FCC REPORT

Applicant:	Baicells Technologies Co., Ltd.
Address of Applicant:	3F, Hui Yuan Development Building, No.1 Shangdi Information Industry Base, Haidian Dist., Beijing, China

Equipment Under Test (EUT)

Product Name:	LTE Indoor CPE
Model No.:	EG2030C-M2
Trade mark:	BaiCells
FCC ID:	2AG32EG2030CM2
Applicable standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part 90 Subpart Z
Date of sample receipt:	12 June, 2017
Date of Test:	12 June, to 11 July, 2017
Date of report issued:	11 July, 2017
Test Result:	PASS*

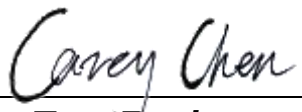
* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

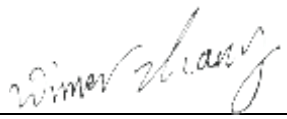
Bruce Zhang
Laboratory Manager

2. Version

Version No.	Date	Description
00	*11 Jul., 2017*	*Original*

Tested by:  ***Date:*** *11 Jul., 2017*

Test Engineer

Reviewed by:  ***Date:*** *11 Jul., 2017*

Project Engineer

3. Contents

Page

4. Test Summary

Test Item	Section in CFR 47	Result
	FCC	
RF Output Power	Part 2.1046 Part 90.1321	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 90.209	Pass
Emission Mask	Part 90.210(b)	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 90.1323	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 90.1323	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b) Part 90.213(a)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2) Part 90.213(a)	Pass

Pass: The EUT complies with the essential requirements in the standard.

5. General Information

5.1 Client Information

Applicant:	Baicells Technologies Co., Ltd.
Address of Applicant:	3F, Hui Yuan Development Building, No.1 Shangdi Information Industry Base, Haidian Dist., Beijing, China
Manufacturer	Baicells Technologies Co., Ltd.
Address of Manufacturer:	3F, Hui Yuan Development Building, No.1 Shangdi Information Industry Base, Haidian Dist., Beijing, China

5.2 General Description of E.U.T.

Product Name:	LTE Indoor CPE
Model No.:	EG2030C-M2
Operation Frequency range:	Band43: 3650MHz~3700MHz
Modulation type:	BPSK, QPSK, 16QAM
Antenna type:	Omni-directional antenna
Antenna gain:	6 dBi
Power supply:	DC 5V
AC adapter:	Model: ADS-12G-06 05010EPCU Input: AC100-240V, 50/60Hz, 0.5 A Output: DC 5V, 2000 mA

Test Channel:

Band43

5MHz		10MHz	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
Lowest	3652.5	Lowest	3655.0
Middle	3675.0	Middle	3675.0
Highest	3697.5	Highest	3695.0
15MHz		20MHz	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
Lowest	3657.5	Lowest	3660.0
Middle	3675.0	Middle	3675.0
Highest	3692.5	Highest	3690.0

5.3 Test modes

Data mode (QPSK)	Keep the EUT in data communicating mode (QPSK). *(5MHz, 10MHz, 15MHz, 20MHz)*
Data mode (16QAM)	Keep the EUT in data communicating mode (16QAM). *(5MHz, 10MHz, 15MHz, 20MHz)*

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
/	/	/	/	/

5.5 Related Submittal(s) / Grant (s)

FCC: This submittal(s) (test report) is filing to comply with Section Part 90 subpart Z of the FCC CFR 47 Rules.

5.6 Test Methodology

FCC: Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in out files. Registration 817957, February 27, 2012.

● **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

5.8 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Website: http://www.ccis-cb.com
Tel: +86-755-23118282
Fax: +86-755-23116366
Email: info@ccis-cb.com

5.9 Test Instruments list

Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	CCIS0005	02-25-2017	02-24-2018
Horn Antenna	SCHWARZBECK	BBHA9120D	CCIS0006	02-25-2017	02-24-2018
Pre-amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	02-25-2017	02-24-2018
Pre-amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	02-25-2017	02-24-2018
Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	02-25-2017	02-24-2018
Horn Antenna	ETS-LINDGREN	3160	GTS217	02-25-2017	02-24-2018
Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP30	CCIS0023	02-25-2017	02-24-2018
Spectrum Analyzer 20Hz-26.5GHz	Agilent	N9020A	MY50510123	02-25-2017	02-24-2018
EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	02-25-2017	02-24-2018
Loop antenna	Laplace instrument	RF300	EMC0701	02-25-2017	02-24-2018
Coaxial Cable	CCIS	N/A	CCIS0016	02-25-2017	02-24-2018
Coaxial Cable	CCIS	N/A	CCIS0017	02-25-2017	02-24-2018
Coaxial cable	CCIS	N/A	CCIS0018	02-25-2017	02-24-2018
Coaxial Cable	CCIS	N/A	CCIS0019	02-25-2017	02-24-2018
Coaxial Cable	CCIS	N/A	CCIS0087	02-25-2017	02-24-2018
Signal Generator	Rohde & Schwarz	SMR 20	CCIS0024	02-25-2017	02-24-2018
Signal Generator	Rohde & Schwarz	SMX	CCIS0064	02-25-2017	02-24-2018
Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	02-25-2017	02-24-2018
Universal radio communication tester	Anritsu	MT8820C	CCIS0170	02-25-2017	02-24-2018

6. System test configuration

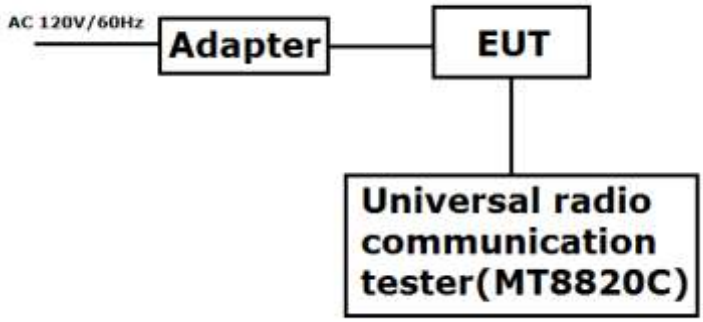
6.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

6.2 EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

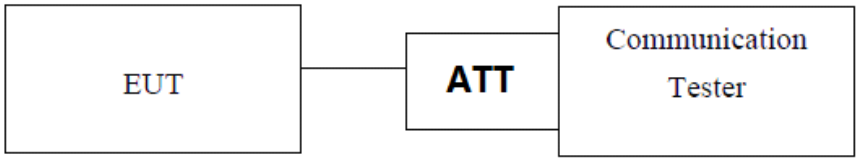
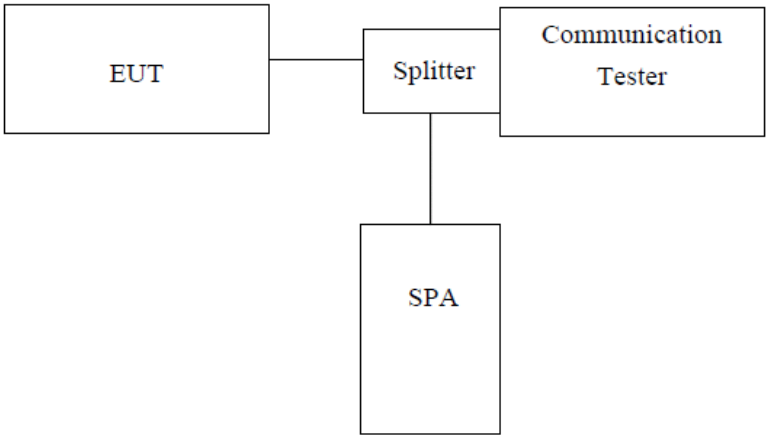
6.3 Configuration of Tested System



6.4 Description of Test Modes

The EUT has been tested under operating condition.
EUT staying in continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.
The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for three modes with power adaptor, earphone and Data cable. The worst-case H mode.

6.5 Transmit Output Power and PSD

Test Requirement:	FCC part90.1321(a)
Test Method:	FCC part2.1046 and KDB 971168 D01
Limit:	Mobile and portable stations are limited to 1 watt/25 MHz EIRP. In any event, the peak EIRP density shall not exceed 40 milliwatts in any one-megahertz slice of spectrum.
Test setup:	1. Transmit Output Power:  ***Note:*** *Measurement setup for testing on Antenna connector* 2. PSD:  ***Note:*** *Measurement setup for testing on Antenna connector*
Test Procedure:	1. Transmit Output Power: The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the simulated station. Transmitter output power was read off in dBm. 2. PSD: RBW=1MHz, VBW=3MHz, Detector mode= RMS, Trace mode: Power averaging over 100 sweeps
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

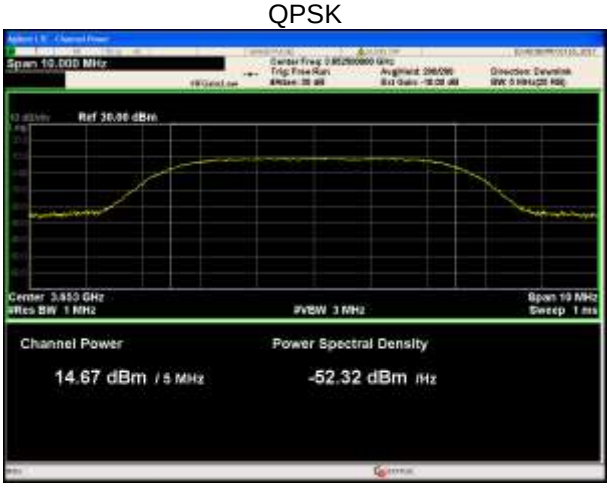
LTE Band 43 for Power					
Modulation	**Frequency (MHz)**	**Output Power (dBm)**	**Antenna gain (dBi)**	**EIRP (dBm)**	**Limited (dBm)**
QPSK(5MHz)	3652.50	14.67	6	20.67	**23.01**
	3675.00	14.77	6	20.77	
	3697.50	15.22	6	21.22	
16QAM(5MHz)	3652.50	14.44	6	20.44	
	3675.00	14.99	6	20.99	
	3697.50	15.38	6	21.38	
QPSK(10MHz)	3655.00	14.62	6	20.62	**26.02**
	3675.00	14.63	6	20.63	
	3695.00	14.96	6	20.96	
16QAM(10MHz)	3655.00	14.68	6	20.68	
	3675.00	14.80	6	20.80	
	3695.00	14.59	6	20.59	
QPSK(15MHz)	3657.50	14.60	6	20.60	**27.78**
	3675.00	14.47	6	20.47	
	3692.50	14.38	6	20.38	
16QAM(15MHz)	3657.50	14.24	6	20.24	
	3675.00	15.09	6	21.09	
	3692.50	14.26	6	20.26	
QPSK(20MHz)	3660.00	14.32	6	20.32	**29.03**
	3675.00	13.72	6	19.72	
	3690.00	14.14	6	20.14	
16QAM(20MHz)	3660.00	13.96	6	19.96	
	3675.00	14.31	6	20.31	
	3690.00	14.32	6	20.32	

Note: Limit=30dBm+10log(bandwidth/25MHz)

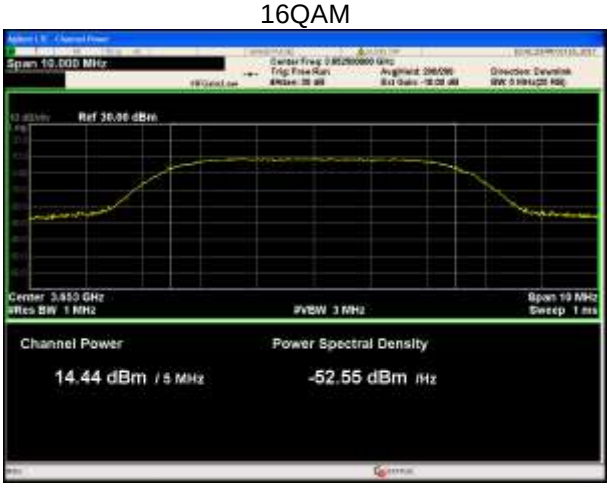
Test plot as below:

5MHz

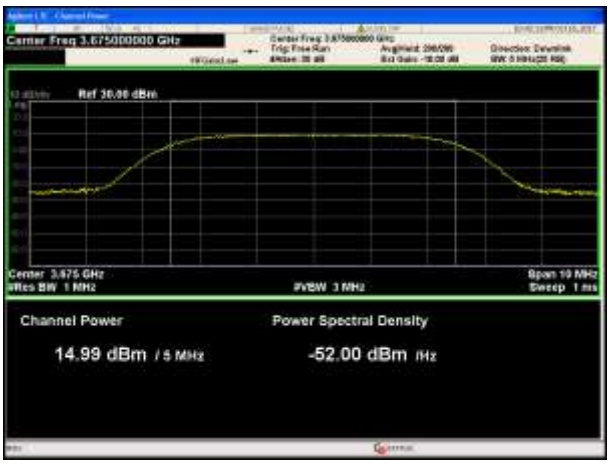
QPSK



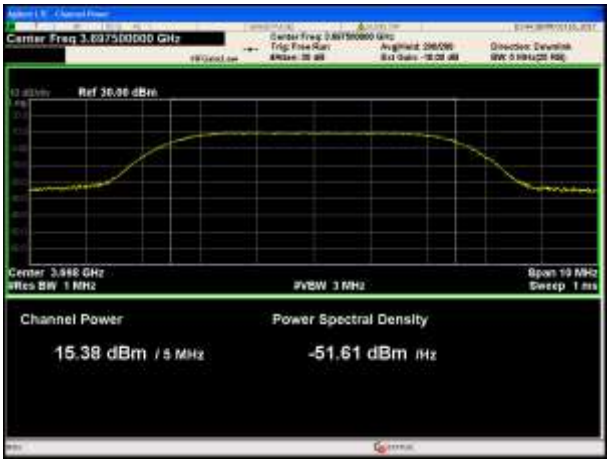
16QAM



Lowest channel



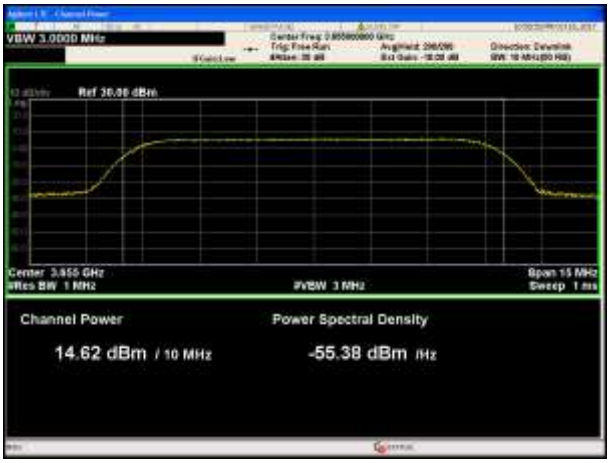
Middle channel



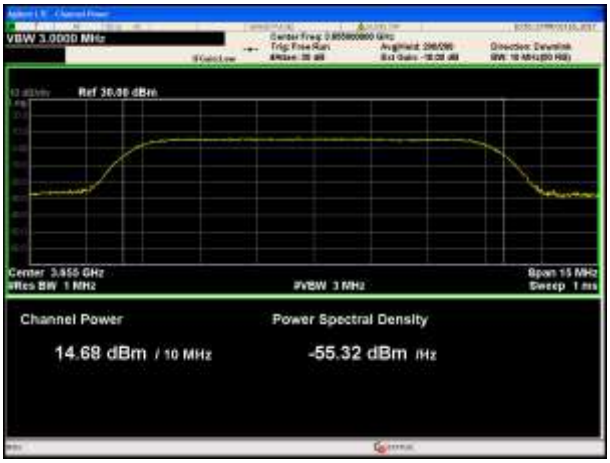
Highest channel

10MHz

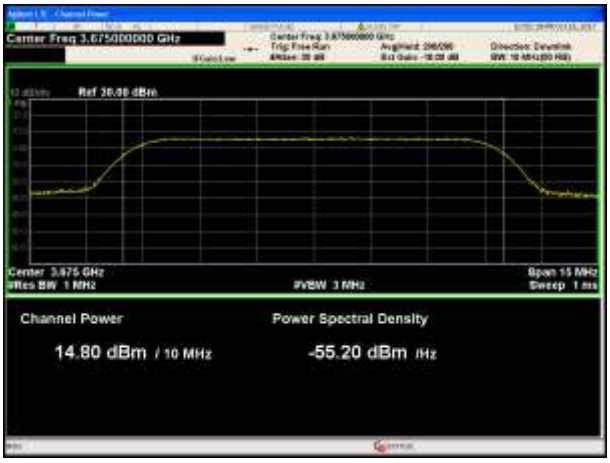
QPSK



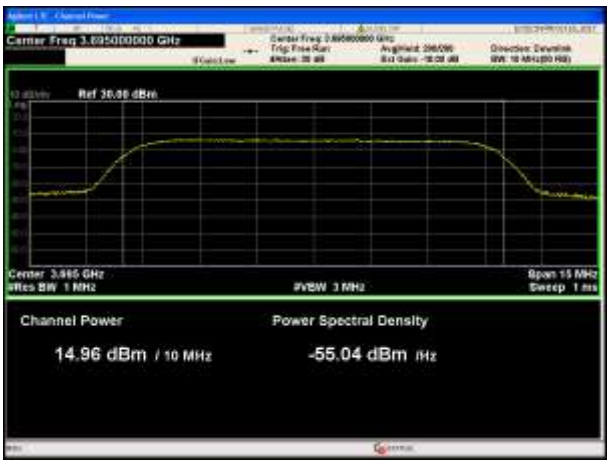
16QAM

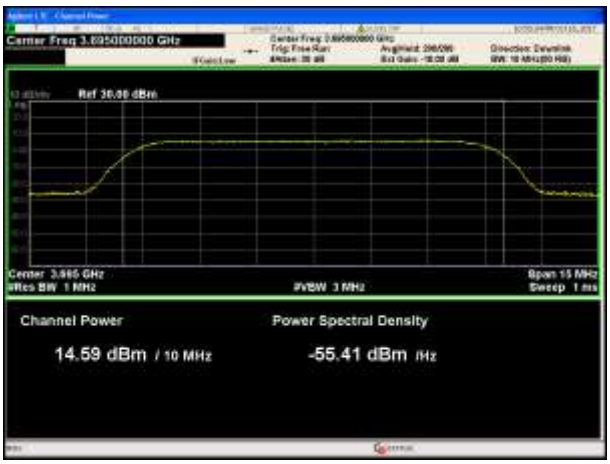


Lowest channel



Middle channel

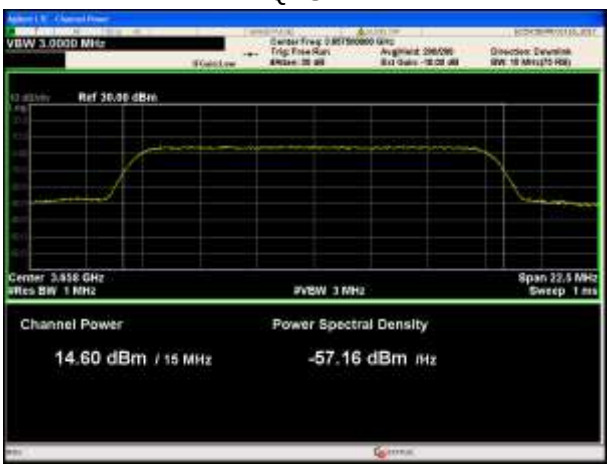




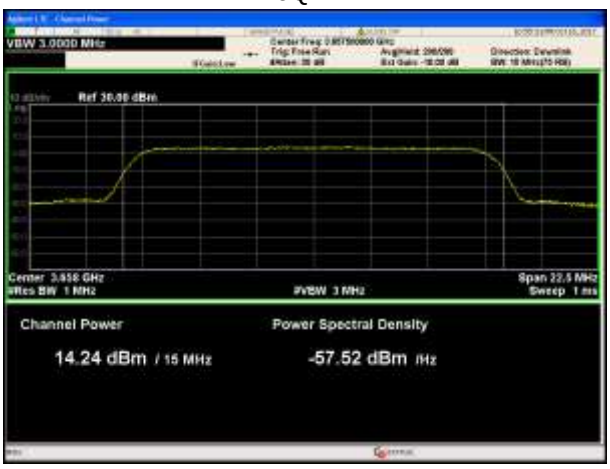
Highest channel

15MHz

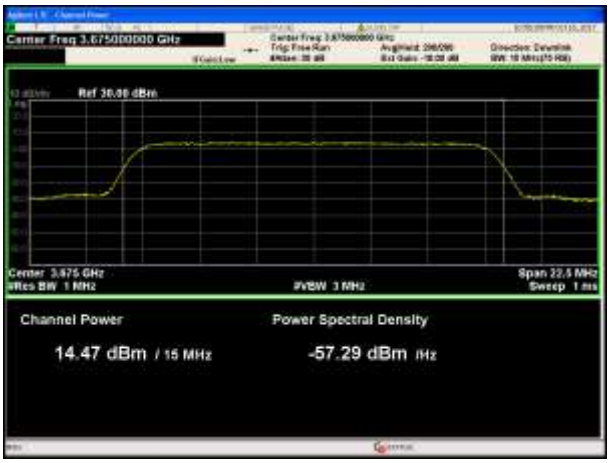
QPSK

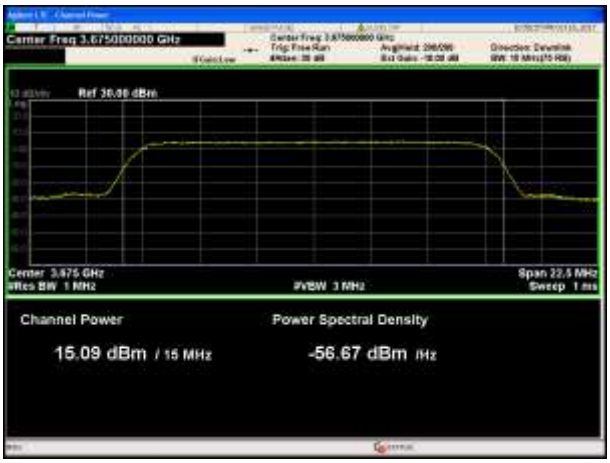


16QAM

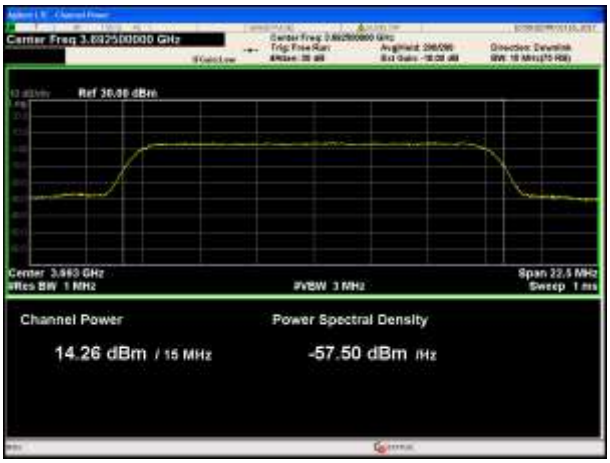


Lowest channel





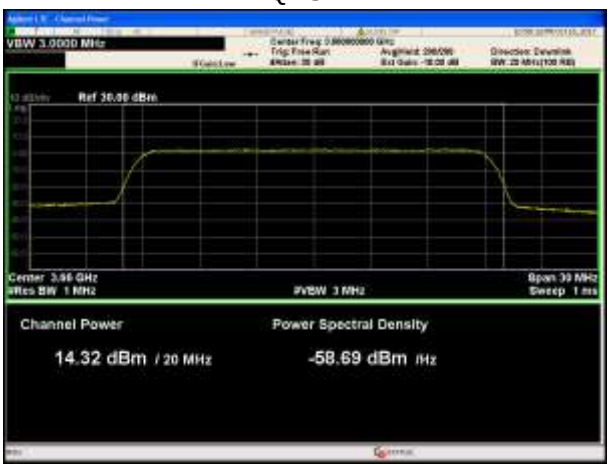
Middle channel



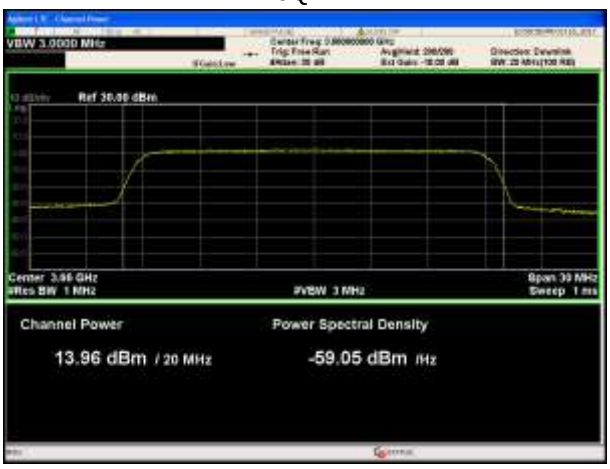
Highest channel

20MHz

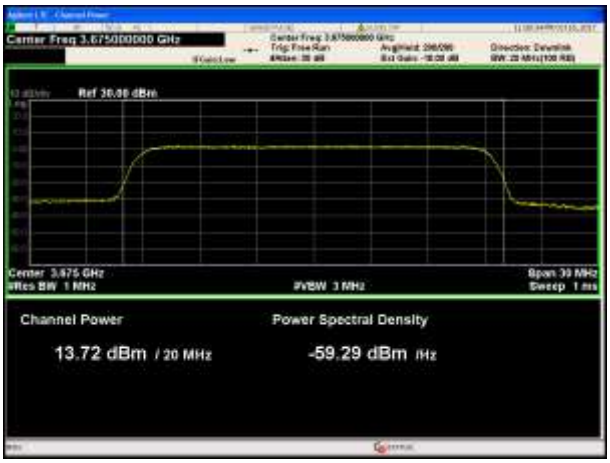
QPSK

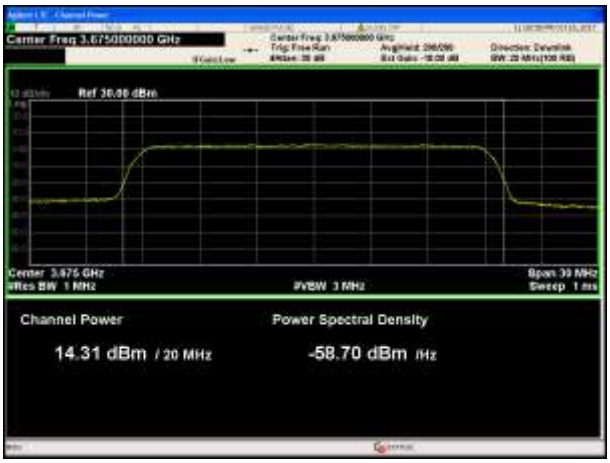


16QAM

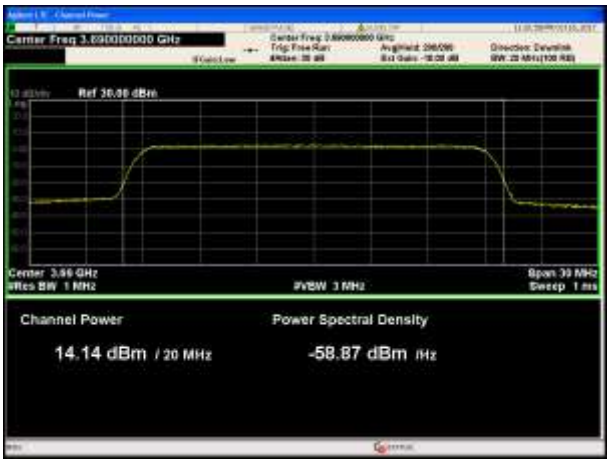


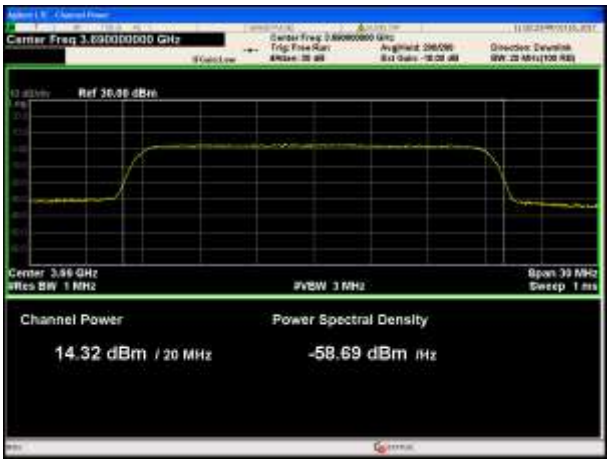
Lowest channel





Middle channel





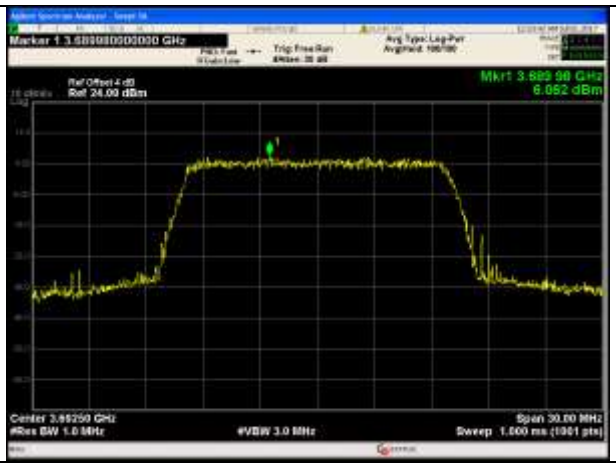
Highest channel

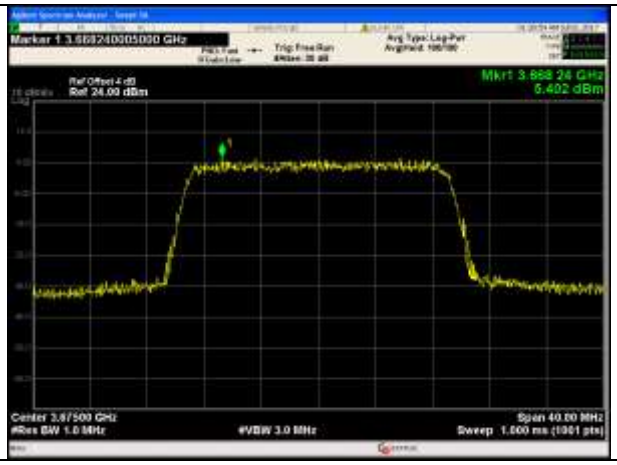
LTE Band 43 for PSD					
Modulation	**Frequency (MHz)**	**Output Power (dBm)**	**Antenna gain (dBi)**	**PSD (dBm)**	**Limited (dBm)**
QPSK(5MHz)	3652.50	9.18	6	15.18	16.02
	3675.00	9.38	6	15.38	
	3697.50	9.08	6	15.08	
16QAM(5MHz)	3652.50	8.90	6	14.90	
	3675.00	9.60	6	15.60	
	3697.50	9.79	6	15.79	
QPSK(10MHz)	3655.00	7.08	6	13.08	16.02
	3675.00	7.89	6	13.89	
	3695.00	7.99	6	13.99	
16QAM(10MHz)	3655.00	6.72	6	12.72	
	3675.00	7.85	6	13.85	
	3695.00	7.87	6	13.87	
QPSK(15MHz)	3657.50	6.15	6	12.15	16.02
	3675.00	6.21	6	12.21	
	3692.50	6.06	6	12.06	
16QAM(15MHz)	3657.50	6.61	6	12.61	
	3675.00	6.16	6	12.16	
	3692.50	7.08	6	13.08	
QPSK(20MHz)	3660.00	5.40	6	11.40	16.02
	3675.00	5.40	6	11.40	
	3690.00	6.19	6	12.19	
16QAM(20MHz)	3660.00	4.85	6	10.85	
	3675.00	5.26	6	11.26	
	3690.00	4.85	6	10.85	

Test plot as below:

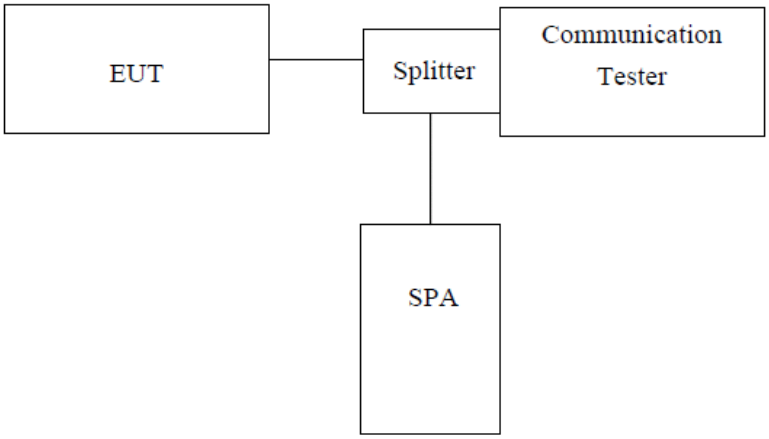
PSD	
Test Bandwidth: 5MHz	
QPSK	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

Test Bandwidth:10MHz	
QPSK	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

Test Bandwidth: 15MHz	
QPSK	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

Test Bandwidth: 20MHz	
QPSK	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

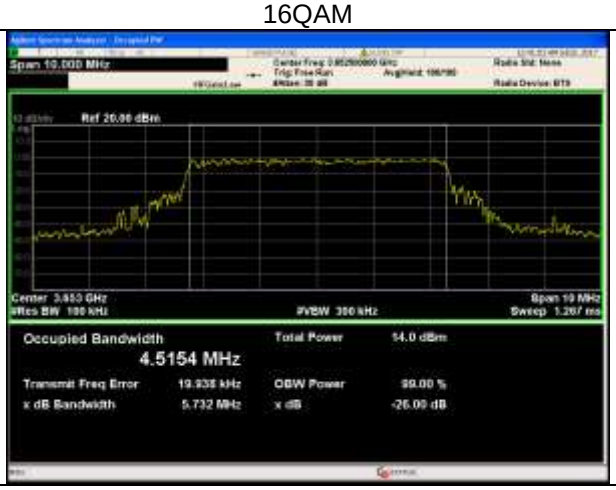
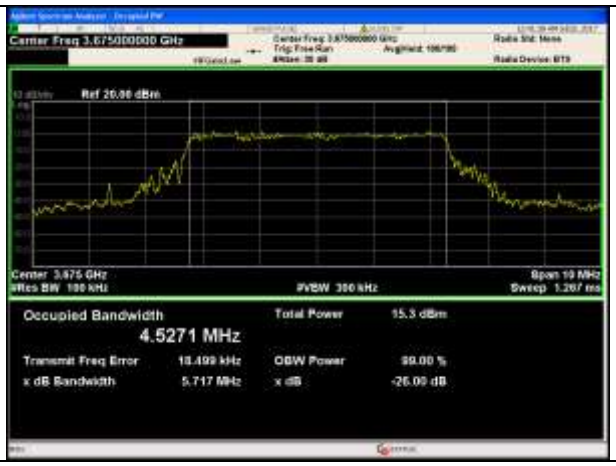
6.6 Occupy Bandwidth

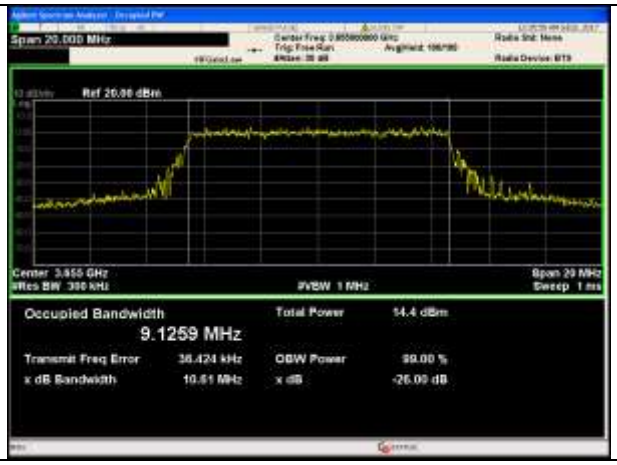
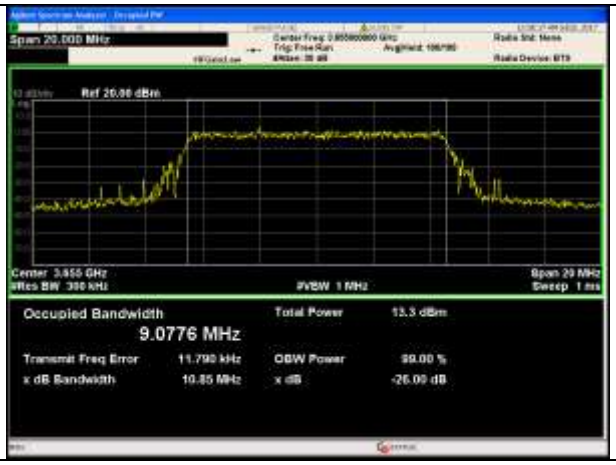
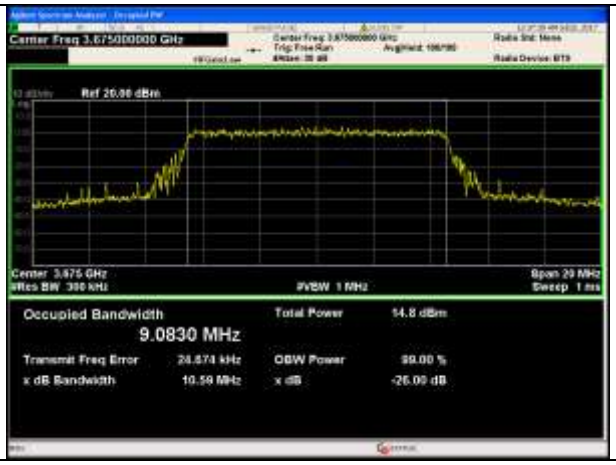
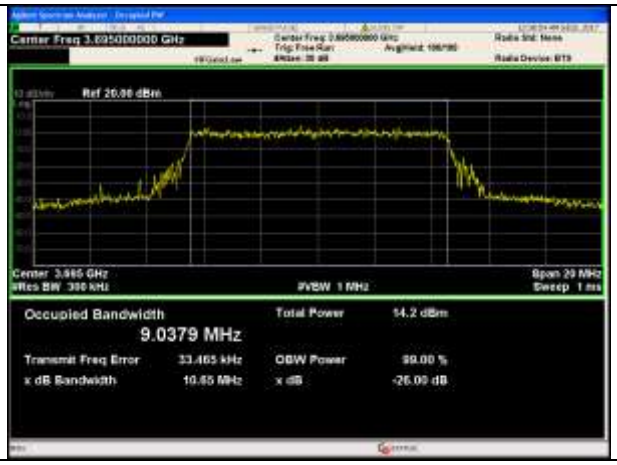
Test Requirement:	FCC part 90.209
Test Method:	FCC part 2.1049 and KDB 971168 D01
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. The transmitter shall be operated at its maximum carrier powermeasured under normal test conditions. 3. The span of the analyzer shall be set to capture all products of themodulation process, including the emission skirts. 4. The resolution bandwidth (RBW) shall be in the range of 1% to 5% ofthe occupied bandwidth (OBW) and video bandwidth (VBW) shall beapproximately 3x RBW.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

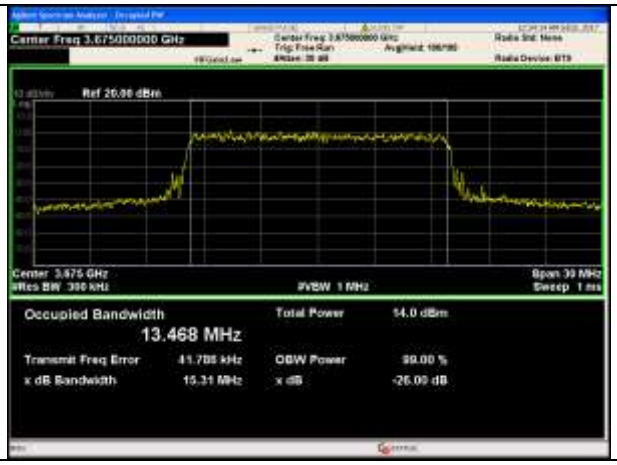
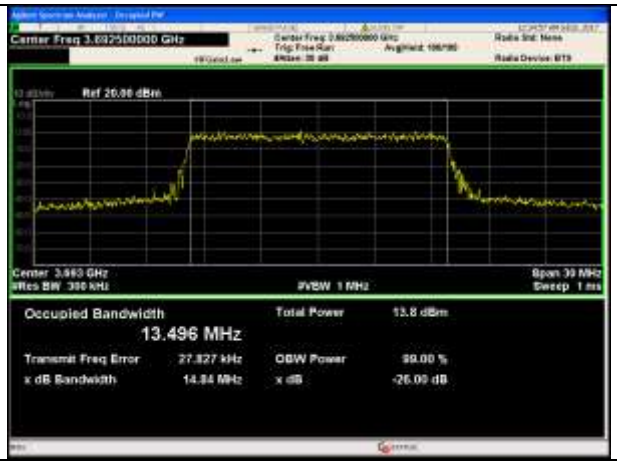
Measurement Data:

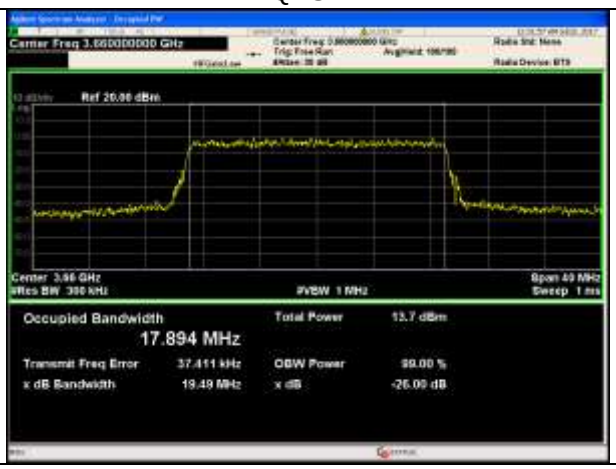
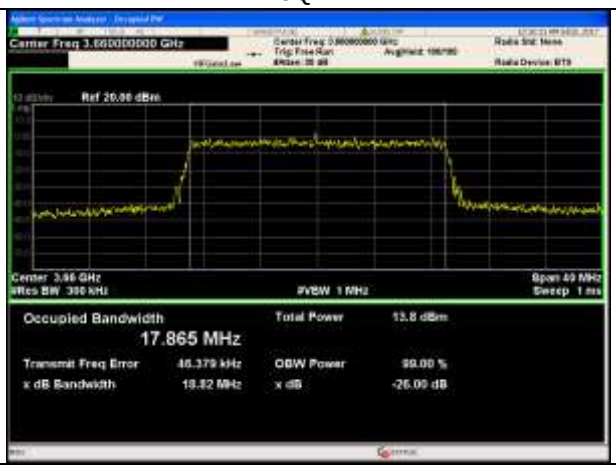
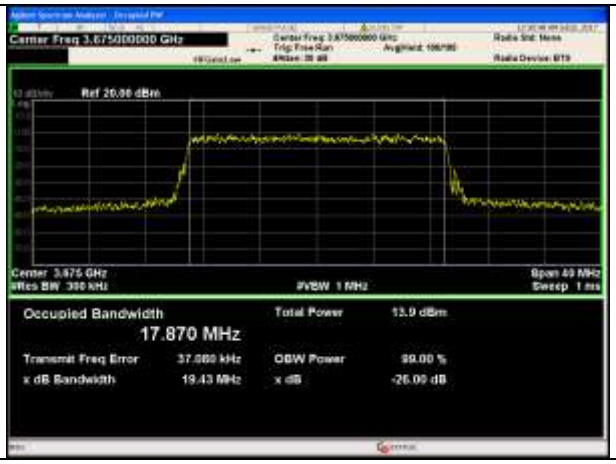
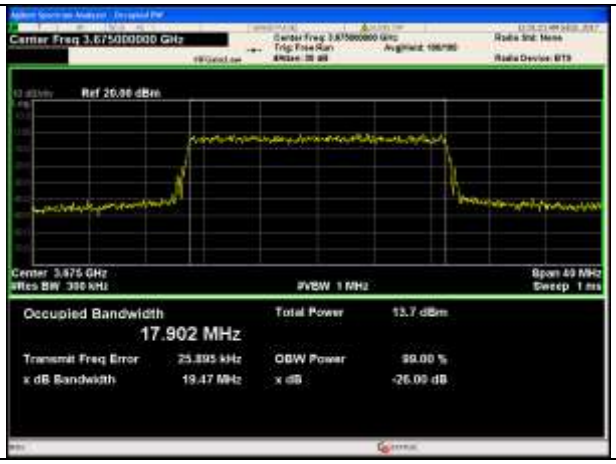
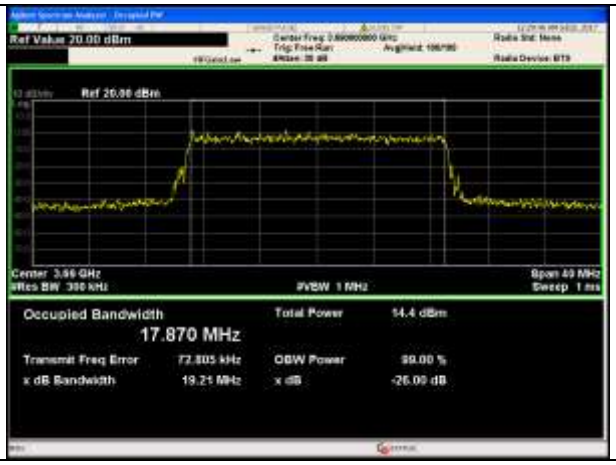
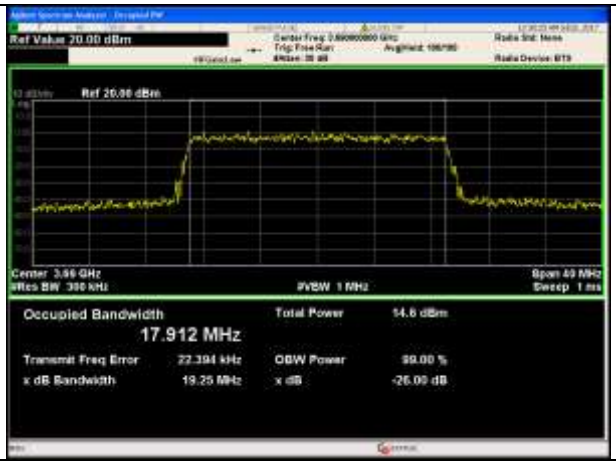
Bandwidth(MHz)	Modulation	Test Channel	99% Occupy bandwidth (MHz)
5	QPSK	Lowest	4.54
		Middle	4.52
		Highest	4.52
	16QAM	Lowest	4.52
		Middle	4.53
		Highest	4.52
10	QPSK	Lowest	9.13
		Middle	9.08
		Highest	9.04
	16QAM	Lowest	9.08
		Middle	9.08
		Highest	9.05
15	QPSK	Lowest	13.49
		Middle	13.47
		Highest	13.50
	16QAM	Lowest	13.48
		Middle	13.49
		Highest	13.53
20	QPSK	Lowest	17.89
		Middle	17.87
		Highest	17.87
	16QAM	Lowest	17.87
		Middle	17.90
		Highest	17.91

Test plot as follows:

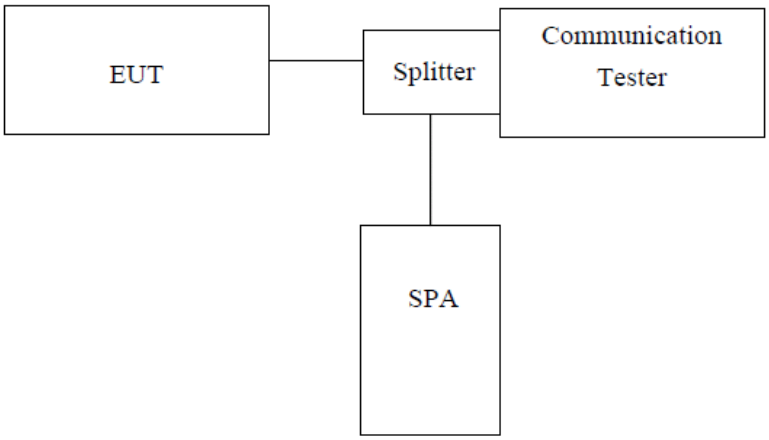
99% OBW	
Test Bandwidth: 5MHz	
QPSK	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

Test Bandwidth: 10MHz	
QPSK	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

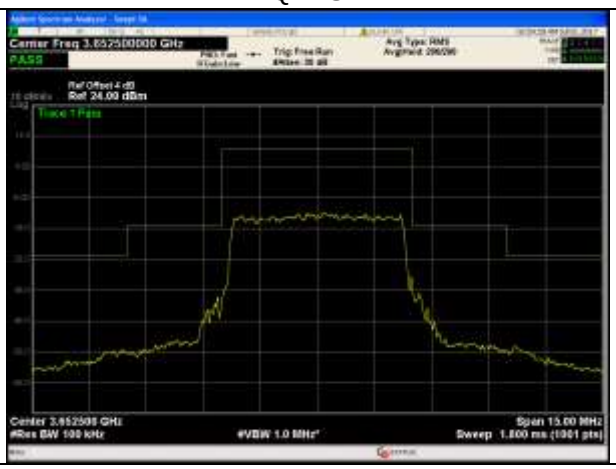
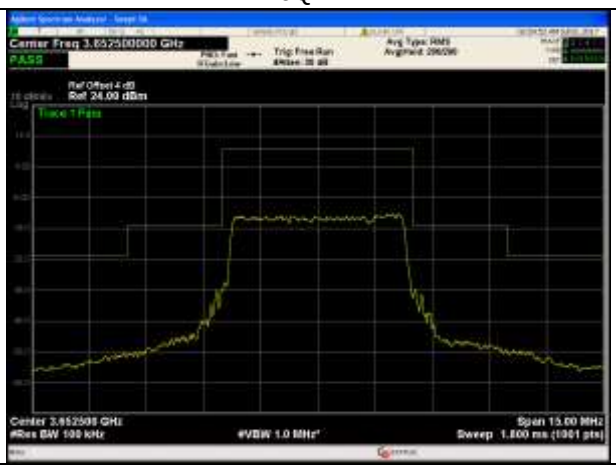
Test Bandwidth:15MHz	
QPSK	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

Test Bandwidth: 20MHz	
QPSK	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

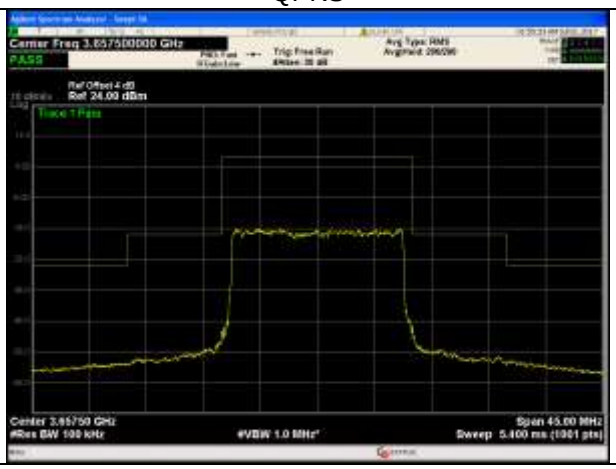
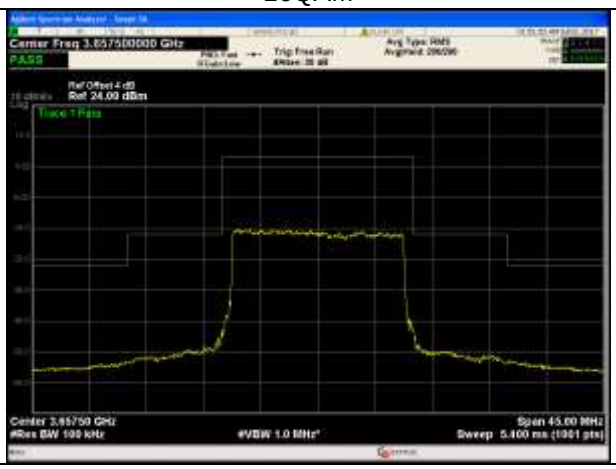
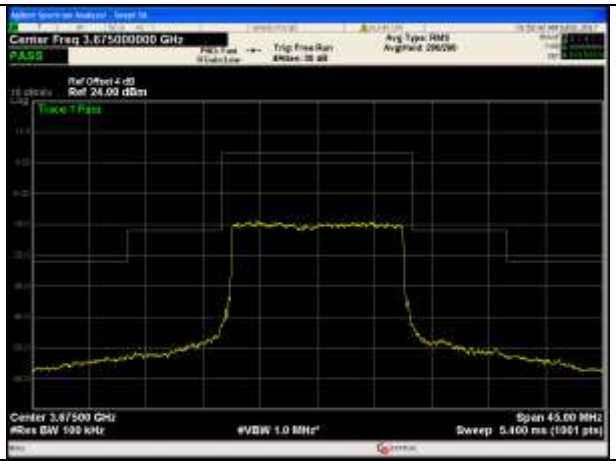
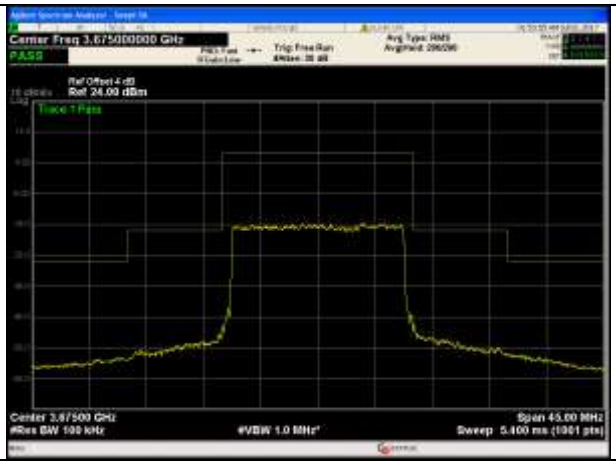
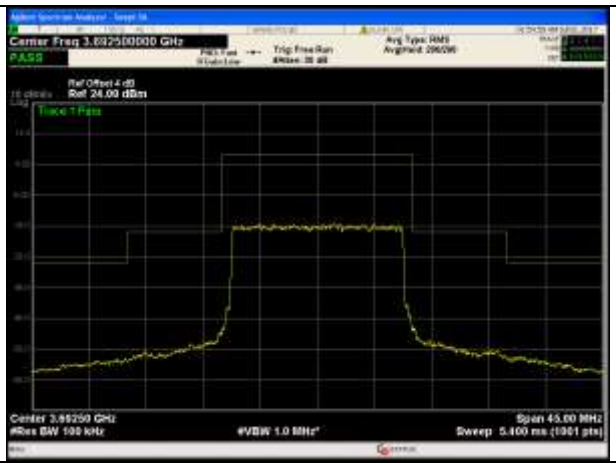
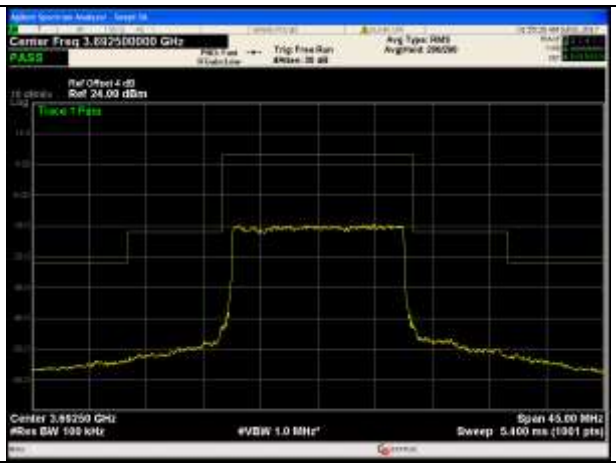
6.7 Emission Mask

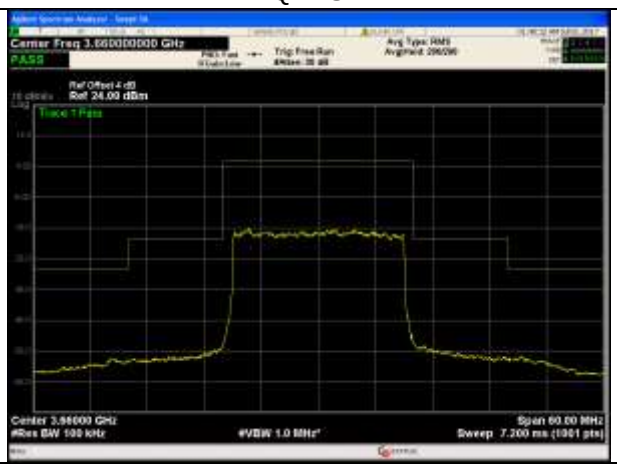
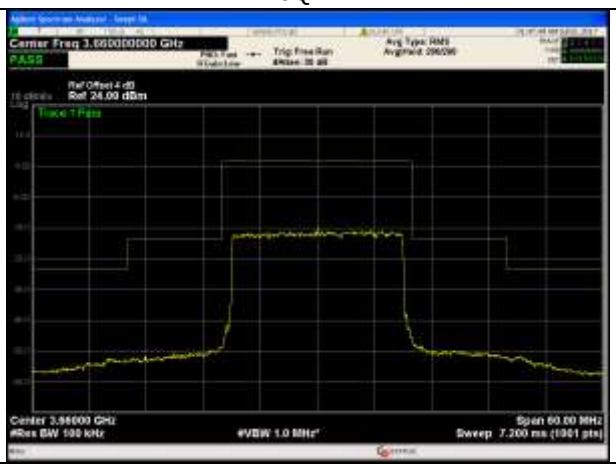
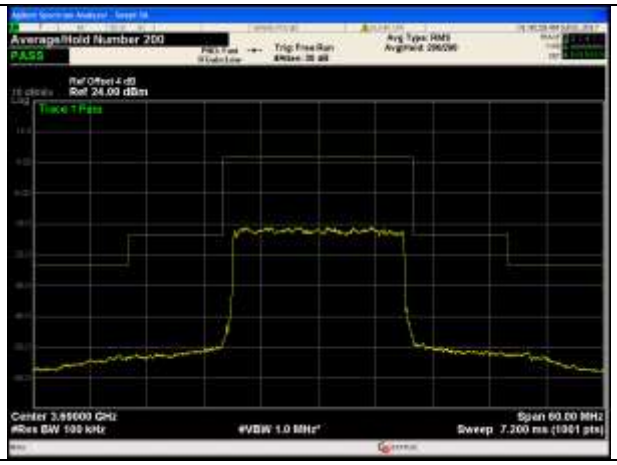
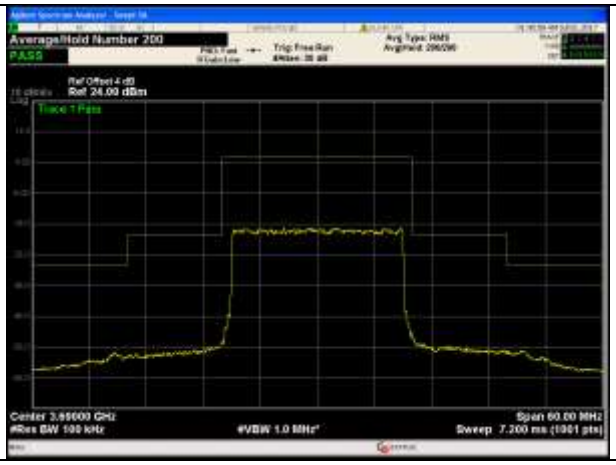
Test Requirement:	FCC part 90.210(b) and KDB 971168 D01
Limit:	Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows: (1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB. (2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB. (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.
Test setup:	 ***Note:** Measurement setup for testing on Antenna connector*
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 RBW=100kHz, VBW=1MHz, Detector mode= RMS, Trace mode: Power averaging over 100 sweeps
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	PASS

Test plots as below:

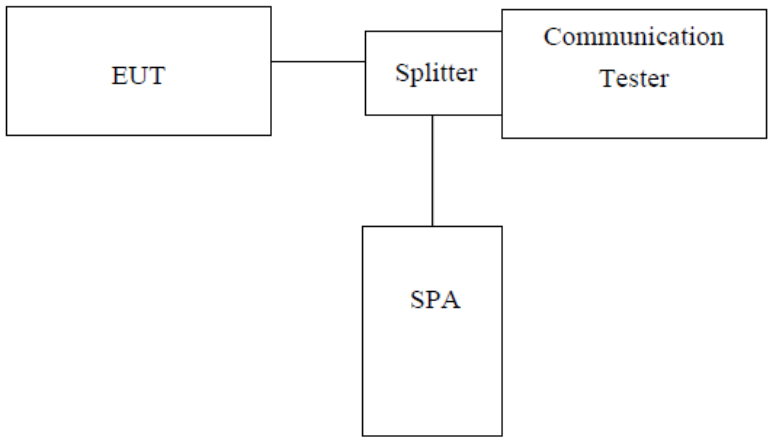
Test Bandwidth: 5MHz	
QPKS	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

Test Bandwidth: 10MHz	
QPKS	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

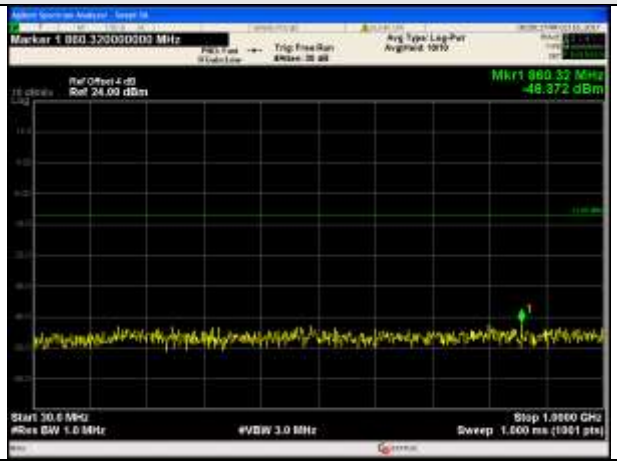
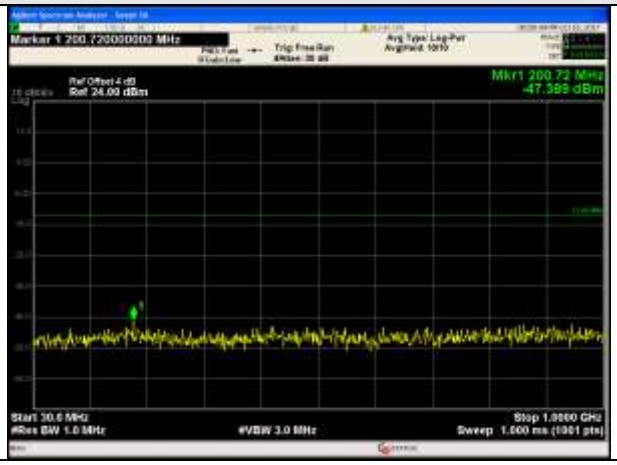
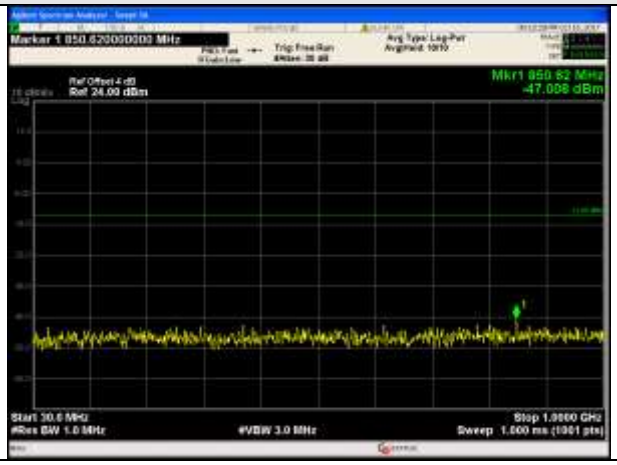
Test Bandwidth:15MHz	
QPKS	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

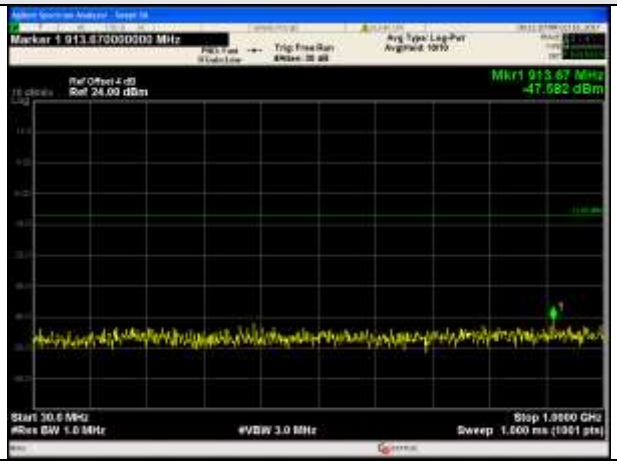
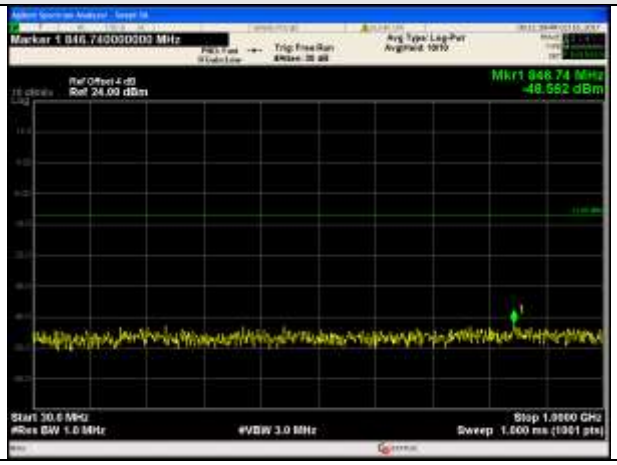
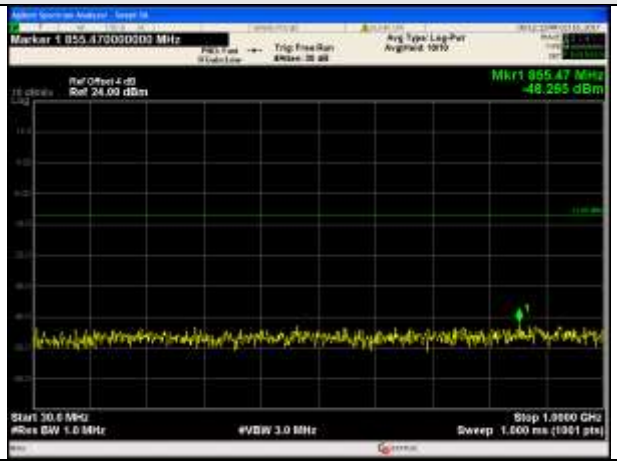
Test Bandwidth: 20MHz	
QPKS	16QAM
	
Lowest channel	
	
Middle channel	
	
Highest channel	

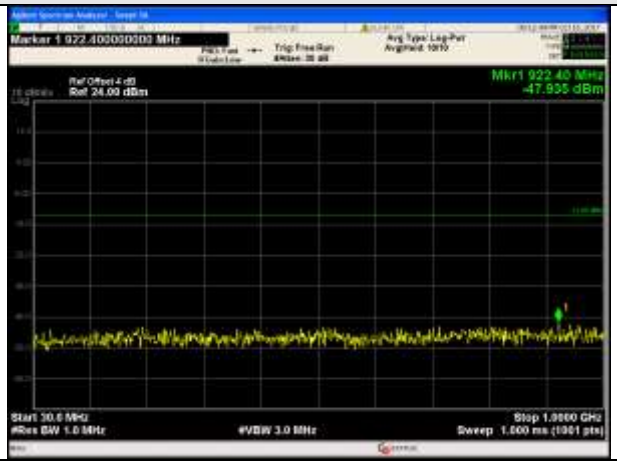
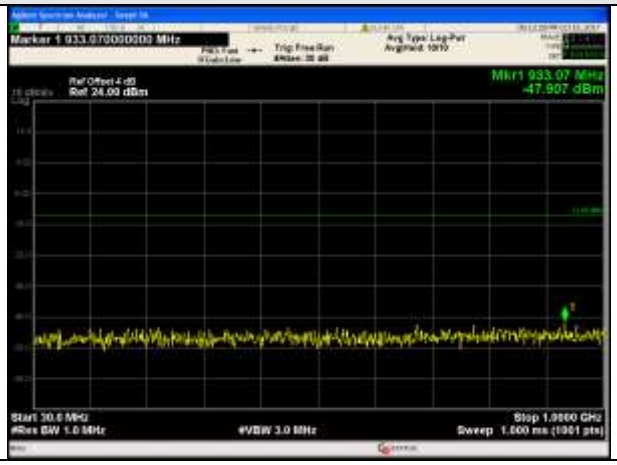
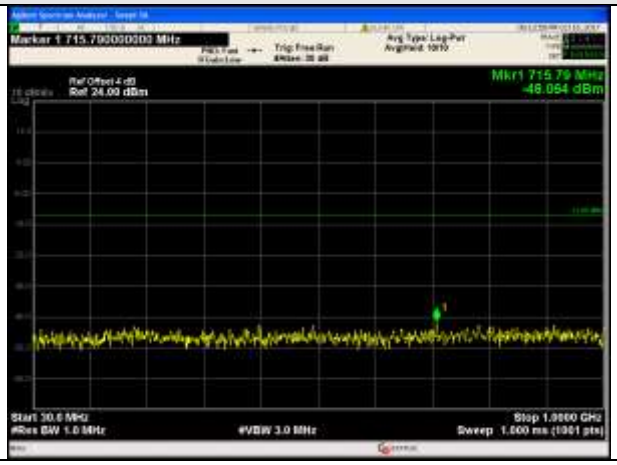
6.8 Out of band emission at antenna terminals

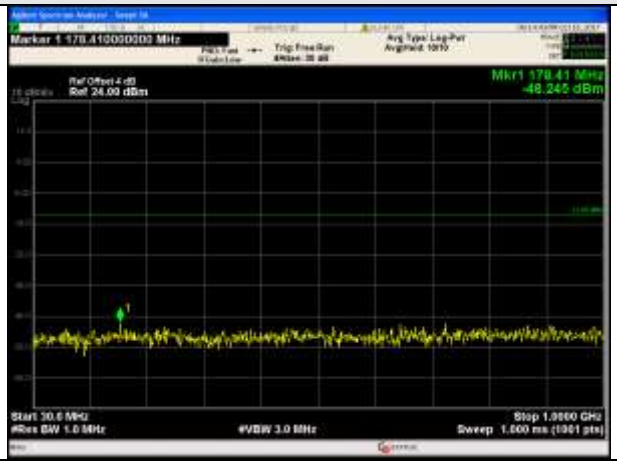
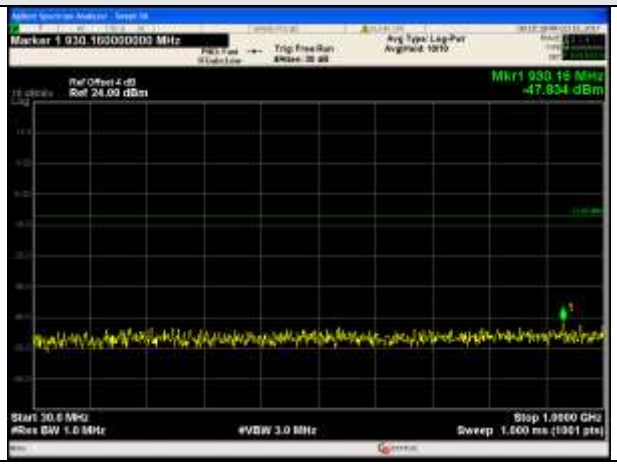
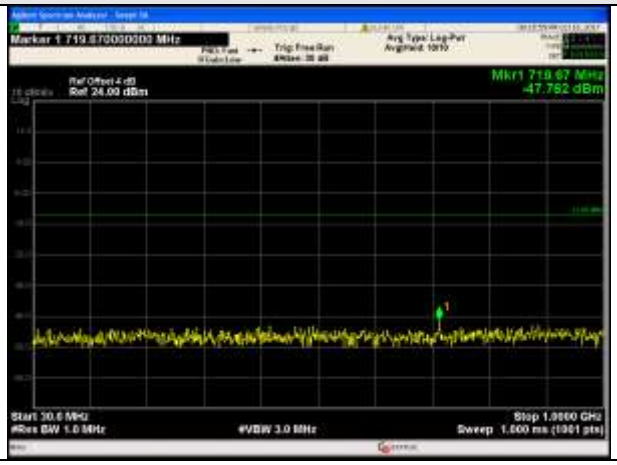
Test Requirement:	FCC part90.1323
Test Method:	FCC part2.1051 and KDB 971168 D01
Limit:	-13dBm
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plots as follows (worst case):

Spurious emission	
LTE band 43 for Test Frequency: 30MHz~26GHz	
Test Mode: 16QAM for 5MHz	
Test channel: Lowest channel	
	
30MHz~1GHz	1GHz~26GHz
Test channel: Middle channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Highest channel	
	
30MHz~1GHz	1GHz~26GHz

Test Mode: 16QAM for 10MHz	
Test channel: Lowest channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Middle channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Highest channel	
	
30MHz~1GHz	1GHz~26GHz

Test Mode: 16QAM for 15MHz	
Test channel: Lowest channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Middle channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Highest channel	
	
30MHz~1GHz	1GHz~26GHz

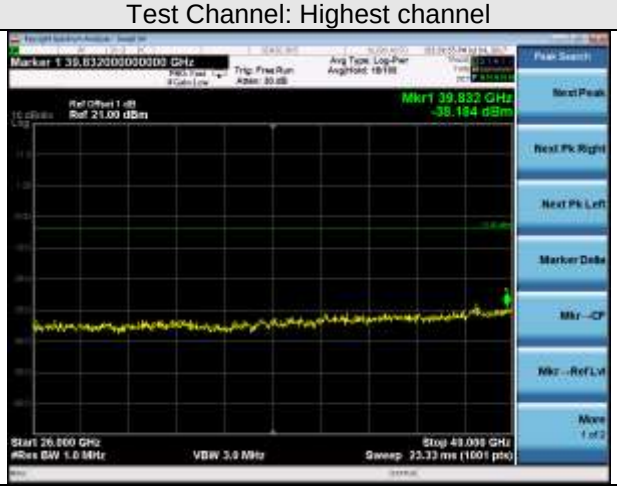
Test Mode: 16QAM for 20MHz	
Test channel: Lowest channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Middle channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Highest channel	
	
30MHz~1GHz	1GHz~26GHz

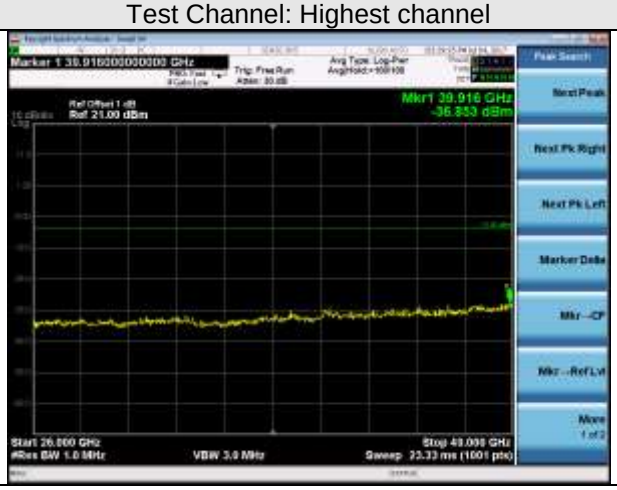
LTE band 43 for Test Frequency: 26GHz~40GHz	
Test Mode: 16QAM for 5MHz	
Test channel: Lowest channel	Test Channel: Middle channel
	
26GHz~40GHz	26GHz~40GHz
Test Channel: Highest channel	
	
26GHz~40GHz	

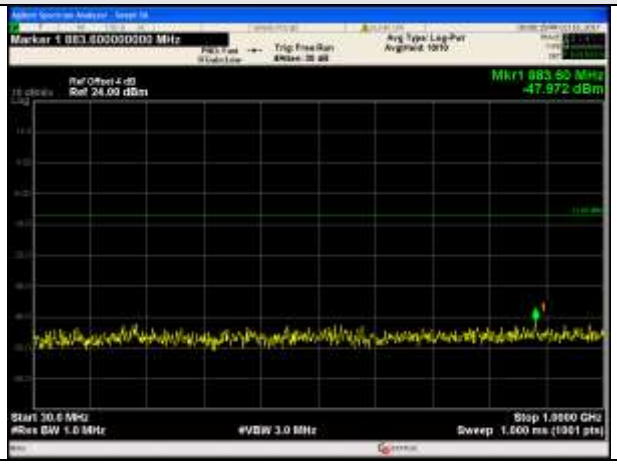
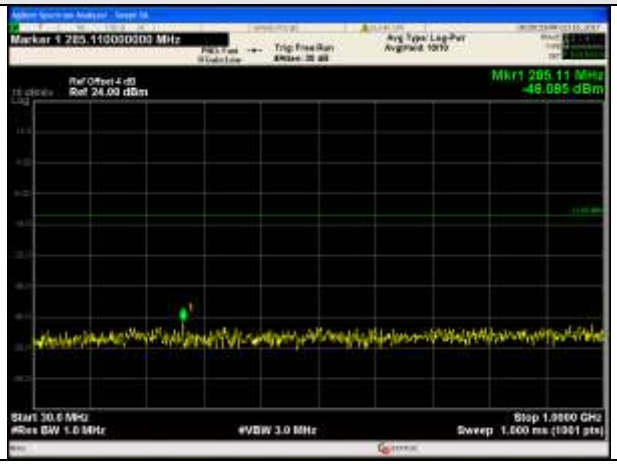
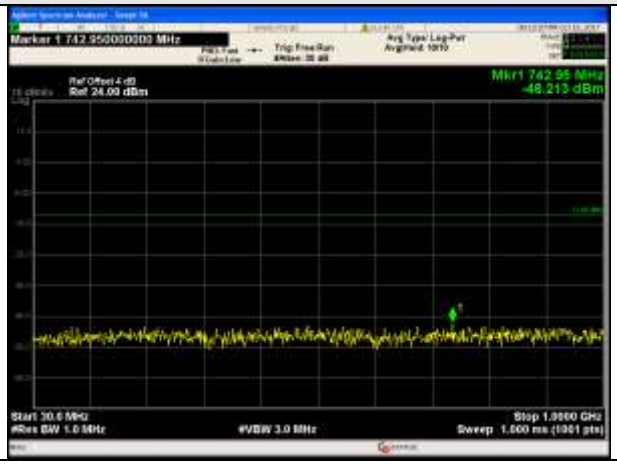
Test Mode: 16QAM for 10MHz	
Test channel: Lowest channel	Test Channel: Middle channel
	
26GHz~40GHz	26GHz~40GHz

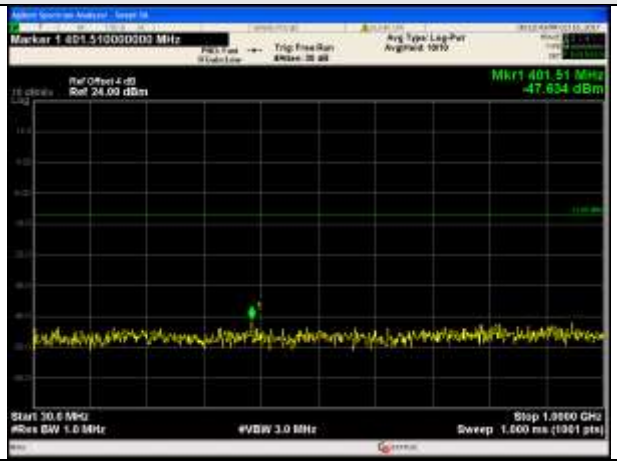
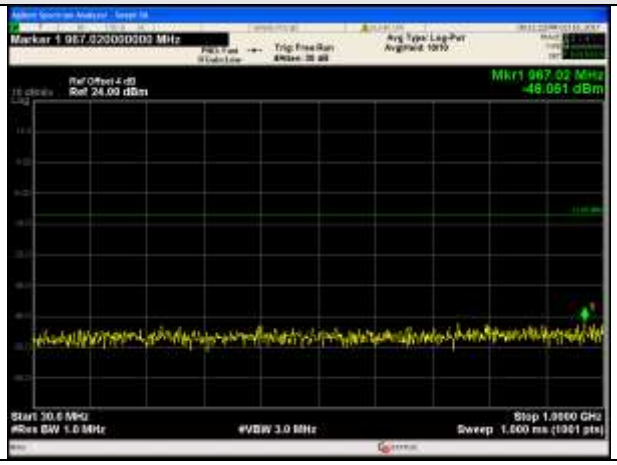
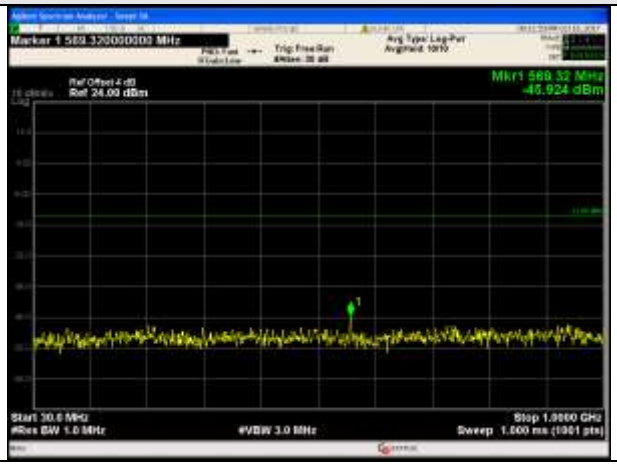
Test Channel: Highest channel

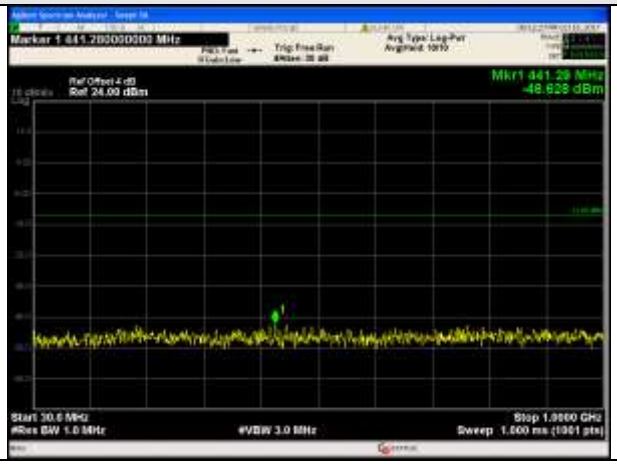
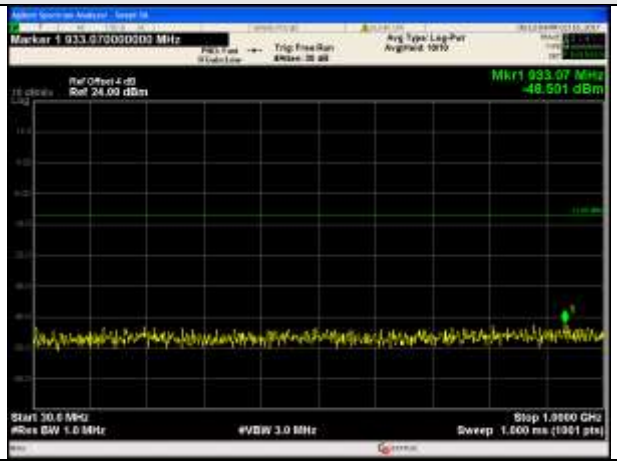
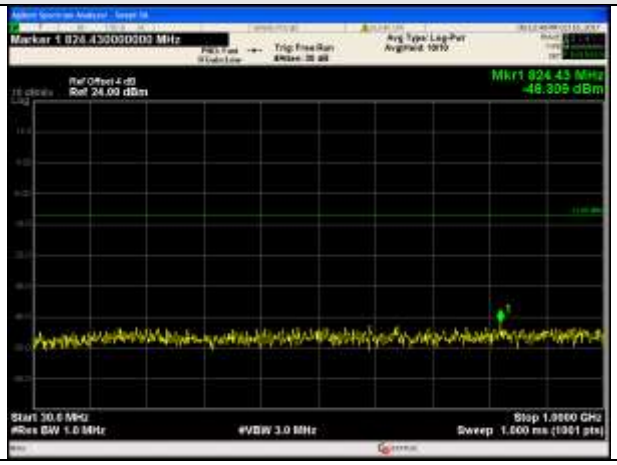
26GHz~40GHz

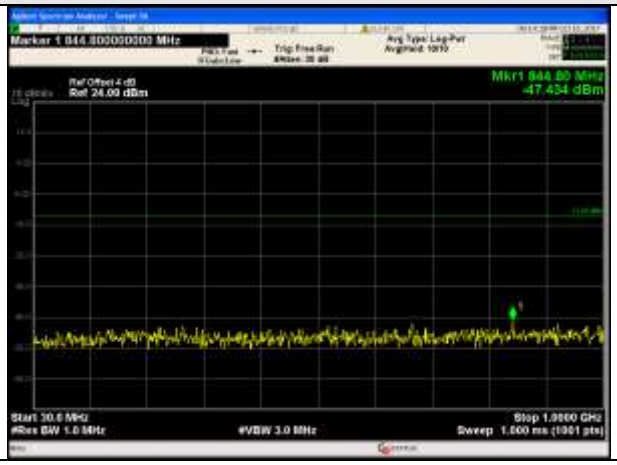
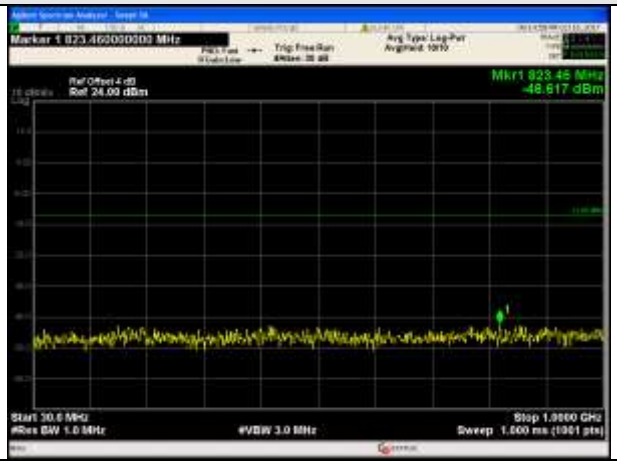
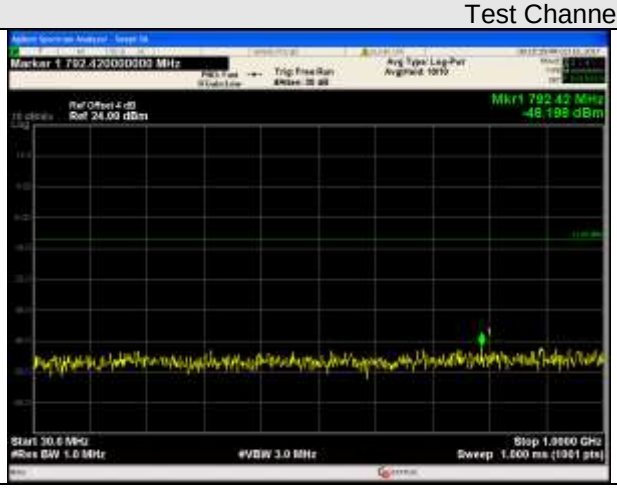
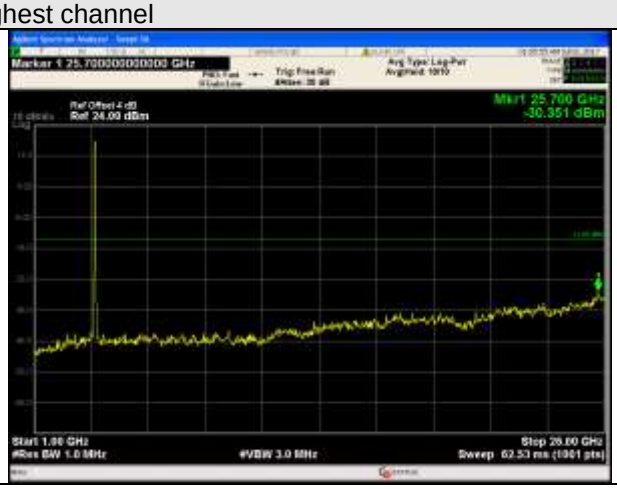
Test Mode: 16QAM for 15MHz	
Test channel: Lowest channel	Test Channel: Middle channel
	
26GHz~40GHz	26GHz~40GHz
Test Channel: Highest channel	
	
26GHz~40GHz	

Test Mode: 16QAM for 20MHz	
Test channel: Lowest channel	Test Channel: Middle channel
	
26GHz~40GHz	26GHz~40GHz
Test Channel: Highest channel	
	
26GHz~40GHz	

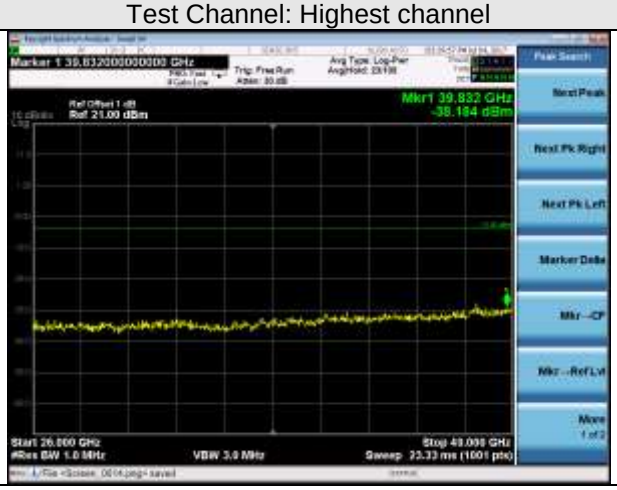
LTE band 43 for Test Frequency: 30MHz~26GHz	
Test Mode: QPSK for 5MHz	
Test channel: Lowest channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Middle channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Highest channel	
	
30MHz~1GHz	1GHz~26GHz

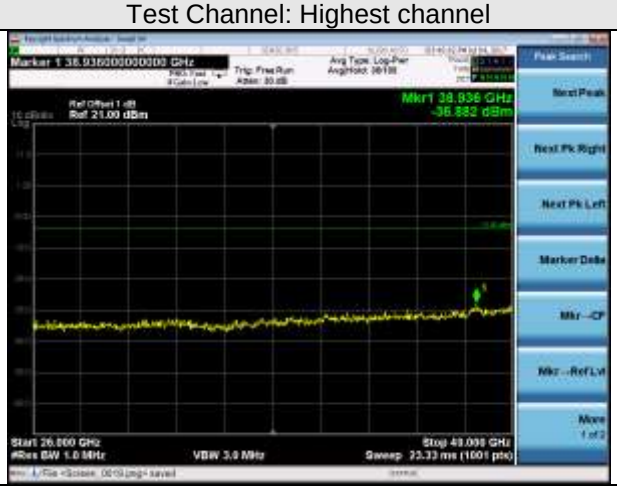
Test Mode: QPSK for 10MHz	
Test channel: Lowest channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Middle channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Highest channel	
	
30MHz~1GHz	1GHz~26GHz

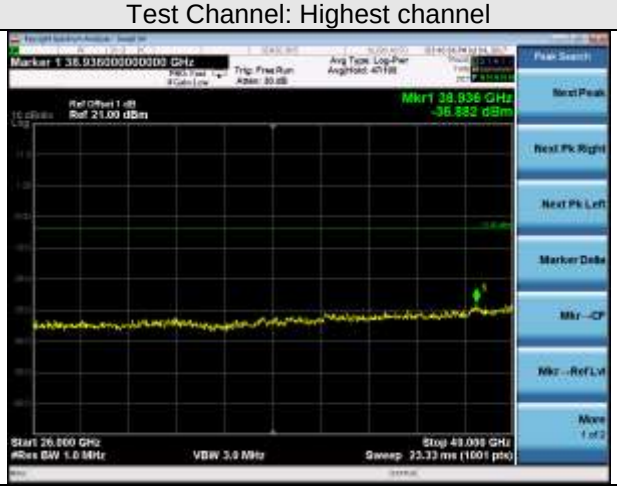
Test Mode: QPSK for 15MHz	
Test channel: Lowest channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Middle channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Highest channel	
	
30MHz~1GHz	1GHz~26GHz

Test Mode: QPSK for 20MHz	
Test channel: Lowest channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Middle channel	
	
30MHz~1GHz	1GHz~26GHz
Test Channel: Highest channel	
	
30MHz~1GHz	1GHz~26GHz

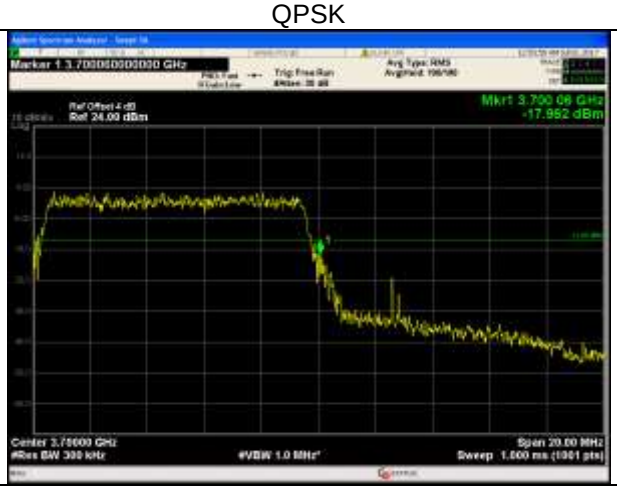
LTE band 43 for Test Frequency: 26GHz~40GHz	
Test Mode: QPSK for 5MHz	
Test channel: Lowest channel	Test Channel: Middle channel
	
26GHz~40GHz	26GHz~40GHz
Test Channel: Highest channel	
	
26GHz~40GHz	

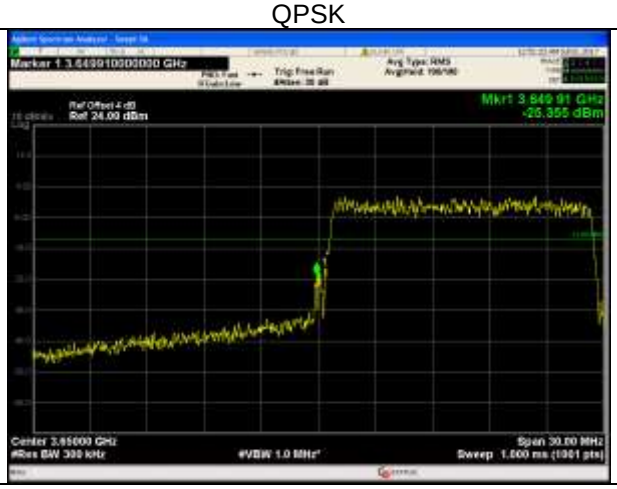
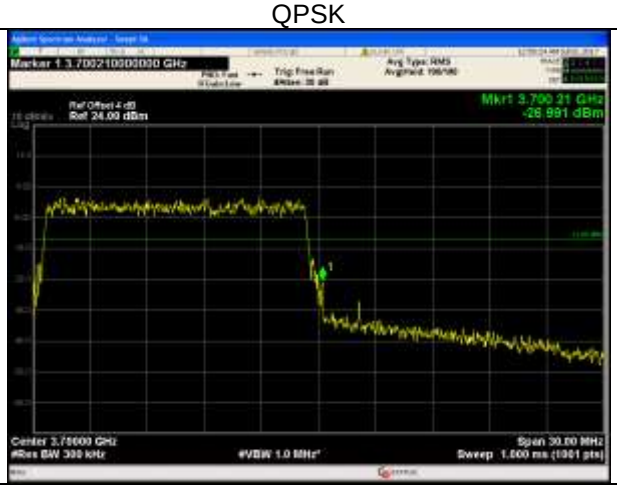
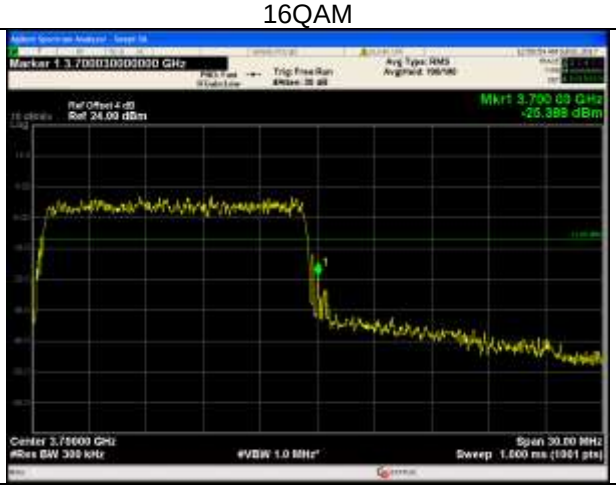
Test Mode: QPSK for 10MHz	
Test channel: Lowest channel	Test Channel: Middle channel
	
26GHz~40GHz	26GHz~40GHz
Test Channel: Highest channel	
	
26GHz~40GHz	

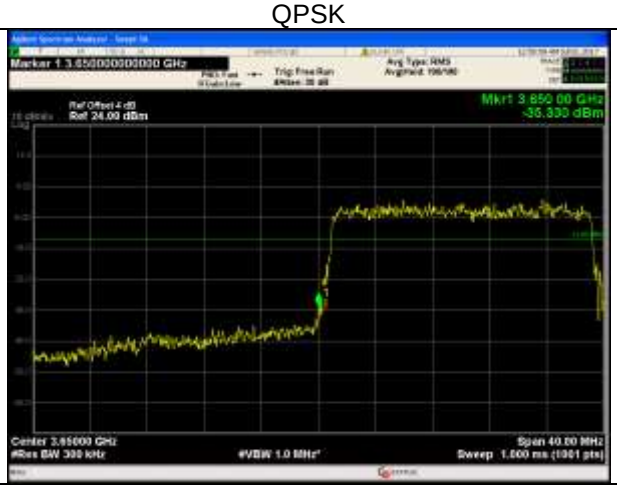
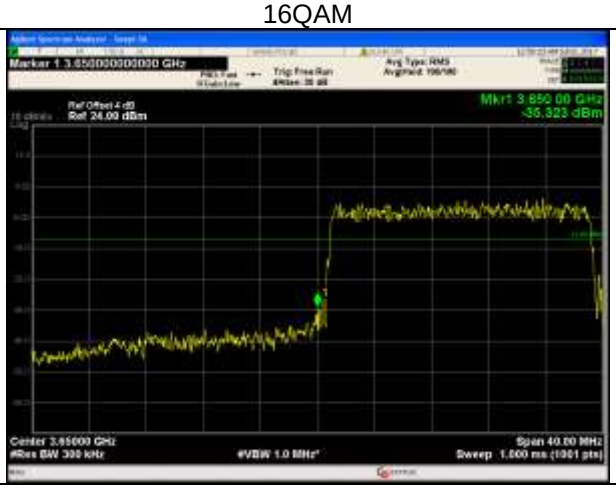
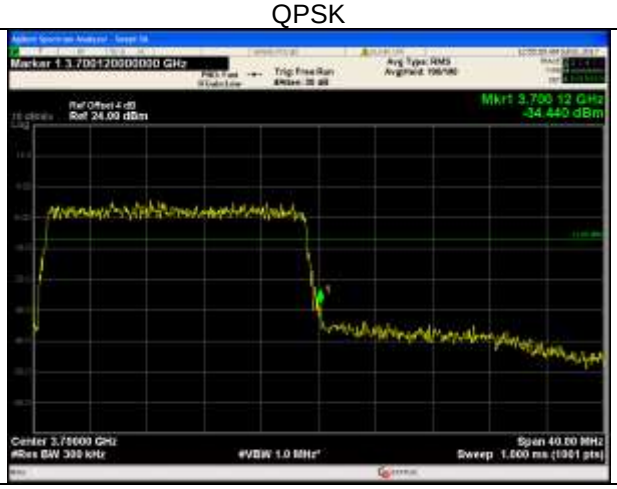
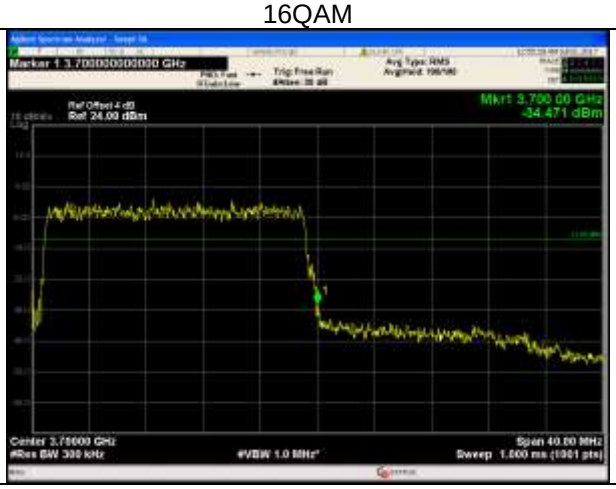
Test Mode: QPSK for 15MHz	
Test channel: Lowest channel	Test Channel: Middle channel
	
26GHz~40GHz	26GHz~40GHz
Test Channel: Highest channel	
	
26GHz~40GHz	

Test Mode: QPSK for 20MHz	
Test channel: Lowest channel	Test Channel: Middle channel
	
26GHz~40GHz	26GHz~40GHz
Test Channel: Highest channel	
	
26GHz~40GHz	

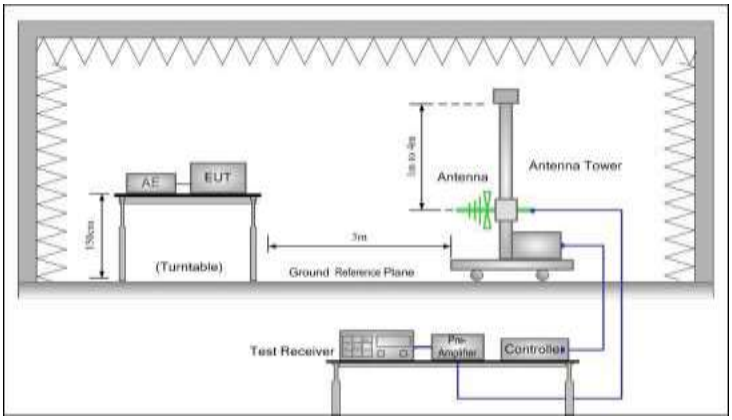
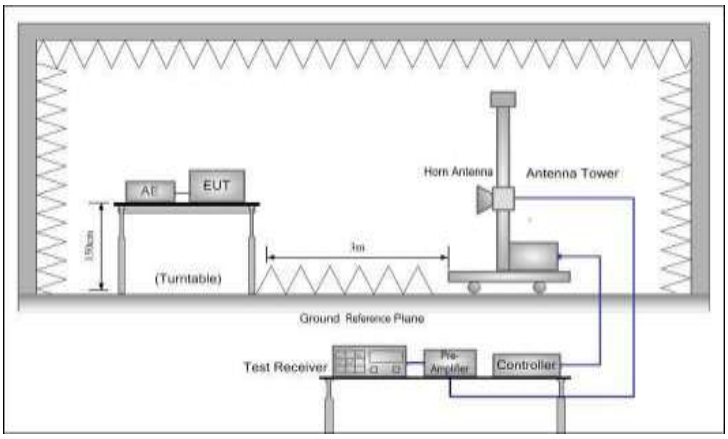
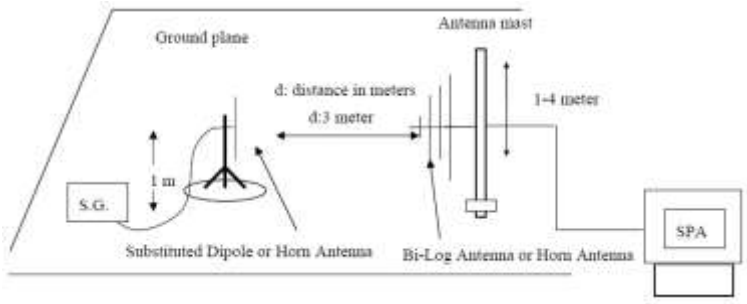
Band edge emission	
LTE band 43	
Test Bandwidth: 5MHz	
Test channel: Lowest channel	
QPSK	16QAM
	
Test channel: Highest channel	
QPSK	16QAM
	

Test Bandwidth: 10MHz	
Test channel: Lowest channel	
QPSK	16QAM
	
Test channel: Highest channel	
QPSK	16QAM
	

Test Bandwidth: 15MHz	
Test channel: Lowest channel	
QPSK	16QAM
	
Test channel: Highest channel	
QPSK	16QAM
	

Test Bandwidth: 20MHz	
Test channel: Lowest channel	
QPSK	16QAM
	
Test channel: Highest channel	
QPSK	16QAM
	

6.9 Field strength of spurious radiation measurement

Test Requirement:	Part 90.1323
Test Method:	FCC part2.1053 and KDB 971168 D01
Limit:	-13dBm
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each

	of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
Test Uncertainty:	± 4.88 dB
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed
Remark:	During the test, pre-scan the QPSK, 16QAM modulation, and found the QPSK modulation is the worst case.

Measurement Data (worst case):

LTE Band 43				
5MHz for QPSK				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Test channel: Lowest channel				
7305.00	Vertical	-45.70	-13	Pass
10957.50	V	-34.41		
14610.00	V	-31.67		
7305.00	Horizontal	-45.70		
10957.50	H	-37.28		
14610.00	H	-31.83		
Test channel: Middle channel				
7350.00	Vertical	-43.22	-13	Pass
11025.00	V	-35.30		
14700.00	V	-31.05		
7350.00	Horizontal	-44.26		
11025.00	H	-39.92		
14700.00	H	-31.52		
Test channel: Highest channel				
7395.00	Vertical	-43.76	-13	Pass
11070.00	V	-36.28		
14790.00	V	-32.36		
7395.00	Horizontal	-44.28		
11070.00	H	-34.56		
14790.00	H	-31.83		

Remark:

1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

10MHz for QPSK				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Test channel: Lowest channel				
7310.00	Vertical	-45.24	-13	Pass
10985.00	V	-34.39		
14620.00	V	-31.64		
7310.00	Horizontal	-45.15		
10985.00	H	-37.58		
14620.00	H	-31.59		
Test channel: Middle channel				
7350.00	Vertical	-43.51	-13	Pass
11025.00	V	-35.89		
14700.00	V	-31.58		
7350.00	Horizontal	-44.25		
11025.00	H	-39.34		
14700.00	H	-31.31		
Test channel: Highest channel				
7390.00	Vertical	-43.26	-13	Pass
11065.00	V	-36.61		
14780.00	V	-32.58		
7390.00	Horizontal	-44.56		
11065.00	H	-34.25		
14780.00	H	-31.26		

Remark:

1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

15MHz for QPSK				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Test channel: Lowest channel				
7315.00	Vertical	-45.73	-13	Pass
10990.00	V	-34.61		
14630.00	V	-31.42		
7315.00	Horizontal	-45.12		
10990.00	H	-37.71		
14630.00	H	-31.36		
Test channel: Middle channel				
7350.00	Vertical	-43.50	-13	Pass
11025.00	V	-35.88		
14700.00	V	-31.25		
7350.00	Horizontal	-44.89		
11025.00	H	-39.25		
14700.00	H	-31.26		
Test channel: Highest channel				
7385.00	Vertical	-43.56	-13	Pass
11060.00	V	-36.39		
14770.00	V	-32.26		
7385.00	Horizontal	-44.56		
11060.00	H	-34.12		
14770.00	H	-31.26		

Remark:
1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

20MHz for QPSK				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Test channel: Lowest channel				
7320.00	Vertical	-45.11	-13	Pass
10995.00	V	-34.14		
14640.00	V	-31.58		
7320.00	Horizontal	-45.26		
10995.00	H	-37.09		
14640.00	H	-31.25		
Test channel: Middle channel				
7350.00	Vertical	-43.71	-13	Pass
11025.00	V	-35.88		
14700.00	V	-31.42		
7350.00	Horizontal	-44.82		
11025.00	H	-39.56		
14700.00	H	-31.58		
Test channel: Highest channel				
7380.00	Vertical	-43.42	-13	Pass
11055.00	V	-36.92		
14760.00	V	-32.44		
7380.00	Horizontal	-44.25		
11055.00	H	-34.89		
14760.00	H	-31.23		

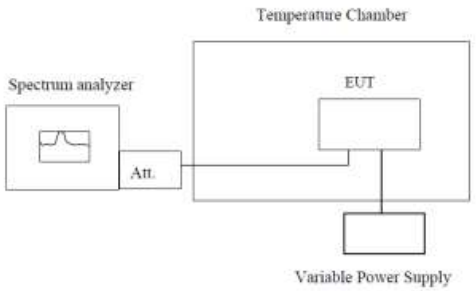
Remark:
1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

6.10 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part90.213(a)
Test Method:	FCC Part2.1055(a)(1)(b)
Limit:	FCC:

Frequency range (MHz)	Fixed and base stations (±ppm)	Mobile stations (±ppm)	
		Over 2 watts output power	2 watts or less output power
Below 25	100	100	200
25–50	20	20	50
72–76	5		50
150–174	5	5	50
216–220	1.0		1.0
220–222	0.1	1.5	1.5
421–512	2.5	5	5
806–809	1.0	1.5	1.5
809–824	1.5	2.5	2.5
851–854	1.0	1.5	1.5
854–869	1.5	2.5	2.5
896–901	0.1	1.5	1.5
902–928	2.5	2.5	2.5
902–928	2.5	2.5	2.5
929–930	1.5		
935–940	0.1	1.5	1.5
1427–1435	300	300	300
Above 2450			

Test setup:



Note : Measurement setup for testing on Antenna connector

Test procedure:

1. The equipment under test was connected to an external DC power supply and input rated voltage.
2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
3. The EUT was placed inside the temperature chamber.
4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency.
5. Turn EUT off and set the chamber temperature to –30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency.
6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached

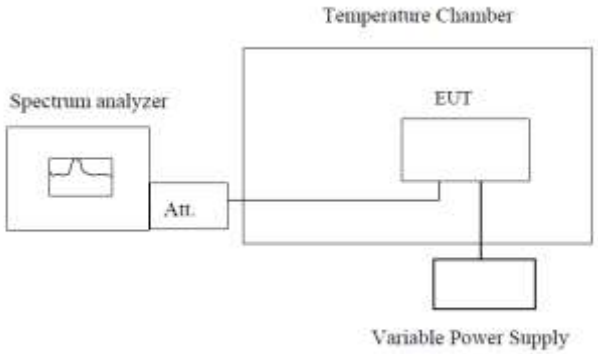
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	All three channels of all modulations have been tested, but only the worst channel and the worst modulation show in this test item.

Measurement Data (the worst channel):

LTE band 43 for QPSK			
Power supplied (Vac)	Temperature (℃)	Frequency error	
		Hz	ppm
120	Reference Frequency: Lowest channel=3652.5MHz (for 5MHz)		
	-20	180	0.049281
	-10	165	0.045175
	0	190	0.052019
	10	132	0.036140
	20	174	0.047639
	30	185	0.050650
	40	164	0.044901
	55	142	0.038877
	Reference Frequency: Lowest channel=3655.0MHz (for 10MHz)		
	-20	185	0.050616
	-10	123	0.033653
	0	165	0.045144
	10	148	0.040492
	20	170	0.046512
	30	128	0.035021
	40	108	0.029549
	55	116	0.031737
	Reference Frequency: Lowest channel=3657.5MHz (for 15MHz)		
	-25	165	0.045113
	-10	123	0.033630
	0	133	0.036364
	10	104	0.028435
	20	144	0.039371
	30	171	0.046753
	40	180	0.049214
	55	155	0.042379
	Reference Frequency: Lowest channel=3660.0MHzMHz (for 20MHz)		
	-20	181	0.049454
	-10	171	0.046721
	0	148	0.040437
	10	176	0.048087
	20	180	0.049180
	30	144	0.039344
	40	123	0.033607
	55	160	0.043716

LTE band 43 for 16QAM			
Power supplied (Vac)	Temperature (℃)	Frequency error	
		Hz	ppm
120	Reference Frequency: Lowest channel=3652.5MHz (for 5MHz)		
	-25	123	0.033676
	-10	165	0.045175
	0	181	0.049555
	10	175	0.047912
	20	141	0.038604
	30	132	0.036140
	40	105	0.028747
	55	118	0.032307
	Reference Frequency: Lowest channel=3655.0MHz (for 10MHz)		
	-20	123	0.033653
	-10	151	0.041313
	0	168	0.045964
	10	149	0.040766
	20	175	0.047880
	30	148	0.040492
	40	109	0.029822
	55	160	0.043776
	Reference Frequency: Lowest channel=3657.5MHz (for 15MHz)		
	-25	180	0.049214
	-10	171	0.046753
	0	146	0.039918
	10	123	0.033630
	20	136	0.037184
	30	105	0.028708
	40	118	0.032262
	55	141	0.038551
	Reference Frequency: Lowest channel=3660.0MHzMHz (for 20MHz)		
	-20	165	0.045082
	-10	180	0.049180
	0	132	0.036066
	10	136	0.037158
	20	150	0.040984
	30	148	0.040437
	40	171	0.046721
	55	105	0.028689

6.11 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part 90.213(a)
Test Method:	FCC Part 2.1055(a)(1)(b) and KDB 971168 D01
Limit:	FCC: Frequency range (MHz) / Fixed and base stations (±ppm) / Mobile stations (±ppm): Over 2 watts output power / 2 watts or less output power Below 25: 100 / 100 / 200 25–50: 20 / 20 / 50 72–76: 5 / / 50 150–174: 5 / 5 / 50 216–220: 1.0 / / 1.0 220–222: 0.1 / 1.5 / 1.5 421–512: 2.5 / 5 / 5 806–809: 1.0 / 1.5 / 1.5 809–824: 1.5 / 2.5 / 2.5 851–854: 1.0 / 1.5 / 1.5 854–869: 1.5 / 2.5 / 2.5 896–901: 0.1 / 1.5 / 1.5 902–928: 2.5 / 2.5 / 2.5 902–928: 2.5 / 2.5 / 2.5 929–930: 1.5 / / 935–940: 0.1 / 1.5 / 1.5 1427–1435: 300 / 300 / 300 Above 2450: / /
Test setup:	 **Note :** Measurement setup for testing on Antenna connector
Test procedure:	1. Set chamber temperature to 25℃. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details, and all channels have been tested, only shows the worst channel data in this report.
Test results:	Passed
Remark:	All three channels of all modulations have been tested, but only the worst channel and the worst modulation show in this test item.

Measurement Data (the worst channel):

LTE band 43 for QPSK			
Temperature (℃)	Power supplied (Vdc)	Frequency error	
		Hz	ppm
25	Reference Frequency: Lowest channel=3652.5MHz (for 5MHz)		
	108	68	0.018617
	120	90	0.024641
	132	74	0.020260
	Reference Frequency: Lowest channel=3655.0MHz (for 10MHz)		
	108	68	0.018605
	120	90	0.024624
	132	77	0.021067
	Reference Frequency: Lowest channel=3657.5MHz (for 15MHz)		
	108	74	0.020232
	120	80	0.021873
	132	90	0.024607
	Reference Frequency: Lowest channel=3660.0MHz (for 20MHz)		
	108	96	0.026230
	120	78	0.021311
	132	80	0.021858

LTE band 43 for 16QAM			
Temperature (℃)	Power supplied (Vdc)	Frequency error	
		Hz	ppm
25	Reference Frequency: Lowest channel=3652.5MHz (for 5MHz)		
	108	48	0.013142
	120	59	0.016153
	132	90	0.024641
	Reference Frequency: Lowest channel=3655.0MHz (for 10MHz)		
	108	90	0.024624
	120	86	0.023529
	132	74	0.020246
	Reference Frequency: Lowest channel=3657.5MHz (for 15MHz)		
	108	65	0.017772
	120	90	0.024607
	132	84	0.022967
	Reference Frequency: Lowest channel=3660.0MHz (for 20MHz)		
	108	98	0.026776
	120	81	0.022131
	132	74	0.020219