



RF EXPOSURE REPORT

REPORT NO.: SA111011C17

MODEL NO.: 8017-01620P, WLU5150-D81,
8017-01622P, 8017-01618P,
8017-01619P, WLU5151-D81

FCC ID: H8N-WLU5150

RECEIVED: Oct. 11, 2011

TESTED: Nov. 17, 2011

ISSUED: Nov. 28, 2011

APPLICANT: Askey Computer Corp

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ISSUED BY: Bureau Veritas Consumer Products Services
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA111011C17	Original release	Nov. 28, 2011

1. CERTIFICATION

PRODUCT: Wireless LAN Adaptor

BRAND NAME: Panasonic

MODEL NO.: 8017-01620P, WLU5150-D81, 8017-01622P,
8017-01618P, 8017-01619P, WLU5151-D81

TEST SAMPLE: ENGINEERING SAMPLE

APPLICANT: Askey Computer Corp

TESTED: Nov. 17, 2011

STANDARDS: FCC Part 2 (Section 2.1091)
FCC OET Bulletin 65, Supplement C (01-01)
IEEE C95.1

The above equipment (Model: 8017-01622P) 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.

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(Claire Kuan, Specialist)

APPROVED BY : May Chen , **DATE:** Nov. 28, 2011
(May Chen, Deputy Manager)

2. RF EXPOSURE LIMIT

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

3. 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

4. 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**.

5. ANTENNA GAIN

The antennas used in this EUT are listed as below table:

Set	Transmitter Circuit	Brand	P/N	Antenna Type	Gain (dBi)	Antenna Connector
1	Chain (0) Ant 1(L)	Askey	08B1-1PV1000	PCB	Please refer table 1	NA
	Chain (1) Ant 2(R)	Askey	08B1-1PW1000	PCB	Please refer table 1	NA
Set	Transmitter Circuit	Brand	P/N	Antenna Type	Gain (dBi)	Antenna Connector
2	Chain (0) Ant 1(L)	Askey	08B1-1PV1000	PCB	Please refer table 2	NA
	Chain (1) Ant 2(R)	Askey	08B1-1PW1000	PCB	Please refer table 2	NA

Antenna set 1 was used for model: 8017-01620P, WLU5150-D81

Antenna set 2 was used for model: 8017-01622P, 8017-01618P, 8017-01619P, WLU5151-D81

Table 1

Ant 1(L)	Frequency (MHz)	2412	2450	2484	5180	5250	5350	5500	5725	5806
	Peak Gain (dBi)	-0.83	0.40	1.23	2.45	2.21	2.20	3.14	3.73	3.64
	Average Gain(dBi)	-6.59	-6.26	-5.05	-4.09	-2.31	-2.58	-2.95	-2.82	-2.01
	Efficiency (%)	21.92	23.69	31.24	38.97	58.79	55.20	50.73	52.27	62.96
Ant 2(R)	Frequency (MHz)	2412	2450	2484	5180	5250	5350	5500	5725	5806
	Peak Gain (dBi)	-3.76	-2.96	-0.76	0.99	3.21	3.06	3.29	3.49	3.71
	Average Gain(dBi)	-3.76	-2.96	-0.76	0.99	3.21	3.06	3.29	3.49	3.71
	Efficiency (%)	16.08	18.41	28.57	39.12	56.11	55.78	58.86	59.90	63.23

Table 2

Ant 1(L)	Frequency (MHz)	2412	2450	2484	5180	5250	5350	5500	5725	5806
	Peak Gain (dBi)	0.60	1.72	2.15	3.42	3.55	3.81	4.02	3.89	4.39
	Average Gain(dBi)	-4.68	-3.45	-2.90	-2.25	-2.17	-1.91	-1.95	-1.65	-1.67
	Efficiency (%)	34.05	45.24	51.27	59.55	60.71	64.38	63.89	68.43	68.03
Ant 2(R)	Frequency (MHz)	2412	2450	2484	5180	5250	5350	5500	5725	5806
	Peak Gain (dBi)	-3.40	-2.06	-0.70	2.35	2.47	2.64	3.09	3.16	2.79
	Average Gain(dBi)	-7.75	-6.15	-5.06	-1.99	-2.02	-2.00	-2.10	-1.95	-1.83
	Efficiency (%)	16.79	24.27	31.20	63.30	62.83	63.03	61.64	63.83	65.66

u The EUT incorporates CDD function with 802.11a, 802.11b & 802.11g.

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

For 15.247(2.4GHz):

802.11b:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
2412-2462	54.5	3.9	20	0.027	1.00

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 2]$
 Effective Legacy Gain (dBi) = 3.9

802.11g:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
2412-2462	381.1	3.9	20	0.186	1.00

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 2]$
 Effective Legacy Gain (dBi) = 3.9

802.11n(20MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
2412-2462	381.2	2.15	20	0.124	1.00

802.11n(40MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
2422-2452	200.0	2.15	20	0.065	1.00

For 15.247(5GHz):

802.11a:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
5745 ~ 5825	447.9	6.8	20	0.426	1.00

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 2]$
 Effective Legacy Gain (dBi) = 6.8

802.11n(20MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
5745 ~ 5825	442.9	4.39	20	0.242	1.00

802.11n(40MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
5755 ~ 5795	392.6	4.39	20	0.215	1.00

For 15.407(5GHz):

802.11a:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
5180-5240	25.9	6.1	20	0.021	1.00
5260-5320	68.6	6.2	20	0.057	1.00
5500-5700	77.3	6.6	20	0.070	1.00

For Operated in 5150MHz ~ 5250MHz bands:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$$

Effective Legacy Gain (dBi) = 6.1

For Operated in 5250MHz ~ 5350MHz bands:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$$

Effective Legacy Gain (dBi) = 6.2

For Operated in 5470MHz ~ 5600MHz & 5650MHz ~ 5725MHz bands:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$$

Effective Legacy Gain (dBi) = 6.6

802.11n(20MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
5180-5240	28.9	3.55	20	0.013	1.00
5260-5320	57.0	3.81	20	0.027	1.00
5500-5700	64.0	4.02	20	0.032	1.00

802.11n(40MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm ²)	LIMIT (mW/cm ²)
5190-5230	40.4	3.55	20	0.018	1.00
5270-5310	45.8	3.81	20	0.022	1.00
5510-5670	55.8	4.02	20	0.028	1.00

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