

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

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ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch

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TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
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A D T

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 ²)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
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/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 ²)	LIMIT (mW/cm ²)
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

FREQUENCY BAND (MHz)	MODULATION MODE	MAX POWER (dBm)	CHAIN	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
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	1
		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 ²)	LIMIT (mW/cm ²)
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

MODE	FREQUENCY BAND (MHz)	MAX POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
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 ²)	LIMIT (mW/cm ²)
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 ²)	LIMIT (mW/cm ²)
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