FCC Test Report

(Part 27)

Report No.:	RF140707C54J-2
FCC ID:	M82-UTX-3115
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
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.)

Table of Contents

Release Control Record 3

1 Certificate of Conformity 4

2 Summary of Test Results 5

2.1 Measurement Uncertainty 5
2.2 Test Site and Instruments 6

3 General Information 7

3.1 General Description of EUT 7
3.2 Configuration of System Under Test 9
3.2.1 Description of Support Units 9
3.3 Test Mode Applicability and Tested Channel Detail 10
3.4 EUT Operating Conditions 10
3.5 General Description of Applied Standards 10

4 Test Types and Results 11

4.1 Radiated Emission Measurement 11
4.1.1 Limits of Radiated Emission Measurement 11
4.1.2 Test Procedure 11
4.1.3 Deviation from Test Standard 11
4.1.4 Test Setup 12
4.1.5 Test Results 13

5 Pictures of Test Arrangements 14

Appendix – Information on the Testing Laboratories 15

Release Control Record

Issue No.	Description	Date Issued
RF140707C54J-2	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 27, Subpart L

This report is issued as a supplementary report of RF140707C54D-6. 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: Radiated emission below 1GHz test is performed for the addendum. Refer to original report for the other test data.

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)(4)	Equivalent Isotropically radiated power	N/A	Refer to Note
2.1055 27.54	Frequency Stability Stay with the authorized bands of operation	N/A	Refer to Note
2.1049 27.53(h)	Occupied Bandwidth	N/A	Refer to Note
27.53(h)	Band Edge Measurements	N/A	Refer to Note
27.50(d)(5)	Peak to average ratio	N/A	Refer to Note
2.1051 27.53(h)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(h)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -26.10dB at 747.80MHz.

Note: Radiated emission below 1GHz test is performed for the addendum. Refer to original report for the other test data.

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	Expanded 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 ROHDE & SCHWARZ	ESCS30	100289	Dec. 23, 2015	Dec. 22, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Apr. 19, 2016	Apr. 18, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-148	Jan. 18, 2016	Jan. 17, 2017
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Jan. 08, 2016	Jan. 07, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Jan. 18, 2016	Jan. 17, 2017
Preamplifier Agilent	8449B	3008A01911	Aug. 09, 2016	Aug. 08, 2017
Preamplifier Agilent	8447D	2944A10638	Aug. 09, 2016	Aug. 08, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-02 (309222 +248780)	Aug. 09, 2016	Aug. 08, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-03 (274092)	Aug. 09, 2016	Aug. 08, 2017
RF signal cable Woken	8D-FB	Cable-CH9-01	Aug. 09, 2016	Aug. 08, 2017
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller 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	QPSK, 16QAM
Operating Frequency	WCDMA: BPSK, QPSK HSPDA: BPSK HUPDA: QPSK
Max. EIRP Power	117.761 mW (20.71dBm)
Antenna Type	Dipole antenna with -1.0dBi gain
Antenna Connector	SMA(M)
Accessory Device	Refer to note
Data Cable Supplied	NA

Note:

1. This is a supplementary report of RF140707C54D-6. 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.
	UTX3115XXXXXXXXXXXXXXXX (“X” can be 0-9 or A-Z or blank or any alphanumeric character)	
Hewlett Packard Enterprise	HPE Edgeline EL10	

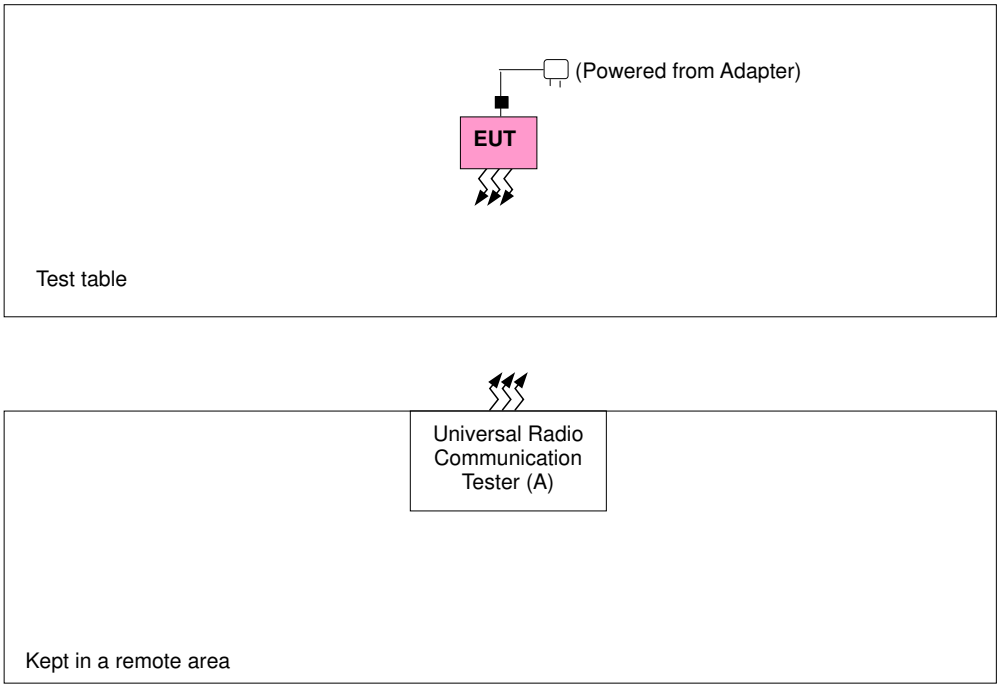
* Model UTX-3115 was chosen for final test.

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 O/P: 12Vdc, 3A DC: 1.5m cable with one core attached on adapter AC: 1.8m shielded cable without core	FSP	FSP036-RAB
Adapter 2	**I/P: 100-240Vac, 50-60Hz, 1.2A** **O/P: 12Vdc, 3A** **DC: 1.45m cable with one core attached on adapter** **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:

WCDMA MODE

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	Radiated Emission Below 1GHz	1312 to 1513	1312	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 27

KDB 971168 D01 Power Meas License Digital Systems v02r02

ANSI/TIA/EIA-603-D 2010

Note: 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. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high channel of operational frequency range.)

b. 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.

c. The substitution 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 b. Record the power level of S.G

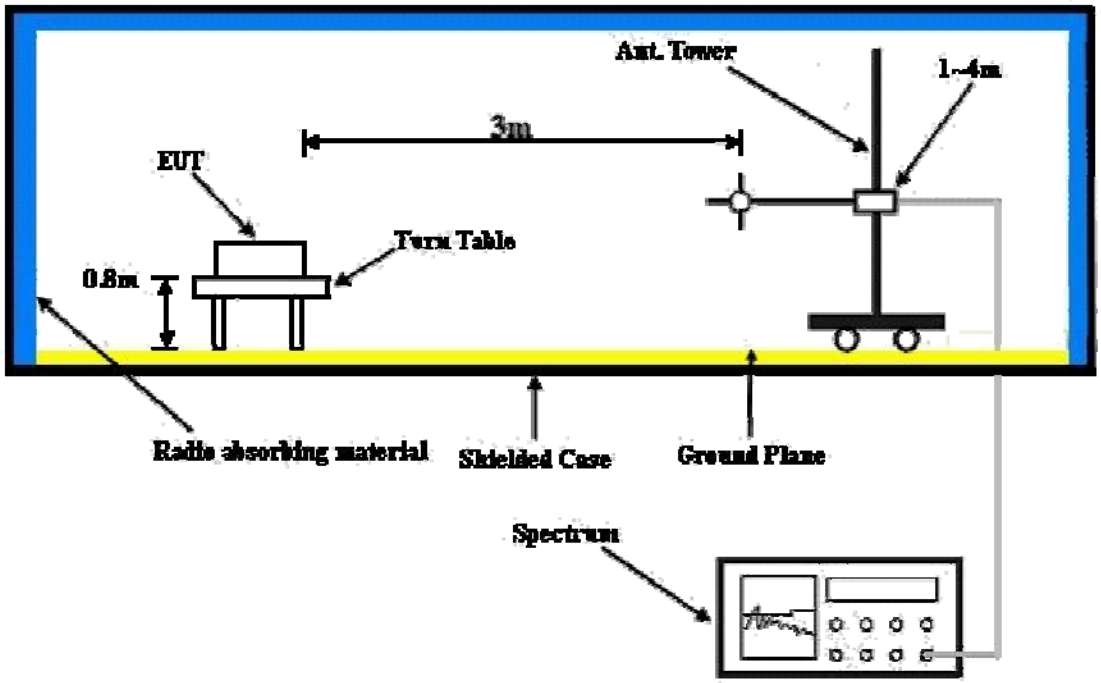
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution antenna.

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:

Mode	TX channel 1312	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)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-52.70	-31.00	-18.30	-49.30	-13.00	-36.30
2	109.54	-52.80	-58.20	-2.50	-60.70	-13.00	-47.70
3	136.70	-56.20	-59.00	-3.20	-62.20	-13.00	-49.20
4	600.36	-55.70	-58.00	3.80	-54.20	-13.00	-41.20
5	747.80	-45.20	-44.90	3.70	-41.20	-13.00	-28.20
6	802.12	-66.20	-64.50	4.00	-60.50	-13.00	-47.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-38.30	-28.80	-19.40	-48.20	-13.00	-35.20
2	276.38	-66.60	-61.70	-1.60	-63.30	-13.00	-50.30
3	549.92	-62.90	-65.00	3.80	-61.20	-13.00	-48.20
4	600.36	-57.30	-57.40	3.80	-53.60	-13.00	-40.60
5	**747.80**	**-46.00**	**-42.80**	**3.70**	**-39.10**	**-13.00**	**-26.10**
6	802.12	-65.80	-63.00	4.00	-59.00	-13.00	-46.00

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:

Linko EMC/RF Lab
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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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