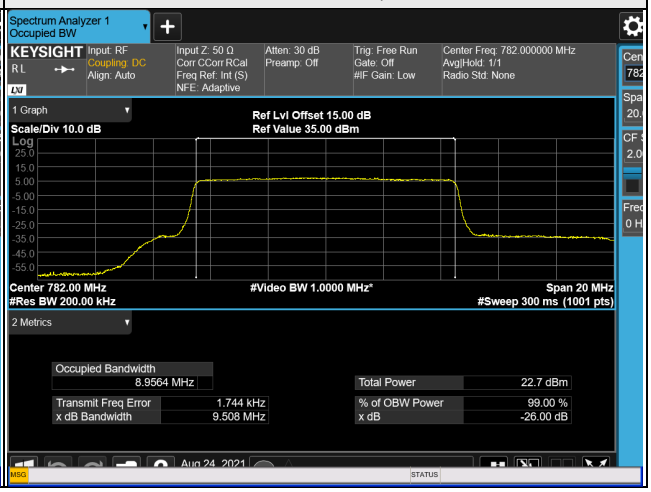
LTE Band 13, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23205	779.5	4.49	4.49	4.50
23230	782.0	4.48	4.49	4.49
23255	784.5	4.50	4.50	4.51
LTE Band 13, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23230	782.0	8.95	8.95	8.96

Spectrum Plot of Worst Value

5MHz / 64QAM

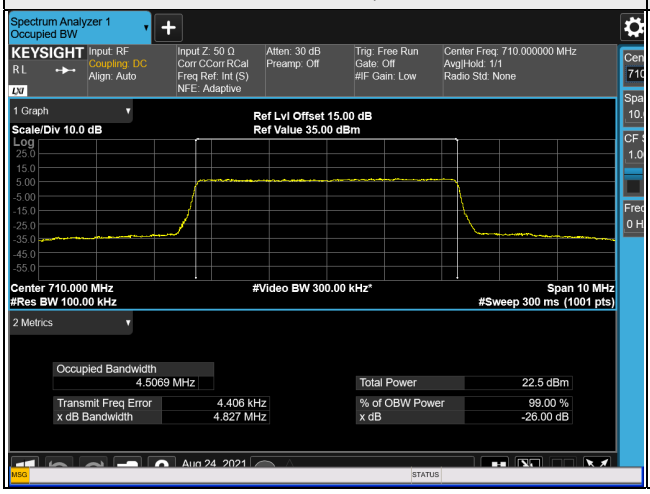


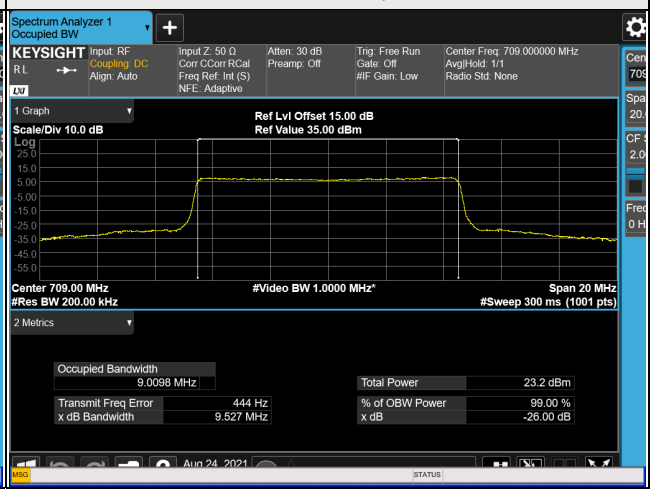
10MHz / 64QAM



LTE Band 17, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23755	706.5	4.49	4.49	4.51
23790	710.0	4.50	4.50	4.51
23825	713.5	4.48	4.48	4.49
LTE Band 17, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23780	709.0	9.00	9.01	9.00
23790	710.0	8.99	9.00	9.00
23800	711.0	8.97	8.97	8.98

Spectrum Plot of Worst Value	
5MHz / 64QAM	10MHz / 16QAM

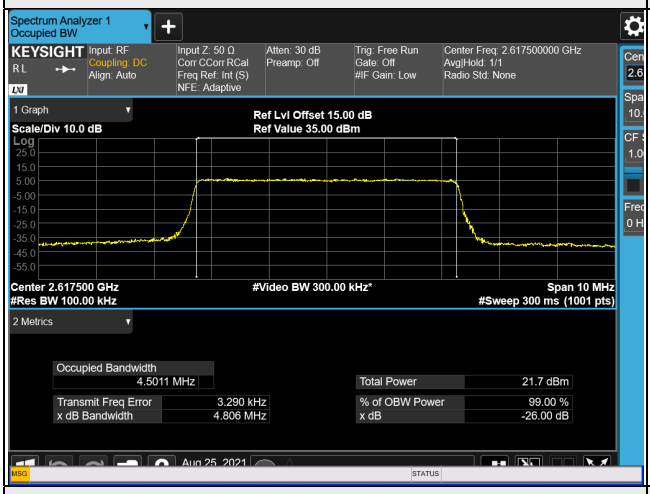




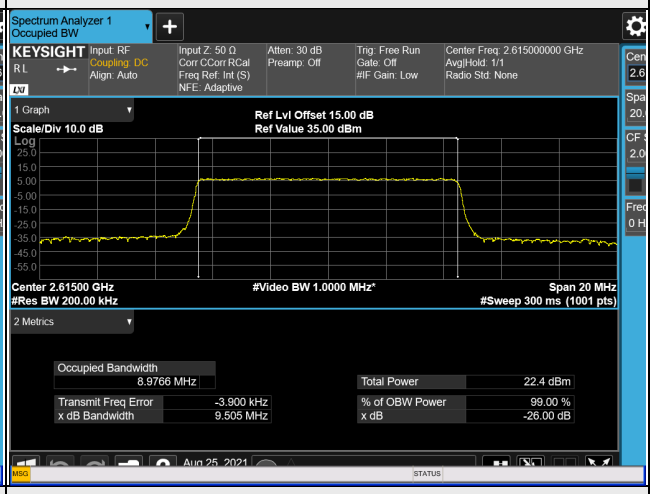
LTE Band 38, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
37775	2572.5	4.49	4.49	4.50
38000	2595.0	4.50	4.49	4.50
38225	2617.5	4.49	4.49	4.50
LTE Band 38, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
37800	2575.0	8.96	8.97	8.96
38000	2595.0	8.96	8.97	8.97
38200	2615.0	8.96	8.98	8.97
LTE Band 38, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
37825	2577.5	13.44	13.43	13.43
38000	2595.0	13.44	13.44	13.45
38175	2612.5	13.46	13.42	13.43
LTE Band 38, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
37850	2580.0	17.92	17.90	17.93
38000	2595.0	17.92	17.90	17.90
38150	2610.0	17.93	17.91	17.93

Spectrum Plot of Worst Value

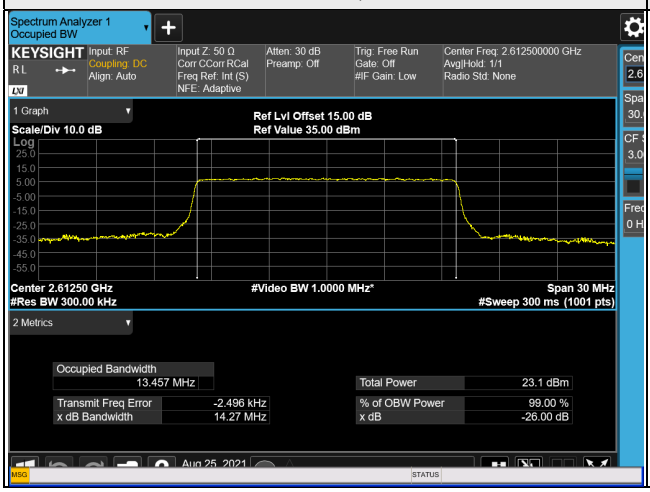
5MHz / 64QAM



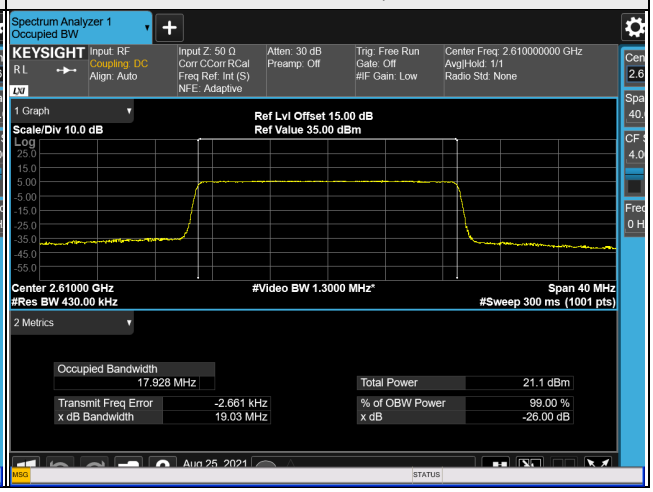
10MHz / 16QAM



15MHz / QPSK



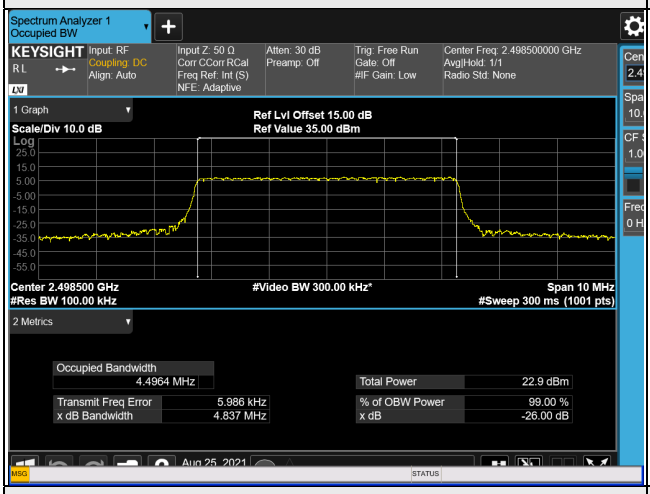
20MHz / 64QAM



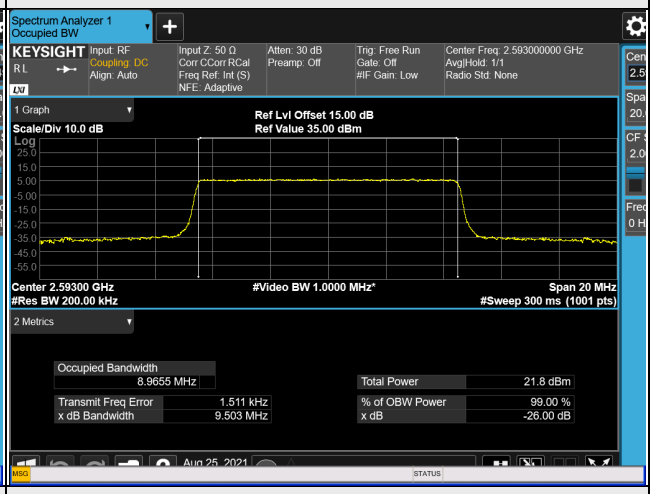
LTE Band 41, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
39675	2498.5	4.50	4.49	4.49
40620	2593.0	4.49	4.49	4.49
41565	2687.5	4.49	4.49	4.49
LTE Band 41, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
39700	2501.0	8.94	8.96	8.96
40620	2593.0	8.96	8.97	8.97
41540	2685.0	8.95	8.96	8.96
LTE Band 41, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
39725	2503.5	13.43	13.43	13.42
40620	2593.0	13.44	13.43	13.42
41515	2682.5	13.43	13.42	13.42
LTE Band 41, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
39750	2506.0	17.88	17.88	17.88
40620	2593.0	17.89	17.88	17.90
41490	2680.0	17.85	17.83	17.86

Spectrum Plot of Worst Value

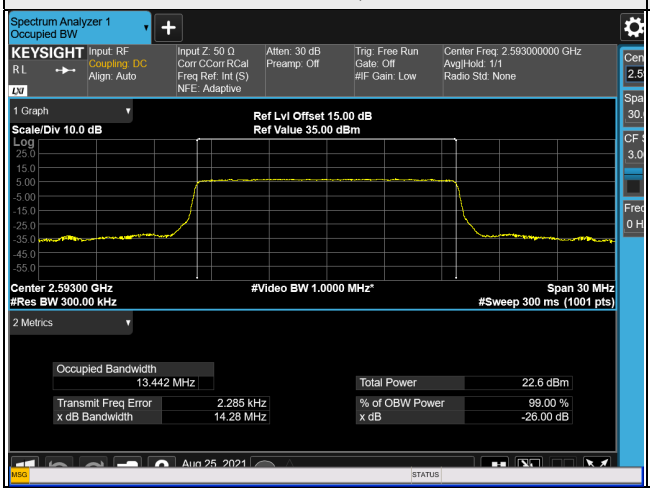
5MHz / QPSK



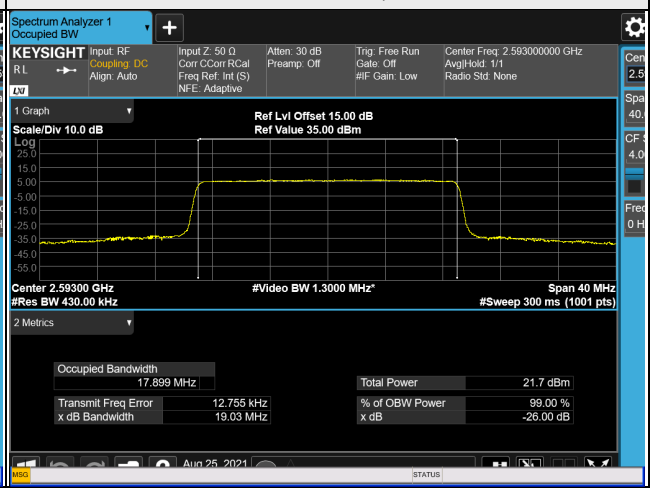
10MHz / 16QAM



15MHz / QPSK



20MHz / 64QAM

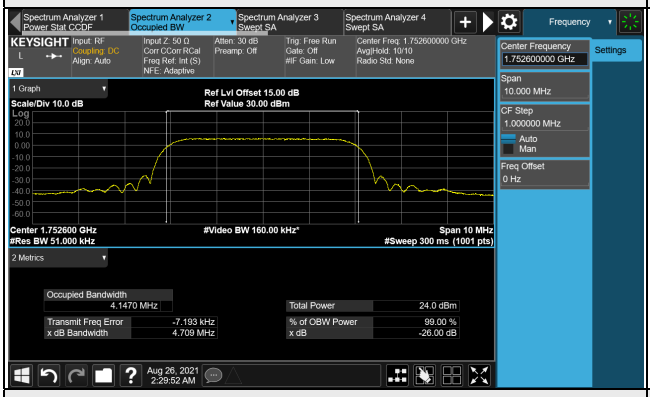


26dB Bandwidth

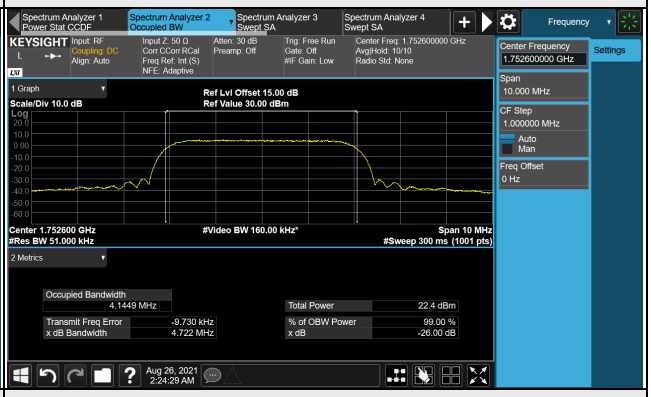
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
1312	1712.4	4.70	4.72	4.72
1413	1732.6	4.71	4.72	4.72
1513	1752.6	4.71	4.72	4.72

Spectrum Plot of Worst Value

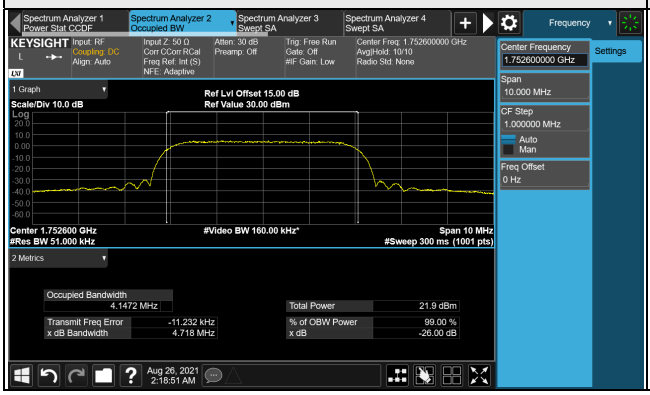
WCDMA



HSDPA



HSUPA

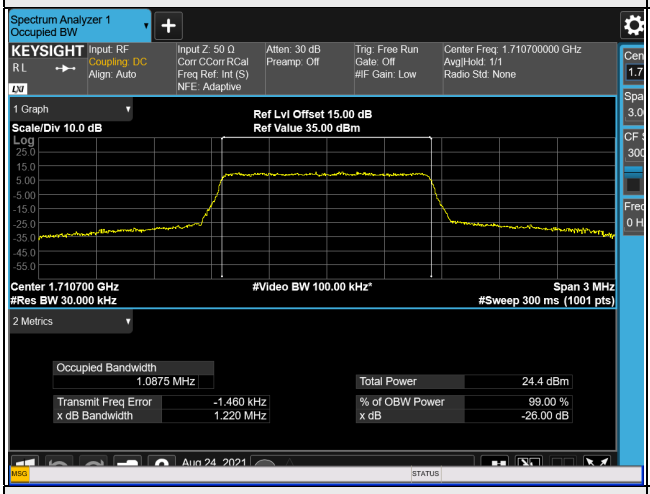


LTE Band 4, Channel Bandwidth 1.4MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
19957	1710.7	1.22	1.21	1.22
20175	1732.5	1.22	1.22	1.22
20393	1754.3	1.22	1.21	1.22
LTE Band 4, Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
19965	1711.5	2.92	2.93	2.90
20175	1732.5	2.93	2.92	2.91
20385	1753.5	2.93	2.93	2.90
LTE Band 4, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
19975	1712.5	4.81	4.82	4.84
20175	1732.5	4.84	4.81	4.83
20375	1752.5	4.83	4.81	4.84
LTE Band 4, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20000	1715.0	9.52	9.51	9.52
20175	1732.5	9.52	9.52	9.54
20350	1750.0	9.50	9.51	9.53
LTE Band 4, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20025	1717.5	14.24	14.23	14.22
20175	1732.5	14.27	14.24	14.25
20325	1747.5	14.24	14.19	14.21

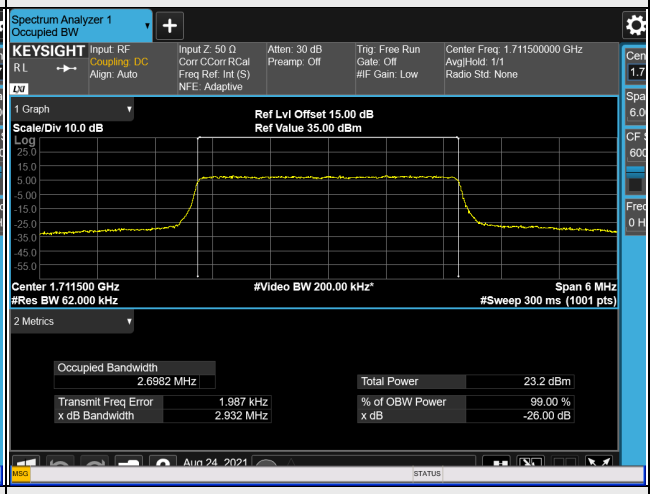
LTE Band 4, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20050	1720.0	19.01	18.99	19.00
20175	1732.5	19.07	19.04	19.03
20300	1745.0	18.96	18.97	18.97

Spectrum Plot of Worst Value

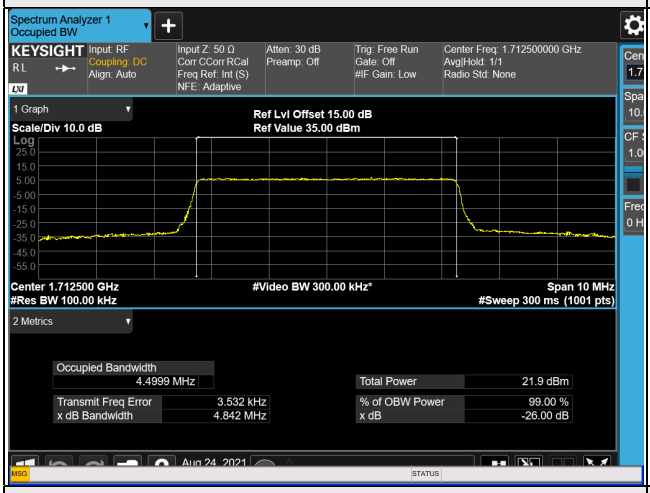
1.4MHz / QPSK



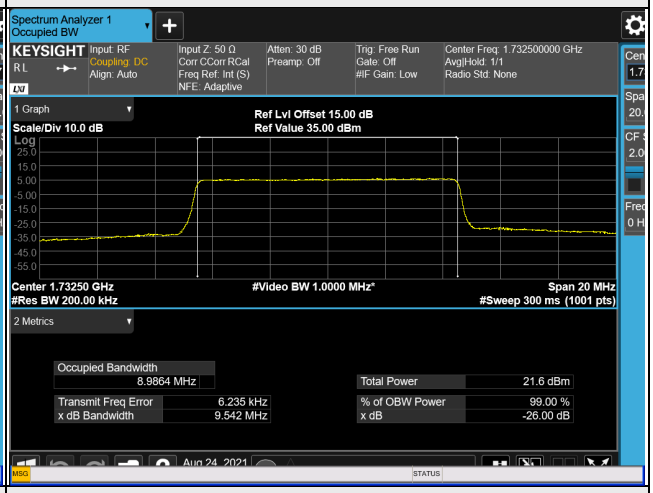
3MHz / 16QAM



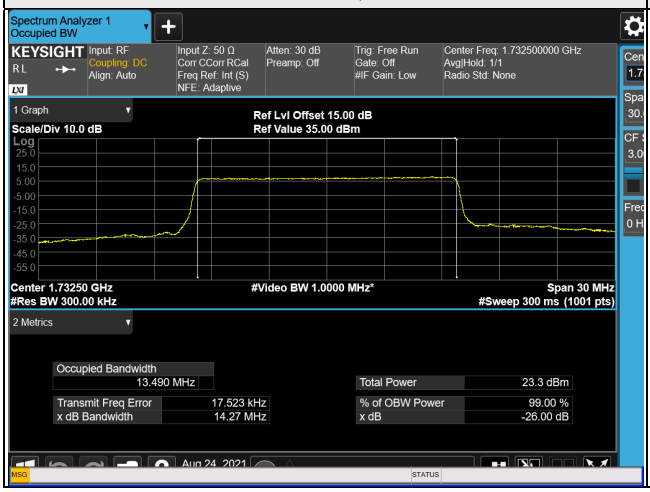
5MHz / 64QAM



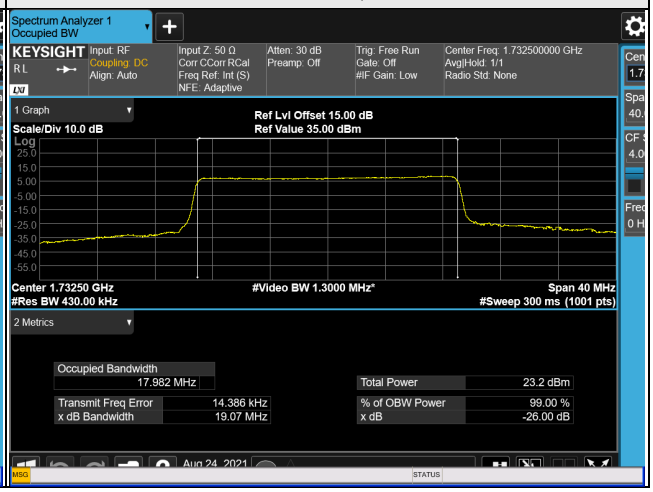
10MHz / 64QAM



15MHz / QPSK



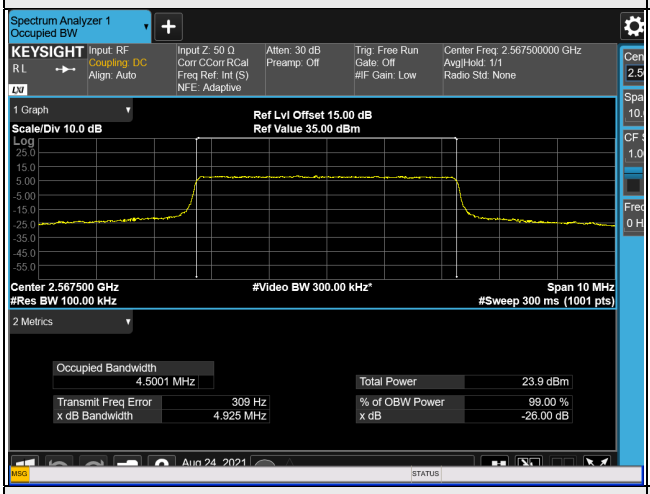
20MHz / QPSK



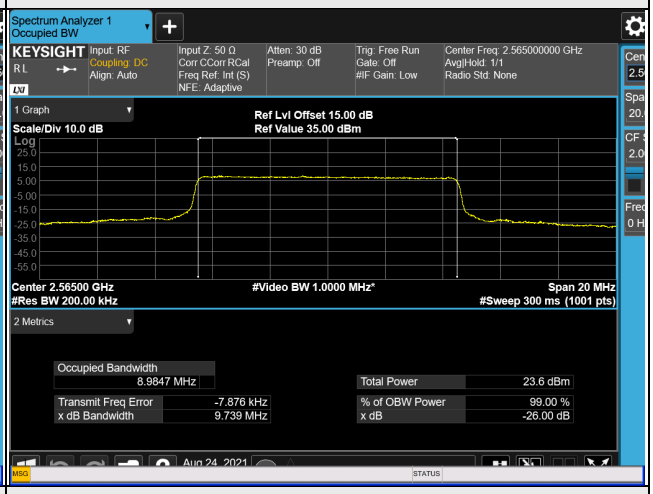
LTE Band 7, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20775	2502.5	4.84	4.80	4.84
21100	2535.0	4.83	4.81	4.84
21425	2567.5	4.93	4.83	4.85
LTE Band 7, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20800	2505.0	9.53	9.51	9.53
21100	2535.0	9.53	9.51	9.52
21400	2565.0	9.74	9.55	9.54
LTE Band 7, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20825	2507.5	14.25	14.23	14.24
21100	2535.0	14.31	14.26	14.25
21375	2562.5	14.42	14.27	14.25
LTE Band 7, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
20850	2510.0	19.03	19.02	19.01
21100	2535.0	19.07	19.04	19.04
21350	2560.0	19.11	19.02	19.01

Spectrum Plot of Worst Value

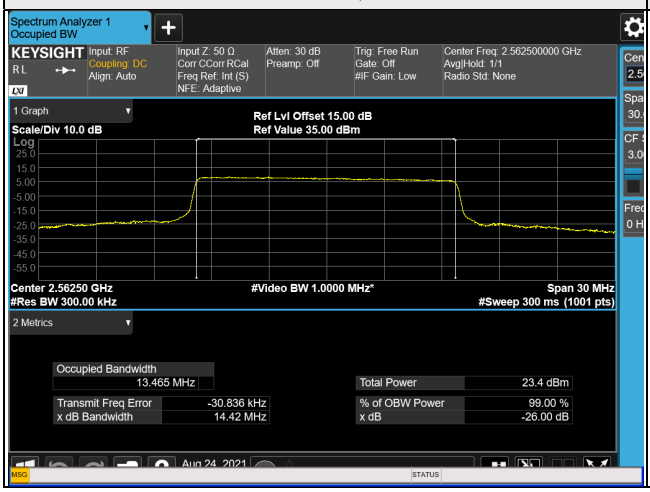
5MHz / QPSK



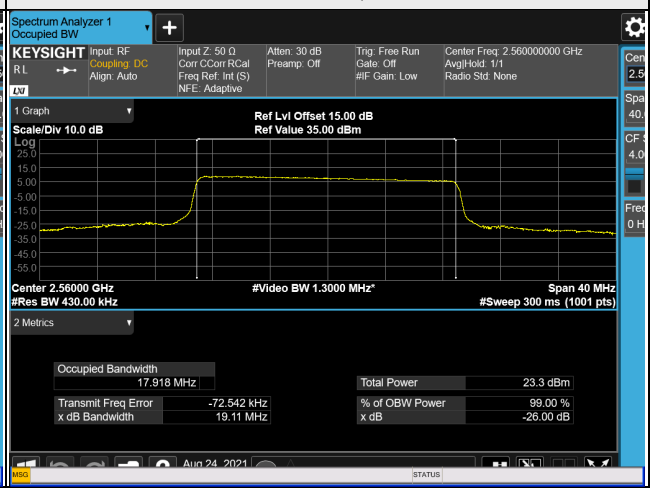
10MHz / QPSK



15MHz / QPSK



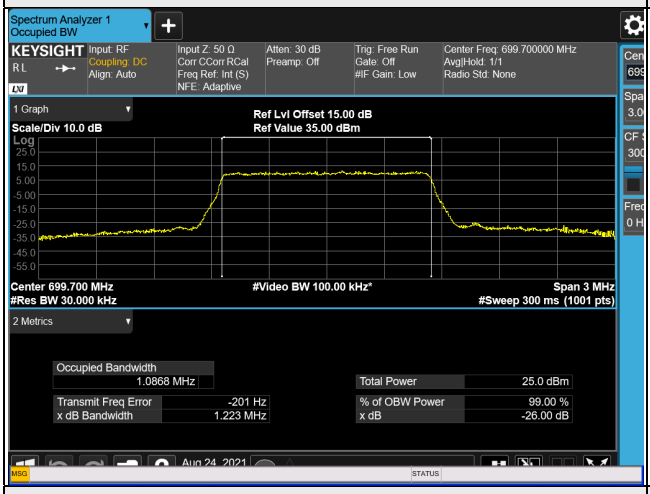
20MHz / QPSK



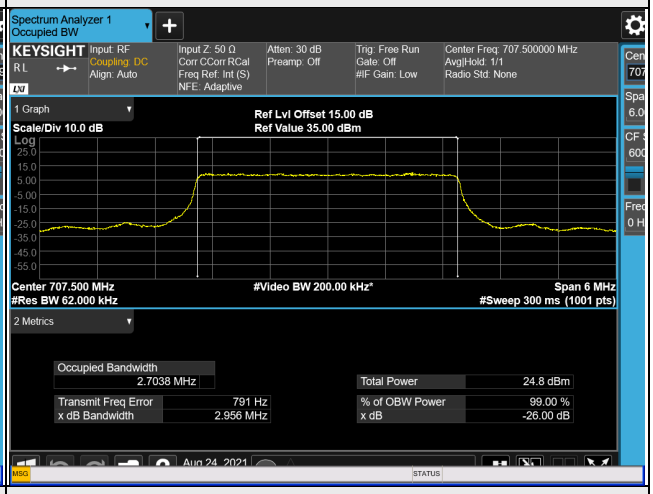
LTE Band 12, Channel Bandwidth 1.4MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23017	699.7	1.22	1.22	1.21
23095	707.5	1.22	1.22	1.21
23173	715.3	1.22	1.21	1.22
LTE Band 12, Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23025	700.5	2.93	2.91	2.90
23095	707.5	2.96	2.93	2.91
23165	714.5	2.94	2.92	2.90
LTE Band 12, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23035	701.5	4.82	4.78	4.79
23095	707.5	4.85	4.82	4.83
23155	713.5	4.80	4.79	4.82
LTE Band 12, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23060	704.0	9.48	9.48	9.49
23095	707.5	9.55	9.53	9.54
23130	711.0	9.51	9.50	9.51

Spectrum Plot of Worst Value

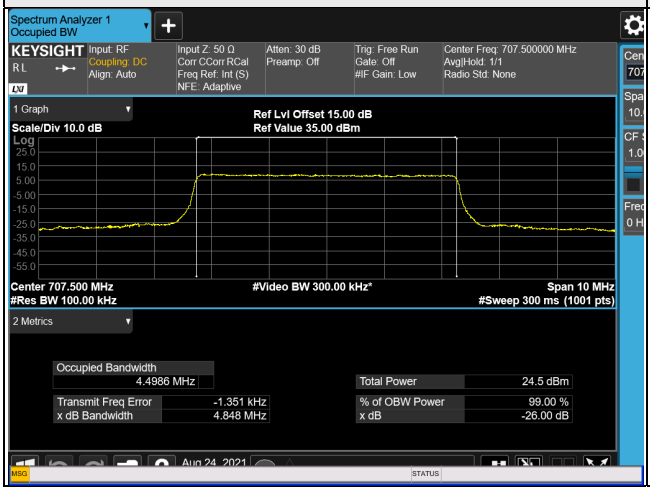
1.4MHz / QPSK



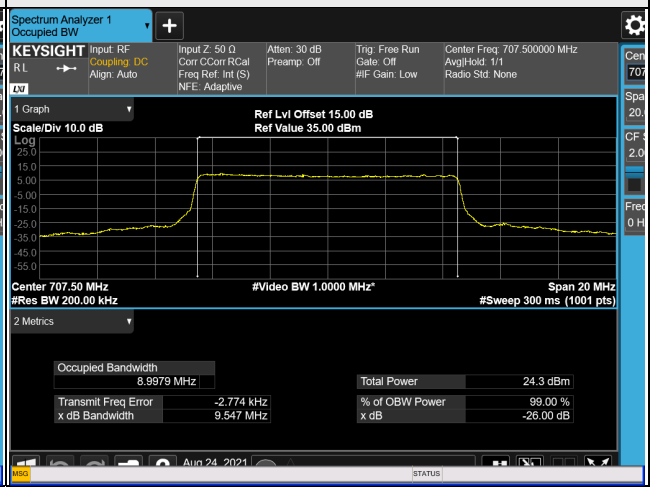
3MHz / QPSK



5MHz / QPSK

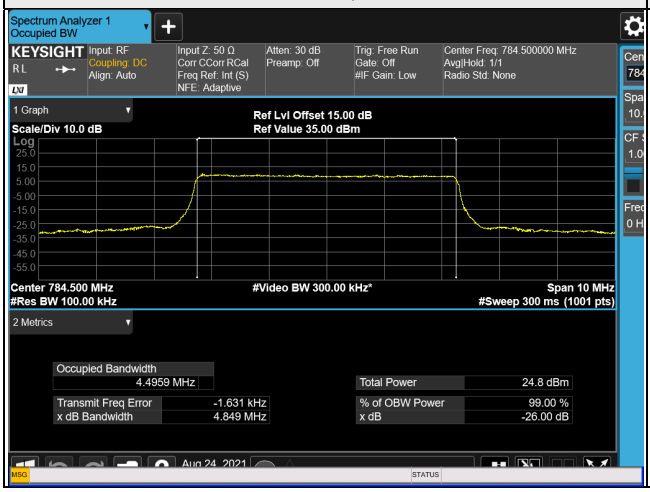


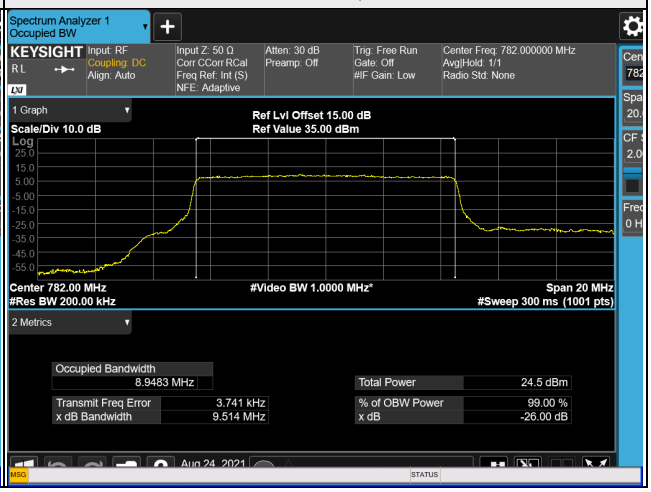
10MHz / QPSK



LTE Band 13, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23205	779.5	4.84	4.80	4.83
23230	782.0	4.81	4.79	4.82
23255	784.5	4.85	4.81	4.84
LTE Band 13, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23230	782.0	9.51	9.50	9.51

Spectrum Plot of Worst Value	
5MHz / QPSK	10MHz / QPSK

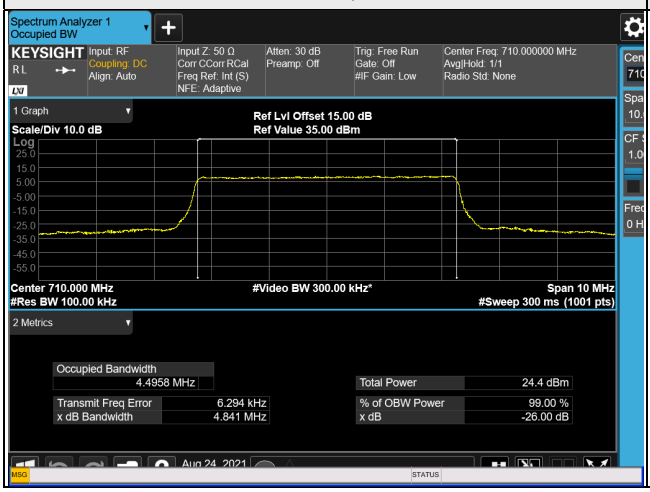




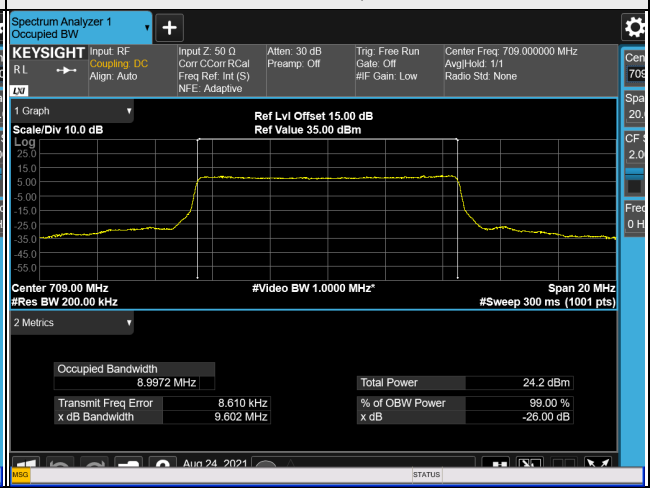
LTE Band 17, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23755	706.5	4.83	4.81	4.83
23790	710.0	4.84	4.81	4.83
23825	713.5	4.80	4.78	4.81
LTE Band 17, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
23780	709.0	9.60	9.53	9.53
23790	710.0	9.55	9.53	9.54
23800	711.0	9.53	9.50	9.51

Spectrum Plot of Worst Value

5MHz / QPSK



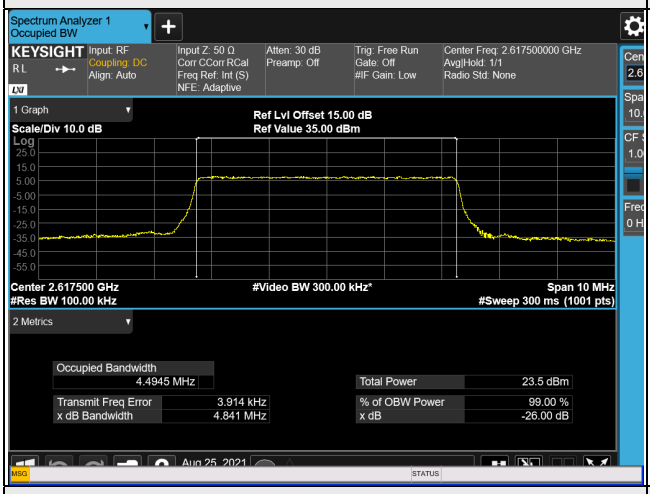
10MHz / QPSK



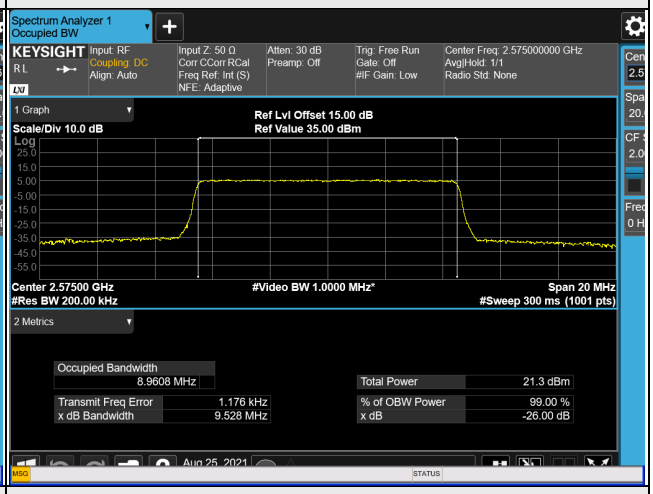
LTE Band 38, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
37775	2572.5	4.82	4.78	4.81
38000	2595.0	4.83	4.79	4.81
38225	2617.5	4.84	4.80	4.81
LTE Band 38, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
37800	2575.0	9.51	9.52	9.53
38000	2595.0	9.51	9.51	9.50
38200	2615.0	9.51	9.51	9.51
LTE Band 38, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
37825	2577.5	14.29	14.25	14.24
38000	2595.0	14.27	14.26	14.28
38175	2612.5	14.27	14.25	14.23
LTE Band 38, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
37850	2580.0	19.07	19.01	19.03
38000	2595.0	19.07	18.99	19.03
38150	2610.0	19.05	19.04	19.03

Spectrum Plot of Worst Value

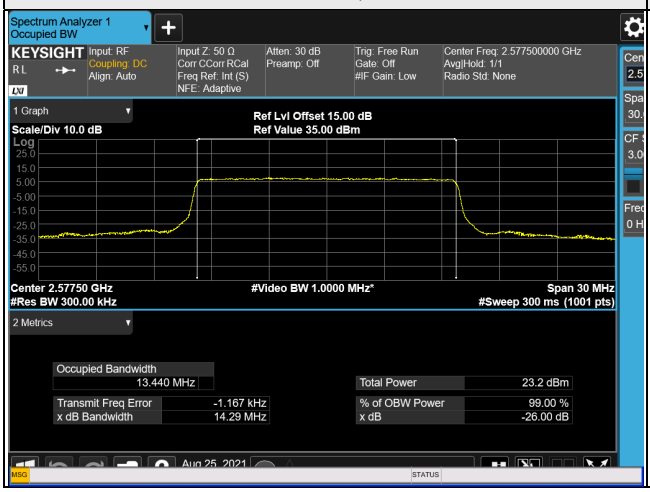
5MHz / QPSK



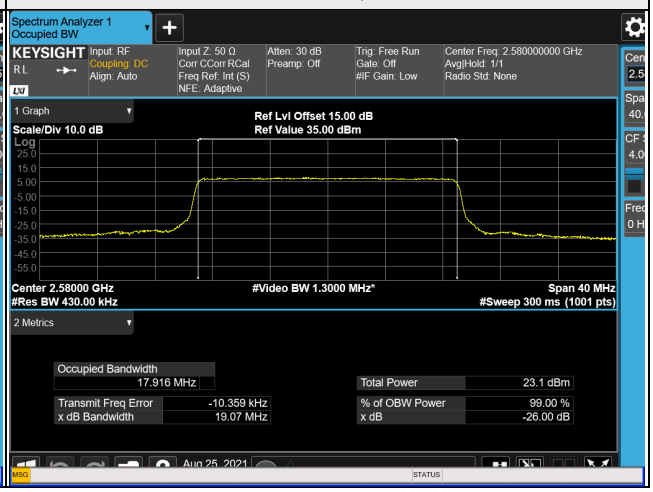
10MHz / 64QAM



15MHz / QPSK



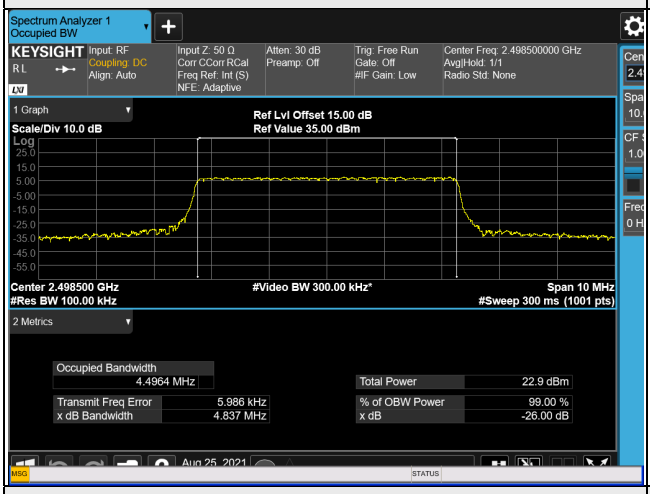
20MHz / QPSK



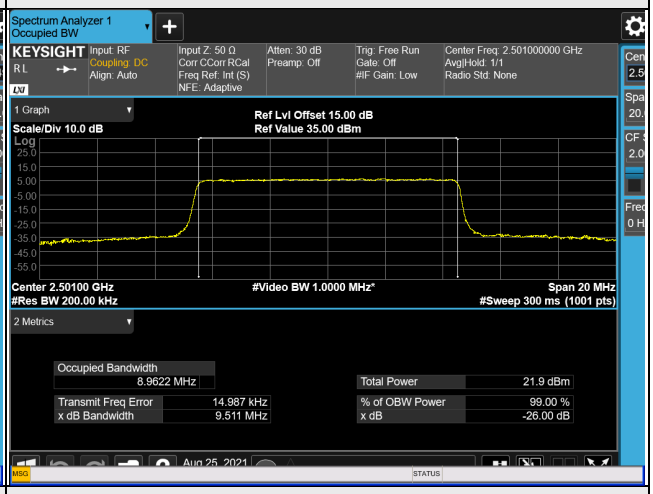
LTE Band 41, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
39675	2498.5	4.84	4.80	4.78
40620	2593.0	4.81	4.79	4.79
41565	2687.5	4.82	4.80	4.79
LTE Band 41, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
39700	2501.0	9.51	9.51	9.51
40620	2593.0	9.50	9.50	9.51
41540	2685.0	9.49	9.50	9.50
LTE Band 41, Channel Bandwidth 15MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
39725	2503.5	14.28	14.21	14.22
40620	2593.0	14.28	14.22	14.23
41515	2682.5	14.27	14.22	14.23
LTE Band 41, Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
39750	2506.0	19.01	19.00	18.99
40620	2593.0	19.04	19.01	19.03
41490	2680.0	18.98	18.97	18.96

Spectrum Plot of Worst Value

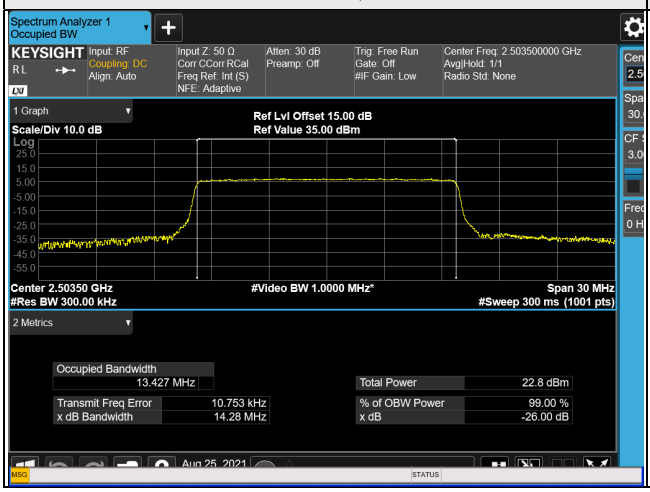
5MHz / QPSK



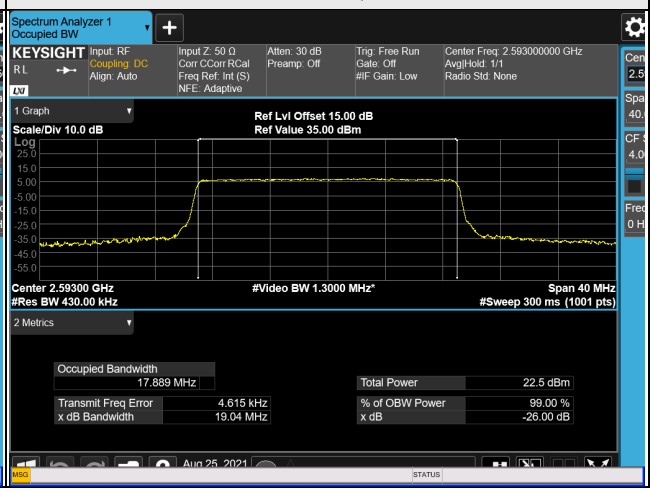
10MHz / 64QAM



15MHz / QPSK



20MHz / QPSK



4.5 Channel Edge / Out-of-Band Emissions Measurement

4.5.1 Limits of Band Edge / Out-of-Band Emissions Measurement

For WCDMA Band 4, LTE Band 4:
According to FCC 27.53(h), for operations in the 1695-1710MHz, 1710-1755MHz, 1755-1780 MHz, 1915-1920MHz, 1995-2000 MHz, 2000-2020MHz, 2110-2155MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log (P) dB. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

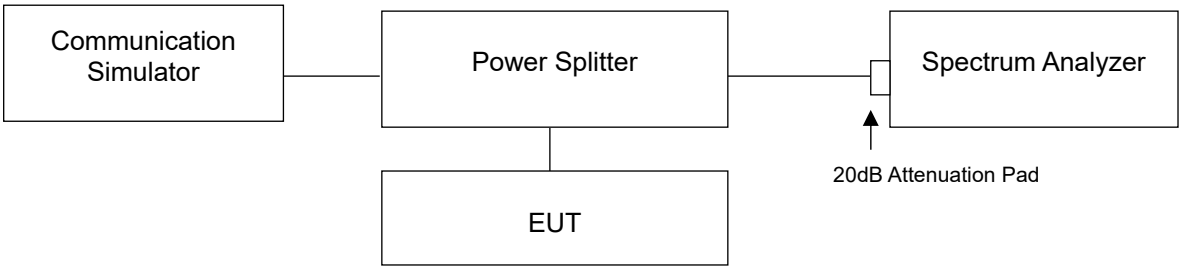
For LTE Band 7, LTE Band 38, LTE Band 41:
According to FCC 27.53(m)(4) regulations, any transmit power of any emission outside of the channel edge must be attenuated below the transmitting power (P) by a factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5MHz. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

For LTE Band 12, LTE Band 17:
According to FCC 27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

For LTE Band 13:
According to FCC 27.53(c)(2), for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

According to 27.53(c)(4), on all frequencies between 763-775MHz and 793-805MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations

4.5.2 Test Setup



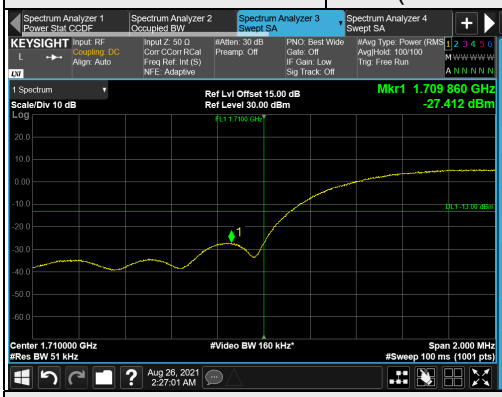
4.5.3 Test Procedures

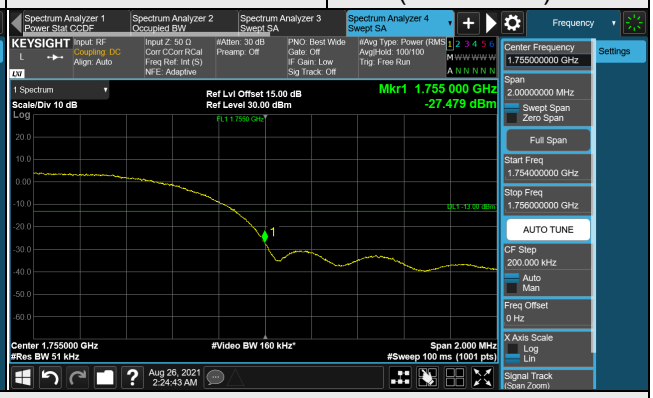
a. The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. Band edge measurements were done at 2 channels: low and high operational frequency range.

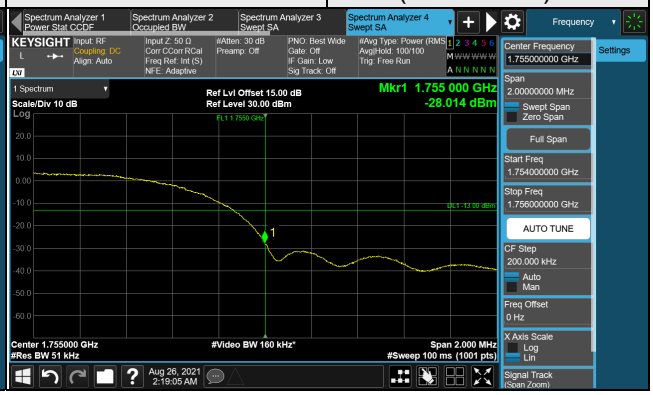
b. Measurement refer to ANSI C63.26 section 5.7.2 and FCC Part 27 section 27.53.

c. Record the max trace plot into the test report.

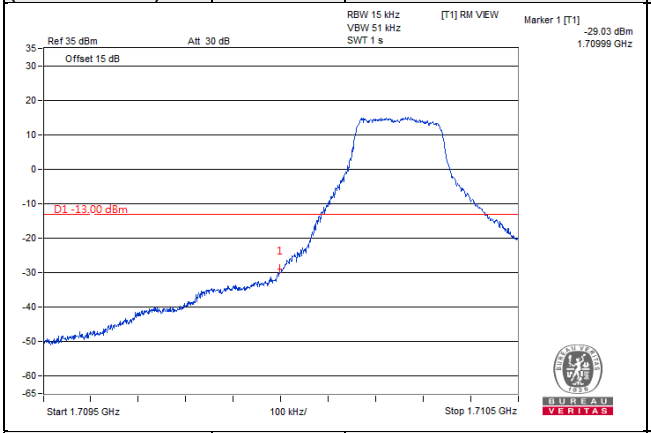
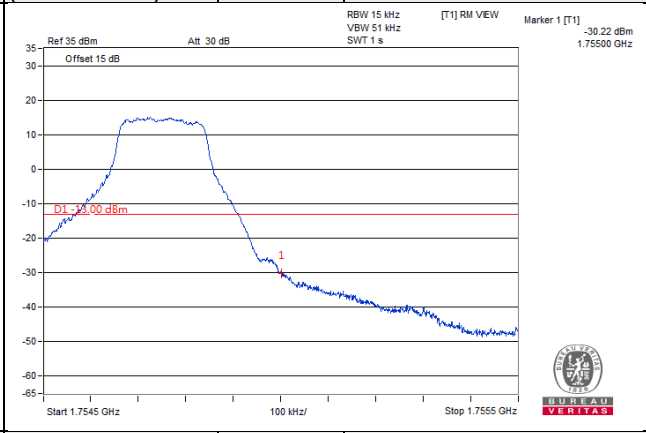
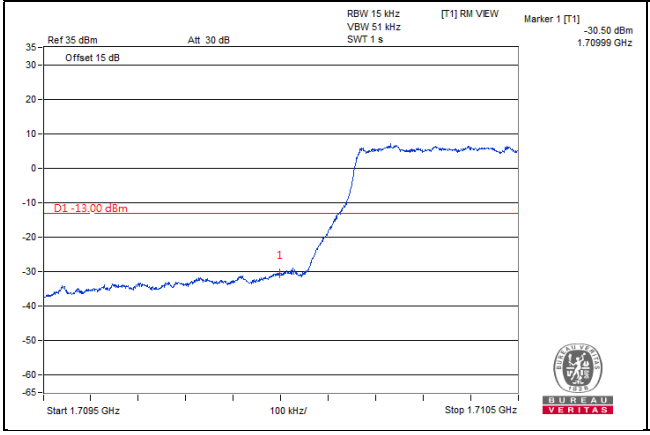
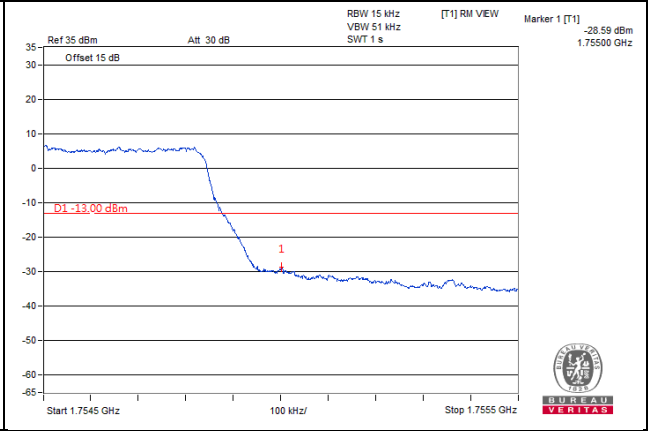
4.5.4 Test Results

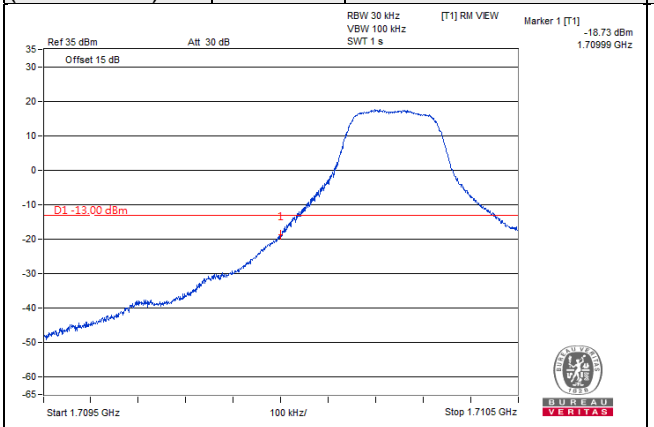
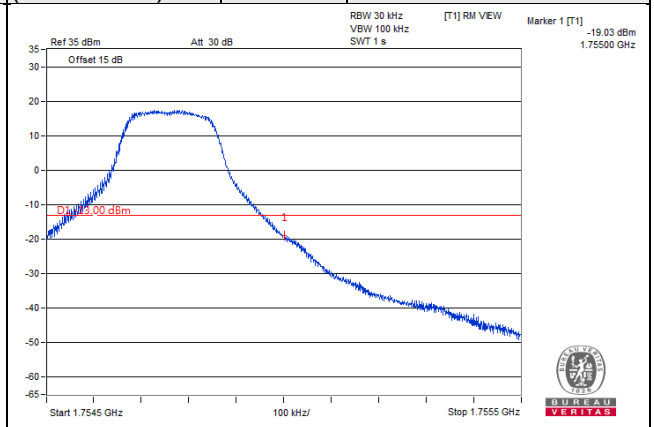
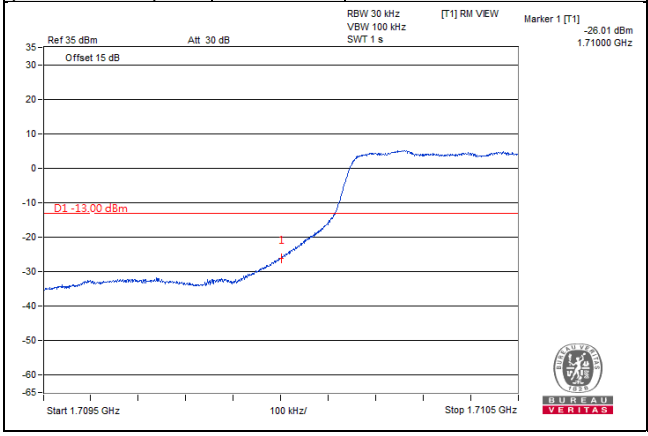
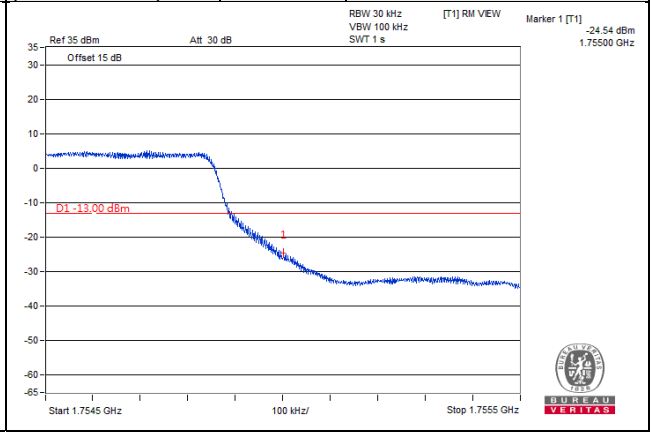
WCDMA Band 4			
Channel	1312 (1712.4MHz)	Channel	1513 (1752.6MHz)
			

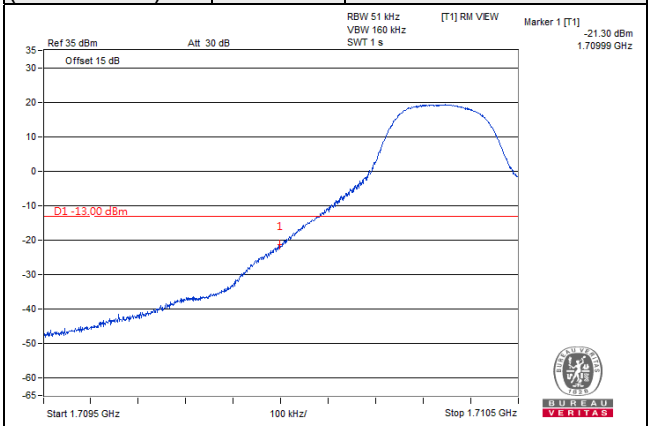
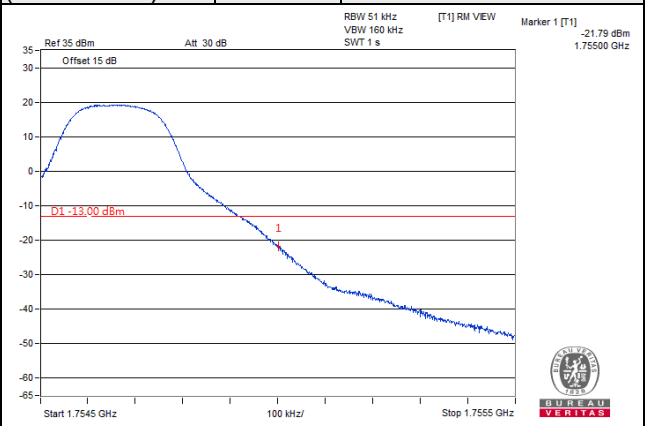
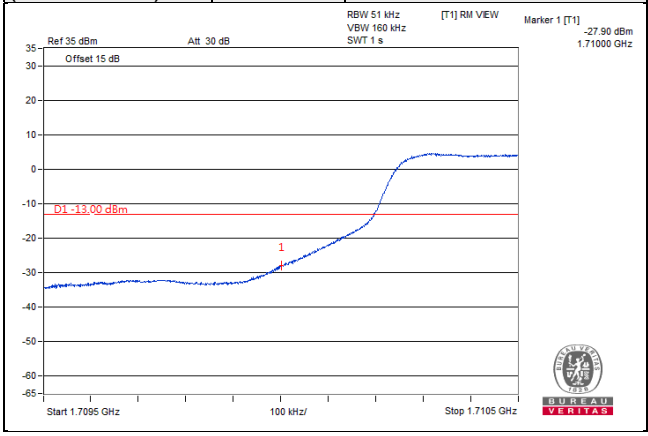
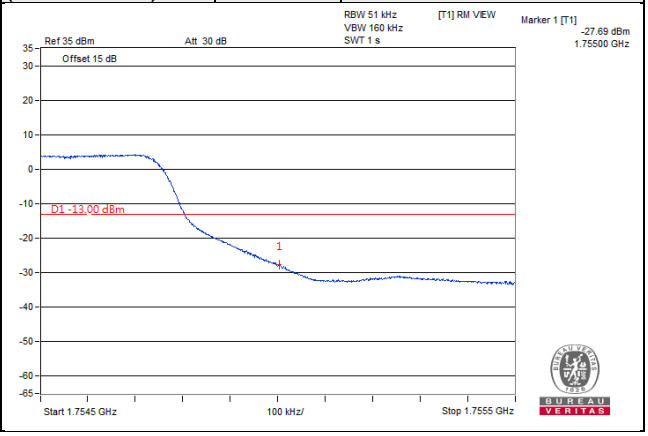
HSDPA			
Channel	1312 (1712.4MHz)	Channel	1513 (1752.6MHz)
			

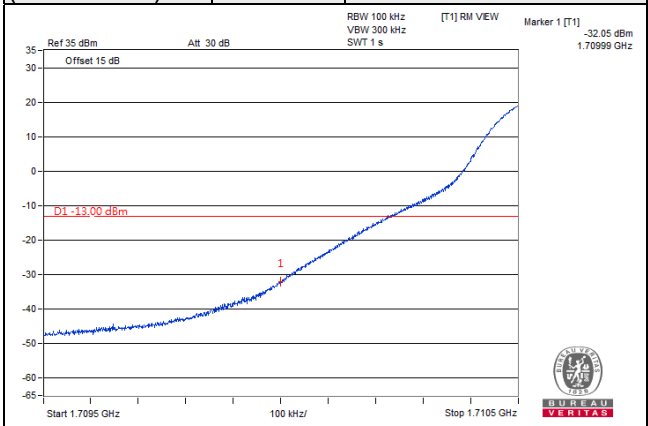
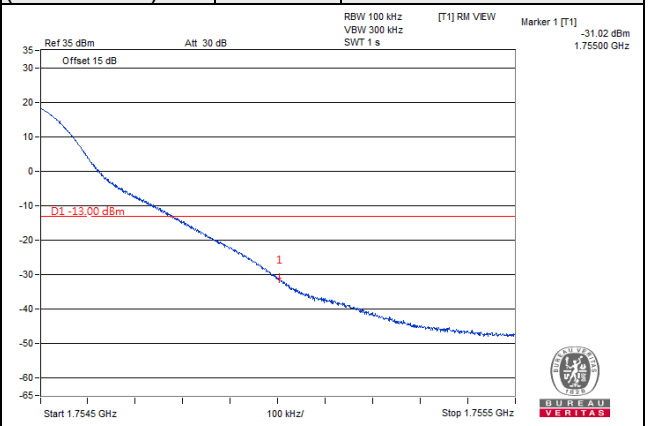
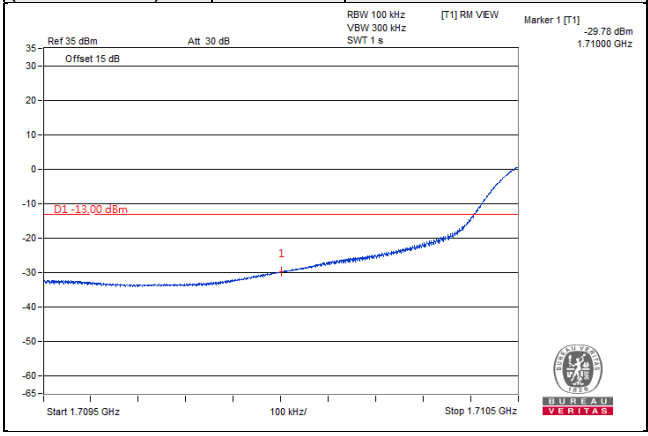
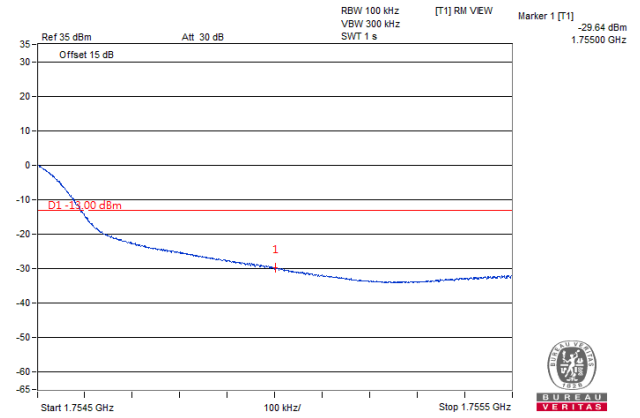
HSUPA			
Channel	1312 (1712.4MHz)	Channel	1513 (1752.6MHz)
			

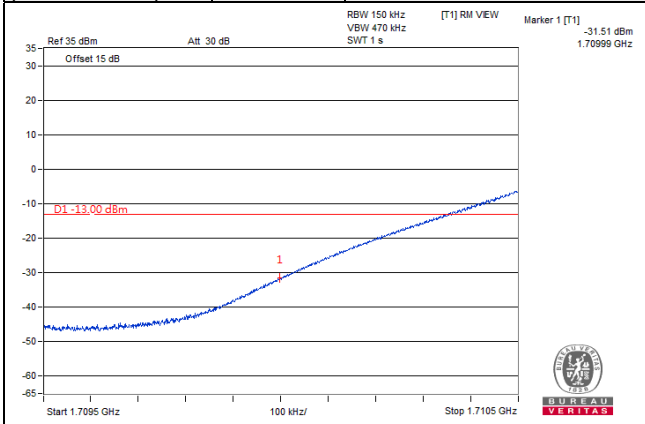
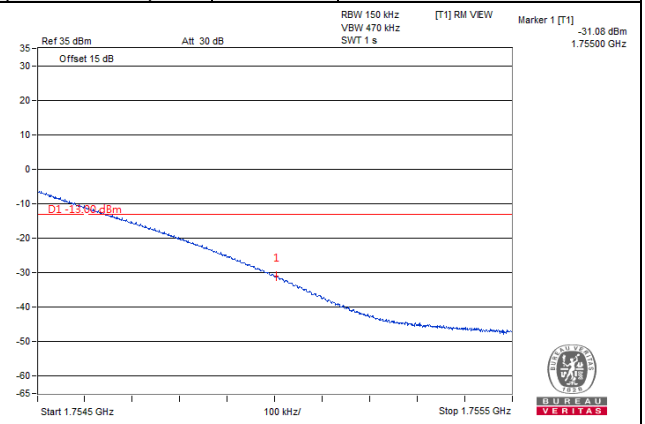
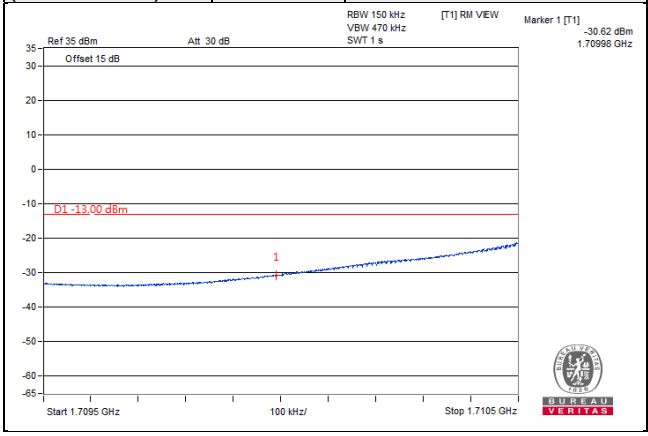
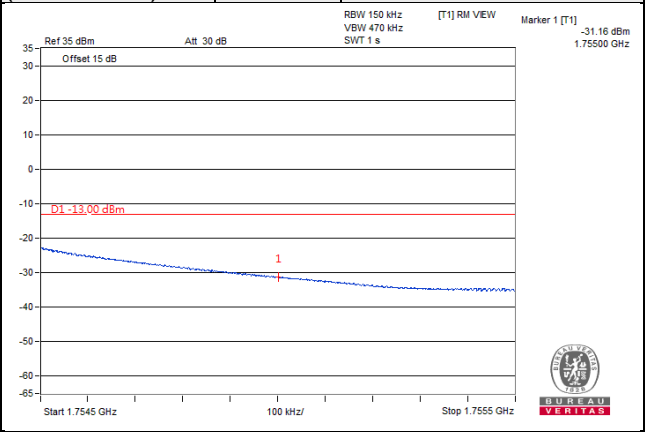
Band Edge

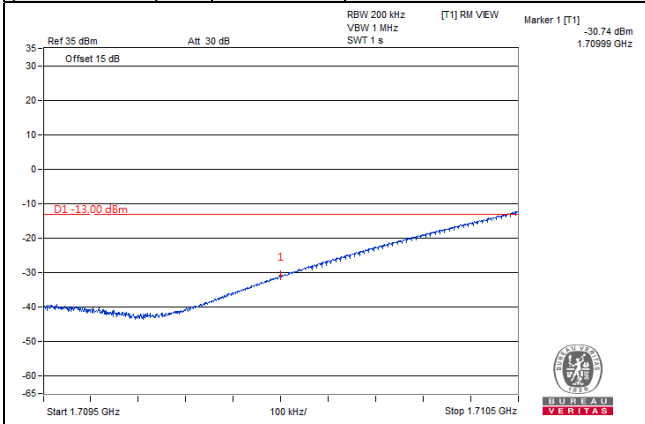
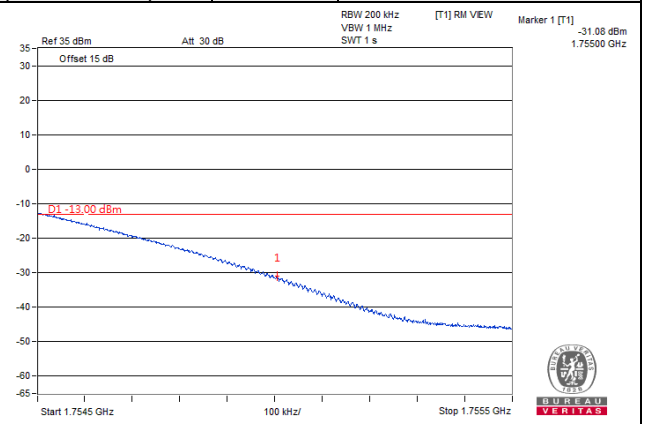
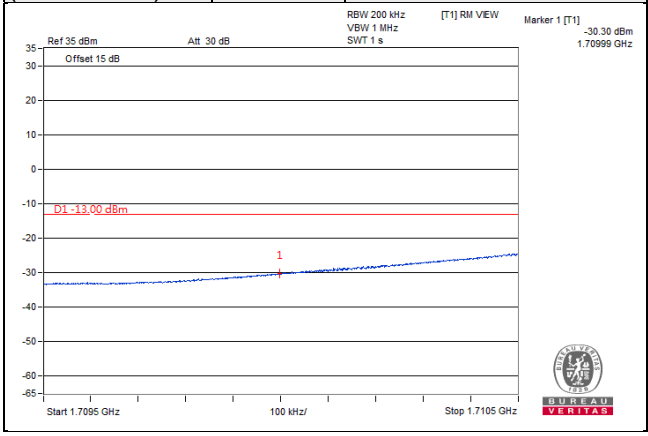
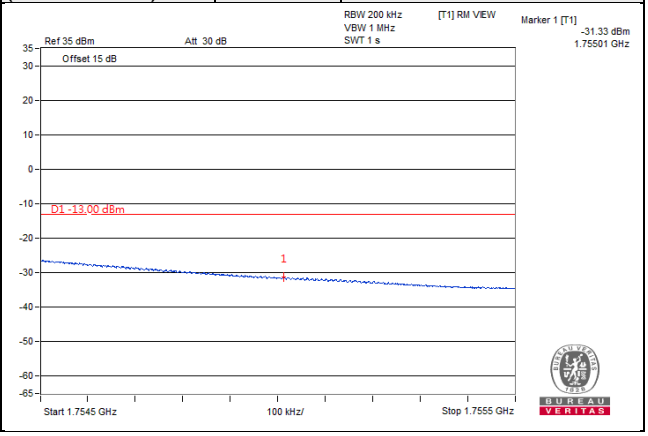
LTE Band 4, Channel Bandwidth 1.4MHz					
Channel 19957 (1710.7MHz)	QPSK	1 RB / 0 RB Offset	Channel 20393 (1754.3MHz)	QPSK	1 RB / 5 RB Offset
					
Channel 19957 (1710.7MHz)	QPSK	6 RB / 0 RB Offset	Channel 20393 (1754.3MHz)	QPSK	6 RB / 0 RB Offset
					

LTE Band 4, Channel Bandwidth 3MHz					
Channel 19965 (1711.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20385 (1753.5MHz)	QPSK	1 RB / 14 RB Offset
					
Channel 19965 (1711.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 20385 (1753.5MHz)	QPSK	15 RB / 0 RB Offset
					

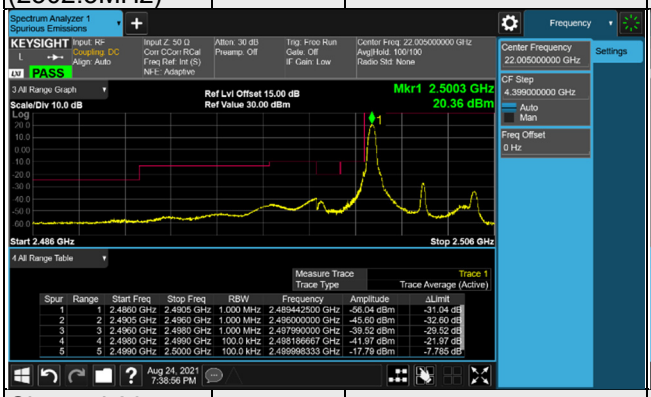
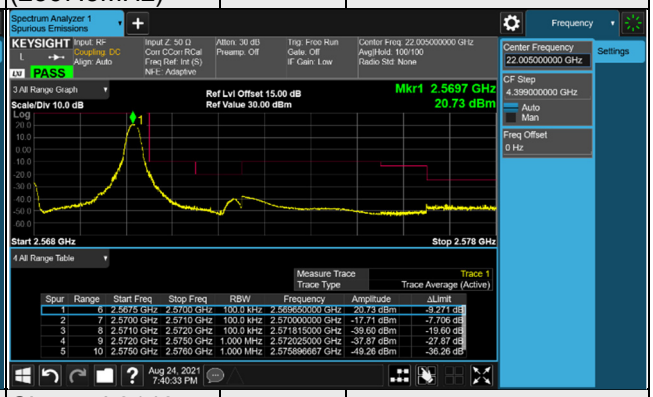
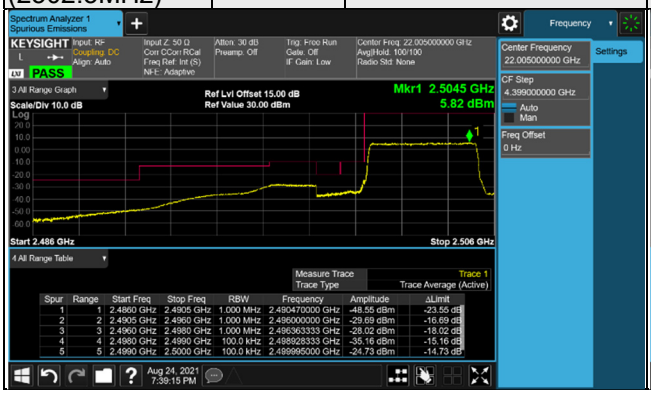
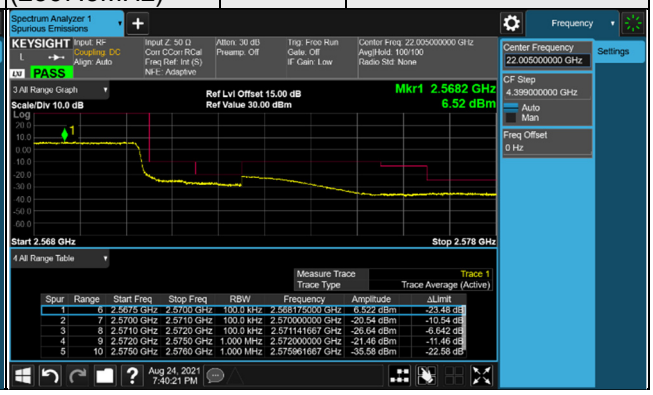
LTE Band 4, Channel Bandwidth 5MHz					
Channel 19975 (1712.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20375 (1752.5MHz)	QPSK	1 RB / 24 RB Offset
					
Channel 19975 (1712.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 20375 (1752.5MHz)	QPSK	25 RB / 0 RB Offset
					

LTE Band 4, Channel Bandwidth 10MHz					
Channel 20000 (1715.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 20350 (1750.0MHz)	QPSK	1 RB / 49 RB Offset
					
Channel 20000 (1715.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 20350 (1750.0MHz)	QPSK	50 RB / 0 RB Offset
					

LTE Band 4, Channel Bandwidth 15MHz					
Channel 20025 (1717.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20325 (1747.5MHz)	QPSK	1 RB / 74 RB Offset
					
Channel 20025 (1717.5MHz)	QPSK	75 RB / 0 RB Offset	Channel 20325 (1747.5MHz)	QPSK	75 RB / 0 RB Offset
					

LTE Band 4, Channel Bandwidth 20MHz					
Channel 20050 (1720.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 20300 (1745.0MHz)	QPSK	1 RB / 99 RB Offset
					
Channel 20050 (1720.0MHz)	QPSK	100 RB / 0 RB Offset	Channel 20300 (1745.0MHz)	QPSK	100 RB / 0 RB Offset
					

Out-of-Band Emission

LTE Band 7, Channel Bandwidth 5MHz					
Channel 20775 (2502.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 21425 (2567.5MHz)	QPSK	1 RB / 24 RB Offset
					
Channel 20775 (2502.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 21425 (2567.5MHz)	QPSK	25 RB / 0 RB Offset