中国认可
国际互认
检测
TESTING
CNAS L2264

RF TEST REPORT

Applicant	OBSERVA Telecom
FCC ID	2AI24SQO14
Brand	observatelecom
Product	ODU
Model	SQO14
Report No.	RXA1608-0174RF01R3
Issue Date	October 24, 2016

TA Technology (Shanghai) Co., Ltd.tested the above equipment in accordance with the requirements in**FCC CFR47 Part 2/FCC CFR 47 Part 90Z**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Xianqing Li *Approved by: Kai Xu*

TA Technology (Shanghai) Co., Ltd.

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TABLE OF CONTENT

Summary of measurementresults

No.	Test Type	Clause in FCC rules	Verdict
1	RF Power Output & Effective Isotropic Radiated Power	2.1046/90.1321(a)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edges Compliance	2.1051/ 90.1323	PASS
4	Frequency Stability	2.1055	PASS
5	Spurious Emissions at Antenna Terminals	2.1051 / 90.1323	PASS
6	Field Strength of Spurious Radiation / Radiated SpuriousEmissions	2.1053/ 90.1323	PASS
Date of Testing:August 16, 2016 ~ September 13, 2016 and October 22, 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. TestingLocation

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
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E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

Client Information

Applicant	OBSERVA Telecom
Applicant address	Monte Esquinza, 28 – 1st floor – Right hand
Manufacturer	OBSERVA Telecom
Manufacturer address	Monte Esquinza, 28 – 1st floor – Right hand

General Information

Model	SQO14		
SN	ZMOT350163000049		
Hardware Version	SQO14_v1.0		
Software Version	SQO14-1.2.2-R12-ARGENTINA		
Power Supply	POE (only DC 12V)		
Antenna Type	Internal Antenna		
Antenna Gain	10dBi		
Test Mode(s)	LTE Band 43		
Test Modulation	(LTE)QPSK 16QAM;		
Maximum E.I.R.P.	LTE Band 43: 32.68dBm		
Rated Power Supply Voltage	12V		
Extreme Voltage	Minimum: 9V Maximum: 18V		
Extreme Temperature	Lowest: -40°C Highest: +55°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	LTE Band 43	3600 ~ 3800	3600 ~ 3800
EUT Accessory			
Ethernet cables	Model : UTP CAT5E		
Note: Theinformation 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 thefollowing standards:

FCC CFR47 Part 2 (2015)

FCC CFR 47 Part 90Z (2015)

ANSI/TIA-603-D(2010)

FCC KDB 971168 D01 Power Meas License Digital Systems v02r02

FCC KDB 552295 D01 CBP Guidance for 3650 3700 Band 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.

Test modes are chosen as the worst case configuration below for LTE Band 43

Test items	Bandwidth (MHz)				Modulation		RB			Test Channel		
	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	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	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
Field Strength of Spurious Radiation/ 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&Effective Isotropic Radiated Power

Ambient condition

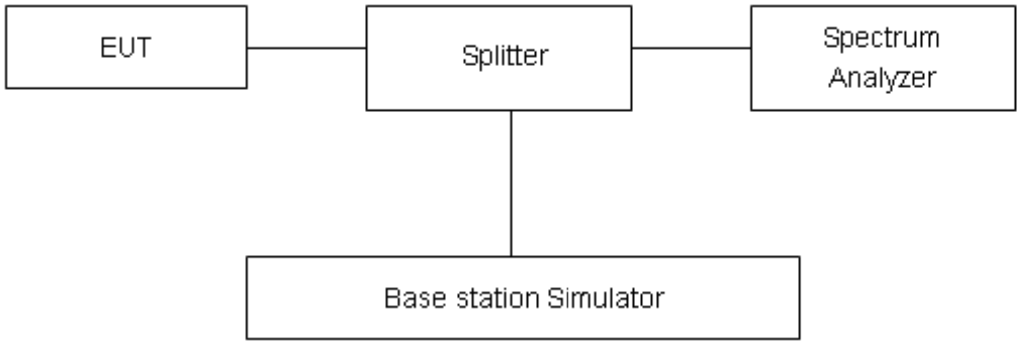
Temperature	Relative humidity
21°C ~25°C	40%~60%

Methods of Measurement

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

Since this procedure utilizes a conducted measurement it does not directly result in EIRP levels for comparison to the output power limits. In order to determine the EIRP level, the effective antenna gain must be added to the corrected (for external test set-up factors) measurement result.

Test Setup



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

Limits

According to FCC §2.1046 & 90.1321(a) Base and fixed stations are limited to 25 watts/25 MHz equivalent isotropically radiated power (EIRP). In any event, the peak EIRP power density shall not exceed 1 Watt in any one megahertz slice of spectrum.

Limit	Limit
Base Station/ Fixed Station	≤ 25 W/25 MHz

Measurement Uncertainty

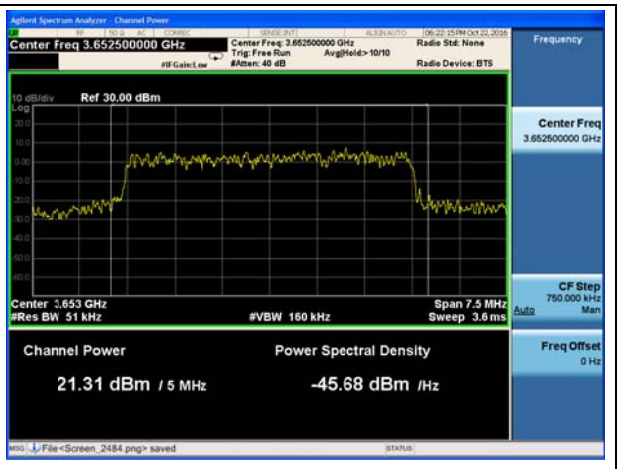
The assessed measurement uncertainty to ensure 95% confidence level for thenormal distribution is with the coverage factor k = 2, U= 0.4 dB.

Test Results

LTE FDD Band 43				Conducted Power(dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				44115/3652.5	44340/3675	44565/3697.5
5MHz	QPSK	25	0	20.28	21.33	19.95
	16QAM	25	0	21.31	20.12	18.70
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				44140/3655	44340/3675	44540/3695
10MHz	QPSK	50	0	22.68	21.24	20.26
	16QAM	50	0	19.87	20.47	18.40
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				44165/3675.5	44340/3675	44515/3692.5
15MHz	QPSK	75	0	21.05	20.85	20.09
	16QAM	75	0	20.88	20.32	19.34
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				44190/3670	44340/3675	44490/3690
20MHz	QPSK	100	0	20.29	19.67	20.55
	16QAM	100	0	21.60	21.01	18.27

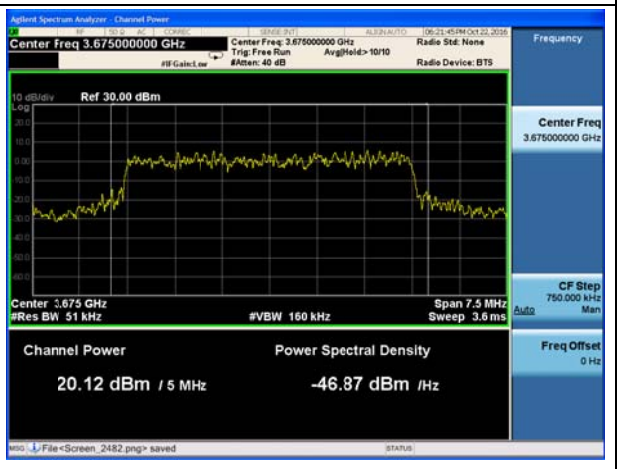
LTE FDD Band 43				EIRP(dBm)			Limit (dBm)
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)			
				44115/3652.5	44340/3675	44565/3697.5	
5MHz	QPSK	25	0	30.28	31.33	29.95	37
	16QAM	25	0	31.31	30.12	28.70	37
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)			Limit (dBm)
				44140/3655	44340/3675	44540/3695	
10MHz	QPSK	50	0	32.68	31.24	30.26	40
	16QAM	50	0	29.87	30.47	28.40	40
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)			Limit (dBm)
				44165/3675.5	44340/3675	44515/3692.5	
15MHz	QPSK	75	0	31.05	30.85	30.09	41.8
	16QAM	75	0	30.88	30.32	29.34	41.8
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)			Limit (dBm)
				44190/3670	44340/3675	44490/3690	
20MHz	QPSK	100	0	30.29	29.67	30.55	43
	16QAM	100	0	31.60	31.01	28.27	43
Note: EIRP=Conducted Power + Antenna Gain							

LTE Band 43 QPSK 5MHz CH44115

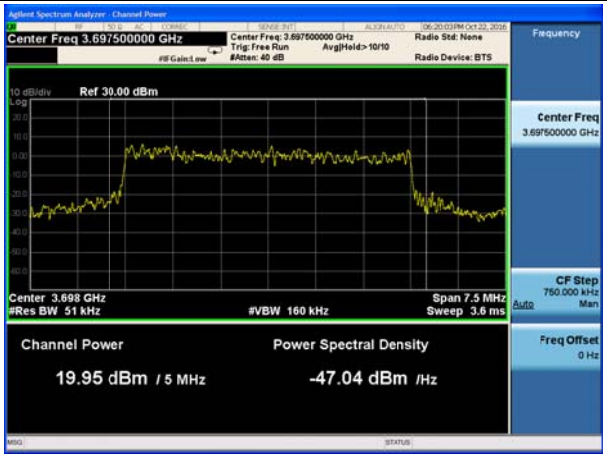


LTE Band 43 16QAM 5MHz CH44115

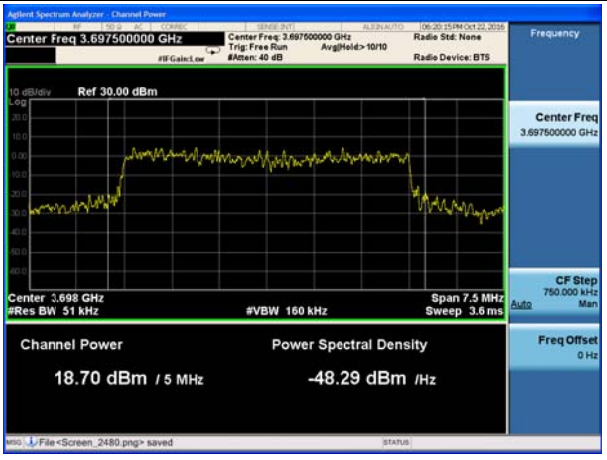
LTE Band 43 QPSK 5MHz CH44340



LTE Band 43 16QAM 5MHz CH44340



LTE Band 43 QPSK 5MHz CH44565



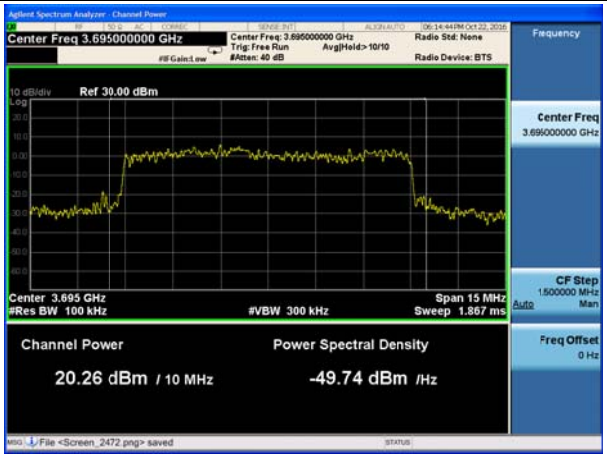
LTE Band 43 16QAM 5MHz CH44565

LTE Band 43 QPSK 10MHz CH44140

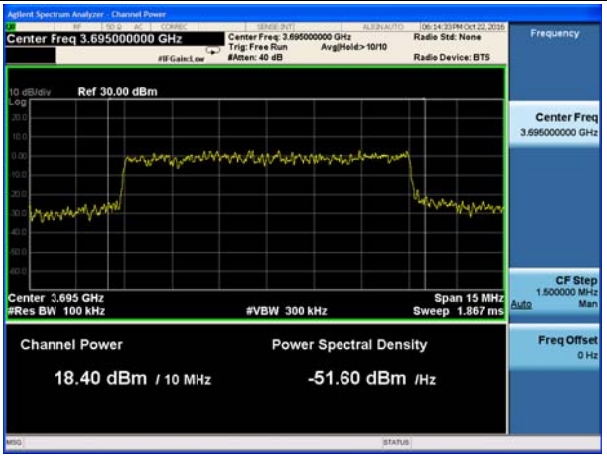
LTE Band 43 16QAM 10MHz CH44140

LTE Band 43 QPSK 10MHz CH44340

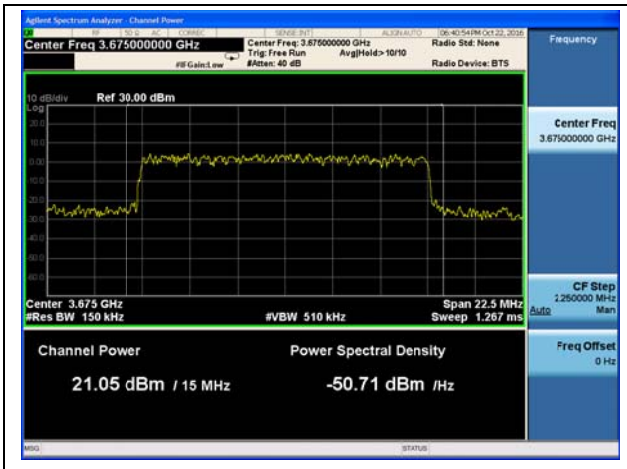
LTE Band 43 16QAM 10MHz CH44340



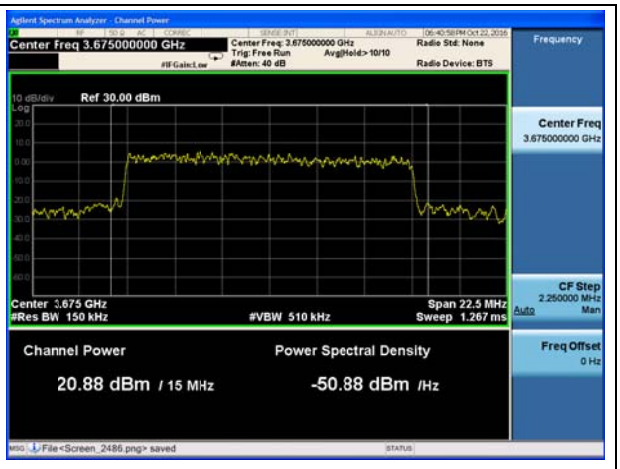
LTE Band 43 QPSK 10MHz CH44540



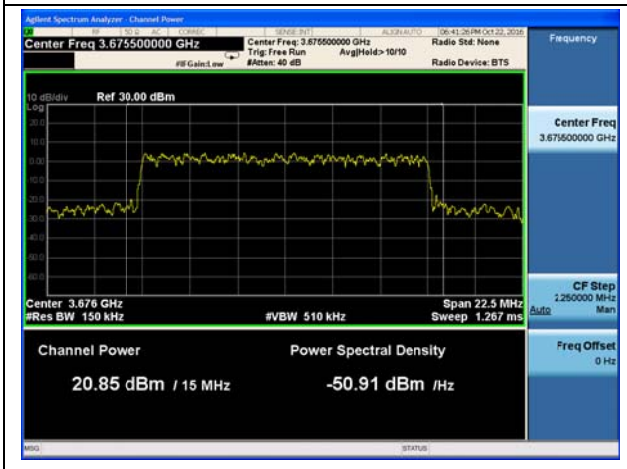
LTE Band 43 16QAM 10MHz CH44540



LTE Band 43 QPSK 15MHz CH44165



LTE Band 43 16QAM 15MHz CH44165



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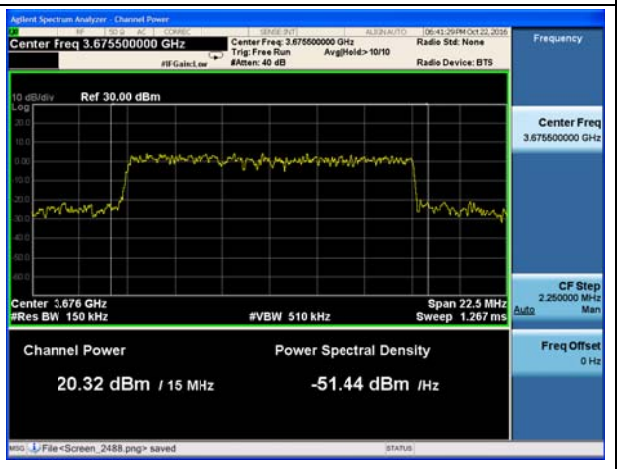
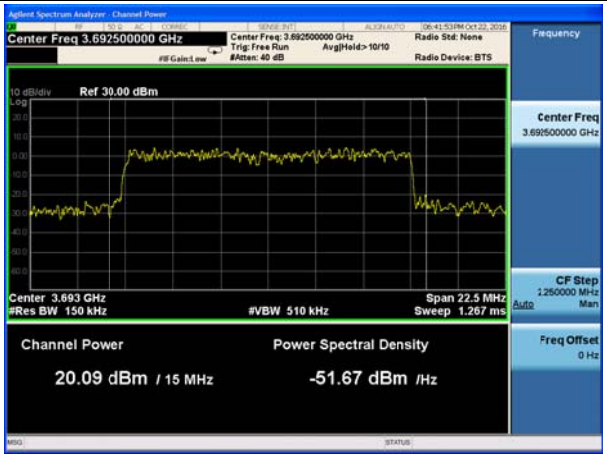
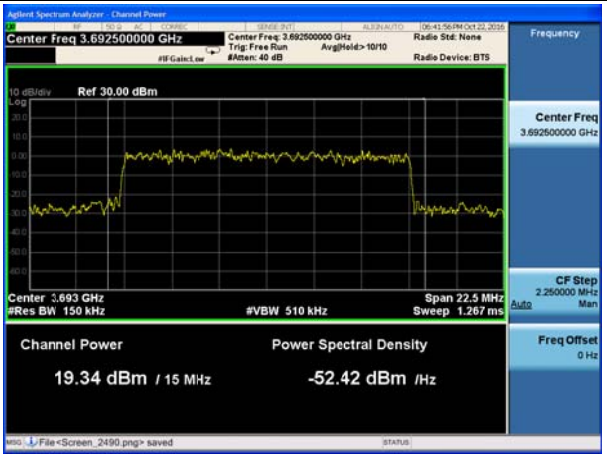


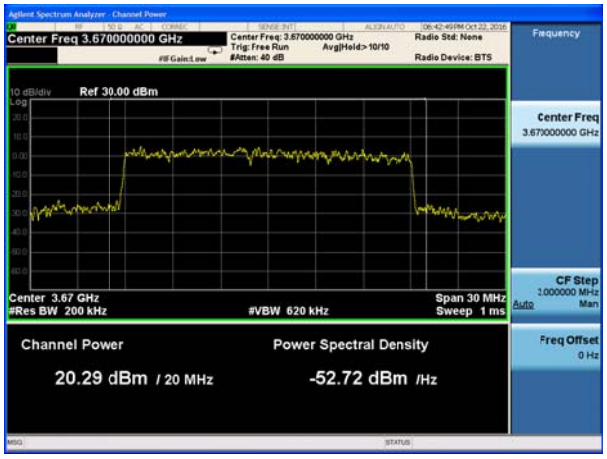
LTE Band 43 16QAM 15MHz CH44340



LTE Band 43 QPSK 15MHz CH44515

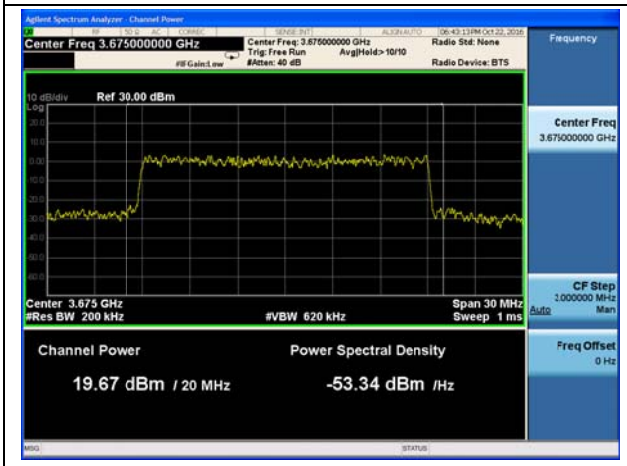


LTE Band 43 16QAM 15MHz CH44515

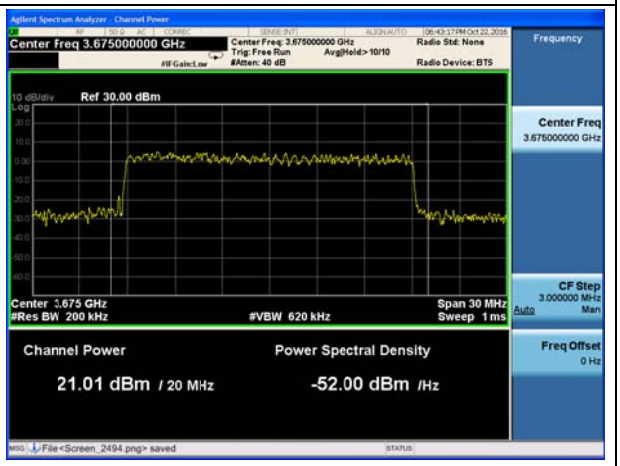


LTE Band 43 QPSK 20MHz CH44190

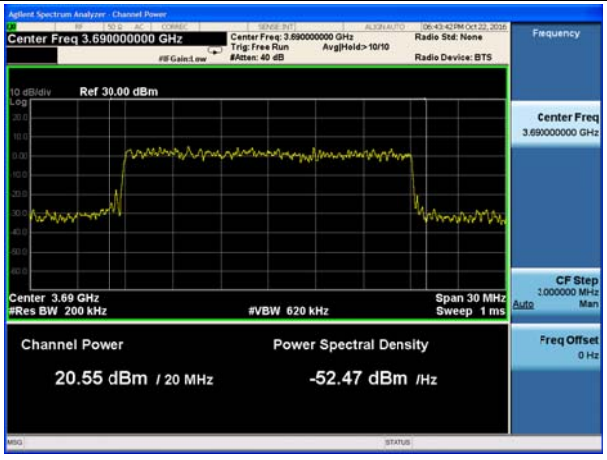
LTE Band 43 16QAM 20MHz CH44190



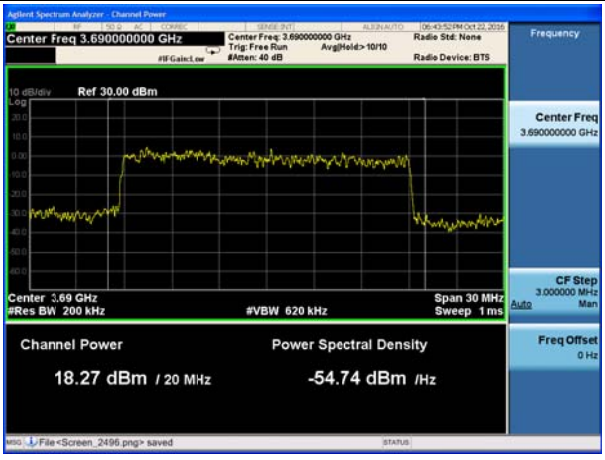
LTE Band 43 QPSK 20MHz CH44340



LTE Band 43 16QAM 20MHz CH44340



LTE Band 43 QPSK 20MHz CH44490



LTE Band 43 16QAM 20MHz CH44490

5.2. Occupied Bandwidth

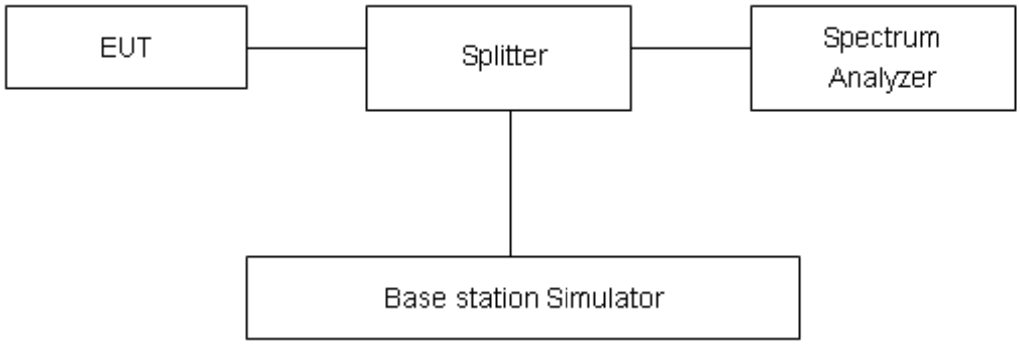
Ambient condition

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 100 kHz, VBW is set to 300 kHz for LTE Band 43 (5MHz),
RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 43 (10MHz/15MHz/20MHz).
99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

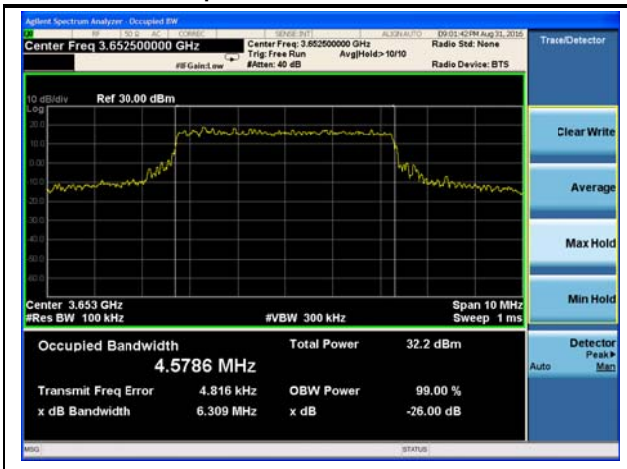
The occupied bandwidth, that is the frequency bandwidth such that, below its lower andabove its upper frequency limits, the mean powers radiated are each equal to 0.5 percentof the total mean power.

Measurement Uncertainty

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

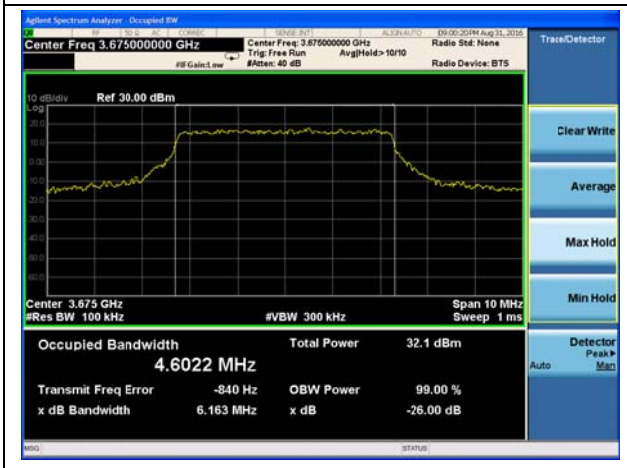
Test Result

LTE Band 43					
RB	**Modulation**	**Bandwidth (MHz)**	**Channel**	**Frequency (MHz)**	**99% Power Bandwidth(MHz)**
100%	QPSK	5	44115	3652.5	4.5786
			44340	3675	4.6022
			44565	3697.5	4.5750
		10	44140	3655	9.1521
			44340	3675	9.0973
			44540	3695	9.1714
		15	44165	3675.5	13.579
			44340	3675	13.552
			44515	3692.5	13.571
		20	44190	3670	13.974
			44340	3675	13.920
			44490	3690	17.985
	16QAM	5	44115	3652.5	4.6306
			44340	3675	4.5727
			44565	3697.5	4.5876
		10	44140	3655	9.1445
			44340	3675	9.2560
			44540	3695	9.1389
		15	44165	3675.5	13.631
			44340	3675	13.609
			44515	3692.5	13.529
		20	44190	3670	13.990
			44340	3675	18.005
			44490	3690	17.951

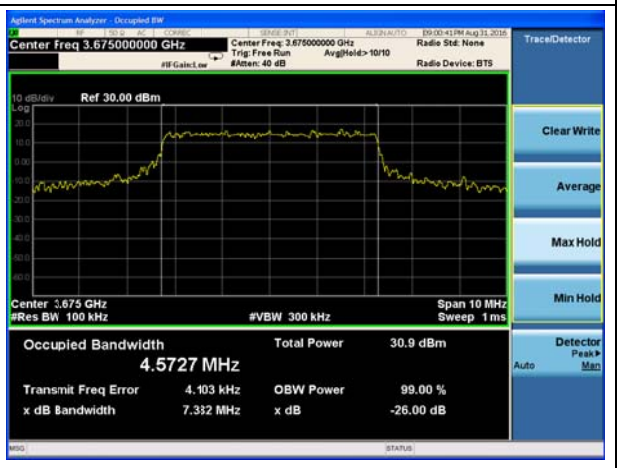


LTE Band 43 QPSK 5MHz CH44115

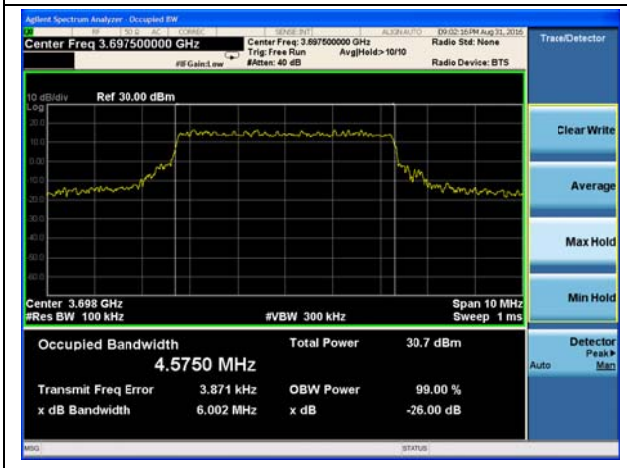
LTE Band 43 16QAM 5MHz CH44115



LTE Band 43 QPSK 5MHz CH44340

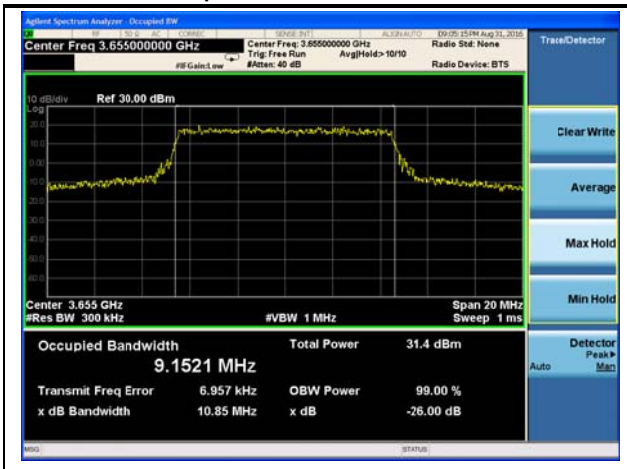


LTE Band 43 16QAM 5MHz CH44340



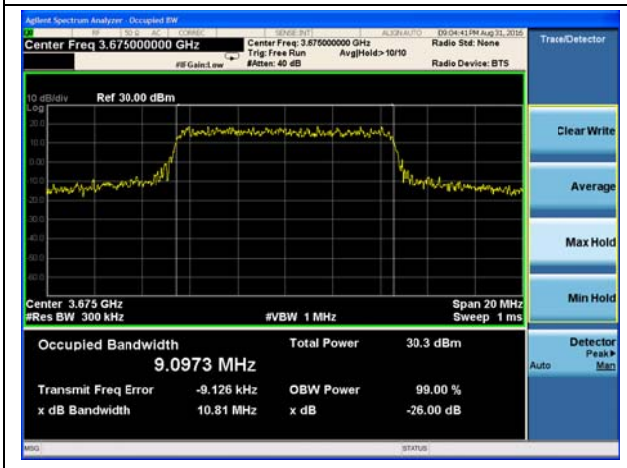
LTE Band 43 QPSK 5MHz CH44565

LTE Band 43 16QAM 5MHz CH44565



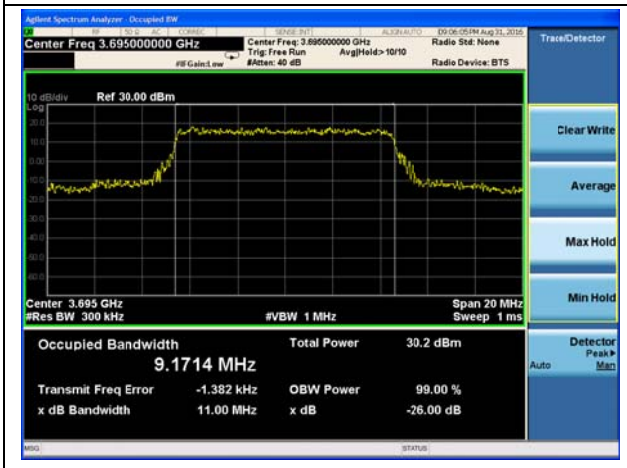
LTE Band 43 QPSK 10MHz CH44140

LTE Band 43 16QAM 10MHz CH44140



LTE Band 43 QPSK 10MHz CH44340

LTE Band 43 16QAM 10MHz CH44340



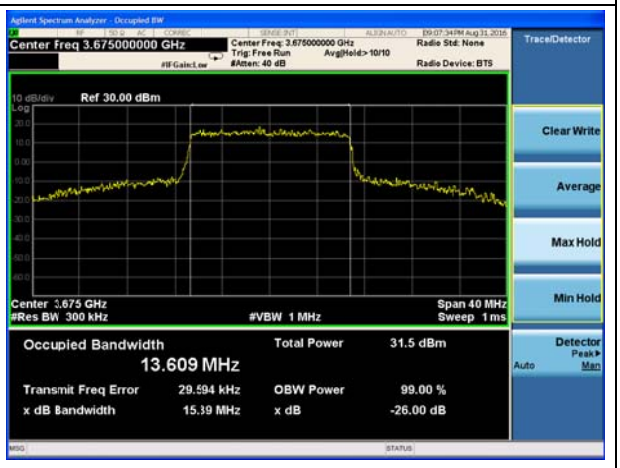
LTE Band 43 QPSK 10MHz CH44540

LTE Band 43 16QAM 10MHz CH44540

LTE Band 43 QPSK 15MHz CH44165

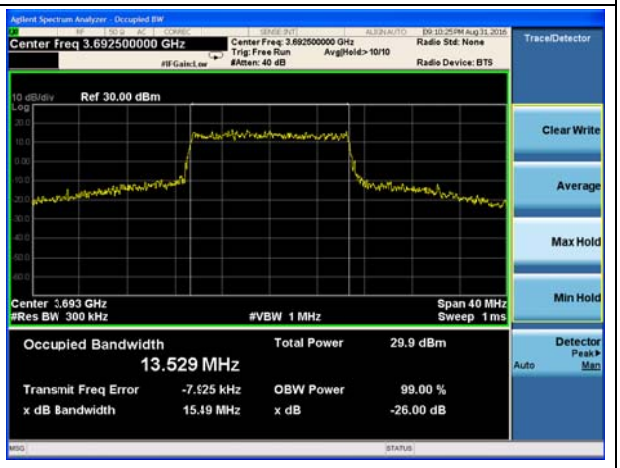
LTE Band 43 16QAM 15MHz CH44165

LTE Band 43 QPSK 15MHz CH44340

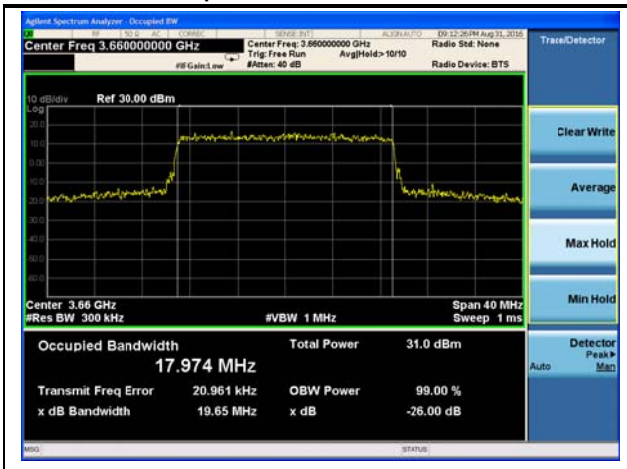


LTE Band 43 16QAM 15MHz CH44340

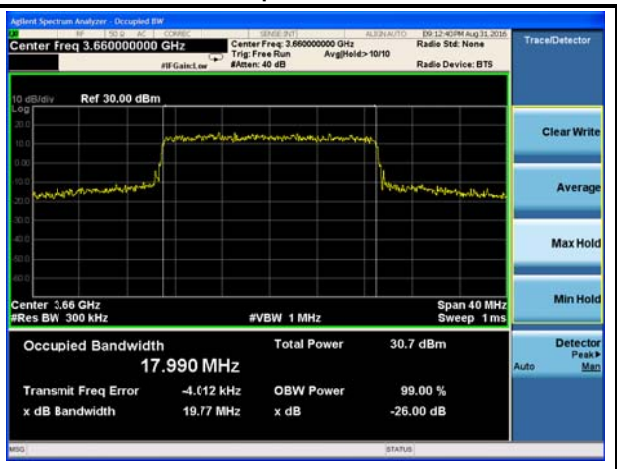
LTE Band 43 QPSK 15MHz CH44515



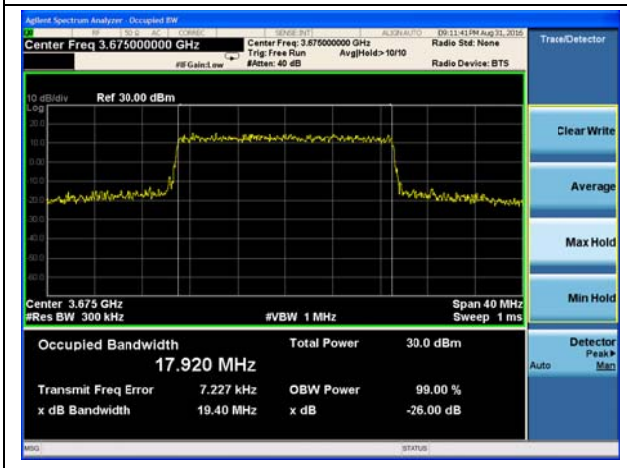
LTE Band 43 16QAM 15MHz CH44515



LTE Band 43 QPSK 20MHz CH44190

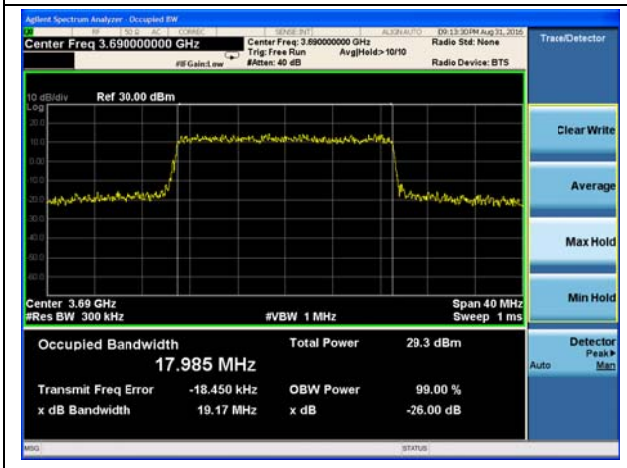


LTE Band 43 16QAM 20MHz CH44190



LTE Band 43 QPSK 20MHz CH44340

LTE Band 43 16QAM 20MHz CH44340



LTE Band 43 QPSK 20MHz CH44490

LTE Band 43 16QAM 20MHz CH44490

5.3. Band Edge Compliance

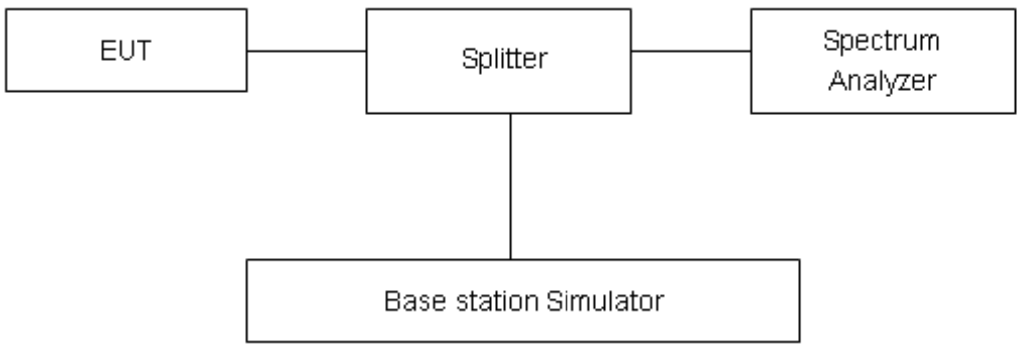
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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.
1.The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. For LTE Band 43Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 43 (5MHz).
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 43 (10MHz).
RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 43 (15MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 43 (20MHz) onspectrumanalyzer.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. Checked that all the results comply with the emission limit line.

Test Setup



Limits

Rule Part 2.1051&90.1323 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

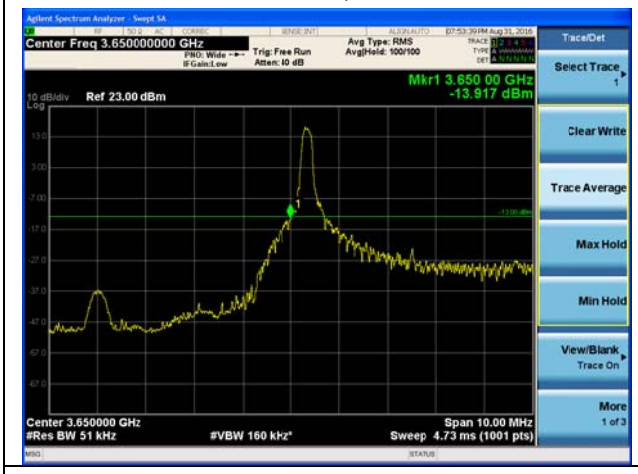
Measurement Uncertainty

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

Test Result

All the test traces in the plots shows the test results clearly.

LTE Band 43 QPSK Bandwidth = 5MHz
CH44115, RB 1

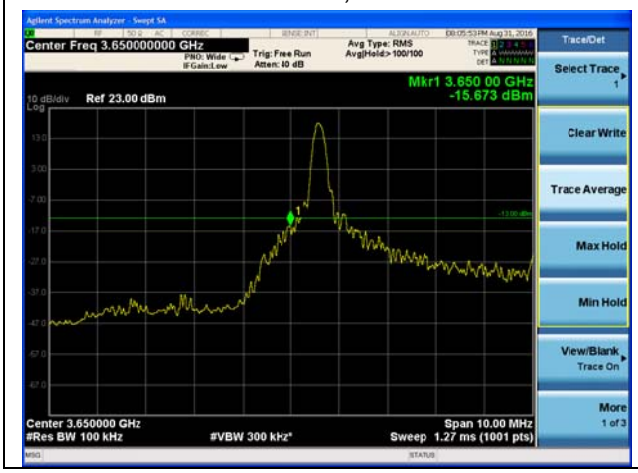


LTE Band 43 QPSK Bandwidth = 5MHz
CH44565, RB 1

LTE Band 43 QPSK Bandwidth = 5MHz
CH44115, RB 25

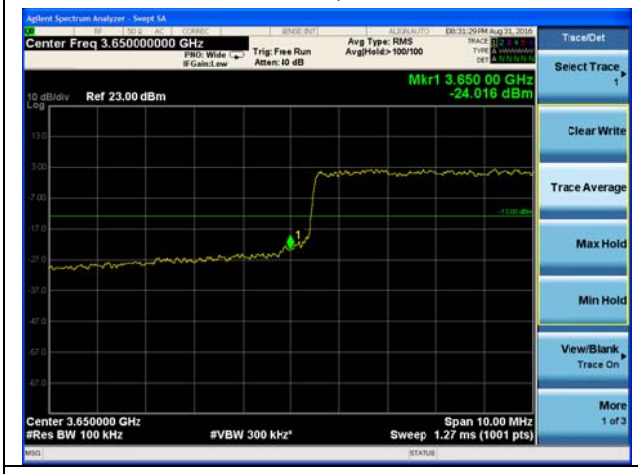
LTE Band 43 QPSK Bandwidth = 5MHz
CH44565, RB 25

LTE Band 43 QPSK Bandwidth = 10MHz
CH44140, RB 1



LTE Band 43 QPSK Bandwidth = 10MHz
CH44540, RB 1

LTE Band 43 QPSK Bandwidth = 10MHz
CH44140, RB 50



LTE Band 43 QPSK Bandwidth = 10MHz
CH44540, RB 50

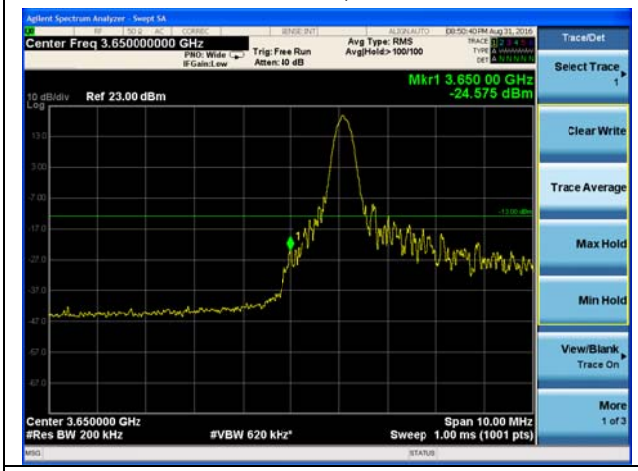
LTE Band 43 QPSK Bandwidth = 15MHz
CH44165, RB 1

LTE Band 43 QPSK Bandwidth = 15MHz
CH44515, RB 1

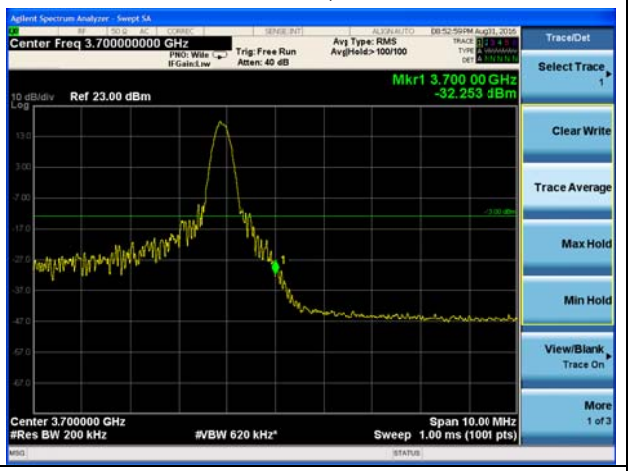
LTE Band 43 QPSK Bandwidth = 15MHz
CH44165, RB 75

LTE Band 43 QPSK Bandwidth = 15MHz
CH44515, RB 75

LTE Band 43 QPSK Bandwidth = 20MHz
CH44190, RB 1



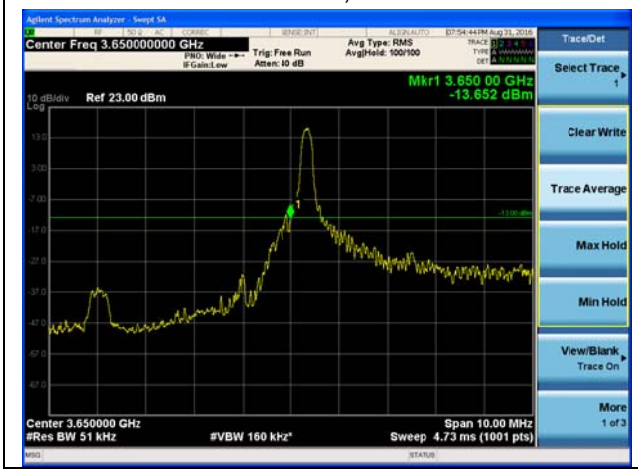
LTE Band 43 QPSK Bandwidth = 20MHz
CH44490, RB 1



LTE Band 43 QPSK Bandwidth = 20MHz
CH44190, RB 100

LTE Band 43 QPSK Bandwidth = 20MHz
CH44490, RB 100

LTE Band 43 16QAM Bandwidth = 5MHz
CH44115, RB 1

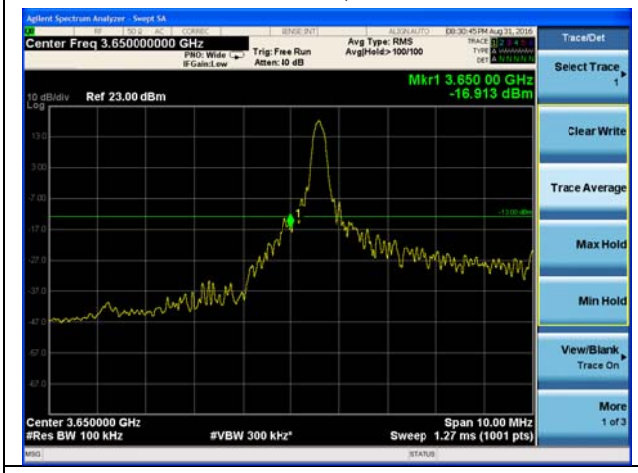


LTE Band 43 16QAM Bandwidth = 5MHz
CH44565, RB 1

LTE Band 43 16QAM Bandwidth = 5MHz
CH44115, RB 25

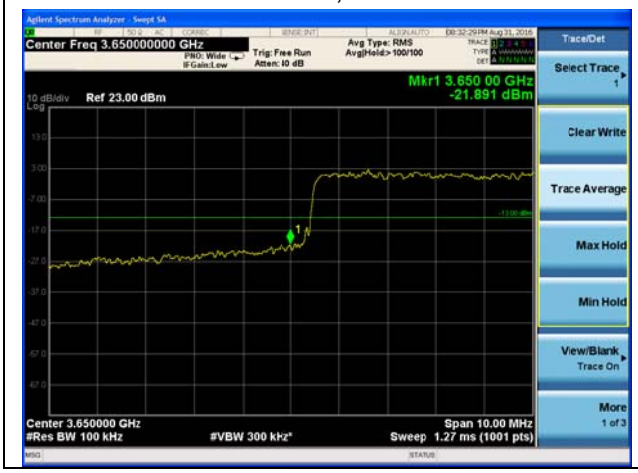
LTE Band 43 16QAM Bandwidth = 5MHz
CH44565, RB 25

LTE Band 43 16QAM Bandwidth = 10MHz
CH44140, RB 1



LTE Band 43 16QAM Bandwidth = 10MHz
CH44540, RB 1

LTE Band 43 16QAM Bandwidth = 10MHz
CH44140, RB 50



LTE Band 43 16QAM Bandwidth = 10MHz
CH44540, RB 50

LTE Band 43 16QAM Bandwidth = 15MHz
CH44165, RB 1

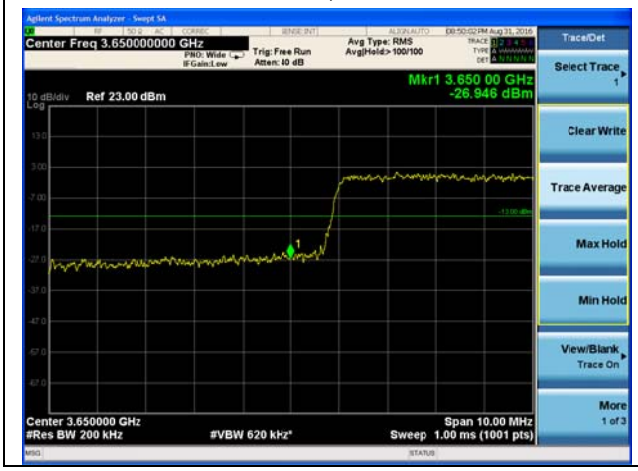
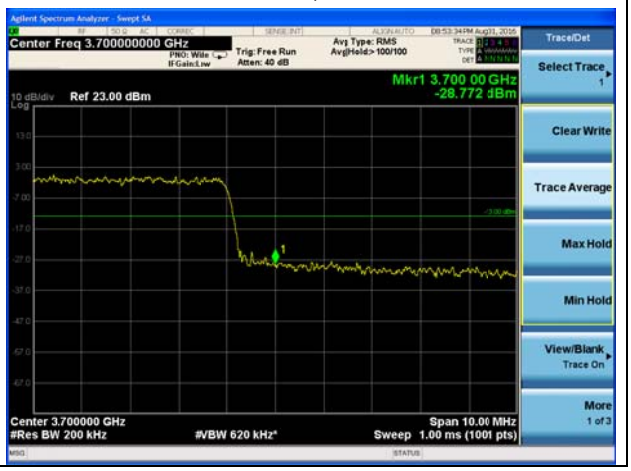
LTE Band 43 16QAM Bandwidth = 15MHz
CH44515, RB 1

LTE Band 43 16QAM Bandwidth = 15MHz
CH44165, RB 75

LTE Band 43 16QAM Bandwidth = 15MHz
CH44515, RB 75

LTE Band 43 16QAM Bandwidth = 20MHz
CH44190, RB 1

LTE Band 43 16QAM Bandwidth = 20MHz
CH44490, RB 1

LTE Band 43 16QAM Bandwidth = 20MHz CH44190, RB 100	LTE Band 43 16QAM Bandwidth = 20MHz CH44490, RB 100
	

5.4. Frequency Stability

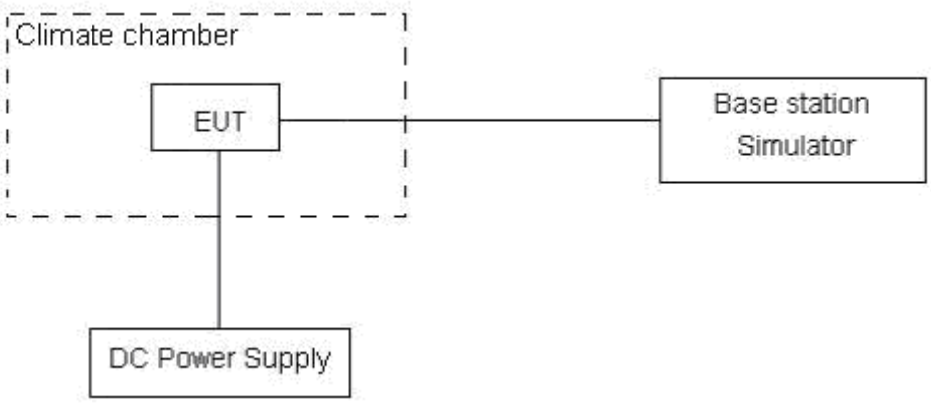
Ambient condition

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 9 V and 18 V, with a nominal voltage of 12V.

Test setup



Limits

Requirements: FCC § 2.1055 (a)(d), The frequency stability shall be sufficient to ensure thatthe fundamental emissions stay within the authorized bands of operation.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75％ confidence level for thenormal distribution is with the coverage factor k = 3,U=0.01ppm.

Test Result

Bandwidth	Test status	LTE Band 43 Channel 44340 Test Results (ppm)		
		QPSK	16QAM	Conclusion
5MHz	50°C/12 V	-0.00117	-0.00098	PASS
	40°C/12 V	0.00101	-0.00057	PASS
	30°C/12 V	0.00253	0.00185	PASS
	20°C/12 V	-0.00171	-0.00125	PASS
	10°C/12 V	0.00286	0.00095	PASS
	0°C/12 V	-0.00190	0.00185	PASS
	-10°C/12 V	0.00180	0.00280	PASS
	-20°C/12 V	0.00163	-0.00154	PASS
	-30°C/12 V	0.00166	-0.00250	PASS
	20°C/18 V	0.00150	0.00199	PASS
	20°C/9 V	0.00174	0.00261	PASS
10MHz	50°C/12 V	0.00114	0.00234	PASS
	40°C/12 V	-0.00098	0.00386	PASS
	30°C/12 V	-0.00210	0.00223	PASS
	20°C/12 V	-0.00120	0.00237	PASS
	10°C/12 V	-0.00313	0.00150	PASS
	0°C/12 V	-0.00212	0.00177	PASS
	-10°C/12 V	-0.00269	0.00337	PASS
	-20°C/12 V	0.00070	-0.00074	PASS
	-30°C/12 V	0.00073	-0.00055	PASS
	20°C/18 V	-0.00299	0.00158	PASS
	20°C/9 V	-0.00234	0.00210	PASS
15MHz	50°C/12 V	-0.00275	0.00250	PASS
	40°C/12 V	-0.00180	0.00245	PASS
	30°C/12 V	-0.00117	0.00133	PASS
	20°C/12 V	-0.00212	0.00177	PASS
	10°C/12 V	-0.00269	0.00337	PASS
	0°C/12 V	-0.00299	0.00158	PASS
	-10°C/12 V	-0.00234	0.00210	PASS
	-20°C/12 V	0.00166	-0.00250	PASS
	-30°C/12 V	0.00147	-0.00154	PASS
	20°C/18 V	-0.00365	0.00193	PASS
	20°C/9 V	-0.00275	0.00250	PASS
20MHz	50°C/12 V	-0.00117	0.00133	PASS
	40°C/12 V	-0.00215	0.00174	PASS

	30°C/12 V	0.00419	-0.00144	PASS
	20°C/12 V	0.00356	-0.00215	PASS
	10°C/12 V	-0.00182	0.00177	PASS
	0°C/12 V	0.00152	0.00169	PASS
	-10°C/12 V	-0.00231	0.00212	PASS
	-20°C/12 V	-0.00153	0.00205	PASS
	-30°C/12 V	-0.00101	0.00270	PASS
	20°C/18 V	0.00171	-0.00141	PASS
	20°C/9 V	0.00310	0.00316	PASS

5.5. Spurious Emissions at Antenna Terminals

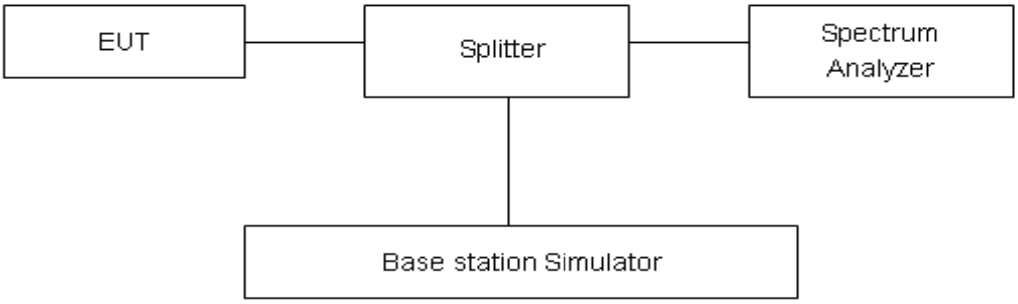
Ambient condition

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 9kHzto the 10th harmonic of the carrier. The peak detector is used.
RBW =0.001MHz,VBW=0.003MHz for 9kHz-150kHz;
RBW =0.01MHz,VBW=0.03MHzfor 150kHz-30MHz;
RBW =0.1MHz, VBW=0.3MHzfor 30MHz-1GHz;
RBW =1MHz,VBW=3MHzfor above 1GHz;Sweep is set to ATUO.

Test setup



Limits

Rule Part 2.1051&90.1323 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

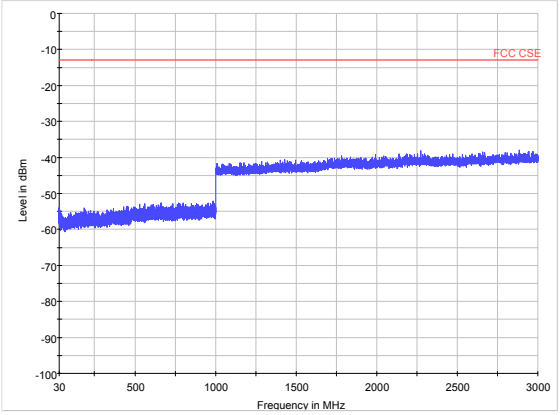
The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

Frequency	Uncertainty
9kHz-2GHz	0.684 dB
2GHz-12.75GHz	1.407 dB

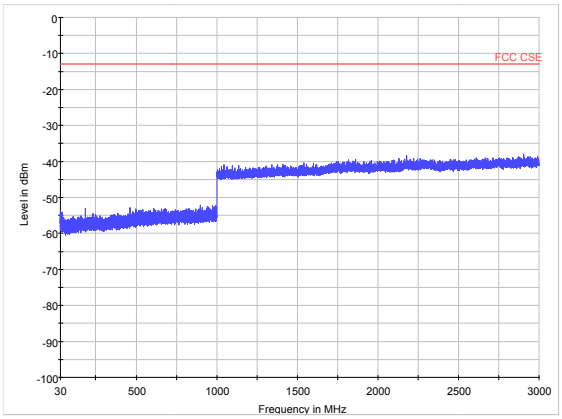
Test Result:

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 in the following plots.

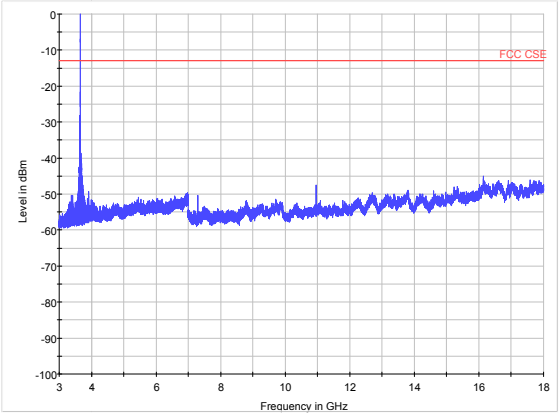
Test Data File Name	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
CSE_SQ014_LTE B43_CH44340_15M_RB1_3-18GHz	11022.8	-30.9	-13	17.9
CSE_SQ014_LTE B43_CH44190_20M_RB1_3-18GHz	10980.0	-32.3	-13	19.3



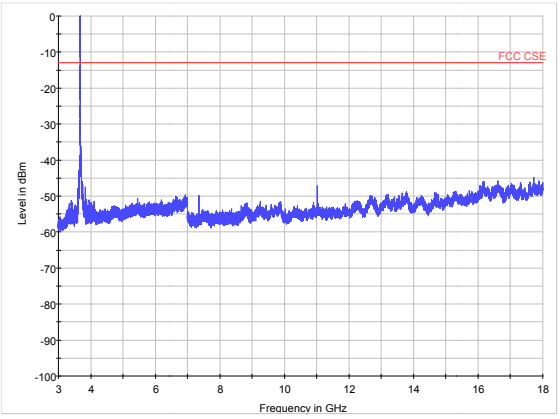
LTE Band 43 5MHz CH44115 30MHz~3GHz



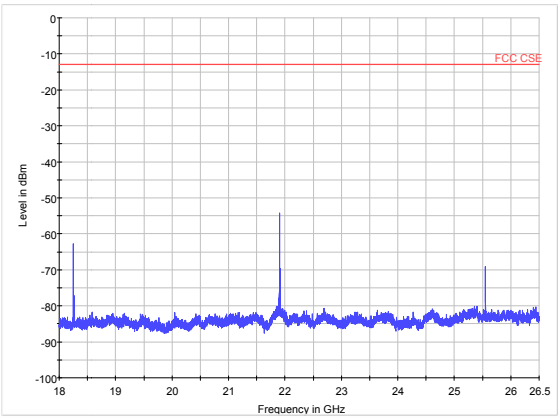
LTE Band 43 5MHz CH44340 30MHz~3GHz



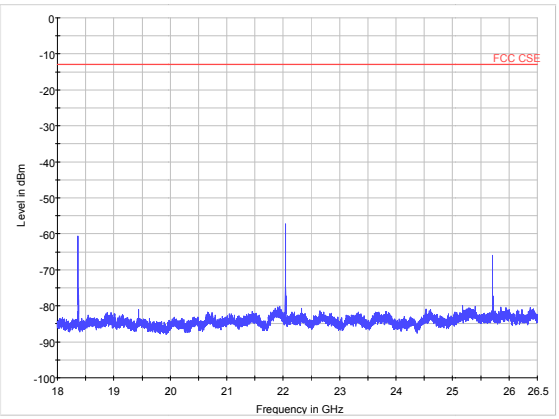
LTE Band 43 5MHz CH44115 3GHz~18GHz



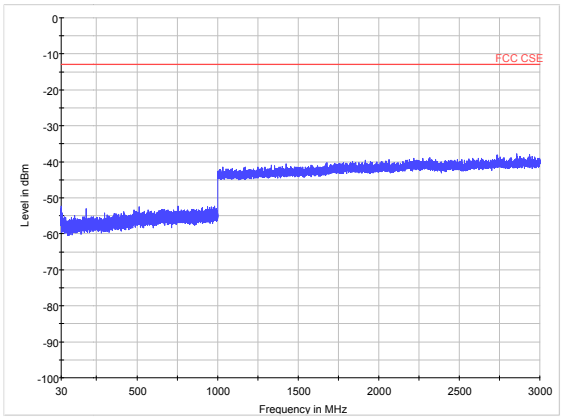
LTE Band 43 5MHz CH44340 3GHz~18GHz



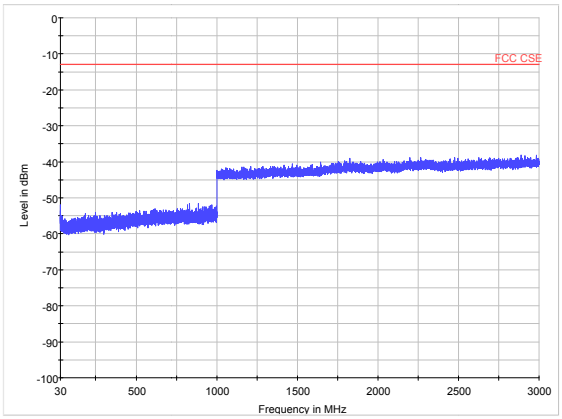
LTE Band 43 5MHz CH44115 18GHz~26.5GHz



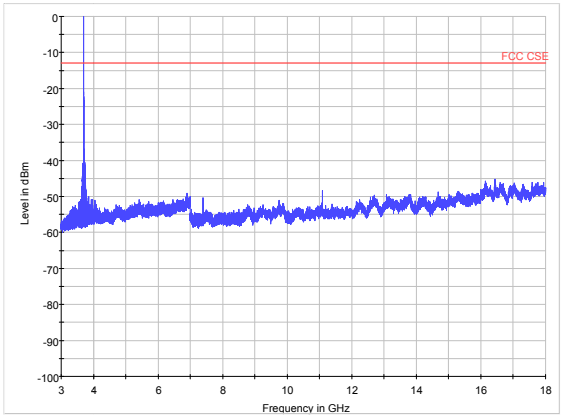
LTE Band 43 5MHz CH44340 18GHz~26.5GHz



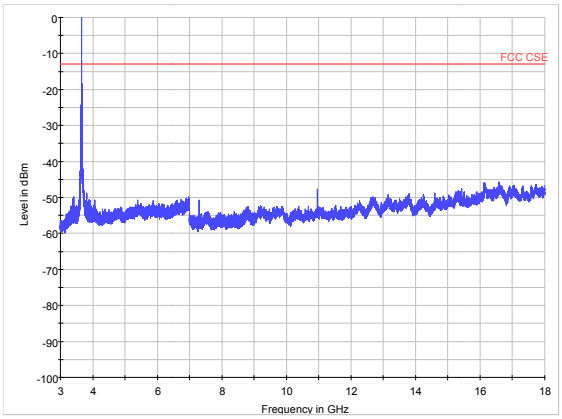
LTE Band 43 5MHz CH44565 30MHz~3GHz



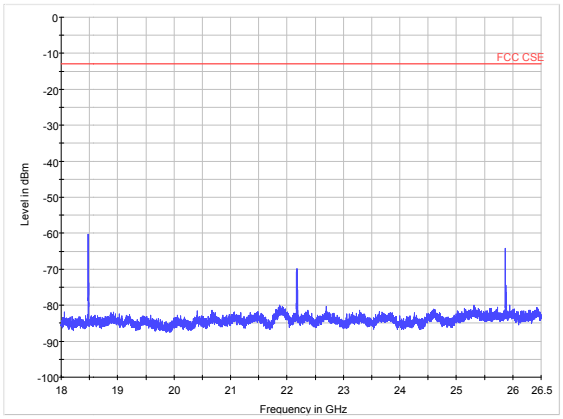
LTE Band 43 10MHz CH44140 30MHz~3GHz



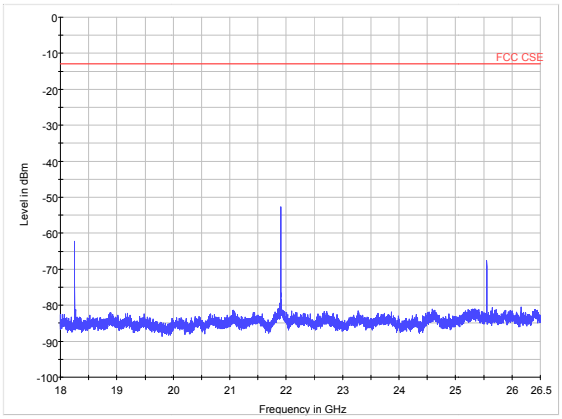
LTE Band 43 5MHz CH44565 3GHz~18GHz



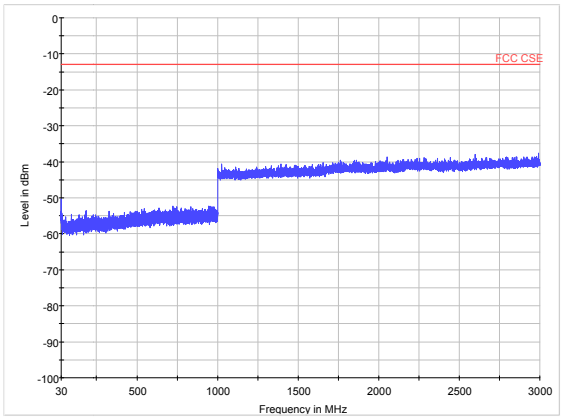
LTE Band 43 10MHz CH44140 3GHz~18GHz



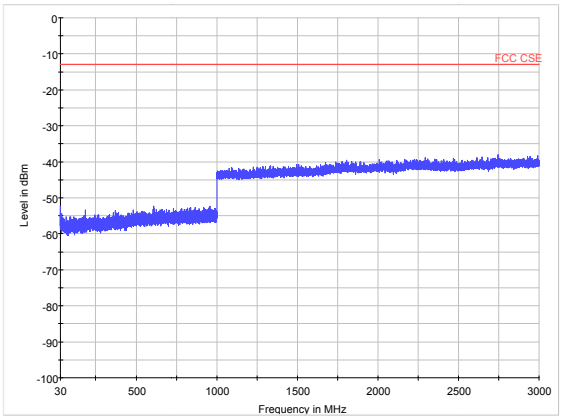
LTE Band 43 5MHz CH44565 18GHz~26.5GHz



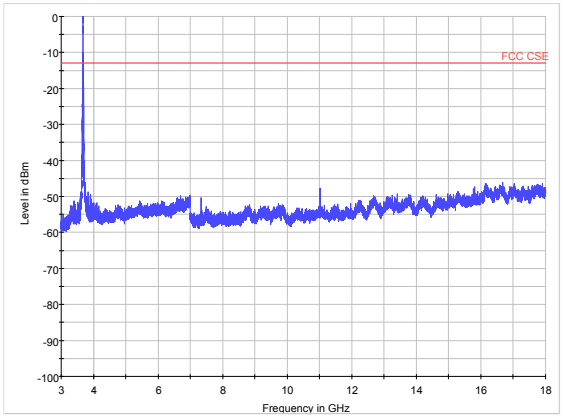
LTE Band 43 10MHz CH44140 18GHz~26.5GHz



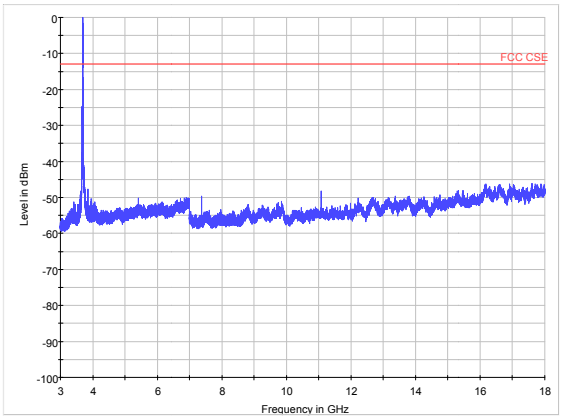
LTE Band 43 10MHz CH44340 30MHz~3GHz



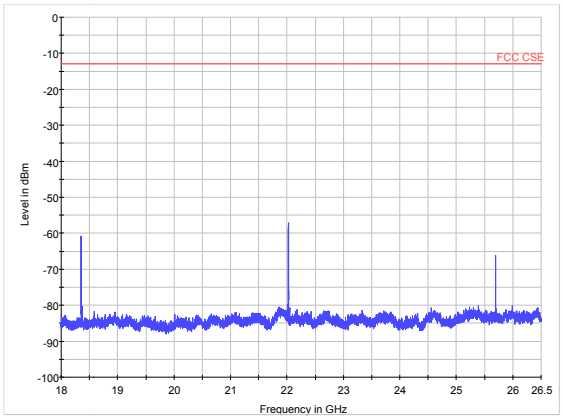
LTE Band 43 10MHz CH44540 30MHz~3GHz



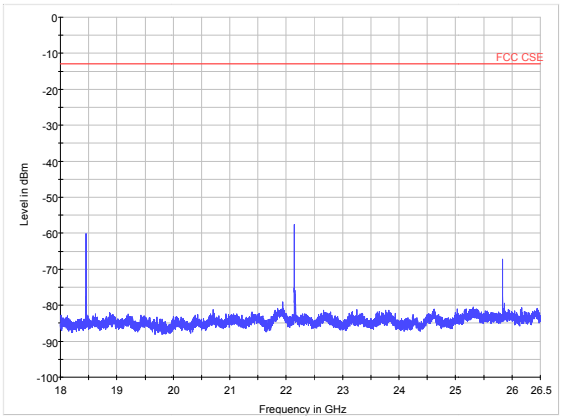
LTE Band 43 10MHz CH44340 3GHz~18GHz



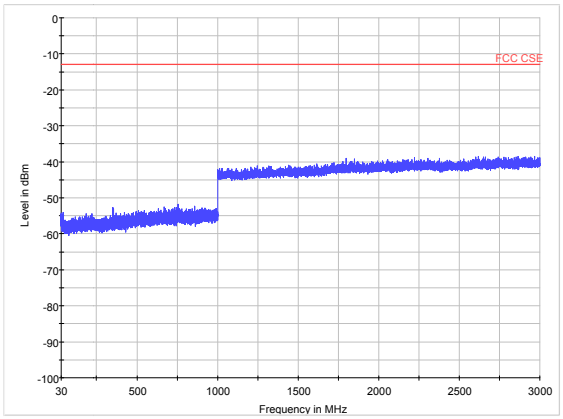
LTE Band 43 10MHz CH44540 3GHz~18GHz



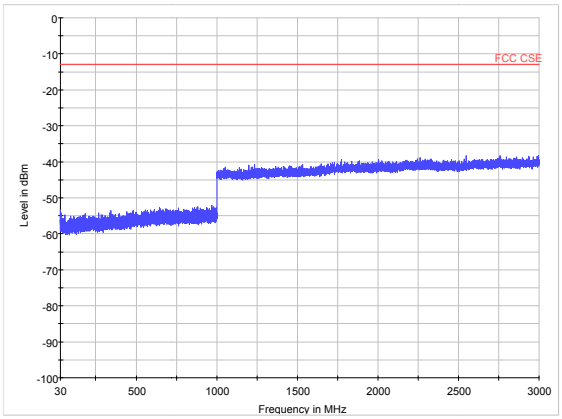
LTE Band 43 10MHz CH44340 18GHz~26.5GHz



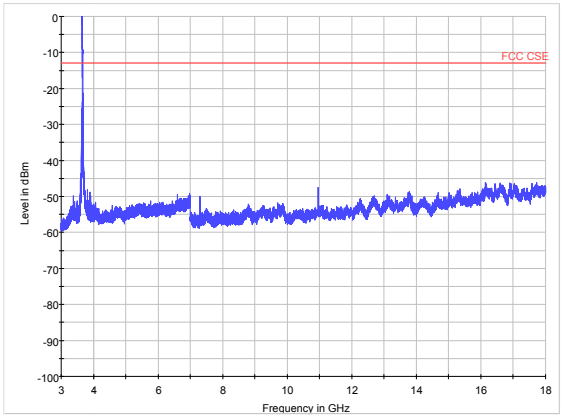
LTE Band 43 10MHz CH44540 18GHz~26.5GHz



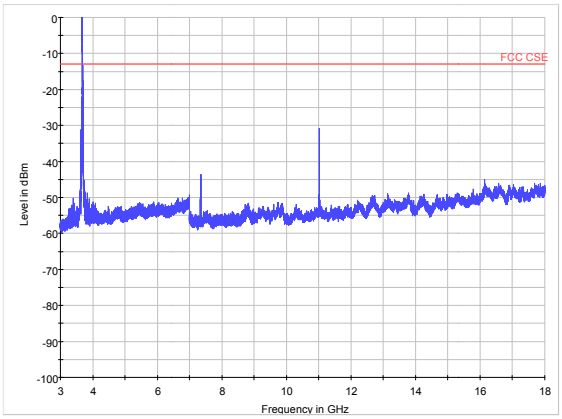
LTE Band 43 15MHz CH44165 30MHz~3GHz



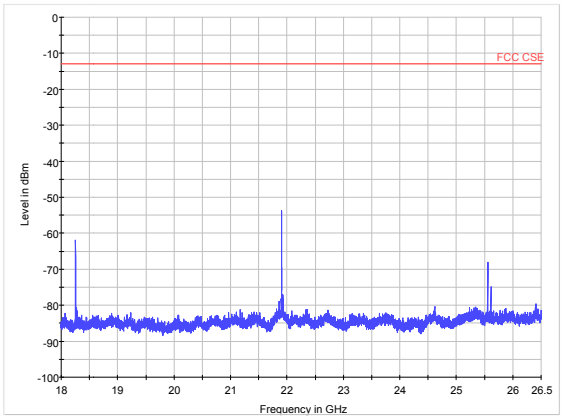
LTE Band 43 15MHz CH44340 30MHz~3GHz



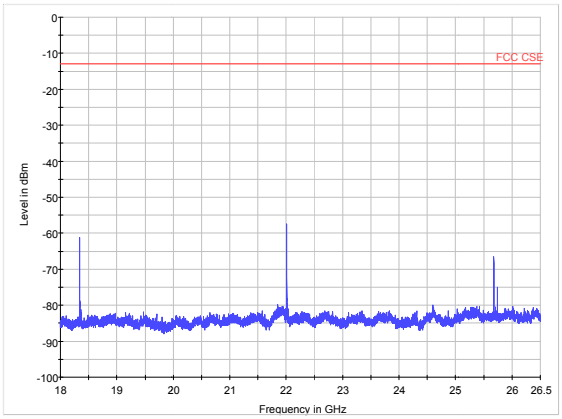
LTE Band 43 15MHz CH44165 3GHz~18GHz



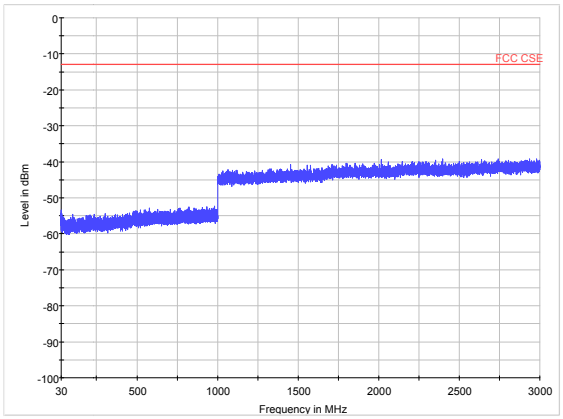
LTE Band 43 15MHz CH44340 3GHz~18GHz



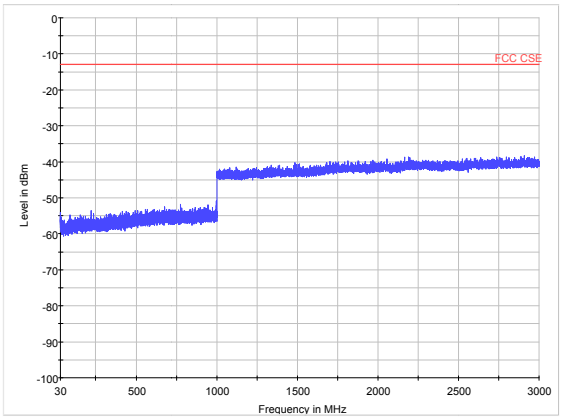
LTE Band 43 15MHz CH44165 18GHz~26.5GHz



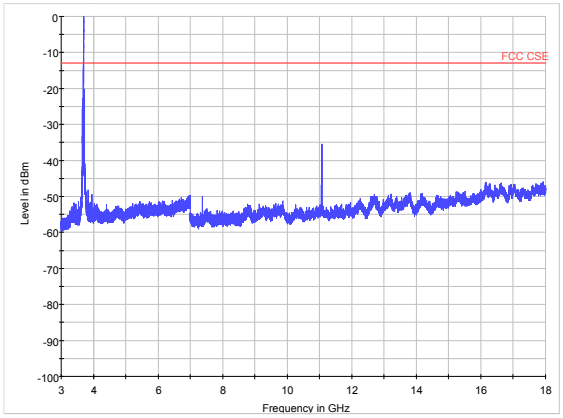
LTE Band 43 15MHz CH44340 18GHz~26.5GHz



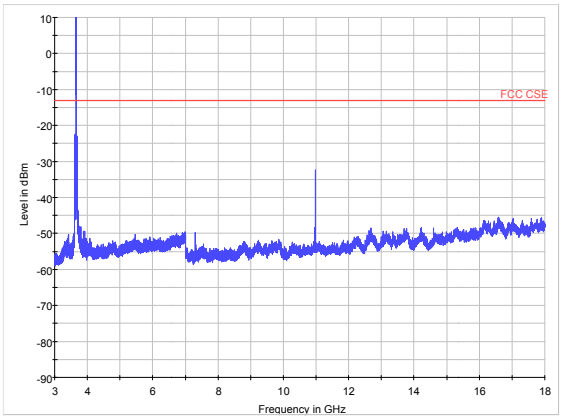
LTE Band 43 15MHz CH44515 30MHz~3GHz



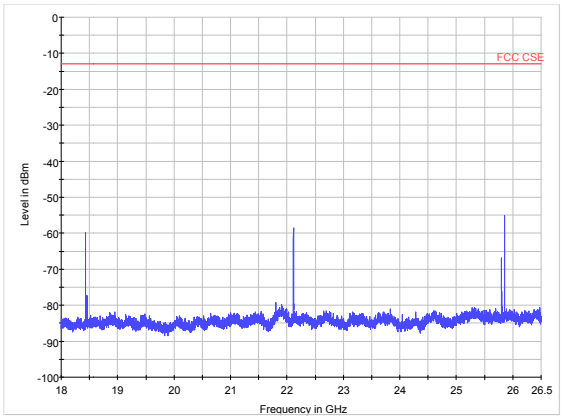
LTE Band 43 20MHz CH44190 30MHz~3GHz



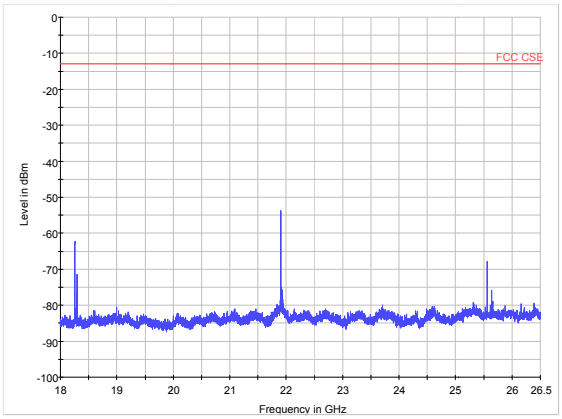
LTE Band 43 15MHz CH44515 3GHz~18GHz



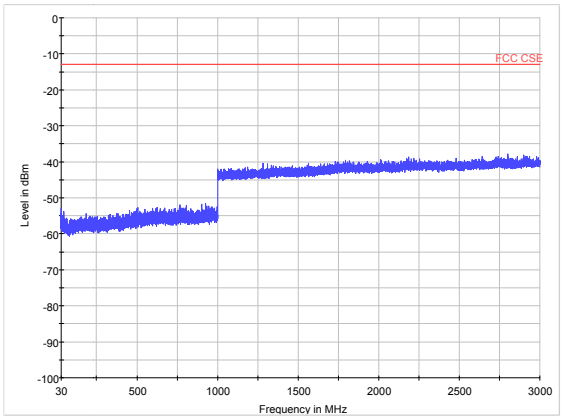
LTE Band 43 20MHz CH44190 3GHz~18GHz



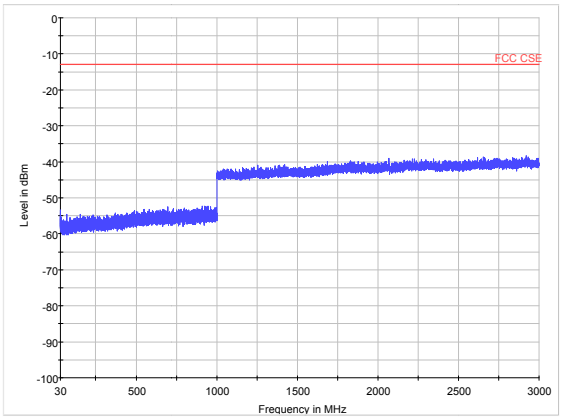
LTE Band 43 15MHz CH44515 18GHz~26.5GHz



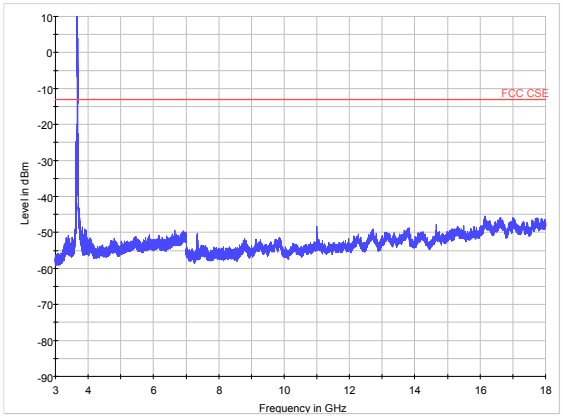
LTE Band 43 20MHz CH44190 18GHz~26.5GHz



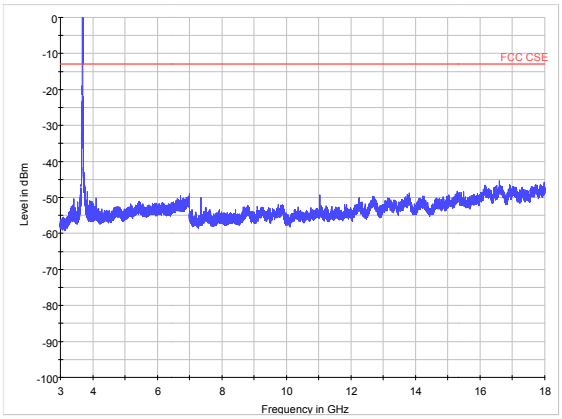
LTE Band 43 20MHz CH44340 30MHz~3GHz



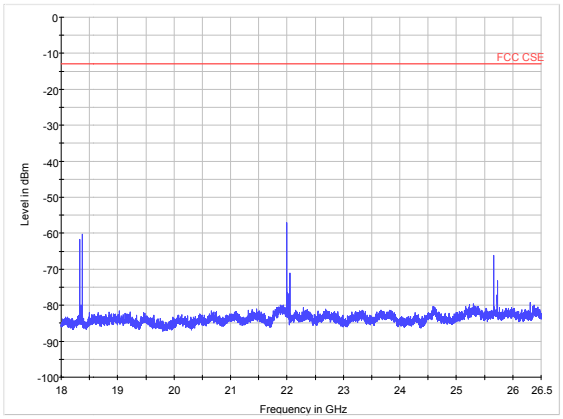
LTE Band 43 20MHz CH44490 30MHz~3GHz



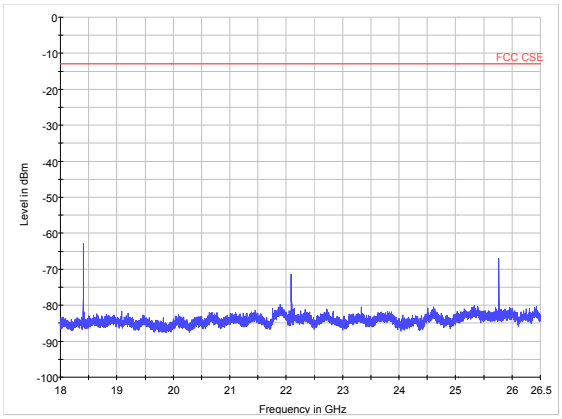
LTE Band 43 20MHz CH44340 3GHz~18GHz



LTE Band 43 20MHz CH44490 3GHz~18GHz



LTE Band 43 20MHz CH44340 18GHz~26.5GHz



LTE Band 43 20MHz CH44490 18GHz~26.5GHz

5.6. Field Strength of Spurious Radiation/ Radiated Spurious Emissions

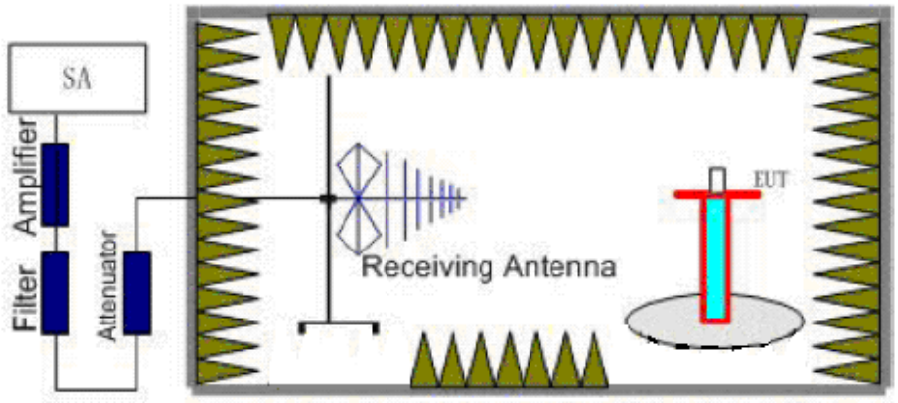
Ambient condition

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

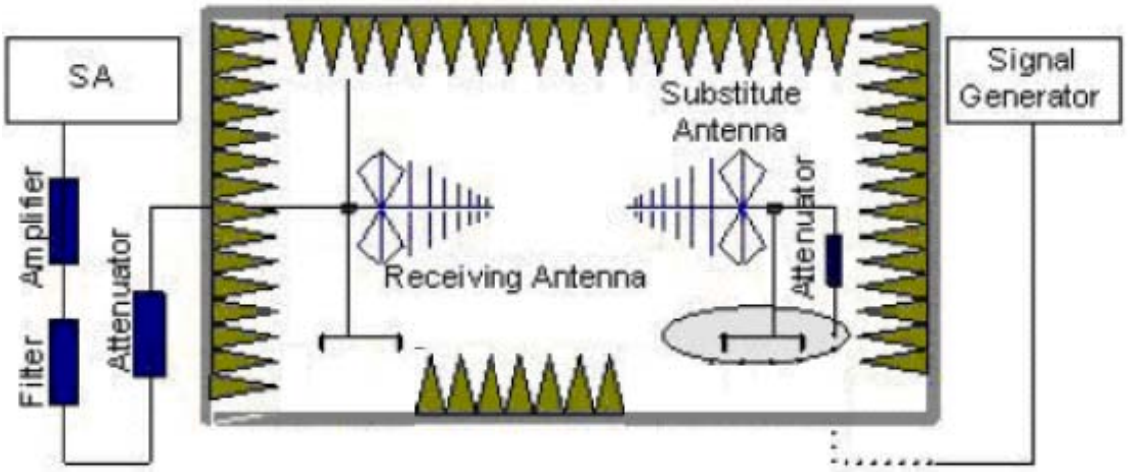
Method of Measurement

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 100 kHz. 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（peak power）=S.G. - Tx Cable loss + Substitution antenna gain – 2.15.
EIRP= E.R.P+2.15

Limits

Rule Part 90.1323 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 thenormal 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.If disturbances were found more than 20dB below limit line, the mark is not required for the EUT

LTE Band 43 5MHz CH44115

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7301.3	-49.75	2.50	11.35	vertical	-40.9	-13.00	27.9	270
3	10951.9	-39.15	4.20	12.05	vertical	-31.3	-13.00	18.3	0
4	14602.5	-35.93	5.50	14.23	vertical	-27.2	-13.00	14.2	90
5	18253.1	-84.35	5.70	14.15	vertical	-75.9	-13.00	62.9	270
6	21903.8	-87.95	6.80	14.05	vertical	-80.7	-13.00	67.7	90
7	25554.4	-86.34	6.90	14.84	vertical	-78.4	-13.00	65.4	315
8	29205.0	--	--	--	--	--	--	--	--
9	32855.6	--	--	--	--	--	--	--	--
10	36506.3	--	--	--	--	--	--	--	--

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 43 5MHz CH44340

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7345.7	-49.85	2.50	11.35	vertical	-41.0	-13.00	28.0	90
3	11018.6	-38.95	4.20	12.05	vertical	-31.1	-13.00	18.1	270
4	14691.4	-35.13	5.50	14.23	vertical	-26.4	-13.00	13.4	0
5	18364.3	-83.65	5.70	14.15	vertical	-75.2	-13.00	62.2	315
6	22037.1	-87.55	6.80	14.05	vertical	-80.3	-13.00	67.3	225
7	25710.0	-86.04	6.90	14.84	vertical	-78.1	-13.00	65.1	0
8	29382.8	--	--	--	--	--	--	--	--
9	33055.7	--	--	--	--	--	--	--	--
10	36728.5	--	--	--	--	--	--	--	--

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 43 5MHz CH44565

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7390.7	-50.45	2.50	11.35	vertical	-41.6	-13.00	28.6	90
3	11086.1	-38.95	4.20	12.05	vertical	-31.1	-13.00	18.1	270
4	14781.4	-47.83	5.50	14.23	vertical	-39.1	-13.00	26.1	0
5	18476.8	-84.05	5.70	14.15	vertical	-75.6	-13.00	62.6	90
6	22172.1	-87.75	6.80	14.05	vertical	-80.5	-13.00	67.5	0
7	25867.5	-86.84	6.90	14.84	vertical	-78.9	-13.00	65.9	270
8	29562.8	--	--	--	--	--	--	--	--
9	33258.2	--	--	--	--	--	--	--	--
10	36953.5	--	--	--	--	--	--	--	--

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 43 10MHz CH44140

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1631.00	-49.25	2.50	11.35	vertical	-40.4	-13.00	27.4	270
3	2446.50	-39.05	4.20	12.05	vertical	-31.2	-13.00	18.2	315
4	3262.00	-33.93	5.50	14.23	vertical	-25.2	-13.00	12.2	90
5	4077.50	-84.25	5.70	14.15	vertical	-75.8	-13.00	62.8	90
6	4893.00	-87.55	6.80	14.05	vertical	-80.3	-13.00	67.3	45
7	5708.50	-86.44	6.90	14.84	vertical	-78.5	-13.00	65.5	270
8	6524.00	--	--	--	--	--	--	--	--
9	7339.50	--	--	--	--	--	--	--	--
10	8155.00	--	--	--	--	--	--	--	--

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 43 10MHz CH44340

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7341.2	-48.85	2.50	11.35	vertical	-40.0	-13.00	27.0	90
3	11011.8	-38.95	4.20	12.05	vertical	-31.1	-13.00	18.1	225
4	14682.4	-35.13	5.50	14.23	vertical	-26.4	-13.00	13.4	270
5	18353.0	-83.75	5.70	14.15	vertical	-75.3	-13.00	62.3	90
6	22023.6	-87.25	6.80	14.05	vertical	-80.0	-13.00	67.0	270
7	25694.2	-86.24	6.90	14.84	vertical	-78.3	-13.00	65.3	45
8	29364.8	--	--	--	--	--	--	--	--
9	33035.4	--	--	--	--	--	--	--	--
10	36706.0	--	--	--	--	--	--	--	--

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 43 10MHz CH44540

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7381.2	-48.65	2.50	11.35	vertical	-39.8	-13.00	26.8	270
3	11071.7	-38.75	4.20	12.05	vertical	-30.9	-13.00	17.9	90
4	14762.3	-34.63	5.50	14.23	vertical	-25.9	-13.00	12.9	315
5	18452.9	-85.05	5.70	14.15	vertical	-76.6	-13.00	63.6	180
6	22143.5	-87.55	6.80	14.05	vertical	-80.3	-13.00	67.3	0
7	25834.0	-86.14	6.90	14.84	vertical	-78.2	-13.00	65.2	270
8	29524.6	--	--	--	--	--	--	--	--
9	33215.2	--	--	--	--	--	--	--	--
10	36905.8	--	--	--	--	--	--	--	--

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 43 15MHz CH44165

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7306.3	-49.15	2.50	11.35	vertical	-40.3	-13.00	27.3	270
3	10959.5	-38.95	4.20	12.05	vertical	-31.1	-13.00	18.1	90
4	14612.6	-35.03	5.50	14.23	vertical	-26.3	-13.00	13.3	270
5	18265.8	-82.95	5.70	14.15	vertical	-74.5	-13.00	61.5	0
6	21918.9	-88.55	6.80	14.05	vertical	-81.3	-13.00	68.3	90
7	25572.1	-87.14	6.90	14.84	vertical	-79.2	-13.00	66.2	270
8	29225.2	--	--	--	--	--	--	--	--
9	32878.4	--	--	--	--	--	--	--	--
10	36531.5	--	--	--	--	--	--	--	--

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 43 15MHz CH44340

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7341.2	-48.85	2.50	11.35	vertical	-40.0	-13.00	27.0	270
3	11011.8	-40.15	4.20	12.05	vertical	-32.3	-13.00	19.3	225
4	14682.4	18.17	5.50	14.23	vertical	26.9	-13.00	-39.9	0
5	18353.0	-83.55	5.70	14.15	vertical	-75.1	-13.00	62.1	90
6	22023.6	-88.25	6.80	14.05	vertical	-81.0	-13.00	68.0	270
7	25694.2	-86.24	6.90	14.84	vertical	-78.3	-13.00	65.3	270
8	29364.8	--	--	--	--	--	--	--	--
9	33035.4	--	--	--	--	--	--	--	--
10	36706.0	--	--	--	--	--	--	--	--

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 43 15MHz CH44515

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7376.1	-47.65	2.50	11.35	vertical	-38.8	-13.00	25.8	45
3	11064.1	-38.95	4.20	12.05	vertical	-31.1	-13.00	18.1	90
4	14752.1	-39.03	5.50	14.23	vertical	-30.3	-13.00	17.3	225
5	18440.1	-83.95	5.70	14.15	vertical	-75.5	-13.00	62.5	270
6	22128.2	-87.55	6.80	14.05	vertical	-80.3	-13.00	67.3	0
7	25816.2	-86.54	6.90	14.84	vertical	-78.6	-13.00	65.6	90
8	29504.2	--	--	--	--	--	--	--	--
9	33192.2	--	--	--	--	--	--	--	--
10	36880.3	--	--	--	--	--	--	--	--

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 43 20MHz CH44190

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7311.4	-48.55	2.50	11.35	vertical	-39.7	-13.00	26.7	225
3	10967.1	-38.85	4.20	12.05	vertical	-31.0	-13.00	18.0	270
4	14622.8	-36.23	5.50	14.23	vertical	-27.5	-13.00	14.5	90
5	18278.5	-84.75	5.70	14.15	vertical	-76.3	-13.00	63.3	270
6	21934.2	-88.05	6.80	14.05	vertical	-80.8	-13.00	67.8	0
7	25589.9	-86.04	6.90	14.84	vertical	-78.1	-13.00	65.1	315
8	29245.6	--	--	--	--	--	--	--	--
9	32901.3	--	--	--	--	--	--	--	--
10	36557.0	--	--	--	--	--	--	--	--

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 43 20MHz CH44340

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7341.2	-48.65	2.50	11.35	vertical	-39.8	-13.00	26.8	270
3	11011.7	-39.45	4.20	12.05	vertical	-31.6	-13.00	18.6	225
4	14682.3	-36.83	5.50	14.23	vertical	-28.1	-13.00	15.1	90
5	18352.9	-84.65	5.70	14.15	vertical	-76.2	-13.00	63.2	270
6	22023.5	-87.55	6.80	14.05	vertical	-80.3	-13.00	67.3	0
7	25694.0	-86.94	6.90	14.84	vertical	-79.0	-13.00	66.0	90
8	29364.6	--	--	--	--	--	--	--	--
9	33035.2	--	--	--	--	--	--	--	--
10	36705.8	--	--	--	--	--	--	--	--

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 43 20MHz CH44490

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7371.0	-47.45	2.50	11.35	vertical	-38.6	-13.00	25.6	225
3	11056.5	-38.85	4.20	12.05	vertical	-31.0	-13.00	18.0	270
4	14742.0	-37.43	5.50	14.23	vertical	-28.7	-13.00	15.7	315
5	18427.5	-83.75	5.70	14.15	vertical	-75.3	-13.00	62.3	90
6	22113.0	-88.45	6.80	14.05	vertical	-81.2	-13.00	68.2	90
7	25798.5	-86.44	6.90	14.84	vertical	-78.5	-13.00	65.5	45
8	29484.0	--	--	--	--	--	--	--	--
9	33169.5	--	--	--	--	--	--	--	--
10	36855.0	--	--	--	--	--	--	--	--

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	CMW500	R&S	113645	2016-05-21	2017-05-20
Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA
Spectrum Analyzer	N9010A	Agilent	MY47191109	2016-05-21	2017-05-20
Signal Analyzer	FSV40	R&S	15195-01-00	2016-05-26	2017-05-25
EMI Test Receiver	ESCI	R&S	100948	2016-06-01	2017-05-31
Trilog Antenna	VUBL 9163	SCHWARZBECK	9163-201	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
Horn Antenna	3160-09	ETS-Lindgren	00102643	2015-01-30	2018-01-29
Horn Antenna	QSH-SL-26-40-K-15	STEATITE	16779	2016-03-21	2019-03-20
Climatic Chamber	PT-30B	Re Ce	20101891	2016-07-17	2017-07-16
RF Cable	SMA 15cm	Agilent	0001	2016-08-05	2016-10-04

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

ANNEX A:EUT Appearanceand Test Setup

A.1 EUT Appearance

Front Side

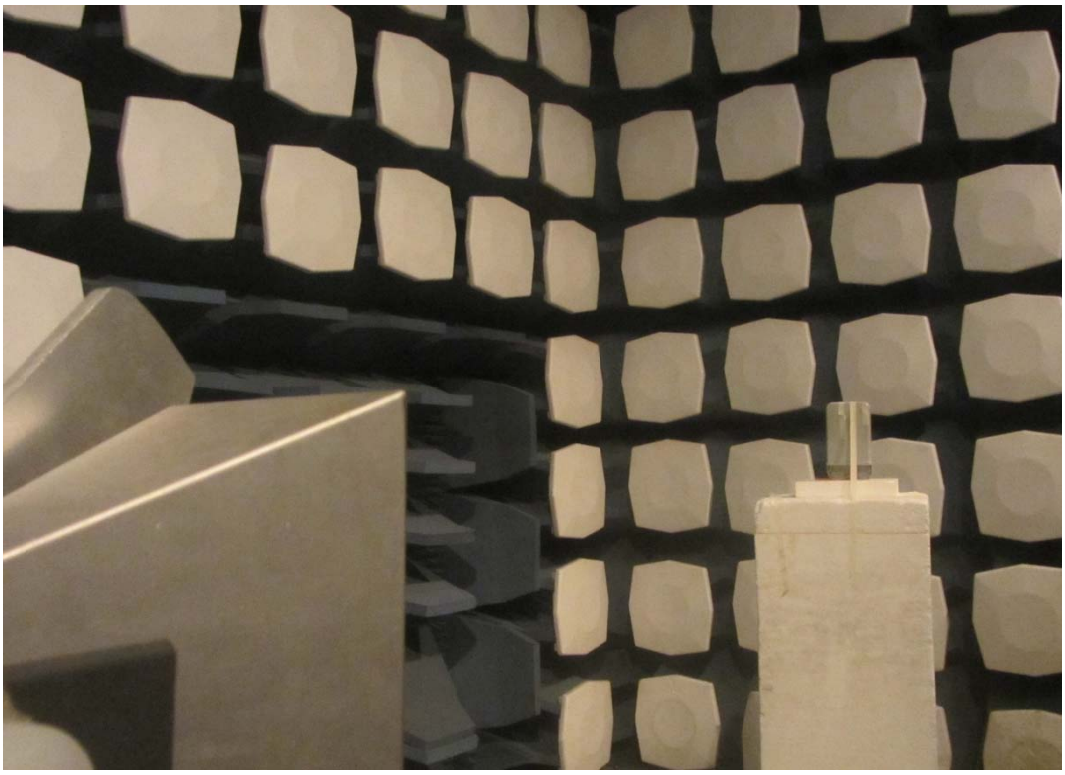
Back Side

a: EUT

c: Ethernet cables

Picture 1: EUT and Auxiliary

A.2 Test Setup



Picture 2: Radiated Spurious Emissions Test setup