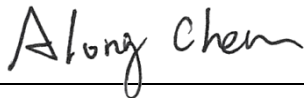


# FCC Test Report

**FCC ID** : MXF-WRTD303NME936  
**Equipment** : LTE Module  
**Model No.** : ME936  
**Brand Name** : Gemtek  
**Applicant** : Gemtek Technology Co., Ltd.  
**Address** : No.15-1 Zhonghua Road, Hsinchu Industrial  
Park, Hukou, Hsinchu, Taiwan, 30352  
**Standard** : 47 CFR FCC Part 22 Subpart H  
**Received Date** : Nov. 12, 2014  
**Tested Date** : Dec. 03 ~ Dec. 22, 2014

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:



Along Chen / Assistant Manager



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## Release Record

Report No.	Version	Description	Issued Date
FG4N1201P22	Rev. 01	Initial issue	Jan. 21, 2014

## Summary of Test Results

FCC Rules	Test Items	Measured	Result
2.1046 / 22.913(a)(2)	Effective Radiated Power	Power[dBm] : WCDMA: 22.47 LTE: 22.06	Pass
2.1053 / 22.917(a)	Radiated Emissions	Meet the requirement of limit	Pass
2.1051 / 22.917(a)	Conducted Emissions	Meet the requirement of limit	Pass
2.1051 / 22.917(a)	Band Edge	Meet the requirement of limit	Pass
2.1049 / 22.917(a)	Occupied Bandwidth	Meet the requirement of limit	Pass
-	Peak to average ratio	Meet the requirement of limit	Pass
2.1055 / 22.355	Frequency Stability	Meet the requirement of limit	Pass

# 1 General Description

## 1.1 Information

### 1.1.1 Specification of the Equipment under Test (EUT)

<b>Operating band (MHz)</b>	WCDMA Band V: 826.4~846.6 LTE Band 5: Channel Bandwidth: 3MHz: 825.5~847.5 Channel Bandwidth: 5MHz: 826.5~846.5 Channel Bandwidth: 10MHz: 829~844
<b>Modulation</b>	WCDMA / HSDPA / HSUPA Uplink: QPSK Downlink: QPSK , 16QAM , 64QAM  LTE Uplink: QPSK, 16QAM Downlink: QPSK , 16QAM , 64QAM
<b>3GPP Release Version</b>	WCDMA: R7 LTE: 9
<b>H/W Version</b>	V03
<b>S/W Version</b>	1.1.0

Note: The module is certified as limited module that is limited to specific host (refer to section 1.1.2).

### 1.1.2 Specific platform Information

Brand Name	Model Name	Product Name	FCC ID
Gemtek	WRTD-303N	Easy Connect	MXF-WRTD303N

Accessories for Platform		
No.	Equipment	Description
1	AC Adapter 1	Brand Name: AOEM Model Name: ADS0248-W 120200 Power Rating: I/P: 100-240Vac, 50-60Hz, 0.6A O/P: 12Vdc, 2A Power Line: 120cm non-shielded cable with one core
2	AC Adapter 2	Brand Name: APD Model Name: WA-24Q12FU Power Rating: I/P: 100-240Vac, 50-60Hz, 0.6A O/P: 12Vdc, 2A Power Line: 1.8m non-shielded cable with one core
3	AC Adapter 3	Brand Name: MOSO Model Name: MSP-C2000IC12.0-24W-US Power Rating: I/P: 100-240Vac, 50-60Hz, 0.8A O/P: 12Vdc, 2A Power Line: 1.4m non-shielded cable with one core
4	WTE Battery	Model: 303N Rating: 7.4Vdc, 4050mAh (29.97Wh)
5	MAXELL Battery	button cell battery Model: ML2032 Rating: 3Vdc
6	built-in HDD	Brand: TOSHIBA Model: MQ01ABF050 Capacity: 500GB

### 1.1.3 Maximum ERP, Frequency Tolerance and Emission Designator

System	Modulation	Maximum ERP(W)	Emission Designator
WCDMA 850	QPSK	0.177	4M07F9W
LTE Band 5, CB: 3MHz	QPSK	0.156	2M69G7D
LTE Band 5, CB: 3MHz	16QAM	0.141	2M70W7D
LTE Band 5, CB: 5MHz	QPSK	0.151	4M52G7D
LTE Band 5, CB: 5MHz	16QAM	0.135	4M50W7D
LTE Band 5, CB: 10MHz	QPSK	0.161	9M03G7D
LTE Band 5, CB: 10MHz	16QAM	0.138	9M00W7D

### 1.1.4 Antenna Details

Ant. No.	Type	Gain (dBi)	Connector	Remark
1	PIFA	1.3	UFL	---

### 1.1.5 EUT and Host Operational Condition

#### EUT

<b>Supply Voltage</b>	3.3 Vdc from host		
<b>Operational Climatic</b>	<input checked="" type="checkbox"/> Tnom (20°C)	<input checked="" type="checkbox"/> Tmax (50°C)	<input checked="" type="checkbox"/> Tmin (-30°C)

#### Host

<b>Operational Voltage</b>	<input checked="" type="checkbox"/> Vnom (7.4 Vdc)	<input checked="" type="checkbox"/> Vmax (8.14 Vdc)	<input checked="" type="checkbox"/> Vmin (6.66 Vdc)
----------------------------	--	---	---

### 1.1.6 Operating Channel List

WCDMA BAND V		
Channel Location	Channel	Frequency (MHz)
Low	4132	826.4
Middle	4182	836.4
High	4233	846.6

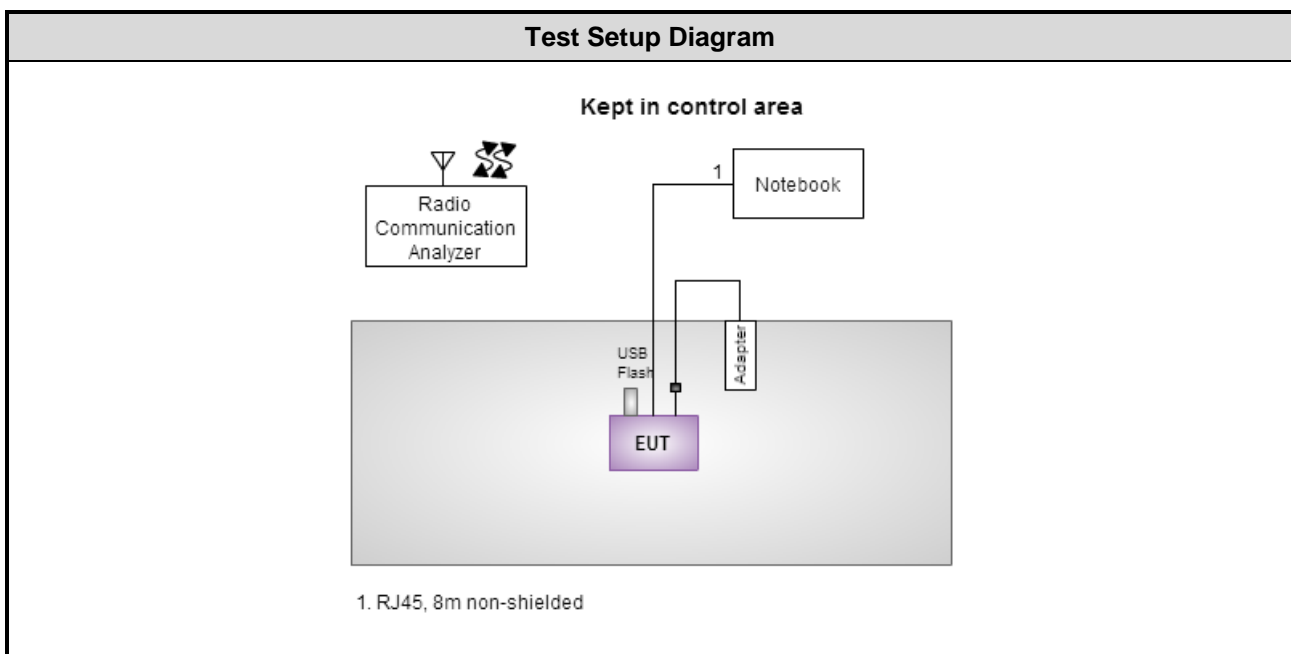
LTE Band 5		
Channel Bandwidth (MHz)	Channel	Frequency (MHz)
3	20415	825.5
3	20525	836.5
3	20635	847.5
5	20425	826.5
5	20525	836.5
5	20625	846.5
10	20450	829
10	20525	836.5
10	20600	844



## 1.2 Local Support Equipment List

Support Equipment List						
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E6430	J5GB4X1	DoC	RJ45, 8m non-shielded.
2	USB Flash	Kingston	DTSE9	WX9Q6	---	---

## 1.3 Test Setup Chart



Note: The module is certified as limited module that is limited to specific host (refer to section 1.1.2). Thus, test configuration is combined with host not stand-alone.

## 1.4 The Equipment List

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101063	Feb. 17, 2014	Feb. 16, 2015
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 16, 2014	Sep. 15, 2015
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Dec. 03, 2014	Dec. 02, 2015
Power Meter	Anritsu	ML2495A	1241002	Sep. 29, 2014	Sep. 28, 2015
Power Sensor	Anritsu	MA2411B	1207366	Sep. 29, 2014	Sep. 28, 2015
Signal Generator	R&S	SMB100A	175727	Oct. 08, 2014	Oct. 07, 2015
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Mar. 18, 2014	Mar. 17, 2015
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA

Note: Calibration Interval of instruments listed above is one year.

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101499	Feb. 08, 2014	Feb. 07, 2015
Receiver	R&S	ESR3	101658	Nov. 10, 2014	Nov. 09, 2015
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Sep. 05, 2014	Sep. 04, 2015
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Oct. 14, 2014	Oct. 13, 2015
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 10, 2014	Nov. 09, 2015
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	Burgeon	BPA-530	SN:100219	Sep. 09, 2014	Sep. 08, 2015
Preamplifier	Agilent	83017A	MY39501308	Oct. 09, 2014	Oct. 08, 2015
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 19, 2014	Feb. 18, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY22601/4	Feb. 19, 2014	Feb. 18, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 19, 2014	Feb. 18, 2015
LF cable 3M	EMC	EMC8D-NM-NM-3000	131103	Feb. 17, 2014	Feb. 16, 2015
LF cable 10M	EMC	EMC8D-NM-NM-13000	131104	Feb. 17, 2014	Feb. 16, 2015
Measurement Software	AUDIX	e3	6.120210g	NA	NA

Note: Calibration Interval of instruments listed above is one year.

## 1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards.

47 CFR FCC Part 22 Subpart H

ANSI C63.4-2003

ANSI / TIA / EIA-603-C -2004

FCC KDB 971168 D01 Power Meas License Digital Systems v02r02

FCC KDB 971168 D02 Misc OOBE License Digital Systems v01

FCC KDB 412172 D01 Determining ERP and EIRP v01

## 1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ( $k=2$ )).

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	$\pm 34.134$ Hz
Conducted power	$\pm 0.808$ dB
Frequency error	$\pm 34.134$ Hz
Temperature	$\pm 0.6$ °C
Conducted emission	$\pm 2.670$ dB
AC conducted emission	$\pm 2.92$ dB
Radiated emission $\leq 1$ GHz	$\pm 3.72$ dB
Radiated emission $> 1$ GHz	$\pm 5.65$ dB

---

## 2 Test Configuration

### 2.1 Testing Condition and Location Information

Test Item	Test Site	Ambient Condition	Tested By
RF conducted	TH01-WS	21°C / 60-64%	Felix Sung
Radiated Emissions	03CH01-WS	22°C / 63%	Haru Yang

- FCC site registration No.: 657002
- IC site registration No.: 10807A-1

## 2.2 The Worst Test Modes and Channel Details

### WCDMA

Test item	Mode	Test channel
Effective Radiated Power	WCDMA Band V	4132, 4182, 4233
Radiated Emissions ≤ 1GHz	WCDMA Band V	4233
Radiated Emissions > 1GHz	WCDMA Band V	4132, 4182, 4233
Conducted Emissions	WCDMA Band V	4132, 4182, 4233
Band Edge	WCDMA Band V	4132, 4233
Occupied Bandwidth	WCDMA Band V	4132, 4182, 4233
Peak to average ratio	WCDMA Band V	4132, 4182, 4233
Frequency Stability	WCDMA Band V	4182

**Note:**

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.
2. Adapter 1, Adapter 2 and Adapter 3 had been pretested and found that **Adapter 1** was the worst case and was selected for final testing (Adapter 1: AOEM adapter; Adapter 2: APD adapter; Adapter 3: MOSO adapter).

### LTE

Test item	Channel Bandwidth	Modulation	Test channel
E.I.R.P			
Conducted Emissions	3 MHz	QPSK / 16QAM	20415 / 20525 / 20635
Occupied Bandwidth	5 MHz	QPSK / 16QAM	20425 / 20525 / 20625
Peak to Average Ratio	10 MHz	QPSK / 16QAM	20450 / 20525 / 20600
Radiated Emission ≤ 1GHz	3 MHz	QPSK	20415
	5 MHz	QPSK	20425
	10 MHz	QPSK	20600
Radiated Emission > 1GHz	3 MHz	QPSK	20415 / 20525 / 20635
	5 MHz	QPSK	20425 / 20525 / 20625
	10 MHz	QPSK	20450 / 20525 / 20600
Band Edge	3 MHz	QPSK / 16QAM	20415 20635
	5 MHz	QPSK / 16QAM	20425 20625
	10 MHz	QPSK / 16QAM	20450 20600
Frequency Stability	3 MHz	QPSK	20525
	5 MHz	QPSK	20525
	10 MHz	QPSK	20525

**Note:**

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.
2. Adapter 1, Adapter 2 and Adapter 3 had been pretested and found that **Adapter 1** was the worst case and was selected for final testing (Adapter 1: AOEM adapter; Adapter 2: APD adapter; Adapter 3: MOSO adapter).

## 3 Test Results

### 3.1 Effective Radiated Power

#### 3.1.1 Limit of Effective Radiated Power

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

#### 3.1.2 Test Procedures

For Conducted power measurement

1. The EUT links up with simulator and is set to maximum output power level at low / middle / high channel.
2. Measure the output power of low / middle / high channel of the EUT

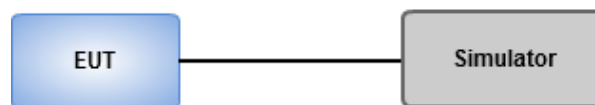
For ERP measurement

EPR can be calculated by below formula from KDB 412172 D01

1.  $EIRP = P_T + G_T - L_C$   
 $P_T$  = transmitter output power, in dBm  
 $G_T$  = gain of the transmitting antenna, in dBi (EIRP)  
 $L_C$  = signal attenuation in the connecting cable between the transmitter and antenna, in dB.
2.  $ERP = EIRP - 2.15 \text{ dB}$ .

#### 3.1.3 Test Setup

##### Conducted Power Measurement



### 3.1.4 Test Result of Conducted Output Power (dBm)

Band	WCDMA BAND V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	22.71	23.10	<b>23.32</b>
HSDPA Subtest-1	22.74	23.05	23.24
HSDPA Subtest-2	22.25	22.76	22.79
HSDPA Subtest-3	21.82	22.26	22.43
HSDPA Subtest-4	21.46	21.88	22.21
HSUPA Subtest-1	22.28	22.22	22.47
HSUPA Subtest-2	20.49	20.91	21.16
HSUPA Subtest-3	21.57	21.99	22.21
HSUPA Subtest-4	20.73	21.25	21.45
HSUPA Subtest-5	22.65	22.92	23.18

Band / Channel Bandwidth			LTE Band 5 / CB: 3MHz		
Channel			20415	20525	20635
Frequency (MHz)			825.5	836.5	847.5
Mode	RB	RB Offset	Maximum AV Power (dBm)		
QPSK	1	0	22.75	22.58	22.52
	1	7	22.64	22.47	22.61
	1	14	<b>22.79</b>	22.59	22.45
	8	0	21.99	21.80	21.91
	8	4	21.91	21.79	21.85
	8	7	22.00	21.79	21.93
	15	0	21.98	21.81	21.89
16QAM	1	0	22.33	21.80	21.97
	1	7	22.07	22.21	21.82
	1	14	21.86	21.98	21.96
	8	0	20.80	20.83	20.82
	8	4	20.91	20.80	20.80
	8	7	20.94	20.84	20.88
	15	0	21.04	20.85	20.96

Band / Channel Bandwidth			LTE Band 5 / CB: 5MHz		
Channel			20425	20525	20625
Frequency (MHz)			826.5	836.5	846.5
Mode	RB	RB Offset	Maximum AV Power (dBm)		
QPSK	1	0	22.59	22.42	22.53
	1	12	22.53	22.58	22.62
	1	24	<b>22.63</b>	22.58	22.59
	12	0	21.95	21.89	21.93
	12	6	21.91	21.75	21.96
	12	11	21.92	21.84	21.76
	25	0	21.96	21.79	21.84
16QAM	1	0	21.73	22.08	21.68
	1	12	21.95	21.89	21.79
	1	24	22.14	22.05	21.64
	12	0	20.68	20.79	20.67
	12	6	20.91	20.75	20.83
	12	11	20.73	20.66	20.82
	25	0	20.81	20.74	20.69

Band / Channel Bandwidth			LTE Band 5 / CB: 10MHz		
Channel			20450	20525	20600
Frequency (MHz)			829	836.5	844
Mode	RB	RB Offset	Maximum AV Power (dBm)		
QPSK	1	0	22.86	22.49	22.87
	1	24	22.73	22.40	22.40
	1	49	22.45	22.52	<b>22.91</b>
	25	0	22.00	21.96	22.12
	25	12	21.97	21.92	21.99
	25	24	21.94	21.92	21.96
	50	0	21.96	21.94	21.97
16QAM	1	0	21.99	21.95	21.96
	1	24	21.92	21.91	22.25
	1	49	22.19	21.95	22.03
	25	0	20.97	20.96	20.98
	25	12	20.95	20.92	21.08
	25	24	21.06	20.94	21.12
	50	0	20.98	20.97	21.06



### 3.1.5 Test Result of Effective Radiated Power (dBm)

Mode	WCDMA Band V						
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
4132	826.4	22.74	1.3	24.04	21.86	0.155	7
4182	836.4	23.1	1.3	24.4	22.25	0.168	7
4233	846.6	23.32	1.3	<b>24.62</b>	22.47	0.177	7

Mode	LTE Band 5, CB: 3MHz, QPSK						
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
20415	825.5	22.79	1.3	24.09	21.94	0.156	7
20525	836.5	22.59	1.3	23.89	21.74	0.149	7
20635	847.5	22.61	1.3	23.91	21.76	0.150	7

Mode	LTE Band 5, CB: 3MHz, 16QAM						
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
20415	825.5	22.33	1.3	23.63	21.48	0.141	7
20525	836.5	22.21	1.3	23.51	21.36	0.137	7
20635	847.5	21.97	1.3	23.27	21.12	0.129	7

Mode							
LTE Band 5, CB: 5MHz, QPSK							
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
20425	826.5	22.63	1.3	23.93	21.78	0.151	7
20525	836.5	22.58	1.3	23.88	21.73	0.149	7
20625	846.5	22.62	1.3	23.92	21.77	0.150	7

Mode							
LTE Band 5, CB: 5MHz, 16QAM							
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
20425	826.5	22.14	1.3	23.44	21.29	0.135	7
20525	836.5	22.08	1.3	23.38	21.23	0.133	7
20625	846.5	21.79	1.3	23.09	20.94	0.124	7

Mode							
LTE Band 5, CB: 10MHz, QPSK							
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
20450	829	22.86	1.3	24.16	22.01	0.159	7
20525	836.5	22.52	1.3	23.82	21.67	0.147	7
20600	844	22.91	1.3	<b>24.21</b>	22.06	0.161	7

Mode							
LTE Band 5, CB: 10MHz, 16QAM							
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (W)	Limit (W)
20450	829	22.19	1.3	23.49	21.34	0.136	7
20525	836.5	21.95	1.3	23.25	21.1	0.129	7
20600	844	22.25	1.3	23.55	21.4	0.138	7

## 3.2 Radiated Emissions

### 3.2.1 Limit of Radiated Emissions

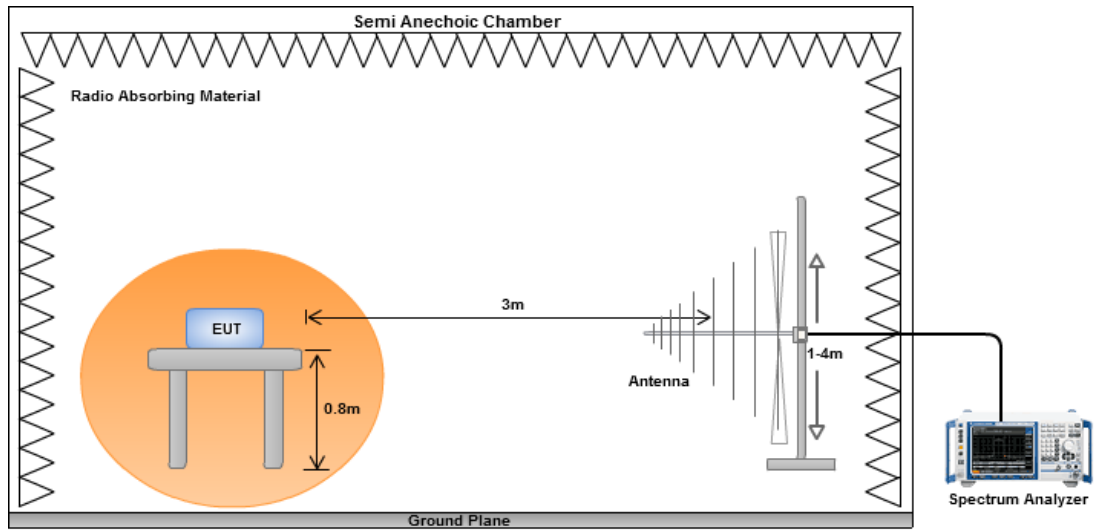
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB equal to -13dBm.

### 3.2.2 Test Procedures

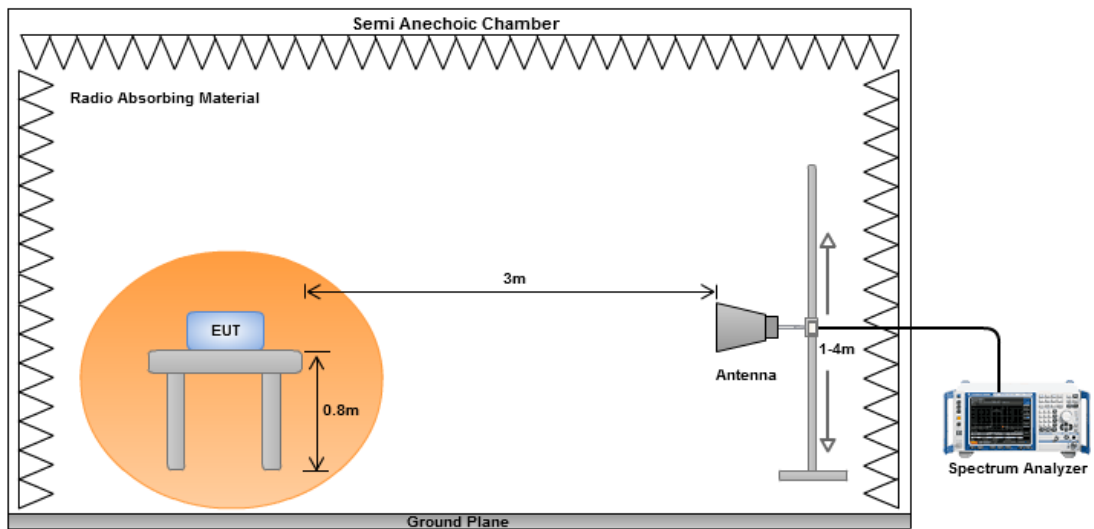
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.
4. After finding the max radiated emission, substitution method will be used for getting effective radiated power. EUT will be removed and substitution antenna will be placed at same position. Signal generator will output CW signal to substitution antenna through a RF cable. Rotate turntable and move antenna to find maximum radiated emission. Adjust output power of signal generator to let the maximum radiated emission is same as step 3. Record the output power level.
5. E.I.R.P = output power of step 4 + gain of substitution antenna – cable loss of RF cable. ERP can be calculated by below formula:  
 $E.R.P = E.I.R.P - 2.15dB$

### 3.2.3 Test Setup

#### Radiated Emissions below 1 GHz



#### Radiated Emissions above 1 GHz



### 3.2.4 Test Result of Radiated Emissions below 1GHz

Mode		WCDMA Band V, Channel: 4233					
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
66.37	H	-59	-13	-46	-48.5	-50.23	-6.62
88.42	H	-54.08	-13	-41.08	-41.16	-51.99	0.06
107.54	H	-48.53	-13	-35.53	-36.2	-46.28	-0.1
122.39	H	-47.4	-13	-34.4	-35.2	-44.46	-0.79
337.28	H	-63.91	-13	-50.91	-54.2	-66.12	4.36
518.45	H	-66.38	-13	-53.38	-60.01	-68.34	4.11
40.26	V	-52.08	-13	-39.08	-39.48	-37.67	-12.26
82.91	V	-59.04	-13	-46.04	-46.28	-55.53	-1.36
108.43	V	-43.44	-13	-30.44	-32.09	-41.15	-0.14
144.72	V	-58.49	-13	-45.49	-49.42	-55.11	-1.23
183.26	V	-66.86	-13	-53.86	-57.58	-67.2	2.49
318.63	V	-65.02	-13	-52.02	-56.74	-67.15	4.28

Mode		LTE Band 5, CB:3MHz, 1RB, Offset 14, Channel:20415					
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
65.89	H	-59.5	-13	-46.5	-49.27	-50.57	-6.78
87.23	H	-54.45	-13	-41.45	-41.39	-52.05	-0.25
108.57	H	-48.57	-13	-35.57	-36.24	-46.27	-0.15
121.18	H	-48.47	-13	-35.47	-36.18	-45.57	-0.75
337.49	H	-64.31	-13	-51.31	-54.61	-66.52	4.36
518.88	H	-66.74	-13	-53.74	-60.38	-68.71	4.12
41.64	V	-52.79	-13	-39.79	-40.6	-38.58	-12.06
82.38	V	-59.12	-13	-46.12	-46.33	-55.47	-1.5
108.57	V	-43.23	-13	-30.23	-31.87	-40.93	-0.15
145.43	V	-58.97	-13	-45.97	-49.96	-55.6	-1.22
184.23	V	-66.74	-13	-53.74	-57.42	-67.19	2.6
318.09	V	-65.41	-13	-52.41	-57.13	-67.54	4.28

NOTE: ERP = S.G power value + correction factor - 2.15

Mode	LTE Band 5, CB:5MHz, 1RB, Offset 24, Channel:20425						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
65.37	H	-59.36	-13	-46.36	-49.41	-50.25	-6.96
87.49	H	-55.11	-13	-42.11	-42.08	-52.78	-0.18
108.42	H	-48.69	-13	-35.69	-36.36	-46.4	-0.14
121.83	H	-48.74	-13	-35.74	-36.5	-45.82	-0.77
337.63	H	-65	-13	-52	-55.31	-67.22	4.37
518.93	H	-66.86	-13	-53.86	-60.5	-68.83	4.12
41.38	V	-52.38	-13	-39.38	-40.11	-38.13	-12.1
82.44	V	-58.72	-13	-45.72	-45.93	-55.09	-1.48
108.72	V	-43.68	-13	-30.68	-32.32	-41.37	-0.16
145.63	V	-59.04	-13	-46.04	-50.04	-55.68	-1.21
184.35	V	-66.87	-13	-53.87	-57.54	-67.33	2.61
318.24	V	-65.33	-13	-52.33	-57.05	-67.46	4.28

Mode	LTE Band 5, CB:10MHz, 1RB, Offset 49, Channel:20600						
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
65.29	H	-59.56	-13	-46.56	-49.65	-50.43	-6.98
87.42	H	-54.44	-13	-41.44	-41.4	-52.09	-0.2
108.14	H	-48.52	-13	-35.52	-36.19	-46.24	-0.13
121.35	H	-48.34	-13	-35.34	-36.07	-45.44	-0.75
337.65	H	-64.73	-13	-51.73	-55.04	-66.95	4.37
518.39	H	-66.41	-13	-53.41	-60.04	-68.37	4.11
41.23	V	-53.13	-13	-40.13	-40.82	-38.86	-12.12
82.19	V	-59.18	-13	-46.18	-46.37	-55.49	-1.54
108.41	V	-43.74	-13	-30.74	-32.39	-41.45	-0.14
145.38	V	-59.11	-13	-46.11	-50.09	-55.74	-1.22
184.45	V	-66.87	-13	-53.87	-57.54	-67.35	2.63
318.29	V	-65.66	-13	-52.66	-57.38	-67.79	4.28

NOTE: ERP = S.G power value + correction factor - 2.15

### 3.2.5 Test Result of Radiated Emissions above 1GHz

Mode		WCDMA Band V, Channel: 4132					
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1652.8	H	-62.21	-13	-49.21	-63.57	-65.1	5.04
2479.2	H	-62.43	-13	-49.43	-68.62	-66.35	6.07
3305.6	H	-65.08	-13	-52.08	-73.92	-69.34	6.41
1652.8	V	-68.78	-13	-55.78	-69.52	-71.67	5.04
2479.2	V	-63.41	-13	-50.41	-70.34	-67.33	6.07
3305.6	V	-65.41	-13	-52.41	-73.88	-69.67	6.41

Mode		WCDMA Band V, Channel: 4182					
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1672.8	H	-60.96	-13	-47.96	-62.42	-63.92	5.11
2509.2	H	-62.95	-13	-49.95	-69.21	-66.86	6.06
3345.6	H	-64.64	-13	-51.64	-73.27	-68.95	6.46
1672.8	V	-66.53	-13	-53.53	-67.34	-69.49	5.11
2509.2	V	-65.42	-13	-52.42	-72.4	-69.33	6.06
3345.6	V	-65.34	-13	-52.34	-73.79	-69.65	6.46

Mode		WCDMA Band V, Channel: 4233					
Frequency (MHz)	Antenna Polarity.	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1693.2	H	-58.68	-13	-45.68	-60.25	-61.7	5.17
2539.8	H	-63.9	-13	-50.9	-70.23	-67.8	6.05
3386.4	H	-65.15	-13	-52.15	-73.57	-69.52	6.52
1693.2	V	-62.67	-13	-49.67	-63.55	-65.69	5.17
2539.8	V	-65.1	-13	-52.1	-72.12	-69	6.05
3386.4	V	-65.17	-13	-52.17	-73.59	-69.54	6.52

NOTE: ERP = S.G power value + correction factor - 2.15

Mode							
LTE Band 5, CB:3MHz, 1RB, Offset 14, Channel:20415							
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1653.52	H	-48.61	-13	-35.61	-49.97	-51.51	5.05
2480.43	H	-56.16	-13	-43.16	-62.35	-60.08	6.07
3306.98	H	-53.56	-13	-40.56	-62.39	-57.82	6.41
1653.52	V	-53.1	-13	-40.1	-53.84	-56	5.05
2480.43	V	-51.39	-13	-38.39	-58.32	-55.31	6.07
3306.98	V	-57.02	-13	-44.02	-65.49	-61.28	6.41

Mode							
LTE Band 5, CB:3MHz, 1RB, Offset 14, Channel:20525							
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1675.51	H	-47.81	-13	-34.81	-49.28	-50.77	5.11
2513.21	H	-55.6	-13	-42.6	-61.87	-59.51	6.06
3351.01	H	-54.31	-13	-41.31	-62.91	-58.63	6.47
1675.51	V	-52.16	-13	-39.16	-52.98	-55.12	5.11
2513.21	V	-51.09	-13	-38.09	-58.07	-55	6.06
3351.01	V	-57.08	-13	-44.08	-65.53	-61.4	6.47

Mode							
LTE Band 5, CB:3MHz, 1RB, Offset 14, Channel:20635							
Frequency (MHz)	Antenna Polarity.	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1697.46	H	-49.11	-13	-36.11	-50.7	-52.14	5.18
2524.33	H	-56.33	-13	-43.33	-62.63	-60.23	6.05
3351.11	H	-54.67	-13	-41.67	-63.27	-58.99	6.47
1697.46	V	-53.78	-13	-40.78	-54.67	-56.81	5.18
2524.33	V	-52.58	-13	-39.58	-59.59	-56.48	6.05
3351.11	V	-57.36	-13	-44.36	-65.81	-61.68	6.47

NOTE: ERP = S.G power value + correction factor - 2.15



Mode							
LTE Band 5, CB:5MHz, 1RB, Offset 24, Channel:20425							
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1657.33	H	-48.45	-13	-35.45	-49.83	-51.36	5.06
2485.84	H	-57.27	-13	-44.27	-63.47	-61.19	6.07
3314.58	H	-54.48	-13	-41.48	-63.28	-58.75	6.42
1657.33	V	-53.12	-13	-40.12	-53.88	-56.03	5.06
2485.84	V	-53.17	-13	-40.17	-60.11	-57.09	6.07
3314.58	V	-58.61	-13	-45.61	-67.08	-62.88	6.42

Mode							
LTE Band 5, CB:5MHz, 1RB, Offset 24, Channel:20525							
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1677.29	H	-48.19	-13	-35.19	-49.68	-51.16	5.12
2516.26	H	-55.96	-13	-42.96	-62.23	-59.87	6.06
3354.59	H	-54.93	-13	-41.93	-63.51	-59.26	6.48
1677.29	V	-52.33	-13	-39.33	-53.16	-55.3	5.12
2516.26	V	-52.59	-13	-39.59	-59.58	-56.5	6.06
3354.59	V	-57.68	-13	-44.68	-66.12	-62.01	6.48

Mode							
LTE Band 5, CB:5MHz, 1RB, Offset 24, Channel:20625							
Frequency (MHz)	Antenna Polarity.	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1697.28	H	-48.73	-13	-35.73	-50.32	-51.76	5.18
2545.99	H	-56.15	-13	-43.15	-62.49	-60.04	6.04
3394.73	H	-55.75	-13	-42.75	-64.13	-60.13	6.53
1697.28	V	-53.76	-13	-40.76	-54.65	-56.79	5.18
2545.99	V	-53.19	-13	-40.19	-60.22	-57.08	6.04
3394.73	V	-58.97	-13	-45.97	-67.4	-63.35	6.53

NOTE: ERP = S.G power value + correction factor - 2.15

Mode							
LTE Band 5, CB:10MHz, 1RB, Offset 49, Channel:20450							
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1666.86	H	-46.8	-13	-33.8	-48.23	-49.74	5.09
2500.24	H	-56.89	-13	-43.89	-63.13	-60.8	6.06
3333.61	H	-53.55	-13	-40.55	-62.24	-57.85	6.45
1666.86	V	-52.31	-13	-39.31	-53.1	-55.25	5.09
2500.24	V	-54.44	-13	-41.44	-61.41	-58.35	6.06
3333.61	V	-56.37	-13	-43.37	-64.82	-60.67	6.45

Mode							
LTE Band 5, CB:10MHz, 1RB, Offset 49, Channel:20525							
Frequency (MHz)	Antenna Polarity	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1681.78	H	-48.26	-13	-35.26	-49.77	-51.24	5.13
2522.71	H	-57.16	-13	-44.16	-63.46	-61.06	6.05
3363.59	H	-54.73	-13	-41.73	-63.27	-59.07	6.49
1681.78	V	-53	-13	-40	-53.84	-55.98	5.13
2522.71	V	-53.22	-13	-40.22	-60.22	-57.12	6.05
3363.59	V	-57.4	-13	-44.4	-65.84	-61.74	6.49

Mode							
LTE Band 5, CB:10MHz, 1RB, Offset 49, Channel:20600							
Frequency (MHz)	Antenna Polarity.	E.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
1696.77	H	-57.46	-13	-44.46	-50.56	-60.49	5.18
2545.29	H	-57.64	-13	-44.64	-63.98	-61.53	6.04
3393.76	H	-48.97	-13	-35.97	-63.84	-53.35	6.53
1696.77	V	-53.88	-13	-40.88	-54.77	-56.91	5.18
2545.29	V	-53.84	-13	-40.84	-60.87	-57.73	6.04
3393.76	V	-57.6	-13	-44.6	-66.03	-61.98	6.53

NOTE: ERP = S.G power value + correction factor - 2.15

### 3.3 Conducted Emissions

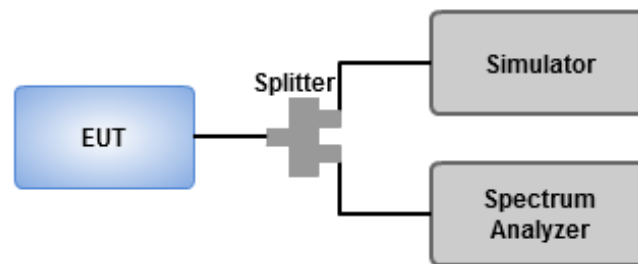
#### 3.3.1 Limit of Conducted Emissions

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 equal to -13dBm.

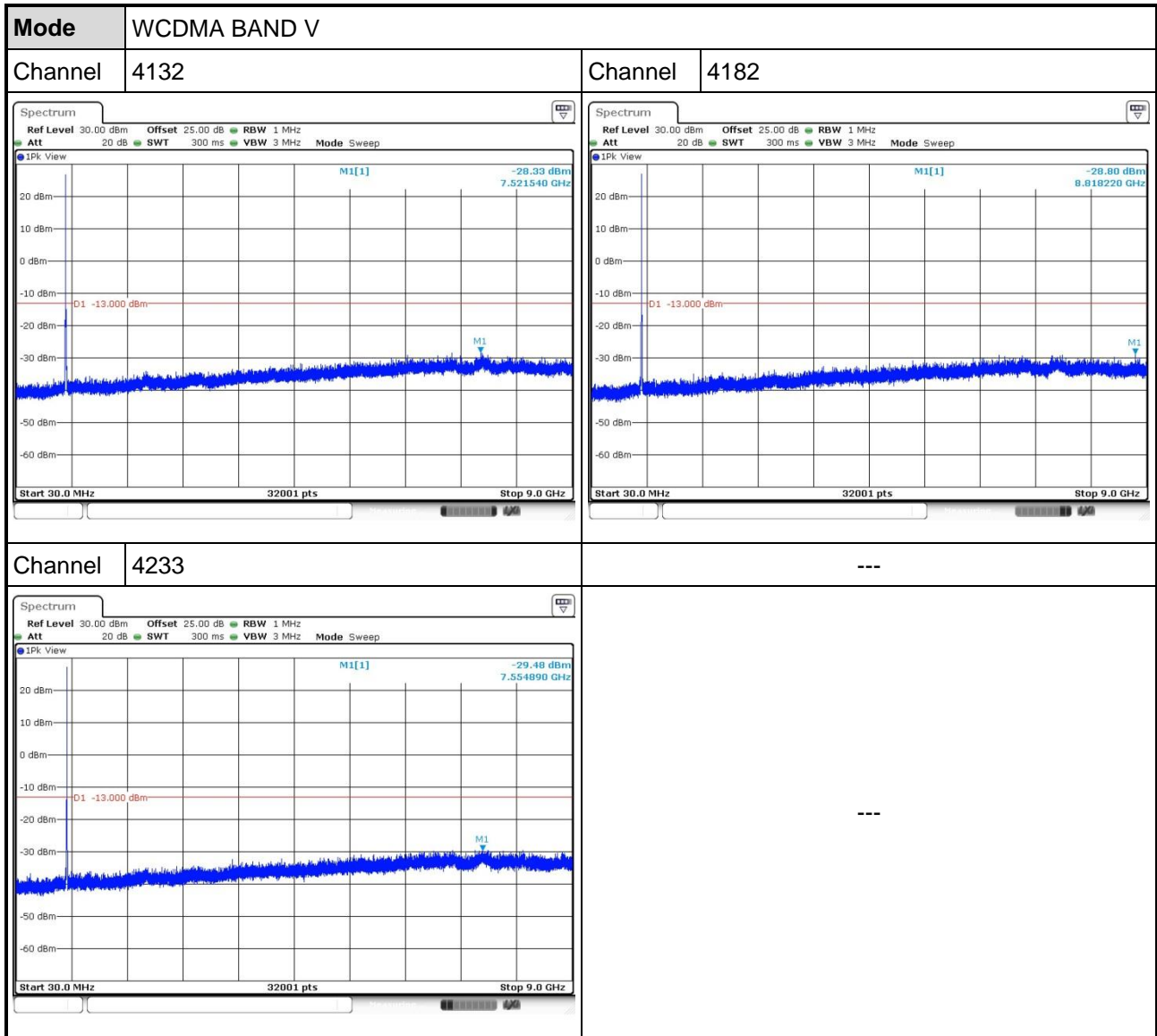
#### 3.3.2 Test Procedures

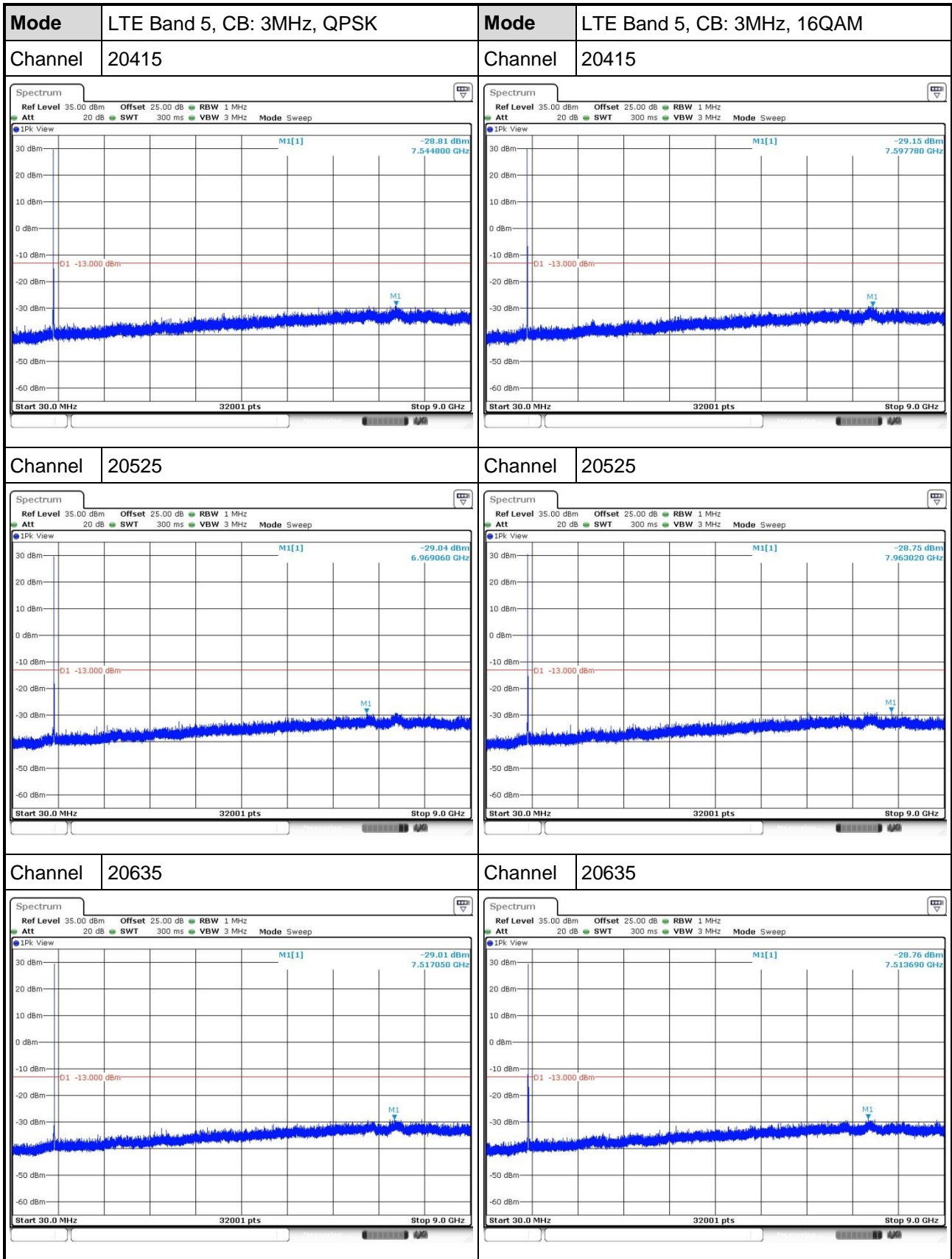
1. Lowest, middle and highest operating channels are tested for this item.
2. Scan frequency range is from 30MHz~9GHz.
3. Set RBW = 1MHz, VBW = 3MHz, detector = RMS, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

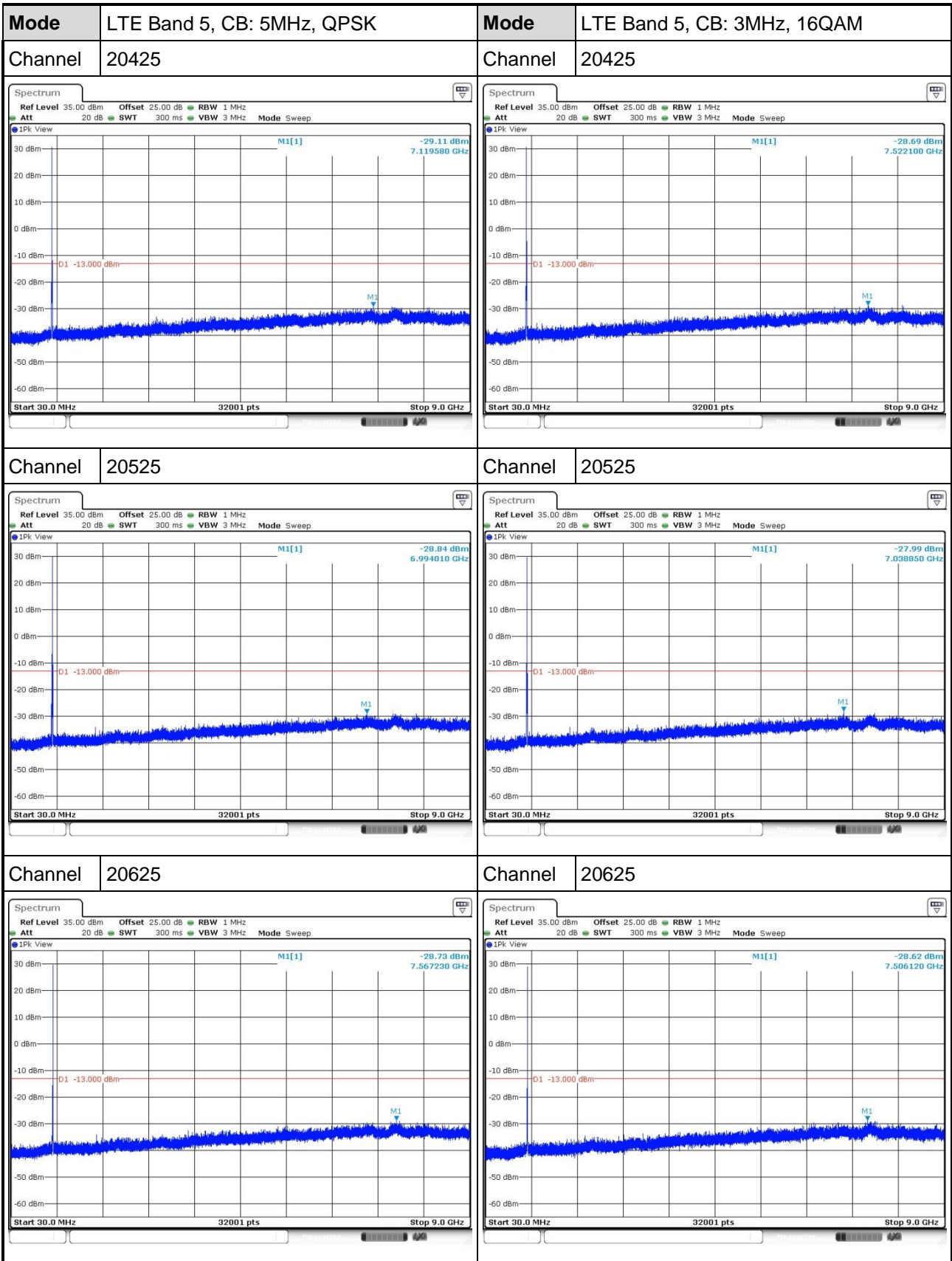
#### 3.3.3 Test Setup

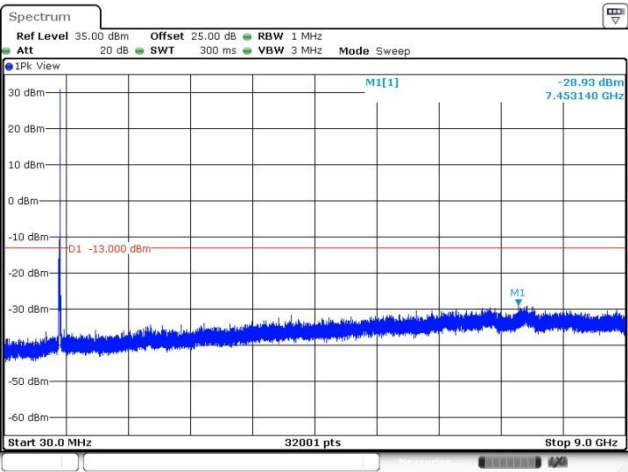
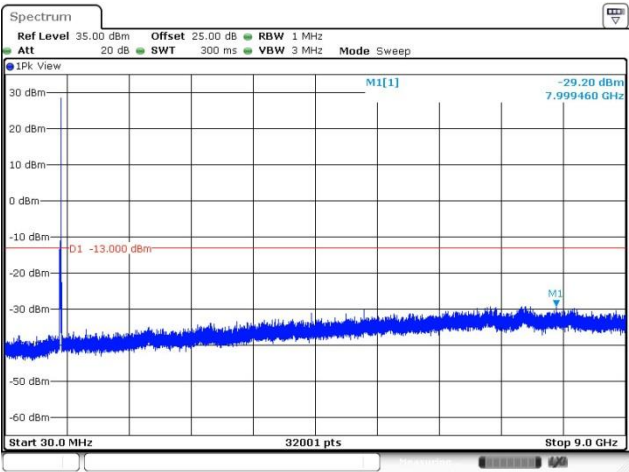
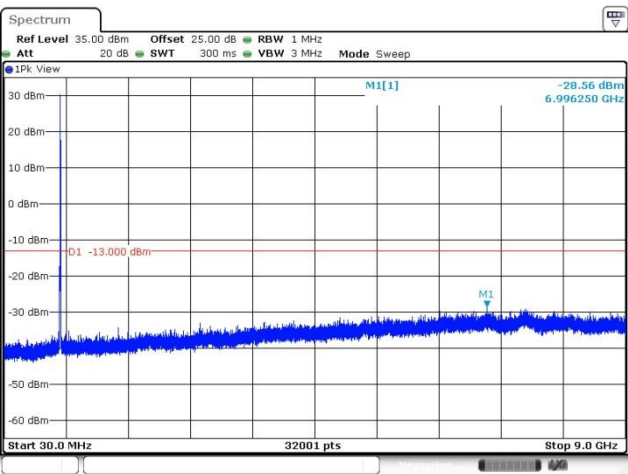
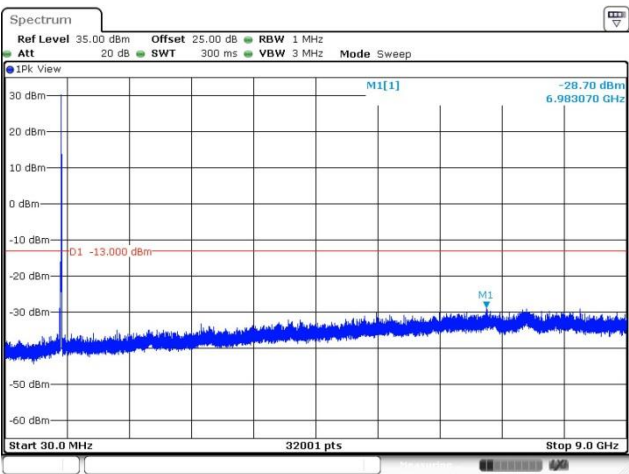
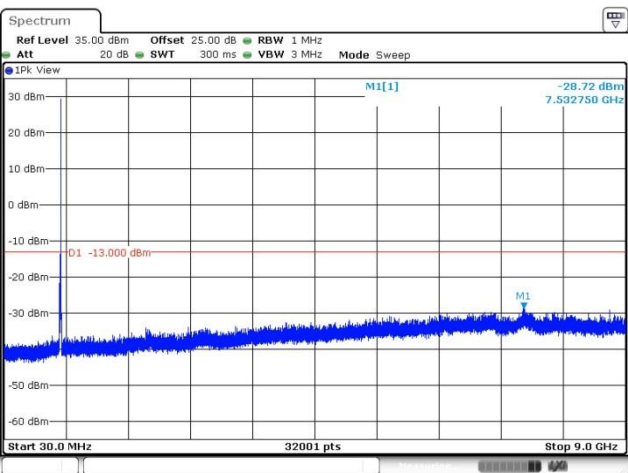
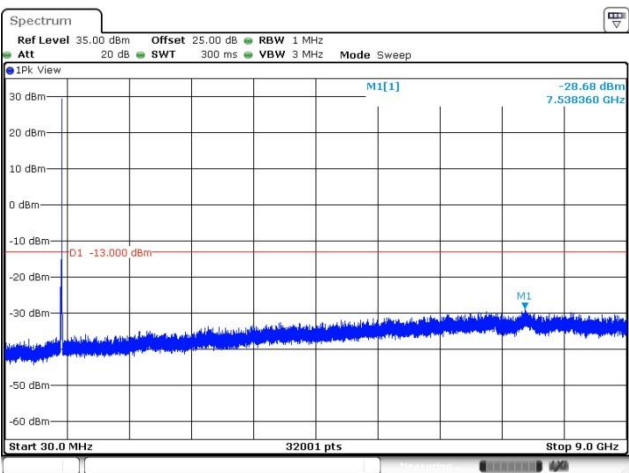


### 3.3.4 Test Result of Conducted Emissions







<b>Mode</b>	LTE Band 5, CB: 10MHz, QPSK	<b>Mode</b>	LTE Band 5, CB: 3MHz, 16QAM
<b>Channel</b>	20450	<b>Channel</b>	20450
			
<b>Channel</b>	20525	<b>Channel</b>	20525
			
<b>Channel</b>	20600	<b>Channel</b>	20600
			

## 3.4 Band Edge

### 3.4.1 Limit of Band Edge

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 equal to -13dBm.

### 3.4.2 Test Procedures

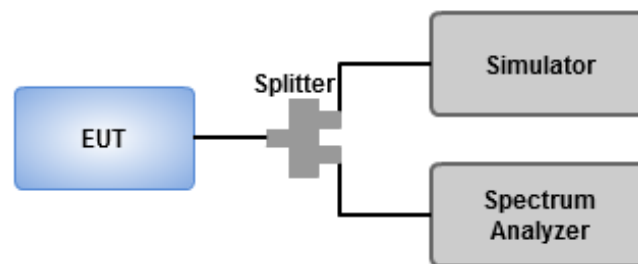
For WCDMA

1. Lowest and highest operating channels are tested for this item.
2. The center frequency of spectrum analyzer will be set to 824 and 849 MHz.
3. Set RBW = VBW = 100kHz, span = 5 MHz, detector = RMS, sweep time = auto
4. Record the max trace value and capture the test plot.

For LTE

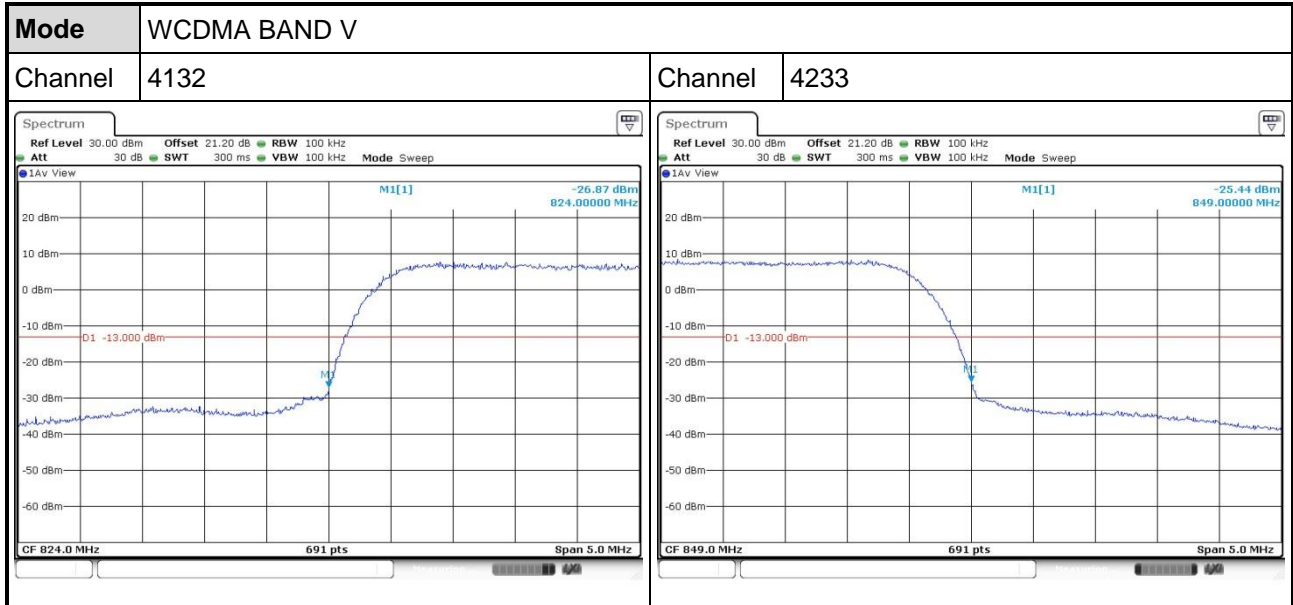
1. Lowest and highest operating channels are tested for this item.
2. Set RBW = 39 / 56 / 180 KHz , VBW = 120 / 180 / 330 kHz, for channel bandwidth 3 / 5 / 10 , detector = RMS, sweep time = auto to measure trace
3. Set RBW=100kHz,VBW=300kHz detector = RMS and use channel power measurement function of spectrum analyze to integrate power over 1MHz.

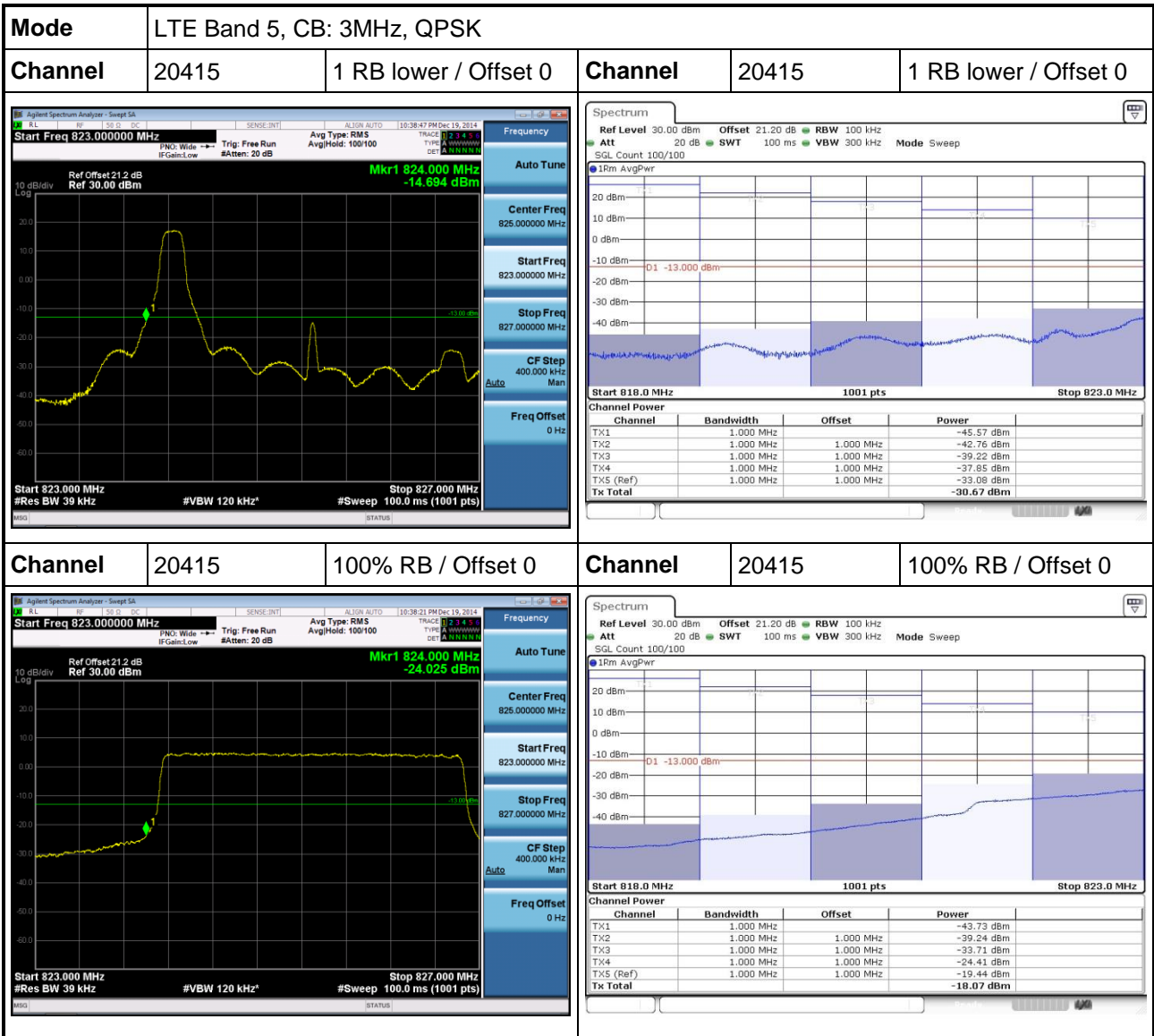
### 3.4.3 Test Setup

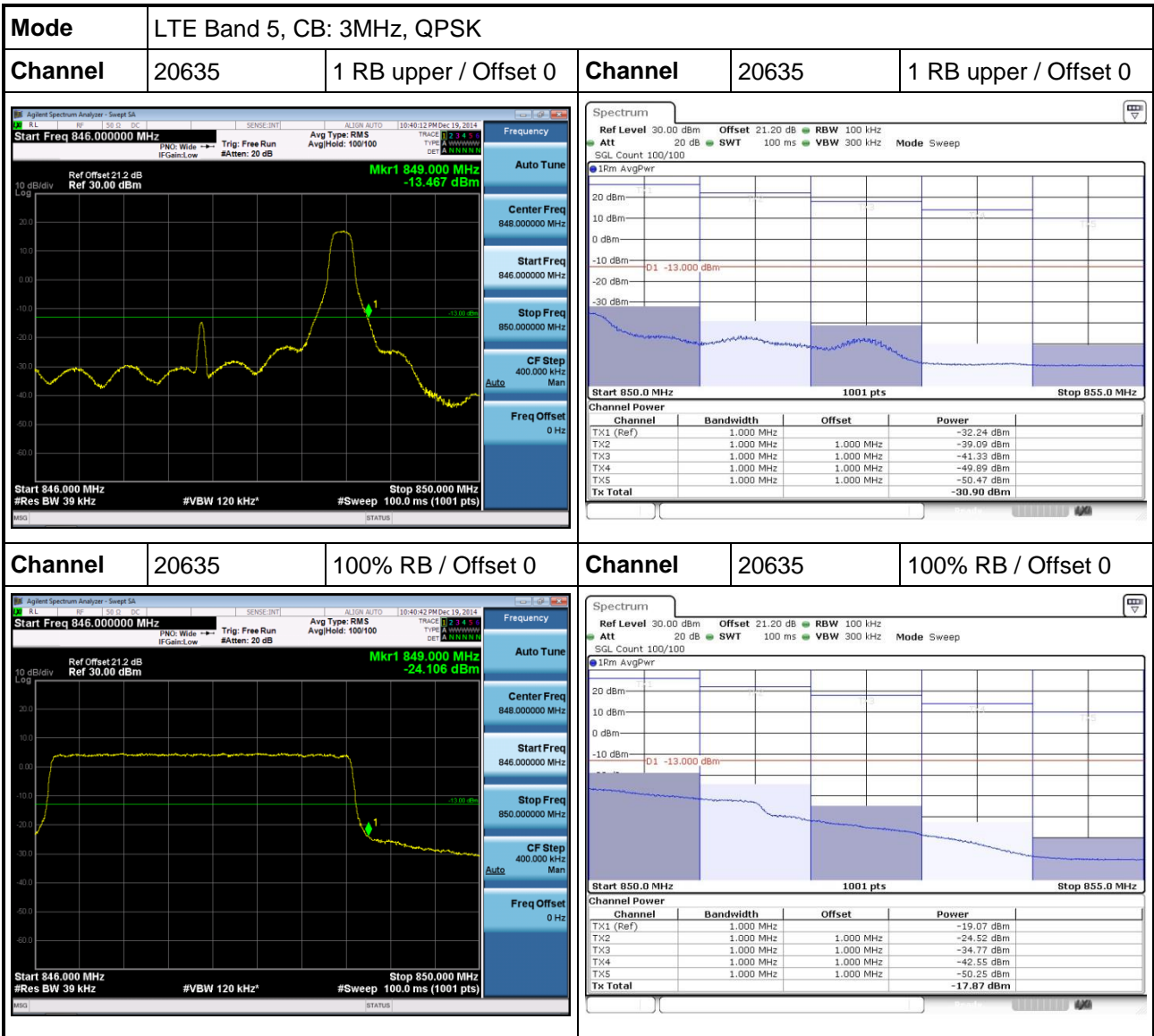




### 3.4.4 Test Result of Band Edge











<b>Mode</b>	LTE Band 5, CB: 5MHz, QPSK				
<b>Channel</b>	20425	1 RB lower / Offset 0	<b>Channel</b>	20425	1 RB lower / Offset 0

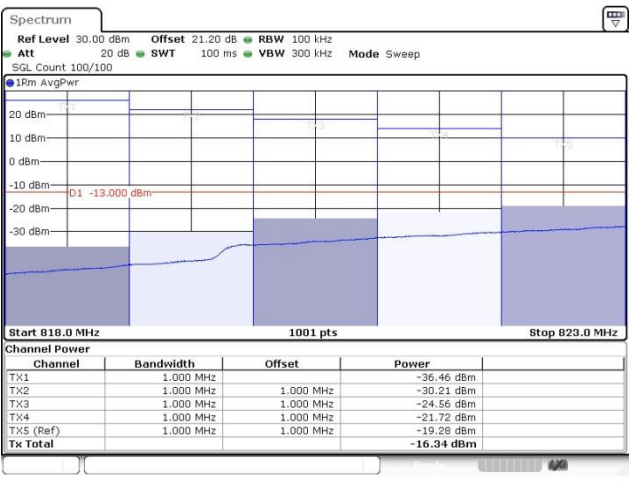
  

	
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<b>Channel</b>	20425	100% RB / Offset 0	<b>Channel</b>	20425	100% RB / Offset 0
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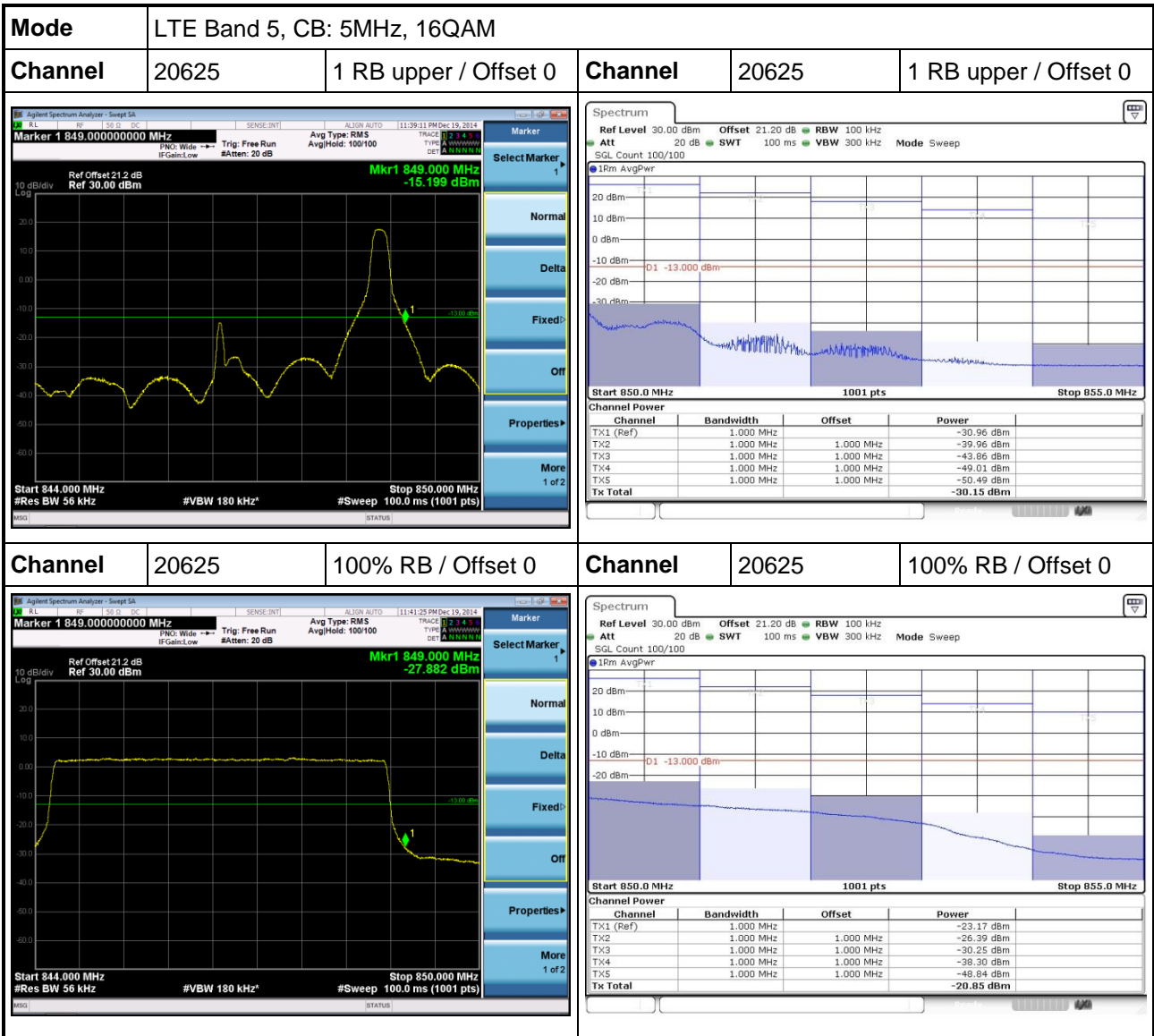
  

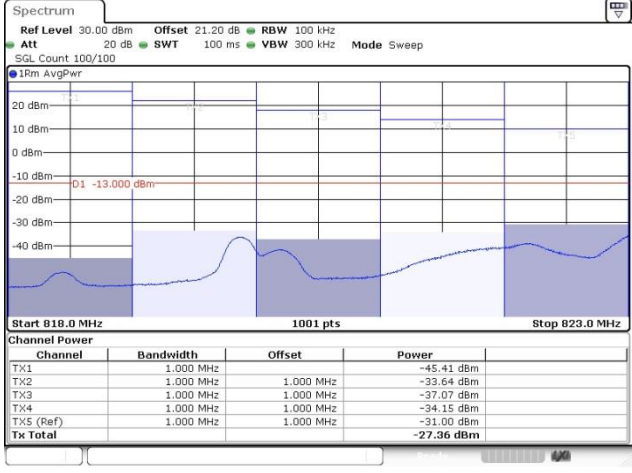
	
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<b>Mode</b>		LTE Band 5, CB: 10MHz, QPSK																															
<b>Channel</b>		20450	1 RB lower / Offset 0	<b>Channel</b>	20450	1 RB lower / Offset 0																											
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