

FCC Test Report

(PART 27)

Report No.: RF151015C01

FCC ID: V65C6742

Test Model: C6742

Received Date: Oct. 15, 2015

Test Date: Oct. 17, 2015 ~ Oct. 21, 2015

Issued Date: Nov. 04, 2015

Applicant: Kyocera Corporation c/o Kyocera Communications, Inc.

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

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(R.O.C)

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Hsien 333, Taiwan, R.O.C.

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Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results	5
2.1 Measurement Uncertainty	6
2.2 Test Site And Instruments	7
3 General Information	8
3.1 General Description of EUT	8
3.2 Configuration of System Under Test	9
3.2.1 Description of Support Units	9
3.3 Test Mode Applicability and Tested Channel Detail	10
3.4 EUT Operating Conditions	13
3.5 General Description of Applied Standards	13
4 Test Types and Results	14
4.1 Output Power Measurement	14
4.1.1 Limits of Output Power Measurement	14
4.1.2 Test Procedures	14
4.1.3 Test Setup	15
4.1.4 Test Results	16
4.2 Frequency Stability Measurement	24
4.2.1 Limits of Frequency Stability Measurement	24
4.2.2 Test Procedure	24
4.2.3 Test Setup	24
4.2.4 Test Results	25
4.3 Occupied Bandwidth Measurement	26
4.3.1 Limits Of Occupied Bandwidth Measurement	26
4.3.2 Test Procedure	26
4.3.3 Test Setup	26
4.3.4 Test Result	27
4.4 Band Edge Measurement	31
4.4.1 Limits of Band Edge Measurement	31
4.4.2 Test Setup	31
4.4.3 Test Procedures	31
4.4.4 Test Results	32
4.5 Peak To Average Ratio	40
4.5.1 Limits of Peak To Average Ratio Measurement	40
4.5.2 Test Setup	40
4.5.3 Test Procedures	40
4.5.4 Test Results	41
4.6 Conducted Spurious Emissions	45
4.6.1 Limits of Conducted Spurious Emissions Measurement	45
4.6.2 Test Setup	45
4.6.3 Test Procedure	45
4.6.4 Test Results	46
4.7 Radiated Emission Measurement	48
4.7.1 Limits of Radiated Emission Measurement	48
4.7.2 Test Procedure	48
4.7.3 Deviation from Test Standard	48
4.7.4 Test Setup	49
4.7.5 Test Results	50
5 Pictures of Test Arrangements	54
Appendix – Information on the Testing Laboratories	55



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Release Control Record

Issue No.	Description	Date Issued
RF151015C01	Original Release	Nov. 04, 2015

1 Certificate of Conformity

Product: UMTS/GSM Bar Phone

Brand: Kyocera

Test Model: C6742

Sample Status: Identical Prototype

Applicant: Kyocera Corporation c/o Kyocera Communications, Inc.

Test Date: Oct. 17, 2015 ~ Oct. 21, 2015

Standards: FCC Part 27, Subpart C, L
FCC Part 2

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 : Evonne Liu, **Date:** Nov. 04, 2015
Evonne Liu / Specialist

Approved by : Stanley Wu, **Date:** Nov. 04, 2015
Stanley Wu / Assistant Manager

2 Summary of Test Results

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 -26.04dB at 5197.50MHz.

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 -31.70dB at 65.10MHz.

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	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	2.0153 dB
	200MHz ~1000MHz	2.0224 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.0121 dB
	18GHz ~ 40GHz	1.1508 dB

2.2 Test Site And Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Spectrum Analyzer Agilent Technologies	N9038A	MY52260177	May 19, 2015	May 18, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 10, 2014	Dec. 09, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Feb. 04, 2015	Feb. 04, 2016
HORN Antenna ETS-Lindgren	3117	00143293	Jan. 05, 2015	Jan. 04, 2016
Bluetooth Tester	CBT	100980	Apr. 27, 2015	Apr. 26, 2017
Agilent Communications Tester-Wireless	8960 Series 10	MY53201073	Jul. 03, 2015	Jul. 02, 2017
Preamplifier Agilent	310N	187226	Jun. 29, 2015	Jun. 28, 2016
Preamplifier Agilent	83017A	MY39501357	Jun. 29, 2015	Jun. 28, 2016
Power Meter Anritsu	ML2495A	1232002	Sep. 21, 2015	Sep. 22, 2016
Power Sensor Anritsu	MA2411B	1207325	Sep. 21, 2015	Sep. 22, 2016
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(R FC-SMS-100-SM S-120+RFC-SMS -100-SMS-400)	Jun. 27, 2015	Jun. 26, 2016
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(R FC-SMS-100-SM S-24)	Jun. 27, 2015	Jun. 26, 2016
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	6201240432	Jul. 06, 2015	Jul. 05, 2017

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1GHz 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	UMTS/GSM Bar Phone	
Brand	Kyocera	
Test Model	C6742	
Status of EUT	Identical Prototype	
Power Supply Rating	5.0Vdc (adapter or host equipment) 3.8Vdc (Li-ion battery)	
Modulation Type	QPSK, 16QAM	
Frequency Range	LTE Band 4 (Channel Bandwidth: 1.4MHz)	1710.7 ~1754.3MHz
	LTE Band 4 (Channel Bandwidth: 3MHz)	1711.5 ~1753.5MHz
	LTE Band 4 (Channel Bandwidth: 5MHz)	1712.5 ~1752.5MHz
	LTE Band 4 (Channel Bandwidth: 10MHz)	1715.0 ~1750.0MHz
	LTE Band 4 (Channel Bandwidth: 15MHz)	1717.5 ~1747.5MHz
	LTE Band 4 (Channel Bandwidth: 20MHz)	1720.0 ~1745.0MHz
	LTE Band 17 (Channel Bandwidth: 5MHz)	706.5 ~ 713.5MHz
	LTE Band 17 (Channel Bandwidth: 10MHz)	709 ~ 711MHz
Emission Designator	LTE Band 4 (Channel Bandwidth: 1.4MHz)	1M09G7D
	LTE Band 4 (Channel Bandwidth: 3MHz)	2M69W7D
	LTE Band 4 (Channel Bandwidth: 5MHz)	4M50G7D
	LTE Band 4 (Channel Bandwidth: 10MHz)	8M96W7D
	LTE Band 4 (Channel Bandwidth: 15MHz)	13M46G7D
	LTE Band 4 (Channel Bandwidth: 20MHz)	17M94G7D
	LTE Band 17 (Channel Bandwidth: 5MHz)	4M50G7D
	LTE Band 17 (Channel Bandwidth: 10MHz)	8M98W7D
Max. ERP Power	LTE Band 17 (Channel Bandwidth: 5MHz)	185.74mW
	LTE Band 17 (Channel Bandwidth: 10MHz)	197.56mW
Max. EIRP Power	LTE Band 4 (Channel Bandwidth: 1.4MHz)	194.98mW
	LTE Band 4 (Channel Bandwidth: 3MHz)	181.97mW
	LTE Band 4 (Channel Bandwidth: 5MHz)	182.39mW
	LTE Band 4 (Channel Bandwidth: 10MHz)	177.01mW
	LTE Band 4 (Channel Bandwidth: 15MHz)	194.98mW
	LTE Band 4 (Channel Bandwidth: 20MHz)	190.99mW
Antenna Type	Fixed Internal Antenna	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

1. The EUT contains following accessory devices.

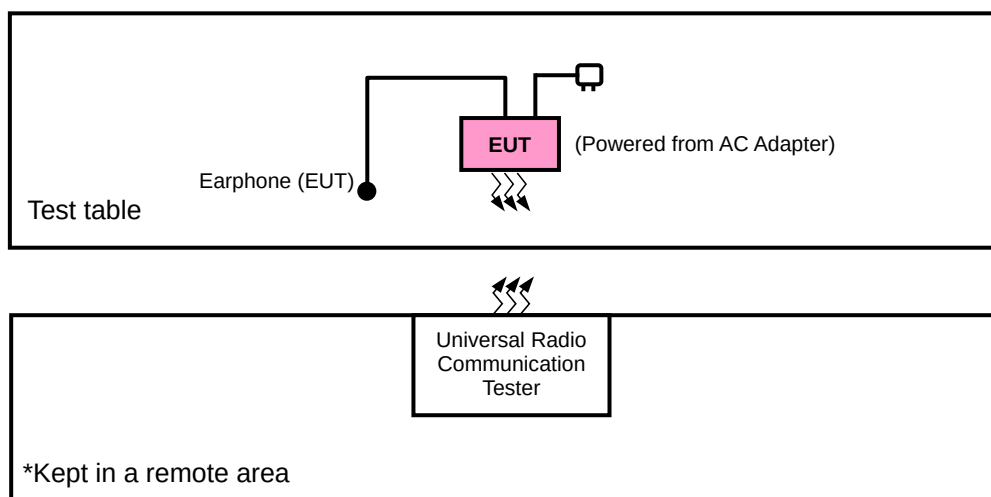
Product	Brand	Model	Description
Adapter	KYOCERA	SCP-47ADT	I/P: 100-240Vac, 50/60Hz, 0.2A O/P: 5Vdc, 1.0A
Battery	KYOCERA	SCP-66LBPS	3.8Vdc, 2200mAh
Earphone	Galien Electron	HF-HBD5D	1.35m non-shielded cable w/o core

USB Cable	KYOCERA	SCP-19SDC	0.5m shielded cable w/o core
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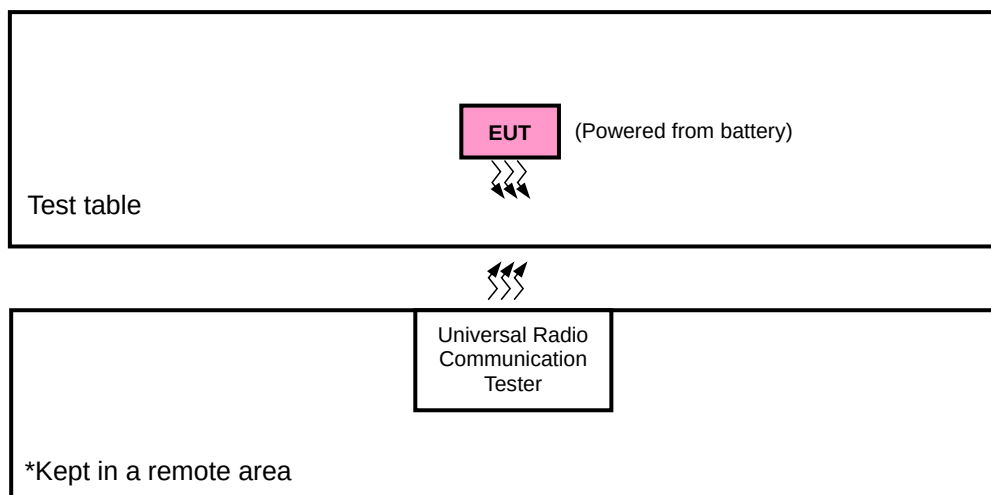
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

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:

Band	ERP / EIRP	Radiated Emission
LTE Band 4	Y-plane	X-axis
LTE Band 17	X-plane	Y-axis

LTE Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	1 RB / 5 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	1 RB / 14 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	1 RB / 24 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	1 RB / 49 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	1 RB / 74 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	1 RB / 99 RB Offset
-	Frequency Stability	19957 to 20393	20175	1.4MHz	QPSK	1 RB / 5 RB Offset
		19965 to 20385	20175	3MHz	QPSK	1 RB / 14 RB Offset
		19975 to 20375	20175	5MHz	QPSK	1 RB / 24 RB Offset
		20000 to 20350	20175	10MHz	QPSK	1 RB / 49 RB Offset
		20025 to 20325	20175	15MHz	QPSK	1 RB / 74 RB Offset
		20050 to 20300	20175	20MHz	QPSK	1 RB / 99 RB Offset
-	Occupied Bandwidth	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	1 RB / 2 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	1 RB / 7 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	12 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	1 RB / 24 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	36 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	50 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	19957 to 20393	19957	1.4MHz	QPSK	1 RB / 0 RB Offset
			20393	1.4MHz	QPSK	6 RB / 0 RB Offset
		19965 to 20385	19965	3MHz	QPSK	1 RB / 5 RB Offset
			20385	3MHz	QPSK	6 RB / 0 RB Offset
		19975 to 20375	19975	5MHz	QPSK	1 RB / 0 RB Offset
			20375	5MHz	QPSK	15 RB / 0 RB Offset
		20000 to 20350	20000	10MHz	QPSK	1 RB / 14 RB Offset
			20350	10MHz	QPSK	15 RB / 0 RB Offset
		20025 to 20325	20025	15MHz	QPSK	1 RB / 0 RB Offset
			20325	15MHz	QPSK	25 RB / 0 RB Offset
		20050 to 20300	20050	20MHz	QPSK	1 RB / 24 RB Offset
			20300	20MHz	QPSK	25 RB / 0 RB Offset
		19957 to 20393	20000	10MHz	QPSK	1 RB / 0 RB Offset
			20350	10MHz	QPSK	50 RB / 0 RB Offset
		19965 to 20385	20025	15MHz	QPSK	1 RB / 49 RB Offset
			20325	15MHz	QPSK	50 RB / 0 RB Offset
-	Conducted Emission	19957 to 20393	20175	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	20175	3MHz	QPSK	75 RB / 0 RB Offset
		19975 to 20375	20175	5MHz	QPSK	1 RB / 74 RB Offset
		20000 to 20350	20175	10MHz	QPSK	75 RB / 0 RB Offset
		20025 to 20325	20175	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20175	20MHz	QPSK	100 RB / 0 RB Offset
-	Radiated Emission	20050 to 20300	20175	20MHz	QPSK	1 RB / 99 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	5MHz	QPSK, 16QAM	1 RB / 12 RB Offset
		23780 to 23800	23780, 23790, 23800	10MHz	QPSK, 16QAM	1 RB / 24 RB Offset
-	Frequency Stability	23755 to 23825	23790	5MHz	QPSK	1 RB / 12 RB Offset
		23780 to 23800	23790	10MHz	QPSK	1 RB / 24 RB Offset
-	Occupied Bandwidth	23755 to 23825	23755, 23790, 23825	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		23780 to 23800	23780, 23790, 23800	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Peak to Average Ratio	23755 to 23825	23755, 23790, 23825	5MHz	QPSK, 16QAM	1 RB / 12 RB Offset
		23780 to 23800	23780, 23790, 23800	10MHz	QPSK, 16QAM	1 RB / 24 RB Offset
-	Band Edge	23755 to 23825	23755	5MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
		23780 to 23800	23825	5MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
			23780	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
-	Conducted Emission	23755 to 23825	23790	5MHz	QPSK	1 RB / 49 RB Offset
		23780 to 23800	23790	10MHz	QPSK	50 RB / 0 RB Offset
-	Radiated Emission	23755 to 23825	23790	5MHz	QPSK	1 RB / 12 RB Offset
		23780 to 23800	23790	10MHz	QPSK	1 RB / 24 RB Offset

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

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP / EIRP	25deg. C, 65%RH	3.8Vdc	Charles Hsiao
Frequency Stability	25deg. C, 65%RH	3.8Vdc	Taylor Liu
Occupied Bandwidth	25deg. C, 65%RH	3.8Vdc	Taylor Liu
Band Edge	25deg. C, 65%RH	3.8Vdc	Taylor Liu
Peak to Average Ratio	25deg. C, 65%RH	3.8Vdc	Taylor Liu
Condcudeted Emission	25deg. C, 65%RH	3.8Vdc	Taylor Liu
Radiated Emission	25deg. C, 65%RH	120Vac, 60Hz	Charles Hsiao/Karl Lee

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards

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

ANSI/TIA/EIA-603-C 2004

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 704-716 MHz band are limited to 3 watts ERP

4.1.2 Test Procedures

EIRP / ERP Measurement:

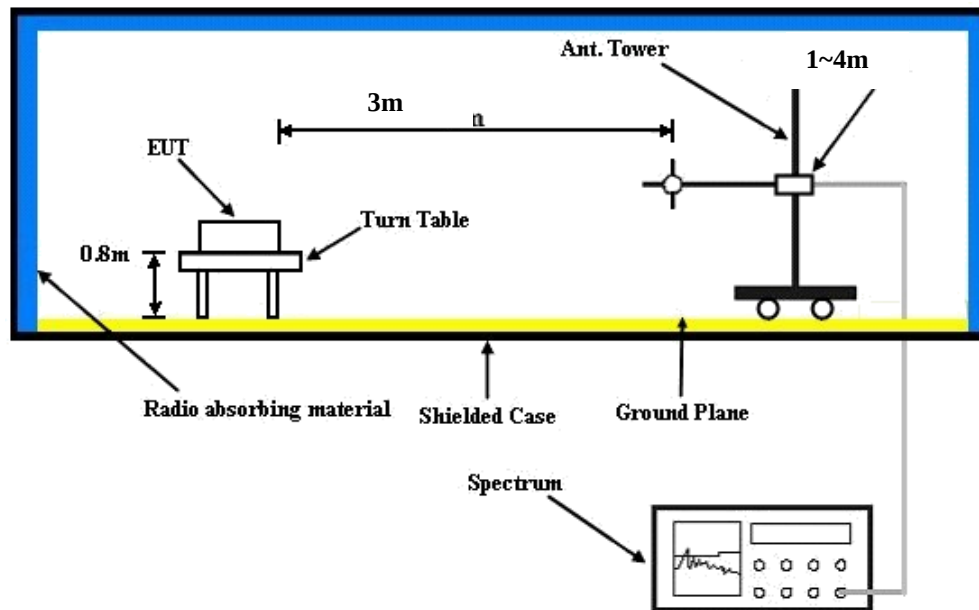
- All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5MHz for WCDMA and 10MHz for LTE mode.
- Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- 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
- $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. 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:

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

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 / 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	21.83	21.68	21.74	0	20.79	20.64	20.70	1
	1	2	21.80	21.65	21.71	0	20.76	20.61	20.67	1
	1	5	21.68	21.53	21.59	0	20.64	20.49	20.55	1
	3	0	21.77	21.62	21.68	0	20.73	20.58	20.64	1
	3	1	21.68	21.53	21.59	0	20.64	20.49	20.55	1
	3	3	21.62	21.47	21.53	0	20.58	20.43	20.49	1
	6	0	20.83	20.68	20.74	1	19.79	19.64	19.70	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	21.94	21.79	21.85	0	20.90	20.75	20.81	1
	1	7	21.91	21.76	21.82	0	20.87	20.72	20.78	1
	1	14	21.79	21.64	21.70	0	20.75	20.60	20.66	1
	8	0	20.98	20.83	20.89	1	19.94	19.79	19.85	2
	8	3	20.89	20.74	20.80	1	19.85	19.70	19.76	2
	8	7	20.83	20.68	20.74	1	19.79	19.64	19.70	2
	15	0	20.94	20.79	20.85	1	19.90	19.75	19.81	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	22.02	21.87	21.93	0	20.98	20.83	20.89	1
	1	12	21.99	21.84	21.90	0	20.95	20.80	20.86	1
	1	24	21.87	21.72	21.78	0	20.83	20.68	20.74	1
	12	0	21.06	20.91	20.97	1	20.02	19.87	19.93	2
	12	6	20.97	20.82	20.88	1	19.93	19.78	19.84	2
	12	13	20.91	20.76	20.82	1	19.87	19.72	19.78	2
	25	0	21.02	20.87	20.93	1	19.98	19.83	19.89	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	22.15	22.00	22.06	0	21.11	20.96	21.02	1
	1	24	22.12	21.97	22.03	0	21.08	20.93	20.99	1
	1	49	22.00	21.85	21.91	0	20.96	20.81	20.87	1
	25	0	21.19	21.04	21.10	1	20.15	20.00	20.06	2
	25	12	21.10	20.95	21.01	1	20.06	19.91	19.97	2
	25	25	21.04	20.89	20.95	1	20.00	19.85	19.91	2
	50	0	21.15	21.00	21.06	1	20.11	19.96	20.02	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	22.24	22.09	22.15	0	21.20	21.05	21.11	1
	1	37	22.21	22.06	22.12	0	21.17	21.02	21.08	1
	1	74	22.09	21.94	22.00	0	21.05	20.90	20.96	1
	36	0	21.28	21.13	21.19	1	20.24	20.09	20.15	2
	36	19	21.19	21.04	21.10	1	20.15	20.00	20.06	2
	36	39	21.13	20.98	21.04	1	20.09	19.94	20.00	2
	75	0	21.24	21.09	21.15	1	20.20	20.05	20.11	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	22.36	22.21	22.27	0	21.32	21.17	21.23	1
	1	50	22.33	22.18	22.24	0	21.29	21.14	21.20	1
	1	99	22.21	22.06	22.12	0	21.17	21.02	21.08	1
	50	0	21.40	21.25	21.31	1	20.36	20.21	20.27	2
	50	25	21.31	21.16	21.22	1	20.27	20.12	20.18	2
	50	50	21.25	21.10	21.16	1	20.21	20.06	20.12	2
	100	0	21.36	21.21	21.27	1	20.32	20.17	20.23	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	24.23	24.36	24.29	0	23.22	23.35	23.28	1
	1	12	24.11	24.24	24.18	0	23.10	23.23	23.16	1
	1	24	24.07	24.21	24.15	0	23.04	23.18	23.10	1
	12	0	23.17	23.30	23.22	1	22.15	22.28	22.20	2
	12	6	23.13	23.25	23.18	1	22.09	22.20	22.15	2
	12	13	23.07	23.19	23.14	1	22.02	22.14	22.11	2
	25	0	22.87	23.04	22.99	1	21.83	22.03	21.94	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	24.35	24.48	24.43	0	23.34	23.44	23.42	1
	1	24	24.25	24.38	24.33	0	23.23	23.34	23.31	1
	1	49	24.22	24.35	24.30	0	23.17	23.30	23.27	1
	25	0	23.28	23.41	23.36	1	22.26	22.40	22.35	2
	25	12	23.25	23.38	23.33	1	22.22	22.34	22.32	2
	25	25	23.21	23.34	23.29	1	22.16	22.29	22.25	2
	50	0	23.02	23.15	23.10	1	21.98	22.14	22.08	2

ERP Power (dBm)

LTE Band 17							
Channel Bandwidth: 5MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	23755	706.5	-7.88	32.719	22.69	185.74	H
	23790	710.0	-8.53	32.736	22.06	160.55	
	23825	713.5	-7.78	32.591	22.66	184.54	
	23755	706.5	-16.77	32.69	13.77	23.82	V
	23790	710.0	-17.66	32.81	13.00	19.95	
	23825	713.5	-17.42	32.74	13.17	20.75	

LTE Band 17							
Channel Bandwidth: 5MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	23755	706.5	-9.48	32.719	21.09	128.50	H
	23790	710.0	-8.94	32.736	21.65	146.08	
	23825	713.5	-9.19	32.591	21.25	133.38	
	23755	706.5	-17.92	32.69	12.62	18.28	V
	23790	710.0	-18.36	32.81	12.30	16.98	
	23825	713.5	-18.31	32.74	12.28	16.90	

LTE Band 17							
Channel Bandwidth: 10MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	23780	709.0	-7.62	32.727	22.96	197.56	H
	23790	710.0	-7.67	32.739	22.92	195.84	
	23800	711.0	-8.28	32.728	22.30	169.75	
	23780	709.0	-17.43	32.75	13.17	20.75	V
	23790	710.0	-17.29	32.81	13.37	21.73	
	23800	711.0	-17.01	32.84	13.68	23.33	

LTE Band 17							
Channel Bandwidth: 10MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	23780	709.0	-9.03	32.727	21.55	142.79	H
	23790	710.0	-9.08	32.739	21.51	141.55	
	23800	711.0	-9.33	32.728	21.25	133.29	
	23780	709.0	-18.24	32.75	12.36	17.22	V
	23790	710.0	-18.39	32.81	12.27	16.87	
	23800	711.0	-17.92	32.84	12.77	18.92	

EIRP Power (dBm)

LTE Band 4							
Channel Bandwidth: 1.4MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	19957	1710.7	-23.99	42.49	18.50	70.71	H
	20175	1732.5	-24.06	42.33	18.27	67.10	
	20393	1754.3	-23.24	42.10	18.86	76.91	
	19957	1710.7	-20.36	42.99	22.63	183.23	V
	20175	1732.5	-19.84	42.74	22.90	194.98	
	20393	1754.3	-19.69	42.21	22.52	178.65	

LTE Band 4							
Channel Bandwidth: 1.4MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	19957	1710.7	-25.09	42.49	17.40	54.89	H
	20175	1732.5	-24.78	42.33	17.55	56.85	
	20393	1754.3	-25.10	42.10	17.00	50.12	
	19957	1710.7	-21.82	42.99	21.17	130.92	V
	20175	1732.5	-21.00	42.74	21.74	149.28	
	20393	1754.3	-20.25	42.21	21.96	157.04	

LTE Band 4							
Channel Bandwidth: 3MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	19965	1711.5	-23.84	42.49	18.65	73.20	H
	20175	1732.5	-24.14	42.33	18.19	65.87	
	20385	1753.5	-23.34	42.10	18.76	75.16	
	19965	1711.5	-20.39	42.99	22.60	181.97	V
	20175	1732.5	-20.16	42.74	22.58	181.13	
	20385	1753.5	-19.90	42.21	22.31	170.22	

LTE Band 4							
Channel Bandwidth: 3MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	19965	1711.5	-25.44	42.49	17.05	50.64	H
	20175	1732.5	-24.51	42.33	17.82	60.49	
	20385	1753.5	-24.63	42.10	17.47	55.85	
	19965	1711.5	-21.14	42.99	21.85	153.11	V
	20175	1732.5	-21.60	42.74	21.14	130.02	
	20385	1753.5	-20.34	42.21	21.87	153.82	

LTE Band 4							
Channel Bandwidth: 5MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	19975	1712.5	-24.20	42.49	18.29	67.38	H
	20175	1732.5	-24.29	42.33	18.04	63.64	
	20375	1752.5	-23.34	42.10	18.76	75.16	
	19975	1712.5	-20.40	42.99	22.59	181.55	V
	20175	1732.5	-20.13	42.74	22.61	182.39	
	20375	1752.5	-19.73	42.21	22.48	177.01	

LTE Band 4							
Channel Bandwidth: 5MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	19975	1712.5	-24.64	42.49	17.85	60.88	H
	20175	1732.5	-24.57	42.33	17.76	59.66	
	20375	1752.5	-24.74	42.10	17.36	54.45	
	19975	1712.5	-21.94	42.99	21.05	127.35	V
	20175	1732.5	-21.54	42.74	21.20	131.83	
	20375	1752.5	-21.12	42.21	21.09	128.53	

LTE Band 4							
Channel Bandwidth: 10MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	20000	1715.0	-24.39	42.49	18.10	64.49	H
	20175	1732.5	-24.10	42.33	18.23	66.48	
	20350	1750.0	-23.48	42.10	18.62	72.78	
	20000	1715.0	-20.58	42.99	22.41	174.18	V
	20175	1732.5	-20.26	42.74	22.48	177.01	
	20350	1750.0	-19.44	42.21	22.77	189.23	

LTE Band 4							
Channel Bandwidth: 10MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	20000	1715.0	-24.79	42.49	17.70	58.82	H
	20175	1732.5	-25.04	42.33	17.29	53.54	
	20350	1750.0	-24.30	42.10	17.80	60.26	
	20000	1715.0	-21.09	42.99	21.90	154.88	V
	20175	1732.5	-21.01	42.74	21.73	148.94	
	20350	1750.0	-20.62	42.21	21.59	144.21	

LTE Band 4							
Channel Bandwidth: 15MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	20025	1717.5	-24.12	42.49	18.37	68.63	H
	20175	1732.5	-23.99	42.33	18.34	68.19	
	20325	1747.5	-24.10	42.10	18.00	63.10	
	20025	1717.5	-20.09	42.99	22.90	194.98	V
	20175	1732.5	-20.34	42.74	22.40	173.78	
	20325	1747.5	-19.64	42.21	22.57	180.72	

LTE Band 4							
Channel Bandwidth: 15MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	20025	1717.5	-24.52	42.49	17.97	62.59	H
	20175	1732.5	-24.73	42.33	17.60	57.50	
	20325	1747.5	-24.50	42.10	17.60	57.54	
	20025	1717.5	-21.53	42.99	21.46	139.96	V
	20175	1732.5	-21.51	42.74	21.23	132.74	
	20325	1747.5	-20.48	42.21	21.73	148.94	

LTE Band 4							
Channel Bandwidth: 20MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	20050	1720.0	-23.72	42.49	18.77	75.25	H
	20175	1732.5	-24.20	42.33	18.13	64.97	
	20300	1745.0	-23.96	42.10	18.14	65.16	
	20050	1720.0	-20.42	42.99	22.57	180.72	V
	20175	1732.5	-20.63	42.74	22.11	162.55	
	20300	1745.0	-19.40	42.21	22.81	190.99	

LTE Band 4							
Channel Bandwidth: 20MHz / 16QAM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)	Polarization (H/V)
Y	20050	1720.0	-25.22	42.49	17.27	53.27	H
	20175	1732.5	-24.71	42.33	17.62	57.77	
	20300	1745.0	-24.70	42.10	17.40	54.95	
	20050	1720.0	-21.01	42.99	21.98	157.76	V
	20175	1732.5	-21.68	42.74	21.06	127.64	
	20300	1745.0	-20.22	42.21	21.99	158.12	

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stability Measurement

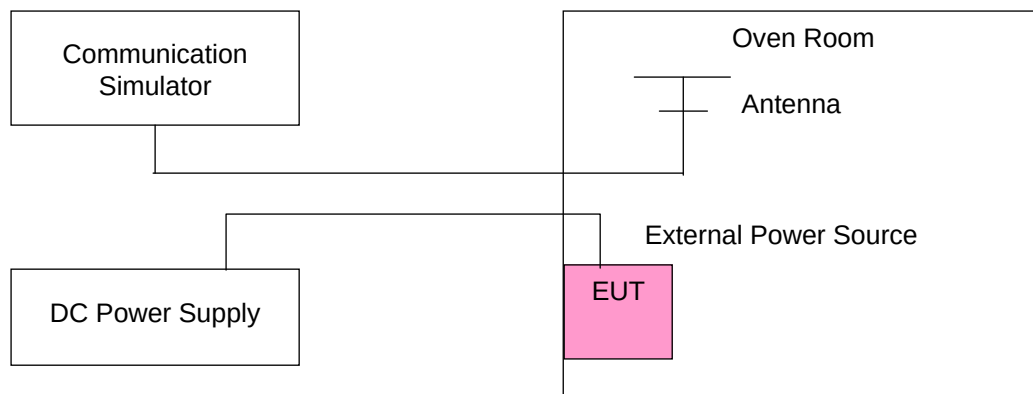
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

4.2.2 Test Procedure

- 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.
- 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.
- 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)	Frequency Error (ppm)								Limit (ppm)
	LTE Band 17		LTE Band 4						
	5MHz	10MHz	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz	
3.8	0.00155	0.00113	0.00156	0.00069	0.00075	0.00110	0.00035	0.00167	2.5
3.4	0.00282	0.00352	0.00133	0.00208	0.00162	0.00242	0.00173	0.00110	2.5
4.35	0.00493	0.00197	0.00196	0.00144	0.00052	0.00075	0.00127	0.00214	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.4Vdc to 4.35Vdc.

Frequency Error vs. Temperature

Temp. (°C)	Frequency Error (ppm)								Limit (ppm)
	LTE Band 17		LTE Band 4						
	5MHz	10MHz	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz	
-30	0.00493	0.00225	0.00139	0.00214	0.00023	0.00144	0.00208	0.00035	2.5
-20	0.00423	-0.00239	-0.00063	0.00075	0.00075	0.00087	-0.00029	0.00225	2.5
-10	0.00535	-0.00423	-0.00219	0.00127	-0.00063	0.00069	-0.00190	0.00098	2.5
0	-0.00338	-0.00113	-0.00162	0.00179	-0.00219	0.00127	-0.00092	-0.00081	2.5
10	-0.00239	-0.00507	-0.00058	-0.00156	-0.00139	-0.00098	-0.00196	-0.00087	2.5
20	-0.00408	0.00352	0.00133	-0.00133	-0.00173	-0.00127	-0.00133	-0.00190	2.5
30	-0.00507	0.00225	0.00179	-0.00017	0.00219	-0.00179	0.00063	-0.00196	2.5
40	0.00282	0.00535	0.00162	-0.00121	0.00156	-0.00133	0.00139	-0.00040	2.5
50	0.00479	0.00239	0.00087	0.00063	0.00190	-0.00098	0.00087	0.00133	2.5

4.3 Occupied Bandwidth Measurement

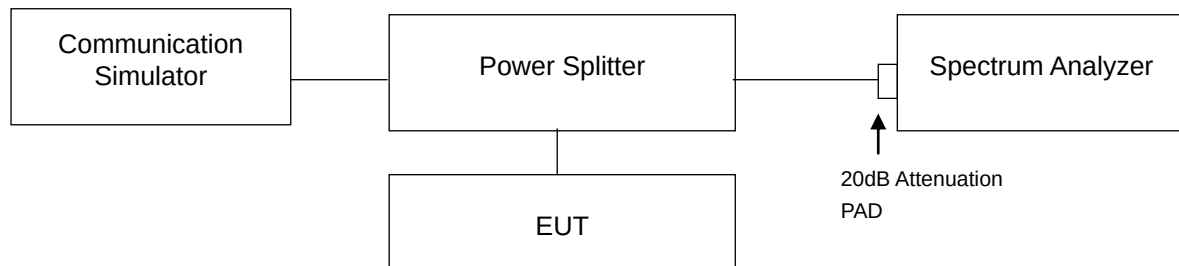
4.3.1 Limits Of Occupied Bandwidth Measurement

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

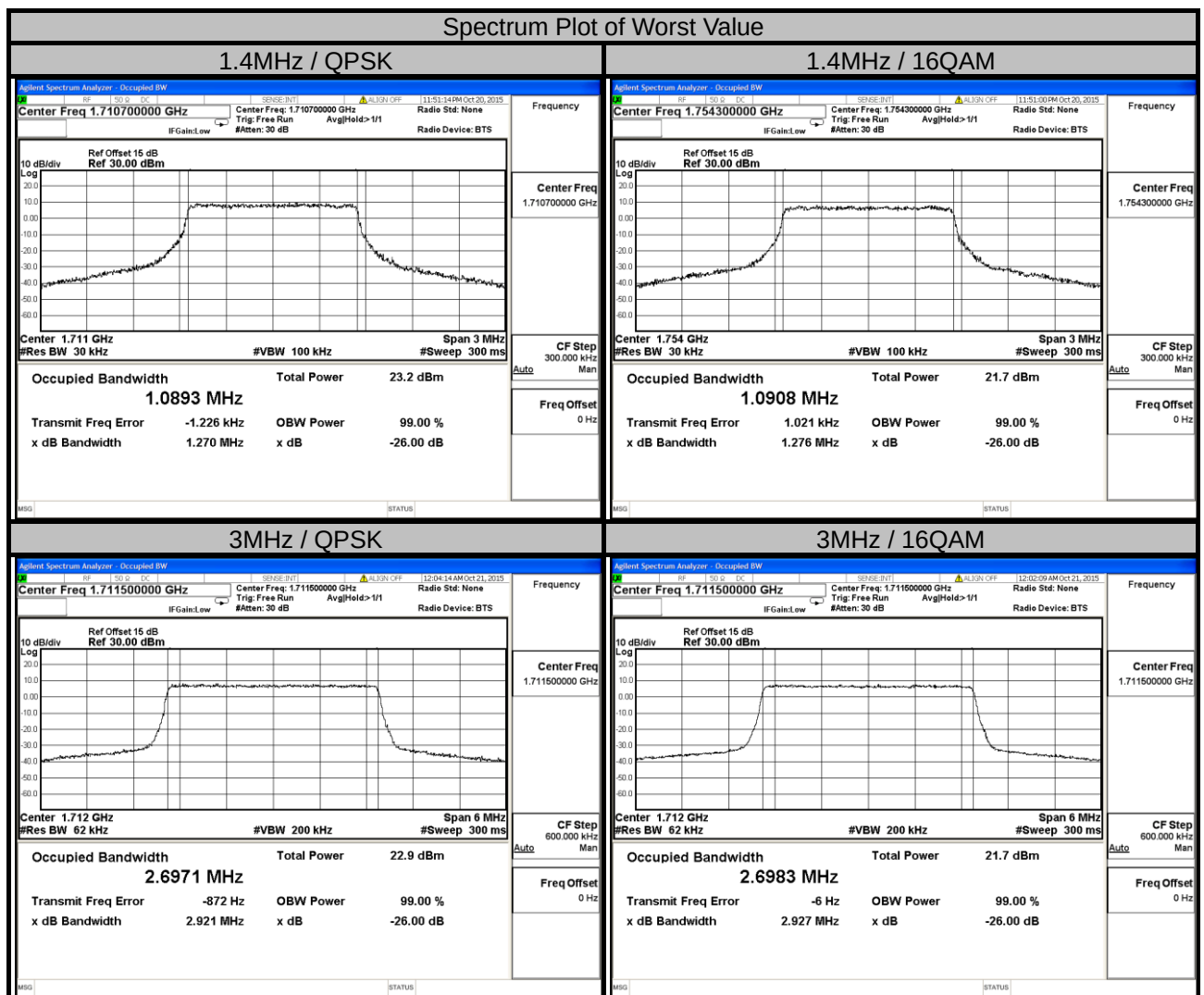
- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

4.3.3 Test Setup



4.3.4 Test Result

LTE Band 4							
Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
19957	1710.7	1.0893	1.0898	19965	1711.5	2.6971	2.6983
20175	1732.5	1.0886	1.0885	20175	1732.5	2.6969	2.6969
20393	1754.3	1.0888	1.0908	20385	1753.5	2.6954	2.6978



LTE Band 4

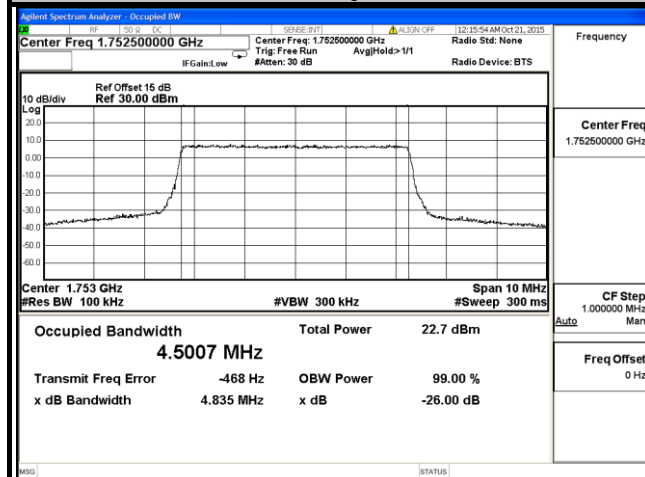
Channel Bandwidth: 5MHz

Channel Bandwidth: 10MHz

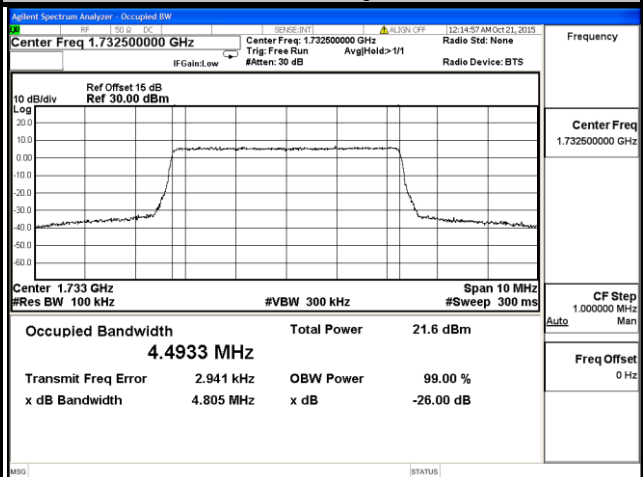
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	4.4959	4.4910	20000	1715.0	8.9598	8.9610
20175	1732.5	4.4958	4.4933	20175	1732.5	8.9598	8.9560
20375	1752.5	4.5007	4.4932	20350	1750.0	8.9595	8.9573

Spectrum Plot of Worst Value

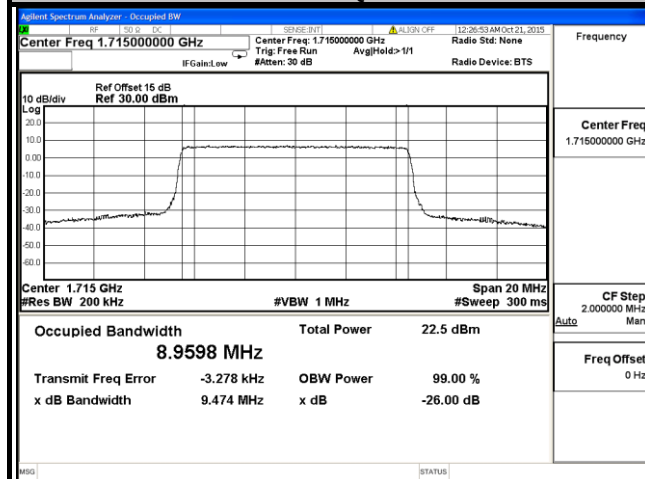
5MHz / QPSK



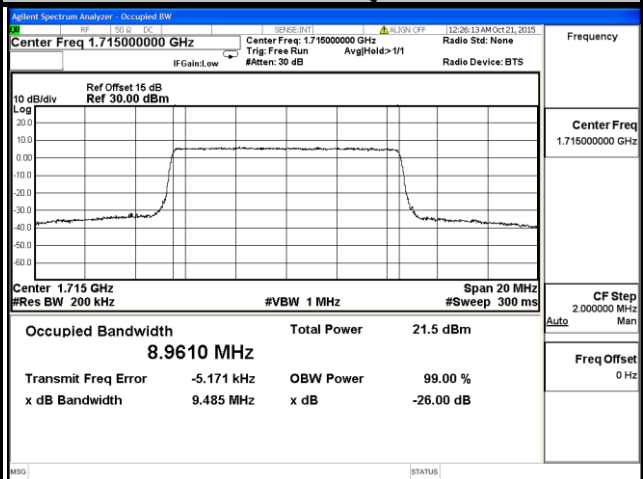
5MHz / 16QAM



10MHz / QPSK



10MHz / 16QAM



LTE BAND 4

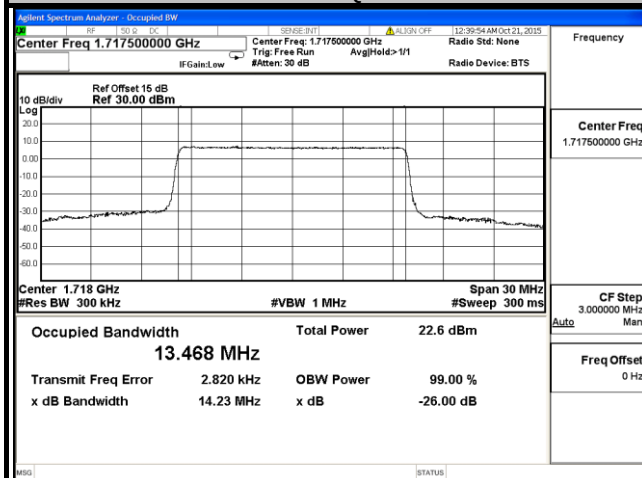
Channel Bandwidth: 15MHz

Channel Bandwidth: 20MHz

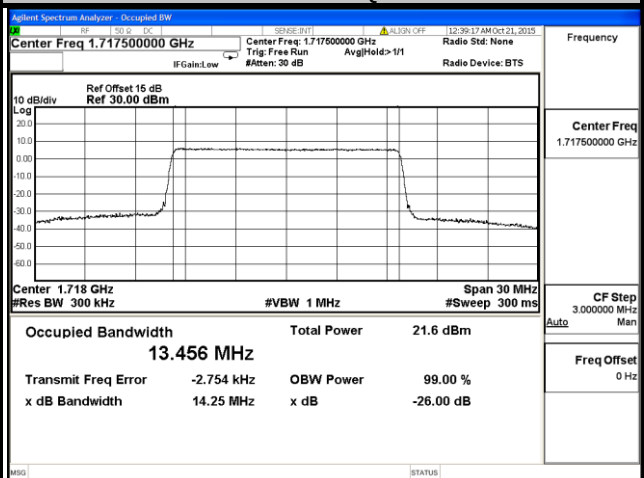
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	13.4680	13.4560	20050	1720.0	17.9380	17.9350
20175	1732.5	13.4600	13.4560	20175	1732.5	17.9330	17.9430
20325	1747.5	13.4450	13.4520	20300	1745.0	17.9120	17.9130

Spectrum Plot of Worst Value

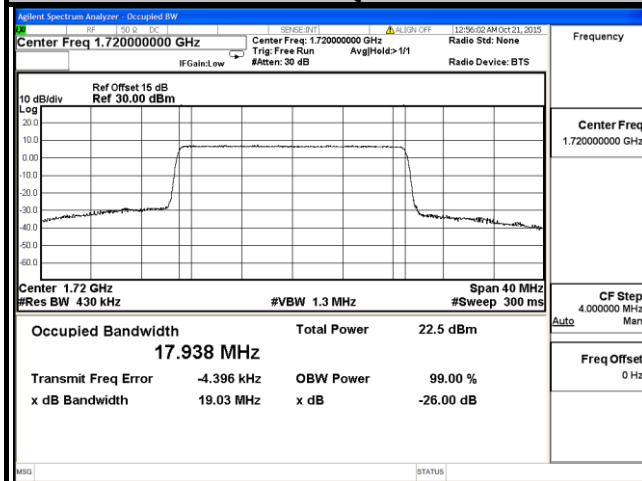
15MHz / QPSK



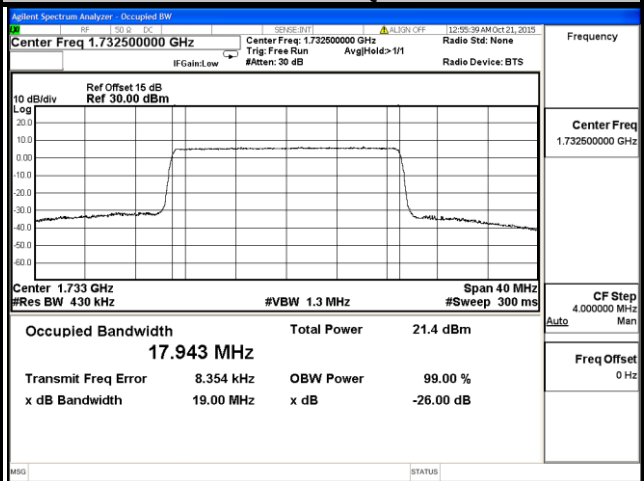
15MHz / 16QAM



20MHz / QPSK



20MHz / 16QAM



LTE Band 17

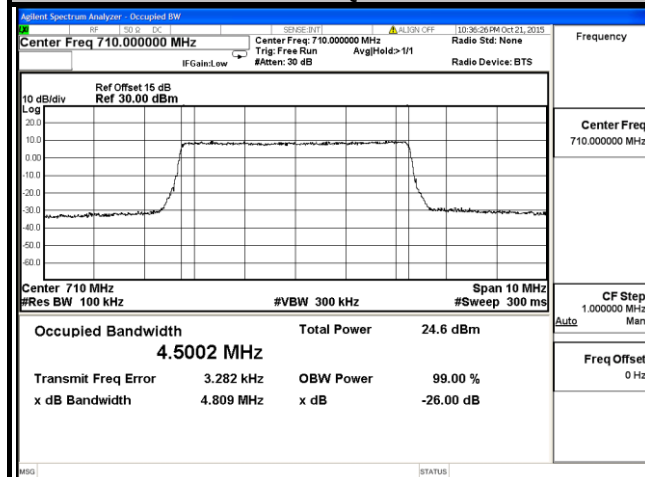
Channel Bandwidth: 5MHz

Channel Bandwidth: 10MHz

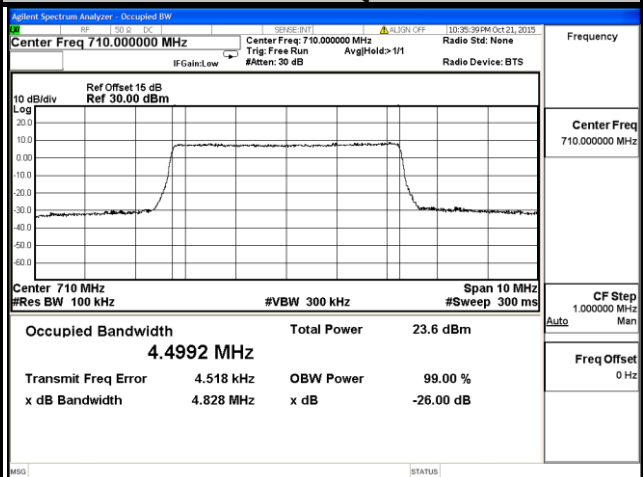
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
23755	706.5	4.4947	4.4929	23780	709.0	8.9896	8.9816
23790	710.0	4.5002	4.4992	23790	710.0	8.9858	8.9840
23825	713.5	4.4898	4.4865	23800	711.0	8.9610	8.9677

Spectrum Plot of Worst Value

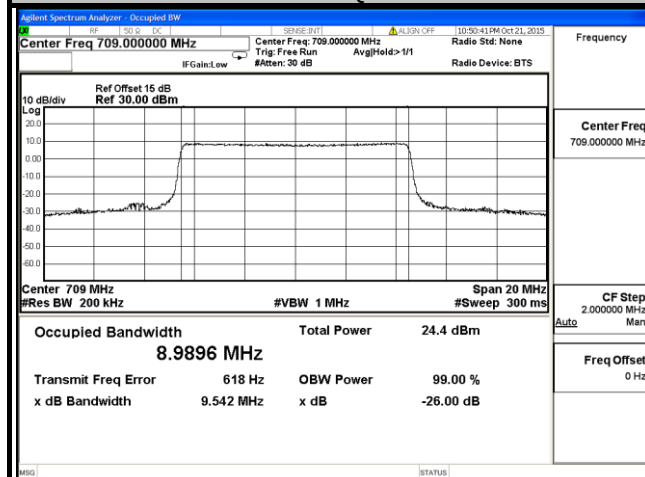
5MHz / QPSK



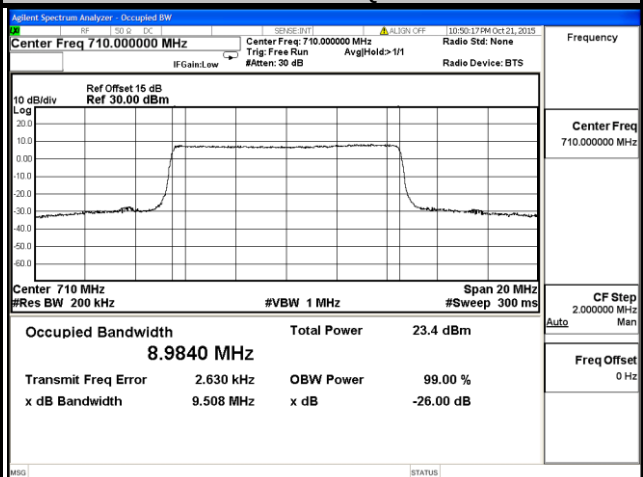
5MHz / 16QAM



10MHz / QPSK



10MHz / 16QAM



4.4 Band Edge Measurement

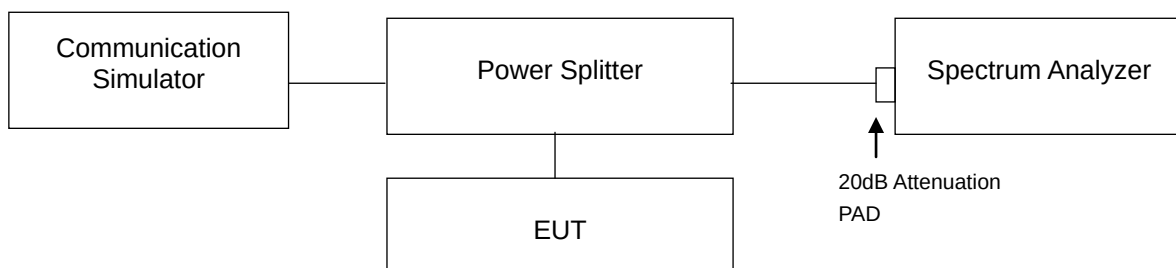
4.4.1 Limits of Band Edge Measurement

For operations in the 704-716 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.

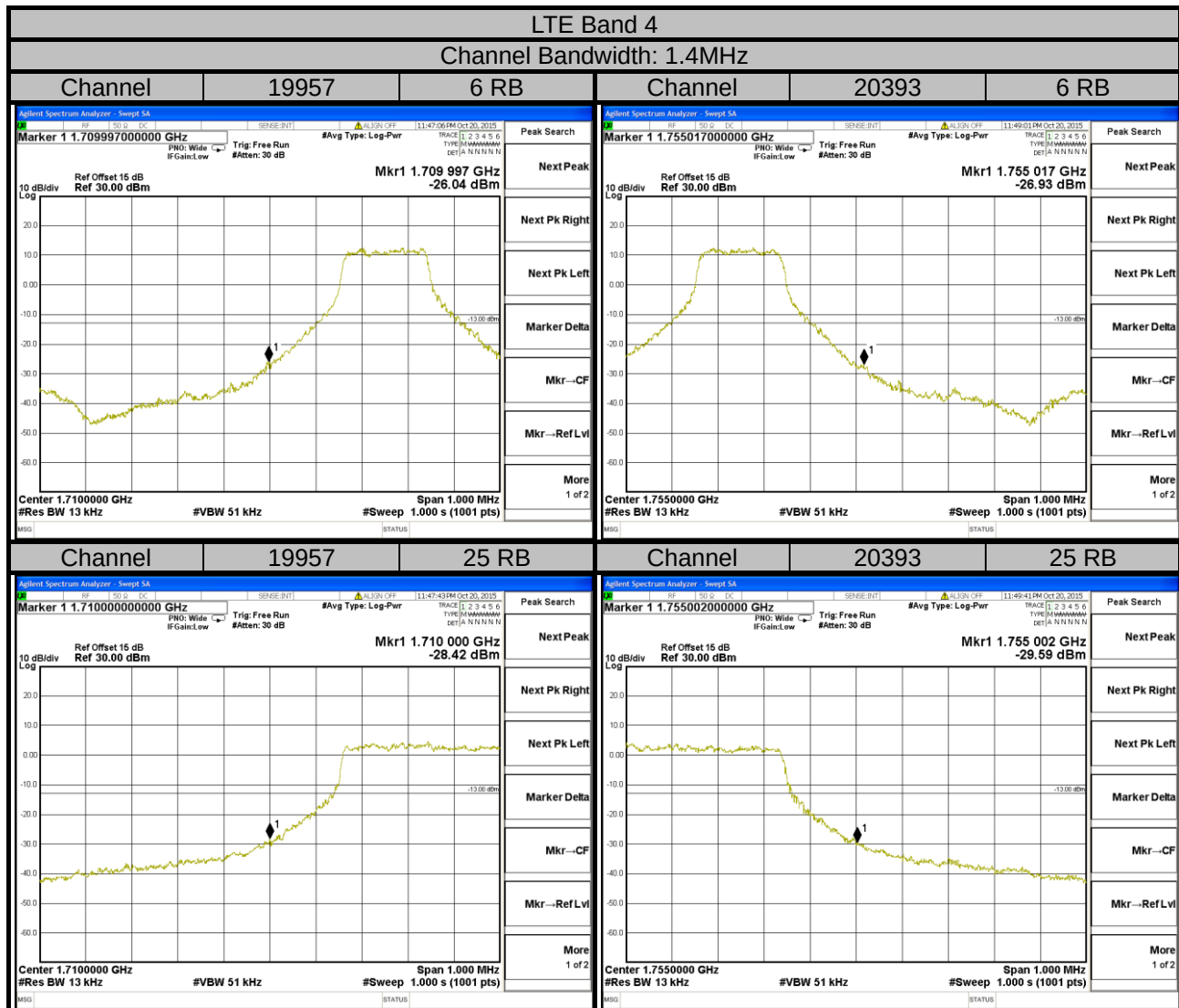
4.4.2 Test Setup



4.4.3 Test Procedures

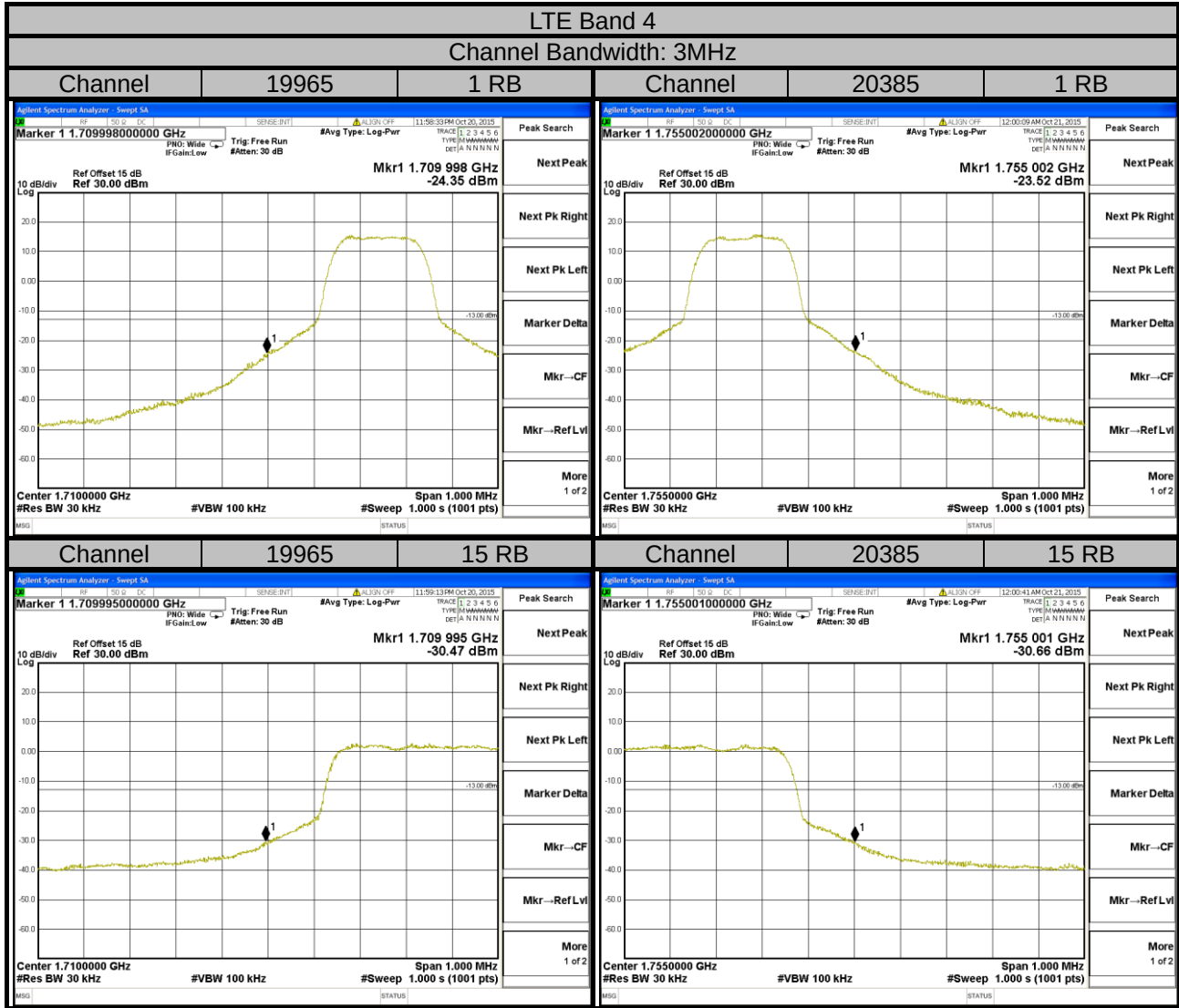
- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 5MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).
- The center frequency of spectrum is the band edge frequency and span is 1MHz.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

4.4.4 Test Results





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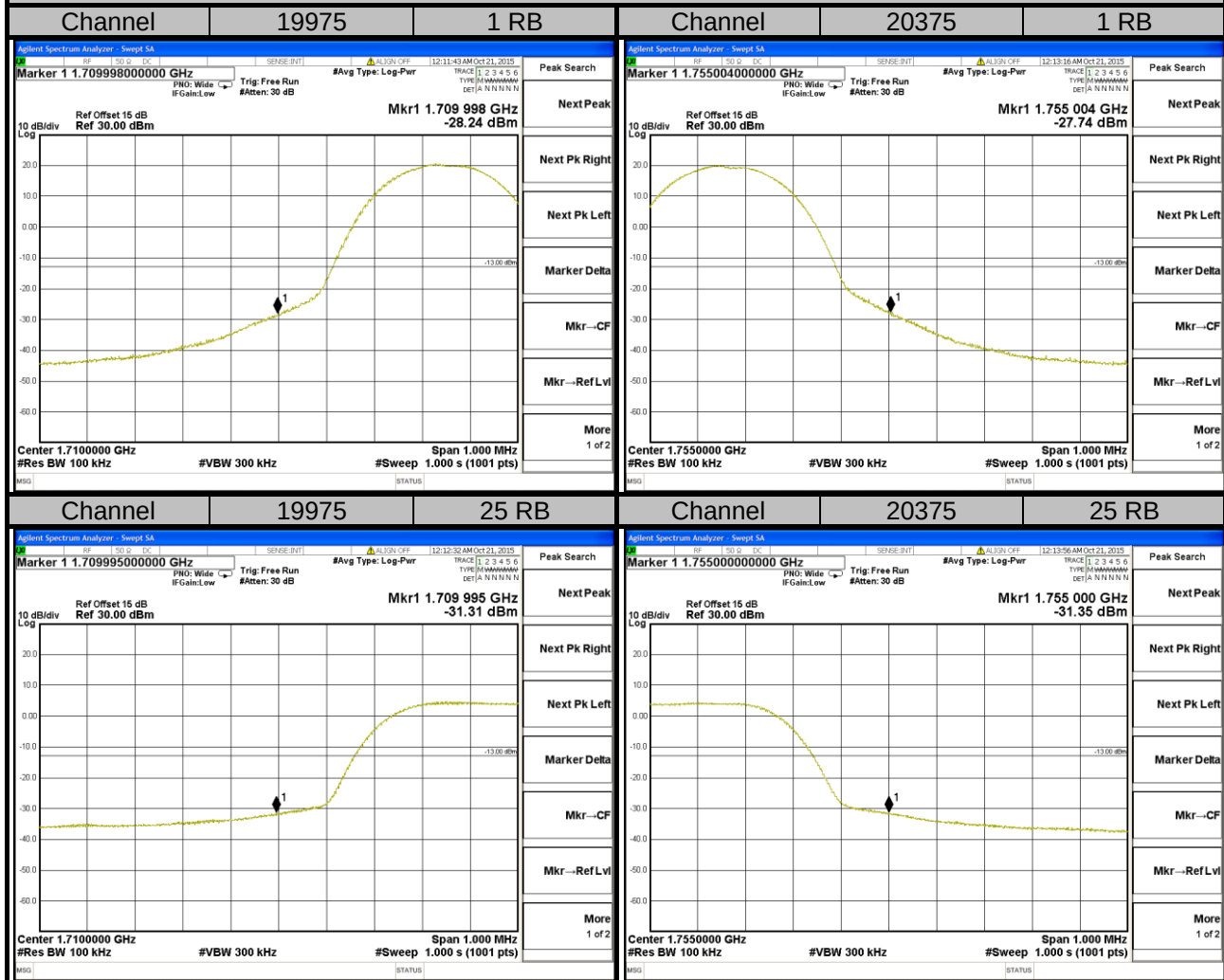




A D T

LTE Band 4

Channel Bandwidth: 5MHz

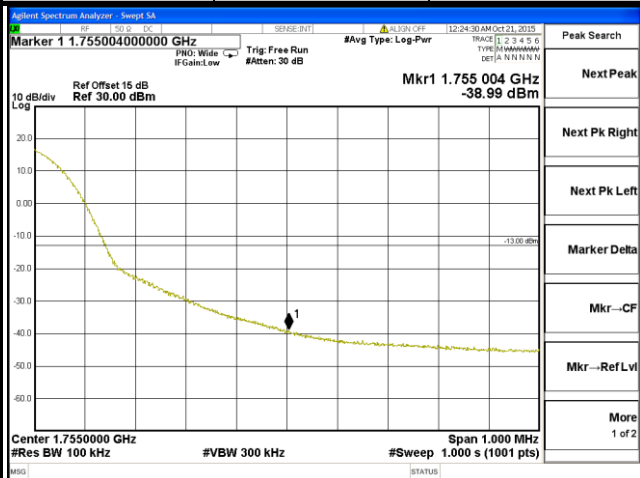
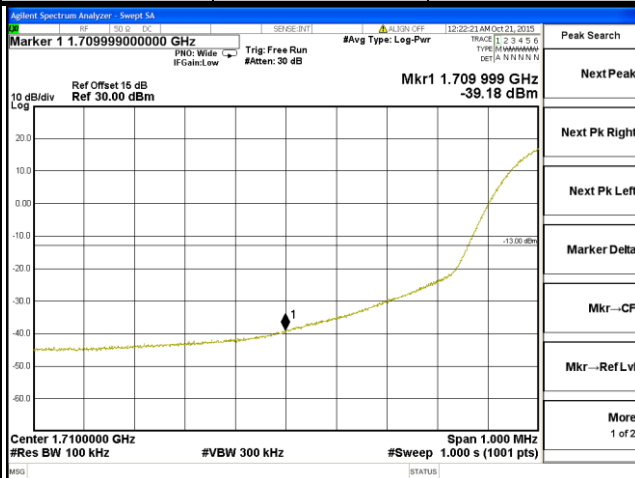


LTE Band 4

Channel Bandwidth: 10MHz

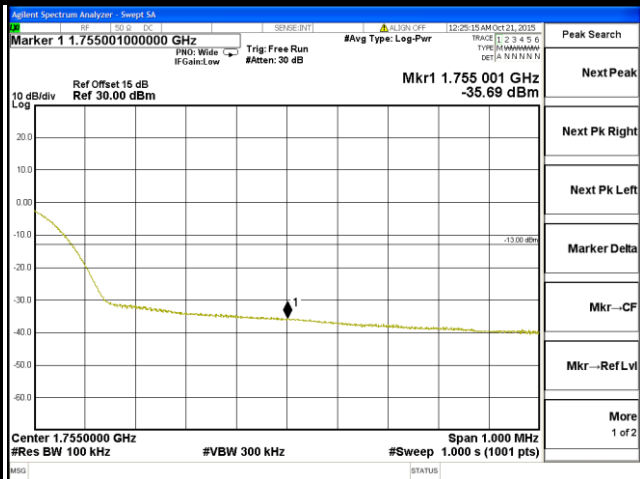
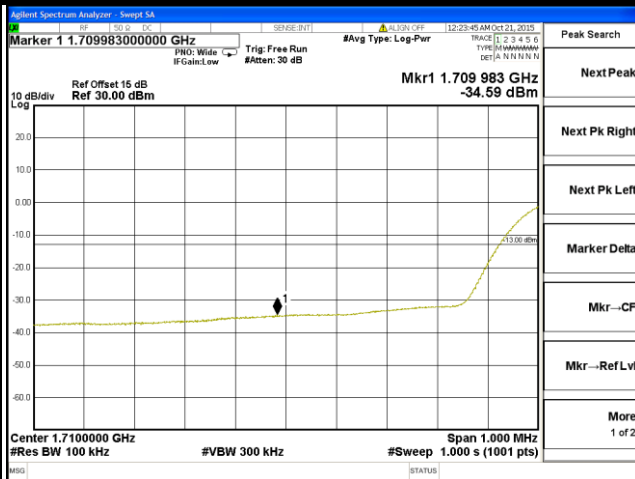
Channel 20000 1 RB

Channel 20350 1 RB



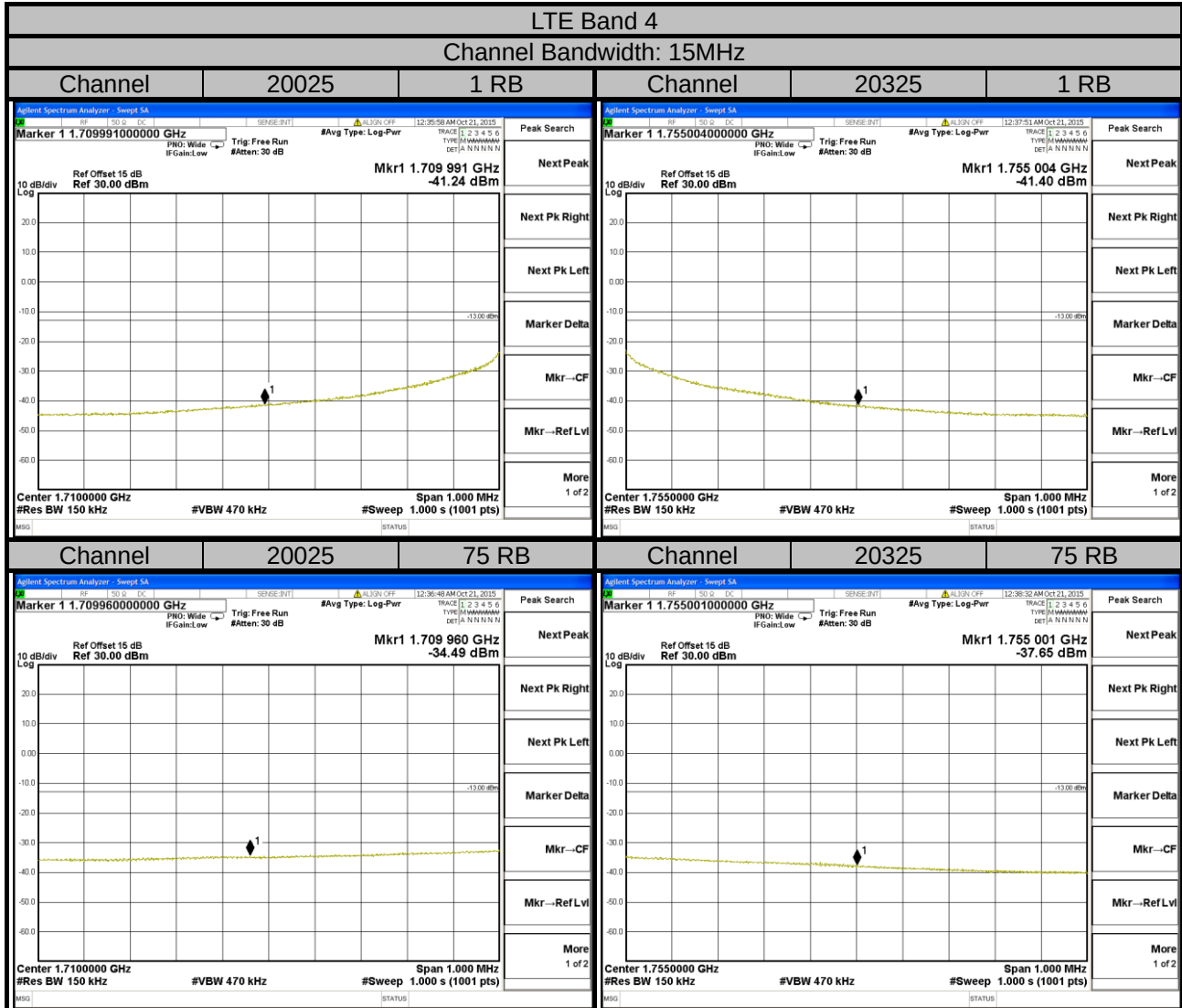
Channel 20000 50 RB

Channel 20350 50 RB



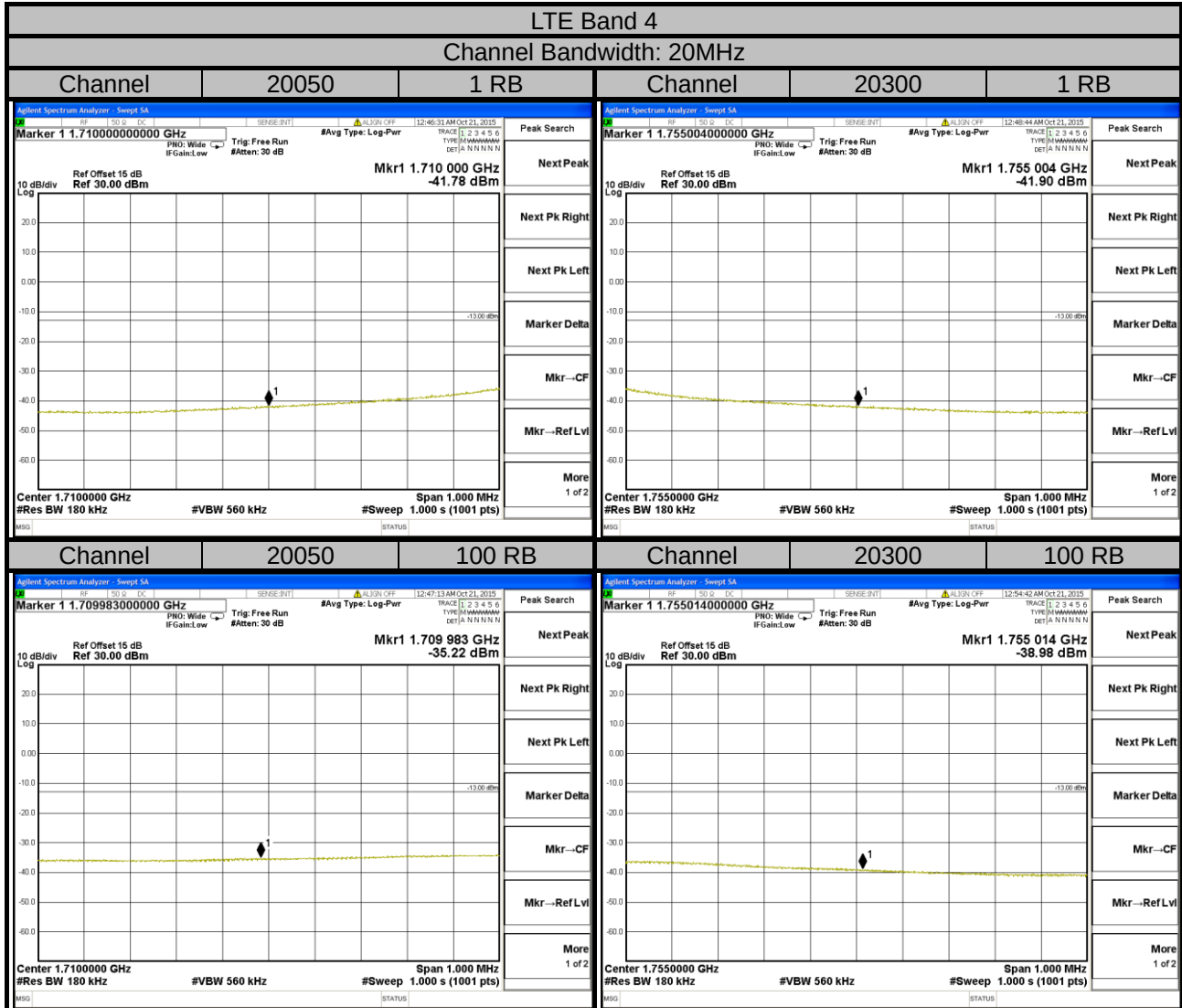


A D T





A D T

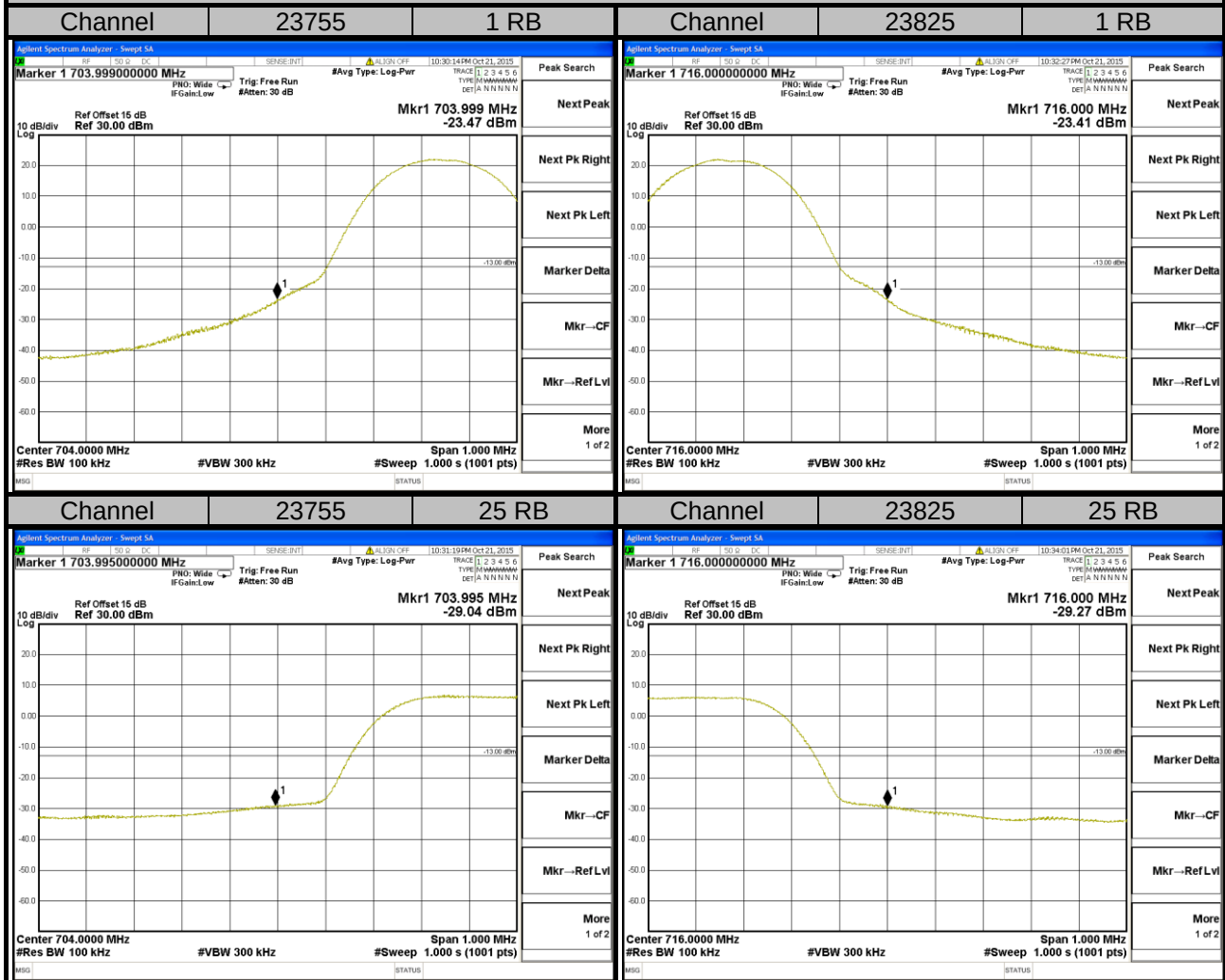




A D T

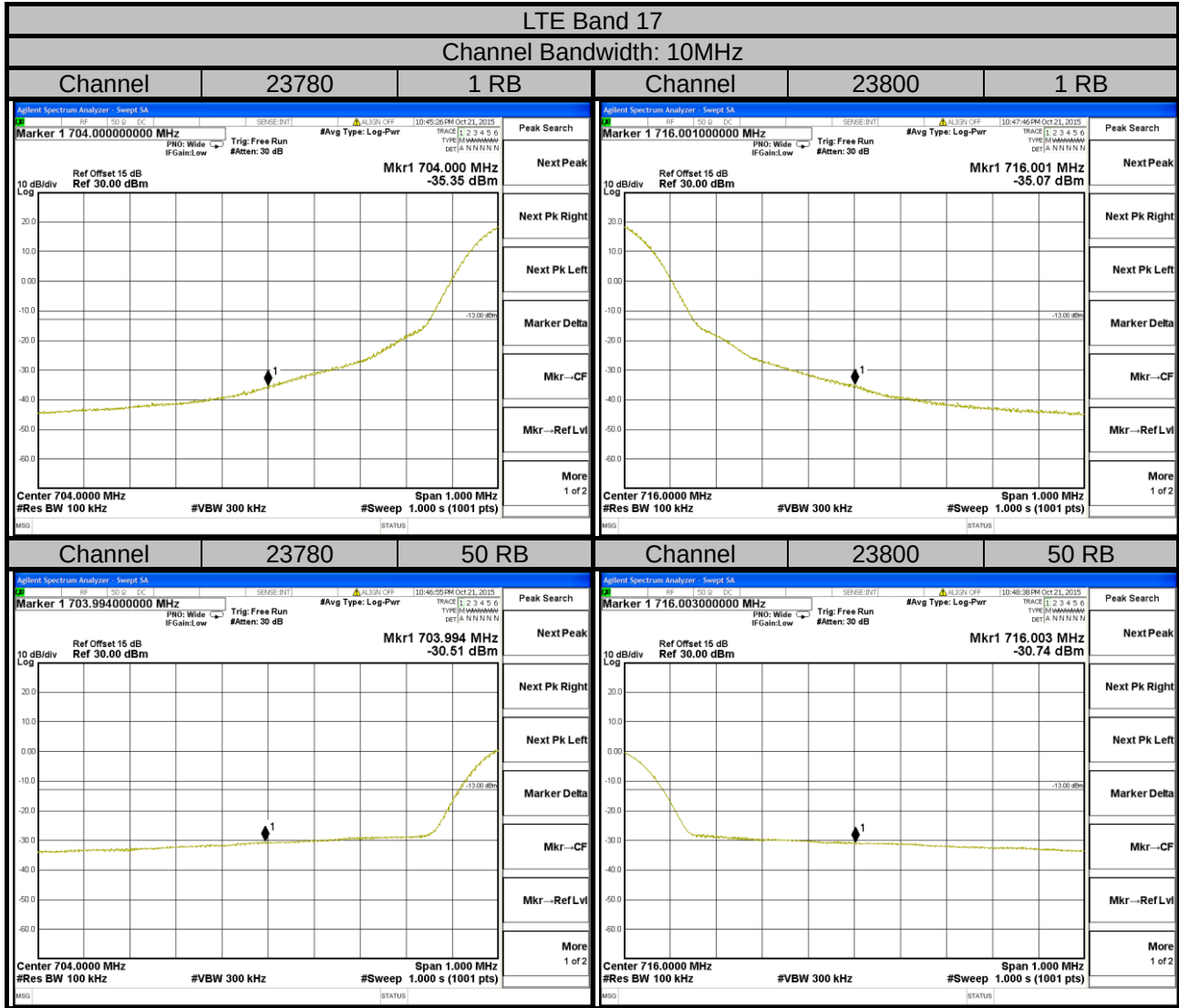
LTE Band 17

Channel Bandwidth: 5MHz





A D T

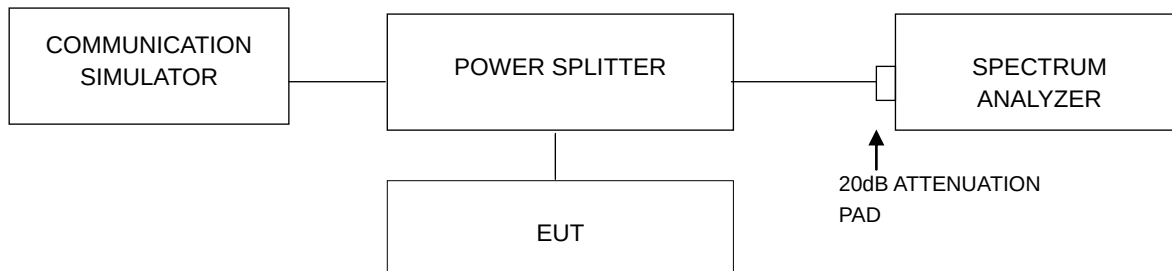


4.5 Peak To Average Ratio

4.5.1 Limits of Peak To Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

4.5.2 Test Setup

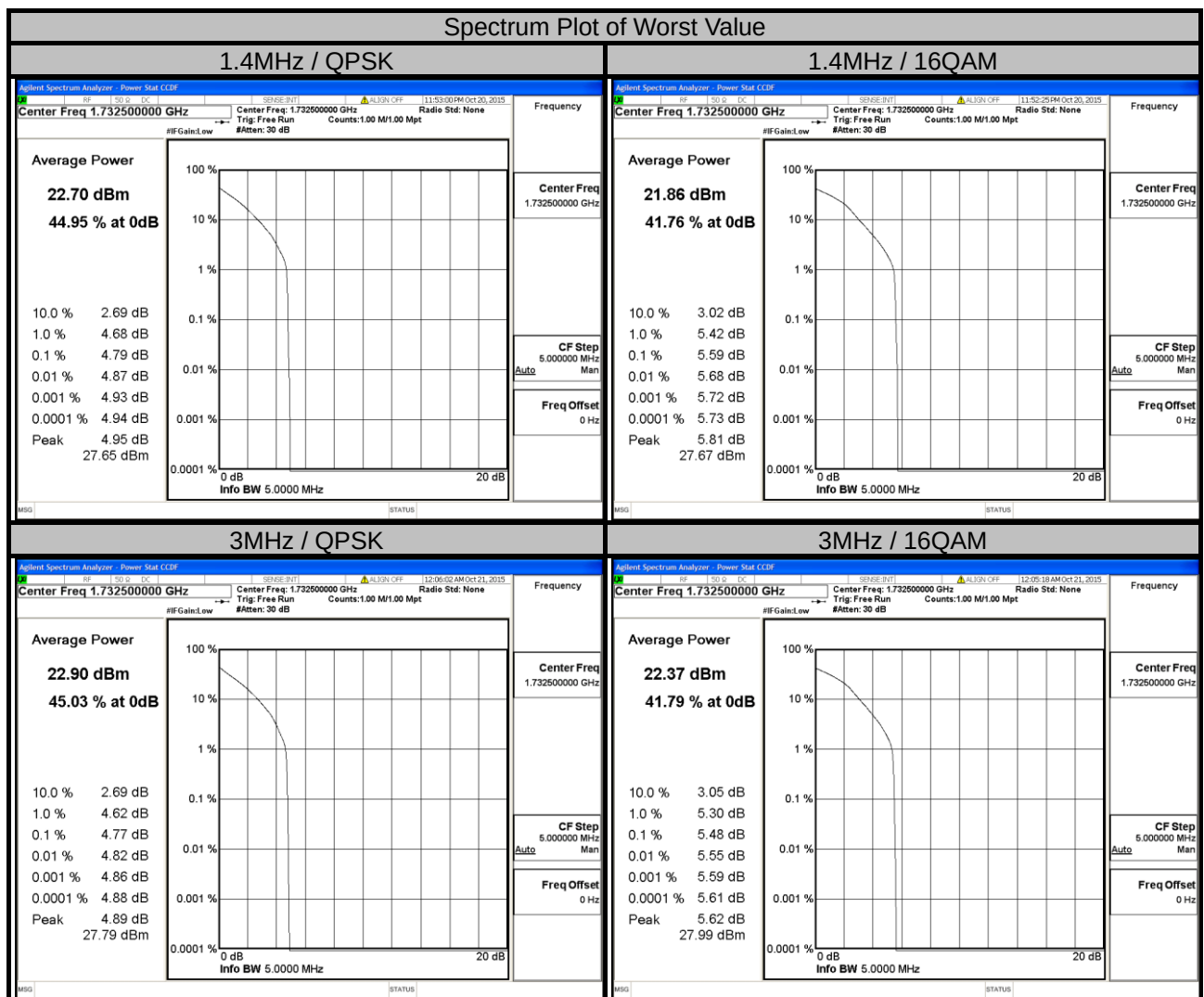


4.5.3 Test Procedures

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.5.4 Test Results

LTE Band 4							
Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
19957	1710.7	4.32	5.12	19965	1711.5	4.37	4.96
20175	1732.5	4.79	5.59	20175	1732.5	4.77	5.48
20393	1754.3	4.25	5.31	20385	1753.5	4.37	5.29



LTE Band 4

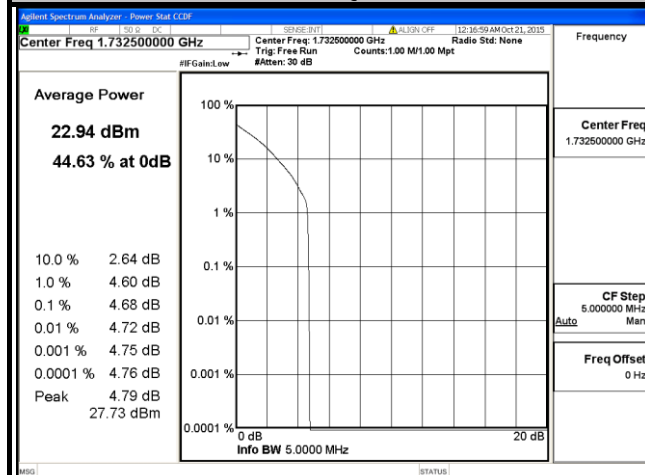
Channel Bandwidth: 5MHz

Channel Bandwidth: 10MHz

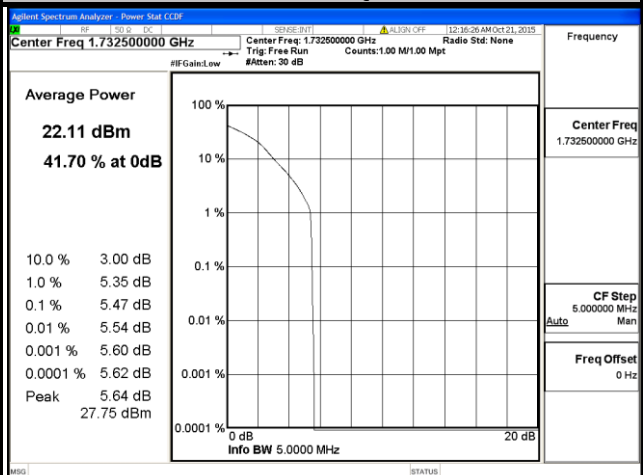
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	4.28	5.06	20000	1715.0	4.20	5.04
20175	1732.5	4.68	5.47	20175	1732.5	4.59	5.55
20375	1752.5	4.25	5.24	20350	1750.0	4.11	4.98

Spectrum Plot of Worst Value

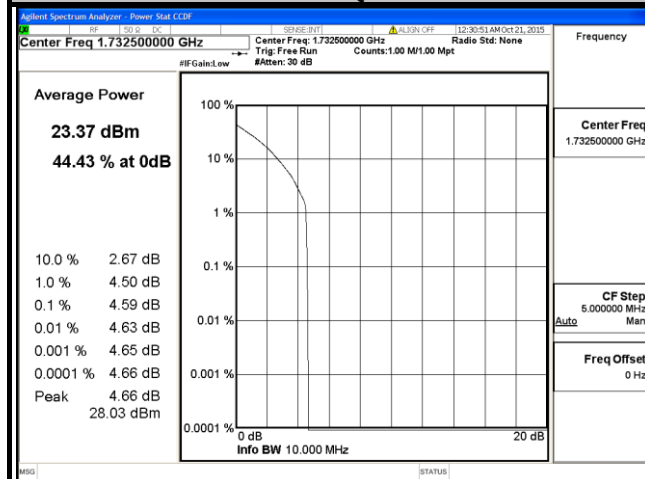
5MHz / QPSK



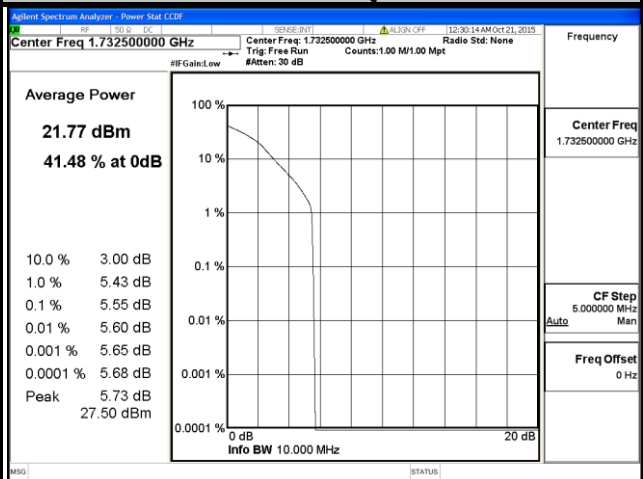
5MHz / 16QAM



10MHz / QPSK



10MHz / 16QAM



LTE BAND 4

Channel Bandwidth: 15MHz

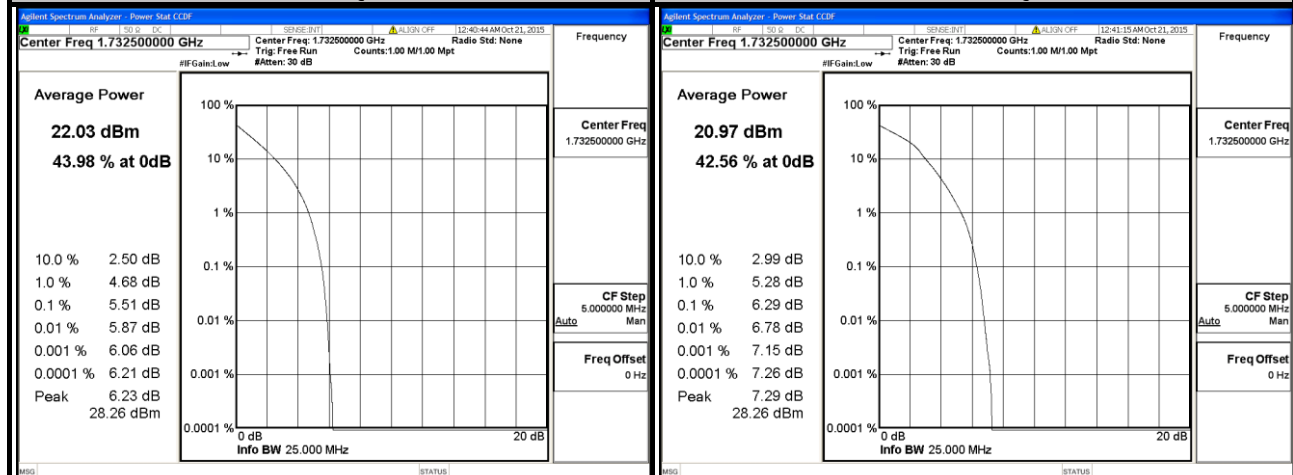
Channel Bandwidth: 20MHz

Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	5.41	6.20	20050	1720.0	4.33	5.02
20175	1732.5	5.51	6.29	20175	1732.5	4.52	5.45
20325	1747.5	5.23	6.04	20300	1745.0	4.46	5.40

Spectrum Plot of Worst Value

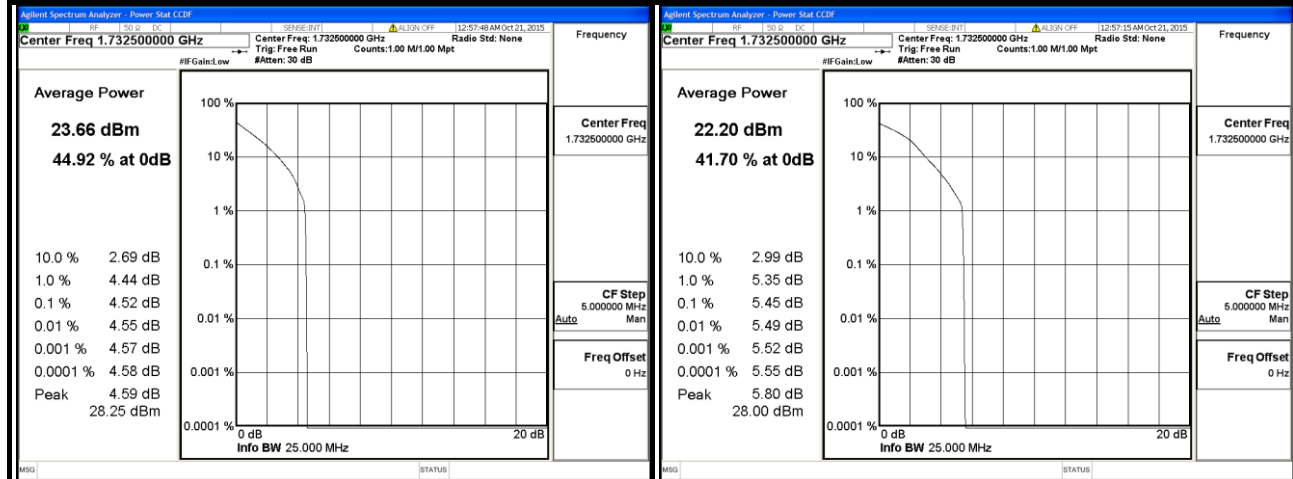
15MHz / QPSK

15MHz / 16QAM



20MHz / QPSK

20MHz / 16QAM



LTE Band 17

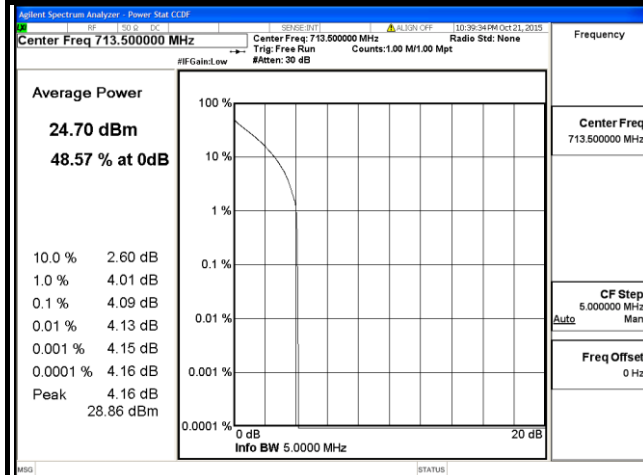
Channel Bandwidth: 5MHz

Channel Bandwidth: 10MHz

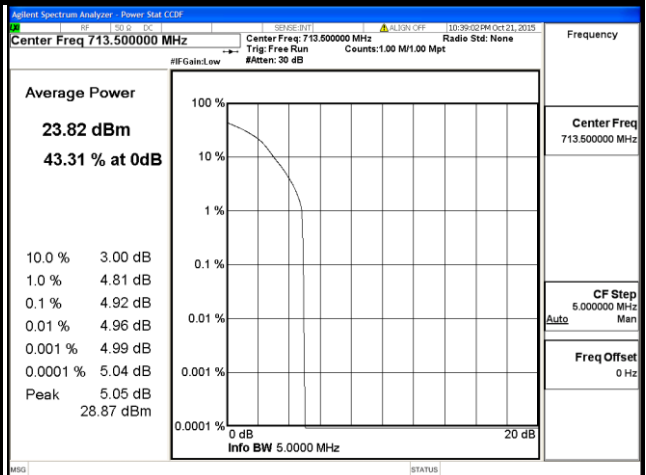
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
23755	706.5	3.67	4.17	23780	709.0	3.60	4.38
23790	710.0	3.96	4.71	23790	710.0	3.53	4.43
23825	713.5	4.09	4.92	23800	711.0	3.57	4.42

Spectrum Plot of Worst Value

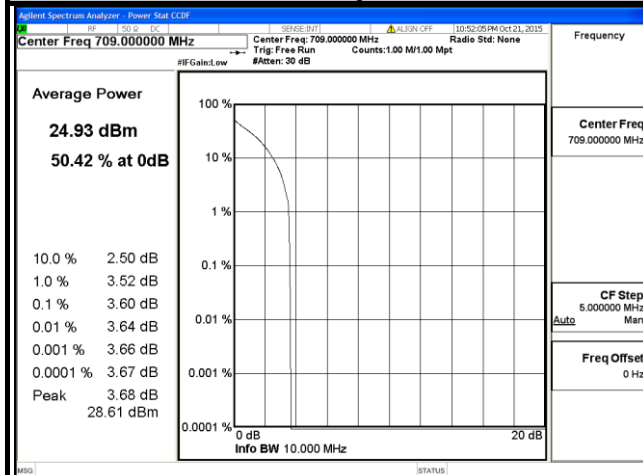
5MHz / QPSK



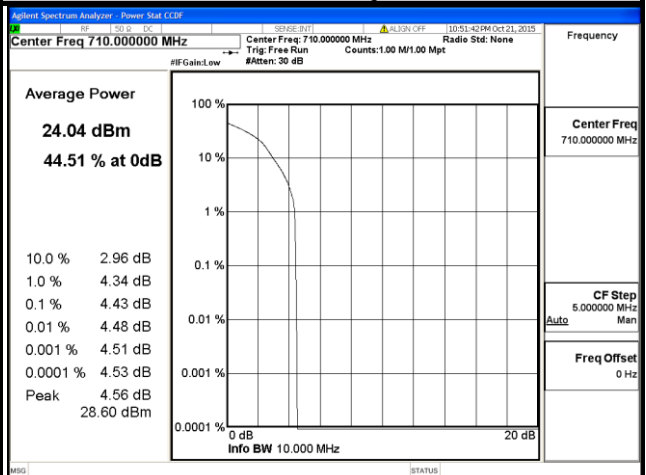
5MHz / 16QAM



10MHz / QPSK



10MHz / 16QAM

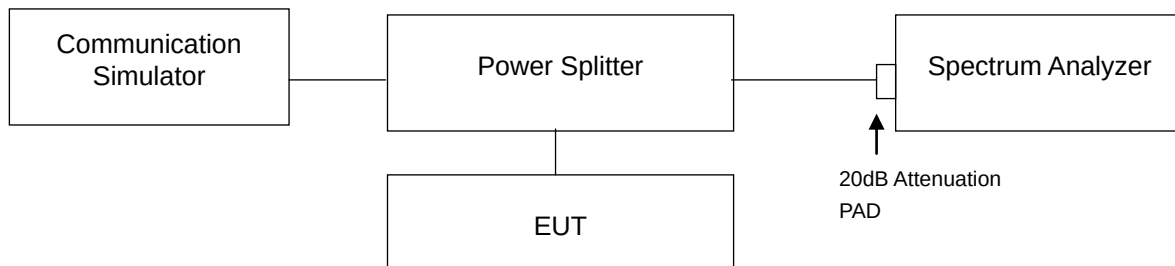


4.6 Conducted Spurious Emissions

4.6.1 Limits of Conducted Spurious Emissions Measurement

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. The limit of emission is equal to -13dBm.

4.6.2 Test Setup

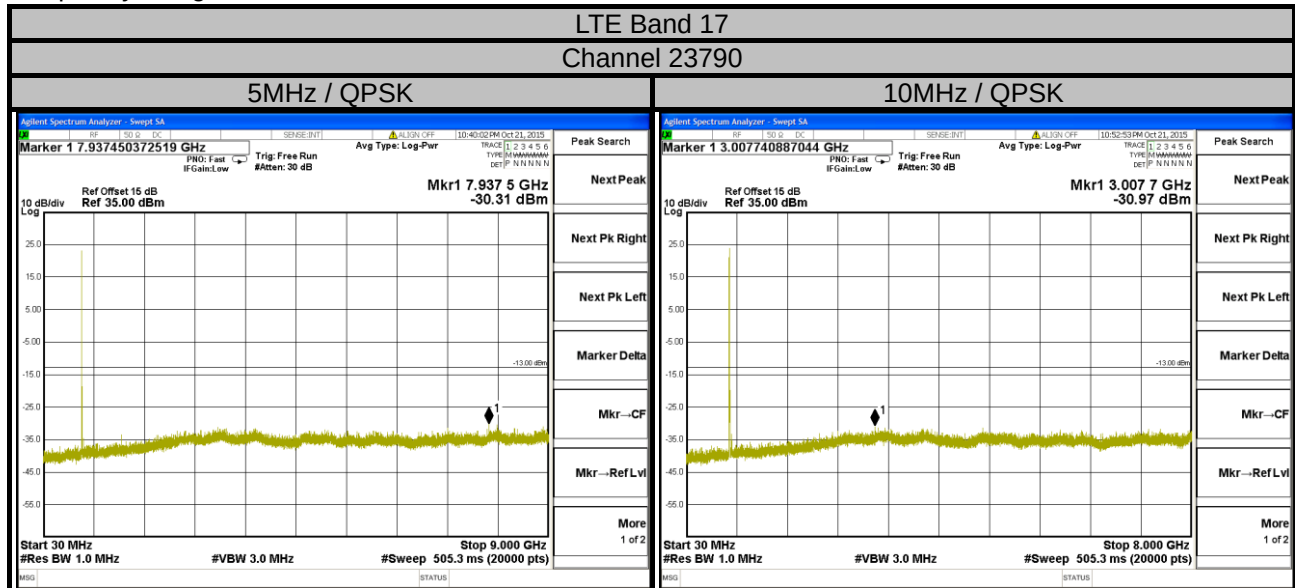


4.6.3 Test Procedure

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 30 MHz to 8GHz for LTE Band 17 and from 30MHz to 18GHz for LTE Band 4. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

4.6.4 Test Results

Frequency Range: 30MHz~8GHz



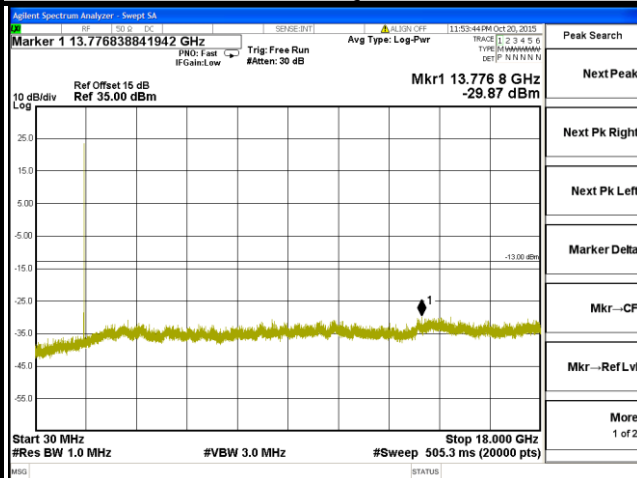


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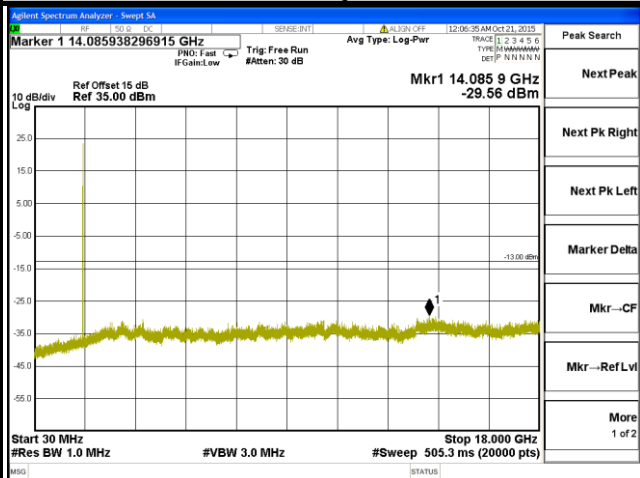
Frequency Range: 30MHz~18GHz

LTE Band 4
Channel 20175

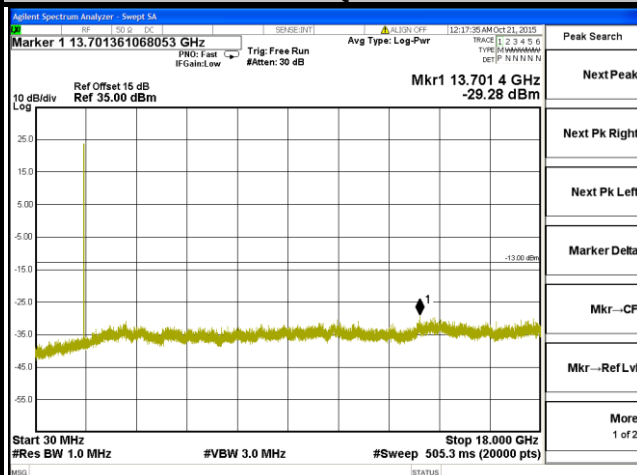
1.4MHz / QPSK



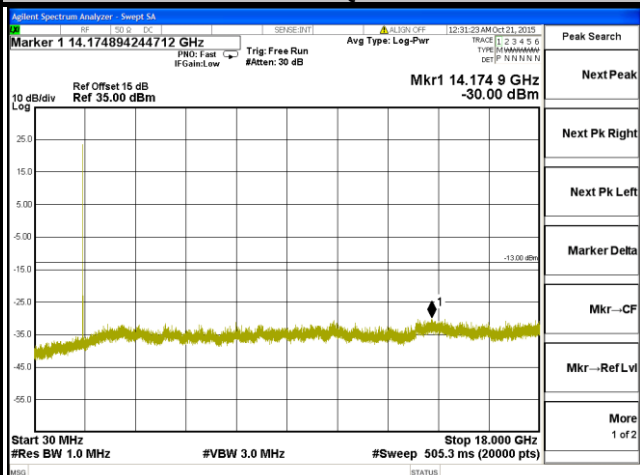
3MHz / QPSK



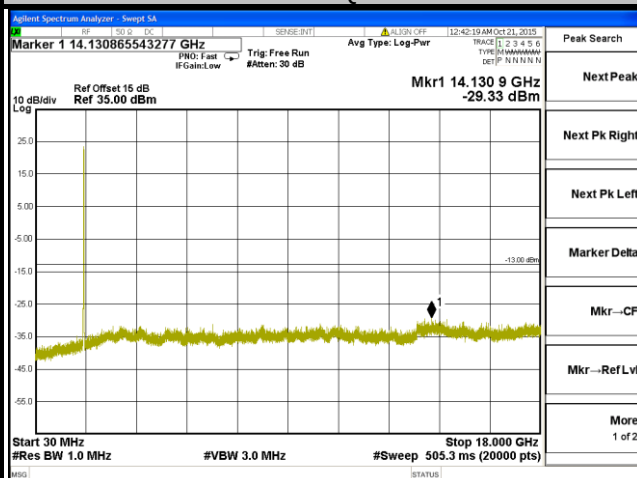
5MHz / QPSK



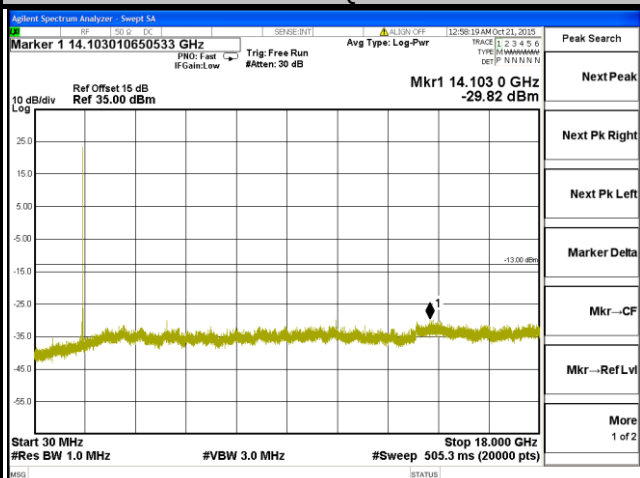
10MHz / QPSK



15MHz / QPSK



20MHz / QPSK



4.7 Radiated Emission Measurement

4.7.1 Limits of Radiated Emission Measurement

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. The limit of emission equal to -13dBm.

4.7.2 Test Procedure

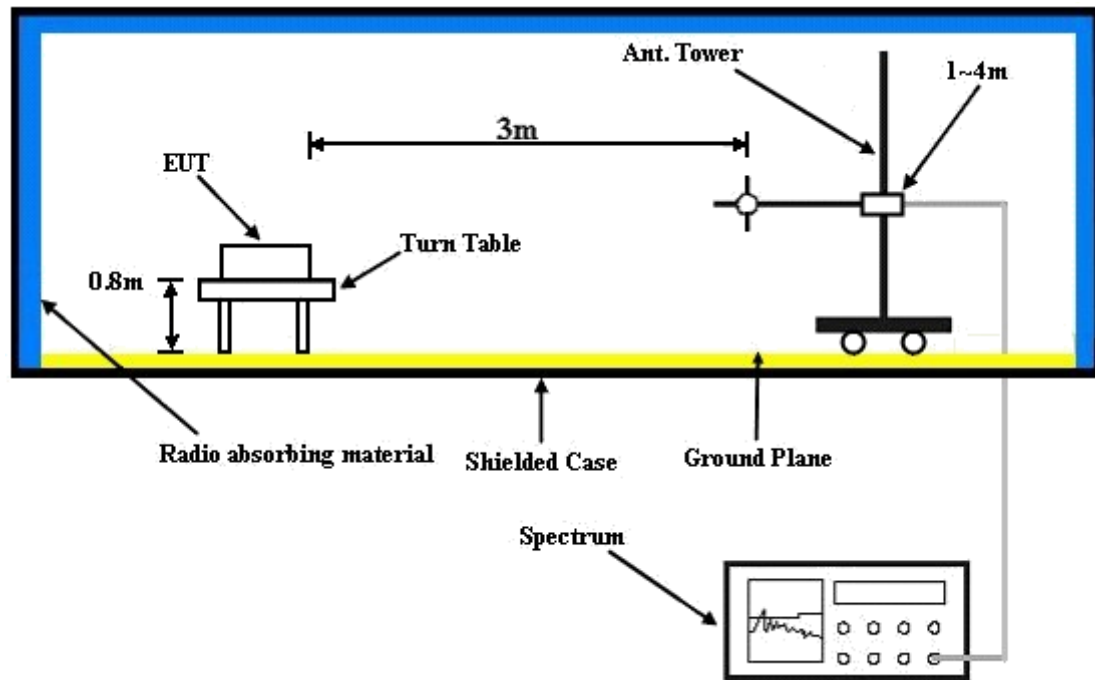
- Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- 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 a. Record the power level of S.G
- $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15\text{dBi}.$

NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.7.3 Deviation from Test Standard

No deviation.

4.7.4 Test Setup



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

4.7.5 Test Results

LTE Band 4

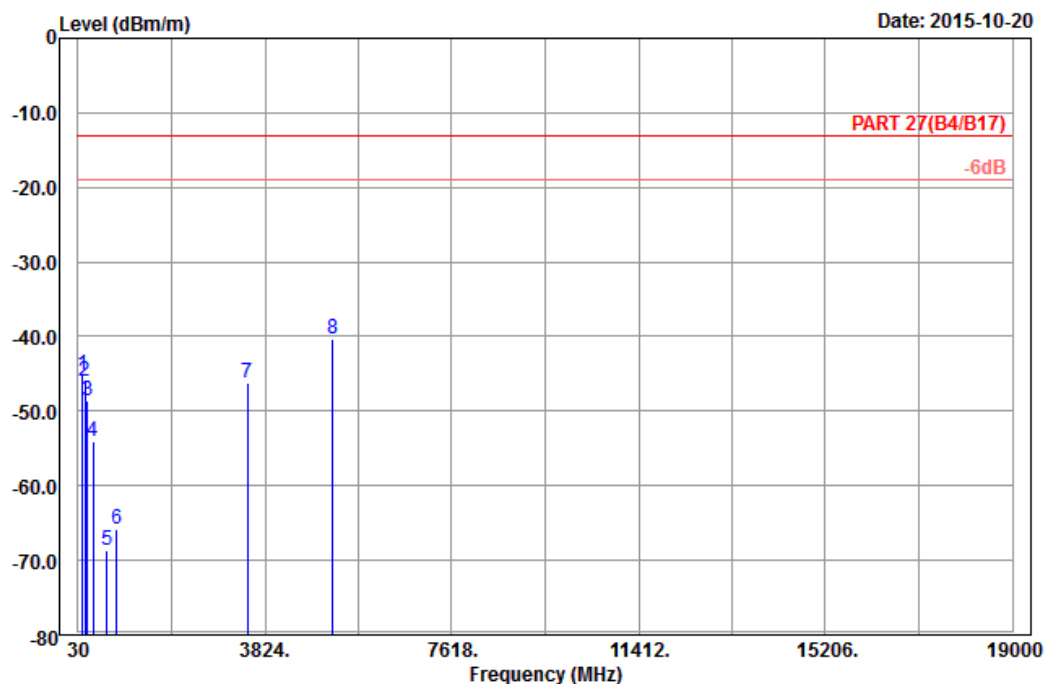
Channel Bandwidth: 20MHz / QPSK



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Data: 13



Site : 966 chamber 1
Condition: PART 27(B4/B17) 3m Horizontal
Remark : LTE_Band 4_QPSK(1,50)_20M_CH20175
Tested by: Karl Lee
Plane : X

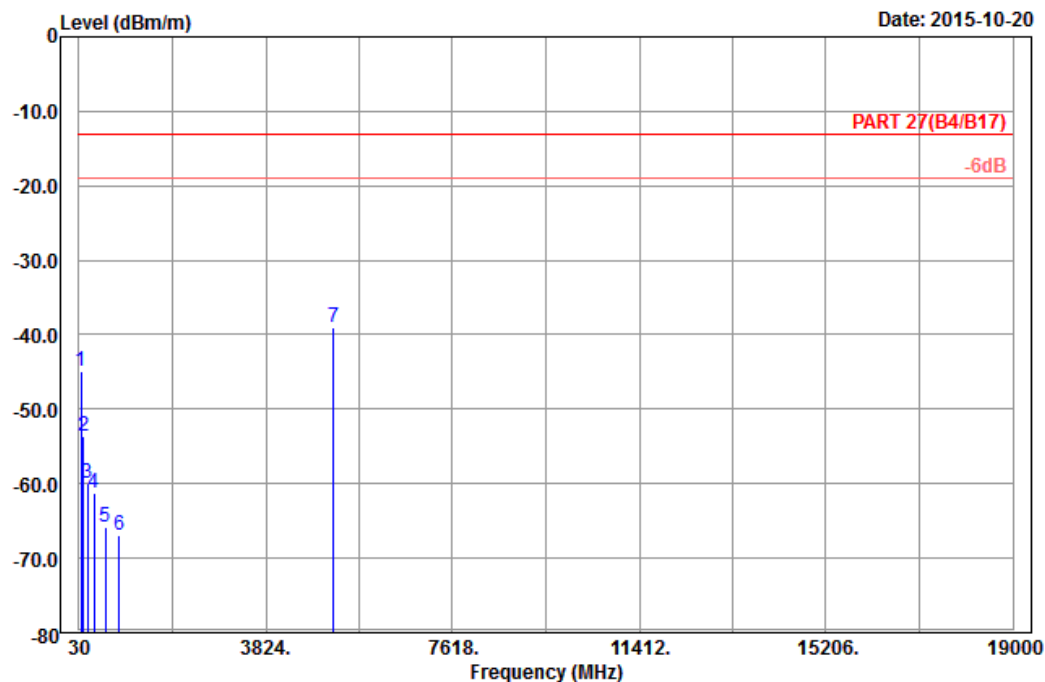
			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	115.05	-45.02	-36.45	-13.00	-32.02	-8.57	Peak
2	164.73	-46.00	-38.81	-13.00	-33.00	-7.19	Peak
3	217.92	-48.54	-42.60	-13.00	-35.54	-5.94	Peak
4	337.10	-54.02	-48.50	-13.00	-41.02	-5.52	Peak
5	617.80	-68.62	-68.85	-13.00	-55.62	0.23	Peak
6	811.00	-65.86	-67.75	-13.00	-52.86	1.89	Peak
7	3465.00	-46.14	-60.48	-13.00	-33.14	14.34	Peak
8 pp	5197.50	-40.22	-60.34	-13.00	-27.22	20.12	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 14



Site : 966 chamber 1
Condition: PART 27(B4/B17) 3m Vertical
Remark : LTE_Band 4_QPSK(1,50)_20M_CH20175
Tested by: Karl Lee
Plane : X

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	65.10	-44.83	-31.45	-13.00	-31.83	-13.38	Peak
2	115.32	-53.68	-45.11	-13.00	-40.68	-8.57	Peak
3	210.09	-59.98	-53.94	-13.00	-46.98	-6.04	Peak
4	340.60	-61.23	-55.74	-13.00	-48.23	-5.49	Peak
5	563.20	-65.76	-64.66	-13.00	-52.76	-1.10	Peak
6	850.20	-66.94	-68.42	-13.00	-53.94	1.48	Peak
7 pp	5197.50	-39.04	-59.16	-13.00	-26.04	20.12	Peak

LTE Band 17

Channel Bandwidth: 10MHz / QPSK

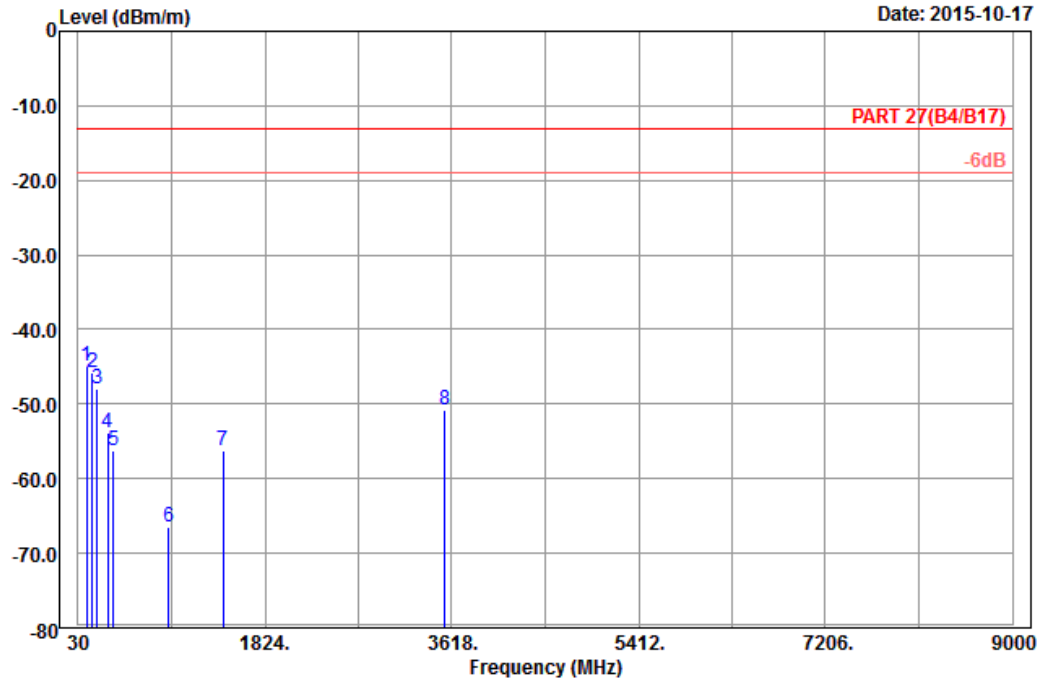


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Data: 9

Date: 2015-10-17



Site : 966 chamber 1
Condition: PART 27(B4/B17) 3m Horizontal
Remark : LTE_Band 17_QPSK(1,24)_10M_CH23790
Tested by: Charles Hsiao
Plane : Y

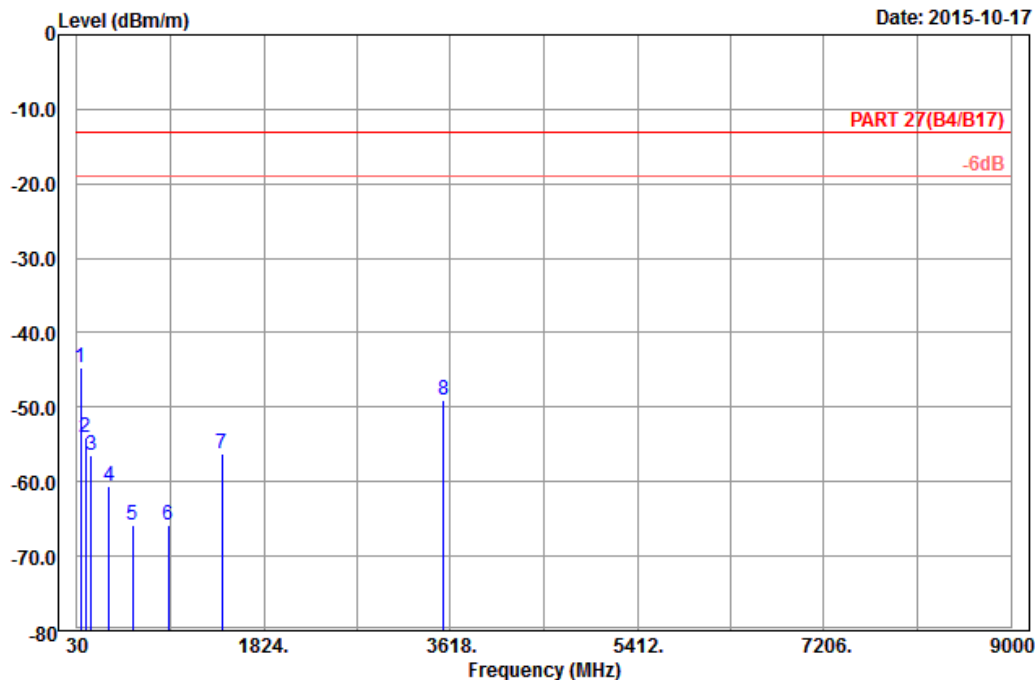
			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	pp	114.24	-44.99	-36.36	-13.00	-31.99	-8.63 Peak
2		163.11	-45.84	-38.46	-13.00	-32.84	-7.38 Peak
3		216.57	-48.04	-42.08	-13.00	-35.04	-5.96 Peak
4		314.00	-53.91	-48.12	-13.00	-40.91	-5.79 Peak
5		367.90	-56.22	-51.77	-13.00	-43.22	-4.45 Peak
6		902.00	-66.39	-69.36	-13.00	-53.39	2.97 Peak
7		1420.00	-56.14	-62.50	-13.00	-43.14	6.36 Peak
8		3550.00	-50.84	-66.03	-13.00	-37.84	15.19 Peak



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Data: 10



Site : 966 chamber 1
Condition: PART 27(B4/B17) 3m Vertical
Remark : LTE_Band 17_QPSK(1,24)_10M_CH23790
Tested by: Charles Hsiao
Plane : Y

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm/m	dBm	dBm/m	dB	dB/m	
1	pp	65.10	-44.70	-31.32	-13.00	-31.70	-13.38 Peak
2		113.97	-53.99	-45.36	-13.00	-40.99	-8.63 Peak
3		164.19	-56.54	-49.26	-13.00	-43.54	-7.28 Peak
4		339.20	-60.60	-55.10	-13.00	-47.60	-5.50 Peak
5		568.10	-65.86	-64.96	-13.00	-52.86	-0.90 Peak
6		908.30	-65.76	-69.00	-13.00	-52.76	3.24 Peak
7		1420.00	-56.24	-62.60	-13.00	-43.24	6.36 Peak
8		3550.00	-48.94	-64.13	-13.00	-35.94	15.19 Peak

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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