

Report No.: FG910213C



FCC RADIO TEST REPORT

FCC ID : PU5-TP00107A

Equipment : Notebook Computer

Brand Name : Lenovo Model Name : TP00107A

Applicant : Wistron Corporation

21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist, New Taipei City 221, Taiwan R.O.C.

Manufacturer: Wistron Corporation

21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist, New Taipei City 221, Taiwan R.O.C.

Standard : FCC 47 CFR Part 2, and 90(S)

Equipment: Fibocom L850-GL and Intel 9560D2W tested inside of Lenovo Notebook Computer.

The product was received on Jan. 02, 2019 and testing was started from Jan. 28, 2019 and completed on Feb. 19, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this 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: Jones Tsai

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

TEL: 0800-800005 Page Number : 1 of 15 FAX: 886-3-328-4978 Issued Date : Feb. 27, 2019

E-mail: Alex@sporton.com.tw

Report Template No.: BU5-FGLTE90S Version 2.4

Report Version : 01

Table of Contents

| His | story o | of this test report | 3 |
|-----|---------|--------------------------------------------------------|----|
| Su | mmar | ry of Test Result | 4 |
| 1 | Gene | eral Description | 5 |
| | 1.1 | Feature of Equipment Under Test | 5 |
| | 1.2 | Product Specification of Equipment Under Test | |
| | 1.3 | Modification of EUT | 6 |
| | 1.4 | Testing Site | 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 | |
| | 2.3 | Support Unit used in test configuration and system | 9 |
| | 2.4 | Frequency List of Low/Middle/High Channels | 9 |
| 3 | Cond | ducted Test Items | 10 |
| | 3.1 | Measuring Instruments | 10 |
| | 3.2 | Conducted Output Power Measurement and ERP Measurement | 11 |
| | 3.3 | Field Strength of Spurious Radiation Measurement | |
| 4 | List | of Measuring Equipment | |
| 5 | Unce | ertainty of Evaluation | 15 |
| Аp | | ix A. Test Results of Conducted Test | |
| Аp | pendi | x B. Test Results of ERP and Radiated Test | |
| An | nendi | ix C. Test Setup Photographs | |

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

Report Template No.: BU5-FGLTE90S Version 2.4

Page Number : 2 of 15

Issued Date : Feb. 27, 2019

Report No. : FG910213C

Report Version : 01

History of this test report

Report No. : FG910213C

| Report No. | Version | Description | Issued Date |
|------------|---------|-------------------------|---------------|
| FG910213C | 01 | Initial issue of report | Feb. 27, 2019 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

TEL: 0800-800005 Page Number : 3 of 15 Issued Date : Feb. 27, 2019

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

Summary of Test Result

Report No.: FG910213C

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|------------------|--------------------|-----------------------------------------------------|-----------------------|--------------------------------------------|
| 3.2 | §2.1046 §90.635 | Conducted Output Power and Effective Radiated Power | Pass | - |
| 3.3 | §2.1053 §90.691 | Field Strength of Spurious Radiation | Pass | Under limit 17.38 dB at 3272.000 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: Maggie Chiang

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

1 General Description

1.1 Feature of Equipment Under Test

| Product Feature | | | | | |
|---------------------------------|-------------------------------------------------------------------------------------------------|--|--|--|--|
| Equipment | Notebook Computer | | | | |
| Brand Name | Lenovo | | | | |
| Model Name | TP00107A | | | | |
| FCC ID | PU5-TP00107A | | | | |
| Sample 1 | EUT with SKU 1 | | | | |
| Sample 2 | EUT with SKU 2 | | | | |
| Sample 3 | EUT with SKU 3 | | | | |
| Sample 4 | EUT with SKU 4 | | | | |
| EUT supports Radios application | WCDMA/HSPA/LTE/GNSS WLAN a/b/g/n HT20/40 WLAN ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE | | | | |
| EUT Stage | Production Unit | | | | |

Report No.: FG910213C

Remark:

- 1. The above EUT's information was declared by manufacturer.
- 2. Equipment: Fibocom L850-GL and Intel 9560D2W tested inside of Lenovo Notebook Computer.
- 3. All test items were performed with Sample 4.

<Sample Information>

| Sample List | | | | | | | |
|--------------------------------|-------|--------|--|--|--|--|--|
| SKU Antenna Manufacturer Color | | | | | | | |
| SKU 1 | Auden | Silver | | | | | |
| SKU 2 | WNC | Silver | | | | | |
| SKU 3 | Auden | Black | | | | | |
| SKU 4 | WNC | Black | | | | | |

| Antenna Information | | | | | | | | |
|---------------------|--------------|----------------|-----------|------|--|--|--|--|
| WWAN 3G<E (dBi) | | | | | | | | |
| | Manufacturer | Auden | Peak gain | 2.27 | | | | |
| Antenna 1 | Part number | 025.901FP.0011 | Туре | PIFA | | | | |
| | Manufacturer | WNC | Peak gain | 2.54 | | | | |
| Antenna 2 | Part number | 025.901FP.0001 | Туре | PIFA | | | | |

TEL: 0800-800005 Page Number : 5 of 15 FAX: 886-3-328-4978 Issued Date : Feb. 27, 2019

Report Version

: 01

E-mail: Alex@sporton.com.tw

1.2 Product Specification of Equipment Under Test

| Product Specification subjective to this standard | | | | | | |
|-----------------------------------------------------|--------------------------------------|--|--|--|--|--|
| Tx Frequency LTE Band 26 : 814.7 ~ 823.3 MHz | | | | | | |
| Rx Frequency | LTE Band 26: 859.7 ~ 868.3 MHz | | | | | |
| Bandwidth | 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz | | | | | |
| Maximum Output Power to Antenna | 22.84 dBm | | | | | |
| Type of Modulation | QPSK / 16QAM | | | | | |

Report No.: FG910213C

1.3 Modification of EUT

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

1.4 Testing Site

| Test Site | SPORTON INTERNATIONAL INC. | | | |
|--------------------|-----------------------------------------------------------------------|--|--|--|
| Test Site Location | No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) | | | |
| Test Site No. | Sporton Site No. | | | |
| rest Site No. | TH05-HY | | | |
| Test Engineer | Kurt Liu | | | |
| Temperature | 21°C | | | |
| Relative Humidity | 53% | | | |

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

| Test Site | SPORTON INTERNATIONAL INC. | | | | | |
|--------------------|-------------------------------------------------------------------------------------------|--|--|--|--|--|
| Test Site Location | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) | | | | | |
| Test Site No. | Sporton Site No. | | | | | |
| Test Site No. | 03CH10-HY | | | | | |
| Test Engineer | Lewis Ho | | | | | |
| Temperature | 23~24°C | | | | | |
| Relative Humidity | 59~60% | | | | | |

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

FCC Designation No. TW1190 and TW0007

TEL: 0800-800005 Page Number : 6 of 15 FAX: 886-3-328-4978 Issued Date : Feb. 27, 2019

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

1.5 Applied Standards

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

Report No.: FG910213C

- FCC 47 CFR Part 2, 90
- ANSI / TIA-603-E
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- Interim Guidance for Equipment Authorization of Devices with Channel Bandwidths Combined Across Two Contiguous Service Rule Allocations OET/Lab/EACB, June 6, 2013

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

TEL: 0800-800005 Page Number : 7 of 15 Issued Date : Feb. 27, 2019

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

2 **Test Configuration of Equipment Under Test**

Test Mode 2.1

During all testing, EUT is in link mode with base station emulator at maximum power level.

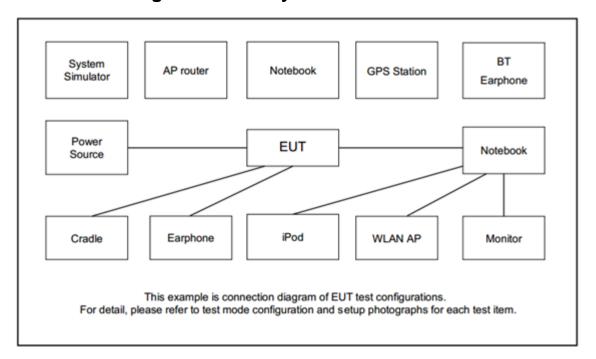
For radiated measurement, pre-scanned in Notebook type and three orthogonal panels(X, Y, Z). The worst cases (Y plane) were recorded in this report.

Report No.: FG910213C

Frequency range investigated for radiated emission is 30 MHz to 9000 MHz.

| Conducted | Donal | Bandwidth (MHz) | | | | | Modu | lation | on RB# | | | Test Channel | | | |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------|---|----|----|------|--------|--------|---|------|--------------|---|---|---|
| Test Cases | Band | 1.4 | 3 | 5 | 10 | 15 | 20 | QPSK | 16QAM | 1 | Half | Full | L | M | Н |
| Max. Output Power | 26 | ٧ | v | ٧ | v | v | - | V | v | v | v | v | V | ٧ | v |
| E.R.P. | 26 | | | | | v | - | v | v | ٧ | | | v | | |
| Radiated Spurious Emission | 26 | | 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. LTE Band26 transmit frequency for part22 rule is 824MHz-849MHz, for part90 rule is 814MHz-824MHz. ERP over 15MHz bandwidth complies the ERP limit line of part22 rule, therefore ERP of the partial frequency spectrum which falls within part 22 also complies. All the radiated test cases were performed with Adapter 1 and Battery 2. | | | | | | | | | | | | | | |

2.2 Connection Diagram of Test System



TEL: 0800-800005 : 8 of 15 Page Number FAX: 886-3-328-4978 Issued Date : Feb. 27, 2019 Report Version : 01

E-mail: Alex@sporton.com.tw

2.3 Support Unit used in test configuration and system

| Item | Equipment | Trade Name | rade Name Model No. FCC ID | | Data Cable | Power Cord | |
|------|------------------|------------|--------------------------------|--------------|-------------------|-------------------|--|
| 1. | System Simulator | Anritsu | MT8820C | N/A | N/A | Unshielded, 1.8 m | |
| 2. | iPod Earphone | Apple | N/A | Verification | Unshielded, 1.0 m | N/A | |

Report No.: FG910213C

2.4 Frequency List of Low/Middle/High Channels

| LTE Band 26 Channel and Frequency List | | | | | | | | |
|----------------------------------------|------------------------|--------|--------|---------|--|--|--|--|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest | | | | |
| 45 | Channel | 26765 | - | - | | | | |
| 15 | Frequency | 821.5 | - | | | | | |
| 10 | Channel | - | 26740 | - | | | | |
| 10 | Frequency | - | 819 | - | | | | |
| 5 | Channel | 26715 | 26740 | 26765 | | | | |
| 5 | Frequency | 816.5 | 819 | 821.5 | | | | |
| 3 | Channel | 26705 | 26740 | 26775 | | | | |
| 3 | Frequency | 815.5 | 819 | 822.5 | | | | |
| 1.4 | Channel | 26697 | 26740 | 26783 | | | | |
| 1.4 | Frequency | 814.7 | 819 | 823.3 | | | | |

TEL: 0800-800005 Page Number : 9 of 15 Issued Date : Feb. 27, 2019

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

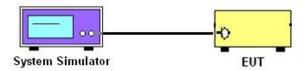
3 Conducted Test Items

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.: FG910213C

3.1.3 Test Result of Conducted Test

Please refer to Appendix A.

Report Template No.: BU5-FGLTE90S Version 2.4

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

3.2 Conducted Output Power Measurement and ERP Measurement

3.2.1 Description of the Conducted Output Power Measurement and ERP Measurement

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

Report No.: FG910213C

The ERP of mobile transmitters must not exceed 7 Watts for LTE Band 26.

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 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 : 11 of 15 FAX: 886-3-328-4978 Issued Date : Feb. 27, 2019

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

3.3 Field Strength of Spurious Radiation Measurement

3.3.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission FCC Part 90.691 on any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

Report No.: FG910213C

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+10log₁₀(P[Watts]) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.3.2 Test Procedures

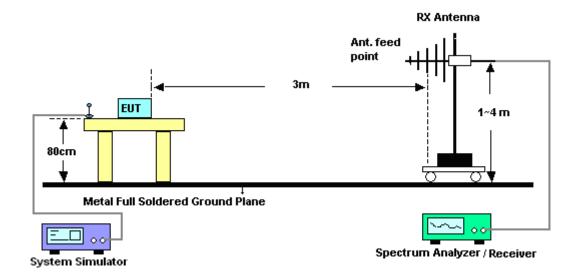
- 1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 3. The table was rotated 360 degrees to determine the position 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, Sweep = 500ms, 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. EIRP (dBm) = S.G. Power Tx Cable Loss + Tx Antenna Gain
- 11. ERP (dBm) = EIRP 2.15
- 12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 13. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

TEL: 0800-800005 Page Number : 12 of 15
FAX: 886-3-328-4978 Issued Date : Feb. 27, 2019

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

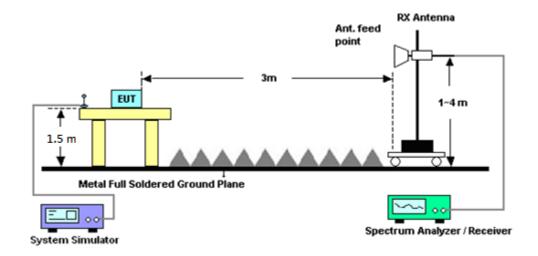
3.3.3 Test Setup

For radiated test from 30MHz to 1GHz



Report No.: FG910213C

For radiated test above 1GHz



3.3.4 Test Result of Field Strength of Spurious Radiated

Please refer to Appendix B.

TEL: 0800-800005 Page Number : 13 of 15 FAX: 886-3-328-4978 Issued Date : Feb. 27, 2019 : 01

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

4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|----------------------|-------------------|---------------------------------|------------------------------------------|--------------------|---------------------|---------------------------------|---------------|--------------------------|
| LTE Base Station | Anritsu | MT8820C | 6201432821 | - | Oct. 14, 2018 | Feb. 19, 2019 | Oct. 13, 2019 | Conducted (TH05-HY) |
| Amplifier | SONOMA | 310N | 187311 | 9kHz~1GHz | Oct. 23, 2018 | Jan. 28, 2019~ Feb. 14, 2019 | Oct. 22, 2019 | Radiation (03CH10-HY) |
| Bilog Antenna | TESEQ | CBL 6111D&00800N 1D01N-06 | 35413&02 | 30MHz~1GHz | Jan. 10, 2019 | Jan. 28, 2019~ Feb. 14, 2019 | Jan. 09, 2020 | Radiation (03CH10-HY) |
| Horn Antenna | SCHWARZBE CK | BBHA 9120 D | 9120D-1325 | 1GHz ~ 18GHz | Oct. 02, 2018 | Jan. 28, 2019~ Feb. 14, 2019 | Oct. 01, 2019 | Radiation (03CH10-HY) |
| Preamplifier | Keysight | 83017A | MY53270078 | 1GHz~26.5GHz | Oct. 28, 2018 | Jan. 28, 2019~ Feb. 14, 2019 | Oct. 27, 2019 | Radiation (03CH10-HY) |
| Preamplifier | Jet-Power | JAP00101800- 30-10P | 160118550004 | 1GHz~18GHz | Apr. 17, 2018 | Jan. 28, 2019~ Feb. 14, 2019 | Apr. 16, 2019 | Radiation (03CH10-HY) |
| Spectrum Analyzer | Keysight | N9010A | MY54200485 | 10Hz ~ 44GHz | Nov. 02, 2018 | Jan. 28, 2019~ Feb. 14, 2019 | Nov. 01, 2019 | Radiation (03CH10-HY) |
| Antenna Mast | EMEC | AM-BS-4500-B | N/A | 1~4m | N/A | Jan. 28, 2019~ Feb. 14, 2019 | N/A | Radiation (03CH10-HY) |
| Turn Table | EMEC | TT 2200 | N/A | 0~360 Degree | N/A | Jan. 28, 2019~ Feb. 14, 2019 | N/A | Radiation (03CH10-HY) |
| Software | Audix | E3 6.2009-8-24 | RK-001042 | N/A | N/A | Jan. 28, 2019~ Feb. 14, 2019 | N/A | Radiation (03CH10-HY) |
| EMI Test Receiver | Agilent | N9038A(MXE) | MY53290053 | 20Hz to 26.5GHz | Jan. 19, 2019 | Jan. 28, 2019~ Feb. 14, 2019 | Jan. 18, 2020 | Radiation (03CH10-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 / 102 | MY11692/4PE, MY11693/4PE, MY2855/2 | 30M-1G | Nov. 08, 2018 | Jan. 28, 2019~ Feb. 14, 2019 | Nov. 07, 2019 | Radiation (03CH10-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 / 102 | MY11692/4PE, MY11693/4PE, MY2855/2 | 1G-18G | Nov. 08, 2018 | Jan. 28, 2019~ Feb. 14, 2019 | Nov. 07, 2019 | Radiation (03CH10-HY) |

Report No. : FG910213C

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

5 Uncertainty of Evaluation

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

| Measuring Uncertainty for a Level of | 2 17 |
|--------------------------------------|------|
| Confidence of 95% (U = 2Uc(y)) | 3.17 |

Report No.: FG910213C

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

| Measuring Uncertainty for a Level of | 3.48 |
|--------------------------------------|------|
| Confidence of 95% (U = 2Uc(y)) | |

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

| Measuring Uncertainty for a Level of | 4.00 |
|--------------------------------------|------|
| Confidence of 95% (U = 2Uc(y)) | 4.00 |

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



Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

| LTE Band 26 Maximum Average Power [dBm] | | | | | | | | | |
|-----------------------------------------|---------|-----------|--------|--------|--------|---------|--|--|--|
| BW [MHz] | RB Size | RB Offset | Mod | Lowest | Middle | Highest | | | |
| 15 | 1 | 0 | | 22.68 | - | - | | | |
| 15 | 1 | 37 | | 22.64 | - | - | | | |
| 15 | 1 | 74 | | 22.63 | - | - | | | |
| 15 | 36 | 0 | QPSK | 21.75 | - | - | | | |
| 15 | 36 | 20 | | 21.76 | ı | - | | | |
| 15 | 36 | 39 | | 21.65 | - | - | | | |
| 15 | 75 | 0 | | 21.88 | 1 | - | | | |
| 15 | 1 | 0 | | 21.68 | - | - | | | |
| 15 | 1 | 37 | | 21.88 | 1 | - | | | |
| 15 | 1 | 74 | | 21.89 | - | - | | | |
| 15 | 36 | 0 | 16-QAM | 20.85 | 1 | - | | | |
| 15 | 36 | 20 | | 20.87 | - | - | | | |
| 15 | 36 | 39 | | 20.76 | 1 | - | | | |
| 15 | 75 | 0 | | 20.97 | 1 | - | | | |
| 10 | 1 | 0 | | - | 22.77 | - | | | |
| 10 | 1 | 25 | | - | 22.80 | - | | | |
| 10 | 1 | 49 | | - | 22.84 | - | | | |
| 10 | 25 | 0 | QPSK | - | 21.82 | - | | | |
| 10 | 25 | 12 | | - | 21.90 | - | | | |
| 10 | 25 | 25 | | - | 21.89 | - | | | |
| 10 | 50 | 0 | | - | 21.92 | - | | | |
| 10 | 1 | 0 | | - | 21.96 | - | | | |
| 10 | 1 | 25 | | - | 21.99 | - | | | |
| 10 | 1 | 49 | | - | 21.95 | - | | | |
| 10 | 25 | 0 | 16-QAM | - | 20.89 | - | | | |
| 10 | 25 | 12 | | - | 20.97 | - | | | |
| 10 | 25 | 25 | | - | 20.97 | - | | | |
| 10 | 50 | 0 | | - | 20.97 | - | | | |

Report No. : FG910213C



FCC RADIO TEST REPORT

LTE Band 26 Maximum Average Power [dBm] BW [MHz] **RB Size RB Offset** Mod Lowest Middle Highest 22.60 22.41 22.77 5 1 0 5 1 12 22.63 22.63 22.75 1 24 5 22.59 22.81 22.79 **QPSK** 5 12 0 21.67 21.63 21.90 21.69 5 12 21.76 21.85 5 12 13 21.55 21.73 21.89 5 25 0 21.81 21.92 21.83 0 21.94 5 1 21.67 21.82 5 1 12 21.87 21.86 21.89 24 5 1 21.88 21.87 21.89 5 12 0 16-QAM 20.80 20.71 20.97 5 12 7 20.78 20.83 20.91 5 12 13 20.68 20.83 20.89 5 25 0 20.95 20.91 20.89 3 1 0 22.27 22.60 22.65 1 3 8 22.58 22.60 22.64 3 1 14 22.49 22.66 22.69 3 0 QPSK 21.64 21.87 8 21.65 4 3 8 21.64 21.69 21.85 3 8 7 21.56 21.67 21.85 15 0 21.77 3 21.80 21.81 3 1 0 21.63 21.74 21.88 3 1 8 21.79 21.79 21.83 3 1 14 21.79 21.81 21.83 3 8 0 16-QAM 20.76 20.62 20.83 3 8 4 20.78 20.71 20.78 3 8 20.69 20.74 20.88 3 15 0 20.87 20.91 20.86

Report No.: FG910213C



FCC RADIO TEST REPORT

| | LTE Band 26 Maximum Average Power [dBm] | | | | | | | | | |
|----------|------------------------------------------|---|--------|-------|-------|-------|--|--|--|--|
| BW [MHz] | MHz] RB Size RB Offset Mod Lowest Middle | | | | | | | | | |
| 1.4 | 1 | 0 | | 22.41 | 22.70 | 22.74 | | | | |
| 1.4 | 1 | 3 | | 22.60 | 22.64 | 22.79 | | | | |
| 1.4 | 1 | 5 | | 22.58 | 22.79 | 22.78 | | | | |
| 1.4 | 3 | 0 | QPSK | 21.71 | 21.65 | 21.85 | | | | |
| 1.4 | 3 | 1 | | 21.71 | 21.75 | 21.86 | | | | |
| 1.4 | 3 | 3 | | 21.63 | 21.70 | 21.88 | | | | |
| 1.4 | 6 | 0 | | 21.84 | 21.91 | 21.88 | | | | |
| 1.4 | 1 | 0 | | 21.61 | 21.83 | 21.92 | | | | |
| 1.4 | 1 | 3 | | 21.78 | 21.83 | 21.80 | | | | |
| 1.4 | 1 | 5 | | 21.79 | 21.94 | 21.84 | | | | |
| 1.4 | 3 | 0 | 16-QAM | 20.77 | 20.67 | 20.90 | | | | |
| 1.4 | 3 | 1 | | 20.87 | 20.74 | 20.89 | | | | |
| 1.4 | 3 | 3 | | 20.70 | 20.85 | 20.84 | | | | |
| 1.4 | 6 | 0 | | 20.89 | 20.92 | 20.93 | | | | |

Report No. : FG910213C

Appendix B. Test Results of ERP and Radiated Test

ERP

<Reporting Only>

| chepoting only? | | | | | | | | | | | |
|-------------------------------------|----------|------|--------|------------|----------|----------|--------|--|--|--|--|
| LTE Band 26 / 15MHz (Channel 26765) | | | | | | | | | | | |
| Channal | Mode | RB | | Cond | ucted | ERP(dBm) | | | | | |
| Channel | Wiode | Size | Offset | Power(dBm) | Power(W) | ERP(dBm) | ERP(W) | | | | |
| Lowest | QPSK | 1 | 0 | 22.68 | 0.19 | 21.19 | 0.13 | | | | |
| Middle | | - | - | - | - | - | - | | | | |
| Highest | | - | - | - | - | - | - | | | | |
| Lowest | | 1 | 74 | 21.89 | 0.15 | 20.40 | 0.11 | | | | |
| Middle | 16QAM | - | - | - | 1 | - | - | | | | |
| Highest | | - | - | - | - | - | - | | | | |
| Limit | ERP < 7W | | | Res | sult | PASS | | | | | |

Report No. : FG910213C

Radiated Spurious Emission

Part 90S_LTE Band 26

Report No.: FG910213C

| LTE Band 26 / 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) | | |
| | 1640 | -37.27 | -13 | -24.27 | -45.97 | -42.97 | 0.81 | 8.66 | Н | | |
| | 2456 | -33.84 | -13 | -20.84 | -47.38 | -41.39 | 1.04 | 10.74 | Н | | |
| | 3272 | -33.26 | -13 | -20.26 | -49 | -41.81 | 1.10 | 11.80 | Н | | |
| | 4096 | -36.17 | -13 | -23.17 | -54.14 | -45.31 | 1.39 | 12.68 | Н | | |
| | 4912 | -40.59 | -13 | -27.59 | -60.99 | -49.73 | 1.39 | 12.68 | Н | | |
| Lowest | | | | | | | | | Н | | |
| Lowest | 1640 | -41.12 | -13 | -28.12 | -49.67 | -46.82 | 0.81 | 8.66 | V | | |
| | 2456 | -31.04 | -13 | -18.04 | -44.76 | -38.59 | 1.04 | 10.74 | V | | |
| | 3272 | -30.38 | -13 | -17.38 | -46.42 | -38.93 | 1.10 | 11.80 | V | | |
| | 4096 | -32.19 | -13 | -19.19 | -50.87 | -41.33 | 1.39 | 12.68 | V | | |
| | 4912 | -38.37 | -13 | -25.37 | -59.47 | -47.51 | 1.39 | 12.68 | V | | |
| | | | | | | | | | V | | |
| | 1640 | -37.83 | -13 | -24.83 | -46.53 | -43.53 | 0.81 | 8.66 | Н | | |
| | 2464 | -32.58 | -13 | -19.58 | -46.13 | -40.14 | 1.04 | 10.75 | Н | | |
| | 3288 | -32.99 | -13 | -19.99 | -48.65 | -41.57 | 1.10 | 11.83 | Н | | |
| | 4104 | -34.45 | -13 | -21.45 | -52.44 | -43.60 | 1.38 | 12.68 | Н | | |
| | 4928 | -39.72 | -13 | -26.72 | -60.15 | -48.86 | 1.40 | 12.69 | Н | | |
| N 4: el ell e | | | | | | | | | Н | | |
| Middle | 1640 | -41.60 | -13 | -28.60 | -50.15 | -47.30 | 0.81 | 8.66 | V | | |
| | 2464 | -31.05 | -13 | -18.05 | -44.76 | -38.61 | 1.04 | 10.75 | V | | |
| | 3288 | -31.22 | -13 | -18.22 | -47.23 | -39.80 | 1.10 | 11.83 | V | | |
| | 4104 | -31.31 | -13 | -18.31 | -50.01 | -40.46 | 1.38 | 12.68 | V | | |
| | 4928 | -36.87 | -13 | -23.87 | -57.96 | -46.01 | 1.40 | 12.69 | V | | |
| | | | _ | | | | | | V | | |

TEL: 0800-800005 Page Number : B2-1 of 3

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

| | | | L | TE Band 26 | / 5MHz / QP | SK | | | |
|-----------|----------------------|--------------|------------------|-------------------------|-------------------------|--------------------------|----------------------|-----------------------------|-----------------------|
| 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) |
| | 1648 | -37.87 | -13 | -24.87 | -46.61 | -43.60 | 0.81 | 8.69 | Н |
| | 2472 | -32.77 | -13 | -19.77 | -46.35 | -40.34 | 1.04 | 10.76 | Н |
| | 3296 | -33.36 | -13 | -20.36 | -48.97 | -41.96 | 1.10 | 11.85 | Н |
| | 4120 | -36.39 | -13 | -23.39 | -54.42 | -45.54 | 1.38 | 12.68 | Н |
| | 4944 | -39.43 | -13 | -26.43 | -59.9 | -48.56 | 1.41 | 12.69 | Н |
| l liabaat | | | | | | | | | Н |
| Highest | 1648 | -41.71 | -13 | -28.71 | -50.3 | -47.44 | 0.81 | 8.69 | V |
| | 2472 | -31.46 | -13 | -18.46 | -45.18 | -39.03 | 1.04 | 10.76 | V |
| | 3296 | -31.96 | -13 | -18.96 | -47.94 | -40.56 | 1.10 | 11.85 | V |
| | 4120 | -31.27 | -13 | -18.27 | -50.01 | -40.42 | 1.38 | 12.68 | V |
| | 4944 | -37.22 | -13 | -24.22 | -58.31 | -46.35 | 1.41 | 12.69 | V |
| | | | | | | | | | V |

Report No.: FG910213C

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

| | | | Ľ | TE Band 26 | / 10MHz / QF | PSK | | | |
|---------|----------------------|--------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| 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) |
| | 1648 | -37.86 | -13 | -24.86 | -46.6 | -43.59 | 0.81 | 8.69 | Н |
| | 2472 | -33.04 | -13 | -20.04 | -46.62 | -40.61 | 1.04 | 10.76 | Н |
| | 3296 | -33.10 | -13 | -20.10 | -48.71 | -41.70 | 1.10 | 11.85 | Н |
| | 4120 | -36.71 | -13 | -23.71 | -54.74 | -45.86 | 1.38 | 12.68 | Н |
| | 4944 | -39.87 | -13 | -26.87 | -60.34 | -49.00 | 1.41 | 12.69 | Н |
| Middle | | | | | | | | | Н |
| Middle | 1648 | -41.83 | -13 | -28.83 | -50.42 | -47.56 | 0.81 | 8.69 | V |
| | 2472 | -31.95 | -13 | -18.95 | -45.67 | -39.52 | 1.04 | 10.76 | V |
| | 3296 | -31.80 | -13 | -18.80 | -47.78 | -40.40 | 1.10 | 11.85 | V |
| | 4120 | -31.26 | -13 | -18.26 | -50 | -40.41 | 1.38 | 12.68 | V |
| | 4944 | -36.62 | -13 | -23.62 | -57.71 | -45.75 | 1.41 | 12.69 | V |
| | | | | | | | | | V |

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

TEL: 0800-800005 Page Number : B2-2 of 3

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



LTE Band 26 / 15MHz / QPSK Over **SPA** S.G. **TX Cable TX Antenna** Frequency **ERP** Limit **Polarization** Channel Limit Reading **Power** loss Gain (dBm) (H/V) (MHz) (dBm) (dB) (dBm) (dBm) (dB) (dBi) 1640 -38.82 -13 -25.82 -47.52 -44.52 0.81 8.66 Н -13 1.04 10.75 Н 2464 -33.10 -20.10 -46.65 -40.66 3288 -32.27 -13 -47.93 -40.85 1.10 11.83 Н -19.27 4104 -35.29 -13 -22.29 -53.28 -44.44 1.38 12.68 Н 4928 -38.87 -13 -25.87 -59.3 -48.01 1.40 12.69 Н Н Lowest ٧ 1640 -41.78 -13 -28.78 -50.33 -47.48 0.81 8.66 -13 -17.46 ٧ 2464 -30.46 -44.17 -38.02 1.04 10.75 ٧ 3288 -31.10 -13 -18.10 -47.11 -39.68 1.10 11.83 ٧ 4104 -32.28 -13 -50.98 1.38 12.68 -19.28 -41.43 4928 -37.00 -13 -24.00 -58.09 -46.14 1.40 12.69 ٧ ٧

Report No.: FG910213C

TEL: 0800-800005 Page Number : B2-3 of 3

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