



# FCC RADIO TEST REPORT

**FCC ID** : PPQ201707BG96  
**Equipment** : WWAN Module  
**Brand Name** : Quectel  
**Model Name** : BG96  
**Applicant** : LITE-ON Technology Corporation  
Bldg. C, 90, Chien 1 Rd., Chung-Ho,  
New Taipei City 23585, Taiwan (R.O.C)  
**Manufacturer** : LITE-ON Technology Corporation  
Bldg. C, 90, Chien 1 Rd., Chung-Ho,  
New Taipei City 23585, Taiwan (R.O.C)  
**Standard** : FCC 47 CFR Part 2, 22(H), 24(E), 27

The product was received on Jul. 17, 2023 and testing was performed from Aug. 17, 2023 to Oct. 18, 2023. We, Sporton International Inc. Wensan 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. Wensan Laboratory, the test report shall not be reproduced except in full.

*Louis Wu*

Approved by: Louis Wu

**Sporton International Inc. Wensan Laboratory**

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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### History of this test report

<b>Report No.</b>	<b>Version</b>	<b>Description</b>	<b>Issue Date</b>
FG371710B	01	Initial issue of report	Oct. 31, 2023
FG371710B	02	Revise Product Feature This report is an updated version, replacing the report issued on Oct. 31, 2023.	Nov. 17, 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	-
	§22.913 (a)(5)	Effective Radiated Power (Band 5)	Pass	-
	§27.50 (b)(10) §27.50 (c)(10)	Effective Radiated Power (Band 12) (Band 13)		
	§24.232 (c)	Equivalent Isotropic Radiated Power (Band 2) (Band 25)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (Band 4)		
4.2	§2.1053 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (f) §27.53 (g) §27.53 (h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 25)	Pass	13.28 dB under the limit at 1560.00 MHz

**Remark:** The test voltage (220Vac/60Hz) and set up were by manufacturer definition.

**Conformity Assessment Condition:**

- 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.
- 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: Yun Huang**

**Report Producer: Rachel Hsieh**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

Product Feature	
General Specs	GSM/LTE
Installed into the Host	Equipment name: AC Charging Station_IC 80A Brand name: LITEON Model Name: EX-1193-1, EX-1193-1-48
Antenna Type	WWAN: Monopole-Coupling Antenna
Antenna Gain	LTE Band 2: 3.2 dBi LTE Band 4: 2.3 dBi LTE Band 5: 1.0 dBi LTE Band 12: 2.4 dBi LTE Band 13: 0.8 dBi LTE Band 25: 3.2 dBi

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

## 1.2 Modification of EUT

No modifications made to the EUT during the testing.



### 1.3 Testing Location

<b>Test Site</b>	Sporton International Inc. EMC & Wireless Communications Laboratory
<b>Test Site Location</b>	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
<b>Test Site No.</b>	<b>Sporton Site No.</b> TH03-HY (TAF Code: 1190)
<b>Test Engineer</b>	Kelvin Lu
<b>Temperature (°C)</b>	22.7~23.7
<b>Relative Humidity (%)</b>	50.2~50.8
<b>Remark</b>	The Conducted test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

<b>Test Site</b>	Sporton International Inc. Wensan Laboratory
<b>Test Site Location</b>	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
<b>Test Site No.</b>	<b>Sporton Site No.</b> 03CH13-HY
<b>Test Engineer</b>	Rain Lee, Jacky Hung and Mancy Chou
<b>Temperature (°C)</b>	20~26
<b>Relative Humidity (%)</b>	40~65

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

FCC Designation No.: TW1190 and TW3786



## **1.4 Applicable Standards**

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

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

<Cat-M1>

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	2	v	v	v	v	v	v	v	v	v		v	v	v	v
	4	v	v	v	v	v	v	v	v	v		v	v	v	v
	5	v	v	v	v	-	-	v	v	v		v	v	v	v
	12	v	v	v	v	-	-	v	v	v		v	v	v	v
	13	-	-	v	v	-	-	v	v	v		v	v	v	v
	25	v	v	v	v	v	v	v	v	v		v	v	v	v
E.R.P / E.I.R.P	2	v	v	v	v	v	v	v	v	Max. Power					
	4	v	v	v	v	v	v	v							
	5	v	v	v	v	-	-	v	v						
	12	v	v	v	v	-	-	v	v						
	13	-	-	v	v	-	-	v	v						
	25	v	v	v	v	v	v	v	v						
Radiated Spurious Emission	2						v	v		v				v	
	4					v		v		v					v
	5			v		-	-	v		v					v
	12				v	-	-	v		v			v		
	13	-	-	v		-	-	v		v			v	v	
	25						v	v		v			v		
Remark	<ol style="list-style-type: none"> <li>The mark "v" means that this configuration is chosen for testing</li> <li>The mark "-" means that this bandwidth is not supported.</li> <li>The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.</li> </ol>														

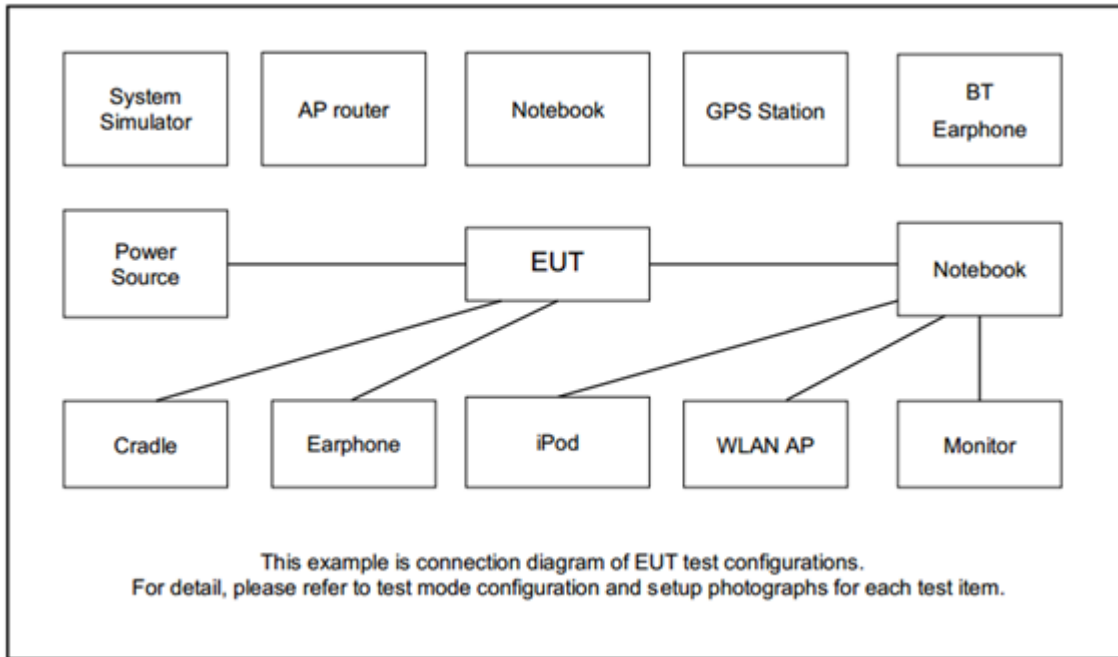




<NB-IoT>

Test Items	LTE -NB1 Band	Subcarrier (kHz)		Modulation		Tone @		Test Channel		
		3.75	15	BPSK	QPSK	1	Full	L	M	H
Max. Output Power	2	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v
	5	v	v	v	v	v	v	v	v	v
	12	v	v	v	v	v	v	v	v	v
	13	v	v	v	v	v	v	v	v	v
	25	v	v	v	v	v	v	v	v	v
E.R.P / E.I.R.P	2	v	v	v	v	Max. Power				
	4	v	v	v	v					
	5	v	v	v	v					
	12	v	v	v	v					
	13	v	v	v	v					
	25	v	v	v	v					
Radiated Spurious Emission	2		v		v	v				v
	4		v		v	v			v	
	5		v		v	v				v
	12		v		v	v		v		
	25		v		v	v		v		
Remark	1. The mark "v " means that this configuration is chosen for testing 2. The mark "- " means that this bandwidth is not supported. 3. 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.									

## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration and system

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

<Cat-M1>

LTE Band 2 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 4 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3



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

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



LTE Band 13 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	23230	-
	Frequency	-	782	-
5	Channel	23205	23230	23255
	Frequency	779.5	782	784.5

LTE Band 25 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	26140	26340	26590
	Frequency	1860	1880	1905
15	Channel	26115	26340	26615
	Frequency	1857.5	1880	1907.5
10	Channel	26090	26340	26640
	Frequency	1855	1880	1910
5	Channel	26065	26340	26665
	Frequency	1852.5	1880	1912.5
3	Channel	26055	26340	26675
	Frequency	1851.5	1880	1913.5
1.4	Channel	26047	26340	26683
	Frequency	1850.7	1880	1914.3



<NB-IoT>

LTE-NB1 Band 2 Channel and Frequency List			
Channel/Frequency(MHz)	Lowest	Middle	Highest
Channel	18601	18900	19199
Frequency	1850.1	1880.0	1909.9

LTE-NB1 Band 4 Channel and Frequency List			
Channel/Frequency(MHz)	Lowest	Middle	Highest
Channel	19951	20175	20399
Frequency	1710.1	1732.5	1754.9

LTE-NB1 Band 5 Channel and Frequency List			
Channel/Frequency(MHz)	Lowest	Middle	Highest
Channel	20401	20525	20649
Frequency	824.1	836.5	848.9

LTE-NB1 Band 12 Channel and Frequency List			
Channel/Frequency(MHz)	Lowest	Middle	Highest
Channel	23011	23095	23179
Frequency	699.1	707.5	715.9

LTE-NB1 Band 13 Channel and Frequency List			
Channel/Frequency(MHz)	Lowest	Middle	Highest
Channel	23181	23230	23279
Frequency	777.1	782.0	786.9

LTE-NB1 Band 25 Channel and Frequency List			
Channel/Frequency(MHz)	Lowest	Middle	Highest
Channel	26041	26365	26689
Frequency	1850.1	1882.5	1914.9

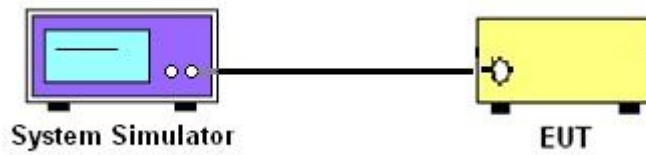
### 3 Conducted Test Items

#### 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 and ERP/EIRP

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

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

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

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 12 and Band 13

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2 and Band 25

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4

According to KDB 412172 D01 Power Approach,

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

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna in dB

### 3.2.2 Test Procedures

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



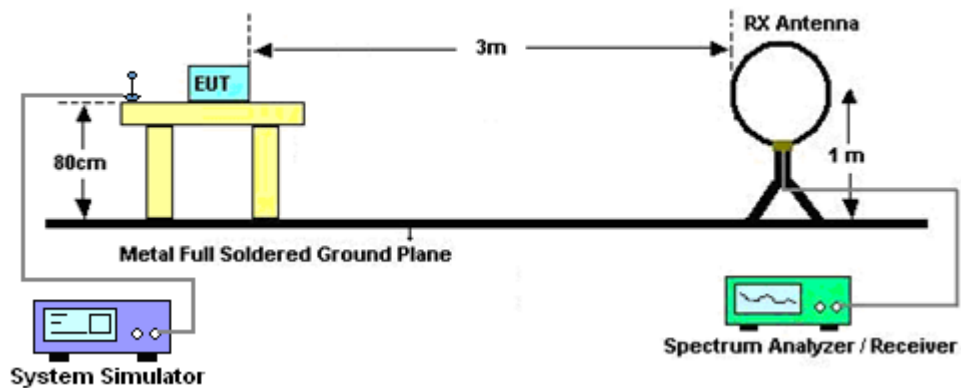
## 4 Radiated Test Items

### 4.1 Measuring Instruments

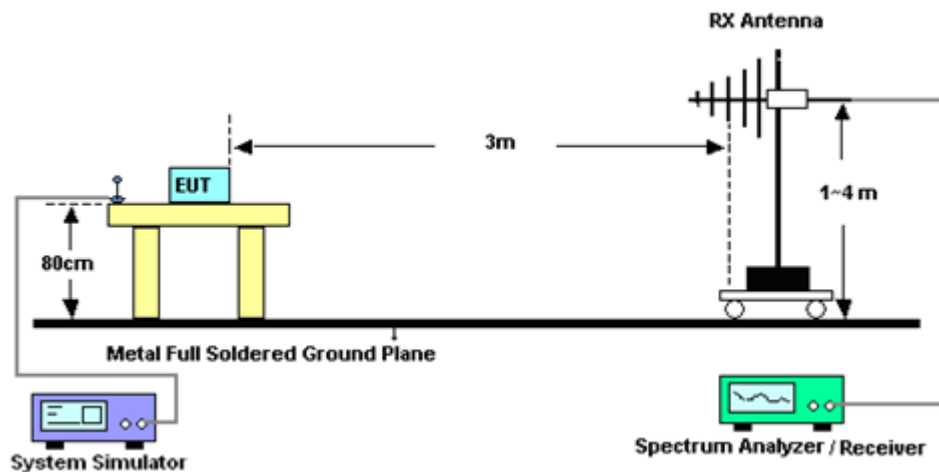
See list of measuring instruments of this test report.

#### 4.1.1 Test Setup

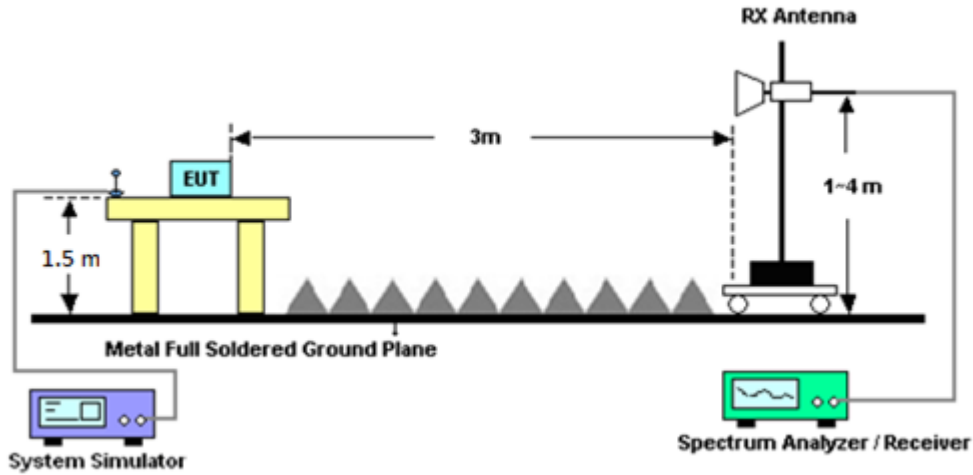
For radiated test below 30MHz



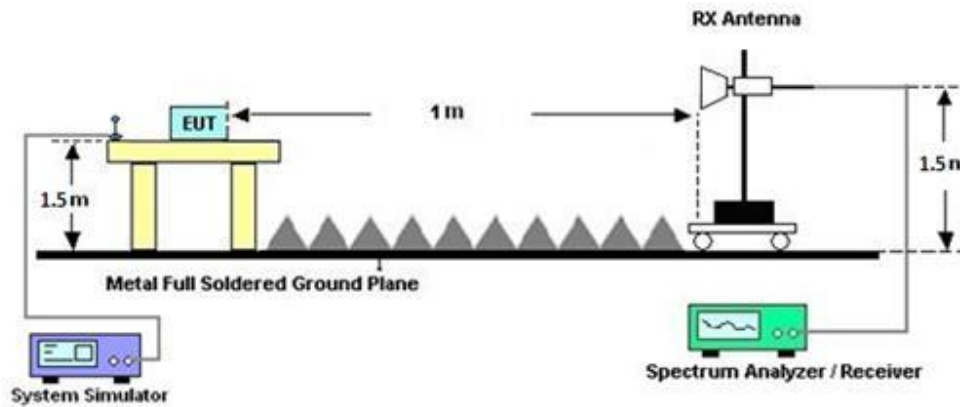
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



#### 4.1.2 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.



## 4.2 Radiated Spurious Emission Measurement

### 4.2.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

For LTE Band 13

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to  $-70$  dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and  $-80$  dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

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

### 4.2.2 Test Procedures

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

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

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

$EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$

$ERP \text{ (dBm)} = EIRP - 2.15$



## 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	100488	9 kHz~30 MHz	Sep. 20, 2022	Aug. 17, 2023~ Aug. 24, 2023	Sep. 19, 2023	Radiation (03CH13-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 07, 2022	Aug. 17, 2023~ Aug. 24, 2023	Dec. 06, 2023	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	1223	18GHz~40GHz	Jul. 10, 2023	Aug. 17, 2023~ Aug. 24, 2023	Jul. 09, 2024	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Dec. 20, 2022	Aug. 17, 2023~ Aug. 24, 2023	Dec. 19, 2023	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz~40GHz	May 15, 2022	Aug. 17, 2023~ Aug. 24, 2023	May 14, 2024	Radiation (03CH13-HY)
Amplifier	SONOMA	310N	187282	9kHz~1GHz	Dec. 14, 2022	Aug. 17, 2023~ Aug. 24, 2023	Dec. 13, 2023	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	40103 & 07	30MHz~1GHz	Apr. 23, 2023	Aug. 17, 2023~ Aug. 24, 2023	Apr. 22, 2024	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	41912 & 05	30MHz~1GHz	Feb. 05, 2023	Aug. 17, 2023~ Aug. 24, 2023	Feb. 04, 2024	Radiation (03CH13-HY)
Hygrometer	TECPEL	DTM-303B	TP140325	N/A	Nov. 07, 2022	Aug. 17, 2023~ Aug. 24, 2023	Nov. 06, 2023	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	1GHz~18GHz	May 16, 2023	Aug. 17, 2023~ Aug. 24, 2023	May 15, 2024	Radiation (03CH13-HY)
Preamplifier	EM Electronics	EM01G18G	060803	1GHz~18GHz	Jan. 10, 2023	Aug. 17, 2023~ Aug. 24, 2023	Jan. 09, 2024	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY55370526	10Hz~44GHz	Mar. 23, 2023	Aug. 17, 2023~ Aug. 24, 2023	Mar. 22, 2024	Radiation (03CH13-HY)
Filter	Wainwright	WLK4-1000-15 30-8000-40SS	SN12	1.53GHz Low Pass Filter	Sep. 13, 2022	Aug. 17, 2023~ Aug. 24, 2023	Sep. 12, 2023	Radiation (03CH13-HY)
Filter	Wainwright	WHKX12-1080 -1200-15000-6 0SS	SN3	1.2GHz High Pass Filter	Jun. 29, 2023	Aug. 17, 2023~ Aug. 24, 2023	Jun. 28, 2024	Radiation (03CH13-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 0SS	SN2	3GHz High Pass Filter	Jul. 10, 2023	Aug. 17, 2023~ Aug. 24, 2023	Jul. 09, 2024	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30MHz~18GHz	Feb. 08, 2023	Aug. 17, 2023~ Aug. 24, 2023	Feb. 07, 2024	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	804793/4	30MHz~18GHz	Feb. 08, 2023	Aug. 17, 2023~ Aug. 24, 2023	Feb. 07, 2024	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15682/4	9 kHz~18GHz	Feb. 22, 2023	Aug. 17, 2023~ Aug. 24, 2023	Feb. 21, 2024	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24961/4	30MHz~18GHz	Feb. 08, 2023	Aug. 17, 2023~ Aug. 24, 2023	Feb. 07, 2024	Radiation (03CH13-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Aug. 17, 2023~ Aug. 24, 2023	N/A	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Aug. 17, 2023~ Aug. 24, 2023	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Aug. 17, 2023~ Aug. 24, 2023	N/A	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02038	1GHz~18GHz	Jul. 31, 2023	Aug. 17, 2023~ Aug. 24, 2023	Jul. 30, 2024	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1212	1GHz~18GHz	Mar. 23, 2023	Aug. 17, 2023~ Aug. 24, 2023	Mar. 22, 2024	Radiation (03CH13-HY)
Base Station(Measurement)	Anritsu	MT8821C	6201664755	LTE FDD/TDD(with 4), LTE-4CC DLCA/2CC ULCA, CatM1/NB1/NB2	Jul. 18, 2023	Oct. 13, 2023~ Oct. 18, 2023	Jul. 17, 2024	Conducted (TH03-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#B	1-18GHz	Jan. 06, 2023	Oct. 13, 2023~ Oct. 18, 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% ( $U = 2Uc(y)$ )	3.02 dB
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### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.55 dB
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### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.82 dB
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## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power & ERP/EIRP)

<Cat-M1>

LTE Band 2 Maximum Average Power [dBm] (GT - LC = 3.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
20	1	0	QPSK	22.40	22.27	22.42	25.76	0.3767
20	1	5		22.35	22.32	22.43		
20	6	0		22.39	22.26	22.56		
20	1	0	16-QAM	22.12	21.97	22.23	25.84	0.3837
20	1	5		22.07	21.91	22.16		
20	5	0		22.52	22.39	22.64		
15	1	0	QPSK	22.42	22.29	22.41	25.63	0.3656
15	1	5		22.39	22.27	22.43		
15	6	0		22.39	22.36	22.40		
15	1	0	16-QAM	22.00	21.99	22.13	25.82	0.3819
15	1	5		21.97	21.94	22.15		
15	5	0		22.60	22.57	22.62		
10	1	0	QPSK	22.40	22.34	22.43	25.72	0.3733
10	1	5		22.43	22.36	22.40		
10	6	0		22.41	22.24	22.52		
10	1	0	16-QAM	21.99	22.15	22.14	25.89	0.3882
10	1	5		22.01	22.07	22.11		
10	5	0		22.52	22.46	22.69		
5	1	0	QPSK	22.42	22.33	22.26	25.67	0.3690
5	1	5		22.47	22.27	22.28		
5	6	0		22.40	22.31	22.36		
5	1	0	16-QAM	22.22	22.03	22.09	25.80	0.3802
5	1	5		22.05	21.88	22.01		
5	5	0		22.60	22.41	22.60		
3	1	0	QPSK	22.53	22.55	22.59	25.79	0.3793
3	1	5		22.49	22.48	22.56		
3	6	0		22.25	22.17	22.32		
3	1	0	16-QAM	22.52	22.51	22.54	25.86	0.3855
3	1	5		22.53	22.66	22.51		
3	5	0		22.36	22.01	22.11		
1.4	1	0	QPSK	22.55	22.46	22.44	25.75	0.3758
1.4	1	5		22.48	22.44	22.41		
1.4	6	0		22.21	22.19	22.27		
1.4	1	0	16-QAM	22.48	22.33	22.48	25.68	0.3698
1.4	1	5		22.47	22.29	22.44		
1.4	5	0		22.06	22.11	22.14		
Limit	EIRP < 2W			Result			Pass	



LTE Band 25 Maximum Average Power [dBm] (GT - LC = 3.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
20	1	0	QPSK	22.93	22.90	23.21	26.49	0.4457
20	1	5		22.88	22.87	23.18		
20	6	0		22.91	22.97	23.29		
20	1	0	16-QAM	22.67	22.77	22.98	26.42	0.4385
20	1	5		22.64	22.72	22.97		
20	5	0		23.07	23.13	23.22		
15	1	0	QPSK	22.76	22.87	23.08	26.51	0.4477
15	1	5		22.73	22.93	23.06		
15	6	0		22.95	22.96	23.31		
15	1	0	16-QAM	22.88	22.89	23.01	26.41	0.4375
15	1	5		22.79	22.76	22.94		
15	5	0		23.08	23.13	23.21		
10	1	0	QPSK	22.77	22.91	23.23	26.53	0.4498
10	1	5		22.84	22.92	23.16		
10	6	0		22.94	22.98	23.33		
10	1	0	16-QAM	22.89	22.70	23.25	26.76	0.4742
10	1	5		22.85	22.71	23.11		
10	5	0		23.11	23.07	23.56		
5	1	0	QPSK	23.02	23.09	23.18	26.41	0.4375
5	1	5		23.01	23.14	23.16		
5	6	0		23.00	23.08	23.21		
5	1	0	16-QAM	22.80	22.91	23.25	26.45	0.4416
5	1	5		22.84	22.83	23.13		
5	5	0		23.13	23.10	23.16		
3	1	0	QPSK	23.16	23.22	23.30	26.50	0.4467
3	1	5		23.15	23.24	23.25		
3	6	0		22.97	22.92	22.97		
3	1	0	16-QAM	23.21	23.24	23.27	26.47	0.4436
3	1	5		23.17	23.12	23.23		
3	5	0		22.72	22.92	23.09		
1.4	1	0	QPSK	23.14	23.22	23.58	26.78	0.4764
1.4	1	5		23.02	23.18	23.47		
1.4	6	0		22.97	23.07	23.36		
1.4	1	0	16-QAM	23.17	23.27	23.39	26.59	0.4560
1.4	1	5		23.16	23.17	23.31		
1.4	5	0		22.98	22.97	23.07		
Limit	EIRP < 2W			Result			Pass	





LTE Band 4 Maximum Average Power [dBm] (GT - LC = 2.3 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
20	1	0	QPSK	22.64	22.73	22.67	25.12	0.3251
20	1	5		22.62	22.70	22.58		
20	6	0		22.64	22.82	22.78		
20	1	0	16-QAM	22.43	23.02	22.75	25.32	0.3404
20	1	5		22.41	22.99	22.67		
20	5	0		22.86	22.86	22.68		
15	1	0	QPSK	22.62	22.67	22.64	25.04	0.3192
15	1	5		22.61	22.65	22.56		
15	6	0		22.60	22.74	22.64		
15	1	0	16-QAM	22.42	22.58	22.74	25.17	0.3289
15	1	5		22.41	22.57	22.65		
15	5	0		22.83	22.87	22.60		
10	1	0	QPSK	22.63	22.78	22.54	25.12	0.3251
10	1	5		22.68	22.82	22.56		
10	6	0		22.60	22.74	22.60		
10	1	0	16-QAM	22.51	22.61	22.66	25.25	0.3350
10	1	5		22.49	22.68	22.65		
10	5	0		22.84	22.95	22.77		
5	1	0	QPSK	22.76	22.86	22.63	25.17	0.3289
5	1	5		22.73	22.83	22.57		
5	6	0		22.65	22.87	22.65		
5	1	0	16-QAM	22.60	22.61	22.69	25.48	0.3532
5	1	5		22.46	22.58	22.64		
5	5	0		22.73	23.18	22.66		
3	1	0	QPSK	22.95	23.01	22.89	25.35	0.3428
3	1	5		23.01	23.05	22.88		
3	6	0		22.76	22.89	22.66		
3	1	0	16-QAM	22.97	23.07	22.90	25.39	0.3459
3	1	5		22.97	23.09	22.90		
3	5	0		22.57	22.78	22.66		
1.4	1	0	QPSK	22.91	23.02	22.87	25.42	0.3483
1.4	1	5		22.93	23.12	22.91		
1.4	6	0		22.70	22.81	22.62		
1.4	1	0	16-QAM	22.92	23.06	22.86	25.37	0.3443
1.4	1	5		22.92	23.07	22.87		
1.4	5	0		22.52	22.73	22.58		
Limit	EIRP < 1W			Result			Pass	



LTE Band 5 Maximum Average Power [dBm] (GT - LC = 1 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	22.73	22.78	22.55	21.68	0.1472
10	1	5		22.67	22.82	22.47		
10	6	0		22.77	22.83	22.70		
10	1	0	16-QAM	22.43	22.49	22.22	21.78	0.1507
10	1	5		22.38	22.54	22.23		
10	5	0		22.91	22.93	22.84		
5	1	0	QPSK	22.52	23.11	22.61	22.03	0.1596
5	1	5		22.57	23.18	22.56		
5	6	0		22.61	22.94	22.58		
5	1	0	16-QAM	22.50	22.51	22.28	21.84	0.1528
5	1	5		22.36	22.48	22.24		
5	5	0		22.99	22.92	22.66		
3	1	0	QPSK	22.89	23.15	22.83	22.03	0.1596
3	1	5		22.93	23.18	22.83		
3	6	0		22.59	22.86	22.56		
3	1	0	16-QAM	22.95	23.05	22.87	21.92	0.1556
3	1	5		22.94	23.07	22.88		
3	5	0		22.54	22.85	22.43		
1.4	1	0	QPSK	22.93	23.15	22.85	22.00	0.1585
1.4	1	5		22.92	23.07	22.86		
1.4	6	0		22.51	22.85	22.49		
1.4	1	0	16-QAM	22.84	23.08	22.81	21.93	0.1560
1.4	1	5		22.85	23.07	22.83		
1.4	5	0		22.58	22.86	22.44		
Limit	ERP < 7W			Result			Pass	



LTE Band 12 Maximum Average Power [dBm] (GT - LC = 2.4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	22.40	22.65	22.66	22.98	0.1986
10	1	5		22.53	22.54	22.58		
10	6	0		22.57	22.73	22.73		
10	1	0	16-QAM	22.25	22.49	22.52	22.88	0.1941
10	1	5		22.40	22.52	22.46		
10	5	0		22.48	22.62	22.63		
5	1	0	QPSK	22.52	22.54	22.27	22.87	0.1936
5	1	5		22.58	22.57	22.25		
5	6	0		22.62	22.38	22.28		
5	1	0	16-QAM	22.30	22.28	22.05	22.69	0.1858
5	1	5		22.20	22.27	21.91		
5	5	0		22.44	22.43	22.29		
3	1	0	QPSK	22.64	22.76	22.55	23.01	0.2000
3	1	5		22.62	22.68	22.53		
3	6	0		22.27	22.65	22.20		
3	1	0	16-QAM	22.56	22.72	22.54	22.97	0.1982
3	1	5		22.42	22.68	22.49		
3	5	0		22.21	22.44	22.13		
1.4	1	0	QPSK	22.69	22.76	22.53	23.01	0.2000
1.4	1	5		22.56	22.70	22.58		
1.4	6	0		22.31	22.49	22.24		
1.4	1	0	16-QAM	22.51	22.76	22.43	23.01	0.2000
1.4	1	5		22.47	22.71	22.35		
1.4	5	0		22.33	22.53	22.41		
Limit	ERP < 3W			Result			Pass	



LTE Band 13 Maximum Average Power [dBm] (GT - LC = 0.8 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	-	22.79	-	21.45	0.1396
10	1	5			22.78			
10	6	0			22.80			
10	1	0	16-QAM	-	22.64	-	21.62	0.1452
10	1	5			22.60			
10	5	0			22.97			
5	1	0	QPSK	22.76	22.83	22.70	21.48	0.1406
5	1	5		22.74	22.80	22.64		
5	6	0		22.83	22.78	22.69		
5	1	0	16-QAM	22.61	22.68	22.55	21.54	0.1426
5	1	5		22.59	22.65	22.51		
5	5	0		22.89	22.84	22.86		
Limit	ERP < 3W			Result			Pass	



<NB-IoT>

LTE Band 2 Maximum Average Power [dBm] (GT - LC = 3.2 dB)								
Sub-carrier Spacing [kHz]	Number of Tones		Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
3.75	1	0	BPSK	22.90	22.84	23.07	26.27	0.4236
3.75	1	47		22.85	22.80	23.04		
3.75	1	0	QPSK	22.87	22.92	23.10	26.30	0.4266
3.75	1	47		22.81	22.88	23.05		
15	1	0	BPSK	22.50	22.54	23.03	26.40	0.4365
15	1	11		22.57	22.57	23.20		
15	1	0	QPSK	22.41	22.61	23.02	26.52	0.4487
15	1	11		22.47	22.56	23.11		
15	12	0		22.76	22.85	23.32		
Limit	EIRP < 2W		Result			Pass		

LTE Band 25 Maximum Average Power [dBm] (GT - LC = 3.2 dB)								
Sub-carrier Spacing [kHz]	Number of Tones		Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
3.75	1	0	BPSK	23.01	23.03	23.36	26.56	0.4529
3.75	1	47		22.88	23.01	23.33		
3.75	1	0	QPSK	22.97	23.13	23.38	26.58	0.4550
3.75	1	47		22.87	23.04	23.31		
15	1	0	BPSK	23.03	23.29	23.71	26.91	0.4909
15	1	11		23.14	23.21	23.67		
15	1	0	QPSK	23.07	23.23	23.62	27.01	0.5023
15	1	11		23.03	23.16	23.60		
15	12	0		23.29	23.41	23.81		
Limit	EIRP < 2W		Result			Pass		

LTE Band 4 Maximum Average Power [dBm] (GT - LC = 2.3 dB)								
Sub-carrier Spacing [kHz]	Number of Tones		Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
3.75	1	0	BPSK	23.10	23.17	23.06	25.47	0.3524
3.75	1	47		23.09	23.06	23.03		
3.75	1	0	QPSK	23.11	23.10	23.03	25.41	0.3475
3.75	1	47		23.02	23.06	22.95		
15	1	0	BPSK	22.85	23.13	23.10	25.51	0.3556
15	1	11		22.94	23.21	23.18		
15	1	0	QPSK	22.82	23.20	23.05	25.69	0.3707
15	1	11		22.91	23.15	23.10		
15	12	0		23.14	23.39	23.35		
Limit	EIRP < 1W		Result			Pass		



LTE Band 5 Maximum Average Power [dBm] (GT - LC = 1 dB)								
Sub-carrier Spacing [kHz]	Number of Tones		Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3.75	1	0	BPSK	23.10	23.42	23.12	22.27	0.1687
3.75	1	47		23.07	23.33	23.05		
3.75	1	0	QPSK	23.03	23.40	23.15	22.25	0.1679
3.75	1	47		23.01	23.31	23.12		
15	1	0	BPSK	22.99	23.31	22.85	22.16	0.1644
15	1	11		22.98	23.30	22.94		
15	1	0	QPSK	23.04	23.24	22.86	22.45	0.1758
15	1	11		23.02	23.29	22.97		
15	12	0		23.35	23.60	23.30		
Limit	ERP < 7W			Result			Pass	

LTE Band 12 Maximum Average Power [dBm] (GT - LC = 2.4 dB)								
Sub-carrier Spacing [kHz]	Number of Tones		Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3.75	1	0	BPSK	22.88	23.07	22.62	23.32	0.2148
3.75	1	47		22.85	23.02	22.78		
3.75	1	0	QPSK	22.86	23.06	22.79	23.31	0.2143
3.75	1	47		22.81	23.01	22.77		
15	1	0	BPSK	22.44	22.74	22.47	22.99	0.1991
15	1	11		22.42	22.70	22.52		
15	1	0	QPSK	22.45	22.72	22.40	23.34	0.2158
15	1	11		22.41	22.69	22.39		
15	12	0		22.81	23.09	22.79		
Limit	ERP < 3W			Result			Pass	

LTE Band 13 Maximum Average Power [dBm] (GT - LC = 0.8 dB)								
Sub-carrier Spacing [kHz]	Number of Tones		Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3.75	1	0	BPSK	-	22.94	-	21.59	0.1442
3.75	1	47		-	22.91	-		
3.75	1	0	QPSK	-	22.98	-	21.63	0.1455
3.75	1	47		-	22.88	-		
15	1	0	BPSK	-	22.86	-	21.54	0.1426
15	1	11		-	22.89	-		
15	1	0	QPSK	-	22.87	-	21.83	0.1524
15	1	11		-	22.83	-		
15	12	0		-	23.18	-		
Limit	ERP < 3W			Result			Pass	



# Appendix B. Test Results of Radiated Test

<Cat-M1>

## LTE Band 2

LTE Band 2 / 20MHz / QPSK									
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3742	-34.33	-13	-21.33	-44.84	-44.60	1.26	11.53	H
	5613	-58.03	-13	-45.03	-73.04	-68.47	1.64	12.07	H
	7484	-50.43	-13	-37.43	-69.52	-59.73	1.94	11.24	H
									H
									H
									H
									H
	3742	-32.28	-13	-19.28	-42.59	-42.55	1.26	11.53	V
	5613	-58.22	-13	-45.22	-73.02	-68.66	1.64	12.07	V
	7484	-50.88	-13	-37.88	-69.95	-60.18	1.94	11.24	V
									V
									V
									V
									V

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



LTE Band 25

LTE Band 25 / 20MHz / QPSK									
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3702	-33.74	-13	-20.74	-44.25	-44.20	1.23	11.69	H
	5553	-58.34	-13	-45.34	-73.27	-68.72	1.63	12.01	H
	7404	-49.13	-13	-36.13	-68.12	-58.12	1.93	10.92	H
									H
									H
									H
									H
	3702	-33.59	-13	-20.59	-43.91	-44.05	1.23	11.69	V
	5553	-58.61	-13	-45.61	-73.39	-68.99	1.63	12.01	V
	7404	-47.41	-13	-34.41	-66.41	-56.40	1.93	10.92	V
									V
									V
									V
									V

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





**LTE Band 4**

LTE Band 4 / 15MHz / QPSK									
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Highest	3481	-38.44	-13	-25.44	-49.21	-48.73	1.07	11.36	H
	5222	-57.00	-13	-44.00	-71.57	-66.84	1.56	11.40	H
	6963	-56.57	-13	-43.57	-74.09	-65.73	1.86	11.03	H
									H
									H
									H
									H
	3481	-38.03	-13	-25.03	-48.59	-48.32	1.07	11.36	V
	5222	-56.44	-13	-43.44	-70.93	-66.28	1.56	11.40	V
	6963	-55.95	-13	-42.95	-73.96	-65.11	1.86	11.03	V
									V
									V
									V
									V

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



**LTE Band 5**

LTE Band 5 / 5MHz / QPSK									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Highest	1688	-38.01	-13	-25.01	-41.79	-44.36	0.95	9.46	H
	2533	-40.23	-13	-27.23	-47.26	-47.28	1.07	10.27	H
	3377	-44.21	-13	-31.21	-54	-52.12	1.09	11.15	H
	4221	-47.27	-13	-34.27	-58.18	-54.97	1.50	11.34	H
	5066	-51.56	-13	-38.56	-65.91	-58.87	1.53	11.00	H
									H
									H
	1688	-39.53	-13	-26.53	-43.12	-45.88	0.95	9.46	V
	2533	-42.24	-13	-29.24	-49.55	-49.29	1.07	10.27	V
	3377	-50.03	-13	-37.03	-59.78	-57.94	1.09	11.15	V
	4221	-47.78	-13	-34.78	-58.51	-55.48	1.50	11.34	V
	5066	-55.19	-13	-42.19	-69.34	-62.50	1.53	11.00	V
									V
									V

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



LTE Band 12

LTE Band 12 / 10MHz / QPSK									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1399	-30.92	-13.00	-17.92	-34.62	-35.07	0.90	7.19	H
	2099	-28.17	-13.00	-15.17	-33.79	-34.24	0.98	9.20	H
	2799	-38.70	-13.00	-25.70	-46.70	-45.82	1.13	10.40	H
	3498	-41.57	-13.00	-28.57	-51.75	-49.75	1.07	11.40	H
	4198	-46.86	-13.00	-33.86	-57.69	-54.52	1.49	11.30	H
	4898	-43.73	-13.00	-30.73	-57.72	-51.16	1.52	11.10	H
	5598	-49.19	-13.00	-36.19	-63.92	-57.50	1.64	12.10	H
	6297	-55.48	-13.00	-42.48	-71.63	-63.18	1.75	11.60	H
	1399	-27.82	-13.00	-14.82	-30.70	-31.97	0.90	7.19	V
	2099	-32.21	-13.00	-19.21	-38.04	-38.28	0.98	9.20	V
	2799	-41.69	-13.00	-28.69	-49.27	-48.81	1.13	10.40	V
	3498	-40.37	-13.00	-27.37	-50.30	-48.55	1.07	11.40	V
	4198	-45.82	-13.00	-32.82	-56.50	-53.48	1.49	11.30	V
	4898	-49.46	-13.00	-36.46	-63.31	-56.89	1.52	11.10	V
	5598	-49.20	-13.00	-36.20	-63.69	-57.51	1.64	12.10	V
	6297	-55.63	-13.00	-42.63	-72.02	-63.33	1.75	11.60	V

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



### LTE Band 13

LTE Band 13 / 5MHz / QPSK									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1555	-55.14	-13	-42.14	-59.02	-60.54	0.95	8.50	H
	2332	-49.59	-13	-36.59	-55.87	-56.74	1.03	10.33	H
	3109	-52.37	-13	-39.37	-62.11	-59.27	1.15	10.20	H
									H
									H
									H
	1555	-58.37	-13.00	-45.37	-61.90	-63.77	0.95	8.50	V
	2332	-53.90	-13	-40.90	-60.42	-61.05	1.03	10.33	V
	3109	-54.10	-13	-41.10	-63.45	-61.00	1.15	10.20	V
									V
									V
									V
Middle	1560	-55.43	-42.15	-13.28	-59.32	-60.83	0.95	8.50	H
	2340	-50.10	-13	-37.10	-56.37	-57.28	1.03	10.36	H
	3119	-51.20	-13	-38.20	-60.97	-58.10	1.15	10.20	H
									H
									H
									H
	1560	-57.47	-42.15	-15.32	-61.00	-62.87	0.95	1560	V
	2340	-50.16	-13	-37.16	-56.66	-57.34	1.03	2340	V
	3119	-54.63	-13	-41.63	-64.02	-61.53	1.15	3119	V
									V
									V
									V

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



<NB-IoT>

**LTE Band 2**

LTE Band 2 / 15kHz / QPSK									
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Highest	3819	-28.04	-13	-15.04	-39.68	-37.81	1.32	11.09	H
	5729	-56.55	-13	-43.55	-72.87	-66.48	1.66	11.58	H
	7641	-51.64	-13	-38.64	-71.61	-61.03	1.94	11.34	H
									H
									H
									H
									H
	3819	-27.64	-13	-14.64	-39.07	-37.41	1.32	11.09	V
	5729	-56.33	-13	-43.33	-72.66	-66.26	1.66	11.58	V
	7641	-50.21	-13	-37.21	-69.89	-59.60	1.94	11.34	V
									V
									V
									V
									V

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



LTE Band 25

LTE Band 25 / 15kHz / QPSK									
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700	-35.47	-13	-22.47	-46.98	-45.94	1.23	11.70	H
	5548	-57.17	-13	-44.17	-73.1	-67.54	1.63	12.00	H
	7403	-49.18	-13	-36.18	-69.16	-58.17	1.93	10.91	H
									H
									H
									H
									H
	3700	-33.19	-13	-20.19	-44.51	-43.66	1.23	11.70	V
	5550	-57.39	-13	-44.39	-73.18	-67.76	1.63	12.00	V
	7403	-48.27	-13	-35.27	-68.27	-57.26	1.93	10.91	V
									V
									V
									V
									V

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



**LTE Band 4**

LTE Band 4 / 15kHz / QPSK									
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3462	-38.51	-13	-25.51	-50.23	-48.76	1.08	11.32	H
	5193	-58.59	-13	-45.59	-74.03	-68.42	1.56	11.39	H
	6924	-55.68	-13	-42.68	-74.34	-64.87	1.86	11.05	H
									H
									H
									H
									H
	3462	-40.16	-13	-27.16	-51.71	-50.41	1.08	11.32	V
	5193	-58.37	-13	-45.37	-73.74	-68.20	1.56	11.39	V
	6924	-54.77	-13	-41.77	-73.9	-63.96	1.86	11.05	V
									V
									V
									V
									V

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



**LTE Band 5**

LTE Band 5 / 15kHz / QPSK									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Highest	1699.2	-38.29	-13	-25.29	-43.05	-44.77	0.95	9.59	H
	2549.4	-50.86	-13	-37.86	-59.05	-57.94	1.07	10.30	H
	3391.8	-53.22	-13	-40.22	-63.98	-61.16	1.09	11.18	H
	4242	-53.41	-13	-40.41	-65.39	-61.15	1.50	11.38	H
									H
									H
									H
	1699.2	-39.42	-13	-26.42	-44.01	-45.90	0.95	9.59	V
	2549.4	-53.07	-13	-40.07	-61.44	-60.15	1.07	10.30	V
	3391.8	-55.61	-13	-42.61	-66.35	-63.55	1.09	11.18	V
	4242	-56.00	-13	-43.00	-67.77	-63.74	1.50	11.38	V
									V
									V
									V

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





LTE Band 12

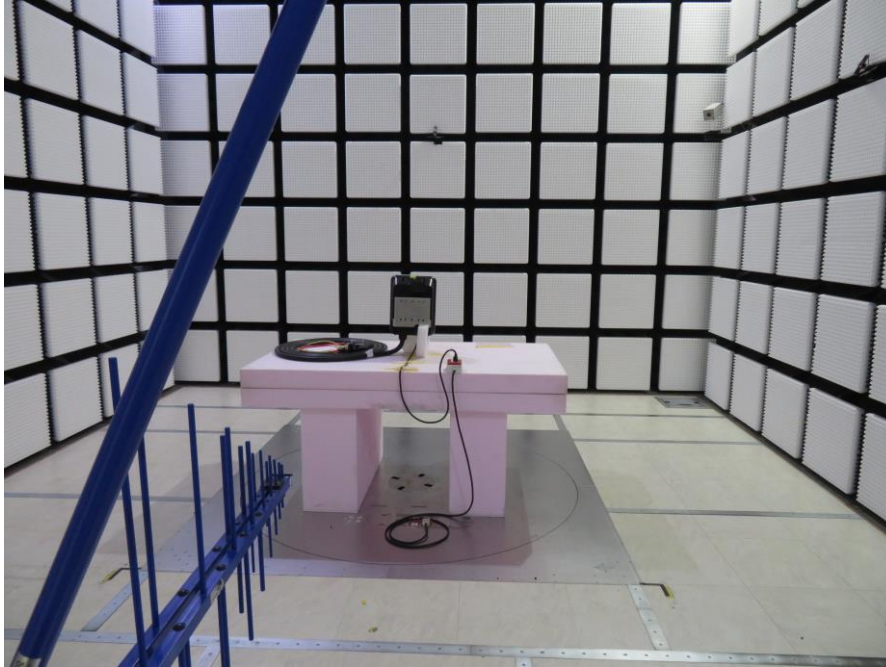
LTE Band 12 / 15kHz / QPSK									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1400	-35.07	-13.00	-22.07	-39.75	-39.22	0.90	7.20	H
	2096	-35.44	-13.00	-22.44	-42.04	-41.53	0.98	9.22	H
	2800	-45.23	-13.00	-32.23	-54.23	-52.35	1.13	10.40	H
	3496	-44.58	-13.00	-31.58	-55.75	-52.75	1.07	11.39	H
	4192	-47.41	-13.00	-34.41	-59.25	-55.07	1.49	11.30	H
	4896	-46.63	-13.00	-33.63	-61.61	-54.06	1.52	11.11	H
	5592	-55.38	-13.00	-42.38	-71.12	-63.68	1.63	12.08	H
	1400	-36.84	-13.00	-23.84	-40.71	-40.99	0.90	7.20	V
	2096	-38.76	-13.00	-25.76	-45.56	-44.85	0.98	9.22	V
	2800	-45.20	-13.00	-32.20	-53.78	-52.32	1.13	10.40	V
	3496	-42.57	-13.00	-29.57	-53.49	-50.74	1.07	11.39	V
	4192	-44.81	-13.00	-31.81	-56.50	-52.47	1.49	11.30	V
	4896	-52.80	-13.00	-39.80	-67.64	-60.23	1.52	11.11	V
	5592	-55.12	-13.00	-42.12	-70.64	-63.42	1.63	12.08	V

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

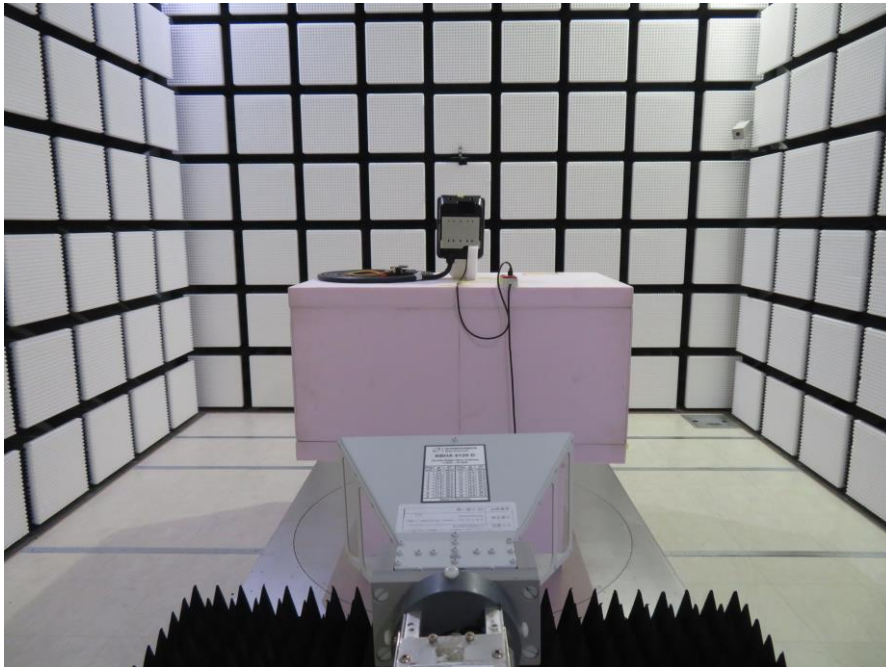
## Appendix C. Setup Photographs

### <Radiated Emission>

LF



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SHF



————THE END————