FCC TEST REPORT

Product	:	Mobile Phone
Trade mark	:	MI
Model/Type reference	:	2016117
Report Number	:	1608310293RFM-1
Date of Issue	:	Oct.19, 2016
FCC ID	:	2AFZZ-RM6117
Test Standards	:	47 CFR Part 22 Subpart H (2015) 47 CFR Part 2 Subpart J (2015)
Test result	:	PASS

Prepared for:

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

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
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Tested by:	Tiny You	Reviewed by:	Jim Long
	Tiny You		Jim Long
	RF Engineer		RF Senior Supervisor
Approved by:		Date:	Oct.19, 2016
	Billy Li		
	Technical Director		

Version

Version No.	Date	Description
V1.0	Oct.19, 2016	Original

Content

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 General Description of EUT

Product Name:	Mobile Phone	
Model No.(EUT):	2016117	
Add. Mode No.:	N/A	
Trade Mark:	MI	
EUT Supports Radios application:	GSM850/900/1800/1900 WCDMA Band I/Band II/Band V/Band VIII LTE FDD Band 1/Band 3/ Band 4/ Band 5/Band 7/Band 8/Band 20 LTE TDD Band 40/Band 41 Wlan 2.4GHz 802.11b/g/n(HT20) Bluetooth V3.0+EDR&Bluetooth V4.0 BLE GPS, Glonass	
Power Supply:	AC adapter	Model:MDY-08-EF Input:100-240V~50/60Hz, 0.35A; Output: 5V ⎓ 2A
	Battery1	Model: BN30 Brand: Sunwoda Rated voltage: 3.84Vdc Battery capacity: 3030mAh(Li-on Rechargeable)
	Battery2	Model: BN30 Brand: SCUD Rated voltage: 3.84Vdc Battery capacity: 3030mAh(Li-on Rechargeable)
USB Micro-B Plug cable:	117cm(Shielded)	
Sample Received Date:	Sep. 09, 2016	
Sample tested Date:	Sep. 11, 2016 to Oct. 14, 2016	

1.3 Product Specification subjective to this standard

Support Networks:	GSM, GPRS, EDGE, WCDMA, HSDPA, HSUPA,DC-HSDPA,HSPA+, LTE	
Type of Modulation:	GSM/GPRS:	GMSK
	EDGE:	GMSK, 8PSK
	WCDMA:	BPSK
	LTE:	QPSK, 16QAM
Frequency Range:	GSM/GPRS/EDGE:	824.2-848.8 MHz
	WCDMA:	826.4-846.6 MHz
	LTE Band 5(Channel Bandwidth: 1.4 MHz):	824.7-848.3 MHz
	LTE Band 5 (Channel Bandwidth: 3 MHz):	825.5-847.5MHz
	LTE Band 5 (Channel Bandwidth: 5 MHz):	826.5-846.5 MHz
	LTE Band 5 (Channel Bandwidth: 10 MHz):	829-844 MHz

Max RF Output Power:	GSM/GPRS:	32.51dBm
	EDGE:	24.93dBm
	WCDMA	22.83dBm
	LTE Band 5(Channel Bandwidth: 1.4 MHz):	22.58dBm
	LTE Band 5 (Channel Bandwidth: 3 MHz):	22.62dBm
	LTE Band 5 (Channel Bandwidth: 5 MHz):	22.68dBm
	LTE Band 5 (Channel Bandwidth: 10 MHz):	22.71dBm
Type of Emission:	GSM/GPRS:	245KGXW
	EDGE:	249KG7W
	WCDMA	4M15F9W
	LTE Band 5(Channel Bandwidth: 1.4 MHz):	1M10G7D, 1M10W7D
	LTE Band 5 (Channel Bandwidth: 3 MHz):	2M73G7D, 2M73W7D
	LTE Band 5 (Channel Bandwidth: 5 MHz):	4M50G7D, 4M49W7D
	LTE Band 5 (Channel Bandwidth: 10 MHz):	9M06G7D, 9M06W7D
IEMI:	SIM1: 862115030005584	
	SIM2: 862115030005592	
Type of Antenna:	LDS Antenna	
Antenna Gain:	-1.1dBi	
GPRS/EDGE Class:	Class 33	
Sample Type:	Portable production	
Normal Test voltage:	3.84Vdc	
Extreme Test voltage:	3.6~4.35Vdc (declared by the manufacturer)	
Operating Temperature:	0℃ to +40℃ (declared by the manufacturer)	
Software Version:	MIUI8	
Hardware Version:	P3	

1.4 Description of Support Units

The EUT has been tested independently

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
N/A	N/A	N/A	N/A	N/A

2) Cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
1	N/A	N/A	N/A	N/A

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
Tested by: Tiny You

Tests were sub-contracted.(ERP and Field strength of spurious radiation)
CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.
Address: Building 28/29, Shigu East, Xili Street, Xili Industrial District, Nanshan District, Shenzhen, Guangdong, China
Telephone: +86 (0) 755 26627338 Fax:+86 (0) 755 26627238
Tested by: Fly

1.6 Test Facility

1) Shenzhen UnionTrust Quality and Technology Co., Ltd.

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.

2) CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.

CNAS-Lab Code: L1659

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659. A 12.8*6.8*6.4 (m) fully anechoic chamber was used for the radiated spurious emissions test.

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 (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	±6.3 x 10^{-8}
2	RF power, conducted	±0.52 dB
3	Radiated Spurious emissions	±5.9 dB
4	Conducted spurious emission 9KHz-40GHz	±1.60 dB
5	Temperature	±0.64 °C
6	Humidity	±2.8 %
7	Supply voltages	±0.49 %

2 Test Summary

Test Item	Test Requirement	Test method	Result
Effective Radiated Power(ERP)	Part 2.1046(a) & Part 22.913(a)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Conducted Output Power	Part 2.1046(a) & Part 22.913(a)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
99%&26dB Occupied Bandwidth	Part 2.1049(h)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Band Edge at antenna terminals	Part 2.1051 & Part 22.917(a)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Spurious emissions at antenna terminals	Part 2.1051 & Part 22.917(a)(b)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Field strength of spurious radiation	Part 2.1053 & Part 22.917(a)(b)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Frequency stability	Part 2.1055 & Part 22.355	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS

Remark:
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radiated Frequency.
CH: In this whole report CH means channel.

3 Equipment List

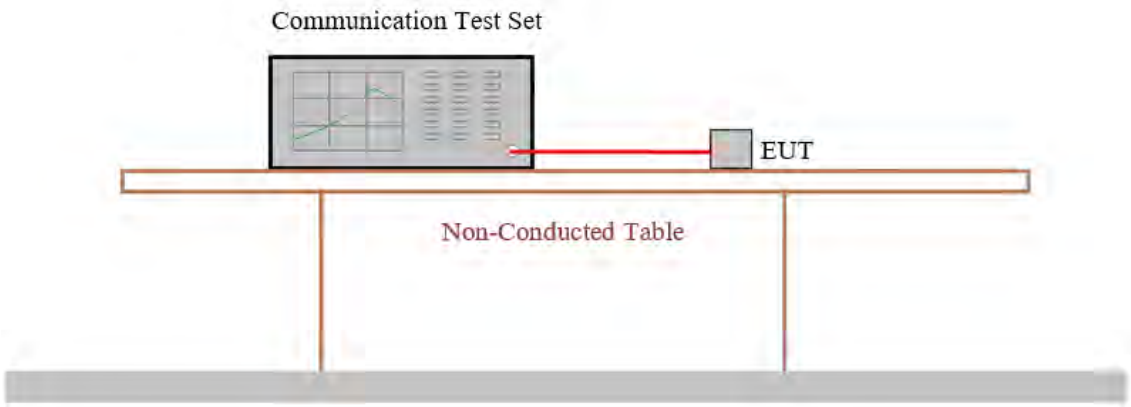
3m (Semi-Anechoic Chamber)					
Equipment	**Manufacturer**	**Mode No.**	**Serial Number**	**Cal date**	**Cal. Due date**
Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	538	11/8/2015	11/7/2017
Double-Ridged-Waveguide Horn Antenna	SCHWARZBECK	9120D	1011	11/8/2015	11/7/2017
Emi Test Receiver	R&S	ESCI	101247	11/1/2015	10/31/2016
Spectrum Analyzer	R&S	FSP40	100597	11/1/2015	10/31/2016
Pre-amplifer	SCHWARZBECK	BBV 9743	9743-0022	11/1/2015	10/31/2016
Broadband Preamplifer	SCHWARZBECK	BBV 9718	9718-248	11/1/2015	10/31/2016
Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A	N/A
Test Software	R&S	ES-K1	N/A	N/A	N/A
Communication test set	R&S	CMW500	130805	10/8/2016	9/8/2017

Communication RF test					
Equipment	**Manufacturer**	**Mode No.**	**Serial Number**	**Cal date**	**Cal. Due date**
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	27/1/2016	26/1/2017
Receiver/ Spectrum Analyzer	R&S	ESR7	1316.3003K07-101181-K3	23/22016	22/22017
Communication test set	R&S	CMU200	114713	7/12/2015	6/12/2016
Communication test set	R&S	CMW500	130805	10/8/2016	9/8/2017

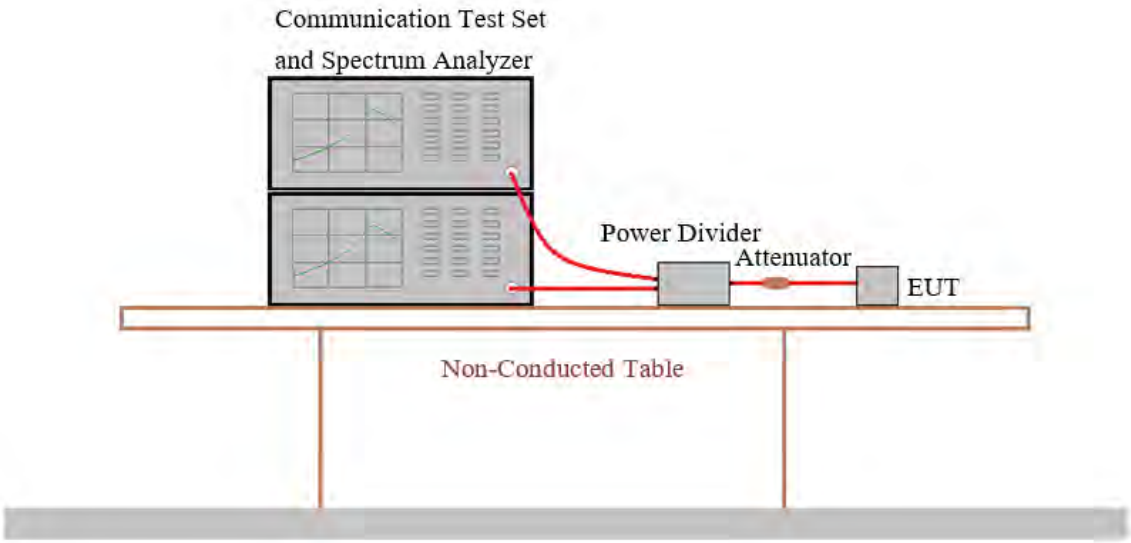
4 Test Requirement

4.1 Test setup

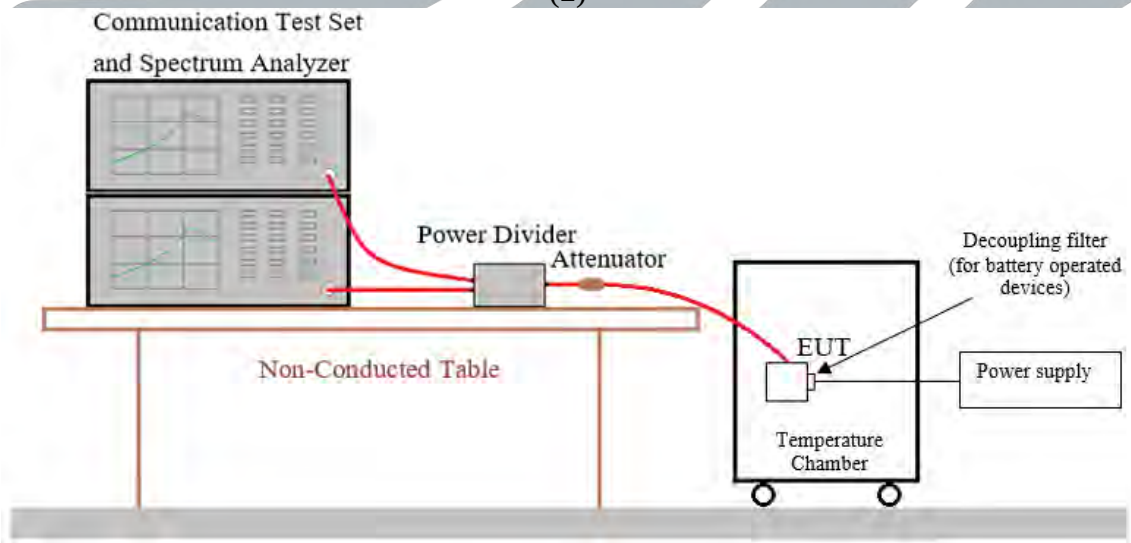
4.1.1 For Conducted test setup



(1)



(2)



(3)

4.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

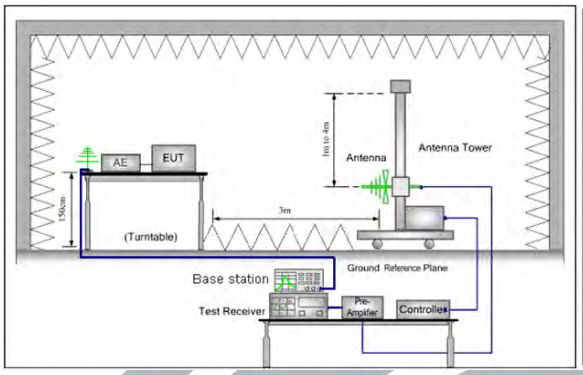


Figure 1.30MHz to 1GHz

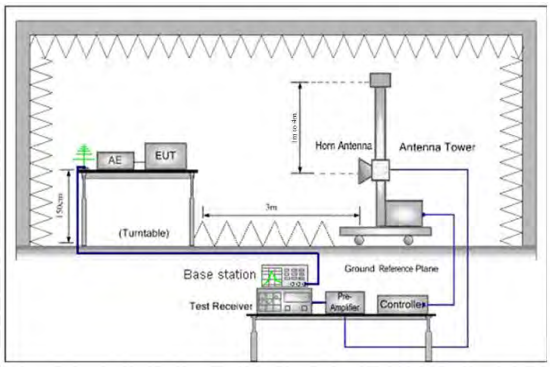


Figure 2. above 1GHz

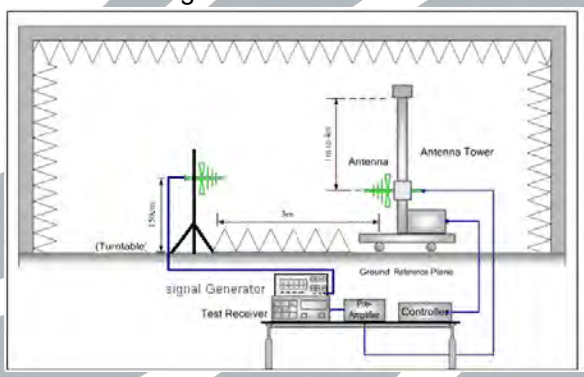


Figure 1. 30MHz to 1GHz

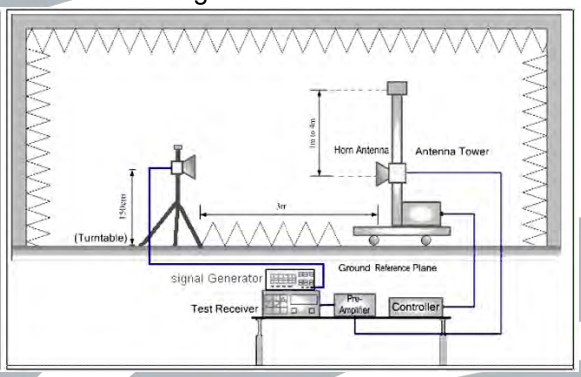


Figure 2. above 1GHz

4.2 Test Environment

Operating Environment:	
Temperature:	25.0 °C
Humidity:	53 % RH
Atmospheric Pressure:	99.87kpa

4.3 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	**Worst-case Orientation**	
	ERP	**Radiated Emission**
GSM	Y axis	Y axis
EDGE	Y axis	Y axis
WCDMA Band V	Y axis	Y axis
LTE Band 5	Y axis	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.

4.4 Test Condition

4.4.1 Test channel

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(cm)	High(H)
GSM/GPRS/ EDGE850	Tx (824 MHz ~849 MHz)	Channel 128	Channel 190	Channel 251
		824.2MHz	836.6 MHz	848.8 MHz
	Rx (869 MHz ~894 MHz)	Channel 128	Channel 190	Channel 251
		869.2 MHz	881.6 MHz	893.8 MHz
WCDMA band V	Tx (824 MHz ~849 MHz)	Channel 4132	Channel 4182	Channel 4233
		826.4 MHz	836.4 MHz	846.6 MHz
	Rx (869 MHz ~894 MHz)	Channel 4357	Channel 4407	Channel 4458
		871.4 MHz	881.4 MHz	891.6 MHz

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)	Number [DL]	Frequency of Downlink (MHz)
LTE band 5 TX:824–849 MHz RX: 869–894MHz	Low Range	1.4	20407	824.7	2407	869.7
		3	20415	825.5	2415	870.5
		5	20425	826.5	2425	871.5
		10	20450	829	2450	874
	Mid Range	1.4/3/5/10	20525	836.5	2525	881.5
	High Range	1.4	20643	848.3	2643	893.3
		3	20635	847.5	2635	892.5
		5	20625	846.5	2625	891.5
		10	20600	844	2600	889

4.4.2 Test mode

Pre-scan under all rate at lowest middle and highest channel, find the transmitter power as below:

SIM 1 Card Conducted transmitter power measurement result (Units: dBm).

band	GSM850		
Channel	**128**	**190**	**251**
Frequency(MHz)	**824.2MHz**	**836.6MHz**	**848.8MHz**
GSM (GMSK, 1Tx-slot)	32.39	32.46	**32.51**
GPRS (GMSK, 1Tx-slot)	32.44	32.49	32.50
GPRS (GMSK, 2Tx-slot)	30.13	30.15	30.19
GPRS (GMSK, 3Tx-slot)	28.20	28.25	28.25

GPRS (GMSK, 4Tx-slot)	27.10	27.16	27.07
EDGE (8PSK, 1Tx-slot)	**24.93**	24.87	24.77
EDGE (8PSK, 2Tx-slot)	23.83	23.97	23.76
EDGE (8PSK, 3Tx-slot)	22.76	22.79	22.84
EDGE (8PSK, 4Tx-slot)	21.71	21.80	21.75

band	**WCDMA Band V**		
Channel	**4132**	**4182**	**4233**
Frequency(MHz)	**826.4MHz**	**836.4MHz**	**846.6MHz**
RMC 12.2K	**22.83**	22.76	22.68
HSDPA Subtest-1	21.45	21.41	21.38
HSDPA Subtest-2	21.35	21.4	21.31
HSDPA Subtest-3	20.92	20.87	20.81
HSDPA Subtest-4	20.81	20.82	20.79
HSUPA Subtest-1	20.29	20.18	20.17
HSUPA Subtest-2	19.31	19.37	19.24
HSUPA Subtest-3	19.51	19.45	19.53
HSUPA Subtest-4	19.36	19.38	19.4
HSUPA Subtest-5	20.67	20.68	20.72
DC-HSDPA Subtest-1	21.42	21.40	21.35
DC-HSDPA Subtest-2	21.37	21.37	21.33
DC-HSDPA Subtest-3	20.95	20.88	20.83
DC-HSDPA Subtest-4	20.86	20.84	20.77
HSPA+	20.59	20.65	20.67

LTE Band 5									
Channel Bandwidth: 1.4 MHz					**Channel Bandwidth: 3 MHz**				
Channel	**RB Configuration**		**Average Power [dBm]**		Channel	**RB Configuration**		**Average Power [dBm]**	
	Size	**Offset**	**QPSK**	**16QAM**		**Size**	**Offset**	**QPSK**	**16QAM**
LCH	1	0	22.52	21.10	LCH	1	0	22.56	21.14
	1	2	22.51	21.08		1	7	22.55	21.12
	1	5	22.41	20.96		1	14	22.45	21.00
	3	0	22.50	21.09		8	0	21.56	20.75
	3	1	22.49	21.07		8	3	21.61	20.79
	3	3	22.39	20.95		8	7	21.57	20.68
	6	0	21.61	20.69		15	0	21.65	20.73
MCH	1	0	**22.58**	**21.49**	MCH	1	0	**22.62**	**21.53**
	1	2	22.52	21.44		1	7	22.56	21.48
	1	5	22.52	21.12		1	14	22.56	21.16
	3	0	22.56	21.48		8	0	21.54	20.66
	3	1	22.50	21.43		8	3	21.60	20.72
	3	3	22.50	21.11		8	7	21.58	20.52
	6	0	21.47	20.67		15	0	21.51	20.71
HCH	1	0	22.49	21.14	HCH	1	0	22.53	21.18
	1	2	22.48	21.06		1	7	22.52	21.10
	1	5	22.26	20.68		1	14	22.30	20.72
	3	0	22.47	21.13		8	0	21.50	20.63

	3	1	22.46	21.05		8	3	21.52	20.53
	3	3	22.24	20.67		8	7	21.47	20.49
	6	0	21.45	20.56		15	0	21.49	20.60
Channel Bandwidth: 5 MHz					**Channel Bandwidth: 10 MHz**				
LCH	1	0	22.62	21.20	LCH	1	0	22.65	21.23
	1	12	22.61	21.18		1	24	22.64	21.21
	1	24	22.51	21.06		1	49	22.54	21.09
	12	0	21.62	20.81		25	0	21.65	20.84
	12	6	21.67	20.85		25	12	21.70	20.88
	12	13	21.63	20.74		25	25	21.66	20.77
	25	0	21.71	20.79		50	0	21.74	20.82
MCH	1	0	**22.68**	**21.59**	MCH	1	0	**22.71**	**21.62**
	1	12	22.62	21.54		1	24	22.65	21.57
	1	24	22.62	21.22		1	49	22.65	21.25
	12	0	21.60	20.72		25	0	21.63	20.75
	12	6	21.66	20.78		25	12	21.69	20.81
	12	13	21.64	20.58		25	25	21.67	20.61
	25	0	21.57	20.77		50	0	21.60	20.80
HCH	1	0	22.59	21.24	HCH	1	0	22.62	21.27
	1	12	22.58	21.16		1	24	22.61	21.19
	1	24	22.36	20.78		1	49	22.39	20.81
	12	0	21.56	20.69		25	0	21.59	20.72
	12	6	21.58	20.59		25	12	21.61	20.62
	12	13	21.53	20.55		25	25	21.56	20.58
	25	0	21.55	20.66		50	0	21.58	20.69

Pre-scan all mode and data rates and positions, find worse case mode are chosen to the report, the worse mode as below:

band	Radiated	Conducted
GSM/GPRS/EDGE 850	1) GSM (GMSK, 1Tx-slot) Link 2) GPRS (GMSK, 1Tx-slot) Link 3) EDGE (8PSK, 1Tx-slot) Link	1) GSM (GMSK,1Tx-slot) Link 2) GPRS (GMSK, 1Tx-slot) Link 3) EDGE (8PSK, 1Tx-slot) Link
WCDMA Band V	RMC 12.2Kbps Link	RMC 12.2Kbps Link

LTE worse mode applicability and tested channel detail as below:

LTE-Band 5												
Item	Bandwidth(MHz)				Modulation		RB #			Test Channel		
	1.4	3	5	10	QPSK	16QAM	1	Half	Ful	L	M	H
ERP	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
Conducted output power	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
99% &26dB Occupied Bandwidth	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
Band Edge at antenna terminals	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒

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												

5 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	47 CFR Part 22 Subpart H	PART 22 – PUBLIC MOBILE SERVICES Subpart H – Cellular Radiotelephone Service
2	47 CFR Part 2 Subpart J	Frequency allocations and radio treaty matters; general rules and regulations
3	ANSI/TIA/EIA-603-D 2010	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
4	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v02r02

5.1 Effective Radiated Power

Test Requirement: Part 2.1046(a) & Part 22.913(a)

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

Limit: The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Test Procedure: Test procedure as below:

1) The EUT was powered ON and placed on a 0.8m high table at a 3 meter 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 (above 18GHz the distance is 1 meter) 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 4.1.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data:

Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Result	Antenna Polaxis.
GSM 1Tx-slot					
128	824.2	30.74	38.45	Pass	H
		18.79	38.45	Pass	V
190	836.6	30.66	38.45	Pass	H
		19.08	38.45	Pass	V
251	848.8	31.27	38.45	Pass	H
		18.84	38.45	Pass	V
EDGE 1Tx-slot					
128	824.2	22.41	38.45	Pass	H
		9.93	38.45	Pass	V
190	836.6	22.52	38.45	Pass	H
		10.07	38.45	Pass	V
251	848.8	22.16	38.45	Pass	H
		10.22	38.45	Pass	V
WCDMA RMC 12.2Kbps					
4132	826.4	20.88	38.45	Pass	H
		9.45	38.45	Pass	V
4182	836.6	20.80	38.45	Pass	H
		9.05	38.45	Pass	V
4233	846.6	20.84	38.45	Pass	H
		8.99	38.45	Pass	V

Channel	Frequency (MHz)	ERP (dBm)		Limit (dBm)	Result	Antenna Polaxis.
		QPSK; RB:1	16QAM; RB:1			
LTE Band 5; Bandwidth 1.4MHz						
20407	824.7	21.42	19.15	33.01	Pass	H
		8.79	7.09	33.01	Pass	V
20525	836.5	21.03	20.22	33.01	Pass	H
		8.76	7.41	33.01	Pass	V

20643	848.3	21.19	19.55	33.01	Pass	H
		8.57	7.45	33.01	Pass	V
LTE Band 5; Bandwidth 3MHz						
20415	825.5	21.22	19.45	33.01	Pass	H
		9.40	8.04	33.01	Pass	V
20525	836.5	20.67	20.18	33.01	Pass	H
		9.44	7.80	33.01	Pass	V
20635	847.5	21.12	19.21	33.01	Pass	H
		9.08	7.98	33.01	Pass	V
LTE Band 5; Bandwidth 5MHz						
20425	826.5	20.95	19.28	33.01	Pass	H
		8.95	8.07	33.01	Pass	V
20525	836.5	20.94	19.86	33.01	Pass	H
		9.41	7.86	33.01	Pass	V
20625	846.5	21.15	19.34	33.01	Pass	H
		9.37	7.48	33.01	Pass	V
LTE Band 5; Bandwidth 10MHz						
20450	829	21.24	20.00	33.01	Pass	H
		8.84	7.44	33.01	Pass	V
20525	836.5	20.90	20.19	33.01	Pass	H
		8.99	7.61	33.01	Pass	V
20600	844	20.58	19.44	33.01	Pass	H
		9.46	7.48	33.01	Pass	V

5.2 Conducted Output Power

Test Requirement: Part 2.1046(a) & Part 22.913(a)

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

Limit: The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Test Procedure: The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, 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 4.1.1(1) for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data:

Note: The following is the worst conducted output power (Units: dBm), the full result can be also refer to section 4.4.2 for details.

For Cellular Band			
Channel	**128**	**190**	**251**
Frequency(MHz)	**824.2MHz**	**836.6MHz**	**848.8MHz**
GSM 1Tx-slot	32.39	32.46	32.51
GPRS 1Tx-slot	32.44	32.49	32.50
EDGE 1Tx-slot	23.83	23.97	23.76

WCDMA			
Channel	**4132**	**4182**	**4233**
Frequency(MHz)	**826.4MHz**	**836.4MHz**	**846.6MHz**
RMC 12.2Kbps	22.83	22.76	22.68

LTE Band 5									
Channel	**RB Configuration**		**Average Power [dBm]**		**Channel**	**RB Configuration**		**Average Power [dBm]**	
	Size	**Offset**	**QPSK**	**16QAM**		**Size**	**Offset**	**QPSK**	**16QAM**
Channel Bandwidth: 1.4 MHz					**Channel Bandwidth: 3 MHz**				
LCH	1	0	22.52	21.10	LCH	1	0	22.56	21.14
MCH	1	0	22.58	21.49	MCH	1	0	22.62	21.53
HCH	1	0	22.49	21.14	HCH	1	0	22.53	21.18
Channel Bandwidth: 5 MHz					**Channel Bandwidth: 10 MHz**				
LCH	1	0	22.62	21.20	LCH	1	0	22.65	21.23
MCH	1	0	22.68	21.59	MCH	1	0	22.71	21.62
HCH	1	0	22.59	21.24	HCH	1	0	22.62	21.27

5.3 99%&26dB Occupied Bandwidth

Test Requirement: Part 2.1049(h) & Part 22.917(b)

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

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 4.1.1(2) for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data:

For Cellular Band				
Test Mode	**Channel**	**Frequency (MHz)**	**26 dB BW (kHz)**	**99% BW (kHz)**
GSM 1Tx-slot	128	824.2	316.9	243.1259
	190	836.6	315.5	244.5731
	251	848.8	315.5	243.1259
EDGE 1Tx-slot	128	824.2	314.0	248.9146
	190	836.6	315.5	243.1259
	251	848.8	314.0	246.0203

For WCDMA				
Test Mode	**Channel**	**Frequency (MHz)**	**26 dB BW (MHz)**	**99% BW (MHz)**
RMC 12.2Kbps	4132	826.4	4.747	4.1534
	4182	836.4	4.718	4.1245
	4233	846.6	4.747	4.1389

For LTE Band 5						
Channel Bandwidth: 1.4 MHz						
Channel	**RB Configuration**		**26 dB BW (MHz)**		**99% BW (MHz)**	
	Size	**Offset**	**QPSK**	**16QAM**	**QPSK**	**16QAM**
LCH	6	0	1.2967	1.2967	1.0981	1.0981
MCH	6	0	1.2967	1.2967	1.0981	1.0981
HCH	6	0	1.3007	1.2805	1.0981	1.0981
Channel Bandwidth: 3 MHz						
LCH	15	0	3.0478	3.0564	2.7178	2.7265
MCH	15	0	3.0478	3.0651	2.7178	2.7178

HCH	15	0a	3.0564	3.0564	2.7265	2.7265
Channel Bandwidth: 5 MHz						
LCH	25	0	5.051	5.036	4.5007	4.4863
MCH	25	0	5.036	5.051	4.5007	4.4863
HCH	25	0	5.051	5.036	4.5007	4.4863
Channel Bandwidth: 10 MHz						
LCH	50	0	10.043	9.957	9.0593	8.9725
MCH	50	0	9.957	10.014	9.0593	9.0593
HCH	50	0	10.072	10.072	9.0593	9.0593

The test plot as follows:

GSM 1Tx-slot	
26 dB BW	**99% BW**
128 Channel	
	
190 Channel	
	

251 Channel

EDGE 1Tx-slot

26 dB BW	99% BW

128 Channel

190 Channel

251 Channel

WCDMARMC 12.2Kbps

4132 Channel

4182 Channel

4233 Channel

LTE_ Band 5_Channel Bandwidth: 1.4 MHz_QPSK_6RB#0

26 dB BW	99% BW

LCH

MCH

HCH

LTE_ Band 5_Channel Bandwidth: 1.4 MHz_16QAM_6RB#0

26 dB BW | **99% BW**

LCH

MCH

HCH

LTE_ Band 5_Channel Bandwidth: 3 MHz_QPSK_15RB#0

26 dB BW | **99% BW**

LCH

MCH

HCH

LTE_ Band 5_Channel Bandwidth: 3 MHz_16QAM_15RB#0

26 dB BW	99% BW

LCH

MCH

HCH

LTE_ Band 5_Channel Bandwidth: 5 MHz_QPSK_25RB#0

26 dB BW	99% BW

LCH

MCH

HCH

LTE_ Band 5_Channel Bandwidth: 5 MHz_16QAM_25RB#0

26 dB BW **99% BW**

LCH

MCH

HCH

LTE_ Band 5_Channel Bandwidth: 10 MHz_QPSK_50RB#0

26 dB BW | **99% BW**

LCH

MCH

HCH

LTE_ Band 5_Channel Bandwidth: 10 MHz_16QAM_50RB#0

26 dB BW | **99% BW**

LCH

MCH

HCH


Spectrum
Ref Level 30.00 dBm Offset 11.00 dB RBW 300 kHz
Att 30 dB SWT 12.7 µs VBW 1 MHz Mode Auto FFT Input 1 AC
1Pk Max
M1[1] 17.69 dBm 841.5110 MHz
ndB 26.00 dB
Bw 9.986000000 MHz
Q factor 84.3
CF 844.0 MHz 691 pts Span 20.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 841.511 MHz 17.69 dBm ndB down 9.986 MHz
T1 1 839.022 MHz -7.95 dBm ndB 26.00 dB
T2 1 849.007 MHz -7.80 dBm Q factor 84.3
Measuring...
Spectrum
Ref Level 30.00 dBm Offset 11.00 dB RBW 300 kHz
Att 30 dB SWT 12.7 µs VBW 1 MHz Mode Auto FFT Input 1 AC
1Pk Max
M1[1] 18.04 dBm 846.7790 MHz
Occ Bw 8.972503618 MHz
CF 844.0 MHz 691 pts Span 20.0 MHz
Measuring...

5.4 Band Edge at antenna terminals

Test Requirement: Part 2.1051 & Part 22.917(a)

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

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

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 block edge frequency.
2) Set a marker to point the corresponding band edge frequency in each test case.
3) Set display line at -13 dBm
4) Set resolution bandwidth to at least 1% of emission bandwidth.

Such as:

a) The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 3 kHz and VB of the spectrum is 10 kHz (GSM/GPRS/EDGE).
b) The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is100 kHz and VB of the spectrum is 300 kHz (WCDMA).
c) The center frequency of spectrum is the band edge frequency and span is 2 MHz. RB of the spectrum is 20 kHz and VB of the spectrum is 20 kHz (LTE Bandwidth 1.4 MHz).
d) The center frequency of spectrum is the band edge frequency and span is 2 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 30 kHz (LTE Bandwidth 3 MHz).
e) The center frequency of spectrum is the band edge frequency and span is 2 MHz. RB of the spectrum is 50 kHz and VB of the spectrum is 50 kHz (LTE Bandwidth 5 MHz)
f) The center frequency of spectrum is the band edge frequency and span is 2 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 10 MHz)

5) Record the max trace plot into the test report

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

Test Setup: Refer to section 4.1.1(2) for details.

Instruments Used: Refer to section 3 for details

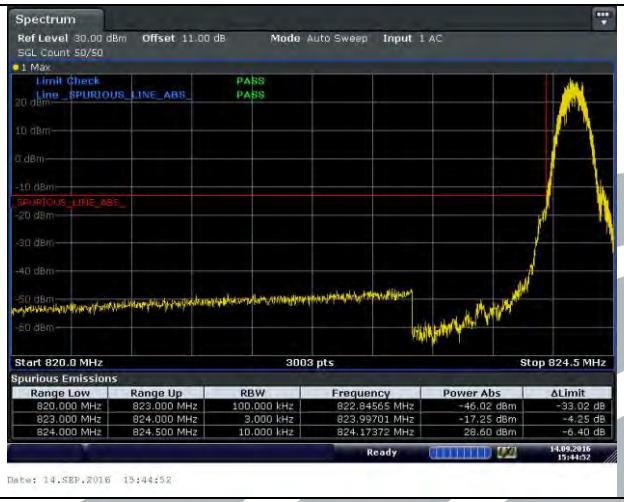
Test Mode: Link mode

Test Results: Pass

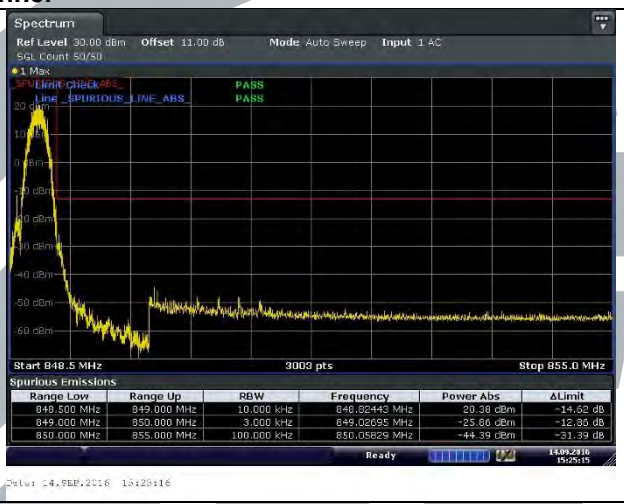
The test plot as follows:

GSM 1Tx-slot	EDGE 错误!未找到引用源。

128 Channel

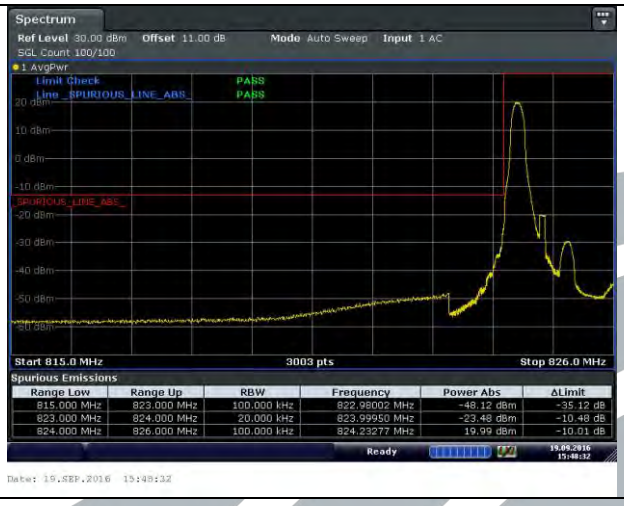
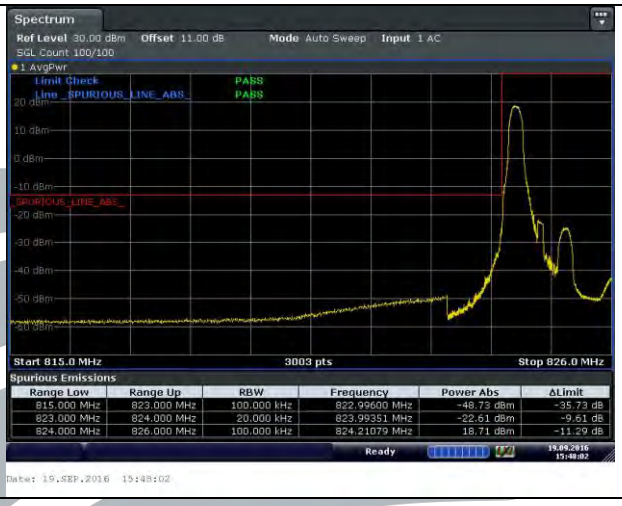
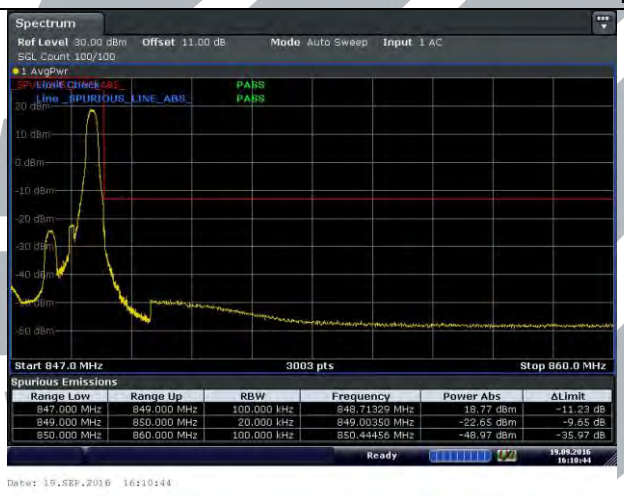
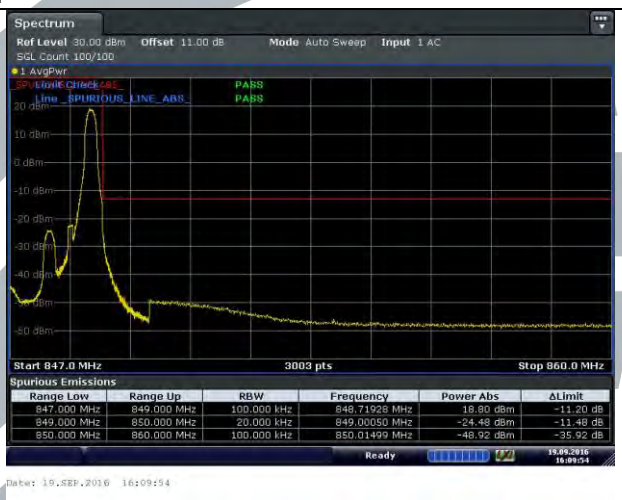
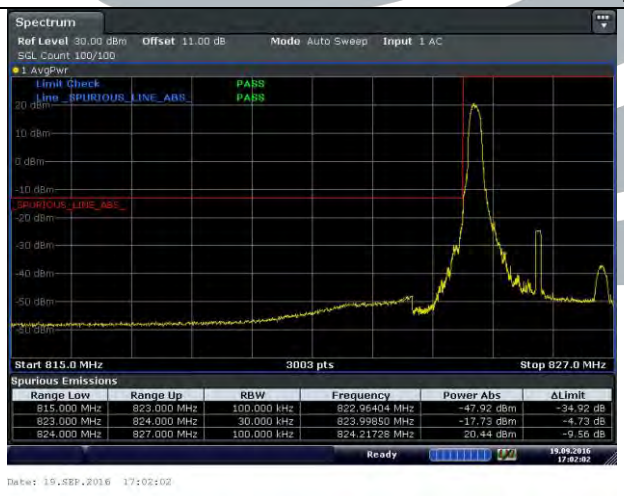
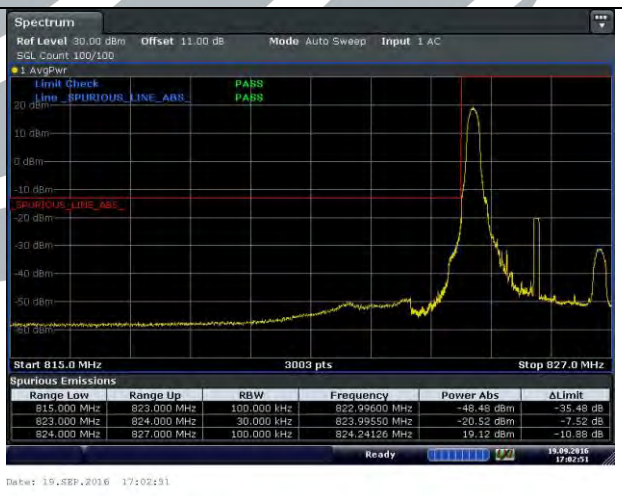


251 Channel

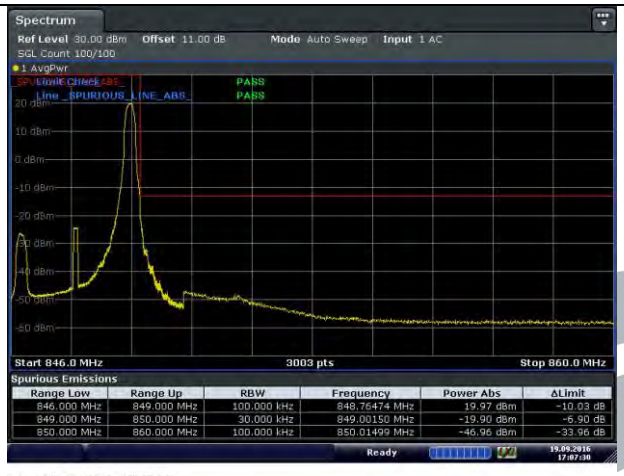


WCDMA RMC 12.2Kbps

4132 Channel	4233 Channel

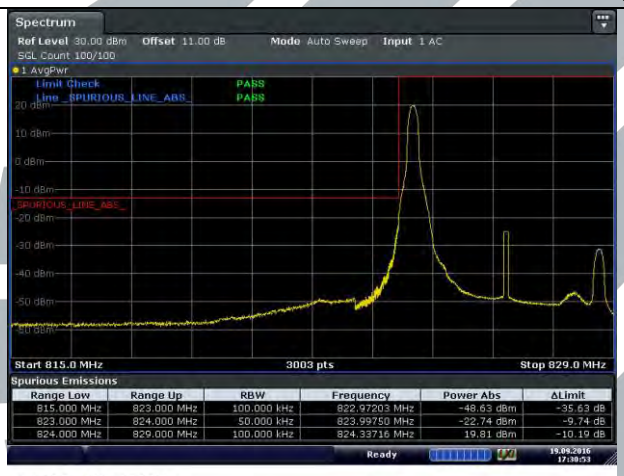
QPSK	16QAM
LTE_ Band 5_ Channel Bandwidth: 1.4 MHz_1RB#0	
LCH	
	
HCH	
	
LTE_ Band 5_ Channel Bandwidth: 3 MHz_1RB#0	
LCH	
	

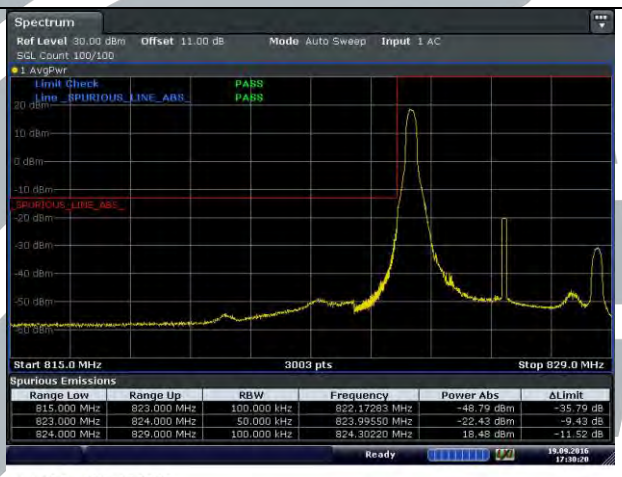
HCH



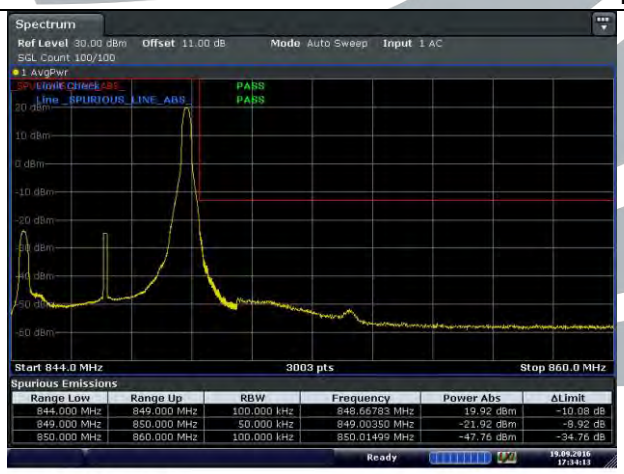
LTE_ Band 5_ Channel Bandwidth: 5 MHz_1RB#0

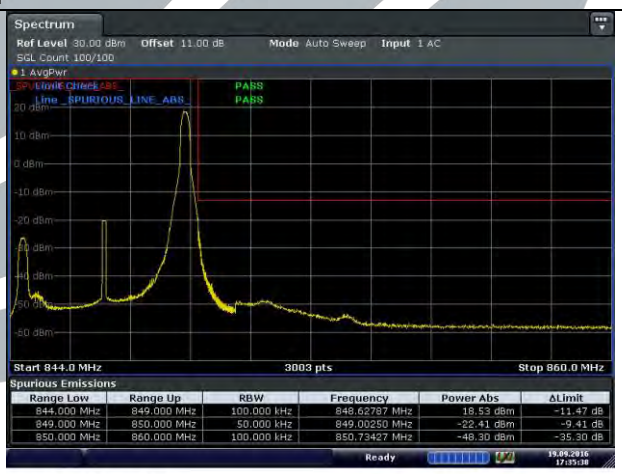
LCH

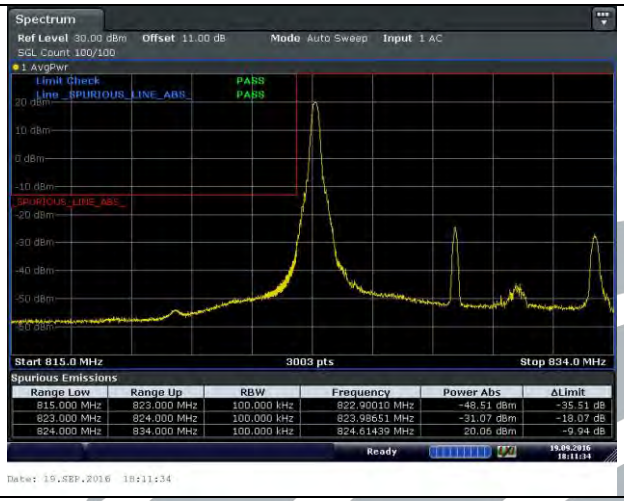
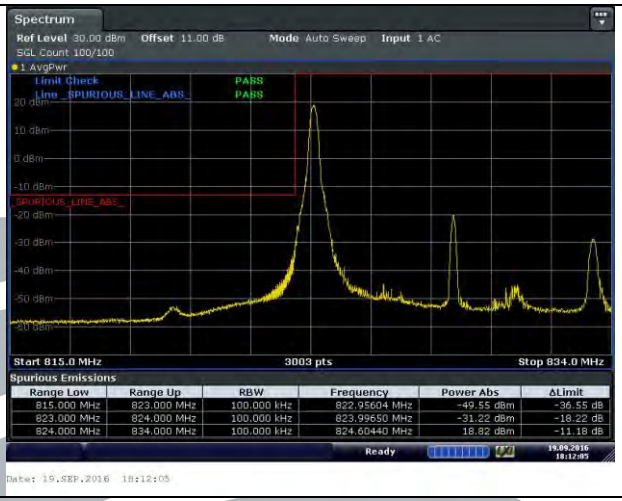
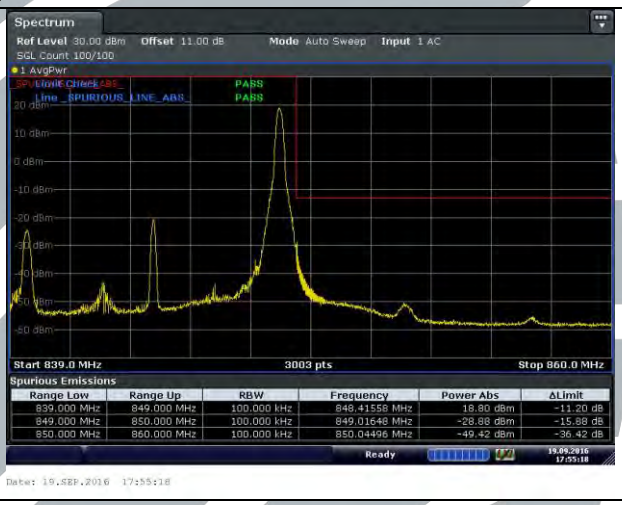




HCH





LTE_ Band 5_ Channel Bandwidth: 10 MHz_1RB#0	
LCH	
	
HCH	
	
QPSK	16QAM
LTE_ Band 5_ Channel Bandwidth: 1.4 MHz_6RB#0	
LCH	
	

HCH

LTE_ Band 5_ Channel Bandwidth: 3 MHz_15RB#0

LCH

HCH

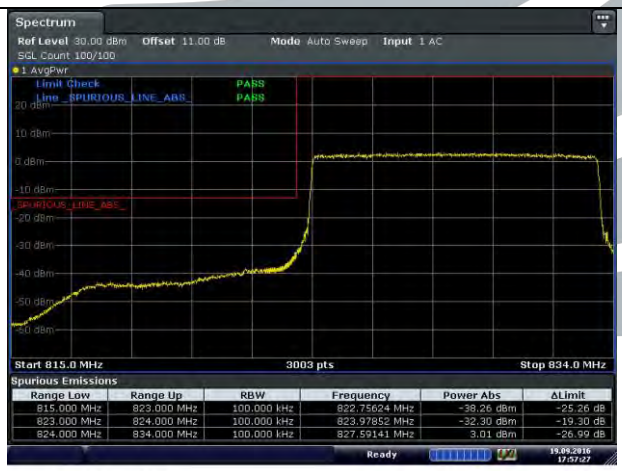
LTE_ Band 5_ Channel Bandwidth: 5 MHz_25RB#0

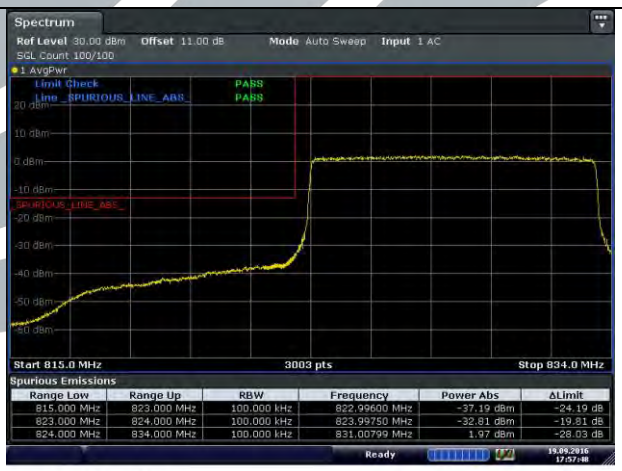
LCH

HCH

LTE_ Band 5_ Channel Bandwidth: 10 MHz_50RB#0

LCH





HCH


Spectrum
Ref Level 30.00 dBm Offset 11.00 dB Mode Auto Sweep Input 1 AC
SGL Count 100/100
1 AvgPwr
Start 839.0 MHz 3003 pts Stop 860.0 MHz
Spurious Emissions
Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit
839.000 MHz | 849.000 MHz | 100.000 kHz | 843.43057 MHz | 3.29 dBm | -26.71 dB
849.000 MHz | 850.000 MHz | 100.000 kHz | 849.01648 MHz | -31.04 dBm | -18.04 dB
850.000 MHz | 860.000 MHz | 100.000 kHz | 850.21479 MHz | -36.19 dBm | -23.19 dB
Ready


Spectrum
Ref Level 30.00 dBm Offset 11.00 dB Mode Auto Sweep Input 1 AC
SGL Count 100/100
1 AvgPwr
Start 839.0 MHz 3003 pts Stop 860.0 MHz
Spurious Emissions
Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit
839.000 MHz | 849.000 MHz | 100.000 kHz | 844.53946 MHz | 2.02 dBm | -27.98 dB
849.000 MHz | 850.000 MHz | 100.000 kHz | 849.00649 MHz | -32.37 dBm | -19.37 dB
850.000 MHz | 860.000 MHz | 100.000 kHz | 850.07493 MHz | -35.10 dBm | -22.10 dB
Ready

5.5 Spurious emissions at antenna terminals

Test Requirement: Part 2.1051 & Part 22.917(a)(b)

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

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

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 9 GHz. 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.

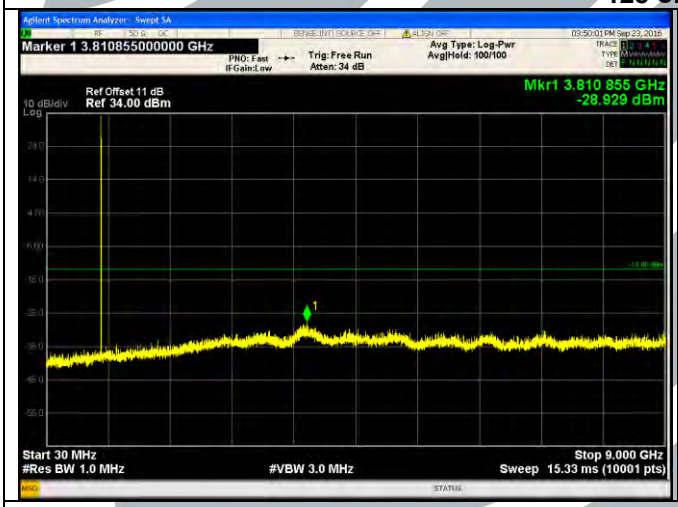
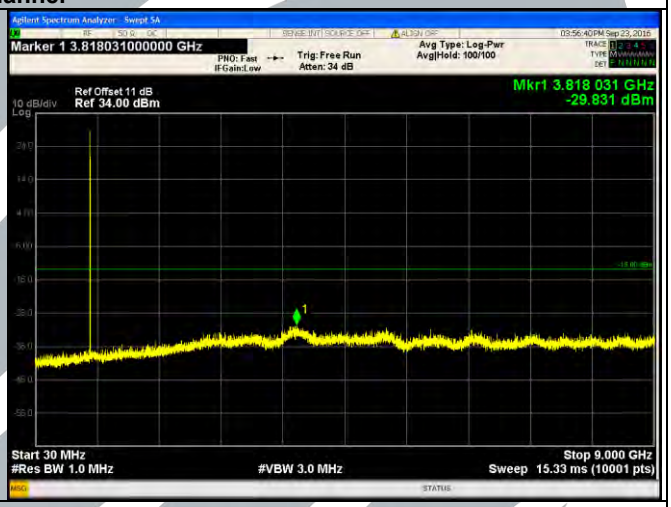
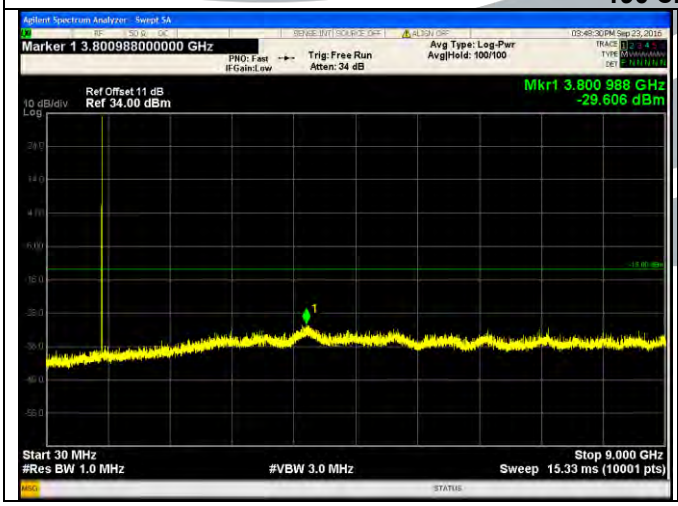
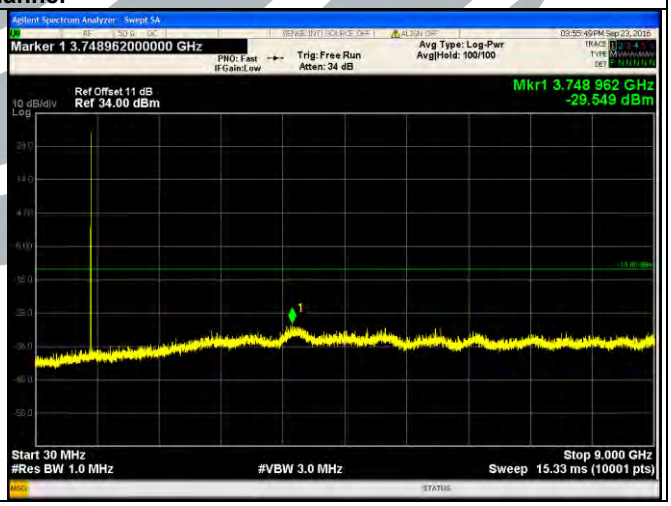
Test Setup: Refer to section 4.1.1(2) for details.

Instruments Used: Refer to section 3 for details

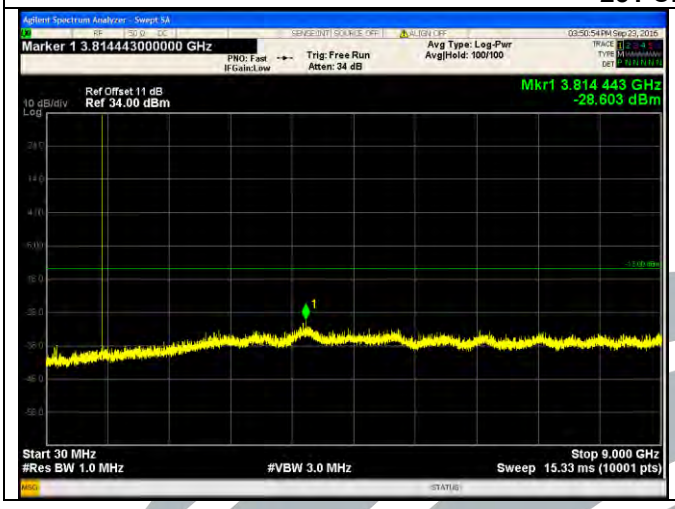
Test Mode: Link mode

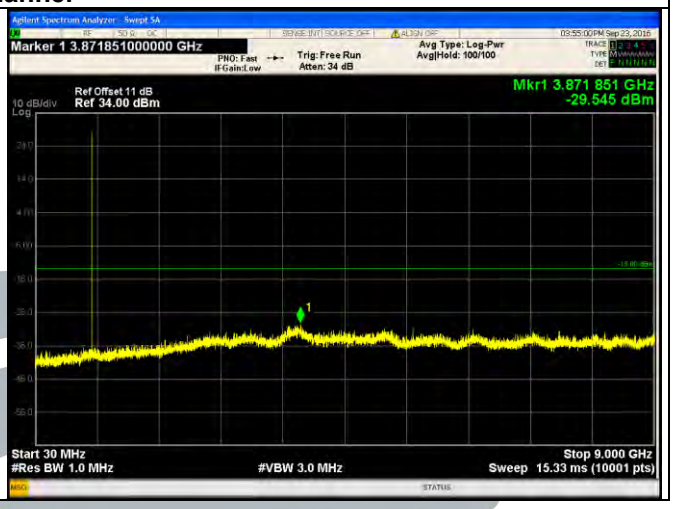
Test Results: Pass

The test plot as follows:

GSM 1Tx-slot	EDGE 错误!未找到引用源。
128 Channel	
	
190 Channel	
	

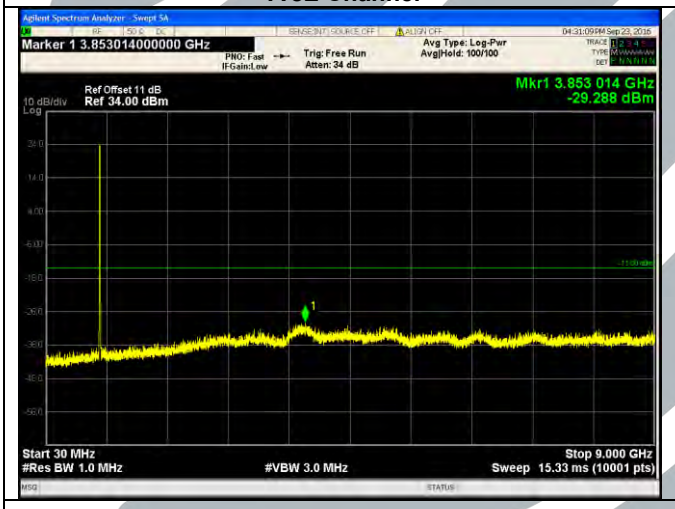
251 Channel



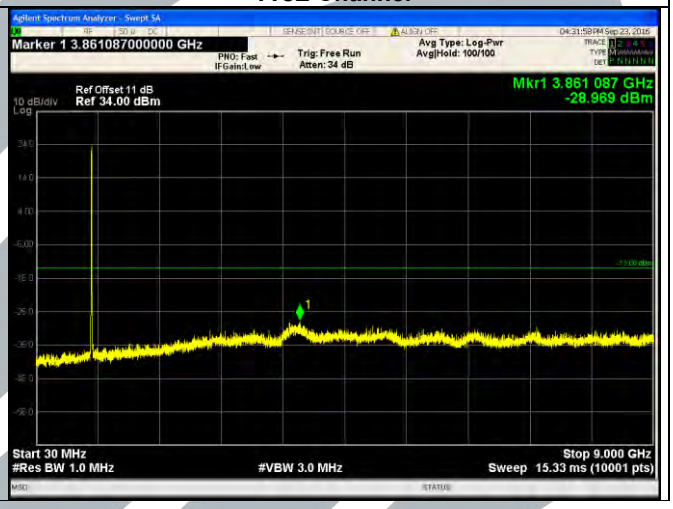


WCDMA RMC 12.2Kbps

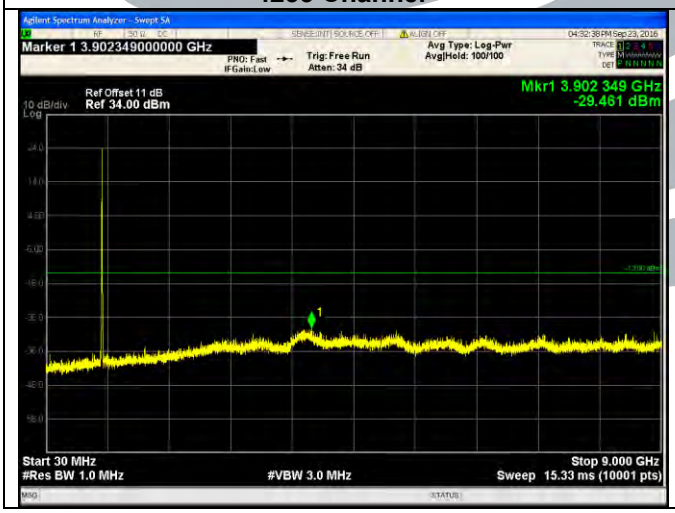
4132 Channel

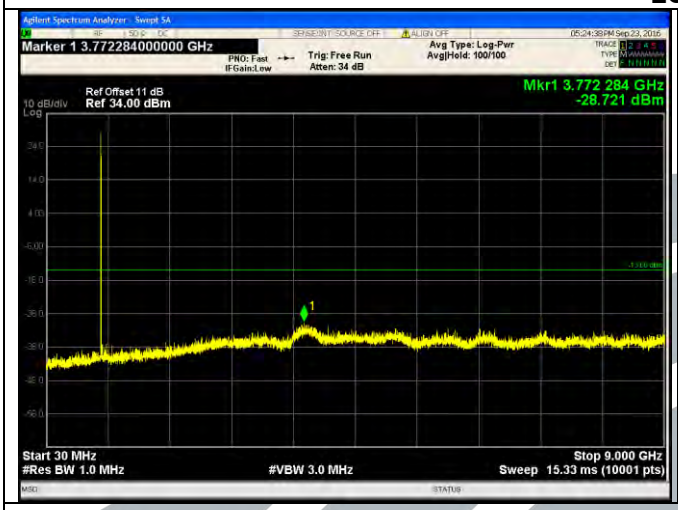
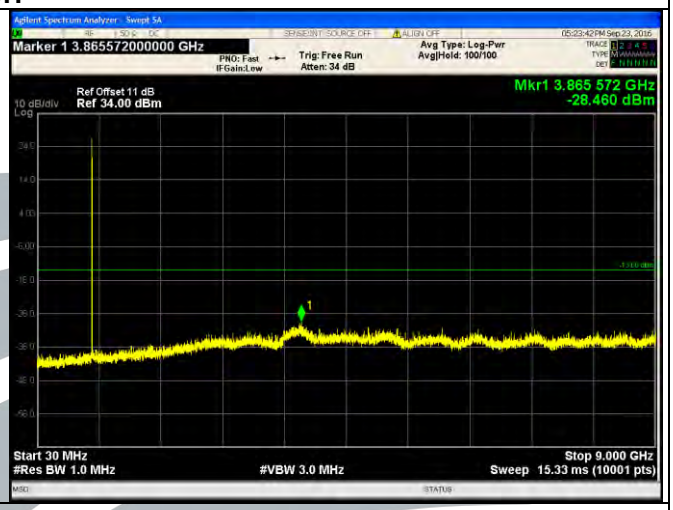
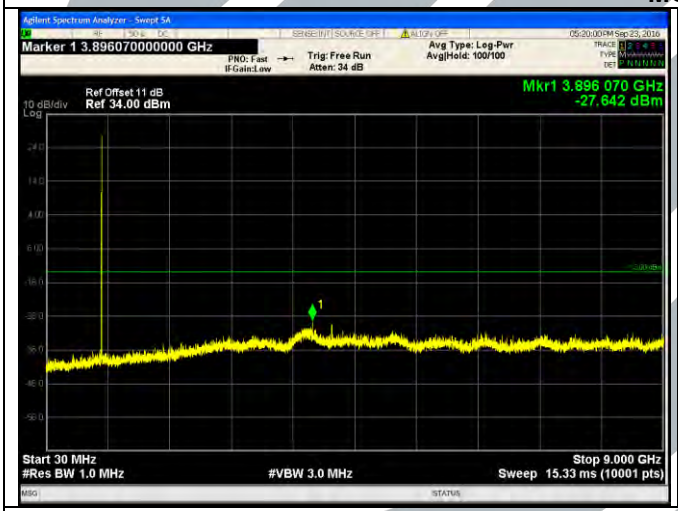
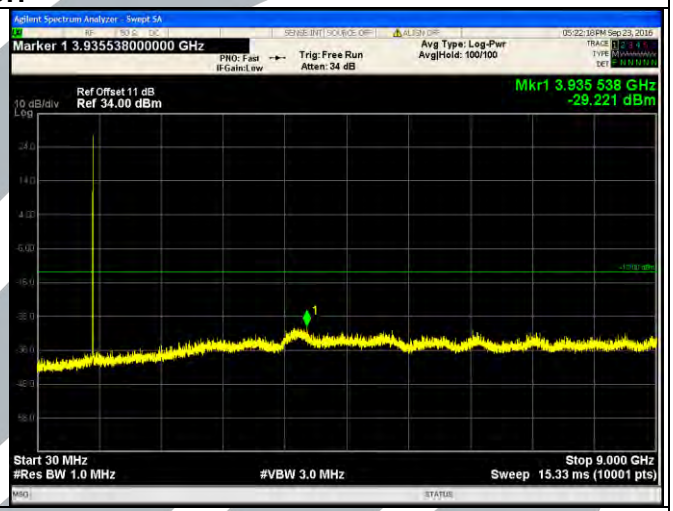


4182 Channel



4233 Channel



LTE_ Band 5_ Channel Bandwidth: 1.4 MHz_1RB#0	
QPSK	**16QAM**
LCH	
	
MCH	
	
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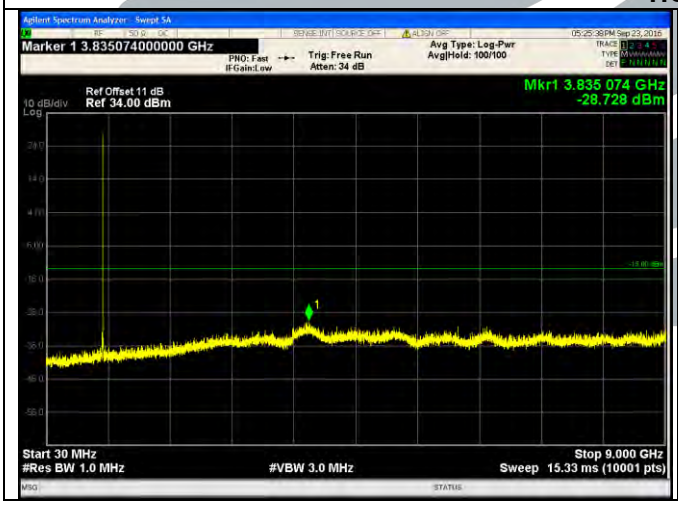
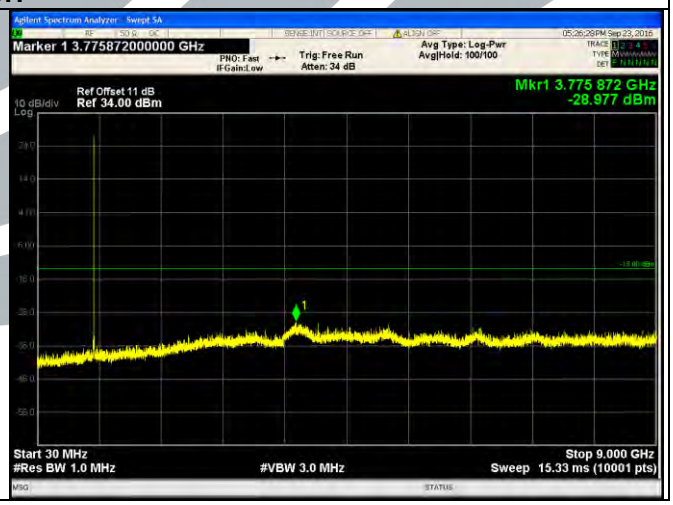
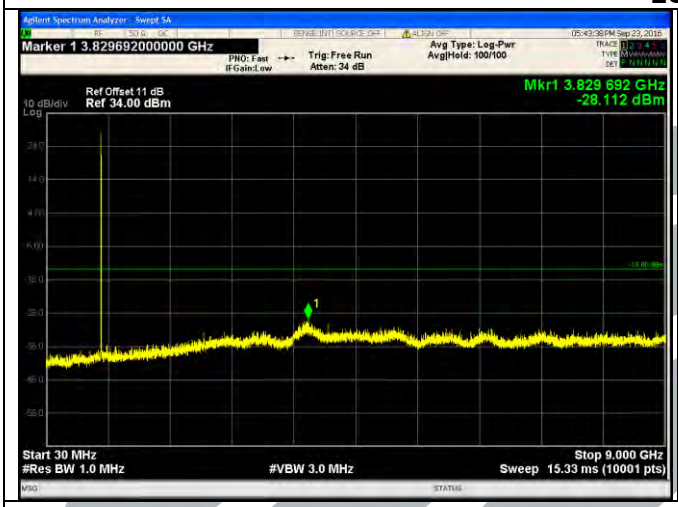
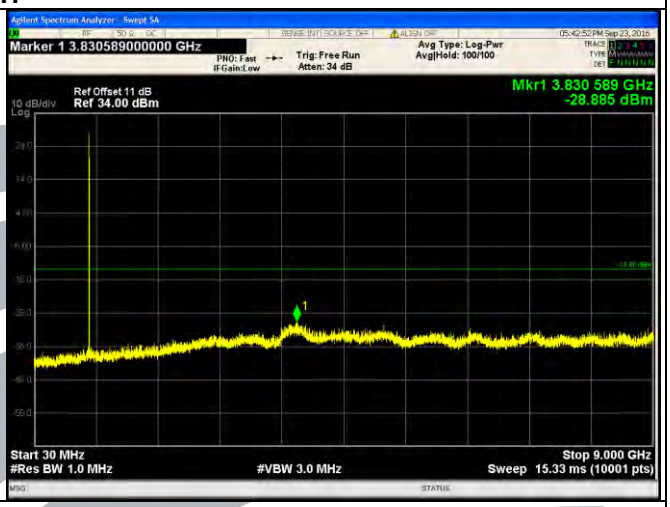
	

LTE_ Band 5_ Channel Bandwidth: 3 MHz_1RB#0	
QPSK	**16QAM**
LCH	
	
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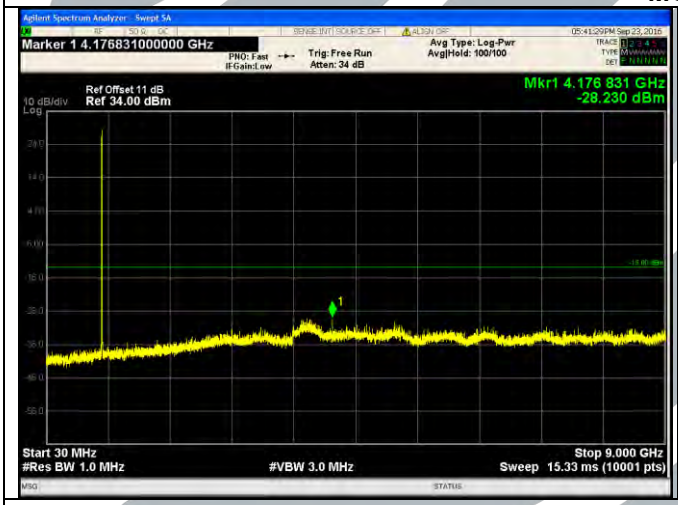	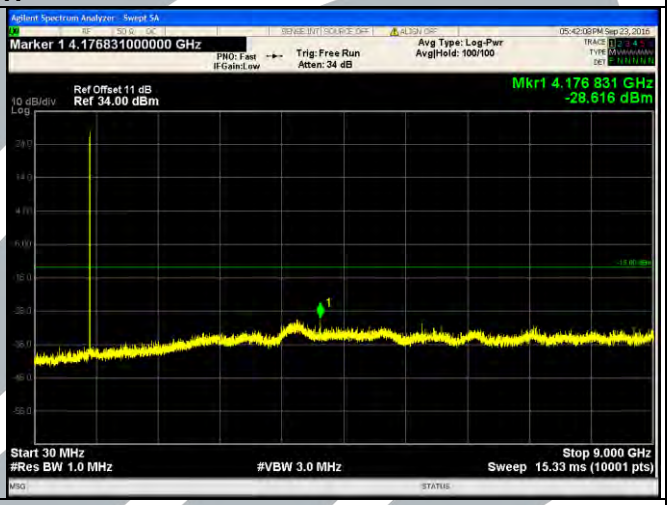
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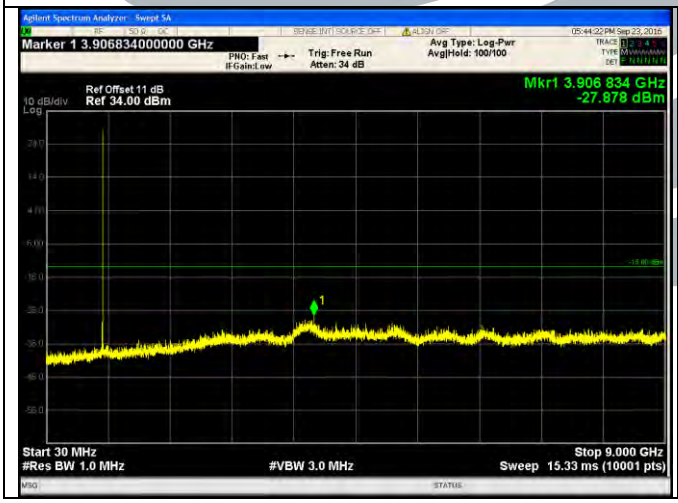
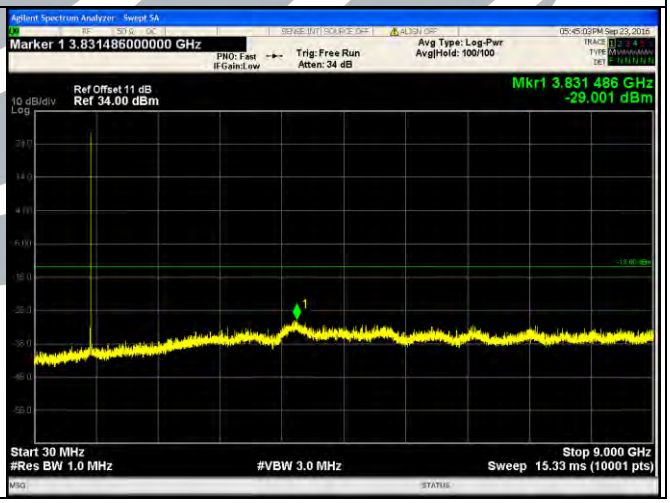
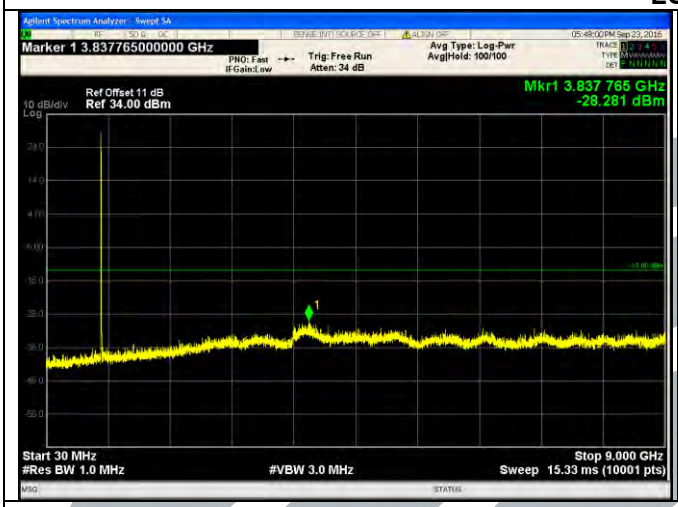
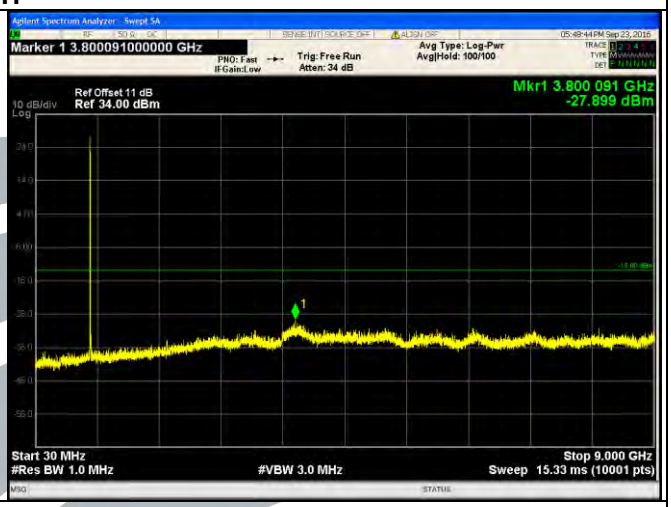
	

LTE_ Band 5_ Channel Bandwidth: 5 MHz_1RB#0	
QPSK	**16QAM**
LCH	
	
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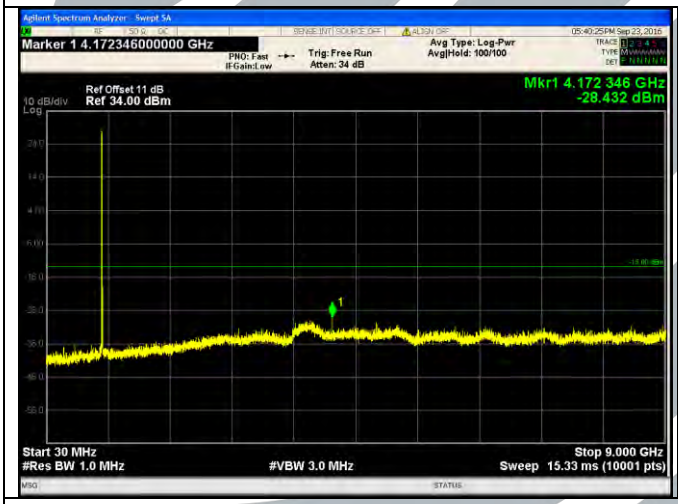	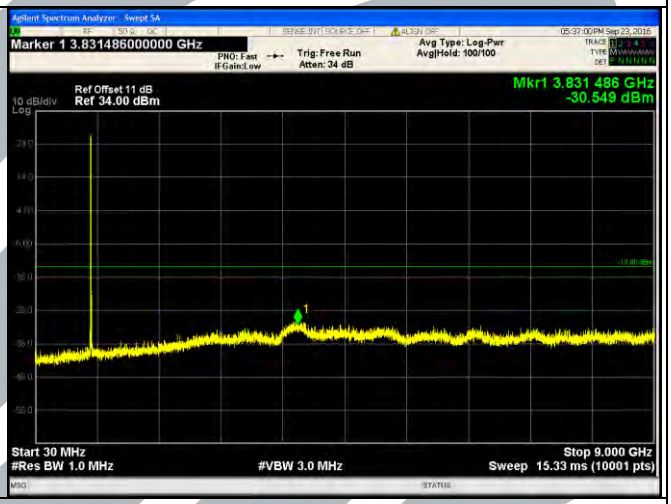
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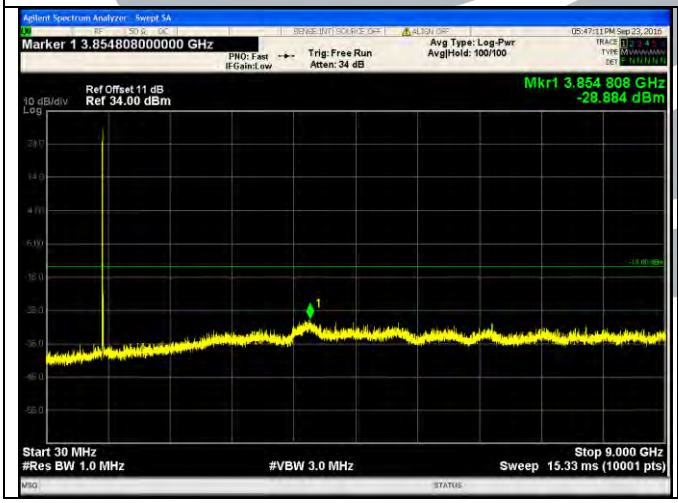	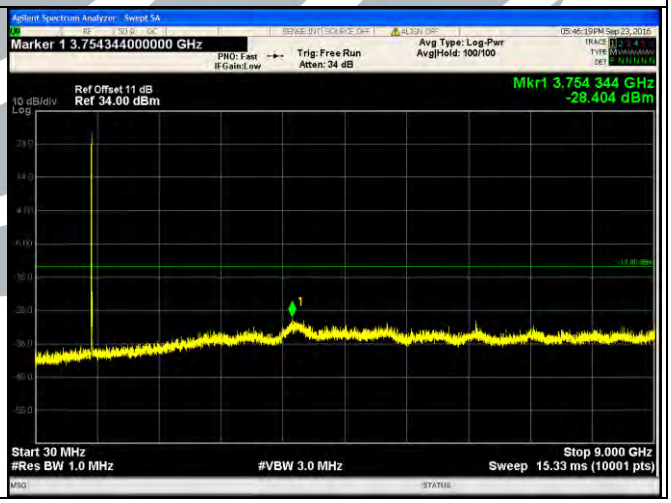

LTE_ Band 5_ Channel Bandwidth: 10 MHz_1RB#0	
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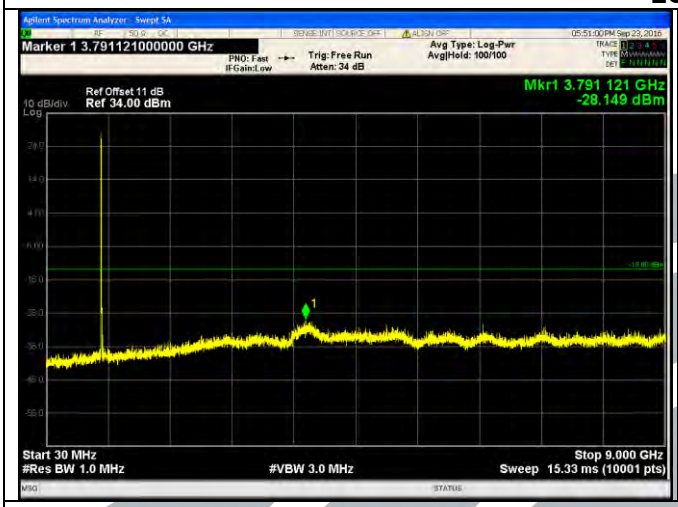
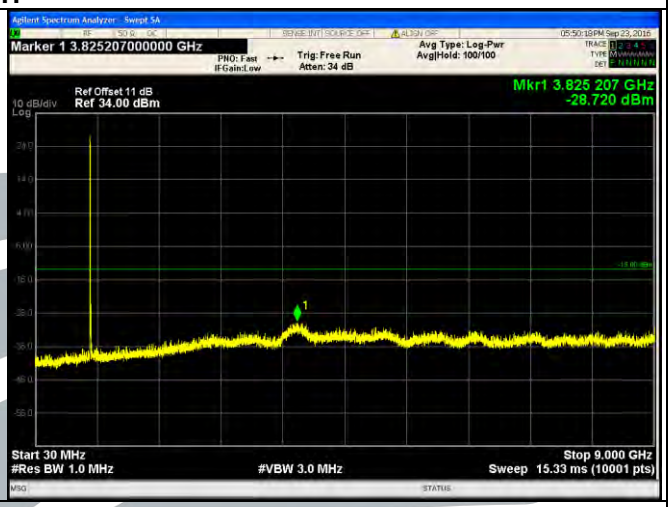
LCH	
	
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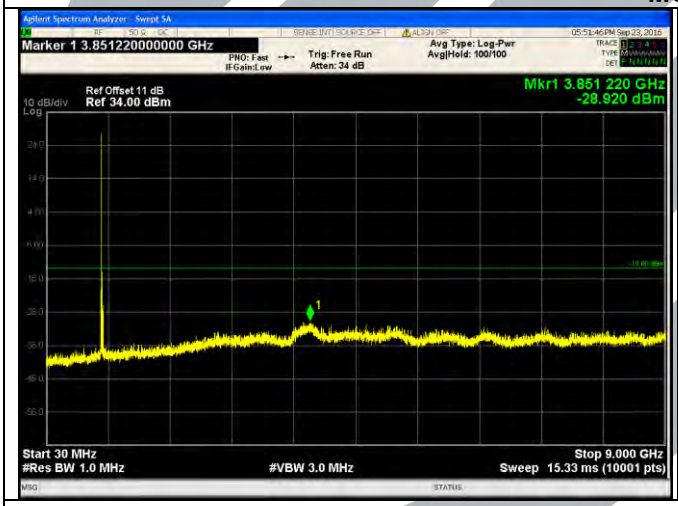	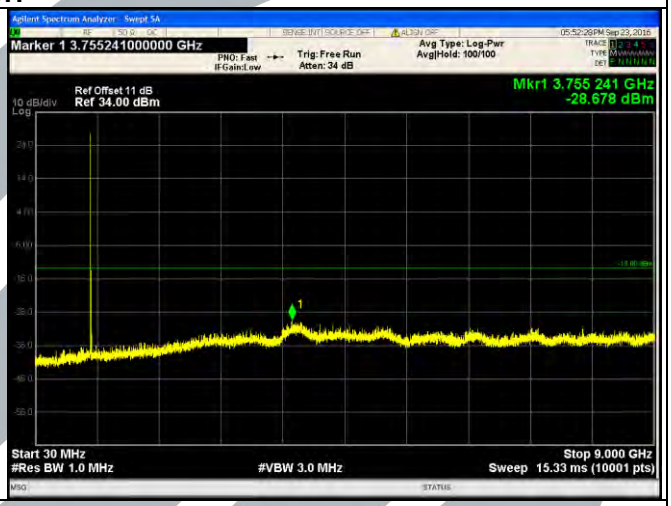
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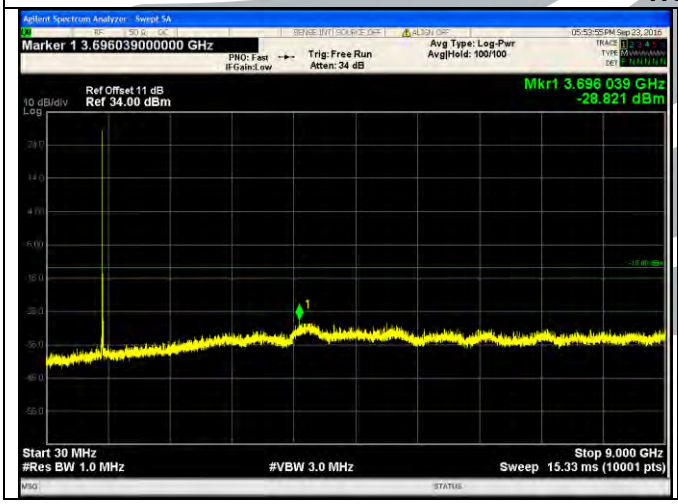
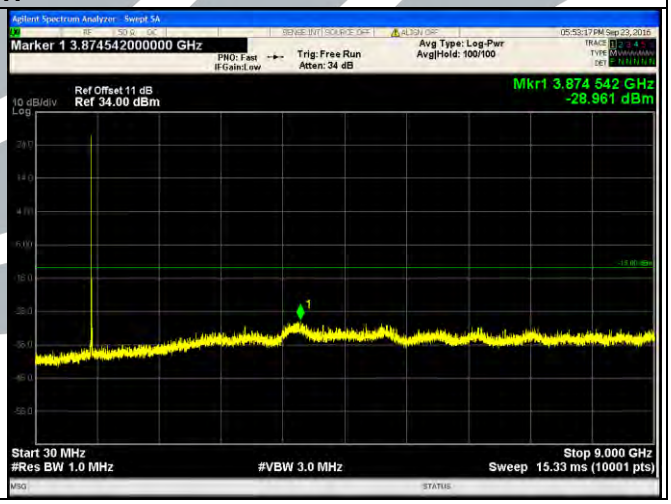
	

5.6 Field strength of spurious radiation

Test Requirement: Part 2.1053 & Part 22.917(a)(b)

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

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

Test Procedure:

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 1.5m high table at a 3 meter 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 (above 18GHz the distance is 1 meter) 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
0.009MHz-30MHz	Peak	10kHz	30kHz	Peak
30MHz-1GHz	Peak	100kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Test Setup: Refer to section 4.1.2 for details.

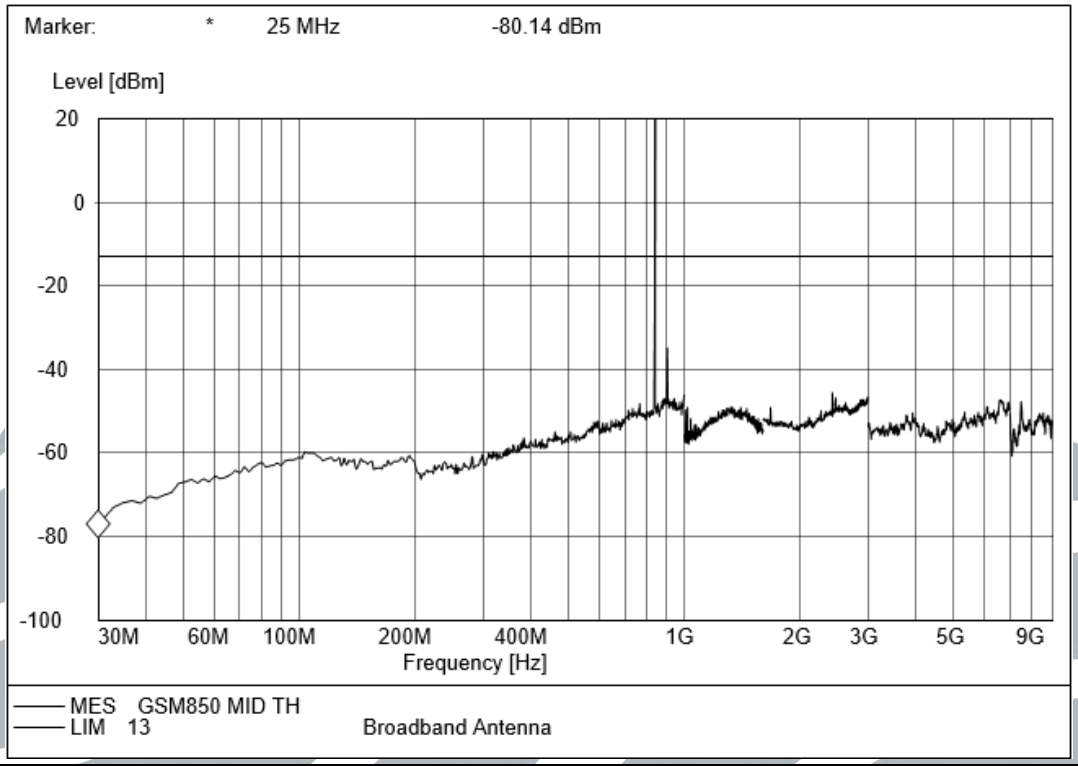
Instruments Used: Refer to section 3 for details

Test Mode: Link mode

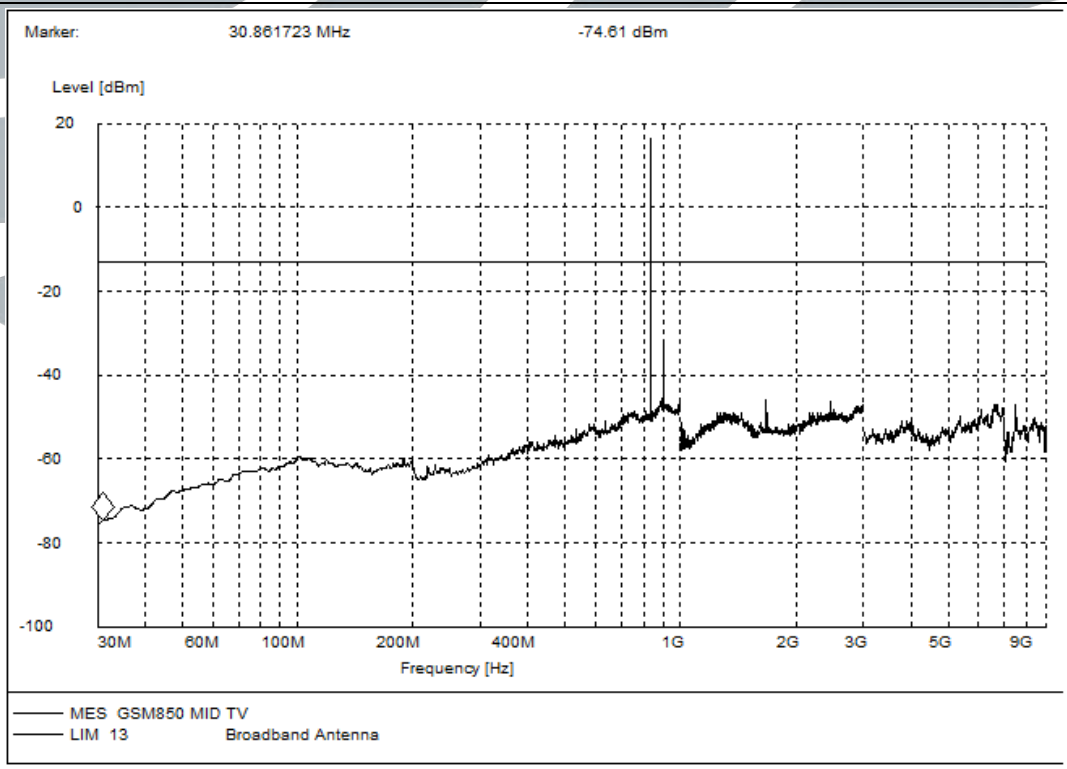
Test Results: Pass

Test Data:

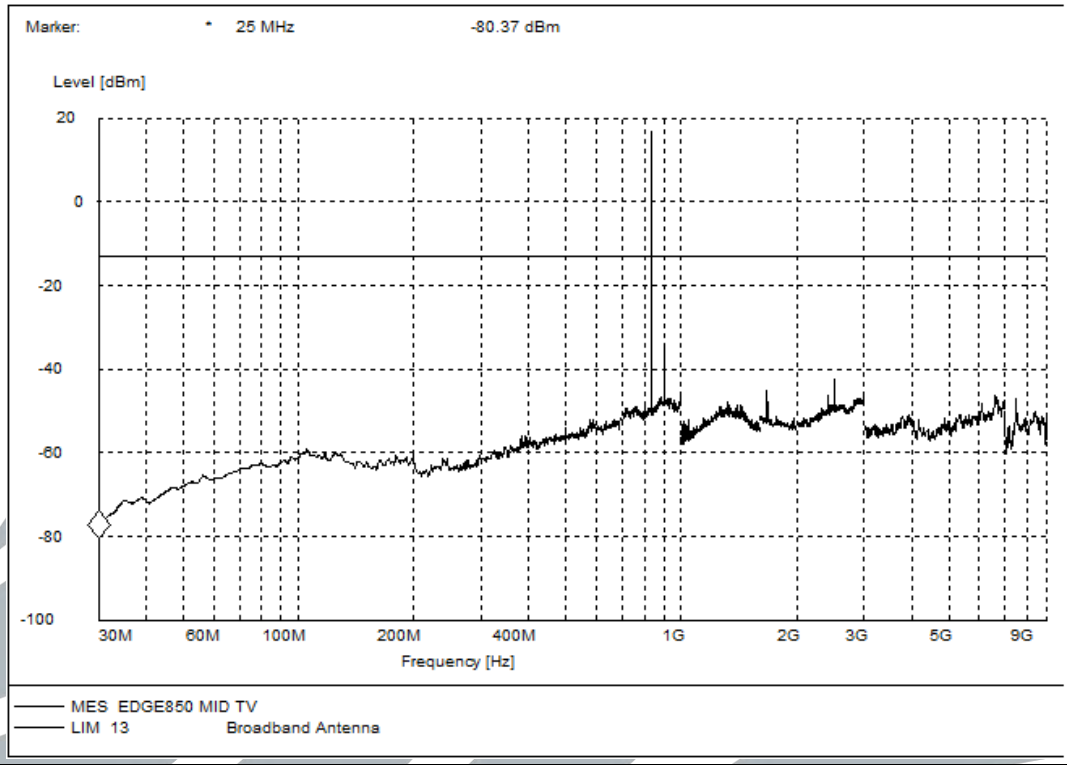
GSM 1Tx-slot_190 channel/836.6MHz_Horizontal



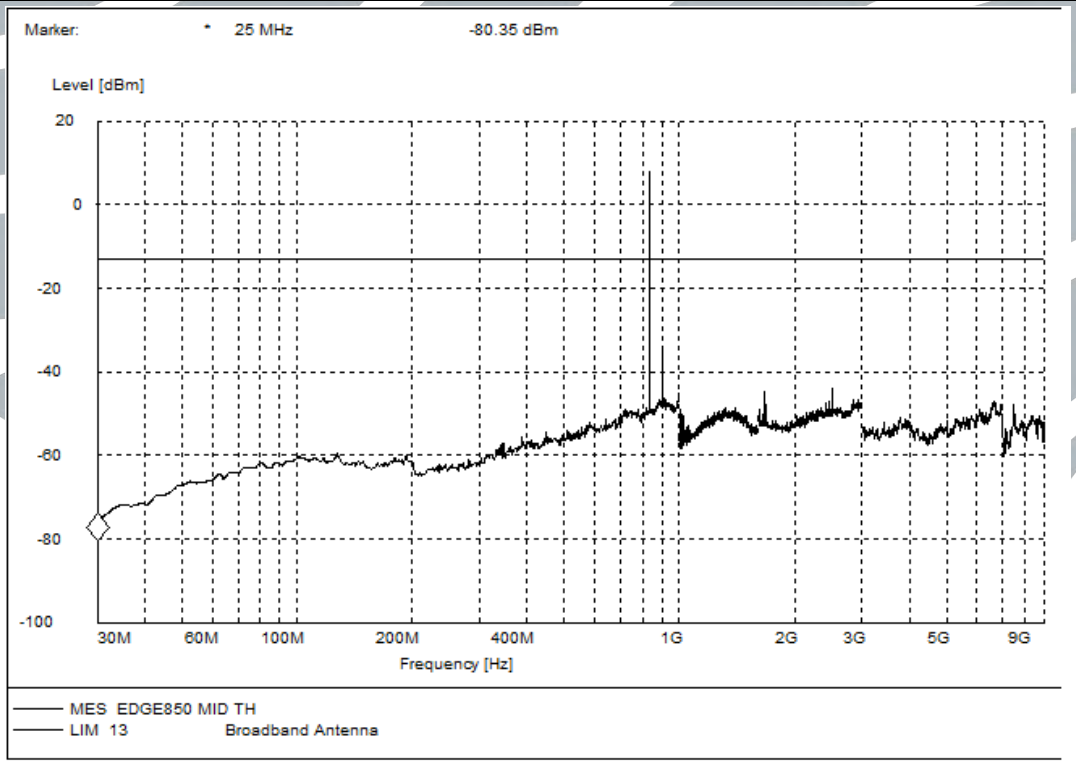
GSM 1Tx-slot_190 channel/836.6MHz_Vertical



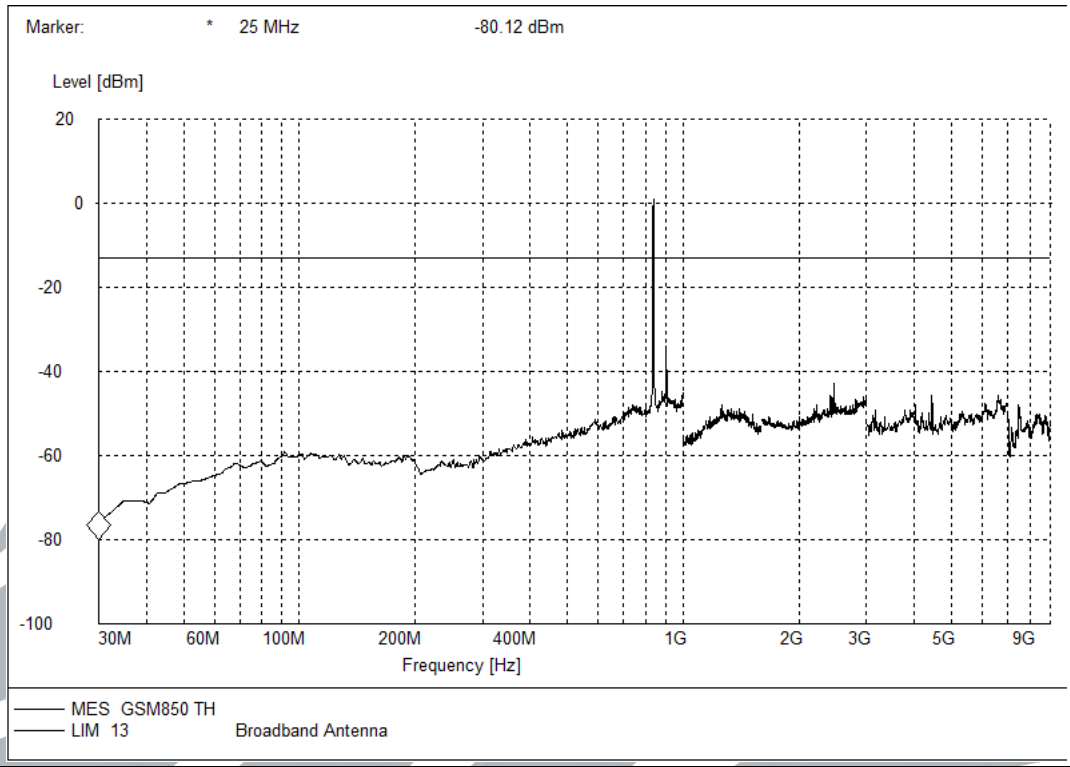
EDGE 1Tx-slot _190 channel/836.6MHz_Horizontal



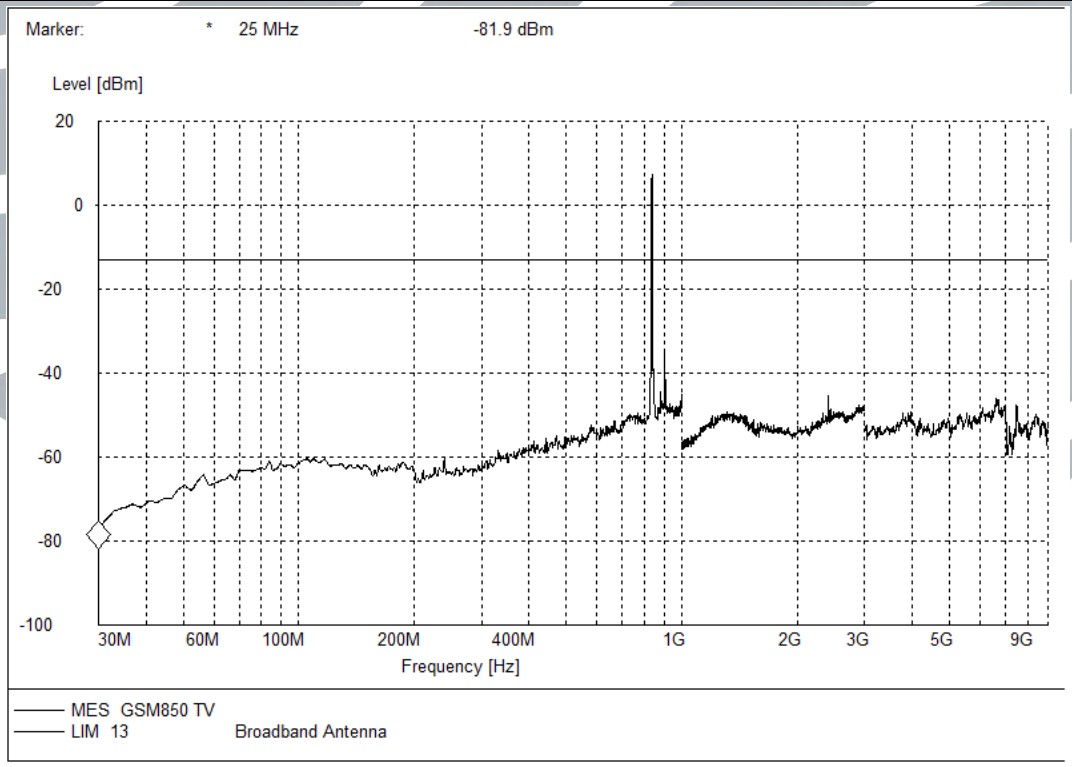
EDGE 1Tx-slot _190 channel/836.6MHz _Vertical



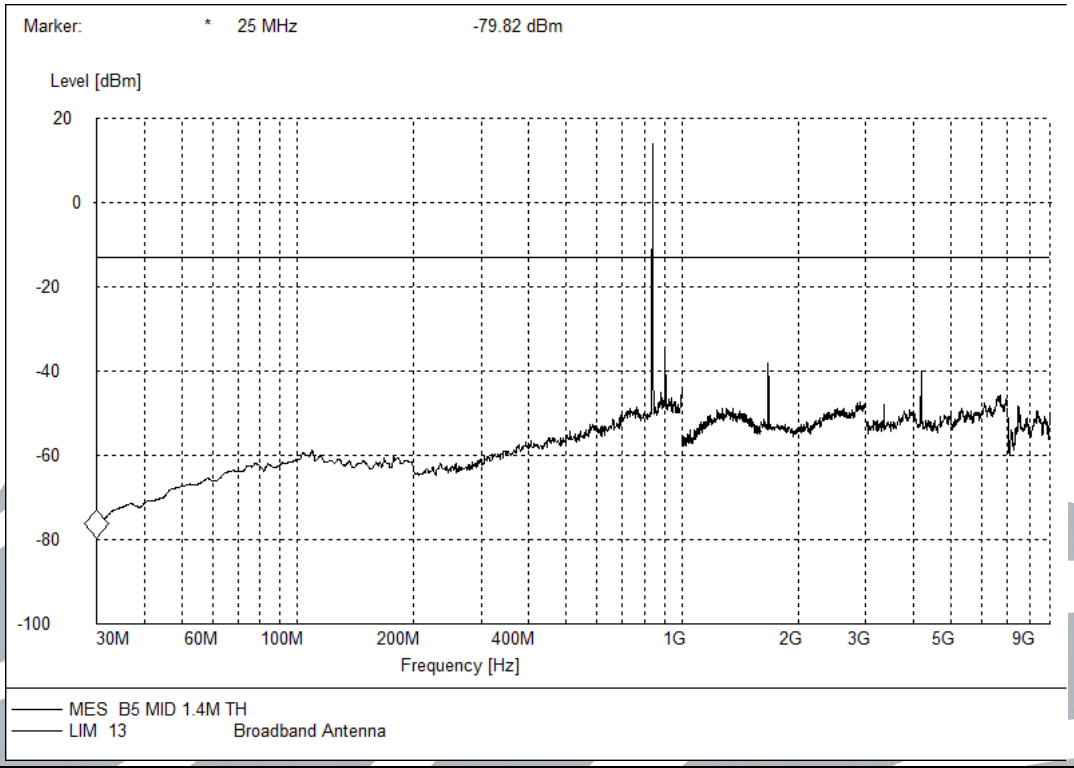
WCDMA RMC 12.2Kbps_4182 channel/836.4 MHz _Horizontal



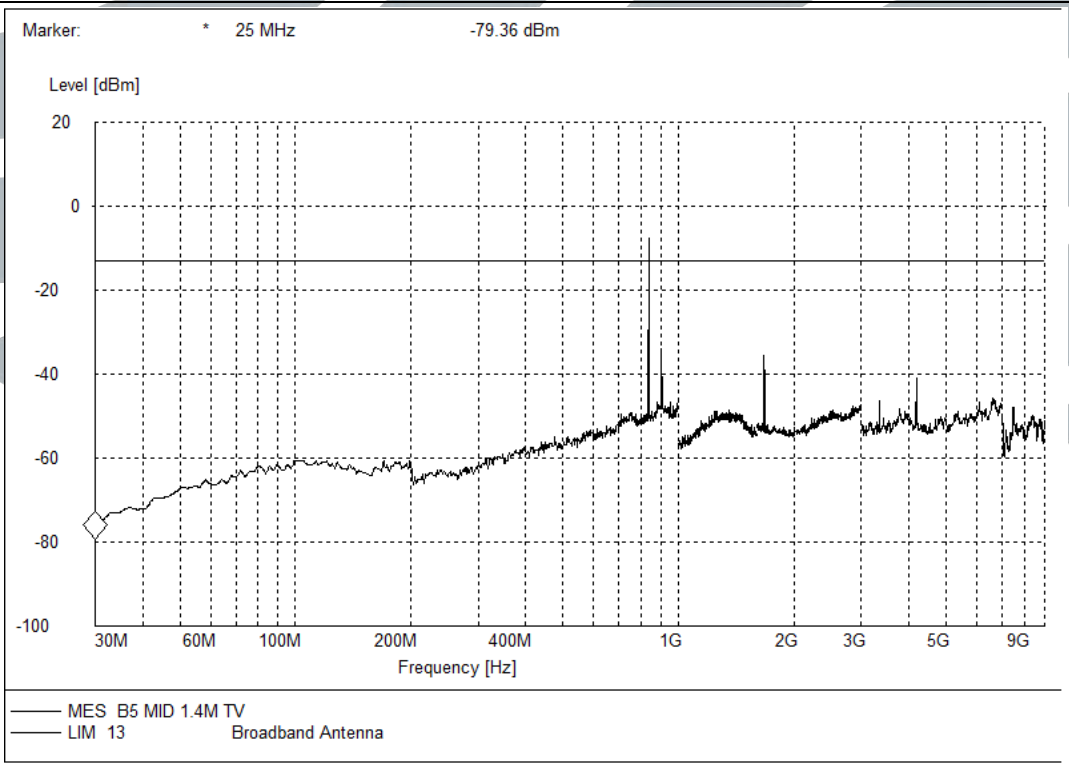
WCDMA RMC 12.2Kbps_4182 channel/836.4 MHz _Vertical



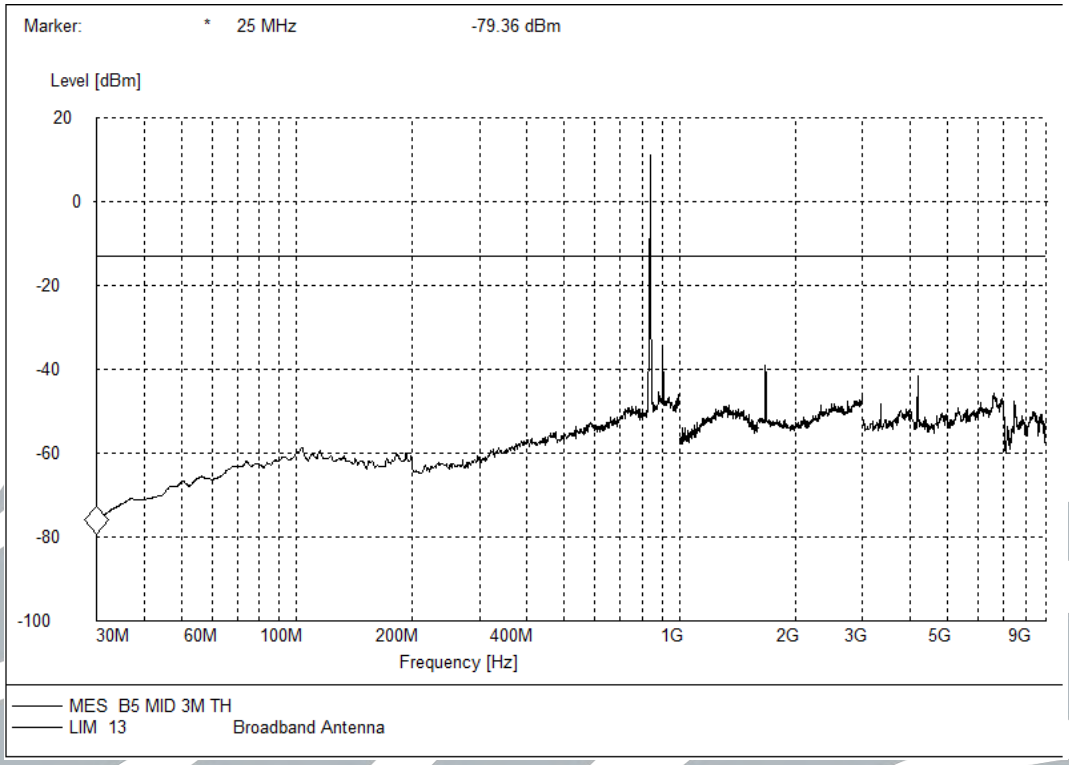
LTE Band 5; Bandwidth 1.4MHz; Modulation: QPSK; RB: 1; 20525/836.5MHz _Horizontal



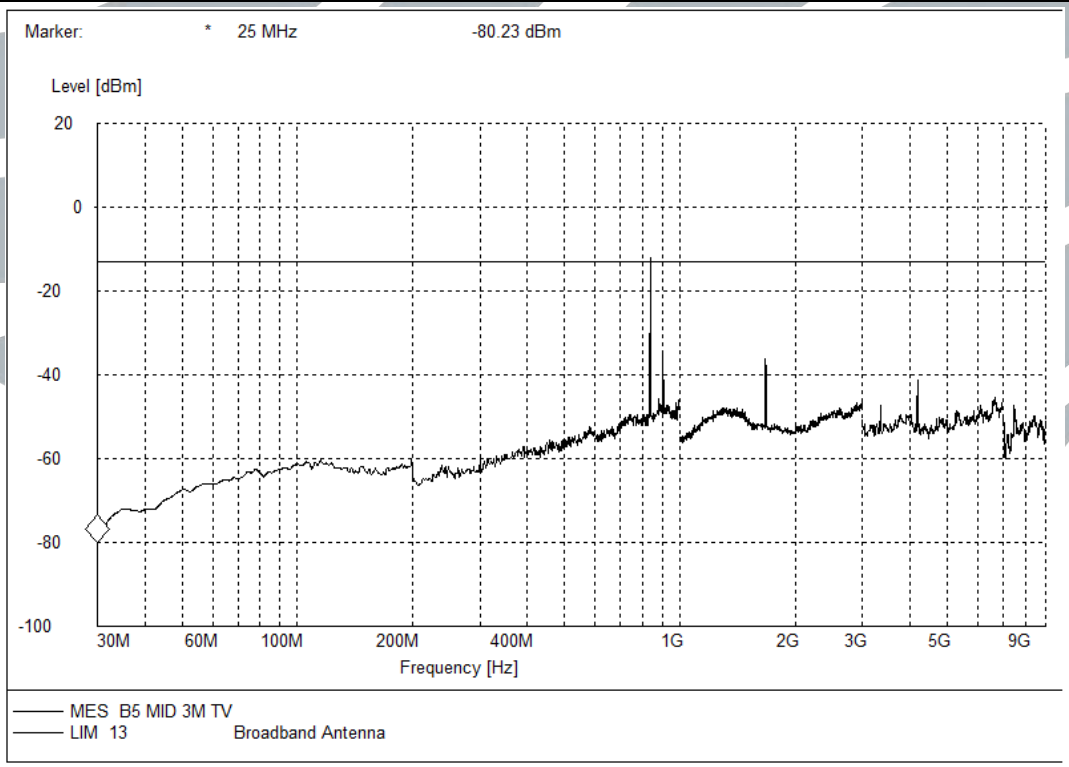
LTE Band 5; Bandwidth 1.4MHz; Modulation: QPSK; RB: 1; 20525/836.5MHz _Vertical



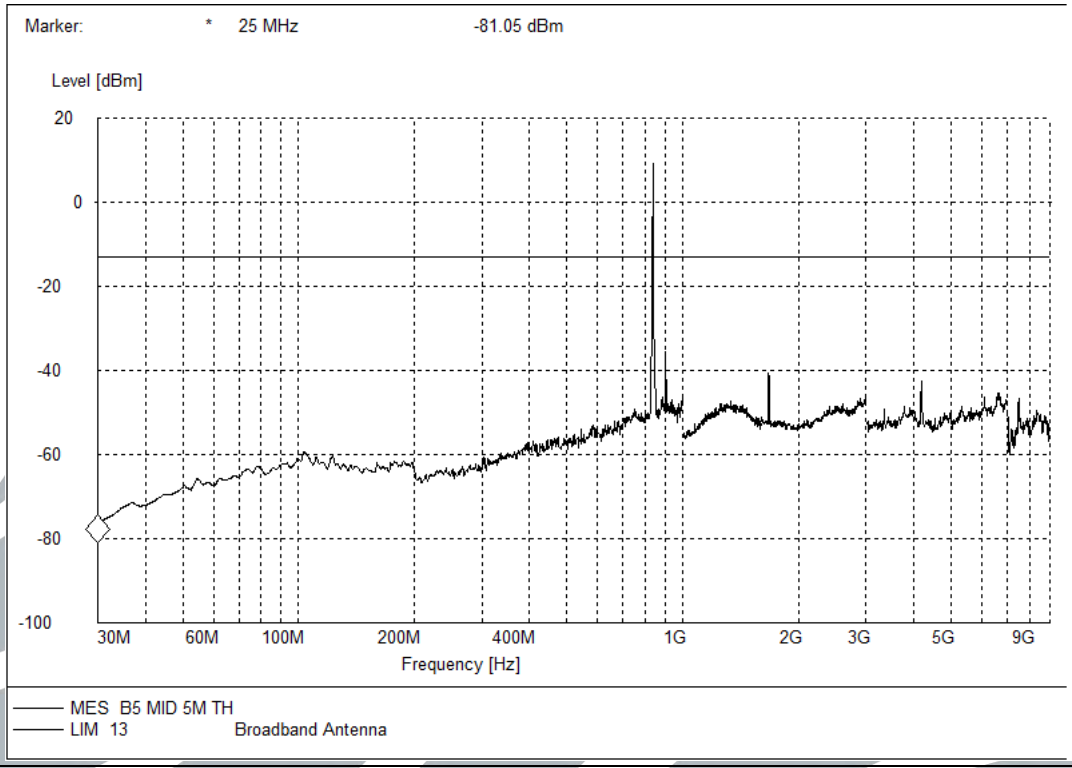
LTE Band 5; Bandwidth 3.0 MHz; Modulation: QPSK; RB: 1; 20525/836.5MHz _Horizontal



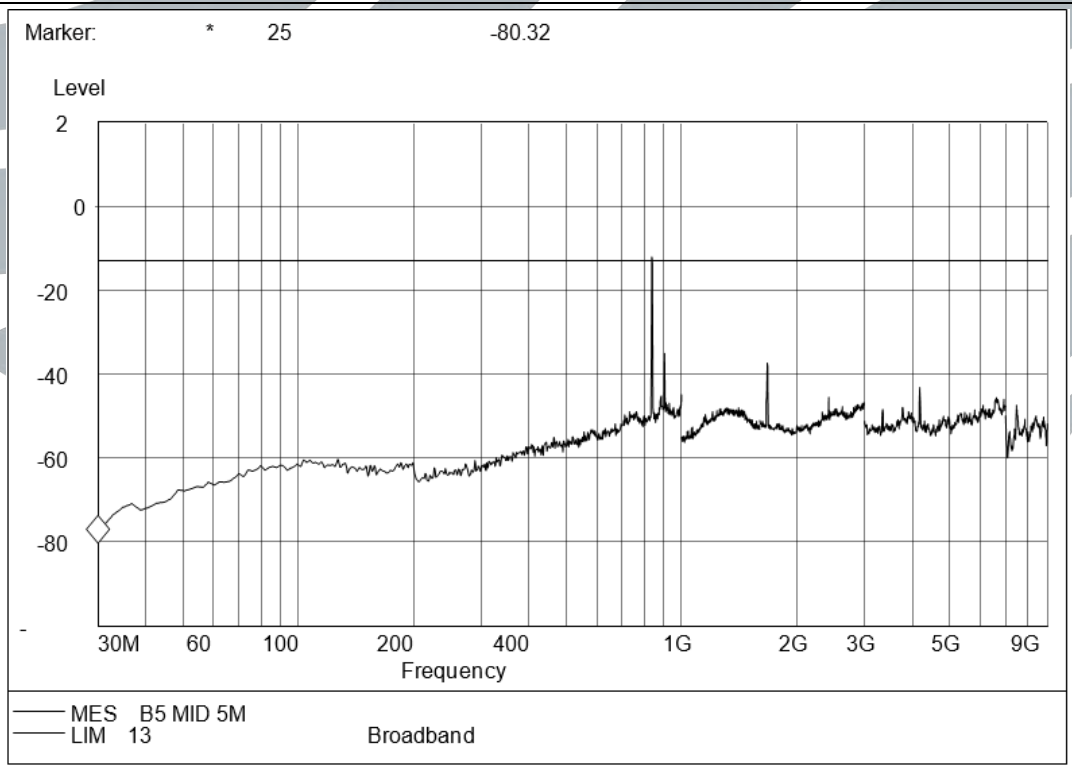
LTE Band 5; Bandwidth 3.0 MHz; Modulation: QPSK; RB: 1; 20525/836.5MHz _Vertical



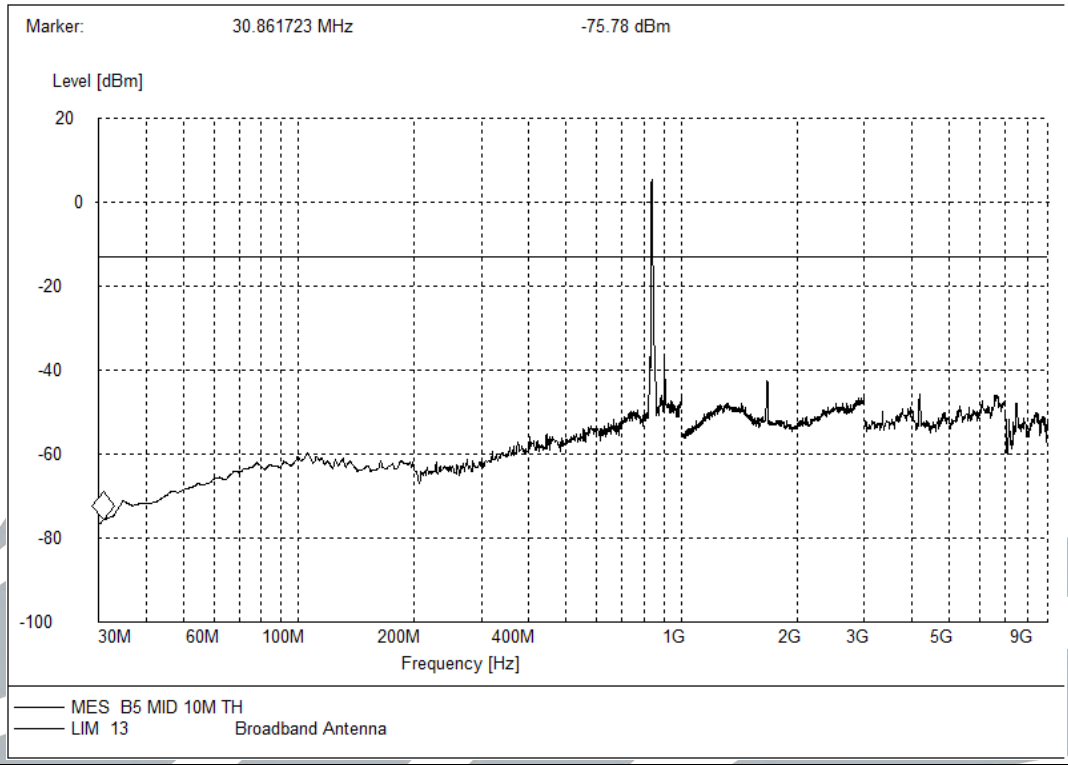
LTE Band 5; Bandwidth 5.0 MHz; Modulation: QPSK; RB:1; 20525/836.5MHz _Horizontal



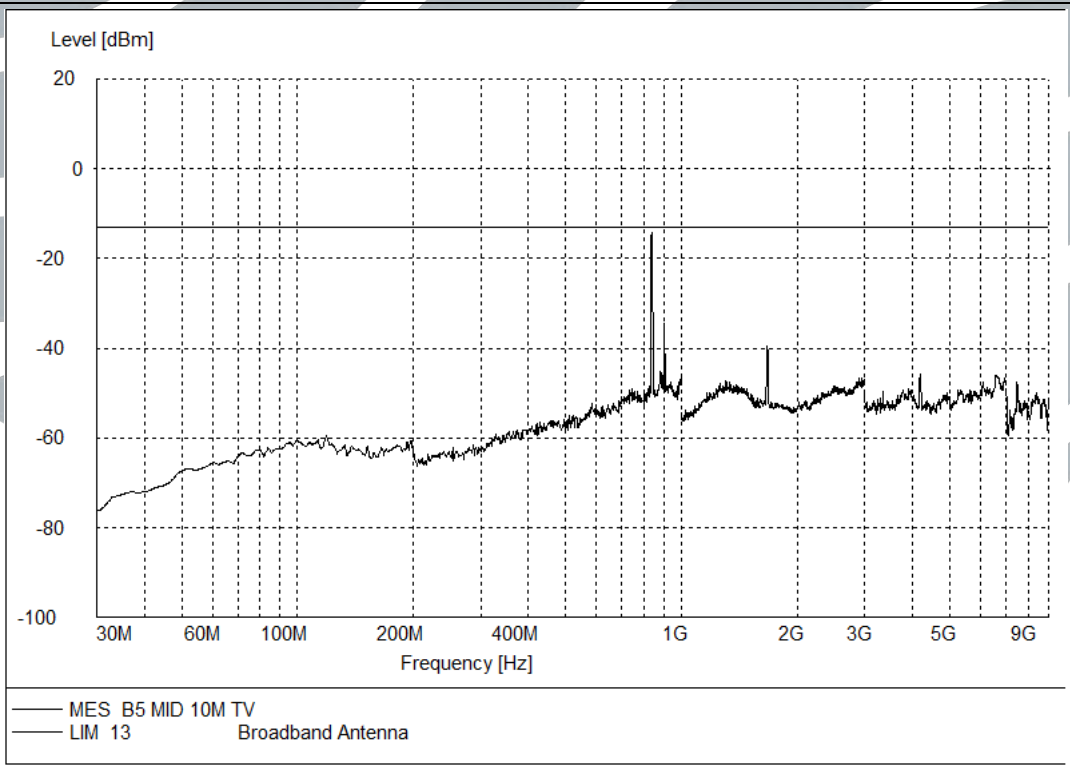
LTE Band 5; Bandwidth 5.0 MHz; Modulation: QPSK; RB: 1; 20525/836.5MHz _Vertical



LTE Band 5; Bandwidth 10.0 MHz; Modulation :QPSK; RB:1; 20525/836.5MHz _Horizontal



LTE Band 5; Bandwidth 10.0 MHz; Modulation: QPSK; RB: 1; 20525/836.5MHz _Vertical



Note:

1) Scan from 9 kHz to 9 GHz, the disturbance above 9GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

5.7 Frequency stability

Test Requirement: Part 2.1055 & Part 22.355

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

Limit: The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

Test Procedure:

1) Use CMW 500 or CMU 200 with Frequency Error measurement capability.
   a) Temp. =−30° to +50°C
   The applicant declared that the normal operating temperature of the EUT is from −30° to +50°C. The EUT would shut down automatically as below -10°C.
   b) Voltage =low voltage, 3.6Vdc, Normal, 3.84Vdc and High voltage, 4.35Vdc.
   The applicant defined the normal working voltage of the battery is from 3.6~4.35Vdc.
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).

Test Setup: Refer to section 4.1.1(3) for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data:

Modulation	Channel / Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
GSM 1Tx-slot							
GMSK	190/ 836.6	3.6	Normal	-19	-0.0227	± 2.5	PASS
		3.84		-17	-0.0203	± 2.5	PASS
		4.35		-20	-0.0239	± 2.5	PASS
		3.84	50	-24	-0.0287	± 2.5	PASS
			40	-25	-0.0299	± 2.5	PASS
			30	-23	-0.0275	± 2.5	PASS
			20	-17	-0.0203	± 2.5	PASS
			20	-20	-0.0239	± 2.5	PASS
			0	-23	-0.0275	± 2.5	PASS
			-10	-24	-0.0287	± 2.5	PASS
			-20	-21	-0.0251	± 2.5	PASS
			-30	-25	-0.0299	± 2.5	PASS

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
EDGE 1Tx-slot							
8PSK	190/ 836.6	3.6	Normal	26	0.0311	± 2.5	PASS
		3.84		23	0.0275	± 2.5	PASS
		4.35		25	0.0299	± 2.5	PASS
		3.84	50	32	0.0383	± 2.5	PASS
			40	33	0.0394	± 2.5	PASS
			30	29	0.0347	± 2.5	PASS
			20	23	0.0275	± 2.5	PASS
			20	25	0.0299	± 2.5	PASS
			0	24	0.0287	± 2.5	PASS
			-10	27	0.0323	± 2.5	PASS
			-20	32	0.0383	± 2.5	PASS
			-30	35	0.0418	± 2.5	PASS

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
WCDMA RMC 12.2Kbps							
BPSK	4182/ 836.4	3.6	Normal	9	0.0108	± 2.5	PASS
		3.84		5	0.0060	± 2.5	PASS
		4.35		7	0.0084	± 2.5	PASS
		3.84	50	11	0.0132	± 2.5	PASS
			40	12	0.0143	± 2.5	PASS
			30	7	0.0084	± 2.5	PASS
			20	5	0.0060	± 2.5	PASS
			20	10	0.0120	± 2.5	PASS
			0	9	0.0108	± 2.5	PASS
			-10	14	0.0167	± 2.5	PASS
			-20	10	0.0120	± 2.5	PASS
			-30	12	0.0143	± 2.5	PASS

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
LTE Band 5; Channel Bandwidth: 10 MHz							
QPSK	20525/ 836.5	3.6	Normal	-7	-0.0084	± 2.5	PASS
		3.84		-4	-0.0048	± 2.5	PASS
		4.35		-6	-0.0072	± 2.5	PASS
		3.84	50	-13	-0.0155	± 2.5	PASS
			40	-10	-0.0120	± 2.5	PASS
			30	-7	-0.0084	± 2.5	PASS
			20	-4	-0.0048	± 2.5	PASS
			20	-10	-0.0120	± 2.5	PASS
			0	-13	-0.0155	± 2.5	PASS
			-10	-12	-0.0143	± 2.5	PASS
			-20	-15	-0.0179	± 2.5	PASS
			-30	-11	-0.0132	± 2.5	PASS

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

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

APPENDIX 2 PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photographs.

*** End of Report ***