

Report No.: FG971613B



FCC RADIO TEST REPORT

FCC ID : APYHRO00276 Equipment : Smart phone

Brand Name : SHARP

Applicant : SHARP CORPORATION

2-13-1, Hachihonmatsu-lida, Higashi-hiroshima-shi,

Hiroshima pref. 739-0192, Japan

Manufacturer : SHARP CORPORATION

1 Takumi-Cho, Sakai-Ku, Sakai-Shi, Osaka 590-8522, Japan

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

The product was received on Jul. 16, 2019 and testing was started from Jul. 22, 2019 and completed on Aug. 06, 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 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 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019

Table of Contents

His	tory o	f this test reportf	.3
Sur	nmary	y of Test Result	.4
1	Gene	ral Description	.5
	1.1	Product Feature of Equipment Under Test	.5
	1.2	Modification of EUT	.5
	1.3	Testing Location	.6
	1.4	Applicable Standards	.6
2	Test	Configuration of Equipment Under Test	.7
	2.1	Test Mode	.7
	2.2	Connection Diagram of Test System	.8
	2.3	Support Unit used in test configuration and system	.8
	2.4	Measurement Results Explanation Example	.8
	2.5	Frequency List of Low/Middle/High Channels	.9
3	Cond	ucted Test Items1	0
	3.1	Measuring Instruments	0
	3.2	Conducted Output Power and EIRP	1
	3.3	Peak-to-Average Ratio1	2
	3.4	Occupied Bandwidth1	3
	3.5	Conducted Band Edge1	4
	3.6	Conducted Spurious Emission1	5
	3.7	Frequency Stability1	6
4	Radia	ated Test Items1	7
	4.1	Measuring Instruments	7
	4.2	Radiated Spurious Emission Measurement1	8
5	List o	of Measuring Equipment1	9
6	Unce	rtainty of Evaluation2	20
Apı	pendi	A. Test Results of Conducted Test	
Apı	pendi	c B. Test Results of EIRP and Radiated Test	
Apı	pendix	c C. Test Setup Photographs	

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

Report Template No.: BU5-FGLTE Version 2.4

Page Number : 2 of 20 Issued Date

: Aug. 21, 2019

Report No.: FG971613B

: 01 Report Version

History of this test report

Report No.: FG971613B

Report No.	Version	Description	Issued Date
FG971613B	01	Initial issue of report	Aug. 21, 2019

TEL: 886-3-327-3456 Page Number : 3 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019

Summary of Test Result

Report No.: FG971613B

Report Clause	Ref Std. Clause	Test Items		Remark	
	§2.1046	Conducted Output Power	Reporting only		
3.2	§22.913 (a)(2)	Effective Radiated Power (Band 5)	Pass	-	
	§27.50 (c)(10)	Effective Radiated Power (Band 12) (Band 17)	Pass		
3.3	-	Peak-to-Average Ratio	Reporting only	-	
3.4	§2.1049	Occupied Bandwidth	Reporting only	-	
3.5	§2.1051 §22.917 (a) §27.53 (g)	Conducted Band Edge Measurement (Band 5) (Band 12) (Band 17)	Pass	-	
3.6	§2.1051 §22.917 (a) §27.53 (g)	Conducted Spurious Emission (Band 5) (Band 12) (Band 17)	Pass	-	
3.7	§2.1055 §22.355 §27.54	Frequency Stability Temperature & Voltage		-	
4.2	§2.1053 §22.917 (a) §27.53 (g)	Radiated Spurious Emission (Band 5) (Band 12) (Band 17)	Pass	Under limit 39.28 dB at 1680.000 MHz	

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 : 4 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, NFC, and GNSS.

Report No.: FG971613B

Product Specification subjective to this standard						
Sample 1	1st vender parts					
Sample 2	2nd vender parts					
	WWAN: PIFA Antenna					
	WLAN: ILA Antenna					
Antenna Type	Bluetooth: ILA Antenna					
	GPS / Glonass / BDS / Galileo: ILA Antenna					
	NFC: Loop Antenna					

Remark: All test items were performed with Sample 1.

1.2 Modification of EUT

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

TEL: 886-3-327-3456 Page Number : 5 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019

1.3 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				
Test Engineer	Jacky Wang				
Temperature	23~25°C				
Relative Humidity	55~57%				

Report No.: FG971613B

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

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory					
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855					
Test Site No.	Sporton Site No.					
rest site No.	03CH11-HY					
Test Engineer	Bill Kuo, Fu Chen, Troye Hsieh					
Temperature	21.6~26°C					
Relative Humidity	54.6~66.3%					

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

FCC Designation No.: TW1190 and TW0007

1.4 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), 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 : 6 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 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.: FG971613B

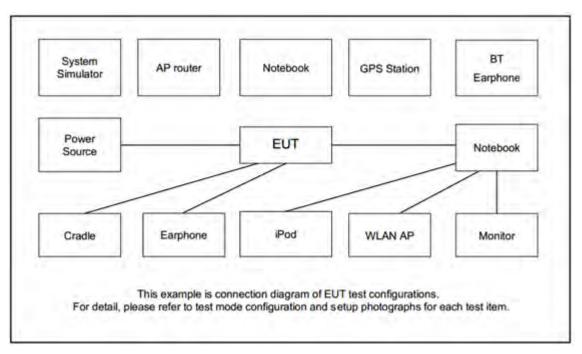
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane for LTE Band 17, Y plane for LTE Band 12 and Z plane for LTE Band 5) were recorded in this report.

		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.	5	v	٧	v	v	-	•	٧	v	v	v	v	v	٧	v	v
Output	12	v	v	v	v	-	-	V	v	v	٧	v	v	v	v	٧
Power	17	-	-	v	v	-	-	V	v	v	٧	v	v	٧	v	٧
	5				v	-	-	V	v	v	٧		v	٧	v	٧
Peak-to-Av erage Ratio	12				v	-	-	v	v	v	v		v	٧	v	v
orago riano	17	-	-		v	-	-	٧	v	v	٧		v	٧	v	٧
26dB and	5	v	v	v	v	-	-	٧	v	v			v	٧	v	٧
99%	12	v	V	v	v	-	-	٧	v	v			v	٧	v	٧
Bandwidth	17	-	-	v	v	-	-	٧	v	v			v	٧	v	٧
O a made a stand	5	v	v	v	v	-	-	٧	v	v	٧		v	٧		٧
Conducted Band Edge	12	v	v	v	v	-	-	v	v	v	٧		v	٧		٧
	17	-	-	v	v	-	-	v	v	v	٧		v	٧		٧
Conducted	5	v	v	v	v	-	-	٧	v	v	٧			٧	v	٧
Spurious	12	v	v	v	v	-	-	v	v	v	v			٧	v	٧
Emission	17	-	-	v	v	-	-	v	v	v	٧			٧	v	٧
Fraguenay	5				v	-	-	v					v		v	
Frequency Stability	12				v	-	-	v					v		v	
	17	-	-		v	-	-	v					v		v	
	5	v	v	v	v	-	-	v	v	v	٧			٧	v	٧
E.R.P.	12	v	v	v	v	-	-	V	v	v	٧			٧	v	٧
	17	-	-	v	v	-	-	V	v	v	٧			٧	v	٧
Radiated	5						V	orst Case	е					٧	v	٧
Spurious	12						V	orst Case	е					٧	v	٧
Emission	17							orst Case						V	v	٧
Remark	 Th Th dif 	ne mark ne devid	mark "v" means that this configuration is chosen for testing mark "-" means that this bandwidth is not supported. device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under rent RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are													

reported.

TEL: 886-3-327-3456 Page Number : 7 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019

2.2 Connection Diagram of Test System



Report No.: FG971613B

2.3 Support Unit used in test configuration and system

Item	Equipment	ruipment Trade Name		me Model No. FCC ID		Power Cord	
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m	
2.	Earphone	SHARP	RPHOEA007AFZZ	N/A	Unshielded, 1.2m	N/A	

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: 8 of 20 Issued Date: Aug. 21, 2019

2.5 Frequency List of Low/Middle/High Channels

LTE Band 5 Channel and Frequency List								
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest				
10	Channel	20450	20525	20600				
10	Frequency	829	836.5	844				
5	Channel	20425	20525	20625				
5	Frequency	826.5	836.5	846.5				
3	Channel	20415	20525	20635				
S	Frequency	825.5	836.5	847.5				
1.4	Channel	20407	20525	20643				
1.4	Frequency	824.7	836.5	848.3				

Report No.: FG971613B

LTE Band 12 Channel and Frequency List								
BW [MHz]	Channel/Frequency(MHz)	lz) Lowest Mid		Highest				
10	Channel	23060	23095	23130				
10	Frequency	704	707.5	711				
5	Channel	23035	23095	23155				
5	Frequency	701.5	707.5	713.5				
3	Channel	23025	23095	23165				
3	Frequency	700.5	707.5	714.5				
1.4	Channel	23017	23095	23173				
1.4	Frequency	699.7	707.5	715.3				

LTE Band 17 Channel and Frequency List									
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest					
10	Channel	23780	23790	23800					
10	Frequency	709	710	711					
5	Channel	23755	23790	23825					
5	Frequency	706.5	710	713.5					

TEL: 886-3-327-3456 Page Number : 9 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019

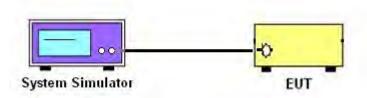
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

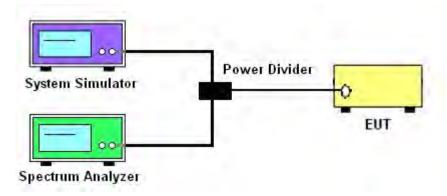
3.1.1 Test Setup

3.1.2 Conducted Output Power

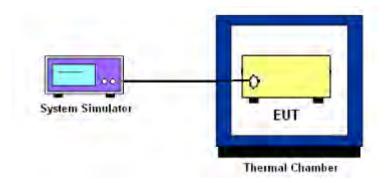


Report No.: FG971613B

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 : 10 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 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.: FG971613B

The ERP of mobile transmitters must not exceed 7 Watts for LTE Band 5.

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 12 and Band 17.

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_C = 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 : 11 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 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.: FG971613B

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 : 12 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 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.: FG971613B

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: 13 of 20 FAX: 886-3-328-4978 Issued Date: Aug. 21, 2019

3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

22.917(a)

For operations in the 824 - 849 MHz band, the FCC limit is $43 + 10\log_{10}(P[Watts])$ dB below the transmitter power P(Watts) in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Report No.: FG971613B

27.53 (g)

For operations in the 600MHz band and 698 -746 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

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.
- 7. 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)

TEL: 886-3-327-3456 Page Number : 14 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 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.: FG971613B

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th 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.
- 2. 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)

TEL: 886-3-327-3456 Page Number : 15 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019

3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

22.355

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency.

Report No.: FG971613B

27.54

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

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 : 16 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019

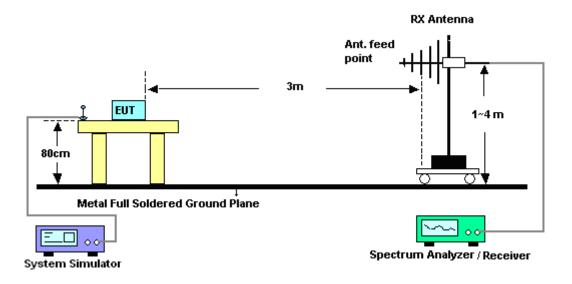
4 Radiated Test Items

4.1 Measuring Instruments

See list of measuring instruments of this test report.

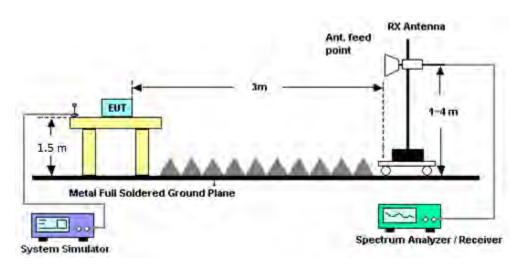
4.1.1 Test Setup

For radiated test from 30MHz to 1GHz



Report No.: FG971613B

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 : 17 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 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.: FG971613B

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 43 + 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)

TEL: 886-3-327-3456 Page Number : 18 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 06, 2018	Jul. 27, 2019~ Aug. 06, 2019	Dec. 05, 2019	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 04, 2018	Jul. 27, 2019~ Aug. 06, 2019	Dec. 03, 2019	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-0 6	35414&AT- N0602	30MHz~1GHz	Oct. 13, 2018	Jul. 27, 2019~ Aug. 06, 2019	Oct. 12, 2019	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-132 6	1GHz ~ 18GHz	Oct. 15, 2018	Jul. 27, 2019~ Aug. 06, 2019	Oct. 14, 2019	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120D	9120D-132 8	1GHz ~ 18GHz	Nov. 09, 2018	Jul. 27, 2019~ Aug. 06, 2019	Nov. 08, 2019	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Nov. 23, 2017	Jul. 27, 2019~ Aug. 06, 2019	Nov. 22, 2019	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY532701 48	1GHz~26.5GHz	Nov. 14, 2018	Jul. 27, 2019~ Aug. 06, 2019	Nov. 13, 2019	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY542004 86	10Hz ~ 44GHz	Oct. 18, 2018	Jul. 27, 2019~ Aug. 06, 2019	Oct. 17, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-108 0-1200-1500- 60SS	SN2	1.2G High Pass	Sep. 17, 2018	Jul. 27, 2019~ Aug. 06, 2019	Sep. 16, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-270 0-3000-18000 -60SS	SN3	2.7G High Pass	Sep. 17, 2018	Jul. 27, 2019~ Aug. 06, 2019	Sep. 16, 2019	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1~4m	N/A	Jul. 27, 2019~ Aug. 06, 2019	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jul. 27, 2019~ Aug. 06, 2019	N/A	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A (MXE)	MY532900 45	20MHz~8.4GHz	Jan. 19, 2019	Jul. 27, 2019~ Aug. 06, 2019	Jan. 18, 2020	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 584	18GHz- 40GHz	Dec. 05, 2018	Jul. 27, 2019~ Aug. 06, 2019	Dec. 04, 2019	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-00104 2	N/A	N/A	Jul. 27, 2019~ Aug. 06, 2019	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4 PE	9kHz-30MHz	Mar. 13, 2019	Jul. 27, 2019~ Aug. 06, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 13, 2019	Jul. 27, 2019~ Aug. 06, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4 PE	30M-18G	Mar. 13, 2019	Jul. 27, 2019~ Aug. 06, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30MHz-40GHz	Mar. 13, 2019	Jul. 27, 2019~ Aug. 06, 2019	Mar. 12, 2020	Radiation (03CH11-HY)
SMB100A Signal Generator	R&S	SMB100A	181147	100kHz~40GHz	Nov. 12, 2018	Jul. 27, 2019~ Aug. 06, 2019	Nov. 10, 2020	Radiation (03CH11-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 13, 2018	Jul. 22, 2019~ Jul. 27, 2019	Nov. 12, 2019	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40°C~90°C	Aug. 29, 2018	Jul. 22, 2019~ Jul. 27, 2019	Aug. 28, 2019	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 02, 2018	Jul. 22, 2019~ Jul. 27, 2019	Oct. 01, 2019	Conducted (TH05-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#A	1-18GHz	Jan. 14, 2019	Jul. 22, 2019~ Jul. 27, 2019	Jan. 13, 2020	Conducted (TH05-HY)

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : 19 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 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))	3.37

Report No.: FG971613B

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

Measuring Uncertainty for a Level of	2.67
Confidence of 95% (U = 2Uc(y))	3.67

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

Measuring Uncertainty for a Level of	4.03
Confidence of 95% (U = 2Uc(y))	4.03

TEL: 886-3-327-3456 Page Number : 20 of 20 FAX: 886-3-328-4978 Issued Date : Aug. 21, 2019



Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

LTE Band 5 Maximum Average Power [dBm]									
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest			
10	1	0		23.03	23.18	23.14			
10	1	25		23.05	23.13	23.17			
10	1	49		23.13	23.12	23.16			
10	25	0	QPSK	22.18	22.23	22.13			
10	25	12		22.29	22.28	22.26			
10	25	25		22.19	22.17	22.22			
10	50	0		22.15	22.25	22.10			
10	1	0		22.30	22.32	22.39			
10	1	25		22.47	22.47	22.49			
10	1	49		22.50	22.46	22.59			
10	25	0	16-QAM	21.30	21.33	21.24			
10	25	12		21.41	21.27	21.39			
10	25	25		21.30	21.18	21.43			
10	50	0		21.28	21.25	21.21			
10	1	0		21.33	21.40	21.37			
10	1	25		21.39	21.49	21.50			
10	1	49		21.50	21.39	21.49			
10	25	0	64-QAM	20.33	20.32	20.25			
10	25	12		20.35	20.34	20.44			
10	25	25		20.38	20.33	20.40			
10	50	0		20.36	20.28	20.31			
5	1	0		23.10	23.20	23.29			
5	1	12		23.00	23.18	23.18			
5	1	24		23.19	23.04	23.28			
5	12	0	QPSK	22.12	22.27	22.12			
5	12	7		22.22	22.12	22.27			
5	12	13		22.26	22.18	22.21			
5	25	0		22.21	22.13	22.27			
5	1	0		22.50	22.41	22.58			
5	1	12		22.36	22.48	22.60			
5	1	24		22.46	22.47	22.58			
5	12	0	16-QAM	21.24	21.30	21.39			
5	12	7		21.25	21.24	21.29			
5	12	13		21.25	21.30	21.38			
5	25	0		21.27	21.24	21.39			
5	1	0		21.34	21.40	21.52			
5	1	12		21.30	21.40	21.48			
5	1	24		21.33	21.28	21.59			
5	12	0	64-QAM	20.35	20.34	20.38			
5	12	7		20.35	20.31	20.40			
5	12	13		20.36	20.33	20.45			
5	25	0		20.35	20.28	20.31			



FCC RADIO TEST REPORT

	LTE Band 5 Maximum Average Power [dBm]									
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest				
3	1	0		23.16	23.06	23.24				
3	1	8		22.94	23.20	23.12				
3	1	14		23.18	22.95	23.19				
3	8	0	QPSK	21.99	22.21	22.14				
3	8	4		22.13	22.23	22.16				
3	8	7		22.12	22.21	22.21				
3	15	0		22.14	22.07	22.19				
3	1	0		22.35	22.28	22.42				
3	1	8		22.30	22.35	22.43				
3	1	14		22.45	22.43	22.50				
3	8	0	16-QAM	21.13	21.20	21.37				
3	8	4		21.24	21.32	21.32				
3	8	7		21.25	21.28	21.16				
3	15	0		21.24	21.19	21.25				
3	1	0		21.27	21.36	21.46				
3	1	8		21.19	21.40	21.48				
3	1	14		21.24	21.20	21.42				
3	8	0	64-QAM	20.35	20.26	20.28				
3	8	4		20.34	20.33	20.41				
3	8	7		20.29	20.22	20.29				
3	15	0		20.34	20.21	20.34				
1.4	1	0		22.98	23.09	23.07				
1.4	1	3		23.00	22.97	23.06				
1.4	1	5		22.89	23.11	23.09				
1.4	3	0	QPSK	23.11	23.00	23.02				
1.4	3	1		23.10	23.09	23.00				
1.4	3	3		23.16	22.92	22.99				
1.4	6	0		21.92	22.18	22.01				
1.4	1	0		22.14	21.89	21.94				
1.4	1	3		22.02	21.88	22.19				
1.4	1	5		22.00	21.95	22.06				
1.4	3	0	16-QAM	22.12	21.97	22.15				
1.4	3	1		22.03	22.01	22.14				
1.4	3	3		22.01	21.99	22.04				
1.4	6	0		21.17	21.02	21.14				
1.4	1	0		21.09	20.95	21.07				
1.4	1	3		21.19	20.98	21.04				
1.4	1	5		21.04	20.90	21.13				
1.4	3	0	64-QAM	21.13	21.08	21.12				
1.4	3	1		21.19	20.89	21.11				
1.4	3	3		20.95	21.13	21.09				
1.4	6	0		20.17	20.05	20.27				

Report No.: FG971613B



FCC RADIO TEST REPORT

	LTE Band 12 Maximum Average Power [dBm]									
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest				
10	1	0		23.05	22.96	23.08				
10	1	25		23.16	23.08	23.17				
10	1	49		23.18	23.09	23.10				
10	25	0	QPSK	22.20	22.08	22.20				
10	25	12		22.21	22.10	22.21				
10	25	25		22.12	22.16	22.10				
10	50	0		22.22	22.11	22.14				
10	1	0		22.45	22.34	22.47				
10	1	25		22.49	22.45	22.48				
10	1	49		22.48	22.54	22.47				
10	25	0	16-QAM	21.31	21.32	21.30				
10	25	12		21.32	21.27	21.25				
10	25	25		21.28	21.22	21.28				
10	50	0		21.26	21.26	21.21				
10	1	0		21.30	21.38	21.40				
10	1	25		21.48	21.42	21.33				
10	1	49	64-QAM	21.46	21.37	21.43				
10	25	0		20.27	20.28	20.31				
10	25	12		20.28	20.36	20.28				
10	25	25		20.31	20.20	20.35				
10	50	0		20.27	20.20	20.23				
5	1	0		23.16	23.05	23.05				
5	1	12		23.06	23.11	23.19				
5	1	24		23.22	23.02	23.12				
5	12	0	QPSK	22.12	22.15	22.09				
5	12	7		22.21	22.12	22.18				
5	12	13		22.27	22.19	22.17				
5	25	0		22.25	22.13	22.05				
5	1	0		22.50	22.32	22.37				
5	1	12		22.45	22.44	22.56				
5	1	24		22.56	22.42	22.34				
5	12	0	16-QAM	21.31	21.30	21.22				
5	12	7		21.31	21.33	21.29				
5	12	13		21.41	21.20	21.31				
5	25	0		21.38	21.25	21.09				
5	1	0		21.32	21.37	21.35				
5	1	12		21.37	21.38	21.45				
5	1	24		21.61	21.43	21.39				
5	12	0	64-QAM	20.37	20.35	20.31				
5	12	7		20.47	20.33	20.33				
5	12	13		20.52	20.26	20.30				
5	25	0		20.33	20.22	20.20				

Report No.: FG971613B



PORTON LAB. FCC RADIO TEST REPORT

		LTE	Band 12 Ma	ximum Average Po	ower [dBm]	
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0		23.00	23.00	22.94
3	1	8		23.08	23.04	23.14
3	1	14	QPSK 16-QAM QPSK	23.13	22.96	23.05
3	8	0	QPSK	22.11	22.10	21.96
3	8	4		22.30	22.11	22.23
3	8	7		22.22	22.08	22.20
3	15	0		22.07	22.21	22.00
3	1	0		22.39	22.39	22.34
3	1	8		22.39	22.46	22.49
3	1	14		22.46	22.32	22.32
3	8	0	16-QAM	21.32	21.24	21.21
3	8	4		21.19	21.23	21.28
3	8	7		21.36	21.20	21.20
3	15	0		21.24	21.17	21.10
3	1	0		21.41	21.26	21.24
3	1	8		21.43	21.25	21.45
3	1	14		21.37	21.27	21.29
3	8	0	64-QAM	20.27	20.21	20.33
3	8	4		20.37	20.25	20.25
3	8	7		20.45	20.20	20.29
3	15	0		20.35	20.19	20.21
1.4	1	0		22.89	23.04	22.94
1.4	1	3		22.96	23.14	23.02
1.4	1	5		22.76	23.16	22.96
1.4	3	0		23.07	22.82	23.09
1.4	3	1		22.97	23.02	23.05
1.4	3	3		23.15	22.92	22.83
1.4	6	0		22.13	22.08	22.01
1.4	1	0		22.22	22.01	22.02
1.4	1	3		21.89	22.00	22.23
1.4	1	5		21.92	21.92	22.05
1.4	3	0	16-QAM	22.04	21.89	22.10
1.4	3	1		22.09	22.10	22.19
1.4	3	3		21.97	21.96	22.01
1.4	6	0		21.22	21.04	21.19
1.4	1	0		21.13	20.91	21.18
1.4	1	3		21.16	20.83	21.08
1.4	1	5		21.21	20.82	21.11
1.4	3	0	64-QAM	21.03	20.94	21.07
1.4	3	1		21.23	20.77	21.04
1.4	3	3		21.02	21.05	21.02
1.4	6	0		20.25	20.03	20.22

Report No.: FG971613B



PORTON LAB. FCC RADIO TEST REPORT

	LTE Band 17 Maximum Average Power [dBm]									
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest				
10	1	0		22.88	22.89	22.91				
10	1	25		22.90	22.87	22.88				
10	1	49	Mod QPSK 16-QAM G4-QAM 16-QAM	22.98	23.05	22.96				
10	25	0	QPSK	21.92	21.92	21.91				
10	25	12		21.93	21.94	21.94				
10	25	25		21.90	21.91	21.92				
10	50	0		21.91	21.90	21.91				
10	1	0		22.26	22.25	22.26				
10	1	25		22.23	22.23	22.25				
10	1	49		22.36	22.30	22.27				
10	25	0	16-QAM	21.02	21.02	21.01				
10	25	12		21.04	21.03	21.04				
10	25	25		21.01	21.02	21.02				
10	50	0		21.04	21.04	21.04				
10	1	0		21.20	21.18	21.20				
10	1	25		21.19	21.16	21.17				
10	1	49		21.27	21.24	21.21				
10	25	0	64-QAM	20.05	20.05	20.04				
10	25	12		20.05	20.06	20.05				
10	25	25		20.06	20.05	20.04				
10	50	0		20.07	20.06	20.06				
5	1	0		22.91	22.87	22.94				
5	1	12		22.89	22.85	23.01				
5	1	24		22.90	22.97	23.03				
5	12	0	QPSK	21.92	21.91	22.00				
5	12	7	QPSK	21.96	21.92	22.11				
5	12	13		21.94	21.89	22.07				
5	25	0		21.91	21.91	22.00				
5	1	0		22.27	22.22	22.33				
5	1	12		22.27	22.21	22.37				
5	1	24		22.26	22.31	22.30				
5	12	0	16-QAM	21.06	21.01	21.11				
5	12	7		21.08	21.05	21.22				
5	12	13		21.03	20.99	21.19				
5	25	0		21.02	21.02	21.10				
5	1	0		21.24	21.19	21.24				
5	1	12		21.19	21.19	21.30				
5	1	24		21.21	21.29	21.29				
5	12	0	64-QAM	20.10	20.06	20.17				
5	12	7		20.14	20.09	20.28				
5	12	13		20.10	20.09	20.26				
5	25	0		20.05	20.03	20.11				

Report No. : FG971613B

LTE Band 5

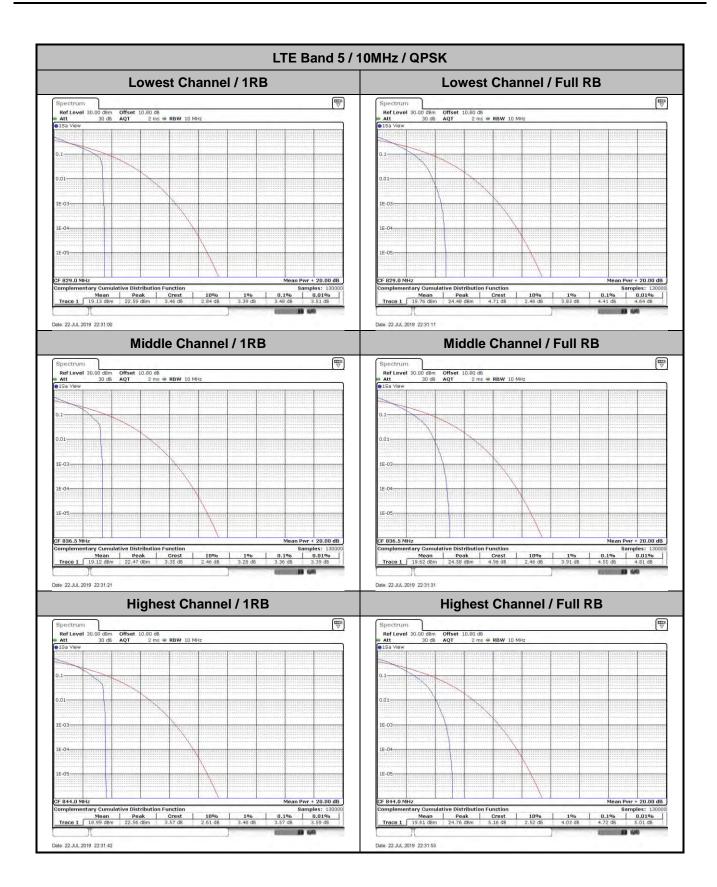
Peak-to-Average Ratio

Mode		LTE Band 5 / 10MHz								
Mod.	QP	SK	16	Limit: 13dB						
RB Size	1RB Full RB		1RB	Full RB	Result					
Lowest CH	3.48	4.41	5.04	5.68						
Middle CH	3.36	4.55	4.52	5.74	PASS					
Highest CH	3.57	4.72	4.93	6.03						
Mode		LTE Band	5 / 10MHz							
Mod.	64C	AM			Limit: 13dB					
RB Size	1RB	Full RB			Result					
Lowest CH	5.83	6.20	-	-						
Middle CH	6.17	6.32	-	-	PASS					
Highest CH	6.32	6.64	-	-						

Report No. : FG971613B

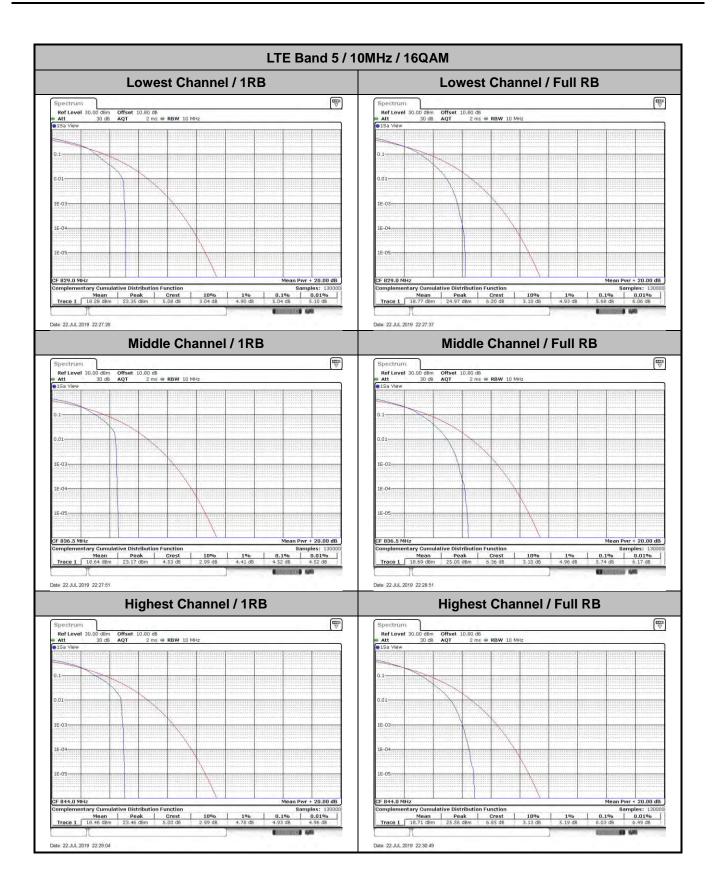
TEL: 886-3-327-3456 Page Number : A5-1 of 41

RADIO TEST REPORT Report No. : FG971613B



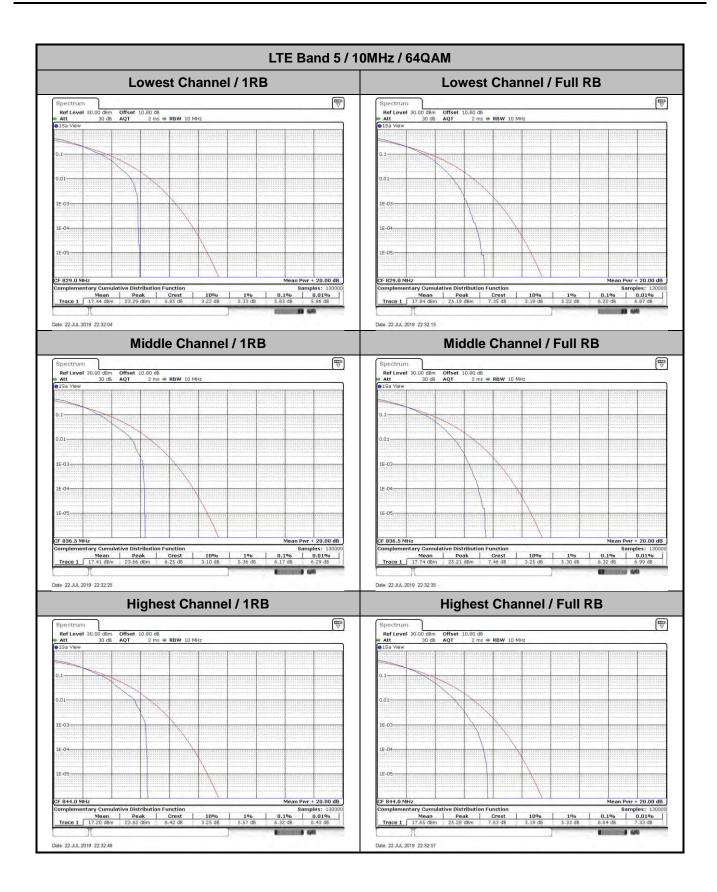
TEL: 886-3-327-3456 Page Number: A5-2 of 41

RADIO TEST REPORT Report No. : FG971613B



TEL: 886-3-327-3456 Page Number: A5-3 of 41

C RADIO TEST REPORT Report No. : FG971613B



TEL: 886-3-327-3456 Page Number: A5-4 of 41

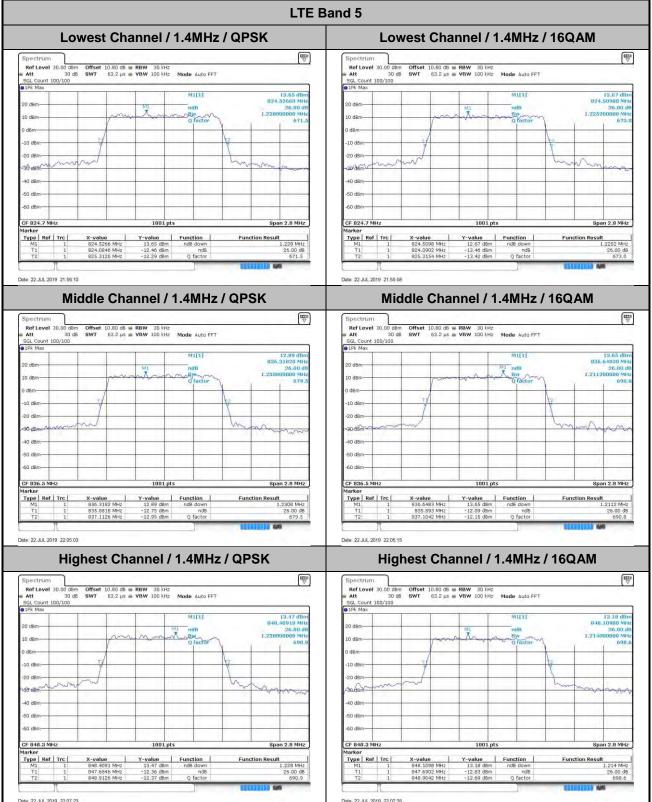
26dB Bandwidth

Mode		LTE Band 5 : 26dB BW(MHz)										
BW	1.4MHz 3MHz 5MHz 10MHz 15MHz							ИHz	20MHz			
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	1.23	1.23	3.03	2.99	4.92	4.85	9.75	9.81	-	-	-	-
Middle CH	1.23	1.21	3.03	3.05	4.92	4.94	9.81	9.99	-	-	-	-
Highest CH	1.23	1.21	3.02	3.02	4.92	4.96	9.87	9.67	-	-	-	-
Mode					LTE B	and 5 : 2	26dB BW	(MHz)				
BW	1.4	ИHz	3M	lHz	5MHz 10MHz		15MHz		20MHz			
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM	
Lowest CH	1.24	-	3.01	-	4.91	-	9.79	-	-	-	-	-
Middle CH	1.22	-	3.03	-	4.87	-	9.83	-	-	-	-	-
Highest CH	1.22	-	3.00	-	4.88	-	9.77	-	-	-	-	-

Report No. : FG971613B

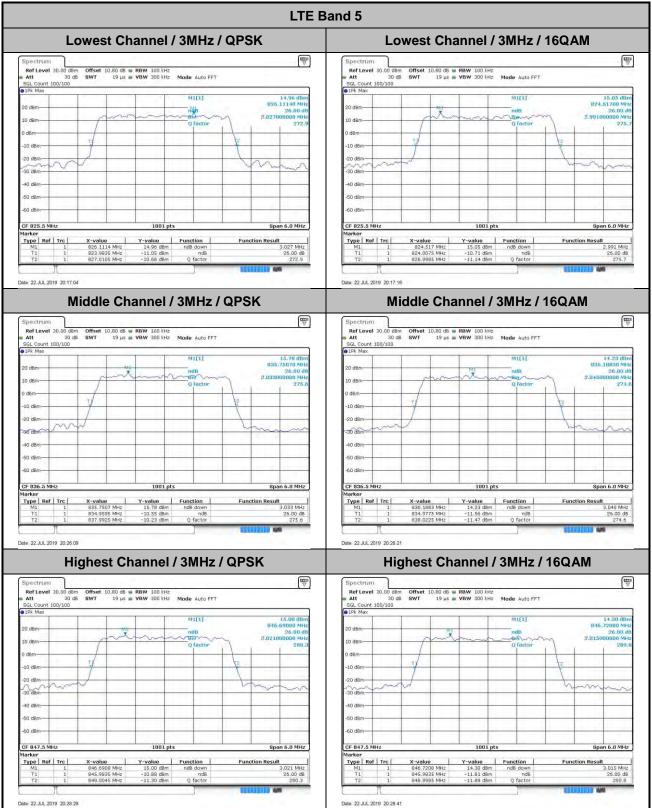
TEL: 886-3-327-3456 Page Number : A5-5 of 41

Report No.: FG971613B



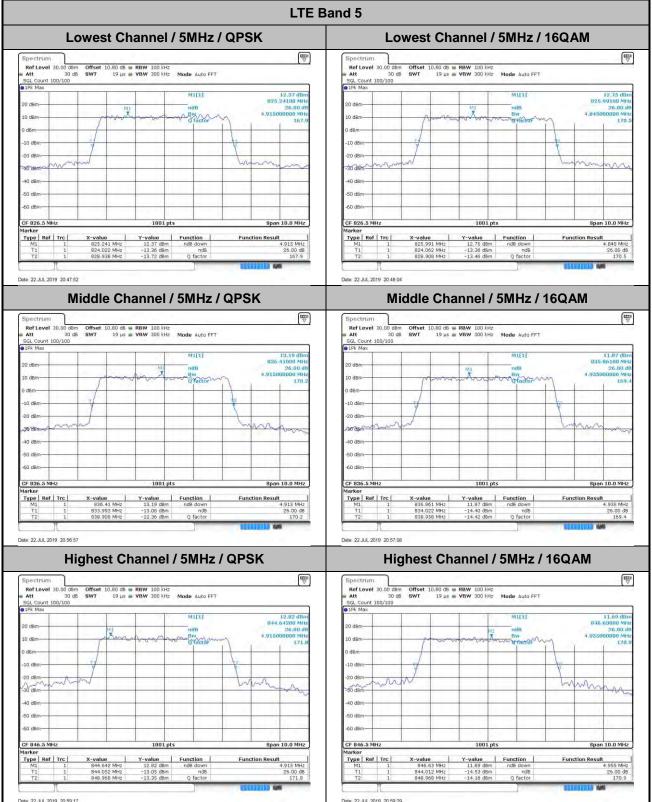
TEL: 886-3-327-3456 Page Number : A5-6 of 41

Report No.: FG971613B



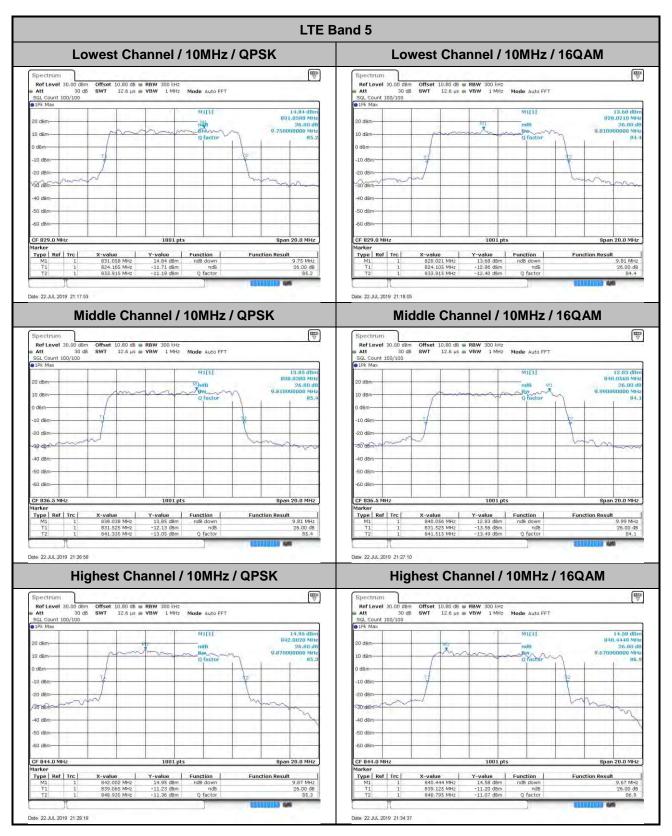
TEL: 886-3-327-3456 Page Number : A5-7 of 41

Report No.: FG971613B LTE Band 5 Lowest Channel / 5MHz / QPSK Lowest Channel / 5MHz / 16QAM



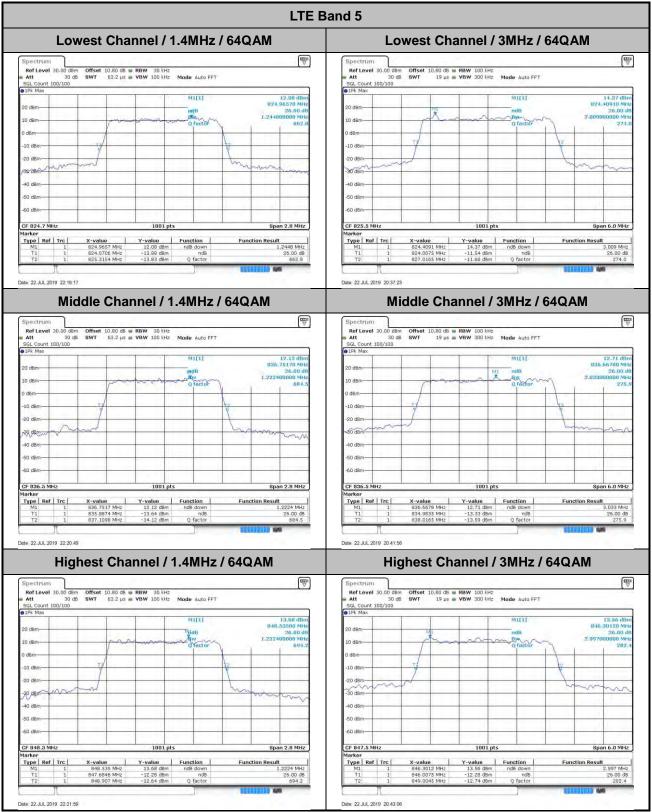
TEL: 886-3-327-3456 Page Number : A5-8 of 41

Report No.: FG971613B



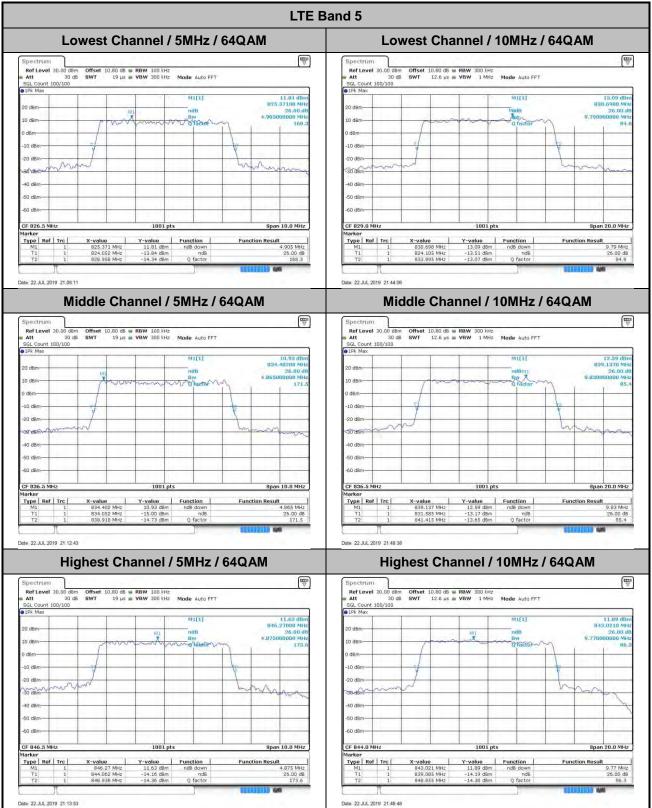
TEL: 886-3-327-3456 Page Number : A5-9 of 41

Report No.: FG971613B



TEL: 886-3-327-3456 Page Number : A5-10 of 41

Report No.: FG971613B LTE Band 5



TEL: 886-3-327-3456 Page Number : A5-11 of 41

Occupied Bandwidth

Mode	LTE Band 5 : 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	1.09	1.09	2.72	2.73	4.51	4.50	9.03	9.07	-	-	-	-
Middle CH	1.09	1.09	2.70	2.71	4.49	4.51	9.07	9.03	-	-	-	-
Highest CH	1.09	1.09	2.72	2.72	4.52	4.50	9.01	8.95	-	-	-	-
Mode		LTE Band 5 : 99%OBW(MHz)										
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM	
Lowest CH	1.09	-	2.73	-	4.52	-	9.03	-	-	-	-	-
Middle CH	1.09	-	2.72	-	4.53	-	9.01	-	-	-	-	-
Highest CH	1.09	-	2.73	-	4.47	-	9.03	-	-	-	-	-

Report No. : FG971613B

TEL: 886-3-327-3456 Page Number: A5-12 of 41

Report No.: FG971613B LTE Band 5 Lowest Channel / 1.4MHz / QPSK Lowest Channel / 1.4MHz / 16QAM 7 Ref Level 30.00 dBm • Att 30 dB SGL Count 100/100 • 1Pk Max -10 dBn -10 dВп -40 dBm 40 dBm Span 2.8 MHz CF 824.7 MHz Span 2.8 MHz Y-value 12.84 dBm 4.62 dBm 4.90 dBm X-value 824.8427 MHz 824.15734 MHz 825.25105 MHz Type | Ref | Trc | Function **Function Result** Type | Ref | Trc | Middle Channel / 1.4MHz / QPSK Middle Channel / 1.4MHz / 16QAM 7 ∇ Offset 10,80 dB • RBW 30 kHz SWT 63.2 µs • VBW 100 kHz Mode Auto FFT 13.31 dB: 836.45520 MH 1.090909091 MH 12.12 dBm 836.05240 MHz 1.088111888 MHz d8man dam 40 dBm 40 dBm 50 dBm-Type Ref Trc
 X-value
 Y-value
 Function

 836,4552 MHz
 13.31 dbm
 835.95175 MHz

 835,95175 MHz
 6.74 dbm
 Occ Bw

 837.04266 MHz
 7.46 dbm
 Type Ref Trc X-value Y-value 836.0524 MHz 12.12 dBm 835.95734 MHz 5.30 dBm 837.04545 MHz 5.47 dBm Function **Function Result Function Result** 1.090909091 MHz 1.088111888 MHz Date: 22.JUL 2019 22:04:40 Date: 22.JUL 2019 22.04.51 Highest Channel / 1.4MHz / QPSK Highest Channel / 1.4MHz / 16QAM ∇ ∇ Ref Level 30.00 dBm Offset 10.60 dB RBW 30 Hz Att 30 dB SWT 63.2 µs VBW 100 kHz Mode Auto FFT SGL Count 100/100 0 dBm Offset 10,80 dB • RBW 30 kHz 30 dB SWT 63.2 µs • VBW 100 kHz Mode Auto FFT MILIT 13.06 dBi 848-11020 MH 1.088111888 MH MILLI mor 30 dBm

TEL: 886-3-327-3456 Page Number: A5-13 of 41

Span 2.8 MHz

1.088111888 MHz

CF 848.3 MHz

 Type
 Ref
 Trc
 X-value
 Y-value
 Function

 M1
 1
 848.1098 MHz
 12.91 dBm

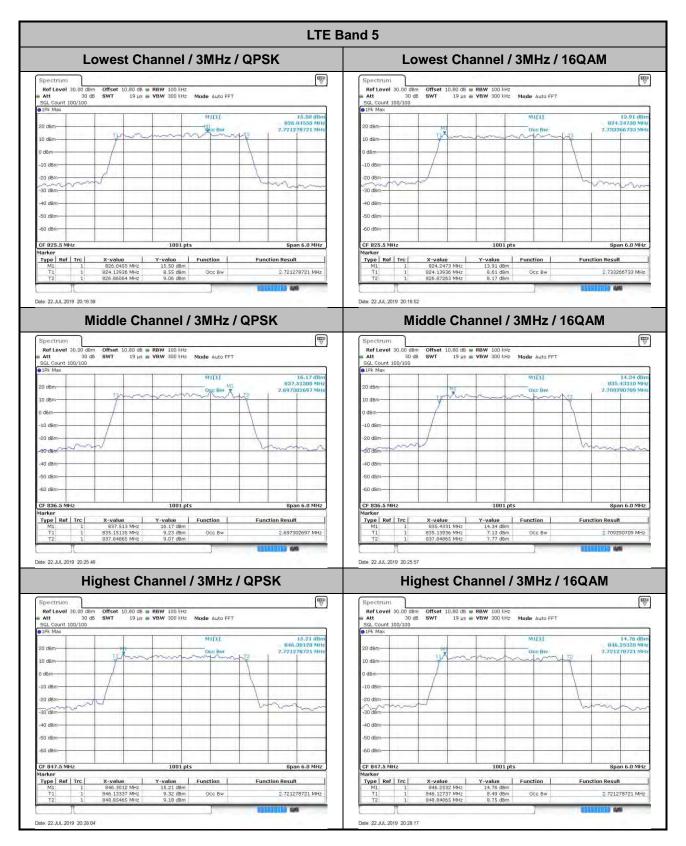
Occ Bw

1.090909091 MHz

FAX: 886-3-328-4978

Type | Ref | Trc |

6.92 dBm Occ Bw 7.51 dBm CC RADIO TEST REPORT Report No. : FG971613B



TEL: 886-3-327-3456 Page Number : A5-14 of 41

Report No.: FG971613B LTE Band 5 Lowest Channel / 5MHz / QPSK Lowest Channel / 5MHz / 16QAM **₩** Ref Level 30.00 dBm

Att 30 dB

SGL Count 100/100

Pk Max 12.64 dB: 827,39900 MH 4,505494505 MH -10 dBm -10 dBn 90 dam--40 dBm 40 dBm 60 dBr -60 dBm Span 10.0 MHz 1001 pts X-value 825.861 MHz 824.25225 MHz 828.74775 MHz Y-value 11.29 dBm 7.26 dBm 6.17 dBm Type | Ref | Trc | Type | Ref | Trc | Middle Channel / 5MHz / QPSK Middle Channel / 5MHz / 16QAM 7 .80 dB **** RBW** 100 kHz 19 µs **** VBW** 300 kHz **Mode** Auto FFT 0 dBm Offset 10,60 dB • RBW 100 kHz 30 dB SWT 19 µs • VBW 300 kHz Mode Auto FFT SGL Count 100/100 13.03 dB: 835.80100 MF 4.485514486 MF d8m-40 dBm 40 dBm 50 dBm-Type Ref Trc
 X-value
 Y-value
 Function

 835,901 MHz
 13,03 dbm
 934,55225 MHz

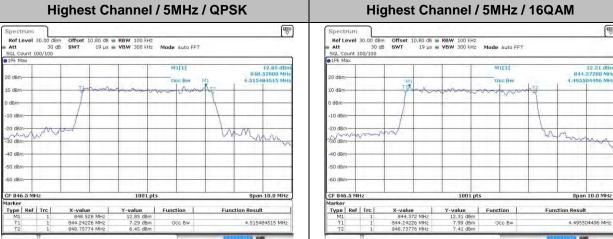
 834,25225 MHz
 8,24 dbm
 Occ Bw

 838,73776 MHz
 8,50 dbm

 X-value
 Y-value
 Function

 836.15 MHz
 12.00 dBm
 334.24226 MHz
 7.43 dBm
 Occ BW

 838.74775 MHz
 6.73 dBm
 Occ BW
 Type Ref Trc **Function Result Function Result** 4.485514486 MHz 4.505494505 MHz Date: 22 JUL 2019 20:56:33 Date: 22.JUL 2019 20.56.45 Highest Channel / 5MHz / QPSK Highest Channel / 5MHz / 16QAM ∇



TEL: 886-3-327-3456 Page Number : A5-15 of 41

Report No.: FG971613B LTE Band 5 Lowest Channel / 10MHz / QPSK Lowest Channel / 10MHz / 16QAM 7 Ref Level 30.00 dBm

Att 30 dB

SGL Count 100/100

Pk Max 13.41 dBn 827.4020 MH 9.070929071 MH -10 dBm -10 dBm -40 dBm 40 dBm Span 20.0 MHz CF 829.0 MHz CF 829.0 MHz 1001 pts Y-value Function
14-92 dBm
8.30 dBm Occ Bw
8.66 dBm Y-value 13.41 dBm 8.34 dBm 7.24 dBm Type Ref Trc **Function Result** Type | Ref | Trc | Middle Channel / 10MHz / QPSK Middle Channel / 10MHz / 16QAM 7 7 Offset 10,80 dB • RBW 300 kHz SWT 12.6 µs • VBW 1 MHz Mode Auto FFT SGL Count 100/100 14.74 dB: 893,9430 MF 9.070929071 MF d8man dish 30 den--40 dBm 40 dBm 50 dBm-Span 20.0 MHz
 X-value
 Y-value
 Function

 839.277 MHz
 14.54 dBm

 831.9645 MHz
 8.43 dBm
 Occ Bw

 840.9955 MHz
 7.01 dBm
 Type | Ref | Trc |
 X-value
 Y-value
 Function

 833,343 MHz
 14,74 dBm
 Occ Bw

 831,9645 MHz
 7,93 dBm
 Occ Bw

 841,0355 MHz
 7,63 dBm
 Type Ref Trc **Function Result Function Result** 9.070929071 MHz 9.030969031 MHz Date: 22.JUL 2019 21:26:34 Date: 22 JUL 2019 21:26:46 Highest Channel / 10MHz / QPSK Highest Channel / 10MHz / 16QAM ∇ ∇ Ref Level 30.00 dBm Offset 10.60 dB RBW 300 bHz Att 30 dB SWT 12.6 µs VBW 1 MHz Mode Auto FFT SGL Count 100/100 15.05 dB: 841.2030 MF 9.010989811 MF MILLI 8.951048951 M 10 dBm 30 dam--50 dBm

TEL: 886-3-327-3456 Page Number: A5-16 of 41

9.010989011 MHz

CF 844.0 MHz

 Type
 Ref
 Trc
 X-value
 Y-value
 Function

 M1
 1
 846,498 MHz
 14,70 dBm

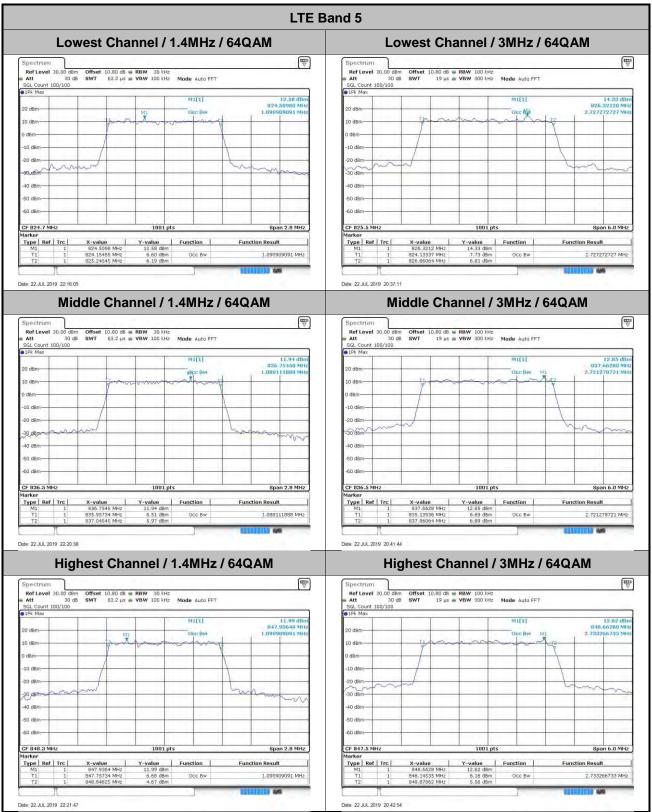
Occ Bw

B.951048951 MHz

FAX: 886-3-328-4978

Type | Ref | Trc |

7.93 dBm Occ Bw 8.00 dBm Report No.: FG971613B



TEL: 886-3-327-3456 Page Number : A5-17 of 41

Type | Ref | Trc |

FAX: 886-3-328-4978

X-value Y-value Function 845.371 MHz 10.84 dBm

5.53 dBm Occ Bw 5.10 dBm

Report No.: FG971613B LTE Band 5 Lowest Channel / 5MHz / 64QAM Lowest Channel / 10MHz / 64QAM Ref Level 30.00 dBm • Att 30 dB SGL Count 100/100 • 19k Max 12.27 dB: 026.50000 MH 4.515484515 MH 12.54 dBn 828.6200 MH 9.030969031 MH -10 dBm mun -40 dBm 40 dBm 60 dBn CF 829.0 MHz 1001 pts Span 20.0 MHz Y-value 12.54 dBm 7.45 dBm 7.62 dBm Type | Ref | Trc | Type | Ref | Trc | Middle Channel / 5MHz / 64QAM Middle Channel / 10MHz / 64QAM 7 7 .80 dB **RBW** 100 kHz 19 µs **VBW** 300 kHz **Mode** Auto FFT Offset 10,80 dB • RBW 300 kHz SWT 12.6 µs • VBW 1 MHz Mode Auto FFT 10.75 dB: 837,00900 MF 4.525474525 MF 12.59 dBm 834.7820 MHz 9.010989011 MHz d8m-च्या तेहरू≃ -40 dBm 40 dBm 50 dBm 50 dBm-Type Ref Trc
 X-value
 Y-value
 Function

 837.009 MHz
 10.75 dBm
 934.23227 MHz

 434.23227 MHz
 4.27 dBm
 Occ Bw

 838.75774 MHz
 5.39 dBm
 Type Ref Trc
 X-value
 Y-value
 Function

 834.782 MHz
 12.59 dBm
 92.59 dBm

 831.9845 MHz
 7.10 dBm
 Occ Bw

 840.9955 MHz
 6.84 dBm
 Function Result Function Result 4.525474525 MHz 9.010989011 MHz Date: 22.JUL 2019 21:12:31 Date: 22 JUL 2019 21:48:26 Highest Channel / 5MHz / 64QAM Highest Channel / 10MHz / 64QAM 7 Ref Level 30.00 dBm Offset 10.60 dB RBW 300 bHz Att 30 dB SWT 12.6 µs VBW 1 MHz Mode Auto FFT SGL Count 100/100 MILIT 10.84 dB 845,37100 MP 4,465534466 MP MILLI 14.65 dBn 840,3240 MH 10 dBm gardens 30 d8m /3traBm -50 dBm

4.465534466 MHz

CF 844.0 MHz

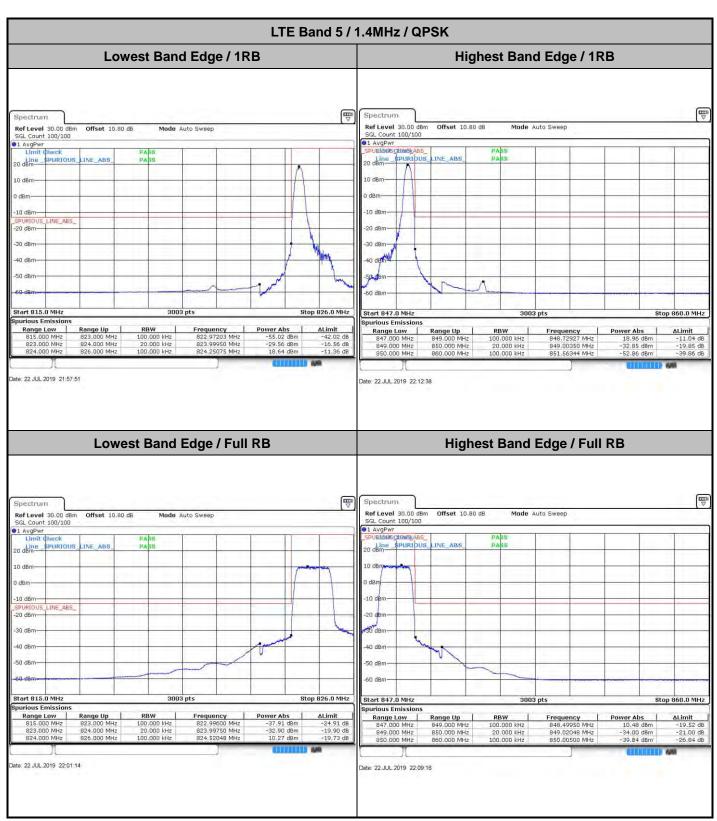
 Type
 Ref
 Trc
 X-value
 Y-value
 Function

 M1
 1
 840.324 MHz
 14.65 dBm

Occ Bw

9.030969031 MHz

Conducted Band Edge



Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-19 of 41

LTE Band 5 / 1.4MHz / 16QAM Lowest Band Edge / 1 RB Highest Band Edge / 1 RB Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 SGL Count 100/100 1 AvgPwr SPURIOUS_LINE_ABS 20 dBm -10 dBm LINE_ABS 20 dBm 30 dBn -30 dBm-40 dBm Start 815.0 MHz Stop 826.0 MHz 3003 pts Stop 860.0 MHz purious Emissions Range Up 823,000 MHz 824,000 MHz 826,000 MHz RBW 100.000 kHz 20.000 kHz 100.000 kHz Power Abs -55,55 dBm -30,46 dBm 17,63 dBm -42.55 dB -17.46 dB -12.37 dB 822.99600 MHz 823.99950 MHz 824.25475 MHz RBW 100.000 kHz 20.000 kHz 100.000 kHz Frequency 848.73726 MHz 849.00150 MHz 851.51349 MHz Range Low Range Low 847,000 MHz Power Abs 18.36 dBm ΔLimit 850,000 MHz 860,000 MHz Date: 22.JUL 2019 21:59:32 Date: 22.JUL 2019 22:14:19 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** THE P Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep **Ref Level** 30.00 dBm **Offset** 10.80 dB SGL Count 100/100 Mode Auto Sweet SGL Count 100/100 1 AvgPwr SPURIOUS_LINE_ABS 20 dBm 10 dBm-10 dBm 0 dBn -10 d INE_ABS -20 dBm -20 dBm--30 dBm -60 dBm-Stop 860.0 MHz Start 847.0 MHz purious Emissions Range Up 823.000 MHz Frequency 822.98801 MHz 823.98052 MHz 824.59441 MHz -38,09 dBm -32,83 dBm -9,50 dBm ΔLimit Range Low 847,000 MHz 100.000 kHz 20.000 kHz 100.000 kHz 824.000 MHz 826.000 MHz -19.83 dB Date: 22.JUL 2019 22:02:55 Date: 22.JUL 2019 22:10:57

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-20 of 41

LTE Band 5 / 1.4MHz / 64QAM Lowest Band Edge / 1 RB Highest Band Edge / 1 RB Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 SGL Count 100/100 1 AvgPwr SPURIOUS LINE ABS 20 dBm -10 dBm LINE_ABS 20 dBm 30 dBn -30 dBm-40 dBm Start 815.0 MHz Stop 826.0 MHz 3003 pts Stop 860.0 MHz purious Emissions Range Up 823,000 MHz 824,000 MHz 826,000 MHz RBW 100.000 kHz 20,000 kHz 100.000 kHz Power Abs -56.00 dBm -32.60 dBm 17.20 dBm Range Low Frequency 821.43756 MHz 823.99950 MHz 824.23477 MHz ΔLimit Range Low 847,000 MHz RBW .00.000 kHz Power Abs 17.37 dBm ΔLimit 850,000 MHz 860,000 MHz 20.000 kHz 100.000 kHz Date: 22.JUL 2019 22:17:58 Date: 22 JUL 2019 22:25:21 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPwr SPURIOUS_LINE_ABS 0 dBm 10 dBm-10 dBm 0 dBn INE_ABS -20 dBm--20 dBm -30 dBm -60 dBm-Start 847.0 MHz purious Emissions Range Up 823.000 MHz Frequency 822.99600 MHz 823.99451 MHz 824.95604 MHz Range Low 847,000 MHz 849,000 MHz 850,000 MHz ΔLimit 100.000 kHz 20.000 kHz 100.000 kHz 824.000 MHz 826.000 MHz Date: 22.JUL 2019 22:19:39 Date: 22 JUL 2019 22:23:40

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number: A5-21 of 41

LTE Band 5 / 3MHz / QPSK Lowest Band Edge / 1RB Highest Band Edge / 1 RB Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 SGL Count 100/100 1 AvgPwr 20 dBm SPURIOUS NE ABS 20 dBm -10 dBm LINE_ABS 20 dBm 30 dBr -30 dBm-40 dBm Start 815.0 MHz Stop 827.0 MHz 3003 pts Stop 860.0 MHz purious Emissions Range Up 823,000 MHz 824,000 MHz 827,000 MHz RBW 100.000 kHz 30.000 kHz 100.000 kHz Power Abs -46.85 dBm -20.18 dBm 18.97 dBm Range Low Frequency 822.98801 MHz 823.99850 MHz 824.28022 MHz ΔLimit Range Low 846,000 MHz 19.16 dBm -21.64 dBm -46.35 dBm Range Up RBW .00.000 kHz ΔLimit 850,000 MHz 860,000 MHz 30.000 kHz 100.000 kHz Date: 22.JUL 2019 20:18:57 Date: 22.JUL 2019 20:30:22 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** THE P Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPwr SPURIOUS_LINE_ABS 20 dBm 10 dBm dBm-INE_ABS -20 dBm--30 dBm -30 dBm 50 dBm -60 dBm--60 dBm-Start 846.0 MHz purious Emissions Range Up 823.000 MHz Frequency 822.79620 MHz 823.99950 MHz 825.00849 MHz -33,17 dBm -28,14 dBm -7,33 dBm ΔLimit Range Low 846.000 MHz 100.000 kHz 30.000 kHz 100.000 kHz 824.000 MHz 824.000 MHz 827.000 MHz -20.17 dB -15.14 dB -22.67 dB Date: 22.JUL 2019 20:22:19 Date: 22.JUL 2019 20:33:44

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number: A5-22 of 41

LTE Band 5 / 3MHz / 16QAM Lowest Band Edge / 1 RB Highest Band Edge /1 RB Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 SGL Count 100/100 1 AvgPwr SPURIOUS 20 dBm 20 dBm 0 dBm -10 dBm LINE_ABS 20 dBm 30 dBn -30 dBm 40 dBm Start 815.0 MHz 3003 pts Stop 860.0 MHz Stop 827.0 MHz purious Emissions Range Up 823,000 MHz 824,000 MHz 827,000 MHz RBW 100.000 kHz 30.000 kHz 100.000 kHz Power Abs -48.04 dBm -22.19 dBm 18.28 dBm Frequency 822.96404 MHz 823.99850 MHz 824.26823 MHz ΔLimit Range Low 846,000 MHz Power Abs 18.58 dBm -22.95 dBm -47.43 dBm Range Low Range Up RBW .00.000 kHz ∆Limit -11.42 -11.42 dB -9.95 dB -34.43 dB 850,000 MHz 860,000 MHz 30.000 kHz 100.000 kHz Date: 22.JUL 2019 20:20:38 Date: 22 JUL 2019 20:32:03 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** THE P Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep **Ref Level** 30.00 dBm **Offset** 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPwr SPURIOUS_LINE_ABS 20 dBm 10 dBm dBm-INE_ABS -20 dBm--30 dBm -30 dBm 50 dBm--60 dBm -60 dBm-Start 846.0 MHz purious Emissions Range Up 823.000 MHz Frequency 822.95604 MHz 823.99950 MHz 826.17433 MHz ΔLimit Range Low 846.000 MHz 100.000 kHz 30.000 kHz 100.000 kHz -19.49 dB -16.93 dB -23.66 dB 824.000 MHz 824.000 MHz 827.000 MHz ate: 22.JUL 2019 20:24:01 Date: 22.JUL 2019 20:35:25

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-23 of 41

LTE Band 5 / 3MHz / 64QAM Lowest Band Edge / 1 RB Highest Band Edge /1 RB Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 SGL Count 100/100 1 AvgPwr 20 dBm SPURIOUS LINE_ABS 20 dBm 0 dBm -10 dBm LINE_ABS 20 dBm 30 dBr -30 dBm-40 dBm 40 dBm-Start 815.0 MHz Stop 827.0 MHz 3003 pts Stop 860.0 MHz purious Emissions Range Up 823,000 MHz 824,000 MHz 827,000 MHz RBW 100.000 kHz 30.000 kHz 100.000 kHz Power Abs -49,16 dBm -26.27 dBm 16.93 dBm Range Low Frequency 822.98002 MHz 823.99850 MHz 824.21429 MHz ΔLimit RBW .00.000 kHz Power Abs 16.55 dBm -26.68 dBm -49.46 dBm Range Low 846,000 MHz ΔLimit -13.68 dB -36.46 dB 850,000 MHz 860,000 MHz 30.000 kHz 100.000 kHz Date: 22.JUL 2019 20:39:04 Date: 22 JUL 2019 20:44:47 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** THE P Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep **Ref Level** 30.00 dBm **Offset** 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPwr SPURIOUS_LINE_ABS 20 dBm 10 dBm-10 dBm INE_ABS -20 dBm--30 dBm -30 dBm 50 dBm 60 dBm--60 dBm-Start 846.0 MHz purious Emissions Range Up 823.000 MHz Frequency 822.99600 MHz 823.99850 MHz 825.94056 MHz ΔLimit Range Low 846.000 MHz Power Abs 100.000 kHz 30.000 kHz 100.000 kHz 824.000 MHz 824.000 MHz 827.000 MHz Date: 22.JUL 2019 20:40:46 Date: 22.JUL 2019 20:46:28

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-24 of 41

LTE Band 5 / 5MHz / QPSK Lowest Band Edge / 1 RB Highest Band Edge / 1 RB Spectrum Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 SGL Count 100/100 1 AvgPwr INE ABS 20 dBm 20 dBm -10 dBm LINE_ABS 20 dBm 30 dBr 30 dBm-40 dBm Start 815.0 MHz Stop 829.0 MHz 3003 pts Stop 860.0 MHz purious Emissions Range Up 823,000 MHz 824,000 MHz 829,000 MHz RBW 100.000 kHz 50.000 kHz 100.000 kHz Power Abs -49,77 dBm -27.19 dBm 18.07 dBm Range Low Frequency 822.21279 MHz 823.99850 MHz 824.37213 MHz ΔLimit RBW 100.000 kHz 50.000 kHz 100.000 kHz Range Low 844,000 MHz Power Abs 18.21 dBm ΔLimit 850,000 MHz 860,000 MHz 849.00050 MHz 850.85415 MHz Date: 22.JUL 2019 20:49:45 Date: 22.JUL.2019 21:01:10 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPwr SPURIOUS_LINE_ABS 20 dBm 10 dBm INE_ABS -20 dBm--30 dBm -30 dBm 50 dBm 50 dBm -60 dBm--60 dBm-Start 844.0 MHz purious Emissions Frequency 822.99600 MHz 823.99850 MHz 827.12438 MHz -34,89 dBm -31,66 dBm 4,38 dBm ΔLimit Range Up 823.000 MHz Range Low 844,000 MHz 100.000 kHz 50.000 kHz 100.000 kHz 4.48 dbm -32.28 dBm -34.01 dBm 824.000 MHz 824.000 MHz 829.000 MHz Date: 22.JUL 2019 20:53:07 Date: 22.JUL 2019 21.04.32

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-25 of 41

LTE Band 5 / 5MHz / 16QAM Lowest Band Edge / 1RB Highest Band Edge / 1 RB Spectrum Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 SGL Count 100/100 1 AvgPwr SPURIOUS INE ABS 20 dBm 20 dBm -10 dBm LINE_ABS 20 dBm 30 dBr 30 dBm-40 dBm Start 815.0 MHz Stop 860.0 MHz 3003 pts Stop 829.0 MHz purious Emissions Range Up 823,000 MHz 824,000 MHz 829,000 MHz RBW 100.000 kHz 50.000 kHz 100.000 kHz Power Abs -50,62 dBm -26,30 dBm 17.18 dBm Range Low Frequency 822.18881 MHz 823.99850 MHz 824.32218 MHz ΔLimit RBW 100.000 kHz 50.000 kHz 100.000 kHz 17.68 dBm -28.06 dBm -51.24 dBm Range Low 844,000 MHz ΔLimit 850,000 MHz 860,000 MHz Date: 22.JUL 2019 20:51;26 Date: 22 JUL 2019 21:02:51 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPwr LINE ABS SPURIOUS_LINE_ABS 20 dBm 10 dBm o dBm INE_ABS -20 dBm--30 dBm -30 dBm 50 dBm -60 dBm--60 dBm-Stop 860.0 MHz Start 844.0 MHz purious Emissions Range Up 823.000 MHz Frequency 822.96404 MHz 823.99650 MHz 827.50400 MHz ΔLimit Range Low 844,000 MHz 100.000 kHz 50.000 kHz 100.000 kHz -21.12 dB -19.92 dB -26.61 dB 824.000 MHz 824.000 MHz 829.000 MHz -20.27 dB -21.33 dB Date: 22.JUL 2019 20:54:48 Date: 22 JUL 2019 21:06:13

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-26 of 41

LTE Band 5 / 5MHz / 64QAM Lowest Band Edge / 1RB Highest Band Edge / 1 RB Spectrum Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 SGL Count 100/100 1 AvgPwr 20 dBm SPURIOUS INE ABS 20 dBm -10 dBm LINE_ABS 20 dBm 30 dBr -30 dBm 40 dBm Start 815.0 MHz Stop 829.0 MHz 3003 pts Stop 860.0 MHz purious Emissions Range Up 823,000 MHz 824,000 MHz 829,000 MHz RBW 100.000 kHz 50.000 kHz 100.000 kHz -50,93 dBm -29,50 dBm 16,19 dBm Range Low Frequency 822.18881 MHz 823.99550 MHz 824.35215 MHz ΔLimit RBW 100.000 kHz 50.000 kHz 100.000 kHz Range Low 844,000 MHz Power Abs 16,25 dBm ΔLimit 850,000 MHz 860,000 MHz Date: 22.JUL 2019 21:09:52 Date: 22.JUL 2019 21:15:34 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** THE P Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPwr LINE_ABS SPURIOUS_LINE_ABS 20 dBm 10 dBm o dem INE_ABS -20 dBm--30 dBm -30 dBm 50 dBm -60 dBm--60 dBm-Start 844.0 MHz purious Emissions Range Up 823.000 MHz ΔLimit Range Low 844,000 MHz 100.000 kHz 50.000 kHz 100.000 kHz 824.000 MHz 824.000 MHz 829.000 MHz Date: 22.JUL 2019 21:11:33 Date: 22 JUL 2019 21:17:15

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number: A5-27 of 41

LTE Band 5 / 10MHz / QPSK Lowest Band Edge / 1 RB Highest Band Edge / 1 RB Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 1 AvgPwr SGL Count 100/100 LINE ABS 20 dBm SPURIOUS_ 20 dBm -10 dBm 20 dBm 30 dBn 40 dBm Start 815.0 MHz Stop 834.0 MHz Stop 860.0 MHz 3003 pts Power Abs -50.54 dBn purious Emissions RBW 100.000 kHz 100.000 kHz 100.000 kHz Range Up 823.000 MHz 824.000 MHz 834.000 MHz Frequency 820.20679 MHz 823.99451 MHz 824.57443 MHz ΔLimit Range Low RBW 100.000 kHz 100.000 kHz 100.000 kHz 18.01 dBm -37.14 dBm -53.24 dBm Range Low ΔLimit 850,000 MHz 860,000 MHz Date: 22.JUL 2019 21:19:46 Date: 22.JUL.2019 21:36:17 **Highest Band Edge / Full RB** Lowest Band Edge / Full RB THE P Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPw SPURIOUS_LINE_ABS 20 dBm 10 dBm-20 dBm-30 dBm -60 dBm--60 dBm-Start 839.0 MHz Range Up purious Emissions Range Low 815.000 MHz 823.000 MHz RBW 100.000 kHz 100.000 kHz 100.000 kHz Frequency 822.17283 MHz 823.99650 MHz 826.41259 MHz -37,48 dBm -32,47 dBm -32,47 dBm 1,53 dBm ΔLimit Range Low 839.000 MHz Frequency 840.29371 MHz 849.01349 MHz 850.02498 MHz -24.48 dB -19.47 dB -28.47 dB Date: 22.JUL 2019 21:23:09 Date: 22 JUL 2019 21:39:40

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-28 of 41

LTE Band 5 / 10MHz / 16QAM Lowest Band Edge / 1 RB Highest Band Edge / 1 RB Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm SGL Count 100/100 1 AvgPwr SGL Count 100/100 SPURIOUS_LINE_ABS 20 dBm 20 dBm -10 dBm 20 dBm 30 dBn 40 dBm m/W Start 815.0 MHz Stop 834.0 MHz Stop 860.0 MHz 3003 pts purious Emissions RBW 100.000 kHz 100.000 kHz 100.000 kHz Range Up 823.000 MHz 824.000 MHz 834.000 MHz Frequency 820.18282 MHz 823.99950 MHz 824.59441 MHz Power Abs -51.55 dBm -36.76 dBm 16.90 dBm ΔLimit Range Low RBW 100.000 kHz 100.000 kHz 100.000 kHz Range Low Power Abs 17.26 dBm ΔLimit 850,000 MHz 860,000 MHz 849.00150 MHz 851.17383 MHz Date: 22.JUL 2019 21:21:27 Date: 22.JUL 2019 21:37:59 **Highest Band Edge / Full RB** Lowest Band Edge / Full RB Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPw SPURIOUS_LINE_ABS 20 dBm 10 dBm--20 dBm--30 dBm -60 dBm--60 dBm-3003 pts Start 839.0 MHz Range Up purious Emissions Range Low 815.000 MHz 823.000 MHz RBW 100.000 kHz 100.000 kHz 100.000 kHz Frequency 822.97203 MHz 823.99850 MHz 826.98202 MHz ΔLimit Range Low 839.000 MHz Power Abs -23.52 dB -21.59 dB -29.54 dB Date: 22.JUL 2019 21:24:50 Date: 22.JUL 2019 21.41.21

Report No.: FG971613B

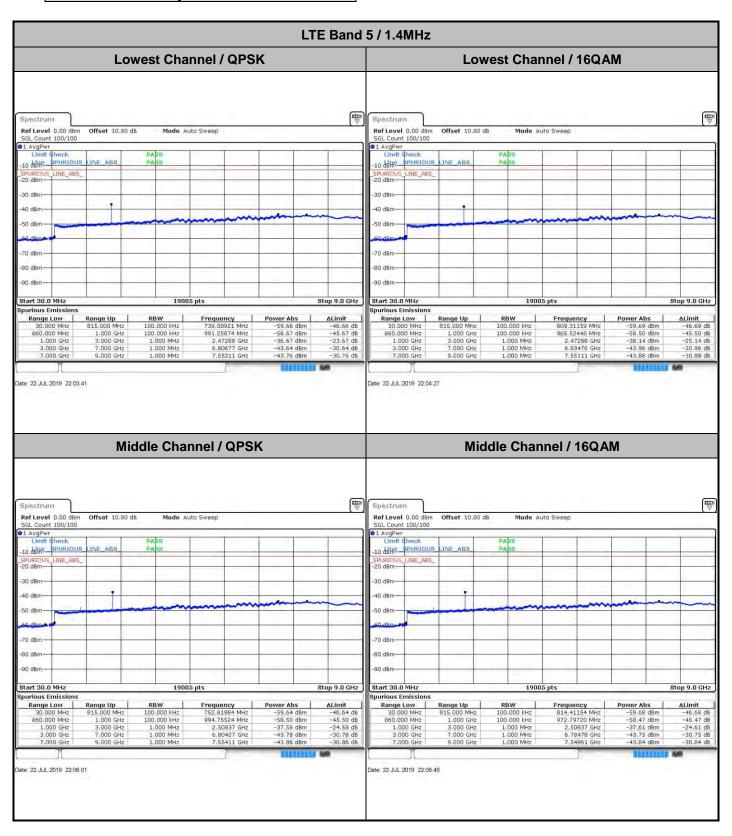
TEL: 886-3-327-3456 Page Number: A5-29 of 41

LTE Band 5 / 10MHz / 64QAM Lowest Band Edge / 1 RB Highest Band Edge / 1 RB Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr SGL Count 100/100 Line SPURIOUS LINE ABS 20 dBm -10 dBm 20 dBm 30 dBn 30 dBm 40 dBm Start 815.0 MHz Stop 834.0 MHz Stop 860.0 MHz 3003 pts purious Emissions RBW 100.000 kHz 100.000 kHz 100.000 kHz Power Abs -51.90 dBm -39.71 dBm 16.24 dBm Range Up 823.000 MHz 824.000 MHz 834.000 MHz Frequency 820.18282 MHz 823.99950 MHz 824.59441 MHz ΔLimit Range Low RBW 100.000 kHz 100.000 kHz 100.000 kHz Power Abs 16.47 dBm -41.44 dBm -53.57 dBm Range Low Frequency 848.44555 MHz 849.00150 MHz 851.20380 MHz ΔLimit 850,000 MHz 860,000 MHz Date: 22.JUL 2019 21:45:47 Date: 22 JUL 2019 21:51:29 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** Spectrum Spectrum Ref Level 30.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 10.80 dB SGL Count 100/100 Mode Auto Sweep SGL Count 100/100 1 AvgPw SPURIOUS_LINE_ABS 20 dBm 10 dBm -20 dBm--30 dBm -60 dBm-3003 pts Stop 860.0 MHz Start 839.0 MHz Range Up purious Emissions Range Low 815.000 MHz 823.000 MHz RBW 100.000 kHz 100.000 kHz 100.000 kHz Frequency 822.78022 MHz 823.99650 MHz 825.88312 MHz Power Abs -36,89 dBm -35,19 dBm -0,33 dBm ΔLimit Range Low 839.000 MHz Date: 22.JUL 2019 21:47:28 Date: 22 JUL 2019 21:53:10

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-30 of 41

Conducted Spurious Emission



Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-31 of 41

LTE Band 5 / 1.4MHz **Highest Channel / QPSK Highest Channel / 16QAM** Spectrum Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm GL Count 100/100 SGL Count 100/100 1 AvgPwr Limit Check ●1 AvgPwr Limit Check 10 dene SPURIOUS LINE ABS 10 dene SPURIOUS LINE ABS LINE_ABS_ LINE_ABS_ 20 dBm 30 dBm 30 dBm Start 30.0 MHz ious Emissi Spurious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Power Abs
-59,30 dBm
-59,55 dBm
-45,71 dBm
-43,76 dBm
-43,78 dBm -46.30 dB -45.55 dB -32.71 dB -30.76 dB -30.78 dB Frequency 757.52749 MHz 948.74126 MHz 1.69608 GHz 6.76078 GHz 7.54661 GHz Power Abs
-59.40 dBm
-58.60 dBm
-46.01 dBm
-43.91 dBm
-43.90 dBm Frequency 808.52699 MHz 999.09091 MHz RBW 100.000 kHz 100.000 kHz 1.000 MHz ΔLimit -46.40 dB Range Low 30.000 MHz Range Up 815.000 MHz Range Low 30.000 MHz Range Up 815.000 MH: 1.000 GHz -45.60 dB -33.01 dB -30.91 dB -30.90 dB 860,000 MHz 860.000 MHz 1.000 GHz 3.000 GHz 1.69608 GHz 6.80477 GHz 7.55311 GHz 1.000 GHz 3.000 GHz 7.000 GHz 7.000 GHz 9.000 GHz 7.000 GHz 9.000 GHz ate: 22 JUL 2019 22:15:06 Date: 22 JUL 2019 22:15:53 LTE Band 5 / 3MHz **Lowest Channel / QPSK Lowest Channel / 16QAM** Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep GL Count 100/100 SGL Count 100/100 ●1 AvgPwr Limit Check 10 dene SPURIOUS LINE ABS 10 dene SPURIOUS LINE ABS LINE ABS INE ABS SPURIOUS 20 dBm-20 dBm 30 dBr 30 dBm 70 dBm 70 dBm 90 dBm 80 dBm 90 dBm on dam Stop 9.0 GHz Start 30.0 MHz 19005 pts Stop 9.0 GHz Start 30.0 MHz 19005 pts Range Low 30.000 MHz 860.000 MHz 1.000 GHz 3.000 GHz 7.000 GHz RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Power Abs
-59.49 dBm
-59.49 dBm
-49.40 dBm
-43.67 dBm
-43.73 dBm ΔLimit
-46.49 dB
-45.48 dB
-35.40 dB
-30.67 dB
-30.73 dB Range Up 815.000 MHz 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Frequency 811.66542 MHz 937.55245 MHz 2.95826 GHz 6.78078 GHz 7.55111 GHz 814.01924 MHz 976.43357 MHz 2.97976 GHz ΔLimit Range Up 815.000 MHz Range Low 30.000 MHz Power Abs -59.49 dBm 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz 860,000 MHz 1,000 GHz 3,000 GHz 7,000 GHz -59.49 dBm -58.61 dBm -48.34 dBm -43.85 dBm -43.78 dBm -46.49 dB -45.61 dB -35.34 dB -30.85 dB -30.78 dB ate: 22 JUL 2019 20:24:47 Date: 22 JUL 2019 20:25:33

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-32 of 41

LTE Band 5 / 3MHz Middle Channel / QPSK Middle Channel / 16QAM Spectrum Spectrum Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Ref Level 0.00 dBm GL Count 100/100 SGL Count 100/100 1 AvgPwr Limit Check ●1 AvgPwr Limit (he 10 dene SPURIOUS LINE ABS 10 deline SPURIOUS LINE ABS LINE_ABS LINE_ABS_ 20 dBm 30 dBm 30 dBn 50 d8m Start 30.0 MHz ious Emissi Spurious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Power Abs
-59.48 dBm
-59.20 dBm
-47.12 dBm
-43.95 dBm
-43.91 dBm Frequency 806.95777 MHz 964.54545 MHz -59.50 dBm -58.51 dBm -47.09 dBm RBW 100.000 kHz 100.000 kHz 1.000 MHz Range Low 30.000 MHz Range Up 815.000 MHz ΔLimit −46.50 dB Range Low 30.000 MHz Range Up 815.000 MH: ΔLimit -46.50 dB -45.51 dB -34.09 dB -30.72 dB -30.85 dB 1.000 GHz 992.09790 MHz 1.67058 GHz 6.91726 GHz 7.54211 GHz -45.20 dB -34.12 dB -30.95 dB -30.91 dB 860,000 MHz 860.000 MHz 1.000 GHz 3.000 GHz 1.67058 GHz 6.80077 GHz 7.54911 GHz 1.000 GHz 3.000 GHz 7.000 GHz 7.000 GHz 9.000 GHz 43.72 dBm 43.85 dBm 7.000 GHz 9.000 GHz ate: 22 JUL 2019 20:27:07 Date: 22 JUL 2019 20:27:52 **Highest Channel / QPSK Highest Channel / 16QAM** P. B Spectrum Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr Limit Check SGL Count 100/100 1 AvgPwr Limit ¢heck 10 dine SPURIOUS LINE ABS 10 dine SPURIOUS LINE ABS 20 dBm 30 dBr 30 dBm 40 dBm 40 dBm 50 dBm 50 dBm 70 dBm Start 30.0 MHz rious Emissions Spurious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz ΔLimit
-46.76 dB
-45.45 dB
-34.35 dB
-30.89 dB
-30.89 dB Range Low 30.000 MHz 860,000 MHz 1.000 GHz 3.000 GHz ALimit
-46.44 dB
-45.54 dB
-34.81 dB
-30.86 dB
-30.84 dB 739.48151 MHz 989.44056 MHz 1.69258 GHz 6.93976 GHz Power Abs -59.44 dBm -58.54 dBm -47.81 dBm -43.86 dBm -43.84 dBm ite: 22 JUL 2019 20:36:12 ate: 22 JUL 2019 20:36:58

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number : A5-33 of 41

LTE Band 5 / 5MHz **Lowest Channel / QPSK Lowest Channel / 16QAM** Spectrum Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm GL Count 100/100 SGL Count 100/100 1 AvgPwr Limit Check ●1 AvgPwr Limit Check 10 dene SPURIOUS LINE ABS 10 deline SPURIOUS LINE ABS LINE_ABS LINE_ABS_ 20 dBm 20 dBm 30 dBm 30 dBm 50 dBm 90 dBm Start 30.0 MHz Start 30.0 MH ious Emissi Spurious Emission RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 762.62744 MHz 991.53846 MHz 2.47338 GHz 6.90926 GHz 7.55461 GHz Frequency 813.62694 MHz 993.35664 MHz 2.47338 GHz 6.79578 GHz 7.54811 GHz Power Abs
-59,60 dBm
-58,61 dBm
-37,13 dBm
-43,66 dBm
-43,91 dBm -59.67 dBm -58.56 dBm -36.40 dBm RBW 100.000 kHz 100.000 kHz 1.000 MHz Range Low 30.000 MHz Range Up 815.000 MHz ΔLimit -46.67 dB Range Low 30.000 MHz Range Up 815.000 MH: ΔLimit -46.67 dB -45.56 dB -23.40 dB -30.86 dB -30.83 dB -46.60 dB -45.61 dB -24.13 dB -30.66 dB -30.91 dB 1.000 GHz 860,000 MHz 860.000 MHz 1.000 GHz 3.000 GHz 1.000 GHz 3.000 GHz 7.000 GHz 43.86 dBm 43.83 dBm 7.000 GHz 9.000 GHz 7.000 GHz 9.000 GHz 1.000 MHz 1.000 MHz ate: 22 JUL 2019 20:55:35 Date: 22 JUL 2019 20:56:21 Middle Channel / QPSK Middle Channel / 16QAM P. B Spectrum Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr Limit Check SGL Count 100/100 1 AvgPwr Limit ¢heck 10 dine SPURIOUS LINE ABS 10 dine SPURIOUS LINE ABS 20 dBm 30 dBr 30 dBn 40 dBm 40 dBm -50 dBm 50 d8m 70 dBm 70 dBm Start 30.0 MHz rious Emissions **Spurious Emissions** RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz -46.65 dB -45.31 dB -23.89 dB -30.81 dB -30.86 dB Prequency 240.47101 MHz 995.03497 MHz 2.50337 GHz 6.79828 GHz 7.96601 GHz Frequency 790.08871 MHz 957.69231 MHz 2.50337 GHz 6.80377 GHz 7.55061 GHz -46.83 dB -45.74 dB -25.11 dB -30.67 dB -30.92 dB ite: 22 JUL 2019 20:57:54 ate: 22 JUL 2019 20:58:40

Report No.: FG971613B

TEL: 886-3-327-3456 Page Number: A5-34 of 41

Report No.: FG971613B LTE Band 5 / 5MHz **Highest Channel / QPSK Highest Channel / 16QAM** Spectrum Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm GL Count 100/100 SGL Count 100/100 1 AvgPwr Limit Check ●1 AvgPwr Limit Check 10 dene SPURIOUS LINE ABS 10 deline SPURIOUS LINE ABS LINE_ABS INE_ABS_ 20 dBm 30 dBm 30 dBm 50 d8m Start 30.0 MHz ious Emissi Spurious Emission ΔLimit -46.78 dB RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Power Abs
-59.67 dBm
-58.49 dBm
-36.95 dBm
-43.79 dBm
-43.86 dBm -46.67 dB -45.49 dB -23.95 dB -30.79 dB -30.86 dB Power Abs
-59.78 dBm
-58.53 dBm
-37.24 dBm
-43.97 dBm
-43.86 dBm RBW 100.000 kHz 100.000 kHz 1.000 MHz Range Low 30.000 MHz Range Up 815.000 MHz Frequency 770.86582 MHz Range Low 30.000 MHz Range Up 815.000 MH: 1.000 GHz 992.09790 MHz 2.53337 GHz 6.80177 GHz 7.54561 GHz 860,000 MHz 988.32168 MHz 860.000 MHz 1.000 GHz 3.000 GHz 2.53337 GHz 6.75628 GHz 7.53662 GHz 1.000 GHz 3.000 GHz 7.000 GHz 7.000 GHz 9.000 GHz 7.000 GHz 9.000 GHz ate: 22 JUL 2019 21:07:00 Date: 22.JUL.2019 21:07:46 LTE Band 5 / 10MHz **Lowest Channel / QPSK Lowest Channel / 16QAM** Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep GL Count 100/100 SGL Count 100/100 ●1 AvgPwr Limit (heck 10 dene SPURIOUS LINE ABS 10 dene SPURIOUS LINE ABS LINE ABS INE ABS SPURIOUS 20 dBm-20 dBm 30 dBr 30 dBm 70 dBm 70 dBm 90 dBm 80 dBm 90 dBm on dam Stop 9.0 GHz Start 30.0 MHz 19005 pts Stop 9.0 GHz Start 30.0 MHz 19005 pts Range Low 30.000 MHz 860.000 MHz 1.000 GHz 3.000 GHz 7.000 GHz RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Power Abs -59.26 dBm -58.59 dBm -35.59 dBm -43.87 dBm -43.58 dBm ΔLimit
-46.26 dB
-45.59 dB
-22.59 dB
-30.87 dB
-30.58 dB Range Up 815.000 MHz 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Power Abs
-59,68 dBm
-58,50 dBm
-37,34 dBm
-43,76 dBm
-43,78 dBm Frequency 811.27311 MHz 990.27972 MHz 2.47388 GHz ΔLimit Range Up 815.000 MHz Range Low 30.000 MHz -46.68 dB -45.50 dB -24.34 dB -30.76 dB -30.78 dB 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz 860,000 MHz 1,000 GHz 3,000 GHz 7,000 GHz ate: 22 JUL 2019 21:25:36 Date: 22 JUL 2019 21:26:22

TEL: 886-3-327-3456 Page Number : A5-35 of 41

Report No.: FG971613B LTE Band 5 / 10MHz Middle Channel / QPSK Middle Channel / 16QAM Spectrum Spectrum Offset 10.80 dB Mode Auto Sweep Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Ref Level 0.00 dBm GL Count 100/100 SGL Count 100/100 1 AvgPwr Limit Check ●1 AvgPwr Limit (hr 10 dene SPURIOUS LINE ABS 10 deline SPURIOUS LINE ABS LINE_ABS INE_ABS_ 20 dBm 20 dBm 30 dBm 30 dBm 50 d8m Start 30.0 MHz ious Emissi Spurious Emission RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Frequency
790.87331 MHz
996.71329 MHz
2.49638 GHz
6.76178 GHz
7.97101 GHz Power Abs
-59.64 dBm
-59.27 dBm
-36.66 dBm
-43.69 dBm
-43.91 dBm Frequency 795.97326 MHz 993.91608 MHz -59.66 dBm -58.37 dBm -36.25 dBm RBW 100.000 kHz 100.000 kHz 1.000 MHz Range Low 30.000 MHz Range Up 815.000 MHz ΔLimit Range Low 30.000 MHz Range Up 815.000 MH: ΔLimit ALimit
-46.66 dB
-45.37 dB
-23.25 dB
-30.85 dB
-30.89 dB -46.64 dB -45.27 dB -23.66 dB -30.69 dB -30.91 dB 1.000 GHz 860,000 MHz 860.000 MHz 1.000 GHz 3.000 GHz 2.49688 GHz 6.80177 GHz 7.55161 GHz 1.000 GHz 3.000 GHz 7.000 GHz 43.85 dBm 43.89 dBm 7.000 GHz 9.000 GHz 7.000 GHz 9.000 GHz ate: 22 JUL 2019 21:27:55 Date: 22 JUL 2019 21:28:41 **Highest Channel / QPSK Highest Channel / 16QAM** P. Spectrum Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr Limit Check SGL Count 100/100

1 AvgPwr
Limit Check 10 dine SPURIOUS LINE ABS 10 dine SPURIOUS LINE ABS 20 dBm 30 dBr 30 dBn 40 dBm 40 dBm -50 dBm 50 dBm 70 dBm Start 30.0 MHz rious Emissions Spurious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz ΔLimit
-46.71 dB
-45.28 dB
-23.85 dB
-30.56 dB
-30.87 dB Range Low 30.000 MHz 860,000 MHz 1.000 GHz 3.000 GHz Frequency 713.19715 MHz 995.87413 MHz 2.51887 GHz 6.79928 GHz Frequency 814.01924 MHz 994.05594 MHz 2.51887 GHz 6.91276 GHz

TEL: 886-3-327-3456 Page Number: A5-36 of 41

ate: 22 JUL 2019 21:42:54

FAX: 886-3-328-4978

ite: 22 JUL 2019 21:42:08

Report No.: FG971613B LTE Band 5 / 1.4MHz Lowest Channel / 64QAM Middle Channel / 64QAM Spectrum Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep GL Count 100/100 SGL Count 100/100 1 AvgPwr Limit Check ●1 AvgPwr Limit Check 10 dene SPURIOUS LINE ABS 10 dene SPURIOUS LINE ABS LINE_ABS LINE_ABS_ 20 dBm -30 dBm 30 dBm 50 dBm Start 30.0 MHz Start 30.0 MHz 19003 rious Emissi Spurious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Frequency 812.45002 MHz 998.53147 MHz 2.95026 GHz 6.79678 GHz 7.54911 GHz Power Abs
-59.56 dBm
-59.43 dBm
-49.44 dBm
-43.79 dBm
-43.80 dBm -46.56 dB -45.43 dB -35.44 dB -30.79 dB -30.80 dB RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Frequency 766.55047 MHz 992.37762 MHz 1.67258 GHz 6.79728 GHz 7.95351 GHz Power Abs
-59.59 dBm
-59.27 dBm
-48.44 dBm
-43.55 dBm
-43.87 dBm 30.000 MHz 860.000 MHz Range Low 30.000 MHz 860,000 MHz Range Up 815.000 MHz Range Up 815.000 MHz ΔLimit -46.59 dB 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz -45.27 dB -35.44 dB -30.55 dB -30.87 dB 1.000 GHz 3.000 GHz 7.000 GHz ate: 22 JUL 2019 22:20:26 Date: 22.JUL.2019 22:21:35 **Highest Channel / 64QAM** V Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep SGL Count 100/100

1 AvgPwr
Limit Check 10 dine SPURIOUS LINE ABS 30 dBr 40 dBm -50 dBm 70 dBm rious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz ΔLimit
-46.55 dB
-45.25 dB
-34.88 dB
-30.74 dB
-30.82 dB

TEL: 886-3-327-3456 Page Number: A5-37 of 41

FAX: 886-3-328-4978

ite: 22 JUL 2019 22:26:08

ite: 22 JUL.2019 20:47:14

FAX: 886-3-328-4978

Report No.: FG971613B LTE Band 5 / 3MHz Lowest Channel / 64QAM Middle Channel / 64QAM Spectrum Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep GL Count 100/100 SGL Count 100/100 ●1 AvgPwr Limit Check ●1 AvgPwr Limit Check 10 deline SPURIOUS LINE ABS 10 dene SPURIOUS LINE ABS LINE_ABS INE_ABS_ 20 dBm 30 dBm 30 dBm 50 dBm Start 30.0 MHz Start 30.0 MHz rious Emissi Spurious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Frequency 808.91929 MHz 962.44755 MHz 2.47288 GHz 6.78728 GHz 7.55661 GHz Power Abs
-59.45 dBm
-59.60 dBm
-37.76 dBm
-43.70 dBm
-43.76 dBm -46.45 dB -45.60 dB -24.76 dB -30.70 dB -30.76 dB RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Frequency 802.25012 MHz 975.03497 MHz 2.50587 GHz 6.79778 GHz 7.55011 GHz Power Abs
-59.71 dBm
-58.40 dBm
-39.70 dBm
-43.69 dBm
-43.86 dBm ALimit
-46.71 dB
-45.40 dB
-26.70 dB
-30.69 dB
-30.86 dB 30.000 MHz 860.000 MHz Range Low 30.000 MHz 860,000 MHz Range Up 815.000 MHz Range Up 815.000 MHz 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz 1.000 GHz 3.000 GHz 7.000 GHz ate: 22 JUL 2019 20:41:32 Date: 22.JUL.2019 20:42:42 **Highest Channel / 64QAM** V Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep SGL Count 100/100

1 AvgPwr
Limit Check 10 dine SPURIOUS LINE ABS 30 dBr 40 dBm -50 dBm 70 dBm rious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Frequency 810.88081 MHz 991.67832 MHz 2.53937 GHz 6.77578 GHz

TEL: 886-3-327-3456 Page Number: A5-38 of 41

Report No.: FG971613B LTE Band 5 / 5MHz Lowest Channel / 64QAM Middle Channel / 64QAM Spectrum Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep GL Count 100/100 SGL Count 100/100 ●1 AvgPwr Limit Check ●1 AvgPwr Limit Check 10 dene SPURIOUS LINE ABS 10 dene SPURIOUS LINE ABS LINE_ABS INE_ABS_ 20 dBm 30 dBm 30 dBm 50 dBm Start 30.0 MHz Start 30.0 MHz rious Emissi Spurious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 760.27361 MHz 988.04196 MHz 2.47338 GHz 6.79278 GHz 7.54611 GHz Power Abs
-59.51 dBm
-59.51 dBm
-37.78 dBm
-43.70 dBm
-43.76 dBm -46.51 dB -45.51 dB -45.51 dB -24.78 dB -30.70 dB -30.76 dB RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz Frequency 786.95027 MHz 957.97203 MHz 2.50337 GHz 6.77278 GHz 7.55011 GHz -59.64 dBm -59.64 dBm -58.64 dBm -38.69 dBm -43.86 dBm -43.80 dBm 30.000 MHz 860.000 MHz Range Low 30.000 MHz 860,000 MHz Range Up 815.000 MHz Range Up 815.000 MHz ΔLimit −46.64 dB -46.64 dB -45.64 dB -25.69 dB -30.86 dB -30.80 dB 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz 1.000 GHz 3.000 GHz 7.000 GHz 9.000 GHz 1.000 GHz 3.000 GHz 7.000 GHz Date: 22 JUL 2019 21:12:19 Date: 22.JUL.2019 21:13:29 **Highest Channel / 64QAM** V Spectrum Ref Level 0.00 dBm Offset 10.80 dB Mode Auto Sweep SGL Count 100/100

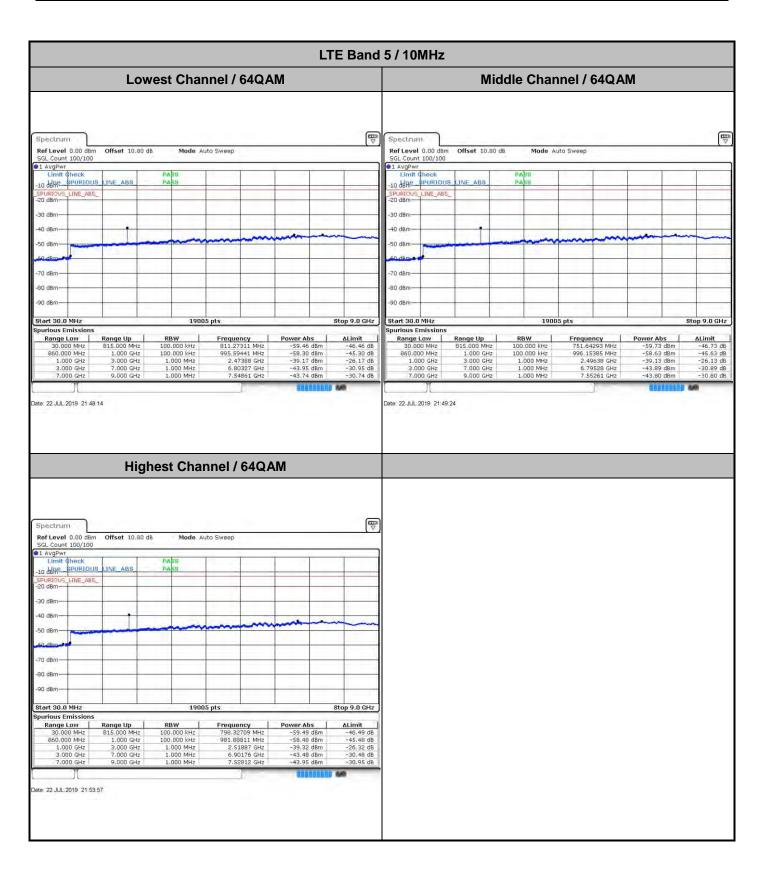
1 AvgPwr
Limit Check 10 dine SPURIOUS LINE ABS 30 dBr 40 dBm -50 dBm 70 dBm rious Emissions RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz -59.59 dBm -59.72 dBm -38.25 dBm -43.74 dBm Frequency 812.84233 MHz 951.67832 MHz 2.53337 GHz 6.90526 GHz .54911 GHz

TEL: 886-3-327-3456 Page Number: A5-39 of 41

FAX: 886-3-328-4978

ite: 22 JUL 2019 21:43:41

Report No.: FG971613B



TEL: 886-3-327-3456 Page Number : A5-40 of 41

Frequency Stability

Test (Conditions	LTE Band 5 (QPSK) / Middle Channel	Limit
Temperature	Voltage	BW 10MHz	2.5ppm
(°C)	(Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0008	
40	Normal Voltage	0.0005	
30	Normal Voltage	0.0016	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0016	
0	Normal Voltage	0.0011	DAGG
-10	Normal Voltage	0.0118	PASS
-20	Normal Voltage	0.0077	
-30	Normal Voltage	0.0025	
20	Maximum Voltage	0.0004	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0013	

Report No.: FG971613B

Note:

- 1. Normal Voltage =4.0 V.; Battery End Point (BEP) =3.7V.; Maximum Voltage =4.0 V.
- 2. The frequency fundamental emissions stay within the authorized frequency block.

TEL: 886-3-327-3456 Page Number: A5-41 of 41

LTE Band 12

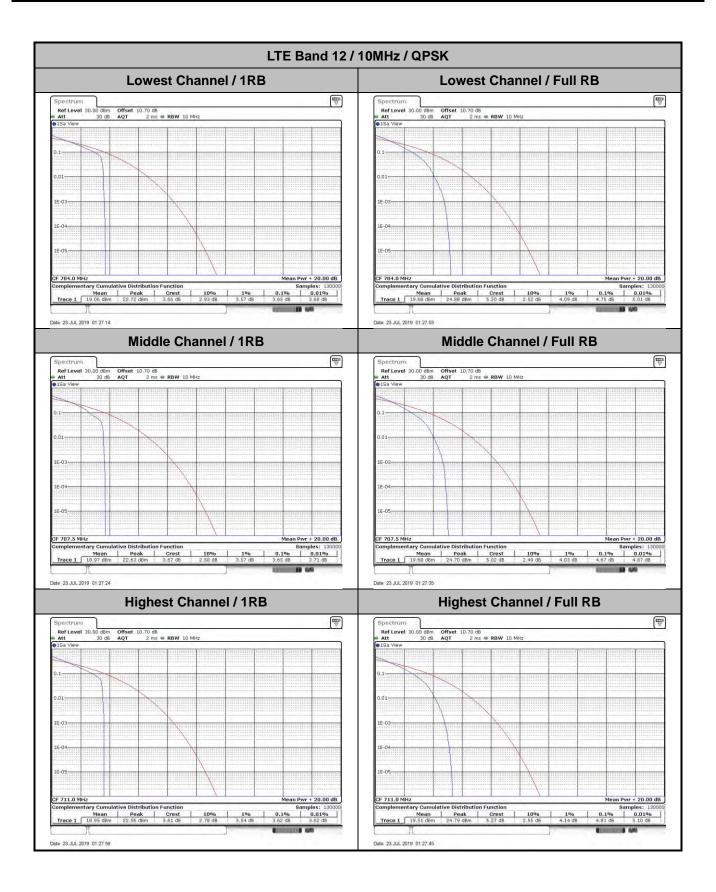
Peak-to-Average Ratio

Mode						
Mod.	QP	SK	160	Limit: 13dB		
RB Size	1RB	Full RB	1RB	Full RB	Result	
Lowest CH	3.65	4.75	5.16	5.88		
Middle CH	3.65	4.67	5.42	5.97	PASS	
Highest CH	3.62	4.81	5.28	6.03		
Mode						
Mod.	64QAM				Limit: 13dB	
RB Size	1RB	Full RB			Result	
Lowest CH	6.23	6.58	-	-		
Middle CH	6.46	6.61	-	-	PASS	
Highest CH	6.06	6.67	-	-		

Report No. : FG971613B

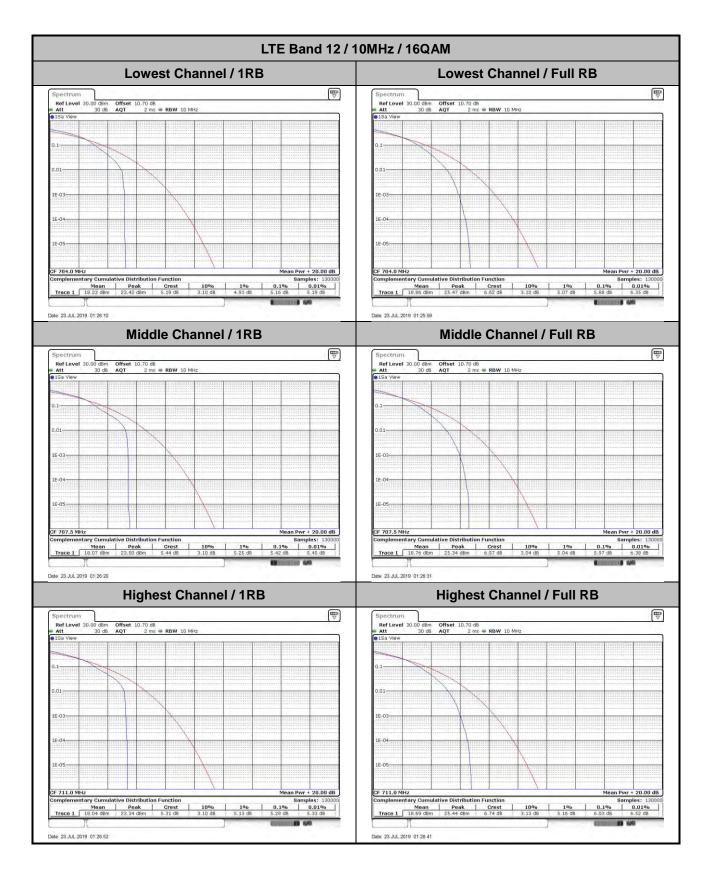
TEL: 886-3-327-3456 Page Number: A12-1 of 41

REPORT Report No. : FG971613B



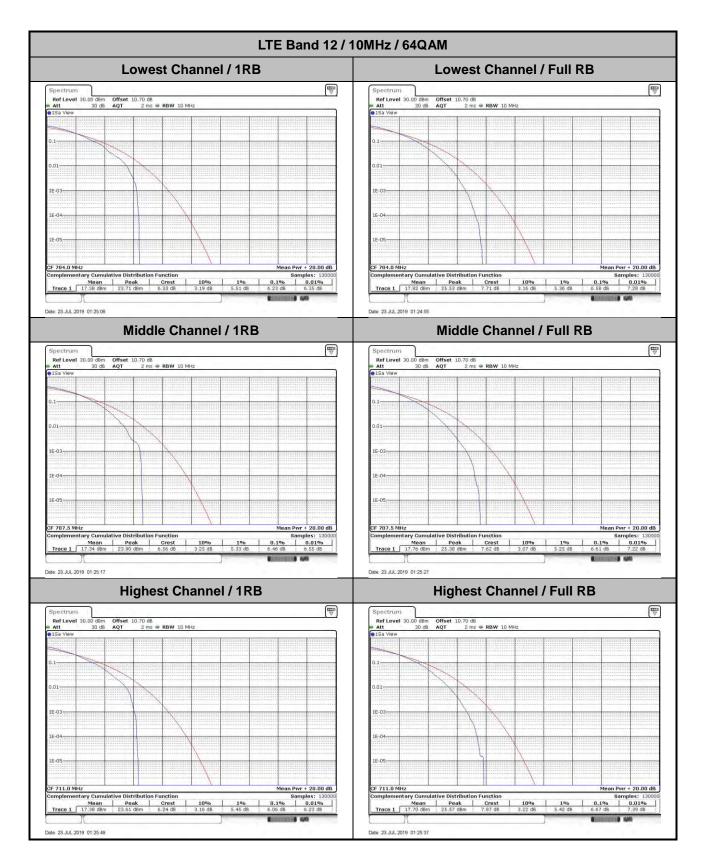
TEL: 886-3-327-3456 Page Number: A12-2 of 41 FAX: 886-3-328-4978

CC RADIO TEST REPORT Report No. : FG971613B



TEL: 886-3-327-3456 Page Number : A12-3 of 41

FCC RADIO TEST REPORT Report No. : FG971613B



TEL: 886-3-327-3456 Page Number : A12-4 of 41

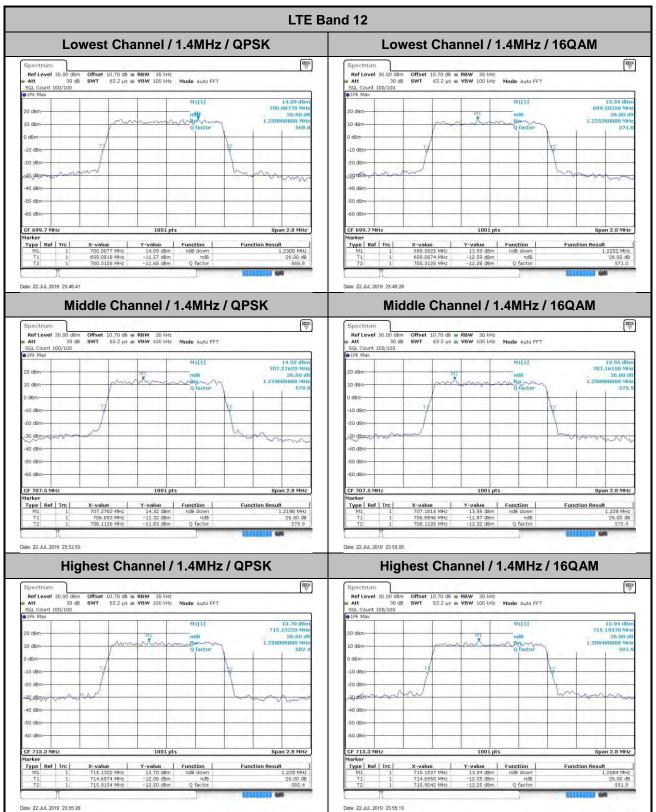
26dB Bandwidth

Mode	LTE Band 12 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	1.23	1.23	3.00	3.07	4.93	4.90	9.65	9.77	-	-	-	-
Middle CH	1.22	1.23	3.02	3.03	4.87	4.81	10.01	9.85	-	-	-	-
Highest CH	1.23	1.21	2.98	3.01	4.91	4.93	9.69	9.89	-	-	-	-
Mode	LTE Band 12 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM	
Lowest CH	1.23	-	3.05	-	4.98	-	9.91	-	-	-	-	-
Middle CH	1.22	-	3.00	-	4.88	-	9.73	-	-	-	-	-
Highest CH	1.23	-	3.03	-	5.00	-	9.73	-	-	-	-	-

Report No. : FG971613B

TEL: 886-3-327-3456 Page Number: A12-5 of 41

Report No.: FG971613B



TEL: 886-3-327-3456 Page Number : A12-6 of 41