

Report No.: FG030207B

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Page Number



FCC RADIO TEST REPORT

FCC ID : 2ASRY-MG401

Equipment : LTE Module

Brand Name : AQUILA Model Name : MG401

Applicant : Suzhou Aquila Solutions Inc.

Room 201, Building 3, 18 Dongchang Road, Suzhou Industry ParkSuzhou, 215000 China

Manufacturer: Suzhou Aquila Solutions Inc.

Room 201, Building 3, 18 Dongchang Road, Suzhou Industry ParkSuzhou, 215000 China

Standard: 47 CFR Part 2, 96

The product was received on Mar. 24, 2020 and testing was started from Mar. 24, 2020 and completed on May 08, 2020. 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.

Approved by: Louis Wu

TEL: 886-3-327-3456

/ DIAZE W/IA

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

FAX: 886-3-328-4978 Issued Date : May 11, 2020 Report Template No.: BU5-FGLTE96 Version 2.4 Report Version : 01

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History of this test report

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Report No.	Version	Description	Issued Date
FG030207B	01	Initial issue of report	May 11, 2020

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Summary of Test Result

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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	
3.8	§2.1055	Frequency Stability for Temperature & Voltage	Pass	-
4.4	§2.1051 §96.41	Radiated Spurious Emission	Pass	Under limit 2.81 dB at 7380.000 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: Lucy Wu

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1 General Description

1.1 Product Feature of Equipment Under Test

LTE

Product Sp	ecification subjective to this standard
Antenna Type	Fixed External Antenna

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

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 Chuan Chu		
Temperature 22~26°C			
Relative Humidity	58~62%		

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

FCC Designation No.: TW1190 and TW0007

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1.4 Applied Standards

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

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- 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 940660 D01 Part 96 CBRS Eqpt v01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- FCC KDB 414788 D01 Radiated Test Site v01r01

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

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2 Test Configuration of Equipment Under Test

2.1 Test Mode

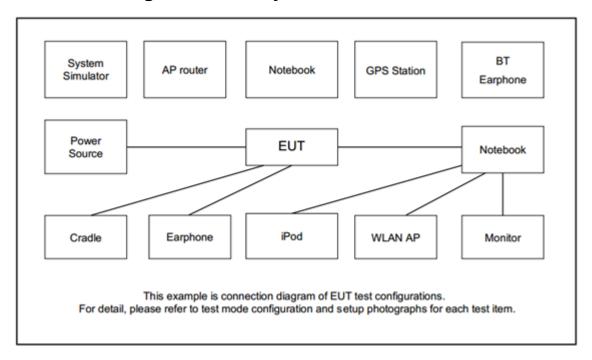
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

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	(!/ D			Bandwidth (MHz)			Modulation		RB#			Test Channel				
Test Items	Band	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	М	Н
Max. Output Power	48	•	-	v	v	v	v	v	v		٧	v	v	٧	v	v
Peak EIRP Density	48	•	-	v	v	v	v	v	v		٧		v	٧	v	v
26dB and 99% Bandwidth	48	-	-	v	v	v	v	v	v				v	v	v	v
Conducted Band Edge	48	•	-	٧	v	v	v	v	V		>		v	>		v
Peak-to-Aver age Ratio	48	•	-				v	v	v		٧		v	٧	v	v
Conducted Spurious Emission	48	-	-	v	v	v	v	v	v		٧		v	v	v	٧
E.R.P / E.I.R.P	48	-	-	v	v	v	v	v	v		v			v	v	v
Frequency Stability	48	•	-		v			v	v		٧			٧	v	v
Radiated Spurious Emission	48	Worst Case v v v							v							
Remark	 The mark "v" means that this configuration is chosen for testing The mark "-" means that this bandwidth is not supported. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 															

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2.2 Connection Diagram of Test System



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2.3 Support Unit used in test configuration

I	ltem	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
	1.	System Simulator	Anritsu	MT8821C	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:

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Offset(dB) = RF cable loss(dB) + attenuator factor(dB). = 4.2 + 10 = 14.2 (dB)

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2.5 Frequency List of Low/Middle/High Channels

LTE Band 48 Channel and Frequency List							
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest			
20	Channel	55340	55990	56640			
20	Frequency	3560.0	3625.0	3690.0			
15	Channel	55315	55990	56665			
15	Frequency	3557.5	3625.0	3692.5			
10	Channel	55290	55990	56690			
10	Frequency	3555.0	3625.0	3695.0			
5	Channel	55265	55990	56715			
5	Frequency	3552.5	3625.0	3697.5			

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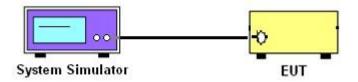
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

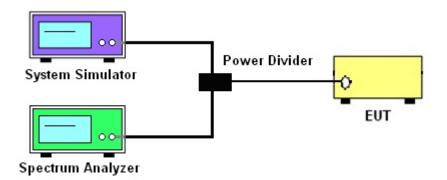
3.1.1 Test Setup

3.1.2 Conducted Output Power

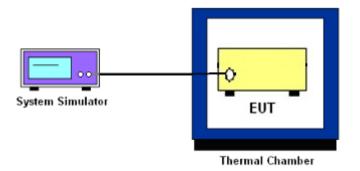


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3.1.3 Peak-to-Average Ratio, Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

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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.

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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.

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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.

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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

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3.4 EIRP

3.4.1 Description of the EIRP Measurement

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

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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

3.4.2 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.

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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

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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.

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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.

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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.

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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.

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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.

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3.8 Frequency Stability

3.8.1 Description of Frequency Stability Measurement

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 ±0.00025% (±2.5ppm) of the center frequency

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3.8.2 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.
- 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.

3.8.3 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 25±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.

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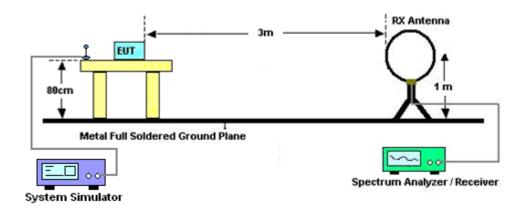
4 Radiated Test Items

4.1 Measuring Instruments

See list of measuring instruments of this test report.

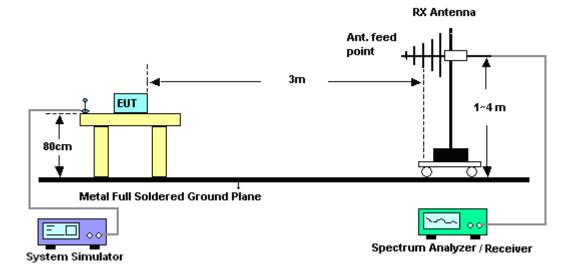
4.2 Test Setup

For radiated emissions below 30MHz



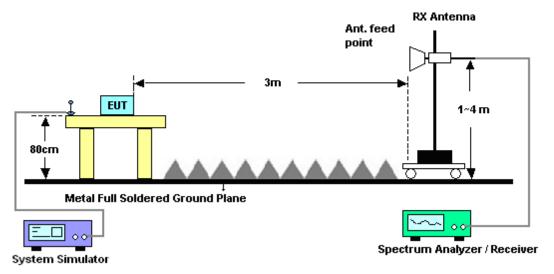
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For radiated emissions from 30MHz to 1GHz



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For radiated emissions above 1GHz



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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.

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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.

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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

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5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Base Station (Measure)	Anritsu	MT8821C	626200253 41	N/A	Oct. 24, 2019	Mar. 24, 2020~ May 05, 2020	Oct. 23, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 15, 2019	Mar. 24, 2020~ May 05, 2020	Nov. 14, 2020	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40°C ~90°C	Sep. 02, 2019	Mar. 24, 2020~ May 05, 2020	Sep. 01, 2020	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 09, 2019	Mar. 24, 2020~ May 05, 2020	Oct. 08, 2020	Conducted (TH05-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#A	1-18GHz	Jan. 13, 2020	Mar. 24, 2020~ May 05, 2020	Jan. 12, 2021	Conducted (TH05-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Dec. 26, 2019	May 07, 2020~ May 08, 2020	Dec. 25, 2020	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01 N-06	37059 & 01	30MHz~1GHz	Oct. 12, 2019	May 07, 2020~ May 08, 2020	Oct. 11, 2020	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120D	9120D-132 8	1GHz ~ 18GHz	Nov. 14, 2019	May 07, 2020~ May 08, 2020	Nov. 13, 2020	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120D	9120D-152 2	1GHz ~ 18GHz	Sep. 19, 2019	May 07, 2020~ May 08, 2020	Sep. 18, 2020	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 584	18GHz ~ 40GHz	Dec. 10, 2019	May 07, 2020~ May 08, 2020	Dec. 09, 2020	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 576	18GHz ~ 40GHz	May 14, 2019	May 07, 2020~ May 08, 2020	May 13, 2020	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 25, 2020	May 07, 2020~ May 08, 2020	Mar. 24, 2021	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY532701 48	1GHz~26.5GHz	Dec. 20, 2019	May 07, 2020~ May 08, 2020	Dec. 19, 2020	Radiation (03CH12-HY)
Preamplifier	Jet-Power	JPA00101800 -30-10P	160118000 2	1GHz~18GHz	Feb. 07, 2020	May 07, 2020~ May 08, 2020	Feb. 06, 2021	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 13, 2019	May 07, 2020~ May 08, 2020	Dec. 12, 2020	Radiation (03CH12-HY)
Signal Analyzer	Agilent	N9010A	MY534701 18	10Hz~44GHz	Mar. 12, 2020	May 07, 2020~ May 08, 2020	Mar. 11, 2021	Radiation (03CH12-HY)
Signal Generator	Rohde & Schwarz	SMB100A	101107	100kHz~40GHz	Aug. 27, 2019	May 07, 2020~ May 08, 2020	Aug. 26, 2020	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP161243	N/A	May 11, 2019	May 07, 2020~ May 08, 2020	May 10, 2020	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30M-18G	Dec. 12, 2019	May 07, 2020~ May 08, 2020	Dec. 11, 2020	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30M~40GHz	Feb. 25, 2020	May 07, 2020~ May 08, 2020	Feb. 24, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30M~40GHz	Feb. 25, 2020	May 07, 2020~ May 08, 2020	Feb. 24, 2021	Radiation (03CH12-HY)
Base Station	Anritsu	MT8821C	620138176 9	LTE FDD/TDD with 44) /LTE-3CC DLCA,2CC ULCA	Oct. 30, 2018	May 07, 2020~ May 08, 2020	Oct. 29, 2020	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	May 07, 2020~ May 08, 2020	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1m~4m	N/A	May 07, 2020~ May 08, 2020	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	May 07, 2020~ May 08, 2020	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-00098 9	N/A	N/A	May 07, 2020~ May 08, 2020	N/A	Radiation (03CH12-HY)

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6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of	3.24
Confidence of 95% (U = 2Uc(y))	J.24

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

Measuring Uncertainty for a Level of	3.62
Confidence of 95% (U = 2Uc(y))	3.02

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

Measuring Uncertainty for a Level of	4.06
Confidence of 95% (U = 2Uc(y))	4.06

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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

LTE Band 48 Maximum Average Power [dBm]										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest				
20	1	0		22.26	20.30	21.68				
20	1	49		22.85	21.53	22.96				
20	1	99		21.92	20.73	21.47				
20	50	0	QPSK	21.01	19.09	20.65				
20	50	24		21.96	20.01	21.40				
20	50	50		21.00	19.40	20.53				
20	100	0		21.01	19.07	20.45				
20	1	0		21.45	19.67	20.89				
20	1	49		22.70	20.94	22.12				
20	1	99		21.10	20.04	20.69				
20	50	0	16-QAM	20.07	18.36	19.64				
20	50	24		20.99	19.30	20.41				
20	50	50		20.03	18.63	19.56				
20	100	0		20.06	18.23	19.48				
15	1	0		22.65	20.74	22.47				
15	1	37		22.62	21.58	22.80				
15	1	74	QPSK	22.61	21.21	22.40				
15	36	0		22.01	20.24	21.48				
15	36	20		22.40	20.48	21.83				
15	36	39		22.22	20.57	21.46				
15	75	0		22.02	20.25	21.60				
15	1	0		21.76	20.05	21.59				
15	1	37		22.49	20.74	21.93				
15	1	74		21.86	20.36	21.50				
15	36	0	16-QAM	20.93	19.31	20.40				
15	36	20		21.35	19.54	20.77				
15	36	39		21.19	19.66	20.41				
15	75	0		21.03	19.36	20.58				

	LTE Band 48 Maximum Average Power [dBm]										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest					
10	1	0		22.87	21.32	22.57					
10	1	25		22.81	21.30	22.44					
10	1	49		22.92	21.51	22.65					
10	25	0	QPSK	22.35	20.56	21.70					
10	25	12		22.36	20.48	21.58					
10	25	25		22.55	20.74	21.86					
10	50	0		22.49	20.55	21.83					
10	1	0		22.22	20.62	21.78					
10	1	25		22.38	20.58	21.58					
10	1	49		22.28	20.77	21.85					
10	25	0	16-QAM	21.46	19.79	20.82					
10	25	12		21.39	19.72	20.82					
10	25	25		21.53	19.85	20.84					
10	50	0		21.48	19.81	20.82					
5	1	0		22.95	21.50	22.42					
5	1	12		22.85	21.16	22.09					
5	1	24		22.81	21.47	22.65					
5	12	0	QPSK	22.01	20.34	21.14					
5	12	7		22.22	20.41	21.36					
5	12	13		22.27	20.47	21.40					
5	25	0		22.41	20.62	21.56					
5	1	0		22.32	20.86	21.53					
5	1	12		22.12	20.35	21.62					
5	1	24		22.59	20.70	21.89					
5	12	0	16-QAM	21.02	19.36	20.48					
5	12	7		21.26	19.43	20.71					
5	12	13		21.32	19.49	20.76					
5	25	0		21.46	19.78	20.91					

LTE Band 48

Peak-to-Average Ratio

Mode					
Mod.	QP	SK	16C	Limit: 13dB	
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	6.61	5.28	7.51	6.38	
Middle CH	6.41	5.22	7.68	6.41	PASS
Highest CH	5.97	5.25	7.48	6.32	

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LTE Band 48 / 20MHz / QPSK Lowest Channel / 1RB Lowest Channel / Full RB
 Spectrum
 2
 X

 Ref Level
 30.00 dBm
 Offset
 13.50 dB

 Att
 30 dB
 AQT
 2 ms
 RBW
 20 MHz
 Samples: 13000 0.1% 0.01% 6.61 dB 6.78 dB Date: 4.MAY.2020 03:26:21 Date: 4.MAY.2020 03:26:36 Middle Channel / 1RB Middle Channel / Full RB Spectrum 2

Ref Level 30.00 dBm Offset
Att 30 dB AQT

TRG:IFP omplementary Cumulative Distribution Function

Macor	Peak	Crest	10%	10%	0.11%	
Trace		17.2 tota	25.1 tota	27.2 tota	25.4 tota	0.5 tota
Trace		17.2 tota	25.1 tota	0.5 tota	0.5 tota	
Trace		17.2 tota	25.1 tota	0.5 tota		
Trace		17.2 tota	25.1 tota	0.5 tota		
Trace		17.2 tota	25.1 tota	0.5 tota		
Trace		17.2 tota	25.1 tota	0.5 tota		
Trace		17.2 tota	25.1 tota	0.5 tota		
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota			
Trace		17.2 tota	0.5 tota	Complementary Cumulative Distribution Function	Mean	Peak
 Spectrum
 Spectrum
 X

 Ref Level
 30.00 dBm
 Offset
 13.50 dB

 Att
 30 dB
 AQT
 2 ms
 RBW
 20 MHz

 Spectrum
 2
 X

 Ref Level
 30.00 dBm
 Offset
 13.50 dB

 Att
 30 dB
 AQT
 2 ms
 RBW
 20 MHz
 | Samples: 130000 | 1% | 0.1% | 0.01% | 4.84 dB | 5.97 dB | 6.23 dB Samples: 130000 1% 0.1% 0.01% 4.23 dB 5.25 dB 5.03 dB

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Date: 4.MAY.2020 03:28:33

FAX: 886-3-328-4978

Date: 4.MAY.2020 03:27:47

LTE Band 48 / 20MHz / 16QAM Lowest Channel / 1RB Lowest Channel / Full RB
 Spectrum
 2
 X

 Ref Level
 30.00 dBm
 Offset
 13.50 dB

 Att
 30 dB
 AQT
 2 ms
 RBW
 20 MHz
 Date: 4.MAY.2020 03:24:06 Date: 4.MAY.2020 03:24:24 Middle Channel / 1RB Middle Channel / Full RB Ref Level 30.00 dBm Offset Att 30 dB AQT TRG:IFP | Second | S | Complementary Cumulative Distribution | Function | Mean | Peak | Crest | 10% | 10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | 0.10% | **Highest Channel / 1RB Highest Channel / Full RB**
 Spectrum
 Spectrum
 X

 Ref Level
 30.00 dBm
 Offset
 13.50 dB

 Att
 30 dB
 AQT
 2 ms
 RBW
 20 MHz

 Spectrum
 2
 X

 Ref Level
 30.00 dBm
 Offset
 13.50 dB

 Att
 30 dB
 AQT
 2 ms
 RBW
 20 MHz

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Samples: 130000 1% 0.1% 0.01% 0.04 dB 6.30 dB 7.03 dB

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Date: 4.MAY.2020 03:25:49

| Samples: 130000 | 1% | 0.1% | 0.01% | 5.91 dB | 7.48 dB | 7.83 dB

FAX: 886-3-328-4978

Date: 4.MAY.2020 03:25:34

26dB Bandwidth

Mode	LTE Band 48 : 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	-	-	-	-	4.96	4.97	9.85	9.79	14.33	14.51	18.90	18.90
Middle CH	-	-	-	-	4.92	5.04	9.63	9.85	14.42	14.27	18.94	18.62
Highest CH	-	-	-	-	4.79	4.89	9.77	9.65	14.42	14.12	18.62	18.62

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FAX: 886-3-328-4978

Date: 4.MAY.2020 03:15:20

LTE Band 48 Lowest Channel / 5MHz / QPSK Lowest Channel / 5MHz / 16QAM Ref Level 30.00 dBm Offset 13.50 dB RBW 100 kHz
Att 30 dB SWT 19 µs VBW 300 kHz Mode Auto FFT
\$150L Count 100/100
\$150k Max 15.02 dBn 3.55124100 GH 26.00 dl M1[1] 15.62 dBi M1[1] 3.550 30°dBm CF 3.5525 GHz CF 3.5525 GHz Type | Ref | Trc | Function ndB down Date: 4.MAY.2020 03:13:44 Date: 4.MAY.2020 03:13:56 Middle Channel / 5MHz / QPSK Middle Channel / 5MHz / 16QAM 13.50 dB • RBW 100 kHz 19 µs • VBW 300 kHz Mode Auto FFT 13.50 dB • RBW 100 kHz 19 µs • VBW 300 kHz Mode Auto FFT ... 30.00 dBm 30 dB SGL Count 100/100 Ref Level 30. Att 12.92 dBi 3.62678800 GF 26.00 d M1[1] 13.14 dBr M1[1] -10 dBm-30 dB 40 dBm -50 dBm -50 dBm-Function Result 4.915 MHz 26.00 dB 737.9 Type Ref Trc
 X-value
 Y-value
 Function

 3.626788 GHz
 12.92 dBm
 nd8 down

 3.622512 GHz
 -13.23 dBm
 nd8

 3.627428 GHz
 -13.11 dBm
 Q factor

 X-value
 Y-value
 Function

 3.626329 GHz
 13.14 d8m
 nd8 down

 3.622443 GHz
 -12.86 d8m
 nd8

 3.627478 GHz
 -12.82 d8m
 Q factor
 Highest Channel / 5MHz / QPSK Highest Channel / 5MHz / 16QAM 20 dBm--10 dBm -20 dBm 60 dBm--60 dBm-CF 3.6975 GHz CF 3.6975 GHz Marker Function Result
4.885 MHz
26.00 dB
757.3 X-value Y-value Function 3.696491 GHz 14.44 dBm ndB down 3.695972 GHz -11.32 dBm Function Result 4.785 MHz Type | Ref | Trc |
 X-value
 Y-value
 Function

 3.699638 GHz
 14.70 dBm
 nd8 down

 3.695092 GHz
 -11.47 dBm
 nd8

 3.699978 GHz
 -11.26 dBm
 Q factor
 Type Ref Trc

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Date: 4.MAY.2020 03:15:32

LTE Band 48 Lowest Channel / 10MHz / QPSK Lowest Channel / 10MHz / 16QAM 17.72 dBr 3.5564990 GH 26.00 d 9.850000000 MH M1[1] M1[1] 16.70 dBr 3.5509240 GH 26.00 d CF 3.555 GHz CF 3.555 GHz Type | Ref | Trc | X-value 3.556499 GHz 3.550085 GHz 3.559935 GHz Function n ndB down Date: 4.MAY.2020 03:16:10 Date: 4.MAY.2020 03:16:23 Middle Channel / 10MHz / QPSK Middle Channel / 10MHz / 16QAM 13.50 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT 13.50 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT 30 dB SGL Count 100/100 SFK Max 14.42 dBr 3.6288960 GH 26.00 d 14.09 dBn 3.6223630 GH 26.00 dl M1[1] M1[1] -10 dBm-40 dBm -50 dBm -50 dBm-Function Result 9.63 MHz 26.00 dB 376.8
 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 3.622393 GHz
 14.09 dBm
 nd8 down

 T1
 1
 3.620165 GHz
 -11.75 dBm
 nd8

 T2
 1
 3.630015 GHz
 -11.80 dBm
 Q factor
 Highest Channel / 10MHz / QPSK Highest Channel / 10MHz / 16QAM 15.15 dBr 3.6941010 GH 20 dBm--10 dBm -20 dBm--60 dBm--60 dBm-CF 3.695 GH CF 3.695 GHz Marker

Report No.: FG030207B

Function Result 9.65 MHz 26.00 dB 382.8

Type Ref Trc

Date: 4.MAY.2020 03:17:58

 X-value
 Y-value
 Function

 3.694101 GHz
 15.15 dBm
 nd8 down

 3.690185 GHz
 -10.34 dBm
 nd8

 3.699935 GHz
 -10.75 dBm
 Q factor

Function Result 9.77 MHz 26.00 dB 378.4

Type Ref Trc

Date: 4.MAY.2020 03:17:46

FAX: 886-3-328-4978

 X-value
 Y-value
 Function

 3.696658 GHz
 16.91 dBm
 nd8 down

 3.690145 GHz
 -9.23 dBm
 nd8

 3.699915 GHz
 -9.17 dBm
 Q factor

Date: 4.MAY.2020 03:20:12

FAX: 886-3-328-4978

LTE Band 48 Lowest Channel / 15MHz / QPSK Lowest Channel / 15MHz / 16QAM
 Ref Level
 30.00 dBm
 Offset
 13.50 dB ● RBW
 300 kHz

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

 SGL Count 100/100
 30 dB
 12.71 dBn 3.5548930 GH 26.00 dl 14.505000000 MH 245. M1[1] 14.60 dBr 3.5611560 GF M1[1] 14.3260000 de dBm 40 dBm CF 3.5575 GHz CF 3.5575 GHz Y-value Function
2 14.50 dBm ndB down
3 -11.00 dBm ndB
4 -11.59 dBm Q factor X-value 3.561156 GHz 3.550397 GHz 3.564723 GHz Type | Ref | Trc | Function ndB down Date: 4.MAY.2020 03:18:36 Date: 4.MAY.2020 03:18:49 Middle Channel / 15MHz / QPSK Middle Channel / 15MHz / 16QAM 13.50 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT 13.50 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT 30 dB SGL Count 100/100 SWT Acr Level 30.00 dBm

Att 30 dB

SGL Count 100/100

1Pk Max 12.90 dBn 3.6240410 GH; 26.00 dB 14.416000000 MH2 13.03 dBr 3.6187360 GH 26.00 di M1[1] M1[1] -10 dBm--30 dBm--50 dBm -50 dBm-Function Result 14.416 MHz 26.00 dB 251.4 Type Ref Trc
 X-value
 Y-value
 Function

 3.624041 GHz
 12.90 dBm
 nd8 down

 3.617927 GHz
 -13.79 dBm
 ndB

 3.632343 GHz
 -13.53 dBm
 Q factor

 X-value
 Y-value
 Function

 3.618736 GHz
 13.03 dBm
 ndB down

 3.617867 GHz
 -12.59 dBm
 ndB

 3.632133 GHz
 -13.18 dBm
 Q factor
 Highest Channel / 15MHz / QPSK Highest Channel / 15MHz / 16QAM 14.68 dBi 3.6875550 C 13.92 dBr 3.6931290 GH 20 dBm--10 dBm -20 dBm--60 dBm--60 dBm-CF 3.6925 GHz CF 3.6925 GHz Marker Span 30.0 MHz Function Result

14.116 MHz
26.00 dB
261.6 Function Result Type Ref Trc Type | Ref | Trc |
 X-value
 Y-value
 Function

 3.667555 GHz
 14.66 dBm
 nd8 down

 3.685397 GHz
 -10.80 dBm
 nd8

 3.699813 GHz
 -11.17 dBm
 Q factor

 X-value
 Y-value
 Function

 3.693129 GHz
 13.92 dBm
 ndB down

 3.685457 GHz
 -11.16 dBm
 ndB

 3.699573 GHz
 -11.29 dBm
 Q factor

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Date: 4.MAY.2020 03:20:24

LTE Band 48 Lowest Channel / 20MHz / QPSK Lowest Channel / 20MHz / 16QAM 11.91 dBn 3.55968pp M1[1] M1[1] 12.78 dB 3.5590010 GF 10 dBm dBm-30 dBm₇ 30.dBm 40 dBm CF 3.56 GH CF 3.56 GHz Y-value Function
2 12.78 dBm ndB down
3 -12.96 dBm ndB ndB
4 -11.57 dBm Q factor Type | Ref | Trc | Function ndB down Date: 4.MAY.2020 03:21:02 Date: 4.MAY.2020 03:21:14 Middle Channel / 20MHz / QPSK Middle Channel / 20MHz / 16QAM 13.50 dB • RBW 300 kHz 18.9 µs • VBW 1 MHz Mode Auto FFT 13.50 dB • RBW 300 kHz 18.9 µs • VBW 1 MHz Mode Auto FFT 30 dB SGL Count 100/100 SWT Att 30.00 dBm

SGL Count 100/100 11.65 dBn 3.6260790 GH: 26.00 dE 18.941000000 MH2 12.24 dBr 3.6273980 GH 26.00 di M1[1] M1[1] -10 dBm--50 dBm -50 dBm-Function Result 18.941 MHz 26.00 dB 191.4 Type Ref Trc
 X-value
 Y-value
 Function

 3.627398 GHz
 12.24 d8m
 nd8 down

 3.615649 GHz
 -14.21 d8m
 nd8

 3.634271 GHz
 -14.65 d8m
 Q factor
 Highest Channel / 20MHz / QPSK Highest Channel / 20MHz / 16QAM 12.46 dBi 3.6929170 GF 20 dBm--10 dBm -20 dBm -20 dBmmo 40 dB -60 dBm--60 dBm-CF 3.69 GH CF 3.69 GH Marker Function Result 18.621 MHz 26.00 dB 198.3 Function Result 18.621 MHz 26.00 dB 198.2

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Type Ref Trc

Date: 4.MAY.2020 03:22:50

 X-value
 Y-value
 Function

 3.690959 GHz
 12.70 dBm
 nd8 down

 3.680689 GHz
 -14.61 dBm
 nd8

 3.699311 GHz
 -13.21 dBm
 Q factor

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Type | Ref | Trc |

Date: 4.MAY.2020 03:22:37

 X-value
 Y-value
 Function

 3.692917 GHz
 12.46 dBm
 nd8 down

 3.69089 GHz
 -15.00 dBm
 nd8

 3.699311 GHz
 -14.63 dBm
 Q factor

Occupied Bandwidth

Mode	LTE Band 48 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.49	4.50	9.11	9.05	13.43	13.40	17.74	17.74
Middle CH	-	-	-	-	4.53	4.52	9.07	8.95	13.37	13.37	17.74	17.78
Highest CH	-	-	-	-	4.49	4.50	8.99	8.95	13.40	13.46	17.74	17.74

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-60 dBm-

CF 3.6975 GHz Marker

Type Ref Trc

Date: 4.MAY.2020 03:14:55

1001 pt:

X-value Y-value Function
3.698829 GHz 14.83 dBm 3.698829 GHz 8.20 dBm 0.66 ft 14.60 dBm 0.66 ft 14.60

Report No.: FG030207B LTE Band 48 Lowest Channel / 5MHz / QPSK Lowest Channel / 5MHz / 16QAM Ref Level 30.00 dBm Offset 13.50 dB ● RBW 100 kHz
Att 30 dB SWT 19 µs ● VBW 300 kHz Mode Auto FFT
SGL Count 100/100 14.07 dBn 3.55232000 GH 4.495504496 MH M1[1] M1[1] 15.47 dB 10 dBmdBm--20 dBm--30 dBM-\ 430°db.n^--40 dBm-40 dBm--50 dBm-CF 3.5525 GHz Span 10.0 MHz CF 3.5525 GHz Span 10.0 MHz
 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 3.55232 GHz
 14.07 dsm
 1

 T1
 1
 3.550232 GHz
 9.30 d8m
 Occ Bw

 T2
 1
 3.55047478 GHz
 9.40 d8m
 Occ Bw
 Date: 4.MAY.2020 03:13:19 Date: 4.MAY.2020 03:13:32 Middle Channel / 5MHz / QPSK Middle Channel / 5MHz / 16QAM 2 X 13.50 dB • RBW 100 kHz 19 µs • VBW 300 kHz Mode Auto FFT 2 (X) : 13.50 dB • RBW 100 kHz 19 µs • VBW 300 kHz Mode Auto FFT 30 dB SGL Count 100/100 Ref Level 30.00 dBm
Att 30 dB
SGL Count 100/100 14.04 dBn 3.62290200 GH: 4.525474525 MH: 12.65 dBm 3.62513000 GHz 4.515484515 MHz M1[1] M1[1] -10 dBm--30 dBm-40 dBm--50 dBm -50 dBm-1001 pts
 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 3.02513 GHz
 12.65 dbm
 12.65 dbm

 T1
 1
 3.027223 GHz
 4.54 dbm
 Occ Bw

 T2
 1
 3.6272378 GHz
 7.66 dbm
 Occ Bw
 Type Ref Trc
 X-value
 Y-value
 Function

 3.622929 GHz
 14.04 dBm
 Occ Bw

 3.622723 GHz
 7.47 dBm
 Occ Bw

 3.6272478 GHz
 8.22 dBm
 Function Result Function Result 4.525474525 MHz 4.515484515 MHz Highest Channel / 5MHz / QPSK Highest Channel / 5MHz / 16QAM 20 dBm-10 dBm--10 dBm-10 dBn -20 dBm -20 dBm-



Function Result

4.485514486 MHz

-60 dBm-

CF 3.6975 GHz

Type Ref Trc

Date: 4.MAY.2020 03:15:08

1001 pts

 X-value
 Y-value
 Function

 3.699518 GHz
 14.31 dBm
 Occ Bw

 3.6952522 GHz
 9.94 dBm
 Occ Bw

 3.6997478 GHz
 9.88 dBm

Span 10.0 MHz

4.495504496 MHz

Function Result

LTE Band 48 Lowest Channel / 10MHz / QPSK Lowest Channel / 10MHz / 16QAM Ref Level 30.00 dBm Offset 13.50 dB ® RBW 300 kHz
Att 30 db SWT 12.6 µs ® VBW 1 MHz Mode Auto FFT
SGL Count 100/100 16.04 dBn 3.5534420 GH 9.050949051 MH M1[1] M1[1] TY dBm--20 dBm-30 dBm 40 dBm-CF 3.555 GHz CF 3.555 GHz
 Morker
 Type
 Ref
 Trc
 X-value
 Y-value
 Function
 Function Result

 M1
 1
 3.55454 GHz
 17.20 dbm
 Dcc Bw
 9.11088

 T1
 1
 3.5594446 GHz
 10.25 dbm
 Occ Bw
 9.11088

 T2
 1
 3.5595554 GHz
 10.33 dbm
 Occ Bw
 9.11088

 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 3.553442 GHz
 16.04 dbm
 16.04 dbm

 T1
 1
 3.55044945 GHz
 8.94 dbm
 Occ Bw

 T2
 1
 3.5595355 GHz
 10.38 dbm
 Occ Bw
 Date: 4.MAY.2020 03:15:46 Date: 4.MAY.2020 03:15:58 Middle Channel / 10MHz / QPSK Middle Channel / 10MHz / 16QAM 13.50 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT Att 30 dB SWT
SGL Count 100/100 13.63 dBm 3.6238810 GHz 8.951048951 MHz 15.43 dBr 3.6272780 GH 9.070929071 MH M1[1] -10 dBm-30 dBm-40 dBm--50 dBm -50 dBm-
 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 3.623881 GHz
 13.63 dbm
 13.63 dbm
 7.20 dbm
 Occ Bw

 T1
 1
 3.6292545 GHz
 7.20 dbm
 Occ Bw
 7.20 dbm
 0cc Bw
 7.20 dbm
 0cc Bw
 7.20 dbm
 0cc Bw
 0cc B Type Ref Trc
 X-value
 Y-value
 Function

 3.627278 GHz
 15.43 dBm
 3.6204645 GHz

 3.6204645 GHz
 9.32 dBm
 Occ Bw

 3.6295355 GHz
 9.06 dBm
 Function Result Function Result 9.070929071 MHz 8.951048951 MHz Highest Channel / 10MHz / QPSK Highest Channel / 10MHz / 16QAM 20 dBm-10 dBm--10 dBm--20 dBm -20 dBm--60 dBm--60 dBm-CF 3.695 GH CF 3.695 GHz Marker 1001 pt: 1001 pts
 X-value
 Y-value
 Function

 3.697438 GHz
 16.70 dBm
 3.6905045 GHz
 10.74 dBm

 3.6995495 GHz
 9.69 dBm
 Occ Bw
 Type Ref Trc Type Ref Trc
 X-value
 Y-value
 Function

 3.695759 GHz
 16.03 dBm
 Occ Bw

 3.6905245 GHz
 7.86 dBm
 Occ Bw

 3.6994755 GHz
 8.19 dBm
 Occ Bw
 Function Result Function Result

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8.951048951 MHz

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Date: 4.MAY.2020 03:17:34

8.991008991 MHz

Date: 4.MAY.2020 03:17:21

FAX: 886-3-328-4978

LTE Band 48 Lowest Channel / 15MHz / QPSK Lowest Channel / 15MHz / 16QAM Ref Level 30.00 dBm Offset 13.50 dB ® RBW 300 kHz
Att 30 db SWT 12.6 µs ® VBW 1 MHz Mode Auto FFT
SGL Count 100/100 M1[1] M1[1] 13.80 dBr 10 dBmdBm-30 dBm-40 dBm--50 dBm-CF 3.5575 GHz CF 3.5575 GHz
 Morker
 Type
 Ref
 Trc
 X-value
 Y-value
 Function
 Function Result

 M1
 1
 3.559748 GHz
 14-21 dbm
 Punction
 Tunction Result

 T1
 1
 3.559768 GHz
 9.23 dbm
 Occ Bw
 13.42657

 T2
 1
 3.5642133 GHz
 9.40 dbm
 Occ Bw
 13.42657

 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 3.559628 GHz
 13.80 dbm
 13.80 dbm

 T1
 1
 3.559628 GHz
 6.71 dbm
 Occ Bw

 T2
 1
 3.5642133 GHz
 6.71 dbm
 Occ Bw
 13.396603397 MHz Date: 4.MAY.2020 03:18:12 Date: 4.MAY.2020 03:18:24 Middle Channel / 15MHz / QPSK Middle Channel / 15MHz / 16QAM 13.50 dB • RBW 300 kHz 12.6 µs • VBW 1 MHZ Mode Auto FFT 13.50 dB • RBW 300 kHz 12.6 µs • VBW 1 MHz Mode Auto FFT Att 30 dB SWT
SGL Count 100/100 30 dB SGL Count 100/100 SFk Max 13.23 dBn 3.6187660 GH; 13.366633367 MH; 14.39 dBr 3.6298250 GH 13.366633367 MH M1[1] M1[1] -10 dBm--20 dBm--30 dBm-40 dBm -50 dBm -50 dBm-
 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 3.618766 GHz
 13.23 dbm
 13.23 dbm

 T1
 1
 3.6184967 GHz
 7.00 dbm
 Occ Bw

 T2
 1
 3.6317133 GHz
 5.99 dbm
 Occ Bw
 Type Ref Trc
 X-value
 Y-value
 Function

 3.629825 GHz
 14.39 dBm
 Occ Bw

 3.6182867 GHz
 6.12 dBm
 Occ Bw

 3.6316533 GHz
 7.97 dBm
 Function Result Function Result 13.366633367 MHz 13.366633367 MHz Highest Channel / 15MHz / QPSK Highest Channel / 15MHz / 16QAM 20 dBm-10 dBm--10 dBm--10 dBm -20 dBm -20 dBm--60 dBm--60 dBm-CF 3.6925 GHz CF 3.6925 GHz Marker 1001 pt: 1001 pts
 X-value
 Y-value
 Function

 3.690762 GHz
 14.01 dBm
 3.6857657 GHz

 3.6857657 GHz
 9.37 dBm
 Occ Bw

 3.6991533 GHz
 8.02 dBm
 Type Ref Trc Type Ref Trc
 X-value
 Y-value
 Function

 3.689993 GHz
 12.53 dBm
 Occ Bw

 3.6857867 GHz
 6.83 dBm
 Occ Bw

 3.6992433 GHz
 7.24 dBm
 Function Result Function Result 13.396603397 MHz 13.456543457 MHz

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Date: 4.MAY.2020 03:20:00

FAX: 886-3-328-4978

Date: 4.MAY.2020 03:19:47

LTE Band 48 Lowest Channel / 20MHz / QPSK Lowest Channel / 20MHz / 16QAM Ref Level 30.00 dBm Offset 13.50 dB ® RBW 300 kHz
Att 30 db SWT 18.9 µs ® VBW 1 MHz Mode Auto FFT
SGL Count 100/100 12.26 dBn 3.5539660 GH 17.742257742 MH M1[1] M1[1] 13.64 dB 10 dBmdBm-20 dBm-30.d8m -30/d8m 40 dBm -50 dBm CF 3.56 GHz CF 3.56 GHz | Marker | Trc | X-value | Y-value | Function | | M1 | 1 | 3.559201 GHz | 13.64 dBm | T1 | 1 | 3.559201 GHz | 13.64 dBm | Occ Bw | T2 | 1 | 3.5688711 GHz | 7.40 dBm | Occ Bw | T2 | 1 | 3.5688711 GHz | 7.40 dBm | Occ Bw | T2 | T3.6488711 GHz | T4.740 dBm | Occ Bw | T4.740 dBm | Occ Bw | Occ
 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 3.553966 GHz
 12.26 dbm
 12.26 dbm

 T1
 1
 3.5511289 GHz
 4.64 dbm
 Occ Bw

 T2
 1
 3.56080711 GHz
 6.53 dbm
 17.742257742 MHz Date: 4.MAY.2020 03:20:38 Date: 4.MAY.2020 03:20:50 Middle Channel / 20MHz / QPSK Middle Channel / 20MHz / 16QAM 13.50 dB • RBW 300 kHz 18.9 µs • VBW 1 MHz Mode Auto FFT 13.50 dB • RBW 300 kHz 18.9 µs • VBW 1 MHz Mode Auto FFT Att 30.00 dBm Offset 30.00 dBm SWT SGL Count 100/100 Ref Level 30.00 dBm
Att 30 dB
SGL Count 100/100 11.95 dBr 3.6224030 GH 17.742257742 MH 10.83 dBn 3.6257990 GHz 17.782217782 MHz M1[1] M1[1] -10 dBm--20 dBmmm -50 dBm -50 dBm
 Marker
 Trc
 X-value
 Y-value
 Function

 M1
 1
 3.625799 GHz
 10.83 d8m
 Occ Bw

 T1
 1
 3.610289 GHz
 3.65 d8m
 Occ Bw

 T2
 1
 3.6399111 GHz
 3.40 d8m
 Occ Bw
 Type Ref Trc
 X-value
 Y-value
 Function

 3.622403 GHz
 11.95 dBm
 3.6160889 GHz
 4.69 dBm
 Occ Bw

 3.6398912 GHz
 6.27 dBm
 Occ Bw
 Function Result **Function Result** 17.742257742 MHz 17.782217782 MHz Highest Channel / 20MHz / QPSK Highest Channel / 20MHz / 16QAM | Spectrum | Spectrum | 2 | 2 | 2 | 2 | 2 | 2 | 30.80 dBm | Offset 13.50 dB | RBW 300 kHz | Att 30 dB | SWT | 18.9 µs | VBW | 1 MHz | Mode Auto FFT | SGL Count 100/100 20 dBm-10 dBm--10 dBm--10 dBm -20 dBm -20 dBm--40 dBm--60 dBm--60 dBm-CF 3.69 GH CF 3.69 GH Marker 1001 pt: 1001 pts
 X-value
 Y-value
 Function

 3.69044 GHz
 13.86 dBm

 3.6811289 GHz
 6.09 dBm
 Occ Bw

 3.6988711 GHz
 6.40 dBm
 Type Ref Trc Type Ref Trc
 X-value
 Y-value
 Function

 3.691399 GHz
 12.05 dBm
 3.6811289 GHz

 3.6811289 GHz
 6.02 dBm
 Occ Bw

 3.6986711 GHz
 5.62 dBm
 Function Result Function Result 17.742257742 MHz 17.742257742 MHz

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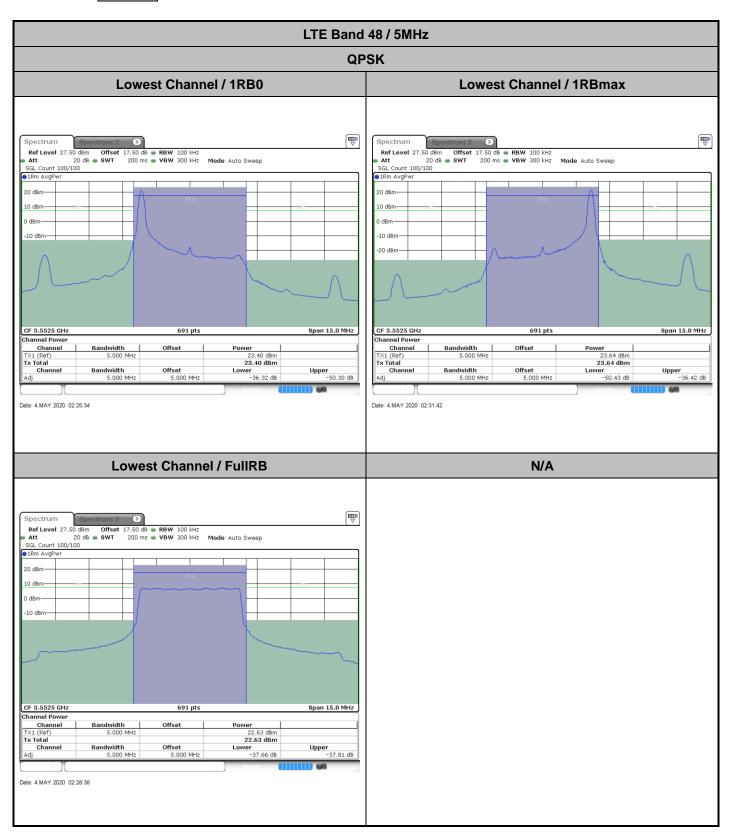
Date: 4.MAY.2020 03:22:25

FAX: 886-3-328-4978

Date: 4.MAY.2020 03:22:13

ACLR

FAX: 886-3-328-4978



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LTE Band 48 / 5MHz **QPSK** Middle Channel / 1RB0 Middle Channel / 1RBmax Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm dBm -10 dBm -10 dBm -20 dBm-CF 3.625 GHz Channel Power 691 pts Span 15.0 MHz 691 pts Span 15.0 MHz hannel Power 21.94 dBm 21.94 dBm 21.94 dBm Lower -50.67 dB Channel
TX1 (Ref)
Tx Total
Channel Channel
TX1 (Ref)
Tx Total 21.93 dBm 21.93 dBm Bandwidth 5.000 MHz Offset Bandwidth 5.000 MHz Offset Upper -50.56 dB Upper -37.29 dB Bandwidth Offset 5.000 MHz Channel Date: 4.MAY.2020 02:27:04 Date: 4.MAY.2020 02:33:12 Middle Channel / FullRB N/A Spectrum Count 100/100 dBm -10 dBm 691 pts Span 15.0 MHz CF 3.625 GHz 20.80 dBm 20.80 dBm 20.80 dBm Lower -40.18 dB Bandwidth 5.000 MHz **Upper** -40.47 dB Bandwidth 5.000 MHz Date: 4.MAY.2020 02:30:08

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LTE Band 48 / 5MHz **QPSK Highest Channel / 1RB0 Highest Channel / 1RBmax** Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm 10 dBm-0 dBm -10 dBm -20 dBm-CF 3.6975 GHz Channel Power 691 pts Span 15.0 MHz Span 15.0 MHz 23.24 dBm 23.24 dBm 23.24 dBm Lower -36.75 dB 23.41 dBm 23.41 dBm 23.41 dBm Lower -51.03 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel Bandwidth 5.000 MHz Offset Bandwidth 5.000 MHz Offset Upper -50.78 dB Upper -37.06 dB Bandwidth 5.000 MHz Offset 5.000 MHz Channel Date: 4.MAY.2020 02:27:35 Date: 4.MAY.2020 02:33:44 **Highest Channel / FullRB** N/A Spectrum
 Ref Level
 27.50 dBm
 Offset
 17.50 dB • RBW
 100 kHz

 Att
 20 dB • SWT
 200 ms • VBW
 300 kHz
 Mode
 Auto Sweep
 Count 100/100 dBm CF 3.6975 GHz 691 pts Span 15.0 MHz 22.28 dBm 22.28 dBm 22.28 dBm Lower -40.55 dB Bandwidth 5.000 MHz Bandwidth 5.000 MHz Date: 4.MAY.2020 02:30:40

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LTE Band 48 / 10MHz **QPSK** Lowest Channel / 1RB0 **Lowest Channel / 1RBmax** Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm dBm -10 dBm -10 dBm 691 pts Span 30.0 MHz 691 pts Channel Power hannel Power 23.14 dBm 23.14 dBm 23.14 dBm Lower -48.76 dB 23.07 dBm 23.07 dBm Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel Bandwidth 10.000 MHz Offset Bandwidth 10.000 MHz Offset Upper -48.47 dB Upper -39.84 dB Bandwidth 10.000 MHz Bandwidth Offset 10.000 MHz Channel Date: 4.MAY.2020 02:35:19 Date: 4.MAY.2020 02:41:31 **Lowest Channel / FullRB** N/A Spectrum Count 100/100 dBm -10 dBm CF 3.555 GHz 691 pts Span 30.0 MHz 22.59 dBm 22.59 dBm 22.59 dBm Lower -40.93 dB Bandwidth 10.000 MHz **Upper** -41.59 dB Bandwidth 10.000 MHz Date: 4.MAY.2020 02:38:25

Report No.: FG030207B

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LTE Band 48 / 10MHz **QPSK** MiddleChannel / 1RB0 Middle Channel / 1RBmax
 Spectrum
 Spectrum
 2
 X

 Ref Level
 27.50 dbm
 Offset
 17.50 db
 ■ RBW
 100 kHz

 Att
 20 db
 ■ SWT
 200 ms
 ■ VBW
 300 kHz

 SGL Count 100/100
 100/100
 ■ WBW
 100 kHz
 100 kHz
 100 kHz
 Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm dBm -10 dBm -10 dBm 691 pts Span 30.0 MHz 691 pts hannel Power Channel Power 21.79 dBm 21.79 dBm 21.79 dBm Lower -48.45 dB Channel
TX1 (Ref)
Tx Total
Channel Channel
TX1 (Ref)
Tx Total 21.61 dBm 21.61 dBm Bandwidth 10.000 MHz Offset Bandwidth 10.000 MHz Offset Upper -48.51 dB Upper -39.02 dB Bandwidth 10.000 MHz Bandwidth Offset 10.000 MHz Channel Date: 4.MAY.2020 02:35:49 Date: 4.MAY.2020 02:42:02 Middle Channel / FullRB N/A Spectrum
 Ref Level
 27.50 dBm
 Offset
 17.50 dB • RBW
 100 kHz

 Att
 20 dB • SWT
 200 ms • VBW
 300 kHz
 Mode
 Auto Sweep
 Count 100/100 dBm -10 dBm 691 pts CF 3.625 GHz Span 30.0 MHz 20.73 dBm 20.73 dBm 20.73 dBm Lower -42.32 dB Bandwidth 10.000 MHz Upper -43.45 dB Bandwidth 10.000 MHz Date: 4.MAY.2020 02:38:55

Report No.: FG030207B

TEL: 886-3-327-3456 Page Number : A48-18 of 86

LTE Band 48 / 10MHz **QPSK Highest Channel / 1RB0 Highest Channel / 1RBmax** Ref Level 27.50 dBm Offset 17.50 dB RBW 100 kHz
Att 20 dB SWT 200 ms VBW 300 kHz
SGL Count 100/100

1Rm AvgPwr Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm dBm -10 dBm -10 dBm CF 3.695 GHz Channel Power 691 pts Span 30.0 MHz 23.34 dBm 23.34 dBm Lower -48.58 dB 23.09 dBm 23.09 dBm Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel Bandwidth 10.000 MHz Offset Bandwidth 10.000 MHz Offset Upper -48.70 dB Upper -39.84 dB Bandwidth Offset 10.000 MHz Channel Date: 4.MAY.2020 02:37:23 Date: 4.MAY.2020 02:43:36 **Highest Channel / FullRB** N/A Spectrum Count 100/100 dBm -10 dBm 691 pts Span 30.0 MHz CF 3.695 GHz 22.16 dBm 22.16 dBm 20.16 dBm Lower -44.58 dB Upper -45.22 dB Bandwidth 10.000 MHz Date: 4.MAY.2020 02:40:29

Report No.: FG030207B

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LTE Band 48 / 15MHz **QPSK** Lowest Channel / 1RB0 **Lowest Channel / 1RBmax** Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm 10 dBm-0 dBm dBm -10 dBm -10 dBm 691 pts Span 45.0 MHz 691 pts Span 45.0 MHz Channel Power Power 22,42 dBm 22,42 dBm Lower -46,34 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel 22.64 dBm 22.64 dBm Bandwidth 15.000 MHz Offset Bandwidth 15.000 MHz Offset Upper -46.54 dB Upper -43.45 dB Bandwidth 15.000 MHz Bandwidth 15.000 MHz Offset 15.000 MHz Channel Date: 4.MAY.2020 02:44:08 Date: 4.MAY.2020 02:50:20 **Lowest Channel / FullRB** N/A Spectrum Count 100/100 0 dBm -10 dBm CF 3.5575 GHz 691 pts Span 45.0 MHz 22.12 dBm 22.12 dBm 22.12 dBm Lower -40.99 dB Bandwidth 15.000 MHz **Upper** -41.94 dB Bandwidth 15.000 MHz Date: 4.MAY.2020 02:47:14

Report No.: FG030207B

TEL: 886-3-327-3456 Page Number : A48-20 of 86

LTE Band 48 / 15MHz **QPSK** Middle Channel / 1RB0 Middle Channel / 1RBmax Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm 10 dBm-0 dBm dBm -10 dBm -10 dBm 691 pts Span 45.0 MHz 691 pts Span 45.0 MHz Channel Power hannel Power 21.12 dBm 21.12 dBm 21.12 dBm Lower -46.29 dB 20.86 dBm 20.86 dBm 20.86 dBm Lower -43.63 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel Bandwidth 15.000 MHz Offset Bandwidth 15.000 MHz Offset Upper -46.49 dB Upper -43.68 dB Bandwidth 15.000 MHz Bandwidth Offset 15.000 MHz Channel Date: 4.MAY.2020 02:45:40 Date: 4.MAY.2020 02:51:52 Middle Channel / FullRB N/A Spectrum Count 100/100 dBm -10 dBm 691 pts Span 45.0 MHz CF 3.625 GHz 20.27 dBm 20.27 dBm 20.27 dBm Lower -42.54 dB Bandwidth 15.000 MHz Upper -43.75 dB Bandwidth 15.000 MHz Date: 4.MAY.2020 02:48:46

Report No.: FG030207B

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LTE Band 48 / 15MHz **QPSK Highest Channel / 1RB0 Highest Channel / 1RBmax** Spectrum Ref Level 27.50 dBm Offset 17.50 dB RBW 200 kHz
Att 200 B SWT 200 ms VBW 1 MHz
SGL Count 100/100
RRm AvgPwr Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm 10 dBm-0 dBm -10 dBm -10 dBm CF 3.6925 GHz Channel Power 691 pts Span 45.0 MHz 691 pts Span 45.0 MHz Power 22,42 dBm 22,42 dBm Lower -46,31 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel 22.53 dBm 22.53 dBm Bandwidth 15.000 MHz Offset Bandwidth 15.000 MHz Offset **Upper** -46.50 dB Upper -43.58 dB Bandwidth 15.000 MHz Channel Date: 4.MAY.2020 02:46:11 Date: 4.MAY.2020 02:52:24 **Highest Channel / FullRB** N/A Spectrum Count 100/100 dBm -10 dBm 691 pts Span 45.0 MHz CF 3.6925 GHz 21.75 dBm 21.75 dBm 21.75 dBm Lower -44.63 dB Bandwidth 15.000 MHz Bandwidth 15.000 MHz Date: 4.MAY.2020 02:49:17

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LTE Band 48 / 20MHz **QPSK** Lowest Channel / 1RB0 **Lowest Channel / 1RBmax**
 Spectrum
 Spectrum
 2
 X

 Ref Level
 27.50 dbm
 Offset
 17.50 db
 RBW
 200 kHz

 Att
 20 db
 SWT
 200 ms
 VBW
 1 MHz

 SGL Count 100/100
 1 MHz
 1 MHz
 1 MHz
 1 MHz
 1 MHz
 Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm 10 dBm-0 dBm dBm -10 dBm -10 dBm CF 3.56 GHz Channel Power 691 pts Span 60.0 MHz 691 pts Span 60.0 MHz 21.98 dBm 21.98 dBm 21.98 dBm Lower -45.99 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel 22.27 dBm 22.27 dBm Bandwidth 20.000 MHz Offset Bandwidth 20.000 MHz Offset Upper -46.45 dB Upper -41.18 dB Bandwidth 20.000 MHz Bandwidth Offset 20.000 MHz Channel Date: 4.MAY.2020 02:56:58 Date: 4.MAY.2020 02:59:58 **Lowest Channel / FullRB** N/A Spectrum Count 100/100 dBm -10 dBm 691 pts Span 60.0 MHz CF 3.56 GHz 21.00 dBm 21.00 dBm 21.00 dBm Lower -40.38 dB Bandwidth 20.000 MHz **Upper** -41.09 dB Bandwidth 20.000 MHz Date: 4.MAY.2020 02:53:58

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LTE Band 48 / 20MHz **QPSK** Middle Channel / 1RB0 Middle Channel / 1RBmax Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm dBm -10 dBm -10 dBm CF 3.625 GHz Channel Power 691 pts Span 60.0 MHz 691 pts Span 60.0 MHz hannel Power 20.35 dBm 20.35 dBm 20.35 dBm Lower -41.01 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel 20.76 dBm 20.76 dBm Bandwidth 20.000 MHz Offset Bandwidth 20.000 MHz Offset Upper -46.65 dB Upper -41.29 dB Bandwidth 20.000 MHz Bandwidth Offset 20.000 MHz Channel Lower -45.77 dB Date: 4.MAY.2020 02:57:28 Date: 4.MAY.2020 03:00:28 Middle Channel / FullRB N/A Spectrum Count 100/100 0 dBm -10 dBm 691 pts Span 60.0 MHz CF 3.625 GHz Power 19.14 dBm 19.14 dBm Lower -42.31 dB Bandwidth 20.000 MHz Upper -42.88 dB Bandwidth 20.000 MHz Date: 4.MAY.2020 02:54:27

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LTE Band 48 / 20MHz **QPSK Highest Channel / 1RB0 Highest Channel / 1RBmax** Ref Level 27.50 dBm Offset 17.50 dB RBW 200 kHz

Att 20 dB SWT 200 ms VBW 1 MHz

SGL Count 100/100

1Rm AvgPwr Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm dBm -10 dBm -10 dBm CF 3.69 GHz Channel Power 691 pts Span 60.0 MHz Span 60.0 MHz 21.62 dBm 21.62 dBm 21.62 dBm Lower -45.52 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel 21.81 dBm 21.81 dBm Bandwidth 20.000 MHz Offset Bandwidth 20.000 MHz Offset Upper -46.68 dB Upper -41.15 dB Bandwidth Offset 20.000 MHz Channel Date: 4.MAY.2020 02:58:57 Date: 4.MAY.2020 03:01:57 **Highest Channel / FullRB** N/A Spectrum Count 100/100 0 dBm -10 dBm 691 pts Span 60.0 MHz CF 3.69 GHz 20.61 dBm 20.61 dBm 20.61 dBm Lower -44.17 dB Upper -44.28 dB Bandwidth 20.000 MHz Date: 4.MAY.2020 02:55:57

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LTE Band 48 / 5MHz **16QAM** Lowest Channel / 1RB0 **Lowest Channel / 1RBmax** Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm-0 dBm dBm -10 dBm -10 dBm -20 dBm 691 pts Span 15.0 MHz 691 pts Span 15.0 MHz Channel Power 22.70 dBm 22.70 dBm 22.70 dBm Lower -49.83 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel 22.58 dBm 22.58 dBm Bandwidth 5.000 MHz Offset Bandwidth 5.000 MHz Offset Upper -49.16 dB Upper -36.07 dB Bandwidth 5.000 MHz Offset 5.000 MHz Channel Date: 4.MAY.2020 02:26:04 Date: 4.MAY.2020 02:32:13 **Lowest Channel / FullRB** N/A Spectrum SGL Count 100/100 1Rm AvgPwr 0 dBm -10 dBm-691 pts Span 15.0 MHz CF 3.5525 GHz 21.75 dBm 21.75 dBm 21.75 dBm Lower -37.49 dB Bandwidth 5.000 MHz **Upper** -37.76 dB Bandwidth 5.000 MHz Offset 5.000 MHz Date: 4.MAY.2020 02:29:08

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LTE Band 48 / 5MHz **16QAM** Middle Channel / 1RB0 Middle Channel / 1RBmax Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm dBm -10 dBm -10 dBm CF 3.625 GHz Channel Power 691 pts Span 15.0 MHz 691 pts Span 15.0 MHz hannel Power 20.86 dBm 20.86 dBm 20.86 dBm Lower -36.69 dB Channel
TX1 (Ref)
Tx Total
Channel Channel
TX1 (Ref)
Tx Total 20.90 dBm 20.90 dBm Bandwidth 5.000 MHz Offset Bandwidth 5.000 MHz Offset **Upper** -49.79 dB -50.18 dB Upper -36.80 dB Bandwidth 5.000 MHz Offset 5.000 MHz Channel Date: 4.MAY.2020 02:26:34 Date: 4.MAY.2020 02:32:43 Middle Channel / FullRB N/A Spectrum Count 100/100 dBm -10 dBm 691 pts Span 15.0 MHz CF 3.625 GHz Power 19.97 dBm 19.97 dBm Lower -40.49 dB Bandwidth 5.000 MHz Bandwidth 5.000 MHz Date: 4.MAY.2020 02:29:38

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LTE Band 48 / 5MHz **16QAM Highest Channel / 1RB0 Highest Channel / 1RBmax** Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm -10 dBm -10 dBm 20 dBm CF 3.6975 GHz Channel Power 691 pts Span 15.0 MHz Span 15.0 MHz Power 22,43 dBm 22,43 dBm Lower -49,98 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel 22.15 dBm 22.15 dBm Bandwidth 5.000 MHz Offset Bandwidth 5.000 MHz Offset Upper -49.71 dB Upper -36.29 dB Bandwidth 5.000 MHz Offset 5.000 MHz Channel Date: 4.MAY.2020 02:28:07 Date: 4.MAY.2020 02:34:15 **Highest Channel / FullRB** N/A Spectrum
 Ref Level
 27.50 dBm
 Offset
 17.50 dB • RBW
 100 kHz

 Att
 20 dB • SWT
 200 ms • VBW
 300 kHz
 Mode
 Auto Sweep
 Count 100/100 dBm -10 dBm CF 3.6975 GHz 691 pts Span 15.0 MHz 21.31 dBm 21.31 dBm 21.31 dBm Lower -40.66 dB Bandwidth 5.000 MHz Bandwidth 5.000 MHz Date: 4.MAY.2020 02:31:11

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LTE Band 48 / 10MHz **16QAM** Lowest Channel / 1RB0 **Lowest Channel / 1RBmax**
 Spectrum
 Spectrum
 2
 X

 Ref Level
 27.50 dbm
 Offset
 17.50 db
 ■ RBW
 100 kHz

 Att
 20 db
 ■ SWT
 200 ms
 ■ VBW
 300 kHz

 SGL Count 100/100
 100/100
 ■ WBW
 100 kHz
 100 kHz
 100 kHz
 Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm dBm -10 dBm -10 dBm 691 pts Span 30.0 MHz 691 pts Channel Power hannel Power Power 22.16 dBm 22.16 dBm Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel Bandwidth 10.000 MHz Offset Bandwidth 10.000 MHz Offset 22.38 dBm 22.38 dBm Lower -48.65 dB **Upper** -48.30 dB Upper -39.46 dB Bandwidth 10.000 MHz Bandwidth Offset 10.000 MHz Channel Date: 4.MAY.2020 02:34:48 Date: 4.MAY.2020 02:41:01 **Lowest Channel / FullRB** N/A Spectrum Count 100/100 dBm -10 dBm CF 3.555 GHz 691 pts Span 30.0 MHz 21.70 dBm 21.70 dBm 21.70 dBm Lower -40.12 dB Bandwidth 10.000 MHz Upper -40.78 dB Bandwidth 10.000 MHz Date: 4.MAY.2020 02:37:54

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LTE Band 48 / 10MHz **16QAM** MiddleChannel / 1RB0 Middle Channel / 1RBmax Spectrum Mode Auto Sweep Mode Auto Sweep ●1Rm AvgPw 20 dBm-20 dBm-10 dBm-10 dBm 0 dBm dBm -10 dBm -10 dBm -20 dBm 691 pts Span 30.0 MHz 691 pts hannel Power Channel Power 20.60 dBm 20.60 dBm 20.60 dBm Lower -39.50 dB Channel
TX1 (Ref)
Tx Total Channel
TX1 (Ref)
Tx Total
Channel 20.43 dBm 20.43 dBm Bandwidth 10.000 MHz Offset Bandwidth 10.000 MHz Offset Lower -48.18 dB Upper -48.33 dB Upper -39.08 dB Bandwidth 10.000 MHz Bandwidth Offset 10.000 MHz Channel Date: 4.MAY.2020 02:36:20 Date: 4.MAY.2020 02:42:32 Middle Channel / FullRB N/A Spectrum Count 100/100 dBm -10 dBm 691 pts CF 3.625 GHz Span 30.0 MHz Power 19.85 dBm 19.85 dBm Lower -42.31 dB Bandwidth 10.000 MHz Upper -43.23 dB Bandwidth 10.000 MHz Date: 4.MAY.2020 02:39:26

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LTE Band 48 / 10MHz **16QAM Highest Channel / 1RB0 Highest Channel / 1RBmax** Ref Level 27.50 dm Offset 17.50 dB RBW 100 kHz
Att 20 dB SWT 200 ms VBW 300 kHz Mode Auto Sweep
SGL Count 100/100

1Rm AvgPwr Mode Auto Sweep 20 dBm-10 dBm-0 dBm dBm -10 dBm -10 dBm CF 3.695 GHz 691 pts Span 30.0 MHz CF 3.695 GHz Channel Power 22.43 dBm 22.43 dBm 22.43 dBm Lower -39.93 dB Power 22.08 dBm 22.08 dBm Lower -48.12 dB Channel
TX1 (Ref)
Tx Total Bandwidth 10.000 MHz Offset Upper -48.64 dB Upper -39.43 dB Bandwidth 10.000 MHz Bandwidth Offset 10.000 MHz Channel Date: 4.MAY.2020 02:36:51 Date: 4.MAY.2020 02:43:04 **Highest Channel / FullRB** N/A Spectrum Count 100/100 0 dBm -10 dBm 691 pts CF 3.695 GHz Span 30.0 MHz 21.18 dBm 21.18 dBm 21.18 dBm Lower -44.29 dB Bandwidth 10.000 MHz Date: 4.MAY.2020 02:39:57

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