

# FCC Test Report

**FCC ID** : ARA-CPE7000IDU2X  
**Equipment** : DM-CPE7000-Si-2D-1V-WiFi-2.x  
**Model No.** : WLTXFSR-105GN  
**Brand Name** : Telrad  
**Applicant** : Telrad Networks Ltd  
**Address** : Industrial Center PO Box 6118, Lod, 711600  
Israel  
**Standard** : 47 CFR FCC Part 27 Subpart M  
**Received Date** : Sep. 11, 2015  
**Tested Date** : Oct. 22 ~ Nov. 13, 2015

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:

  
\_\_\_\_\_  
Gary Chang / Manager



---

## Table of Contents

<b>1</b>	<b>GENERAL DESCRIPTION .....</b>	<b>5</b>
1.1	Information.....	5
1.2	Local Support Equipment List .....	7
1.3	Test Setup Chart .....	7
1.4	The Equipment List .....	8
1.5	Test Standards .....	9
1.6	Measurement Uncertainty .....	9
<b>2</b>	<b>TEST CONFIGURATION .....</b>	<b>10</b>
2.1	Testing Condition and Location Information.....	10
2.2	The Worst Test Modes and Channel Details .....	10
<b>3</b>	<b>TEST RESULTS.....</b>	<b>11</b>
3.1	Output Power.....	11
3.2	Radiated Emissions.....	16
3.3	Conducted Emissions.....	24
3.4	Channel Edge.....	29
3.5	Emission and Occupied Bandwidth.....	62
3.6	Frequency Stability.....	67
<b>4</b>	<b>TEST LABORATORY INFORMATION .....</b>	<b>70</b>

---

## Release Record

Report No.	Version	Description	Issued Date
FG591105	Rev. 01	Initial issue	Nov. 25, 2015

---

## Summary of Test Results

FCC Rules	Description of Test	Measured	Result
2.1046 / 27.50(h)(2)	Output power	EIRP [W]: 0.929	Pass
2.1053 / 27.53(l)(4)(6)	Radiated Emissions	Meet the requirement of limit	Pass
2.1051 / 27.53(l)(4)(6)	Conducted Emissions	Meet the requirement of limit	Pass
2.1051 / 27.53(l)(4)(6)	Channel Edge Measurement	Meet the requirement of limit	Pass
2.1049(h) / 27.53(l)(6)	Emission Bandwidth	Meet the requirement of limit	Pass
2.1055 / 27.54	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>H/W Version</b>	V02A
<b>S/W Version</b>	01.01.02.080
<b>Operating Frequency (MHz)</b>	LTE Band 41 Channel Bandwidth: 5MHz: 2498.5 ~ 2687.5 Channel Bandwidth: 10MHz: 2501.0 ~ 2685.0 Channel Bandwidth: 15MHz: 2503.5 ~ 2682.5 Channel Bandwidth: 20MHz: 2506.0 ~ 2680.0
<b>Modulation Type</b>	QPSK, 16QAM (Uplink) QPSK, 16QAM, 64QAM (Downlink)
<b>Duplex Mode</b>	TDD
<b>Category</b>	4
<b>Release Version</b>	9

### 1.1.2 Maximum Conducted Power and Emission Designator

Mode	Modulation	EIRP (W)	Emission Designator
LTE Band 41, CB: 5MHz	QPSK	0.929	4M48G7D
LTE Band 41, CB: 5MHz	16QAM	0.920	4M47W7D
LTE Band 41, CB: 10MHz	QPSK	0.908	8M92G7D
LTE Band 41, CB: 10MHz	16QAM	0.883	8M97W7D
LTE Band 41, CB: 15MHz	QPSK	0.897	13M4G7D
LTE Band 41, CB: 15MHz	16QAM	0.891	13M4W7D
LTE Band 41, CB: 20MHz	QPSK	0.904	17M9G7D
LTE Band 41, CB: 20MHz	16QAM	0.877	17M9W7D

### 1.1.3 Antenna Details

Ant. No.	Type	Gain (dBi)	Connector	Remarks
1	PCB	6.15	I-PEX	---

### 1.1.4 EUT Operational Condition

<b>Power Supply Type</b>	12Vdc from AC adapter		
<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)

### 1.1.5 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand Name: APD Model Name: WB-18D12FU Power Rating: I/P: 100-240Vac, 50-60Hz, 0.5A Max. O/P: 12Vdc, 1.5A Power Line: 1.45m non-shielded cable w/o core
2	AC adapter	Brand Name: LEI Model Name: MU18A2120150-A1 Power Rating: I/P: 100-240Vac, 50-60Hz, 0.5A O/P: 12Vdc, 1.5A Power Line: 1.5m non-shielded cable w/o core
3	RJ45 cable	1.45m non-shielded cable w/o core.

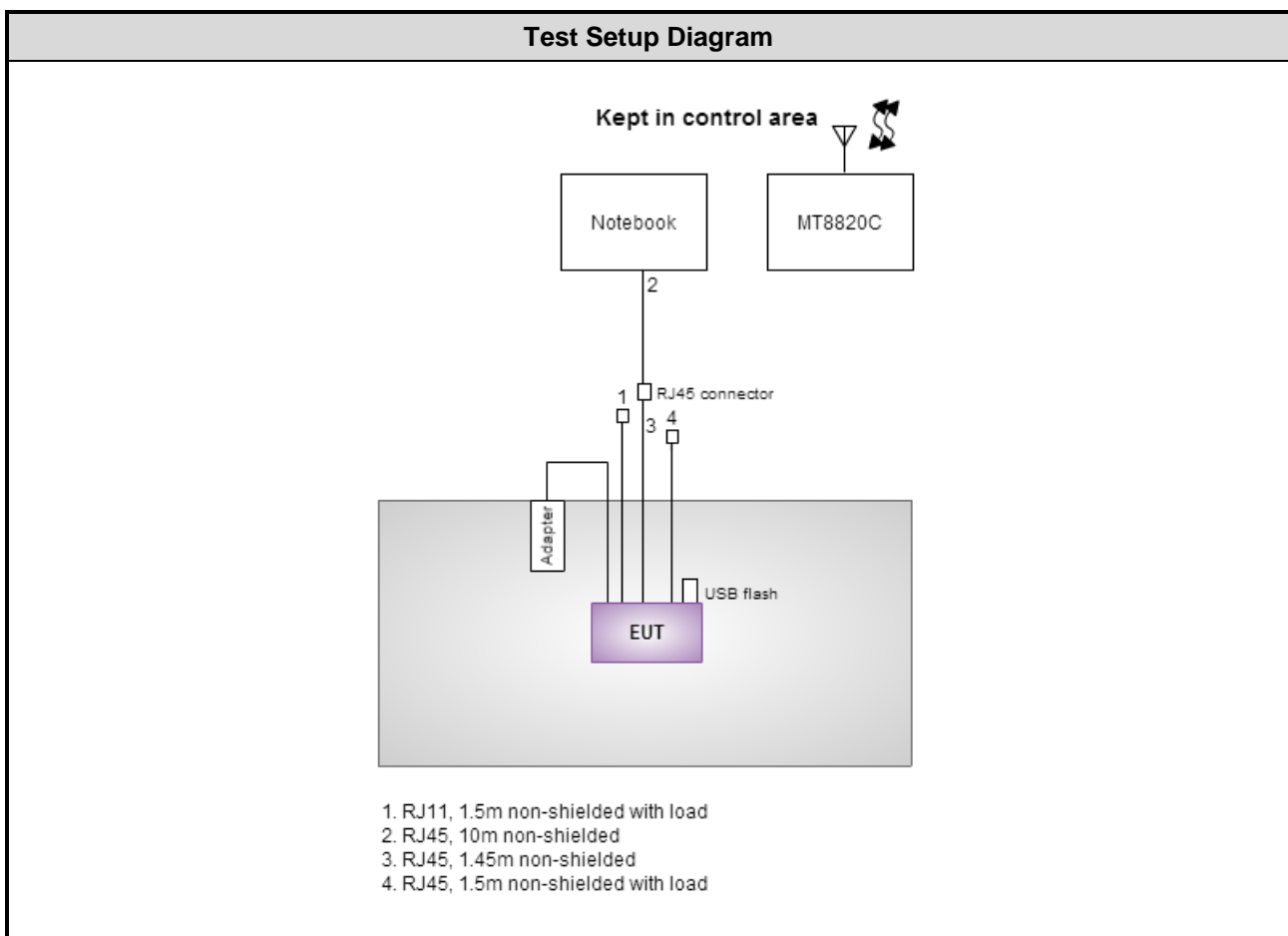
### 1.1.6 Operating Channel List

LTE Band 41		
Channel Bandwidth (MHz)	Channel	Frequency (MHz)
5	39675	2498.5
5	40620	2593.0
5	41565	2687.5
10	39700	2501.0
10	40620	2593.0
10	41540	2685.0
15	39725	2503.5
15	40620	2593.0
15	41515	2682.5
20	39750	2506.0
20	40620	2593.0
20	41490	2680.0

## 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	C0GB4X1	DoC	RJ45, 10m non-shielded.
2	USB Flash	Kingston	DTSE9	LXVW1	---	---

## 1.3 Test Setup Chart



## 1.4 The Equipment List

<b>Test Item</b>	Radiated Emission				
<b>Test Site</b>	966 chamber1 / (03CH01-WS)				
<b>Tested Date</b>	Nov. 02 ~ Nov. 08, 2015				
<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
Spectrum Analyzer	R&S	FSV40	101498	Dec. 09, 2014	Dec. 08, 2015
Receiver	R&S	ESR3	101658	Nov. 10, 2014	Nov. 09, 2015
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 20, 2015	Aug. 19, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 11, 2014	Dec. 10, 2015
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	Burgeon	BPA-530	SN:100219	Sep. 10, 2015	Sep. 09, 2016
Preamplifier	Agilent	83017A	MY39501308	Oct. 02, 2015	Oct. 01, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 15, 2014	Dec. 14, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 15, 2014	Dec. 14, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 15, 2014	Dec. 14, 2015
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 15, 2014	Dec. 14, 2015
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 15, 2014	Dec. 14, 2015
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Mar. 19, 2015	Mar. 18, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

<b>Test Item</b>	RF Conducted				
<b>Test Site</b>	(TH01-WS)				
<b>Tested Date</b>	Oct. 22 ~ Nov. 13, 2015				
<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 14, 2015	Sep. 13, 2016
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Dec. 03, 2014	Dec. 02, 2015
Power Meter	Anritsu	ML2495A	1241002	Sep. 21, 2015	Sep. 20, 2016
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Mar. 19, 2015	Mar. 18, 2016
Measurement Software	Sporton	Sporton_1	1.3.30	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 27 Subpart M

ANSI C63.4-2003

ANSI / TIA / EIA-603-C -2010

KDB 971168 D01 Power Meas License Digital Systems v02r02

KDB 971168 D02 Misc OOBE License Digital Systems v01

KDB 412172 D01 Determining ERP and EIRP v01r01

## 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
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
Temperature	$\pm 0.6$ °C

## 2 Test Configuration

### 2.1 Testing Condition and Location Information

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

➤ FCC site registration No.: 657002

➤ IC site registration No.: 10807A-1

### 2.2 The Worst Test Modes and Channel Details

LTE				
Test item	Channel Bandwidth	Modulation	Test Frequencies (MHz)	Test Configuration
E.I.R.P Conducted Emissions Occupied Bandwidth	5 MHz 10 MHz 15 MHz 20 MHz	QPSK / 16QAM QPSK / 16QAM QPSK / 16QAM QPSK / 16QAM	2498.5 / 2593.0 / 2687.5 2501.0 / 2593.0 / 2685.0 2503.5 / 2593.0 / 2682.5 2506.0 / 2593.0 / 2680.0	---
Radiated Emission ≤ 1GHz	5 MHz 10 MHz 15 MHz 20 MHz	QPSK QPSK QPSK QPSK	2687.5 2685.0 2682.5 2593.0	---
Radiated Emission > 1GHz	5 MHz 10 MHz 15 MHz 20 MHz	QPSK QPSK QPSK QPSK	2498.5 / 2593.0 / 2687.5 2501.0 / 2593.0 / 2685.0 2503.5 / 2593.0 / 2682.5 2506.0 / 2593.0 / 2680.0	---
Band Edge	5 MHz 10 MHz 15 MHz 20 MHz	QPSK / 16QAM QPSK / 16QAM QPSK / 16QAM QPSK / 16QAM	2498.5 / 2687.5 2501.0 / 2685.0 2503.5 / 2682.5 2506.0 / 2680.0	---
Frequency Stability	5 MHz 10 MHz 15 MHz 20 MHz	---	2593.0 2593.0 2593.0 2593.0	---

**NOTE:**

1. The EUT supports TX diversity function: Antenna Port 0 & 1. After pre-test, Antenna Port1 has the worst emission value, therefore the following test results came out from this antenna port.
2. Two adapters had been covered during the pretest, and found that LEI adapter was the worst case and was selected for final test. (APD adapter, model WB-18D12FU; LEI adapter, model MU18A2120150-A1.)

### 3 Test Results

#### 3.1 Output Power

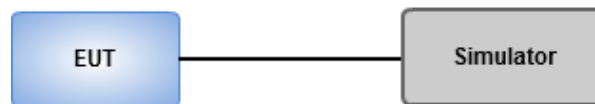
##### 3.1.1 Limit of Output Power

Mobile stations are limited to 2.0 watts EIRP

##### 3.1.2 Test Procedures

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
3.  $EIRP = \text{Conducted power} + \text{Antenna gain}$

##### 3.1.3 Test Setup



### 3.1.4 Test Result of Conducted power (dBm)

Band / Channel Bandwidth			LTE Band 41 / CB: 5MHz		
Channel			39675	40620	41565
Frequency (MHz)			2498.5	2593.0	2687.5
Mode	RB	RB Offset	Maximum AV Power (dBm)		
QPSK	1	0	21.11	23.32	<b>23.53</b>
	1	12	21.06	23.22	23.29
	1	24	21.03	23.19	23.38
	12	0	20.98	22.83	23.18
	12	6	20.93	22.78	23.19
	12	11	20.85	22.86	23.16
	25	0	20.82	22.81	23.14
16QAM	1	0	21.21	23.28	23.49
	1	12	21.16	23.19	23.32
	1	24	21.14	22.91	23.26
	12	0	21.11	22.82	23.22
	12	6	21.02	22.79	23.18
	12	11	21.08	22.82	23.22
	25	0	20.98	22.79	23.16

Band / Channel Bandwidth			LTE Band 41 / CB: 10MHz		
Channel			39700	40620	41540
Frequency (MHz)			2501.0	2593.0	2685.0
Mode	RB	RB Offset	Maximum AV Power (dBm)		
QPSK	1	0	23.15	23.36	<b>23.43</b>
	1	24	22.83	23.28	23.26
	1	49	22.96	23.19	22.96
	25	0	22.80	22.89	22.89
	25	12	22.76	22.83	22.83
	25	24	22.72	22.81	22.81
	50	0	22.58	22.69	22.69
16QAM	1	0	23.11	23.26	23.31
	1	24	22.76	23.16	23.25
	1	49	22.86	23.05	23.11
	25	0	22.85	22.73	22.73
	25	12	22.73	22.71	22.71
	25	24	22.71	22.68	22.68
	50	0	22.63	22.61	22.61

Band / Channel Bandwidth			LTE Band 41 / CB: 15MHz		
Channel			39725	40620	41515
Frequency (MHz)			2503.5	2593.0	2682.5
Mode	RB	RB Offset	Maximum AV Power (dBm)		
QPSK	1	0	23.26	23.33	<b>23.38</b>
	1	24	23.21	23.29	23.28
	1	49	23.16	23.17	23.31
	25	0	23.03	23.11	23.29
	25	12	22.89	23.06	23.18
	25	24	22.76	22.87	22.98
	50	0	22.53	22.73	22.78
16QAM	1	0	23.12	23.35	23.29
	1	24	23.11	23.06	23.18
	1	49	23.08	23.21	23.26
	25	0	22.83	22.86	22.65
	25	12	22.82	22.83	22.63
	25	24	22.78	22.78	22.58
	50	0	22.61	22.64	22.37

Band / Channel Bandwidth			LTE Band 41 / CB: 20MHz		
Channel			39750	40620	41490
Frequency (MHz)			2506.0	2593.0	2680.0
Mode	RB	RB Offset	Maximum AV Power (dBm)		
QPSK	1	0	23.35	<b>23.41</b>	23.29
	1	24	23.16	23.21	23.21
	1	49	23.09	23.05	23.29
	25	0	23.10	23.01	23.18
	25	12	22.78	22.96	22.83
	25	24	22.73	22.85	22.79
	50	0	22.53	22.61	22.57
16QAM	1	0	23.21	23.28	23.21
	1	24	23.16	23.19	23.14
	1	49	23.11	23.12	23.13
	25	0	22.96	22.94	22.93
	25	12	22.98	22.93	22.89
	25	24	22.89	22.84	22.83
	50	0	22.78	22.79	22.73

### 3.1.5 Test Result of Equivalent Isotropically Radiated Power (dBm)

Mode		LTE CB: 5MHz					
Modulation	Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	EIRP Limit (W)
QPSK	39675	2498.5	21.11	6.15	27.26	0.532	2
	40620	2593	23.32	6.15	29.47	0.885	2
	41565	2687.5	23.53	6.15	29.68	0.929	2
16QAM	39675	2498.5	21.21	6.15	27.36	0.545	2
	40620	2593	23.28	6.15	29.43	0.877	2
	41565	2687.5	23.49	6.15	29.64	0.920	2

Mode		LTE CB: 10MHz					
Modulation	Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	EIRP Limit (W)
QPSK	39700	2501	23.15	6.15	29.30	0.851	2
	40620	2593	23.36	6.15	29.51	0.893	2
	41540	2685	23.43	6.15	29.58	0.908	2
16QAM	39700	2501	23.11	6.15	29.26	0.843	2
	40620	2593	23.26	6.15	29.41	0.873	2
	41540	2685	23.31	6.15	29.46	0.883	2

Mode		LTE CB: 15MHz					
Modulation	Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	EIRP Limit (W)
QPSK	39725	2503.5	23.26	6.15	29.41	0.873	2
	40620	2593	23.33	6.15	29.48	0.887	2
	41515	2682.5	23.38	6.15	29.53	0.897	2
16QAM	39725	2503.5	23.12	6.15	29.27	0.845	2
	40620	2593	23.35	6.15	29.5	0.891	2
	41515	2682.5	23.29	6.15	29.44	0.879	2

Mode		LTE CB: 20MHz					
Modulation	Channel	Frequency (MHz)	Conducted Output Power (dBm)	Max Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	EIRP Limit (W)
QPSK	39750	2506	23.35	6.15	29.50	0.891	2
	40620	2593	23.41	6.15	29.56	0.904	2
	41490	2680	23.29	6.15	29.44	0.879	2
16QAM	39750	2506	23.21	6.15	29.36	0.863	2
	40620	2593	23.28	6.15	29.43	0.877	2
	41490	2680	23.21	6.15	29.36	0.863	2

## 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  $55 + 10 \log(P)$  dB equal to -25dBm.

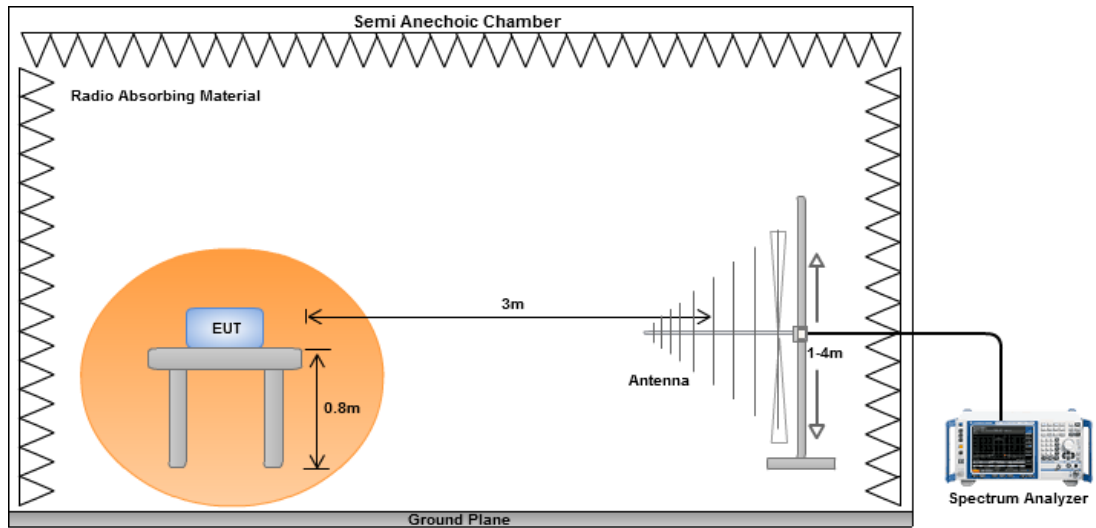
### 3.2.2 Test Procedures

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.  $E.I.R.P = \text{output power of step 4} + \text{gain of substitution antenna} - \text{cable loss of RF cable}$ .

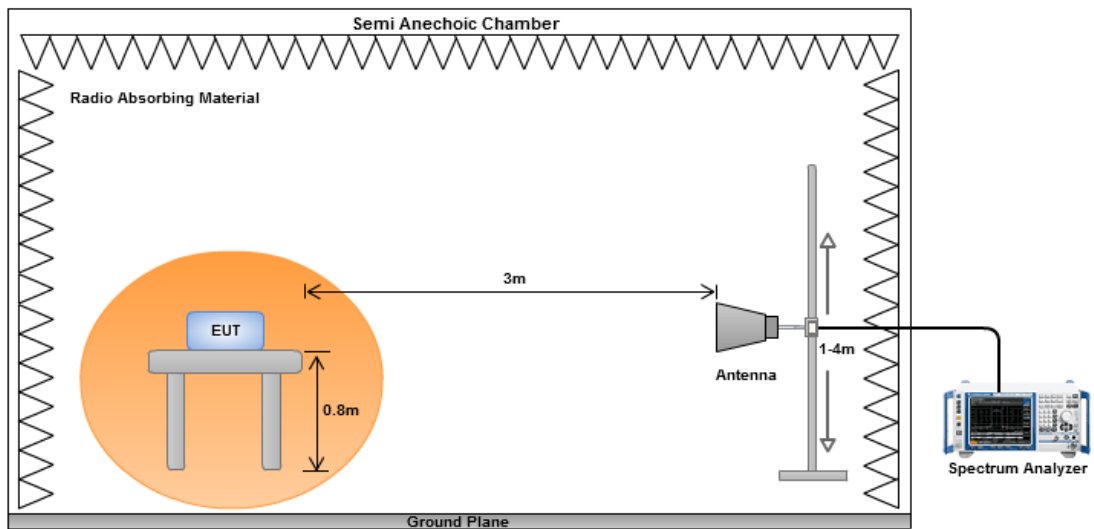


### 3.2.3 Test Setup

#### Radiated Emissions below 1 GHz



#### Radiated Emissions above 1 GHz



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

Mode		LTE Band 41, CB: 5MHz, 1RB, Offset 0, Channel: 2687.5MHz					
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
49.40	H	-34.55	-25.00	-9.55	-29.84	-23.56	-10.99
76.56	H	-39.76	-25.00	-14.76	-28.91	-36.51	-3.25
147.37	H	-49.09	-25.00	-24.09	-40.35	-47.92	-1.17
500.45	H	-60.17	-25.00	-35.17	-55.73	-64.27	4.10
750.71	H	-55.19	-25.00	-30.19	-55.17	-58.58	3.39
806.00	H	-53.59	-25.00	-28.59	-54.04	-56.72	3.13
78.50	V	-35.19	-25.00	-10.19	-24.56	-32.58	-2.61
285.11	V	-54.01	-25.00	-29.01	-47.99	-58.26	4.25
500.45	V	-60.18	-25.00	-35.18	-56.47	-64.28	4.10
661.47	V	-56.67	-25.00	-31.67	-57.05	-60.55	3.88
810.85	V	-55.99	-25.00	-30.99	-56.67	-59.10	3.11
939.86	V	-55.05	-25.00	-30.05	-58.03	-57.74	2.69

Note: EIRP = S.G Power value + Correction factor.

Mode		LTE Band 41, CB: 10MHz, 1RB, Offset 0, Channel: 2685.0MHz					
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
49.40	H	-37.48	-25.00	-12.48	-32.77	-26.49	-10.99
79.47	H	-39.50	-25.00	-14.50	-28.92	-37.22	-2.28
151.25	H	-50.53	-25.00	-25.53	-41.77	-49.46	-1.07
500.45	H	-61.39	-25.00	-36.39	-56.95	-65.49	4.10
750.71	H	-56.78	-25.00	-31.78	-56.76	-60.17	3.39
806.00	H	-54.56	-25.00	-29.56	-55.01	-57.69	3.13
41.64	V	-43.64	-25.00	-18.64	-33.65	-31.58	-12.06
78.50	V	-35.04	-25.00	-10.04	-24.41	-32.43	-2.61
278.32	V	-53.01	-25.00	-28.01	-47.05	-57.28	4.27
660.50	V	-57.07	-25.00	-32.07	-57.44	-60.95	3.88
750.71	V	-56.51	-25.00	-31.51	-57.33	-59.90	3.39
936.95	V	-58.54	-25.00	-33.54	-61.49	-61.25	2.71

Note: EIRP = S.G Power value + Correction factor.

Mode		LTE Band 41, CB: 15MHz, 1RB, Offset 0, Channel: 2682.5MHz					
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
48.43	H	-41.38	-25.00	-16.38	-37.43	-30.26	-11.12
77.53	H	-40.67	-25.00	-15.67	-29.92	-37.74	-2.93
147.37	H	-50.74	-25.00	-25.74	-42.00	-49.57	-1.17
273.47	H	-55.84	-25.00	-30.84	-45.50	-60.13	4.29
500.45	H	-60.87	-25.00	-35.87	-56.43	-64.97	4.10
806.97	H	-56.36	-25.00	-31.36	-56.82	-59.49	3.13
40.67	V	-44.41	-25.00	-19.41	-34.13	-32.21	-12.20
78.50	V	-35.86	-25.00	-10.86	-25.23	-33.25	-2.61
280.26	V	-53.25	-25.00	-28.25	-47.28	-57.52	4.27
660.50	V	-57.49	-25.00	-32.49	-57.86	-61.37	3.88
750.71	V	-56.65	-25.00	-31.65	-57.47	-60.04	3.39
807.94	V	-60.18	-25.00	-35.18	-60.82	-63.31	3.13

Note: EIRP = S.G Power value + Correction factor.

Mode		LTE Band 41, CB: 20MHz, 1RB, Offset 0, Channel: 2593.0MHz					
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
46.49	H	-34.65	-25.00	-9.65	-32.21	-23.27	-11.38
78.50	H	-40.02	-25.00	-15.02	-29.36	-37.41	-2.61
151.25	H	-50.72	-25.00	-25.72	-41.96	-49.65	-1.07
278.32	H	-55.70	-25.00	-30.70	-45.50	-59.97	4.27
500.45	H	-61.32	-25.00	-36.32	-56.88	-65.42	4.10
750.71	H	-56.90	-25.00	-31.90	-56.88	-60.29	3.39
40.67	V	-43.88	-25.00	-18.88	-33.60	-31.68	-12.20
79.47	V	-35.69	-25.00	-10.69	-24.99	-33.41	-2.28
285.11	V	-53.89	-25.00	-28.89	-47.87	-58.14	4.25
660.50	V	-57.98	-25.00	-32.98	-58.35	-61.86	3.88
750.71	V	-55.70	-25.00	-30.70	-56.52	-59.09	3.39
936.95	V	-56.54	-25.00	-31.54	-59.49	-59.25	2.71

Note: EIRP = S.G Power value + Correction factor.

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

Mode							
LTE Band 41, CB: 5MHz, 1RB, Offset 0, Channel: 2498.5MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
4992.70	H	-42.27	-25.00	-17.27	-59.50	-48.12	5.85
7489.05	H	-32.40	-25.00	-7.40	-54.28	-35.34	2.94
9985.40	H	-39.43	-25.00	-14.43	-64.64	-40.58	1.15
4992.70	V	-40.54	-25.00	-15.54	-55.48	-46.39	5.85
7489.05	V	-34.29	-25.00	-9.29	-54.86	-37.23	2.94
9985.40	V	-34.49	-25.00	-9.49	-57.70	-35.64	1.15

Mode							
LTE Band 41, CB: 5MHz, 1RB, Offset 0, Channel: 2593.0MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
5181.70	H	-42.86	-25.00	-17.86	-60.15	-48.70	5.84
7772.55	H	-34.63	-25.00	-9.63	-55.62	-36.98	2.35
10363.40	H	-32.73	-25.00	-7.73	-57.93	-33.44	0.71
5181.70	V	-40.57	-25.00	-15.57	-56.73	-46.41	5.84
7772.55	V	-31.40	-25.00	-6.40	-51.58	-33.75	2.35
10363.40	V	-32.42	-25.00	-7.42	-55.74	-33.13	0.71

Mode							
LTE Band 41, CB: 5MHz, 1RB, Offset 0, Channel: 2687.5MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
5370.70	H	-40.63	-25.00	-15.63	-57.61	-46.53	5.90
8056.05	H	-34.20	-25.00	-9.20	-57.62	-36.65	2.45
10741.40	H	-34.34	-25.00	-9.34	-59.08	-34.67	0.33
5370.70	V	-37.07	-25.00	-12.07	-52.90	-42.97	5.90
8056.05	V	-32.89	-25.00	-7.89	-55.35	-35.34	2.45
10741.40	V	-38.22	-25.00	-13.22	-61.53	-38.55	0.33

Note: EIRP = S.G Power value + Correction factor.

Mode							
LTE Band 41, CB: 10MHz, 1RB, Offset 49, Channel: 2501.0MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
4993.24	H	-44.36	-25.00	-19.36	-61.59	-50.21	5.85
7489.86	H	-32.76	-25.00	-7.76	-54.64	-35.70	2.94
9986.48	H	-37.59	-25.00	-12.59	-62.81	-38.74	1.15
4993.24	V	-42.03	-25.00	-17.03	-56.96	-47.88	5.85
7489.86	V	-34.20	-25.00	-9.20	-54.77	-37.14	2.94
9986.48	V	-36.00	-25.00	-11.00	-59.21	-37.15	1.15

Mode							
LTE Band 41, CB: 10MHz, 1RB, Offset 49, Channel: 2593.0MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
5177.22	H	-40.87	-25.00	-15.87	-58.16	-46.71	5.84
7765.83	H	-28.30	-25.00	-3.30	-49.31	-30.67	2.37
10354.44	H	-33.74	-25.00	-8.74	-58.94	-34.46	0.72
5177.22	V	-41.68	-25.00	-16.68	-57.81	-47.52	5.84
7765.83	V	-32.01	-25.00	-7.01	-52.22	-34.38	2.37
10354.44	V	-32.06	-25.00	-7.06	-55.37	-32.78	0.72

Mode							
LTE Band 41, CB: 10MHz, 1RB, Offset 49, Channel: 2685.0MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
5361.20	H	-40.24	-25.00	-15.24	-57.24	-46.14	5.90
8041.80	H	-32.72	-25.00	-7.72	-56.28	-35.13	2.41
10722.40	H	-34.93	-25.00	-9.93	-59.70	-35.27	0.34
5361.20	V	-39.35	-25.00	-14.35	-55.20	-45.25	5.90
8041.80	V	-34.72	-25.00	-9.72	-57.23	-37.13	2.41
10722.40	V	-40.78	-25.00	-15.78	-64.09	-41.12	0.34

Note: EIRP = S.G Power value + Correction factor.

Mode							
LTE Band 41, CB: 15MHz, 1RB, Offset 74, Channel: 2503.5MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
4993.72	H	-43.93	-25.00	-18.93	-61.16	-49.78	5.85
7490.58	H	-32.42	-25.00	-7.42	-54.30	-35.36	2.94
9987.44	H	-37.74	-25.00	-12.74	-62.96	-38.89	1.15
4993.72	V	-42.56	-25.00	-17.56	-57.49	-48.41	5.85
7490.58	V	-34.77	-25.00	-9.77	-55.35	-37.71	2.94
9987.44	V	-37.24	-25.00	-12.24	-60.45	-38.39	1.15

Mode							
LTE Band 41, CB: 15MHz, 1RB, Offset 74, Channel: 2593.0MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
5172.70	H	-41.90	-25.00	-16.90	-59.18	-47.74	5.84
7759.05	H	-32.33	-25.00	-7.33	-53.37	-34.73	2.40
10345.40	H	-33.51	-25.00	-8.51	-58.72	-34.24	0.73
5172.70	V	-38.84	-25.00	-13.84	-54.94	-44.68	5.84
7759.05	V	-33.36	-25.00	-8.36	-53.61	-35.76	2.40
10345.40	V	-32.38	-25.00	-7.38	-55.69	-33.11	0.73

Mode							
LTE Band 41, CB: 15MHz, 1RB, Offset 74, Channel: 2682.5MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
5351.72	H	-38.31	-25.00	-13.31	-55.32	-44.21	5.90
8027.58	H	-33.31	-25.00	-8.31	-57.01	-35.68	2.37
10703.44	H	-34.74	-25.00	-9.74	-59.54	-35.10	0.36
5351.72	V	-41.77	-25.00	-16.77	-57.65	-47.67	5.90
8027.58	V	-34.84	-25.00	-9.84	-57.40	-37.21	2.37
10703.44	V	-35.32	-25.00	-10.32	-58.63	-35.68	0.36

Note: EIRP = S.G Power value + Correction factor.

Mode							
LTE Band 41, CB: 20MHz, 1RB, Offset 99, Channel: 2506.0MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
4994.20	H	-38.67	-25.00	-13.67	-55.90	-44.52	5.85
7491.30	H	-33.22	-25.00	-8.22	-55.10	-36.16	2.94
9988.40	H	-39.50	-25.00	-14.50	-64.72	-40.65	1.15
4994.20	V	-36.06	-25.00	-11.06	-50.97	-41.91	5.85
7491.30	V	-35.28	-25.00	-10.28	-55.86	-38.22	2.94
9988.40	V	-35.39	-25.00	-10.39	-58.60	-36.54	1.15

Mode							
LTE Band 41, CB: 20MHz, 1RB, Offset 99, Channel: 2593.0MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
5168.20	H	-39.69	-25.00	-14.69	-56.97	-45.53	5.84
7752.30	H	-32.40	-25.00	-7.40	-53.46	-34.83	2.43
10336.40	H	-35.44	-25.00	-10.44	-60.64	-36.18	0.74
5168.20	V	-39.13	-25.00	-14.13	-55.20	-44.97	5.84
7752.30	V	-34.74	-25.00	-9.74	-55.02	-37.17	2.43
10336.40	V	-34.04	-25.00	-9.04	-57.34	-34.78	0.74

Mode							
LTE Band 41, CB: 20MHz, 1RB, Offset 99, Channel: 2680.0MHz							
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Vaule (dBm)	Correction Factor (dB)
5342.20	H	-39.82	-25.00	-14.82	-56.86	-45.71	5.89
8013.30	H	-33.32	-25.00	-8.32	-57.15	-35.66	2.34
10684.40	H	-33.95	-25.00	-8.95	-58.79	-34.33	0.38
5342.20	V	-36.38	-25.00	-11.38	-52.29	-42.27	5.89
8013.30	V	-33.89	-25.00	-8.89	-56.49	-36.23	2.34
10684.40	V	-38.48	-25.00	-13.48	-61.80	-38.86	0.38

Note: EIRP = S.G Power value + Correction factor.

### 3.3 Conducted Emissions

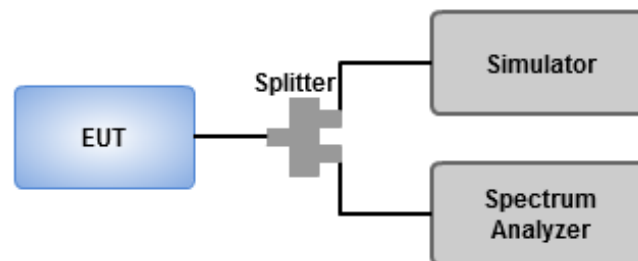
#### 3.3.1 Limit of Conducted Emissions

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  $55 + 10 \log(P)$  dB equal to -25dBm.

#### 3.3.2 Test Procedures

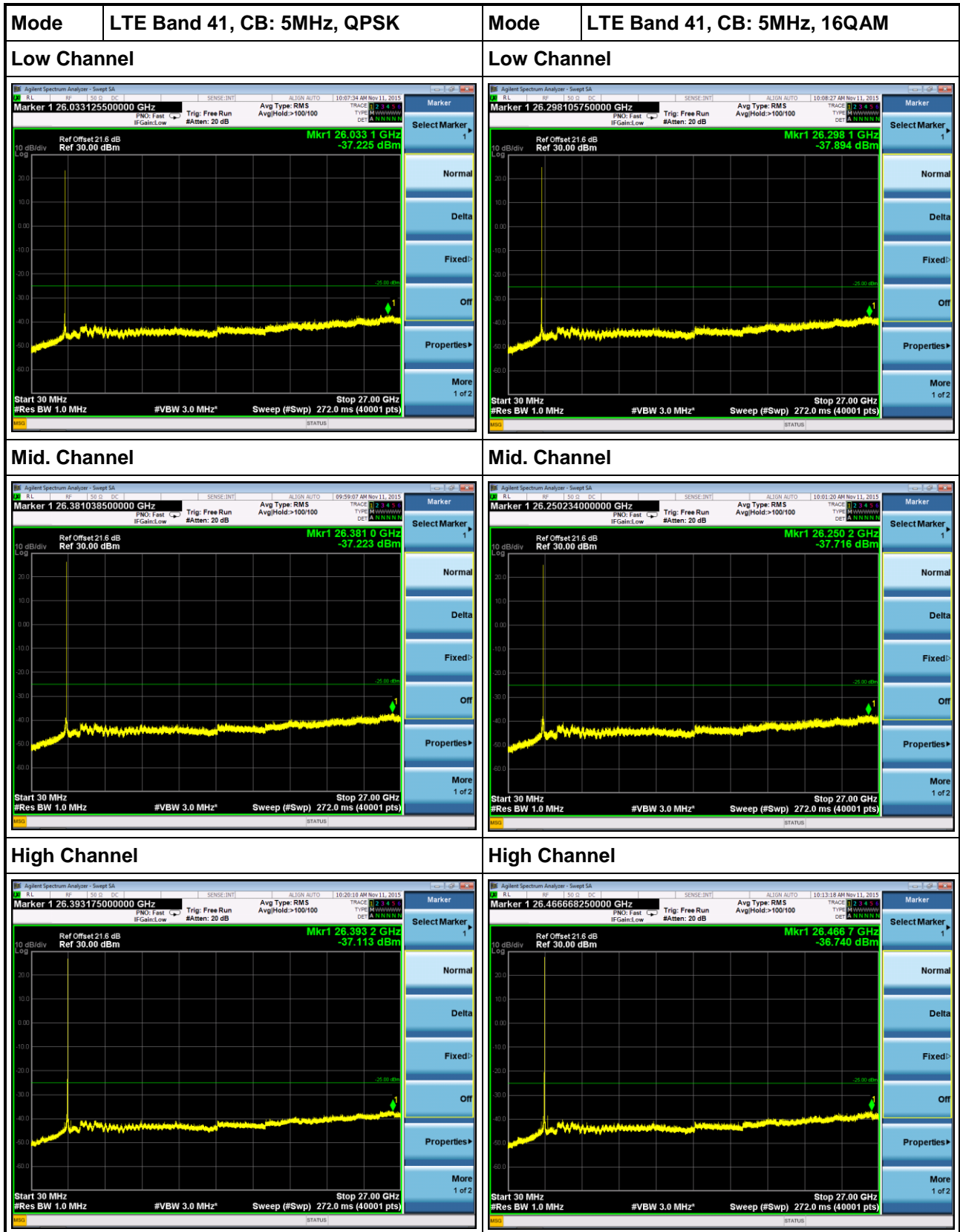
1. Lowest, middle and highest operating channels are tested for this item.
2. Scan frequency range is from 30MHz~27GHz.
3. Set RBW = 1MHz, VBW = 3MHz, detector = average, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

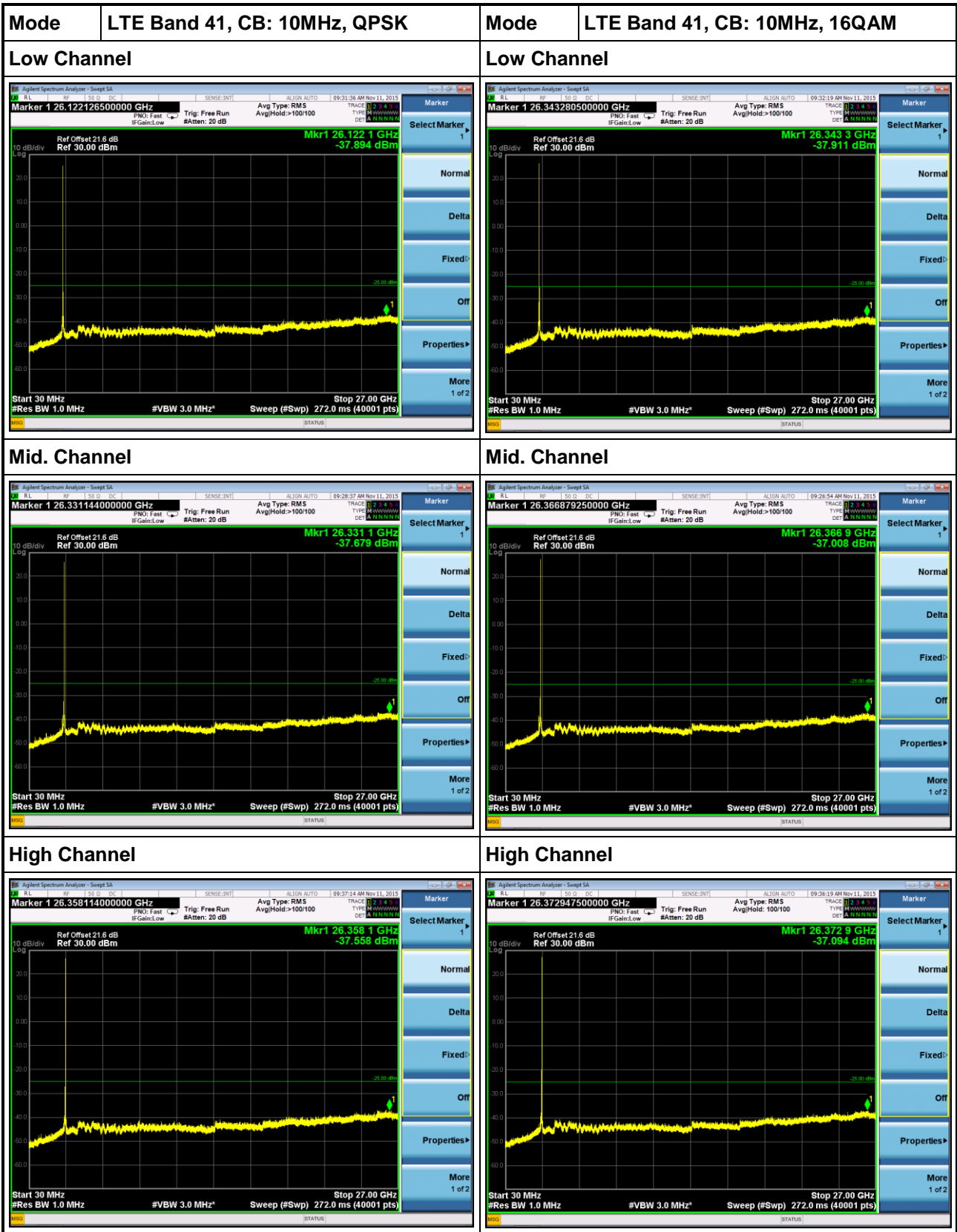
#### 3.3.3 Test Setup



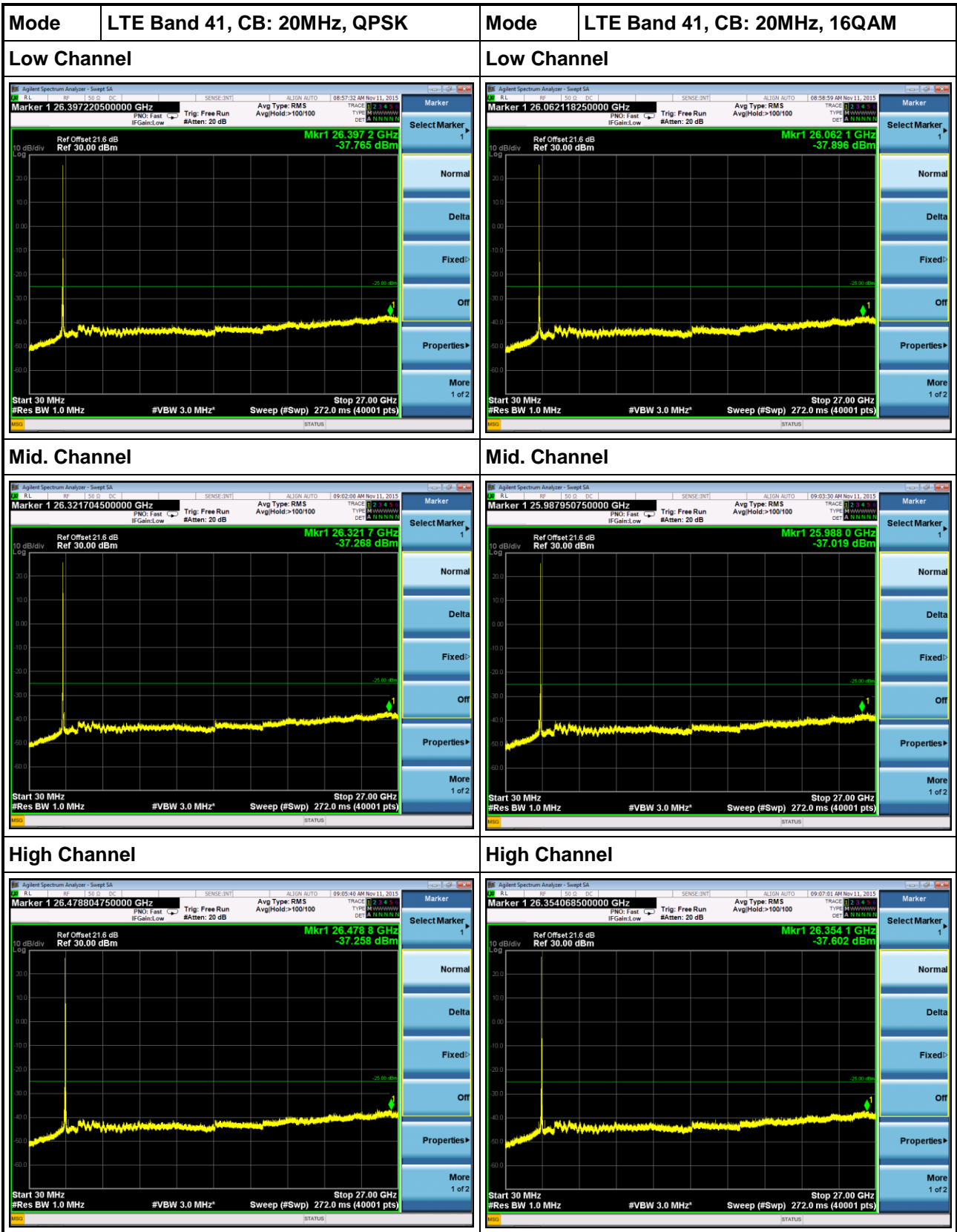


### 3.3.4 Test Result of Conducted Emissions









## 3.4 Channel Edge

### 3.4.1 Limit of Channel Edge

For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz

### 3.4.2 Test Procedures

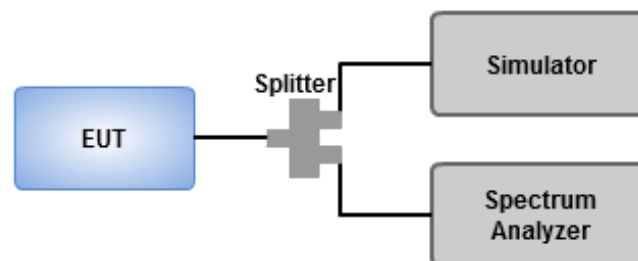
For Limit:  $40 + 10\log(P)$  and  $43 + 10\log(P)$

- 1 Set RBW = 56 / 110 / 150 / 200 kHz, VBW = 180 / 330 / 470 / 620 kHz for channel bandwidth 5 / 10 / 15 / 20 MHz, detector = RMS, sweep time = auto.
- 2 Use channel power measurement function of spectrum analyzer to integrate power over necessary bandwidth.

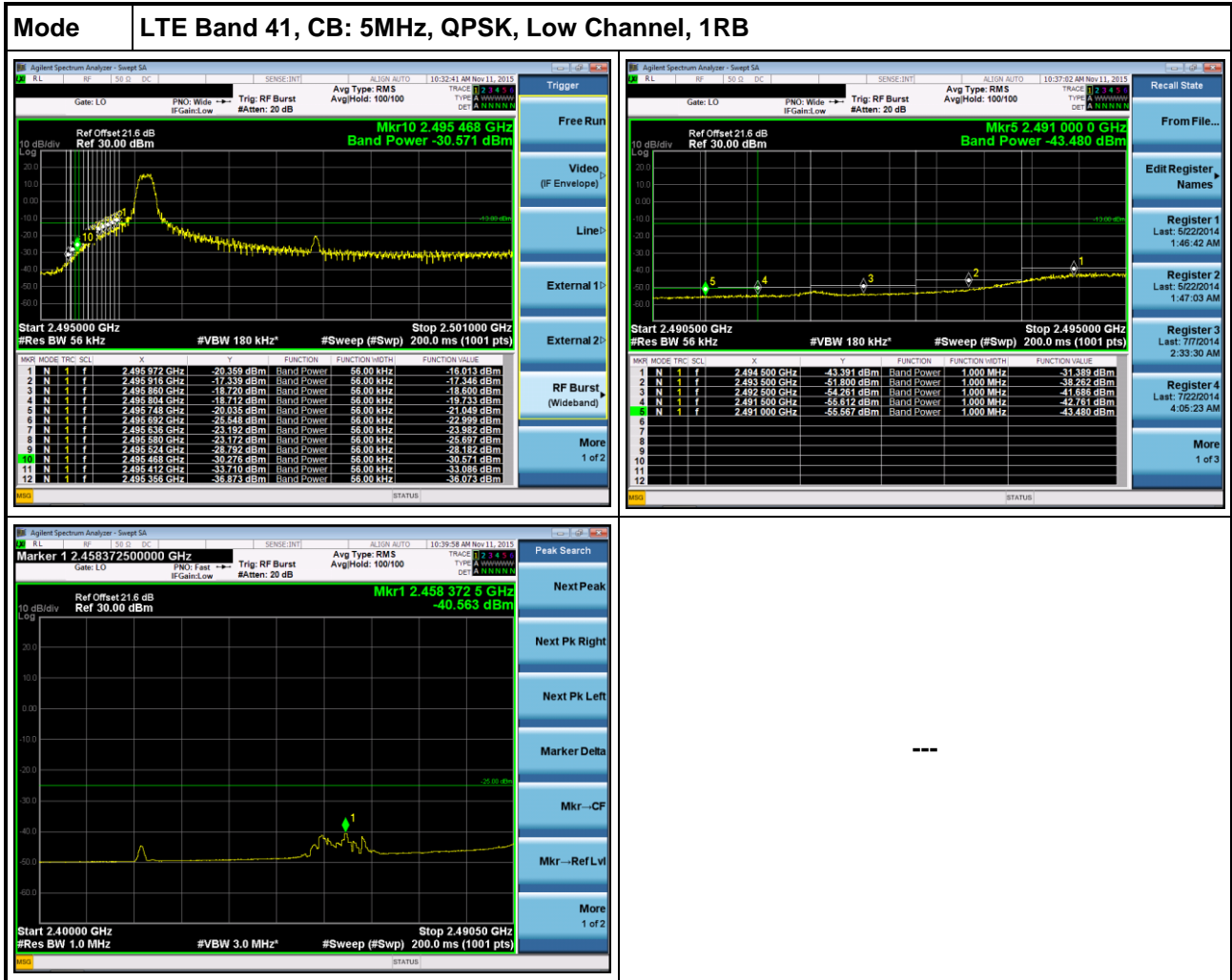
For Limit:  $55 + 10\log(p)$

- 1 Set RBW = 1MHz, VBW= 3MHz detector = RMS, sweep time = auto.
- 2 Record the max trace value and capture the test plot.

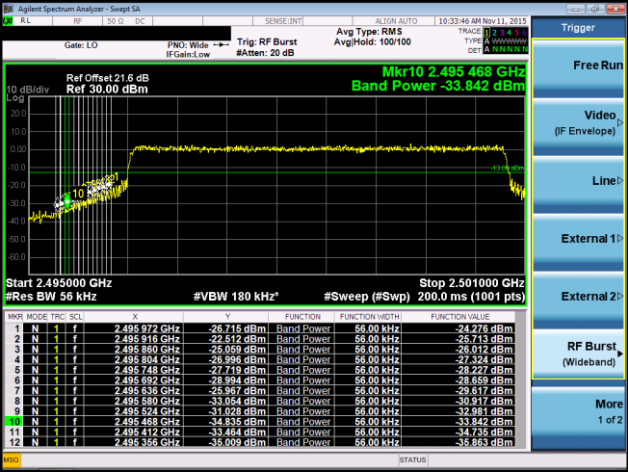
### 3.4.3 Test Setup



### 3.4.4 Test Result of Band Edge



**Mode** | **LTE Band 41, CB: 5MHz, QPSK, Low Channel, 100%RB**



Agilent Spectrum Analyzer - Swept SA

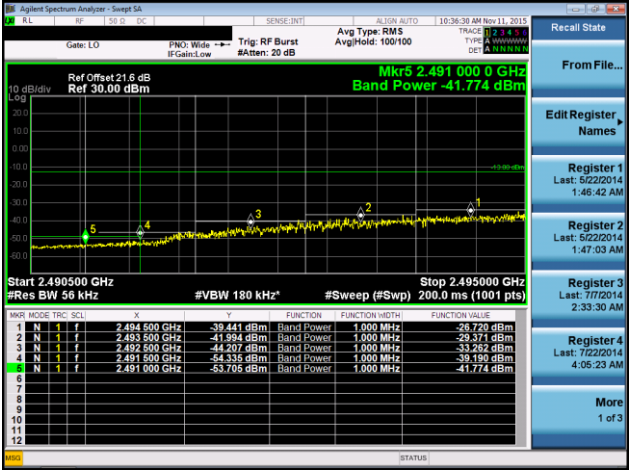
Gate: LO PNO: Wide → Trig: RF Burst Avg Type: RMS Avg/Hold: 100/100

Ref Offset 21.6 dB Ref 30.00 dBm

Mkr10 2.495468 GHz Band Power -33.842 dBm

Start 2.495000 GHz #Res BW 56 kHz #VBW 180 kHz #Sweep (#Swp) 200.0 ms (1001 pts) Stop 2.501000 GHz

MKR MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f	2.495372 GHz	-26.715 dBm	Band Power	56.00 kHz	-24.278 dBm
2	N	f	2.495319 GHz	-22.512 dBm	Band Power	56.00 kHz	-25.713 dBm
3	N	f	2.495380 GHz	-25.659 dBm	Band Power	56.00 kHz	-26.012 dBm
4	N	f	2.495304 GHz	-26.996 dBm	Band Power	56.00 kHz	-27.324 dBm
5	N	f	2.495748 GHz	-27.119 dBm	Band Power	56.00 kHz	-29.227 dBm
6	N	f	2.495692 GHz	-28.994 dBm	Band Power	56.00 kHz	-28.659 dBm
7	N	f	2.495336 GHz	-28.967 dBm	Band Power	56.00 kHz	-29.817 dBm
8	N	f	2.495380 GHz	-33.064 dBm	Band Power	56.00 kHz	-30.917 dBm
9	N	f	2.495524 GHz	-31.028 dBm	Band Power	56.00 kHz	-32.981 dBm
10	N	f	2.495468 GHz	-34.835 dBm	Band Power	56.00 kHz	-33.842 dBm
11	N	f	2.495412 GHz	-33.484 dBm	Band Power	56.00 kHz	-34.735 dBm
12	N	f	2.495356 GHz	-35.009 dBm	Band Power	56.00 kHz	-35.863 dBm



Agilent Spectrum Analyzer - Swept SA

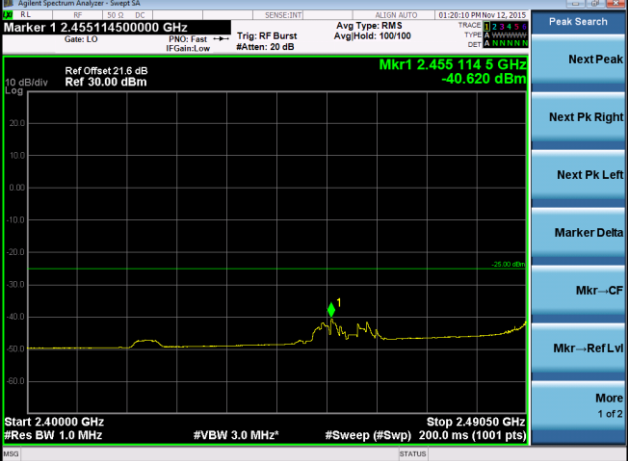
Gate: LO PNO: Wide → Trig: RF Burst Avg Type: RMS Avg/Hold: 100/100

Ref Offset 21.6 dB Ref 30.00 dBm

Mkr5 2.491000 GHz Band Power -41.774 dBm

Start 2.490500 GHz #Res BW 56 kHz #VBW 180 kHz #Sweep (#Swp) 200.0 ms (1001 pts) Stop 2.495000 GHz

MKR MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f	2.494500 GHz	-39.441 dBm	Band Power	1.000 MHz	-33.720 dBm
2	N	f	2.493500 GHz	-41.594 dBm	Band Power	1.000 MHz	-29.371 dBm
3	N	f	2.492500 GHz	-44.207 dBm	Band Power	1.000 MHz	-33.282 dBm
4	N	f	2.491500 GHz	-54.335 dBm	Band Power	1.000 MHz	-39.198 dBm
5	N	f	2.491000 GHz	-53.705 dBm	Band Power	1.000 MHz	-41.774 dBm



Agilent Spectrum Analyzer - Swept SA

Gate: LO PNO: Wide → Trig: RF Burst Avg Type: RMS Avg/Hold: 100/100

Ref Offset 21.6 dB Ref 30.00 dBm

Mkr1 2.4551145 GHz Band Power -40.620 dBm

Start 2.400000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz #Sweep (#Swp) 200.0 ms (1001 pts) Stop 2.490500 GHz

Peak Search

Next Peak

Next Pk Right

Next Pk Left

Marker Delta

Mkr→CF

Mkr→RefLvl

More 1 of 2

