# FCC Test Report

# (Part 22)

| | |
|---|---|
| **Report No.:** | RF140707C54J |
| **FCC ID:** | M82-UTX-3115 |
| **Test Model:** | UTX-3115 |
| **Series Model:** | UTX-3115XXXXXXXXXXXXXXXX, UTX3115XXXXXXXXXXXXXXXX (“X” can be 0-9 or A-Z or blank or any alphanumeric character), HPE Edgeline EL10 |
| **Received Date:** | Oct. 31, 2016 |
| **Test Date:** | Nov. 07, 2016 |
| **Issued Date:** | Nov. 08, 2016 |
| **Applicant:** | ADVANTECH CO., LTD |
| **Address:** | No. 1, Alley 20, Lane 26, Rueiguang Rd, Neihu District, Taipei, Taiwan 114 |
| **Issued By:** | Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch |
| **Lab Address:** | No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C. |
| **Test Location:** | No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.) |

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## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| RF140707C54J | Original release | Nov. 08, 2016 |

## 1 Certificate of Conformity

| | |
|---|---|
| **Product:** | COMPUTER |
| **Brand:** | Advantech, Hewlett Packard Enterprise |
| **Test Model:** | UTX-3115 |
| **Series Model:** | UTX-3115XXXXXXXXXXXXXXX, UTX3115XXXXXXXXXXXXXXX (“X” can be 0-9 or A-Z or blank or any alphanumeric character), HPE Edgeline EL10 |
| **Sample Status:** | Engineering sample |
| **Applicant:** | ADVANTECH CO., LTD |
| **Test Date:** | Nov. 07, 2016 |
| **Standards:** | FCC Part 22, Subpart H |

This report is issued as a supplementary report of RF140707C54D-2. This report shall be used combined together with its original report.

**Prepared by :** Celine Chou , **Date:** Nov. 08, 2016

Celine Chou / Specialist

**Approved by :** Jeremy Lin , **Date:** Nov. 08, 2016

Jeremy Lin / Project Engineer

Note: Test item for radiated emissions below 1 GHz test was performed for this addendum. Other testing data refer to original report.

## 2 Summary of Test Results

| Applied Standard: FCC Part 22 & Part 2 | | | |
|---|---|---|---|
| FCC Clause | Test Item | Result | Remarks |
| 2.1046<br>22.913 (a) | Effective radiated power | N/A | Refer to Note below |
| 2.1055<br>22.355 | Frequency Stability | N/A | Refer to Note below |
| 2.1049 | Occupied Bandwidth | N/A | Refer to Note below |
| 22.917 | Band Edge Measurements | N/A | Refer to Note below |
| 2.1051<br>22.917 | Conducted Spurious Emissions | N/A | Refer to Note below |
| 2.1053<br>22.917 | Radiated Spurious Emissions | Pass | Meet the requirement of limit.<br>Minimum passing margin is<br>-21.00dB at 30.00MHz. |

Note: Test item for radiated emissions below 1 GHz test was performed for this addendum. Other testing data refer to original report.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement | Frequency | Expended Uncertainty (k=2) (±) |
|---|---|---|
| Radiated Emissions up to 1 GHz | 30MHz ~ 200MHz | 3.63 dB |
| | 200MHz ~1000MHz | 3.64 dB |

## 2.2 Test Site and Instruments

| Description & Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|
| Test Receiver<br>ROHDE & SCHWARZ | ESCS30 | 100289 | Dec. 23, 2015 | Dec. 22, 2016 |
| Spectrum Analyzer<br>ROHDE & SCHWARZ | FSP40 | 100269 | Apr. 19, 2016 | Apr. 18, 2017 |
| BILOG Antenna<br>SCHWARZBECK | VULB9168 | 9168-148 | Jan. 18, 2016 | Jan. 17, 2017 |
| HORN Antenna<br>SCHWARZBECK | BBHA 9120 D | 9120D-1169 | Jan. 08, 2016 | Jan. 07, 2017 |
| HORN Antenna<br>SCHWARZBECK | BBHA 9170 | BBHA9170241 | Jan. 18, 2016 | Jan. 17, 2017 |
| Preamplifier<br>Agilent | 8449B | 3008A01911 | Aug. 09, 2016 | Aug. 08, 2017 |
| Preamplifier<br>Agilent | 8447D | 2944A10638 | Aug. 09, 2016 | Aug. 08, 2017 |
| RF signal cable<br>HUBER+SUHNER | SUCOFLEX 104 | CABLE-CH9-02 (309222 +248780) | Aug. 09, 2016 | Aug. 08, 2017 |
| RF signal cable<br>HUBER+SUHNER | SUCOFLEX 104 | CABLE-CH9-03 (274092) | Aug. 09, 2016 | Aug. 08, 2017 |
| RF signal cable<br>Woken | 8D-FB | Cable-CH9-01 | Aug. 09, 2016 | Aug. 08, 2017 |
| Software<br>BV ADT | ADT_Radiated_ V7.6.15.9.4 | NA | NA | NA |
| Antenna Tower<br>EMCO | 2070/2080 | 512.835.4684 | NA | NA |
| Turn Table<br>EMCO | 2087-2.03 | NA | NA | NA |
| Antenna Tower &Turn<br>BV ADT | AT100 | AT93021705 | NA | NA |
| Turn Table<br>BV ADT | TT100 | TT93021705 | NA | NA |
| Turn Table Controller<br>BV ADT | SC100 | SC93021705 | NA | NA |

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 215374.
5. The IC Site Registration No. is IC 7450F-9.

## 3 General Information

### 3.1 General Description of EUT

| | |
|---|---|
| Product | COMPUTER |
| Brand | Advantech, Hewlett Packard Enterprise |
| Test Model | UTX-3115 |
| Series Model | UTX-3115XXXXXXXXXXXXXXX, UTX3115XXXXXXXXXXXXXXXX (“X” can be 0-9 or A-Z or blank or any alphanumeric character), HPE Edgeline EL10 |
| Model Difference | Refer to Note |
| Status of EUT | Engineering sample |
| Power Supply Rating | 12Vdc from Adapter |
| Modulation Type | GPRS: GMSK<br>EDGE: 8PSK<br>WCDMA: BPSK, QPSK<br>HSDPA: BPSK<br>HSUPA: QPSK |
| Operating Frequency | GPRS, EDGE: 824.2MHz ~ 848.8MHz<br>WCDMA, HSUPA, HSDPA: 826.4MHz ~ 846.6MHz |
| Max. ERP Power | GPRS: 722.770 mW (28.59dBm)<br>EDGE: 645.654 mW (28.10dBm)<br>WCDMA: 96.828mW (19.86dBm) |
| Antenna Type | Dipole antenna with -0.5dBi gain |
| Antenna Connector | SMA(M) |
| Accessory Device | Refer to note |
| Data Cable Supplied | NA |

Note:

1. This is a supplementary report of RF140707C54D-2. This report shall be combined together with its original report.
2. This report is prepared for FCC class II permissive change. The differences compared with the original report are adding components. Therefore, test item for radiated emissions below 1GHz had been re-tested and presented in this report. Other testing data refer to original report.
3. All models are listed as below.

| Brand | Model | Difference |
|---|---|---|
| Advantech | UTX-3115XXXXXXXXXXXXXXX (“X” can be 0-9 or A-Z or blank or any alphanumeric character) | For marketing purpose. |
| | UTX3115XXXXXXXXXXXXXXX (“X” can be 0-9 or A-Z or blank or any alphanumeric character) | |
| Hewlett Packard Enterprise | HPE Edgeline EL10 | |

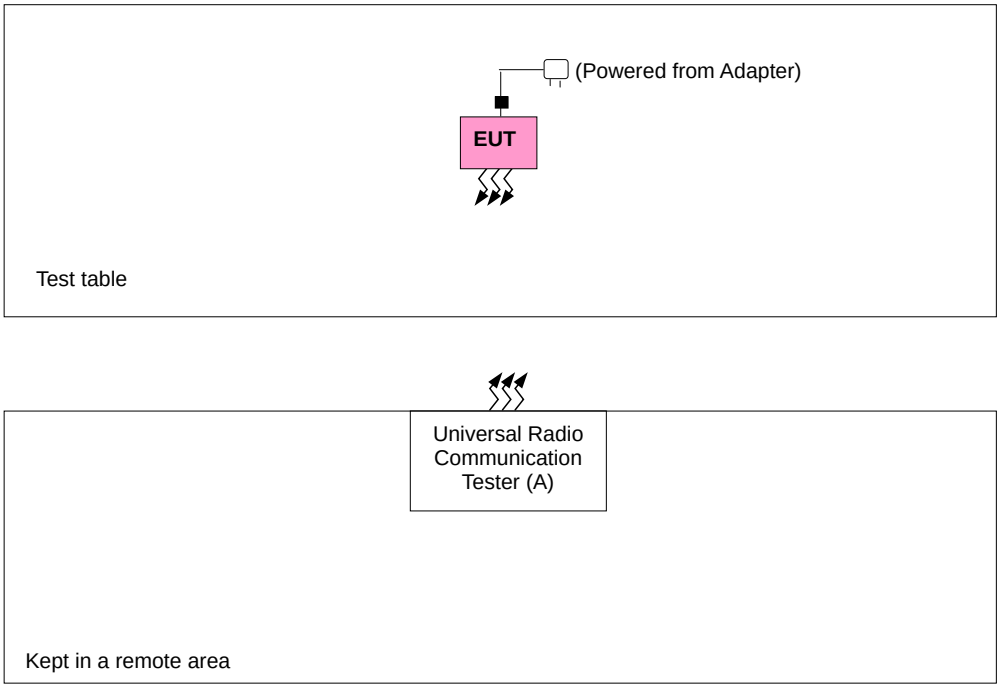
* Model UTX-3115 was chosen for final test.

4. The EUT uses the following components. (New components are marked in boldface.)

| Part | Specification | Vendor | Model |
|---|---|---|---|
| Main board | - | Advantech | AIMB-115 |
| Memory | DDR3L 4GB | Apacer | PC3-1066 CL9 |
| SSD | 32GB | Plextor | PX-32G5Le-72 |
| | **64GB** | **Plextor** | **PX-64G5Le-72** |
| | **64GB** | **Liteon** | **PZ8-CC064** |
| | **64GB** | **Advantech** | **SQF-S25M4-64G-S9E** |
| | **64GB** | **Transcend** | **96FD25-S064-TR7** |
| CPU | 1.4GHz | Intel | ATOM E3826 |
| 3G Module | - | Telit | HE910 |
| Wi-Fi Module | - | Intel | 7260HMW |
| Adapter 1 | I/P: 100-240Vac, 50-60Hz, 1.5A<br>O/P: 12Vdc, 3A<br>DC: 1.5m cable with one core attached on adapter<br>AC: 1.8m shielded cable without core | FSP | FSP036-RAB |
| **Adapter 2** | **I/P: 100-240Vac, 50-60Hz, 1.2A**<br>**O/P: 12Vdc, 3A**<br>**DC: 1.45m cable with one core attached on adapter**<br>**AC: 1.8m shielded cable without core** | **FSP** | **FSP036-RBBN2** |

*Adapter 2 + Liteon SSD (64GB) were for the final tests.

## 3.2 Configuration of System Under Test




### 3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| No. | Product | Brand | Model No. | Serial No. | FCC ID |
|---|---|---|---|---|---|
| A. | Universal Radio Communication Tester | R&S | CMU200 | 123112 | NA |

Note:
1. All power cords of the above support units are non shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

### 3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports
Following channel(s) was (were) selected for the final test as listed below:

**GSM MODE**

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Mode |
|---|---|---|---|---|
| - | Radiated Emission Below 1GHz | 128 to 251 | 128 | GPRS |

**WCDMA MODE**

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Mode |
|---|---|---|---|---|
| - | Radiated Emission Below 1GHz | 4132 to 4233 | 4132 | WCDMA |

**Test Condition:**

| Test Item | Environmental Conditions | Input Power | Tested By |
|---|---|---|---|
| Radiated Emission | 20deg. C, 69%RH | 120Vac, 60Hz | Bayu Chen |

### 3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

### 3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 22**

**KDB 971168 D01 Power Meas License Digital Systems v02r02**

**ANSI/TIA/EIA-603-D 2010**

All test items have been performed and recorded as per the above standards.

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

## 4 Test Types and Results

### 4.1 Radiated Emission Measurement

#### 4.1.1 Limits of Radiated Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

#### 4.1.2 Test Procedure

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G

c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

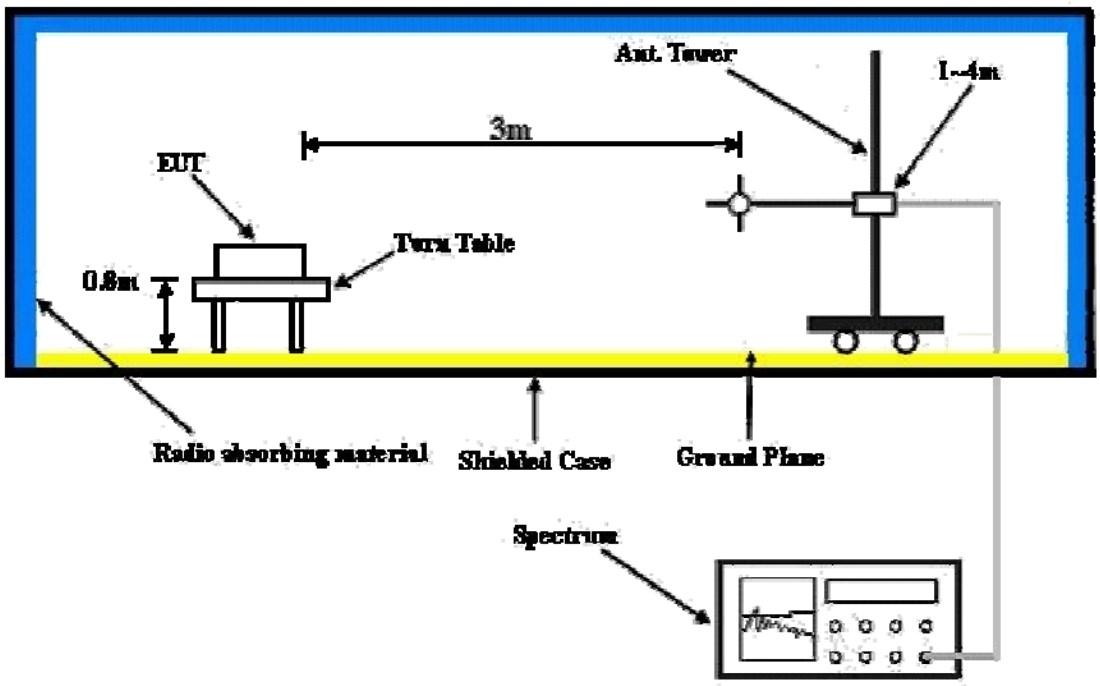
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

#### 4.1.3 Deviation from Test Standard

No deviation.

### 4.1.4 Test Setup




For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 4.1.5 Test Results

Below 1GHz worst-case data:

For GPRS Mode:

| Mode | TX channel 128 | Frequency Range | Below 1000 MHz |
|---|---|---|---|
| Environmental Conditions | 20deg. C, 69%RH | Input Power | 120Vac, 60Hz |
| Tested By | Bayu Chen | | |

| Antenna Polarity & Test Distance: Horizontal at 3 M | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| **1** | **30.00** | **-35.90** | **-14.60** | **-19.40** | **-34.00** | **-13.00** | **-21.00** |
| 2 | 53.28 | -55.10 | -52.80 | -6.20 | -59.00 | -13.00 | -46.00 |
| 3 | 534.40 | -58.00 | -63.70 | 3.80 | -59.90 | -13.00 | -46.90 |
| 4 | 600.36 | -53.90 | -58.30 | 3.80 | -54.50 | -13.00 | -41.50 |
| 5 | 730.34 | -48.10 | -50.10 | 3.60 | -46.50 | -13.00 | -33.50 |
| 6 | 837.04 | -58.20 | -57.40 | 3.80 | -53.60 | -13.00 | -40.60 |
| Antenna Polarity & Test Distance: Vertical at 3 M | | | | | | | |
| No. | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1 | 30.00 | -37.00 | -29.70 | -19.40 | -49.10 | -13.00 | -36.10 |
| 2 | 84.32 | -52.80 | -60.30 | 0.40 | -59.90 | -13.00 | -46.90 |
| 3 | 280.26 | -61.80 | -59.20 | -1.60 | -60.80 | -13.00 | -47.80 |
| 4 | 600.36 | -56.90 | -59.20 | 3.80 | -55.40 | -13.00 | -42.40 |
| **5** | 714.82 | -51.60 | -51.30 | 3.50 | -47.80 | -13.00 | -34.80 |
| 6 | 837.04 | -60.00 | -58.70 | 3.80 | -54.90 | -13.00 | -41.90 |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

For WCDMA Mode:

| Mode | TX channel 4132 | Frequency Range | Below 1000 MHz |
|---|---|---|---|
| Environmental Conditions | 20deg. C, 69%RH | Input Power | 120Vac, 60Hz |
| Tested By | Bayu Chen | | |

| Antenna Polarity & Test Distance: Horizontal at 3 M | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1 | 31.94 | -52.20 | -32.70 | -18.30 | -51.00 | -13.00 | -38.00 |
| 2 | 111.48 | -52.60 | -60.00 | -2.50 | -62.50 | -13.00 | -49.50 |
| 3 | 256.98 | -56.40 | -62.20 | -1.50 | -63.70 | -13.00 | -50.70 |
| 4 | 600.36 | -57.60 | -62.10 | 3.80 | -58.30 | -13.00 | -45.30 |
| 5 | 740.04 | -52.60 | -54.30 | 3.70 | -50.60 | -13.00 | -37.60 |
| 6 | 837.04 | -58.80 | -57.90 | 3.80 | -54.10 | -13.00 | -41.10 |
| Antenna Polarity & Test Distance: Vertical at 3 M | | | | | | | |
| No. | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1 | 30.00 | -43.50 | -36.10 | -19.40 | -55.50 | -13.00 | -42.50 |
| 2 | 82.38 | -56.90 | -63.90 | 0.40 | -63.50 | -13.00 | -50.50 |
| 3 | 198.78 | -59.80 | -60.50 | -2.40 | -62.90 | -13.00 | -49.90 |
| 4 | 600.36 | -59.00 | -61.30 | 3.80 | -57.50 | -13.00 | -44.50 |
| 5 | 747.80 | -48.20 | -47.20 | 3.70 | -43.50 | -13.00 | -30.50 |
| 6 | 837.04 | -58.40 | -57.00 | 3.80 | -53.20 | -13.00 | -40.20 |

Remarks:
1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

**Appendix – Information on the Testing Laboratories**

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following: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The address and road map of all our labs can be found in our web site also.

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