

Report No.: FG981414B



# FCC RADIO TEST REPORT

FCC ID : IHDT56XM1

**Equipment**: Mobile Cellular Phone

Brand Name : Motorola Model Name : XT2000-2

Applicant : Motorola Mobility, LLC

222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

Manufacturer : Motorola Mobility, LLC

222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

Standard : 47 CFR Part 2, 22(H), 24(E), 27

The product was received on Aug. 14, 2019 and testing was started from Aug. 21, 2019 and completed on Aug. 28, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

TEL: 886-3-327-3456 Page Number : 1 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

## **Table of Contents**

His	story	of this test report	3
Su	mmar	y of Test Result	4
1	Gene	eral Description	6
	1.1	Product Feature of Equipment Under Test	6
	1.2	Product Specification of Equipment Under Test	7
	1.3	Modification of EUT	7
	1.4	Maximum EIRP Power, Frequency Tolerance, and Emission Designator	7
	1.5	Testing Location	8
	1.6	Applicable Standards	8
2	Test	Configuration of Equipment Under Test	9
	2.1	Test Mode	9
	2.2	Connection Diagram of Test System	10
	2.3	Support Unit used in test configuration and system	10
	2.4	Measurement Results Explanation Example	10
	2.5	Frequency List of Low/Middle/High Channels	11
3	Con	ducted Test Items	12
	3.1	Measuring Instruments	12
	3.2	Conducted Output Power and EIRP	13
	3.3	Peak-to-Average Ratio	14
	3.4	Occupied Bandwidth	15
	3.5	Conducted Band Edge	16
	3.6	Conducted Spurious Emission	17
	3.7	Frequency Stability	18
4	Radi	ated Test Items	19
	4.1	Measuring Instruments	19
	4.2	Radiated Spurious Emission Measurement	20
5		of Measuring Equipment	
6	Unce	ertainty of Evaluation	22
Аp	pendi	x A. Test Results of Conducted Test	
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Appendix B. Test Results of EIRP and Radiated Test

TEL: 886-3-327-3456 FAX: 886-3-328-4978

Report Template No.: BU5-FGLTE Version 2.4

Page Number Issued Date : 2 of 22 : Oct. 28, 2019

Report Version

: 01

Report No. : FG981414B

# History of this test report

Report No.: FG981414B

Report No.	Version	Description	Issued Date
FG981414B	01	Initial issue of report	Oct. 28, 2019

TEL: 886-3-327-3456 Page Number : 3 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

# **Summary of Test Result**

Report No.: FG981414B

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark	
	§2.1046	Conducted Output Power	Reporting only		
	§22.913 (a)(2)	Effective Radiated Power (Band 5)			
3.2	§27.50 (b)(10)	Effective Radiated Power (Band 13)		-	
	§24.232 (c) §27.50 (h)(2)	Equivalent Isotropic Radiated Power (Band 2) (Band 7) (Band 38)	Pass		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)			
3.3	§24.232 (d) §27.50 (d)(5)	Peak-to-Average Ratio	Pass	-	
3.4	§2.1049	§2.1049 Occupied Bandwidth		-	
3.5	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2)(4) §27.53 (h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 13) (Band 66)	Pass	-	
	§2.1051 §27.53 (m)(4)	Conducted Band Edge Measurement (Band 7) (Band 38)			
3.6	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 13) (Band 66)	Pass	-	
	§2.1051 §27.53 (m)(4)	Conducted Spurious Emission (Band 7) (Band 38)			

TEL: 886-3-327-3456 Page Number : 4 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.7	§2.1055 §22.355 §24.235 §27.54	Frequency Stability Temperature & Voltage	Pass	-
4.2	\$2.1053 \$22.917 (a) \$24.238 (a) \$27.53 (c)(2) \$27.53 (f) \$27.53 (h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 13) (Band 66)	Pass	Under limit 20.11 dB at 10278.000 MHz
	§2.1053 §27.53 (m)(4)	Radiated Spurious Emission (Band 7) (Band 38)		

Report No.: FG981414B

**Remark:** This is a variant report by enable LTE Band 38. All the test cases were performed on original report which can be referred to Sporton Report Number FG912419B. Based on the original report, the test cases were verified.

#### **Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

#### **Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang Report Producer: Yimin Ho

TEL: 886-3-327-3456 Page Number : 5 of 22
FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

	Product Feature
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2000-2
FCC ID	IHDT56XM1
IMEI Code	Conducted: IMEI: 355573090024362
INIEI Code	<b>Radiation:</b> IMEI: 355573090024511
EUT supports Radios application	CDMA/EV-DO/GSM/EGPRS/WCDMA/HSPA/LTE/GNSS/ NFC WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
HW Version	PVT-2
EUT Stage	Identical Prototype

Report No.: FG981414B

**Remark:** The above EUT's information was declared by manufacturer.

Accessory List							
	Brand Name: Motorola						
AC Adapter 1	Model Name: SC-71						
	Manufacturer : Salom						
	Brand Name: Motorola						
AC Adapter 2	Model Name: SC-51						
	Manufacturer : Salom						
	Brand Name: Motorola						
AC Adapter 3	Model Name: SC-51						
	Manufacturer : Chenyang						
	Brand Name: Motorola						
AC Adapter 4	Model Name: SC-57						
	Manufacturer : Salom/Flex						
	Brand Name: Motorola						
AC Adapter 5	Model Name: SC-57						
	Manufacturer : Tenpao/Cliptech						
	Brand Name: Motorola						
Battery 1	Model Name: KV30						
	Manufacturer: Amperex						
	Brand Name: Motorola						
Battery 2	Model Name: KV40						
	Manufacturer: Amperex						
	Brand Name: Motorola						
USB-C Headset	Model Name: SH38C48284						
	Manufacturer: Grandsun						
	Brand Name: Motorola						
Headset Jack Adaptor	Model Name: SC18C45885						
	Manufacturer: Luxshare						
	Brand Name: Motorola						
USB-C Data Cable	Model Name: SC18C45884						
	Manufacturer: Luxshare						

TEL: 886-3-327-3456 Page Number : 6 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

## 1.2 Product Specification of Equipment Under Test

Standards-related Product Specification							
Tx Frequency	LTE Band 38: 2572.5 MHz ~ 2617.5 MHz						
Rx Frequency	LTE Band 38: 2572.5 MHz ~ 2617.5 MHz						
Bandwidth	LTE Band 38: 5MHz / 10MHz / 15MHz / 20MHz						
Maximum Output Power to Antenna	LTE Band 38: 22.83 dBm						
Antenna Type	Fixed Internal Antenna and Dynamic Antenna						
Antenna Gain	LTE Band 38: -6.0 dBi						
Type of Modulation	QPSK / 16QAM / 64QAM						

Report No.: FG981414B

### 1.3 Modification of EUT

No modifications are made to the EUT during all test items.

# 1.4 Maximum EIRP Power, Frequency Tolerance, and Emission Designator

Ľ	TE Band 38	QPSK		16QAM			64QAM			
BW (MHz)	Range Design		Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
5	2572.5 ~ 2617.5	4M51G7D	1	0.0476	4M49W7D	-	0.0385	4M51W7D	1	0.0303
10	2575.0 ~ 2615.0	9M05G7D	0.0039	0.0478	9M09W7D	-	0.0385	9M07W7D	-	0.0304
15	2577.5 ~ 2612.5	13M4G7D	-	0.0473	13M5W7D	-	0.0385	13M5W7D	-	0.0310
20	2580.0 ~ 2610.0	17M9G7D	-	0.0482	17M8W7D	-	0.0382	18M0W7D	-	0.0308

TEL: 886-3-327-3456 Page Number : 7 of 22
FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

## 1.5 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory						
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978						
Test Site No.	Sporton Site No.						
rest site No.	TH05-HY	03CH07-HY					
Test Engineer	Aking Chang	Ken Wu, Jesse Wang					
Temperature	25~26°C	22.4~25.5°C					
Relative Humidity	Relative Humidity 54~56% 56~65%						

Report No.: FG981414B

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190

## 1.6 Applicable Standards

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

- + ANSI C63.26-2015
- ANSI / TIA-603-E
- 47 CFR Part 2, 22(H), 24(E), 27
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

#### Remark:

- 1. All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

TEL: 886-3-327-3456 Page Number : 8 of 22
FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

#### **Test Configuration of Equipment Under Test** 2

#### 2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

Report No.: FG981414B

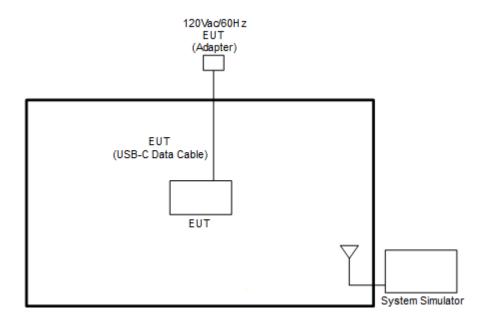
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

		Bandwidth (MHz)					Modulation			RB#			Test Channel			
Test Items	Band	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	М	Н
Max. Output Power	38	-	•	٧	v	v	v	v	v	v	٧	v	٧	٧	v	v
Peak-to-Av erage Ratio	38	-	•				v	>	V	v	>		>	٧	v	v
26dB and 99% Bandwidth	38	-	-	v	v	v	v	v	v	v			v	v	v	v
Conducted Band Edge	38	-	•	٧	v	v	v	٧	v	v	٧		٧	٧		v
Conducted Spurious Emission	38	-	-	v	v	v	v	v	v	v	v			v	v	v
Frequency Stability	38	-	-		v			V					v		v	
E.I.R.P	38	-	•	٧	v	v	v	٧	v	v	>			٧	v	v
Radiated Spurious Emission	38						W	orst Case						v	v	v
<ol> <li>The mark "v " means that this configuration is chosen for testing</li> <li>The mark "-" means that this bandwidth is not supported.</li> <li>The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test u different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are</li> </ol>							nder									

reported.

TEL: 886-3-327-3456 Page Number : 9 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

## 2.2 Connection Diagram of Test System



Report No.: FG981414B

## 2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord	
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m	

## 2.4 Measurement Results Explanation Example

#### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

#### Example:

 $Offset(dB) = RF \ cable \ loss(dB) + attenuator \ factor(dB).$ 

= 4.2 + 10 = 14.2 (dB)

TEL: 886-3-327-3456 Page Number : 10 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

# 2.5 Frequency List of Low/Middle/High Channels

LTE Band 38 Channel and Frequency List									
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest					
00	Channel	37850	38000	38150					
20	Frequency	2580.0	2595.0	2610.0					
15	Channel	37825	38000	38175					
15	Frequency	2577.5	2595.0	2612.5					
10	Channel	37800	38000	38200					
10	Frequency	2575.0	2595.0	2615.0					
5	Channel	37775	38000	38225					
5	Frequency	2572.5	2595.0	2617.5					

Report No.: FG981414B

TEL: 886-3-327-3456 Page Number : 11 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

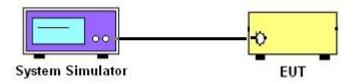
## 3 Conducted Test Items

## 3.1 Measuring Instruments

See list of measuring instruments of this test report.

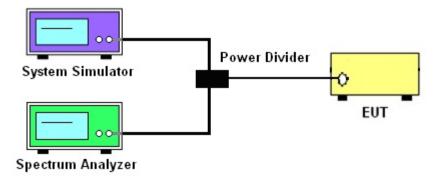
#### 3.1.1 Test Setup

#### 3.1.2 Conducted Output Power

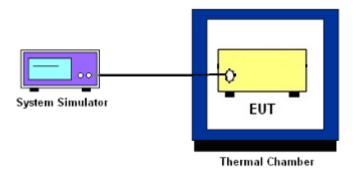


Report No.: FG981414B

# 3.1.3 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge and Conducted Spurious Emission



#### 3.1.4 Frequency Stability



#### 3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

TEL: 886-3-327-3456 Page Number : 12 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

## 3.2 Conducted Output Power and EIRP

# 3.2.1 Description of the Conducted Output Power Measurement and EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

Report No.: FG981414B

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 38.

According to KDB 412172 D01 Power Approach,

 $EIRP = P_T + G_T - L_C$ , ERP = EIRP -2.15, where

 $P_T$  = transmitter output power in dBm

 $G_T$  = gain of the transmitting antenna in dBi

L<sub>C</sub> = signal attenuation in the connecting cable between the transmitter and antenna in dB

#### 3.2.2 Test Procedures

- 1. The transmitter output port was connected to the system simulator.
- 2. Set EUT at maximum power through the system simulator.
- 3. Select lowest, middle, and highest channels for each band and different modulation.
- 4. Measure and record the power level from the system simulator.

TEL: 886-3-327-3456 Page Number : 13 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

### 3.3 Peak-to-Average Ratio

#### 3.3.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Report No.: FG981414B

#### 3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

- 1. The EUT was connected to spectrum and system simulator via a power divider.
- 2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- 3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
- 4. Record the deviation as Peak to Average Ratio.

TEL: 886-3-327-3456 Page Number : 14 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

## 3.4 Occupied Bandwidth

#### 3.4.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

Report No.: FG981414B

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

#### 3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

- 1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
   The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
- 3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- 4. Set the detection mode to peak, and the trace mode to max hold.
- Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.
   (this is the reference value)
- 6. Determine the "-26 dB down amplitude" as equal to (Reference Value X).
- 7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "–X dB down amplitude" determined in step 6. If a marker is below this "-X dB down amplitude" value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
- 8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

TEL: 886-3-327-3456 Page Number : 15 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

### 3.5 Conducted Band Edge

#### 3.5.1 Description of Conducted Band Edge Measurement

27.53(m)(4)

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. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Report No.: FG981414B

#### 3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

- 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. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
- 4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
- 5. Set spectrum analyzer with RMS detector.
- The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- Checked that all the results comply with the emission limit line.
   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
- 8. For LTE Ban 38, the other 40 dB, and 55 dB have additionally applied same calculation above.

TEL: 886-3-327-3456 Page Number : 16 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

## 3.6 Conducted Spurious Emission

#### 3.6.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

Report No.: FG981414B

For Band 38:

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10<sup>th</sup> harmonic.

#### 3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

- 1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
   The path loss was compensated to the results for each measurement.
- 3. The middle channel for the highest RF power within the transmitting frequency was measured.
- 4. The conducted spurious emission for the whole frequency range was taken.
- 5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
- 6. Set spectrum analyzer with RMS detector.
- 7. Taking the record of maximum spurious emission.
- 8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 9. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
- 10. For Band 38

The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)

TEL: 886-3-327-3456 Page Number : 17 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

## 3.7 Frequency Stability

#### 3.7.1 Description of Frequency Stability Measurement

27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Report No.: FG981414B

#### 3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

- 1. The EUT was set up in the thermal chamber and connected with the system simulator.
- 2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
- 3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

#### 3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

- 1. The EUT was placed in a temperature chamber at 20±5° C and connected with the system simulator.
- 2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
- 3. The variation in frequency was measured for the worst case.

TEL: 886-3-327-3456 Page Number : 18 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

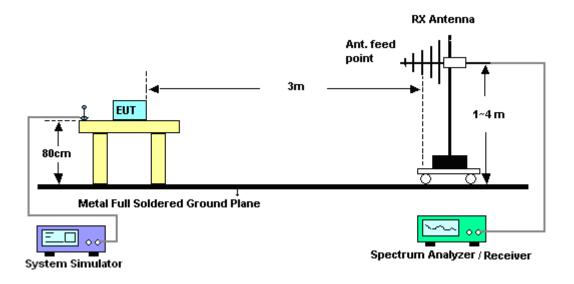
### 4 Radiated Test Items

## 4.1 Measuring Instruments

See list of measuring instruments of this test report.

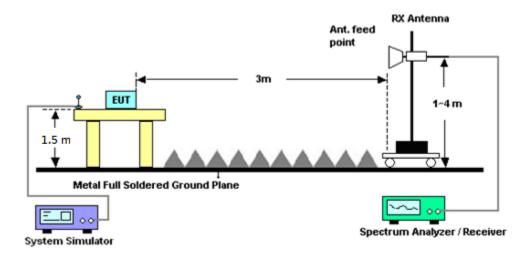
### 4.1.1 Test Setup

#### For radiated test from 30MHz to 1GHz



Report No.: FG981414B

#### For radiated test above 1GHz



#### 4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

TEL: 886-3-327-3456 Page Number : 19 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

## 4.2 Radiated Spurious Emission Measurement

#### 4.2.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E.

Report No.: FG981414B

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

#### 4.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

- 1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- 4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
- 5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
- 6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- 7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- 8. Taking the record of output power at antenna port.
- 9. Repeat step 7 to step 8 for another polarization.
- The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

11. For Band 38:

The limit line is derived from  $55 + 10\log(P)dB$  below the transmitter power P(Watts)

EIRP (dBm) = S.G. Power - Tx Cable Loss + Tx Antenna Gain

ERP (dBm) = EIRP - 2.15

TEL: 886-3-327-3456 Page Number : 20 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

# 5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	Anritsu	MT8820C	6201432821	GSM/GPRS /WCDMA/LTE	Oct. 14, 2018	Aug. 21, 2019~ Aug. 22, 2019	Oct. 13, 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 13, 2018	Aug. 21, 2019~ Aug. 22, 2019	Nov. 12, 2019	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40°C~90°C	Aug. 29, 2018	Aug. 21, 2019~ Aug. 22, 2019	Aug. 28, 2019	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 02, 2018	Aug. 21, 2019~ Aug. 22, 2019	Oct. 01, 2019	Conducted (TH05-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#A	1-18GHz	Jan. 14, 2019	Aug. 21, 2019~ Aug. 22, 2019	Jan. 13, 2020	Conducted (TH05-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	35419 & 03	30MHz~1GHz	Apr. 30, 2019	Aug. 26, 2019~ Aug. 28, 2019	Apr. 29, 2020	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 02, 2018	Aug. 26, 2019~ Aug. 28, 2019	Dec. 03, 2019	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A (MXE)	MY53290053	20Hz~26.5GHz	Jan. 23, 2019	Aug. 26, 2019~ Aug. 28, 2019	Jan. 22, 2020	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101 800-30-10P	1590075	1GHz~18GHz	Apr. 24, 2019	Aug. 26, 2019~ Aug. 28, 2019	Apr. 23, 2020	Radiation (03CH07-HY)
Preamplifier	COM-POWE R	PA-103A	161241	10MHz~1GHz	May 20, 2019	Aug. 26, 2019~ Aug. 28, 2019	May 19, 2020	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Nov. 02, 2018	Aug. 26, 2019~ Aug. 28, 2019	Nov. 01, 2019	Radiation (03CH07-HY)
Filter	Microwave	H3G018G1	SN477220	3GHz High Pass Filter	Nov. 02, 2018	Aug. 26, 2019~ Aug. 28, 2019	Nov. 01, 2019	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4, MY28655/4	9kHz~30MHz	Feb. 26, 2019	Aug. 26, 2019~ Aug. 28, 2019	Feb. 25, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	30MHz~1GHz	Feb. 26, 2019	Aug. 26, 2019~ Aug. 28, 2019	Feb. 25, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	1GHz~18GHz	Feb. 26, 2019	Aug. 26, 2019~ Aug. 28, 2019	Feb. 25, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2	18GHz~40GHz	Feb. 26, 2019	Aug. 26, 2019~ Aug. 28, 2019	Feb. 25, 2020	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Aug. 26, 2019~ Aug. 28, 2019	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Aug. 26, 2019~ Aug. 28, 2019	N/A	Radiation (03CH07-HY)
Horn Antenna	ESCO	3117	00211469	1GHz~18GHz	Aug. 20, 2019	Aug. 26, 2019~ Aug. 28, 2019	Aug. 19, 2020	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Apr. 18, 2019	Aug. 26, 2019~ Aug. 28, 2019	Apr. 17, 2020	Radiation (03CH07-HY)
Signal Generator	Anritsu	MG3694C	163401	0.1Hz~40GHz	Jan. 21, 2019	Aug. 26, 2019~ Aug. 28, 2019	Jan. 20, 2020	Radiation (03CH07-HY)

Report No.: FG981414B

TEL: 886-3-327-3456 Page Number : 21 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019

# 6 Uncertainty of Evaluation

#### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.05

Report No.: FG981414B

#### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of	2.44
Confidence of 95% (U = 2Uc(y))	3.44

#### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of	3.95
Confidence of 95% (U = 2Uc(y))	3.95

TEL: 886-3-327-3456 Page Number : 22 of 22 FAX: 886-3-328-4978 Issued Date : Oct. 28, 2019



## **Appendix A. Test Results of Conducted Test**

## Conducted Output Power(Average power)

LTE Band 38 Maximum Average Power [dBm]										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest				
20	1	0		22.74	22.83	22.73				
20	1	49		22.72	22.72	22.64				
20	1	99		22.56	22.79	22.77				
20	50	0	QPSK	21.72	21.76	21.74				
20	50	24		21.71	21.71	21.68				
20	50	50		21.62	21.80	21.75				
20	100	0		21.72	21.80	21.78				
20	1	0		21.69	21.72	21.76				
20	1	49		21.57	21.82	21.69				
20	1	99		21.69	21.62	21.75				
20	50	0	16-QAM	20.74	20.71	20.81				
20	50	24		20.74	20.68	20.83				
20	50	50		20.60	20.68	20.72				
20	100	0		20.54	20.72	20.82				
20	1	0		20.68	20.73	20.73				
20	1	49		20.67	20.66	20.76				
20	1	99		20.63	20.66	20.88				
20	50	0	64-QAM	19.69	19.77	19.81				
20	50	24		19.66	19.64	19.78				
20	50	50		19.62	19.62	19.72				
20	100	0		19.69	19.61	19.69				
15	1	0		22.74	22.73	22.75				
15	1	37	QPSK	22.56	22.65	22.58				
15	1	74		22.65	22.74	22.72				
15	36	0		21.67	21.67	21.83				
15	36	20		21.58	21.76	21.80				
15	36	39		21.63	21.83	21.81				
15	75	0		21.65	21.77	21.75				
15	1	0		21.64	21.67	21.85				
15	1	37		21.65	21.72	21.73				
15	1	74		21.52	21.81	21.77				
15	36	0	16-QAM	20.73	20.68	20.82				
15	36	20		20.73	20.69	20.86				
15	36	39		20.70	20.69	20.75				
15	75	0		20.67	20.76	20.79				
15	1	0		20.61	20.80	20.77				
15	1	37		20.63	20.62	20.69				
15	1	74		20.61	20.70	20.92				
15	36	0	64-QAM	19.62	19.78	19.79				
15	36	20		19.54	19.78	19.74				
15	36	39		19.74	19.65	19.75				
15	75	0		19.66	19.73	19.87				





LTE Band 38 Maximum Average Power [dBm] BW [MHz] **RB Size RB Offset** Mod Lowest Middle Highest 10 22.79 22.79 22.71 10 1 25 22.54 22.64 22.58 10 1 49 22.64 22.71 22.77 25 10 0 **QPSK** 21.72 21.77 21.81 10 25 12 21.84 21.73 21.56 10 25 25 21.52 21.71 21.82 10 50 21.76 0 21.67 21.72 10 1 0 21.70 21.85 21.80 10 1 25 21.70 21.65 21.74 10 1 49 21.68 21.80 21.72 10 25 16-QAM 20.61 20.69 0 20.75 10 20.70 25 12 20.81 20.80 10 25 25 20.62 20.81 20.69 10 50 0 20.72 20.68 20.90 10 1 0 20.71 20.67 20.74 10 1 25 20.83 20.57 20.67 10 1 49 20.76 20.65 20.64 10 25 0 64-QAM 19.55 19.77 19.90 10 25 12 19.60 19.77 19.75 10 19.82 25 25 19.64 19.68 10 50 0 19.66 19.72 19.76 5 1 0 22.77 22.78 22.78 5 1 12 22.61 22.60 22.63 5 1 24 22.62 22.72 22.77 5 12 0 QPSK 21.68 21.86 21.74 5 12 7 21.60 21.73 21.77 5 12 13 21.71 21.81 21.79 25 5 0 21.69 21.62 21.62 5 1 0 21.70 21.85 21.83 1 12 21.53 21.71 5 21.84 5 1 24 21.66 21.82 21.63 5 12 0 16-QAM 20.59 20.92 20.69 5 12 7 20.70 20.64 20.89 5 12 13 20.60 20.67 20.88 25 0 20.71 20.76 5 20.64 5 0 20.67 20.79 20.82 1 5 1 12 20.71 20.65 20.73 1 24 20.74 5 20.61 20.64 5 12 0 64-QAM 19.63 19.76 19.79 7 5 12 19.76 19.71 19.69 13 5 12 19.59 19.75 19.74 5 25 0 19.56 19.71 19.65

Report No.: FG981414B

## LTE Band 38

# Peak-to-Average Ratio

Mode						
Mod.	QP	SK	160	Limit: 13dB		
RB Size	1RB	Full RB	1RB	Full RB	Result	
Lowest CH	3.54	4.55	4.23	5.86		
Middle CH	3.51	4.46	4.35	5.45	PASS	
Highest CH	3.65	4.38	4.38	5.45		
Mode						
Mod.	64C	AM			Limit: 13dB	
RB Size	1RB	Full RB			Result	
Lowest CH	5.04	6.35	-	-		
Middle CH	5.16	6.38	-	-	PASS	
Highest CH	5.62	6.26	-	-		

Report No. : FG981414B

TEL: 886-3-327-3456 Page Number : A38-1 of 41

LTE Band 38 / 20MHz / QPSK Lowest Channel / 1RB Lowest Channel / Full RB Middle Channel / 1RB Middle Channel / Full RB Samples: 130000 0.1% 0.01% 3.51 dB 3.54 dB | Samples: 130000 | 1% | 0.1% | 0.01% | | 3.94 dB | 4.46 dB | 4.70 dB | **Highest Channel / 1RB Highest Channel / Full RB** Offset 11.80 dB AQT 2 ms • RBW 20 MHz 00 dBm Offset 11.80 dB 30 dB AQT 2 ms = RBW 20 MHz

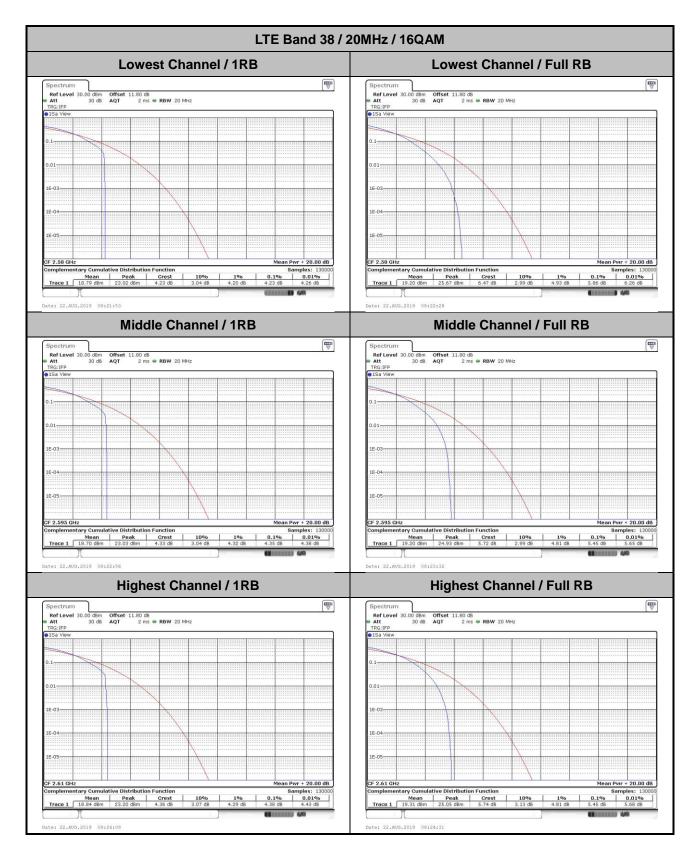
Report No.: FG981414B

| Samples: 130000 | 1% | 0.1% | 0.01% | | 3.83 dB | 4.38 dB | 4.58 dB |

TEL: 886-3-327-3456 Page Number : A38-2 of 41

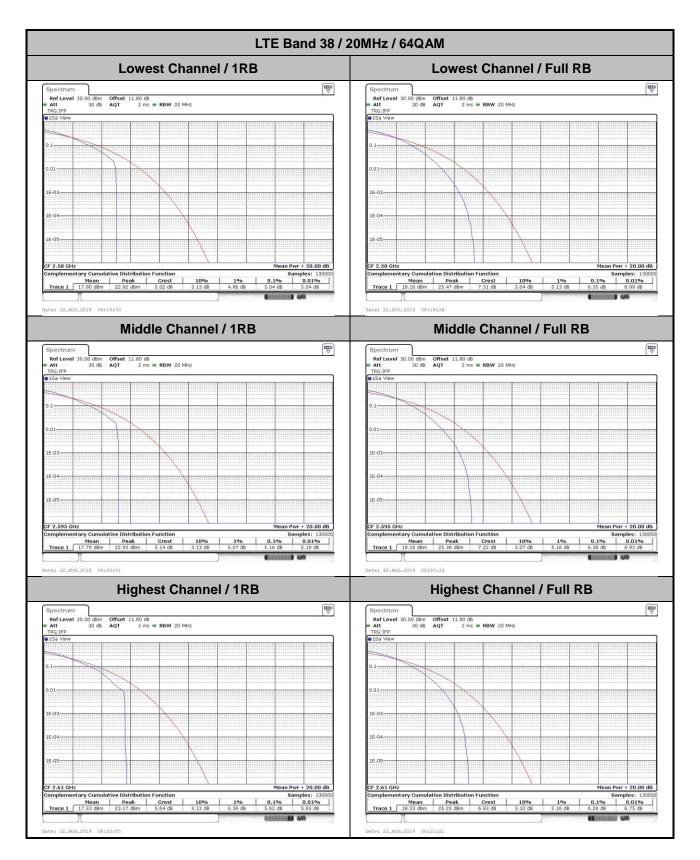
Samples: 13000 0.1% 0.01% 3.65 dB 3.65 dB

C RADIO TEST REPORT Report No. : FG981414B



TEL: 886-3-327-3456 Page Number : A38-3 of 41

C RADIO TEST REPORT Report No. : FG981414B



TEL: 886-3-327-3456 Page Number : A38-4 of 41

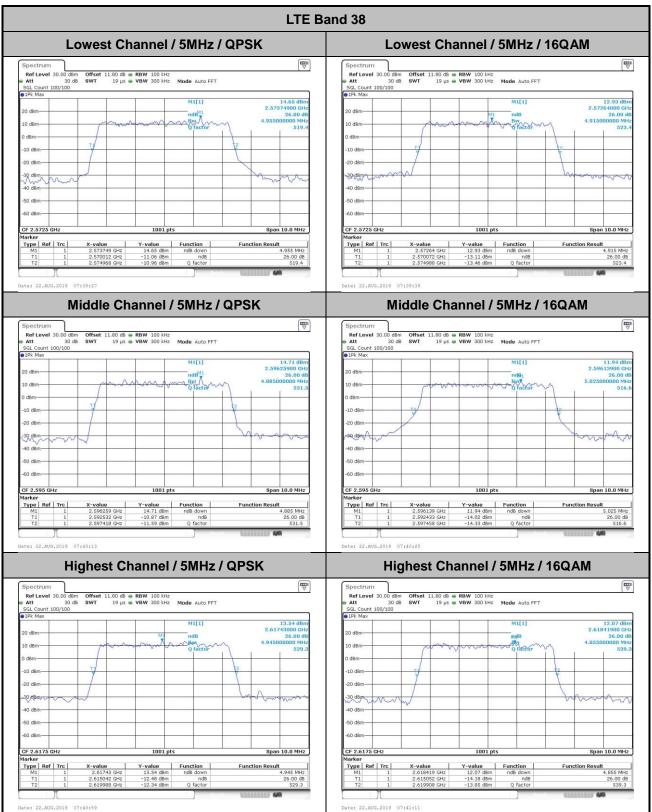
# 26dB Bandwidth

Mode	LTE Band 38 : 26dB BW(MHz)											
BW	1.4MHz 3MHz			5MHz 10		101	ИHz	15MHz		20MHz		
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.96	4.92	9.79	9.61	14.27	14.39	18.78	18.90
Middle CH	-	-	-	-	4.89	5.03	9.67	9.69	14.12	14.27	18.66	19.02
Highest CH	-	-	-	-	4.95	4.86	9.81	9.85	14.51	14.12	18.66	19.14
Mode					LTE Ba	and 38 :	26dB BV	V(MHz)				
BW	1.4	ИHz	3M	lHz	5MHz 10MHz			15MHz		20MHz		
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM	
Lowest CH	-	-	-	-	4.79	-	9.71	-	14.33	-	19.18	-
Middle CH	-	-	-	-	4.76	-	9.61	-	14.60	-	19.02	-
Highest CH	-	-	ı	-	4.90	-	9.73	-	14.24	-	18.82	-

Report No. : FG981414B

TEL: 886-3-327-3456 Page Number : A38-5 of 41

Report No.: FG981414B



TEL: 886-3-327-3456 Page Number : A38-6 of 41

Report No.: FG981414B LTE Band 38 Lowest Channel / 10MHz / QPSK Lowest Channel / 10MHz / 16QAM Ref Level 30.00 dBm
Att 30 dB
SGL Count 100/100 15.92 dBn 2.5779770 GH: 26.00 dE 9.7900000000 MH: 15.08 dBm 2.5757790 GH: 26.00 dE 9.610000000 MH: 263 -10 dBm -20 dBm 30 dBm-40 dBm Span 20.0 MHz Span 20.0 MHz CF 2.575 GHz Type Ref Trc **Function Result** Type Ref Trc Date: 22.AUG.2019 07:41:57 Middle Channel / 10MHz / QPSK Middle Channel / 10MHz / 16QAM 11.80 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT 14.02 dBn 2.5930020 15.37 dBn 2.5955990 cm 26.00 d 9.670000000 MH 268. 26.00 di 0000 MH 267. Y-value 15.37 dBm -9.83 dBm -11.21 dBm X-value Y-value
2.593002 GHz 14.02 dBm
2.590125 GHz -11.49 dBm
2.599815 GHz -11.99 dBm Type Ref Trc Function | Type | Ref | Trc | **Function Result** Function | Highest Channel / 10MHz / 16QAM Highest Channel / 10MHz / QPSK 15.47 dBn 2.6155990 GH 26.00 dB 9.810000000 MH 15.04 dBn 2.6139810 GH 26.00 dl M1[1] M1[1] 30 dBm

TEL: 886-3-327-3456 Page Number : A38-7 of 41

Type Ref Trc

 X-value
 Y-value
 Function

 2.613981 GHz
 15.04 dBm
 ndB down

Function Result 9.81 MHz

Type | Ref | Trc |

FAX: 886-3-328-4978

 X-value
 Y-value
 Function

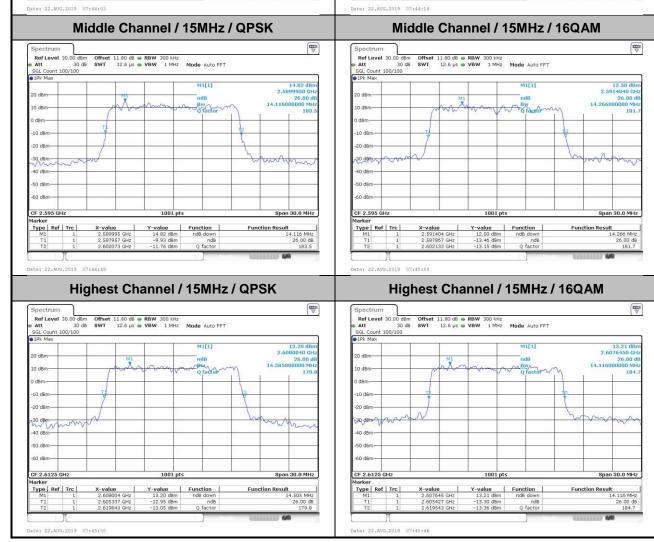
 2.615599 GHz
 15.47 dBm
 ndB down

SPORTON LAB. FCC RADIO TEST REPORT Report No.: FG981414B LTE Band 38 Lowest Channel / 15MHz / QPSK Lowest Channel / 15MHz / 16QAM Ref Level 30.00 dBm

Att 30 dB

SGL Count 100/100

1Pk Max 12.33 dBn 2.5763010 GH 26.00 dE 14.386000000 MH 13.80 dBr 2.5818160 GH 26.00 d 14.266000000 MH 10 dBm 181 179. -10 dBm 20 dBm 30 d8m mun -40 dBm 40 dBm Span 30.0 MHz Span 30.0 MHz CF 2.5775 GHz Function Result 14.266 MHz 26.00 dB 181.0 Type Ref Trc Type Ref Trc Date: 22.AUG.2019 07:44:14 Middle Channel / 15MHz / QPSK Middle Channel / 15MHz / 16QAM 11.80 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT 14.82 dBr 2.5899950 cm 12.50 dBn 2.5914040 GH 26.00 di 14.266000000 MH 181.



TEL: 886-3-327-3456 Page Number : A38-8 of 41

Report No.: FG981414B LTE Band 38 Lowest Channel / 20MHz / QPSK Lowest Channel / 20MHz / 16QAM Ref Level 30.00 dBm
Att 30 dB
SGL Count 100/100 11.92 dBn 2.5740060 GH; 26.00 dE 18.901000000 MH; 12.74 dBi 2.5807590 GF 26.00 d 18.781000000 MF 137 136. -10 dBm 20 dBm -APADBORT My -40 dBm-40 dBm-Span 40.0 MHz Span 40.0 MHz CF 2.58 GH Function Result 18.781 MHz 26.00 dB 137.4 Type Ref Trc Type Ref Trc Date: 22.AUG.2019 07:46:32 Middle Channel / 20MHz / QPSK Middle Channel / 20MHz / 16QAM 11.80 dB • RBW 300 kHz 18.9 µs • VBW 1 MHz Mode Auto FFT 11.52 dBn 2.5912040 13.42 dBr 2.5940010 cm 26.00 di 19.021000000 MH 136. Wractor \// Sa dam Function Result 18.661 MHz 26.00 dB 139.0 
 X-value
 Y-value
 Function

 2.594001 GHz
 13.42 dBm
 nd8 down

 2.585649 GHz
 -12.95 dBm
 nd8

 2.604311 GHz
 -12.19 dBm
 Q factor
 X-value Y-value
2.591204 GHz 11.52 dBm
2.585609 GHz -14.49 dBm
2.60463 GHz -14.42 dBm Type Ref Trc Type | Ref | Trc | Function Highest Channel / 20MHz / 16QAM Highest Channel / 20MHz / QPSK 
 Offset
 11.80 dB
 RBW
 300 kHz

 SWT
 18.9 μs
 VBW
 1 MHz
 Mode
 Auto FFT
 10.66 dBn 2.6096800 C M1[1] 13.42 dBr 2.6047650 GH M1[1]

Type | Ref | Trc |

X-value Y-value Function
2.60968 GHz 10.66 dBm ndB down

Function Result

18.661 MHz

Type | Ref | Trc |

FAX: 886-3-328-4978

 X-value
 Y-value
 Function

 2.604765 GHz
 13.42 dBm
 ndB down

Function Result 19.141 MHz 26.00 dB 136.3

Report No.: FG981414B LTE Band 38 Lowest Channel / 5MHz / 64QAM Lowest Channel / 10MHz / 64QAM Ref Level 30.00 dBm

Att 30 dB

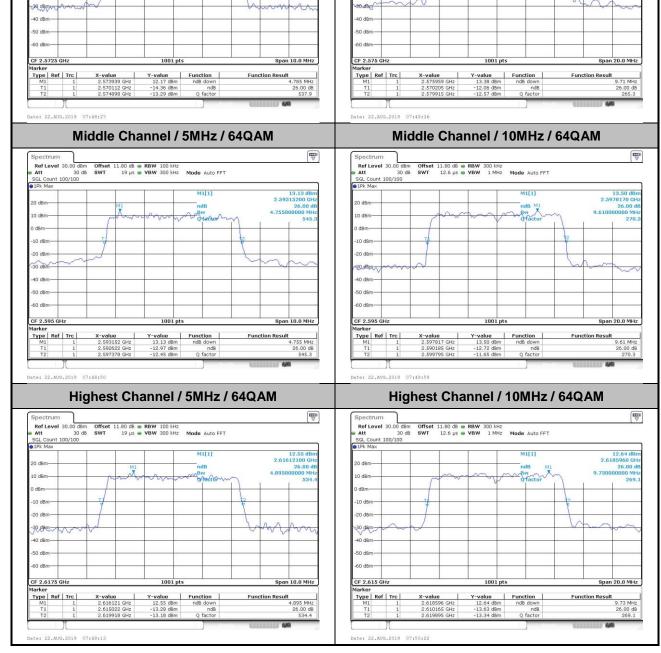
SGL Count 100/100

1Pk Max 12.17 dBi 2.57393900 GF 26.00 d 4.785000000 MF 537 -10 dBm -20 dBm 30 dBms -40 dBm 40 dBm Span 20.0 MHz Span 10.0 MHz Function Result 4.785 MHz 26.00 dB 537.9 Type Ref Trc Type Ref Trc Date: 22.AUG.2019 07:49:36 Middle Channel / 5MHz / 64QAM Middle Channel / 10MHz / 64QAM 11.80 dB • RBW 100 kHz 19 µs • VBW 300 kHz Mode Auto FFT 11.80 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT 13.50 dBm 2.5978170 GHz 26.00 dB 9.610000000 MHz 270.3 13.13 dBr 2.59315200 GF Function Result 4.755 MHz 26.00 dB 545.3 
 X-value
 Y-value

 2.597917 GHz
 13.50 dBm

 2.590185 GHz
 -12.72 dBm

 2.599795 GHz
 -11.65 dBm
 Type | Ref | Trc | Function | Type | Ref | Trc | Function | Highest Channel / 5MHz / 64QAM Highest Channel / 10MHz / 64QAM 



Report No.: FG981414B LTE Band 38 Lowest Channel / 15MHz / 64QAM Lowest Channel / 20MHz / 64QAM Ref Level 30.00 dBm

Att 30 dB

SGL Count 100/100

1Pk Max 11.92 dBi 2.5825950 GF 26.00 d 14.326000000 MF 12.08 dBn 2.5841960 GH 26.00 dl 19.181000000 MH 10 dBm 134. 180 -10 dBm 20 dBm 30 den -M -40 dBm-40 dBm-Span 40.0 MHz Span 30.0 MHz CF 2.58 GH Function Result 14.326 MHz 26.00 dB 180.3 Type Ref Trc Type Ref Trc Date: 22.AUG.2019 07:51:54 Middle Channel / 15MHz / 64QAM Middle Channel / 20MHz / 64QAM 11.80 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT 11.80 dB • RBW 300 kHz 18.9 µs • VBW 1 MHz Mode Auto FFT 11.77 dBn 2.5969480 cm 10.26 dBn 2.5991560 cm 26.00 de 19.021000000 MH: 50 dBm Function Result 14.595 MHz 26.00 dB 177.9 
 X-value
 Y-value
 Function

 2.596948 GHz
 11.77 dBm
 nd8 down

 2.587717 GHz
 -13.93 dBm
 nd8

 2.602313 GHz
 -14.16 dBm
 Q factor
 Y-value 10.26 d8 Type | Ref | Trc | Type | Ref | Trc | Function Highest Channel / 20MHz / 64QAM Highest Channel / 15MHz / 64QAM 11.69 dBn 2.6164860 GH 26.00 df 14.236000000 MH 10.95 dBn 2.6052450 GH: 26.00 dE 18.821000000 MH: M1[1] M1[1] -10 dBm 30\pa\/

TEL: 886-3-327-3456 Page Number : A38-11 of 41

Type | Ref | Trc |

 X-value
 Y-value
 Function

 2.605245 GHz
 10.95 dBm
 ndB down

Function Result 14.236 MHz

FAX: 886-3-328-4978

Type | Ref | Trc |

 X-value
 Y-value
 Function

 2.616486 GHz
 11.69 dBm
 ndB down

# **Occupied Bandwidth**

Mode	LTE Band 38 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.51	4.49	9.03	8.99	13.43	13.46	17.82	17.78
Middle CH	-	-	-	-	4.48	4.49	8.89	9.09	13.40	13.46	17.86	17.74
Highest CH	-	-	-	-	4.47	4.49	9.05	9.05	13.43	13.43	17.82	17.66
Mode					LTE Ba	and 38 : 9	99%OBV	V(MHz)				
BW	1.4	ЛHz	3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM	
Lowest CH	-	-	-	-	4.51	-	8.99	-	13.46	-	17.86	-
Middle CH	-	-	-	-	4.49	-	8.99	-	13.43	-	18.02	-
Highest CH		-	-	-	4.50	-	9.07	-	13.43	-	17.94	-

Report No. : FG981414B

TEL: 886-3-327-3456 Page Number : A38-12 of 41

Type | Ref | Trc |

FAX: 886-3-328-4978

 X-value
 Y-value
 Function

 2.618759 GHz
 14.61 dBm

14-01 dBm 8.68 dBm Occ Bw 8.45 dBm

Report No.: FG981414B LTE Band 38 Lowest Channel / 5MHz / QPSK Lowest Channel / 5MHz / 16QAM Ref Level 30.00 dBm

Att 30 dB

SGL Count 100/100

1Pk Max 13.22 dBr 2.57098200 GF 4.505494505 MF 13.17 dBn 2.57296000 GH 4.485514486 MH 10 dBm -10 dBm 20 dBm 40 dBm 40 dBm-50 dBm CF 2.5725 GHz Marker CF 2.5725 GHz Span 10.0 MHz | Y-value | Function |
| 2 | 13.22 dBm | |
|2 | 7.93 dBm | Occ Bw |
|2 | 7.29 dBm | Type Ref Trc **Function Result** Type Ref Trc 4.505494505 MHz 4.485514486 MHz Date: 22.AUG.2019 07:39:16 Middle Channel / 5MHz / QPSK Middle Channel / 5MHz / 16QAM SGL Count 100/100 1Pk Max 14.45 dBr 2.59625900 GH 4.475524476 MH 12.25 dBm 2.59702800 GHz 4.485514486 MHz -20 dBn mm -50 dBm 50 dBm CF 2.595 GHz 
 X-value
 Y-value
 Function

 2.596259 GHz
 14.45 dBm

 2.5927622 GHz
 8.39 dBm
 Occ Bw

 2.5972378 GHz
 7.99 dBm
 | Type | Ref | Trc | X-value | Y-value | M1 | 1 | 2.597028 GHz | 12.25 dBm | T1 | 1 | 2.597622 GHz | 7.28 dBm | T2 | 1 | 2.5972478 GHz | 7.26 dBm | T2 | 1 | 2.5972478 GHz | 7.26 dBm Type | Ref | Trc | Function **Function Result Function Result** 4.475524476 MHz Occ Bw 4.485514486 MHz Highest Channel / 5MHz / QPSK Highest Channel / 5MHz / 16QAM Ref Level 30.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWY 19 µs VBW 300 kHz Mode Auto FFT
SGL count 100/100
GPM Max 14.61 dBn 2.61875900 GH 4.465534466 MH 12.43 dBn 2.61952800 GH; 4.485514486 MH; M1[1] MILII -10 dBm OBod of 40 dBm -50 dBm -60 dBm

TEL: 886-3-327-3456 Page Number : A38-13 of 41

4.465534466 MHz

 Type
 Ref
 Trc
 X-value
 Y-value
 Function

 M1
 1
 2.619528 GHz
 12.43 dBm

Function Result

4.485514486 MHz

Occ Bw

Report No.: FG981414B LTE Band 38 Lowest Channel / 10MHz / QPSK Lowest Channel / 10MHz / 16QAM Ref Level 30.00 dBm

Att 30 dB

SGL Count 100/100

1Pk Max 14.69 dBi 2.5758390 GF 9.030969031 MF 14.63 dBn 2.5728820 GH 8.991008991 MH 10 dBm -10 dBm 20 dBm -40 dBm-40 dBm-CF 2.575 GHz Marker CF 2.575 GHz 
 Y-value
 Function

 Z
 14.63 dBm

 2
 8.32 dBm

 Z
 8.23 dBm
 X-value 2.575839 GHz 2.5704645 GHz 2.5794955 GHz Type Ref Trc **Function Result** Type Ref Trc 9.030969031 MHz Date: 22.AUG.2019 07:41:34 Middle Channel / 10MHz / QPSK Middle Channel / 10MHz / 16QAM 
 Ref Level
 30.00 dBm
 Offset
 11.80 dB ⊕ RBW
 300 kHz

 Att
 30 dB
 SWT
 12.6 μs ⊕ VBW
 1 MHz
 Mode
 Auto FFT
 16.35 dBr 2.5935010 GH 8.891108891 MH dBm--10 dBm -20 dBm 90 dBm 40 dBm -50 dBm 50 dBm CF 2.595 GHz 
 X-value
 Y-value
 Function

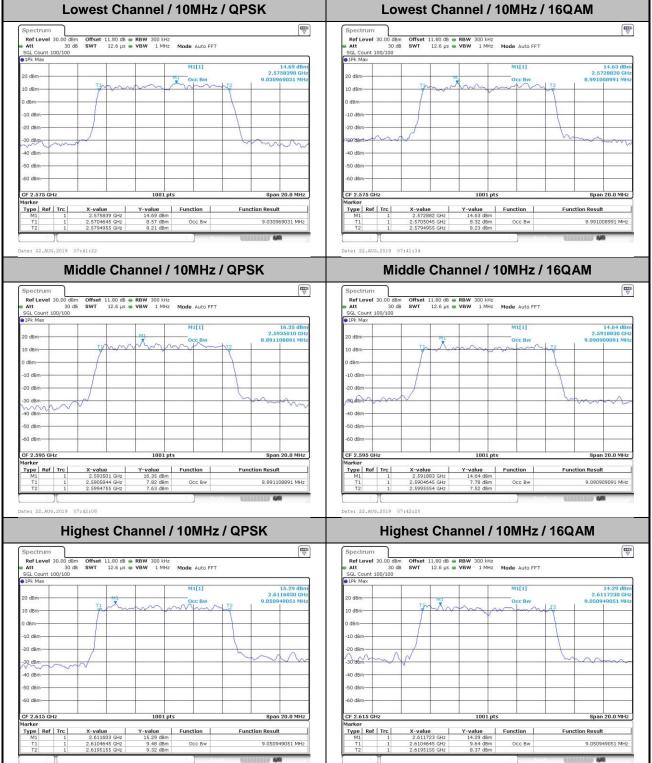
 2.593501 GHz
 16.35 dBm

 2.5905844 GHz
 7.82 dBm
 Occ Bw

 2.5994755 GHz
 7.63 dBm
 Type | Ref | Trc | Function **Function Result Function Result** 14.64 dBm 7.78 dBm Occ Bw 7.52 dBm 8.891108891 MHz 9.090909091 MHz Highest Channel / 10MHz / 16QAM Highest Channel / 10MHz / QPSK Ref Level 30.00 dBm Offset 11.80 dB RBW 300 kHz

Att 30 dB SWT 12.6 µs VBW 1 MHz Mode Auto FFT

SGL Count 100/100 15.29 dBr 2.6116030 GH 9.050949051 MH 14.29 dBn 2.6117230 GH: 9.050949051 MH: MILII MILII Jm



TEL: 886-3-327-3456 Page Number : A38-14 of 41 FAX: 886-3-328-4978

Type | Ref | Trc |

FAX: 886-3-328-4978

X-value Y-value Function 2.609353 GHz 13.39 dBm

13.39 dBm 8.39 dBm Occ Bw 8.36 dBm

Report No.: FG981414B LTE Band 38 Lowest Channel / 15MHz / QPSK Lowest Channel / 15MHz / 16QAM Ref Level 30.00 dBm

Att 30 dB

SGL Count 100/100

1Pk Max 14.06 dBi 2.5730040 GF 13.426573427 MF 13.09 dBn 2.5732140 GH 13.456543457 MH 10 dBm -10 dBm 20 dBm -30 dBTo-Warmer V. 40 dBm-CF 2.5775 GHz Marker CF 2.5775 GHz 
 X-value
 Y-value
 Function

 2.573004 GHz
 14.06 dBm
 Occ Bw

 2.5707867 GHz
 9.48 dBm
 Occ Bw

 2.5942133 GHz
 8.19 dBm
 Type Ref Trc **Function Result** Type Ref Trc 13.426573427 MHz 13.456543457 MHz Date: 22.AUG.2019 07:43:51 Middle Channel / 15MHz / QPSK Middle Channel / 15MHz / 16QAM 
 Ref Level
 30.00 dBm
 Offset
 11.80 dB ⊕ RBW
 300 kHz

 Att
 30 dB
 SWT
 12.6 μs ⊕ VBW
 1 MHz
 Mode
 Auto FFT
 13.62 dBr 2.5995850 GH 13.396603397 MH 2.5900250 GH 13.456543457 MH -50 dBm 50 dBm CF 2.595 GHz 
 X-value
 Y-value
 Function

 2.599585 GHz
 13.62 dBm

 2.5982867 GHz
 7.95 dBm
 Occ Bw

 2.6016933 GHz
 8.45 dBm
 Type | Ref | Trc | Function **Function Result Function Result** 13.396603397 MHz 6.37 dBm Occ Bw 7.93 dBm 13.456543457 MHz Highest Channel / 15MHz / QPSK Highest Channel / 15MHz / 16QAM Ref Level 30.0d d8m Offset 11.80 d8 @ RBW 300 kHz Att SGL count 100/100 SWT 12.6 µs @ VBW 1 MHz Mode Auto FFT SGL count 100/100 13.39 dBn 2.6093530 GH 13.426573427 MH 13.06 dBm 2.6153170 GHz 13.426573427 MHz M1[1] MILII -10 dBm

 Type
 Ref
 Trc
 X-value
 Y-value
 Function

 M1
 1
 2:615317 GHz
 13.06 dBm

7.69 dBm Occ Bw 7.23 dBm **Function Result** 

13.426573427 MHz

Function Result

13.426573427 MHz

Report No.: FG981414B LTE Band 38 Lowest Channel / 20MHz / QPSK Lowest Channel / 20MHz / 16QAM Ref Level 30.00 dBm
Att 30 dB
SGL Count 100/100 11.95 dBn 2.5782020 GH 17.822177822 MH 10 dBm -10 dBm -10 dBm -20 dBm 20 dBm Volume. many -40 dBm-40 dBm-CF 2.58 GHz | Y-value | Function |
11.95 dBm	
7.37 dBm	Occ Bw
6.04 dBm	
 X-value
 Y-value
 Function

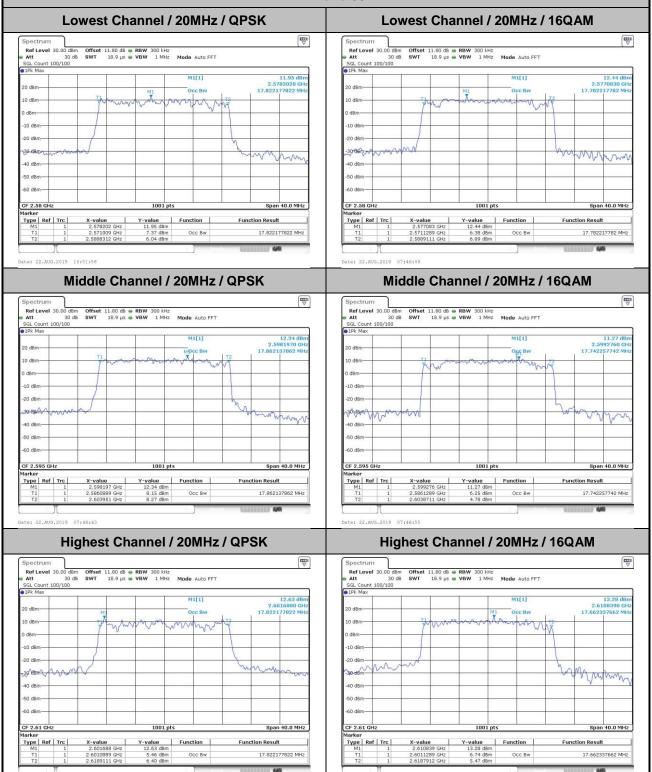
 2.5777083 GHz
 12.44 dBm
 2.5711289 GHz
 6.38 dBm
 Occ Bw

 2.5899111 GHz
 6.89 dBm
 Occ Bw
 Type Ref Trc Type Ref Trc 17.822177822 MHz 17.782217782 MHz Date: 22.AUG.2019 07:46:09 Middle Channel / 20MHz / QPSK Middle Channel / 20MHz / 16QAM 
 Ref Level
 30.00 dBm
 Offset
 11.80 dB ● RBW
 300 kHz

 Att
 30 dB
 SWT
 18.9 µs ● VBW
 1 MHz
 Mode
 Auto FFT
 12.34 dBr 2.5981970 GH 17.862137862 MH 11.27 dBm 2.5992760 GHz 17.742257742 MHz dBm--10 dBm -20 dBr 30/dam/W/W Mary Marin 40 dBm -50 dBm 50 dBm CF 2.595 GHz Y-value Function 
 X-value
 Y-value
 Function

 2.598197 GHz
 12.34 dBm
 2.586089 GHz
 8.15 dBm
 Occ Bw

 2.603951 GHz
 8.27 dBm
 Occ Bw
 Type | Ref | Trc | Function **Function Result Function Result** 6.25 dBm Occ Bw 4.78 dBm 17.742257742 MHz 17.862137862 MHz Highest Channel / 20MHz / QPSK Highest Channel / 20MHz / 16QAM 12.63 dBr 2.6016880 GH 17.822177822 MH 13.28 dBm 2.6108390 GH: 17.662337662 MH: MILII MILII



Type | Ref | Trc |

FAX: 886-3-328-4978

 X-value
 Y-value
 Function

 2.6175 GHz
 13.60 dBm

7.83 dBm Occ Bw 8.05 dBm

Report No.: FG981414B LTE Band 38 Lowest Channel / 5MHz / 64QAM Lowest Channel / 10MHz / 64QAM Ref Level 30.00 dBm
Att 30 dB
SGL Count 100/100 12.81 dBi 2.57251000 GF 4.505494505 MF 13.10 dBn 2.5733220 GH 8.991008991 MH 10 dBm -10 dBm -10 dBn 20 dBm -40 dBm-40 dBm-CF 2.575 GHz | Y-value | Function |
| 2 | 12.81 dBm | |
|2 | 7.12 dBm | Occ Bw |
|2 | 6.73 dBm | Type Ref Trc **Function Result** Type Ref Trc 4.505494505 MHz Date: 22.AUG.2019 07:49:24 Middle Channel / 5MHz / 64QAM Middle Channel / 10MHz / 64QAM 
 Ref Level
 30.00 dBm
 Offset
 11.80 dB ⊕ RBW
 300 kHz

 Att
 30 dB
 SWT
 12.6 μs ⊕ VBW
 1 MHz
 Mode Auto FFT
 14.05 dBm 2.5924630 GHz 8.991008991 MHz 12.60 dBr 2.59314200 GH 4.485514486 MH 30 HBm -50 dBm 50 dBm CF 2.595 GHz 
 X-value
 Y-value
 Function

 2.593142 GHz
 12.60 dBm

 2.5927522 GHz
 7.07 dBm
 Occ Bw

 2.5972378 GHz
 6.40 dBm

 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 2.592469 GHz
 14.05 GBm
 11
 1.5924648 GHz
 5.74 dBm
 Occ Bw

 T2
 1
 2.5994755 GHz
 5.96 dBm
 Occ Bw
 Type | Ref | Trc | **Function Result Function Result** 4.485514486 MHz 8.991008991 MHz Highest Channel / 10MHz / 64QAM Highest Channel / 5MHz / 64QAM Ref Level 30.0d d8m Offset 11.80 d8 @ RBW 300 kHz Att SGL count 100/100 SWT 12.6 µs @ VBW 1 MHz Mode Auto FFT SGL count 100/100 13.60 dBr 2.61750000 GH 4.495504496 MH 13.45 dBn 2.6175370 GH: 9.070929071 MH: MILII MILII -10 dBm 50 dBm -60 dBm

TEL: 886-3-327-3456 Page Number : A38-17 of 41

4.495504496 MHz

 Type
 Ref
 Trc
 X-value
 Y-value
 Function

 M1
 1
 2:617537 GHz
 13.45 dBm

7.63 dBm Occ Bw 7.62 dBm **Function Result** 

9.070929071 MHz