

Report No.: FG9O1139E



FCC RADIO TEST REPORT

FCC ID : 2AJN7-TP00110BUC **Equipment** : Notebook Computer

Brand Name : Lenovo **Model Name** : TP00110B

Applicant : LC Future Center

7F., No.780, Bei'an Rd., Zhongshan Dist.,

Taipei City 104, Taiwan

Manufacturer : LC Future Center Limited Taiwan Branch

7F., No.780, Bei'an Rd., Zhongshan Dist.,

Taipei City 104, Taiwan

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

Equipment: Fibocom L860-GL and Intel AX201D2W tested inside of Lenovo Notebook Computer.

The product was received on Oct. 11, 2019 and testing was started from Nov. 04, 2019 and completed on Nov. 20, 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 variant 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 Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan

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E-mail: Alex@sporton.com.tw

Report Template No.: BU5-FGLTE90S Version 2.4

Report Version : 01

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History of this test report

Report No. : FG9O1139E

| Report No. | Version | Description | Issued Date |
|------------|---------|------------------------------|---------------|
| FG9O1139E | 01 | Initial issue of report | Nov. 26, 2019 |
| FG9O1139E | 01 | Revise applicant information | Feb. 25, 2020 |
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Summary of Test Result

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| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|------------------|--------------------|---|-----------------------|--|
| 3.2 | §2.1046 §90.635 | Conducted Output Power and Effective Radiated Power | Pass | - |
| 3.3 | §2.1053 §90.691 | Field Strength of Spurious Radiation | Pass | Under limit 22.29 dB at 2440.000 MHz |

Remark: This is a variant report which can be referred Product Equality Declaration. All the test cases were performed on original report (FCC ID: 2AJN7-TP00110AUC). Based on the original report, the test cases were verified.

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: Yimin Ho**

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1 General Description

1.1 Feature of Equipment Under Test

| Product Feature | | | | | | |
|---------------------------------|----------------------------|--|--|--|--|--|
| Equipment | Notebook Computer | | | | | |
| Brand Name | Lenovo | | | | | |
| Model Name | TP00110B | | | | | |
| FCC ID | 2AJN7-TP00110BUC | | | | | |
| Sample 1 | EUT with Amphenol Antenna | | | | | |
| Sample 2 | EUT with SPEEDWIRE Antenna | | | | | |
| EUT supports Radios application | WCDMA/HSPA/LTE/GNSS | | | | | |
| EUT Stage | Production Unit | | | | | |

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Remark:

- 1. The above EUT's information was declared by manufacturer.
- 2. Equipment: Fibocom L860-GL and Intel AX201D2W tested inside of Lenovo Notebook Computer.

| Antenna Information | | | | | | | | | |
|---------------------|--------------|---------------------|-----------|--------------|--|--|--|--|--|
| WWAN | | | | 3G<E (dBi) | | | | | |
| Antonno 1 | Manufacturer | Amphenol | Peak gain | 2.30 | | | | | |
| Antenna 1 | Part number | LX9865-16-000-C | Туре | PIFA | | | | | |
| Antonno 2 | Manufacturer | SPEEDWIRE | Peak gain | 2.07 | | | | | |
| Antenna 2 | Part number | F.0G.ZV-0008-001-00 | Туре | PIFA | | | | | |

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 | 23.42 dBm | | | | | | |
| Type of Modulation | QPSK / 16QAM / 64QAM | | | | | | |

1.3 Modification of EUT

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

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1.4 Testing Site

| Test Site | SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory | | | | | | | |
|---------------------------|---|--|--|--|--|--|--|--|
| Test Site Location | No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan | | | | | | | |
| Test Site No. | Sporton Site No. | | | | | | | |
| rest site No. | TH05-HY | | | | | | | |
| Test Engineer | Jacky Wang | | | | | | | |
| Temperature | 23~25 ℃ | | | | | | | |
| Relative Humidity | 52~55% | | | | | | | |

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

| Test Site | SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory |
|---------------------------|---|
| Test Site Location | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan |
| Test Site No. | Sporton Site No. |
| rest site No. | 03CH13-HY |
| Test Engineer | J.C. Liang and Wilson Wu |
| Temperature | 21.5~23.5°C |
| Relative Humidity | 46.9~49.5% |

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

FCC Designation No.: TW1190 and TW0007

1.5 Applied Standards

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

- 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.

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Test Configuration of Equipment Under Test 2

Test Mode 2.1

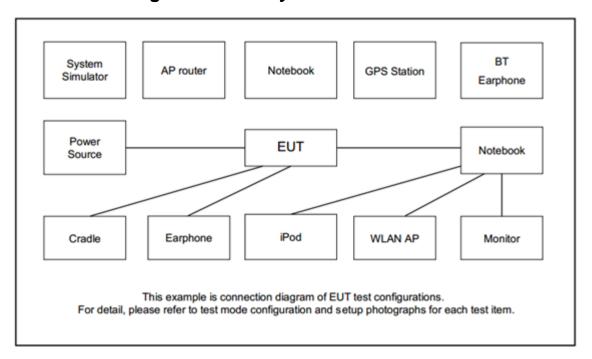
During all testing, EUT is in link mode with base station emulator at maximum power level.

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

| Conducted | Dond | Bandwidth (MHz) | | | Modulation | | | RB# | | | Test Channel | | | | | |
|-------------------------------|---|-----------------|------------|---|------------|----|----|------|-------|-------|--------------|------|------|---|---|---|
| Test Cases | Band | 1.4 | 3 | 5 | 10 | 15 | 20 | QPSK | 16QAM | 64QAM | 1 | Half | Full | L | M | Н |
| Max. Output Power | 26 | v | V | V | v | v | - | V | v | v | v | ٧ | ٧ | V | v | ٧ |
| E.R.P. | 26 | | | | | v | - | V | v | v | v | | | V | | |
| Radiated Spurious Emission | 26 | | Worst Case | | | | | | | | 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. 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. 4. All the radiated test cases were performed with Adapter 1 and Sample 1. | | | | | | | | | | | | | | | |

2.2 Connection Diagram of Test System



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2.3 Support Unit used in test configuration and system

| Item | Equipment | Trade Name | Model No. | FCC ID | Data Cable | Power Cord | |
|------|------------------|------------|-----------|--------|-------------------|-------------------|--|
| 1. | System Simulator | Anritsu | MT8820C | N/A | N/A | Unshielded, 1.8 m | |
| 2. | Earphone | Ziya | N/A | N/A | Unshielded, 1.2 m | N/A | |

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2.4 Frequency List of Low/Middle/High Channels

| LTE Band 26 Channel and Frequency List | | | | | | | | | |
|--|------------------------|--------|--------|---------|--|--|--|--|--|
| BW [MHz] | Channel/Frequency(MHz) | Lowest | Middle | Highest | | | | | |
| | Channel | 26765 | - | - | | | | | |
| 15 | Frequency | 821.5 | - | - | | | | | |
| 40 | 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 | | | | | |

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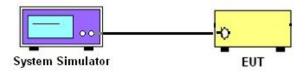
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



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3.1.3 Test Result of Conducted Test

Please refer to Appendix A.

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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.

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

According to KDB 412172 D01 Power Approach,

 $EIRP = P_T + G_T - L_C$, 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.

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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.

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The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43+10\log_{10}(P[Watts])$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.3.2 Test Procedures

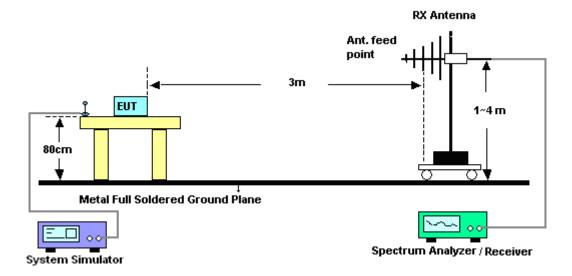
- 1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 3. The table was rotated 360 degrees to determine the position 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. For testing below 1GHz, make the measurement with the spectrum analyzer's RBW = 100 kHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
- 6. For testing above 1GHz, make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, 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.
- 8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- 9. Taking the record of output power at antenna port.
- 10. Repeat step 7 to step 8 for another polarization.
- 11. EIRP (dBm) = S.G. Power Tx Cable Loss + Tx Antenna Gain
- 12. ERP (dBm) = EIRP 2.15
- 13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

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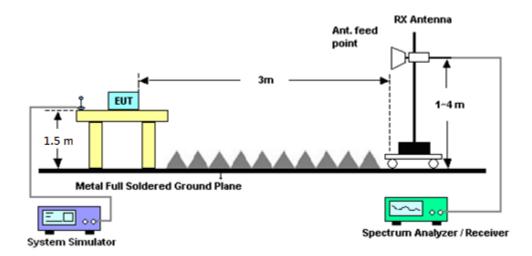
3.3.3 Test Setup

For radiated test from 30MHz to 1GHz



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For radiated test above 1GHz



3.3.4 Test Result of Field Strength of Spurious Radiated

Please refer to Appendix B.

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List of Measuring Equipment 4

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|-------------------------|--------------------|-------------------------------------|---------------------|----------------------------|---------------------|---------------------------------|---------------|--------------------------|
| Bilog Antenna | TESEQ | CBL 6111D & 00800N1D01 N-06 | 40103 & 07 | 30MHz~1GHz | Apr. 30, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | Apr. 29, 2020 | Radiation (03CH13-HY) |
| Bilog Antenna | TESEQ | CBL 6111D&00802 N1D01N-06 | 54682 & AT-N0603 | 30MHz~1GHz | Sep. 26, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | Sep. 25, 2020 | Radiation (03CH13-HY) |
| Horn Antenna | SCHWARZBE CK | BBHA 9120 D | 9120D-124 1 | 1GHz~18GHz | Jul. 02, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | Jul. 01, 2020 | Radiation (03CH13-HY) |
| Horn Antenna | SCHWARZBE CK | BBHA 9120 D | 9120D-121 2 | 1GHz~18GHz | May 14, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | May 13, 2020 | Radiation (03CH13-HY) |
| SHF-EHF Horn Antenna | SCHWARZBE CK | BBHA 9170 | BBHA9170 576 | 18GHz~40GHz | May 14, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | May 13, 2020 | Radiation (03CH13-HY) |
| SHF-EHF Horn Antenna | SCHWARZBE CK | BBHA 9170 | BBHA9170 584 | 18GHz~40GHz | Dec. 05, 2018 | Nov. 04, 2019~ Nov. 20, 2019 | Dec. 04, 2019 | Radiation (03CH13-HY) |
| Amplifier | SONOMA | 310N | 187282 | 9kHz~1GHz | Dec. 18, 2018 | Nov. 04, 2019~ Nov. 20, 2019 | Dec. 17, 2019 | Radiation (03CH13-HY) |
| Preamplifier | MITEQ | AMF-7D-0010 1800-30-10P | 1590074 | 1GHz~18GHz | May 20, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | May 19, 2020 | Radiation (03CH13-HY) |
| Preamplifier | EMEC | EM18G40G | 060715 | 18GHz~40GHz | Dec. 06, 2018 | Nov. 04, 2019~ Nov. 20, 2019 | Dec. 05, 2019 | Radiation (03CH13-HY) |
| Preamplifier | Agilent | 8449B | 3008A023 75 | 1GHz~26.5GHz | May 27, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | May 26, 2020 | Radiation (03CH13-HY) |
| Spectrum Analyzer | Keysight | N9010A | MY553705 26 | 10Hz~44GHz | Mar. 19, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | Mar. 18, 2020 | Radiation (03CH13-HY) |
| Antenna Mast | EMEC | AM-BS-4500- B | N/A | 1m~4m | N/A | Nov. 04, 2019~ Nov. 20, 2019 | N/A | Radiation (03CH13-HY) |
| Turn Table | EMEC | TT2000 | N/A | 0~360 Degree | N/A | Nov. 04, 2019~ Nov. 20, 2019 | N/A | Radiation (03CH13-HY) |
| Software | Audix | E3 6.2009-8-24 | RK-00099 2 | N/A | N/A | Nov. 04, 2019~ Nov. 20, 2019 | N/A | Radiation (03CH13-HY) |
| Signal Generator | Rohde & Schwarz | SMF100A | 101107 | 100kHz~40GHz | Aug. 27, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | Aug. 26, 2020 | Radiation (03CH13-HY) |
| RF Cable | HUBER + SUHNER | SF102/2*11S K252 | MY4278/2 | 9kHz~40GHz | May 16, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | May 15, 2020 | Radiation (03CH13-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 104 | MY24961/ 4 | 30M-18G | Feb. 13, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | Feb. 12, 2020 | Radiation (03CH13-HY) |
| RF Cable | HUBER + SUHNER | SUCOFLEX 102 | MY2859/2 | 30M~40GHz | Mar. 13, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | Mar. 12, 2020 | Radiation (03CH13-HY) |
| Filter | Wainwright | WHKX12-270 0-3000-18000 -60SS | SN2 | 3GHz High Pass Filter | Jul. 14, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | Jul. 13, 2020 | Radiation (03CH13-HY) |
| Filter | Wainwright | WHKX12-108 0-1200-15000 -60SS | SN3 | 1.2GHz High Pass Filter | Jul. 03, 2019 | Nov. 04, 2019~ Nov. 20, 2019 | Jul. 02, 2020 | Radiation (03CH13-HY) |
| LTE Base Station | Anritsu | MT8820C | 620110750 9 | - | Jul. 03, 2019 | Nov. 04, 2019 | Jul. 02, 2020 | Conducted (TH05-HY) |

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5 Uncertainty of Evaluation

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

| Measuring Uncertainty for a Level of | 0.07 |
|--------------------------------------|------|
| Confidence of 95% (U = 2Uc(y)) | 3.07 |

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

| Measuring Uncertainty for a Level of | 3.48 |
|--------------------------------------|------|
| Confidence of 95% (U = 2Uc(y)) | 3.46 |

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

| Measuring Uncertainty for a Level of | 3.02 |
|--------------------------------------|------|
| Confidence of 95% (U = 2Uc(y)) | 3.92 |

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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 | | 23.42 | - | - | | | |
| 15 | 1 | 37 | | 23.35 | - | - | | | |
| 15 | 1 | 74 | | 23.35 | - | - | | | |
| 15 | 36 | 0 | QPSK | 22.38 | - | - | | | |
| 15 | 36 | 20 | | 22.31 | - | - | | | |
| 15 | 36 | 39 | | 22.31 | - | - | | | |
| 15 | 75 | 0 | | 22.37 | - | - | | | |
| 15 | 1 | 0 | | 22.81 | - | - | | | |
| 15 | 1 | 37 | | 22.62 | - | - | | | |
| 15 | 1 | 74 | | 22.64 | - | - | | | |
| 15 | 36 | 0 | 16-QAM | 21.38 | - | - | | | |
| 15 | 36 | 20 | | 21.37 | - | - | | | |
| 15 | 36 | 39 | | 21.45 | - | - | | | |
| 15 | 75 | 0 | | 21.39 | - | - | | | |
| 15 | 1 | 0 | | 21.61 | - | - | | | |
| 15 | 1 | 37 | | 21.50 | - | - | | | |
| 15 | 1 | 74 | | 21.60 | - | - | | | |
| 15 | 36 | 0 | 64-QAM | 20.36 | - | - | | | |
| 15 | 36 | 20 | | 20.37 | - | - | | | |
| 15 | 36 | 39 | | 20.44 | - | - | | | |
| 15 | 75 | 0 | | 20.37 | - | - | | | |
| 10 | 1 | 0 | | - | 23.34 | - | | | |
| 10 | 1 | 25 | | - | 23.31 | - | | | |
| 10 | 1 | 49 | | _ | 23.19 | _ | | | |
| 10 | 25 | 0 | QPSK | _ | 22.36 | _ | | | |
| 10 | 25 | 12 | | - | 22.26 | _ | | | |
| 10 | 25 | 25 | | - | 22.24 | _ | | | |
| 10 | 50 | 0 | | - | 22.32 | _ | | | |
| 10 | 1 | 0 | | - | 22.64 | _ | | | |
| 10 | 1 | 25 | | - | 22.68 | - | | | |
| 10 | 1 | 49 | | - | 22.45 | - | | | |
| 10 | 25 | 0 | 16-QAM | _ | 21.42 | _ | | | |
| 10 | 25 | 12 | | - | 21.35 | - | | | |
| 10 | 25 | 25 | | - | 21.22 | - | | | |
| 10 | 50 | 0 | | - | 21.36 | - | | | |
| 10 | 1 | 0 | | - | 21.49 | - | | | |
| 10 | 1 | 25 | | - | 21.61 | - | | | |
| 10 | 1 | 49 | | _ | 21.34 | - | | | |
| 10 | 25 | 0 | 64-QAM | _ | 20.38 | _ | | | |
| 10 | 25 | 12 | | _ | 20.34 | _ | | | |
| 10 | 25 | 25 | | _ | 20.31 | _ | | | |
| 10 | 50 | 0 | | _ | 20.42 | - | | | |



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| LTE Band 26 Maximum Average Power [dBm] | | | | | | | | | |
|---|---------|-----------|--------|--------|--------|---------|--|--|--|
| BW [MHz] | RB Size | RB Offset | Mod | Lowest | Middle | Highest | | | |
| 5 | 1 | 0 | | 23.41 | 23.39 | 23.28 | | | |
| 5 | 1 | 12 | | 23.25 | 23.36 | 23.26 | | | |
| 5 | 1 | 24 | | 23.28 | 23.19 | 23.22 | | | |
| 5 | 12 | 0 | QPSK | 22.23 | 22.34 | 22.18 | | | |
| 5 | 12 | 7 | | 22.27 | 22.27 | 22.17 | | | |
| 5 | 12 | 13 | | 22.32 | 22.17 | 22.20 | | | |
| 5 | 25 | 0 | | 22.36 | 22.30 | 22.28 | | | |
| 5 | 1 | 0 | | 22.78 | 22.65 | 22.69 | | | |
| 5 | 1 | 12 | | 22.53 | 22.67 | 22.58 | | | |
| 5 | 1 | 24 | | 22.54 | 22.47 | 22.50 | | | |
| 5 | 12 | 0 | 16-QAM | 21.33 | 21.35 | 21.21 | | | |
| 5 | 12 | 7 | | 21.37 | 21.38 | 21.24 | | | |
| 5 | 12 | 13 | | 21.45 | 21.24 | 21.29 | | | |
| 5 | 25 | 0 | | 21.34 | 21.42 | 21.21 | | | |
| 5 | 1 | 0 | | 21.55 | 21.57 | 21.43 | | | |
| 5 | 1 | 12 | | 21.40 | 21.61 | 21.42 | | | |
| 5 | 1 | 24 | | 21.54 | 21.37 | 21.35 | | | |
| 5 | 12 | 0 | 64-QAM | 20.35 | 20.40 | 20.27 | | | |
| 5 | 12 | 7 | | 20.37 | 20.36 | 20.30 | | | |
| 5 | 12 | 13 | | 20.41 | 20.30 | 20.22 | | | |
| 5 | 25 | 0 | | 20.36 | 20.35 | 20.28 | | | |
| 3 | 1 | 0 | | 23.35 | 23.39 | 23.33 | | | |
| 3 | 1 | 8 | | 23.35 | 23.35 | 23.20 | | | |
| 3 | 1 | 14 | | 23.29 | 23.18 | 23.24 | | | |
| 3 | 8 | 0 | QPSK | 22.22 | 22.33 | 22.16 | | | |
| 3 | 8 | 4 | | 22.27 | 22.34 | 22.22 | | | |
| 3 | 8 | 7 | | 22.28 | 22.22 | 22.20 | | | |
| 3 | 15 | 0 | | 22.30 | 22.37 | 22.30 | | | |
| 3 | 1 | 0 | | 22.77 | 22.68 | 22.74 | | | |
| 3 | 1 | 8 | | 22.58 | 22.68 | 22.56 | | | |
| 3 | 1 | 14 | | 22.63 | 22.43 | 22.52 | | | |
| 3 | 8 | 0 | 16-QAM | 21.38 | 21.42 | 21.26 | | | |
| 3 | 8 | 4 | | 21.27 | 21.33 | 21.20 | | | |
| 3 | 8 | 7 | | 21.43 | 21.29 | 21.26 | | | |
| 3 | 15 | 0 | | 21.30 | 21.43 | 21.24 | | | |
| 3 | 1 | 0 | | 21.59 | 21.57 | 21.52 | | | |
| 3 | 1 | 8 | | 21.47 | 21.61 | 21.50 | | | |
| 3 | 1 | 14 | | 21.57 | 21.30 | 21.40 | | | |
| 3 | 8 | 0 | 64-QAM | 20.32 | 20.37 | 20.26 | | | |
| 3 | 8 | 4 | | 20.31 | 20.41 | 20.21 | | | |
| 3 | 8 | 7 | | 20.44 | 20.27 | 20.25 | | | |
| 3 | 15 | 0 | | 20.31 | 20.42 | 20.28 | | | |

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FCC RADIO TEST REPORT

| | | LTE | Band 26 Ma | ximum Average Po | ower [dBm] | |
|----------|---------|-----------|------------|------------------|------------|---------|
| BW [MHz] | RB Size | RB Offset | Mod | Lowest | Middle | Highest |
| 1.4 | 1 | 0 | | 23.40 | 23.35 | 23.29 |
| 1.4 | 1 | 3 | | 23.30 | 23.33 | 23.26 |
| 1.4 | 1 | 5 | | 23.29 | 23.17 | 23.25 |
| 1.4 | 3 | 0 | QPSK | 23.07 | 23.13 | 23.03 |
| 1.4 | 3 | 1 | | 23.07 | 23.14 | 23.06 |
| 1.4 | 3 | 3 | | 23.18 | 23.09 | 23.04 |
| 1.4 | 6 | 0 | | 22.30 | 22.32 | 22.22 |
| 1.4 | 1 | 0 | | 22.80 | 22.70 | 22.74 |
| 1.4 | 1 | 3 | | 22.58 | 22.71 | 22.58 |
| 1.4 | 1 | 5 | | 22.55 | 22.40 | 22.45 |
| 1.4 | 3 | 0 | 16-QAM | 22.10 | 22.21 | 22.06 |
| 1.4 | 3 | 1 | | 22.07 | 22.19 | 22.07 |
| 1.4 | 3 | 3 | | 22.20 | 22.12 | 22.01 |
| 1.4 | 6 | 0 | | 21.33 | 21.38 | 21.26 |
| 1.4 | 1 | 0 | | 21.52 | 21.53 | 21.52 |
| 1.4 | 1 | 3 | | 21.42 | 21.64 | 21.42 |
| 1.4 | 1 | 5 | | 21.57 | 21.38 | 21.35 |
| 1.4 | 3 | 0 | 64-QAM | 21.16 | 21.25 | 21.08 |
| 1.4 | 3 | 1 | | 21.09 | 21.16 | 21.11 |
| 1.4 | 3 | 3 | | 21.20 | 21.06 | 21.10 |
| 1.4 | 6 | 0 | | 21.12 | 21.13 | 21.08 |

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Appendix B. Test Results of ERP and Radiated Test

ERP

<Reporting Only>

| Troporting | Acporting Only | | | | | | | | | | |
|------------|---|------|--------|-------------|---------------|----------|--------|--|--|--|--|
| | LTE Band 26 / 15MHz (Channel 26765) (GT - LC = 1.39 dB) | | | | | | | | | | |
| Channal | Mode | F | RB | Cond | ucted | ERP | | | | | |
| Channel | Mode | Size | Offset | Power (dBm) | Power (Watts) | ERP(dBm) | ERP(W) | | | | |
| Lowest | | 1 | 0 | 23.42 | 0.2198 | 22.66 | 0.1845 | | | | |
| Middle | QPSK | - | - | - | - | - | - | | | | |
| Highest | | - | - | - | - | - | - | | | | |
| Lowest | | 1 | 0 | 22.81 | 0.1910 | 22.05 | 0.1603 | | | | |
| Middle | 16QAM | - | - | - | - | - | - | | | | |
| Highest |] | - | - | - | - | - | - | | | | |
| Lowest | | 1 | 0 | 21.61 | 0.1449 | 20.85 | 0.1216 | | | | |
| Middle | 64QAM | - | - | - | - | - | - | | | | |
| Highest | 1 | - | - | - | - | - | - | | | | |
| Limit | ERP < 7W | | | Re | sult | PA | SS | | | | |

Report No. : FG9O1139E

Radiated Spurious Emission

LTE Band 26

Report No.: FG9O1139E

| | | | Lī | ΓΕ Band 26 / | 1.4MHz / 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) |
| | 1632 | -38.80 | -13 | -25.80 | -51.74 | -44.13 | 1.22 | 8.70 | Н |
| | 2448 | -36.50 | -13 | -23.50 | -53.38 | -43.38 | 1.43 | 10.46 | Н |
| | 3264 | -47.61 | -13 | -34.61 | -66.4 | -55.48 | 1.68 | 11.69 | Н |
| | 4072 | -49.44 | -13 | -36.44 | -69.86 | -57.28 | 2.11 | 12.10 | Н |
| | | | | | | | | | Н |
| Lowest | | | | | | | | | Н |
| Lowest | 1632 | -38.16 | -13 | -25.16 | -50.96 | -43.49 | 1.22 | 8.70 | V |
| | 2448 | -37.20 | -13 | -24.20 | -54.46 | -44.08 | 1.43 | 10.46 | V |
| | 3264 | -48.42 | -13 | -35.42 | -67.51 | -56.29 | 1.68 | 11.69 | V |
| | 4072 | -49.12 | -13 | -36.12 | -70.06 | -56.96 | 2.11 | 12.10 | V |
| | | | | | | | | | V |
| | | | | | | | | | V |
| | 1640 | -40.02 | -13 | -27.02 | -52.98 | -45.38 | 1.22 | 8.73 | Н |
| | 2456 | -37.07 | -13 | -24.07 | -53.93 | -43.95 | 1.43 | 10.46 | Н |
| | 3280 | -50.36 | -13 | -37.36 | -69.05 | -58.26 | 1.69 | 11.74 | Н |
| | 4096 | -50.49 | -13 | -37.49 | -70.89 | -58.34 | 2.10 | 12.10 | Н |
| | | | | | | | | | Н |
| Middle | | | | | | | | | Н |
| Middle | 1640 | -41.18 | -13 | -28.18 | -54.01 | -46.54 | 1.22 | 8.73 | V |
| | 2456 | -37.40 | -13 | -24.40 | -54.61 | -44.28 | 1.43 | 10.46 | V |
| | 3280 | -47.22 | -13 | -34.22 | -66.26 | -55.12 | 1.69 | 11.74 | V |
| | 4096 | -49.57 | -13 | -36.57 | -70.52 | -57.42 | 2.10 | 12.10 | V |
| | | | | | | | | | V |
| | | | | | | | | | V |
| | 1648 | -41.24 | -13 | -28.24 | -54.21 | -46.63 | 1.23 | 8.76 | Н |
| | 2472 | -37.36 | -13 | -24.36 | -54.19 | -44.25 | 1.44 | 10.48 | Н |
| | 3296 | -50.87 | -13 | -37.87 | -69.46 | -58.81 | 1.70 | 11.79 | Н |
| | 4120 | -50.11 | -13 | -37.11 | -70.49 | -57.97 | 2.09 | 12.10 | Н |
| | | | | | | | | | Н |
| Highest | | | | | | | | | Н |
| riigiiost | 1648 | -41.76 | -13 | -28.76 | -54.61 | -47.15 | 1.23 | 8.76 | V |
| | 2472 | -37.28 | -13 | -24.28 | -54.4 | -44.17 | 1.44 | 10.48 | V |
| | 3296 | -47.41 | -13 | -34.41 | -66.4 | -55.35 | 1.70 | 11.79 | V |
| | 4120 | -49.56 | -13 | -36.56 | -70.51 | -57.42 | 2.09 | 12.10 | V |
| | | | | | | | | | V |
| | | | | | | | | | V |

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

TEL: 0800-800005 Page Number : B2-1 of 2

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

| | | LTE Band 26 / 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) | | |
| | 1632 | -37.19 | -13 | -24.19 | -50.13 | -42.52 | 1.22 | 8.70 | Н | | |
| | 2440 | -35.29 | -13 | -22.29 | -52.19 | -42.16 | 1.43 | 10.45 | Н | | |
| | 3256 | -47.05 | -13 | -34.05 | -65.89 | -54.90 | 1.67 | 11.67 | Н | | |
| | 4072 | -48.10 | -13 | -35.10 | -68.52 | -55.94 | 2.11 | 12.10 | Н | | |
| | | | | | | | | | Н | | |
| | | | | | | | | | Н | | |
| Middle | | | | | | | | | Н | | |
| Middle | 1632 | -38.09 | -13 | -25.09 | -50.89 | -43.42 | 1.22 | 8.70 | V | | |
| | 2440 | -36.51 | -13 | -23.51 | -53.82 | -43.38 | 1.43 | 10.45 | V | | |
| | 3256 | -46.92 | -13 | -33.92 | -66.04 | -54.77 | 1.67 | 11.67 | V | | |
| | 4072 | -47.18 | -13 | -34.18 | -68.12 | -55.02 | 2.11 | 12.10 | V | | |
| | | | | | | | | | V | | |
| | | | | | | | | | V | | |
| | | | | | | | | | V | | |

Report No.: FG9O1139E

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

| | LTE Band 26 / 15MHz / 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) | | |
| | 1656 | -39.94 | -13 | -26.94 | -52.93 | -45.35 | 1.23 | 8.79 | Н | | |
| | 2488 | -37.36 | -13 | -24.36 | -54.15 | -44.26 | 1.44 | 10.49 | Н | | |
| | 3312 | -49.52 | -13 | -36.52 | -68.02 | -57.49 | 1.72 | 11.84 | Н | | |
| | 4144 | -50.24 | -13 | -37.24 | -70.6 | -58.11 | 2.08 | 12.10 | Н | | |
| | | | | | | | | | Н | | |
| | | | | | | | | | Н | | |
| Lowest | | | | | | | | | Н | | |
| Lowest | 1656 | -38.57 | -13 | -25.57 | -51.43 | -43.98 | 1.23 | 8.79 | V | | |
| | 2488 | -36.08 | -13 | -23.08 | -53.11 | -42.98 | 1.44 | 10.49 | V | | |
| | 3312 | -46.02 | -13 | -33.02 | -64.96 | -53.99 | 1.72 | 11.84 | V | | |
| | 4144 | -48.31 | -13 | -35.31 | -69.27 | -56.18 | 2.08 | 12.10 | V | | |
| | | | | | | | | | V | | |
| | | | | | | | | | V | | |
| | | | | | | | | | V | | |

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

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