



Report No.: FG2D0922F

# FCC RADIO TEST REPORT

**FCC ID** : PU5-TP00132C

Equipment : Notebook Computer

**Brand Name** : Lenovo : TP00132C **Model Name** 

**Applicant** : Wistron Corporation

21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih

Dist, New Taipei City 221, Taiwan

Manufacturer : Lenovo PC HK Limited.

23/F, Lincoln House, Taikoo Place, 979 King's

Road, Quarry Bay, Hong Kong, China

Standard : FCC 47 CFR Part 2, 96

Equipment: Fibocom L860-GL-16 tested inside of Lenovo Notebook Computer.

The product was received on Dec. 09, 2022 and testing was performed from Jan. 21, 2023 to Feb. 22, 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 of Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

Louis Win

Sporton International Inc. EMC & Wireless Communications Laboratory

TEL: 0800-800005 : 1 of 16 Page Number FAX: 886-3-328-4978 Issue Date : Apr. 07, 2023 Report Version : 01

E-mail: Alex@sporton.com.tw

# **Table of Contents**

His	listory of this test report					
Su	mmar	y of Test Result	4			
1	Gene	eral Description	5			
	1.1 1.2 1.3 1.4 1.5	Product Feature of Equipment Under Test	5 5			
2	Test	Configuration of Equipment Under Test	7			
	2.1 2.2 2.3 2.4	Test Mode  Connection Diagram of Test System  Support Unit used in test configuration  Frequency List of Low/Middle/High Channels	7 8			
3	Cond	9				
	3.1 3.2 3.3	Measuring Instruments  Conducted Output Power  EIRP	10			
4	Radi	ated Test Items				
	4.1 4.2 4.3 4.4	Measuring Instruments Test Setup Test Result of Radiated Test Radiated Spurious Emission	12 13			
5	List	of Measuring Equipment	15			
Ap	pendi pendi	ertainty of Evaluation x A. Test Results of Conducted Test x B. Test Results of Radiated Test x C. Test Setup Photographs	16			

TEL: 0800-800005 FAX: 886-3-328-4978 E-mail: Alex@sporton.com.tw

Report Template No.: BU5-FGLTE96 Version 2.4

Page Number : 2 of 16

Issue Date : Apr. 07, 2023

Report No. : FG2D0922F

Report Version : 01

# History of this test report

Report No. : FG2D0922F

Report No.	Version	Description	Issue Date
FG2D0922F	01	Initial issue of report	Apr. 07, 2023

 TEL: 0800-800005
 Page Number: 3 of 16

 FAX: 886-3-328-4978
 Issue Date: Apr. 07, 2023

 E-mail: Alex@sporton.com.tw
 Report Version: 01

E-mail : Alex@sporton.com.tw

Report Template No.: BU5-FGLTE96 Version 2.4

## **Summary of Test Result**

Report No.: FG2D0922F

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
-	§96.41	Peak-to-Average Ratio	-	See Note
3.3	§96.41	Effective Isotropic Radiated Power	Pass	-
-	§2.1049 §96.41	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	Under limit 9.28 dB at 14724.000 MHz

#### Note:

- For host device, Radiated Spurious Emission, Effective Radiated Power and Equivalent Isotropic Radiated Power are verified and complies with the limit in this test report.
- For host device, the Conducted Output Power is no difference after compared to module (Model: L860-GL-16)

#### 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.
- Please refer to the section "Uncertainty of Evaluation" for 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: Michelle Chen** 

TEL: 0800-800005 Page Number : 4 of 16 FAX: 886-3-328-4978 : Apr. 07, 2023 Issue Date Report Version : 01

E-mail: Alex@sporton.com.tw

## 1 General Description

## 1.1 Product Feature of Equipment Under Test

	Product Feature						
Equipment	Notebook Computer						
Brand Name	Lenovo						
Model Name	TP00132C						
FCC ID	PU5-TP00132C						
Sample 1	EUT with AVX/ Ethertronics Antenna						
Sample 2	EUT with LUXSHARE-ICT Antenna						
	Brand Name: Intel						
Integrated WLAN Module	Model Name: AX211D2W						
	FCC ID: PD9AX211D2						
Integrated NFC Module	Brand Name: Foxconn						
Integrated Ni C Module	Model Name: T77H747						
	WCDMA/HSPA/LTE/GNSS/NFC						
	WLAN 11a/b/g/n HT20/HT40						
EUT supports Radios application	WLAN 11ac VHT20/VHT40/VHT80/VHT160						
	WLAN 11ax HE20/HE40/HE80/HE160						
	Bluetooth BR/EDR/LE						
EUT Stage	Production Unit						

Report No.: FG2D0922F

#### Remark:

- **1.** The above EUT's information was declared by manufacturer.
- 2. Equipment: Fibocom L860-GL-16 tested inside of Lenovo Notebook Computer.

WWAN Antenna Information							
	Manufacturer	AVX/ Ethertronics	Peak gain (dBi)	LTE Band 48: 0.23			
Main Antenna	Part number	SA31F29287AA	Туре	LTE Band 48: 0.23 PIFA LTE Band 48: -4.20 PIFA			
Walli Anteilia	Manufacturer	LUXSHARE-ICT	Peak gain (dBi)	LTE Band 48: -4.20			
	Part number	SA31F29290AA	Туре	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	21.30 dBm					
Type of Modulation	QPSK / 16QAM / 64QAM					

### 1.3 Modification of EUT

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

TEL: 0800-800005 Page Number : 5 of 16
FAX: 886-3-328-4978 Issue Date : Apr. 07, 2023

E-mail : Alex@sporton.com.tw Report Version : 01

## 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
Toot Site No	Sporton Site No.
Test Site No.	TH03-HY
Test Engineer	Mike Yeh
Temperature (°C)	22.8~23.4
Relative Humidity (%)	52~55

Report No.: FG2D0922F

Test Site	Sporton International Inc. Wensan Laboratory	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist.,	
rest Site Location	Taoyuan City 333010	
Test Site No.	Sporton Site No.	
rest site No.	03CH12-HY (TAF Code: 3786)	
Test Engineer	Jack Cheng, Wilson Wu, Jesse Fan and Tim Lee	
Temperature (°C)	20~25	
Relative Humidity (%)	50~60	
	The Radiated Spurious Emission test item subcontracted to Sporton	
Remark	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 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, 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:

- All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. The TAF code is not including all the FCC KDB listed without accreditation.

TEL: 0800-800005 Page Number : 6 of 16 FAX: 886-3-328-4978 Issue Date : Apr. 07, 2023

E-mail : Alex@sporton.com.tw Report Version : 01

#### 2 **Test Configuration of Equipment Under Test**

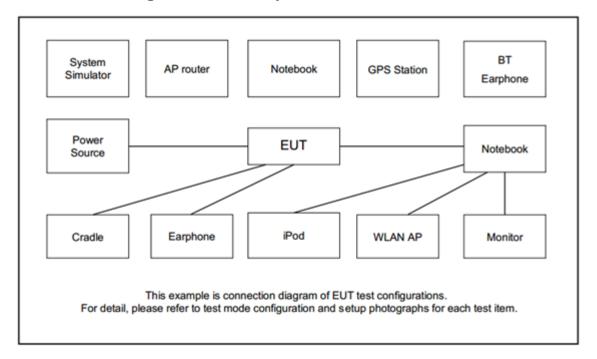
### 2.1 Test Mode

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

Report No.: FG2D0922F

			В	andwid	lth (MH	lz)		r	/lodulatio	n	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		v			v	v	v
E.I.R.P	48	-	-	v	٧	٧	v	٧	v				Max. I	Power		
Radiated Spurious Emission	48	-	-				v	v			v			v	v	<b>v</b>
Remark	<ol> <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>All the radiated test cases were performed with Adapter 1 and Sample 1.</li> </ol>															

## 2.2 Connection Diagram of Test System



TEL: 0800-800005 : 7 of 16 Page Number FAX: 886-3-328-4978 Issue Date : Apr. 07, 2023 Report Version : 01

E-mail: Alex@sporton.com.tw

## 2.3 Support Unit used in test configuration

lte	em	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1		System Simulator	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

Report No. : FG2D0922F

# 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					
20	Frequency	3560.0	3625.0	3690.0					
45	Channel	55315	55990	56665					
15	Frequency	3557.5	3625.0	3692.5					
40	Channel	55290	55990	56690					
10	Frequency	3555.0	3625.0	3695.0					
Г	Channel	55265	55990	56715					
5	Frequency	3552.5	3625.0	3697.5					

E-mail: Alex@sporton.com.tw Report Version : 01

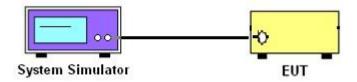
### 3 Conducted Test Items

## 3.1 Measuring Instruments

See list of measuring instruments of this test report.

### 3.1.1 Test Setup

### 3.1.2 Conducted Output Power



Report No.: FG2D0922F

### 3.1.3 Test Result of Conducted Test

Please refer to Appendix A.

E-mail: Alex@sporton.com.tw Report Version : 01

## 3.2 Conducted Output Power

### 3.2.1 Description of the Conducted Output Power Measurement

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

Report No.: FG2D0922F

#### 3.2.2 Test Procedures

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

TEL: 0800-800005 Page Number : 10 of 16 FAX: 886-3-328-4978 Issue Date : Apr. 07, 2023

E-mail : Alex@sporton.com.tw Report Version : 01

#### **3.3 EIRP**

### 3.3.1 Description of the EIRP Measurement

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

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<sub>T</sub> = gain of the transmitting antenna in dBi

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

Report No.: FG2D0922F

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

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

#### 3.3.1 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.

TEL: 0800-800005 : 11 of 16 Page Number FAX: 886-3-328-4978 Issue Date : Apr. 07, 2023 : 01

Report Version E-mail: Alex@sporton.com.tw

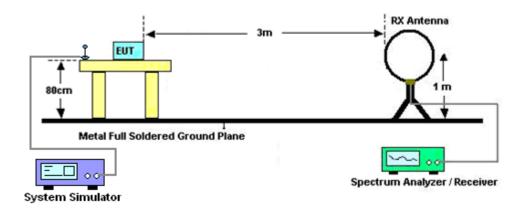
#### 4 **Radiated Test Items**

### 4.1 Measuring Instruments

See list of measuring instruments of this test report.

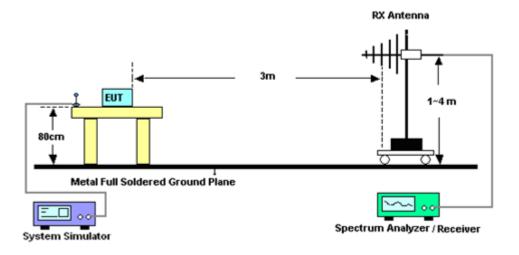
### 4.2 Test Setup

For radiated emissions below 30MHz



Report No.: FG2D0922F

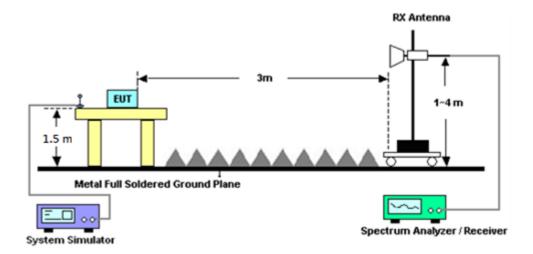
#### For radiated emissions from 30MHz to 1GHz



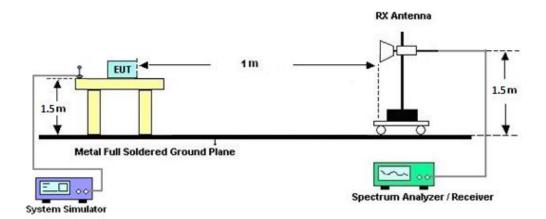
TEL: 0800-800005 Page Number : 12 of 16 FAX: 886-3-328-4978 : Apr. 07, 2023 Issue Date : 01

E-mail: Alex@sporton.com.tw Report Version

#### 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.

TEL: 0800-800005 FAX: 886-3-328-4978 E-mail: Alex@sporton.com.tw

Report Template No.: BU5-FGLTE96 Version 2.4

Page Number : 13 of 16 Issue Date : Apr. 07, 2023

Report No.: FG2D0922F

Report Version : 01

### 4.4 Radiated Spurious Emission

### 4.4.1 Description of Radiated Spurious Emission Measurement

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

Report No.: FG2D0922F

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.
- The table was rotated 360 degrees to determine the position of the highest spurious emission. 3.
- 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.
- 7. 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 ERP (dBm) = EIRP - 2.15

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

The limit line is -40dBm/MHz

TEL: 0800-800005 : 14 of 16 Page Number FAX: 886-3-328-4978 Issue Date : Apr. 07, 2023 : 01

E-mail: Alex@sporton.com.tw Report Version

#### 5 **List of Measuring Equipment**

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Radio Communication Analyzer	Anritsu	MT8821C	6262025353	LTE FDD/TDD LTE-2CC DLCA/ULCA	Oct. 13, 2022	Jan. 21, 2023~ Jan. 22, 2023	Oct. 12, 2023	Conducted (TH03-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#B	1-18GHz	Jan. 06, 2023	Jan. 21, 2023~ Jan. 22, 2023	Jan. 05, 2024	Conducted (TH03-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 20, 2022	Feb. 21, 2023~ Feb. 22, 2023	Sep. 19, 2023	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-0211 4	1GHz~18GHz	Aug. 09, 2022	Feb. 21, 2023~ Feb. 22, 2023	Aug. 08, 2023	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01 N-06	40103 & 07	30MHz~1GHz	Apr. 24, 2022	Feb. 21, 2023~ Feb. 22, 2023	Apr. 23, 2023	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 08, 2022	Feb. 21, 2023~ Feb. 22, 2023	Oct. 07, 2023	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1212	1GHz~18GHz	Mar. 10, 2022	Feb. 21, 2023~ Feb. 22, 2023	Mar. 09, 2023	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA91702 51	18GHz~40GHz	Nov. 24, 2022	Feb. 21, 2023~ Feb. 22, 2023	Nov. 23, 2023	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA91705 76	18GHz~40GHz	May 14, 2022	Feb. 21, 2023~ Feb. 22, 2023	May 13, 2023	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 23, 2022	Feb. 21, 2023~ Feb. 22, 2023	Mar. 22, 2023	Radiation (03CH12-HY)
Preamplifier	Aglient	8449B	3008A02375	1GHz~26.5GHz	May 24, 2022	Feb. 21, 2023~ Feb. 22, 2023	May 23, 2023	Radiation (03CH12-HY)
Preamplifier	E-INSTRUME NT TECH LTD.	ERA-100M-18 G-56-01-A70	EC1900250	1GHz-18GHz	Nov. 03, 2022	Feb. 21, 2023~ Feb. 22, 2023	Nov. 02, 2023	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 28, 2022	Feb. 21, 2023~ Feb. 22, 2023	Jun. 27, 2023	Radiation (03CH12-HY)
Spectrum Analyzer	Keysight	N9010A	MY53470118	10Hz~44GHz	Jan. 10, 2023	Feb. 21, 2023~ Feb. 22, 2023	Jan. 09, 2024	Radiation (03CH12-HY)
Base Station	Anritsu	MT8821C	6201432816	2/3/4G/LTE FDD/TDD with44)/LTE-3C C DLCA/2CC ULCA, CatM1/NB1/NB2	May 10, 2021	Feb. 21, 2023~ Feb. 22, 2023	May 09, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 10, 2022	Feb. 21, 2023~ Feb. 22, 2023	Mar. 09, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30MHz~18GHz	Feb. 08, 2023	Feb. 21, 2023~ Feb. 22, 2023	Feb. 07, 2024	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Dec. 20, 2022	Feb. 21, 2023~ Feb. 22, 2023	Dec. 19, 2023	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803953/2	30MHz~40GHz	Dec. 20, 2022	Feb. 21, 2023~ Feb. 22, 2023	Dec. 19, 2023	Radiation (03CH12-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000 -40ST	SN2	6.75GHz High Pass Filter	Mar. 15, 2022	Feb. 21, 2023~ Feb. 22, 2023	Mar. 14, 2023	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP140325	N/A	Nov. 07, 2022	Feb. 21, 2023~ Feb. 22, 2023	Nov. 06, 2023	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Feb. 21, 2023~ Feb. 22, 2023	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500- B	N/A	1m~4m	N/A	Feb. 21, 2023~ Feb. 22, 2023	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Feb. 21, 2023~ Feb. 22, 2023	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Feb. 21, 2023~ Feb. 22, 2023	N/A	Radiation (03CH12-HY)

Report No. : FG2D0922F

TEL: 0800-800005 : 15 of 16 Page Number FAX: 886-3-328-4978 Issue Date : Apr. 07, 2023 Report Version : 01

E-mail : Alex@sporton.com.tw

# 6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of	2 24 JD
Confidence of 95% (U = 2Uc(y))	3.31 dB

Report No.: FG2D0922F

### <u>Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)</u>

	-
Measuring Uncertainty for a Level of	3.25 dB
Confidence of 95% (U = 2Uc(y))	3.23 UB

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

Measuring Uncertainty for a Level of	0.04 JD
Confidence of 95% (U = 2Uc(y))	3.81 dB

TEL: 0800-800005 Page Number : 16 of 16 FAX: 886-3-328-4978 Issue Date : Apr. 07, 2023

E-mail: Alex@sporton.com.tw Report Version : 01

## **Appendix A. Test Results of Conducted Test**

## Conducted Output Power(Average power & EIRP)

LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1.15 dB)									
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)	
20	1	0	QPSK	21.30	21.29	21.28	22.45	0.1758	
20	1	0	16-QAM	20.15	20.42	20.16	21.57	0.1435	
Limit	EIRP < 23dBm/10MHz			Result			Pass		

Report No. : FG2D0922F

LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1.15 dB)									
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)	
15	1	0	QPSK	21.21	21.19	21.23	22.38	0.1730	
15	1	0	16-QAM	20.13	20.39	20.13	21.54	0.1426	
Limit	EIRP < 23dBm/10MHz			Result			Pass		

LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1.15 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)		
10	1	0	QPSK	21.21	21.27	21.20	22.42	0.1746		
10	1	0	16-QAM	20.05	20.42	20.14	21.57	0.1435		
Limit	EIRP < 23dBm/10MHz			Result			Pass			

LTE Band 48 Maximum Average Power [dBm] (GT - LC = 1.15 dB)									
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)	
5	1	0	QPSK	21.29	21.24	21.20	22.44	0.1754	
5	1	0	16-QAM	20.08	20.39	20.14	21.54	0.1426	
Limit	EIRP < 23dBm/10MHz			Result			Pass		

# Appendix B. Test Results of Radiated Test LTE Band 48

LTE Band 48 / 20MHz / QPSK											
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Margin ( dB )	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)		
	7102	-58.23	-40	-18.23	-55.88	-67.93	1.84	11.55	Н		
	10653	-55.28	-40	-15.28	-56.97	-63.75	2.23	10.71	Н		
	14204	-50.62	-40	-10.62	-58.42	-60.25	2.65	12.28	Н		
	21307	-64.23	-40	-24.23	-77.9	-79.08	3.32	18.17	Н		
	24858	-60.55	-40	-20.55	-78.03	-75.32	3.71	18.49	Н		
	28409	-57.02	-40	-17.02	-76.53	-72.49	3.99	19.45	Н		
Lowest									Н		
Lowest	7102	-57.95	-40	-17.95	-55.84	-67.65	1.84	11.55	V		
	10653	-55.13	-40	-15.13	-56.41	-63.60	2.23	10.71	V		
	14204	-50.56	-40	-10.56	-58.23	-60.19	2.65	12.28	V		
	21307	-64.14	-40	-24.14	-77.5	-78.99	3.32	18.17	V		
	24858	-60.83	-40	-20.83	-77.99	-75.60	3.71	18.49	V		
	28409	-57.41	-40	-17.41	-76.5	-72.88	3.99	19.45	V		
									V		
	7232	-57.94	-40	-17.94	-55.96	-67.40	1.86	11.32	Н		
	10848	-53.68	-40	-13.68	-55.7	-62.06	2.22	10.59	Н		
	14464	-50.56	-40	-10.56	-58.43	-60.06	2.62	12.12	Н		
	18080	-61.86	-40	-21.86	-72.66	-76.23	3.23	17.60	Н		
	21697	-57.91	-40	-17.91	-72.29	-73.08	3.43	18.60	Н		
	25313	-60.32	-40	-20.32	-77.9	-75.32	3.78	18.78	Н		
Middle									Н		
Middle	7232	-57.33	-40	-17.33	-55.7	-66.79	1.86	11.32	V		
	10848	-53.18	-40	-13.18	-54.97	-61.56	2.22	10.59	V		
	14464	-49.31	-40	-9.31	-57.62	-58.81	2.62	12.12	V		
	18080	-62.07	-40	-22.07	-72.57	-76.44	3.23	17.60	V		
	21697	-59.27	-40	-19.27	-73.32	-74.44	3.43	18.60	V		
	25313	-59.37	-40	-19.37	-76.66	-74.37	3.78	18.78	V		
									V		

Report No. : FG2D0922F

TEL: 0800-800005 Page Number : B1 of B2

FAX: 886-3-328-4978 E-mail: Alex@sporton.com.tw



-14.13 -52.49 7362 -54.13 -40 -63.59 1.92 11.38 Н 11043 -54.16 -40 -14.16 -56.59 -62.492.22 10.55 Н 14724 -50.15 -40 -10.15 -58.27 -60.15 2.59 12.59 Н 18405 -63.55 -40 -23.55 -74.72 -77.91 3.24 17.60 Η 22087 -63.49 -40 -23.49 -78.16 -78.86 3.52 18.88 Н -59.79 -40 -19.79 -77.64 -74.96 3.88 19.05 Н 25768 Н Highest V 7362 -53.62 -40 -13.62 -52.13 -63.08 1.92 11.38 -54.31 -40 -14.31 -56.67 2.22 10.55 V 11043 -62.64 V 14724 -49.28 -40 -9.28 -58.36 -59.28 2.59 12.59 ٧ 18405 -64.33 -40 -24.33 -75.27 -78.69 3.24 17.60 ٧ 22087 -63.67 -40 -23.67 -77.96 -79.04 3.52 18.88 ٧ 25768 -59.70 -40 -19.70 -77.26 -74.87 3.88 19.05 ٧

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

FAX: 886-3-328-4978

E-mail: Alex@sporton.com.tw

TEL: 0800-800005

Page Number : B2 of B2

Report No.: FG2D0922F