

Report No.: FG950301-02



FCC RADIO TEST REPORT

FCC ID : PKRISGM1000

Equipment : M1000
Brand Name : inseego
Model Name : M1000

Marketing Name : 5G MiFi M1000 Applicant : Inseego Corp.

6950 Scranton Road, Suite 300, San Diego, CA 92121

Manufacturer : Inseego Corp.

6950 Scranton Road, Suite 300, San Diego, CA 92121

Standard : 47 CFR Part 2, 96

The product was received on Sep. 24, 2019 and testing was started from Sep. 25, 2019 and completed on Nov. 12, 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 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

Table of Contents

His	story o	of this test report	3
Su	mmar	y of Test Result	4
1	Gene	eral Description	5
	1.1 1.2	Product Feature of Equipment Under Test	
	1.3 1.4	Testing Location	
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	
	2.4	Measurement Results Explanation Example	
	2.5	Frequency List of Low/Middle/High Channels	9
3	Cond	ducted Test Items	10
	3.1	Measuring Instruments	10
	3.2	Conducted Output Power	11
	3.3	Peak-to-Average Ratio	12
	3.4	EIRP Power	
	3.5	Occupied Bandwidth	
	3.6	Conducted Band Edge	
	3.7	Conducted Spurious Emission	
4	Radi	ated Test Items	17
	4.1	Measuring Instruments	17
	4.2	Test Setup	
	4.3	Test Result of Radiated Test	
	4.4	Radiated Spurious Emission	19
5	List	of Measuring Equipment	20
6	Unce	ertainty of Evaluation	22
Аp	pendi	x A. Test Results of Conducted Test and EIRP	
Аp	pendi	x B. Test Results of Radiated Test	
Δn	nendi	x C. Test Setup Photographs	

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

Report Template No.: BU5-FGLTE96 Version 2.4

Page Number : 2 of 22

Issued Date : Nov. 13, 2019

Report No. : FG950301-02

Report Version : 01

History of this test report

Report No. : FG950301-02

Report No.	Version	Description	Issued Date
FG950301-02	01	Initial issue of report	Nov. 13, 2019

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

Summary of Test Result

Report No.: FG950301-02

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
3.3	§96.41	Peak-to-Average Ratio	Pass	-
3.4	§96.41	Effective Isotropic Radiated Power	Pass	-
3.5	§2.1049 §96.41	Occupied Bandwidth	Reporting only	-
3.6	§2.1051 §96.41	Conducted Band Edge Measurement	Pass	-
3.7	§2.1051 §96.41	Conducted Spurious Emission	Pass	-
4.4	§2.1051 §96.41	Radiated Spurious Emission	Pass	Under limit 6.56 dB at 25747.000 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 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

1 General Description

1.1 Product Feature of Equipment Under Test

The EUT supports UMTS/LTE/NR/WiFi. The details please find the Operating Description.

Report No.: FG950301-02

1.2 Modification of EUT

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

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	Aking Chang					
Temperature 23~25°C						
Relative Humidity	54~57%					

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.	03CH12-HY								
Test Engineer	Jack Cheng, Lance Chiang and CR Liao								
Temperature	22~26°C								
Relative Humidity	54~60%								

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

FCC Designation No.: TW1190 and TW0007

TEL: 886-3-327-3456 Page Number : 5 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

1.4 Applied Standards

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

Report No.: FG950301-02

- + ANSI C63.26-2015
- ANSI / TIA-603-E
- 47 CFR Part 2, 96
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 940660 D01 Part 96 CBRS Eqpt v02
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

TEL: 886-3-327-3456 Page Number : 6 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

2 Test Configuration of Equipment Under Test

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.

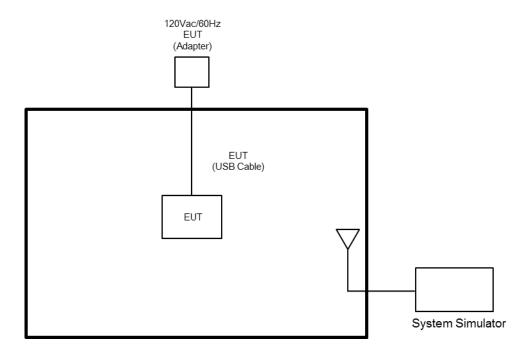
Report No.: FG950301-02

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

Test Items	Band	Bandwidth (MHz)					Modulation			RB#			Test Channel				
		20+20	20+15	15+20	20+10	10+20	20+5	5+20	QPSK	16QAM	64QAM	1	Half	Full	L	М	н
Max. Output Power	48_CA	v	v	v	v	v	v	v	٧	v	v	v	v	v	v	٧	v
26dB and 99% Bandwidth	48_CA	v							v	v	v			v	v	٧	v
Conducted Band Edge	48_CA	v							٧	v	v	v		v	v	٧	v
Conducted Spurious Emission	48_CA	v							v	v	v	v		v	v	٧	v
E.I.R.P.	48_CA	v	٧	v	v	v	٧	v	v	v	v	v			٧	٧	v
Radiated Spurious Emission	48_CA		Worst Case						v	v	v						
Remark	 The mark "v" means that this configuration is chosen for testing The mark "-" means that this bandwidth is not supported. 						ler										

TEL: 886-3-327-3456 Page Number : 7 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

2.2 Connection Diagram of Test System



Report No.: FG950301-02

2.3 Support Unit used in test configuration

ltem	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	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 : 8 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

2.5 Frequency List of Low/Middle/High Channels

LTE Band 48C Channel and Frequency List_CA									
BW [MHz]	Channe	/Frequency(MHz)	Lowest	Middle	Highest				
	D00	Channel	55273	55898	56523				
5M . 00M	PCC	Frequency	3553.3	3615.8	3678.3				
5M + 20M	000	Channel	55390	56015	56640				
	SCC	Frequency	3565	3627.5	3690				
	PCC	Channel	55340	55965	56590				
20M + 5M	PCC	Frequency	3560	3622.5	3685				
20IVI + 5IVI	SCC	Channel	55457	56082	56707				
	SCC	Frequency	3571.7	3634.2	3696.7				
	DCC	Channel	55295	55896	56496				
4004 + 2004	PCC	Frequency	3555.5	3615.6	3675.6				
10M + 20M	SCC	Channel	55439	56040	56640				
		Frequency	3569.9	3630	3690				
	PCC	Channel	55340	55941	56541				
2004 - 4004	PCC	Frequency	3560	3620.1	3680.1				
20M + 10M	SCC	Channel	55484	56085	56685				
	300	Frequency	3574.4	3634.5	3694.5				
	DCC	Channel	55318	55893	56469				
15M + 20M	PCC	Frequency	3557.8	3615.3	3672.9				
15W + 20W	SCC	Channel	55489	56064	56640				
	300	Frequency	3574.9	3632.4	3690				
	PCC	Channel	55340	55916	56491				
20M - 45M	PCC	Frequency	3560	3617.6	3675.1				
20M + 15M	SCC	Channel	55511	56087	56662				
	300	Frequency	3577.1	3634.7	3692.2				
	PCC	Channel	55340	55891	56442				
2014 - 2014	PCC	Frequency	3560	3615.1	3670.2				
20M + 20M	SCC	Channel	55538	56089	56640				
	300	Frequency	3579.8	3634.9	3690				

Report No. : FG950301-02

TEL: 886-3-327-3456 Page Number : 9 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

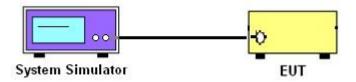
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

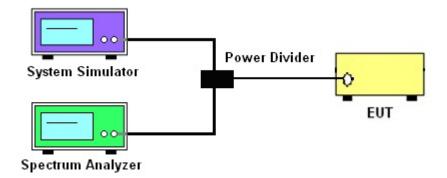
3.1.1 Test Setup

3.1.2 Conducted Output Power



Report No.: FG950301-02

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



3.1.4 Test Result of Conducted Test

Please refer to Appendix A.

TEL: 886-3-327-3456 Page Number : 10 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

3.2 Conducted Output Power

3.2.1 Description of the Conducted Output Power 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.: FG950301-02

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 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 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.: FG950301-02

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 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

3.4 EIRP Power

3.4.1 Description of the EIRP Power

The EIRP of mobile transmitters must not exceed 23 dBm /10 megahertz for Band 48.

Report No.: FG950301-02

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

 $EIRP = P_T + G_T - L_C$, 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

EIRP for CBRS equipment as below tabel:

Device	Maximum EIRP
	(dBm/10 MHz)
End User Device	23
Category A CBSD	30
Category B CBSD	47

3.4.1 Test Procedures

The testing follows procedure in Section 5.2 of ANSI C63.26-2015 and KDB 940660 D01 Part 96 Eqpt v02 Section 3.2(b)(2)

Determine the EIRP by adding the effective antenna gain to the measured average conducted power level.

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

3.5 Occupied Bandwidth

3.5.1 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

Report No.: FG950301-02

total mean transmitted power.

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.

3.5.2 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.

2. 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.

5. 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 : 14 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

3.6 Conducted Band Edge

3.6.1 Description of Conducted Band Edge Measurement

The conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

Report No.: FG950301-02

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 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.

For Adjacent Channel Leakage Ratio (ACLR) measurement,

- The Adjacent Channel Leakage Ratio (ACLR) is the ratio of the average power in the assigned aggregated channel bandwidth to the average power over the equivalent adjacent channel bandwidth.
- 2. The option ACLR of spectrum analyzer is used and measures the ACLR ratio by setting equivalent channel bandwidth.
- 3. The measured ACLR ratio shall be at least 30 dB.

TEL: 886-3-327-3456 Page Number : 15 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

3.7 Conducted Spurious Emission

3.7.1 Description of Conducted Spurious Emission Measurement

Emission and interference limits: the device satisfies the emission limits specified in Section FCC Part 96.41 e) 1) ii) & e) 2) at the lowest and highest edges of the band, and in the middle of the band.

Report No.: FG950301-02

3.7.2 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 -40dBm/MHz.

TEL: 886-3-327-3456 Page Number : 16 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

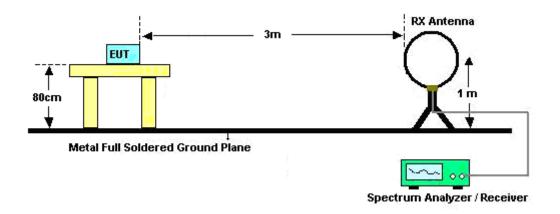
4 Radiated Test Items

4.1 Measuring Instruments

See list of measuring instruments of this test report.

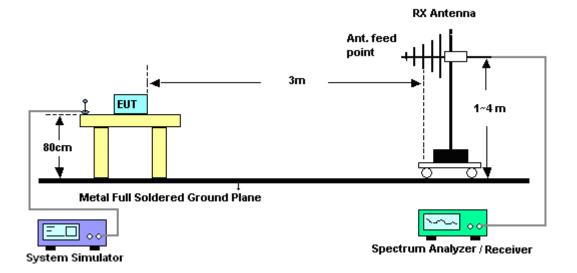
4.2 Test Setup

For radiated emissions below 30MHz



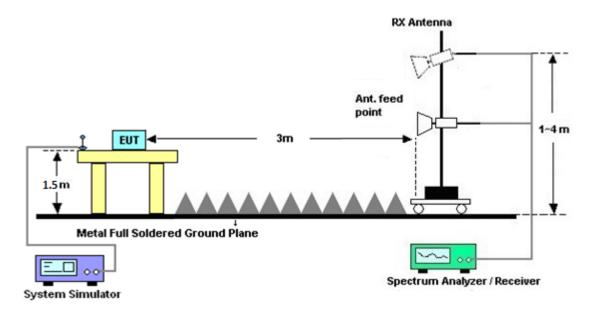
Report No.: FG950301-02

For radiated emissions from 30MHz to 1GHz



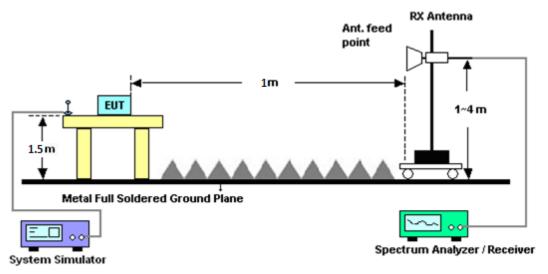
TEL: 886-3-327-3456 Page Number : 17 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

For radiated emissions from 1GHz to 18GHz



Report No.: FG950301-02

For radiated emissions above 18GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

TEL: 886-3-327-3456 Page Number : 18 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission Measurement

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

Report No.: FG950301-02

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 -40dBm / MHz.

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

4.4.2 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 height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
- 2. The EUT was set 3 meters from the receiving antenna 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 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
- 5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
- 6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
- A horn antenna was substituted in place of the EUT and was driven by a signal generator.
 Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.

EIRP (dBm) = S.G. Power - Tx Cable Loss + Tx Antenna Gain<math>ERP (dBm) = EIRP - 2.15

8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is -40dBm/MHz

TEL: 886-3-327-3456 Page Number : 19 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 07, 2019	Sep. 25, 2019~ Sep. 26, 2019	Jan. 06, 2020	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802 N1D01N-06	47020&06	30MHz to 1GHz	Oct. 13, 2018	Sep. 25, 2019~ Sep. 26, 2019	Oct. 12, 2019	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120D	9120D-121 2	1GHz ~ 18GHz	Oct. 19, 2018	Sep. 25, 2019~ Sep. 26, 2019	Oct. 18, 2019	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120D	9120D-132 6	1GHz ~ 18GHz	Oct. 30, 2018	Sep. 25, 2019~ Sep. 26, 2019	Oct. 29, 2019	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 584	18GHz ~ 40GHz	Dec. 05, 2018	Sep. 25, 2019~ Sep. 26, 2019	Dec. 04, 2019	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 25, 2019	Sep. 25, 2019~ Sep. 26, 2019	Mar. 24, 2020	Radiation (03CH12-HY)
Preamplifier	Agilent	8449B	3008A023 75	1GHz~26.5Ghz	May 28, 2018	Sep. 25, 2019~ Sep. 26, 2019	May 26, 2020	Radiation (03CH12-HY)
Preamplifier	Jet-Power	JPA0118-55-3 03	171000180 0055007	1GHz~18GHz	Apr. 01, 2019	Sep. 25, 2019~ Sep. 26, 2019	Mar. 31, 2020	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 06, 2018	Sep. 25, 2019~ Sep. 26, 2019	Dec. 05, 2019	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 26, 2018	Sep. 25, 2019~ Sep. 26, 2019	Dec. 25, 2019	Radiation (03CH12-HY)
Spectrum Analyzer	Keysight	N9010A	MY542004 86	10Hz~44GHz	Dec. 19, 2018	Sep. 25, 2019~ Sep. 26, 2019	Dec. 18, 2019	Radiation (03CH12-HY)
Signal Generator	Rohde & Schwarz	SMB100A	175727	100kHz~40GHz	Dec. 23, 2018	Sep. 25, 2019~ Sep. 26, 2019	Dec. 23, 2019	Radiation (03CH12-HY)
Base Station	Anritsu	MT8821C	620143281 6	GSM / GPRS /WCDMA / LTE FDD/TDD with 44) /LTE-3CC DLCA,2CC ULCA	May 05, 2019	Sep. 25, 2019~ Sep. 26, 2019	May 04, 2020	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30M-18G	Mar. 13, 2019	Sep. 25, 2019~ Sep. 26, 2019	Mar. 12, 2020	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30M~40GHz	Oct. 16, 2018	Sep. 25, 2019~ Sep. 26, 2019	Oct. 15, 2019	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30M~40GHz	Oct. 16, 2018	Sep. 25, 2019~ Sep. 26, 2019	Oct. 15, 2019	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1m~4m	N/A	Sep. 25, 2019~ Sep. 26, 2019	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Sep. 25, 2019~ Sep. 26, 2019	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-00098 9	N/A	N/A	Sep. 25, 2019~ Sep. 26, 2019	N/A	Radiation (03CH12-HY)

Report No. : FG950301-02

TEL: 886-3-327-3456 Page Number : 20 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Base Station(Measure)	Anritsu	MT8821C	620166475 5	GSM / GPRS /WCDMA / LTE FDD/TDD with 44) /LTE-3CC DLCA,2CC ULCA	Mar. 03, 2019	Nov. 07, 2019~ Nov. 12, 2019	Mar. 02, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101408	10Hz~40GHz	Aug. 13, 2019	Nov. 07, 2019~ Nov. 12, 2019	Aug. 12, 2020	Conducted (TH05-HY)
Coupler	Warison	20dB 25W S MA Direction al Coupler	#A	1-18GHz	Jan. 14, 2019	Nov. 07, 2019~ Nov. 12, 2019	Jan. 13, 2020	Conducted (TH05-HY)

Report No. : FG950301-02

TEL: 886-3-327-3456 Page Number : 21 of 22 FAX: 886-3-328-4978 Issued Date : Nov. 13, 2019

6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of	3.36
Confidence of 95% (U = 2Uc(y))	3.30

Report No.: FG950301-02

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

Measuring Uncertainty for a Level of	3.70
Confidence of 95% (U = 2Uc(y))	

<u>Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)</u>

Measuring Uncertainty for a Level of	3.98
Confidence of 95% (U = 2Uc(y))	3.96

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



Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

	LTE Band 48C_CA Maximum Average Power [dBm]							
DW PMIL 1	P	CC	S	CC	M. 1			
BW [MHz]	RB Size	RB Offset	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20+20	1	0	1	0		11.87	11.37	12.01
20+20	1	99	1	0	QPSK	-2.26	-2.68	-1.91
20+20	0	0	1	99		11.72	11.16	12.33
20+20	1	0	1	0		11.92	11.43	12.11
20+20	1	99	1	0	16-QAM	-1.67	-2.20	-1.87
20+20	0	0	1	99		12.43	11.76	12.62
20+20	1	0	1	0		11.98	11.48	12.15
20+20	1	99	1	0	64-QAM	-2.00	-2.44	-1.91
20+20	0	0	1	99		12.08	11.51	12.35
20+15	100	0	75	0		11.66	11.23	12.05
20+15	1	0	1	74	QPSK	-2.62	-2.84	-2.14
20+15	1	74	1	0		11.60	11.09	12.01
20+15	100	0	75	0		11.73	11.29	12.10
20+15	1	0	1	74	16-QAM	-2.07	-2.35	-1.60
20+15	1	74	1	0		12.21	11.66	12.65
20+15	100	0	75	0		11.76	11.27	12.12
20+15	1	0	1	74	64-QAM	-2.40	-2.57	-1.82
20+15	1	74	1	0		12.02	11.42	12.40
15+20	75	0	100	0		11.75	11.28	12.03
15+20	1	0	1	99	QPSK	-2.38	-2.77	-2.12
15+20	1	74	1	0		11.61	11.15	11.98
15+20	75	0	100	0		11.79	11.34	12.08
15+20	1	0	1	99	16-QAM	-1.85	-2.26	-1.56
15+20	1	74	1	0		12.25	11.75	12.57
15+20	75	0	100	0		11.81	11.37	12.12
15+20	1	0	1	99	64-QAM	-2.10	-2.78	-1.81
15+20	1	74	1	0		11.88	11.50	12.35



ORTON LAB. FCC RADIO TEST REPORT

		LTE B	and 48C (CA Maximu	ım Average	Power [dBm	1	
	P	CC		CC			•	
BW [MHz]	RB Size	RB Offset	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20+10	100	0	50	0		11.83	11.19	12.19
20+10	1	0	1	49	QPSK	-2.33	-3.16	-2.01
20+10	1	99	1	0		11.64	11.19	12.02
20+10	100	0	50	0		11.80	11.22	12.23
20+10	1	0	1	49	16-QAM	-1.80	-2.68	-1.47
20+10	1	99	1	0		12.29	11.71	12.80
20+10	100	0	50	0		11.86	11.23	12.28
20+10	1	0	1	49	64-QAM	-2.05	-3.15	-1.69
20+10	1	99	1	0		11.98	11.56	12.45
10+20	50	0	100	0		11.73	11.14	12.05
10+20	1	0	1	99	QPSK	-2.36	-2.82	-2.01
10+20	1	49	1	0		11.65	11.17	12.06
10+20	50	0	100	0		11.84	11.74	12.17
10+20	1	0	1	99	16-QAM	-1.81	-2.28	-1.46
10+20	1	49	1	0		12.20	11.77	12.59
10+20	50	0	100	0		11.83	11.52	12.15
10+20	1	0	1	99	64-QAM	-2.11	-2.53	-1.72
10+20	1	49	1	0		12.07	11.54	12.41
20+5	100	0	25	0		11.93	11.46	12.28
20+5	1	0	1	24	QPSK	-2.15	-2.59	-1.86
20+5	1	99	1	0		11.62	11.20	12.07
20+5	100	0	25	0		11.93	11.48	12.37
20+5	1	0	1	24	16-QAM	-1.60	-2.10	-1.30
20+5	1	99	1	0		12.31	11.85	12.75
20+5	100	0	25	0		12.02	11.50	12.35
20+5	1	0	1	24	64-QAM	-1.92	-2.37	-1.58
20+5	1	99	1	0		11.96	11.58	12.51
5+20	25	0	100	0		11.85	11.05	12.07
5+20	1	0	1	99	QPSK	-2.32	-3.09	-2.05
5+20	1	24	1	0		11.72	10.99	11.97
5+20	25	0	100	0		11.98	11.15	12.18
5+20	1	0	1	99	16-QAM	-1.75	-2.57	-1.50
5+20	1	24	1	0		12.40	11.63	12.66
5+20	25	0	100	0		11.96	11.19	12.24
5+20	1	0	1	99	64-QAM	-2.06	-2.82	-1.78
5+20	1	24	1	0		12.03	11.31	12.39

Report No. : FG950301-02

LTE Band 48C

Conducted Power and EIRP

LTE Band 48C_CA / 20 + 20 MHz (GT - LC = 3.6 dB)										
		PCC		S	CC	Conducted		FIDD		
Channel	Mode	R	B	R	В	Conducted		EIRP		
Chamilei	Wiode	Size	Offset	Size	Offset	Power	Power	EIRP	EIRP	EIRP(W)
		Size	Oliset	Size	Oliset	(dBm)	(Watts)	(dBm)	(dBm/10MHz)	EIRP(W)
Lowest		0	0	1	99	11.72	0.0149	15.32	15.32	0.0340
Middle	QPSK	0	0	1	99	11.16	0.0131	14.76	14.76	0.0299
Highest		0	0	1	99	12.33	0.0171	15.93	15.93	0.0392
Lowest		0	0	1	99	12.43	0.0175	16.03	16.03	0.0401
Middle	16QAM	0	0	1	99	11.76	0.0150	15.36	15.36	0.0344
Highest		0	0	1	99	12.62	0.0183	16.22	16.22	0.0419
Lowest		0	0	1	99	12.08	0.0161	15.68	15.68	0.0370
Middle	64QAM	0	0	1	99	11.51	0.0142	15.11	15.11	0.0324
Highest		0	0	1	99	12.35	0.0172	15.95	15.95	0.0394
Limit		EIRF	o < 0.2W	1	_	Re	sult		PASS	

Report No. : FG950301-02

TEL: 886-3-327-3456 Page Number : A48-1 of 33

26dB Bandwidth

Mode	LTE Band 48C : 26dB BW(MHz)					
QPSK						
BW	20MHz+20MHz	20MHz+20MHz N/A N/A N/A				
Lowest CH	39.80	-	-	-		
Middle CH	39.80	-	-	-		
Highest CH	39.72	-	-	-		

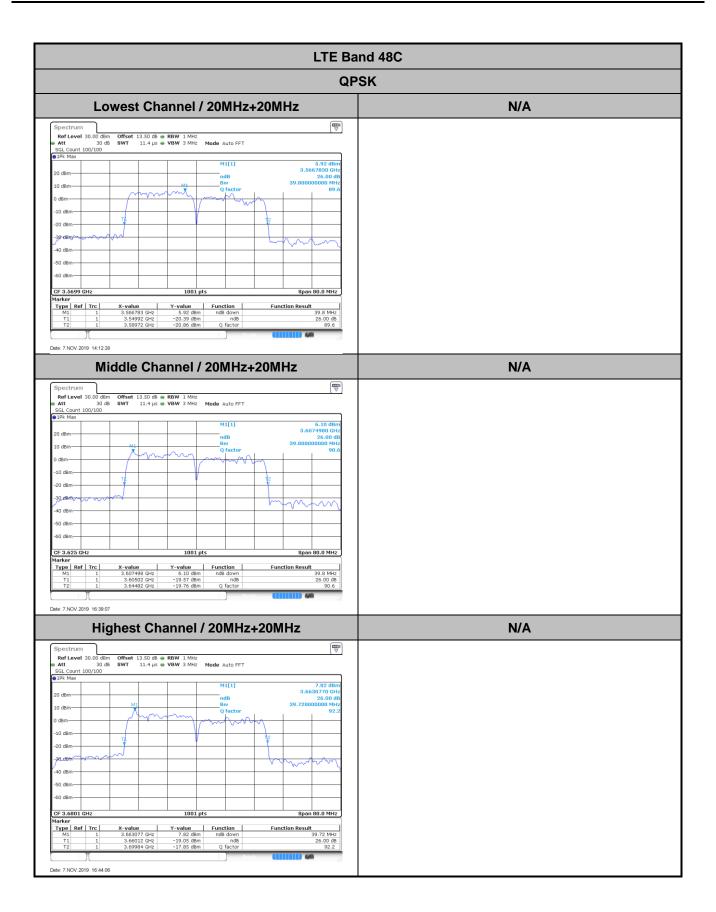
Report No. : FG950301-02

Mode	LTE Band 48C : 26dB BW(MHz)					
16QAM						
BW	20MHz+20MHz	20MHz+20MHz N/A N/A N/A				
Lowest CH	39.80	-	-	-		
Middle CH	39.88	-	-	-		
Highest CH	39.72	-	-	-		

Mode	LTE Band 48C : 26dB BW(MHz)					
64QAM						
BW	20MHz+20MHz	20MHz+20MHz N/A N/A N/A				
Lowest CH	39.88	-	-	-		
Middle CH	39.88	-	-	-		
Highest CH	39.88	-	-	-		

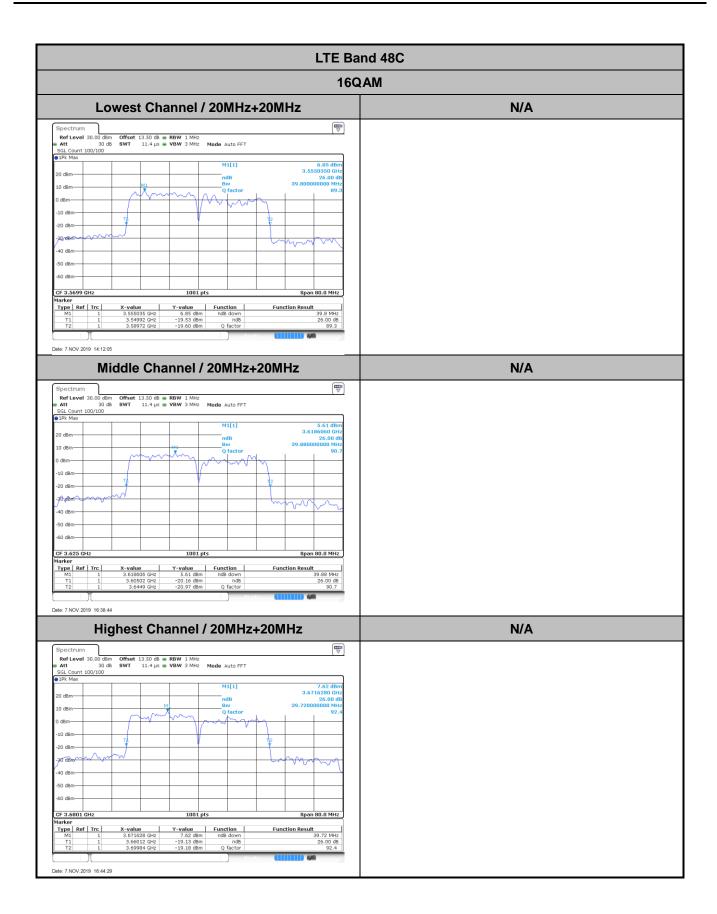
TEL: 886-3-327-3456 Page Number : A48-2 of 33

RADIO TEST REPORT Report No. : FG950301-02



TEL: 886-3-327-3456 Page Number: A48-3 of 33

Report No. : FG950301-02



TEL: 886-3-327-3456 Page Number: A48-4 of 33

RADIO TEST REPORT Report No. : FG950301-02



TEL: 886-3-327-3456 Page Number: A48-5 of 33

Occupied Bandwidth

Mode	LTE Band 48C : 99%OBW(MHz)					
QPSK						
BW	20MHz+20MHz	20MHz+20MHz N/A N/A N/A				
Lowest CH	37.88	-	-	-		
Middle CH	37.64	-	-	-		
Highest CH	37.88	-	-	-		

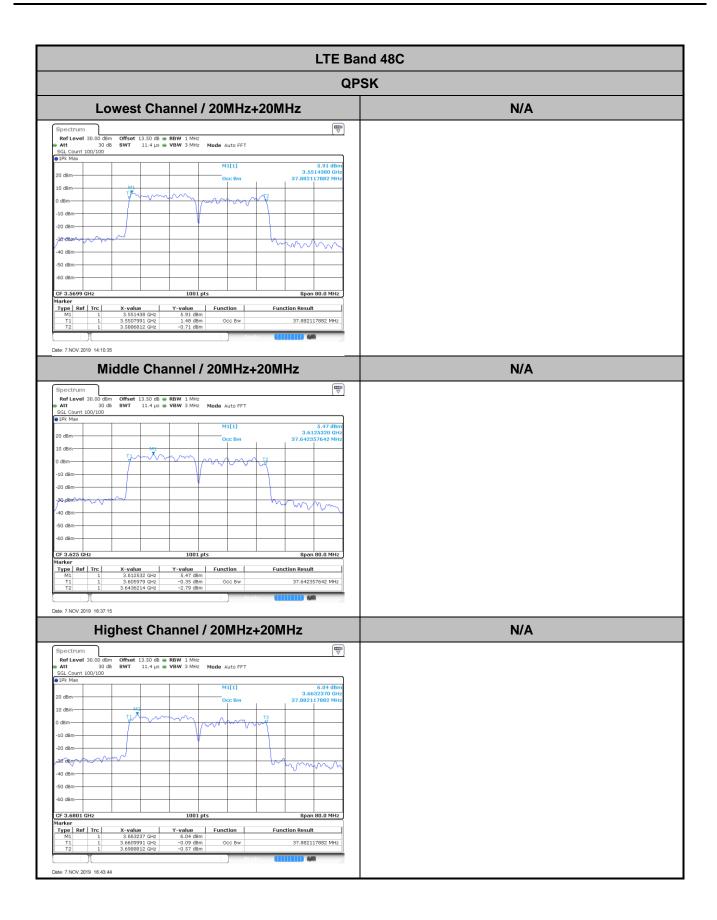
Report No. : FG950301-02

Mode	LTE Band 48C : 99%OBW(MHz)					
16QAM						
BW	20MHz+20MHz	20MHz+20MHz N/A N/A N/A				
Lowest CH	38.04	-	-	-		
Middle CH	37.72	-	-	-		
Highest CH	37.72	-	-	-		

Mode	LTE Band 48C : 99%OBW(MHz)					
64QAM						
BW	20MHz+20MHz	20MHz+20MHz N/A N/A N/A				
Lowest CH	37.80	-	-	-		
Middle CH	37.72	-	-	-		
Highest CH	37.96	-	-	-		

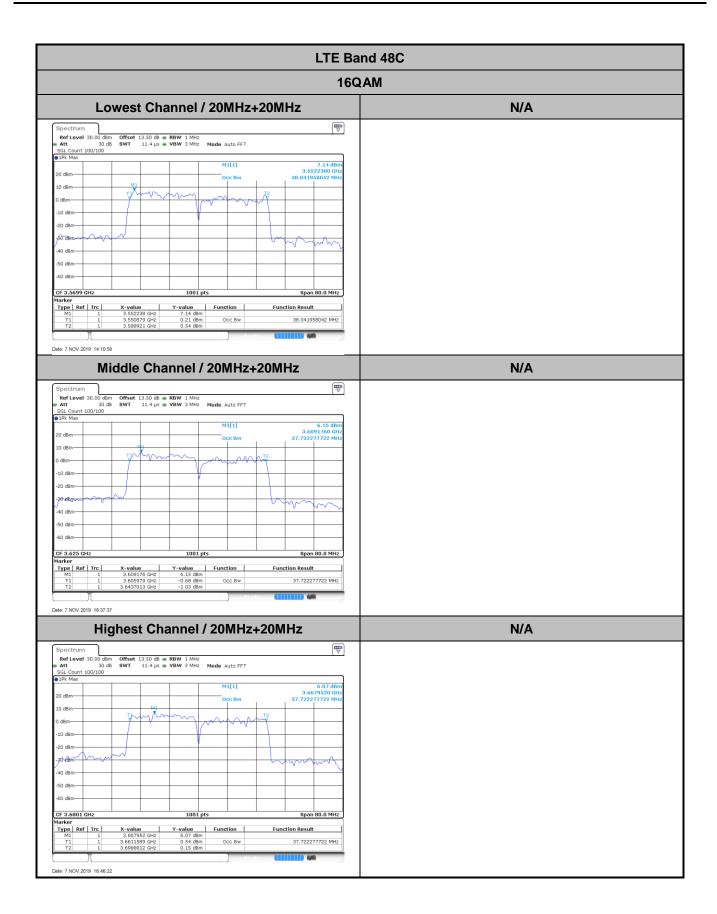
TEL: 886-3-327-3456 Page Number : A48-6 of 33

Report No. : FG950301-02



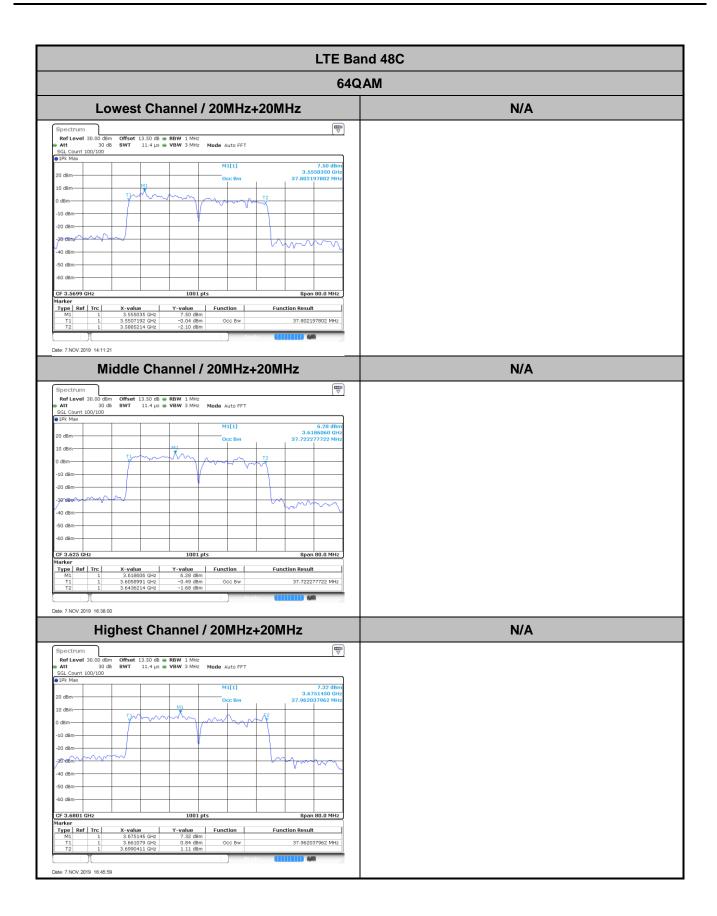
TEL: 886-3-327-3456 Page Number: A48-7 of 33

RADIO TEST REPORT Report No. : FG950301-02



TEL: 886-3-327-3456 Page Number: A48-8 of 33

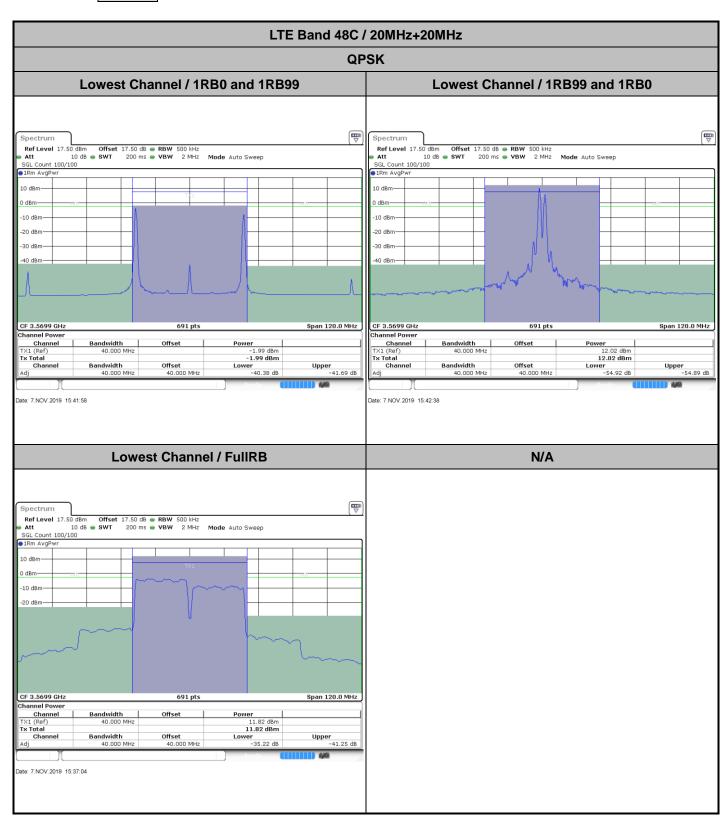
Report No. : FG950301-02



TEL: 886-3-327-3456 Page Number: A48-9 of 33

Report No.: FG950301-02

ACLR



TEL: 886-3-327-3456 Page Number : A48-10 of 33

LTE Band 48C / 20MHz+20MHz **QPSK** MiddleChannel / 1RB0 and 1RB99 Middle Channel / 1RB99 and 1RB0 Spectrum Spectrum Offset 17.50 dB ■ RBW 500 kHz SWT 200 ms ■ VBW 2 MHz Ref Level 17.50 dBm Att 10 dB Offset 17.50 dB ● RBW 500 kHz
SWT 200 ms ● VBW 2 MHz Mode Auto Sweep Ref Level 17.50 dBm 10 dB • SWT 10 dB SWT Mode Auto Sween GL Count 100/100 SGL Count 100/100 -10 dBm -10 dBm -20 dBm -20 dBm -30 dBm -30 dBm CF 3.625 GHz 691 pts Span 120.0 MHz CF 3.625 GHz 691 pts Span 120.0 MHz Channel Powe -2.42 dBm -2.42 dBm Power 11.31 dBm 11.31 dBm Lower -54.26 dB Channel
TX1 (Ref)
Tx Total Channel TX1 (Ref) Bandwidth 40.000 MHz Offset Offset Tx Total Channel Upper -54.70 dB Bandwidth 40.000 MHz Channel Bandwidth 40.000 MHz Offset 40.000 MHz ate: 7.NOV.2019 16:32:55 ate: 7.NOV.2019 16:33:36 Middle Channel / FullRB N/A Ref Level 17.50 dBm Offset
Att 10 dB SWT Offset 17.50 dB ● RBW 500 kHz
SWT 200 ms ● VBW 2 MHz Mode Auto Sweep CF 3.625 GHz 691 pts Span 120.0 MHz hannel Power Power 11.44 dBm 11.44 dBm Lower -35.14 dB ate: 7.NOV.2019 16:29:28

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number : A48-11 of 33

LTE Band 48C / 20MHz+20MHz **QPSK** Highest Channel / 1RB0 and 1RB99 Highest Channel / 1RB99 and 1RB0 Spectrum Spectrum Ref Level 17.50 dBm Att 10 dB Offset 17.50 dB ● RBW 500 kHz SWT 200 ms ● VBW 2 MHz Ref Level 17.50 dBm Offset 17.50 dB ■ RBW 500 kHz SWT 200 ms ■ VBW 2 MHz 10 dB • SWT 10 dB SWT Mode Auto Sween Mode Auto Sween GL Count 100/100 SGL Count 100/100 -10 dBm -10 dBm -20 dBm -20 dBm -30 dBm -30 dBm 691 pts Span 120.0 MHz 691 pts Span 120.0 MHz Channel Power -2.20 dBm -2.20 dBm Power 11.91 dBm 11.91 dBm Lower -54.66 dB Channel
TX1 (Ref)
Tx Total
Channel Channel TX1 (Ref) Bandwidth 40.000 MHz Offset Offset Tx Total Channel Upper -54.79 dB Bandwidth 40.000 MHz Bandwidth 40.000 MHz Offset 40.000 MHz ate: 7.NOV.2019 18:00:28 ate: 7.NOV.2019 18:03:53 **Highest Channel / FullRB** N/A Ref Level 17.50 dBm Att 10 dB 10 dB
SWT Mode Auto Sweep CF 3.6801 GHz 691 pts Span 120.0 MHz 11.89 dBm 11.89 dBm Lower -33.58 dB ate: 7.NOV.2019 17:59:47

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number: A48-12 of 33

SPORTON LAB. FCC RADIO TEST REPORT Report No.: FG950301-02 LTE Band 48C / 20MHz+20MHz **16QAM** Lowest Channel / 1RB0 and 1RB99 Lowest Channel / 1RB99 and 1RB0 Spectrum Spectrum Ref Level 17.50 dBm Ref Level 17.50 dBm t 10 dB • SWT Mode Auto Sweep SGL Count 100/100 1Rm AvgPwr -10 dBm 10 dBm -20 dBm -20 dBm -30 dBm -30 dBm 691 pts Span 120.0 MHz CF 3.5699 GHz 691 pts Span 120.0 MHz Channel TX1 (Ref) Tx Total Channel
TX1 (Ref)
Tx Total Power 11.55 dBm 11.55 dBm Bandwidth 40.000 MHz Offset Power Bandwidth 40.000 MHz Offset -1.62 dBm -1.62 dBm **Upper** -41.27 dB Lower -40.35 dB Lower -54.01 dB Upper -54.19 dB Bandwidth 40.000 MHz Bandwidth 40.000 MHz Channel Offset 40.000 MHz Channel Offset 40.000 MHz Date: 7.NOV.2019 15:41:17 Date: 7.NOV.2019 15:43:18 **Lowest Channel / FullRB** N/A ∍1Rm AvgP CF 3.5699 GHz 691 pts Span 120.0 MHz Power 11.90 dBm 11.90 dBm Lower -34.72 dB Channel TX1 (Ref) Tx Total Channel

TEL: 886-3-327-3456 Page Number: A48-13 of 33

FAX: 886-3-328-4978

ate: 7.NOV.2019 15:39:16

LTE Band 48C / 20MHz+20MHz **16QAM** MiddleChannel / 1RB0 and 1RB99 Middle Channel / 1RB99 and 1RB0 Spectrum Spectrum Offset 17.50 dB ■ RBW 500 kHz SWT 200 ms ■ VBW 2 MHz Ref Level 17.50 dBm Att 10 dB Offset 17.50 dB ● RBW 500 kHz SWT 200 ms ● VBW 2 MHz Ref Level 17.50 dBm 10 dB • SWT 10 dB SWT Mode Auto Sween Mode Auto Sween GL Count 100/100 SGL Count 100/100 -10 dBm -10 dBm -20 dBm -20 dBm -30 dBm -30 dBm CF 3.625 GHz 691 pts Span 120.0 MHz CF 3.625 GHz 691 pts Span 120.0 MHz Channel Powe Power
-2.02 dBm
-2.02 dBm
Lower
-39.76 dB Power 11.71 dBm 11.71 dBm Lower -54.39 dB Channel
TX1 (Ref)
Tx Total Channel TX1 (Ref) Bandwidth 40.000 MHz Offset Offset Tx Total Channel Upper -54.82 dB Bandwidth 40.000 MHz Channel Bandwidth 40.000 MHz Offset 40.000 MHz Adj ate: 7.NOV.2019 16:32:14 ate: 7.NOV.2019 16:34:17 Middle Channel / FullRB N/A Ref Level 17.50 dBm Offset Offset 17.50 dB ● RBW 500 kHz
SWT 200 ms ● VBW 2 MHz Mode Auto Sweep CF 3.625 GHz 691 pts Span 120.0 MHz hannel Power Power 11.48 dBm 11.48 dBm Lower -34.64 dB Upper -40.41 dB ate: 7.NOV.2019 16:30:10

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number : A48-14 of 33

LTE Band 48C / 20MHz+20MHz **16QAM** Highest Channel / 1RB0 and 1RB99 Highest Channel / 1RB99 and 1RB0 Spectrum Spectrum Ref Level 17.50 dBm Att 10 dB Offset 17.50 dB ● RBW 500 kHz SWT 200 ms ● VBW 2 MHz Ref Level 17.50 dBm Offset 17.50 dB ■ RBW 500 kHz SWT 200 ms ■ VBW 2 MHz 10 dB • SWT 10 dB SWT Mode Auto Sween Mode Auto Sween GL Count 100/100 SGL Count 100/100 -10 dBm -10 dBm -20 dBm -20 dBm -30 dBm -30 dBm CF 3.6801 GHz 691 pts Span 120.0 MHz 691 pts Span 120.0 MHz Channel Power Power -1.74 dBm -1.74 dBm Lower -39.57 dB Power 12.43 dBm 12.43 dBm Lower -55.00 dB Channel
TX1 (Ref)
Tx Total
Channel Channel TX1 (Ref) Bandwidth 40.000 MHz Offset Offset Tx Total Channel Upper -55.05 dB Bandwidth 40.000 MHz Bandwidth 40.000 MHz Offset 40.000 MHz ate: 7.NOV.2019 18:01:10 ate: 7.NOV.2019 18:03:12 **Highest Channel / FullRB** N/A Ref Level 17.50 dBm Att 10 dB 10 dB SWT Mode Auto Sweep CF 3.6801 GHz 691 pts Span 120.0 MHz 11.96 dBm 11.96 dBm Lower -32.92 dB Upper -37.81 dB ate: 7.NOV.2019 17:59:05

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number : A48-15 of 33

Report No.: FG950301-02 LTE Band 48C / 20MHz+20MHz 64QAM Lowest Channel / 1RB0 and 1RB99 Lowest Channel / 1RB99 and 1RB0 Spectrum Spectrum Ref Level 17.50 dBm Ref Level 17.50 dBm t 10 dB • SWT Mode Auto Sweep SGL Count 100/100 1Rm AvgPwr -10 dBm 10 dBm -20 dBm -20 dBm -30 dBm -30 dBm 691 pts Span 120.0 MHz CF 3.5699 GHz 691 pts Span 120.0 MHz Channel TX1 (Ref) Tx Total Power -2.14 dBm -2.14 dBm Channel
TX1 (Ref)
Tx Total Power 11.50 dBm 11.50 dBm Bandwidth 40.000 MHz Offset Bandwidth 40.000 MHz Offset Upper -41.42 dB Lower -39.94 dB Lower -55.48 dB Upper -55.41 dB Bandwidth 40.000 MHz Bandwidth 40.000 MHz Channel Offset 40.000 MHz Channel Offset 40.000 MHz Date: 7.NOV.2019 15:40:37 Date: 7.NOV.2019 15:43:59 **Lowest Channel / FullRB** N/A ●1Rm AvgPw CF 3.5699 GHz 691 pts Span 120.0 MHz Power 11.96 dBm 11.96 dBm Lower -34.56 dB Channel
TX1 (Ref)
Tx Total
Channel Upper -40.55 dB ate: 7.NOV.2019 15:39:56

TEL: 886-3-327-3456 Page Number : A48-16 of 33

Report No.: FG950301-02 LTE Band 48C / 20MHz+20MHz 64QAM MiddleChannel / 1RB0 and 1RB99 Middle Channel / 1RB99 and 1RB0 Spectrum Spectrum Offset 17.50 dB ● RBW 500 kHz SWT 200 ms ● VBW 2 MHz Ref Level 17.50 dBm Att 10 dB Offset 17.50 dB ● RBW 500 kHz SWT 200 ms ● VBW 2 MHz Ref Level 17.50 dBm 10 dB • SWT 10 dB SWT Mode Auto Sween Mode Auto Sween GL Count 100/100 SGL Count 100/100 -10 dBm -10 dBm -20 dBm -20 dBm -30 dBm -30 dBm CF 3.625 GHz 691 pts Span 120.0 MHz 691 pts Span 120.0 MHz Channel Powe Power
-2.13 dBm
-2.13 dBm
Lower
-39.94 dB Power 11.60 dBm 11.60 dBm Lower -55.43 dB Channel
TX1 (Ref)
Tx Total Channel TX1 (Ref) Bandwidth 40.000 MHz Offset Offset Tx Total Channel Upper -56.01 dB Bandwidth 40.000 MHz Channel Bandwidth 40.000 MHz Offset 40.000 MHz Offset 40.000 MHz Adj ate: 7.NOV.2019 16:31:32 ate: 7.NOV.2019 16:34:58 Middle Channel / FullRB N/A Ref Level 17.50 dBm Offset Mode Auto Sweep CF 3.625 GHz 691 pts Span 120.0 MHz hannel Power 11.51 dBm 11.51 dBm Lower -34.48 dB Upper -40.19 dB ate: 7.NOV.2019 16:30:51

TEL: 886-3-327-3456 Page Number: A48-17 of 33

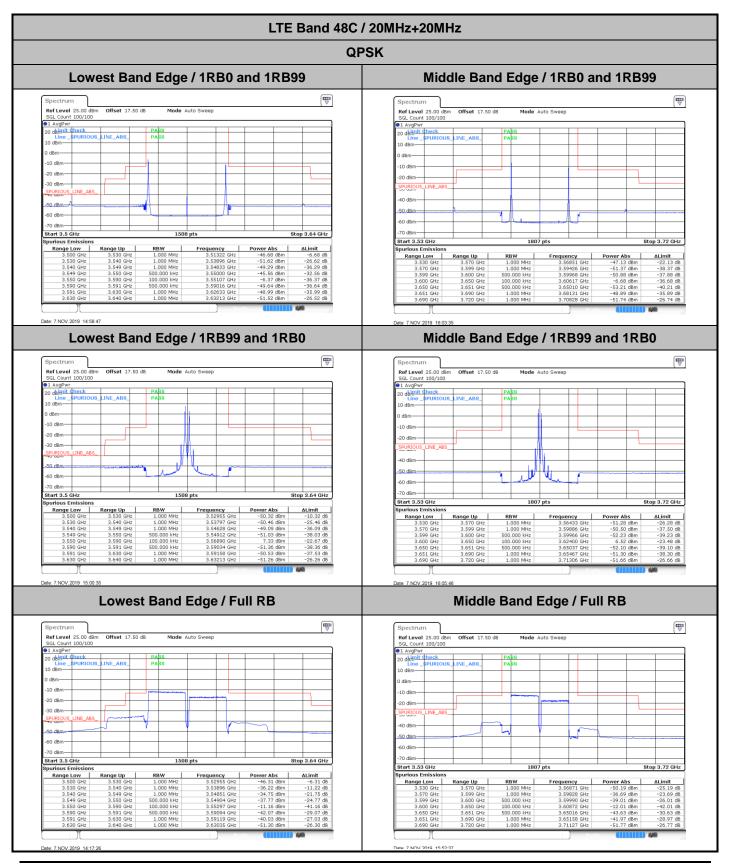
SPORTON LAB. FCC RADIO TEST REPORT Report No.: FG950301-02 LTE Band 48C / 20MHz+20MHz 64QAM Highest Channel / 1RB0 and 1RB99 Highest Channel / 1RB99 and 1RB0 Spectrum Spectrum Ref Level 17.50 dBm Att 10 dB Offset 17.50 dB • RBW 500 kHz SWT 200 ms • VBW 2 MHz Ref Level 17.50 dBm Offset 17.50 dB ■ RBW 500 kHz SWT 200 ms ■ VBW 2 MHz 10 dB • SWT 10 dB SWT Mode Auto Sween Mode Auto Sween GL Count 100/100 SGL Count 100/100 -10 dBm -10 dBm -20 dBm -20 dBm -30 dBm -30 dBm CF 3.6801 GHz 691 pts Span 120.0 MHz 691 pts Span 120.0 MHz Channel Power Power 12.31 dBm 12.31 dBm Lower -56.18 dB Channel
TX1 (Ref)
Tx Total
Channel Channel TX1 (Ref) Bandwidth 40.000 MHz Offset Offset -1.95 dBm -1.95 dBm Tx Total Channel Lower -39.65 dB Upper -56.56 dB Bandwidth 40.000 MHz Bandwidth 40.000 MHz Offset 40.000 MHz ate: 7.NOV.2019 18:01:51 ate: 7.NOV.2019 18:02:31 **Highest Channel / FullRB** N/A Ref Level 17.50 dBm Att 10 dB 10 dB SWT Mode Auto Sweep CF 3.6801 GHz 691 pts Span 120.0 MHz hannel Power Power 11.99 dBm 11.99 dBm Lower -32.53 dB Upper -37.38 dB

TEL: 886-3-327-3456 Page Number : A48-18 of 33

FAX: 886-3-328-4978

ate: 7.NOV.2019 17:58:24

Conducted Band Edge



Report No.: FG950301-02

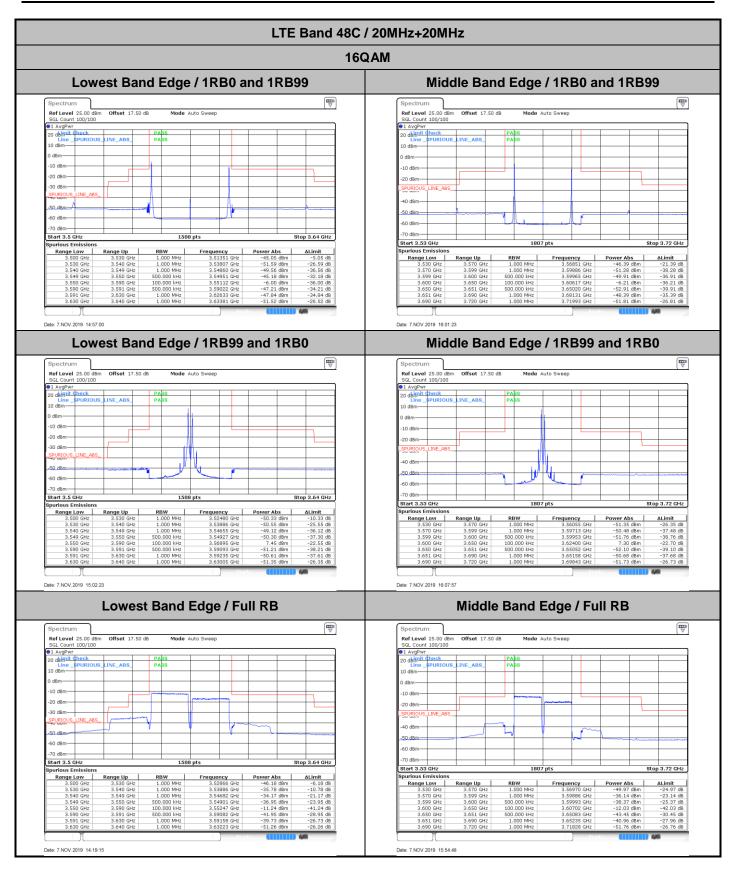
TEL: 886-3-327-3456 Page Number : A48-19 of 33 FAX: 886-3-328-4978

Report No.: FG950301-02 LTE Band 48C / 20MHz+20MHz **QPSK** Highest Band Edge / 1RB0 and 1RB99 N/A Ref Level 25.00 dBm SGL Count 100/100 1 AvgPwr 20 dbimit dheck Line SPURIOUS 10 dBm Offset 17.50 dB Mode Auto Sweep 10 dBm-20 dBm LINE_ABS_ 60 dBm-Start 3.61 GHz 1508 pts Stop 3.75 GHz Highest Band Edge / 1RB99 and 1RB0 N/A Ref Level 25.00 dB SGL Count 100/100 1 AvgPwr 20 dbimit theck Line SPURIOU 10 dBm dBm-10 dBm LINE_ABS 40 dBm-50 d8m-60 dBm-Start 3.61 GHz Stop 3.75 GHz Range Low Range Up Date: 7.NOV.2019 17:06:27 **Highest Band Edge / Full RB** N/A dBm-40 dBm-Range Low Range Up

TEL: 886-3-327-3456 Page Number: A48-20 of 33

FAX: 886-3-328-4978

Date: 7.NOV.2019 16:53:19



Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number : A48-21 of 33

LTE Band 48C / 20MHz+20MHz **16QAM** Highest Band Edge / 1RB0 and 1RB99 N/A Ref Level 25.00 dBm SGL Count 100/100 1 AvgPwr 20 dbimit dheck Line SPURIOUS 10 dBm Offset 17.50 dB Mode Auto Sweep 10 dBm-20 dBm LINE_ABS_ 60 dBm-Start 3.61 GHz 1508 pts Stop 3.75 GHz Highest Band Edge / 1RB99 and 1RB0 N/A Ref Level 25.00 dB SGL Count 100/100 1 AvgPwr 20 dbimit theck Line SPURIOU 10 dBm dBm-10 dBm LINE_ABS 40 dBm-50 d8m-60 dBm-Start 3.61 GHz Stop 3.75 GHz Range Low Range Up Date: 7.NOV.2019 17:04:16 **Highest Band Edge / Full RB** N/A dBm-40 dBm-Range Low Range Up

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number: A48-22 of 33

FAX: 886-3-328-4978

Date: 7.NOV.2019 16:51:08

LTE Band 48C / 20MHz+20MHz 64QAM Lowest Band Edge / 1RB0 and 1RB99 Middle Band Edge / 1RB0 and 1RB99 Ref Level 25.00 dBm SGL Count 100/100 1 AvgPwr 20 dbmit Check Offset 17.50 dB Mode Auto Sweep Offset 17.50 dB Ref Level 25.00 dBm Mode Auto Sweep SGL Count 100/100

1 AvgPwr
20 dbimit check
Line _SPURIOUS 10 dBm dBm-10 d8m--10 dBm 20 dBm--20 dBm 30 dBm-INE ABS LINE_ABS 40 dBm 50.d8m 50 dBm-60 dBm-1508 pts Stop 3.64 GHz Stop 3.72 GHz Start 3.53 GHz 1807 pts Range Low 3.530 GHz Lowest Band Edge / 1RB99 and 1RB0 Middle Band Edge / 1RB99 and 1RB0 SGL Count 100/10

1 AvgPwr
20 dbimit theck dBm-10 dBm-30 dBm-SPURIOUS 40 dBm 50 d8m--50 dBm--60 dBm--70 dBm Start 3.5 GH 3.52361 GHz 3.52361 GHz 3.53748 GHz 3.54987 GHz 3.54987 GHz 3.56890 GHz Range Low Range Up Range Up | Frequency | Power Abs | 3.5693° GHz | -51.47 dBm | 3.5992° GHz | -51.30 dBm | 3.5992° GHz | -53.81 dBm | 3.6240° GHz | -74.9 dBm | 3.6240° GHz | -74.9 dBm | 3.6597° GHz | -54.32 dBm | 3.68633 GHz | -50.17 dBm | 3.70973 GHz | -51.74 dBm | Date: 7 NOV 2019 15:04:12 Date: 7 NOV 2019 16:10:09 Lowest Band Edge / Full RB Middle Band Edge / Full RB dBmdBm--10 dBm -20 dBm 30 dBm-40 dBm--50 dBm--60 dBm-1807 pts Stop 3.72 GHz Date: 7.NOV.2019 14:21:03 Date: 7.NOV.2019 15:57:00

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number : A48-23 of 33

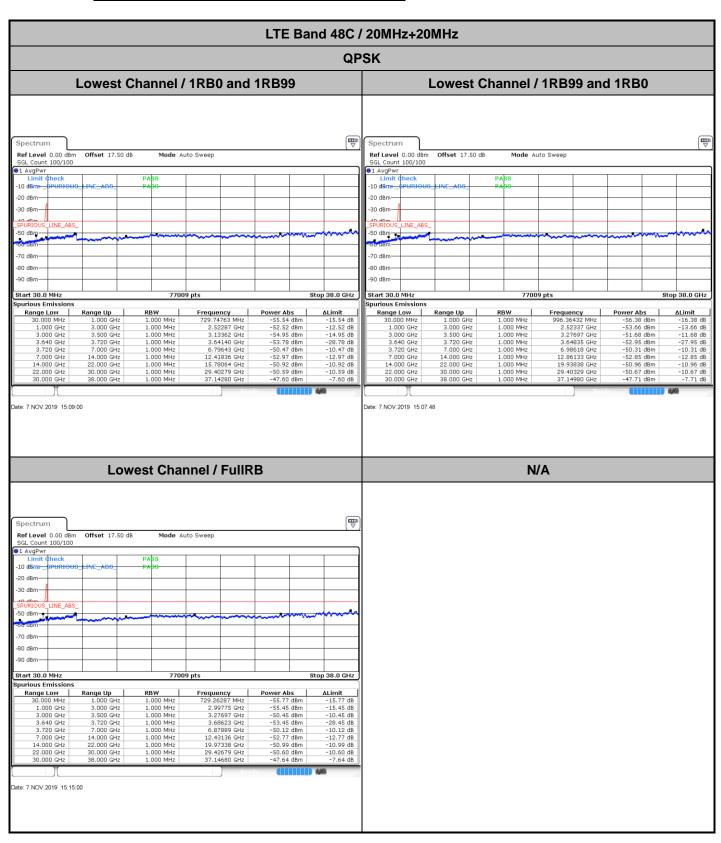
Report No.: FG950301-02 LTE Band 48C / 20MHz+20MHz **64QAM** Highest Band Edge / 1RB0 and 1RB99 N/A Ref Level 25.00 dBm SGL Count 100/100 1 AvgPwr 20 dbimit dheck Line SPURIOUS 10 dBm Offset 17.50 dB Mode Auto Sweep 10 dBm-20 dBm LINE_ABS_ 60 dBm-Start 3.61 GHz Stop 3.75 GHz Highest Band Edge / 1RB99 and 1RB0 N/A Ref Level 25.00 dBm Offset : SGL Count 100/100 1 AvgPwr 20 db/mit dheck Line _\$PURIOUS_LINE_ABS 10 dBm dBm-10 dBm LINE_ABS 40 dBm-50.d8m 60 dBm-Start 3.61 GHz Range Low Range Up Date: 7.NOV.2019 17:02:04 Highest Band Edge / Full RB N/A dBm-40 dBm-3.61866 GHz 3.65881 GHz 3.65982 GHz 3.65902 GHz 3.70100 GHz 3.70167 GHz 3.71431 GHz 3.72074 GHz Range Low Range Up

TEL: 886-3-327-3456 Page Number: A48-24 of 33

FAX: 886-3-328-4978

Date: 7.NOV.2019 16:48:56

Conducted Spurious Emission



Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number : A48-25 of 33

LTE Band 48C / 20MHz+20MHz **QPSK** MiddleChannel / 1RB0 and 1RB99 Middle Channel / 1RB99 and 1RB0 **₩** Spectrum Spectrum Offset 17.50 dB Mode Auto Sweep Offset 17.50 dB Mode Auto Sweep Ref Level 0.00 Ref Level 0.00 dBm Count 100/100 GL Count 100/100 ●1 AvgPwi 1 AvgPwr -20 dBm -20 dBm 30 dBm-30 dBm--50 dBm 50 dBm--80 dBm -80 dBm 90 dBm--90 dBm-Start 30.0 MHz 77008 pts Start 30.0 MHz 77008 pt Stop 38.0 GHz rious Emissions Spurious Emissions Power Abs
-56.09 dBm
-55.41 dBm
-54.45 dBm
-50.40 dBm
-50.98 dBm
-50.98 dBm
-47.65 dBm Range Up 1.000 GHz 3.000 GHz 3.530 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz RBW

1.000 MHz

1.000 MHz ΔLimit
-16.09 dB
-15.41 dB
-14.45 dB
-10.40 dB
-12.87 dB
-10.98 dB
-10.59 dB
-7.65 dB RBW 1.000 MHz 729.26287 MHz 2.84829 GHz 3.27692 GHz 6.81799 GHz 12.43386 GHz 17.82701 GHz 29.37679 GHz 37.14030 GHz Range Low 30,000 MH Range Up 30.000 MHz 1.000 GHz 3.000 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 29.26287 MHz 2.96926 GHz 3.51821 GHz 6.76223 GHz 12.90133 GHz 19.47641 GHz 29.41629 GHz 37.14880 GHz 30.000 MHz 1.000 GHz 3.000 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz ate: 7.NOV.2019 16:17:22 ate: 7.NOV.2019 16:18:34 Middle Channel / FullRB N/A Spectrum Ref Level 0.00 dBm Offset 17.50 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr Limit Check -10 dBm 20 dBm 30 dBm 50 dBm⊸ -80 dBm Start 30.0 MHz 77008 pts Stop 38.0 GHz rious Emissions Frequency
729.26287 MHz
2.98625 GHz
3.27692 GHz
6.80674 GHz
12.88433 GHz
17.84751 GHz
29.39929 GHz
37.13580 GHz Range Low 30.000 MHz ate: 7.NOV.2019 16:11:21

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number : A48-26 of 33

Report No.: FG950301-02 LTE Band 48C / 20MHz+20MHz **QPSK** Highest Channel / 1RB0 and 1RB99 Highest Channel / 1RB99 and 1RB0 **₩** Spectrum Spectrum Offset 17.50 dB Mode Auto Sweep Offset 17.50 dB Mode Auto Sweep Ref Level 0.00 Ref Level 0.00 dBm Count 100/100 Count 100/100 1 AvgPwi 1 AvgPw -20 dBm -30 dBm 50 dBm 50 dBm- 70 dBm -70 dBm 80 dBm an dam 90 dBm -90 dBm ious Emissio Spurious Emissions Range Up 937.70865 MHz 2.99175 GHz 3.27692 GHz 3.60764 GHz 6.81547 GHz 12.88433 GHz 19.47791 GHz 29.40829 GHz 37.14730 GHz Range Up 1.000 MHz -56.53 dBm -55.25 dBm -54.37 dBm -53.89 dBm -50.24 dBm -52.84 dBm -51.00 dBm -50.51 dBm -47.84 dBm 1.000 GHz 3.000 GHz 3.530 GHz 3.530 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz -56.33 dBm -55.40 dBm -49.81 dBm -51.11 dBm -50.17 dBm -52.90 dBm -51.03 dBm -50.76 dBm -47.74 dBm 1.000 GHz 3.000 GHz 3.530 GHz 3.610 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 1.000 MHz 30.000 MHz 1.000 GHz 3.000 GHz 3.530 GHz 3.750 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz ate: 7.NOV.2019 17:13:40 ate: 7.NOV.2019 17:07:38 N/A **Highest Channel / FullRB** Spectrum Ref Level 0.00 dB Offset 17.50 dB Mode Auto Sweep 1 AvgPwr Limit ¢heck 20 dBm 30 dBm-50 dBm-Start 30.0 MHz Stop 38.0 GHz rious Emission Prequency
983.76062 MHz
2.99925 GHz
3.27692 GHz
3.60780 GHz
6.78437 GHz
12.93033 GHz
19.94488 GHz
29.40129 GHz
37.13780 GHz Range Low 30,000 MHz Range Up ALimit
-16.35 dB
-15.16 dB
-7.56 dB
-28.47 dB
-10.26 dB
-12.96 dB
-11.04 dB
-10.69 dB
-7.66 dB ate: 7.NOV.2019 17:14:52

TEL: 886-3-327-3456 Page Number: A48-27 of 33

LTE Band 48C / 20MHz+20MHz **16QAM** Lowest Channel / 1RB0 and 1RB99 Lowest Channel / 1RB99 and 1RB0 Spectrum Spectrum Offset 17.50 dB Mode Auto Sweep Offset 17.50 dB Mode Auto Sweep Ref Level 0.00 Ref Level 0.00 dBm Count 100/100 GL Count 100/100 1 AvgPwr ●1 AvgPw -20 dBm 30 dBm -30 dBm 50 dBm 50 dBm 70 dBm -70 dBm 80 dBm an dam 90 dBm -90 dBm ious Emissio Spurious Emissions Range Up Power Abs
-56.46 dBm
-53.95 dBm
-50.11 dBm
-52.91 dBm
-50.32 dBm
-52.91 dBm
-51.06 dBm
-50.55 dBm
-47.89 dBm Range Up ΔLimit
-15.76 dB
-15.50 dB
-14.82 dB
-29.11 dB
-10.32 dB
-12.94 dB
-11.00 dB
-10.68 dB
-7.53 dB 1.000 MHz ALimit
-16.46 dB
-13.95 dB
-10.11 dB
-27.91 dB
-10.32 dB
-12.91 dB
-11.06 dB
-10.55 dB
-7.89 dB 99.27286 MHz 2.52337 GHz 3.27697 GHz 3.65906 GHz 6.79409 GHz 12.41786 GHz 19.47341 GHz 29.40079 GHz 37.15430 GHz -55.76 dBm -55.50 dBm -54.82 dBm -54.11 dBm -50.32 dBm -52.94 dBm -51.00 dBm -50.68 dBm -47.53 dBm 1.000 GHz 3.000 GHz 3.500 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 1.000 GHz 3.000 GHz 3.500 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 1.000 MHz 29.26287 MHz 2.98775 GHz 3.48027 GHz 3.66386 GHz 6.77114 GHz 12.43536 GHz 15.16018 GHz 29.42529 GHz 37.14580 GHz 30.000 MHz 1.000 GHz 3.000 GHz 3.640 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 14.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz ate: 7.NOV.2019 15:10:12 ate: 7.NOV.2019 15:06:36 **Lowest Channel / FullRB** N/A Spectrum Ref Level 0.00 dBm Offset 17.50 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr Limit Check 20 dBm 30 dBm-50 dBm-Start 30.0 MHz 77009 pts Stop 38.0 GHz rious Emission Frequency
729.26287 MHz
2.81480 GHz
3.27697 GHZ
3.64651 GHz
6.80206 GHz
12.89133 GHZ
19.49091 GHz
29.42279 GHz
37.14530 GHz Range Low 30,000 MHz Range Up

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number: A48-28 of 33

LTE Band 48C / 20MHz+20MHz **16QAM** MiddleChannel / 1RB0 and 1RB99 Middle Channel / 1RB99 and 1RB0 **₩** Spectrum Spectrum Offset 17.50 dB Mode Auto Sweep Offset 17.50 dB Mode Auto Sweep Ref Level 0.00 dB Ref Level 0.00 dBm Count 100/100 GL Count 100/100 ●1 AvgPwi 1 AvgPwr -20 dBm -20 dBm 30 dBm-30 dBm--50 dBm--80 dBm -80 dBm 90 dBm--90 dBm-Start 30.0 MHz 77008 pts Start 30.0 MHz 77008 pt Stop 38.0 GHz rious Emissions Spurious Emissions 991.03198 MHz 2.52237 GHz 3.51954 GHz 6.81892 GHz 12.41186 GHz 15.15668 GHz 29.40279 GHz 37.13130 GHz Power Abs
-56.37 dBm
-54.67 dBm
-54.47 dBm
-50.30 dBm
-52.86 dBm
-51.11 dBm
-50.66 dBm
-47.82 dBm Range Up 1.000 GHz 3.000 GHz 3.530 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz RBW

1.000 MHz

1.000 MHz ΔLimit
-16.37 dB
-14.67 dB
-14.47 dB
-10.30 dB
-12.86 dB
-11.11 dB
-10.66 dB
-7.82 dB RBW 1.000 MHz Prequency 984.73013 MHz 2.99425 GHz 3.27692 GHz 6.81611 GHz 12.91183 GHz 19.45941 GHz 29.41729 GHz 37.15230 GHz Range Low 30,000 MH Range Up ALimit
-16.37 dB
-15.38 dB
-9.51 dB
-10.24 dB
-12.91 dB
-11.00 dB
-10.59 dB
-7.64 dB -56.37 dBm -55.38 dBm -49.51 dBm -50.24 dBm -52.91 dBm -51.00 dBm -50.59 dBm -47.64 dBm 30.000 MHz 1.000 GHz 3.000 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 1.000 GHz 3.000 GHz 3.530 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 30.000 MHz 1.000 GHz 3.000 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz ate: 7.NOV.2019 16:16:10 ate: 7.NOV.2019 16:19:46 Middle Channel / FullRB N/A Spectrum Ref Level 0.00 dBm Offset 17.50 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr Limit Check -10 dBm 20 dBm-30 dBm 50 dBm 🕂 80 dBm Start 30.0 MHz 77008 pts Stop 38.0 GHz rious Emissions Power Abs
-55.80 dBm
-55.22 dBm
-48.04 dBm
-49.86 dBm
-52.92 dBm
-51.01 dBm
-50.69 dBm
-47.67 dBm Range Low 30.000 MHz ate: 7.NOV.2019 16:12:33

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number: A48-29 of 33

LTE Band 48C / 20MHz+20MHz **16QAM** Highest Channel / 1RB0 and 1RB99 Highest Channel / 1RB99 and 1RB0 **₩** Spectrum Spectrum Offset 17.50 dB Mode Auto Sweep Offset 17.50 dB Mode Auto Sweep Ref Level 0.00 Ref Level 0.00 dBm Count 100/100 Count 100/100 1 AvgPwi 1 AvgPw -20 dBm -30 dBm-50 dBm 50 dBm - 10 70 dBm -70 dBm 80 dBm an dam 90 dBm -90 dBm ious Emissio Spurious Emissions Range Up Frequency 998.30335 MHz 2.97876 GHz 3.27692 GHz 3.60828 GHz 6.81501 GHz 12.43836 GHz 19.4591 GHz 29.39729 GHz 37.14880 GHz Range Up ΔLimit
-16.13 dB
-15.43 dB
-14.69 dB
-28.44 dB
-10.20 dB
-12.98 dB
-11.02 dB
-10.65 dB
-7.64 dB 1.000 MHz ALimit
-16.44 dB
-15.49 dB
-8.56 dB
-25.35 dB
-10.22 dB
-12.95 dB
-10.83 dB
-10.50 dB
-7.79 dB -56.13 dBm -55.43 dBm -54.69 dBm -53.44 dBm -50.20 dBm -52.98 dBm -51.02 dBm -50.65 dBm -47.64 dBm 1.000 GHz 3.000 GHz 3.530 GHz 3.530 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz -56.44 dBm -55.49 dBm -48.56 dBm -50.35 dBm -50.22 dBm -52.95 dBm -50.83 dBm -50.50 dBm -47.79 dBm 1.000 GHz 3.000 GHz 3.530 GHz 3.610 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 1.000 MHz 96.84908 MHz 2.99575 GHz 3.52298 GHz 3.60373 GHz 6.79458 GHz 12.45336 GHz 19.94888 GHz 29.41329 GHz 37.14280 GHz 30.000 MHz 1.000 GHz 3.000 GHz 3.530 GHz 3.750 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz ate: 7.NOV.2019 17:12:27 ate: 7.NOV.2019 17:08:51 N/A **Highest Channel / FullRB** Spectrum Ref Level 0.00 dB Offset 17.50 dB Mode Auto Sweep 1 AvgPwr Limit Check 20 dBm 30 dBm-50 dBm-70 dBm Start 30.0 MHz rious Emission Prequency 965.82459 MHz 2.97976 GHz 3.27692 GHz 3.59957 GHz 6.82522 GHz 12.41336 GHz 18.83145 GHz 29.43479 GHz 37.13780 GHz Range Low 30,000 MHz Range Up ate: 7.NOV.2019 17:16:04

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number: A48-30 of 33

Report No.: FG950301-02 LTE Band 48C / 20MHz+20MHz **64QAM** Lowest Channel / 1RB0 and 1RB99 Lowest Channel / 1RB99 and 1RB0 Spectrum Spectrum Offset 17.50 dB Mode Auto Sweep Offset 17.50 dB Mode Auto Sweep Ref Level 0.00 Ref Level 0.00 dBm Count 100/100 GL Count 100/100 1 AvgPwr ●1 AvgPw 10 di -20 dBm 30 dBm -30 dBm 50 dBm 50 dBm 70 dBm -70 dBm 80 dBm an dam 90 dBm -90 dBm ious Emissio Spurious Emissions Range Up Range Up 1.000 MHz 918.31834 MHz 2.52237 GHz 3.27697 GHz 3.68639 GHz Frequency 729.74763 MHz ALimit
-16.33 dB
-13.88 dB
-7.54 dB
-28.06 dB
-10.31 dB
-12.74 dB
-11.10 dB
-10.56 dB
-7.84 dB -56.37 dBm -55.48 dBm -54.60 dBm -54.19 dBm -50.27 dBm -52.93 dBm -51.05 dBm -50.55 dBm -47.84 dBm 1.000 GHz 3.000 GHz 3.500 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 1.000 GHz 3.000 GHz 3.500 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 1.000 MHz 29.74763 MHz 2.94876 GHz 3.47478 GHz 3.64108 GHz 6.78332 GHz 12.89083 GHz 19.47991 GHz 29.41529 GHz 37.15130 GHz 30.000 MHz 1.000 GHz 3.000 GHz 3.640 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz -56.33 dBm -53.88 dBm -47.54 dBm -53.06 dBm -50.31 dBm -52.74 dBm -51.10 dBm -50.56 dBm -47.84 dBm 5.88639 GHz 6.82080 GHz 12.42336 GHz 16.15162 GHz 29.40429 GHz 37.14380 GHz 14.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz ate: 7.NOV.2019 15:11:24 ate: 7.NOV.2019 15:05:23 **Lowest Channel / FullRB** N/A Spectrum Ref Level 0.00 dBm Offset 17.50 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr Limit Check 10 dBrns 20 dBm 30 dBm-50 dBm-70 dBm Start 30.0 MHz 77009 pts Stop 38.0 GHz rious Emission Frequency
729.26287 MHz
2.96776 GHz
3.27697 GHz
3.88655 GHz
6.81377 GHz
12.43136 GHz
15.15668 GHz
29.43779 GHz
37.15730 GHz Range Low 30,000 MHz Range Up ate: 7.NOV.2019 15:12:36

TEL: 886-3-327-3456 Page Number: A48-31 of 33

Report No.: FG950301-02 LTE Band 48C / 20MHz+20MHz **64QAM** MiddleChannel / 1RB0 and 1RB99 Middle Channel / 1RB99 and 1RB0 **₩** Spectrum Spectrum Offset 17.50 dB Mode Auto Sweep Offset 17.50 dB Mode Auto Sweep Ref Level 0.00 Ref Level 0.00 dBm Count 100/100 GL Count 100/100 ●1 AvgPwi 1 AvgPwr -20 dBm -20 dBm 30 dBm-30 dBm-50 dBm--50 dBm--80 dBm -80 dBm 90 dBm--90 dBm-Start 30.0 MHz 77008 pts Start 30.0 MHz 77008 pt Stop 38.0 GHz rious Emissions Spurious Emissions Power Abs
-56.33 dBm
-55.26 dBm
-54.48 dBm
-50.13 dBm
-52.85 dBm
-50.95 dBm
-47.81 dBm Range Up 1.000 GHz 3.000 GHz 3.530 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz RBW

1.000 MHz

1.000 MHz 984,24538 MHz 2,98525 GHz 3,51371 GHz 6,9930 GHz 12,84733 GHz 19,46741 GHz 29,40829 GHz 37,14330 GHz ΔLimit
-16.33 dB
-15.26 dB
-14.48 dB
-10.13 dB
-12.85 dB
-10.95 dB
-10.60 dB
-7.81 dB RBW

1.000 MHz

1.000 MHz Range Low 30.000 MHz Range Low 30,000 MH Range Up 30.000 MHz 1.000 GHz 3.000 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 1.000 GHz 3.000 GHz 3.530 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 30.000 MHz 1.000 GHz 3.000 GHz 3.720 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz ate: 7.NOV.2019 16:14:57 ate: 7.NOV.2019 16:20:58 Middle Channel / FullRB N/A Spectrum Ref Level 0.00 dBm Offset 17.50 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr Limit Check -10 dBm 20 dBm 30 dBm 50 dBm 🕂 80 dBm Start 30.0 MHz 77008 pts Stop 38.0 GHz rious Emissions Range Low 30.000 MHz ate: 7.NOV.2019 16:13:45

TEL: 886-3-327-3456 Page Number: A48-32 of 33

LTE Band 48C / 20MHz+20MHz **64QAM** Highest Channel / 1RB0 and 1RB99 Highest Channel / 1RB99 and 1RB0 **₩** Spectrum Spectrum Offset 17.50 dB Mode Auto Sweep Offset 17.50 dB Mode Auto Sweep Ref Level 0.00 Ref Level 0.00 dBm Count 100/100 Count 100/100 1 AvgPwi 1 AvgPw -20 dBm -30 dBm 50 dBm -50 dBm 70 dBm -70 dBm 80 dBm an dam 90 dBm -90 dBm ious Emissio Spurious Emissions Range Up Range Up ΔLimit
-16.40 dB
-15.40 dB
-14.30 dB
-28.87 dB
-10.25 dB
-12.89 dB
-11.01 dB
-10.55 dB
-7.79 dB 1.000 MHz ### ALIMIT |
|-16.33 dB |
|-15.41 dB |
|-6.35 dB |
|-28.55 dB |
|-10.30 dB |
|-12.94 dB |
|-10.71 dB |
|-7.75 dB | -56.33 dBm -55.41 dBm -46.35 dBm -53.55 dBm -50.30 dBm -52.94 dBm -50.98 dBm -50.71 dBm -47.75 dBm -56.40 dBm -55.40 dBm -54.30 dBm -53.87 dBm -50.25 dBm -52.89 dBm -51.01 dBm -50.55 dBm -47.79 dBm 1.000 GHz 3.000 GHz 3.530 GHz 3.530 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 93.94053 MHz 2.94876 GHz 3.27692 GHz 3.53979 GHz 6.79783 GHz 12.41786 GHz 17.85451 GHz 29.43079 GHz 37.14630 GHz 1.000 GHz 3.000 GHz 3.530 GHz 3.610 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 38.000 GHz 1.000 MHz 83.76062 MHz 2.99925 GHz 3.52775 GHz 3.58399 GHz 6.80851 GHz 12.43686 GHz 19.94088 GHz 29.40979 GHz 37.14980 GHz 30.000 MHz 1.000 GHz 3.000 GHz 3.530 GHz 3.750 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz 7.000 GHz 14.000 GHz 22.000 GHz 30.000 GHz ate: 7.NOV.2019 17:11:15 ate: 7.NOV.2019 17:10:03 N/A **Highest Channel / FullRB** Spectrum Ref Level 0.00 dB Offset 17.50 dB Mode Auto Sweep 1 AvgPwr 1 imit Check 20 dBm 30 dBm-50 dBm 70 dBn Start 30.0 MHz rious Emission Power Abs
-56.47 dBm
-55.48 dBm
-46.37 dBm
-53.36 dBm
-50.18 dBm
-52.77 dBm
-50.96 dBm
-50.47 dBm
-47.56 dBm Prequency
991.03198 MHz
2.99275 GHz
3.27692 GHz
3.60716 GHz
6.80712 GHz
12.42686 GHz
19.47741 GHz
29.40429 GHz
37.14630 GHz ALimit
-16.47 dB
-15.48 dB
-6.37 dB
-28.36 dB
-10.18 dB
-12.77 dB
-10.96 dB
-10.47 dB
-7.56 dB Range Low 30,000 MHz Range Up ate: 7.NOV.2019 17:17:17

Report No.: FG950301-02

TEL: 886-3-327-3456 Page Number: A48-33 of 33

Appendix B. Test Results of Radiated Spurious Emission

LTE CA Band 48C

Report No.: FG950301-02

LTE Band 48 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	7140	-59.67	-40	-19.67	-63.95	-69.55	1.80	11.68	Н
	10710	-59.13	-40	-19.13	-67.17	-67.53	2.50	10.90	Н
	14272	-56.38	-40	-16.38	-68.52	-65.06	2.86	11.55	Н
	21418	-47.67	-40	-7.67	-74.26	-64.42	1.95	18.70	Н
	24981	-49.23	-40	-9.23	-75.27	-65.42	2.08	18.27	Н
	28556	-50.37	-40	-10.37	-78.7	-67.59	2.31	19.53	Н
	7140	-60.36	-40	-20.36	-64.29	-70.24	1.80	11.68	V
	10710	-59.51	-40	-19.51	-67.31	-67.91	2.50	10.90	V
	14272	-56.85	-40	-16.85	-68.57	-65.53	2.86	11.55	V
	21418	-54.50	-40	-14.50	-74	-71.25	1.95	18.70	V
	24981	-52.83	-40	-12.83	-75.32	-69.02	2.08	18.27	V
	28556	-52.40	-40	-12.40	-77.56	-69.62	2.31	19.53	V
Middle	7250	-59.56	-40	-19.56	-63.87	-69.21	1.86	11.50	Н
	10875	-58.89	-40	-18.89	-67.17	-67.21	2.59	10.90	Н
	14498	-57.87	-40	-17.87	-69.97	-66.02	2.85	11.00	Н
	18122	-52.91	-40	-12.91	-72.12	-69.11	1.77	17.98	Н
	21751	-49.21	-40	-9.21	-74.79	-66.00	2.01	18.80	Н
	25367	-47.58	-40	-7.58	-75.93	-64.25	2.15	18.81	Н
	7250	-59.74	-40	-19.74	-63.8	-69.39	1.86	11.50	V
	10875	-59.64	-40	-19.64	-67.72	-67.96	2.59	10.90	V
	14498	-58.56	-40	-18.56	-69.76	-66.71	2.85	11.00	V
	18122	-59.53	-40	-19.53	-72.35	-75.73	1.77	17.98	V
	21751	-55.79	-40	-15.79	-74.71	-72.58	2.01	18.80	V
	25367	-51.69	-40	-11.69	-76.29	-68.36	2.15	18.81	V
Highest	7360	-59.66	-40	-19.66	-63.75	-69.07	1.91	11.32	Н
	11040	-58.62	-40	-18.62	-67.16	-66.93	2.63	10.95	Н
	14718	-56.68	-40	-16.68	-69.96	-65.47	2.91	11.70	Н
	18399	-51.67	-40	-11.67	-71.4	-67.72	1.87	17.92	Н
	22073	-49.58	-40	-9.58	-74.33	-66.37	2.08	18.87	Н
	25747	-46.56	-40	-6.56	-75.31	-63.57	2.04	19.05	Н
	7360	-59.98	-40	-19.98	-63.88	-69.39	1.91	11.32	V
	11040	-58.81	-40	-18.81	-67.18	-67.12	2.63	10.95	V
	14718	-58.51	-40	-18.51	-70.15	-67.30	2.91	11.70	V
	18399	-59.38	-40	-19.38	-71.72	-75.43	1.87	17.92	V
	22073	-56.23	-40	-16.23	-74.72	-73.02	2.08	18.87	V
	25747	-50.39	-40	-10.39	-75.54	-67.40	2.04	19.05	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

TEL: 886-3-327-3456 Page Number: B-1 of 1

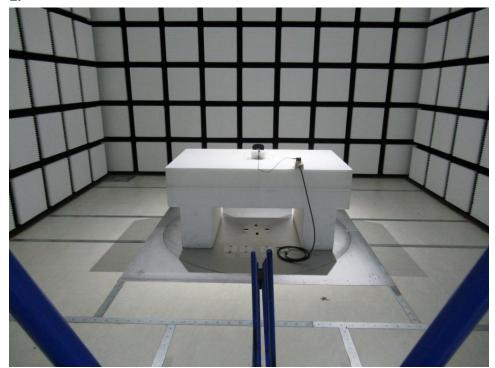


Appendix C. Setup Photographs

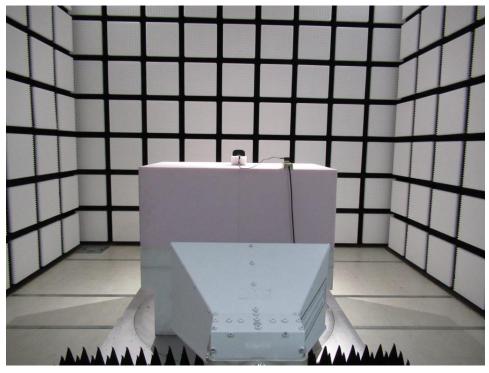
<Radiated Emission>

Y Plane

LF







TEL: 886-3-327-3456 Page Number : C-1 of 2



——THE END——

TEL: 886-3-327-3456 Page Number : C-2 of 2