



RF TEST REPORT

Applicant	ZTE Coporation
FCC ID	SRQ-Z815
Product	LTE/WCDMA/GSM Multi-Mode Digital Mobile Phone
Model	Z815
Report No.	RXC1512-0230RF01R2
Issue Date	March 15, 2016

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2/ FCC CFR 47 Part 22H**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Handwritten signature of Lingling Kang in black ink.

Reviewed by: Lingling Kang/ Manager

Handwritten signature of Kai Xu in black ink.

Approved by: Kai Xu/ Director



TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000



TABLE OF CONTENT

1. Test Laboratory	4
1.1. Notes of the Test Report	4
1.2. Test facility	4
1.3. Testing Location	5
2. General Description of Equipment under Test.....	6
3. Applied Standards	7
4. Test Configuration	8
5. Test Case Results	10
5.1. RF Power Output	10
5.2. Effective Radiated Power	14
5.3. Occupied Bandwidth	19
5.4. Band Edge Compliance	28
5.5. Peak-to-Average Power Ratio (PAPR).....	37
5.6. Frequency Stability.....	40
5.7. Spurious Emissions at Antenna Terminals.....	44
5.8. Radiates Spurious Emission	53
6. Main Test Instruments.....	64
ANNEX A: EUT Appearance and Test Setup	65
A.1 EUT Appearance.....	65
A.2 Test Setup.....	67



Summary of measurement results

No.	Test Type	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Radiated Power	22.913(a)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	2.1051 / 22.917(a)	PASS
5	Peak-to-Average Power Ratio	KDB 971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 22.355	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 / 22.917(a)	PASS
8	Radiates Spurious Emission	2.1053 / 22.917 (a)	PASS
Date of Testing: January 8, 2016~ February 5, 2016			



1. Test Laboratory

1.1. Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd**. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by CNAS or any government agencies.

1.2. Test facility

CNAS (accreditation number:L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2. General Description of Equipment under Test

Client Information

Applicant	ZTE Coporation
Applicant address	ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District Shenzhen, Guangdong, P.R.China
Manufacturer	ZTE Coporation
Manufacturer address	ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District Shenzhen, Guangdong, P.R.China

General Information

Model:	Z815		
Product IMEI:	869278020003663		
Hardware Version:	u50A		
Software Version:	Z815V0.0.0B01		
Power Supply:	Battery/AC adapter		
Antenna Type:	Internal Antenna		
Test Mode(s):	GSM 850; WCDMA Band V; LTE Band 5;		
Test Modulation:	(GSM)GMSK,8PSK; (WCDMA)QPSK; (LTE)QPSK 16QAM;		
GPRS/ EGPRS Multislot Class:	10		
WCDMA Downlink UE Category:	14		
WCDMA Uplink UE Category:	6		
Maximum E.R.P.	GSM 850: 29.74dBm WCDMA Band V: 19.34dBm LTE Band 5: 20.2dBm		
Rated Power Supply Voltage:	3.84V		
Extreme Voltage:	Minimum: 3.6V Maximum: 4.4V		
Extreme Temperature:	Lowest: -10°C Highest: +60°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM850	824 ~ 849	869 ~ 894
	WCDMA Band V	824 ~ 849	869 ~ 894
	LTE Band 5	824 ~ 849	869 ~ 894
EUT Accessory			
Battery	Manufacturer: SCUD(FUJIAN)ELECTRONICS Model: Li3922T44P6h903546 Power Rating: DC 3.84V, Li-ion		
Adapter	Manufacturer: RUIDE Model: STC-A51A-Z		
Note: The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details.			



3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC CFR47 Part 2 (2014)

FCC CFR 47 Part 22H (2014)

ANSI/TIA-603-D (2010)

KDB 971168 D01 Power Meas License Digital Systems v02r02

4. Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, vertical polarization) and the worst case was recorded.

All mode and data rates and positions were investigated.

The following testing in GSM/WCDMA/LTE is set based on the maximum RF Output Power.

Test modes are chosen to be reported as the worst case configuration below:

	Test items	Modes/Modulation	
		GSM 850	WCDMA Band V
Conducted Test cases	RF power output	GSM /GPRS /EGPRS	RMC HSDPA/HSUPA DC-HSDPA
	Occupied Bandwidth	GSM /GPRS /EGPRS	RMC
	Band Edge Compliance	GSM /GPRS /EGPRS	RMC
	Peak-to-Average Power Ratio	GSM /GPRS /EGPRS	RMC
	Frequency Stability	GSM /GPRS /EGPRS	RMC
	Spurious Emissions at Antenna Terminals	GSM	RMC
Radiated Test cases	Effective Radiated Power	GSM /GPRS /EGPRS	RMC
	Radiates Spurious Emission	GSM	RMC



Test modes are chosen as the worst case configuration below for LTE Band 5.

Test items	Bandwidth (MHz)				Modulation		RB			Test Channel		
	1.4	3	5	10	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	O	O	O	O	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	O	O	O	O	O	O	-	-	O	O	O	O
Occupied Bandwidth	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	O	O	O	O	O	O	-	-	O	-	O	-
Spurious Emissions at Antenna Terminals	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	O	O	O	O	O	-	O	-	-	O	O	O
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.											

5. Test Case Results

5.1. RF Power Output

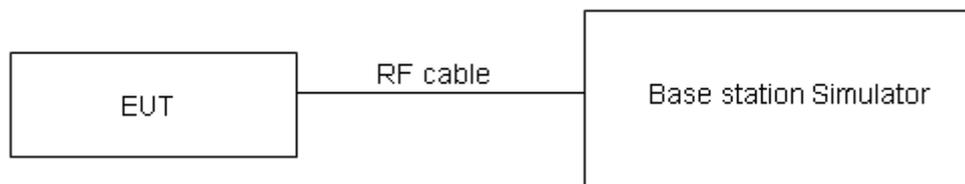
Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.

Test Results

GSM 850		Conducted Power(dBm)		
		Channel 128	Channel 190	Channel 251
		824.2 (MHz)	836.6 (MHz)	848.8 (MHz)
GSM	Results	32.57	32.21	32.29
GPRS (GMSK)	1TXslot	32.32	32.37	32.36
	2TXslots	29.89	29.84	29.62
EGPRS (8PSK)	1TXslot	26.15	26.15	26.12
	2TXslots	26.05	25.93	25.94
Note: 1) The maximum RF Output Power numbers are marks in bold. 2) The following testing in GPRS/EGPRS is set to 1TXslot based on the maximum RF Output Power.				

WCDMA Band V		Conducted Power(dBm)		
		Channel 4132	Channel 4183	Channel 4233
		826.4(MHz)	836.6(MHz)	846.6(MHz)
RMC		22.96	22.99	22.93
HSDPA	Sub - Test 1	22.95	22.87	22.84
	Sub - Test 2	22.86	22.99	22.92
	Sub - Test 3	22.99	22.88	22.90
	Sub - Test 4	22.98	22.89	22.85
HSUPA	Sub - Test 1	21.84	21.82	21.91
	Sub - Test 2	20.51	20.53	20.63
	Sub - Test 3	21.08	20.99	21.12
	Sub - Test 4	20.54	20.64	20.72
	Sub - Test 5	21.90	21.87	21.94
DC-HSDPA	Sub - Test 1	22.72	22.79	22.71
	Sub - Test 2	22.69	22.72	22.65
	Sub - Test 3	22.56	22.65	22.57
	Sub - Test 4	22.58	22.63	22.58
HSDPA+	Sub - Test 1	22.78	22.72	22.72
	Sub - Test 2	22.66	22.81	22.81
	Sub - Test 3	22.50	22.41	22.46
	Sub - Test 4	22.53	22.39	22.42
HSUPA+	Sub - Test 1	21.90	21.91	21.97
	Sub - Test 2	20.59	20.58	20.71
	Sub - Test 3	21.18	21.09	21.16
	Sub - Test 4	20.60	20.76	20.78
	Sub - Test 5	21.98	21.95	22.02
Note: 1) The maximum RF Output Power numbers are marks in bold. 2) The following testing in RMC based on the maximum RF Output Power.				

LTE FDD Band 5				Conducted Power(dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				20407/824.7	20525/836.5	20643/848.3
1.4MHz	QPSK	1	0	24.01	23.74	24.01
		1	2	24.02	23.91	23.87
		1	5	23.63	23.91	23.77
		3	0	23.31	23.11	23.27
		3	2	23.23	23.24	23.18
		3	3	23.02	23.23	23.17
	16QAM	6	0	22.52	22.34	22.46
		1	0	22.51	22.37	23.05
		1	2	22.48	22.09	23.10
		1	5	21.94	22.05	22.77
		3	0	22.34	21.45	22.47
		3	2	22.04	22.00	22.29
		3	3	21.47	21.83	22.26
		6	0	21.56	21.37	21.51
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				20415/825.5	20525/836.5	20635/847.5
3MHz	QPSK	1	0	23.96	23.69	23.96
		1	7	23.97	23.86	23.82
		1	14	23.58	23.86	23.72
		8	0	22.93	22.93	22.89
		8	4	22.85	22.86	22.80
		8	7	22.94	22.85	22.79
		15	0	22.97	22.79	22.91
	16QAM	1	0	22.96	22.82	23.40
		1	7	22.93	22.54	23.45
		1	14	22.39	22.50	23.22
		8	0	22.09	21.90	21.92
		8	4	21.99	21.75	21.74
		8	7	21.92	21.68	21.71
		15	0	22.01	21.82	21.96



BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				20425/826.5	20525/836.5	20625/846.5
5MHz	QPSK	1	0	23.97	23.70	23.97
		1	13	23.98	23.87	23.83
		1	24	23.59	23.87	23.73
		12	0	22.94	22.94	22.90
		12	6	22.86	22.87	22.81
		12	13	22.95	22.86	22.80
		25	0	22.98	22.80	22.92
	16QAM	1	0	22.97	22.83	23.41
		1	13	22.94	22.55	23.46
		1	24	22.40	22.51	23.23
		12	0	22.10	21.91	21.93
		12	6	22.00	21.76	21.75
		12	13	21.93	21.69	21.72
		25	0	22.02	21.83	21.97
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				20450/829	20525/836.5	20600/844
10MHz	QPSK	1	0	23.99	23.72	23.99
		1	25	24.00	23.89	23.85
		1	49	23.61	23.89	23.75
		25	0	22.96	22.96	22.92
		25	13	22.88	22.89	22.83
		25	25	22.97	22.88	22.82
		50	0	23.00	22.82	22.94
	16QAM	1	0	22.99	22.85	23.43
		1	25	22.96	22.57	23.48
		1	49	22.42	22.53	23.25
		25	0	22.12	21.93	21.95
		25	13	22.02	21.78	21.77
		25	25	21.95	21.71	21.74
		50	0	22.04	21.85	21.99

5.2. Effective Radiated Power

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

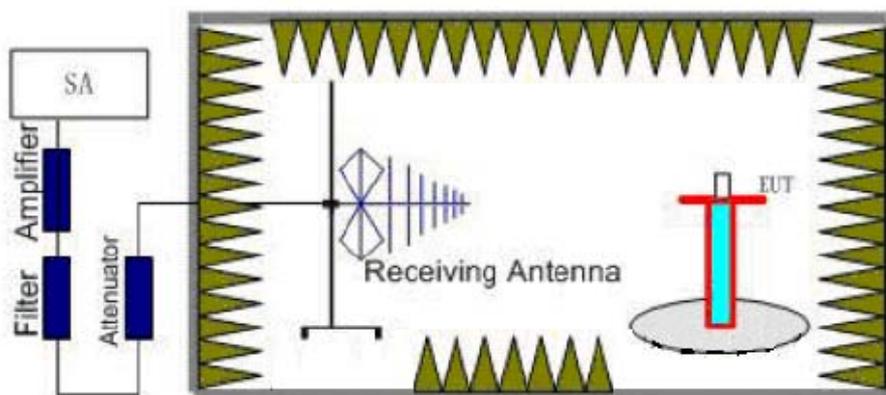
Methods of Measurement

The measurement procedures in TIA- 603-D are used.

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
 2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
 3. GSM operating modes: Set RBW= 1MHz, VBW= 3MHz, RMS detector over burst;
UMTS operating modes: Set RBW= 100 KHz, VBW= 300 KHz, RMS detector over frame, and use channel power option with bandwidth=5MHz, per section 4.0 of KDB 971168 D01.
 4. The table was rotated 360 degrees to determine the position of the highest radiated power.
 5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
 6. Taking the record of maximum ERP/EIRP.
 7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
 8. The conducted power at the terminal of the dipole antenna is measured.
 9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
 10. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$
- P_s (dBm) : Input power to substitution antenna.
 G_s (dBi or dBd) : Substitution antenna Gain.
 $E_t = R_t + AF$
 $E_s = R_s + AF$
 AF (dB/m) : Receive antenna factor
 R_t : The highest received signal in spectrum analyzer for EUT.
 R_s : The highest received signal in spectrum analyzer for substitution antenna.

$$EIRP = E.R.P + 2.15$$

Test Setup



**Limits**

Rule Part 22.913(a) specifies that "Mobile/portable stations are limited to 7 watts ERP".

Limit	$\leq 7 \text{ W}$ (38.45 dBm)
-------	--------------------------------

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 1.19 \text{ dB}$



Test Results:

Mode	Polarization	Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	Limit (dBm)	Conclusion
GSM 850	H	824.2	-18.42	-47.10	0	1.06	29.74	38.45	Pass
	H	836.6	-19.56	-47.13	0	1.24	28.81	38.45	Pass
	H	848.8	-20.98	-47.29	0	1.38	27.69	38.45	Pass
	V	824.2	-33.20	-46.91	0	1.06	14.77	38.45	Pass
	V	836.6	-34.47	-46.82	0	1.24	13.59	38.45	Pass
	V	848.8	-37.43	-47.04	0	1.38	10.99	38.45	Pass
GPRS 850	H	824.2	-21.18	-47.10	0	1.06	26.98	38.45	Pass
	H	836.6	-21.29	-47.13	0	1.24	27.08	38.45	Pass
	H	848.8	-22.18	-47.29	0	1.38	26.49	38.45	Pass
	V	824.2	-25.22	-46.91	0	1.06	22.75	38.45	Pass
	V	836.6	-25.33	-46.82	0	1.24	22.73	38.45	Pass
	V	848.8	-26.57	-47.04	0	1.38	21.85	38.45	Pass
EGPRS 850	H	824.2	-25.20	-47.10	0	1.06	22.96	38.45	Pass
	H	836.6	-25.23	-47.13	0	1.24	23.14	38.45	Pass
	H	848.8	-25.81	-47.29	0	1.38	22.86	38.45	Pass
	V	824.2	-27.67	-46.91	0	1.06	20.30	38.45	Pass
	V	836.6	-27.84	-46.82	0	1.24	20.22	38.45	Pass
	V	848.8	-29.99	-47.04	0	1.38	18.43	38.45	Pass
WCDMA Band V	H	826.4	-28.96	-47.17	0	1.13	19.34	38.45	Pass
	H	836.6	-29.35	-47.13	0	1.24	19.02	38.45	Pass
	H	846.6	-30.44	-47.21	0	1.35	18.12	38.45	Pass
	V	826.4	-42.11	-46.87	0	1.13	5.89	38.45	Pass
	V	836.6	-43.14	-46.82	0	1.24	4.92	38.45	Pass
	V	846.6	-47.09	-46.97	0	1.35	1.23	38.45	Pass



LTE Band 5								
bandwidth	Polarization	Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	ERP (dBm)	Conclusion
1.4 MHz (QPSK)	H	824.7	-29.07	-47.61	0	1.13	19.67	Pass
	H	836.5	-29.40	-47.75	0	1.24	19.59	Pass
	H	848.3	-30.86	-48.23	0	1.38	18.75	Pass
	V	824.7	-44.70	-47.29	0	1.13	3.72	Pass
	V	836.5	-43.92	-47.15	0	1.24	4.47	Pass
	V	848.3	-46.06	-47.48	0	1.38	2.80	Pass
1.4 MHz (16QAM)	H	824.7	-30.41	-47.61	0	1.13	18.33	Pass
	H	836.5	-30.65	-47.75	0	1.24	18.34	Pass
	H	848.3	-32.41	-48.23	0	1.38	17.2	Pass
	V	824.7	-45.76	-47.29	0	1.13	2.66	Pass
	V	836.5	-45.19	-47.15	0	1.24	3.20	Pass
	V	848.3	-47.96	-47.48	0	1.38	0.90	Pass
3 MHz (QPSK)	H	825.5	-28.46	-47.59	0	1.06	20.20	Pass
	H	836.5	-28.89	-47.75	0	1.24	20.10	Pass
	H	847.5	-30.29	-48.18	0	1.38	19.27	Pass
	V	825.5	-44.38	-47.26	0	1.06	3.95	Pass
	V	836.5	-42.74	-47.15	0	1.24	5.65	Pass
	V	847.5	-45.02	-47.44	0	1.38	3.81	Pass
3 MHz (16QAM)	H	825.5	-29.60	-47.59	0	1.06	19.06	Pass
	H	836.5	-30.02	-47.75	0	1.24	18.97	Pass
	H	847.5	-31.57	-48.18	0	1.38	17.99	Pass
	V	825.5	-45.36	-47.26	0	1.06	2.97	Pass
	V	836.5	-44.13	-47.15	0	1.24	4.26	Pass
	V	847.5	-46.67	-47.44	0	1.38	2.16	Pass
5 MHz (QPSK)	H	826.5	-29.04	-47.60	0	1.13	19.69	Pass
	H	836.5	-29.67	-47.75	0	1.24	19.32	Pass
	H	846.5	-31.04	-48.12	0	1.36	18.44	Pass
	V	826.5	-45.67	-47.24	0	1.13	2.70	Pass
	V	836.5	-44.53	-47.15	0	1.24	3.86	Pass
	V	846.5	-45.91	-47.40	0	1.36	2.85	Pass
5 MHz (16QAM)	H	826.5	-30.25	-47.60	0	1.13	18.48	Pass
	H	836.5	-31.00	-47.75	0	1.24	17.99	Pass
	H	846.5	-32.28	-48.12	0	1.36	17.2	Pass
	V	826.5	-46.87	-47.24	0	1.13	1.50	Pass
	V	836.5	-45.22	-47.15	0	1.24	3.17	Pass
	V	846.5	-46.89	-47.40	0	1.36	1.87	Pass
10 MHz (QPSK)	H	829	-29.35	-47.61	0	1.13	19.39	Pass
	H	836.5	-30.12	-47.75	0	1.24	18.87	Pass
	H	844	-30.27	-48.01	0	1.33	19.06	Pass



LTE Band 5								
bandwidth	Polarization	Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	ERP (dBm)	Conclusion
	V	829	-46.25	-47.19	0	1.13	2.07	Pass
	V	836.5	-44.69	-47.15	0	1.24	3.70	Pass
	V	844	-44.75	-47.29	0	1.33	3.86	Pass
10 MHz (16QAM)	H	829	-30.73	-47.61	0	1.13	18.01	Pass
	H	836.5	-30.50	-47.75	0	1.24	18.49	Pass
	H	844	-30.80	-48.01	0	1.33	18.53	Pass
	V	829	-47.02	-47.19	0	1.13	1.30	Pass
	V	836.5	-46.18	-47.15	0	1.24	2.21	Pass
	V	844	-45.64	-47.29	0	1.33	2.97	Pass

5.3. Occupied Bandwidth

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

RBW is set to 3 kHz, VBW is set to 10kHz for GSM 850,

RBW is set to 51 kHz, VBW is set to 160kHz for WCDMA Band V,

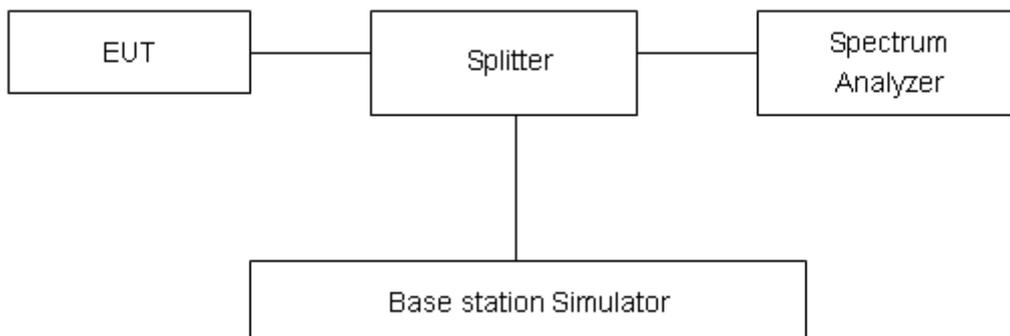
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 5 (1.4MHz),

RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 5 (3MHz/5MHz),

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 5 (10MHz),

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 624\text{Hz}$.

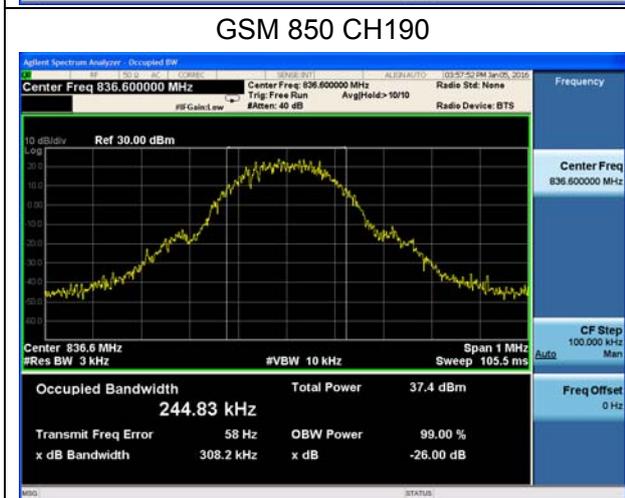


Test Result

Mode	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth(MHz)
GSM 850 (GSM)	128	824.2	0.24593	0.3098
	190	836.6	0.24483	0.3082
	251	848.8	0.24678	0.3126
GPRS 850 (GMSK)	128	824.2	0.24538	0.3078
	190	836.6	0.24376	0.3022
	251	848.8	0.24301	0.3059
EGPRS 850 (8-PSK)	128	824.2	0.24486	0.3069
	190	836.6	0.24416	0.3113
	251	848.8	0.23931	0.3160
WCDMA Band V (RMC)	4132	826.4	4.1363	4.697
	4183	836.6	4.1354	4.688
	4233	846.6	4.1377	4.727

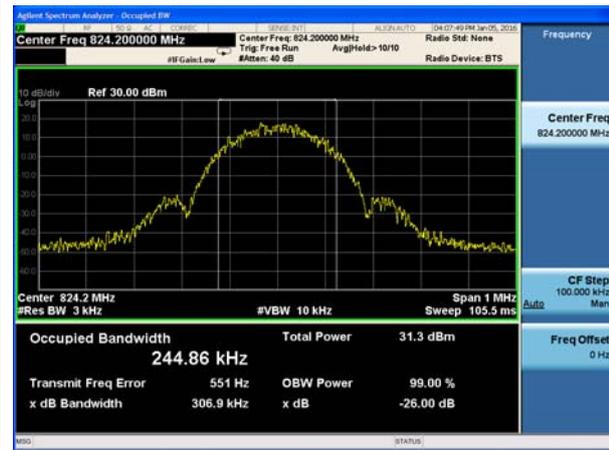


LTE Band 5						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100 %	QPSK	1.4	20407	824.7	1.1150	1.337
			20525	836.5	1.1087	1.342
			20643	848.3	1.1251	1.404
		3	20415	825.5	2.7530	3.077
			20525	836.5	2.7422	3.062
			20635	847.5	2.7455	3.078
		5	20425	826.5	4.5198	5.022
			20525	836.5	4.5370	5.044
			20625	846.5	4.5206	5.052
		10	20450	829	9.0317	10.04
			20525	836.5	9.0564	10.11
			20600	844	9.0432	10.12
	16QAM	1.4	20407	824.7	1.1191	1.317
			20525	836.5	1.1265	1.346
			20643	848.3	1.1169	1.346
		3	20415	825.5	2.7521	3.047
			20525	836.5	2.7367	3.053
			20635	847.5	2.7478	3.025
		5	20425	826.5	4.5232	4.987
			20525	836.5	4.5362	5.042
			20625	846.5	4.5286	5.075
		10	20450	829	9.0286	10.04
			20525	836.5	9.0477	10.08
			20600	844	9.0500	10.01

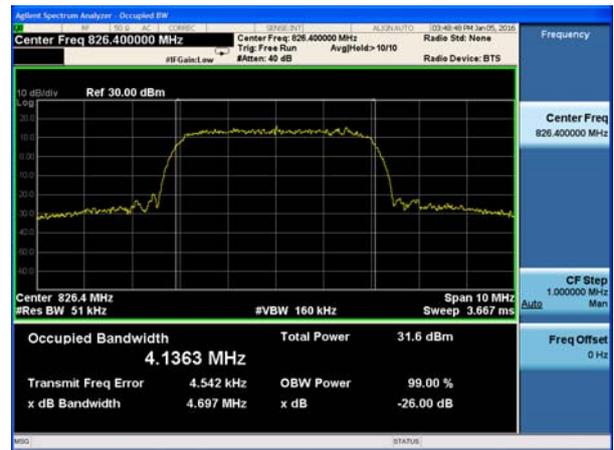




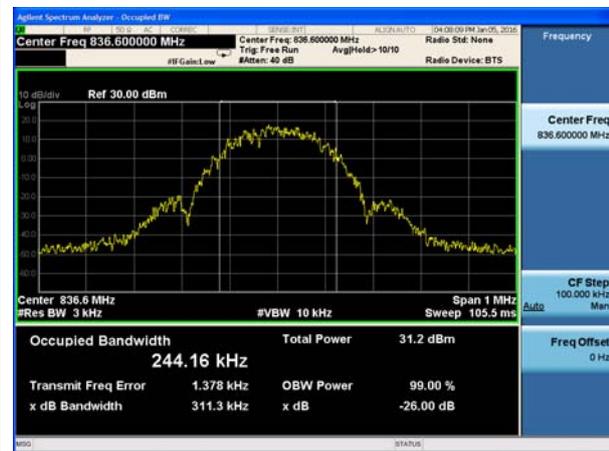
GSM 850 EGPRS CH128



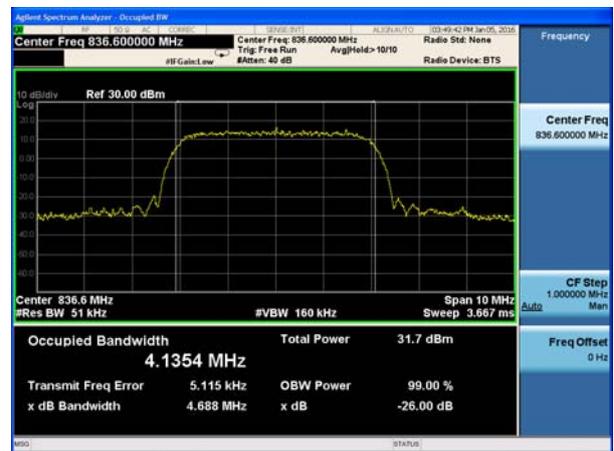
WCDMA Band V CH4132



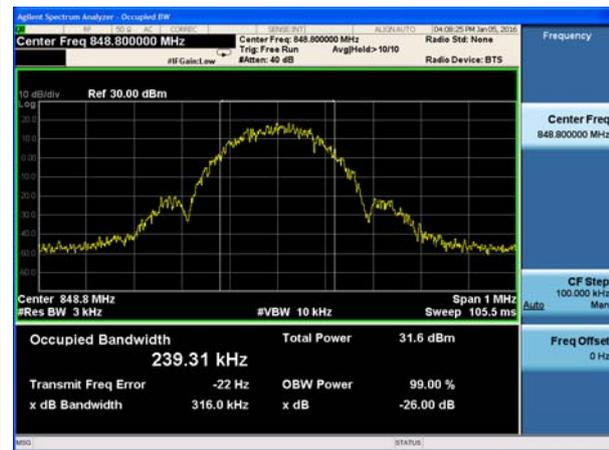
GSM 850 EGPRS CH190



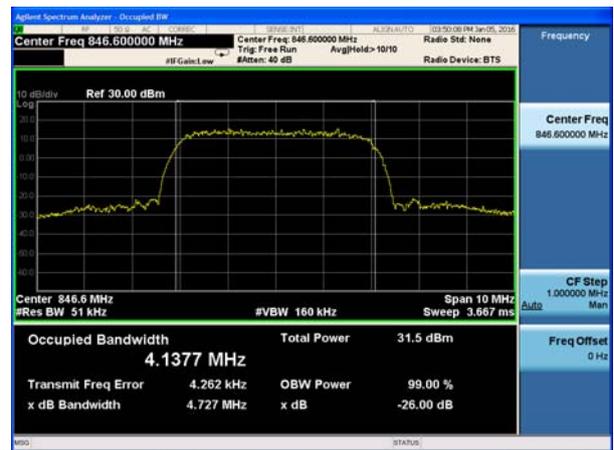
WCDMA Band V CH4183

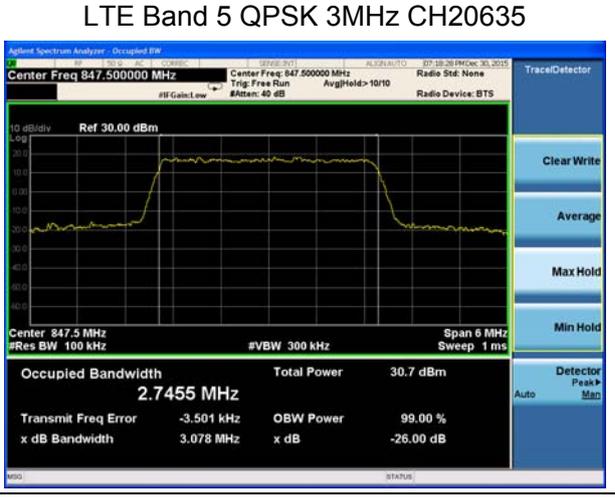
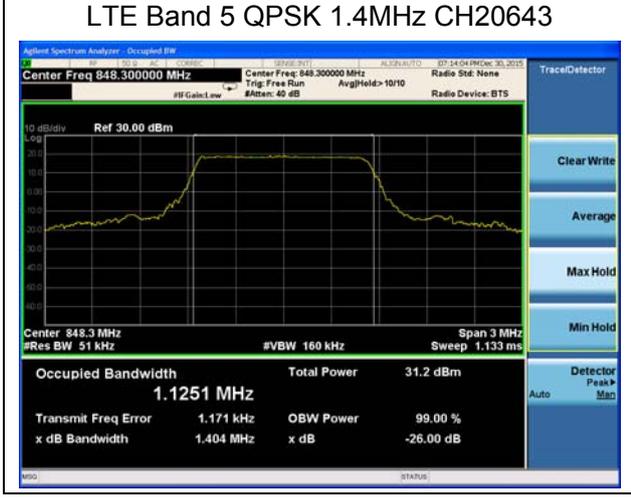
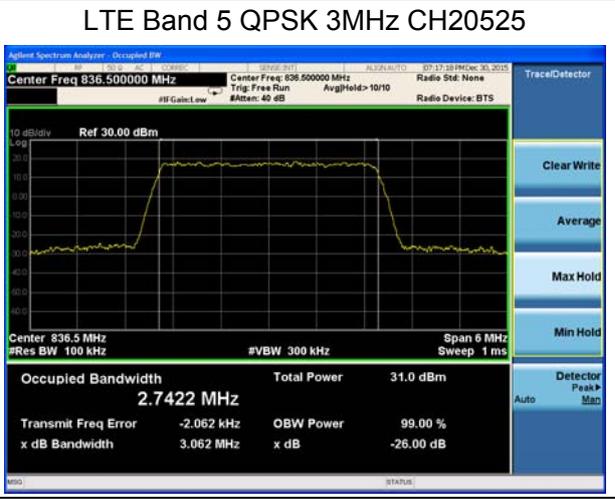
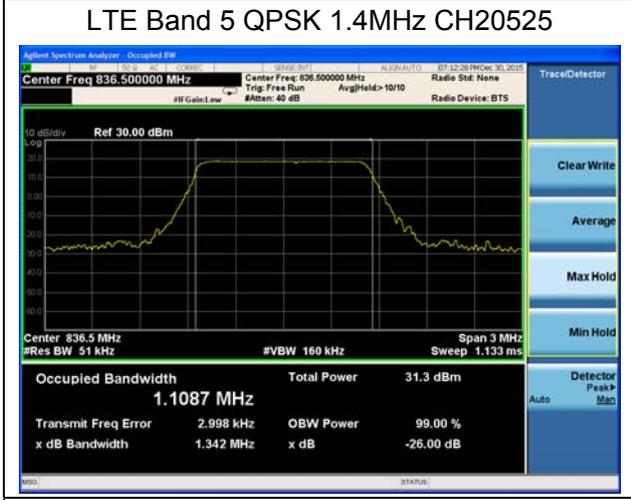
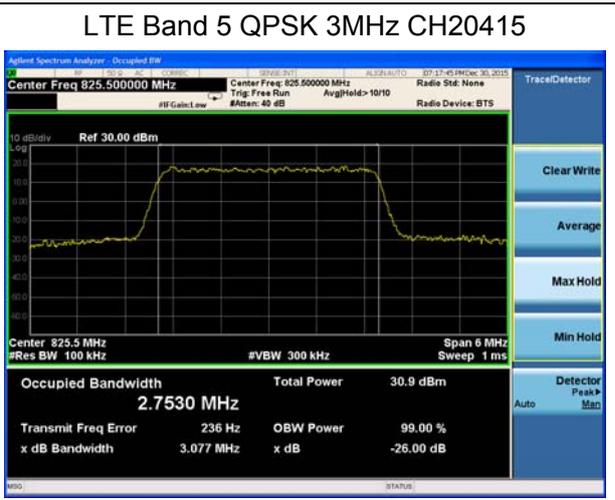
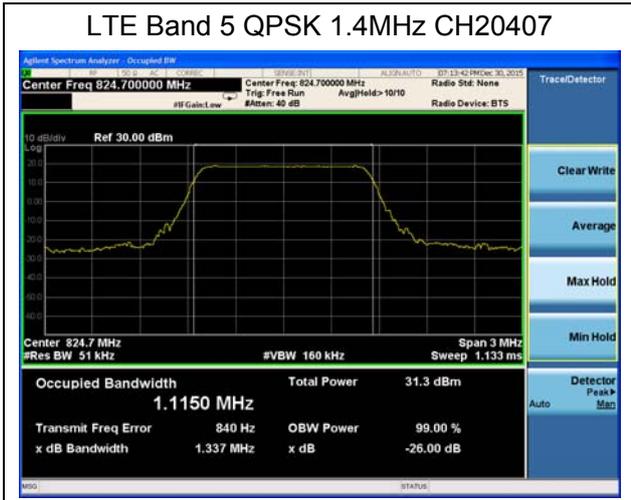


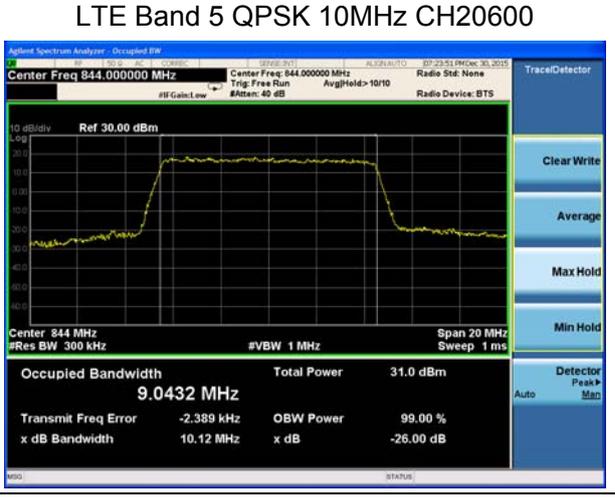
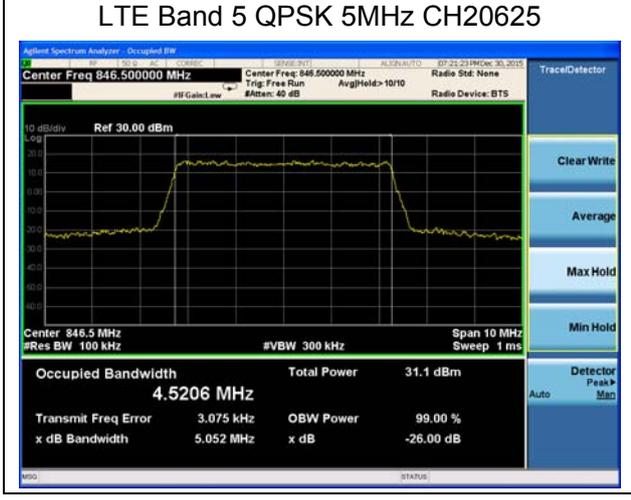
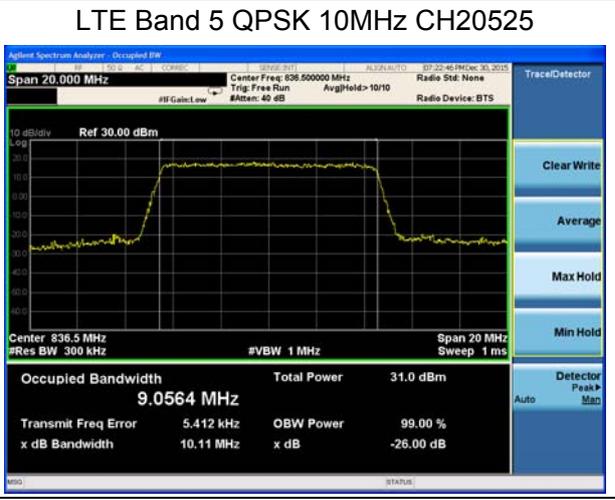
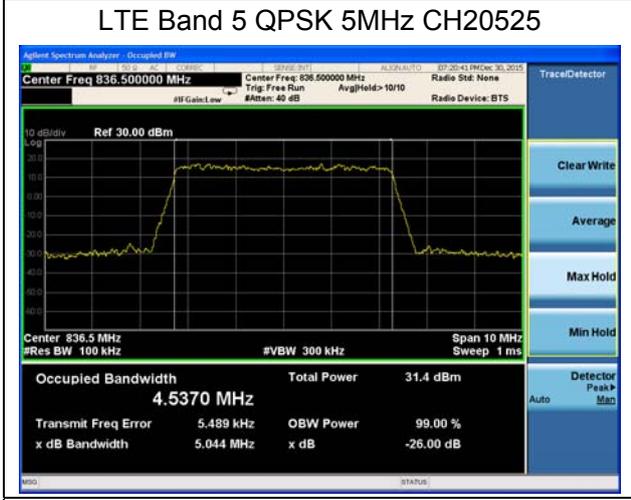
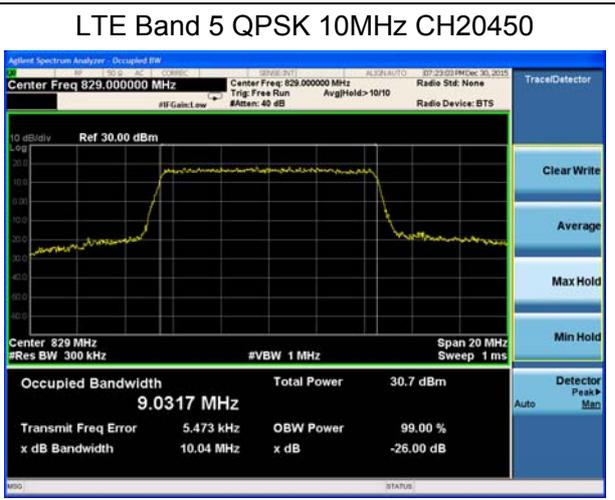
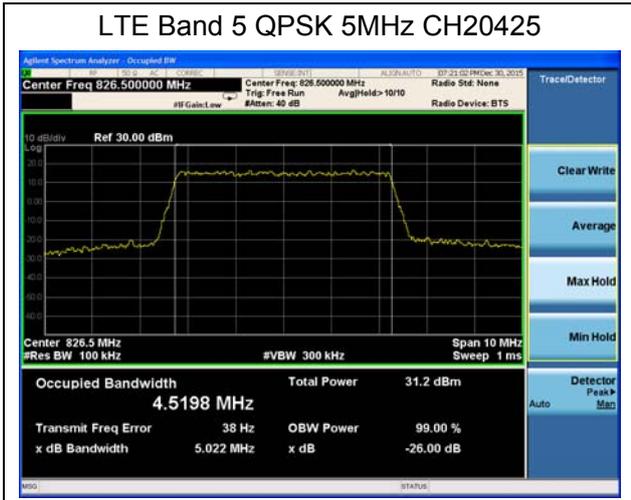
GSM 850 EGPRS CH251



WCDMA Band V CH4233

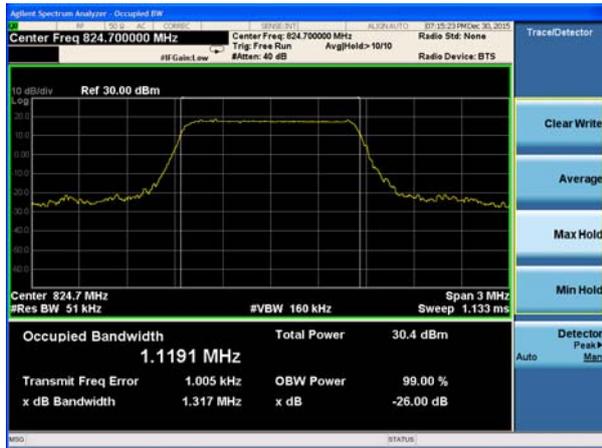








LTE Band 5 16QAM 1.4MHz CH20407



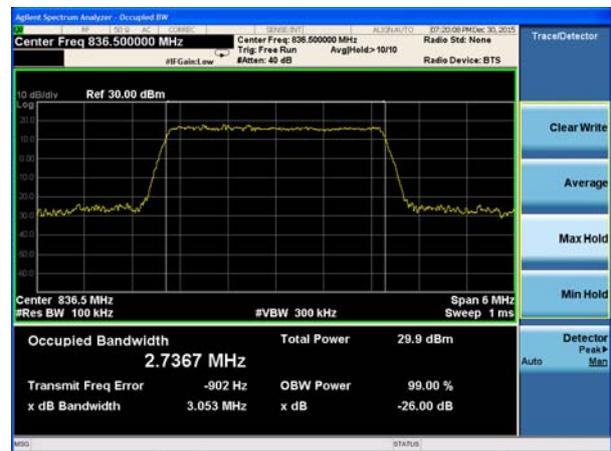
LTE Band 5 16QAM 3MHz CH20415



LTE Band 5 16QAM 1.4MHz CH20525



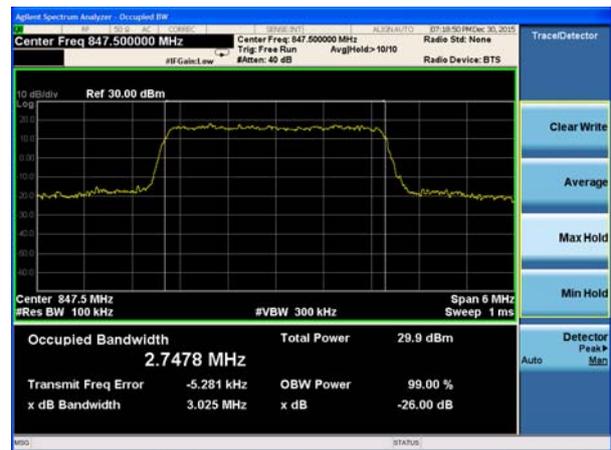
LTE Band 5 16QAM 3MHz CH20525

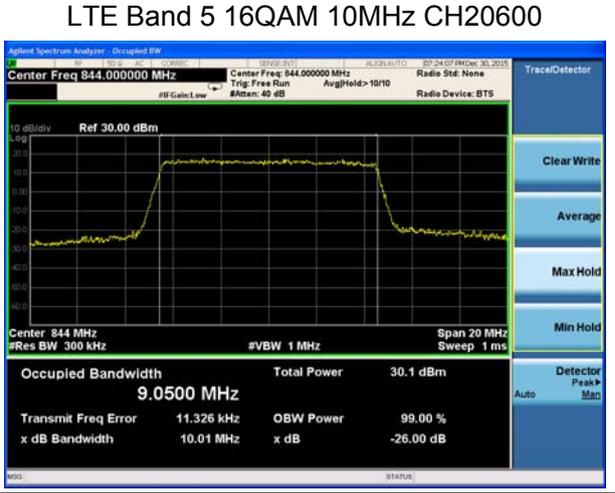
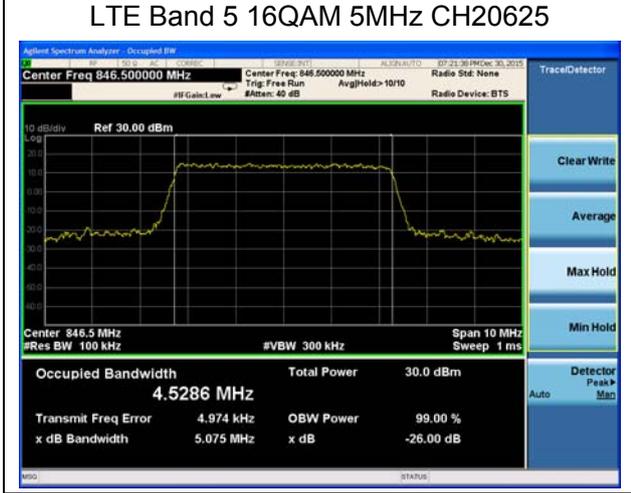
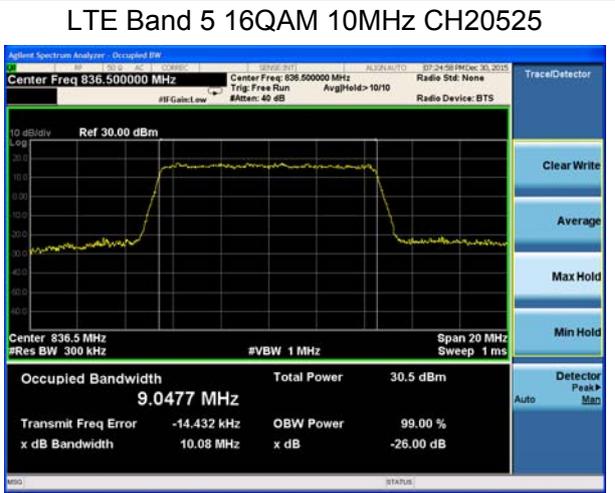
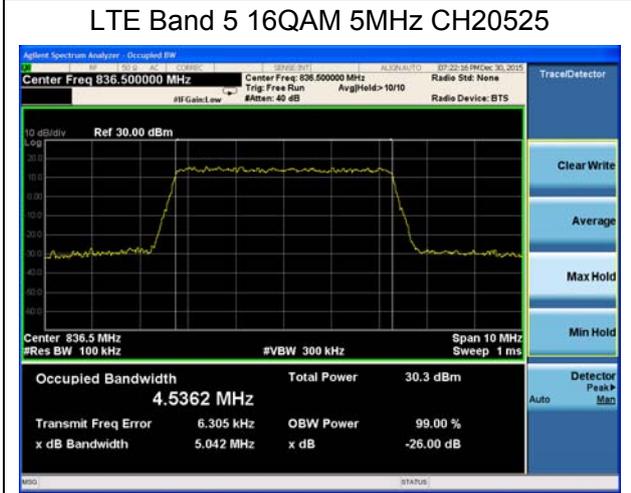
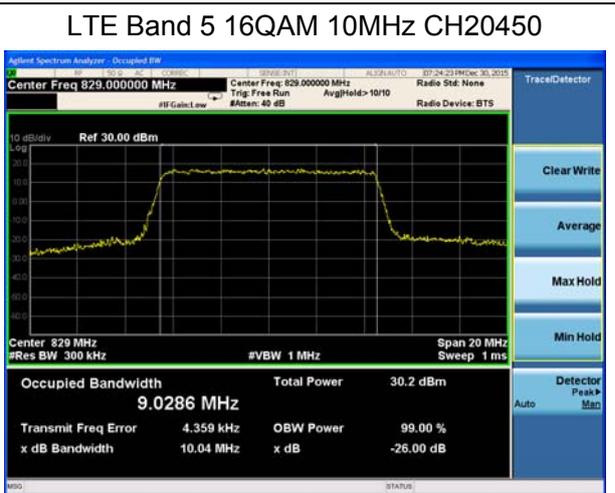
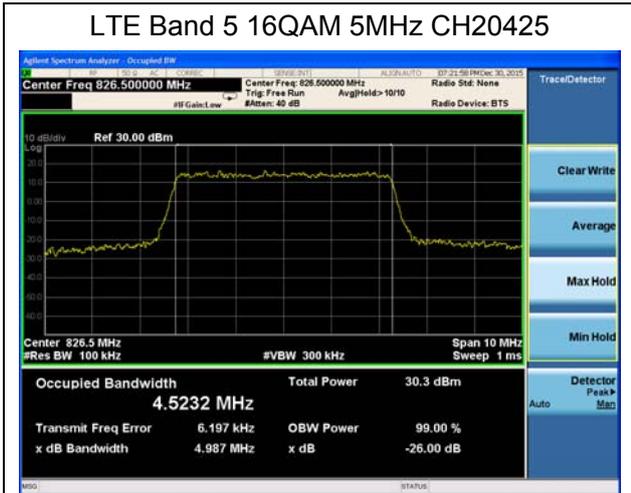


LTE Band 5 16QAM 1.4MHz CH20643



LTE Band 5 16QAM 3MHz CH20635





5.4. Band Edge Compliance

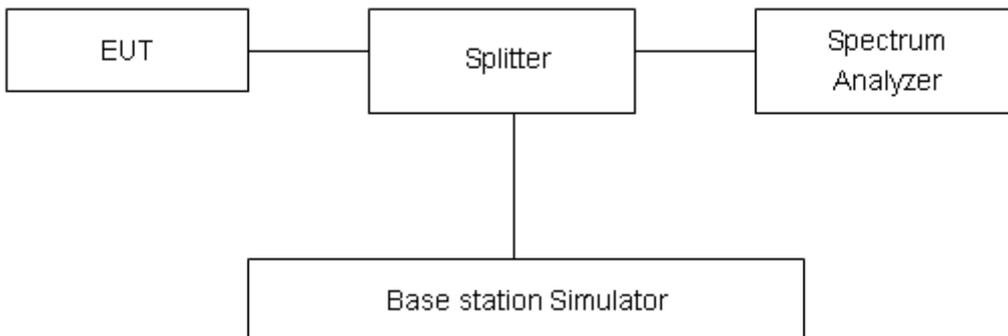
Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured. The average detector is used. RBW is set to 3kHz,VBW is set to 10kHz for GSM 850, RBW is set to 51kHz,VBW is set to 160kHz for WCDMA Band V, RBW is set to 15 kHz, VBW is set to 51 kHz for LTE Band 5 (1.4MHz), RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 5 (3MHz), RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 5 (5MHz), RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 5 (10MHz), Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 22.917(a) specifies that “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.”

Limit	-13 dBm
-------	---------

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U=0.684$ dB.

**Test Result:**

Mode	Carrier frequency (MHz)	Reference value (dBm)	Limit (dBm)	Conclusion
GSM 850 (GSM)	824.0	-31.832	-13	PASS
	849.0	-28.850	-13	PASS
GPRS 850 (GMSK)	824.0	-30.769	-13	PASS
	849.0	-31.380	-13	PASS
EGPRS 850 (8-PSK)	824.0	-40.843	-13	PASS
	849.0	-38.638	-13	PASS
WCDMA Band V RMC	824.0	-26.151	-13	PASS
	849.0	-23.918	-13	PASS

LTE Band 5						
Modulation	Bandwidth	Channel	RB	Reference value (dBm)	Limit (dBm)	Conclusion
QPSK	1.4MHz	20407	1	-24.078	-13	PASS
			100%	-28.312	-13	PASS
		20643	1	-23.146	-13	PASS
			100%	-27.274	-13	PASS
	3MHz	20415	1	-20.697	-13	PASS
			100%	-26.103	-13	PASS
		20635	1	-18.701	-13	PASS
			100%	-26.375	-13	PASS
	5MHz	20425	1	-21.088	-13	PASS
			100%	-26.564	-13	PASS
		20625	1	-20.079	-13	PASS
			100%	-27.670	-13	PASS
	10MHz	20450	1	-32.323	-13	PASS
			100%	-28.825	-13	PASS
		20600	1	-30.091	-13	PASS
			100%	-30.111	-13	PASS
16QAM	1.4MHz	20407	1	-23.360	-13	PASS
			100%	-27.932	-13	PASS
		20643	1	-22.062	-13	PASS
			100%	-25.803	-13	PASS
	3MHz	20415	1	-20.124	-13	PASS
			100%	-27.376	-13	PASS
		20635	1	-18.480	-13	PASS
			100%	-24.674	-13	PASS
	5MHz	20425	1	-20.593	-13	PASS
			100%	-27.816	-13	PASS
		20625	1	-21.495	-13	PASS
			100%	-27.557	-13	PASS
	10MHz	20450	1	-31.536	-13	PASS
			100%	-31.028	-13	PASS
		20600	1	-31.459	-13	PASS
			100%	-30.352	-13	PASS



GSM 850 CH128



GSM 850 CH251



GSM 850 GPRS CH128



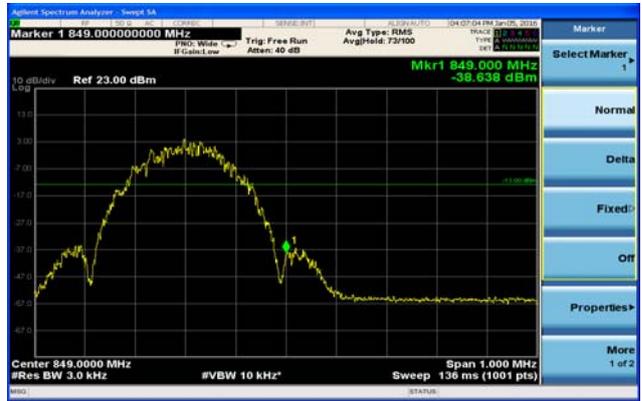
GSM 850 GPRS CH251



GSM 850 EGPRS CH128



GSM 850 EGPRS CH251



WCDMA Band V CH4132

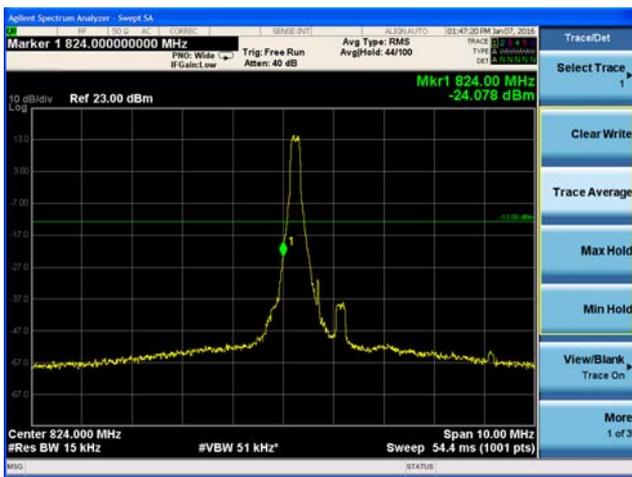


WCDMA Band V CH4233

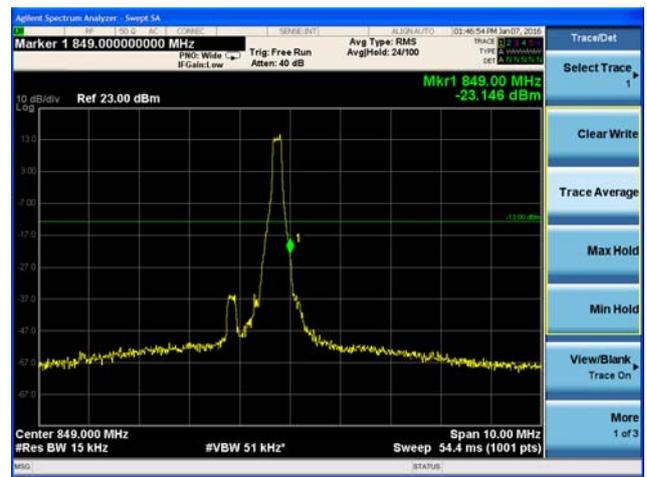




LTE Band 5 QPSK 1.4MHz CH20407 1RB



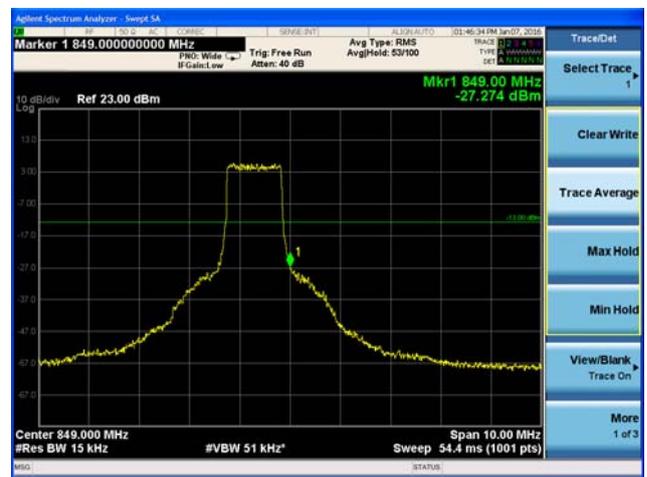
LTE Band 5 QPSK 1.4MHz CH20643 1RB



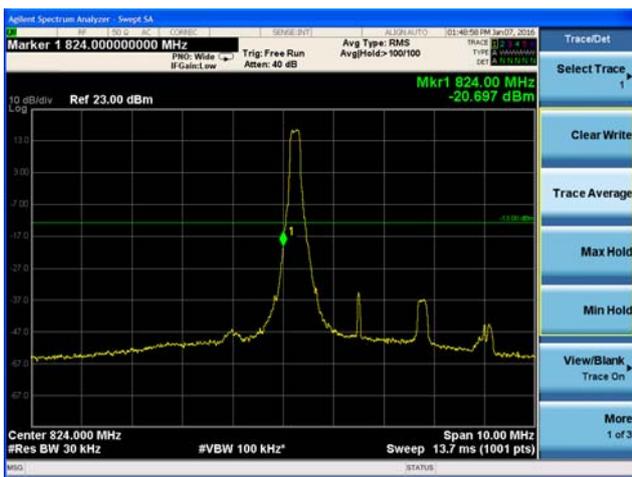
LTE Band 5 QPSK 1.4MHz CH20407 100%RB



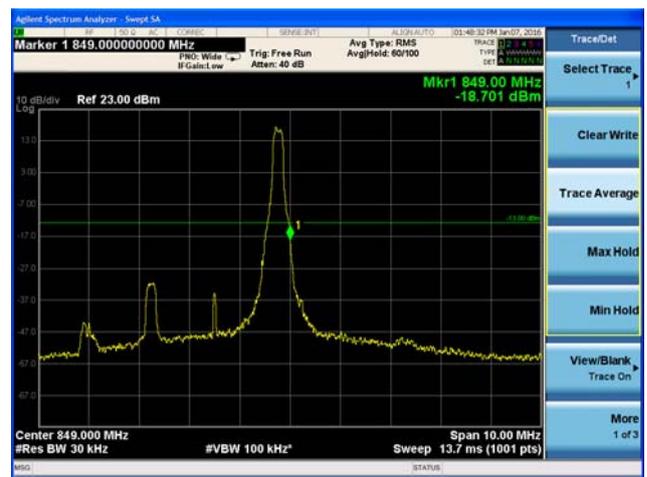
LTE Band 5 QPSK 1.4MHz CH20643 100%RB



LTE Band 5 QPSK 3MHz CH20415 1RB

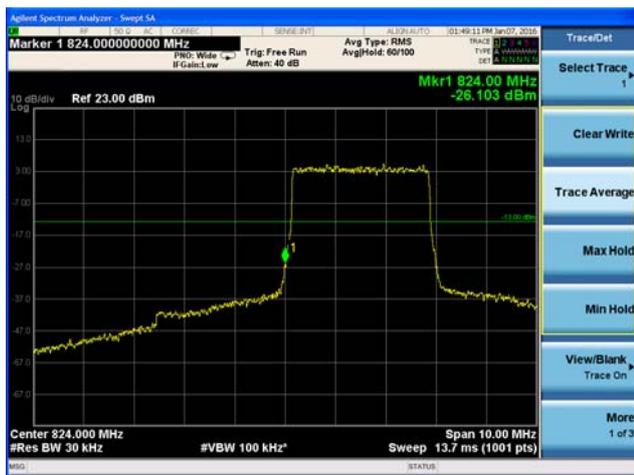


LTE Band 5 QPSK 3MHz CH20635 1RB

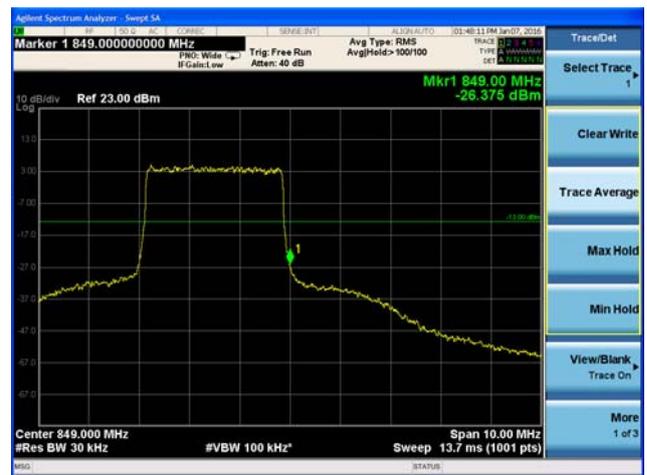




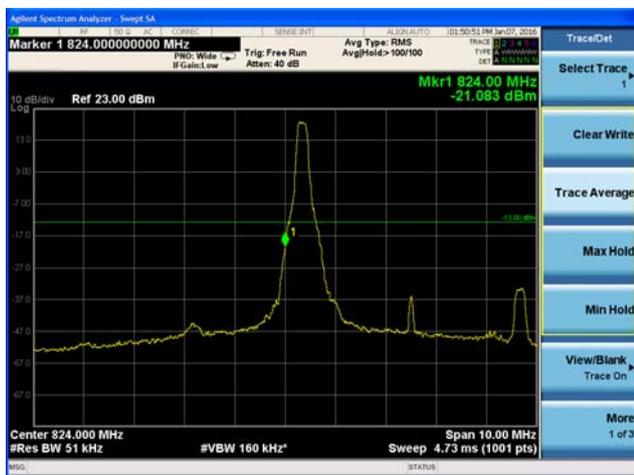
LTE Band 5 QPSK 3MHz CH20415 100%RB



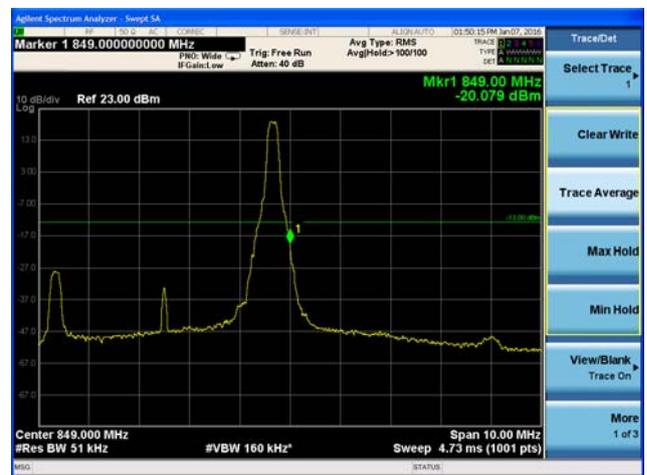
LTE Band 5 QPSK 3MHz CH20635 100%RB



LTE Band 5 QPSK 5MHz CH20425 1RB



LTE Band 5 QPSK 5MHz CH20625 1RB



LTE Band 5 QPSK 5MHz CH20425 100%RB

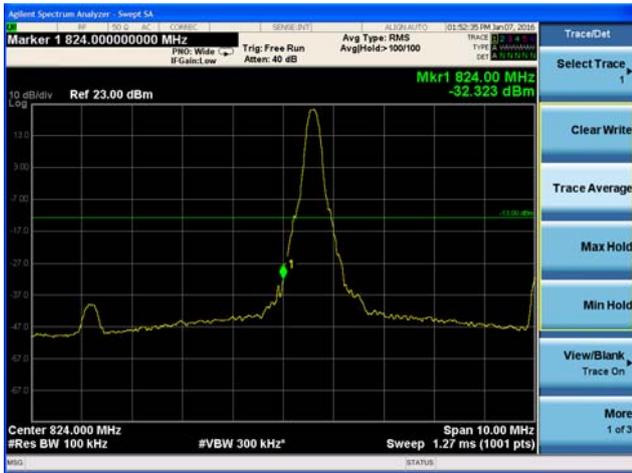


LTE Band 5 QPSK 5MHz CH20625 100%RB

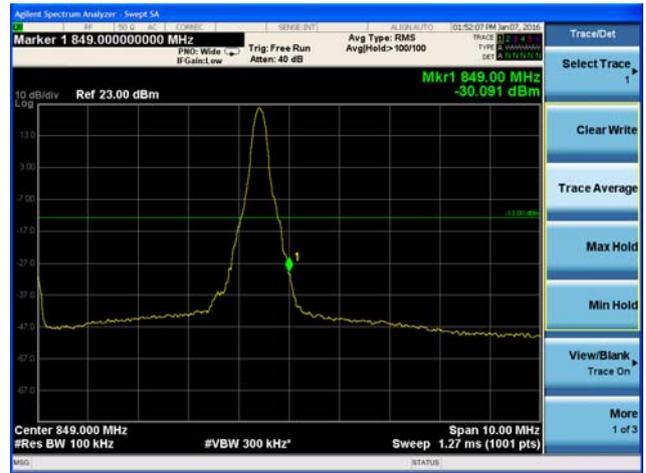




LTE Band 5 QPSK 10MHz CH20450 1RB



LTE Band 5 QPSK 10MHz CH20600 1RB



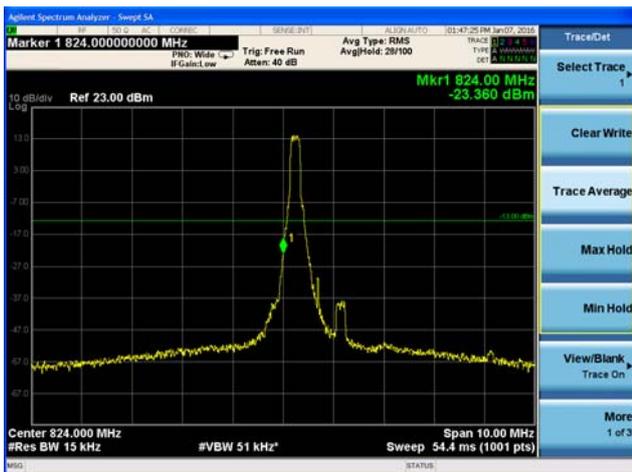
LTE Band 5 QPSK 10MHz CH20450 100%RB



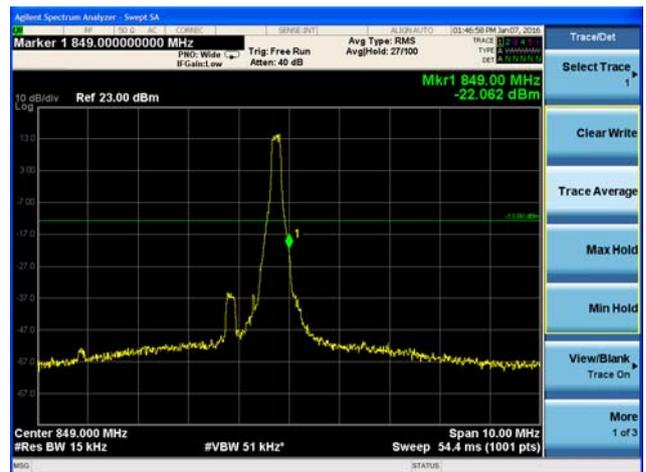
LTE Band 5 QPSK 10MHz CH20600 100%RB



LTE Band 5 16QAM 1.4MHz CH20407 1RB

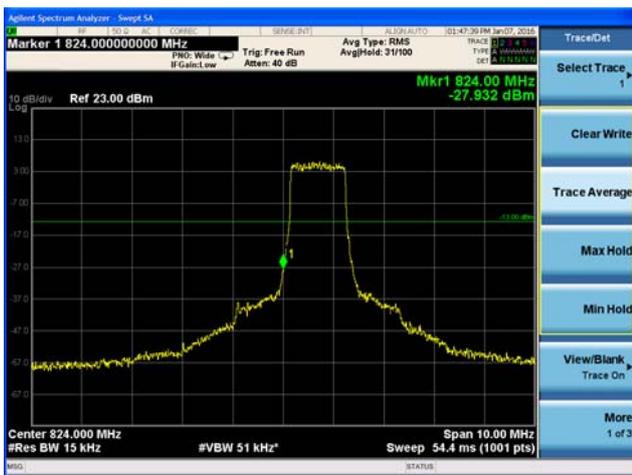


LTE Band 5 16QAM 1.4MHz CH20643 1RB

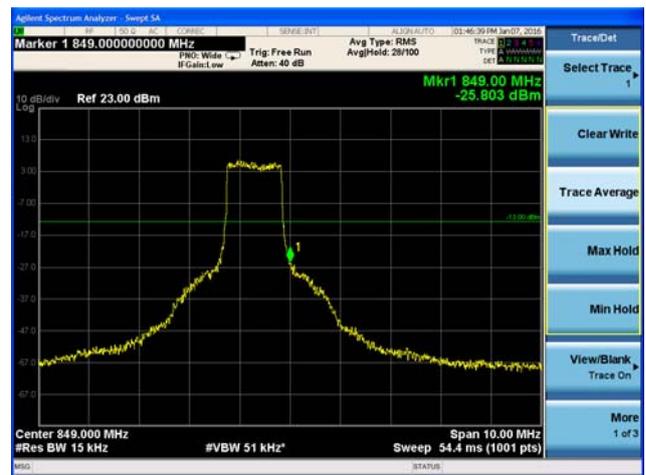




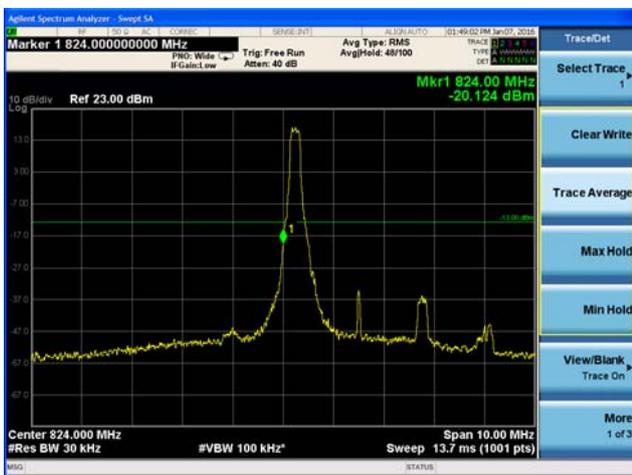
LTE Band 5 16QAM 1.4MHz CH20407 100%RB



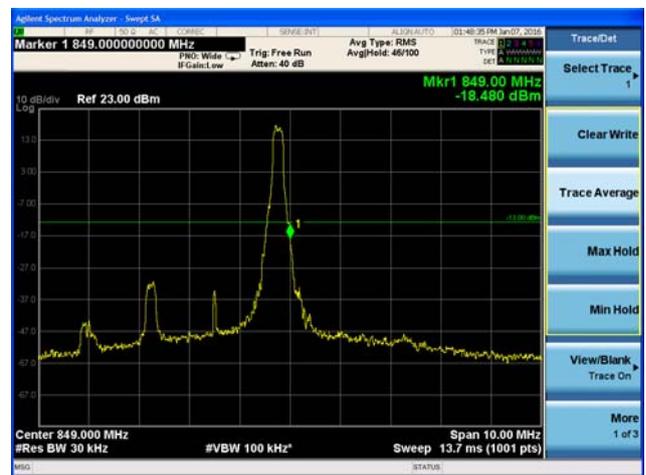
LTE Band 5 16QAM 1.4MHz CH20643 100%RB



LTE Band 5 16QAM 3MHz CH20415 1RB



LTE Band 5 16QAM 3MHz CH20635 1RB



LTE Band 5 16QAM 3MHz CH20415 100%RB

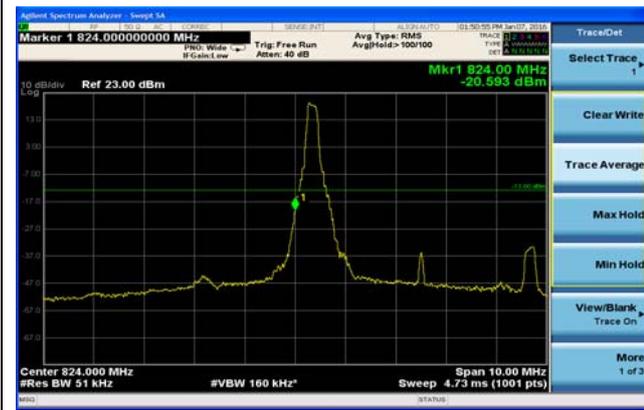


LTE Band 5 16QAM 3MHz CH20635 100%RB

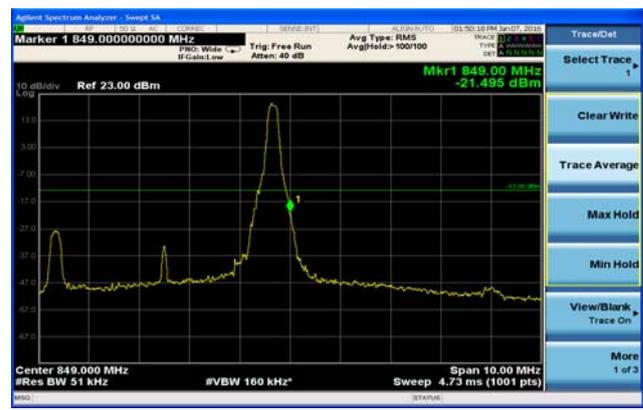




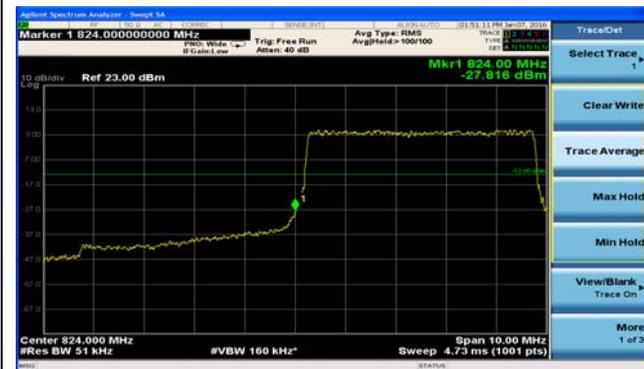
LTE Band 5 16QAM 5MHz CH20425 1RB



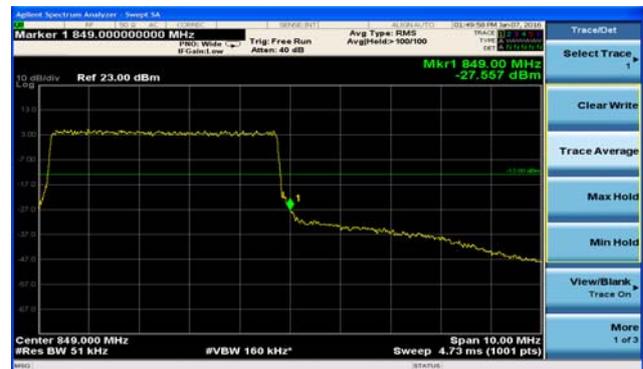
LTE Band 5 16QAM 5MHz CH20625 1RB



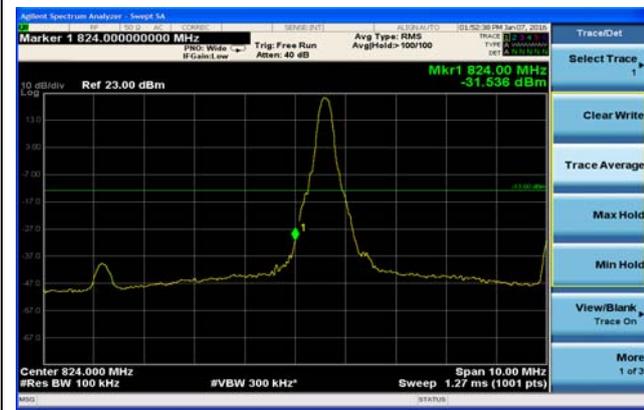
LTE Band 5 16QAM 5MHz CH20425 100%RB



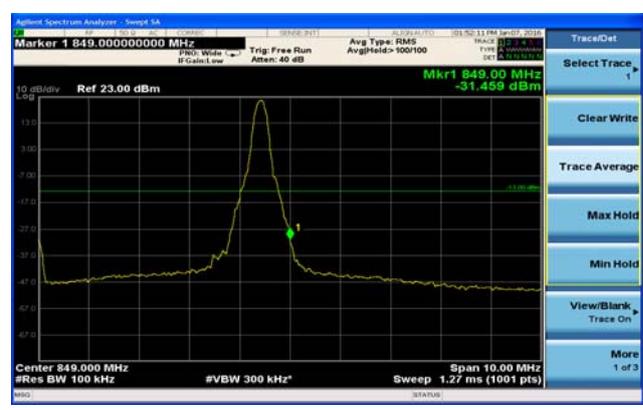
LTE Band 5 16QAM 5MHz CH20625 100%RB



LTE Band 5 16QAM 10MHz CH20450 1RB



LTE Band 5 16QAM 10MHz CH20600 1RB



LTE Band 5 16QAM 10MHz CH20450 100%RB



LTE Band 5 16QAM 10MHz CH20600 100%RB



5.5. Peak-to-Average Power Ratio (PAPR)

Ambient condition

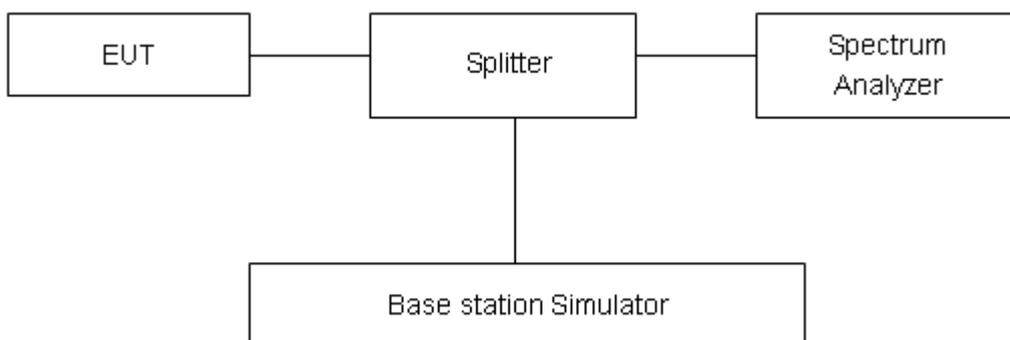
Temperature	Relative humidity
21°C ~25°C	40%~60%

Methods of Measurement

Measure the total peak power and record as P_{Pk} . And measure the total average power and record as P_{Avg} . Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

$$PAPR (dB) = P_{Pk} (dBm) - P_{Avg} (dBm).$$

Test Setup



Limits

No specific Peak-to-Average Ratio requirements in KDB 971168.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.

**Test Results**

Mode	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)
GSM 850 (GSM)	128	824.2	32.61	32.57	0.039
	190	836.6	32.23	32.21	0.022
	251	848.8	32.31	32.29	0.016
GPRS 850 (GMSK)	128	824.2	29.90	29.89	0.013
	190	836.6	29.88	29.84	0.042
	251	848.8	29.63	29.62	0.011
EGPRS 850 (8-PSK)	128	824.2	26.06	26.05	0.009
	190	836.6	25.99	25.93	0.055
	251	848.8	26.03	25.94	0.086
WCDMA Band V (RMC)	4132	826.4	26.05	22.95	3.10
	4183	836.6	26.17	22.94	3.23
	4233	846.6	25.88	22.9	2.98



LTE Band 5						
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)
QPSK	1.4	20407	824.7	23.50	23.02	0.48
		20525	836.5	23.57	22.84	0.73
		20643	848.3	23.79	22.96	0.83
	3	20415	825.5	24.04	22.97	1.07
		20525	836.5	24.06	22.79	1.27
		20635	847.5	24.16	22.91	1.25
	5	20425	826.5	24.15	22.98	1.17
		20525	836.5	24.15	22.8	1.35
		20625	846.5	24.04	22.92	1.12
	10	20450	829	24.28	23.1	1.18
		20525	836.5	24.21	22.82	1.39
		20600	844	24.15	22.94	1.21
16QAM	1.4	20407	824.7	23.10	22.06	1.04
		20525	836.5	22.64	21.87	0.77
		20643	848.3	22.92	22.01	0.91
	3	20415	825.5	23.23	22.01	1.22
		20525	836.5	23.03	21.82	1.21
		20635	847.5	22.93	21.96	0.97
	5	20425	826.5	23.19	22.02	1.17
		20525	836.5	23.19	21.83	1.36
		20625	846.5	23.31	21.97	1.34
	10	20450	829	23.28	22.04	1.24
		20525	836.5	23.18	21.85	1.33
		20600	844	23.18	21.99	1.19

5.6. Frequency Stability

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

1. Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -30°C to +50°C in 10°C step size,

(1) With all power removed, the temperature was decreased to 0°C and permitted to stabilize for three hours.

(2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

2. Frequency Stability (Voltage Variation)

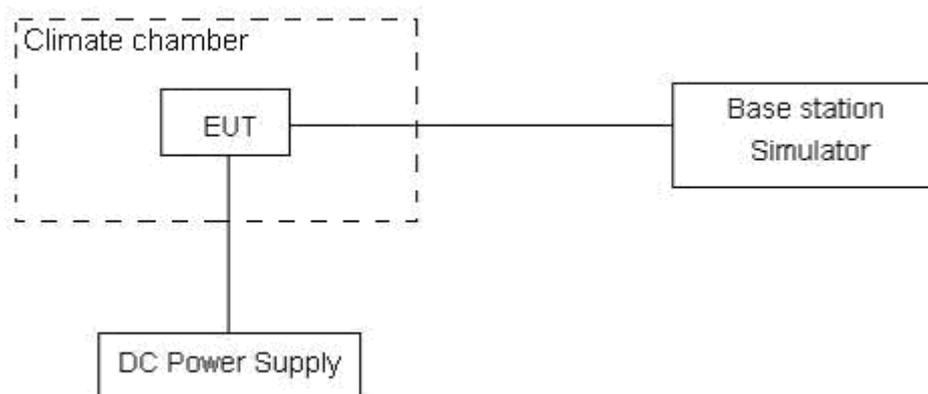
The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 3.6 V and 4.4 V, with a nominal voltage of 3.84V.

Test setup



Limits

According to the Sec. 22.355, the frequency stability of the carrier shall be accurate to within 2.5 ppm of the received frequency for mobile stations.

Limits	≤ 2.5 ppm
--------	-----------

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 3, U = 0.01\text{ppm}$.

Test Result

Mode	Test status	Test Results (ppm)			Conclusion
		GSM (GMSK)	GPRS (GMSK)	EGPRS (8PSK)	
GSM 850 Channel 190	-30°C/3.84 V	-0.00258	0.00307	0.00316	PASS
	-20°C/3.84 V	-0.00173	0.00336	0.00173	PASS
	-10°C/3.84 V	0.00860	0.00097	0.00145	PASS
	0°C/3.84 V	0.01870	0.00363	-0.00084	PASS
	10°C/3.84 V	-0.00450	-0.00158	0.00081	PASS
	20°C/3.84 V	-0.00580	0.00066	-0.00180	PASS
	30°C/3.84 V	0.01160	0.00124	0.00201	PASS
	40°C/3.84 V	-0.00560	0.00044	0.00160	PASS
	50°C/3.84 V	0.00350	0.00282	0.00178	PASS
	20°C/3.6 V	0.01530	0.00108	-0.00342	PASS
	20°C/4.4 V	0.00900	0.00197	0.00235	PASS
/	/	RMC			/
WCDMA Band V Channel 4183	-30°C/3.84 V	-0.000013			PASS
	-20°C/3.84 V	-0.000327			PASS
	-10°C/3.84 V	0.000025			PASS
	0°C/3.84 V	0.000571			PASS
	10°C/3.84 V	0.000169			PASS
	20°C/3.84 V	-0.000446			PASS
	30°C/3.84 V	-0.000128			PASS
	40°C/3.84 V	0.000857			PASS
	50°C/3.84 V	0.000035			PASS
	20°C/3.6 V	0.000325			PASS
	20°C/4.4 V	-0.000253			PASS



Bandwidth	Test status	LTE Band 5 Channel 20525 Test Results (ppm)		
		QPSK	16QAM	Conclusion
1.4MHz	-30°C/3.84 V	-0.00043	-0.00044	PASS
	-20°C/3.84 V	-0.00128	-0.00061	PASS
	-10°C/3.84 V	-0.00336	0.01354	PASS
	0°C/3.84 V	-0.00563	0.00876	PASS
	10°C/3.84 V	0.00226	0.00828	PASS
	20°C/3.84 V	-0.00599	0.01426	PASS
	30°C/3.84 V	-0.00216	0.01295	PASS
	40°C/3.84 V	-0.00276	0.02072	PASS
	50°C/3.84 V	0.00441	0.01199	PASS
	20°C/3.6 V	0.00879	0.01017	PASS
	20°C/4.4 V	0.00233	0.00384	PASS
3MHz	-30°C/3.84 V	-0.00001	0.00053	PASS
	-20°C/3.84 V	0.00071	0.00035	PASS
	-10°C/3.84 V	0.01218	-0.01491	PASS
	0°C/3.84 V	0.00692	-0.00917	PASS
	10°C/3.84 V	-0.00444	0.01187	PASS
	20°C/3.84 V	-0.00671	0.009	PASS
	30°C/3.84 V	-0.00181	0.01307	PASS
	40°C/3.84 V	-0.00157	0.0139	PASS
	50°C/3.84 V	-0.00408	0.0188	PASS
	20°C/3.6 V	-0.00729	0.00813	PASS
	20°C/4.4 V	0.00723	0.01041	PASS
5MHz	-30°C/3.84 V	0.00063	0.00086	PASS
	-20°C/3.84 V	0.00143	0.00100	PASS
	-10°C/3.84 V	0.00322	0.01091	PASS
	0°C/3.84 V	0.00310	0.01546	PASS
	10°C/3.84 V	0.00525	0.01378	PASS
	20°C/3.84 V	0.00525	-0.00618	PASS
	30°C/3.84 V	0.00238	-0.00403	PASS
	40°C/3.84 V	0.00644	-0.00678	PASS
	50°C/3.84 V	0.00728	-0.01096	PASS
	20°C/3.5 V	0.00921	-0.01327	PASS
	20°C/4.2 V	-0.01010	0.01209	PASS
10MHz	-30°C/3.84 V	0.00036	0.00103	PASS
	-20°C/3.84 V	0.00047	0.00051	PASS
	-10°C/3.84 V	0.00298	0.00542	PASS
	0°C/3.84 V	-0.01268	0.01211	PASS
	10°C/3.84 V	-0.00754	0.01629	PASS
	20°C/3.84 V	-0.00085	0.00494	PASS
	30°C/3.84 V	-0.0024	0.00279	PASS
	40°C/3.84 V	-0.00324	0.00721	PASS



	50°C/3.84 V	0.00011	0.00781	PASS
	20°C/3.6 V	-0.00341	0.00312	PASS
	20°C/4.4 V	-0.00616	0.00802	PASS

5.7. Spurious Emissions at Antenna Terminals

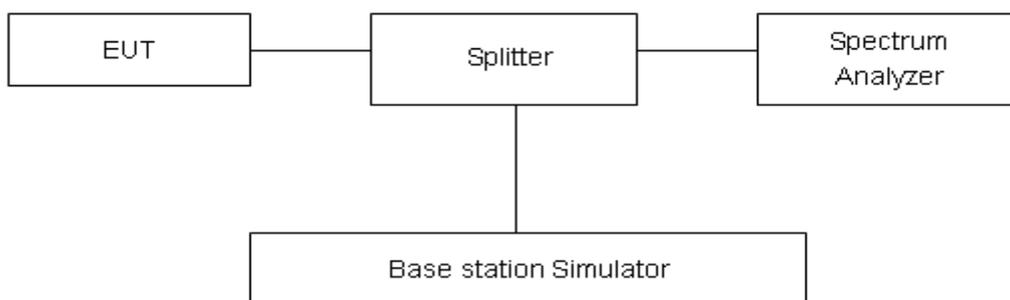
Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. For GSM 850, RBW and VBW are set to 100 kHz, Sweep is set to ATUO. For WCDMA Band V, RBW and VBW are set to 100 kHz for the carrier frequency, or RBW and VBW are set to 1MHz(other frequency), Sweep is set to ATUO.

Test setup



Limits

Rule Part 22.917(a) specifies that “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.”

Limit	-13 dBm
-------	---------

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-12.75GHz	1.407 dB



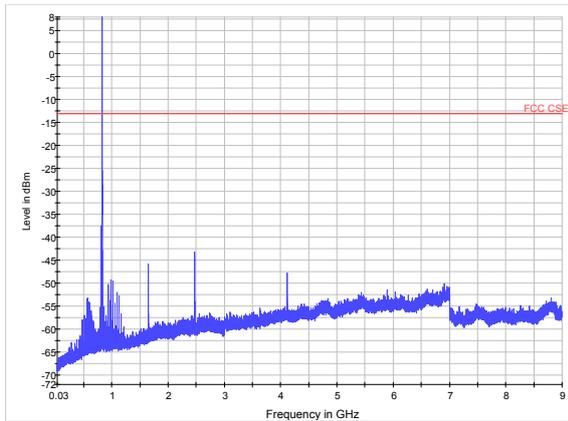
Test Result

If disturbances were found more than 20dB below limit line, the mark is not required for the EUT.
The signal beyond the limit is carrier.

Mode	Frequency	Peak (dBm)	Limit (dBm)	Margin (dB)
LTE5 1.4M RB1_CH LOW	1648.0	-31.17	-13	18.17
LTE5 1.4M RB1_CH MID	1671.9	-31.30	-13	18.30
LTE5 3M RB1_CH LOW	1650.0	-31.49	-13	18.49
LTE5 3M RB1_CH MID	1671.9	-30.09	-13	17.09
LTE5 5M RB1_CH LOW	1651.9	-32.70	-13	19.70
LTE5 5M RB1_CH MID	1672.1	-29.68	-13	16.68
LTE5 5M RB1_CH HIG	1692.2	-32.53	-13	19.53
LTE5 10M RB1_CH LOW	1657.1	-32.33	-13	19.33
LTE5 10M RB1_CH MID	1672.1	-29.85	-13	16.85
LTE5 10M RB1_CH HIG	1686.9	-31.22	-13	18.22

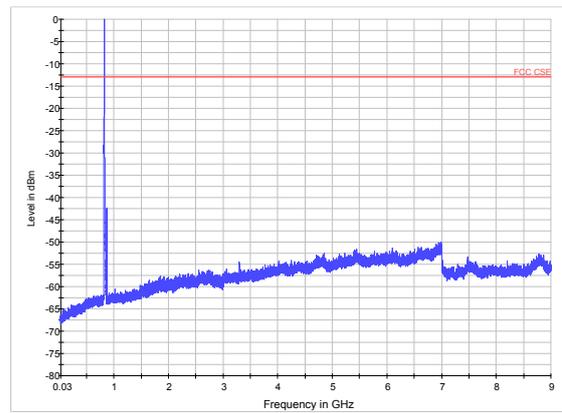


GSM 850 CH128 30MHz~9GHz



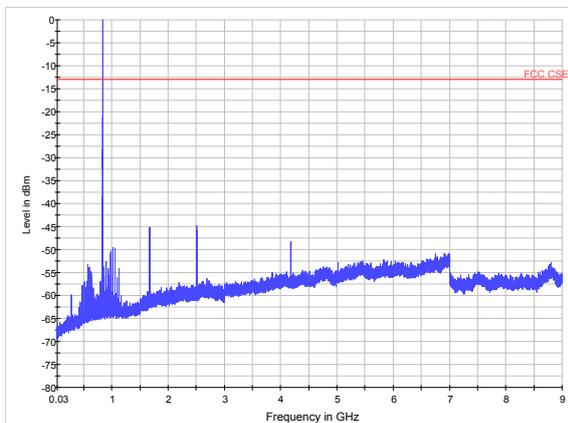
MaxPeak-MaxHold-PK+ FCC CSE

WCDMA Band V CH4132 30MHz~9GHz



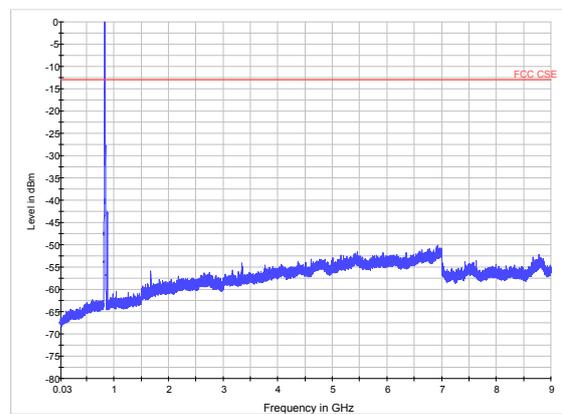
MaxPeak-MaxHold-PK+ FCC CSE

GSM 850 CH190 30MHz~9GHz



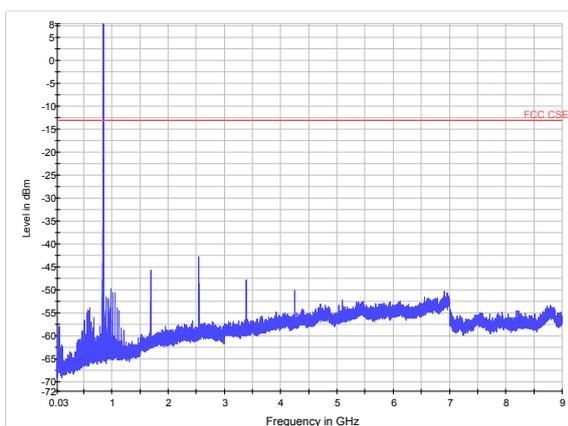
MaxPeak-MaxHold-PK+ FCC CSE

WCDMA Band V CH4183 30MHz~9GHz



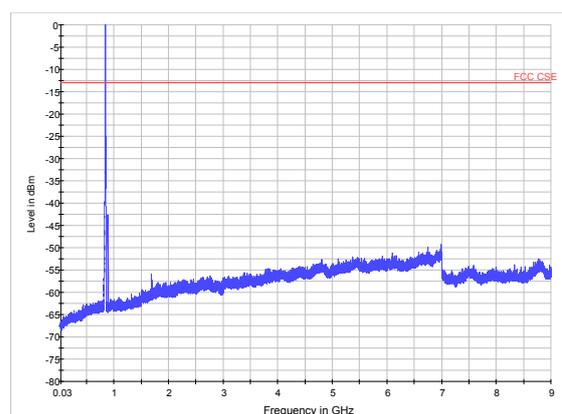
MaxPeak-MaxHold-PK+ FCC CSE

GSM 850 CH251 30MHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

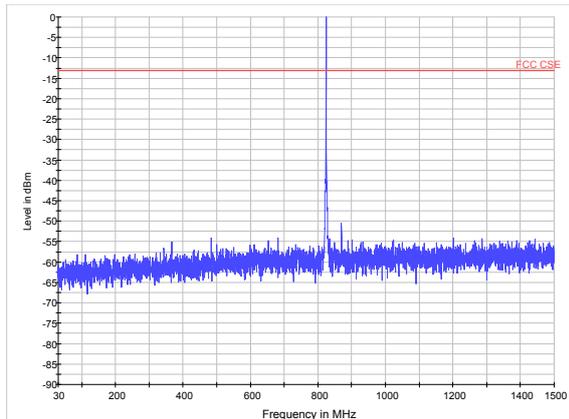
WCDMA Band V CH4233 30MHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

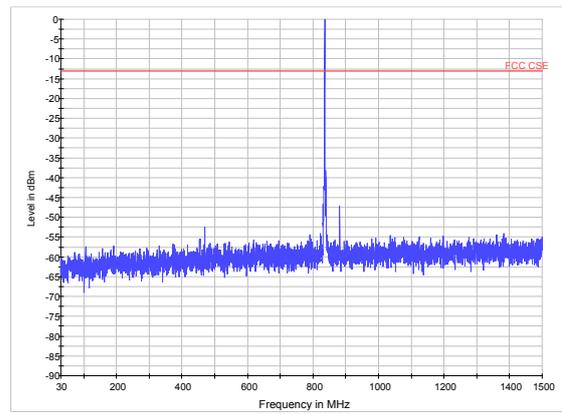


LTE Band 5 1.4MHz CH20407 30MHz~1.5GHz



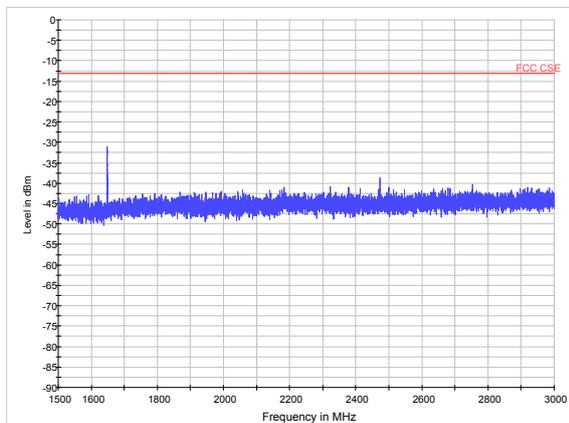
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 1.4MHz CH20525 30MHz~1.5GHz



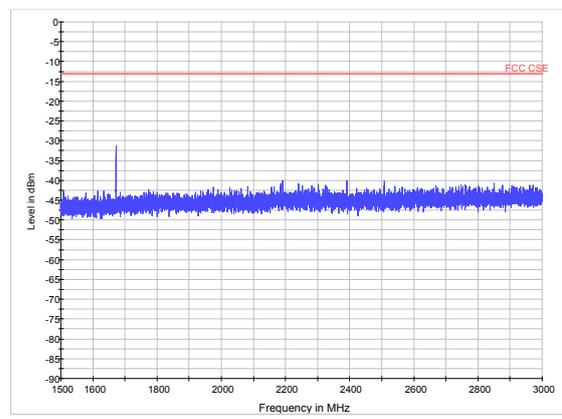
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 1.4MHz CH20407 1.5GHz~3GHz



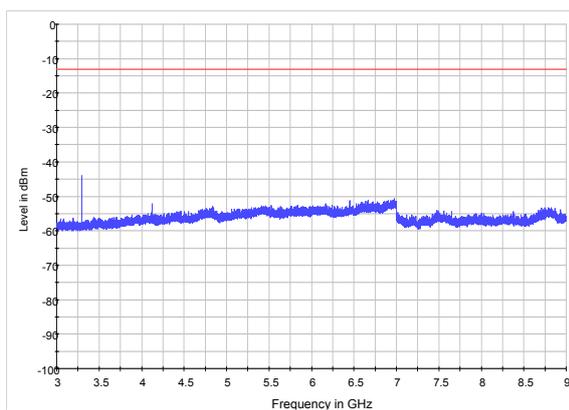
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 1.4MHz CH20525 1.5GHz~3GHz



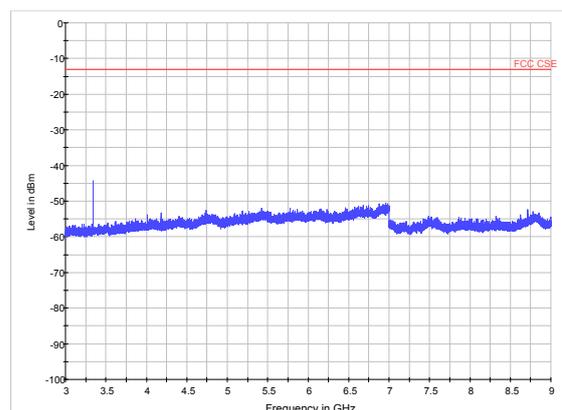
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 1.4MHz CH20407 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

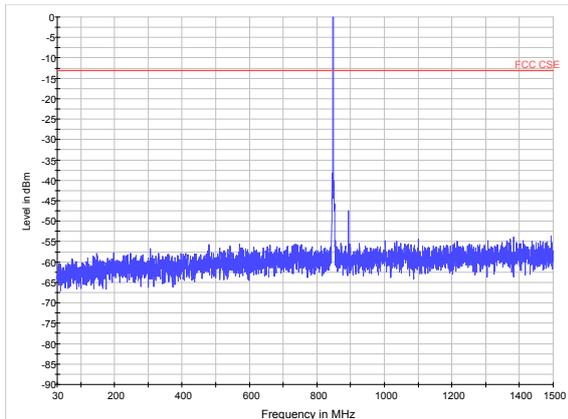
LTE Band 5 1.4MHz CH20525 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

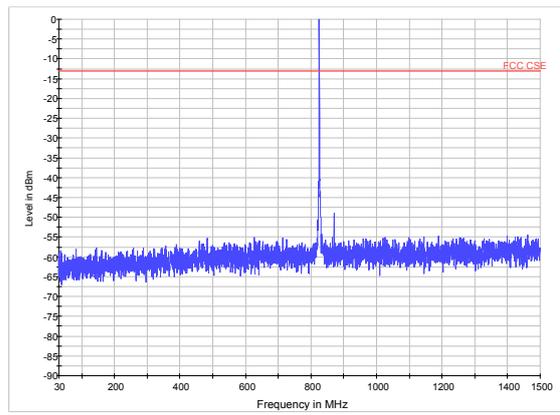


LTE Band 5 1.4MHz CH20643 30MHz~1.5GHz



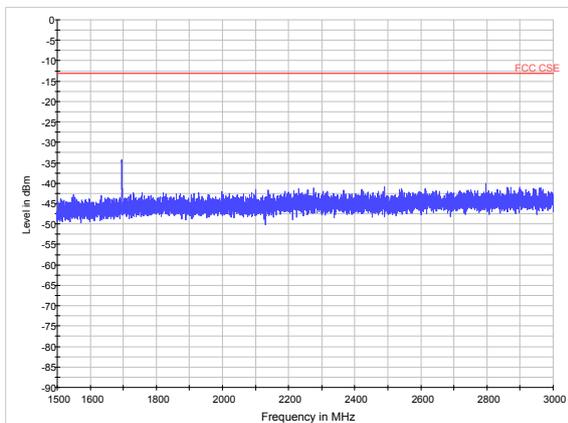
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 3MHz CH20415 30MHz~1.5GHz



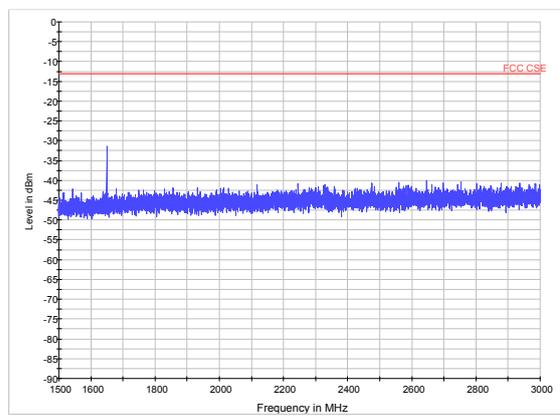
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 1.4MHz CH20643 1.5GHz~3GHz



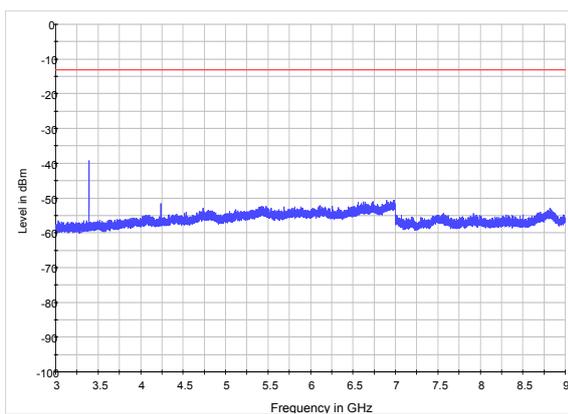
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 3MHz CH20415 1.5GHz~3GHz



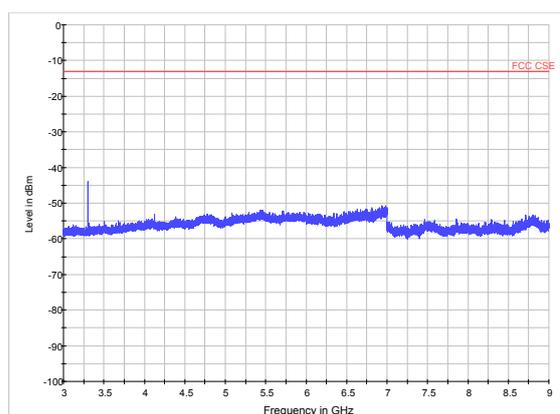
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 1.4MHz CH20643 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

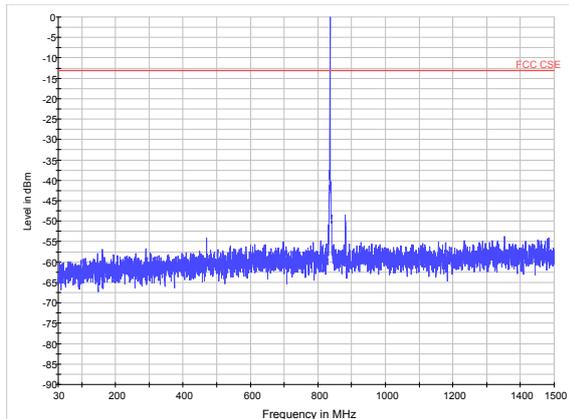
LTE Band 5 3MHz CH20415 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

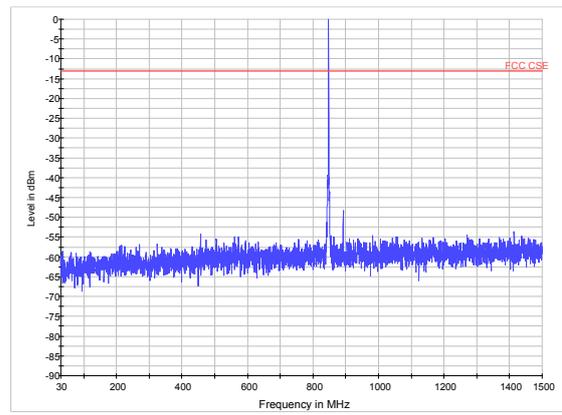


LTE Band 5 3MHz CH20525 30MHz~1.5GHz



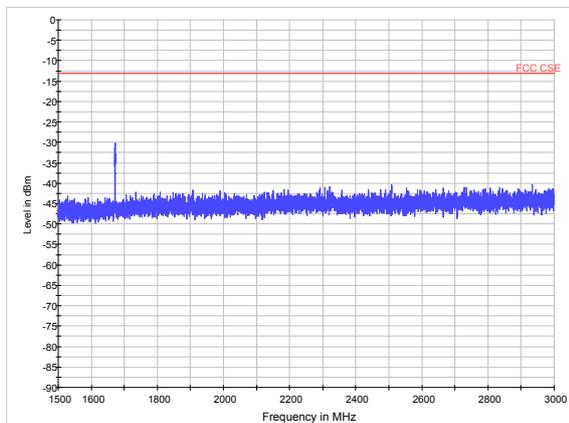
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 3MHz CH20635 30MHz~1.5GHz



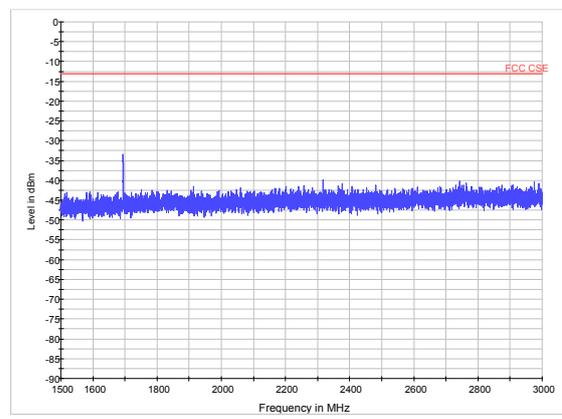
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 3MHz CH20525 1.5GHz~3GHz



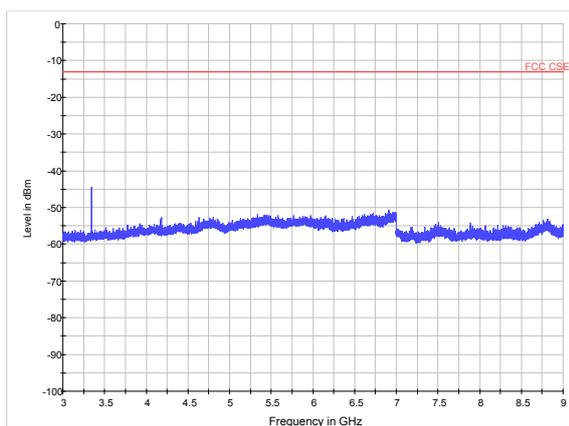
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 3MHz CH20635 1.5GHz~3GHz



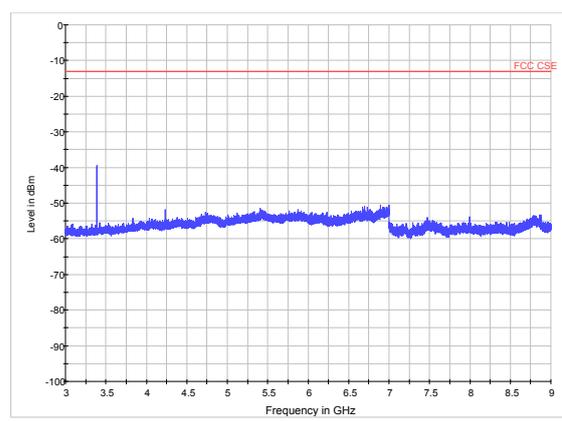
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 3MHz CH20525 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

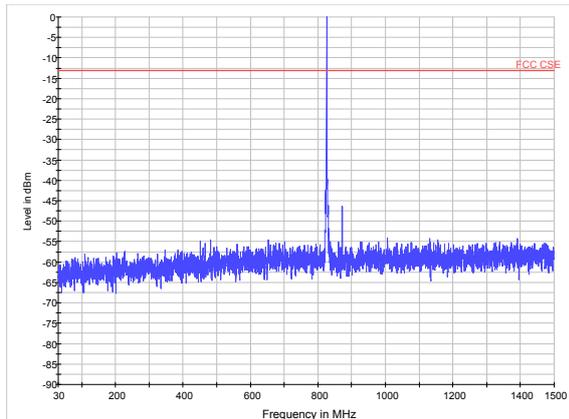
LTE Band 5 3MHz CH20635 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

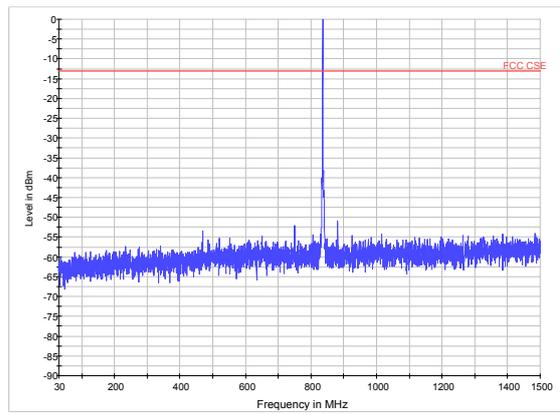


LTE Band 5 5MHz CH20425 30MHz~1.5GHz



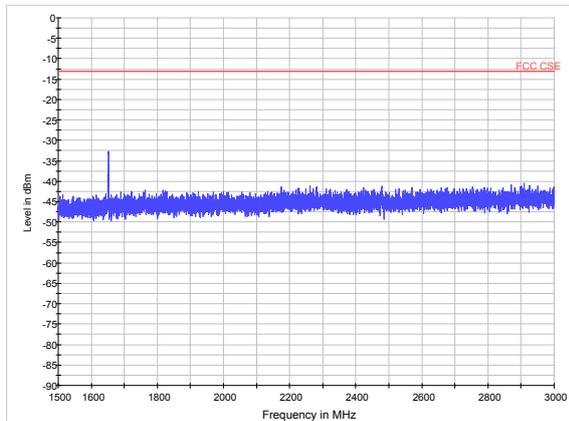
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 5MHz CH20525 30MHz~1.5GHz



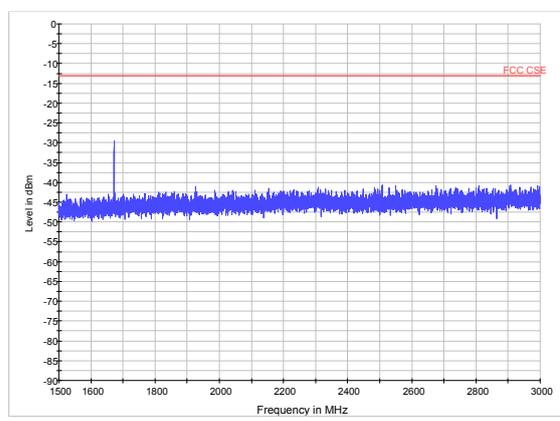
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 5MHz CH20425 1.5GHz~3GHz



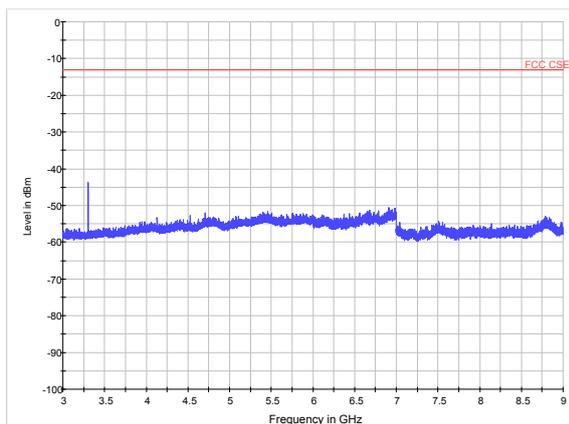
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 5MHz CH20525 1.5GHz~3GHz



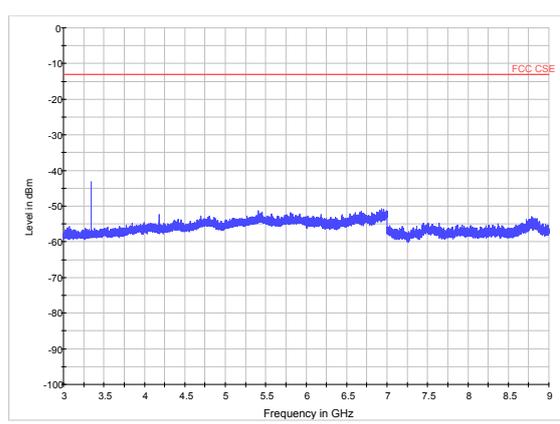
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 5MHz CH20425 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

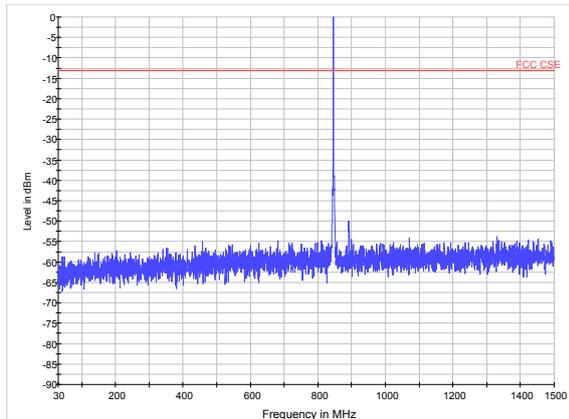
LTE Band 5 5MHz CH20525 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

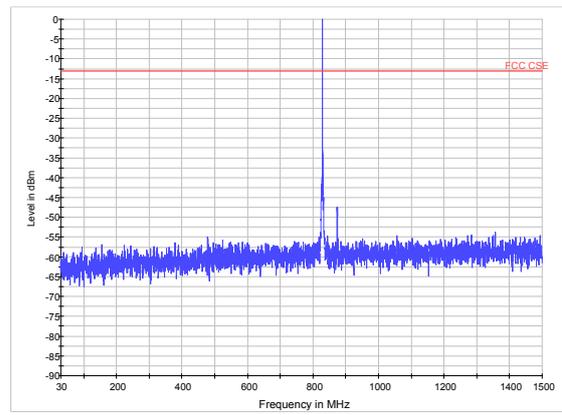


LTE Band 5 5MHz CH20625 30MHz~1.5GHz



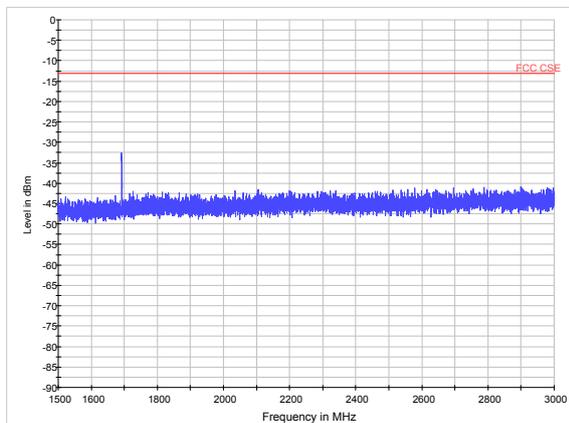
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 10MHz CH20450 30MHz~1.5GHz



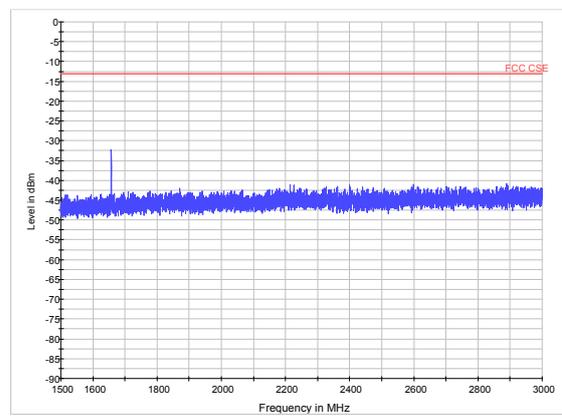
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 5MHz CH20625 1.5GHz~3GHz



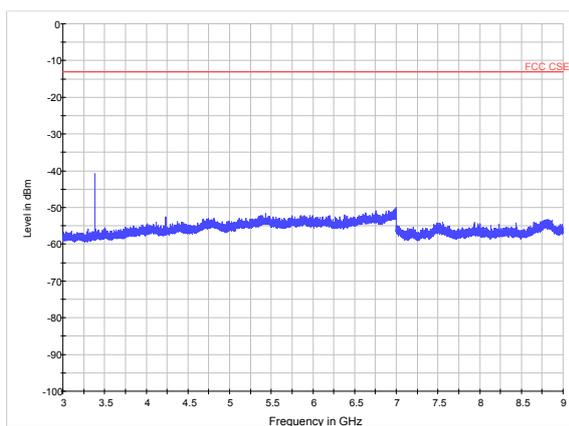
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 10MHz CH20450 1.5GHz~3GHz



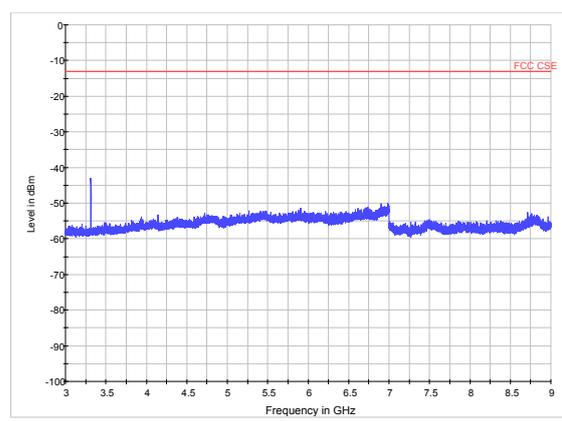
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 5MHz CH20625 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

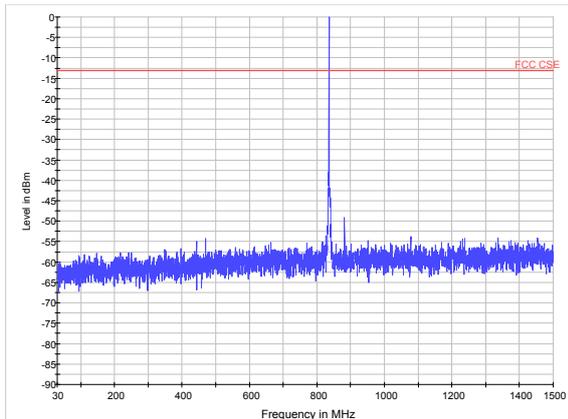
LTE Band 5 10MHz CH20450 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

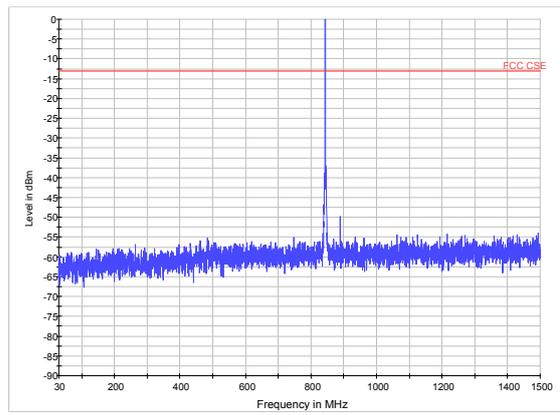


LTE Band 5 10MHz CH20525 30MHz~1.5GHz



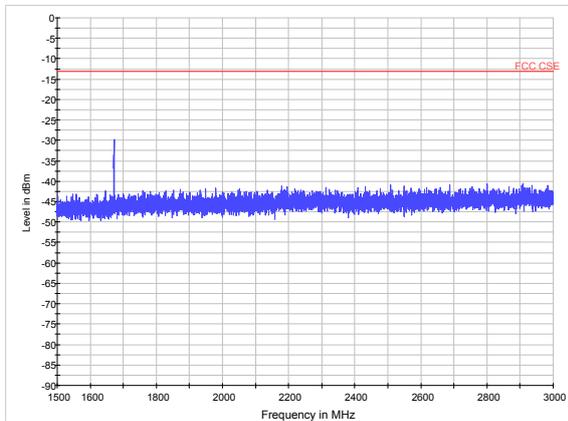
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 10MHz CH20600 30MHz~1.5GHz



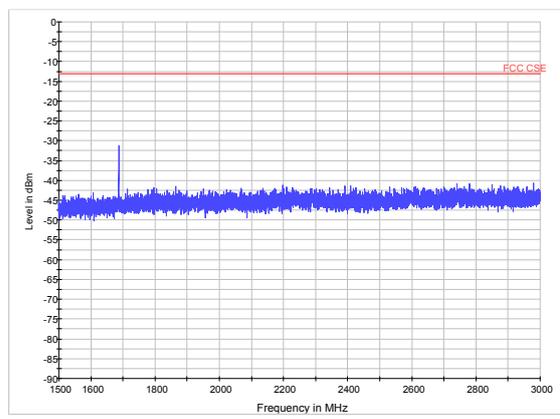
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 10MHz CH20525 1.5GHz~3GHz



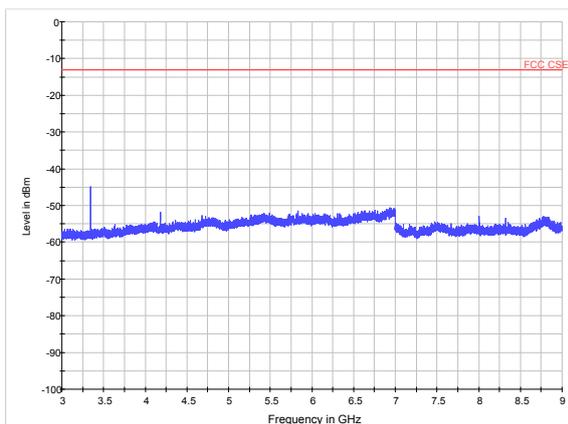
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 10MHz CH20600 1.5GHz~3GHz



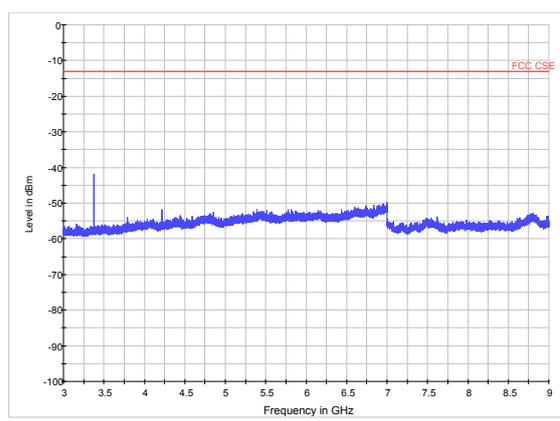
MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 10MHz CH20525 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

LTE Band 5 10MHz CH20600 3GHz~9GHz



MaxPeak-MaxHold-PK+ FCC CSE

5.8. Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

The measurements procedures in TIA -603-D are used.

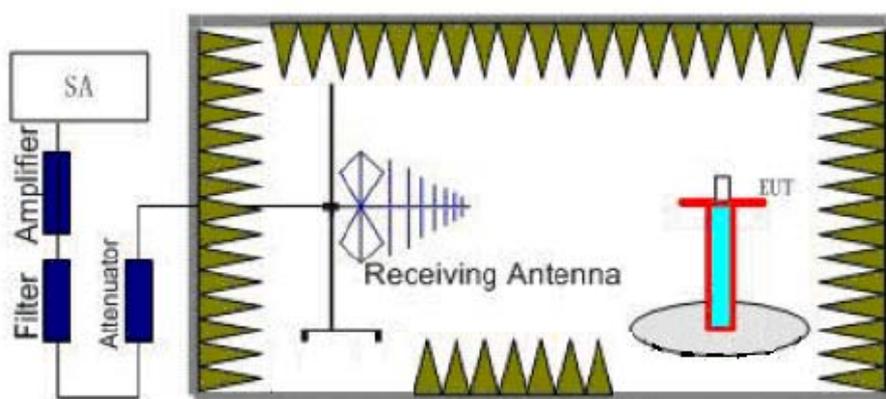
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

The emissions less than 20 dB below the permissible value are reported.

The procedure of Radiates Spurious Emission is as follows:

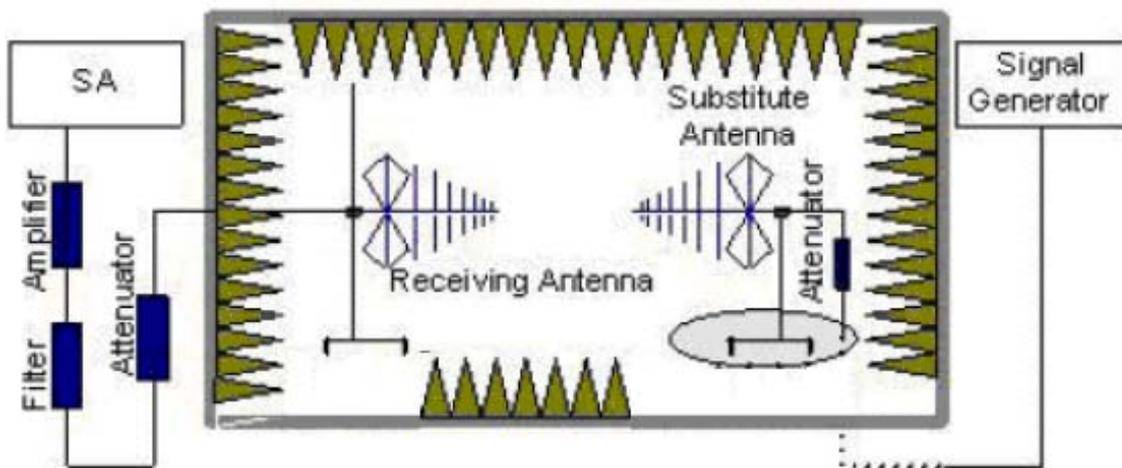
Step 1:

The measurement is carried out in the semi-anechoic chamber. EUT was placed on a 1.5 meters high non-conductive table at a 3 meters test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. A peak detector is used while RBW and VBW are both set to 3MHz. During the measurement, the highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna moved up and down over a range from 1 to 4 meters in both horizontally and vertically polarized orientations. The test setup refers to figure below.



Step 2:

A dipole antenna shall be substituted in place of the EUT. The antenna will be driven by a signal generator with a adjustable S.G. applied through a Tx cable. Adjust the level of the signal generator output until the value of the receiver reach the previously recorded analyzer power level (LVL). Then The E.R.P. /E.I.R.P. of the EUT can be calculated through the level of the signal generator, Tx cable loss and the gain of the substitution antenna. The test setup refers to figure below.



$E.R.P \text{ (peak power)} = S.G. - Tx \text{ Cable loss} + \text{Substitution antenna gain} - 2.15.$
 $EIRP = E.R.P + 2.15$

Limits

Rule Part 22.917(a) specifies that “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.”

Limit	-13 dBm
-------	---------

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 3.55$ dB.

Test Result

Receiver antenna polarization (horizontal and vertical), the worst emission was found in vertical polarization, and the worst case in vertical polarization was recorded.

GSM 850 CH128

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1648.5	-50.45	2	10.15	Vertical	-42.30	-13.00	29.30	90
3	2472.6	-51.34	2.51	11.35	Vertical	-42.50	-13.00	29.50	180
4	3297	-63.6	4.2	10.85	Vertical	-56.95	-13.00	43.95	0
5	4121	-59.38	5.2	11.35	Vertical	-53.23	-13.00	40.23	45
6	4945	-60.46	5.5	11.95	Vertical	-54.51	-13.00	41.51	180
7	5769	-61.34	5.7	13.55	Vertical	-53.49	-13.00	40.49	90
8	6594	-59.39	6.3	13.75	Vertical	-51.94	-13.00	38.94	225
9	7418	-59.32	6.8	13.85	Vertical	-52.27	-13.00	39.27	270
10	8813	-56.05	6.9	14.25	Vertical	-48.70	-13.00	35.70	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

GSM 850 CH190

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1672.9	-53.99	2	10.75	Vertical	-45.24	-13.00	32.24	90
3	2509.7	-50.94	2.51	11.05	Vertical	-42.40	-13.00	29.40	180
4	3346	-63.07	4.2	11.15	Vertical	-56.12	-13.00	43.12	135
5	4183	-60.26	5.2	11.15	Vertical	-54.31	-13.00	41.31	0
6	5020	-59.56	5.5	11.95	Vertical	-53.11	-13.00	40.11	45
7	5856	-61.66	5.7	13.55	Vertical	-53.81	-13.00	40.81	90
8	6693	-59.50	6.3	13.75	Vertical	-52.05	-13.00	39.05	180
9	7529	-60.82	6.8	13.85	Vertical	-53.77	-13.00	40.77	90
10	8366	-60.08	6.9	14.25	Vertical	-52.73	-13.00	39.73	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.



GSM 850 CH251

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1698	-55.08	2	10.15	Vertical	-46.93	-13.00	33.93	90
3	2546	-49.14	2.51	11.05	Vertical	-40.60	-13.00	27.60	180
4	3395	-62.81	4.2	11.15	Vertical	-55.86	-13.00	42.86	270
5	4244	-61.27	5.2	11.15	Vertical	-55.32	-13.00	42.32	0
6	5093	-60.76	5.5	11.95	Vertical	-54.31	-13.00	41.31	180
7	5942	-60.86	5.7	13.55	Vertical	-53.01	-13.00	40.01	90
8	6790	-60.86	6.3	13.75	Vertical	-53.41	-13.00	40.41	225
9	7639	-61.48	6.8	13.85	Vertical	-54.43	-13.00	41.43	270
10	8488	-61.09	6.9	14.25	Vertical	-53.74	-13.00	40.74	135

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

WCDMA Band V CH4357

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1653	-60.99	2	10.15	Vertical	-52.84	-13.00	39.84	180
3	2479	-56.09	2.51	11.35	Vertical	-47.25	-13.00	34.25	90
4	3306	-61.77	4.2	10.85	Vertical	-55.12	-13.00	42.12	0
5	4132	-61.15	5.2	11.35	Vertical	-55.00	-13.00	42.00	270
6	4958	-61.3	5.5	11.95	Vertical	-54.85	-13.00	41.85	315
7	5785	-61.23	5.7	13.55	Vertical	-53.38	-13.00	40.38	180
8	6611	-59.38	6.3	13.75	Vertical	-51.93	-13.00	38.93	270
9	7438	-59.52	6.8	13.85	Vertical	-52.47	-13.00	39.47	135
10	8264	-58.78	6.9	14.25	Vertical	-51.43	-13.00	38.43	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.



WCDMA Band V CH4408

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1673	-62.07	2	10.75	Vertical	-53.32	-13.00	40.32	225
3	2510	-58.9	2.51	11.05	Vertical	-50.36	-13.00	37.36	270
4	3346	-63.38	4.2	11.15	Vertical	-56.43	-13.00	43.43	0
5	4183	-59.09	5.2	11.15	Vertical	-53.14	-13.00	40.14	270
6	5020	-61.55	5.5	11.95	Vertical	-55.10	-13.00	42.10	315
7	5856	-61.01	5.7	13.55	Vertical	-53.16	-13.00	40.16	225
8	6693	-59.19	6.3	13.75	Vertical	-51.74	-13.00	38.74	135
9	8366	-61.06	6.8	13.85	Vertical	-54.01	-13.00	41.01	270
10	3346	-63.78	6.9	14.25	Vertical	-56.43	-13.00	43.43	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

WCDMA Band V CH4458

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1693	-60.63	2	10.15	Vertical	-52.25	-13.00	39.25	135
3	2540	-56.6	2.51	11.05	Vertical	-49.71	-13.00	36.71	45
4	3386	-64.16	4.2	11.15	Vertical	-53.40	-13.00	40.40	0
5	4233	-61.50	5.2	11.15	Vertical	-55.16	-13.00	42.16	135
6	5080	-62.89	5.5	11.95	Vertical	-53.67	-13.00	40.67	0
7	5926	-63.04	5.7	13.55	Vertical	-53.51	-13.00	40.51	45
8	6773	-60.84	6.3	13.75	Vertical	-52.97	-13.00	39.97	180
9	7619	-60.52	6.8	13.85	Vertical	-51.12	-13.00	38.12	90
10	8466	-62.22	6.9	14.25	Vertical	-53.05	-13.00	40.05	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

LTE Band 5 1.4MHz CH20407

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1649.4	-68.42	2.00	10.75	vertical	-59.67	-13.00	46.67	225
3	2474.1	-62.24	2.51	11.05	vertical	-53.70	-13.00	40.70	180
4	3298.8	-66.06	4.20	11.15	vertical	-59.11	-13.00	46.11	0
5	4123.5	-63.15	5.20	11.15	vertical	-57.20	-13.00	44.20	90
6	4948.2	-63.09	5.50	11.95	vertical	-56.64	-13.00	43.64	45
7	5772.9	-62.54	5.70	13.55	vertical	-54.69	-13.00	41.69	0
8	6597.6	-60.65	6.30	13.75	vertical	-53.20	-13.00	40.20	135
9	7422.3	-61.43	6.80	13.85	vertical	-54.38	-13.00	41.38	90
10	8247.0	-60.89	6.90	14.25	vertical	-53.54	-13.00	40.54	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

LTE Band 5 1.4MHz CH20525

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1673.0	-67.59	2.00	10.75	vertical	-58.84	-13.00	45.84	225
3	2509.5	-62.81	2.51	11.05	vertical	-54.27	-13.00	41.27	180
4	3346.0	-65.78	4.20	11.15	vertical	-58.83	-13.00	45.83	180
5	4182.5	-63.24	5.20	11.15	vertical	-57.29	-13.00	44.29	270
6	5019.0	-62.6	5.50	11.95	vertical	-56.15	-13.00	43.15	45
7	5855.5	-62.99	5.70	13.55	vertical	-55.14	-13.00	42.14	225
8	6692.0	-60.04	6.30	13.75	vertical	-52.59	-13.00	39.59	90
9	7528.5	-62.12	6.80	13.85	vertical	-55.07	-13.00	42.07	135
10	8365.0	-60.91	6.90	14.25	vertical	-53.56	-13.00	40.56	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

LTE Band 5 1.4MHz CH20643

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1696.6	-66.83	2.00	10.75	vertical	-58.08	-13.00	45.08	180
3	2544.9	-63.09	2.51	11.05	vertical	-54.55	-13.00	41.55	90
4	3393.2	-65.23	4.20	11.15	vertical	-58.28	-13.00	45.28	180
5	4241.5	-63.92	5.20	11.15	vertical	-57.97	-13.00	44.97	135
6	5089.8	-63.54	5.50	11.95	vertical	-57.09	-13.00	44.09	225
7	5938.1	-62.14	5.70	13.55	vertical	-54.29	-13.00	41.29	180
8	6786.4	-59.11	6.30	13.75	vertical	-51.66	-13.00	38.66	135
9	7634.7	-62.75	6.80	13.85	vertical	-55.70	-13.00	42.70	315
10	8483.0	-61.46	6.90	14.25	vertical	-54.11	-13.00	41.11	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

LTE Band 5 3MHz CH20415

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1648.3	-52.15	2.00	10.75	vertical	-43.40	-13	30.40	45
3	2476.5	-63.12	2.51	11.05	vertical	-54.58	-13.00	41.58	135
4	3302.0	-65.4	4.20	11.15	vertical	-58.45	-13.00	45.45	135
5	4127.5	-63.15	5.20	11.15	vertical	-57.20	-13.00	44.20	135
6	4953.0	-62.75	5.50	11.95	vertical	-56.30	-13.00	43.30	180
7	5778.5	-62.83	5.70	13.55	vertical	-54.98	-13.00	41.98	270
8	6604.0	-59.27	6.30	13.75	vertical	-51.82	-13.00	38.82	270
9	7429.5	-63.32	6.80	13.85	vertical	-56.27	-13.00	43.27	90
10	8255.0	-60.51	6.90	14.25	vertical	-53.16	-13.00	40.16	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.



LTE Band 5 3MHz CH20525

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1670.3	-52.54	2.00	10.75	vertical	-43.79	-13	30.79	45
3	2509.5	-62.62	2.51	11.05	vertical	-54.08	-13.00	41.08	45
4	3346.0	-64.86	4.20	11.15	vertical	-57.91	-13.00	44.91	180
5	4182.5	-63.85	5.20	11.15	vertical	-57.90	-13.00	44.90	270
6	5019.0	-62.77	5.50	11.95	vertical	-56.32	-13.00	43.32	270
7	5855.5	-63.53	5.70	13.55	vertical	-55.68	-13.00	42.68	90
8	6692.0	-60.1	6.30	13.75	vertical	-52.65	-13.00	39.65	90
9	7528.5	-62.37	6.80	13.85	vertical	-55.32	-13.00	42.32	135
10	8365.0	-59.54	6.90	14.25	vertical	-52.19	-13.00	39.19	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

LTE Band 5 3MHz CH20635

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1692.5	-55.25	2.00	10.75	vertical	-46.50	-13	33.50	45
3	2542.5	-63.20	2.51	11.05	vertical	-54.66	-13.00	41.66	225
4	3390.0	-65.47	4.20	11.15	vertical	-58.52	-13.00	45.52	180
5	4237.5	-64.15	5.20	11.15	vertical	-58.20	-13.00	45.20	90
6	5085.0	-62.55	5.50	11.95	vertical	-56.10	-13.00	43.10	90
7	5932.5	-64.08	5.70	13.55	vertical	-56.23	-13.00	43.23	90
8	6780.0	-59.45	6.30	13.75	vertical	-52.00	-13.00	39.00	180
9	7627.5	-62.69	6.80	13.85	vertical	-55.64	-13.00	42.64	90
10	8475.0	-59.26	6.90	14.25	vertical	-51.91	-13.00	38.91	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

LTE Band 5 5MHz CH20425

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1649.6	-57.35	2.00	10.75	vertical	-48.60	-13	35.60	90
3	2479.5	-62.3	2.51	11.05	vertical	-53.76	-13.00	40.76	225
4	3306.0	-65.88	4.20	11.15	vertical	-58.93	-13.00	45.93	135
5	4132.5	-64.61	5.20	11.15	vertical	-58.66	-13.00	45.66	135
6	4959.0	-62.49	5.50	11.95	vertical	-56.04	-13.00	43.04	270
7	5785.5	-63.92	5.70	13.55	vertical	-56.07	-13.00	43.07	270
8	6612.0	-58.81	6.30	13.75	vertical	-51.36	-13.00	38.36	45
9	7438.5	-63.45	6.80	13.85	vertical	-56.40	-13.00	43.40	225
10	8265.0	-60.02	6.90	14.25	vertical	-52.67	-13.00	39.67	135

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
 2.The worst emission was found in the antenna is vertical position.

LTE Band 5 5MHz CH20525

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1668.6	-57.18	2.00	10.75	vertical	-48.43	-13.00	35.43	90
3	2509.5	-61.9	2.51	11.05	vertical	-53.36	-13.00	40.36	135
4	3346.0	-64.91	4.20	11.15	vertical	-57.96	-13.00	44.96	180
5	4182.5	-64.57	5.20	11.15	vertical	-58.62	-13.00	45.62	90
6	5019.0	-62.95	5.50	11.95	vertical	-56.50	-13.00	43.50	270
7	5855.5	-64.89	5.70	13.55	vertical	-57.04	-13.00	44.04	135
8	6692.0	-59.74	6.30	13.75	vertical	-52.29	-13.00	39.29	90
9	7528.5	-62.48	6.80	13.85	vertical	-55.43	-13.00	42.43	315
10	8365.0	-60.7	6.90	14.25	vertical	-53.35	-13.00	40.35	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
 2.The worst emission was found in the antenna is vertical position.



LTE Band 5 5MHz CH20625

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1693.0	-68.24	2.00	10.75	vertical	-59.49	-13.00	46.49	225
3	2539.5	-61.96	2.51	11.05	vertical	-53.42	-13.00	40.42	270
4	3386.0	-65.6	4.20	11.15	vertical	-58.65	-13.00	45.65	135
5	4232.5	-64.1	5.20	11.15	vertical	-58.15	-13.00	45.15	315
6	5079.0	-62.02	5.50	11.95	vertical	-55.57	-13.00	42.57	270
7	5925.5	-65.2	5.70	13.55	vertical	-57.35	-13.00	44.35	90
8	6772.0	-59.77	6.30	13.75	vertical	-52.32	-13.00	39.32	90
9	7618.5	-62.2	6.80	13.85	vertical	-55.15	-13.00	42.15	135
10	8465.0	-59.76	6.90	14.25	vertical	-52.41	-13.00	39.41	270

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

LTE Band 5 10MHz CH20450

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1658.0	-54.25	2.00	10.75	vertical	-45.50	-13	32.50	90
3	2487.0	-61.12	2.51	11.05	vertical	-52.58	-13.00	39.58	270
4	3316.0	-66.28	4.20	11.15	vertical	-59.33	-13.00	46.33	225
5	4145.0	-63.8	5.20	11.15	vertical	-57.85	-13.00	44.85	45
6	4974.0	-62.15	5.50	11.95	vertical	-55.70	-13.00	42.70	225
7	5803.0	-64.22	5.70	13.55	vertical	-56.37	-13.00	43.37	90
8	6632.0	-60.75	6.30	13.75	vertical	-53.30	-13.00	40.30	225
9	7461.0	-63.16	6.80	13.85	vertical	-56.11	-13.00	43.11	90
10	8290.0	-59.19	6.90	14.25	vertical	-51.84	-13.00	38.84	135

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

LTE Band 5 10MHz CH20525

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1673.0	-50.95	2.00	10.75	vertical	-42.20	-13	29.20	45
3	2509.5	-61.52	2.51	11.05	vertical	-52.98	-13.00	39.98	225
4	3346.0	-65.71	4.20	11.15	vertical	-58.76	-13.00	45.76	180
5	4182.5	-63.63	5.20	11.15	vertical	-57.68	-13.00	44.68	180
6	5019.0	-61.66	5.50	11.95	vertical	-55.21	-13.00	42.21	135
7	5855.5	-63.55	5.70	13.55	vertical	-55.70	-13.00	42.70	135
8	6692.0	-61.02	6.30	13.75	vertical	-53.57	-13.00	40.57	90
9	7528.5	-62.37	6.80	13.85	vertical	-55.32	-13.00	42.32	45
10	8365.0	-58.75	6.90	14.25	vertical	-51.40	-13.00	38.40	270

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

LTE Band 5 10MHz CH20600

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1688.0	-69.12	2.00	10.75	vertical	-60.37	-13.00	47.37	180
3	2532.0	-61.78	2.51	11.05	vertical	-53.24	-13.00	40.24	270
4	3376.0	-65.67	4.20	11.15	vertical	-58.72	-13.00	45.72	135
5	4220.0	-63.98	5.20	11.15	vertical	-58.03	-13.00	45.03	315
6	5064.0	-61.19	5.50	11.95	vertical	-54.74	-13.00	41.74	270
7	5908.0	-63.81	5.70	13.55	vertical	-55.96	-13.00	42.96	270
8	6752.0	-60.04	6.30	13.75	vertical	-52.59	-13.00	39.59	270
9	7596.0	-62.10	6.80	13.85	vertical	-55.05	-13.00	42.05	90
10	8440.0	-57.77	6.90	14.25	vertical	-50.42	-13.00	37.42	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

6. Main Test Instruments

Name	Type	Manufacturer	Serial Number	Calibration Date	Expiration Time
Base Station Simulator	CMU200	R&S	118133	2015-05-22	2016-05-21
Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA
Spectrum Analyzer	E4445A	Agilent	MY46181146	2015-05-22	2016-05-21
Spectrum Analyzer	N9010A	Agilent	MY47191109	2015-05-22	2016-05-21
Universal Radio Communication Tester	E5515C	Agilent	MY48367192	2015-12-17	2016-12-16
Signal Analyzer	FSV30	R&S	100815	2015-12-17	2016-12-16
Signal generator	SMB 100A	R&S	102594	2015-05-22	2016-05-21
Signal generator	SMR27	R&S	100365	2015-05-22	2016-05-21
EMI Test Receiver	ESCI	R&S	100948	2015-05-22	2016-05-21
Trilog Antenna	VUBL 9163	SCHWARZBECK	9163-201	2014-12-06	2017-12-05
Trilog Antenna	VUBL 9163	SCHWARZBECK	9163-391	2014-12-06	2017-12-05
Horn Antenna	HF907	R&S	100126	2014-12-06	2017-12-05
Horn Antenna	HF907	R&S	100125	2014-12-06	2017-12-05
Climatic Chamber	PT-30B	Re Ce	20101891	2015-07-18	2018-07-17
RF Cable	SMA 15cm	Agilent	0001	2016-01-09	2016-03-08

*****END OF REPORT *****