FCC RADIO TEST REPORT

FCC ID	:	**XMR2020EM160RGL2**
Equipment	:	**LTE-A Cat 16 M.2 Module**
Brand Name	:	**Quectel**
Model Name	:	**EM160R-GL**
Applicant	:	**Quectal Wireless Solutions Co., Ltd.** **Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China, 200233**
Manufacturer	:	**LCFC (HeFei) Electronics Technology Co., Ltd.** **No. 3188-1, Yungu Road (Hefei Export Processing Zone), Hefei Economics & Technology Development Area, Anhui, CHINA**
Standard	:	**FCC 47 CFR Part 2, 96**

Equipment: Quectel EM160R-GL tested inside of Lenovo Notebook Computer.

The product was received on Oct. 12, 2023 and testing was performed from Oct. 25, 2023 to Nov. 13, 2023. 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 test results in this partial report apply exclusively to the tested model / sample. Without written approval from 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

Table of Contents

History of this test report **3**

Summary of Test Result **4**

1 General Description **5**

1.1 Product Feature of Equipment Under Test 5
1.2 Product Specification of Equipment Under Test 6
1.3 Modification of EUT 6
1.4 Testing Location 6
1.5 Applied Standards 7

2 Test Configuration of Equipment Under Test **8**

2.1 Test Mode 8
2.2 Connection Diagram of Test System 9
2.3 Support Unit used in test configuration 9
2.4 Frequency List of Low/Middle/High Channels 9

3 Conducted Test Items **10**

3.1 Measuring Instruments 10
3.2 Conducted Output Power 11
3.3 EIRP 12

4 Radiated Test Items **13**

4.1 Measuring Instruments 13
4.2 Test Setup 13
4.3 Test Result of Radiated Test 14
4.4 Radiated Spurious Emission 15

5 List of Measuring Equipment **16**

6 Measurement Uncertainty **17**

Appendix A. Test Results of Conducted Test

Appendix B. Test Results of Radiated Test

Appendix C. Test Setup Photographs

History of this test report

Report No.	Version	Description	Issue Date
FG3O1203B	01	Initial issue of report	Nov. 28, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
-	-	Peak-to-Average Ratio	-	See Note
3.3	§96.41	Effective Isotropic Radiated Power	Pass	-
-	§2.1049 RSS-197 3.1	Occupied Bandwidth	-	See Note
-	§2.1051 §96.41	Conducted Band Edge Measurement	-	See Note
-	§2.1051 §96.41	Conducted Spurious Emission	-	See Note
-	§2.1055	Frequency Stability for Temperature & Voltage	-	See Note
4.4	§2.1051 §96.41	Radiated Spurious Emission	Pass	6.74 dB under the limit at 7102.00 MHz

Remark:

1. For host device, Radiated Spurious Emission and Equivalent Isotropic Radiated Power are verified and complies with the limit in this test report.
2. For host device, the Conducted Output Power is no difference after compared to module (Model: EM160R-GL)

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sheng Kuo

Report Producer: Rachel Hsieh

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	LTE-A Cat 16 M.2 Module
Brand Name	Quectel
Model Name	EM160R-GL
FCC ID	XMR2020EM160RGL2
Sample 1	EUT with Host 1
Sample 2	EUT with Host 2
EUT supports Radios application	WCDMA/HSPA/LTE/GNSS
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer.
2. Equipment: Quectel EM160R-GL tested inside of Lenovo Notebook Computer.

The product was installed into Notebook Computer (Brand Name: Lenovo, Model Name: TP00151A) during test, and the host information was recorded in the following table.

Host Information	
Host 1	Host with Amphenol Antenna
Host 2	Host with Speed Taiwan Corporation Antenna

Support band and evaluated information	
Supported band	B48
Evaluated and Tested band	B48

TDD band Power Class		
	PC3	**PC2**
B48	V	-

WWAN Antenna Information				
Main Antenna	**Manufacturer**	Amphenol	**Peak gain (dBi)**	LTE Band 48 : 1.00
	Part number	TKF113-16-000-R	**Type**	PIFA
	Manufacturer	Speed Taiwan Corporation	**Peak gain (dBi)**	LTE Band 48 : 0.97
	Part number	F-0G-JV-0228-001-00	**Type**	PIFA
MIMO 2 Antenna	**Manufacturer**	Amphenol	**Peak gain (dBi)**	LTE Band 48 : -1.49
	Part number	TKF114-16-000-R	**Type**	PIFA
	Manufacturer	Speed Taiwan Corporation	**Peak gain (dBi)**	LTE Band 48 : -1.51
	Part number	F-0G-JV-0228-002-00	**Type**	PIFA

Remark: The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.

1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Tx Frequency	3552.5 MHz ~ 3697.5 MHz
Rx Frequency	3552.5 MHz ~ 3697.5 MHz
Bandwidth	5 MHz / 10 MHz / 15 MHz / 20 MHz
Maximum Output Power to Antenna	21.63 dBm
Type of Modulation	QPSK / 16QAM / 64QAM

1.3 Modification of EUT

No modifications made to the EUT during the testing.

1.4 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333
Test Site No.	**Sporton Site No.**
	TH03-HY
Test Engineer	Bryant Liu
Temperature (℃)	21.1~21.9
Relative Humidity (%)	49.7~51.2

Test Site	Sporton International Inc. Wensan Laboratory.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010
Test Site No.	**Sporton Site No.**
	03CH12HY (TAF Code: 3786)
Test Engineer	Jesse Fan, Tim Lee and Wilson Wu
Temperature (℃)	20~25
Relative Humidity (%)	50~60
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

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

FCC Designation No.: TW1190 and TW3786

1.5 Applied Standards

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

- ANSI C63.26-2015
- ANSI / TIA-603-E
- FCC 47 CFR Part 2, 96
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 940660 D01 Part 96 CBRS Eqpt v03
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- FCC KDB 414788 D01 Radiated Test Site v01r01

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.

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.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape) and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report.

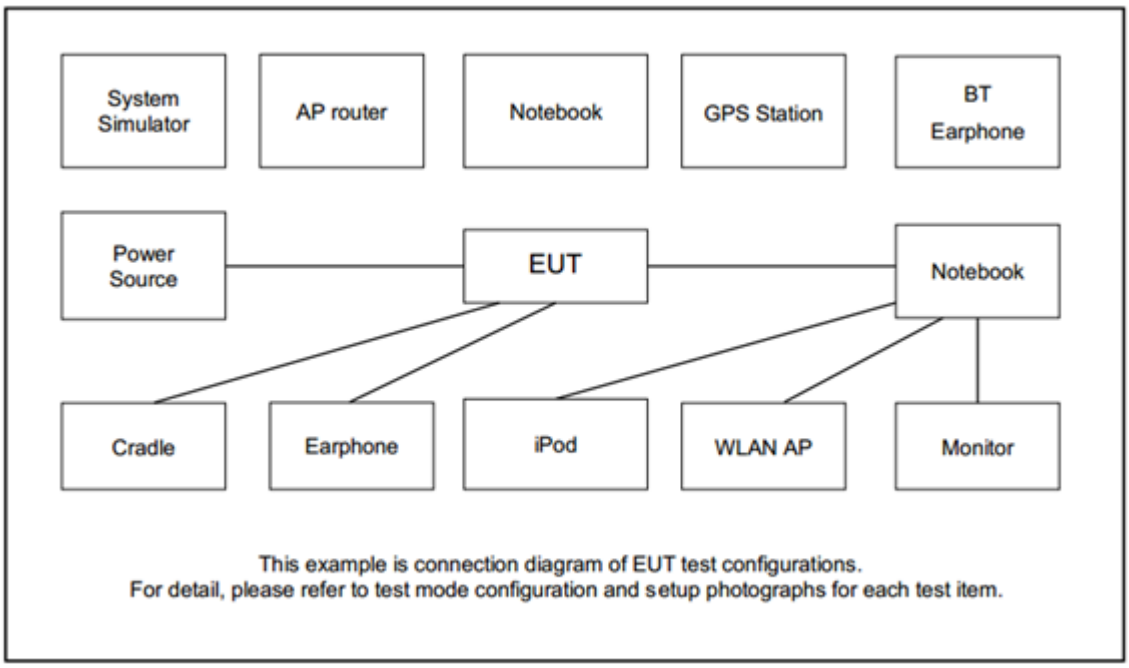
Modulation Type	Modulation
A	QPSK
B	16QAM
C	64QAM

Test Item	Modulation Type	Bandwidth	RB Size	Channel
Conducted Power	A, B	All	1, Half, Full	L, M, H
EIRP	A, B	All	1, Half, Full	L, M, H
RSE	A	20 MHz or less	1RB	L, M, H

Remark:

1. Evaluated all the transmitter signal and reporting worst-case configuration among all modulation types.
2. 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.
3. The maximum power of QPSK is higher than other modulation (16QAM/64QAM), therefore, according to engineering evaluation, we choose higher power (QPSK) to perform all tests and show in the report.
4. All the radiated test cases were performed with AC Adapter 1 and Battery 1 and Sample 1.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m

2.4 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
	Frequency	3560.0	3625	3690
15	Channel	55315	55990	56665
	Frequency	3557.5	3625	3692.5
10	Channel	55290	55990	56690
	Frequency	3555.0	3625	3695
5	Channel	55265	55990	56715
	Frequency	3552.5	3625	3697.5

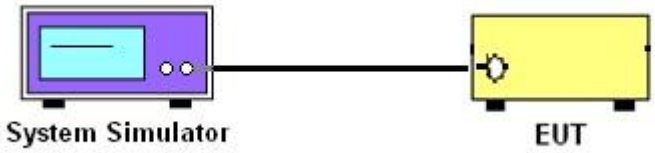
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



3.1.3 Test Result of Conducted Test

Please refer to Appendix A.

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.

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.

3.3 EIRP

3.3.1 Description of the EIRP Measurement

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

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

EIRP = PT + GT – LC, 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

Device	Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)
End User Device	23	n/a

Remark: Total channel power is complied with EIRP limit 23dBm/10MHz.

3.3.2 Test Procedures

The testing follows procedure in Section 5.2 of ANSI C63.26-2015 and KDB 940660 D01 Part 96 CBRS Eqpt v03 Section 3.2(b)(2)

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

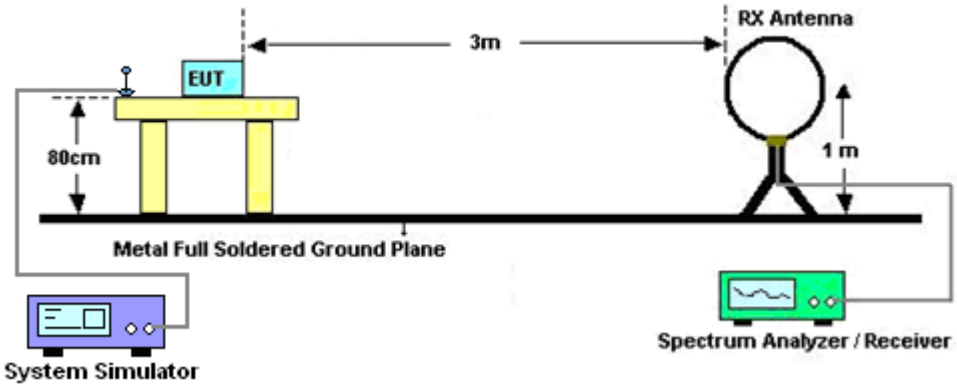
4 Radiated Test Items

4.1 Measuring Instruments

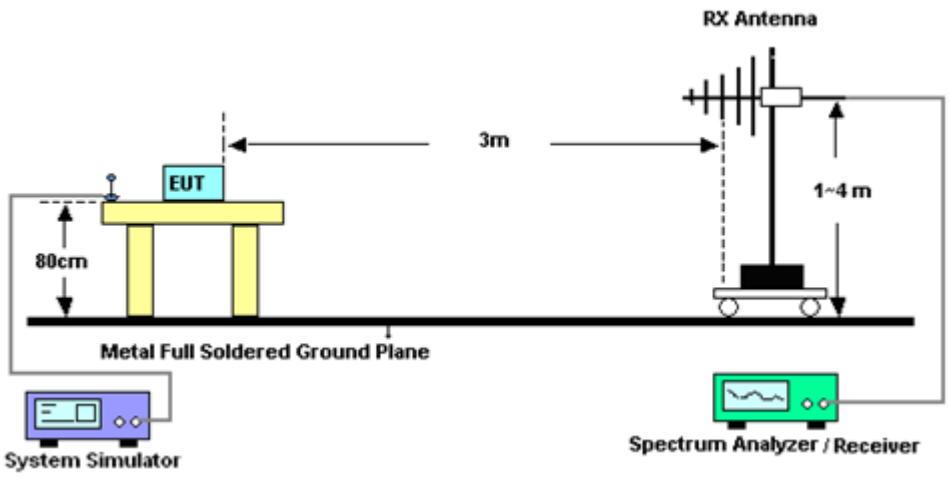
See list of measuring instruments of this test report.

4.2 Test Setup

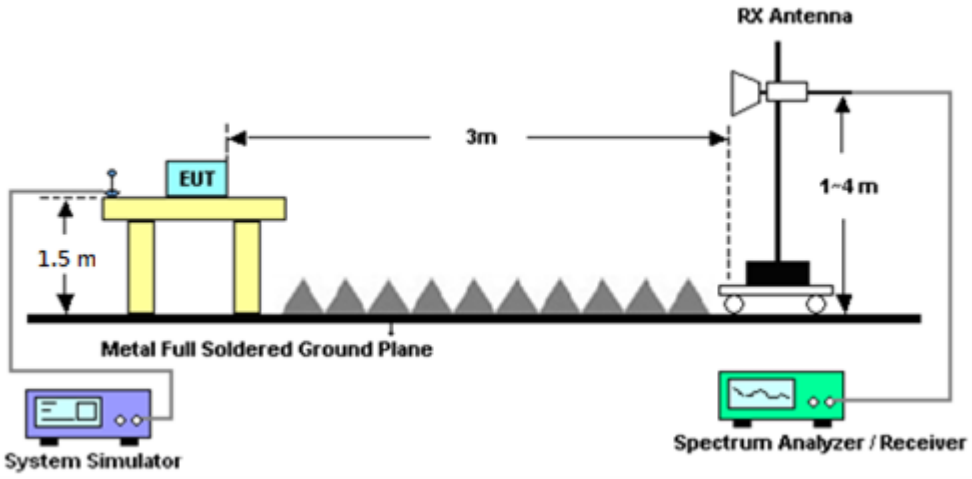
For radiated emissions below 30MHz



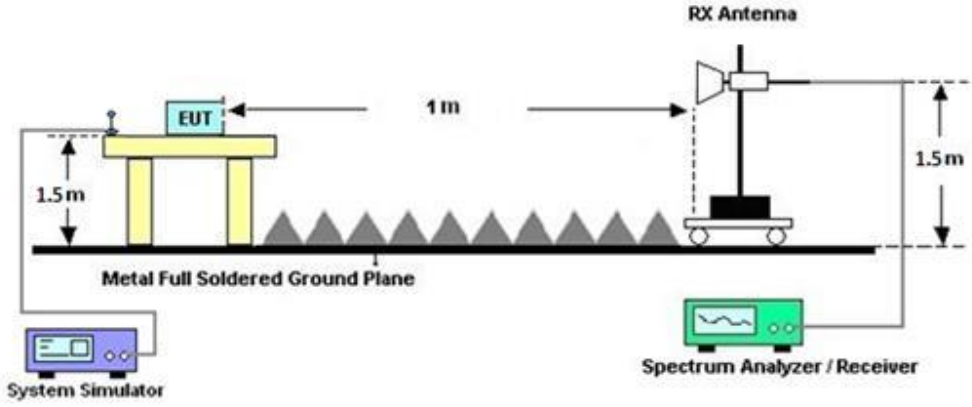
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test 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 adequate comparison measurement 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.

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. 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 C63.26-2015 section 5.5.4 Radiated measurement using the field strength method

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. To convert spectrum reading E(dBuV/m) to EIRP(dBm)
   EIRP(dBm) = Level (dBuV/m) + 20log(d) -104.77, where d is the distance at which filed strength limit is specified in the rules.
7. Field Strength Level (dBm) = Spectrum Reading (dBm) + Antenna Factor + Cable Loss + Read Level - Preamp Factor.
8. ERP (dBm) = EIRP (dBm) - 2.15
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Feb. 28, 2023	Oct. 30, 2023~ Nov. 13, 2023	Feb. 27, 2024	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	37059 & 01	30MHz~1GHz	Nov. 10, 2022	Oct. 30, 2023~ Nov. 08, 2023	Nov. 09, 2023	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	37059 & 01	30MHz~1GHz	Nov. 03, 2023	Nov. 08, 2023~ Nov. 13, 2023	Nov. 02, 2024	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	40103 & 07	30MHz~1GHz	Apr. 23, 2023	Oct. 30, 2023~ Nov. 13, 2023	Apr. 22, 2024	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1328	1GHz~18GHz	Dec. 15, 2022	Oct. 30, 2023~ Nov. 13, 2023	Dec. 14, 2023	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02114	1GHz~18GHz	Jul. 31, 2023	Oct. 30, 2023~ Nov. 13, 2023	Jul. 30, 2024	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	1224	18GHz-40GHz	Jul. 10, 2023	Oct. 30, 2023~ Nov. 13, 2023	Jul. 09, 2024	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz-40GHz	Nov. 24, 2022	Oct. 30, 2023~ Nov. 13, 2023	Nov. 23, 2023	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103A	161075	10MHz~1GHz	Mar. 21, 2023	Oct. 30, 2023~ Nov. 13, 2023	Mar. 20, 2024	Radiation (03CH12-HY)
Preamplifier	Agilent	8449B	3008A02375	1GHz~26.5GHz	May 23, 2023	Oct. 30, 2023~ Nov. 13, 2023	May 22, 2024	Radiation (03CH12-HY)
Preamplifier	E-INSTRUMENT TECH LTD.	ERA-100M-18G-56-01-A70	EC1900249	1GHz-18GHz	Dec. 21, 2022	Oct. 30, 2023~ Nov. 13, 2023	Dec. 20, 2023	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 07, 2022	Oct. 30, 2023~ Nov. 13, 2023	Dec. 06, 2023	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Jan. 10, 2023	Oct. 30, 2023~ Nov. 13, 2023	Jan. 09, 2024	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-900-1000-15000-60SS	SN12	1GHz High Pass Filter	Sep. 11, 2023	Oct. 30, 2023~ Nov. 13, 2023	Sep. 10, 2024	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN2	3GHz High Pass Filter	Mar. 14, 2023	Oct. 30, 2023~ Nov. 13, 2023	Mar. 13, 2024	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 07, 2023	Oct. 30, 2023~ Nov. 13, 2023	Mar. 06, 2024	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 20, 2022	Oct. 30, 2023~ Nov. 13, 2023	Dec. 19, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Dec. 20, 2022	Oct. 30, 2023~ Nov. 13, 2023	Dec. 19, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803953/2	30MHz~40GHz	Dec. 20, 2022	Oct. 30, 2023~ Nov. 13, 2023	Dec. 19, 2023	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP210117	N/A	Oct. 19, 2023	Oct. 30, 2023~ Nov. 13, 2023	Oct. 18, 2024	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Oct. 30, 2023~ Nov. 13, 2023	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Oct. 30, 2023~ Nov. 13, 2023	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Oct. 30, 2023~ Nov. 13, 2023	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Oct. 30, 2023~ Nov. 13, 2023	N/A	Radiation (03CH12-HY)
Base Station (Measure)	Anritsu	MT8821C	6201664755	LTE FDD/TDD(with44), LTE-4CC DLCA/2CC ULCA, CatM1/NB1/NB2	Jul. 18, 2023	Oct. 25, 2023	Jul. 17, 2024	Conducted (TH03-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#B	1-18GHz	Jan. 06, 2023	Oct. 25, 2023	Jan. 05, 2024	Conducted (TH03-HY)

6 Measurement Uncertainty

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.07 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.63 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.14 dB**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) & EIRP

LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
20	1	0	QPSK	21.38	21.58	21.63	22.63	0.1832
20	1	0	16-QAM	20.65	20.82	20.87	21.87	0.1538
Limit	EIRP < 23dBm/10MHz			Result			Pass	

LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
15	1	0	QPSK	21.32	21.56	21.60	22.60	0.1820
15	1	0	16-QAM	20.56	20.80	20.83	21.83	0.1524
Limit	EIRP < 23dBm/10MHz			Result			Pass	

LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
10	1	0	QPSK	21.35	21.54	21.57	22.57	0.1807
10	1	0	16-QAM	20.58	20.79	20.86	21.86	0.1535
Limit	EIRP < 23dBm/10MHz			Result			Pass	

LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
5	1	0	QPSK	21.32	21.53	21.56	22.56	0.1803
5	1	0	16-QAM	20.58	20.78	20.83	21.83	0.1524
Limit	EIRP < 23dBm/10MHz			Result			Pass	

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.

Appendix B. Test Results of Radiated Test

B1. Summary of each worse mode

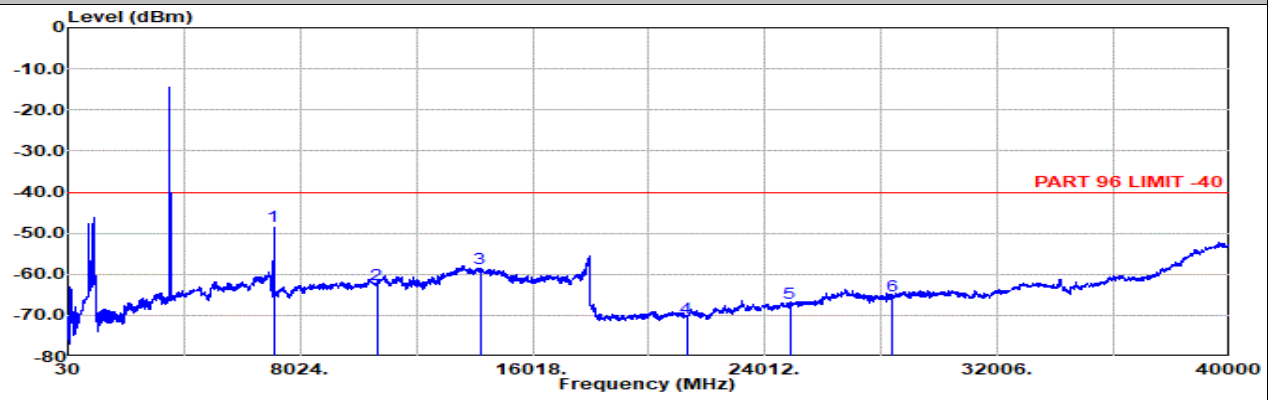
Part	Mode	Ch	Freq (MHz)	Level (dBm)	Detector	Ant Factor (dB/m)	Amp\Cbl (dB)	Filter (dB)	EIRP CF (dB)	Reading (dBuV)	Limit (dBm)	Margin (dB)	Pol	Ant
Part 96	1	L	7102.000	-46.74	RMS	36.52	-53.17	-5.11	-95.23	70.25	-40.00	-6.74	V	Main

Main

Part 96 Mode 1

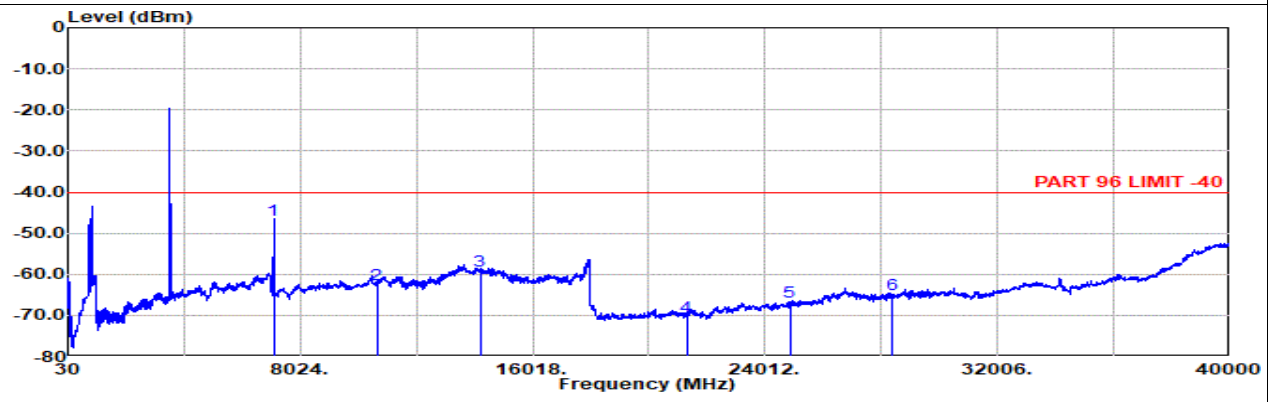
LTE B48 20M Ch55340 1RB0 QPSK

L



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-230731 Horizontal
: LTE Band 48 20M Ch55340 1RB0 QPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	7102.00	-48.36	RMS	36.52	-53.17	-5.11	-95.23	68.63	-40.00	-8.36	Horizontal
2	10653.00	-62.41	RMS	39.30	-51.29	-6.25	-95.23	51.06	-40.00	-22.41	Horizontal
3	14204.00	-58.70	RMS	41.09	-47.48	-6.95	-95.23	49.87	-40.00	-18.70	Horizontal
4	21307.00	-70.49	RMS	37.98	-31.66	-9.54	-95.23	27.96	-40.00	-30.49	Horizontal
5	24858.00	-66.91	RMS	39.77	-29.86	-9.54	-95.23	27.95	-40.00	-26.91	Horizontal
6	28409.00	-65.31	RMS	40.00	-29.12	-9.54	-95.23	28.58	-40.00	-25.31	Horizontal



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-230731 Vertical
: LTE Band 48 20M Ch55340 1RB0 QPSK

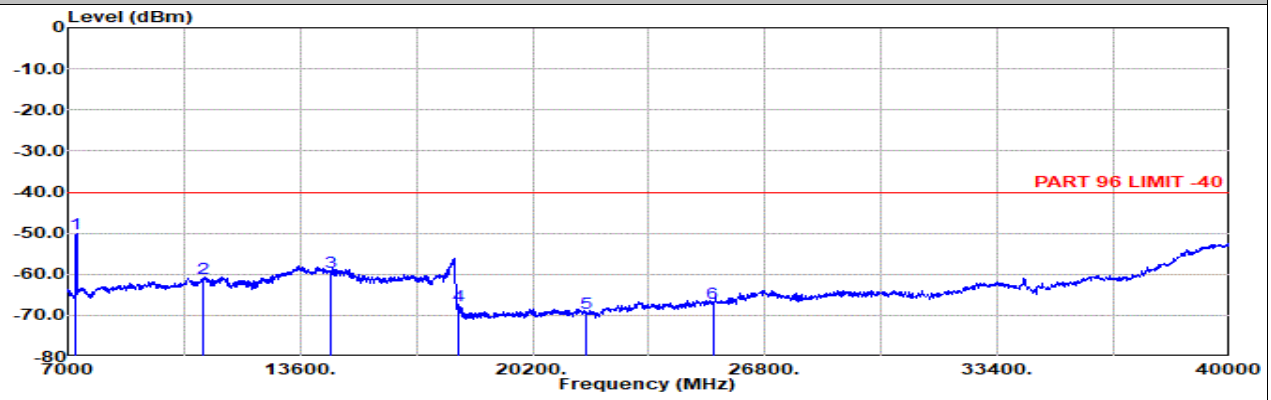
	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	7102.00	-46.74	RMS	36.52	-53.17	-5.11	-95.23	70.25	-40.00	-6.74	Vertical
2	10653.00	-62.51	RMS	39.30	-51.29	-6.25	-95.23	50.96	-40.00	-22.51	Vertical
3	14204.00	-59.05	RMS	41.09	-47.48	-6.95	-95.23	49.52	-40.00	-19.05	Vertical
4	21307.00	-70.28	RMS	37.98	-31.66	-9.54	-95.23	28.17	-40.00	-30.28	Vertical
5	24858.00	-66.76	RMS	39.77	-29.86	-9.54	-95.23	28.10	-40.00	-26.76	Vertical
6	28409.00	-64.99	RMS	40.00	-29.12	-9.54	-95.23	28.90	-40.00	-24.99	Vertical

Main

Part 96 Mode 1

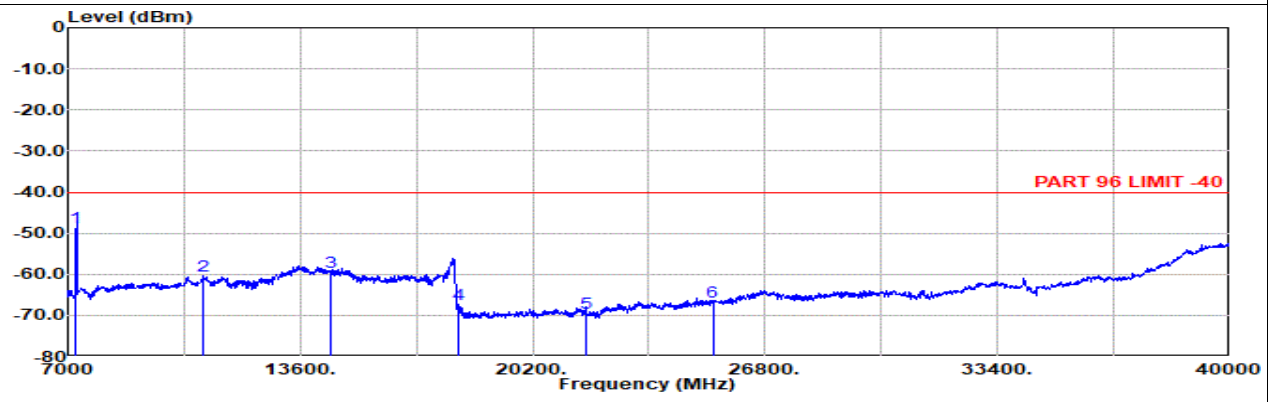
LTE B48 20M Ch55990 1RB0 QPSK

M



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-230731 Horizontal
: LTE Band 48 20M Ch55990 1RB0 QPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	7232.00	-50.01	RMS	37.16	-53.25	-5.23	-95.23	66.54	-40.00	-10.01	Horizontal
2	10848.00	-61.11	RMS	39.30	-50.91	-6.29	-95.23	52.02	-40.00	-21.11	Horizontal
3	14464.00	-59.36	RMS	40.80	-47.10	-7.01	-95.23	49.18	-40.00	-19.36	Horizontal
4	18081.00	-67.68	RMS	37.50	-34.13	-9.54	-95.23	33.72	-40.00	-27.68	Horizontal
5	21697.00	-69.57	RMS	38.10	-31.62	-9.54	-95.23	28.72	-40.00	-29.57	Horizontal
6	25313.00	-66.90	RMS	39.25	-29.52	-9.54	-95.23	28.14	-40.00	-26.90	Horizontal



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-230731 Vertical
: LTE Band 48 20M Ch55990 1RB0 QPSK

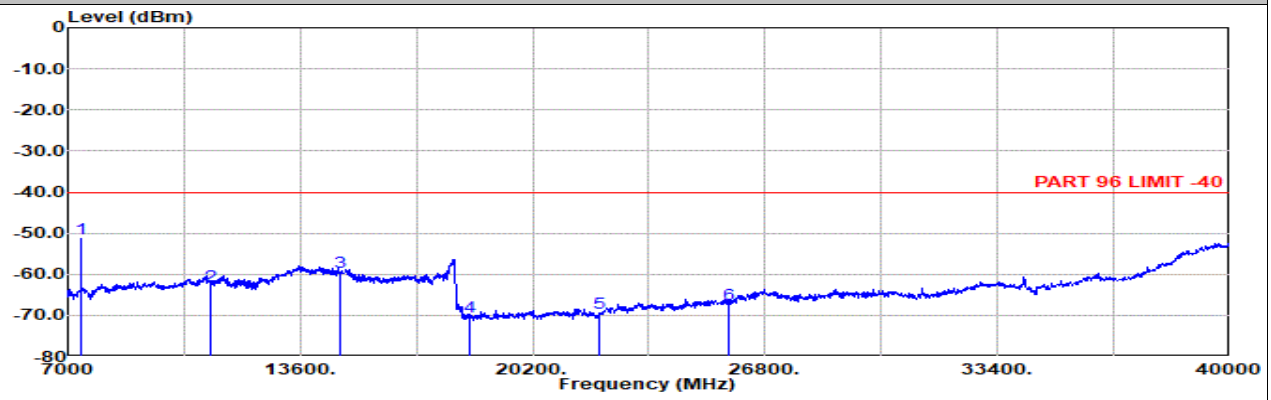
	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	7232.00	-48.54	RMS	37.16	-53.25	-5.23	-95.23	68.01	-40.00	-8.54	Vertical
2	10848.00	-60.52	RMS	39.30	-50.91	-6.29	-95.23	52.61	-40.00	-20.52	Vertical
3	14464.00	-59.58	RMS	40.80	-47.10	-7.01	-95.23	48.96	-40.00	-19.58	Vertical
4	18081.00	-67.25	RMS	37.50	-34.13	-9.54	-95.23	34.15	-40.00	-27.25	Vertical
5	21697.00	-69.49	RMS	38.10	-31.62	-9.54	-95.23	28.80	-40.00	-29.49	Vertical
6	25313.00	-66.87	RMS	39.25	-29.52	-9.54	-95.23	28.17	-40.00	-26.87	Vertical

Main

Part 96 Mode 1

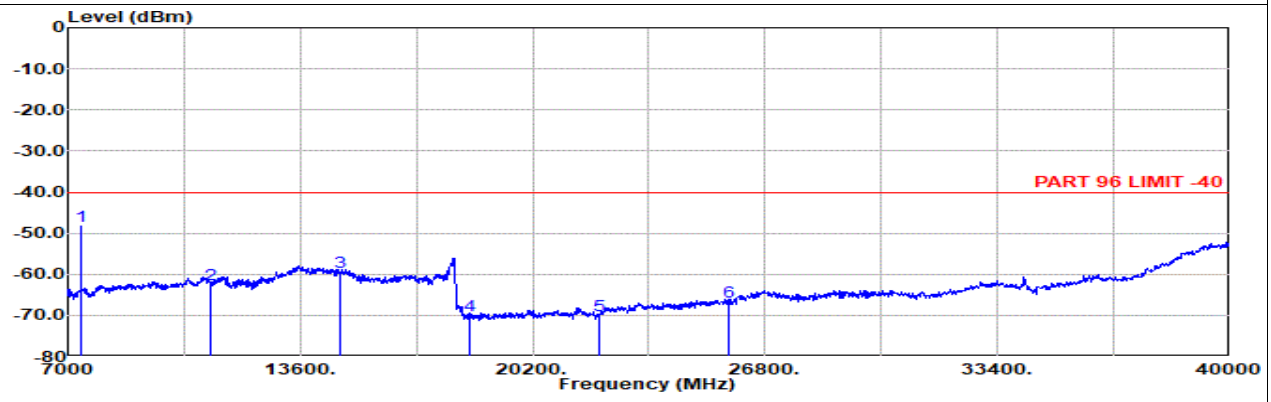
LTE B48 20M Ch56640 1RB0 QPSK

H



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-230731 Horizontal
: LTE Band 48 20M Ch56640 1RB0 QPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	7362.00	-51.19	RMS	36.93	-53.19	-5.19	-95.23	65.49	-40.00	-11.19	Horizontal
2	11043.00	-62.88	RMS	38.91	-50.54	-6.33	-95.23	50.31	-40.00	-22.88	Horizontal
3	14724.00	-59.43	RMS	40.65	-46.98	-7.07	-95.23	49.20	-40.00	-19.43	Horizontal
4	18406.00	-70.29	RMS	37.85	-34.08	-9.54	-95.23	30.71	-40.00	-30.29	Horizontal
5	22087.00	-69.47	RMS	38.08	-31.61	-9.54	-95.23	28.83	-40.00	-29.47	Horizontal
6	25768.00	-67.28	RMS	39.04	-29.13	-9.54	-95.23	27.58	-40.00	-27.28	Horizontal



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-230731 Vertical
: LTE Band 48 20M Ch56640 1RB0 QPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	7362.00	-48.44	RMS	36.93	-53.19	-5.19	-95.23	68.24	-40.00	-8.44	Vertical
2	11043.00	-62.38	RMS	38.91	-50.54	-6.33	-95.23	50.81	-40.00	-22.38	Vertical
3	14724.00	-59.55	RMS	40.65	-46.98	-7.07	-95.23	49.08	-40.00	-19.55	Vertical
4	18406.00	-70.12	RMS	37.85	-34.08	-9.54	-95.23	30.88	-40.00	-30.12	Vertical
5	22087.00	-70.11	RMS	38.08	-31.61	-9.54	-95.23	28.19	-40.00	-30.11	Vertical
6	25768.00	-66.76	RMS	39.04	-29.13	-9.54	-95.23	28.10	-40.00	-26.76	Vertical