

FCC Test Report

(PART 27)

Report No.: RF170301C11-9

FCC ID: NM82PZC500

Test Model: 2PZC500

Received Date: Mar. 01, 2017

Test Date: Mar. 16, 2017 ~ Apr. 18, 2017

Issued Date: May 03, 2017

Applicant: HTC Corporation

Address: No.23 Xinghua Road, Taoyuan District, Taoyuan City 330, Taiwan

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

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(R.O.C)

Test Location (1): No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan
Hsien 333, Taiwan, R.O.C.

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



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Release Control Record

Issue No.	Description	Date Issued
RF170301C11-9	Original Release	May 03, 2017

1 Certificate of Conformity

Product: Smartphone

Brand: HTC

Test Model: 2PZC500

Sample Status: Production Unit

Applicant: HTC Corporation

Test Date: Mar. 16, 2017 ~ Apr. 18, 2017

Standards: FCC Part 27, Subpart C, L

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 EMC characteristics under the conditions specified in this report.

Prepared by :  , **Date:** May 03, 2017

Ivonne Wu / Supervisor

Approved by :  , **Date:** May 03, 2017

David Huang / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2 (WCDMA)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)(4)	Equivalent Isotropic Radiated Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 27.53(h)	Occupied Bandwidth	Pass	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(h)	Band Edge Measurements	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 -28.13 dB at 5257.80 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 4)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)(4)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 27.53(h)	Occupied Bandwidth	Pass	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(h)	Band Edge Measurements	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 -25.22 dB at 5235.00 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 12)

FCC Clause	Test Item	Result	Remarks
2.1046 27.50(C)(10)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 27.53(g)	Occupied Bandwidth	Pass	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(g)	Band Edge Measurements	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 -41.54 dB at 1415.00 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 13)

FCC Clause	Test Item	Result	Remarks
2.1046 27.50(b)(10)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 27.53(g)	Occupied Bandwidth	Pass	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(g)	Band Edge Measurements	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)(f)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -14.51 dB at 1564.00 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 17)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(C)(10)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 27.53(g)	Occupied Bandwidth	Pass	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(g)	Band Edge Measurements	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 -42.92 dB at 1420.00 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 66)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)(4)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 27.53(h)	Occupied Bandwidth	Pass	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(h)	Band Edge Measurements	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 -33.10 dB at 42.61 MHz.

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) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Jun. 21, 2016	Jun. 20, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 13, 2016	Dec. 12, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 16, 2016	Dec. 15, 2017
HORN Antenna ETS-Lindgren	3117	00143293	Dec. 29, 2016	Dec. 28, 2017
Double Ridge Guide Horn Antenna EMCO	3115	5619	Dec. 27, 2016	Dec. 26, 2017
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 13, 2016	Dec. 12, 2017
Fixed Attenuator Mini-Circuits	BW-N10W5+	NA	Jul. 08, 2016	Jul. 07, 2017
MXG Vector signal generator Agilent	N5182B	MY53050430	Oct. 19, 2016	Oct. 18, 2017
Preamplifier Agilent	310N	187226	Jun. 24, 2016	Jun. 23, 2017
Preamplifier Agilent	83017A	MY39501357	Jun. 24, 2016	Jun. 23, 2017
Power Meter Anritsu	ML2495A	1232002	Sep. 08, 2016	Sep. 07, 2017
Power Sensor Anritsu	MA2411B	1207325	Sep. 08, 2016	Sep. 07, 2017
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(R FC-SMS-100-SM S-120+RFC-SMS -100-SMS-400)	Jun. 24, 2016	Jun. 23, 2017
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(R FC-SMS-100-SM S-24)	Jun. 24, 2016	Jun. 23, 2017
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
Communications Tester-Wireless Agilent	8960 Series 10	MY53201073	Jul. 03, 2015	Jul. 02, 2017
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 10, 2015	Aug. 09, 2017

- Note:
1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HsinTien Chamber 1.
 3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
 4. The FCC Site Registration No. is 149147.
 5. The IC Site Registration No. is IC7450I-1.

3 General Information

3.1 General Description of EUT

Product	Smartphone	
Brand	HTC	
Test Model	2PZC500	
Status of EUT	Production Unit	
Power Supply Rating	5 Vdc or 9 Vdc or 12 Vdc (adapter) 5.0 Vdc (host equipment) 3.85 Vdc (Li-ion battery)	
Modulation Type	WCDMA	QPSK
	LTE	QPSK, 16QAM
Frequency Range	WCDMA	1712.4 ~ 1752.6 MHz
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	1710.7 ~ 1754.3 MHz
	LTE Band 4 (Channel Bandwidth: 3 MHz)	1711.5 ~ 1753.5 MHz
	LTE Band 4 (Channel Bandwidth: 5 MHz)	1712.5 ~ 1752.5 MHz
	LTE Band 4 (Channel Bandwidth: 10 MHz)	1715.0 ~ 1750.0 MHz
	LTE Band 4 (Channel Bandwidth: 15 MHz)	1717.5 ~ 1747.5 MHz
	LTE Band 4 (Channel Bandwidth: 20 MHz)	1720.0 ~ 1745.0 MHz
	LTE Band 12 (Channel Bandwidth: 1.4 MHz)	699.7 ~ 715.3 MHz
	LTE Band 12 (Channel Bandwidth: 3 MHz)	700.5 ~ 714.5 MHz
	LTE Band 12 (Channel Bandwidth: 5 MHz)	701.5 ~ 713.5 MHz
	LTE Band 12 (Channel Bandwidth: 10 MHz)	704.0 ~ 711.0 MHz
	LTE Band 13 (Channel Bandwidth: 5 MHz)	779.5 ~ 784.5 MHz
	LTE Band 13 (Channel Bandwidth: 10 MHz)	782.0 MHz
	LTE Band 17 (Channel Bandwidth: 5 MHz)	706.5 ~ 713.5 MHz
	LTE Band 17 (Channel Bandwidth: 10 MHz)	709 ~ 711 MHz
	LTE Band 66 (Channel Bandwidth: 1.4 MHz)	1710.7 ~ 1779.3 MHz
	LTE Band 66 (Channel Bandwidth: 3 MHz)	1711.5 ~ 1778.5 MHz
	LTE Band 66 (Channel Bandwidth: 5 MHz)	1712.5 ~ 1777.5 MHz
LTE Band 66 (Channel Bandwidth: 10 MHz)	1715.0 ~ 1775.0 MHz	
LTE Band 66 (Channel Bandwidth: 15 MHz)	1717.5 ~ 1772.5 MHz	
LTE Band 66 (Channel Bandwidth: 20 MHz)	1720.0 ~ 1770.0 MHz	

Emission Designator	WCDMA	4M15F9W
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	1M09W7D
	LTE Band 4 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE Band 4 (Channel Bandwidth: 5 MHz)	4M49W7D
	LTE Band 4 (Channel Bandwidth: 10 MHz)	8M99W7D
	LTE Band 4 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 4 (Channel Bandwidth: 20 MHz)	18M0W7D
	LTE Band 12 (Channel Bandwidth: 1.4 MHz)	1M09W7D
	LTE Band 12 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE Band 12 (Channel Bandwidth: 5 MHz)	4M49W7D
	LTE Band 12 (Channel Bandwidth: 10 MHz)	8M97W7D
	LTE Band 13 (Channel Bandwidth: 5 MHz)	4M49W7D
	LTE Band 13 (Channel Bandwidth: 10 MHz)	8M95W7D
	LTE Band 17 (Channel Bandwidth: 5 MHz)	4M49W7D
	LTE Band 17 (Channel Bandwidth: 10 MHz)	8M97W7D
	LTE Band 66 (Channel Bandwidth: 1.4 MHz)	1M09W7D
	LTE Band 66 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE Band 66 (Channel Bandwidth: 5 MHz)	4M49W7D
	LTE Band 66 (Channel Bandwidth: 10 MHz)	8M97W7D
	Max. ERP Power	LTE Band 12 (Channel Bandwidth: 1.4 MHz)
LTE Band 12 (Channel Bandwidth: 3 MHz)		45.82mW
LTE Band 12 (Channel Bandwidth: 5 MHz)		45.25mW
LTE Band 12 (Channel Bandwidth: 10 MHz)		45.27mW
LTE Band 13 (Channel Bandwidth: 5 MHz)		44.99mW
LTE Band 13 (Channel Bandwidth: 10 MHz)		45.26mW
LTE Band 17 (Channel Bandwidth: 5 MHz)		72.63mW
LTE Band 17 (Channel Bandwidth: 10 MHz)		71.27mW
Max. EIRP Power	WCDMA	144.11mW
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	142.46mW
	LTE Band 4 (Channel Bandwidth: 3 MHz)	143.22mW
	LTE Band 4 (Channel Bandwidth: 5 MHz)	143.22mW
	LTE Band 4 (Channel Bandwidth: 10 MHz)	142.79mW
	LTE Band 4 (Channel Bandwidth: 15 MHz)	145.88mW
	LTE Band 4 (Channel Bandwidth: 20 MHz)	144.38mW
	LTE Band 66 (Channel Bandwidth: 1.4 MHz)	129.33mW
	LTE Band 66 (Channel Bandwidth: 3 MHz)	133.97mW
	LTE Band 66 (Channel Bandwidth: 5 MHz)	138.04mW
	LTE Band 66 (Channel Bandwidth: 10 MHz)	141.87mW
	LTE Band 66 (Channel Bandwidth: 15 MHz)	144.21mW
	LTE Band 66 (Channel Bandwidth: 20 MHz)	146.55mW

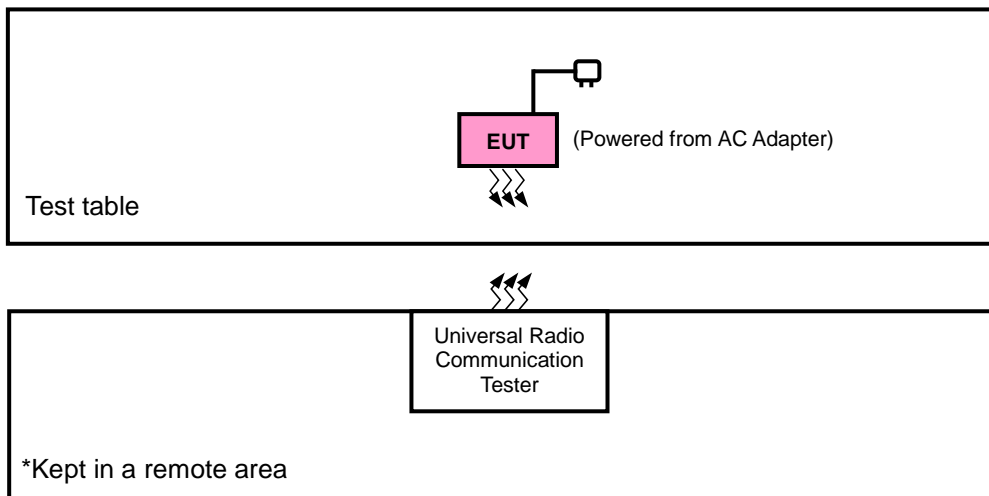
Antenna Type	Fixed Internal Antenna
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

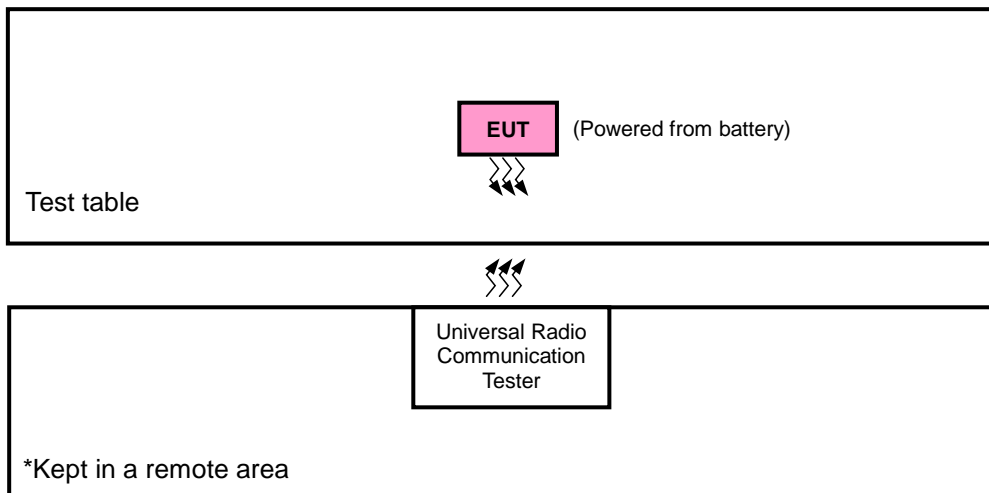
1. The EUT's accessories list refers to Ext. Pho.
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test

<Radiated Emission Test>



<E.R.P. / E.I.R.P. Test>



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

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:

SIM	Band	ERP / EIRP	Radiated Emission
1	WCDMA	X-plane	X-axis
	LTE Band 4	X-plane	X-axis
	LTE Band 12	Y-plane	X-axis
	LTE Band 13	Y-plane	Z-axis
	LTE Band 17	Y-plane	X-axis
	LTE Band 66	X-plane	Y-axis

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA
-	Frequency Stability	1312 to 1513	1312, 1513	WCDMA
-	Occupied Bandwidth	1312 to 1513	1312, 1413, 1513	WCDMA
-	Band Edge	1312 to 1513	1312, 1513	WCDMA
-	Peak to Average Ratio	1312 to 1513	1312, 1413, 1513	WCDMA
-	Conducuted Emission	1312 to 1513	1312, 1413, 1513	WCDMA
-	Radiated Emission	1312 to 1513	1312, 1413, 1513	WCDMA

LTE Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Frequency Stability	19957 to 20393	19957, 20393	1.4 MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965, 20385	3 MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975, 20375	5 MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000, 20350	10 MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025, 20325	15 MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050, 20300	20 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode		
-	Band Edge	19957 to 20393	19957	1.4 MHz	QPSK	1 RB / 0 RB Offset 6 RB / 0 RB Offset		
			20393	1.4 MHz	QPSK	1 RB / 5 RB Offset 6 RB / 0 RB Offset		
		19965 to 20385	19965	3 MHz	QPSK	1 RB / 0 RB Offset 15 RB / 0 RB Offset		
			20385	3 MHz	QPSK	1 RB / 14 RB Offset 15 RB / 0 RB Offset		
		19975 to 20375	19975	5 MHz	QPSK	1 RB / 0 RB Offset 25 RB / 0 RB Offset		
			20375	5 MHz	QPSK	1 RB / 24 RB Offset 25 RB / 0 RB Offset		
		20000 to 20350	20000	10 MHz	QPSK	1 RB / 0 RB Offset 50 RB / 0 RB Offset		
			20350	10 MHz	QPSK	1 RB / 49 RB Offset 50 RB / 0 RB Offset		
		20025 to 20325	20025	15 MHz	QPSK	1 RB / 0 RB Offset 75 RB / 0 RB Offset		
			20325	15 MHz	QPSK	1 RB / 74 RB Offset 75 RB / 0 RB Offset		
		20050 to 20300	20050	20 MHz	QPSK	1 RB / 0 RB Offset 100 RB / 0 RB Offset		
			20300	20 MHz	QPSK	1 RB / 99 RB Offset 100 RB / 0 RB Offset		
		-	Conducted Emission	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK	1 RB / 0 RB Offset
				19965 to 20385	19965, 20175, 20385	3 MHz	QPSK	1 RB / 0 RB Offset
				19975 to 20375	19975, 20175, 20375	5 MHz	QPSK	1 RB / 0 RB Offset
				20000 to 20350	20000, 20175, 20350	10 MHz	QPSK	1 RB / 0 RB Offset
				20025 to 20325	20025, 20175, 20325	15 MHz	QPSK	1 RB / 0 RB Offset
				20050 to 20300	20050, 20175, 20300	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	20050 to 20300	20050, 20175, 20300	20 MHz	QPSK	1 RB / 0 RB Offset		

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE Band 12

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode		
-	ERP	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	1 RB / 5 RB Offset		
		23025 to 23165	23025, 23095, 23165	3 MHz	QPSK, 16QAM	1 RB / 14 RB Offset		
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK, 16QAM	1 RB / 24 RB Offset		
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK, 16QAM	1 RB / 49 RB Offset		
-	Frequency Stability	23017 to 23173	23017, 23173	1.4 MHz	QPSK	1 RB / 5 RB Offset		
		23025 to 23165	23025, 23165	3 MHz	QPSK	1 RB / 14 RB Offset		
		23035 to 23155	23035, 23155	5 MHz	QPSK	1 RB / 24 RB Offset		
		23060 to 23130	23060, 23130	10 MHz	QPSK	1 RB / 49 RB Offset		
-	Occupied Bandwidth	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset		
		23025 to 23165	23025, 23095, 23165	3 MHz	QPSK, 16QAM	15 RB / 0 RB Offset		
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset		
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset		
-	Peak to Average Ratio	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	1 RB / 5 RB Offset		
		23025 to 23165	23025, 23095, 23165	3 MHz	QPSK, 16QAM	1 RB / 14 RB Offset		
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK, 16QAM	1 RB / 24 RB Offset		
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK, 16QAM	1 RB / 49 RB Offset		
-	Band Edge	23017 to 23173	23017	1.4 MHz	QPSK	1 RB / 0 RB Offset 6 RB / 0 RB Offset		
			23173	1.4 MHz	QPSK	1 RB / 5 RB Offset 6 RB / 0 RB Offset		
		23025 to 23165	23025	3 MHz	QPSK	1 RB / 0 RB Offset 15 RB / 0 RB Offset		
			23165	3 MHz	QPSK	1 RB / 14 RB Offset 15 RB / 0 RB Offset		
		23035 to 23155	23035	5 MHz	QPSK	1 RB / 0 RB Offset 25 RB / 0 RB Offset		
			23155	5 MHz	QPSK	1 RB / 24 RB Offset 25 RB / 0 RB Offset		
		23060 to 23130	23060	10 MHz	QPSK	1 RB / 0 RB Offset 50 RB / 0 RB Offset		
			23130	10 MHz	QPSK	1 RB / 49 RB Offset 50 RB / 0 RB Offset		
		-	Conducted Emission	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK	1 RB / 5 RB Offset
				23025 to 23165	23025, 23095, 23165	3 MHz	QPSK	1 RB / 14 RB Offset
				23035 to 23155	23035, 23095, 23155	5 MHz	QPSK	1 RB / 24 RB Offset
				23060 to 23130	23060, 23095, 23130	10 MHz	QPSK	1 RB / 49 RB Offset
-	Radiated Emission	23060 to 23130	23060, 23095, 23130	10 MHz	QPSK	1 RB / 49 RB Offset		

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE Band 13

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Frequency Stability	23205 to 23255	23205, 23255	5 MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Peak to Average Ratio	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Band Edge	23205 to 23255	23205	5 MHz	QPSK	1 RB / 0 RB Offset
			23255	5 MHz	QPSK	25 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK	1 RB / 24 RB Offset
			23230	10 MHz	QPSK	25 RB / 0 RB Offset
			23230	10 MHz	QPSK	1 RB / 0 RB Offset
			23230	10 MHz	QPSK	50 RB / 0 RB Offset
-	Conducted Emission	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	23230	23230	10 MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE Band 17

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	23755 to 23825	23755, 23790, 23825	5 MHz	QPSK, 16QAM	1 RB / 24 RB Offset
		23780 to 23800	23780, 23790, 23800	10 MHz	QPSK, 16QAM	1 RB / 49 RB Offset
-	Frequency Stability	23755 to 23825	23755, 23825	5 MHz	QPSK	1 RB / 24 RB Offset
		23780 to 23800	23780, 23800	10 MHz	QPSK	1 RB / 49 RB Offset
-	Occupied Bandwidth	23755 to 23825	23755, 23790, 23825	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		23780 to 23800	23780, 23790, 23800	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Peak to Average Ratio	23755 to 23825	23755, 23790, 23825	5 MHz	QPSK, 16QAM	1 RB / 24 RB Offset
		23780 to 23800	23780, 23790, 23800	10 MHz	QPSK, 16QAM	1 RB / 49 RB Offset
-	Band Edge	23755 to 23825	23755	5 MHz	QPSK	1 RB / 0 RB Offset
			23825	5 MHz	QPSK	25 RB / 0 RB Offset
		23780 to 23800	23780	10 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
			23800	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE Band 66

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		131987 to 132657	131987, 132322, 132657	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Frequency Stability	131979 to 132665	131979, 132665	1.4 MHz	QPSK	1 RB / 0 RB Offset
		131987 to 132657	131987, 132657	3 MHz	QPSK	1 RB / 0 RB Offset
		131997 to 132647	131997, 132647	5 MHz	QPSK	1 RB / 0 RB Offset
		132022 to 132622	132022, 132622	10 MHz	QPSK	1 RB / 0 RB Offset
		132047 to 132597	132047, 132597	15 MHz	QPSK	1 RB / 0 RB Offset
		132072 to 132572	132072, 132572	20 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		131987 to 132657	131987, 132322, 132657	3 MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		131987 to 132657	131987, 132322, 132657	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Band Edge	131979 to 132665	131979	1.4 MHz	QPSK	1 RB / 0 RB Offset 6 RB / 0 RB Offset
			132665	1.4 MHz	QPSK	1 RB / 5 RB Offset 6 RB / 0 RB Offset
		131987 to 132657	131987	3 MHz	QPSK	1 RB / 0 RB Offset 15 RB / 0 RB Offset
			132657	3 MHz	QPSK	1 RB / 14 RB Offset 15 RB / 0 RB Offset
		131997 to 132647	131997	5 MHz	QPSK	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			132647	5 MHz	QPSK	1 RB / 24 RB Offset 25 RB / 0 RB Offset
		132022 to 132622	132022	10 MHz	QPSK	1 RB / 0 RB Offset 50 RB / 0 RB Offset
			132622	10 MHz	QPSK	1 RB / 49 RB Offset 50 RB / 0 RB Offset
		132047 to 132597	132047	15 MHz	QPSK	1 RB / 0 RB Offset 75 RB / 0 RB Offset
			132597	15 MHz	QPSK	1 RB / 74 RB Offset 75 RB / 0 RB Offset
		132072 to 132572	132072	20 MHz	QPSK	1 RB / 0 RB Offset 100 RB / 0 RB Offset
			132572	20 MHz	QPSK	1 RB / 99 RB Offset 100 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Conducted Emission	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK	1 RB / 0 RB Offset
		131987 to 132657	131987, 132322, 132657	3 MHz	QPSK	1 RB / 0 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK	1 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK	1 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK	1 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	132072 to 132572	132072, 132322, 132572	20 MHz	QPSK	1 RB / 0 RB Offset

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP / EIRP	25 deg. C, 65 % RH	3.85 Vdc	Charles Hsiao
Frequency Stability	25 deg. C, 65 % RH	3.85 Vdc	Anson Lin
Occupied Bandwidth	25 deg. C, 65 % RH	3.85 Vdc	Anson Lin
Band Edge	25 deg. C, 65 % RH	3.85 Vdc	Anson Lin
Peak to Average Ratio	25 deg. C, 65 % RH	3.85 Vdc	Anson Lin
Condcudeted Emission	25 deg. C, 65 % RH	3.85 Vdc	Anson Lin
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Charles Hsiao & Karl Lee & Getaz Yang

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

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

FCC 47 CFR Part 2

FCC 47 CFR Part 27

KDB 971168 D01 Power Meas License Digital Systems v02r02

ANSI/TIA/EIA-603-D 2010

Note: All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

Portable stations (hand-held devices) operating in the 698-787 MHz band are limited to 3 watts ERP

4.1.2 Test Procedures

EIRP / ERP Measurement:

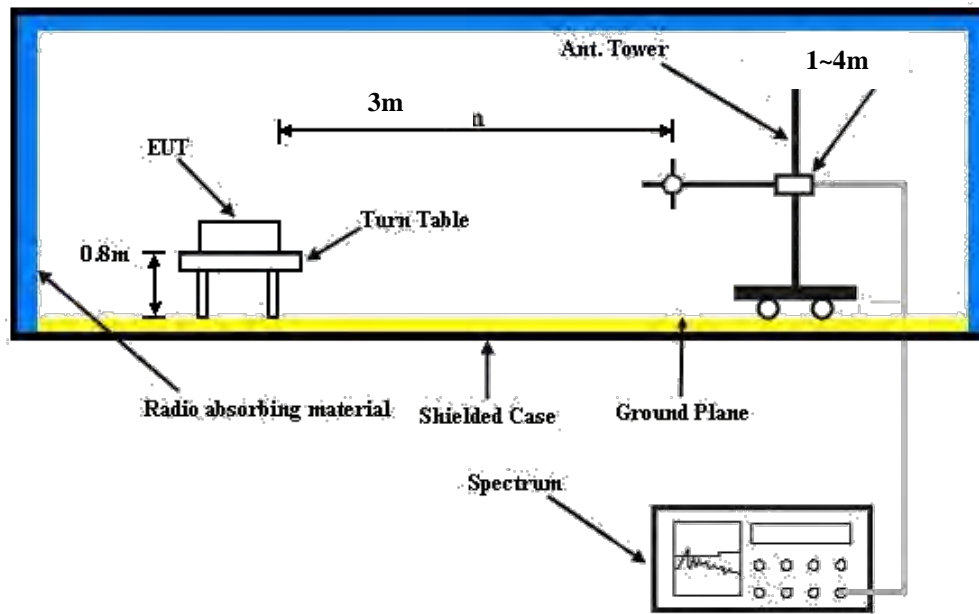
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5 MHz for WCDMA and 10 MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step b. Record the power level of S.G.
- d. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dBi}$.

Conducted Power Measurement:

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

4.1.3 Test Setup

EIRP / ERP Measurement:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

Conducted Power Measurement:



4.1.4 Test Results

Conducted Output Power (dBm)

Band	WCDMA IV		
	Channel	1312	1413
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	23.29	23.38	23.36
HSDPA Subtest-1	22.32	22.40	22.37
HSDPA Subtest-2	22.23	22.38	22.31
HSDPA Subtest-3	21.86	21.91	21.78
HSDPA Subtest-4	21.81	21.90	21.75
HSUPA Subtest-1	22.23	22.38	22.38
HSUPA Subtest-2	20.29	20.38	20.38
HSUPA Subtest-3	21.22	21.39	21.39
HSUPA Subtest-4	20.27	20.33	20.33
HSUPA Subtest-5	22.16	22.30	22.27

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 19957	Mid Ch 20175	High Ch 20393		Low Ch 19957	Mid Ch 20175	High Ch 20393	
			1710.7 MHz	1732.5 MHz	1754.3 MHz		1710.7 MHz	1732.5 MHz	1754.3 MHz	
4 / 1.4M	1	0	22.44	22.73	22.84	0	21.51	21.82	21.90	1
	1	2	22.27	22.60	22.78	0	21.37	21.64	21.76	1
	1	5	22.09	22.36	22.55	0	21.10	21.40	21.50	1
	3	0	22.11	22.41	22.55	0	21.09	21.41	21.52	1
	3	1	21.93	22.25	22.35	0	20.87	21.25	21.44	1
	3	3	21.83	22.11	22.18	0	20.79	21.04	21.16	1
	6	0	21.03	21.31	21.38	1	20.04	20.29	20.42	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 19965	Mid Ch 20175	High Ch 20385		Low Ch 19965	Mid Ch 20175	High Ch 20385	
			1711.5 MHz	1732.5 MHz	1753.5 MHz		1711.5 MHz	1732.5 MHz	1753.5 MHz	
4 / 3M	1	0	22.58	22.84	22.91	0	21.61	21.87	21.93	1
	1	7	22.39	22.72	22.86	0	21.41	21.73	21.85	1
	1	14	22.20	22.50	22.66	0	21.31	21.49	21.57	1
	8	0	21.34	21.67	21.74	1	20.25	20.61	20.79	2
	8	3	21.15	21.50	21.63	1	20.14	20.47	20.57	2
	8	7	21.08	21.31	21.45	1	20.03	20.31	20.47	2
	15	0	21.17	21.45	21.55	1	20.17	20.38	20.52	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 19975	Mid Ch 20175	High Ch 20375		Low Ch 19975	Mid Ch 20175	High Ch 20375	
			1712.5 MHz	1732.5 MHz	1752.5 MHz		1712.5 MHz	1732.5 MHz	1752.5 MHz	
4 / 5M	1	0	22.62	22.87	22.96	0	21.63	21.94	22.01	1
	1	12	22.40	22.75	22.89	0	21.43	21.80	21.87	1
	1	24	22.22	22.53	22.65	0	21.26	21.57	21.67	1
	12	0	21.40	21.72	21.81	1	20.48	20.73	20.80	2
	12	6	21.30	21.61	21.69	1	20.28	20.60	20.67	2
	12	13	21.22	21.48	21.56	1	20.18	20.45	20.57	2
	25	0	21.40	21.59	21.66	1	20.32	20.54	20.63	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 20000	Mid Ch 20175	High Ch 20350		Low Ch 20000	Mid Ch 20175	High Ch 20350	
			1715.0 MHz	1732.5 MHz	1750.0 MHz		1715.0 MHz	1732.5 MHz	1750.0 MHz	
4 / 10M	1	0	22.69	22.93	23.01	0	21.72	21.97	22.04	1
	1	24	22.53	22.79	22.86	0	21.61	21.84	21.90	1
	1	49	22.36	22.62	22.67	0	21.42	21.64	21.78	1
	25	0	21.59	21.82	21.96	1	20.54	20.82	20.91	2
	25	12	21.48	21.70	21.86	1	20.39	20.69	20.79	2
	25	25	21.39	21.61	21.67	1	20.34	20.58	20.66	2
	50	0	21.50	21.68	21.76	1	20.43	20.64	20.75	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 20025	Mid Ch 20175	High Ch 20325		Low Ch 20025	Mid Ch 20175	High Ch 20325	
			1717.5 MHz	1732.5 MHz	1747.5 MHz		1717.5 MHz	1732.5 MHz	1747.5 MHz	
4 / 15M	1	0	22.78	23.00	23.06	0	21.78	22.04	22.11	1
	1	37	22.64	22.89	22.99	0	21.63	21.91	22.01	1
	1	74	22.45	22.71	22.78	0	21.53	21.70	21.88	1
	36	0	21.66	21.93	21.99	1	20.76	20.91	21.05	2
	36	19	21.64	21.84	21.88	1	20.56	20.81	20.86	2
	36	39	21.52	21.74	21.80	1	20.48	20.70	20.76	2
	75	0	21.60	21.81	21.86	1	20.62	20.79	20.86	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 20050	Mid Ch 20175	High Ch 20300		Low Ch 20050	Mid Ch 20175	High Ch 20300	
			1720.0 MHz	1732.5 MHz	1745.0 MHz		1720.0 MHz	1732.5 MHz	1745.0 MHz	
4 / 20M	1	0	22.85	23.05	23.11	0	21.87	22.10	22.16	1
	1	50	22.68	22.95	23.02	0	21.71	21.98	22.09	1
	1	99	22.54	22.79	22.88	0	21.51	21.81	21.90	1
	50	0	21.79	22.03	22.14	1	20.76	21.02	21.14	2
	50	25	21.78	21.95	22.01	1	20.75	20.93	21.04	2
	50	50	21.69	21.87	21.93	1	20.63	20.84	20.91	2
	100	0	21.73	21.93	21.97	1	20.78	20.91	20.97	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23017	Mid Ch 23095	High Ch 23173		Low Ch 23017	Mid Ch 23095	High Ch 23173	
			699.7 MHz	707.5 MHz	715.3 MHz		699.7 MHz	707.5 MHz	715.3 MHz	
12 / 1.4M	1	0	22.28	22.12	22.22	0	21.28	21.11	21.21	1
	1	2	22.38	22.18	22.28	0	21.41	21.16	21.32	1
	1	5	22.54	22.41	22.49	0	21.58	21.48	21.56	1
	3	0	22.20	22.02	22.07	0	21.20	20.97	21.05	1
	3	1	22.24	22.04	22.15	0	21.23	21.01	21.19	1
	3	3	22.33	22.15	22.27	0	21.33	21.12	21.29	1
	6	0	21.30	21.12	21.21	1	20.26	20.07	20.22	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23025	Mid Ch 23095	High Ch 23165		Low Ch 23025	Mid Ch 23095	High Ch 23165	
			700.5 MHz	707.5 MHz	714.5 MHz		700.5 MHz	707.5 MHz	714.5 MHz	
12 / 3M	1	0	22.38	22.25	22.34	0	21.42	21.23	21.32	1
	1	7	22.43	22.31	22.42	0	21.48	21.28	21.36	1
	1	14	22.61	22.50	22.56	0	21.66	21.55	21.60	1
	8	0	21.43	21.27	21.33	1	20.38	20.21	20.31	2
	8	3	21.48	21.30	21.43	1	20.48	20.26	20.38	2
	8	7	21.56	21.39	21.50	1	20.54	20.35	20.47	2
	15	0	21.43	21.27	21.37	1	20.45	20.21	20.35	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23035	Mid Ch 23095	High Ch 23155		Low Ch 23035	Mid Ch 23095	High Ch 23155	
			701.5 MHz	707.5 MHz	713.5 MHz		701.5 MHz	707.5 MHz	713.5 MHz	
12 / 5M	1	0	22.43	22.30	22.38	0	21.47	21.31	21.42	1
	1	12	22.53	22.35	22.44	0	21.58	21.38	21.45	1
	1	24	22.64	22.53	22.62	0	21.71	21.60	21.68	1
	12	0	21.52	21.40	21.47	1	20.50	20.35	20.41	2
	12	6	21.55	21.42	21.52	1	20.59	20.38	20.53	2
	12	13	21.60	21.50	21.58	1	20.63	20.47	20.59	2
	25	0	21.55	21.40	21.45	1	20.50	20.35	20.45	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23060	Mid Ch 23095	High Ch 23130		Low Ch 23060	Mid Ch 23095	High Ch 23130	
			704.0 MHz	707.5 MHz	711.0 MHz		704.0 MHz	707.5 MHz	711.0 MHz	
12 / 10M	1	0	22.51	22.41	22.47	0	21.54	21.43	21.50	1
	1	24	22.63	22.45	22.51	0	21.57	21.47	21.56	1
	1	49	22.71	22.61	22.65	0	21.76	21.65	21.72	1
	25	0	21.65	21.55	21.59	1	20.62	20.51	20.59	2
	25	12	21.68	21.57	21.65	1	20.68	20.54	20.62	2
	25	25	21.73	21.63	21.67	1	20.74	20.62	20.67	2
	50	0	21.66	21.55	21.59	1	20.63	20.51	20.59	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23205	Mid Ch 23230	High Ch 23255		Low Ch 23205	Mid Ch 23230	High Ch 23255	
			779.5 MHz	782.0 MHz	784.5 MHz		779.5 MHz	782.0 MHz	784.5 MHz	
13 / 5M	1	0	22.80	22.70	22.72	0	21.85	21.72	21.75	1
	1	12	22.79	22.69	22.71	0	21.82	21.70	21.74	1
	1	24	22.71	22.64	22.67	0	21.74	21.64	21.67	1
	12	0	21.92	21.83	21.85	1	21.00	20.79	20.86	2
	12	6	21.89	21.78	21.80	1	20.88	20.74	20.78	2
	12	13	21.86	21.76	21.78	1	20.82	20.71	20.74	2
	25	0	21.81	21.75	21.77	1	20.78	20.70	20.72	2

Band / BW	RB Size	RB Offset	QPSK		3GPP MPR (dB)	16QAM		3GPP MPR (dB)
			Mid Ch 23230	782.0 MHz		Mid Ch 23230	782.0 MHz	
			782.0 MHz	782.0 MHz				
13 / 10M	1	0	22.83	21.88	0	21.88	1	
	1	24	22.75	21.79	0	21.79	1	
	1	49	22.65	21.69	0	21.69	1	
	25	0	21.84	20.85	1	20.85	2	
	25	12	21.80	20.80	1	20.80	2	
	25	25	21.75	20.74	1	20.74	2	
	50	0	21.74	20.73	1	20.73	2	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23755	Mid Ch 23790	High Ch 23825		Low Ch 23755	Mid Ch 23790	High Ch 23825	
			706.5 MHz	710.0 MHz	713.5 MHz		706.5 MHz	710.0 MHz	713.5 MHz	
17 / 5M	1	0	22.28	22.40	22.36	0	21.27	21.38	21.34	1
	1	12	22.34	22.45	22.41	0	21.34	21.45	21.40	1
	1	24	22.45	22.55	22.49	0	21.39	21.59	21.54	1
	12	0	21.37	21.49	21.44	1	20.33	20.46	20.39	2
	12	6	21.42	21.52	21.49	1	20.37	20.51	20.47	2
	12	13	21.43	21.56	21.52	1	20.42	20.55	20.53	2
	25	0	21.40	21.51	21.46	1	20.35	20.49	20.45	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23780	Mid Ch 23790	High Ch 23800		Low Ch 23780	Mid Ch 23790	High Ch 23800	
			709.0 MHz	710.0 MHz	711.0 MHz		709.0 MHz	710.0 MHz	711.0 MHz	
17 / 10M	1	0	22.38	22.47	22.44	0	21.37	21.50	21.43	1
	1	24	22.43	22.51	22.46	0	21.47	21.54	21.50	1
	1	49	22.47	22.60	22.57	0	21.55	21.64	21.57	1
	25	0	21.52	21.61	21.55	1	20.47	20.58	20.51	2
	25	12	21.55	21.63	21.60	1	20.51	20.61	20.57	2
	25	25	21.57	21.67	21.62	1	20.52	20.66	20.63	2
	50	0	21.54	21.62	21.59	1	20.49	20.60	20.54	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 131979	Mid Ch 132322	High Ch 132665		Low Ch 131979	Mid Ch 132322	High Ch 132665	
			1710.7 MHz	1745.0 MHz	1779.3 MHz		1710.7 MHz	1745.0 MHz	1779.3 MHz	
66 / 1.4M	1	0	23.44	23.67	23.91	0	22.43	22.73	22.96	1
	1	2	23.29	23.64	23.83	0	22.32	22.67	22.90	1
	1	5	23.23	23.38	23.71	0	22.04	22.37	22.55	1
	3	0	23.34	23.55	23.86	0	22.14	22.51	22.82	1
	3	1	23.14	23.48	23.77	0	22.09	22.42	22.75	1
	3	3	23.09	23.40	23.66	0	22.04	22.35	22.65	1
	6	0	22.03	22.31	22.61	1	21.05	21.26	21.55	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 131987	Mid Ch 132322	High Ch 132657		Low Ch 131987	Mid Ch 132322	High Ch 132657	
			1711.5 MHz	1745.5 MHz	1778.5 MHz		1711.5 MHz	1745.5 MHz	1778.5 MHz	
66 / 3M	1	0	23.47	23.70	23.97	0	22.50	22.74	23.02	1
	1	7	23.42	23.65	23.85	0	22.42	22.69	22.90	1
	1	14	23.20	23.42	23.78	0	22.23	22.46	22.82	1
	8	0	22.20	22.45	22.74	1	21.10	21.45	21.79	2
	8	3	22.10	22.38	22.67	1	21.05	21.37	21.66	2
	8	7	22.06	22.32	22.54	1	20.99	21.31	21.52	2
	15	0	22.19	22.41	22.65	1	21.18	21.43	21.71	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 131997	Mid Ch 132322	High Ch 132647		Low Ch 131997	Mid Ch 132322	High Ch 132647	
			1712.5 MHz	1745.0 MHz	1777.5 MHz		1712.5 MHz	1745.0 MHz	1777.5 MHz	
66 / 5M	1	0	23.53	23.79	24.02	0	22.59	22.81	23.08	1
	1	12	23.40	23.75	23.89	0	22.47	22.78	23.00	1
	1	24	23.19	23.47	23.69	0	22.28	22.51	22.84	1
	12	0	22.36	22.54	22.86	1	21.24	21.53	21.87	2
	12	6	22.24	22.47	22.71	1	21.17	21.47	21.74	2
	12	13	22.19	22.41	22.65	1	21.15	21.41	21.65	2
	25	0	22.28	22.51	22.73	1	21.33	21.50	21.74	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 132022	Mid Ch 132322	High Ch 132622		Low Ch 132022	Mid Ch 132322	High Ch 132622	
			1715.0 MHz	1745.0 MHz	1775.0 MHz		1715.0 MHz	1745.0 MHz	1775.0 MHz	
66 / 10M	1	0	23.62	23.85	24.07	0	22.67	22.89	23.13	1
	1	24	23.56	23.83	24.01	0	22.54	22.86	23.02	1
	1	49	23.45	23.60	23.77	0	22.42	22.64	22.94	1
	25	0	22.42	22.68	22.94	1	21.46	21.61	21.91	2
	25	12	22.39	22.63	22.90	1	21.34	21.57	21.84	2
	25	25	22.35	22.58	22.74	1	21.29	21.52	21.78	2
	50	0	22.43	22.66	22.90	1	21.45	21.60	21.84	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 132047	Mid Ch 132322	High Ch 132597		Low Ch 132047	Mid Ch 132322	High Ch 132597	
			1717.5 MHz	1745.0 MHz	1772.5 MHz		1717.5 MHz	1745.0 MHz	1772.5 MHz	
66 / 15M	1	0	23.70	23.92	24.13	0	22.73	22.94	23.18	1
	1	37	23.64	23.89	24.02	0	22.63	22.91	23.08	1
	1	74	23.41	23.68	23.92	0	22.46	22.70	23.01	1
	36	0	22.61	22.78	23.07	1	21.60	21.77	22.11	2
	36	19	22.54	22.74	22.98	1	21.49	21.73	21.97	2
	36	39	22.49	22.70	22.89	1	21.44	21.67	21.83	2
	75	0	22.53	22.76	22.97	1	21.59	21.75	22.00	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 132072	Mid Ch 132322	High Ch 132572		Low Ch 132072	Mid Ch 132322	High Ch 132572	
			1720.0 MHz	1745.0 MHz	1770.0 MHz		1720.0 MHz	1745.0 MHz	1770.0 MHz	
66 / 20M	1	0	23.78	23.98	24.18	0	22.81	23.02	23.23	1
	1	50	23.75	23.96	24.08	0	22.74	22.99	23.17	1
	1	99	23.55	23.76	23.96	0	22.49	22.78	22.99	1
	50	0	22.73	22.91	23.18	1	21.67	21.89	22.12	2
	50	25	22.68	22.88	23.09	1	21.63	21.85	22.07	2
	50	50	22.64	22.84	23.04	1	21.60	21.81	21.98	2
	100	0	22.79	22.90	23.10	1	21.65	21.88	22.09	2

ERP Power (dBm)

LTE Band 12							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23017	699.7	-14.03	32.719	16.54	45.07	H
	23095	707.5	-14.08	32.736	16.51	44.73	
	23173	715.3	-13.96	32.591	16.48	44.47	
	23017	699.7	-18.02	32.69	12.52	17.86	V
	23095	707.5	-18.16	32.81	12.50	17.78	
	23173	715.3	-18.00	32.74	12.59	18.16	
Channel Bandwidth: 1.4 MHz / 16QAM							
Y	23017	699.7	-15.02	32.719	15.55	35.88	H
	23095	707.5	-15.08	32.736	15.51	35.53	
	23173	715.3	-14.91	32.591	15.53	35.74	
	23017	699.7	-19.00	32.69	11.54	14.26	V
	23095	707.5	-19.13	32.81	11.53	14.22	
	23173	715.3	-19.03	32.74	11.56	14.32	

LTE Band 12							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23025	700.5	-14.06	32.719	16.51	44.76	H
	23095	707.5	-14.05	32.736	16.54	45.04	
	23165	714.5	-13.83	32.591	16.61	45.82	
	23025	700.5	-18.05	32.69	12.49	17.74	V
	23095	707.5	-18.18	32.81	12.48	17.70	
	23165	714.5	-18.06	32.74	12.53	17.91	
Channel Bandwidth: 3 MHz / 16QAM							
Y	23025	700.5	-15.03	32.719	15.54	35.80	H
	23095	707.5	-15.10	32.736	15.49	35.37	
	23165	714.5	-14.89	32.591	15.55	35.90	
	23025	700.5	-19.01	32.69	11.53	14.22	V
	23095	707.5	-19.18	32.81	11.48	14.06	
	23165	714.5	-19.06	32.74	11.53	14.22	

LTE Band 12							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23035	701.5	-14.05	32.719	16.52	44.86	H
	23095	707.5	-14.03	32.736	16.56	45.25	
	23155	713.5	-13.97	32.591	16.47	44.37	
	23035	701.5	-18.03	32.69	12.51	17.82	V
	23095	707.5	-18.14	32.81	12.52	17.86	
	23155	713.5	-18.08	32.74	12.51	17.82	
Channel Bandwidth: 5 MHz / 16QAM							
Y	23035	701.5	-14.96	32.719	15.61	36.38	H
	23095	707.5	-15.13	32.736	15.46	35.12	
	23155	713.5	-14.96	32.591	15.48	35.33	
	23035	701.5	-18.96	32.69	11.58	14.39	V
	23095	707.5	-19.20	32.81	11.46	14.00	
	23155	713.5	-19.06	32.74	11.53	14.22	

LTE Band 12							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23060	704.0	-14.03	32.727	16.55	45.15	H
	23095	707.5	-14.18	32.739	16.41	43.74	
	23130	711.0	-14.02	32.728	16.56	45.27	
	23060	704.0	-18.06	32.75	12.54	17.95	V
	23095	707.5	-18.20	32.81	12.46	17.62	
	23130	711.0	-18.13	32.84	12.56	18.03	
Channel Bandwidth: 10 MHz / 16QAM							
Y	23060	704.0	-15.00	32.727	15.58	36.12	H
	23095	707.5	-15.06	32.739	15.53	35.72	
	23130	711.0	-15.09	32.728	15.49	35.38	
	23060	704.0	-19.00	32.75	11.60	14.45	V
	23095	707.5	-19.14	32.81	11.52	14.19	
	23130	711.0	-19.15	32.84	11.54	14.26	

LTE Band 13							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23205	779.5	-14.13	32.771	16.49	44.58	H
	23230	782.0	-14.06	32.741	16.53	44.99	
	23255	784.5	-14.18	32.854	16.52	44.92	
	23205	779.5	-16.86	32.5	13.49	22.34	V
	23230	782.0	-16.82	32.52	13.55	22.65	
	23255	784.5	-16.91	32.62	13.56	22.70	
Channel Bandwidth: 5 MHz / 16QAM							
Y	23205	779.5	-15.10	32.771	15.52	35.65	H
	23230	782.0	-15.16	32.741	15.43	34.92	
	23255	784.5	-15.18	32.854	15.52	35.68	
	23205	779.5	-17.83	32.5	12.52	17.86	V
	23230	782.0	-17.81	32.52	12.56	18.03	
	23255	784.5	-18.05	32.62	12.42	17.46	

LTE Band 13							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23230	782.0	-14.03	32.737	16.56	45.26	H
	23230	782.0	-16.82	32.52	13.55	22.65	V
Channel Bandwidth: 10 MHz / 16QAM							
Y	23230	782.0	-15.12	32.737	15.47	35.21	H
	23230	782.0	-17.80	32.52	12.57	18.07	V

LTE Band 17							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23755	706.5	-12.04	32.719	18.53	71.27	H
	23790	710.0	-12.09	32.736	18.50	70.73	
	23825	713.5	-11.83	32.591	18.61	72.63	
	23755	706.5	-14.98	32.69	15.56	35.97	V
	23790	710.0	-15.20	32.81	15.46	35.16	
	23825	713.5	-15.06	32.74	15.53	35.73	
Channel Bandwidth: 5 MHz / 16QAM							
Y	23755	706.5	-13.03	32.719	17.54	56.74	H
	23790	710.0	-13.08	32.736	17.51	56.31	
	23825	713.5	-12.86	32.591	17.58	57.29	
	23755	706.5	-16.00	32.69	14.54	28.44	V
	23790	710.0	-16.08	32.81	14.58	28.71	
	23825	713.5	-16.07	32.74	14.52	28.31	

LTE Band 17							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23780	709.0	-12.08	32.727	18.50	70.75	H
	23790	710.0	-12.06	32.739	18.53	71.27	
	23800	711.0	-12.08	32.728	18.50	70.76	
	23780	709.0	-15.07	32.75	15.53	35.73	V
	23790	710.0	-15.13	32.81	15.53	35.73	
	23800	711.0	-15.17	32.84	15.52	35.65	
Channel Bandwidth: 10 MHz / 16QAM							
Y	23780	709.0	-13.09	32.727	17.49	56.07	H
	23790	710.0	-13.07	32.739	17.52	56.48	
	23800	711.0	-13.06	32.728	17.52	56.47	
	23780	709.0	-16.08	32.75	14.52	28.31	V
	23790	710.0	-16.16	32.81	14.50	28.18	
	23800	711.0	-16.20	32.84	14.49	28.12	

EIRP Power (dBm)

WCDMA							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	1312	1712.4	-20.97	42.49	21.52	141.74	H
	1413	1732.6	-20.74	42.33	21.59	144.11	
	1513	1752.6	-20.56	42.10	21.54	142.56	
	1312	1712.4	-26.46	42.99	16.53	44.98	V
	1413	1732.6	-26.24	42.74	16.50	44.67	
	1513	1752.6	-25.69	42.21	16.52	44.87	

LTE Band 4							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	19957	1710.7	-20.96	42.49	21.53	142.07	H
	20175	1732.5	-20.79	42.33	21.54	142.46	
	20393	1754.3	-20.64	42.10	21.46	139.96	
	19957	1710.7	-26.50	42.99	16.49	44.57	V
	20175	1732.5	-26.21	42.74	16.53	44.98	
	20393	1754.3	-25.68	42.21	16.53	44.98	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	19957	1710.7	-21.95	42.49	20.54	113.11	H
	20175	1732.5	-21.82	42.33	20.51	112.38	
	20393	1754.3	-21.59	42.10	20.51	112.46	
	19957	1710.7	-27.48	42.99	15.51	35.56	V
	20175	1732.5	-27.13	42.74	15.61	36.39	
	20393	1754.3	-26.74	42.21	15.47	35.24	

LTE Band 4							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	19965	1711.5	-20.96	42.49	21.53	142.07	H
	20175	1732.5	-20.84	42.33	21.49	140.83	
	20385	1753.5	-20.54	42.10	21.56	143.22	
	19965	1711.5	-26.52	42.99	16.47	44.36	V
	20175	1732.5	-26.18	42.74	16.56	45.29	
	20385	1753.5	-25.63	42.21	16.58	45.50	
Channel Bandwidth: 3 MHz / 16QAM							
X	19965	1711.5	-21.97	42.49	20.52	112.59	H
	20175	1732.5	-21.83	42.33	20.50	112.12	
	20385	1753.5	-21.55	42.10	20.55	113.50	
	19965	1711.5	-27.43	42.99	15.56	35.97	V
	20175	1732.5	-27.28	42.74	15.46	35.16	
	20385	1753.5	-26.71	42.21	15.50	35.48	

LTE Band 4							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	19975	1712.5	-20.99	42.49	21.50	141.09	H
	20175	1732.5	-20.86	42.33	21.47	140.18	
	20375	1752.5	-20.54	42.10	21.56	143.22	
	19975	1712.5	-26.52	42.99	16.47	44.36	V
	20175	1732.5	-26.18	42.74	16.56	45.29	
	20375	1752.5	-25.66	42.21	16.55	45.19	
Channel Bandwidth: 5 MHz / 16QAM							
X	19975	1712.5	-21.93	42.49	20.56	113.63	H
	20175	1732.5	-21.75	42.33	20.58	114.21	
	20375	1752.5	-21.58	42.10	20.52	112.72	
	19975	1712.5	-27.54	42.99	15.45	35.08	V
	20175	1732.5	-27.16	42.74	15.58	36.14	
	20375	1752.5	-26.68	42.21	15.53	35.73	

LTE Band 4							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	20000	1715.0	-21.03	42.49	21.46	139.80	H
	20175	1732.5	-20.78	42.33	21.55	142.79	
	20350	1750.0	-20.57	42.10	21.53	142.23	
	20000	1715.0	-26.46	42.99	16.53	44.98	V
	20175	1732.5	-26.15	42.74	16.59	45.60	
	20350	1750.0	-25.69	42.21	16.52	44.87	
Channel Bandwidth: 10 MHz / 16QAM							
X	20000	1715.0	-22.00	42.49	20.49	111.81	H
	20175	1732.5	-21.76	42.33	20.57	113.95	
	20350	1750.0	-21.58	42.10	20.52	112.72	
	20000	1715.0	-27.50	42.99	15.49	35.40	V
	20175	1732.5	-27.18	42.74	15.56	35.97	
	20350	1750.0	-26.74	42.21	15.47	35.24	

LTE Band 4							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	20025	1717.5	-20.94	42.49	21.55	142.72	H
	20175	1732.5	-20.80	42.33	21.53	142.13	
	20325	1747.5	-20.46	42.10	21.64	145.88	
	20025	1717.5	-26.51	42.99	16.48	44.46	V
	20175	1732.5	-26.22	42.74	16.52	44.87	
	20325	1747.5	-25.70	42.21	16.51	44.77	
Channel Bandwidth: 15 MHz / 16QAM							
X	20025	1717.5	-21.96	42.49	20.53	112.85	H
	20175	1732.5	-21.86	42.33	20.47	111.35	
	20325	1747.5	-21.62	42.10	20.48	111.69	
	20025	1717.5	-27.45	42.99	15.54	35.81	V
	20175	1732.5	-27.20	42.74	15.54	35.81	
	20325	1747.5	-26.68	42.21	15.53	35.73	

LTE Band 4

Channel Bandwidth: 20 MHz / QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	20050	1720.0	-20.89	42.49	21.60	144.38	H
	20175	1732.5	-20.85	42.33	21.48	140.51	
	20300	1745.0	-20.55	42.10	21.55	142.89	
	20050	1720.0	-26.43	42.99	16.56	45.29	V
	20175	1732.5	-26.28	42.74	16.46	44.26	
	20300	1745.0	-25.60	42.21	16.61	45.81	

Channel Bandwidth: 20 MHz / 16QAM

X	20050	1720.0	-22.02	42.49	20.47	111.30	H
	20175	1732.5	-21.84	42.33	20.49	111.87	
	20300	1745.0	-21.60	42.10	20.50	112.20	
	20050	1720.0	-27.41	42.99	15.58	36.14	V
	20175	1732.5	-27.23	42.74	15.51	35.56	
	20300	1745.0	-26.70	42.21	15.51	35.56	

LTE Band 66

Channel Bandwidth: 1.4 MHz / QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	131979	1710.7	-23.09	36.45	13.36	21.68	H
	132322	1745	-23.39	36.80	13.41	21.92	
	132665	1779.3	-23.56	36.94	13.38	21.79	
	131979	1710.7	-16.16	37.28	21.12	129.33	V
	132322	1745	-16.45	37.63	21.18	131.22	
	132665	1779.3	-16.53	37.64	21.11	129.12	

Channel Bandwidth: 1.4 MHz / 16QAM

X	131979	1710.7	-24.26	36.45	12.19	16.56	H
	132322	1745	-24.59	36.80	12.21	16.63	
	132665	1779.3	-24.78	36.94	12.16	16.46	
	131979	1710.7	-17.05	37.28	20.23	105.37	V
	132322	1745	-17.34	37.63	20.29	106.91	
	132665	1779.3	-17.36	37.64	20.28	106.66	

LTE Band 66							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	131987	1711.5	-23.01	36.45	13.44	22.08	H
	132322	1745	-23.31	36.80	13.49	22.33	
	132657	1778.5	-23.48	36.94	13.46	22.20	
	131987	1711.5	-16.05	37.28	21.23	132.65	V
	132322	1745	-16.30	37.63	21.33	135.83	
	132657	1778.5	-16.37	37.64	21.27	133.97	
Channel Bandwidth: 3 MHz / 16QAM							
X	131987	1711.5	-24.10	36.45	12.35	17.18	H
	132322	1745	-24.43	36.80	12.37	17.25	
	132657	1778.5	-24.62	36.94	12.32	17.07	
	131987	1711.5	-16.98	37.28	20.30	107.08	V
	132322	1745	-17.21	37.63	20.42	110.15	
	132657	1778.5	-17.24	37.64	20.40	109.65	

LTE Band 66							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	131997	1712.5	-22.94	36.45	13.51	22.44	H
	132322	1745	-23.22	36.80	13.58	22.80	
	132647	1777.5	-23.37	36.94	13.57	22.77	
	131997	1712.5	-15.98	37.28	21.30	134.80	V
	132322	1745	-16.23	37.63	21.40	138.04	
	132647	1777.5	-16.28	37.64	21.36	136.77	
Channel Bandwidth: 5 MHz / 16QAM							
X	131997	1712.5	-24.02	36.45	12.43	17.50	H
	132322	1745	-24.36	36.80	12.44	17.53	
	132647	1777.5	-24.54	36.94	12.40	17.39	
	131997	1712.5	-16.83	37.28	20.45	110.84	V
	132322	1745	-17.12	37.63	20.51	112.46	
	132647	1777.5	-17.15	37.64	20.49	111.94	

LTE Band 66							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	132022	1715	-22.99	36.64	13.65	23.17	H
	132322	1745	-23.13	36.80	13.67	23.25	
	132622	1775	-23.16	36.80	13.64	23.12	
	132022	1715	-15.96	37.44	21.48	140.57	V
	132322	1745	-16.11	37.63	21.52	141.87	
	132622	1775	-16.19	37.64	21.45	139.48	
Channel Bandwidth: 10 MHz / 16QAM							
X	132022	1715	-24.09	36.64	12.55	17.99	H
	132322	1745	-24.23	36.80	12.57	18.05	
	132622	1775	-24.24	36.80	12.56	18.03	
	132022	1715	-16.91	37.44	20.53	112.95	V
	132322	1745	-17.05	37.63	20.58	114.26	
	132622	1775	-17.08	37.64	20.56	113.63	

LTE Band 66							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	132047	1717.5	-22.74	36.45	13.71	23.50	H
	132322	1745	-23.06	36.80	13.74	23.65	
	132597	1772.5	-23.25	36.94	13.69	23.40	
	132047	1717.5	-15.72	37.28	21.56	143.12	V
	132322	1745	-16.04	37.63	21.59	144.21	
	132597	1772.5	-16.06	37.64	21.58	143.88	
Channel Bandwidth: 15 MHz / 16QAM							
X	132047	1717.5	-23.85	36.45	12.60	18.20	H
	132322	1745	-24.15	36.80	12.65	18.40	
	132597	1772.5	-24.33	36.94	12.61	18.25	
	132047	1717.5	-16.71	37.28	20.57	113.95	V
	132322	1745	-16.94	37.63	20.69	117.22	
	132597	1772.5	-17.01	37.64	20.63	115.61	

LTE Band 66							
Channel Bandwidth: 20 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	132072	1720	-22.67	36.45	13.78	23.88	H
	132322	1745	-23.01	36.80	13.79	23.93	
	132572	1770	-23.21	36.94	13.73	23.62	
	132072	1720	-15.67	37.28	21.61	144.78	V
	132322	1745	-15.97	37.63	21.66	146.55	
	132572	1770	-16.01	37.64	21.63	145.55	
Channel Bandwidth: 20 MHz / 16QAM							
X	132072	1720	-23.72	36.45	12.73	18.75	H
	132322	1745	-24.04	36.80	12.76	18.88	
	132572	1770	-24.20	36.94	12.74	18.81	
	132072	1720	-16.64	37.28	20.64	115.80	V
	132322	1745	-16.86	37.63	20.77	119.40	
	132572	1770	-16.89	37.64	20.75	118.85	

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stability Measurement

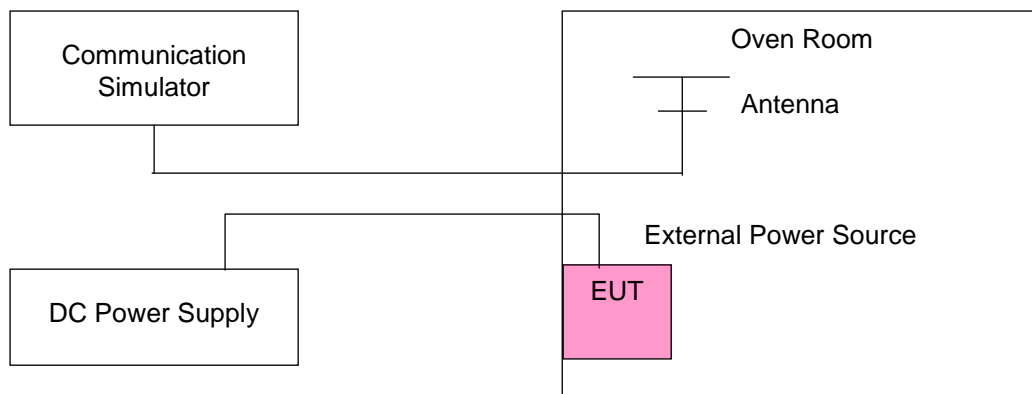
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

4.2.2 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 °C 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.

4.2.3 Test Setup



4.2.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1712.400002	0.001	1752.600003	0.002	2.5
3.6	1712.400002	0.001	1752.600002	0.001	2.5
4.4	1712.400002	0.001	1752.600001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1712.400002	0.001	1752.600003	0.001	2.5
-20	1712.400003	0.002	1752.600004	0.002	2.5
-10	1712.400004	0.002	1752.600003	0.002	2.5
0	1712.400003	0.002	1752.600003	0.001	2.5
10	1712.400003	0.002	1752.600004	0.002	2.5
20	1712.399998	-0.001	1752.599998	-0.001	2.5
30	1712.399997	-0.002	1752.599997	-0.002	2.5
40	1712.399997	-0.002	1752.599997	-0.002	2.5
50	1712.399997	-0.002	1752.599999	-0.001	2.5
55	1712.399998	-0.001	1752.599998	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1710.700003	0.002	1754.300003	0.002	2.5
3.6	1710.700003	0.002	1754.300002	0.001	2.5
4.4	1710.700003	0.001	1754.300003	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1710.700003	0.002	1754.300002	0.001	2.5
-20	1710.700004	0.002	1754.300002	0.001	2.5
-10	1710.700004	0.002	1754.300001	0.001	2.5
0	1710.700001	0.001	1754.300002	0.001	2.5
10	1710.700001	0.001	1754.300004	0.002	2.5
20	1710.699996	-0.002	1754.299997	-0.002	2.5
30	1710.699999	-0.001	1754.299999	-0.001	2.5
40	1710.699997	-0.002	1754.299998	-0.001	2.5
50	1710.699998	-0.001	1754.299998	-0.001	2.5
55	1710.699996	-0.002	1754.299997	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1711.500002	0.001	1753.500004	0.002	2.5
3.6	1711.500004	0.002	1753.500003	0.001	2.5
4.4	1711.500002	0.001	1753.500003	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1711.500003	0.002	1753.500001	0.001	2.5
-20	1711.500003	0.002	1753.500004	0.002	2.5
-10	1711.500001	0.001	1753.500003	0.002	2.5
0	1711.500002	0.001	1753.500002	0.001	2.5
10	1711.500001	0.001	1753.500003	0.002	2.5
20	1711.499998	-0.001	1753.499998	-0.001	2.5
30	1711.499996	-0.002	1753.499997	-0.002	2.5
40	1711.499996	-0.002	1753.499997	-0.002	2.5
50	1711.499997	-0.002	1753.499997	-0.002	2.5
55	1711.499997	-0.002	1753.499997	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1712.500001	0.001	1752.500002	0.001	2.5
3.6	1712.500003	0.002	1752.500004	0.002	2.5
4.4	1712.500002	0.001	1752.500001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1712.500001	0.001	1752.500001	0.001	2.5
-20	1712.500003	0.002	1752.500004	0.002	2.5
-10	1712.500003	0.001	1752.500002	0.001	2.5
0	1712.500002	0.001	1752.500002	0.001	2.5
10	1712.500004	0.002	1752.500001	0.001	2.5
20	1712.499999	-0.001	1752.499998	-0.001	2.5
30	1712.499997	-0.002	1752.499999	-0.001	2.5
40	1712.499997	-0.002	1752.499998	-0.001	2.5
50	1712.499997	-0.002	1752.499998	-0.001	2.5
55	1712.499998	-0.001	1752.499999	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1715.000003	0.001	1750.000003	0.002	2.5
3.6	1715.000001	0.001	1750.000002	0.001	2.5
4.4	1715.000003	0.002	1750.000001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1715.000003	0.002	1750.000001	0.001	2.5
-20	1715.000002	0.001	1750.000004	0.002	2.5
-10	1715.000003	0.002	1750.000002	0.001	2.5
0	1715.000004	0.002	1750.000003	0.001	2.5
10	1715.000004	0.002	1750.000001	0.001	2.5
20	1714.999997	-0.002	1749.999996	-0.002	2.5
30	1714.999998	-0.001	1749.999999	-0.001	2.5
40	1714.999998	-0.001	1749.999997	-0.001	2.5
50	1714.999999	-0.001	1749.999998	-0.001	2.5
55	1714.999997	-0.002	1749.999997	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1717.500003	0.002	1747.500002	0.001	2.5
3.6	1717.500003	0.002	1747.500004	0.002	2.5
4.4	1717.500001	0.001	1747.500004	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1717.500004	0.002	1747.500004	0.002	2.5
-20	1717.500001	0.001	1747.500002	0.001	2.5
-10	1717.500004	0.002	1747.500002	0.001	2.5
0	1717.500003	0.002	1747.500002	0.001	2.5
10	1717.500001	0.001	1747.500002	0.001	2.5
20	1717.499998	-0.001	1747.499997	-0.002	2.5
30	1717.499997	-0.002	1747.499998	-0.001	2.5
40	1717.499998	-0.001	1747.499997	-0.002	2.5
50	1717.499998	-0.001	1747.499999	-0.001	2.5
55	1717.499997	-0.002	1747.499996	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1720.000003	0.002	1745.000003	0.002	2.5
3.6	1720.000004	0.002	1745.000001	0.001	2.5
4.4	1720.000004	0.002	1745.000003	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1720.000002	0.001	1745.000002	0.001	2.5
-20	1720.000004	0.002	1745.000003	0.001	2.5
-10	1720.000002	0.001	1745.000003	0.002	2.5
0	1720.000001	0.001	1745.000004	0.002	2.5
10	1720.000003	0.002	1745.000002	0.001	2.5
20	1719.999998	-0.001	1744.999998	-0.001	2.5
30	1719.999997	-0.002	1744.999997	-0.002	2.5
40	1719.999998	-0.001	1744.999997	-0.002	2.5
50	1719.999999	-0.001	1744.999998	-0.001	2.5
55	1719.999998	-0.001	1744.999996	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	699.700001	0.002	715.300003	0.004	2.5
3.6	699.700004	0.005	715.300003	0.004	2.5
4.4	699.700001	0.002	715.300002	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 12				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	699.700001	0.002	715.300002	0.002	2.5
-20	699.700002	0.003	715.300003	0.004	2.5
-10	699.700002	0.002	715.300003	0.004	2.5
0	699.700002	0.003	715.300004	0.005	2.5
10	699.700003	0.004	715.300003	0.004	2.5
20	699.699997	-0.005	715.299998	-0.003	2.5
30	699.699998	-0.003	715.299997	-0.004	2.5
40	699.699997	-0.004	715.299998	-0.002	2.5
50	699.699999	-0.002	715.299998	-0.003	2.5
55	699.699997	-0.005	715.299997	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	700.500003	0.004	714.500003	0.004	2.5
3.6	700.500004	0.006	714.500002	0.003	2.5
4.4	700.500004	0.006	714.500004	0.005	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 12				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	700.500002	0.003	714.500002	0.003	2.5
-20	700.500004	0.006	714.500004	0.005	2.5
-10	700.500002	0.003	714.500003	0.004	2.5
0	700.500003	0.004	714.500002	0.002	2.5
10	700.500004	0.005	714.500004	0.005	2.5
20	700.499997	-0.004	714.499998	-0.003	2.5
30	700.499997	-0.005	714.499999	-0.002	2.5
40	700.499997	-0.005	714.499996	-0.006	2.5
50	700.499997	-0.004	714.499998	-0.003	2.5
55	700.499998	-0.004	714.499996	-0.006	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	701.500002	0.002	713.500003	0.004	2.5
3.6	701.500003	0.004	713.500001	0.001	2.5
4.4	701.500003	0.005	713.500002	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 12				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	701.500003	0.005	713.500002	0.003	2.5
-20	701.500002	0.003	713.500004	0.005	2.5
-10	701.500004	0.006	713.500003	0.004	2.5
0	701.500002	0.003	713.500003	0.004	2.5
10	701.500003	0.004	713.500004	0.005	2.5
20	701.499999	-0.002	713.499999	-0.002	2.5
30	701.499997	-0.005	713.499997	-0.005	2.5
40	701.499998	-0.003	713.499998	-0.002	2.5
50	701.499998	-0.003	713.499998	-0.003	2.5
55	701.499998	-0.003	713.499997	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	704.000003	0.004	711.000002	0.003	2.5
3.6	704.000002	0.003	711.000004	0.005	2.5
4.4	704.000002	0.003	711.000003	0.004	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 12				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	704.000004	0.005	711.000002	0.002	2.5
-20	704.000002	0.003	711.000002	0.003	2.5
-10	704.000003	0.005	711.000003	0.004	2.5
0	704.000004	0.005	711.000002	0.003	2.5
10	704.000003	0.005	711.000003	0.005	2.5
20	703.999996	-0.006	710.999998	-0.002	2.5
30	703.999997	-0.004	710.999997	-0.004	2.5
40	703.999997	-0.004	710.999998	-0.003	2.5
50	703.999996	-0.006	710.999998	-0.002	2.5
55	703.999997	-0.004	710.999997	-0.005	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 13				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	779.500002	0.002	784.500002	0.002	2.5
3.6	779.500004	0.005	784.500002	0.003	2.5
4.4	779.500001	0.002	784.500002	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 13				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	779.500003	0.004	784.500004	0.005	2.5
-20	779.500004	0.005	784.500003	0.003	2.5
-10	779.500003	0.004	784.500001	0.001	2.5
0	779.500001	0.001	784.500003	0.004	2.5
10	779.500001	0.002	784.500002	0.003	2.5
20	779.499997	-0.004	784.499996	-0.005	2.5
30	779.499997	-0.003	784.499996	-0.005	2.5
40	779.499996	-0.005	784.499998	-0.003	2.5
50	779.499998	-0.003	784.499997	-0.004	2.5
55	779.499996	-0.005	784.499997	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 13		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
3.85	782.000002	0.003	2.5
3.6	782.000002	0.002	2.5
4.4	782.000002	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 13		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
-30	782.000002	0.003	2.5
-20	782.000002	0.003	2.5
-10	782.000003	0.004	2.5
0	782.000002	0.003	2.5
10	782.000002	0.002	2.5
20	781.999997	-0.004	2.5
30	781.999999	-0.001	2.5
40	781.999997	-0.004	2.5
50	781.999996	-0.005	2.5
55	781.999997	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 17				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	706.500004	0.005	713.500002	0.003	2.5
3.6	706.500001	0.002	713.500001	0.002	2.5
4.4	706.500003	0.005	713.500003	0.004	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 17				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	706.500002	0.003	713.500002	0.003	2.5
-20	706.500004	0.006	713.500003	0.004	2.5
-10	706.500002	0.003	713.500003	0.005	2.5
0	706.500003	0.005	713.500003	0.005	2.5
10	706.500001	0.002	713.500003	0.004	2.5
20	706.499999	-0.002	713.499999	-0.002	2.5
30	706.499996	-0.006	713.499997	-0.005	2.5
40	706.499996	-0.005	713.499996	-0.006	2.5
50	706.499997	-0.004	713.499996	-0.005	2.5
55	706.499996	-0.005	713.499999	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 17				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	709.000002	0.002	711.000001	0.002	2.5
3.6	709.000004	0.006	711.000003	0.004	2.5
4.4	709.000003	0.004	711.000001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 17				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	709.000002	0.003	711.000003	0.004	2.5
-20	709.000001	0.002	711.000003	0.004	2.5
-10	709.000002	0.003	711.000003	0.005	2.5
0	709.000002	0.003	711.000003	0.004	2.5
10	709.000004	0.005	711.000002	0.002	2.5
20	708.999999	-0.002	710.999998	-0.003	2.5
30	708.999998	-0.003	710.999997	-0.005	2.5
40	708.999999	-0.002	710.999996	-0.005	2.5
50	708.999998	-0.003	710.999997	-0.004	2.5
55	708.999996	-0.006	710.999998	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1710.700002	0.001	1779.300003	0.002	2.5
3.6	1710.700003	0.002	1779.300003	0.002	2.5
4.4	1710.700001	0.001	1779.300001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1710.700003	0.002	1779.300004	0.002	2.5
-20	1710.700004	0.002	1779.300004	0.002	2.5
-10	1710.700001	0.001	1779.300003	0.002	2.5
0	1710.700002	0.001	1779.300003	0.002	2.5
10	1710.700002	0.001	1779.300004	0.002	2.5
20	1710.699996	-0.002	1779.299997	-0.002	2.5
30	1710.699998	-0.001	1779.299996	-0.002	2.5
40	1710.699997	-0.002	1779.299997	-0.002	2.5
50	1710.699999	-0.001	1779.299999	-0.001	2.5
55	1710.699996	-0.002	1779.299998	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1711.500002	0.001	1778.500001	0.001	2.5
3.6	1711.500004	0.002	1778.500003	0.002	2.5
4.4	1711.500001	0.001	1778.500003	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1711.500004	0.002	1778.500002	0.001	2.5
-20	1711.500001	0.001	1778.500003	0.002	2.5
-10	1711.500003	0.001	1778.500004	0.002	2.5
0	1711.500003	0.002	1778.500004	0.002	2.5
10	1711.500002	0.001	1778.500002	0.001	2.5
20	1711.499997	-0.002	1778.499998	-0.001	2.5
30	1711.499998	-0.001	1778.499996	-0.002	2.5
40	1711.499998	-0.001	1778.499997	-0.002	2.5
50	1711.499997	-0.002	1778.499996	-0.002	2.5
55	1711.499997	-0.002	1778.499999	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1712.500003	0.002	1777.500002	0.001	2.5
3.6	1712.500001	0.001	1777.500001	0.001	2.5
4.4	1712.500004	0.002	1777.500001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1712.500002	0.001	1777.500002	0.001	2.5
-20	1712.500004	0.002	1777.500004	0.002	2.5
-10	1712.500003	0.002	1777.500003	0.001	2.5
0	1712.500004	0.002	1777.500001	0.001	2.5
10	1712.500003	0.001	1777.500003	0.002	2.5
20	1712.499998	-0.001	1777.499998	-0.001	2.5
30	1712.499998	-0.001	1777.499996	-0.002	2.5
40	1712.499999	-0.001	1777.499996	-0.002	2.5
50	1712.499997	-0.002	1777.499997	-0.002	2.5
55	1712.499997	-0.002	1777.499996	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1715.000002	0.001	1775.000004	0.002	2.5
3.6	1715.000003	0.002	1775.000002	0.001	2.5
4.4	1715.000002	0.001	1775.000002	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1715.000004	0.002	1775.000004	0.002	2.5
-20	1715.000003	0.002	1775.000004	0.002	2.5
-10	1715.000002	0.001	1775.000004	0.002	2.5
0	1715.000002	0.001	1775.000001	0.001	2.5
10	1715.000002	0.001	1775.000001	0.001	2.5
20	1714.999999	-0.001	1774.999998	-0.001	2.5
30	1714.999999	-0.001	1774.999996	-0.002	2.5
40	1714.999996	-0.002	1774.999996	-0.002	2.5
50	1714.999998	-0.001	1774.999999	-0.001	2.5
55	1714.999997	-0.002	1774.999999	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1717.500002	0.001	1722.500004	0.002	2.5
3.6	1717.500003	0.001	1722.500002	0.001	2.5
4.4	1717.500001	0.001	1722.500003	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1717.500002	0.001	1722.500003	0.002	2.5
-20	1717.500001	0.001	1722.500003	0.002	2.5
-10	1717.500004	0.002	1722.500004	0.002	2.5
0	1717.500003	0.002	1722.500004	0.002	2.5
10	1717.500001	0.001	1722.500001	0.001	2.5
20	1717.499998	-0.001	1722.499996	-0.002	2.5
30	1717.499998	-0.001	1722.499999	-0.001	2.5
40	1717.499997	-0.002	1722.499999	-0.001	2.5
50	1717.499996	-0.002	1722.499997	-0.002	2.5
55	1717.499998	-0.001	1722.499998	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1720.000002	0.001	1770.000003	0.002	2.5
3.6	1720.000003	0.002	1770.000003	0.002	2.5
4.4	1720.000002	0.001	1770.000002	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 66				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1720.000003	0.002	1770.000002	0.001	2.5
-20	1720.000003	0.002	1770.000002	0.001	2.5
-10	1720.000004	0.002	1770.000002	0.001	2.5
0	1720.000004	0.002	1770.000003	0.002	2.5
10	1720.000002	0.001	1770.000003	0.002	2.5
20	1719.999998	-0.001	1769.999998	-0.001	2.5
30	1719.999997	-0.002	1769.999997	-0.002	2.5
40	1719.999998	-0.001	1769.999996	-0.002	2.5
50	1719.999999	-0.001	1769.999998	-0.001	2.5
55	1719.999999	-0.001	1769.999998	-0.001	2.5

4.3 Occupied Bandwidth Measurement

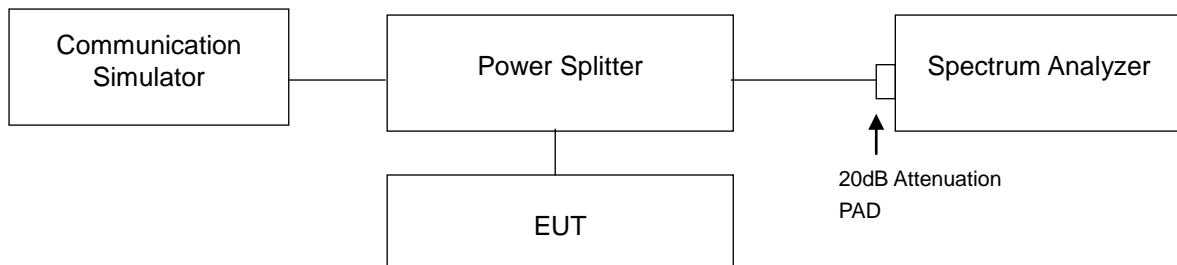
4.3.1 Limits of Occupied Bandwidth Measurement

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

4.3.2 Test Procedure

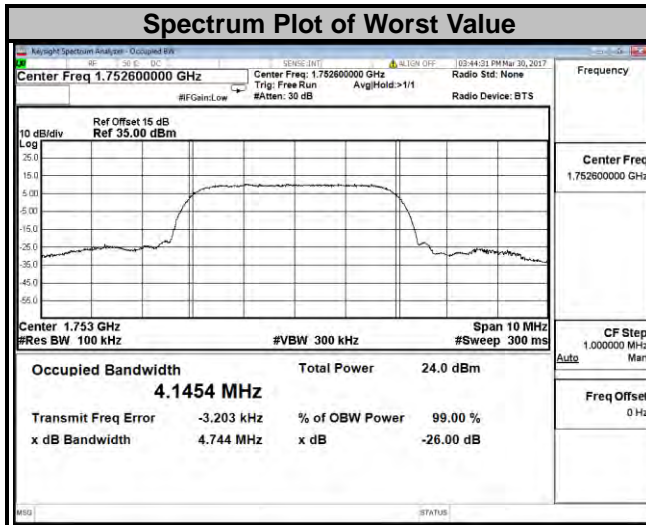
- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

4.3.3 Test Setup



4.3.4 Test Result

WCDMA		
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)
1312	1712.4	4.1339
1413	1732.6	4.1447
1513	1752.6	4.1454

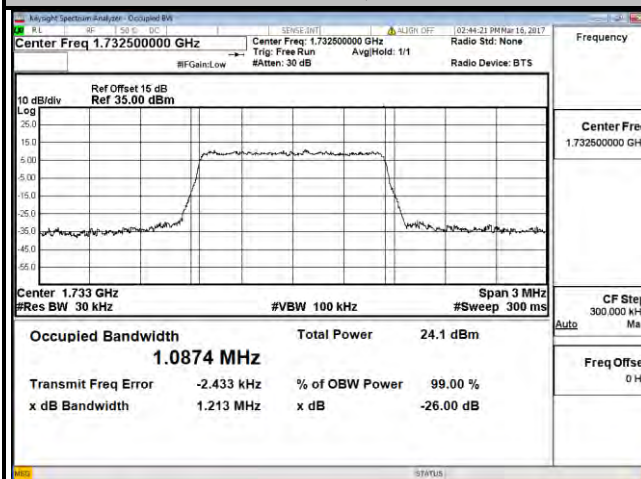


LTE Band 4

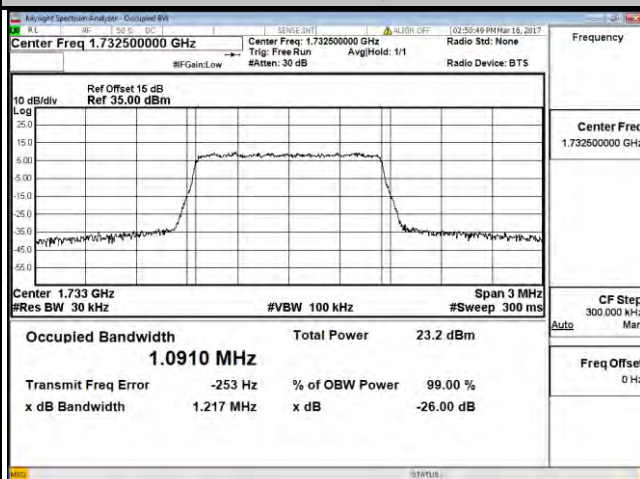
Channel Bandwidth: 1.4 MHz				Channel Bandwidth: 3 MHz			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
19957	1710.7	1.0871	1.0870	19965	1711.5	2.7007	2.6961
20175	1732.5	1.0874	1.0910	20175	1732.5	2.6999	2.6960
20393	1754.3	1.0866	1.0895	20385	1753.5	2.7024	2.6988

Spectrum Plot of Worst Value

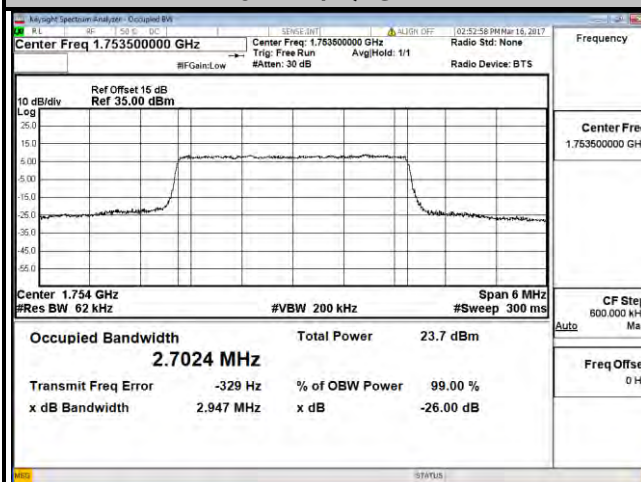
1.4 MHz / QPSK



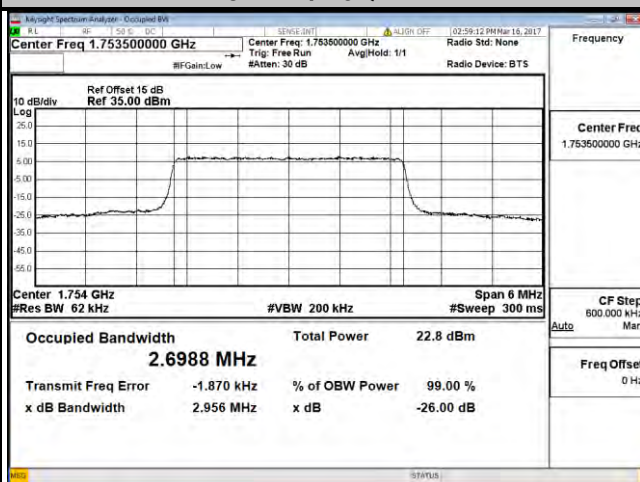
1.4 MHz / 16QAM



3 MHz / QPSK



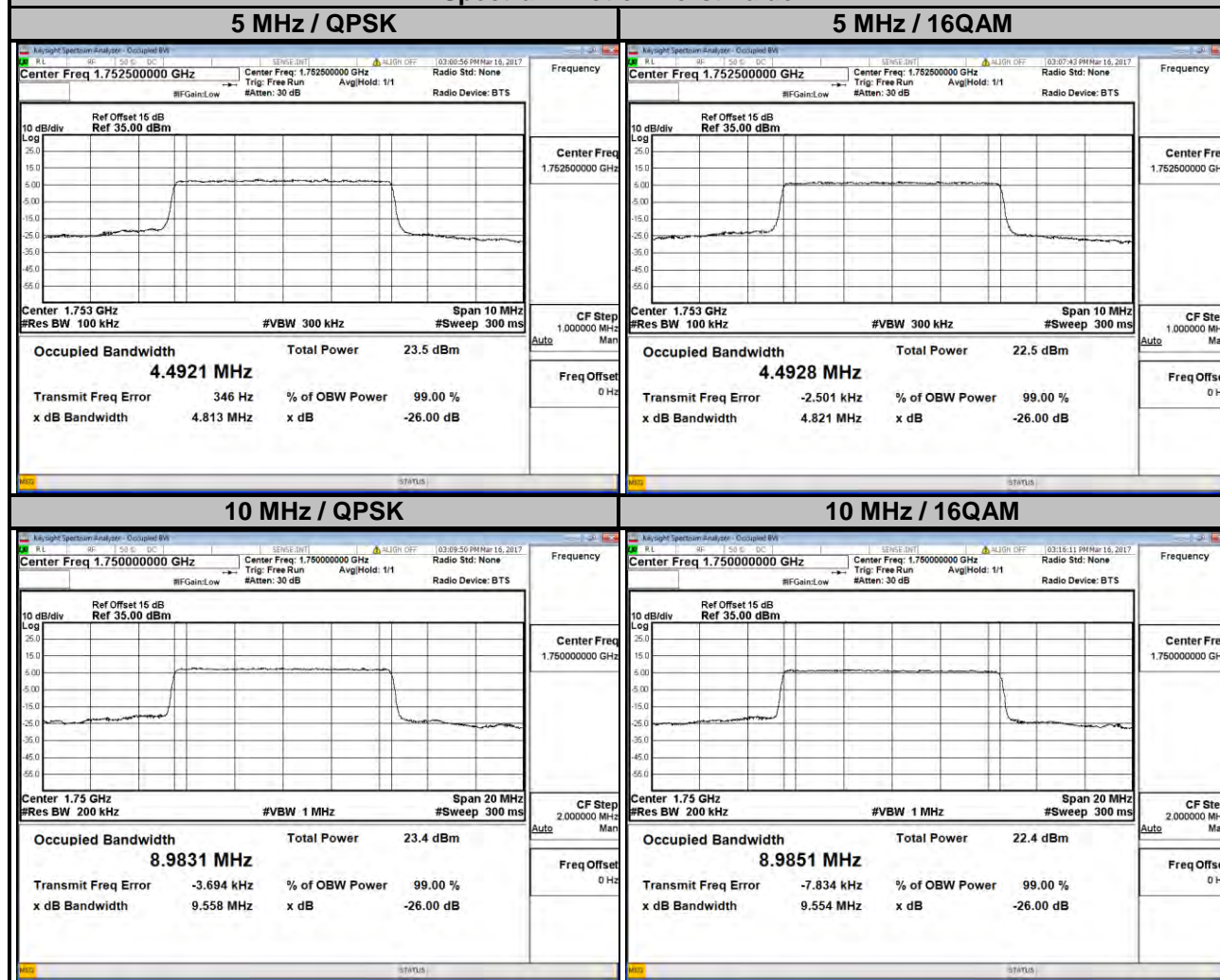
3 MHz / 16QAM



LTE Band 4

Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	4.4881	4.4898	20000	1715.0	8.9716	8.9718
20175	1732.5	4.4861	4.4904	20175	1732.5	8.9673	8.9677
20375	1752.5	4.4921	4.4928	20350	1750.0	8.9831	8.9851

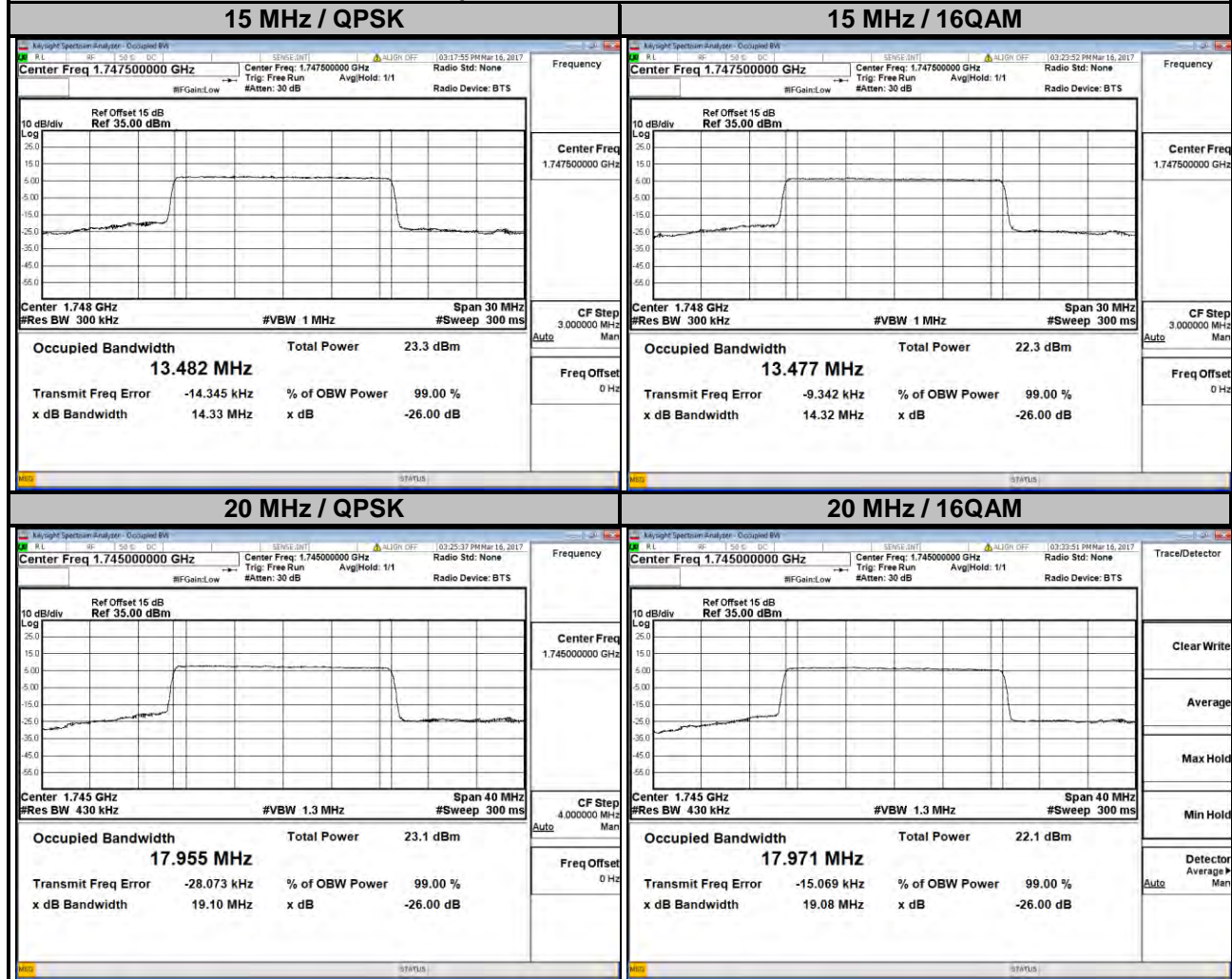
Spectrum Plot of Worst Value



LTE Band 4

Channel Bandwidth: 15 MHz				Channel Bandwidth: 20 MHz			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	13.480	13.459	20050	1720.0	17.941	17.965
20175	1732.5	13.463	13.450	20175	1732.5	17.948	17.958
20325	1747.5	13.482	13.477	20300	1745.0	17.955	17.971

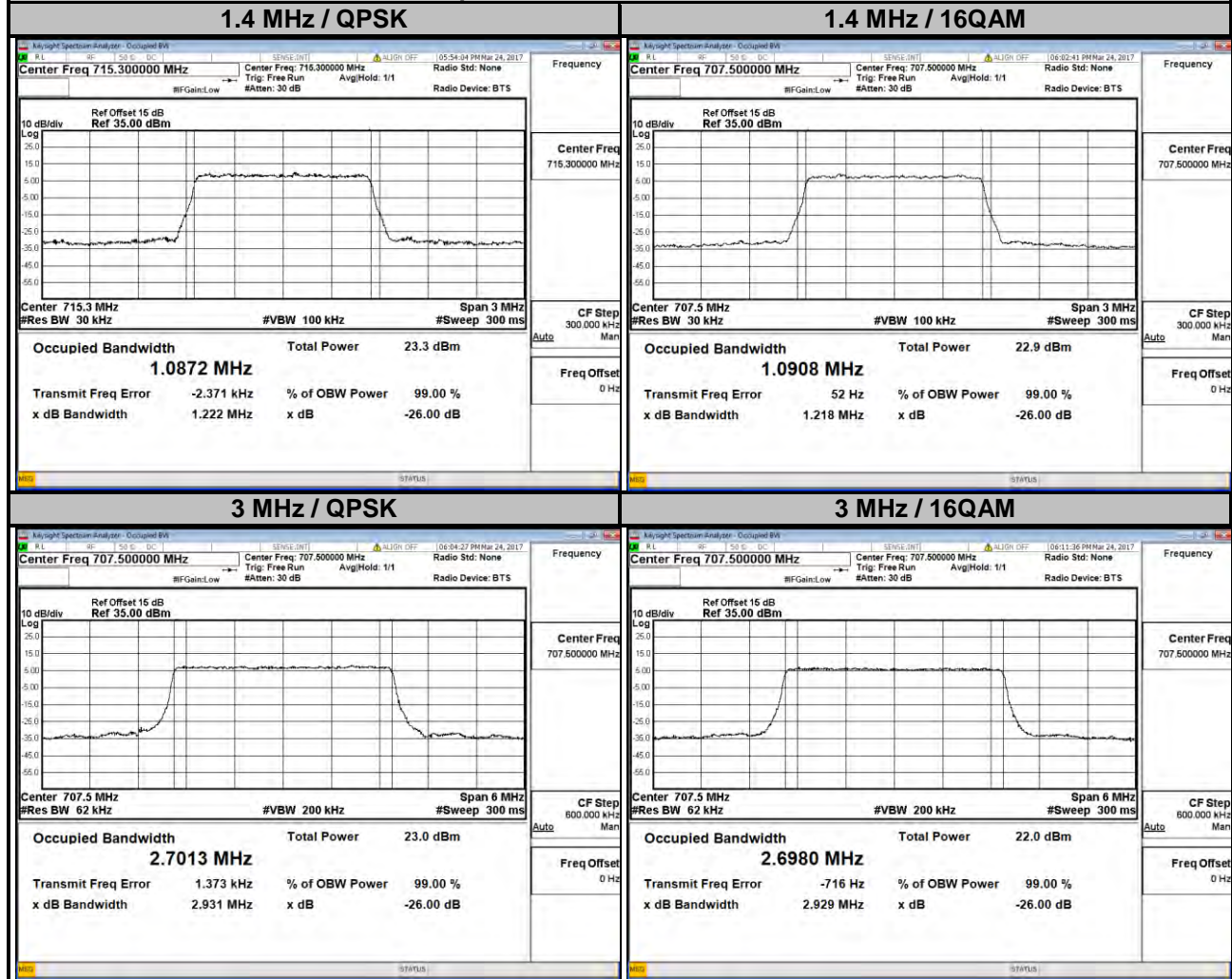
Spectrum Plot of Worst Value



LTE Band 12

Channel Bandwidth: 1.4 MHz				Channel Bandwidth: 3 MHz			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
23017	699.7	1.0856	1.0890	23025	700.5	2.6986	2.6949
23095	707.5	1.0871	1.0908	23095	707.5	2.7013	2.6980
23173	715.3	1.0872	1.0886	23165	714.5	2.6993	2.6977

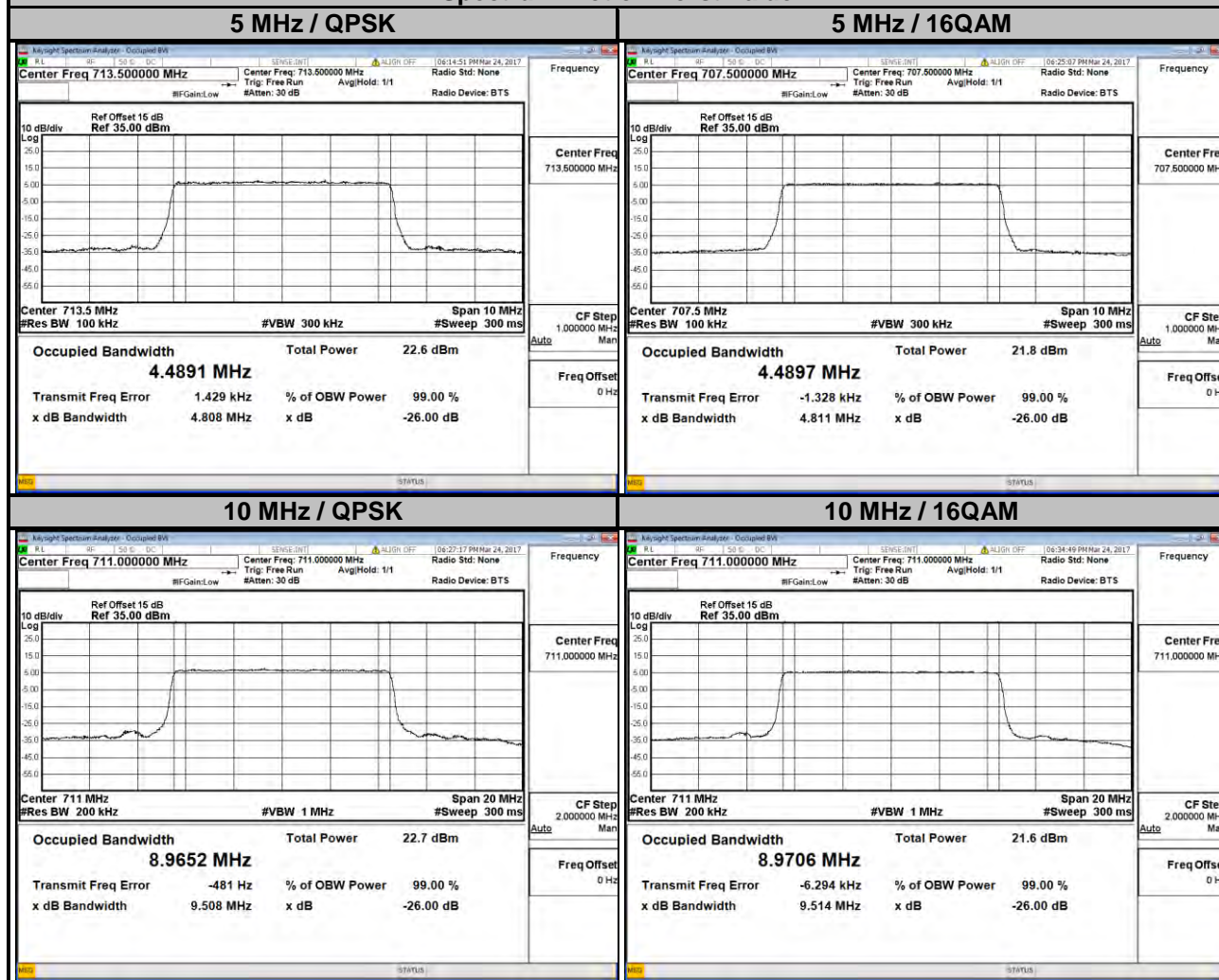
Spectrum Plot of Worst Value



LTE Band 12

Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
23035	701.5	4.4824	4.4869	23060	704.0	8.9633	8.9622
23095	707.5	4.4863	4.4897	23095	707.5	8.9600	8.9621
23155	713.5	4.4891	4.4868	23130	711.0	8.9652	8.9706

Spectrum Plot of Worst Value



LTE Band 13

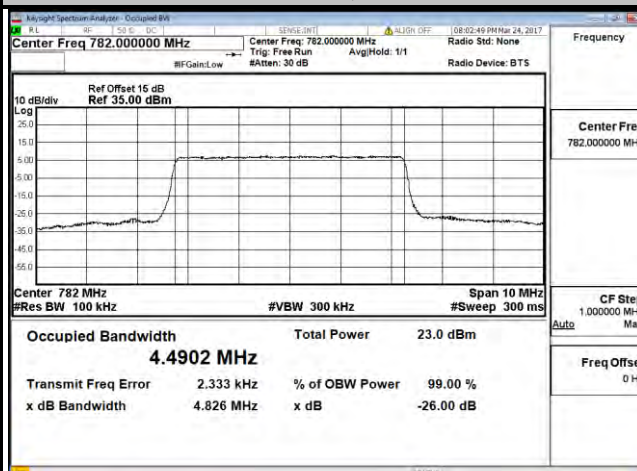
Channel Bandwidth: 5 MHz

Channel Bandwidth: 10 MHz

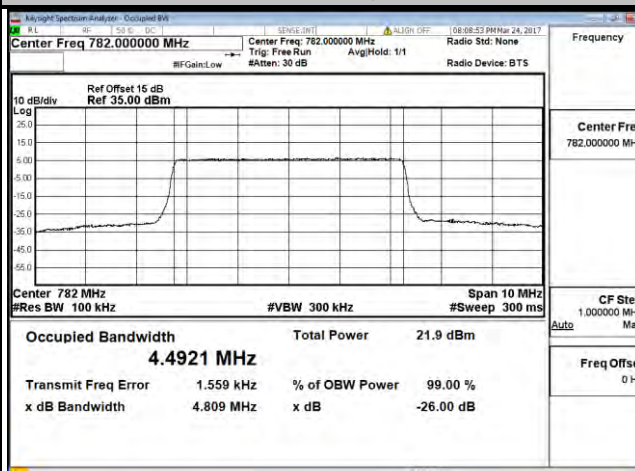
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
23205	779.5	4.4817	4.4823				
23230	782.0	4.4902	4.4921	23230	782.0	8.9435	8.9538
23255	784.5	4.4820	4.4803				

Spectrum Plot of Worst Value

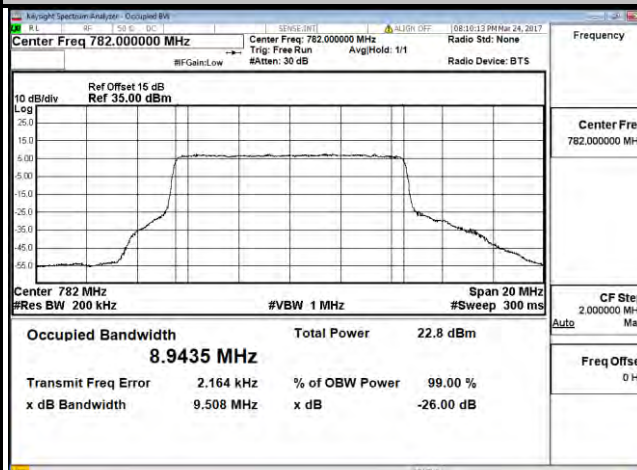
5 MHz / QPSK



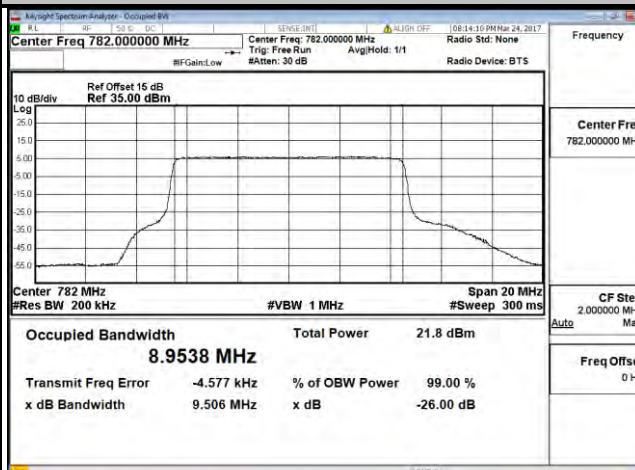
5 MHz / 16QAM



10 MHz / QPSK



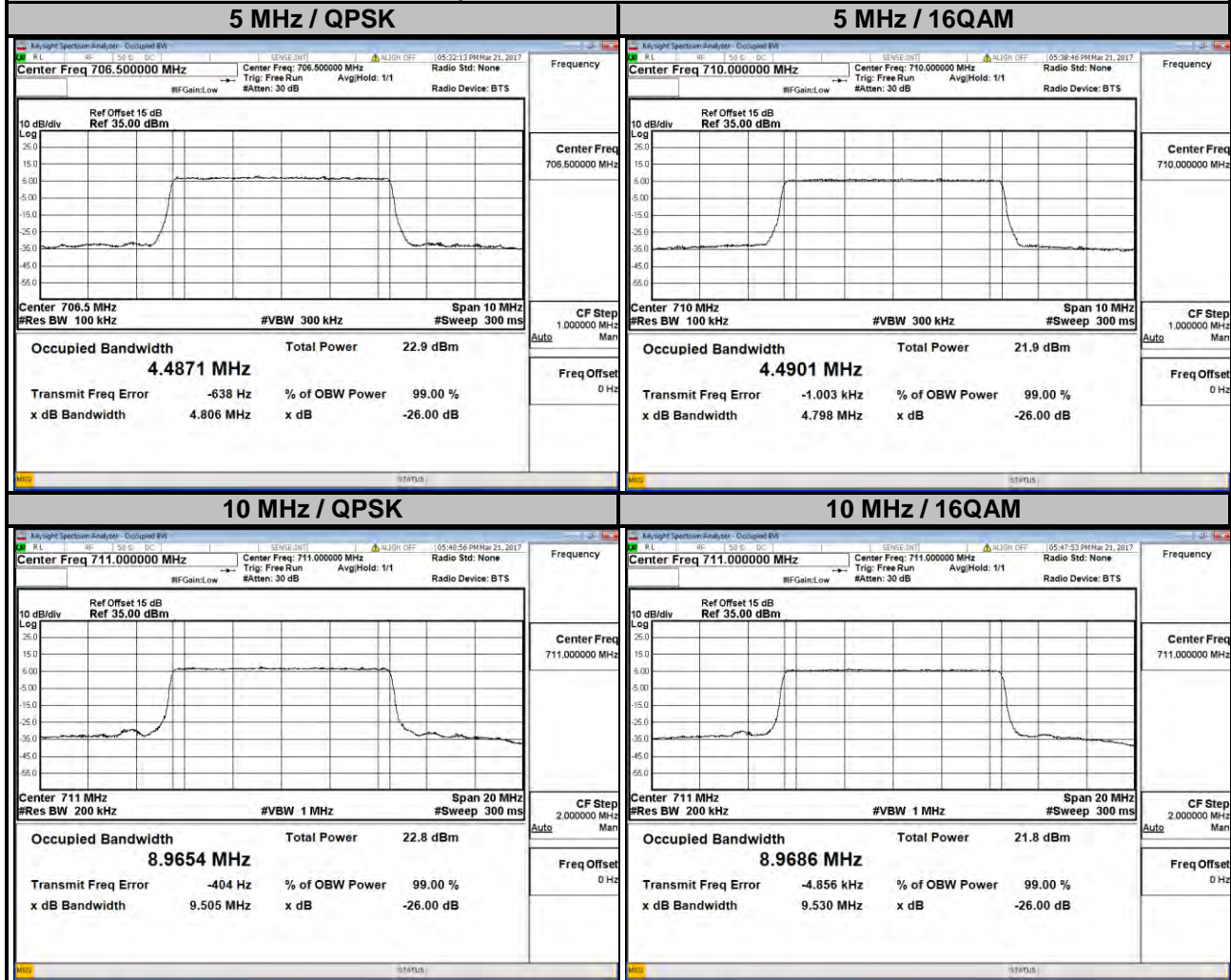
10 MHz / 16QAM



LTE Band 17

Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
23755	706.5	4.4871	4.4867	23780	709.0	8.9638	8.9639
23790	710.0	4.4866	4.4901	23790	710.0	8.9652	8.9684
23825	713.5	4.4844	4.4884	23800	711.0	8.9654	8.9686

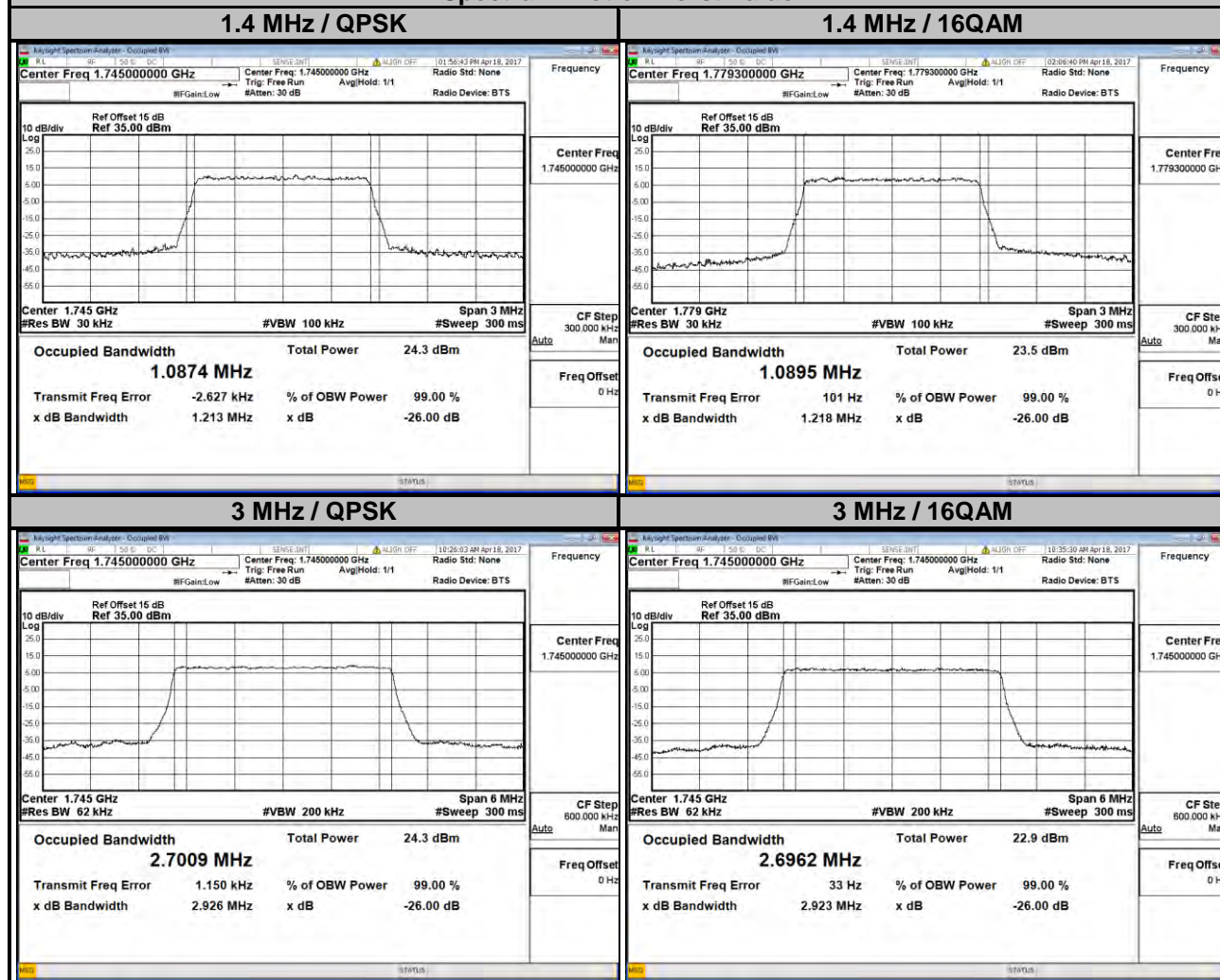
Spectrum Plot of Worst Value



LTE Band 66

Channel Bandwidth: 1.4 MHz				Channel Bandwidth: 3 MHz			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
19957	1710.7	1.0867	1.0889	19965	1711.5	2.6989	2.6961
20175	1732.5	1.0874	1.0878	20175	1732.5	2.7009	2.6962
20393	1754.3	1.0865	1.0895	20385	1753.5	2.6988	2.6954

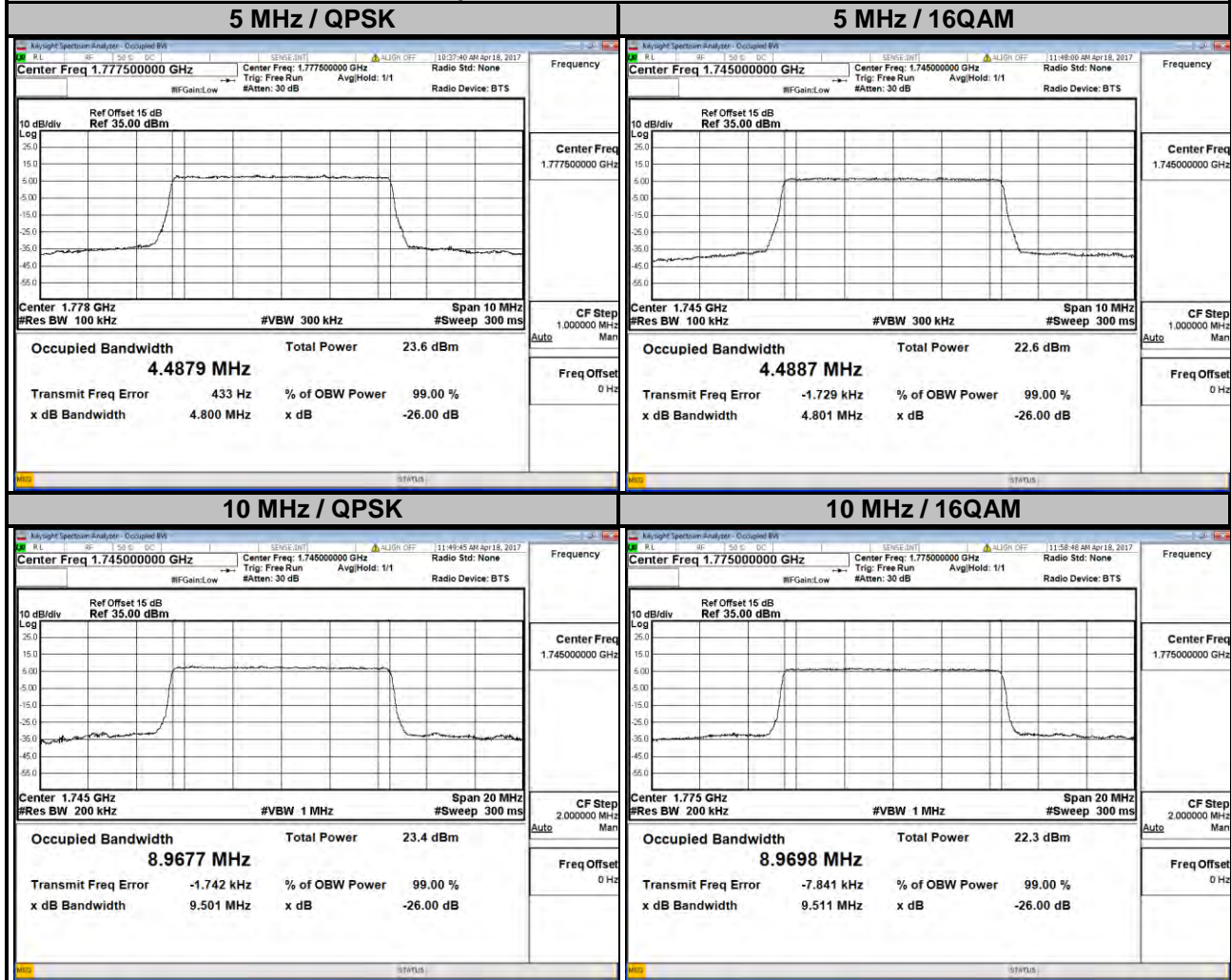
Spectrum Plot of Worst Value



LTE Band 66

Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	4.4846	4.4855	20000	1715.0	8.9578	8.9663
20175	1732.5	4.4865	4.4887	20175	1732.5	8.9677	8.9657
20375	1752.5	4.4879	4.4861	20350	1750.0	8.9635	8.9698

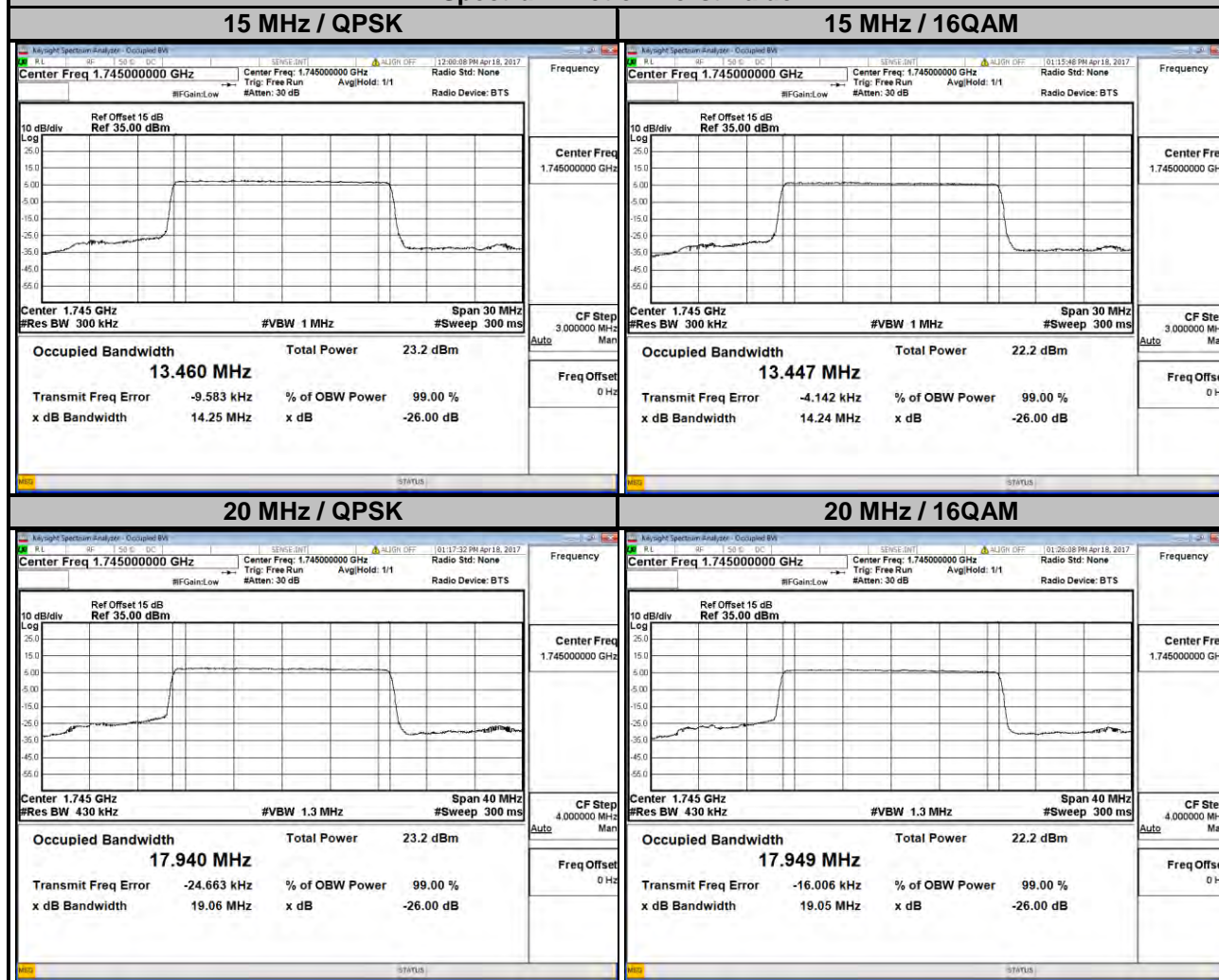
Spectrum Plot of Worst Value



LTE Band 66

Channel Bandwidth: 15 MHz				Channel Bandwidth: 20 MHz			
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	13.454	13.447	20050	1720.0	17.922	17.938
20175	1732.5	13.460	13.447	20175	1732.5	17.940	17.949
20325	1747.5	13.450	13.445	20300	1745.0	17.921	17.941

Spectrum Plot of Worst Value



4.4 Band Edge Measurement

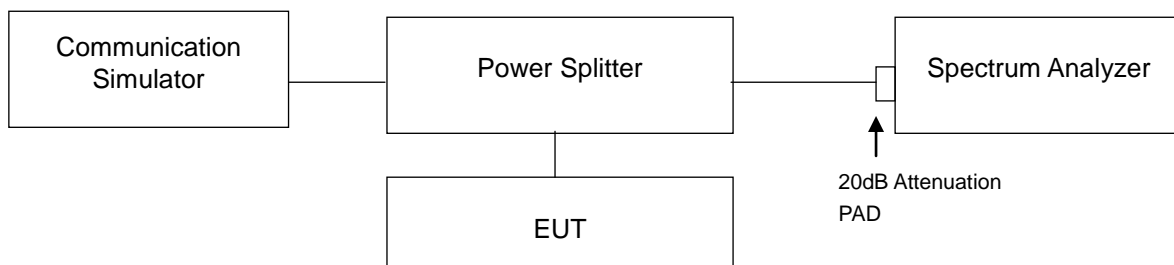
4.4.1 Limits of Band Edge Measurement

For operations in the 698-787 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 operations in the 1710–1755 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

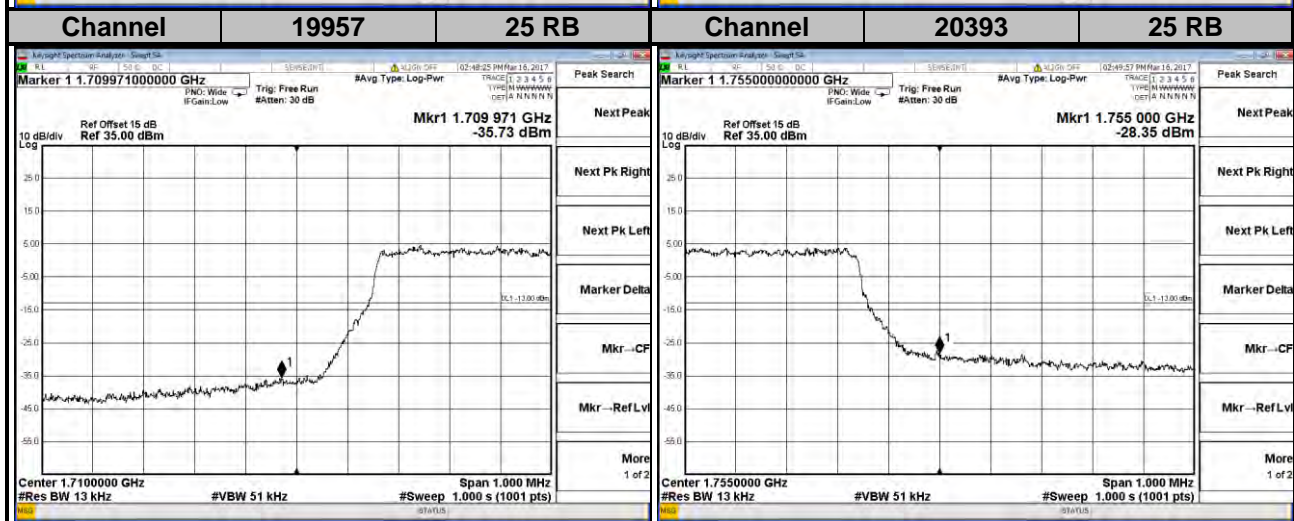
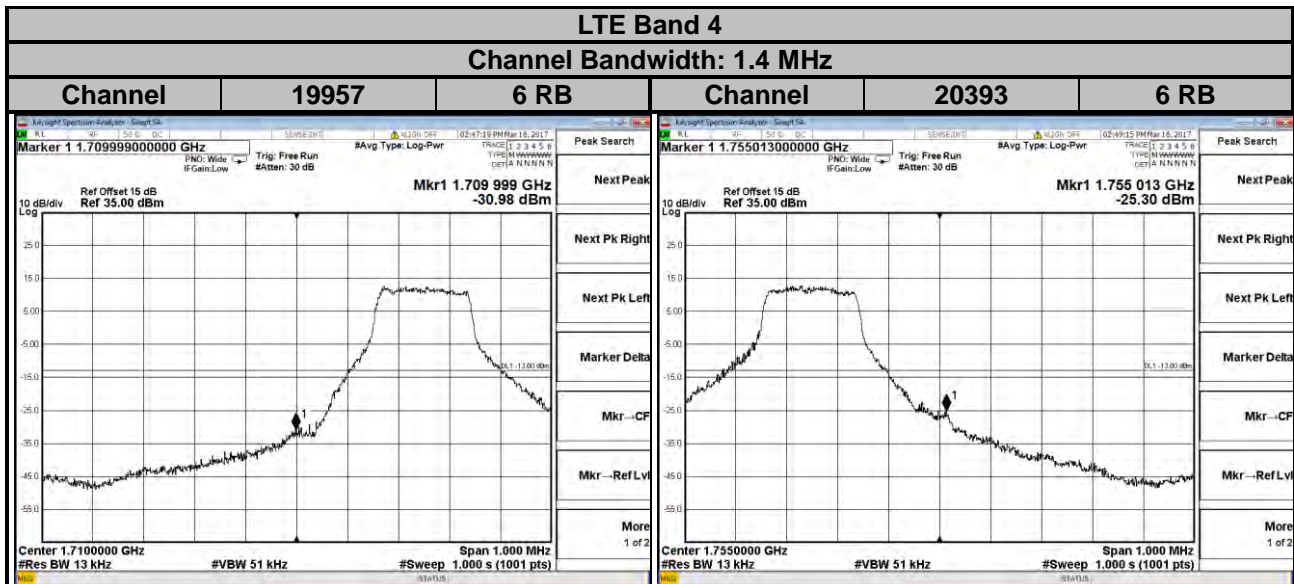
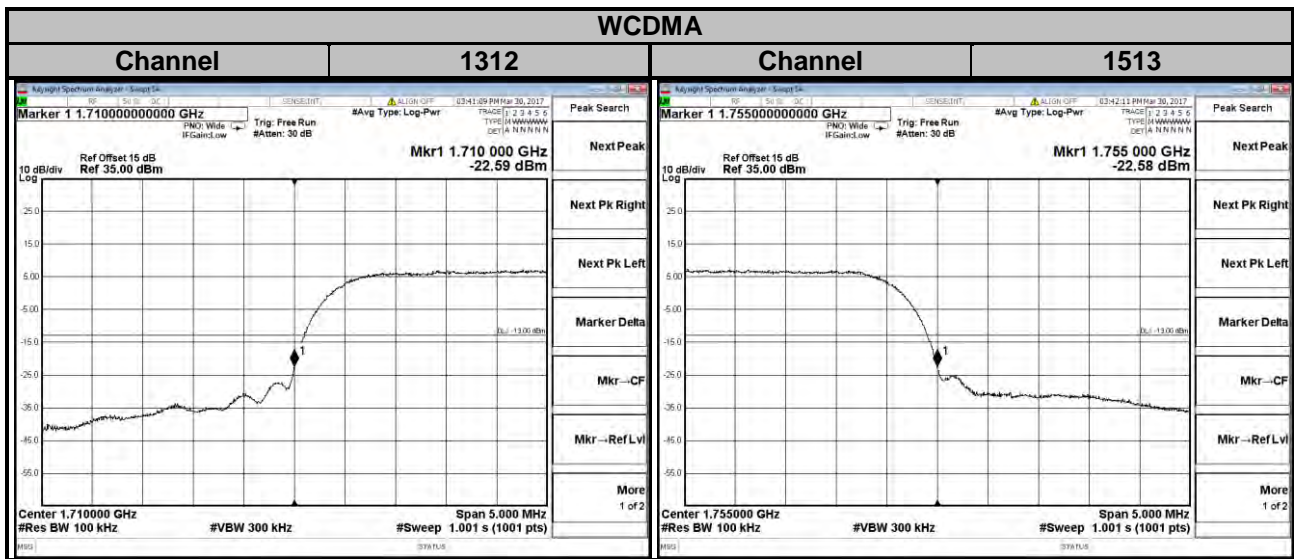
4.4.2 Test Setup



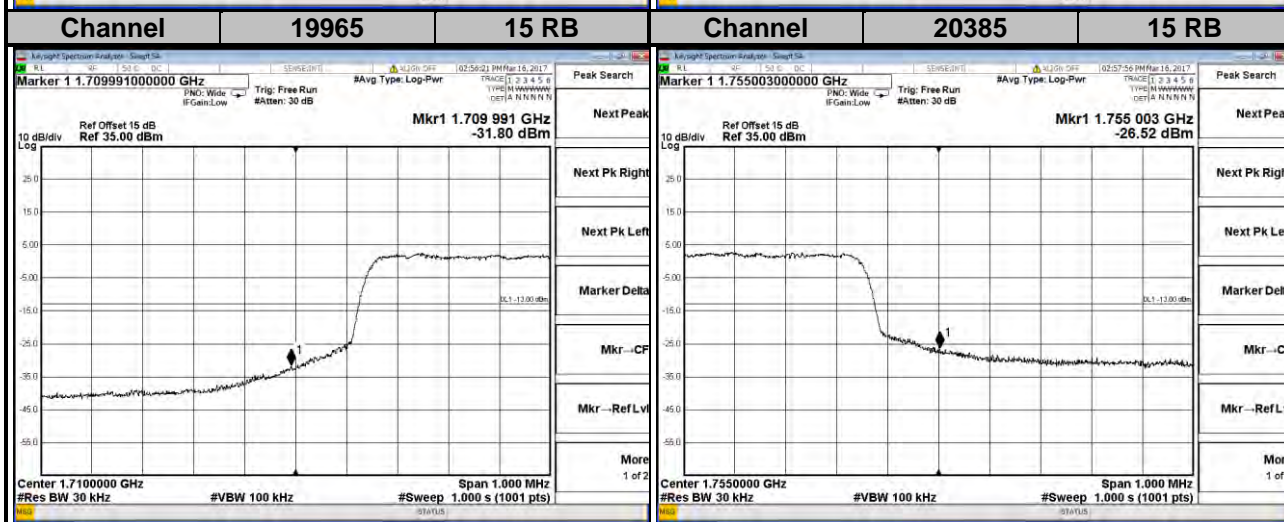
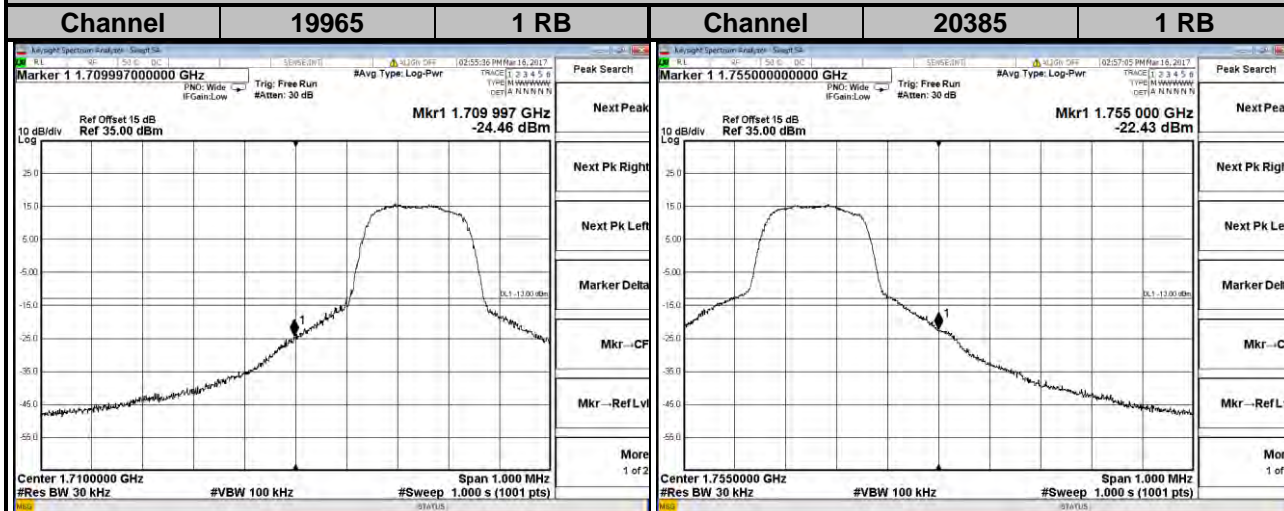
4.4.3 Test Procedures

- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (WCDMA).
- c. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 13 kHz and VB of the spectrum is 51 kHz (LTE Bandwidth 1.4 MHz).
- d. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 3 MHz).
- e. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 5 MHz/10 MHz).
- f. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 150 kHz and VB of the spectrum is 470 kHz (LTE Bandwidth 15 MHz).
- g. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 180 kHz and VB of the spectrum is 560 kHz (LTE Bandwidth 20 MHz).
- h. Record the max trace plot into the test report.

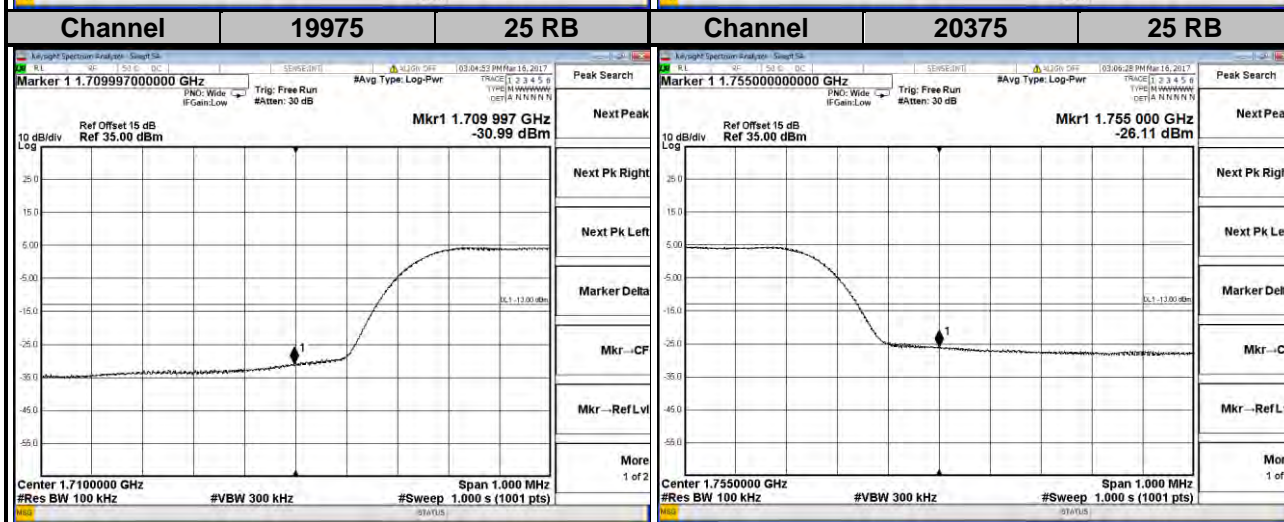
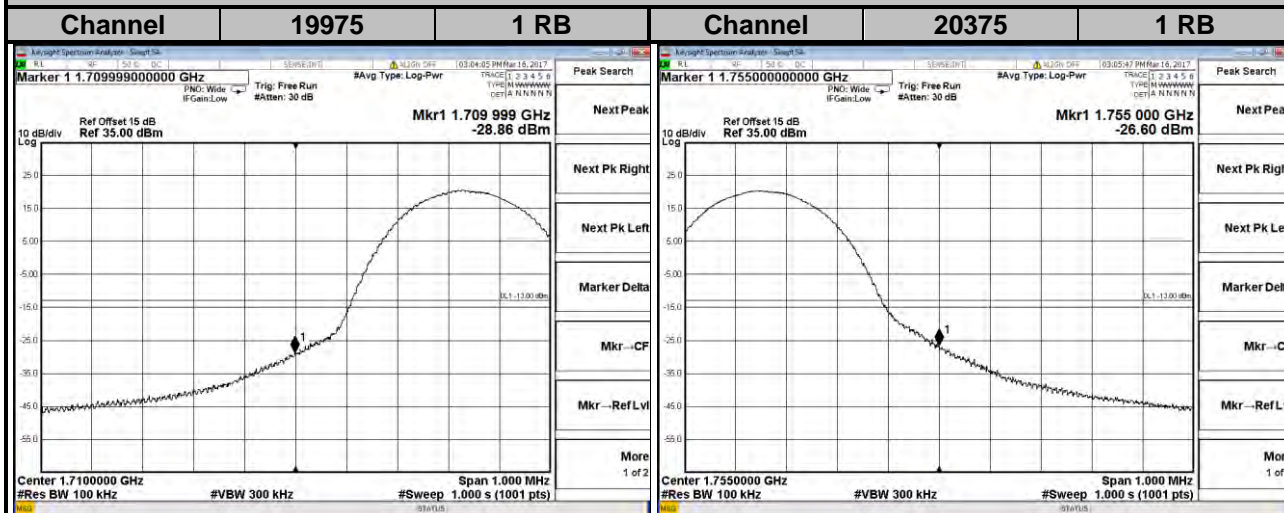
4.4.4 Test Results



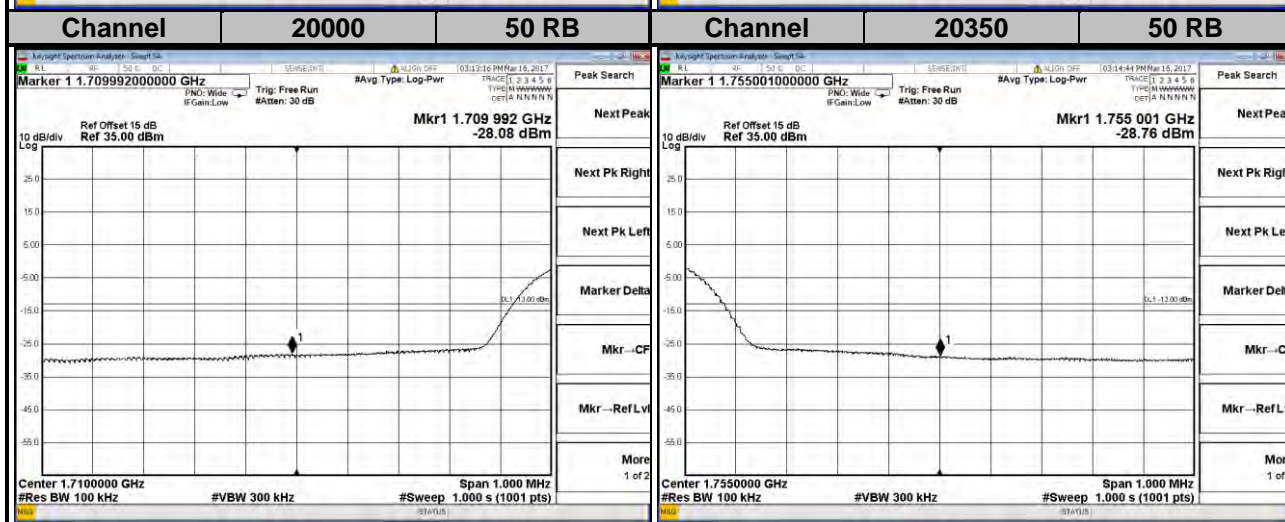
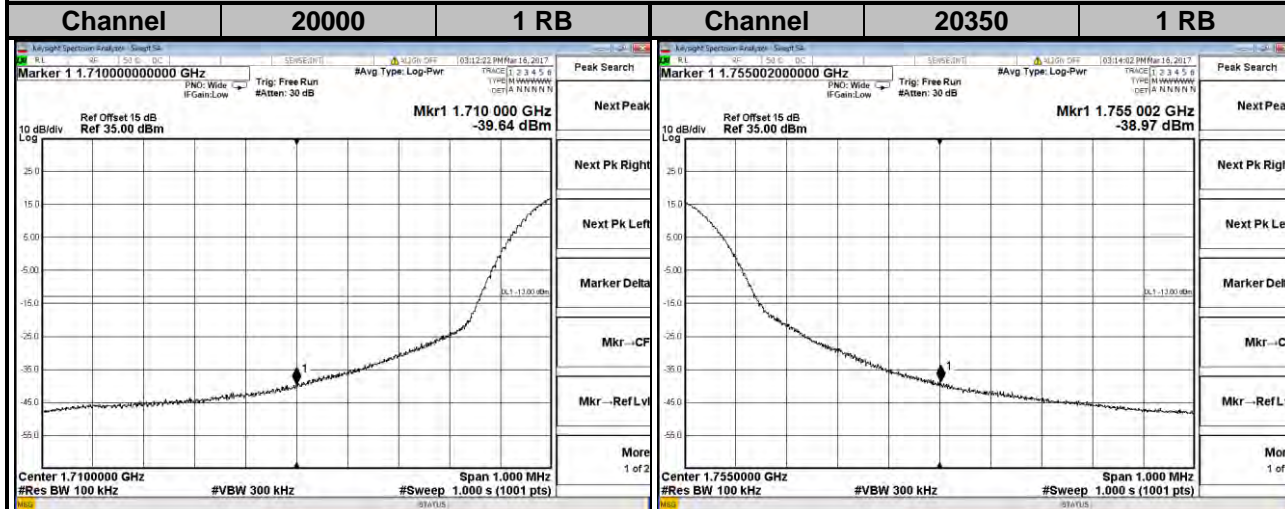
LTE Band 4
Channel Bandwidth: 3 MHz



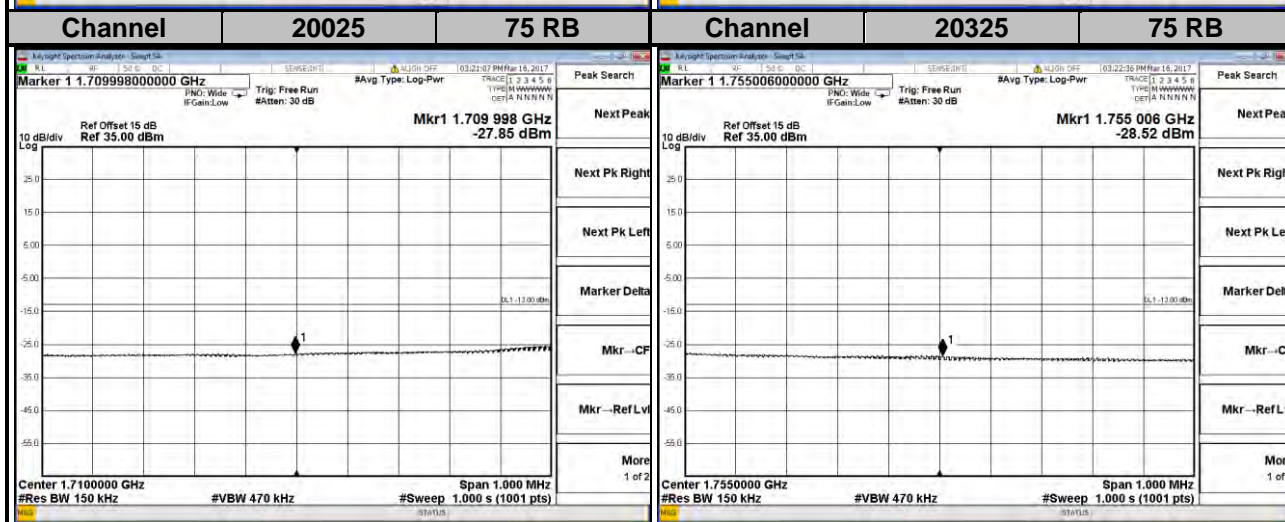
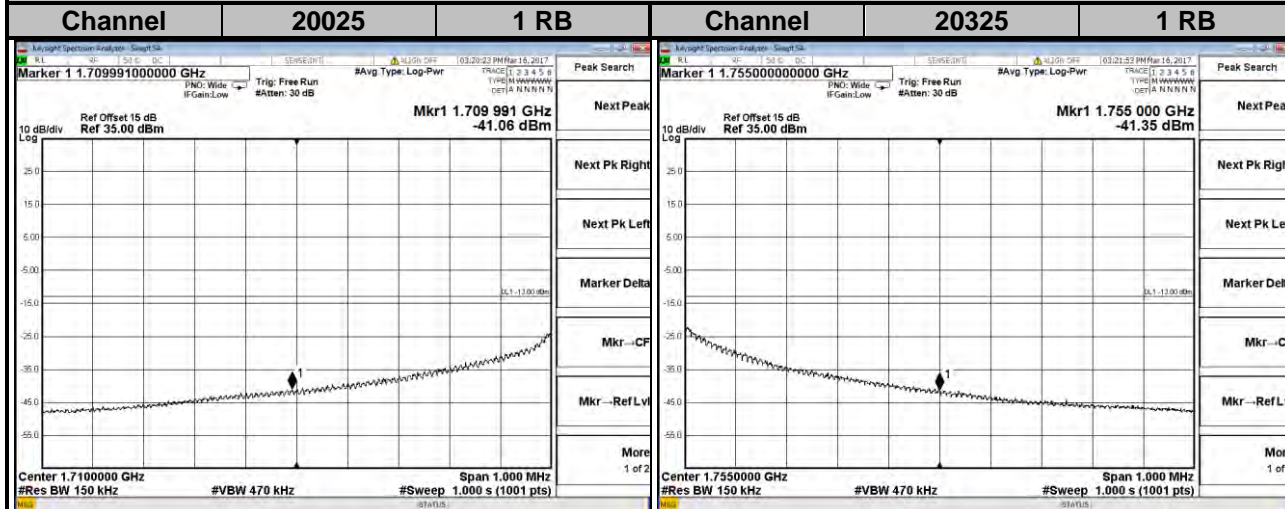
LTE Band 4
Channel Bandwidth: 5 MHz



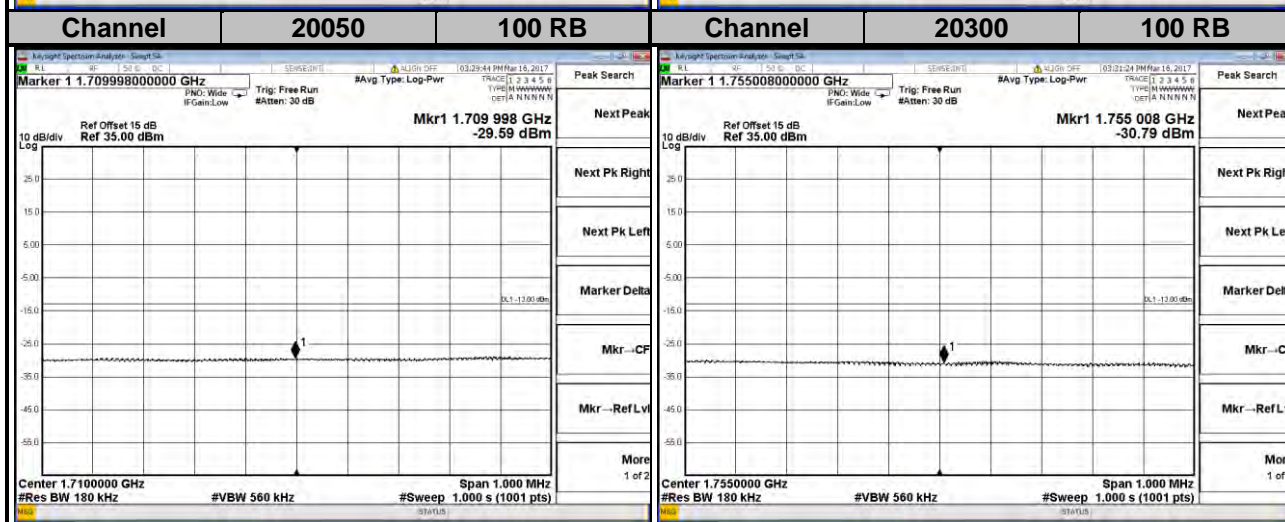
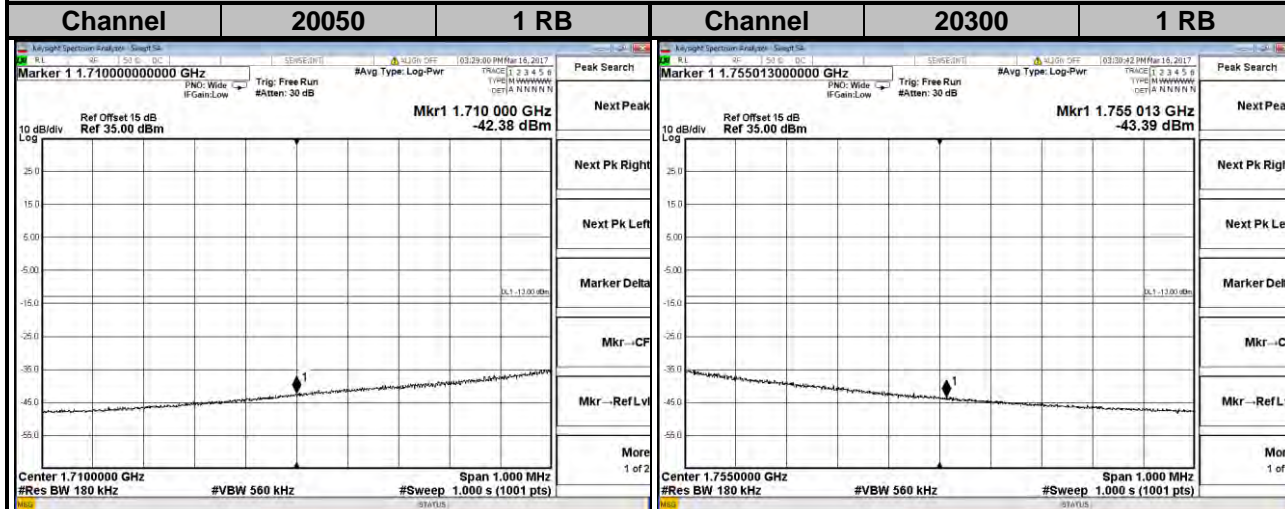
LTE Band 4
Channel Bandwidth: 10 MHz



LTE Band 4
Channel Bandwidth: 15 MHz

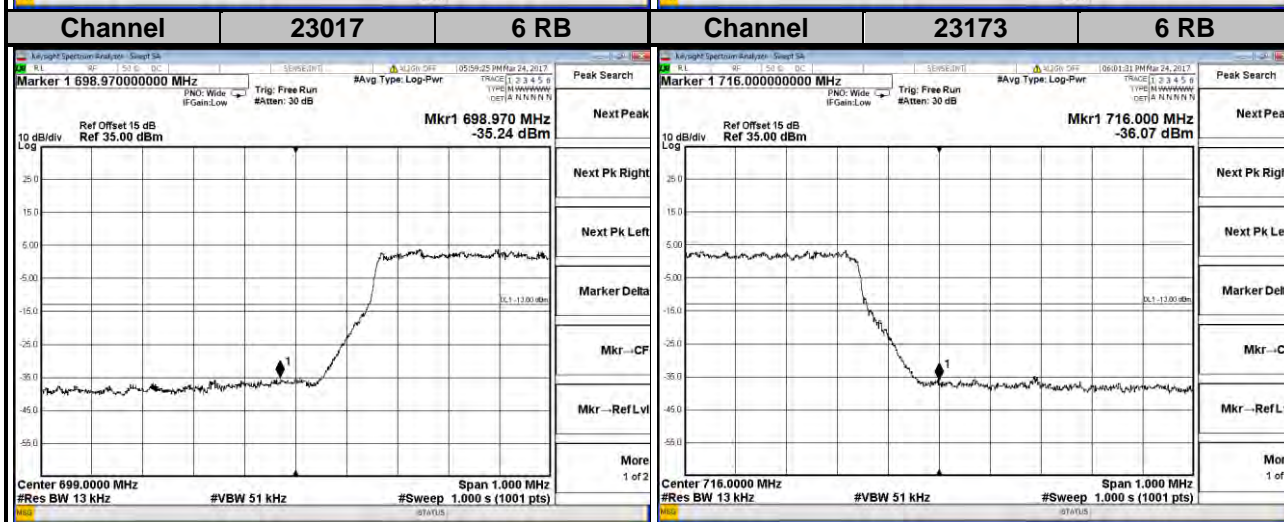
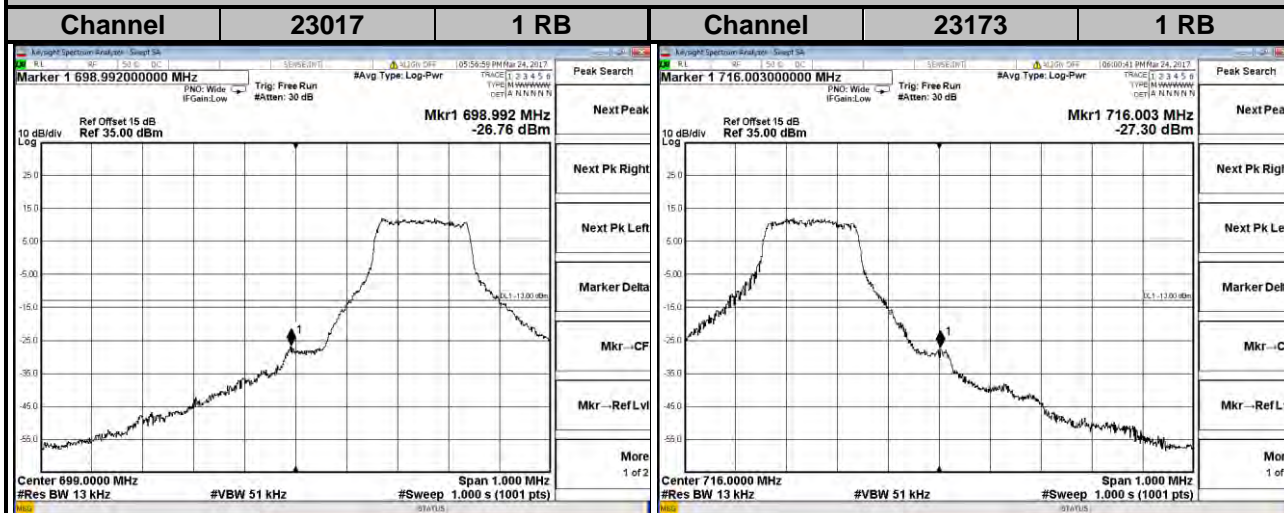


LTE Band 4
Channel Bandwidth: 20 MHz



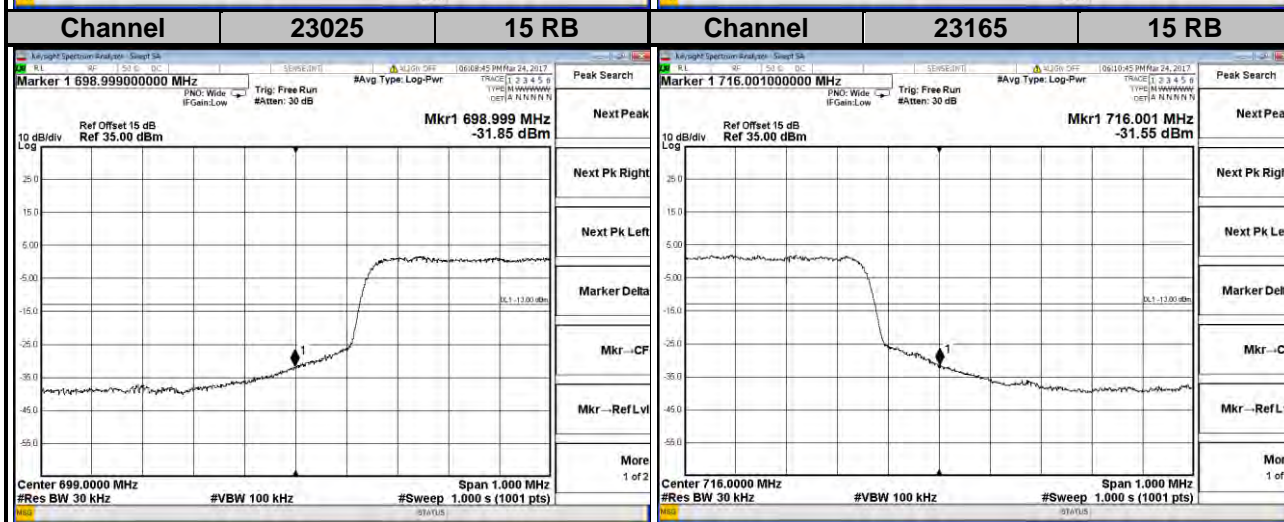
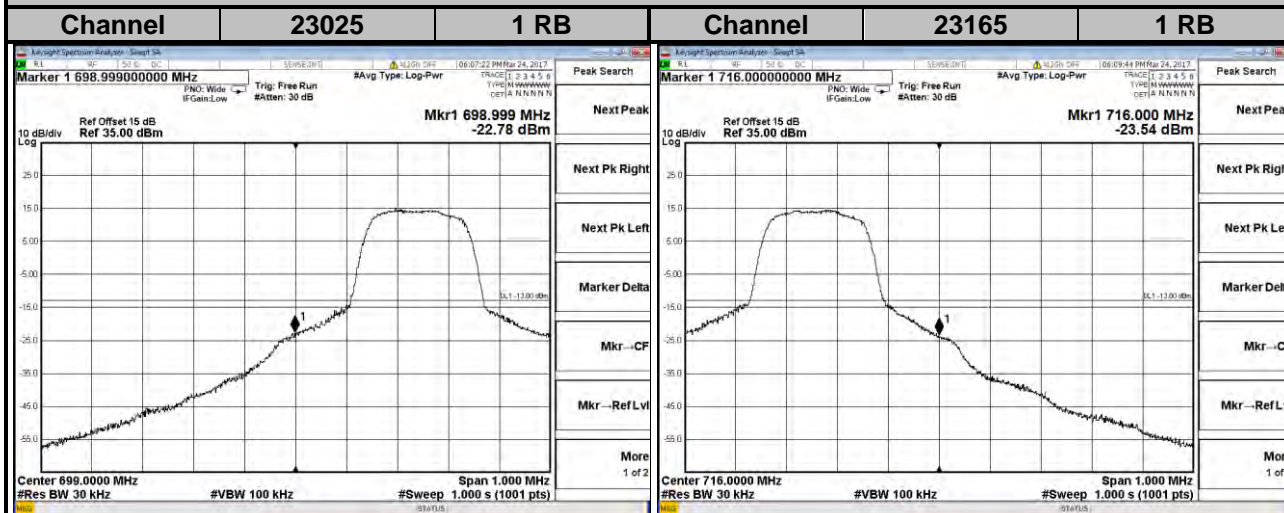
LTE Band 12

Channel Bandwidth: 1.4 MHz



LTE Band 12

Channel Bandwidth: 3 MHz



LTE Band 12

Channel Bandwidth: 5 MHz

