FCC Test Report

FCC ID	:	**QISB5142**
Equipment	:	**B43 TD-LTE Indoor CPE**
Model No.	:	**B5142**
Brand Name	:	**Huawei**
Applicant	:	**Huawei Technologies Co., Ltd.**
Address	:	**Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C**
Standard	:	**47 CFR FCC Part 90 Subpart Z**
Received Date	:	**Sep. 19, 2014**
Tested Date	:	**Sep. 26 ~ Oct. 07, 2014**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Gary Chang / Manager

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Release Record

Report No.	Version	Description	Issued Date
FW491904	Rev. 01	Initial issue	Oct. 15, 2014

Summary of Test Results

FCC Rules	Test Items	Measured	Result
2.1046 / 90.1321	Equivalent Isotropically Radiated Power	Maximum EIRP: 0.736 W / 5MHz 0.787 W / 10MHz 0.773 W / 15MHz 0.721 W / 20MHz	Pass
2.1046 / 90.1321	Peak EIRP Power Density	Meet the requirement of limit	Pass
2.1053 / 90.1323	Radiated Emissions	Meet the requirement of limit	Pass
2.1051 / 90.1323	Conducted Emissions	Meet the requirement of limit	Pass
90.210	Emission Mask	Meet the requirement of limit	Pass
2.1049(h) / 90.1323	26dBc Bandwidth	Meet the requirement of limit	Pass
2.1055 / 90.213	Frequency Stability	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

Operating Frequency (MHz)	Channel Bandwidth: 5MHz: 3652.5~3672.5 Channel Bandwidth: 10MHz: 3655.0~3670.0 Channel Bandwidth: 15MHz: 3657.5~3667.5 Channel Bandwidth: 20MHz: 3660.0~3665.0
Uplink Modulation Type	QPSK, 16QAM
Downlink Modulation Type	QPSK, 16QAM, 64QAM
Duplex Mode	TDD
UE Category	4
H/W Version	Mother board: V01; daughter board: V00B
S/W Version	V100R001C00B020

1.1.2 Maximum EIRP & Emission Designator

Channel Bandwidth	Modulation	Maximum EIRP (W)	Emission Designator
5MHz	QPSK	0.695	4M46G7D
5MHz	16QAM	0.736	4M48W7D
10MHz	QPSK	0.750	8M93G7D
10MHz	16QAM	0.787	8M93W7D
15MHz	QPSK	0.764	13M4G7D
15MHz	16QAM	0.773	13M4W7D
20MHz	QPSK	0.582	17M8G7D
20MHz	16QAM	0.721	17M9W7D

1.1.3 Antenna Details

Ant. No.	Type	Connector	Gain (dBi)	Remarks
1	Directional PCB antenna - 1	IPEX PLUG	5.5	-

1.1.4 EUT Operational Condition

Power Supply Type	12Vdc from adapter				
Operational Voltage	⊠	Vnom (120 V)	⊠	Vmax (138 V)	⊠ Vmin (102 V)
Operational Climatic	⊠	Tnom (20°C)	⊠	Tmax (55°C)	⊠ Tmin (-10°C)

1.1.5 Accessories

Accessories		
No.	**Equipment**	**Description**
1	Adapter 1	Brand Name: APD Model Name: WB-18D12FU Power Rating: I/P: 100-240Vac, 50-60Hz, 0.5A O/P: 12Vdc, 1.5A Power Line: 1.5m non-shielded cable w/o core
2	Adapter 2	Brand Name: AOEM Model Name: ADS0248-W 120150 Power Rating: I/P: 100-240Vac, 50-60Hz, 0.6A O/P: 12Vdc, 1.5A Power Line: 1.2m non-shielded cable w/o core
3	RJ45 cable 1	EKSON, 1.5m non-shielded cable w/o core
4	RJ45 cable 2	TUNG-LI, 1.5m non-shielded cable w/o core

1.1.6 Operating Channel List

Channel Bandwidth (MHz)	Channel	Frequency (MHz)
5	44115	3652.5
5	44215	3662.5
5	44315	3672.5
10	44140	3655.0
10	44215	3662.5
10	44290	3670.0
15	44190	3657.5
15	44215	3662.5
15	44240	3667.5
20	44190	3660.0
20	44215	3662.5
20	44240	3665.0

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	E6430	---	FCC DoC	RJ45, 8m non-shielded
2	Telephone	HTT	HTT-806	186618	---	RJ11, 1.8m non-shielded
3	Telephone	HTT	HTT-806	187113	---	RJ11, 1.8m non-shielded

1.3 Test Setup Chart

Test Setup Diagram

1. RJ11, 1.8m non-shielded
2. RJ11, 1.8m non-shielded
3. RJ45, 1m non-shielded with load
4. RJ45, 1.5m non-shielded
5. RJ45, 8m non-shielded
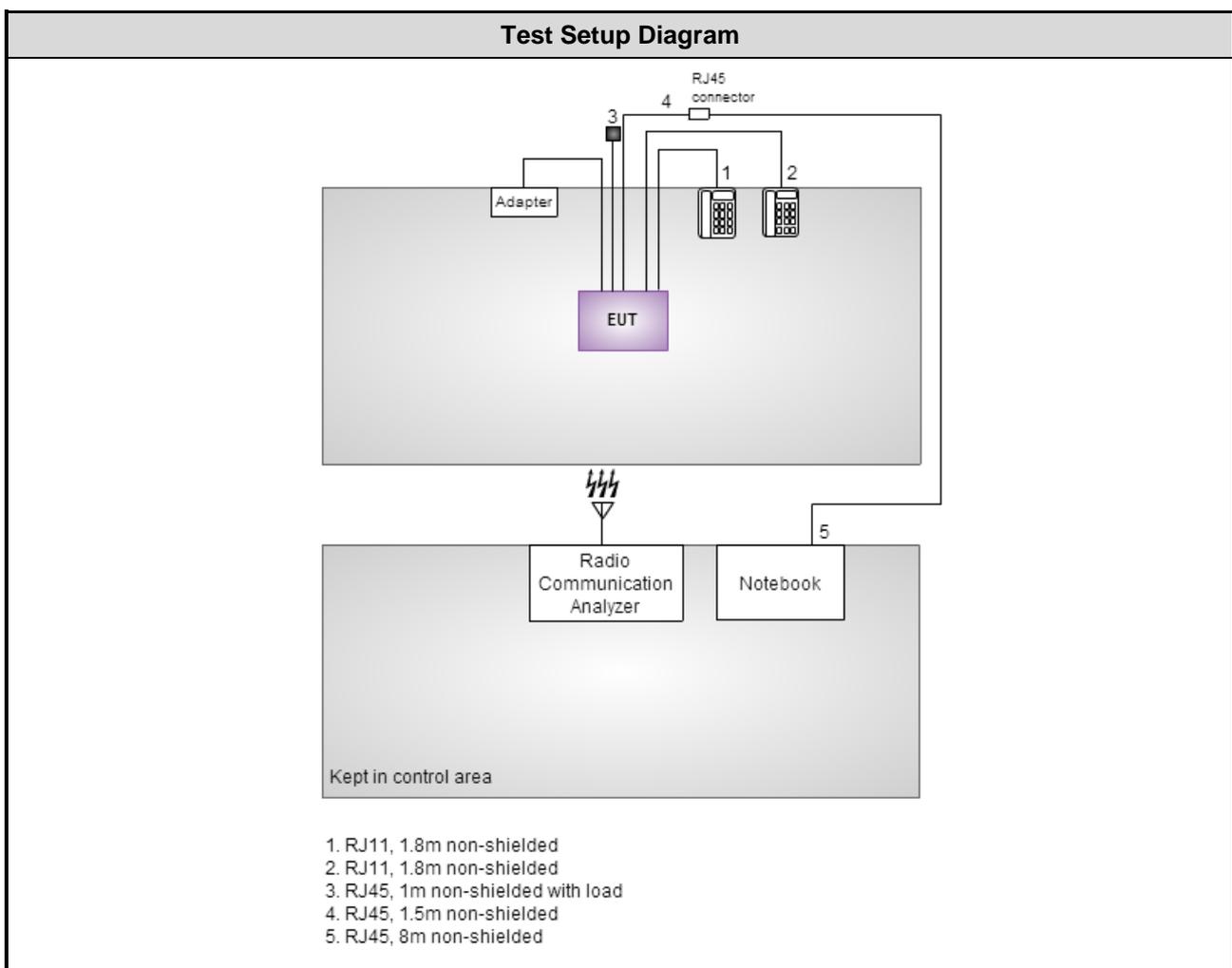
1.4   The Equipment List

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101498	Jan. 25, 2014	Jan. 24, 2015
Receiver	R&S	ESR3	101658	Jan. 10, 2014	Jan. 09, 2015
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Sep. 05, 2014	Sep. 04, 2015
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Feb. 13, 2014	Feb. 12, 2015
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Dec. 27, 2013	Dec. 26, 2014
Preamplifier	Burgeon	BPA-530	SN:100219	Sep. 09, 2014	Sep. 08, 2015
Preamplifier	Agilent	83017A	MY39501308	Dec. 16, 2013	Dec. 15, 2014
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 16, 2013	Dec. 15, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 16, 2013	Dec. 15, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 16, 2013	Dec. 15, 2014
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 16, 2013	Dec. 15, 2014
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 16, 2013	Dec. 15, 2014
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2014
Note: Calibration Interval of instruments listed above is two year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 17, 2014	Feb. 16, 2015
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 16, 2014	Sep. 15, 2015
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Dec. 11, 2013	Dec. 10, 2014
Power Meter	Anritsu	ML2495A	1241001	Sep. 11, 2014	Sep. 10, 2015
Power Sensor	Anritsu	MA2411B	1207362	Sep. 12, 2014	Sep. 11, 2015
Signal Generator	R&S	SMB100A	175727	Jan. 07, 2014	Jan. 06, 2015
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Mar. 18, 2014	Mar. 17, 2015
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5   Test Standards

According to the specification of EUT, the EUT must comply with following standards.

47 CFR FCC Part 90 Subpart Z
KDB 965270 D01 PwrMeas Part 90 Z Equipment v01
ANSI C63.4-2003
ANSI/TIA-603-C-2004
KDB 971168 D01 Power Meas License Digital Systems v02r01
KDB 412172 D01 Determining ERP and EIRP v01

1.6   Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.134 Hz
Conducted power	±0.808 dB
Frequency error	±34.134 Hz
Temperature	±0.6 $^{\circ}$C
Conducted emission	±2.670 dB
AC conducted emission	±2.92 dB
Radiated emission ≤ 1GHz	±3.26 dB
Radiated emission > 1GHz	±4.94 dB

2   Test Configuration

2.1   Testing Condition and Location Information

Test Item	Test Site	Ambient Condition	Tested By
RF conducted	TH01-WS	23°C / 62%	Felix Sung
Radiated Emissions	03CH01-WS	23°C / 64%	Haru Yang

➢ FCC site registration No.:   657002

➢ IC site registration No.:   10807A-1

2.2   The Worst Test Modes and Channel Details

Test item	Channel Bandwidth	Modulation	Test channel (MHz)
Equivalent Isotropically Radiated Power Peak EIRP Power Density	5 MHz 10 MHz 15 MHz 20 MHz	QPSK / 16QAM QPSK / 16QAM QPSK / 16QAM QPSK / 16QAM	3652.5 / 3662.5 / 3672.5 3655.0 / 3662.5 / 3670.0 3657.5 / 3662.5 / 3667.5 3660.0 / 3662.5 / 3665.0
Radiated Emission ≤ 1GHz	5 MHz 10 MHz 15 MHz 20 MHz	16QAM 16QAM 16QAM 16QAM	3672.5 3655.0 3667.5 3665.0
Radiated Emission > 1GHz	5 MHz 10 MHz 15 MHz 20 MHz	16QAM 16QAM 16QAM 16QAM	3652.5 / 3662.5 / 3672.5 3655.0 / 3662.5 / 3670.0 3657.5 / 3662.5 / 3667.5 3660.0 / 3662.5 / 3665.0
Conducted Emissions Emission Mask 26dBc Bandwidth	5 MHz 10 MHz 15 MHz 20 MHz	QPSK / 16QAM QPSK / 16QAM QPSK / 16QAM QPSK / 16QAM	3652.5 / 3662.5 / 3672.5 3655.0 / 3662.5 / 3670.0 3657.5 / 3662.5 / 3667.5 3660.0 / 3662.5 / 3665.0
Frequency Stability	---	Un-modulation	3662.5
NOTE: 1. Adapter 1 and Adapter 2 had been pretested and found that **Adapter 1** was the worst case and was selected for final testing (Adapter 1: APD adapter; Adapter 2: AOEM adapter). 2. RJ45 cable 1 and RJ45 cable 2 had been pretested and found that **RJ45 cable 2** was the worst case and was selected for final testing (RJ45 cable 1: EKSON; Adapter 2: TUNG-LI).			

3 Test Results

3.1 Equivalent Isotropically Radiated Power and Peak EIRP Power Density

3.1.1 Limit of Equivalent Isotropically Radiated Power and Peak EIRP Power Density

Base and fixed stations are limited to 25 watts/25 MHz equivalent isotropically radiated power (EIRP), the peak EIRP power density shall not exceed 1 Watt in any one-mega hertz slice of spectrum.

Mobile and portable stations are limited to 1 watt/25 MHz EIRP. The peak EIRP density shall not exceed 40 milli watts in any one-megahertz slice of spectrum.

3.1.2 Test Procedures

For EIRP

1. Connect the DUT transmitter output to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
2. Tune the analyzer to the nominal center frequency of the emission bandwidth.
3. Set the span to twice the nominal EBW (span = 2 x EBW).
4. Set the resolution bandwidth (RBW) to approximately 1% of EBW.
5. Set the video bandwidth (VBW) to ≥ 3 x RBW.
6. Select the average power (RMS) display detector.
7. Set the number of measurement points to ≥ 1001.
8. Use auto-coupled sweep time.
9. Perform measurement over an interval of time when the transmission is continuous and at its maximum power level.
10. Utilize trace averaging over 100 traces in the power averaging.
11. Use the Channel Power function to determine the integrated power over the full EBW.
12. Record the band power level.
13. Adjust the recorded level by applying appropriate correction factors for the measurement set-up.
14. Determine the EIRP by adding the effective antenna gain to the adjusted power level.

For Peak EIRP Power Density

1. Connect the transmitter to the spectrum analyzer via coaxial cable (i.e., conducted measurement) while ensuring proper impedance matching.

2. Tune the analyzer to the nominal center frequency of the emission bandwidth.

3. Set the span to twice the nominal EBW (span = 2 x EBW).

4. Set the resolution bandwidth (RBW) to 1 MHz.

5. Set the video bandwidth (VBW) to 3 MHz

6. Select the average power (RMS) display detector.

7. Set the number of measurement points to ≥ 1001.

8. Use auto-coupled sweep time.

9. Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.

10. Utilize trace averaging over 100 traces in the power averaging.

11. Find the maximum trace amplitude (peak search) and record.

12. Adjust the recorded level by applying appropriate correction factors for the measurement set-up.

13. Determine the EIRP by adding the effective antenna gain to the adjusted power level.

3.1.3 Test Setup
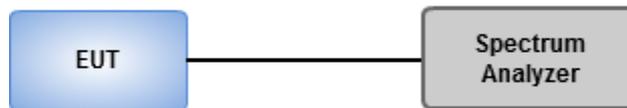
3.1.4 Test Result of EIRP

Channel Bandwidth: 5MHz- QPSK

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Output Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44115	3652.5	1	0	22.61	5.5	28.11	0.647	5
		1	24	22.83	5.5	28.33	0.681	5
		12	6	22.30	5.5	27.80	0.603	5
		25	0	22.18	5.5	27.68	0.586	5
44215	3662.5	1	0	22.50	5.5	28.00	0.631	5
		1	24	22.58	5.5	28.08	0.643	5
		12	6	22.36	5.5	27.86	0.611	5
		25	0	22.17	5.5	27.67	0.585	5
44315	3672.5	1	0	22.05	5.5	27.55	0.569	5
		1	24	22.92	5.5	28.42	0.695	5
		12	6	22.31	5.5	27.81	0.604	5
		25	0	22.07	5.5	27.57	0.571	5

Channel Bandwidth: 5MHz- 16QAM

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Output Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44115	3652.5	1	0	22.71	5.5	28.21	0.662	5
		1	24	22.91	5.5	28.41	0.693	5
		12	6	22.69	5.5	28.19	0.659	5
		25	0	22.68	5.5	28.18	0.658	5
44215	3662.5	1	0	22.76	5.5	28.26	0.670	5
		1	24	23.06	5.5	28.56	0.718	5
		12	6	22.92	5.5	28.42	0.695	5
		25	0	22.79	5.5	28.29	0.675	5
44315	3672.5	1	0	22.60	5.5	28.10	0.646	5
		1	24	23.17	5.5	28.67	0.736	5
		12	6	23.04	5.5	28.54	0.714	5
		25	0	22.98	5.5	28.48	0.705	5

Channel Bandwidth: 10MHz- QPSK

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Output Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44140	3655.0	1	0	22.45	5.5	27.95	0.624	10
		1	49	23.10	5.5	28.60	0.724	10
		25	12	22.22	5.5	27.72	0.592	10
		50	0	21.98	5.5	27.48	0.560	10
44215	3662.5	1	0	22.54	5.5	28.04	0.637	10
		1	49	23.16	5.5	28.66	0.735	10
		25	12	22.31	5.5	27.81	0.604	10
		50	0	22.11	5.5	27.61	0.577	10
44290	3670.0	1	0	22.58	5.5	28.08	0.643	10
		1	49	23.25	5.5	28.75	0.750	10
		25	12	22.43	5.5	27.93	0.621	10
		50	0	22.18	5.5	27.68	0.586	10

Channel Bandwidth: 10MHz- 16QAM

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Output Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44140	3655.0	1	0	22.75	5.5	28.25	0.668	10
		1	49	23.46	5.5	**28.96**	0.787	10
		25	12	22.38	5.5	27.88	0.614	10
		50	0	22.15	5.5	27.65	0.582	10
44215	3662.5	1	0	23.02	5.5	28.52	0.711	10
		1	49	23.30	5.5	28.80	0.759	10
		25	12	22.35	5.5	27.85	0.610	10
		50	0	22.29	5.5	27.79	0.601	10
44290	3670.0	1	0	22.70	5.5	28.20	0.661	10
		1	49	22.91	5.5	28.41	0.693	10
		25	12	22.57	5.5	28.07	0.641	10
		50	0	22.46	5.5	27.96	0.625	10

Channel Bandwidth: 15MHz- QPSK

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Output Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44165	3657.5	1	0	22.91	5.5	28.41	0.693	15
		1	74	23.33	5.5	28.83	0.764	15
		36	18	22.50	5.5	28.00	0.631	15
		75	0	22.29	5.5	27.79	0.601	15
44215	3662.5	1	0	22.55	5.5	28.05	0.638	15
		1	74	22.68	5.5	28.18	0.658	15
		36	18	22.29	5.5	27.79	0.601	15
		75	0	22.11	5.5	27.61	0.577	15
44265	3667.5	1	0	22.57	5.5	28.07	0.641	15
		1	74	22.72	5.5	28.22	0.664	15
		36	18	22.39	5.5	27.89	0.615	15
		75	0	22.22	5.5	27.72	0.592	15

Channel Bandwidth: 15MHz- 16QAM

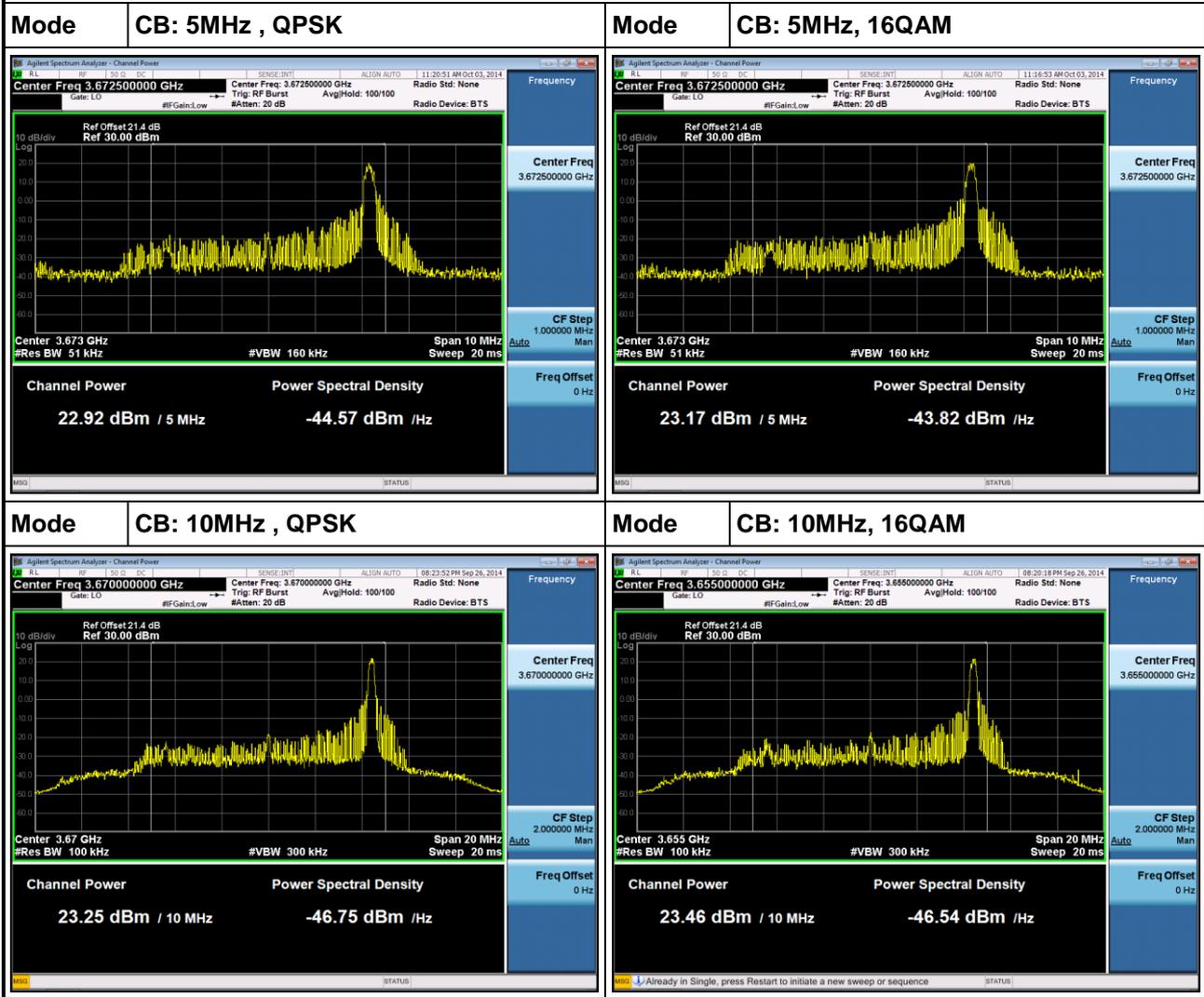| Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Output Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44165	3657.5	1	0	22.52	5.5	28.02	0.634	15
		1	74	22.67	5.5	28.17	0.656	15
		36	18	22.38	5.5	27.88	0.614	15
		75	0	22.13	5.5	27.63	0.579	15
44215	3662.5	1	0	22.94	5.5	28.44	0.698	15
		1	74	23.18	5.5	28.68	0.738	15
		36	18	22.54	5.5	28.04	0.637	15
		75	0	22.26	5.5	27.76	0.597	15
44265	3667.5	1	0	22.99	5.5	28.49	0.706	15
		1	74	23.38	5.5	28.88	0.773	15
		36	18	22.55	5.5	28.05	0.638	15
		75	0	22.27	5.5	27.77	0.598	15

Channel Bandwidth: 20MHz- QPSK

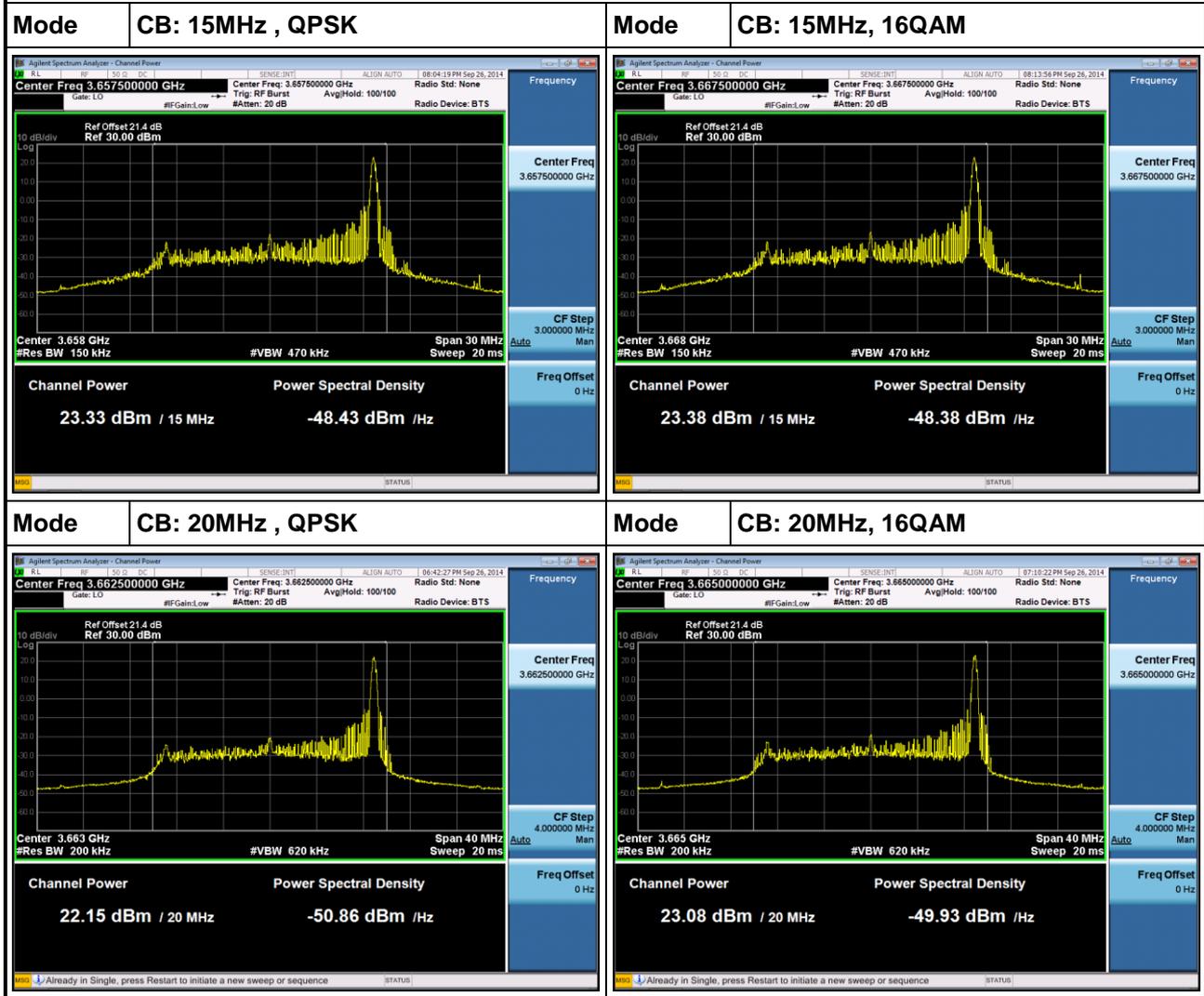| Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Output Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44190	3660.0	1	0	21.89	5.5	27.39	0.548	20
		1	99	22.10	5.5	27.60	0.575	20
		50	25	21.66	5.5	27.16	0.520	20
		100	0	21.52	5.5	27.02	0.504	20
44215	3662.5	1	0	21.93	5.5	27.43	0.553	20
		1	99	22.15	5.5	27.65	0.582	20
		50	25	21.72	5.5	27.22	0.527	20
		100	0	21.5	5.5	27.00	0.501	20
44240	3665.0	1	0	22.00	5.5	27.50	0.562	20
		1	99	22.14	5.5	27.64	0.581	20
		50	25	21.73	5.5	27.23	0.528	20
		100	0	21.55	5.5	27.05	0.507	20

Channel Bandwidth: 20MHz- 16QAM

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Output Power (dBm)	Max. Ant. Gain(dBi)	EIRP (dBm)	EIRP (W)	LIMIT (W)
44190	3660.0	1	0	22.16	5.5	27.66	0.583	20
		1	99	23.04	5.5	28.54	0.714	20
		50	25	21.75	5.5	27.25	0.531	20
		100	0	21.62	5.5	27.12	0.515	20
44215	3662.5	1	0	22.37	5.5	27.87	0.612	20
		1	99	23.03	5.5	28.53	0.713	20
		50	25	21.84	5.5	27.34	0.542	20
		100	0	21.68	5.5	27.18	0.522	20
44240	3665.0	1	0	22.05	5.5	27.55	0.569	20
		1	99	23.08	5.5	28.58	0.721	20
		50	25	21.88	5.5	27.38	0.547	20
		100	0	21.76	5.5	27.26	0.532	20

Worst Plots			
Mode	**CB: 5MHz , QPSK**	**Mode**	**CB: 5MHz, 16QAM**
Mode	**CB: 10MHz , QPSK**	**Mode**	**CB: 10MHz, 16QAM**

Worst Plots

Mode	CB: 15MHz , QPSK	Mode	CB: 15MHz, 16QAM

Mode	CB: 20MHz , QPSK	Mode	CB: 20MHz, 16QAM

3.1.5 Test Result of Peak EIRP Density

Channel Bandwidth: 5MHz- QPSK

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Power Density (dBm/MHz)	Max. Ant. Gain(dBi)	EIRP Peak Density (dBm/MHz)	EIRP Peak Density (W/MHz)	LIMIT (W/MHz)
44115	3652.5	1	0	23.392	5.5	28.892	0.775	1
		1	24	23.197	5.5	28.697	0.741	1
		12	6	20.633	5.5	26.133	0.410	1
		25	0	18.233	5.5	23.733	0.236	1
44215	3662.5	1	0	23.496	5.5	28.996	0.794	1
		1	24	23.044	5.5	28.544	0.715	1
		12	6	20.314	5.5	25.814	0.381	1
		25	0	18.279	5.5	23.779	0.239	1
44315	3672.5	1	0	23.206	5.5	28.706	0.742	1
		1	24	23.402	5.5	28.902	0.777	1
		12	6	20.569	5.5	26.069	0.404	1
		25	0	17.777	5.5	23.277	0.213	1

Channel Bandwidth: 5MHz- 16QAM

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Power Density (dBm/MHz)	Max. Ant. Gain(dBi)	EIRP Peak Density (dBm/MHz)	EIRP Peak Density (W/MHz)	LIMIT (W/MHz)
44115	3652.5	1	0	24.208	5.5	29.708	0.935	1
		1	24	24.034	5.5	29.534	0.898	1
		12	6	21.054	5.5	26.554	0.452	1
		25	0	17.754	5.5	23.254	0.212	1
44215	3662.5	1	0	24.373	5.5	29.873	0.971	1
		1	24	23.983	5.5	29.483	0.888	1
		12	6	21.111	5.5	26.611	0.458	1
		25	0	18.375	5.5	23.875	0.244	1
44315	3672.5	1	0	24.295	5.5	29.795	0.954	1
		1	24	24.394	5.5	29.894	0.976	1
		12	6	20.775	5.5	26.275	0.424	1
		25	0	18.869	5.5	24.369	0.273	1

Channel Bandwidth: 10MHz- QPSK

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Power Density (dBm/MHz)	Max. Ant. Gain(dBi)	EIRP Peak Density (dBm/MHz)	EIRP Peak Density (W/MHz)	LIMIT (W/MHz)
44140	3655.0	1	0	23.094	5.5	28.594	0.723	1
		1	49	22.998	5.5	28.498	0.708	1
		25	12	17.498	5.5	22.998	0.199	1
		50	0	14.587	5.5	20.087	0.102	1
44215	3662.5	1	0	23.167	5.5	28.667	0.736	1
		1	49	23.104	5.5	28.604	0.725	1
		25	12	17.611	5.5	23.111	0.205	1
		50	0	14.957	5.5	20.457	0.111	1
44290	3670.0	1	0	23.073	5.5	28.573	0.720	1
		1	49	23.111	5.5	28.611	0.726	1
		25	12	17.539	5.5	23.039	0.201	1
		50	0	15.013	5.5	20.513	0.113	1

Channel Bandwidth: 10MHz- 16QAM

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Power Density (dBm/MHz)	Max. Ant. Gain(dBi)	EIRP Peak Density (dBm/MHz)	EIRP Peak Density (W/MHz)	LIMIT (W/MHz)
44140	3655.0	1	0	24.112	5.5	29.612	0.915	1
		1	49	24.134	5.5	29.634	0.919	1
		25	12	17.821	5.5	23.321	0.215	1
		50	0	14.752	5.5	20.252	0.106	1
44215	3662.5	1	0	24.011	5.5	29.511	0.894	1
		1	49	24.215	5.5	29.715	0.936	1
		25	12	17.902	5.5	23.402	0.219	1
		50	0	14.852	5.5	20.352	0.108	1
44290	3670.0	1	0	24.255	5.5	29.755	0.945	1
		1	49	24.29	5.5	29.79	0.953	1
		25	12	17.275	5.5	22.775	0.189	1
		50	0	14.805	5.5	20.305	0.107	1

Channel Bandwidth: 15MHz- QPSK

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Power Density (dBm/MHz)	Max. Ant. Gain(dBi)	EIRP Peak Density (dBm/MHz)	EIRP Peak Density (W/MHz)	LIMIT (W/MHz)
44165	3657.5	1	0	22.738	5.5	28.238	0.666	1
		1	74	23.032	5.5	28.532	0.713	1
		36	18	15.754	5.5	21.254	0.133	1
		75	0	12.539	5.5	18.039	0.064	1
44215	3662.5	1	0	22.813	5.5	28.313	0.678	1
		1	74	23.75	5.5	29.25	0.841	1
		36	18	15.749	5.5	21.249	0.133	1
		75	0	12.625	5.5	18.125	0.065	1
44265	3667.5	1	0	22.891	5.5	28.391	0.690	1
		1	74	23.128	5.5	28.628	0.729	1
		36	18	16.303	5.5	21.803	0.151	1
		75	0	12.377	5.5	17.877	0.061	1

Channel Bandwidth: 15MHz- 16QAM

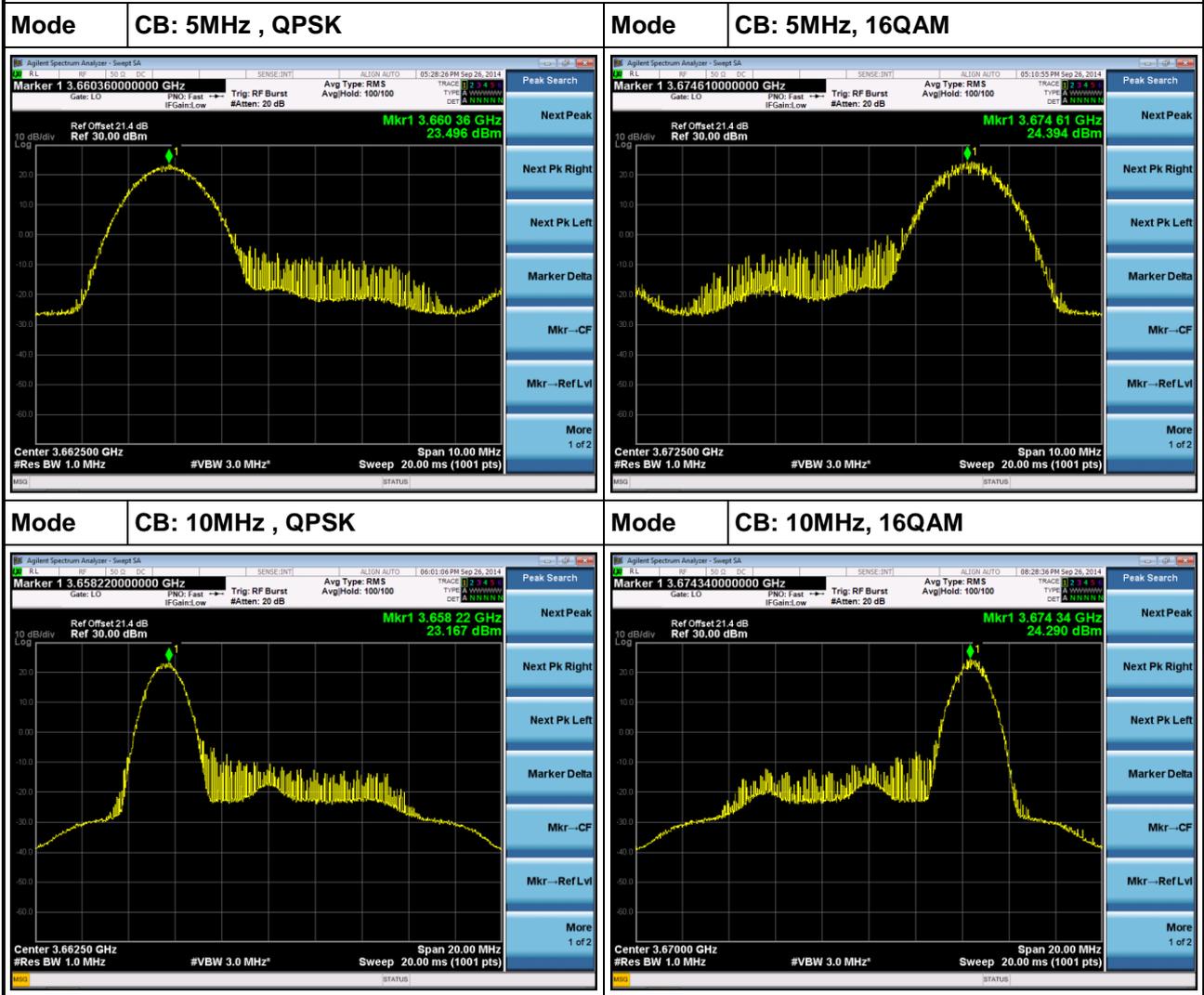| Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Power Density (dBm/MHz)	Max. Ant. Gain(dBi)	EIRP Peak Density (dBm/MHz)	EIRP Peak Density (W/MHz)	LIMIT (W/MHz)
44165	3657.5	1	0	24.095	5.5	29.595	0.911	1
		1	74	24.088	5.5	29.588	0.909	1
		36	18	15.587	5.5	21.087	0.128	1
		75	0	12.845	5.5	18.345	0.068	1
44215	3662.5	1	0	24.072	5.5	29.572	0.906	1
		1	74	23.95	5.5	29.45	0.881	1
		36	18	15.648	5.5	21.148	0.130	1
		75	0	12.64	5.5	18.14	0.065	1
44265	3667.5	1	0	24.112	5.5	29.612	0.915	1
		1	74	24.164	5.5	29.664	0.926	1
		36	18	15.75	5.5	21.25	0.133	1
		75	0	12.551	5.5	18.051	0.064	1

Channel Bandwidth: 20MHz- QPSK

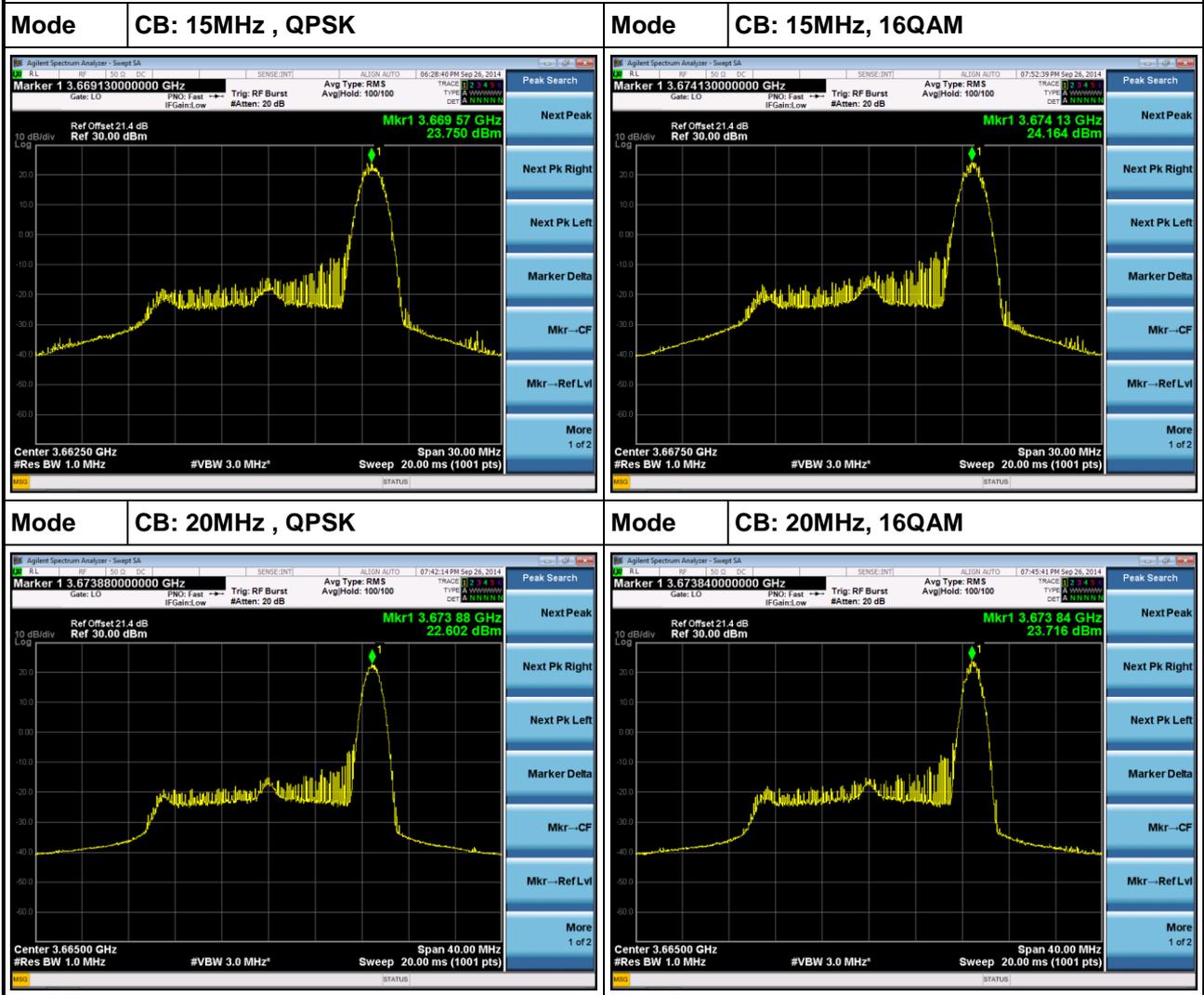| Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Power Density (dBm/MHz)	Max. Ant. Gain(dBi)	EIRP Peak Density (dBm/MHz)	EIRP Peak Density (W/MHz)	LIMIT (W/MHz)
44190	3660.0	1	0	22.238	5.5	27.738	0.594	1
		1	99	22.557	5.5	28.057	0.639	1
		50	25	13.595	5.5	19.095	0.081	1
		100	0	10.936	5.5	16.436	0.044	1
44215	3662.5	1	0	22.195	5.5	27.695	0.588	1
		1	99	22.547	5.5	28.047	0.638	1
		50	25	14.064	5.5	19.564	0.090	1
		100	0	11.16	5.5	16.66	0.046	1
44240	3665.0	1	0	22.319	5.5	27.819	0.605	1
		1	99	22.602	5.5	28.102	0.646	1
		50	25	14.034	5.5	19.534	0.090	1
		100	0	11.447	5.5	16.947	0.050	1

Channel Bandwidth: 20MHz- 16QAM

Channel	Channel Frequency (MHz)	RB	RB Offeset	Conducted Power Density (dBm/MHz)	Max. Ant. Gain(dBi)	EIRP Peak Density (dBm/MHz)	EIRP Peak Density (W/MHz)	LIMIT (W/MHz)
44190	3660.0	1	0	23.417	5.5	28.917	0.779	1
		1	99	23.667	5.5	29.167	0.825	1
		50	25	13.726	5.5	19.226	0.084	1
		100	0	11.089	5.5	16.589	0.046	1
44215	3662.5	1	0	23.564	5.5	29.064	0.806	1
		1	99	23.303	5.5	28.803	0.759	1
		50	25	14.377	5.5	19.877	0.097	1
		100	0	11.284	5.5	16.784	0.048	1
44240	3665.0	1	0	23.484	5.5	28.984	0.791	1
		1	99	23.716	5.5	29.216	0.835	1
		50	25	13.953	5.5	19.453	0.088	1
		100	0	11.163	5.5	16.663	0.046	1

Worst Plots			
Mode	**CB: 5MHz , QPSK**	**Mode**	**CB: 5MHz, 16QAM**
Mode	**CB: 10MHz , QPSK**	**Mode**	**CB: 10MHz, 16QAM**

Worst Plots		

Mode	CB: 15MHz , QPSK	Mode	CB: 15MHz, 16QAM

Mode	CB: 20MHz , QPSK	Mode	CB: 20MHz, 16QAM

3.2 Radiated Emissions
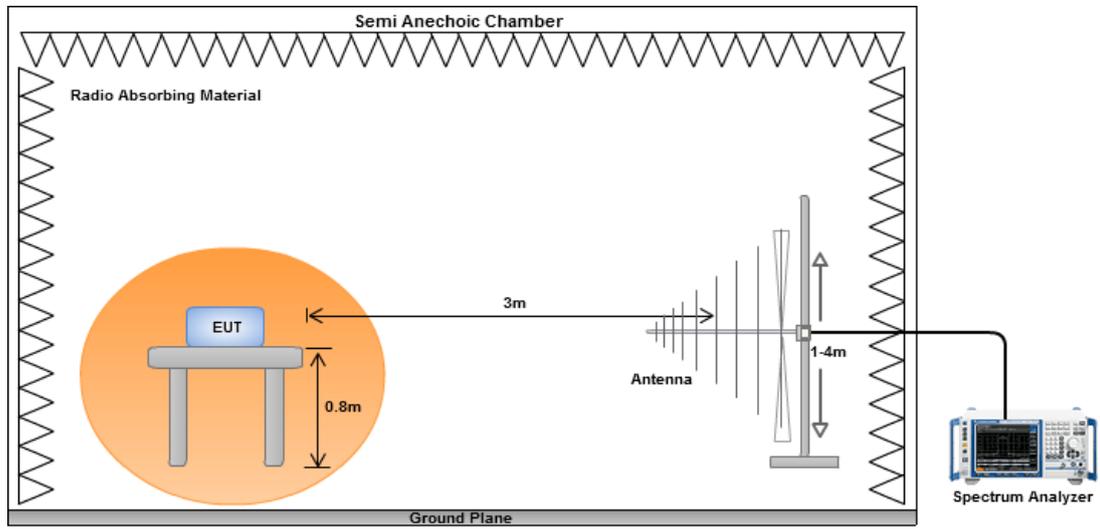
3.2.1 Limit of Radiated Emissions

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB equal to -13dBm.

3.2.2 Test Procedures

1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.

2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.

3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

4. After finding the max radiated emission, substitution method will be used for getting effective radiated power. EUT will be removed and substitution antenna will be placed at same position. Signal generator will output CW signal to substitution antenna through a RF cable. Rotate turntable and move antenna to find maximum radiated emission. Adjust output power of signal generator to let the maximum radiated emission is same as step 3. Record the output power level.

5. E.I.R.P = output power of step 4 + gain of substitution antenna – cable loss of RF cable.

3.2.3 Test Setup

Radiated Emissions below 1 GHz

Radiated Emissions above 1 GHz
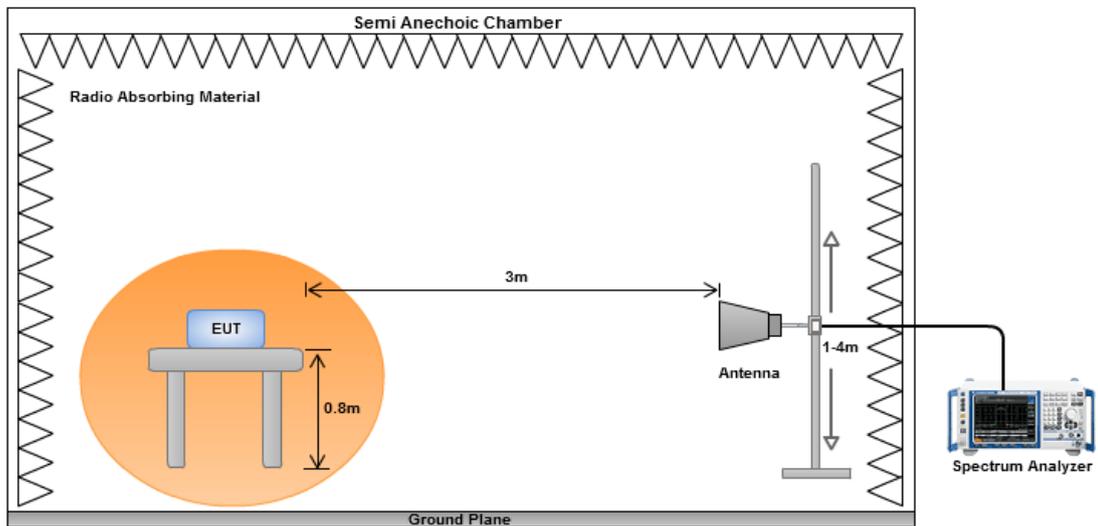
3.2.4 Test Result of Radiated Emissions below 1GHz

Mode	LTE Band 43, CB:5MHz, 1RB, Offset 24, Channel:44315						
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
47.46	H	-54.66	-13.00	-41.66	-51.42	-43.41	-11.25
94.02	H	-48.70	-13.00	-35.70	-38.22	-49.09	0.39
105.66	H	-48.63	-13.00	-35.63	-38.46	-48.62	-0.01
224.97	H	-54.69	-13.00	-41.69	-42.84	-59.07	4.38
275.41	H	-58.32	-13.00	-45.32	-47.97	-62.60	4.28
358.83	H	-60.64	-13.00	-47.64	-53.97	-65.04	4.40
47.46	V	-45.98	-13.00	-32.98	-36.10	-34.73	-11.25
105.66	V	-39.22	-13.00	-26.22	-30.05	-39.21	-0.01
353.98	V	-56.52	-13.00	-43.52	-50.57	-60.93	4.41
425.76	V	-55.39	-13.00	-42.39	-49.88	-59.58	4.19
475.23	V	-58.24	-13.00	-45.24	-53.83	-62.34	4.10
701.24	V	-60.22	-13.00	-47.22	-60.75	-63.99	3.77

Mode	LTE Band 43, CB:10MHz, 1RB, Offset 49, Channel:44140						
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
47.55	H	-54.29	-13.00	-41.29	-50.99	-43.05	-11.24
94.58	H	-48.39	-13.00	-35.39	-37.93	-48.77	0.38
105.38	H	-48.41	-13.00	-35.41	-38.24	-48.42	0.01
224.64	H	-54.37	-13.00	-41.37	-42.51	-58.75	4.38
275.36	H	-58.43	-13.00	-45.43	-48.08	-62.71	4.28
358.66	H	-60.12	-13.00	-47.12	-53.44	-64.52	4.40
47.85	V	-45.72	-13.00	-32.72	-35.71	-34.52	-11.20
105.74	V	-39.08	-13.00	-26.08	-29.91	-39.07	-0.01
353.44	V	-56.41	-13.00	-43.41	-50.46	-60.82	4.41
425.37	V	-55.24	-13.00	-42.24	-49.73	-59.43	4.19
475.39	V	-58.16	-13.00	-45.16	-53.75	-62.26	4.10
701.57	V	-60.03	-13.00	-47.03	-60.57	-63.80	3.77

Mode	LTE Band 43, CB:15MHz, 1RB, Offset 74, Channel:44265						
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
47.05	H	-54.99	-13.00	-41.99	-52.07	-43.68	-11.31
94.76	H	-48.35	-13.00	-35.35	-37.89	-48.72	0.37
105.31	H	-48.52	-13.00	-35.52	-38.35	-48.53	0.01
224.78	H	-54.73	-13.00	-41.73	-42.88	-59.11	4.38
275.37	H	-58.56	-13.00	-45.56	-48.21	-62.84	4.28
358.24	H	-60.24	-13.00	-47.24	-53.55	-64.64	4.40
47.55	V	-45.32	-13.00	-32.32	-35.42	-34.08	-11.24
105.48	V	-39.64	-13.00	-26.64	-30.48	-39.64	0.00
353.67	V	-56.13	-13.00	-43.13	-50.18	-60.54	4.41
425.32	V	-55.28	-13.00	-42.28	-49.77	-59.47	4.19
475.49	V	-58.67	-13.00	-45.67	-54.26	-62.77	4.10
701.72	V	-60.18	-13.00	-47.18	-60.72	-63.95	3.77

Mode	LTE Band 43, CB:20MHz, 1RB, Offset 99, Channel:44240						
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
47.88	H	-54.17	-13.00	-41.17	-50.61	-42.98	-11.19
94.35	H	-48.93	-13.00	-35.93	-38.45	-49.31	0.38
105.56	H	-48.35	-13.00	-35.35	-38.18	-48.35	0.00
224.73	H	-54.82	-13.00	-41.82	-42.97	-59.20	4.38
275.36	H	-58.08	-13.00	-45.08	-47.73	-62.36	4.28
358.49	H	-60.52	-13.00	-47.52	-53.84	-64.92	4.40
47.99	V	-45.53	-13.00	-32.53	-35.48	-34.35	-11.18
105.41	V	-39.86	-13.00	-26.86	-30.70	-39.86	0.00
353.42	V	-56.18	-13.00	-43.18	-50.23	-60.59	4.41
425.37	V	-55.48	-13.00	-42.48	-49.97	-59.67	4.19
475.39	V	-58.58	-13.00	-45.58	-54.17	-62.68	4.10
701.55	V	-60.36	-13.00	-47.36	-60.90	-64.13	3.77

3.2.5 Test Result of Radiated Emissions above 1GHz

Mode	LTE Band 43, CB:5MHz, 1RB, Offset 24, Channel:44115						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7309.44	H	-40.87	-13.00	-27.87	-62.63	-43.69	2.82
10963.96	H	-40.29	-13.00	-27.29	-64.44	-40.42	0.13
14618.47	H	-47.91	-13.00	-34.91	-74.60	-49.17	1.26
7309.44	V	-38.09	-13.00	-25.09	-59.17	-40.91	2.82
10963.96	V	-38.16	-13.00	-25.16	-61.24	-38.29	0.13
14618.47	V	-47.15	-13.00	-34.15	-74.61	-48.41	1.26
Mode	LTE Band 43, CB:5MHz, 1RB, Offset 24, Channel:44215						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7329.34	H	-41.24	-13.00	-28.24	-63.02	-44.07	2.83
10994.07	H	-40.79	-13.00	-27.79	-64.87	-40.90	0.11
14658.33	H	-48.35	-13.00	-35.35	-75.08	-49.61	1.26
7329.34	V	-39.01	-13.00	-26.01	-59.85	-41.84	2.83
10994.07	V	-38.30	-13.00	-25.30	-61.36	-38.41	0.11
14658.33	V	-47.60	-13.00	-34.60	-75.16	-48.86	1.26
Mode	LTE Band 43, CB:5MHz, 1RB, Offset 24, Channel:44315						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7349.32	H	-42.07	-13.00	-29.07	-63.86	-44.91	2.84
11023.97	H	-40.94	-13.00	-27.94	-65.02	-41.08	0.14
14698.36	H	-48.20	-13.00	-35.20	-74.97	-49.46	1.26
7349.32	V	-39.74	-13.00	-26.74	-60.34	-42.58	2.84
11023.97	V	-39.00	-13.00	-26.00	-62.13	-39.14	0.14
14698.36	V	-47.31	-13.00	-34.31	-74.98	-48.57	1.26

Mode	LTE Band 43, CB:10MHz, 1RB, Offset 49, Channel:44140						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7318.85	H	-40.64	-13.00	-27.64	-62.41	-43.47	2.83
10978.17	H	-40.00	-13.00	-27.00	-64.12	-40.12	0.12
14637.56	H	-48.60	-13.00	-35.60	-75.31	-49.86	1.26
7318.85	V	-38.63	-13.00	-25.63	-59.60	-41.46	2.83
10978.17	V	-38.10	-13.00	-25.10	-61.17	-38.22	0.12
14637.56	V	-47.52	-13.00	-34.52	-75.03	-48.78	1.26
Mode	LTE Band 43, CB:10MHz, 1RB, Offset 24, Channel:44215						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7333.82	H	-41.06	-13.00	-28.06	-62.85	-43.90	2.84
11000.61	H	-40.94	-13.00	-27.94	-65.01	-41.04	0.10
14667.34	H	-48.44	-13.00	-35.44	-75.18	-49.70	1.26
7333.82	V	-39.13	-13.00	-26.13	-59.92	-41.97	2.84
11000.61	V	-37.39	-13.00	-24.39	-60.45	-37.49	0.10
14667.34	V	-47.60	-13.00	-34.60	-75.19	-48.86	1.26
Mode	LTE Band 43, CB:10MHz, 1RB, Offset 49, Channel:44290						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7348.83	H	-41.32	-13.00	-28.32	-63.11	-44.16	2.84
11023.20	H	-40.59	-13.00	-27.59	-64.67	-40.72	0.13
14697.76	H	-48.16	-13.00	-35.16	-74.93	-49.42	1.26
7348.83	V	-39.75	-13.00	-26.75	-60.35	-42.59	2.84
11023.20	V	-37.86	-13.00	-24.86	-60.98	-37.99	0.13
14697.76	V	-47.55	-13.00	-34.55	-75.22	-48.81	1.26

Mode	LTE Band 43, CB:15MHz, 1RB, Offset 74, Channel:44165						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7328.33	H	-41.10	-13.00	-28.10	-62.88	-43.93	2.83
10992.31	H	-39.72	-13.00	-26.72	-63.81	-39.83	0.11
14656.56	H	-48.51	-13.00	-35.51	-75.24	-49.77	1.26
7328.33	V	-38.46	-13.00	-25.46	-59.31	-41.29	2.83
10992.31	V	-38.66	-13.00	-25.66	-61.73	-38.77	0.11
14656.56	V	-47.83	-13.00	-34.83	-75.39	-49.09	1.26
Mode	LTE Band 43, CB:15MHz, 1RB, Offset 24, Channel:44215						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7338.33	H	-41.18	-13.00	-28.18	-62.97	-44.02	2.84
11007.46	H	-40.44	-13.00	-27.44	-64.52	-40.55	0.11
14676.46	H	-48.43	-13.00	-35.43	-75.18	-49.69	1.26
7338.33	V	-39.43	-13.00	-26.43	-60.16	-42.27	2.84
11007.46	V	-37.90	-13.00	-24.90	-60.98	-38.01	0.11
14676.46	V	-47.52	-13.00	-34.52	-75.13	-48.78	1.26
Mode	LTE Band 43, CB:15MHz, 1RB, Offset 74, Channel:44265						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7348.38	H	-41.48	-13.00	-28.48	-63.28	-44.32	2.84
11022.54	H	-40.48	-13.00	-27.48	-64.56	-40.61	0.13
14696.62	H	-48.45	-13.00	-35.45	-75.22	-49.71	1.26
7348.38	V	-39.64	-13.00	-26.64	-60.26	-42.48	2.84
11022.54	V	-38.39	-13.00	-25.39	-61.51	-38.52	0.13
14696.62	V	-47.27	-13.00	-34.27	-74.94	-48.53	1.26

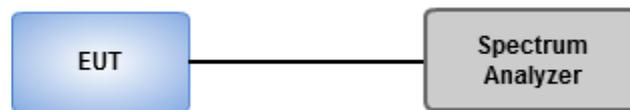| Mode	LTE Band 43, CB:20MHz, 1RB, Offset 99, Channel:44190						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7337.80	H	-41.43	-13.00	-28.43	-63.21	-44.27	2.84
11006.66	H	-41.03	-13.00	-28.03	-65.11	-41.14	0.11
14675.60	H	-48.54	-13.00	-35.54	-75.29	-49.80	1.26
7337.80	V	-39.62	-13.00	-26.62	-60.36	-42.46	2.84
11006.66	V	-38.62	-13.00	-25.62	-61.70	-38.73	0.11
14675.60	V	-47.70	-13.00	-34.70	-75.31	-48.96	1.26
Mode	LTE Band 43, CB:20MHz, 1RB, Offset 24, Channel:44215						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7342.84	H	-41.54	-13.00	-28.54	-63.33	-44.38	2.84
11014.29	H	-41.79	-13.00	-28.79	-65.86	-41.91	0.12
14685.58	H	-48.41	-13.00	-35.41	-75.17	-49.67	1.26
7342.84	V	-39.91	-13.00	-26.91	-60.59	-42.75	2.84
11014.29	V	-39.06	-13.00	-26.06	-62.16	-39.18	0.12
14685.58	V	-47.38	-13.00	-34.38	-75.02	-48.64	1.26
Mode	LTE Band 43, CB:20MHz, 1RB, Offset 99, Channel:44240						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
7347.87	H	-41.47	-13.00	-28.47	-63.27	-44.31	2.84
11021.86	H	-41.62	-13.00	-28.62	-65.70	-41.75	0.13
14695.68	H	-48.38	-13.00	-35.38	-75.15	-49.64	1.26
7347.87	V	-40.27	-13.00	-27.27	-60.89	-43.11	2.84
11021.86	V	-39.48	-13.00	-26.48	-62.60	-39.61	0.13
14695.68	V	-47.57	-13.00	-34.57	-75.23	-48.83	1.26

3.3 Conducted Emissions

3.3.1 Limit of Conducted Emissions

The power of any emission outside of the authorized operating frequencyranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB equal to -13dBm.

3.3.2 Test Procedures

1. Lowest, middle and highest operating channels are tested for this item.
2. Scan frequency range is from 30MHz~40GHz.
3. Set RBW = 1MHz, VBW = 3MHz, detector = RMS, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

3.3.3 Test Setup

3.3.4 Test Result of Conducted Emissions

Mode	QPSK, CB: 5MHz	Mode	16QAM, CB: 5MHz

Mode	QPSK, CB: 10MHz	Mode	16QAM, CB: 10MHz

Mode	QPSK, CB: 15MHz	Mode	16QAM, CB: 15MHz

Mode	QPSK, CB: 20MHz	Mode	16QAM, CB: 20MHz