FCC TEST REPORT

Product Name:	Mobile Phone
Trade Mark:	MI
Model No.:	MDE5
Report Number:	170726002RFM-3
Test Standards:	FCC 47 CFR Part 90 Subpart S FCC 47 CFR Part 2
FCC ID:	2AFZZ-XMSD5
Test Result:	PASS
Date of Issue:	September 4, 2017

Prepared for:

Xiaomi Communications Co., Ltd.
The Rainbow City of China Resources, NO.68,Qinghe Middle Street, Haidian District, Beijing, China

Prepared by:

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Tested by: _____ Reviewed by: _____

Kevin Liang
Senior Engineer

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Approved by: _____ Date: September 4, 2017

Billy Li
Technical Director

Version

Version No.	Date	Description
V1.0	September 4, 2017	Original

CONTENTS

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Xiaomi Communications Co., Ltd.
Address of Applicant:	The Rainbow City of China Resources, NO.68,Qinghe Middle Street, Haidian District, Beijing, China
Manufacturer:	Xiaomi Communications Co., Ltd.
Address of Manufacturer:	The Rainbow City of China Resources, NO.68,Qinghe Middle Street, Haidian District, Beijing, China

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Mobile Phone		
Model No.:	MDE5		
Add. Model No.:	N/A		
Trade Mark:	MI		
DUT Stage:	Identical Prototype		
EUT Supports Function:	GSM Bands:	GSM 850/ PCS 1900	
	UTRA Bands:	Band II/ Band IV/ Band V	
	CDMA2000 Band:	BC0/ BC1/ BC10	
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 7/ Band 12/ Band 13/ Band 17/ Band 25/ Band 26/ Band 30	
		TDD Band 38/ Band 41	
	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth V3.0+EDR/ Bluetooth V4.1 LE/ Bluetooth V5.0 LE	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n/ac
		5 725 MHz to 5 850 MHz	IEEE 802.11a/n/ac
	RNSS Bands:	1559 MHz to 1610 MHz	GPS/GLONASS/Galileo
	NFC:	13.553 MHz to 13.567 MHz	
Software Version:	MIUI 8		
Hardware Version:	P2.0		
Sample Received Date:	July 27, 2017		
Sample Tested Date:	July 27, 2017 to September 3, 2017		

1.2.2 Description of Accessories

Adapter	
Trade Mark:	XIAOMI
Model No.:	MDY-08-EY
Input:	100-240V~50/60 Hz 0.5A
Output:	5V ⎓ 3A/9V ⎓ 2A/12V ⎓ 1.5A
AC Cable:	N/A
DC Cable:	N/A

Battery	
Trade Mark:	MI
Model No.:	BM3B
Battery Type:	Lithium-ion Polymer Rechargeable Battery
Rated Voltage:	3.85 Vdc
Limited Charge Voltage:	4.4 Vdc
Rated Capacity:	3300 mAh

Cable(1)	
Trade Mark:	MI
Model No.:	L6BU2018-CS-H
Description:	USB Type-C Plug Cable
Cable Type:	Shielded without ferrite
Length:	1.0 Meter

Cable(2)	
Trade Mark:	MI
Model No.:	KLC-2588-1
Description:	USB Type-C Plug Cable
Cable Type:	Shielded without ferrite
Length:	1.0 Meter

Cable(3)	
Trade Mark:	MI
Model No.:	KLC-2469
Description:	USB Type-C to 3.5 mm Headphone Jack Adapter
Cable Type:	Unshielded without ferrite

Cable(4)	
Trade Mark:	MI
Model No.:	0QT000XI0007
Description:	USB Type-C to 3.5 mm Headphone Jack Adapter
Cable Type:	Unshielded without ferrite

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	CDMA2000, LTE		
Type of Modulation:	CDMA2000 BC10 1xRTT:		QPSK
	CDMA2000 BC10 1xEV-DO:		QPSK, 8PSK
	LTE Band 26:		QPSK, 16QAM, 64QAM
Frequency Range:	CDMA2000 BC10:		817.25-822.75 MHz
	LTE Band 26 (Channel Bandwidth: 1.4 MHz):		814.7-823.3 MHz
	LTE Band 26 (Channel Bandwidth: 3 MHz):		815.5-822.5MHz
	LTE Band 26 (Channel Bandwidth: 5 MHz):		816.5-821.5 MHz
	LTE Band 26 (Channel Bandwidth: 10 MHz):		819 MHz
	LTE Band 26 (Channel Bandwidth: 15 MHz):		821.5 MHz
Max RF Output Power:	CDMA2000 BC10:		23.55dBm
	LTE Band 26 (Channel Bandwidth: 1.4 MHz):		22.55dBm
	LTE Band 26 (Channel Bandwidth: 3 MHz):		22.58dBm
	LTE Band 26 (Channel Bandwidth: 5 MHz):		22.60dBm
	LTE Band 26 (Channel Bandwidth: 10 MHz):		22.61dBm
	LTE Band 26 (Channel Bandwidth: 15 MHz):		22.67dBm
Type of Emission:	CDMA2000 BC10:		1M29F9W
	LTE Band 26 QPSK	Channel Bandwidth: 1.4 MHz	1M09G7W
		Channel Bandwidth: 3 MHz	2M71G7W
		Channel Bandwidth: 5 MHz	4M52G7W
		Channel Bandwidth: 10 MHz	9M00G7W
		Channel Bandwidth: 15 MHz	13M5G7W
	LTE Band 26 16QAM	Channel Bandwidth: 1.4 MHz	1M10D7W
		Channel Bandwidth: 3 MHz	2M71D7W
		Channel Bandwidth: 5 MHz	4M52D7W
		Channel Bandwidth: 10 MHz	8M98D7W
		Channel Bandwidth: 15 MHz	13M5D7W
	LTE Band 26 64QAM	Channel Bandwidth: 1.4 MHz	1M10D7W
		Channel Bandwidth: 3 MHz	2M70D7W
		Channel Bandwidth: 5 MHz	4M52D7W
		Channel Bandwidth: 10 MHz	8M96D7W
		Channel Bandwidth: 15 MHz	13M5D7W
IEMI:	Conducted: 865736030026044, 865736030026051		
	Radiation: 865736030023801, 865736030023819		
MEID:	Conducted: 99001021001303		
	Radiation: 99001021001191		
Antenna Type:	PIFA Antenna		
Antenna Gain:	-3.9 dBi		
Normal Test Voltage:	3.85 Vdc		
Extreme Test Voltage:	3.7 to 4.4Vdc		
Extreme Test Temperature:	-30 °C to +50 °C		

1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
N/A	N/A	N/A	N/A	N/A

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.30 Meter	UnionTrust

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.6 TEST FACILITY

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

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1
The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.
Designation Number: CN1194
Test Firm Registration Number: 259480

1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.10 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

2. TEST SUMMARY

FCC 47 CFR Part 90 Subpart S Test Cases			
Test Item	**Test Requirement**	**Test Method**	**Result**
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046 & FCC 47 CFR Part 90.635	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Emission Mask	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 90.691	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 90.691	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 90.691	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 90.213	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Note: 1) N/A: In this whole report not application.			

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☑	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 20, 2015	Dec. 19, 2018
☐	Receiver	R&S	ESR7	1316.3003K07 -101181-K3	Dec. 22, 2016	Dec. 22, 2017
☑	Receiver	R&S	ESIB26	100114	Dec. 22, 2016	Dec. 22, 2017
☐	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Dec. 22, 2016	Dec. 22, 2017
☐	Loop Antenna	ETS-LINDGREN	6502	00202525	Jun. 24, 2015	Jun. 23, 2018
☑	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Jul. 24, 2015	Jul. 23, 2018
☑	Preamplifier	HP	8447F	2805A02960	Dec. 22, 2016	Dec. 22, 2017
☐	Broadband Antenna (Pre-amplifier)	ETS-LINDGREN	3142E-PA	00201891	Dec. 30, 2016	Dec. 30, 2017
☑	Horn Antenna	ETS-LINDGREN	3117	00164202	Jul. 24, 2015	Jul. 23, 2018
☑	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	Dec. 30, 2016	Dec. 30, 2017
☐	Horn Antenna	ETS-LINDGREN	3116C	00200180	Jul. 28, 2015	Jul. 27, 2018
☐	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Jul. 29, 2015	Jul. 28, 2018
☑	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☐	Highpass Filter (1.2GHz~18GHz)	Micro-Tronics	HPM50108	G552	Jan. 19, 2017	Jan. 19, 2018
☐	Highpass Filter (3GHz~18GHz)	Micro-Tronics	HPM50117	G005	Jan. 30, 2017	Jan. 30, 2018

2/3/4G RF Test System Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☐	Spectrum Analyzer	R&S	FSP 13	1164.4391.13	Mar. 22, 2017	Mar. 21, 2018
☑	Spectrum Analyzer	R&S	FSV 13	1307.9002K13 -101620-cJ	Aug. 09, 2017	Aug. 08, 2018
☑	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Dec. 22, 2016	Dec. 22, 2017
☑	Wideband Radio Communication Tester	R&S	CMW500	116254	Mar. 22, 2017	Mar. 21, 2018
☑	Universal Radio Communication Tester	R&S	CMU200	114713	Dec. 22, 2016	Dec. 22, 2017
☑	DC Source	KIKUSUI	PWR400L	LK003024	Sep. 21, 2016	Sep. 20, 2017
☐	Temp & Humidity chamber	Ispec	GL(U)04KA(W)	1692H201P3	Sep. 21, 2016	Sep. 20, 2017
☑	Temp & Humidity chamber	Votisch	VT4002	58566133290 020	Jun. 19, 2017	Jun. 18, 2018
☑	Test Software	ECIT	AutomationTestSystem		Software Version: 2.170530	

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Test Environment	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
TN/VN	+15 to +35	**3.85**	20 to 75
TL/VL	-30	3.7	20 to 75
TH/VL	+50	3.7	20 to 75
TL/VH	-30	4.4	20 to 75
TH/VH	+50	4.4	20 to 75

Remark:

1) The EUT just work in such extreme temperature of -30 °C to +50 °C and the extreme voltage of 3.7 V to 4.4 V, so here the EUT is tested in the temperature of -30 °C to +50 °C and the voltage of 3.7 V to 4.4 V.
2) VN: Normal Voltage; TN: Normal Temperature;
TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;
VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.

4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup

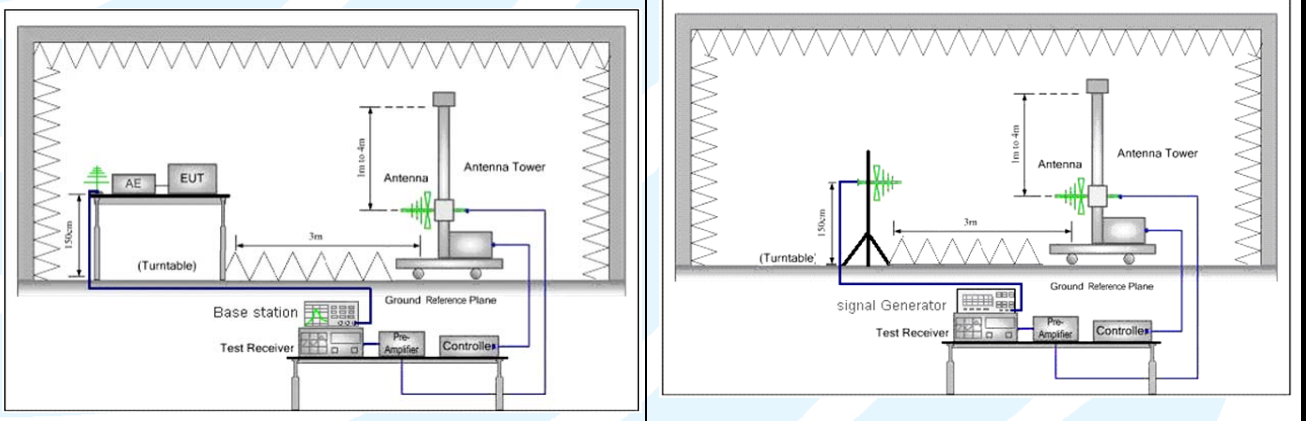


Figure 1. 30MHz to 1GHz

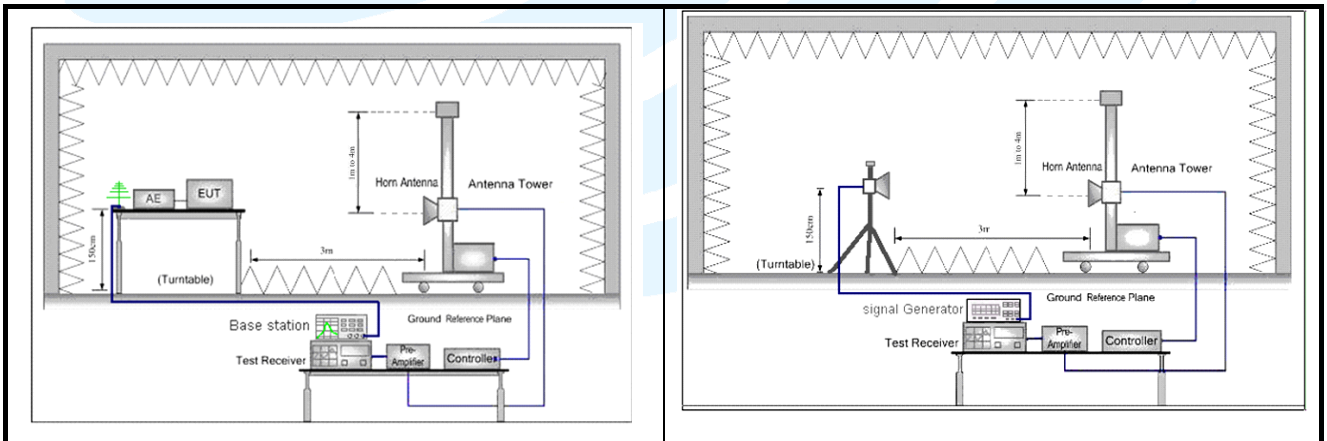
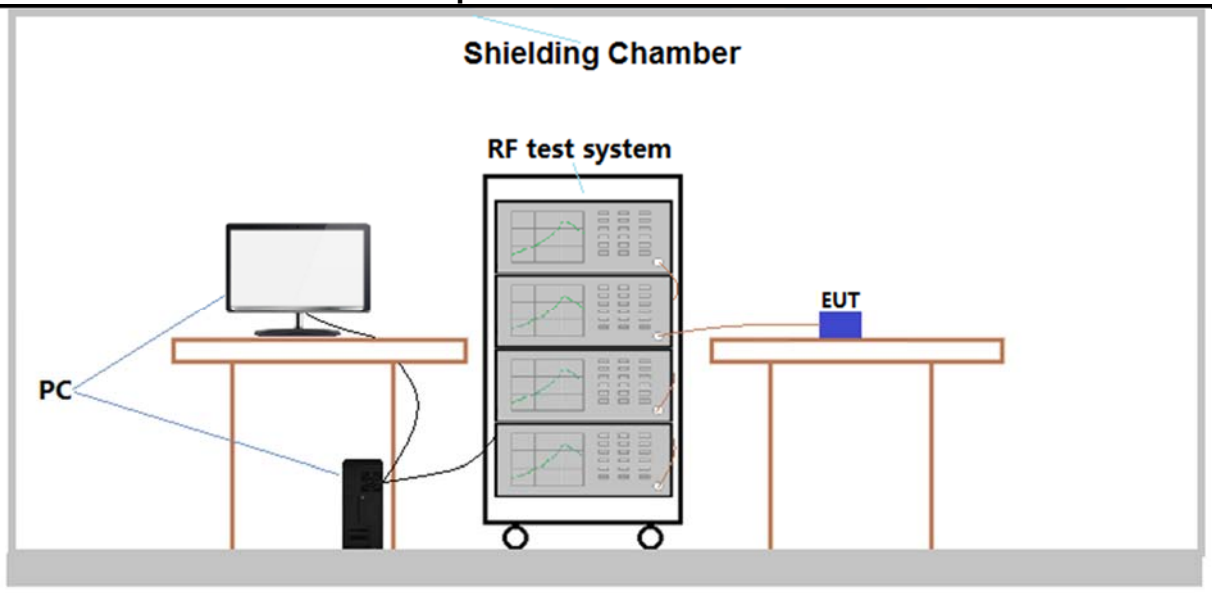
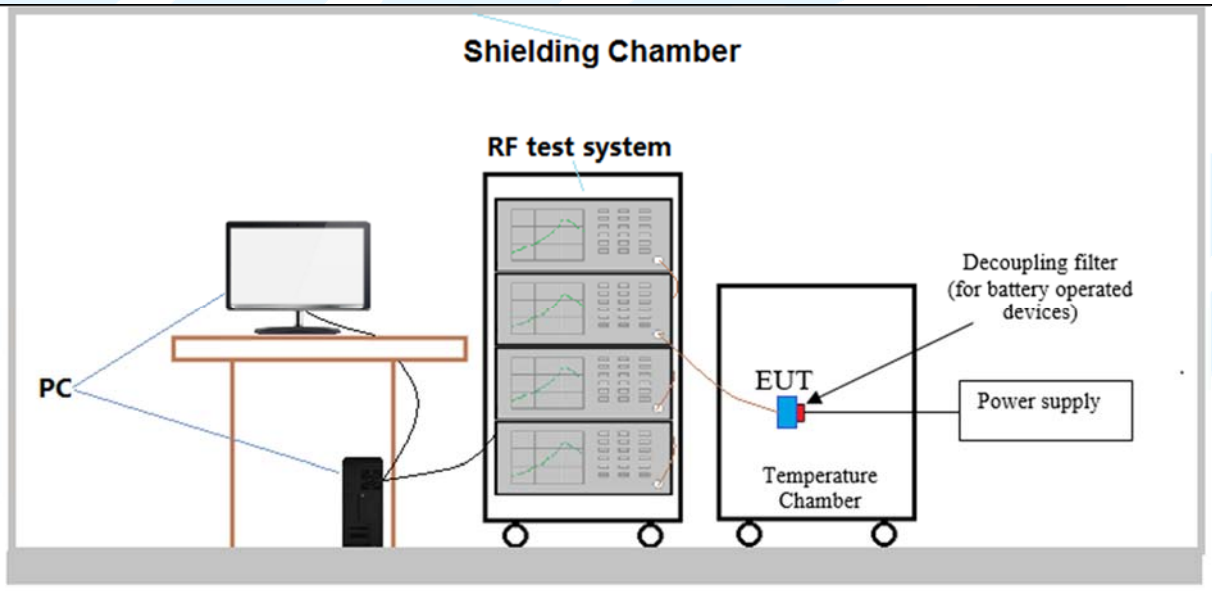


Figure 2. Above 1GHz

4.2.2 For Conducted RF test setup



Normal Environment



Extreme Environment

4.3 TEST CHANNELS

Band	Tx/Rx Frequency	RF Channel		
		Low(L)	Middle(M)	High(H)
CDMA2000 BC10	Tx (817 MHz-824 MHz)	Channel 450	Channel 560	Channel 670
		817.25 MHz	820 MHz	822.75 MHz

Band	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)
LTE Band 26 TX: 814 MHz to 824 MHz	Low Range	1.4	26697	814.7
		3	26705	815.5
		5	26715	816.5
		10	/	/
		15	/	821.5
	Middle Range	1.4/3/5/10	26740	819
	High Range	1.4	26783	823.3
		3	26775	822.5
		5	26765	821.5
		10	/	/
		15	26765	/

4.4 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 3.85Vdc rechargeable Li-on battery. Only the worst case data were recorded in this test report.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X/Y/Z axis, and antenna ports.
The worst case was found when positioned as the table below.

Band	Mode	Antenna Port	Worst-case axis positioning
CDMA2000 BC10 1xRTT	1TX	Chain 0	Y axis
LTE Band 26	1TX	Chain 0	Y axis

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.5 PRE-SCAN

CDMA2000 BC10 Maximum Average Power (dBm)			
Channel	450	560	670
Frequency	817.25 MHz	820 MHz	822.75 MHz
1xRTT RC1+SO55	23.43	23.49	23.45
1xRTT RC3+SO55	23.44	23.50	23.46
1xRTT RC3+SO32 (+ F-SCH)	23.49	**23.55**	23.51
1xRTT RC3+SO32(+SCH)	23.42	23.48	23.44
1xEVDO RTAP 153.6 Kbps	23.43	23.49	23.45
1xEVDO RETAP 4096 Bits	23.26	23.32	23.28
1xRTT RC8+SO75 (1X advance)	23.40	23.41	23.38

LTE Band 26 Maximum Average Power (dBm)										
Modulation	RB		Test Channel			RB		Test Channel		
	Size	Offset	Low	Mid	High	Size	Offset	Low	Mid	High
	Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
QPSK	1	0	22.52	**22.55**	22.53	1	0	22.55	**22.58**	22.56
	1	2	22.46	22.53	22.49	1	7	22.49	22.56	22.52
	1	5	22.40	22.44	22.43	1	14	22.43	22.47	22.46
	3	0	22.50	22.53	22.51	8	0	21.68	21.65	21.65
	3	1	22.44	22.51	22.47	8	3	21.60	21.58	21.59
	3	3	22.38	22.42	22.41	8	7	21.63	21.46	21.46
	6	0	21.51	21.47	21.45	15	0	21.54	21.50	21.48
16QAM	1	0	21.94	22.13	22.11	1	0	21.97	22.16	22.14
	1	2	21.91	22.07	22.07	1	7	21.94	22.10	22.10
	1	5	21.84	21.98	22.00	1	14	21.87	22.01	22.03
	3	0	21.93	22.12	22.10	8	0	20.61	20.56	20.59
	3	1	21.90	22.06	22.06	8	3	20.59	20.63	20.60
	3	3	21.83	21.97	21.99	8	7	20.55	20.52	20.57
	6	0	20.50	20.52	20.53	15	0	20.53	20.55	20.56
64QAM	1	0	20.88	21.11	21.09	1	0	20.91	21.14	21.12
	1	2	20.89	20.97	21.00	1	7	20.92	21.00	21.03
	1	5	20.78	20.91	20.93	1	14	20.81	20.94	20.96
	3	0	20.87	21.10	21.08	8	0	19.60	19.55	19.54
	3	1	20.88	20.96	20.99	8	3	19.52	19.54	19.54
	3	3	20.77	20.90	20.92	8	7	19.53	19.55	19.52
	6	0	19.48	19.42	19.41	15	0	19.51	19.45	19.44
	Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
QPSK	1	0	22.57	**22.60**	22.58	1	0	/	**22.61**	/
	1	12	22.51	22.58	22.54	1	24	/	22.55	/
	1	24	22.45	22.49	22.48	1	49	/	22.49	/
	12	0	21.70	21.67	21.67	25	0	/	21.74	/
	12	6	21.62	21.60	21.61	25	12	/	21.66	/
	12	13	21.65	21.48	21.48	25	25	/	21.69	/
	25	0	21.56	21.52	21.50	50	0	/	21.60	/
16QAM	1	0	21.99	22.18	22.16	1	0	/	22.03	/
	1	12	21.96	22.12	22.12	1	24	/	22.00	/
	1	24	21.89	22.03	22.05	1	49	/	21.93	/
	12	0	20.63	20.58	20.61	25	0	/	20.67	/
	12	6	20.61	20.65	20.62	25	12	/	20.65	/
	12	13	20.57	20.54	20.59	25	25	/	20.61	/
	25	0	20.55	20.57	20.58	50	0	/	20.59	/
64QAM	1	0	20.93	21.16	21.14	1	0	/	20.97	/
	1	12	20.94	21.02	21.05	1	24	/	20.98	/

	1	24	20.83	20.96	20.98	1	49	/	20.87	/
	12	0	19.62	19.57	19.56	25	0	/	19.66	/
	12	6	19.54	19.56	19.56	25	12	/	19.58	/
	12	13	19.55	19.57	19.54	25	25	/	19.59	/
	25	0	19.53	19.47	19.46	50	0	/	19.57	/
Channel Bandwidth: 15 MHz										
QPSK	1	0	/	/	**22.67**					
	1	37	/	/	22.61					
	1	74	/	/	22.55					
	37	0	/	/	21.80					
	37	19	/	/	21.72					
	37	39	/	/	21.75					
	75	0	/	/	21.66					
16QAM	1	0	/	/	22.09					
	1	37	/	/	22.06					
	1	74	/	/	21.99					
	37	0	/	/	20.73					
	37	19	/	/	20.71					
	37	39	/	/	20.67					
	75	0	/	/	20.65					
64QAM	1	0	/	/	21.03					
	1	37	/	/	21.04					
	1	74	/	/	20.93					
	37	0	/	/	19.72					
	37	19	/	/	19.64					
	37	39	/	/	19.65					
	75	0	/	/	19.63					

Pre-scan all bandwidth and RB, find worse case mode are chosen to the report, the worse mode applicability and tested channel detail as below:

Band	Radiated	Conducted
CDMA2000 BC10	1xRTT	1xRTT

LTE worse case mode applicability and tested channel detail as below:

Item	Channel Bandwidth(MHz)						Modulation			RB #			Test		
	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
LTE Band 26															
Effective Radiated Power	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	☐	☐	☐	☒	☐	--	☒	☒	☒	☒	☐	☐	☐	☒	☐
	☐	☐	☐	☐	☒	--	☒	☒	☒	☒	☐	☐	☒	☐	☐
Conducted output power	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☒	☒	☒	☒	☒
	☐	☐	☐	☒	☐	--	☒	☒	☒	☒	☒	☒	☐	☒	☐
	☐	☐	☐	☐	☒	--	☒	☒	☒	☒	☒	☒	☒	☐	☐
99%&26dB Bandwidth	☒	☒	☒	☒	☒	--	☒	☒	☒	☐	☐	☒	☒	☒	☒
	☐	☐	☐	☒	☐	--	☒	☒	☒	☐	☐	☒	☐	☒	☐
	☐	☐	☐	☐	☒	--	☒	☒	☒	☐	☐	☒	☒	☐	☐
Emission Mask	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	☐	☐	☐	☒	☐	--	☒	☒	☒	☒	☐	☒	☐	☒	☐
	☐	☐	☐	☐	☒	--	☒	☒	☒	☒	☐	☒	☒	☐	☐
Spurious emissions at antenna terminals	☒	☒	☒	☒	☒	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	☐	☐	☐	☒	☐	--	☒	☒	☒	☒	☐	☐	☐	☒	☐
	☐	☐	☐	☐	☒	--	☒	☒	☒	☒	☐	☐	☒	☐	☐
Field strength of spurious radiation	☒	☒	☒	☒	☒	--	☒	☐	☐	☒	☐	☐	☐	☒	☐
	☒	☒	☒	☒	☒	--	☒	☐	☐	☒	☐	☐	☐	☒	☐
	☐	☐	☐	☒	☐	--	☒	☐	☐	☒	☐	☐	☒	☐	☐
Frequency stability	☐	☐	☐	☒	☐	--	☒	☐	☐	☐	☐	☒	☐	☒	☐

Remark:
The mark "☒" means is chosen for testing;
The mark "☐" means is not chosen for testing;
The mark "--" means is not supported bandwidth.

5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 90	Private Land Mobile Radio Services
3	ANSI/TIA-603-D 2010	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
5	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v02r02

5.2 EFFECTIVE RADIATED POWER (ERP)

Test Requirement: FCC 47 CFR Part 2.1046 & FCC 47 CFR Part 90.635

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Limit:

(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Table—Equivalent Power and Antenna Heights for Base Stations in the 851–869 MHz and 935–940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

Antenna height (ATT) meters (feet)	Effective radiated power (watts)[1 2 4]
Above 1,372 (4,500)	65
Above 1,220 (4,000) to 1,372 (4,500)	70
Above 1,067 (3,500) to 1,220 (4,000)	75
Above 915 (3,000) to 1,067 (3,500)	100
Above 763 (2,500) to 915 (3,000)	140
Above 610 (2,000) to 763 (2,500)	200
Above 458 (1,500) to 610 (2,000)	350
Above 305 (1,000) to 458 (1,500)	600
Up to 305 (1,000)	[3]1,000

1. Power is given in terms of effective radiated power (ERP).
2. Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra Peak, Mount Lukens, and Mount Wilson.
3. Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP).
4. Licensees in San Diego, CA, will be permitted to utilize an ERP of 500 watts at the following mountaintop sites: Palomar, Otay, Woodson and Miguel.

Test Procedure:

Test procedure as below:

1) The EUT was powered ON and placed on a 0.8/1.5m high table at a 3 meter semi/fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. Modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.
7) The output power into the substitution antenna was then measured.
8) Steps 6) and 7) were repeated with both antennas polarized.
9) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)
EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)
EIRP=ERP+2.15dB

where:
Pg is the generator output power into the substitution antenna.

10) Test the EUT in the lowest channel, the middle channel the Highest channel
11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode, and found the Y axis positioning which it is worse case.
12) Repeat above procedures until all frequencies measured was complete.

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Peak	100kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Test Setup: Refer to section 4.2.1 for details.
Instruments Used: Refer to section 3 for details
Test Mode: Link mode
Test Results: Pass
Test Data: See table below

Maximum ERP (dBm)			
Channel	CDMA2000 BC10 1xRTT	Limit (dBm)	Result
Lowest	17.62	50	Pass
Middle	17.62	50	Pass
Highest	17.82	50	Pass

LTE Band 26 Maximum ERP (dBm)					
Channel	QPSK; RB:1	16QAM; RB:1	64QAM; RB:1	Limit (dBm)	Result
Channel Bandwidth: 1.4MHz					
Lowest	19.03	18.24	17.14	50	Pass
Middle	18.72	18.53	17.23	50	Pass
Highest	18.83	18.52	17.41	50	Pass
Channel Bandwidth: 3MHz					
Lowest	18.83	18.12	17.11	50	Pass
Middle	18.74	18.60	17.36	50	Pass
Highest	19.16	18.56	17.22	50	Pass
Channel Bandwidth: 5MHz					
Lowest	19.12	18.29	17.36	50	Pass
Middle	18.87	18.34	17.34	50	Pass
Highest	18.95	18.32	17.48	50	Pass
Channel Bandwidth: 10MHz					
Middle	19.03	18.26	17.14	50	Pass
Channel Bandwidth: 15MHz					
Highest	19.22	18.29	17.50	50	Pass

5.3 CONDUCTED OUTPUT POWER

Test Requirement: FCC 47 CFR Part 2.1046(a)

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Limit:

No Limit

Test Procedure:

The EUT was set up for the maximum power with CDMA2000, and 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.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data: The full result refer to section 4.5 for details.

5.4 99%&26DB BANDWIDTH

Test Requirement: FCC 47 CFR Part 2.1049(h)

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Limit: No Limit

Test Procedure:

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The 99% and -26dB bandwidths was also measured and recorded.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

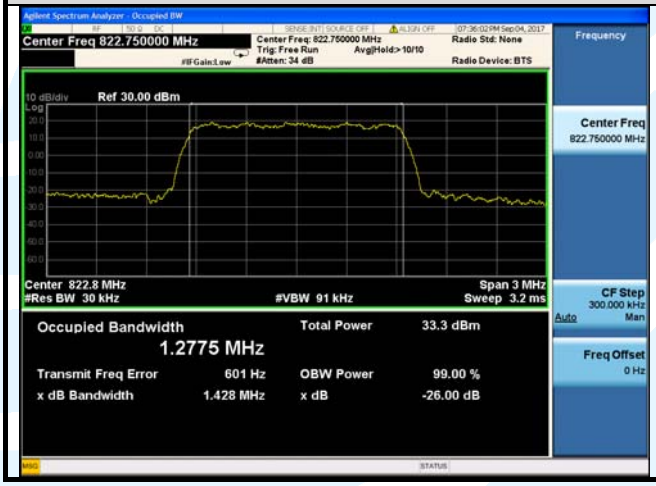
Test Mode: Link mode

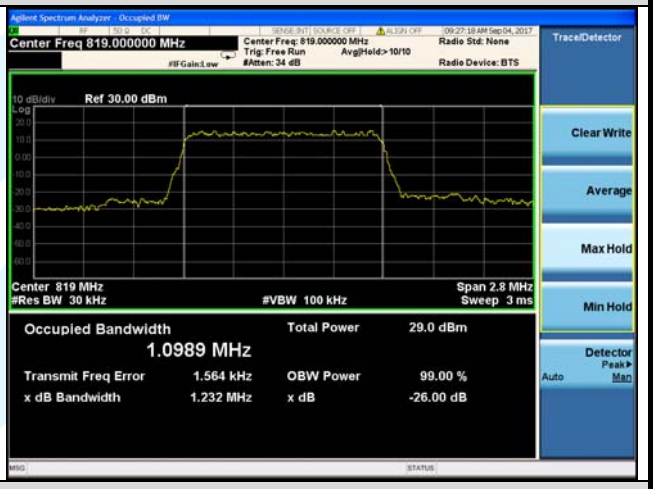
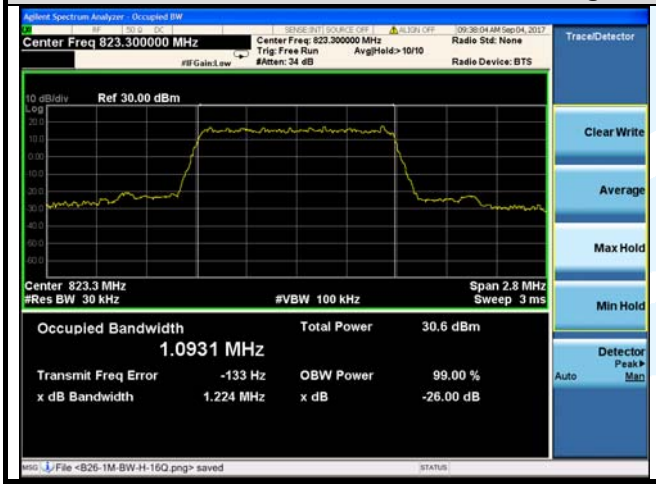
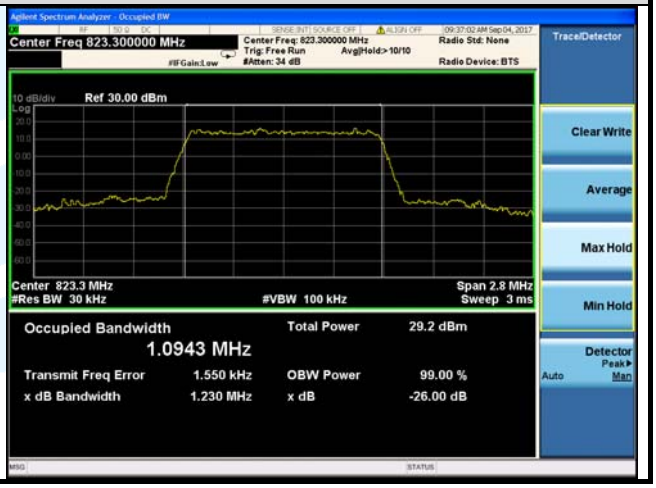
Test Results: Pass

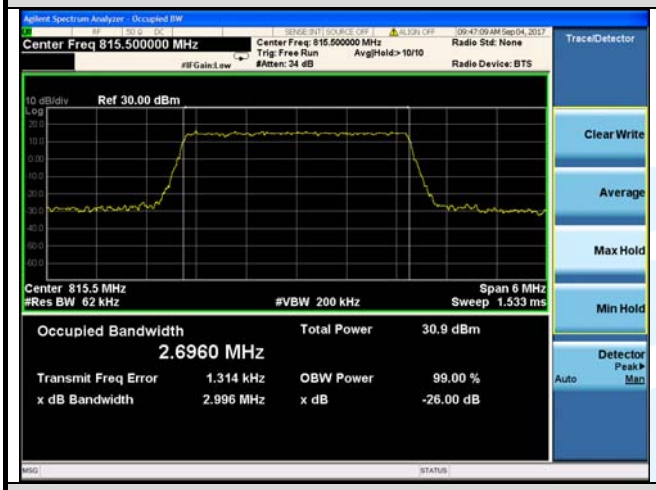
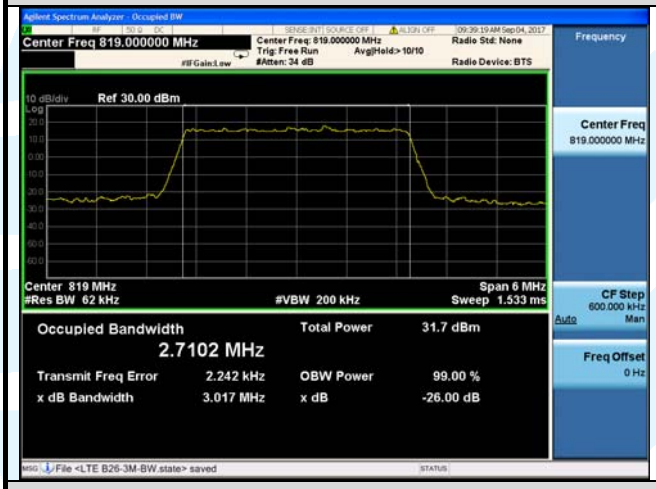
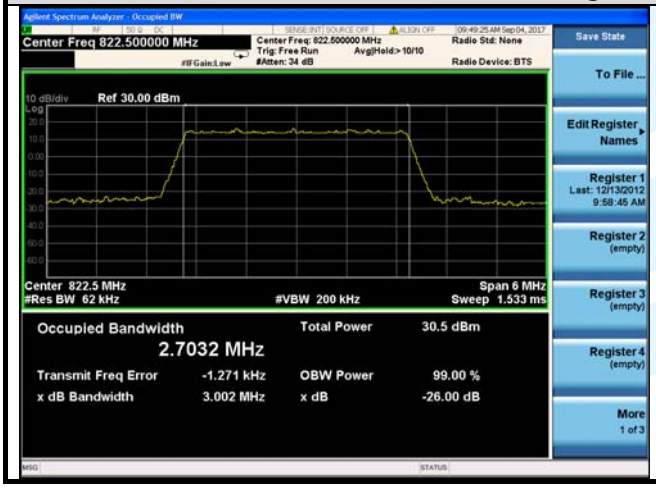
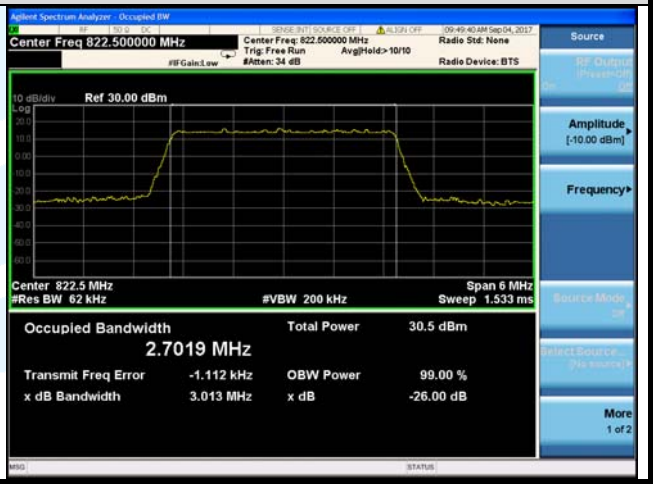
99% & 26 dB Bandwidth				
Test Mode	**Channel**	**Frequency (MHz)**	**26 dB BW (MHz)**	**99% BW (MHz)**
CDMA2000 BC10 1xRTT	450	817.25	1.435	1.2722
	560	820	1.425	1.2860
	670	822.75	1.428	1.2775

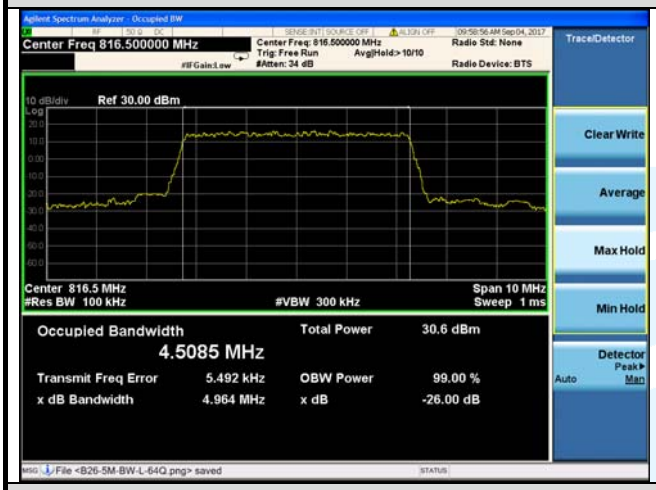
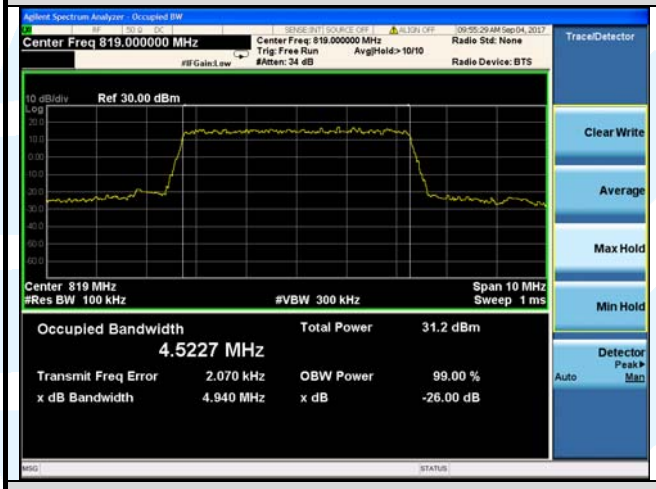
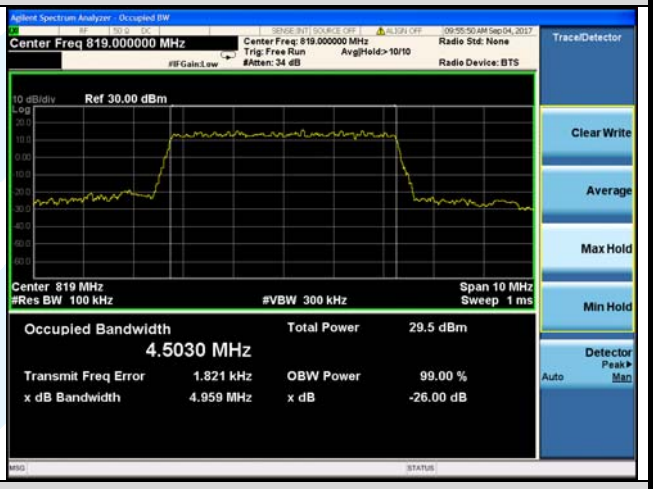
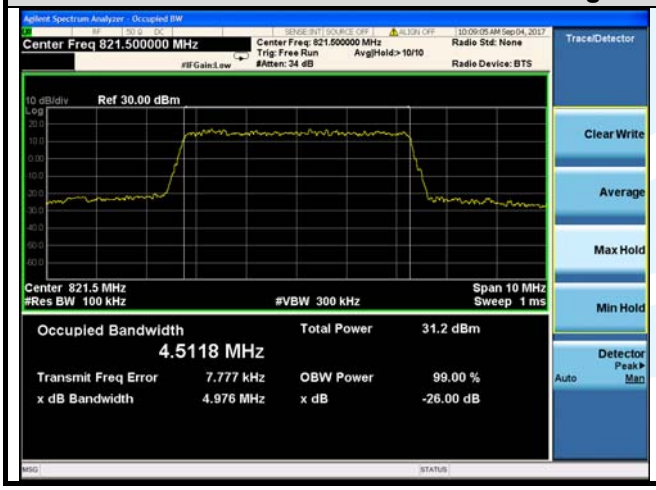
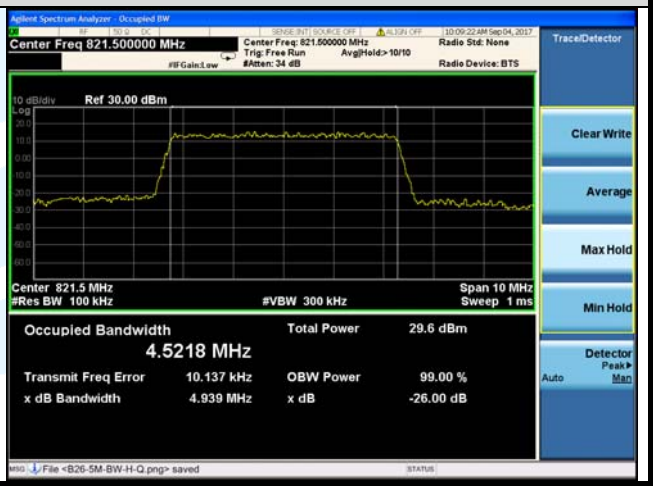
LTE Band 26								
Channel	**RB Configuration**		**26 dB BW (MHz)**			**99% BW (MHz)**		
	Size	**Offset**	**QPSK**	**16QAM**	**64QAM**	**QPSK**	**16QAM**	**64QAM**
Channel Bandwidth: 1.4 MHz								
Lowest	6	0	1.239	1.240	1.248	1.0865	1.0918	1.0972
Middle	6	0	1.246	1.232	1.222	1.0893	1.0989	1.0895
Highest	6	0	1.224	1.230	1.245	1.0931	1.0943	1.0900
Channel Bandwidth: 3 MHz								
Lowest	15	0	2.996	2.990	3.002	2.6960	2.7026	2.7014
Middle	15	0	3.017	2.968	3.013	2.7102	2.7148	2.6993
Highest	15	0	3.002	3.013	3.013	2.7032	2.7019	2.7019
Channel Bandwidth: 5 MHz								
Lowest	25	0	4.964	4.936	4.942	4.5085	4.5077	4.5095
Middle	25	0	4.940	4.959	4.964	4.5227	4.5030	4.5032
Highest	25	0	4.976	4.939	4.965	4.5118	4.5218	4.5180
Channel Bandwidth: 10 MHz								
Middle	50	0	9.865	9.803	9.693	8.9911	8.9842	8.9611
Channel Bandwidth: 15 MHz								
Lowest	75	0	14.76	14.65	14.70	13.489	13.462	13.487

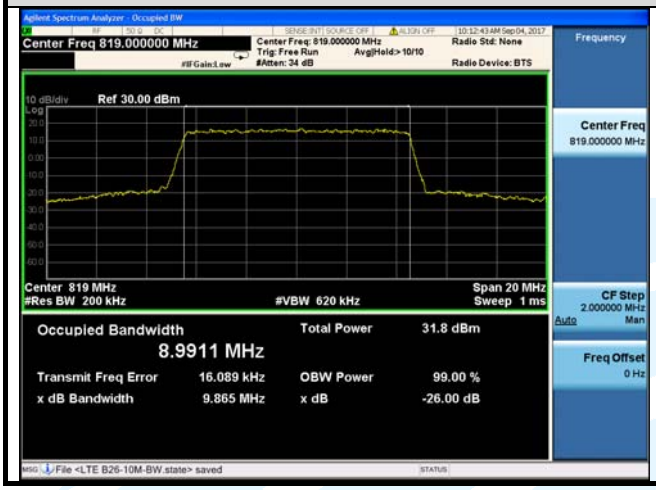
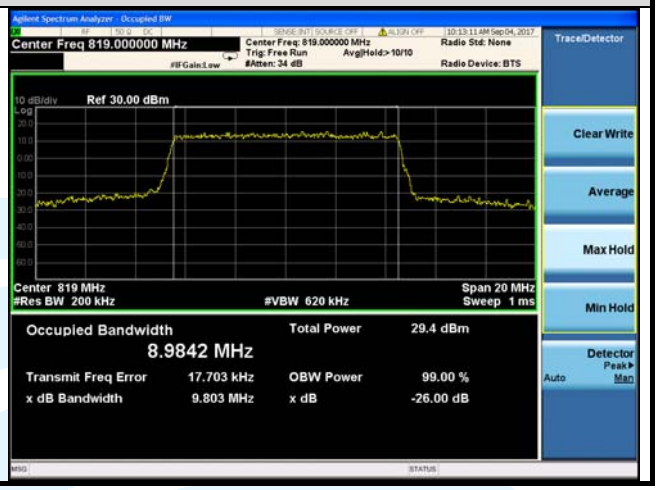
The test plot as follows:

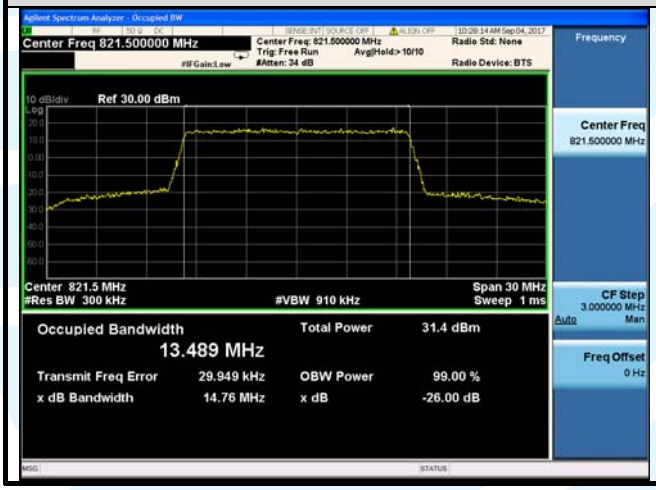
CDMA2000 BC10	
Lowest Channel	**Middle Channel**
	
Highest Channel	
	/

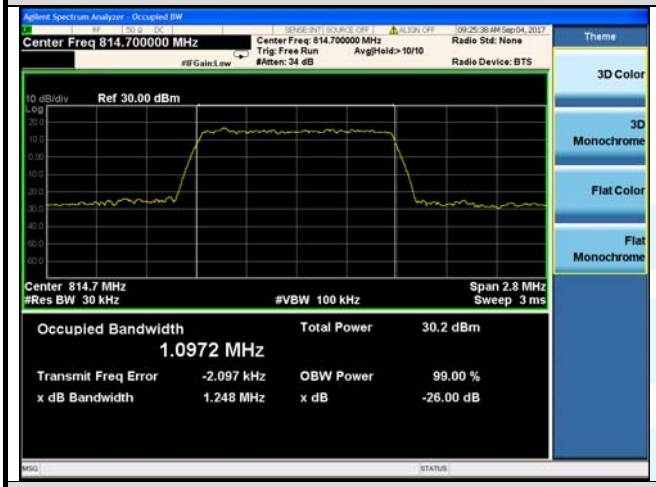
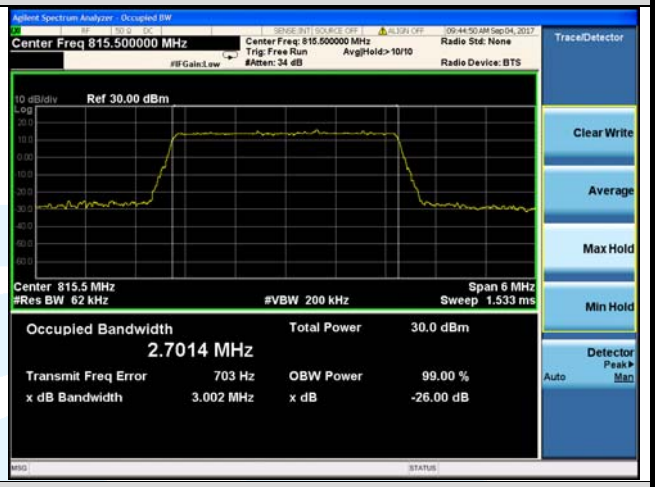
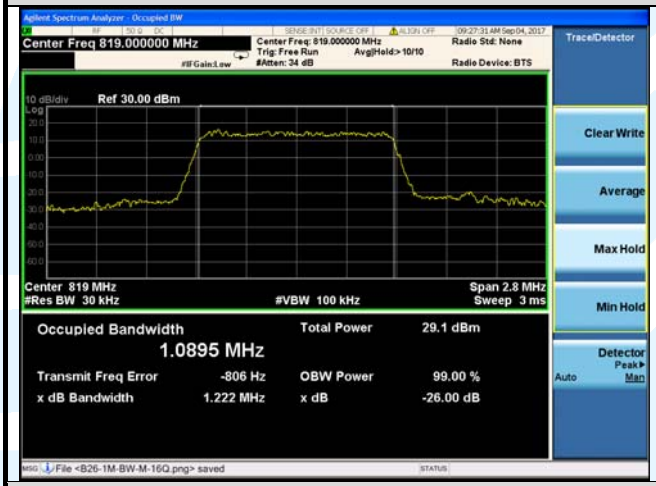
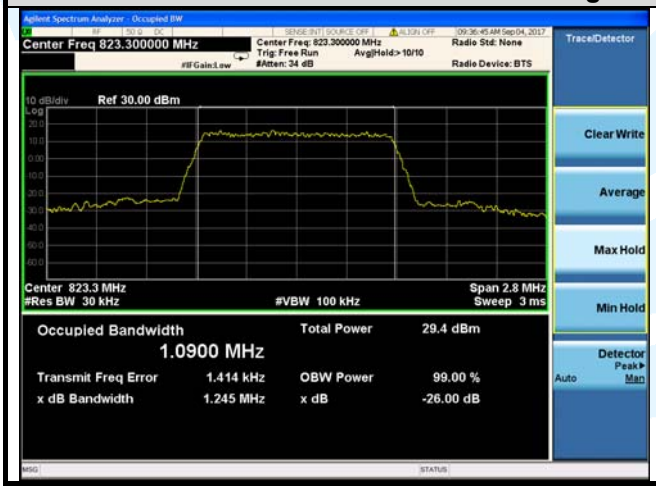
LTE Band 26_ Channel Bandwidth: 1.4 MHz	
QPSK	16QAM
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

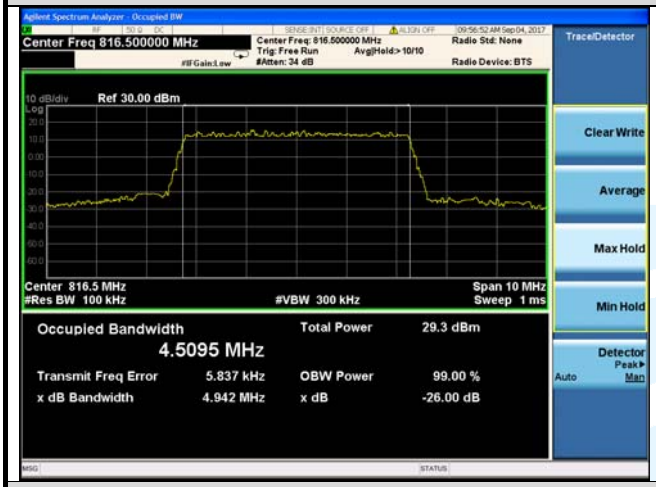
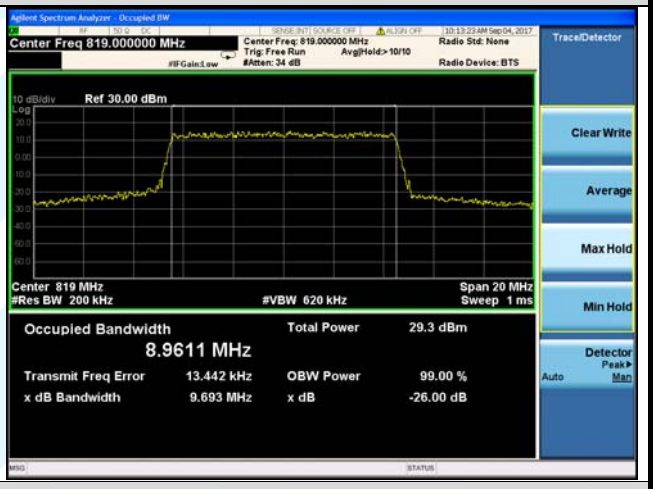
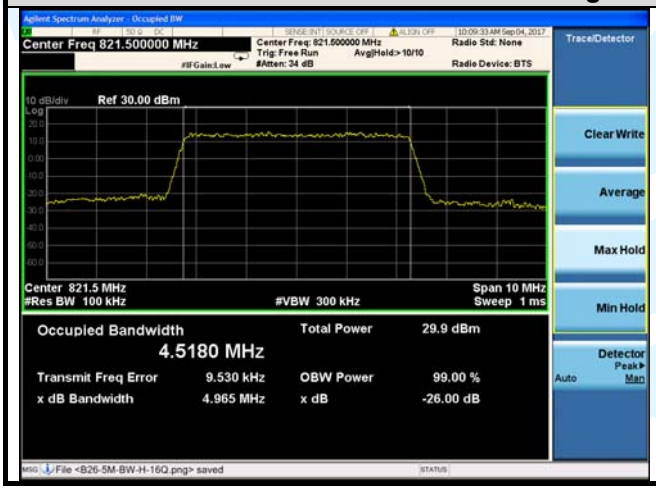
LTE Band 26_ Channel Bandwidth: 3 MHz	
QPSK	16QAM
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

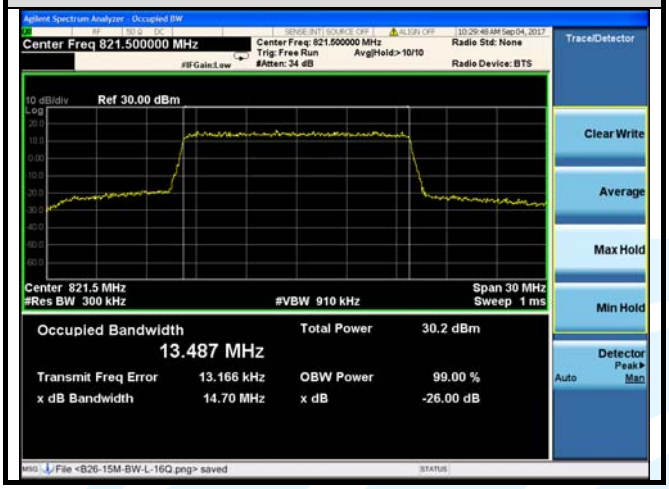
LTE Band 26_ Channel Bandwidth: 5 MHz	
QPSK	16QAM
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

LTE Band 26_ Channel Bandwidth: 10 MHz	
QPSK	16QAM
Middle Channel	
	

LTE Band 26_ Channel Bandwidth: 15 MHz	
QPSK	16QAM
Lowest Channel	
	

LTE Band 26 / 1.4MHz / 64QAM	LTE Band 26 / 3MHz / 64QAM
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

LTE Band 26 / 5MHz / 64QAM	LTE Band 26 / 10MHz / 64QAM
Lowest Channel	
	/
Middle Channel	
	
Highest Channel	
	/

LTE Band 26 / 15MHz / 64QAM
Lowest Channel


5.5 EMISSION MASK

Test Requirement: FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 90.691

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Limit:

(a)(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(a)(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

Test Procedure:

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.

For each band edge measurement:

1) Set the spectrum analyzer span to include the low or high channels.
2) Set the emissions mask of low or high channels.
3) Set resolution bandwidth to at least 1% of emission bandwidth and the VBW set 3 times of RBW.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

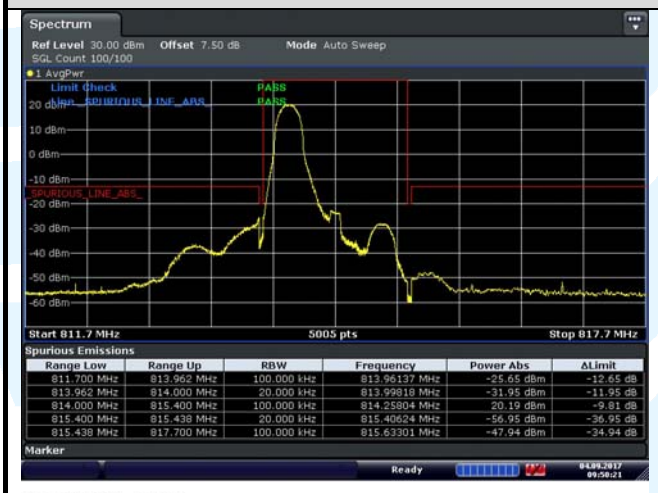
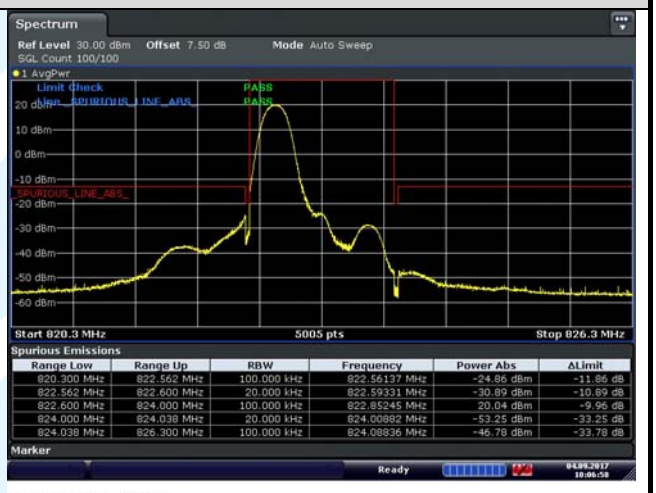
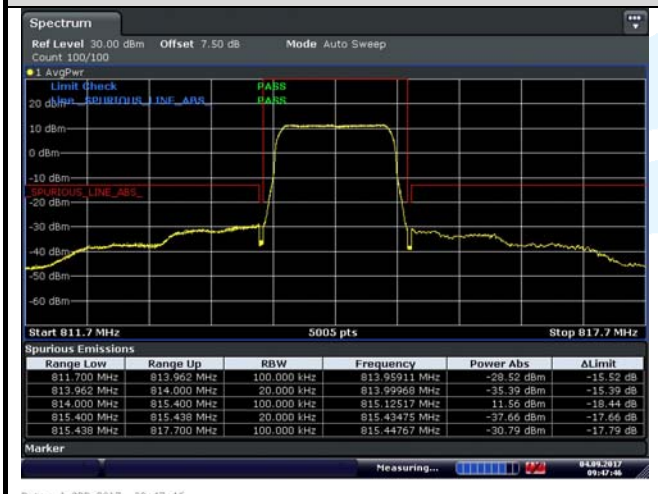
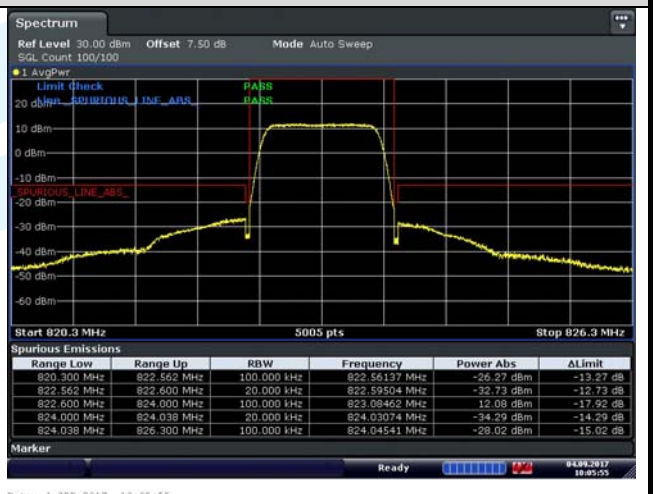
Instruments Used: Refer to section 3 for details

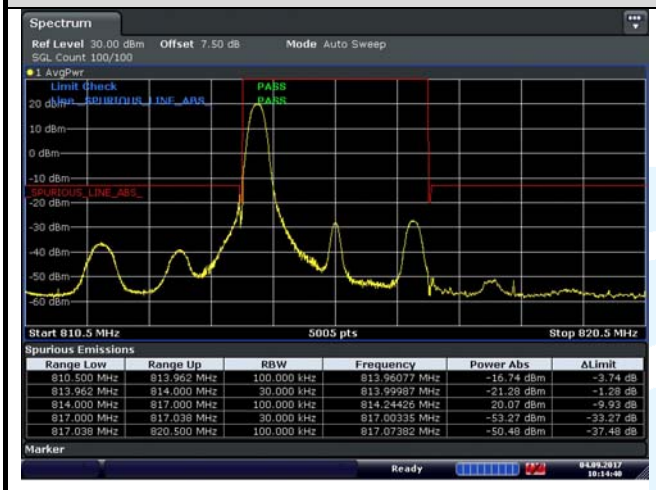
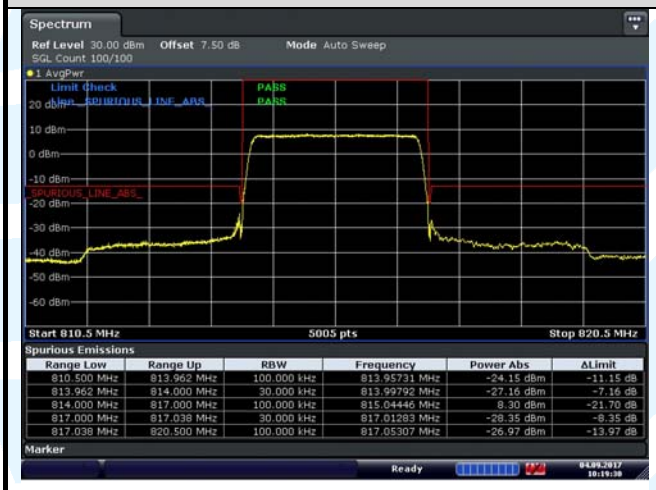
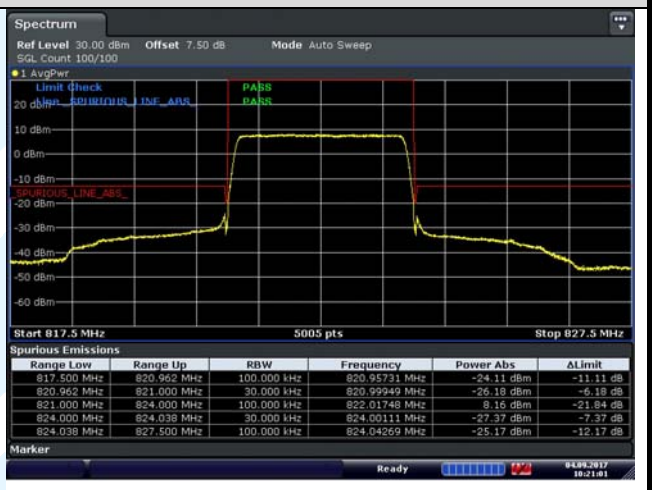
Test Mode: Link mode

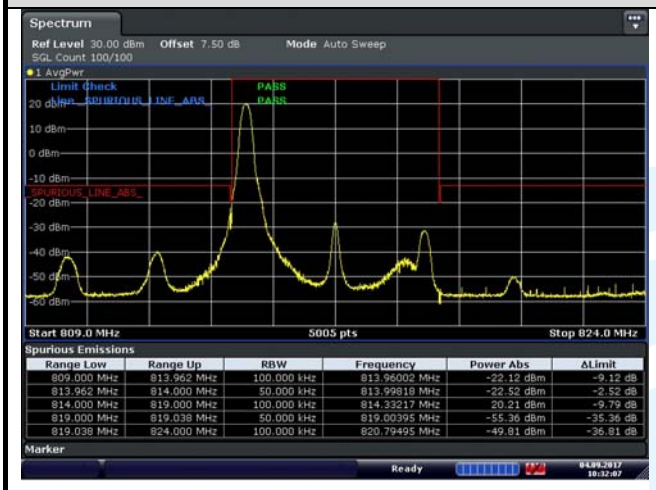
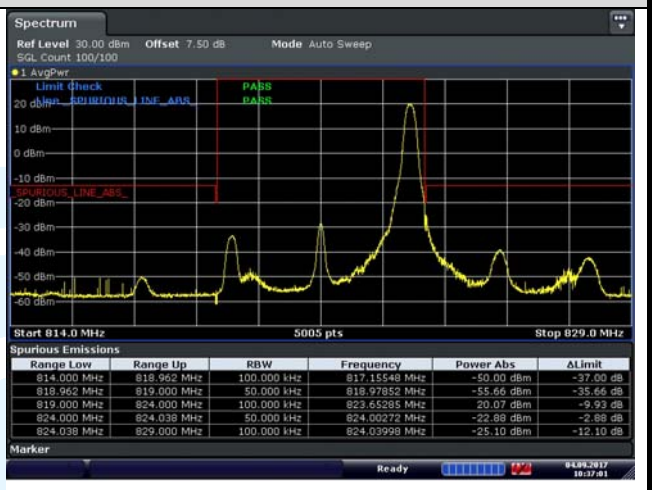
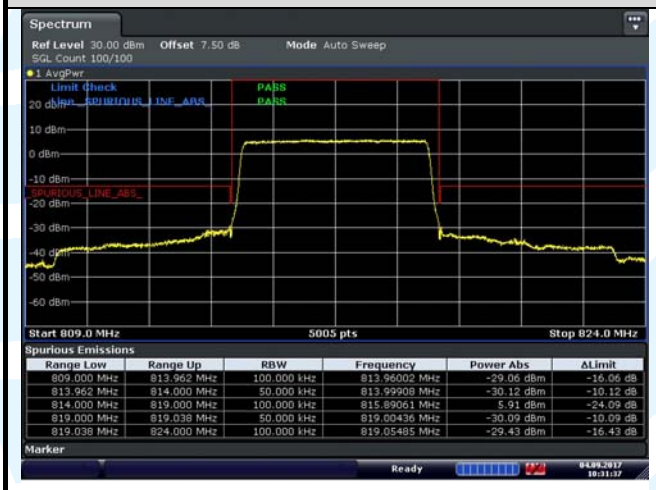
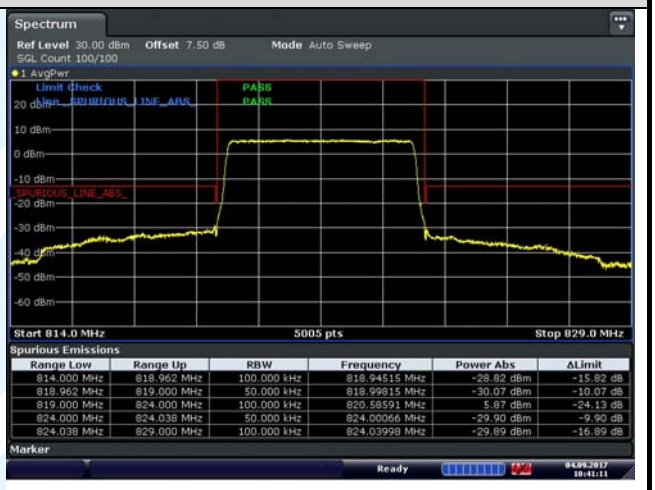
Test Results: Pass

The test plot as follows:

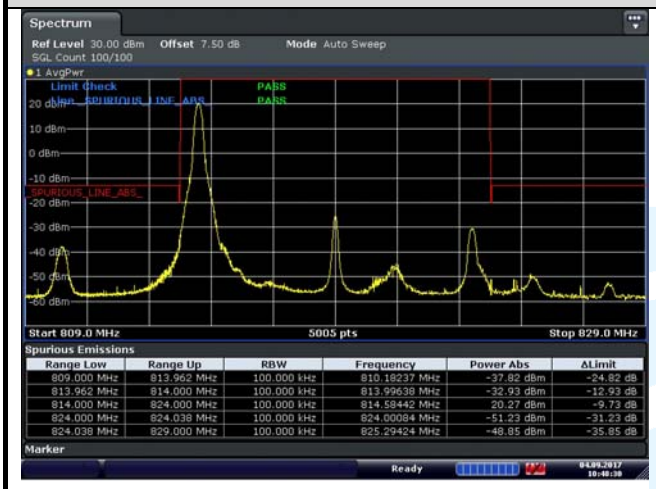
CDMA2000 BC10 1xRTT	
Lowest Channel	**Highest Channel**
	

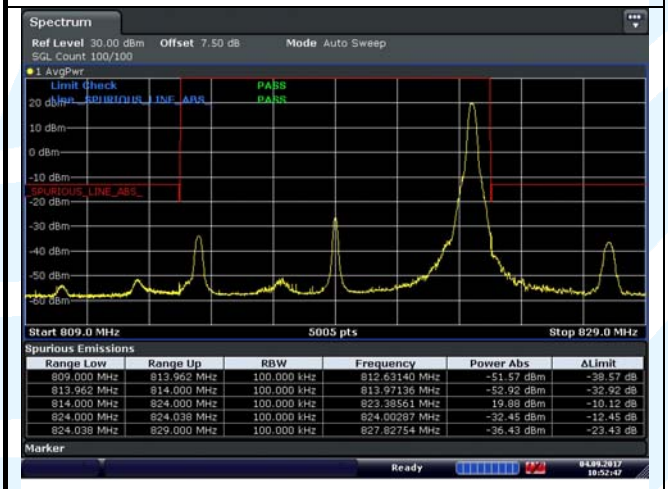
LTE Band 26 / 1.4 MHz / QPSK	
Lowest Channel	**Highest Channel**
1 RB	
	
Full RB	
	

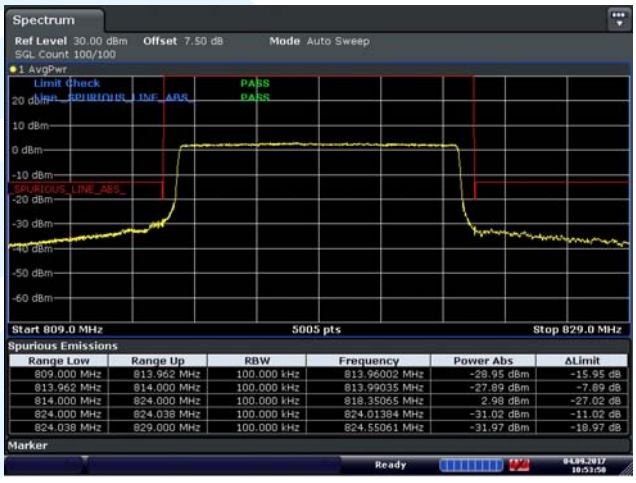
LTE Band 26 / 3 MHz / QPSK	
Lowest Channel	**Highest Channel**
1 RB	
	
Full RB	
	

LTE Band 26 / 5 MHz / QPSK	
Lowest Channel	**Highest Channel**
1 RB	
	
Full RB	
	

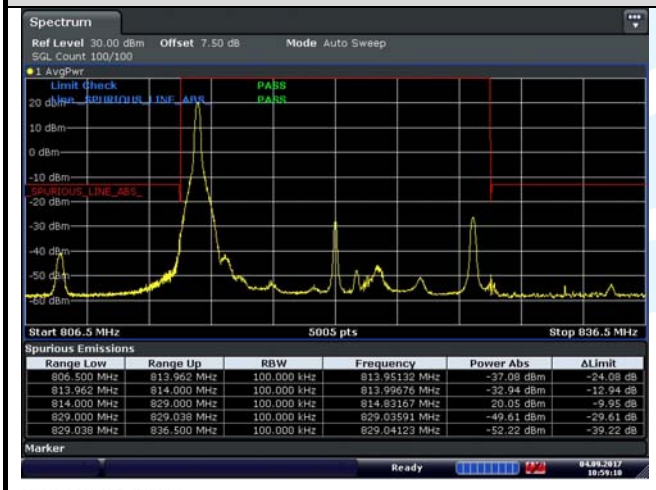
LTE Band 26 / 10 MHz / QPSK_ Middle Channel	
1 RB	Full RB

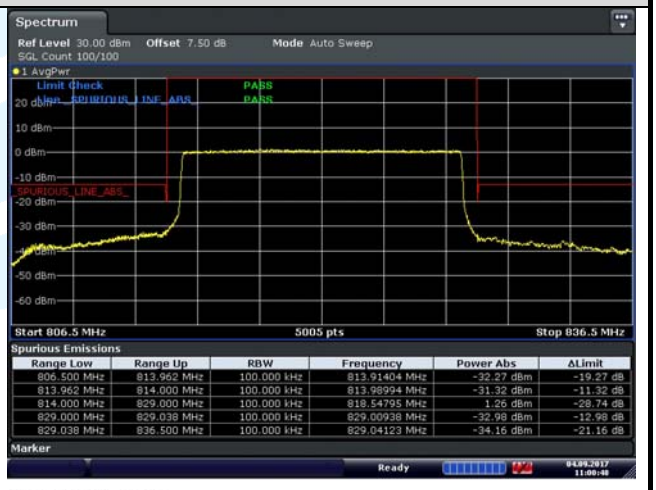


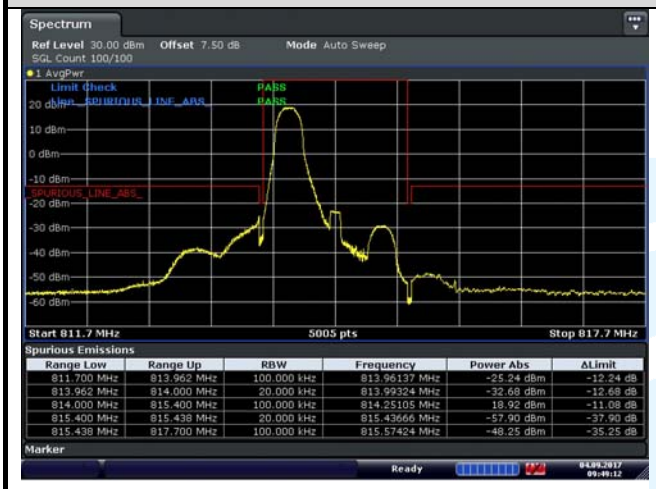
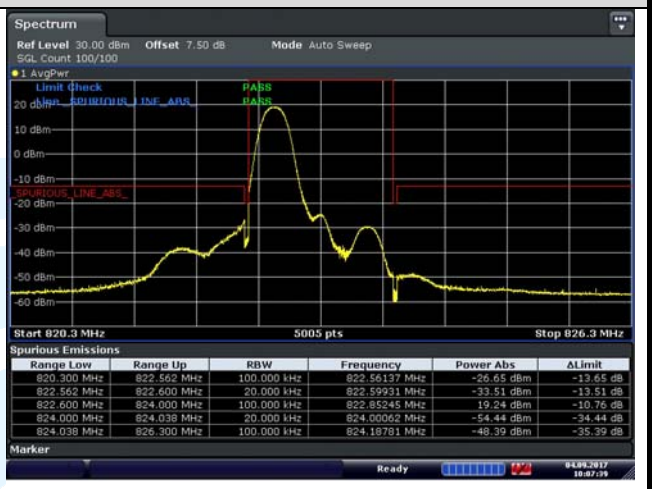


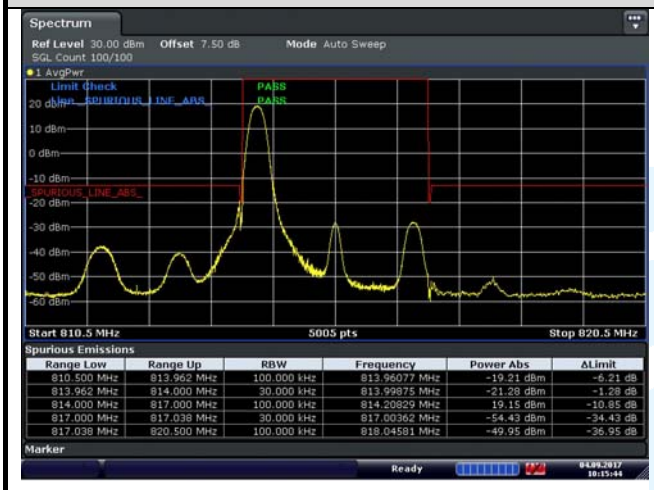
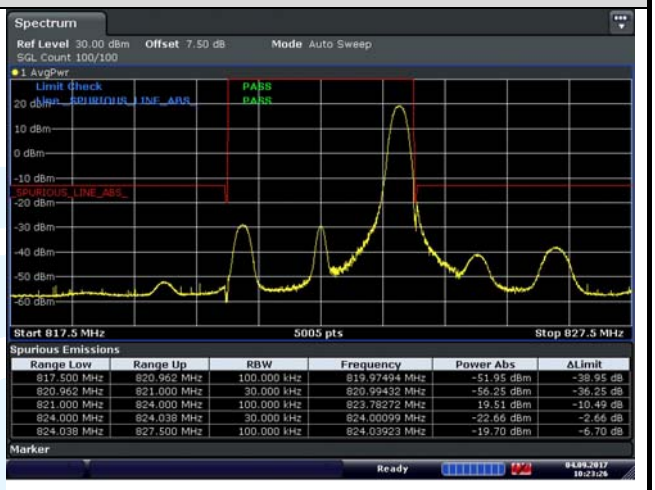
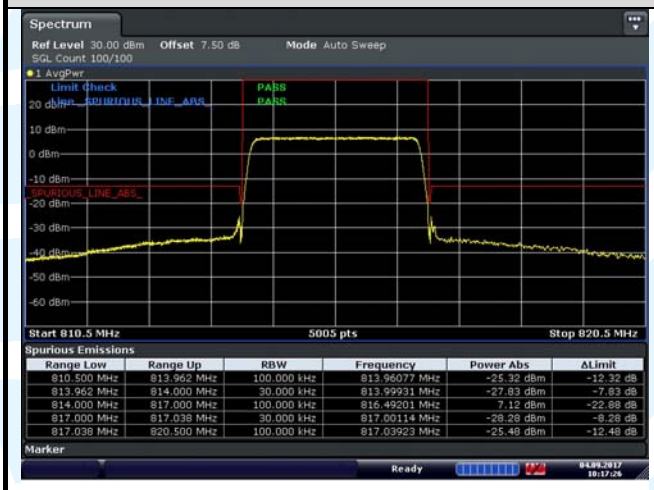
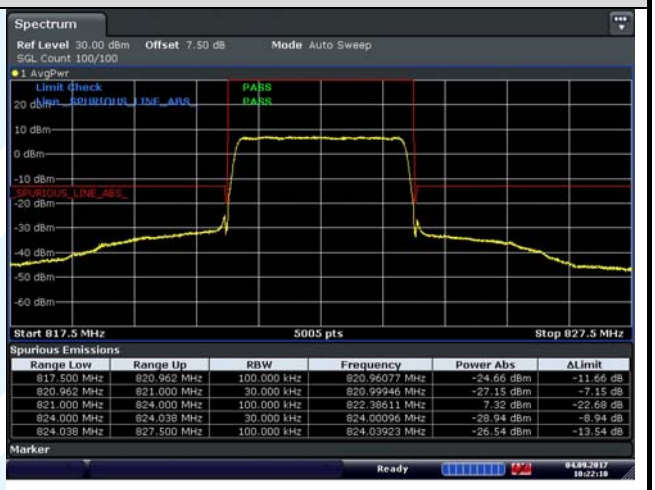


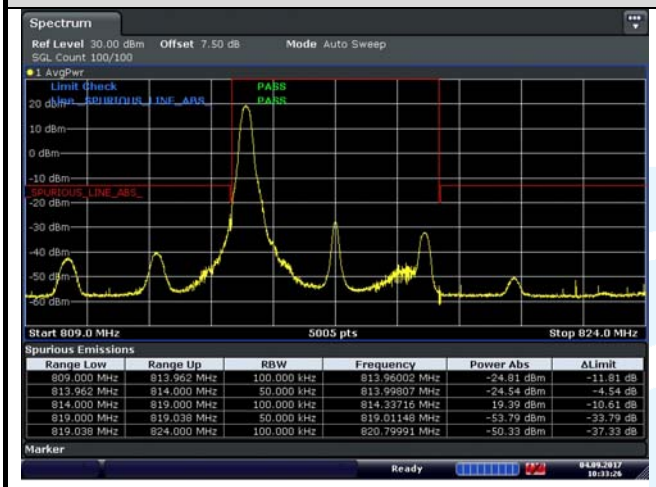
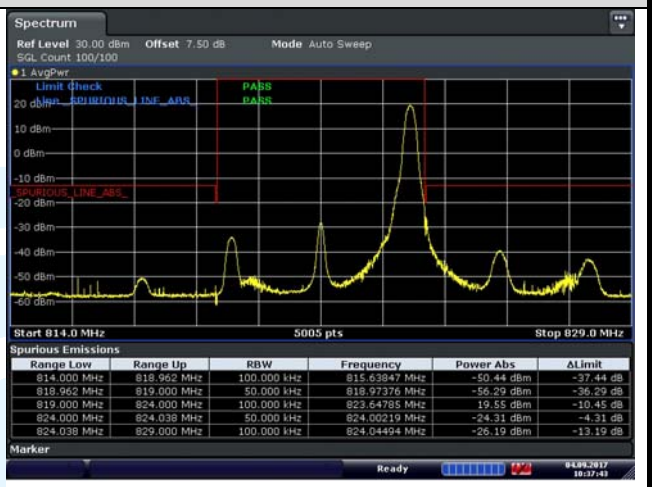
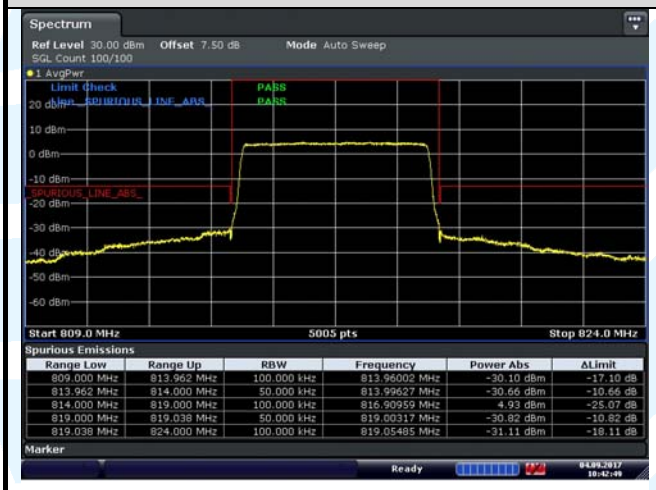
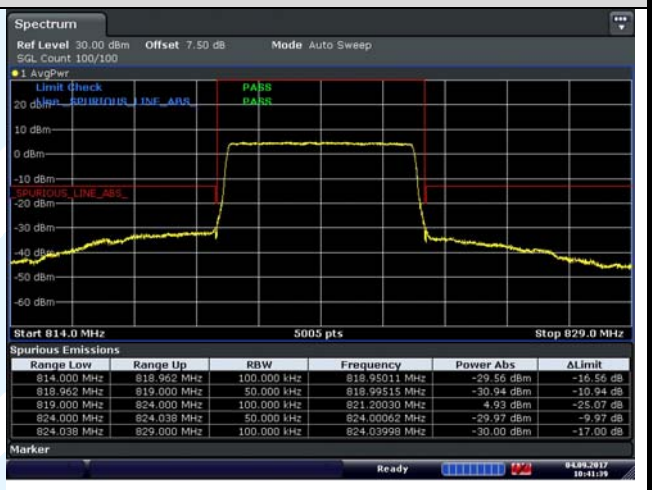
LTE Band 26 / 15 MHz / QPSK_ Lowest Channel	
1 RB	Full RB



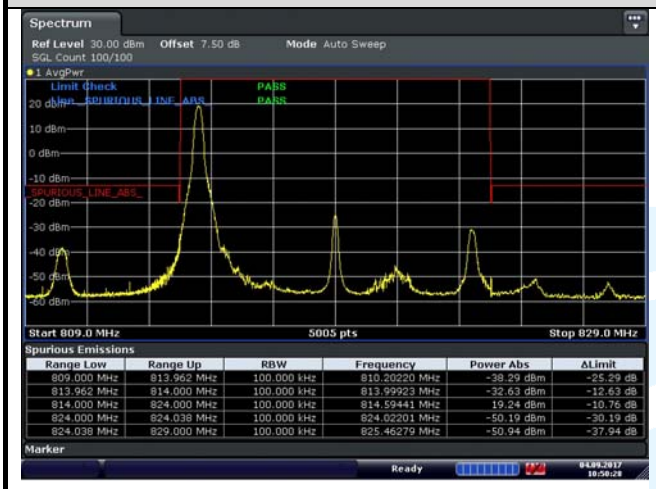


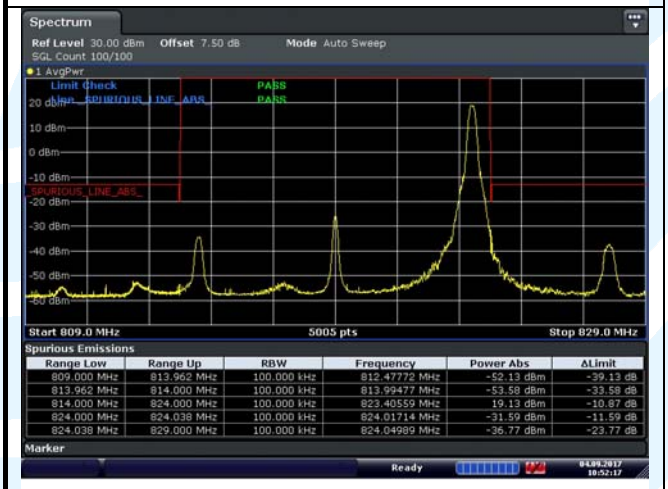
LTE Band 26 / 1.4 MHz / 16QAM	
Lowest Channel	**Highest Channel**
1 RB	
	
Full RB	
	

LTE Band 26 / 3 MHz / 16QAM	
Lowest Channel	**Highest Channel**
1 RB	
	
Full RB	
	

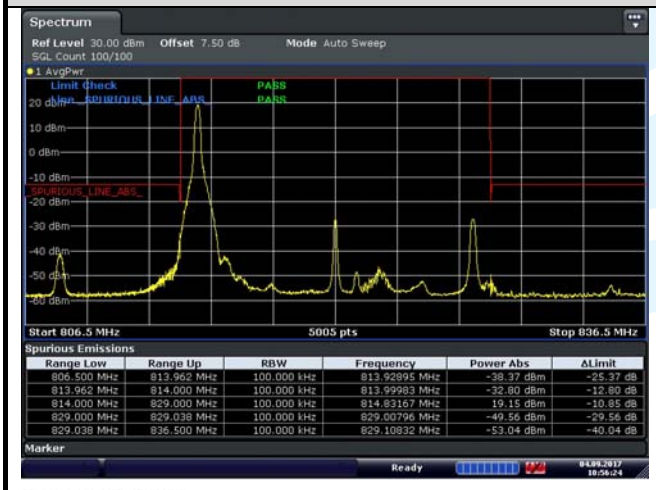
LTE Band 26 / 5 MHz / 16QAM	
Lowest Channel	**Highest Channel**
1 RB	
	
Full RB	
	

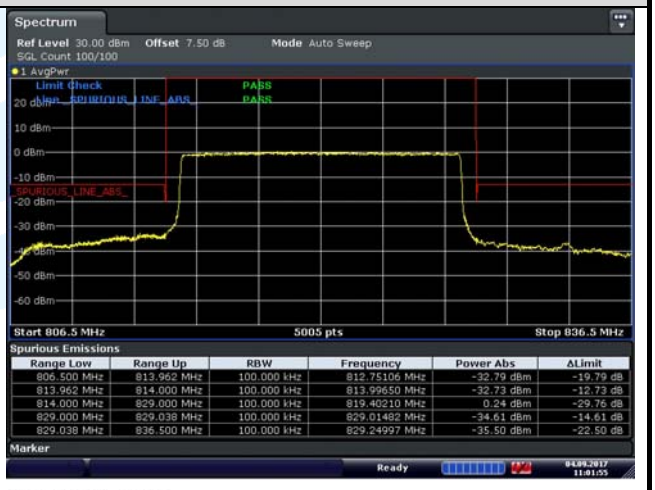
LTE Band 26 / 10 MHz / 16QAM_ Middle Channel	
1 RB	Full RB

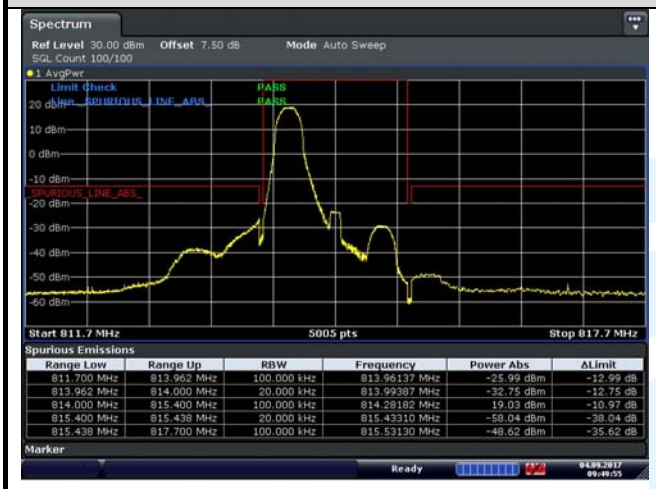
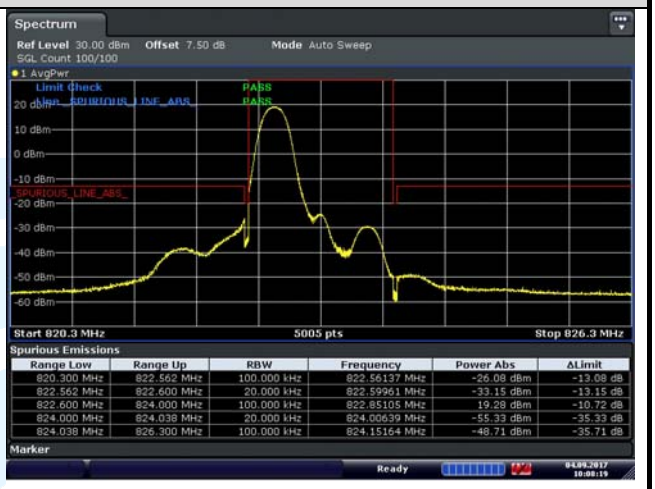
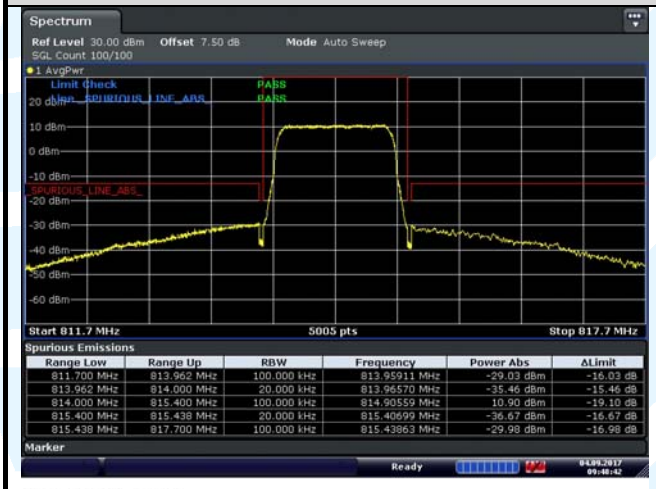


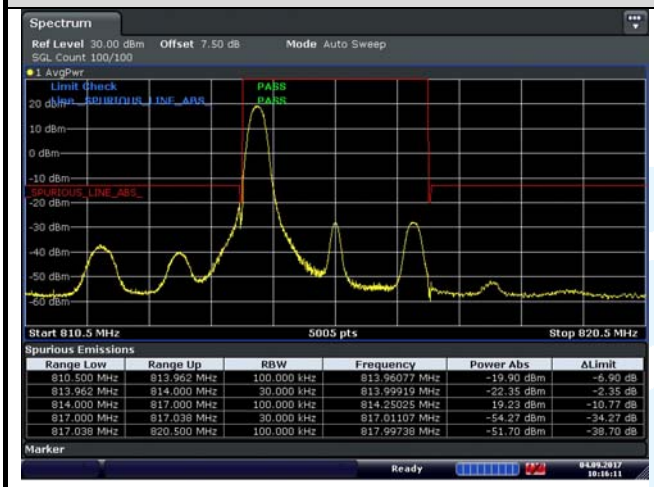
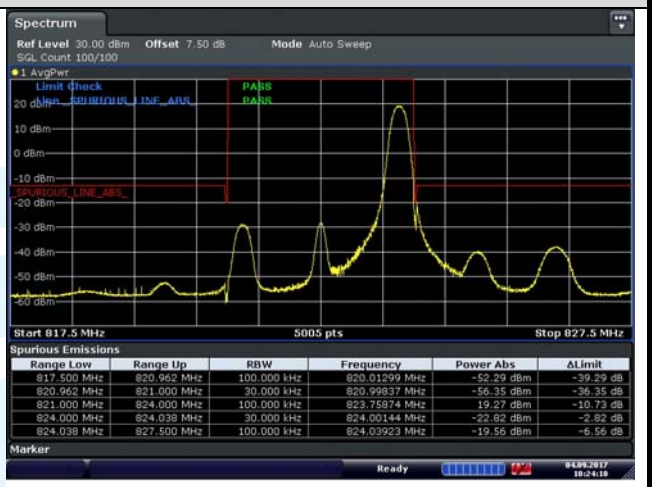
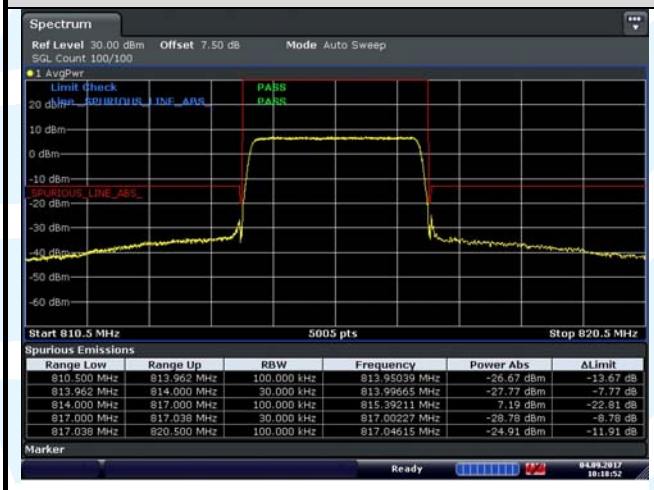
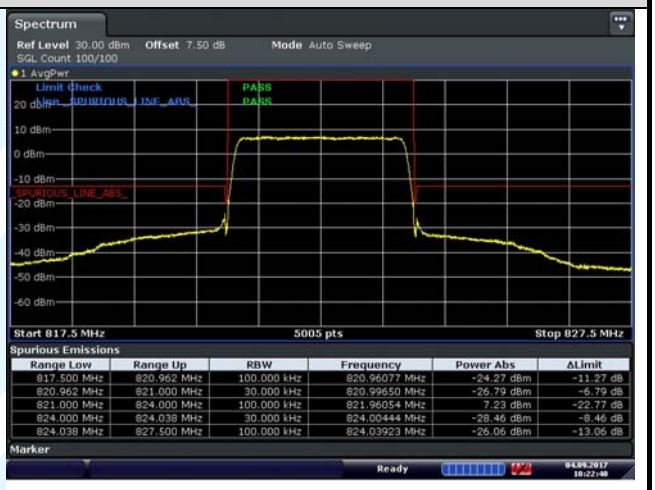


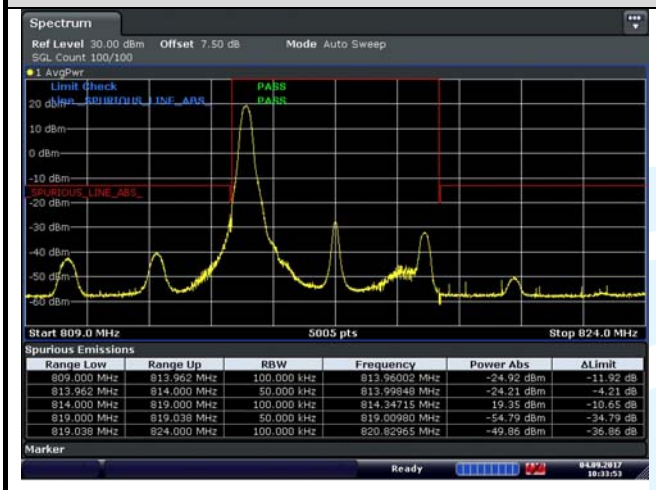
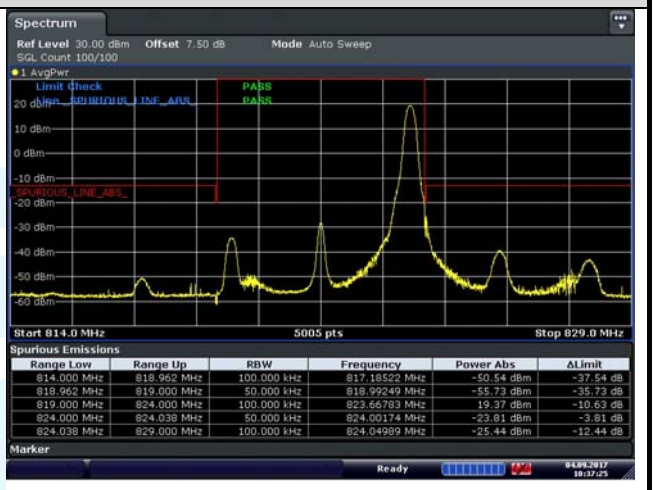
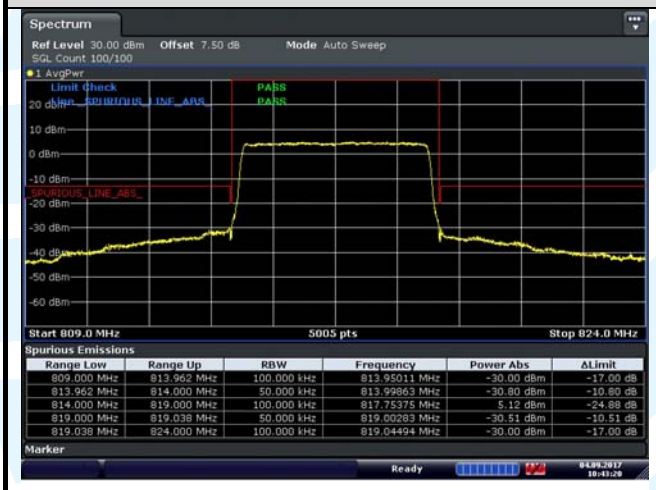
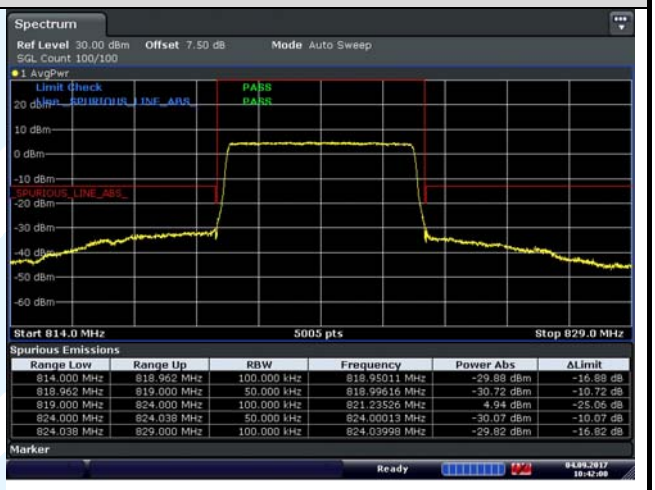
LTE Band 26 / 15 MHz / 16QAM_ Lowest Channel	
1 RB	Full RB



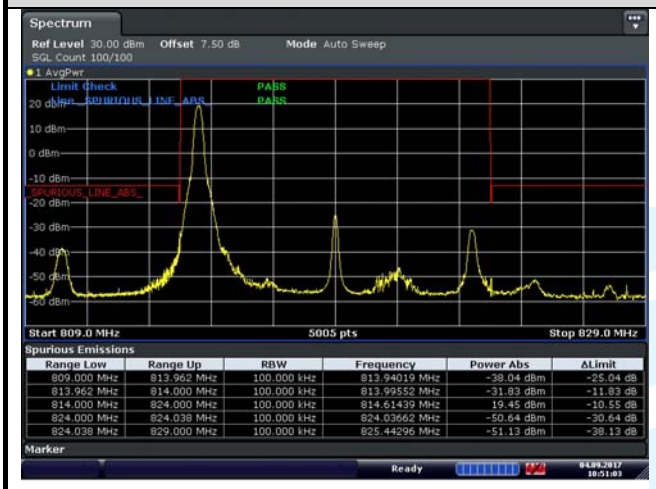


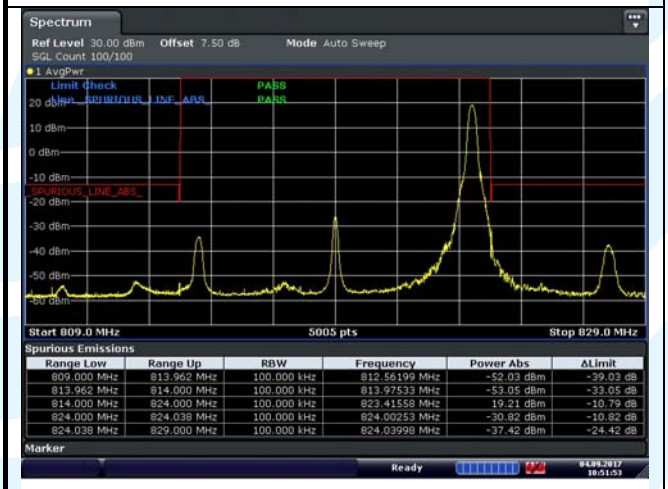
LTE Band 26 / 1.4 MHz / 64QAM	
Lowest Channel	**Highest Channel**
1 RB	
	
Full RB	
	

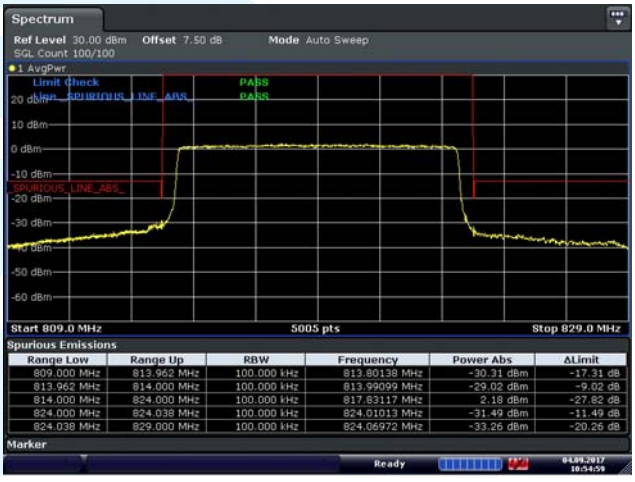
LTE Band 26 / 3 MHz / 64QAM	
Lowest Channel	**Highest Channel**
1 RB	
	
Full RB	
	

LTE Band 26 / 5 MHz / 64QAM	
Lowest Channel	**Highest Channel**
1 RB	
	
Full RB	
	

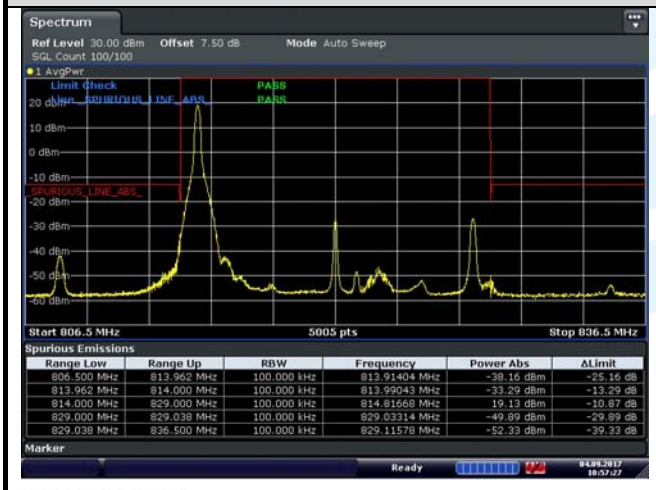
LTE Band 26 / 10 MHz / 64QAM_ Middle Channel	
1 RB	Full RB

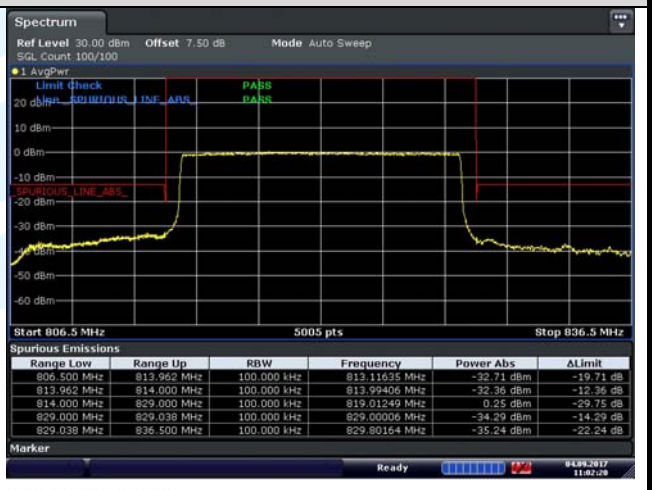






LTE Band 26 / 15 MHz / 64QAM_ Lowest Channel	
1 RB	Full RB





5.6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Test Requirement: FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 90.691

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Limit:

(a)(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(a)(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

Test Procedure:

The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range. b. Measuring frequency range is from 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

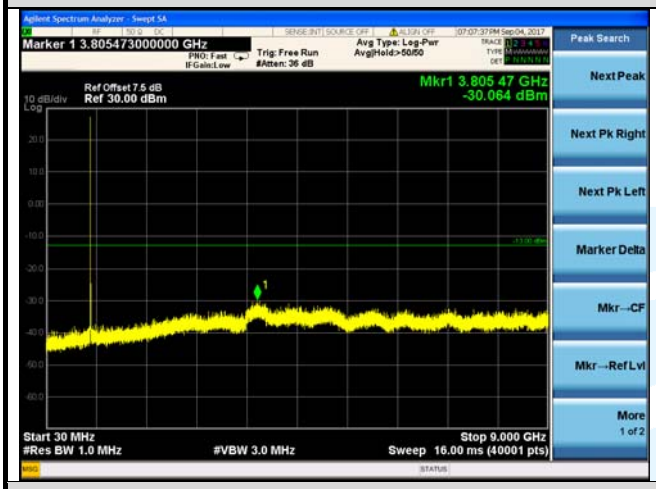
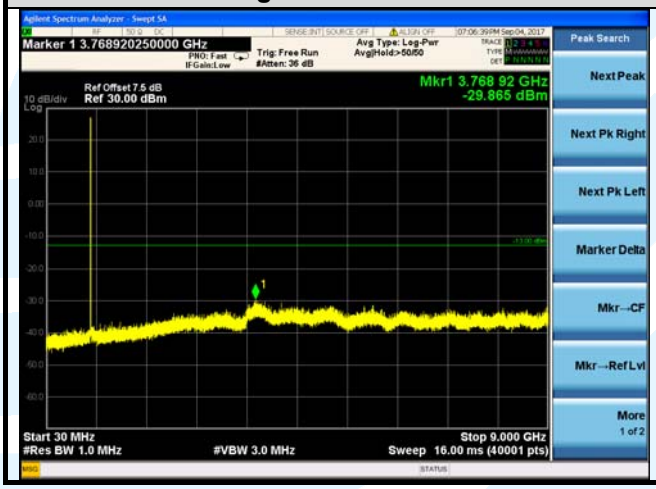
Test Setup: Refer to section 4.2.2 for details.

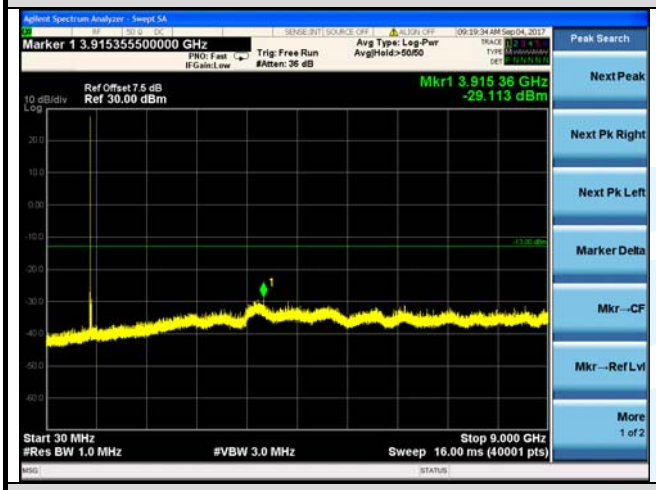
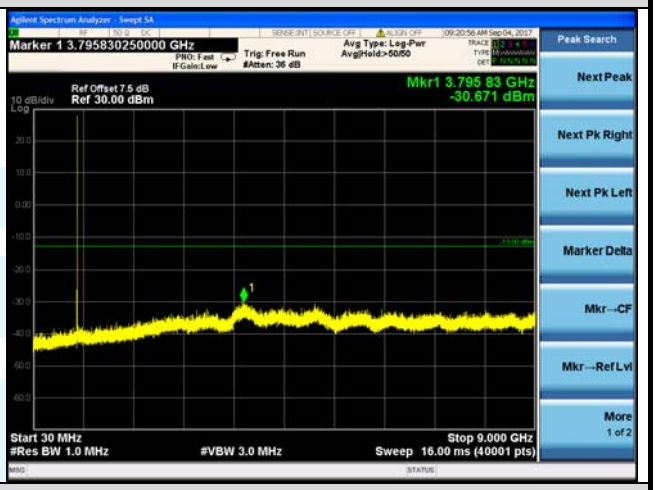
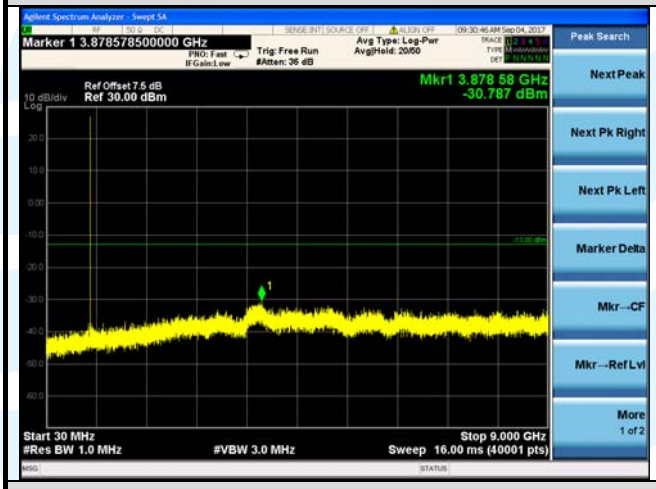
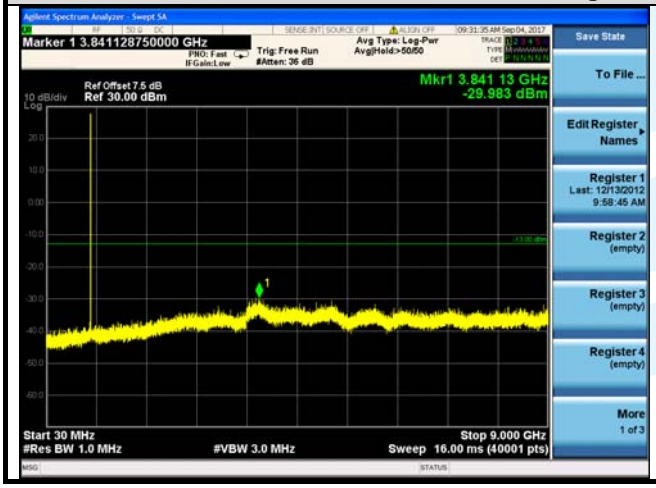
Instruments Used: Refer to section 3 for details

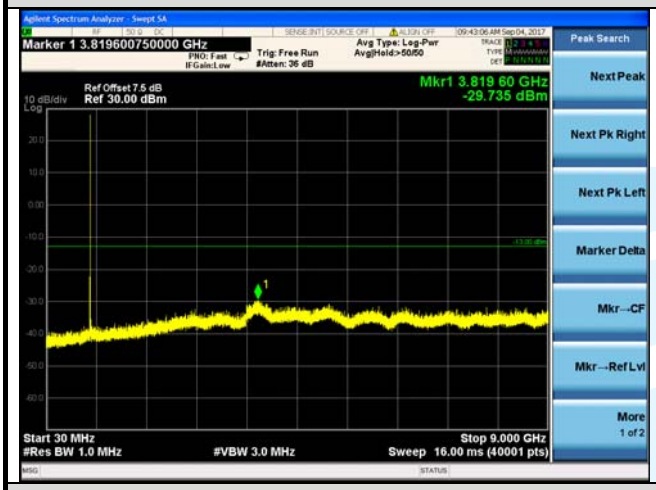
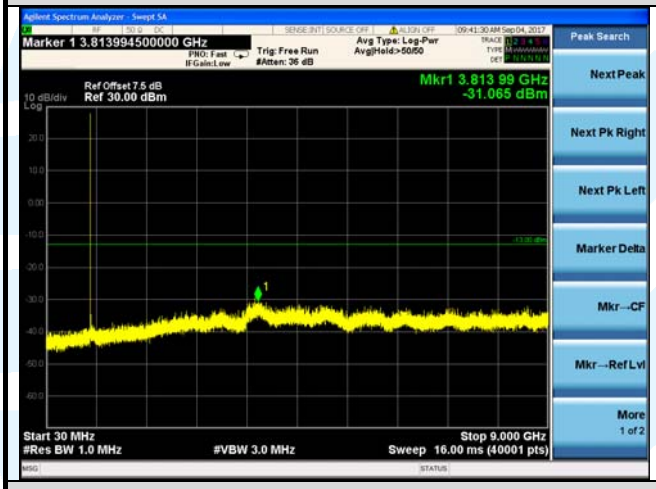
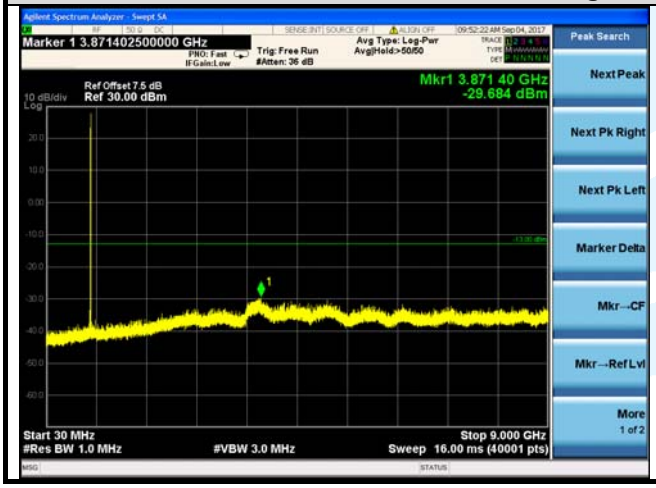
Test Mode: Link mode

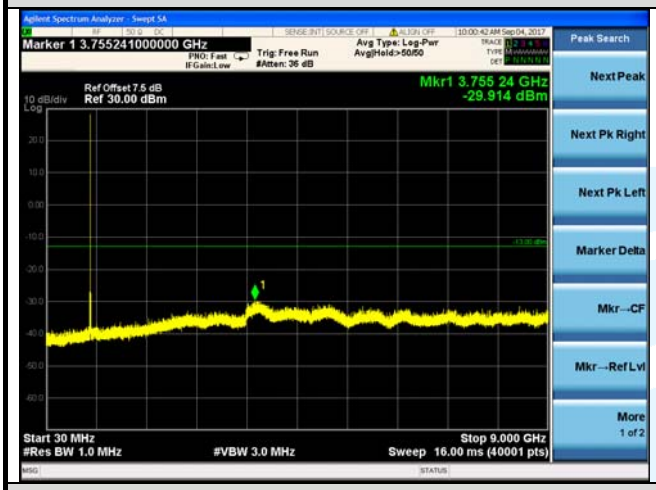
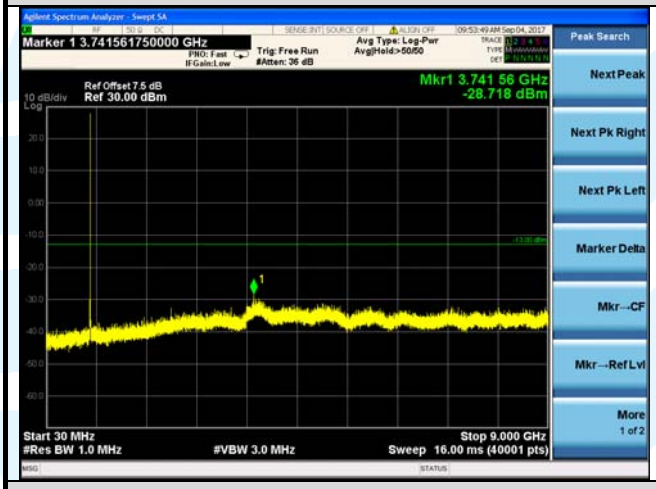
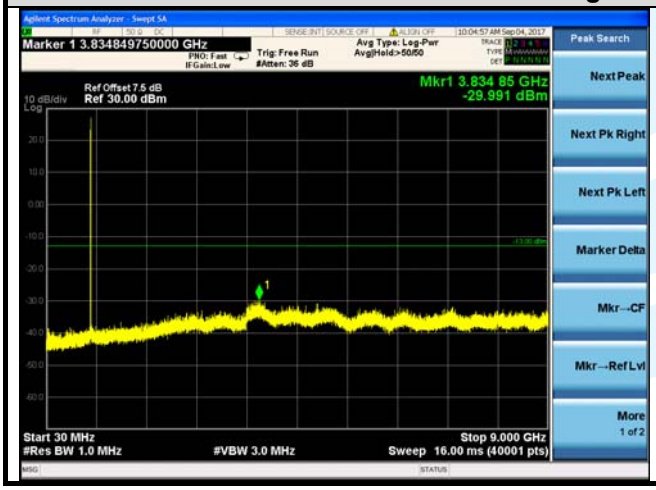
Test Results: Pass

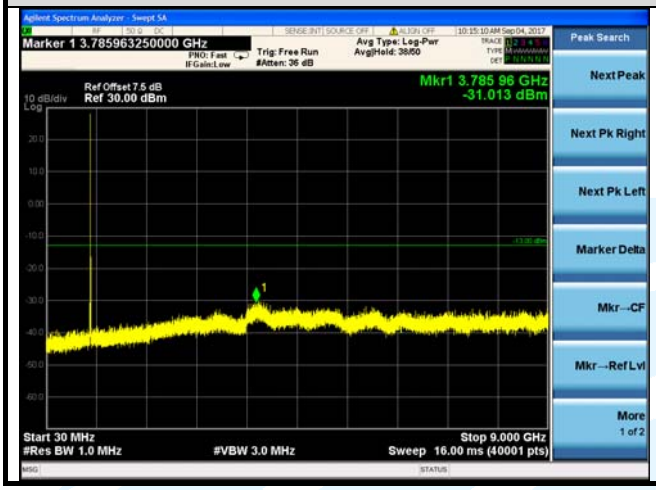
The test plot as follows:

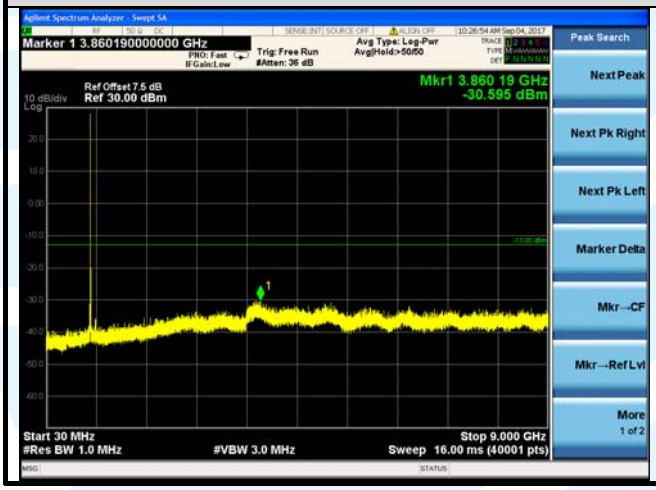
CDMA2000 BC10 1xRTT	
Lowest Channel	**Middle Channel**
	
Highest Channel	
	/

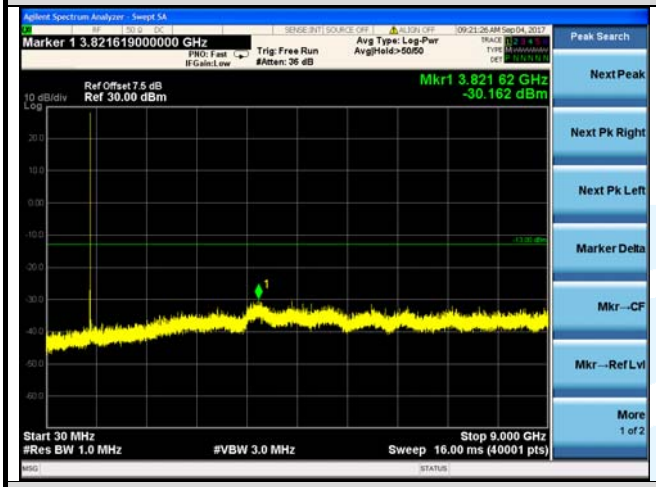
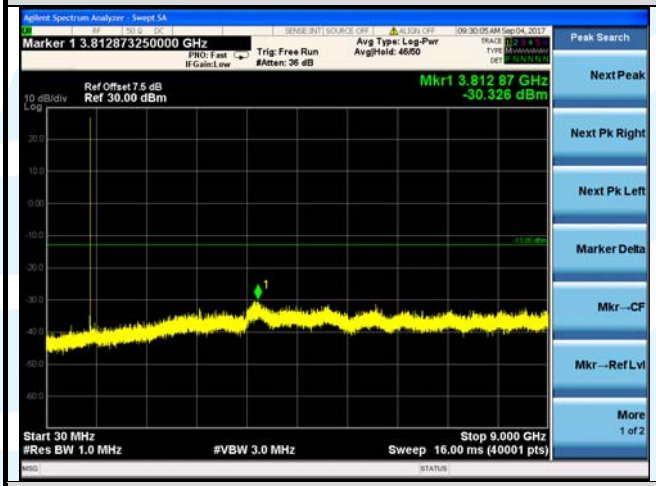
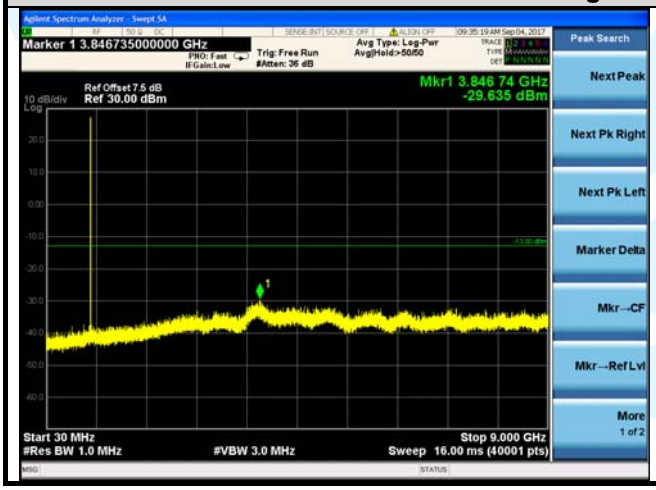
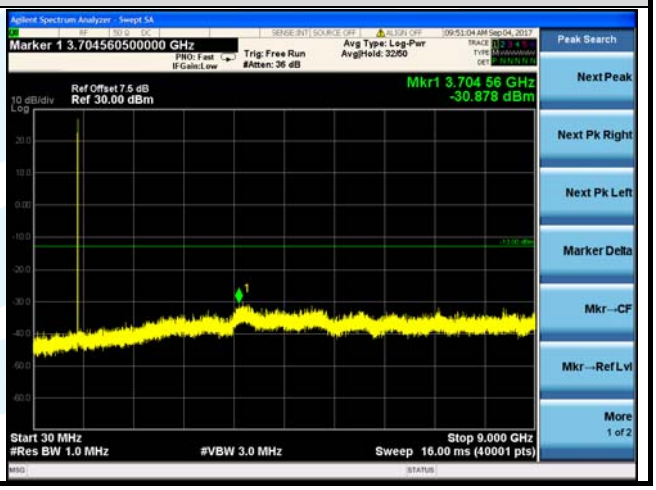
LTE Band 26_ Channel Bandwidth: 1.4 MHz	
QPSK	16QAM
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

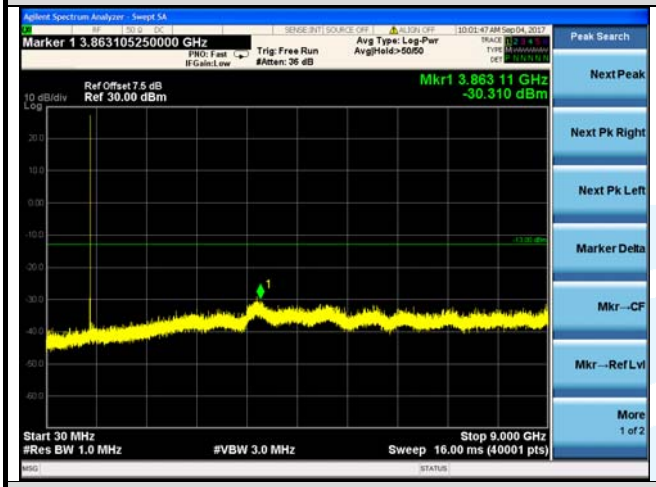
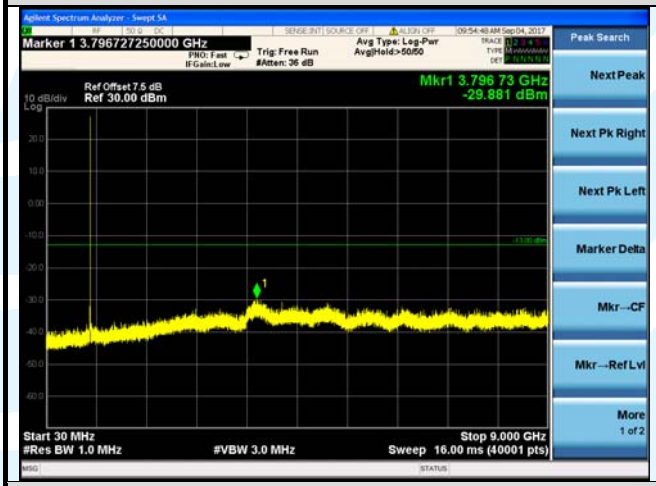
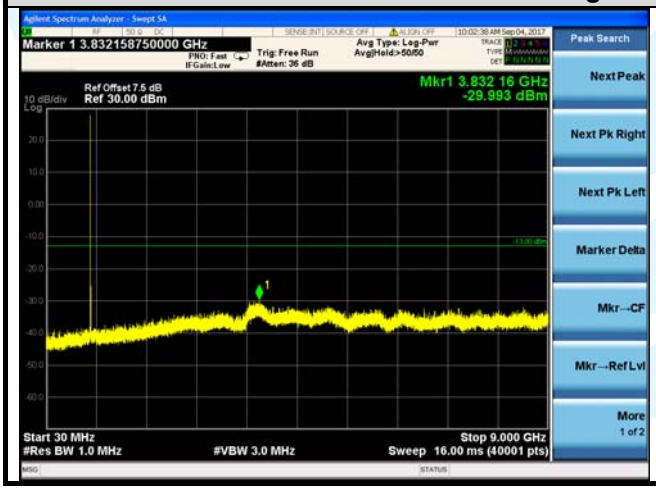
LTE Band 26_ Channel Bandwidth: 3 MHz	
QPSK	16QAM
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

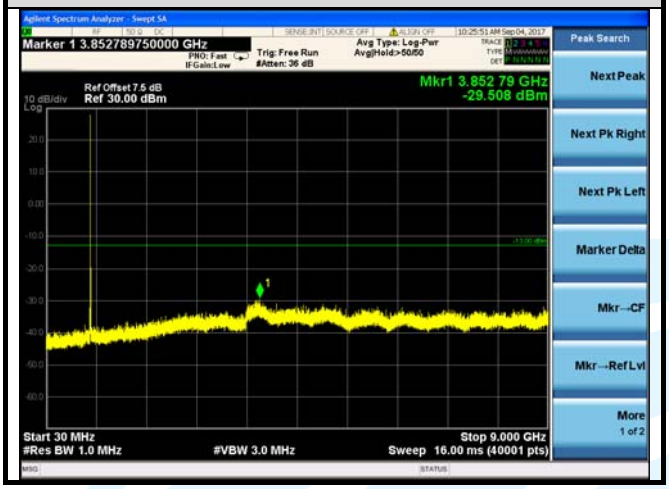
LTE Band 26_ Channel Bandwidth: 5 MHz	
QPSK	16QAM
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

LTE Band 26_ Channel Bandwidth: 10 MHz	
QPSK	16QAM
Middle Channel	
	

LTE Band 26_ Channel Bandwidth: 15 MHz	
QPSK	16QAM
Lowest Channel	
	

LTE Band 26 / 1.4MHz / 64QAM	LTE Band 26 / 3MHz / 64QAM
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

LTE Band 26 / 5MHz / 64QAM	LTE Band 26 / 10MHz / 64QAM
Lowest Channel	
	/
Middle Channel	
	
Highest Channel	
	/

LTE Band 26 / 15MHz / 64QAM
Lowest Channel


5.7 FIELD STRENGTH OF SPURIOUS RADIATION

Test Requirement: FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 90.691

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009 MHz-30 MHz	Peak	10 kHz	30 KHz	Peak
30 MHz-1 GHz	Quasi-peak	100 kHz	300 KHz	Peak
Above 1 GHz	Peak	1 MHz	3 MHz	Peak

Limits:

(a)(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(a)(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

Test Setup: Refer to section 4.2.1 for details.

Test Procedures:

1. Scan up to 10th harmonic, find the maximum radiation frequency to measure.
2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT.

Test procedure as below:

1) The EUT was powered ON and placed on a 0.8/1.5m high table at a 3 meter semi/fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. Modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.
7) The output power into the substitution antenna was then measured.
8) Steps 6) and 7) were repeated with both antennas polarized.
9) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)
EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)
EIRP=ERP+2.15dB

where:
Pg is the generator output power into the substitution antenna.

10) Test the EUT in the lowest channel, the middle channel the Highest channel
11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode, and found the Y axis positioning which it is worse case.

1) Repeat above procedures until all frequencies measured was complete.

Equipment Used: Refer to section 3 for details.

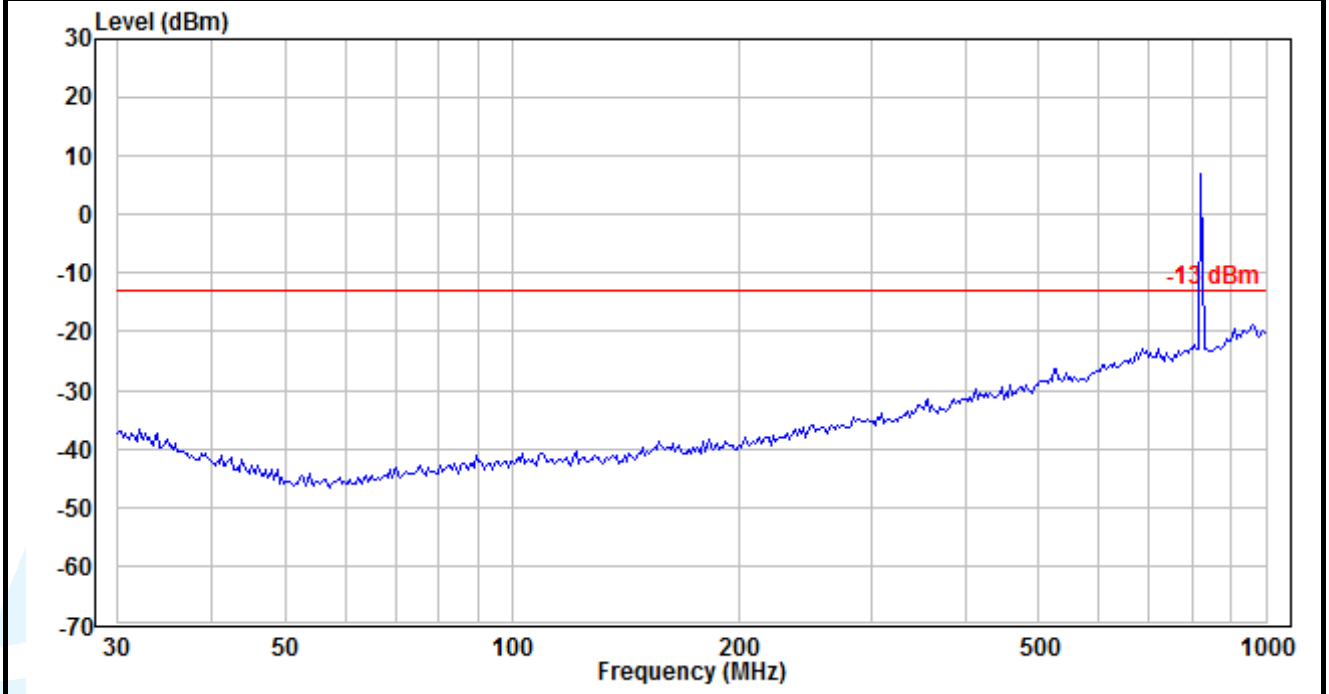
Test Result: Pass

The measurement data as follows:

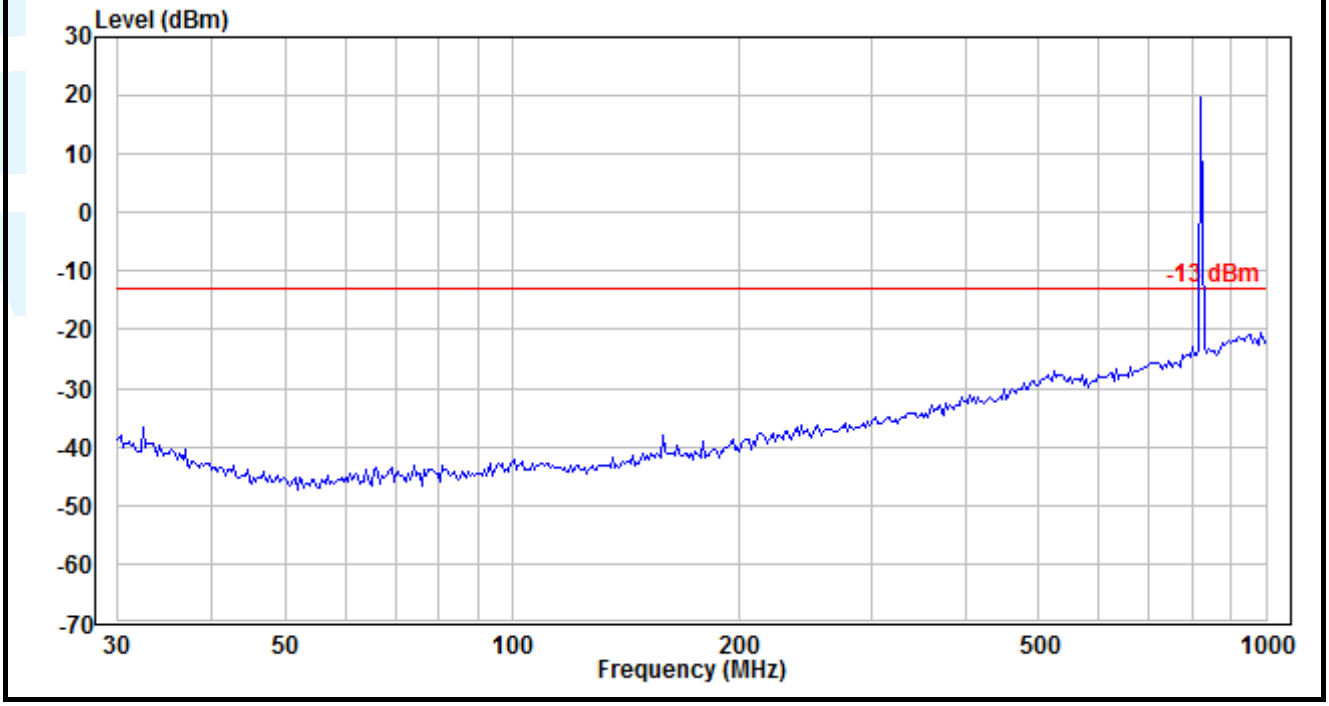
5.7.1 Radiated Emission Test Data (30 MHz to 1 GHz)

CDMA2000 BC10 1xRTT_Middle Channel

Horizontal

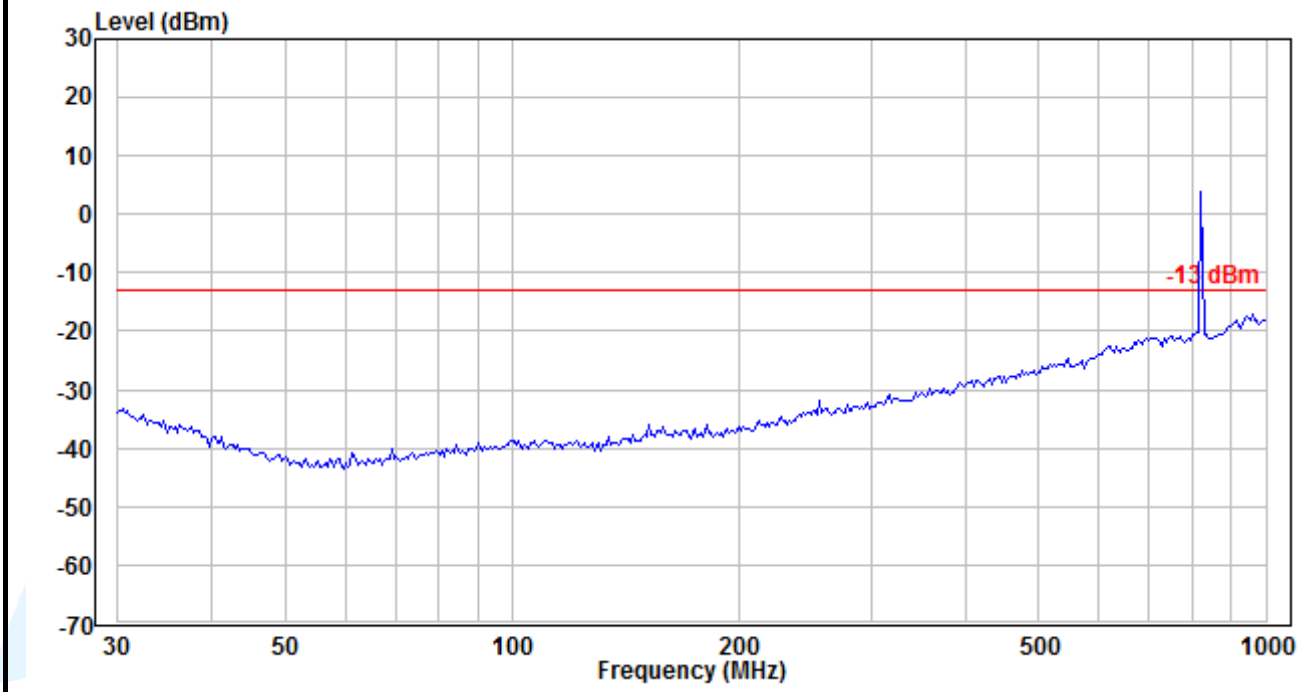


Vertical

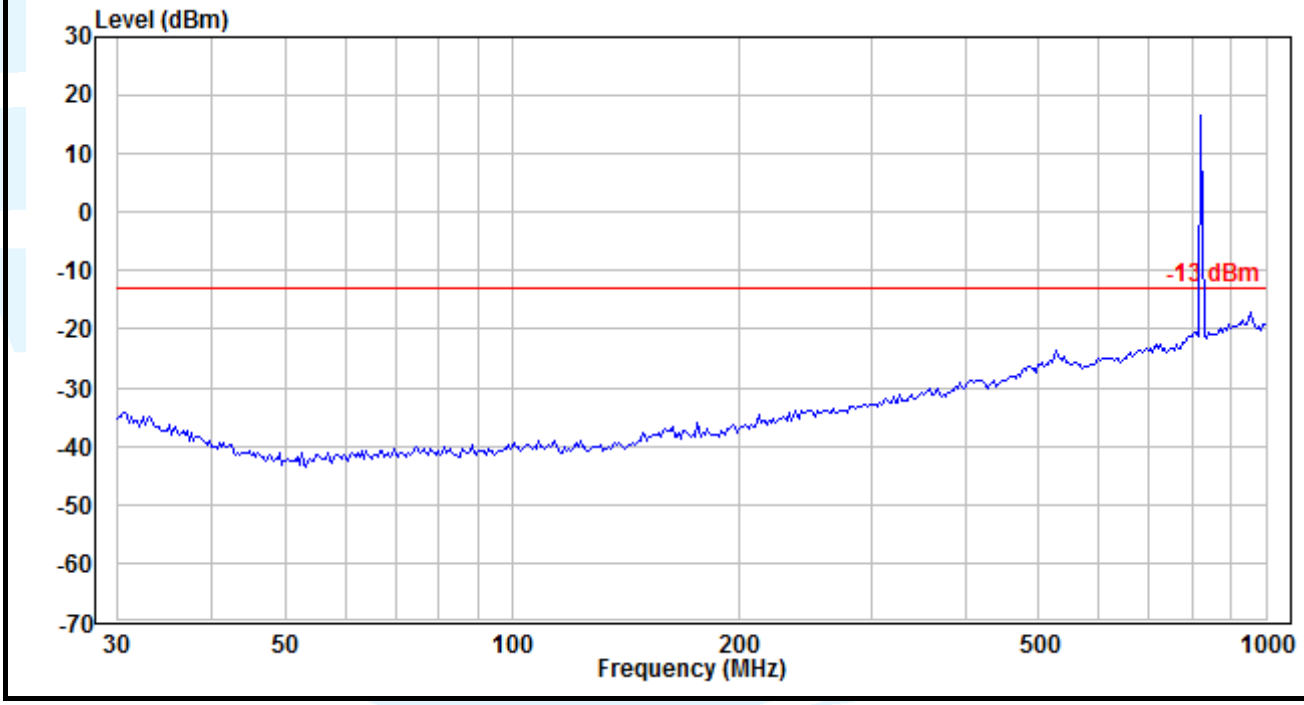


LTE Band 26 / 1.4 MHz / QPSK_ Middle Channel

Horizontal

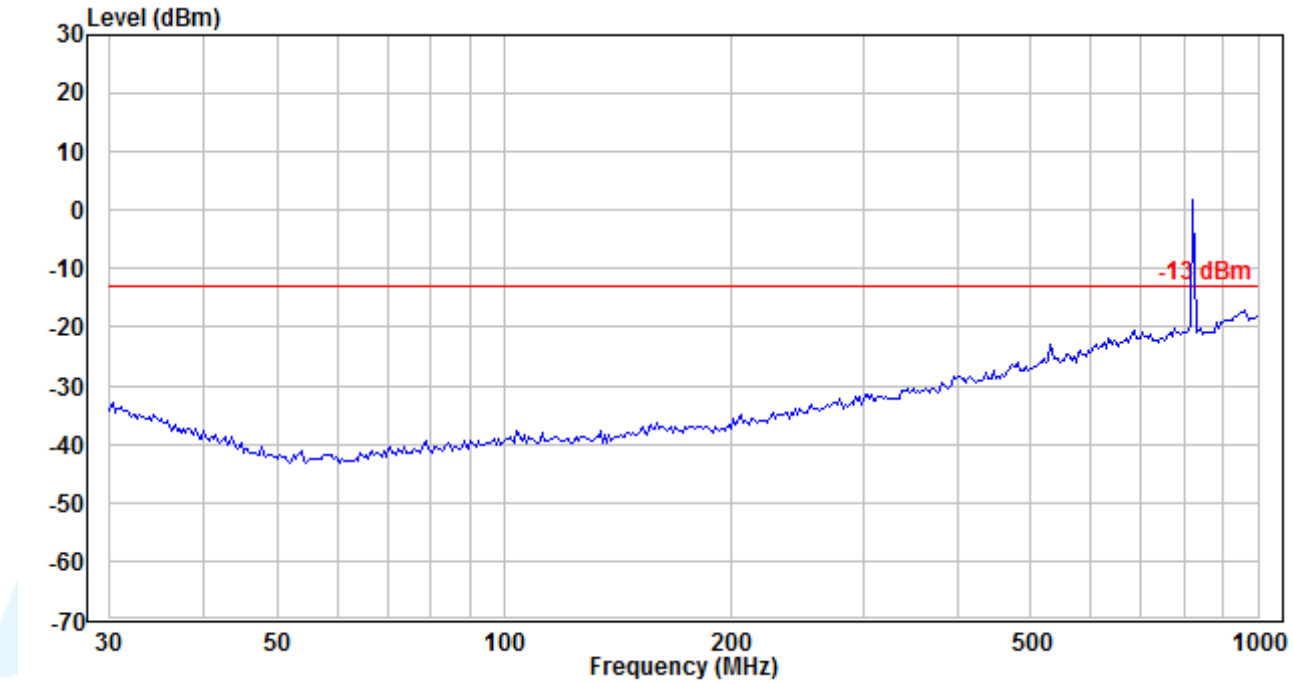


Vertical

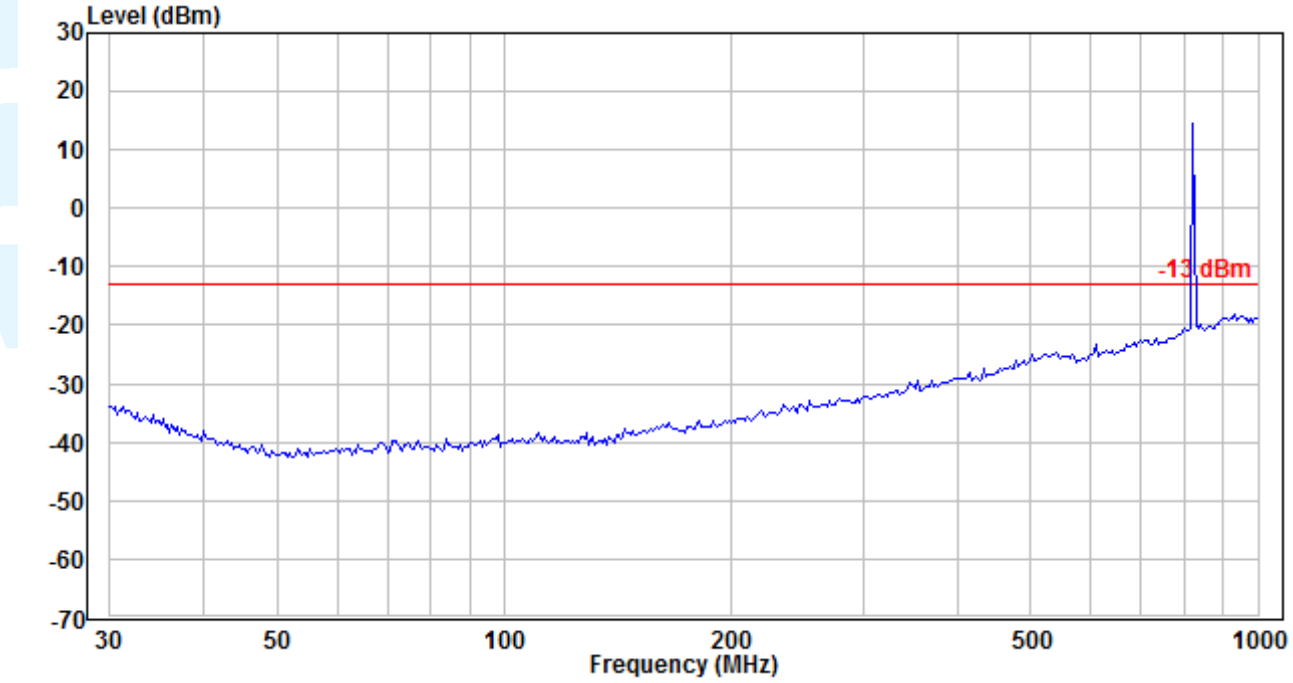


LTE Band 26 / 3 MHz / QPSK_ Middle Channel

Horizontal

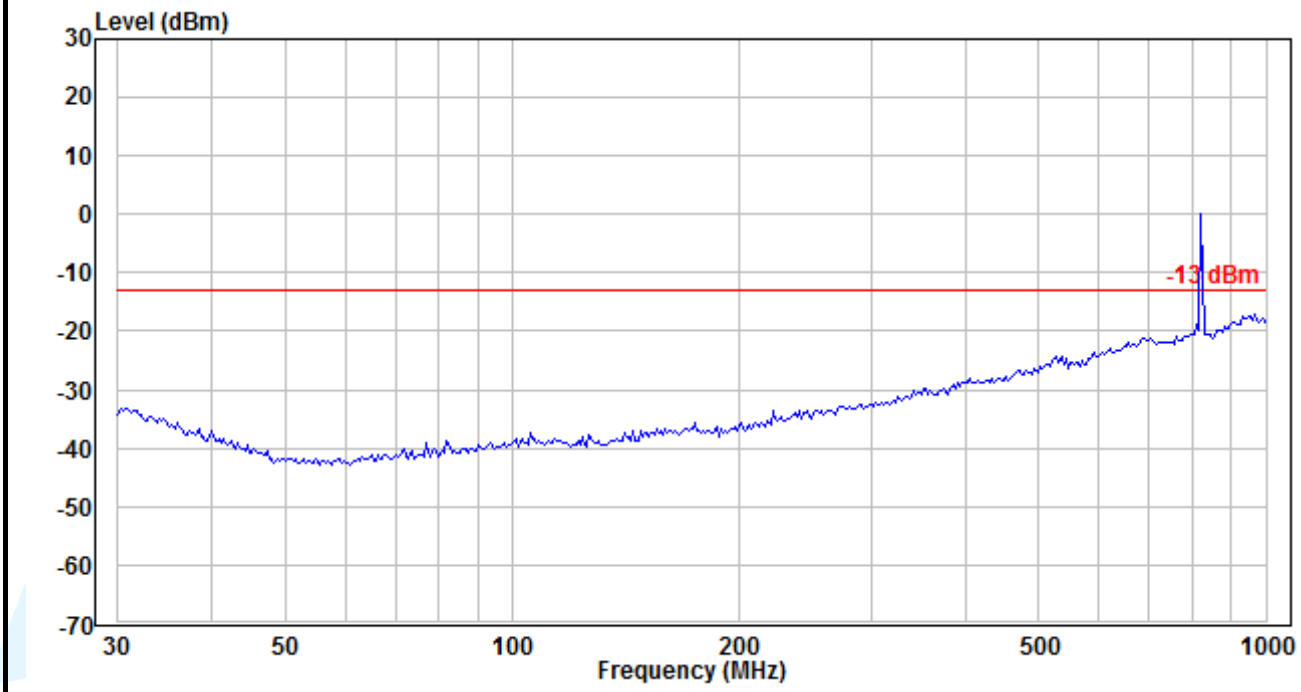


Vertical

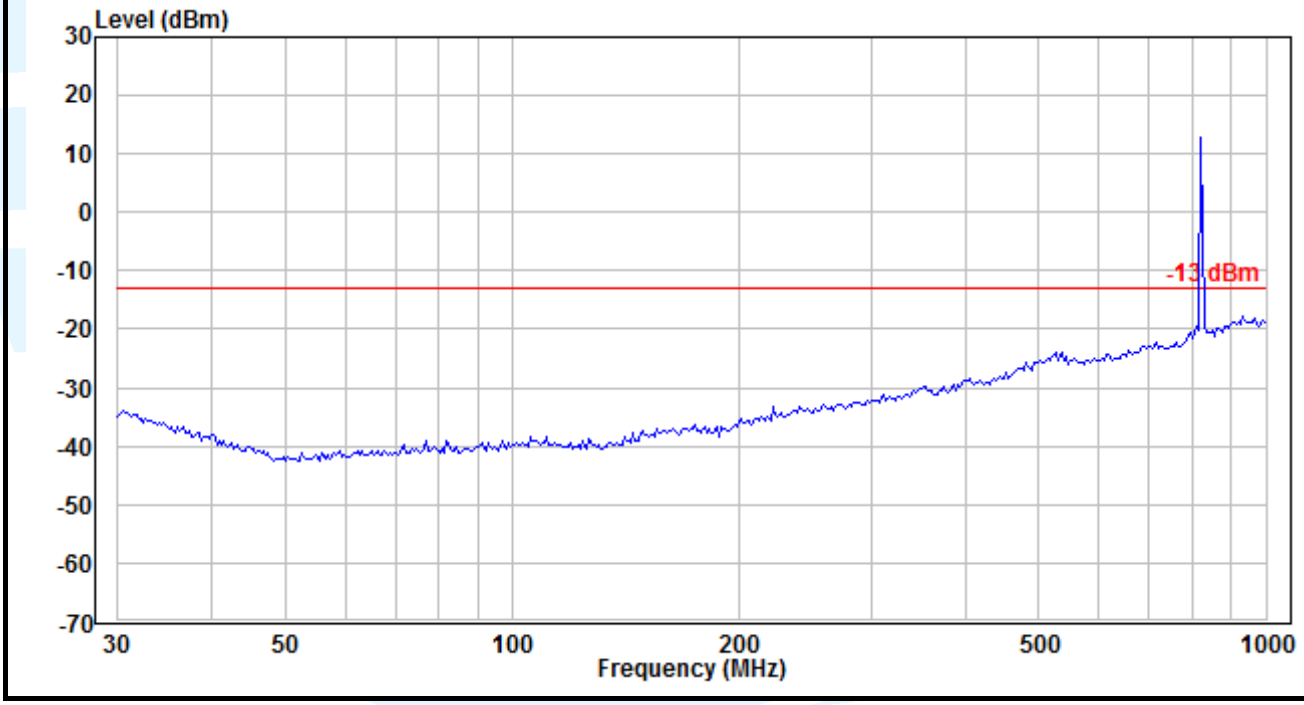


LTE Band 26 / 5 MHz / QPSK_ Middle Channel

Horizontal

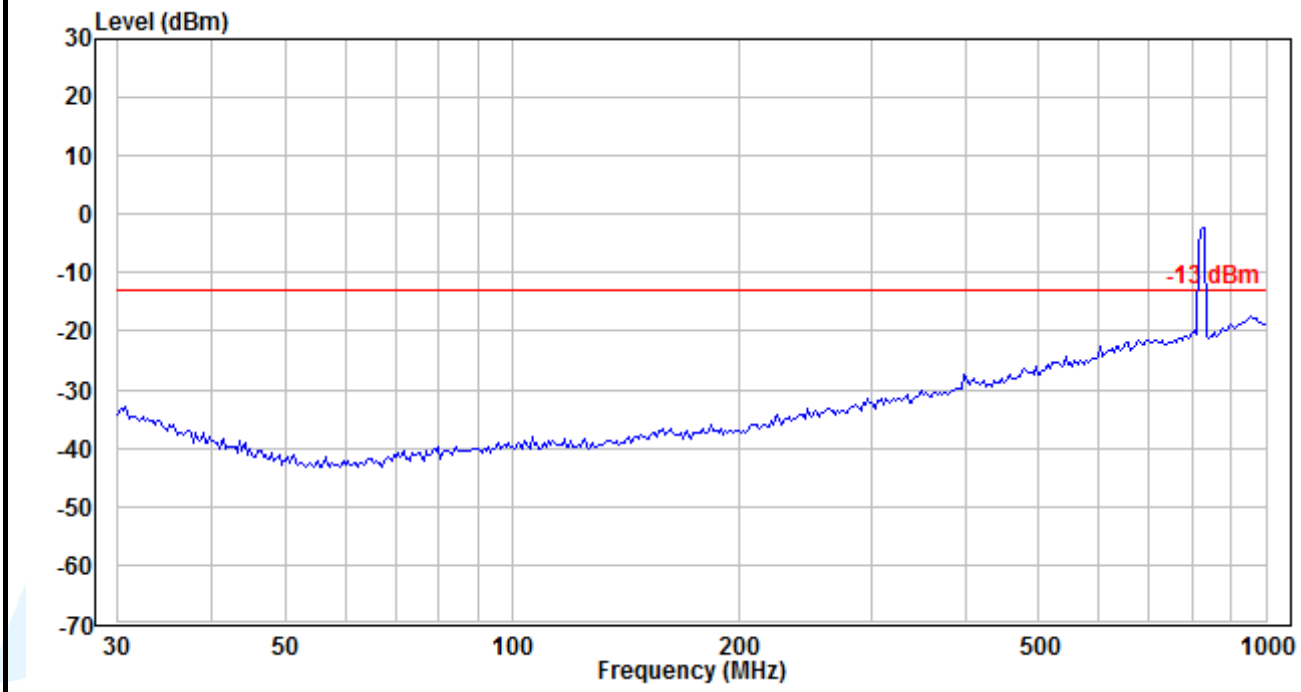


Vertical

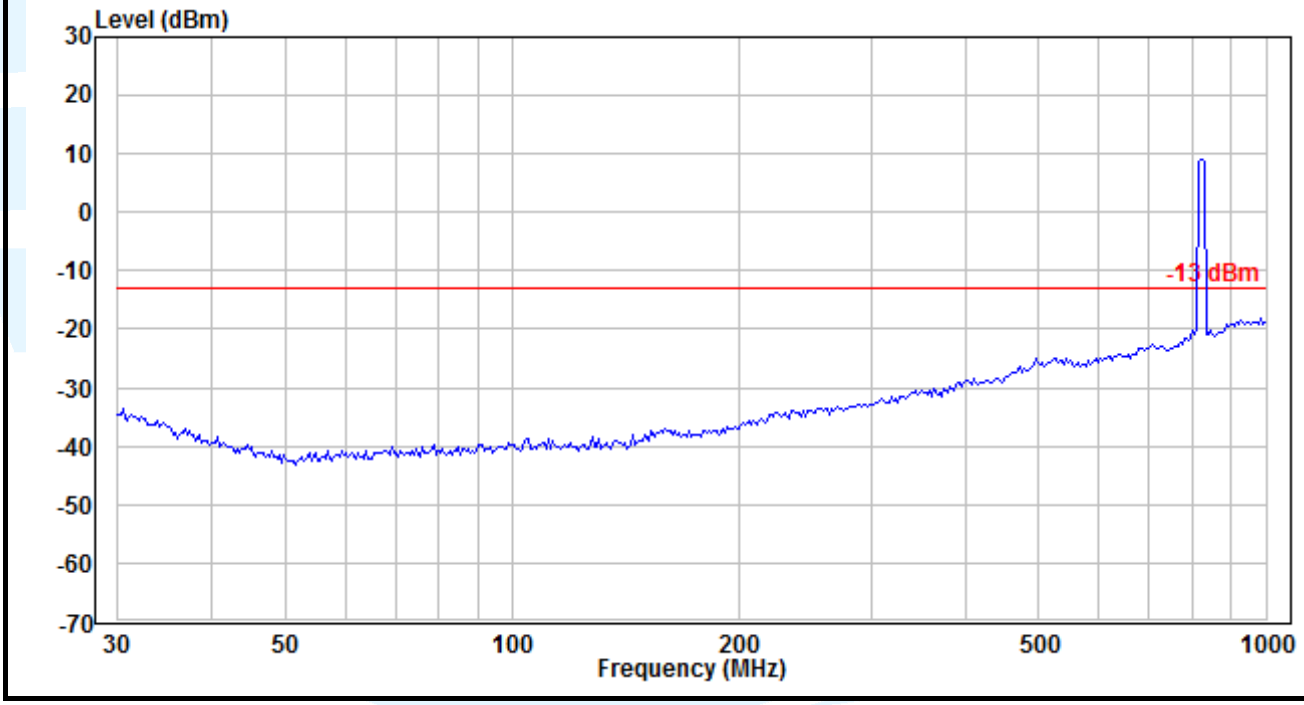


LTE Band 26 / 10 MHz / QPSK_ Middle Channel

Horizontal

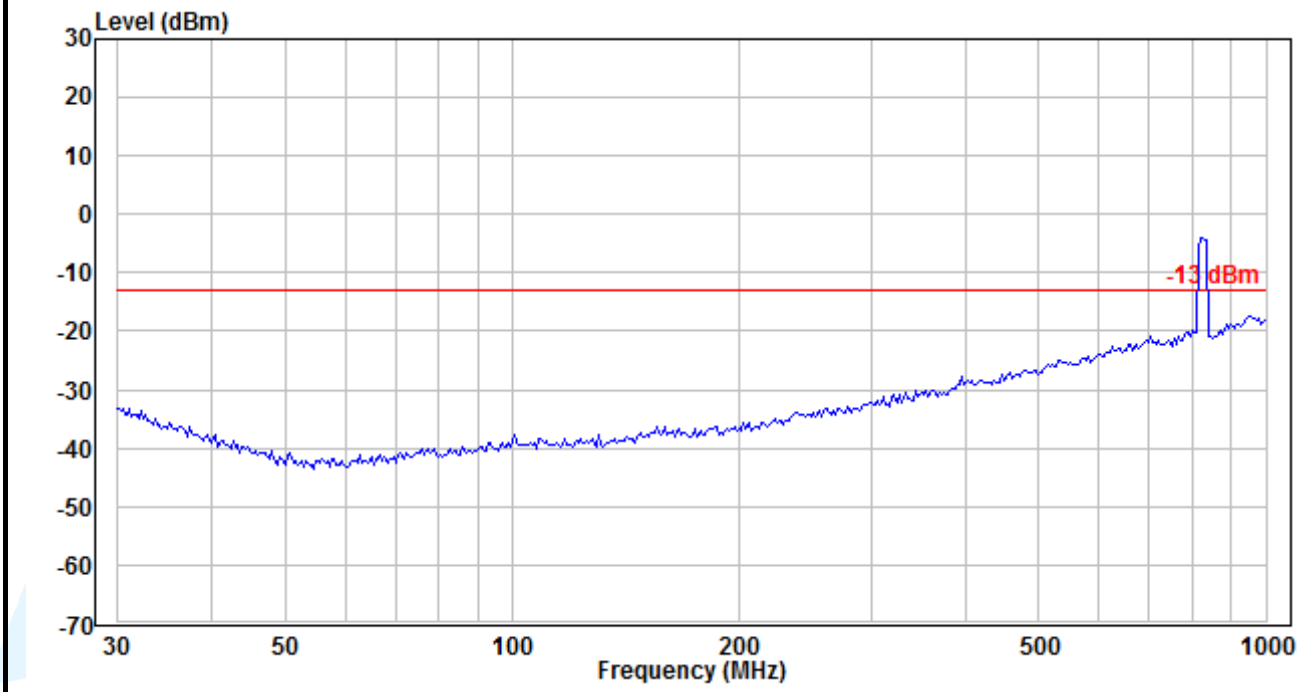


Vertical

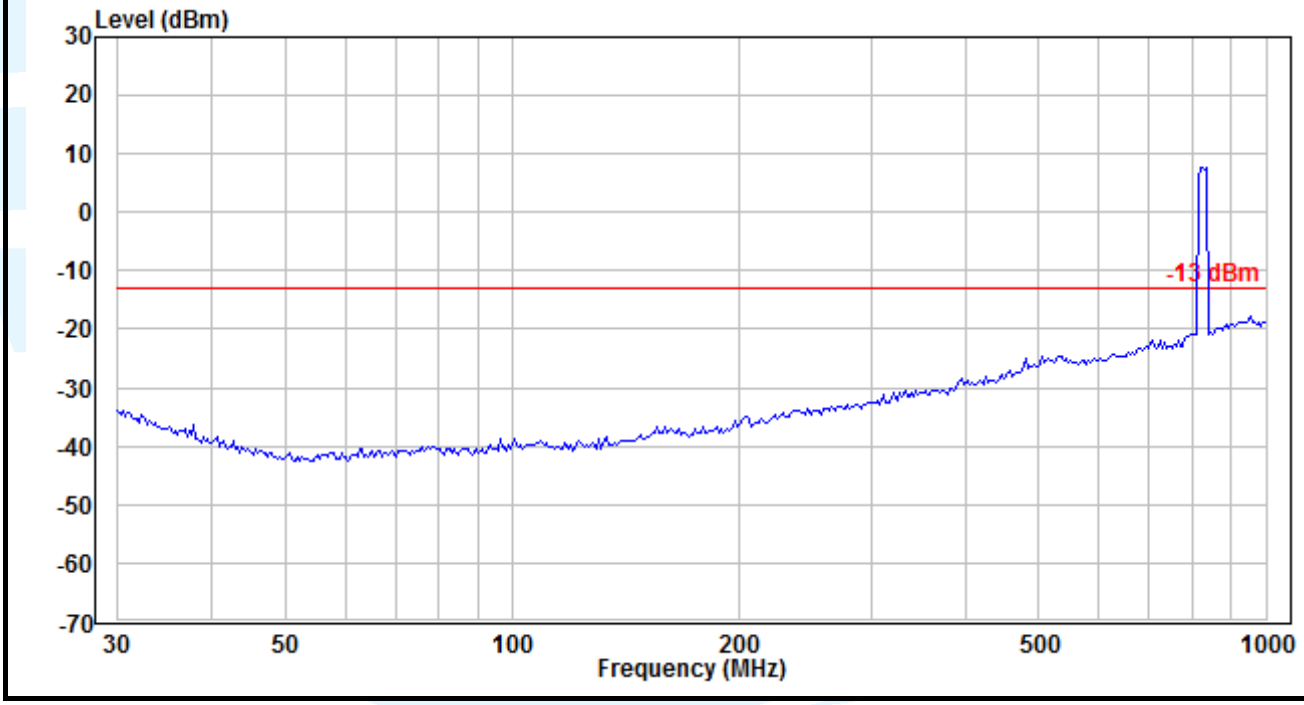


LTE Band 26 / 15 MHz / QPSK_ Lowest Channel

Horizontal



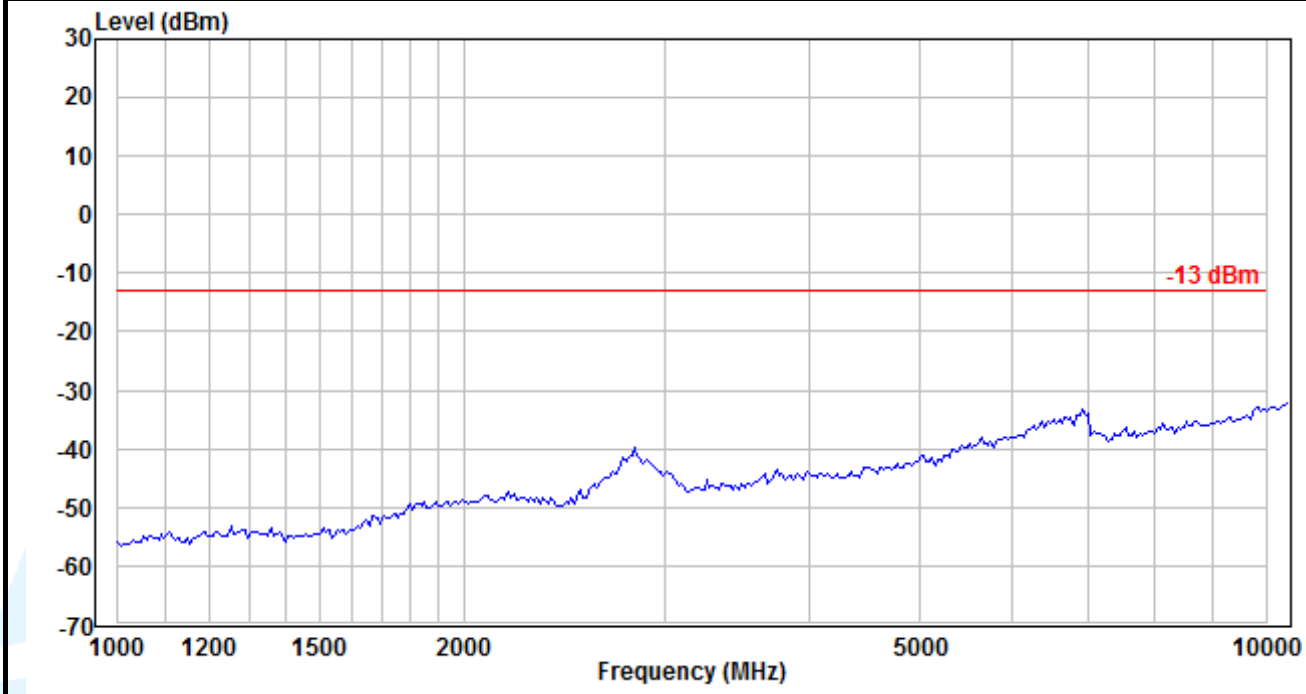
Vertical



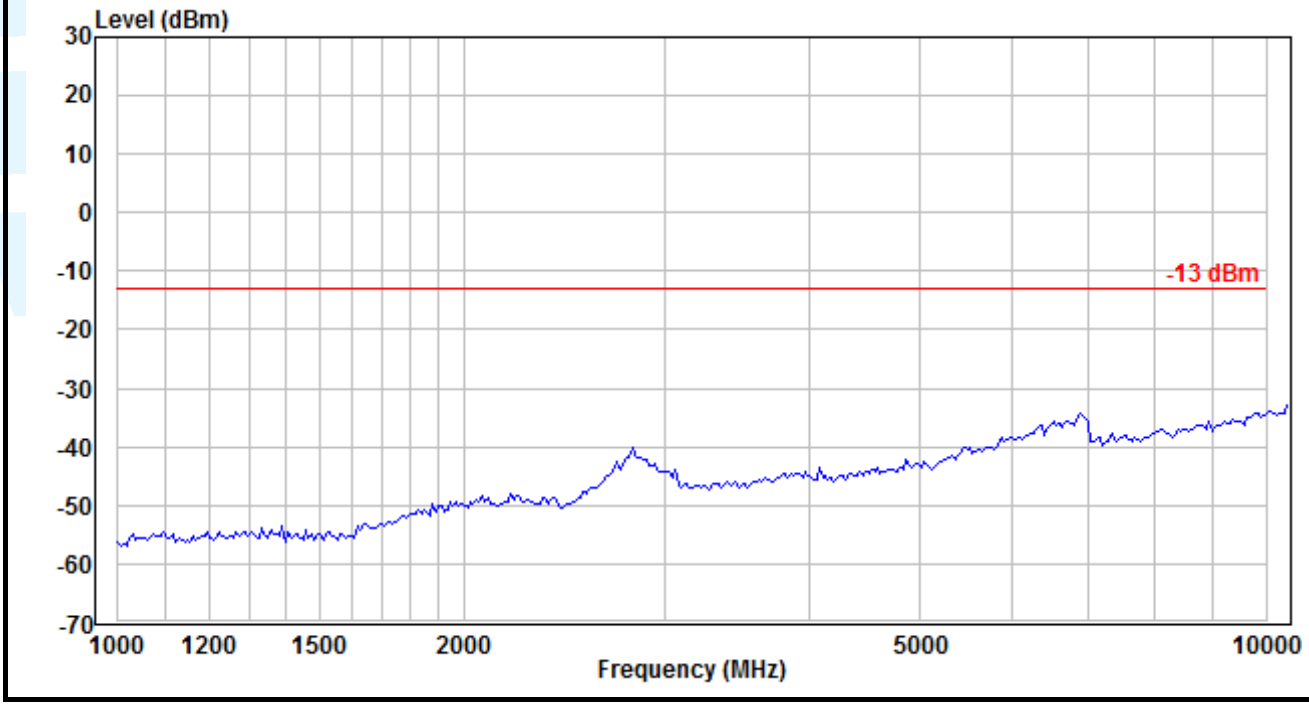
5.7.2 Radiated Emission Test Data (Above 1GHz)

CDMA2000 BC10 1xRTT_Middle Channel

Horizontal

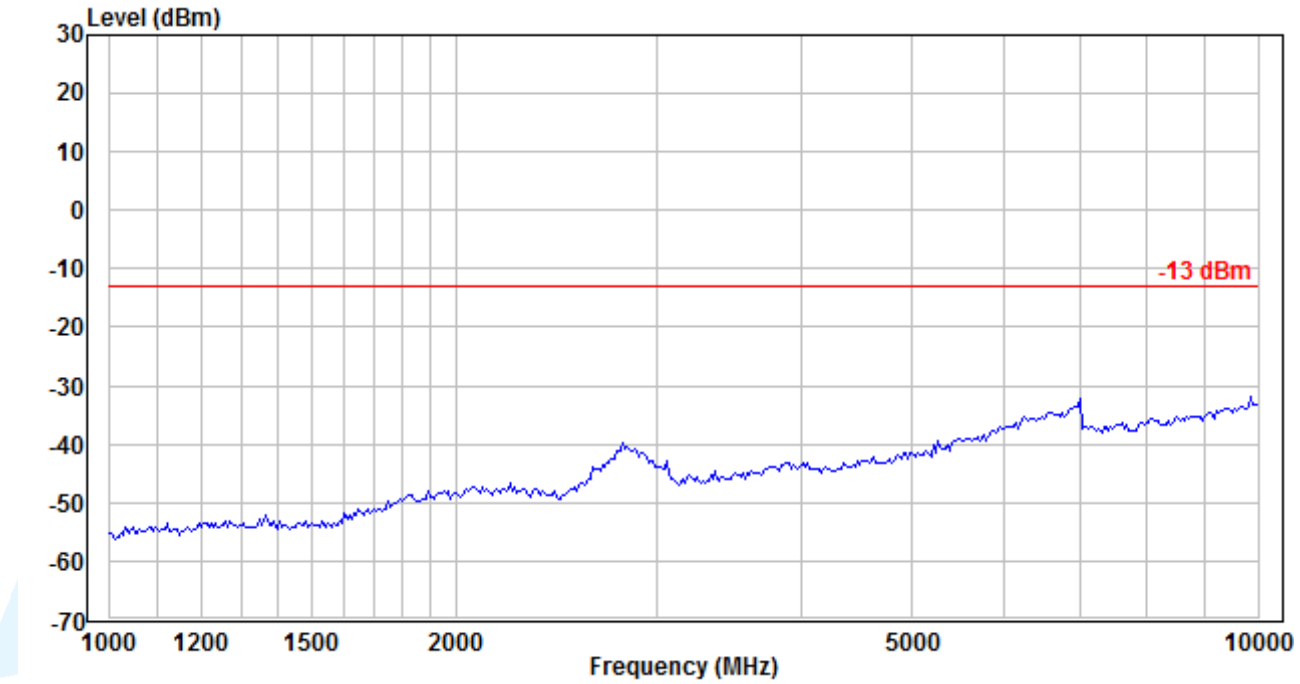


Vertical

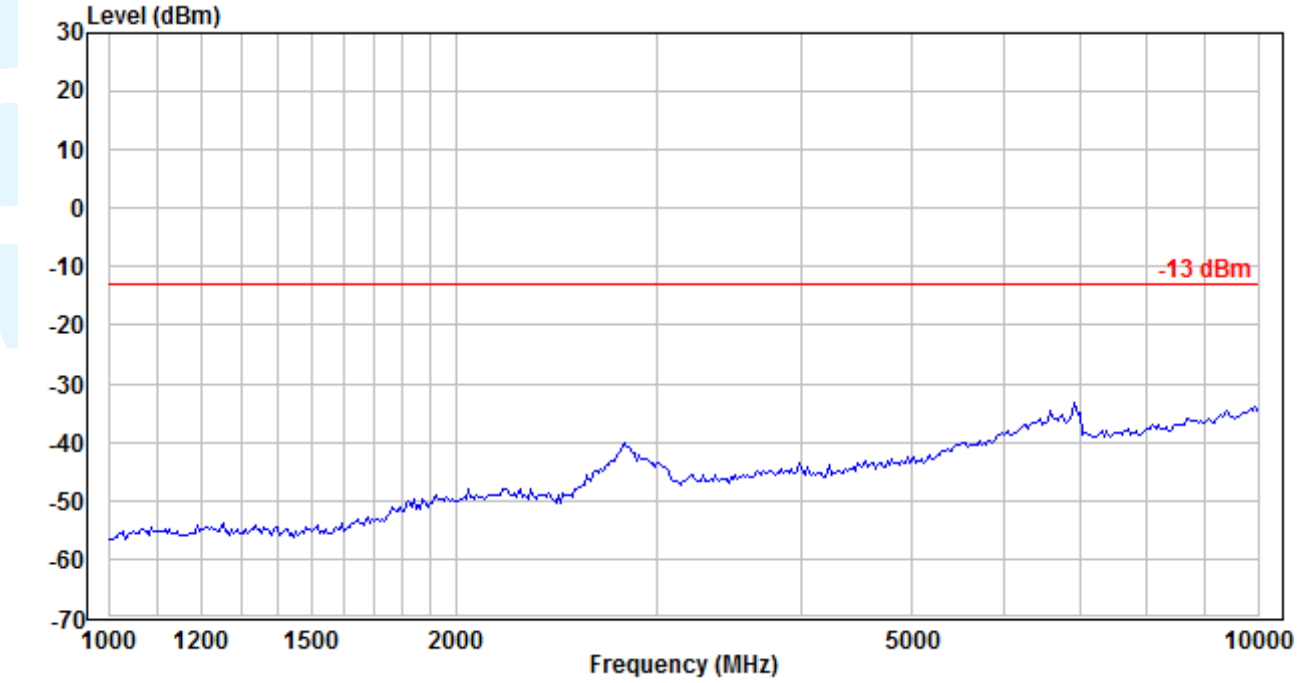


LTE Band 26 / 1.4 MHz / QPSK_ Middle Channel

Horizontal

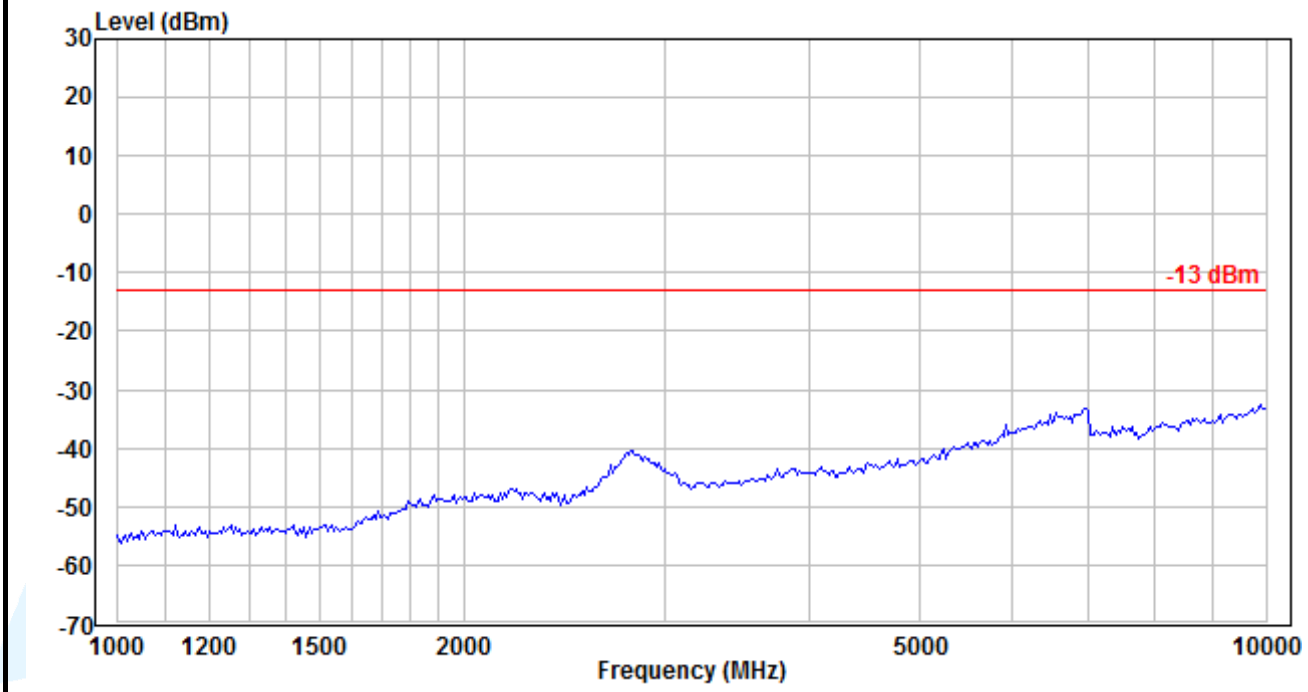


Vertical

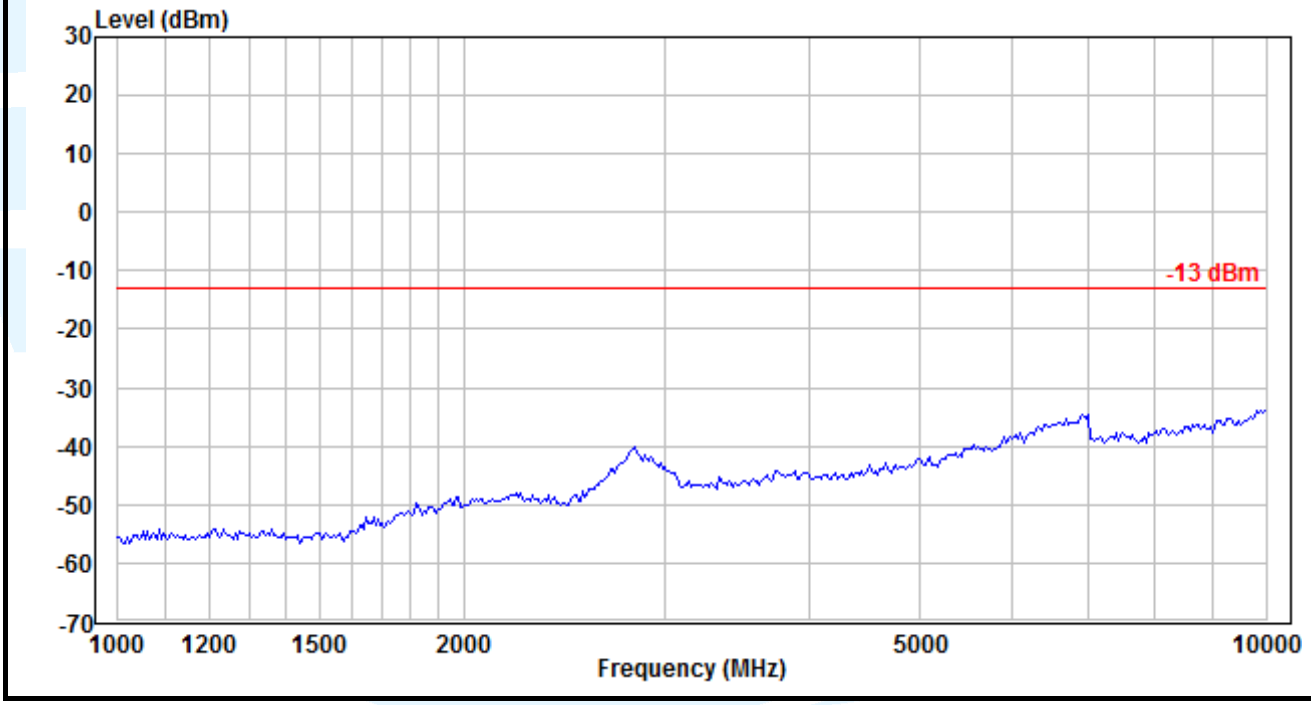


LTE Band 26 / 3 MHz / QPSK_ Middle Channel

Horizontal

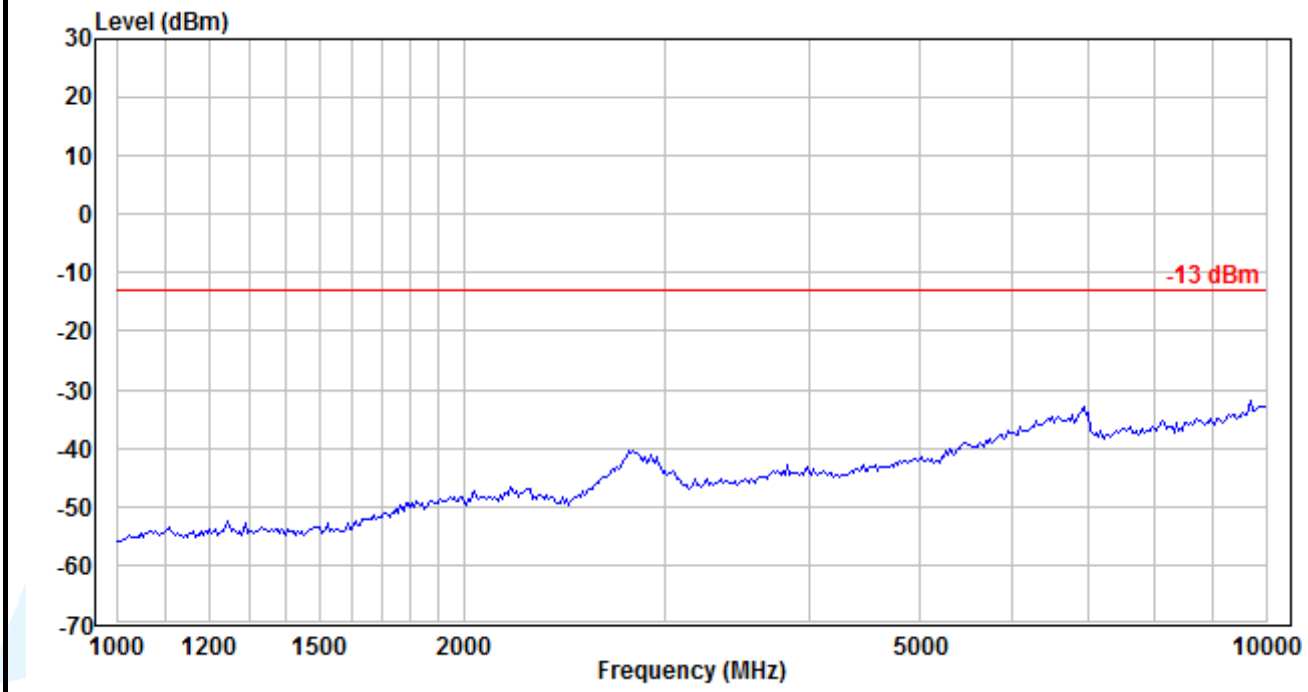


Vertical

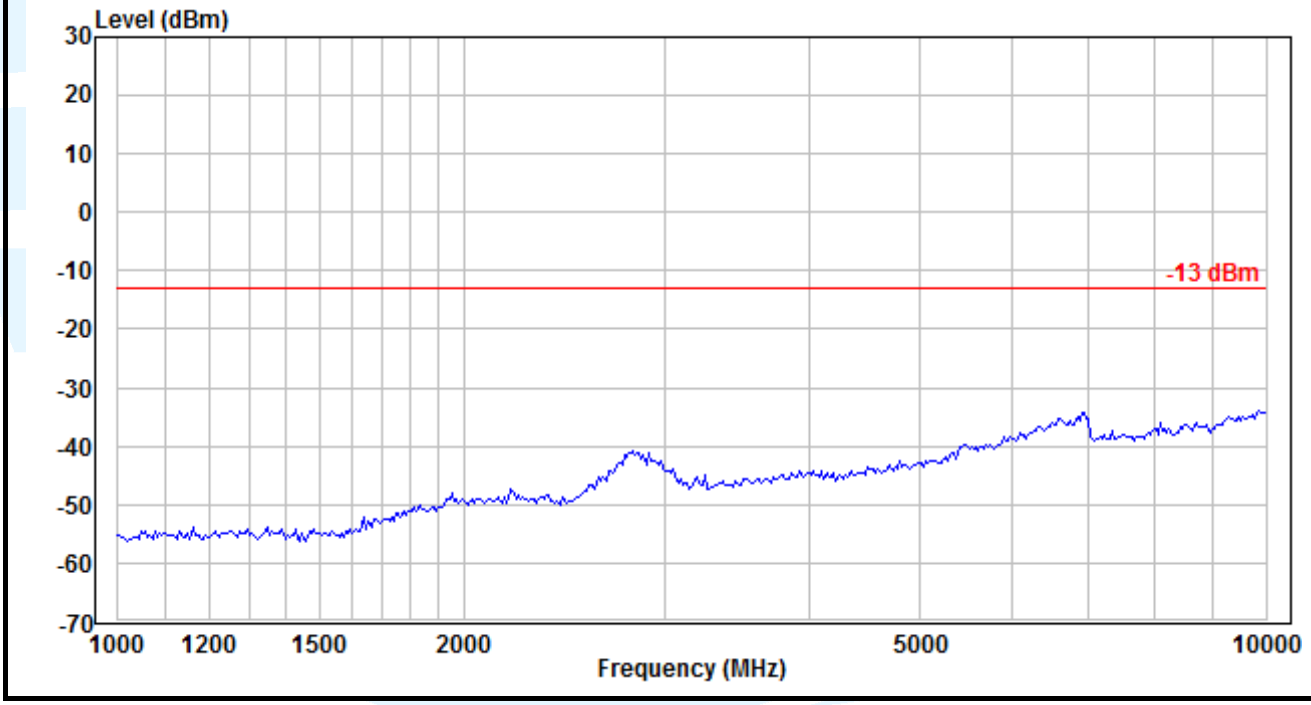


LTE Band 26 / 5 MHz / QPSK_ Middle Channel

Horizontal

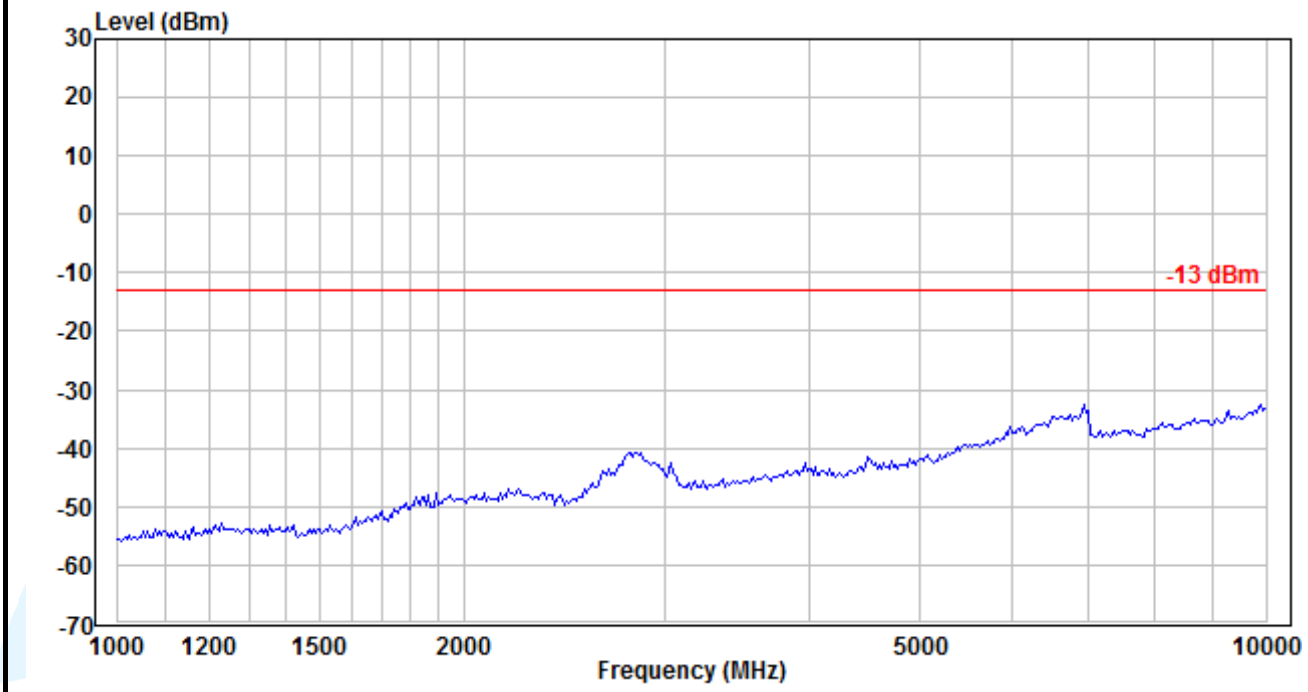


Vertical

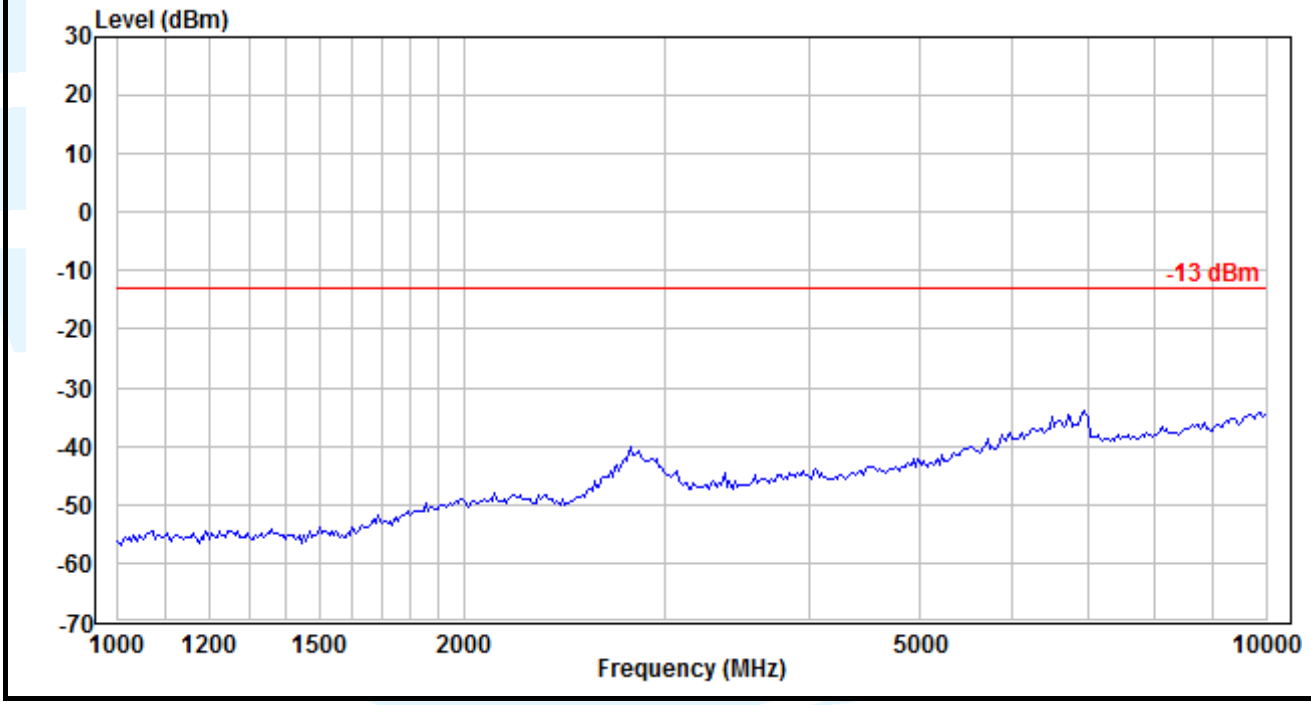


LTE Band 26 / 10 MHz / QPSK_ Middle Channel

Horizontal

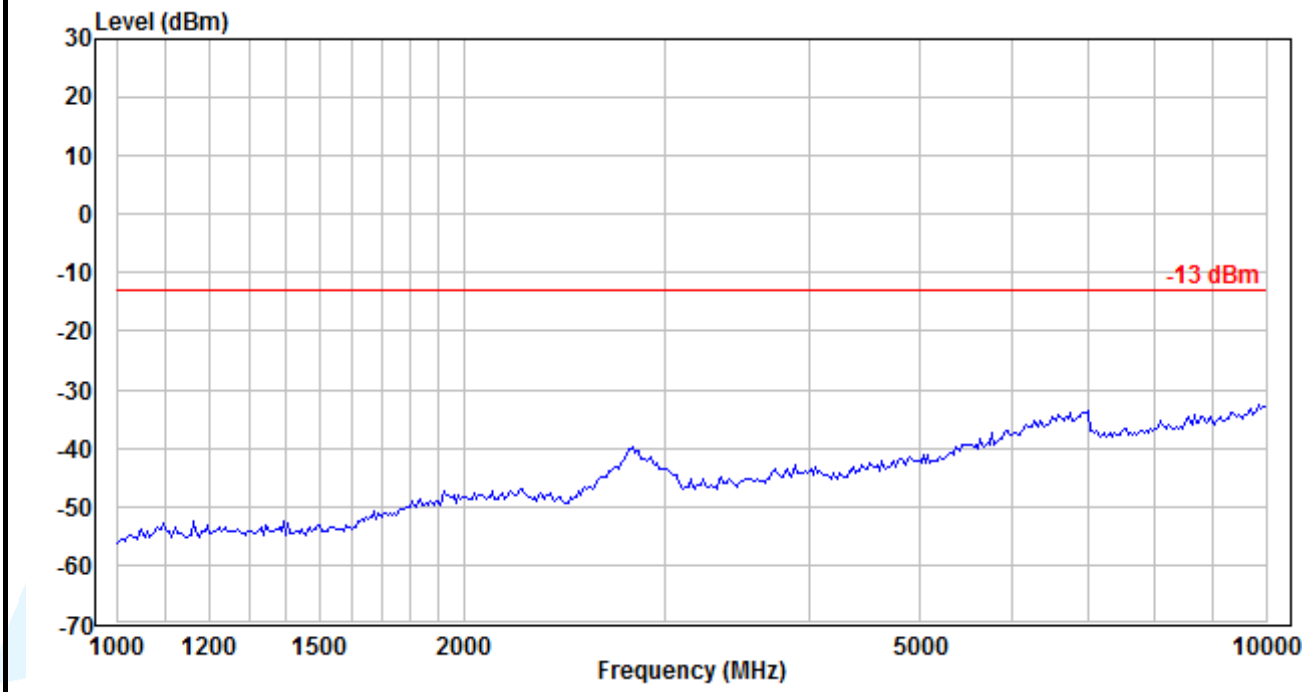


Vertical

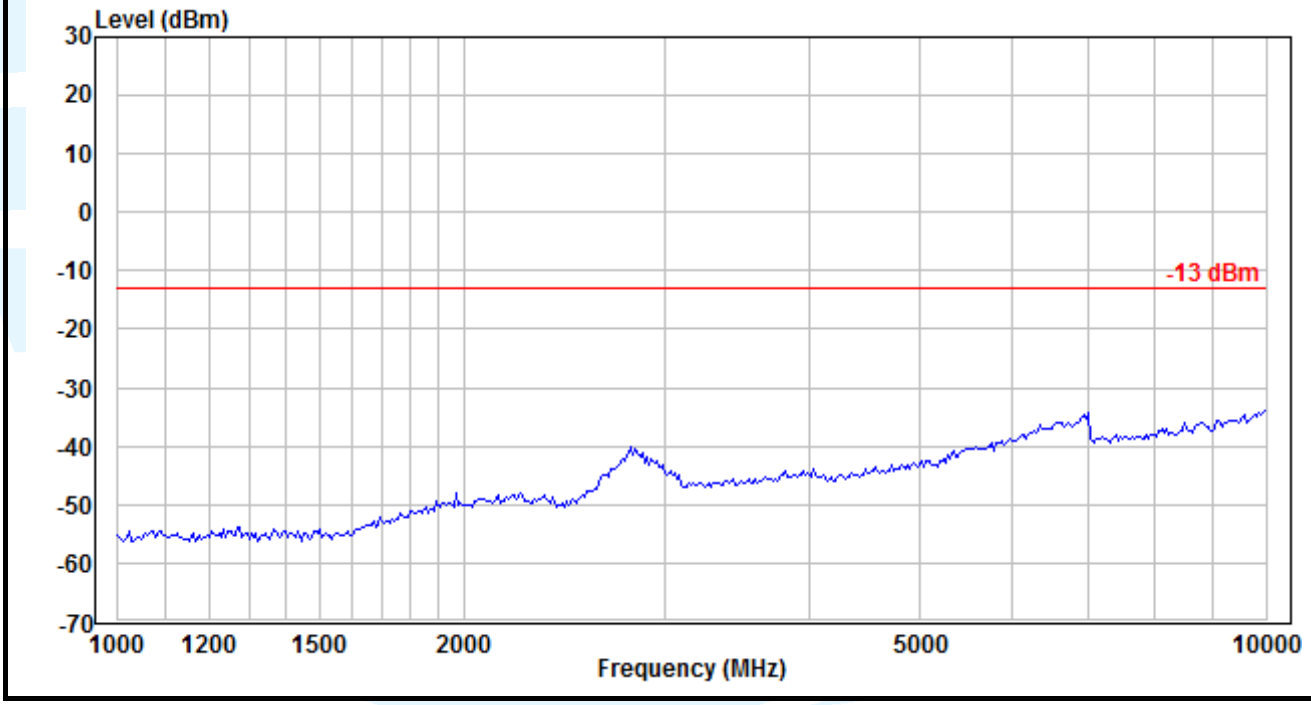


LTE Band 26 / 15 MHz / QPSK_ Lowest Channel

Horizontal



Vertical



5.8 FREQUENCY STABILITY

Test Requirement: FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 90.213

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Limits:

Minimum frequency stability as specified in the following table.

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
809-824	[14]1.5	2.5	2.5

[14]Control stations may operate with the frequency tolerance specified for associated mobile frequencies.

Test Setup: Refer to section 4.2.2 for details.

Test Procedures:

1) Use CMW 500 or CMU 200 with Frequency Error measurement capability.
   a) Temp. =−30° to +50°C
   b) Voltage =low voltage, 3.7 Vdc, Normal, 3.85 Vdc and High voltage, 4.4 Vdc.
2) Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 20ºC and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50ºC is reached.

3) Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

Equipment Used: Refer to section 3 for details.

Test Result: Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
CDMA BC10 1xRTT							
QPSK	580 / 820	VL	TN	17	0.0207	± 2.5	Pass
		VN		19	0.0232	± 2.5	Pass
		VH		17	0.0207	± 2.5	Pass
		VN	50	21	0.0256	± 2.5	Pass
			40	23	0.0280	± 2.5	Pass
			30	16	0.0195	± 2.5	Pass
			20	18	0.0220	± 2.5	Pass
			10	11	0.0134	± 2.5	Pass
			0	23	0.0280	± 2.5	Pass
			-10	20	0.0244	± 2.5	Pass
			-20	21	0.0256	± 2.5	Pass
			-30	19	0.0232	± 2.5	Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
LTE Band 26 / 10MHz / Full RB							
QPSK	26740 / 819	VL	TN	-12	-0.0147	± 2.5	Pass
		VN		-11	-0.0134	± 2.5	Pass
		VH		-14	-0.0171	± 2.5	Pass
		VN	50	-9	-0.0110	± 2.5	Pass
			40	-10	-0.0122	± 2.5	Pass
			30	-14	-0.0171	± 2.5	Pass
			20	-12	-0.0147	± 2.5	Pass
			10	-9	-0.0110	± 2.5	Pass
			0	-5	-0.0061	± 2.5	Pass
			-10	-8	-0.0098	± 2.5	Pass
			-20	-9	-0.0110	± 2.5	Pass
			-30	-13	-0.0159	± 2.5	Pass

APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***