



# RF EXPOSURE REPORT

**REPORT NO.:** SA140707C54A

**MODEL NO.:** UTX-3115XXXXXXXXXXXXXXXXXX,  
UTX3115XXXXXXXXXXXXXXXXXX  
("X" can be 0-9 or A-Z or blank or any alphanumeric character)

**FCC ID:** M82-UTX-3115

**RECEIVED:** Jun. 18, 2014

**ISSUED:** Jul. 29, 2014

**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, 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 Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA140707C54A	Original release.	Jul. 29, 2014



# 1. CERTIFICATION

**PRODUCT:** COMPUTER

**MODEL:** UTX-3115XXXXXXXXXXXXXXXXXX,  
UTX3115XXXXXXXXXXXXXXXXXX ("X" can be 0-9 or A-Z or blank or  
any alphanumeric character)

**BRAND:** Advantech

**APPLICANT:** ADVANTECH CO., LTD

**TEST SAMPLE:** ENGINEERING SAMPLE

**STANDARDS:** FCC Part 2 (Section 2.1091)

**KDB 447498 D03**

**IEEE C95.1**

The above equipment (Model: UTX-3115) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY :** Celine Chou , **DATE :** Jul. 29, 2014  
Celine Chou / Specialist

**APPROVED BY :** Ken Liu , **DATE :** Jul. 29, 2014  
Ken Liu / Senior Manager

## 2. RF EXPOSURE

### 2.1 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm <sup>2</sup> )	AVERAGE TIME (minutes)
<b>LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE</b>				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 2.2 MPE CALCULATION FORMULA

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

### 2.3 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

FREQUENCY BAND (MHz)	MODULATION MODE	MAX POWER (dBm)	CHAIN	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	802.11b	19.17	0	2.98	20	0.033	1
		17.84	1	2.98	20	0.024	1
	802.11g	25.66	0	2.98	20	0.145	1
		24.59	1	2.98	20	0.114	1
	802.11n (20MHz)	26.01	0	2.98	20	0.158	1
		24.83	1	2.98	20	0.120	1
		25.98	0 + 1	5.99	20	0.313	1
	802.11n (40MHz)	26.78	0	2.98	20	0.188	1
		23.95	1	2.98	20	0.098	1
		26.19	0 + 1	5.99	20	0.329	1
5180-5240	802.11a	14.91	0	1.40	20	0.009	1
		15.07	1	1.40	20	0.009	1
	802.11n (20MHz)	15.10	0	1.40	20	0.009	1
		15.06	1	1.40	20	0.009	1
		15.17	0 + 1	4.41	20	0.018	1
	802.11n (40MHz)	15.65	0	1.40	20	0.010	1
		15.01	1	1.40	20	0.009	1
		14.94	0 + 1	4.41	20	0.017	1
	802.11ac (80MHz)	6.89	0	1.40	20	0.001	1
		7.79	1	1.40	20	0.002	1
		8.56	0 + 1	4.41	20	0.004	1



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FREQUENCY BAND (MHz)	MODULATION MODE	MAX POWER (dBm)	CHAIN	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5260-5320	802.11a	14.71	0	1.40	20	0.008	1
		16.18	1	1.40	20	0.011	1
	802.11n (20MHz)	14.70	0	1.40	20	0.008	1
		15.01	1	1.40	20	0.009	1
		15.18	0 + 1	4.41	20	0.018	1
	802.11n (40MHz)	9.97	0	1.40	20	0.003	1
		10.19	1	1.40	20	0.003	1
		10.84	0 + 1	4.41	20	0.007	1
	802.11ac (80MHz)	9.87	0	1.40	20	0.003	1
		10.28	1	1.40	20	0.003	1
		10.05	0 + 1	4.41	20	0.006	1
	5500-5720	802.11a	17.21	0	1.40	20	0.014
17.01			1	1.40	20	0.014	1
802.11n (20MHz)		17.13	0	1.40	20	0.014	1
		16.23	1	1.40	20	0.012	1
		17.20	0 + 1	4.41	20	0.029	1
802.11n (40MHz)		16.76	0	1.40	20	0.013	1
		16.57	1	1.40	20	0.012	1
		16.62	0 + 1	4.41	20	0.025	1
802.11ac (80MHz)		14.23	0	1.40	20	0.007	1
		14.23	1	1.40	20	0.007	1
		16.69	0 + 1	4.41	20	0.026	1

FREQUENCY BAND (MHz)	MODULATION MODE	MAX POWER (dBm)	CHAIN	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745-5825	802.11a	26.13	0	1.40	20	0.113	1
		25.65	1	1.40	20	0.101	1
	802.11n (20MHz)	25.73	0	1.40	20	0.103	1
		25.96	1	1.40	20	0.108	1
		26.86	0 + 1	4.41	20	0.267	1
	802.11n (40MHz)	25.55	0	1.40	20	0.099	1
		26.06	1	1.40	20	0.111	1
		27.18	0 + 1	4.41	20	0.287	1
	802.11ac (80MHz)	23.25	0	1.40	20	0.058	1
		23.34	1	1.40	20	0.059	1
		27.03	0 + 1	4.41	20	0.277	1

**NOTE:**
**2.4GHz Band:**

802.11b / g: gain = 2.98dBi

802.11n: Directional gain = 2.98dBi + 10log(2) = 5.99dBi

**5.0GHz Band:**

802.11a: gain = 1.4

802.11n: Directional gain = 1.4dBi + 10log(2) = 4.41dBi





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MODE	FREQUENCY BAND (MHz)	MAX POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
BT LE	2402~2480	4.54	2.98	20	0.001	1
BT EDR	2402~2480	4.87	2.98	20	0.001	1

FREQUENCY BAND (MHz)	ERP (dBm)	EIRP (dBm)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
GPRS 824.2 ~ 848.8MHz	28.59	30.74	20	0.236	0.549
EDGE 824.2 ~ 848.8MHz	28.10	30.25	20	0.211	0.549
WCDMA 826.4 ~ 846.6MHz	19.86	22.01	20	0.032	0.551

**NOTE:** EIRP = ERP + 2.15dBi.

FREQUENCY BAND (MHz)	EIRP (dBm)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
GPRS 1850.2 ~ 1909.8MHz	28.22	20	0.132	1
EDGE 1850.2 ~ 1909.8MHz	27.70	20	0.117	1
WCDMA 1852.4 ~ 1907.6MHz	21.06	20	0.025	1
WCDMA 1712.4 ~1752.6MHz	20.71	20	0.023	1