

RADIO FREQUENCY RADIATION EXPOSURE REPORT

Mobiles /Fixed Base Station Maximum Permissible Exposure (MPE)

OF

Product Name: WLAN 11n Router
Brand Name: CC&C
Model Name: WA-6212
Model Different: N/A
FCC ID: PANWA6212
Report No.: ER/2012/10002
Issue Date: Jan. 19, 2012
Prepared for: CC&C Technologies, Inc.
8F, No. 150, Jian Yi Road, Zhonghe District,
New Taipei City, Taiwan 235, R.O.C.
Prepared by: SGS Taiwan Ltd.
Electronics & Communication Laboratory
No. 134, Wu Kung Rd., Wuku Industrial Zone,
Taipei County, Taiwan.

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VERIFICATION OF COMPLIANCE

Applicant: CC&C Technologies, Inc.
 8F, No. 150, Jian Yi Road, Zhonghe District, New Taipei City, Taiwan
 235, R.O.C.

Product Name: WLAN 11n Router

Brand Name: CC&C

FCC ID: PANWA6212

Model No.: 3G36W-V

Model Difference: N/A

File Number: ER/2011/10002

Date of test: Jan. 02, 2012 ~ Jan. 18, 2012

Date of EUT Received: Jan. 02, 2012

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd., Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in FCC OET Bulletin 65 Supplement C and 47 CFR §2.1091 and RSS102.

The test results of this report relate only to the tested sample identified in this report.

Test By:	<i>Lion Wang</i>	Date	Jan. 19, 2012
	_____ <i>Lion Wang / Engineer</i>		_____
Prepared By:	<i>Gigi yeh</i>	Date	Jan. 19, 2012
	_____ <i>Gigi Yeh / Clerk</i>		_____
Approved By:	<i>Jim Chang</i>	Date	Jan. 19, 2012
	_____ <i>Jim Chang / Supervisor</i>		_____

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Report Version

Version No.	Date	Description
00	Jan. 19, 2012	Initial creation of document

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Table of Contents

1. GENERAL INFORMATION.....	5
1.1 STANDARD APPLICABLE.....	7
1.2 MAXIMUM PERMISSIBLE EXPOSURE (MPE) EVALUATION	8
APPENDIX 1 PHOTOGRPHS OF EUT	11

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1. GENERAL INFORMATION

General:

Product Name:	WLAN 11n Router
Brand Name:	CC&C
Model No.:	WA-6212
Model Difference:	N/A
Hardware Version:	289G129704-B0
Software Version:	00-029700-01[F/W,WA-6212]
Power Supply:	5V from AC/DC adapter, model: DSC-6PFC-05FUS, Supplier: DVE

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WLAN: 802.11 b/g/n

Frequency Range:	802.11b / g / n_20MHz: 2412 – 2462 MHz 802.11 n_40MHz: 2422 – 2452 MHz
Channel number:	802.11b / g / n_20MHz: 11 channels 802.11 n_40MHz: 9 channels
Max. Output Power:	802.11 b: 20.09 dBm (Peak) 802.11 g: 18.25 dBm (Peak) 802.11 n_20MHz: 13.23dBm (Peak) 802.11 n_40MHz: 13.57dBm (Peak) 802.11 n_20MHz(MIMO): 16.04dBm (Peak) 802.11 n_40MHz(MIMO): 16.40dBm (Peak)
Modulation Technology:	DSSS, OFDM
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Transition Rate:	802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 7.2 – 144.4Mbps 802.11 n_40MHz: 15 – 300Mbps
Antenna Spec:	2.4G Dipole Antenna 30G000036-00 Antenna 80mm: 2 dBi 30G000025-07 Antenna 140mm: 2 dBi
Antenna Designation:	2.4G Dipole Antenna 2dBi+10log(2)=5.01 dBi
Type of Emission:	802.11 b : 15M0G1D 802.11 g : 16M5G1D 802.11 n_20MHz : 17M7G1D 802.11 n_40MHz : 36M0G1D

The EUT is compliance with IEEE 802.11 b/g/n Standard.

This report applies for frequency IEEE 802.11 b/g/n

1.1 Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

1.2 Maximum Permissible Exposure (MPE) Evaluation

MPE Prediction (802.11b/g)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG / 4 \pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

2412MHz

Maximum peak output power at antenna input terminal:	20.09	(dBm)
Maximum peak output power at antenna input terminal:	102.0939484	(mW)
Duty cycle:	100	(%)
Maximum Pav :	102.0939484	(mW)
Antenna gain (typical):	5.01	(dBi)
Maximum antenna gain:	3.169567463	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0644096	(mW/cm ²)
Measurement Result:		
The predicted power density level at 20 cm is	0.644095655	(W/m ²)
This is below the uncontrolled exposure limit of 1 mW/cm	2462	MHz

Measurement Result

The predicted power density level at 20 cm is 0.64409565 W/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 2462MHz.

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MPE Prediction (802.11n_20M) (MIMO mode)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG / 4 \pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

The worst case: 802.11n_20M MIMO mode

Maximum peak output power at antenna input terminal:	16.04	(dBm)
Maximum peak output power at antenna input terminal:	40.17908108	(mW)
Duty cycle:	100	(%)
Maximum Pav :	40.17908108	(mW)
Antenna gain (typical):	5.01	(dBi)
Maximum antenna gain:	3.169567463	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2412	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0253484	(mW/cm ²)
Measurement Result:		
The predicted power density level at 20 cm is	0.253483894	(W/m ²)
This is below the uncontrolled exposure limit of 1 mW/cm	2412	MHz

1.

Measurement Result

The predicted power density level at 20 cm is 0.0253484 W/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 2412MHz.

Note: directional gain = Gain + 10 Log (N) dBi = 2 + 3.0103 = 5.01 dBi, where n is number of antenna used with host, is employed as Max. Gain as per 662911

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MPE Prediction (802.11n_40mM (MIMO mode)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG / 4 \pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

The worst case: 802.11n_40M MIMO mode

Maximum peak output power at antenna input terminal:	16.4	(dBm)
Maximum peak output power at antenna input terminal:	43.65158322	(mW)
Duty cycle:	100	(%)
Maximum Pav :	43.65158322	(mW)
Antenna gain (typical):	5.01	(dBi)
Maximum antenna gain:	3.169567463	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2.422	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0275391	(mW/cm ²)
Measurement Result:		
The predicted power density level at 20 cm is	0.275391397	(W/m ²)
This is below the uncontrolled exposure limit of 1 mW/cm	2.422	MHz

Measurement Result

The predicted power density level at 20 cm is 0.0275391 W/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 2422MHz.

Note: directional gain = Gain + 10 Log (N) dBi = 2 + 3.0103 = 5.01 dBi, where n is number of antenna used with host, is employed as Max. Gain as per 662911

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All of EUT



Front View of EUT



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Back View of EUT



Side View of EUT - 1



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Side View of EUT – 2



Side View of EUT – 3



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Side View of EUT – 4



Adapter

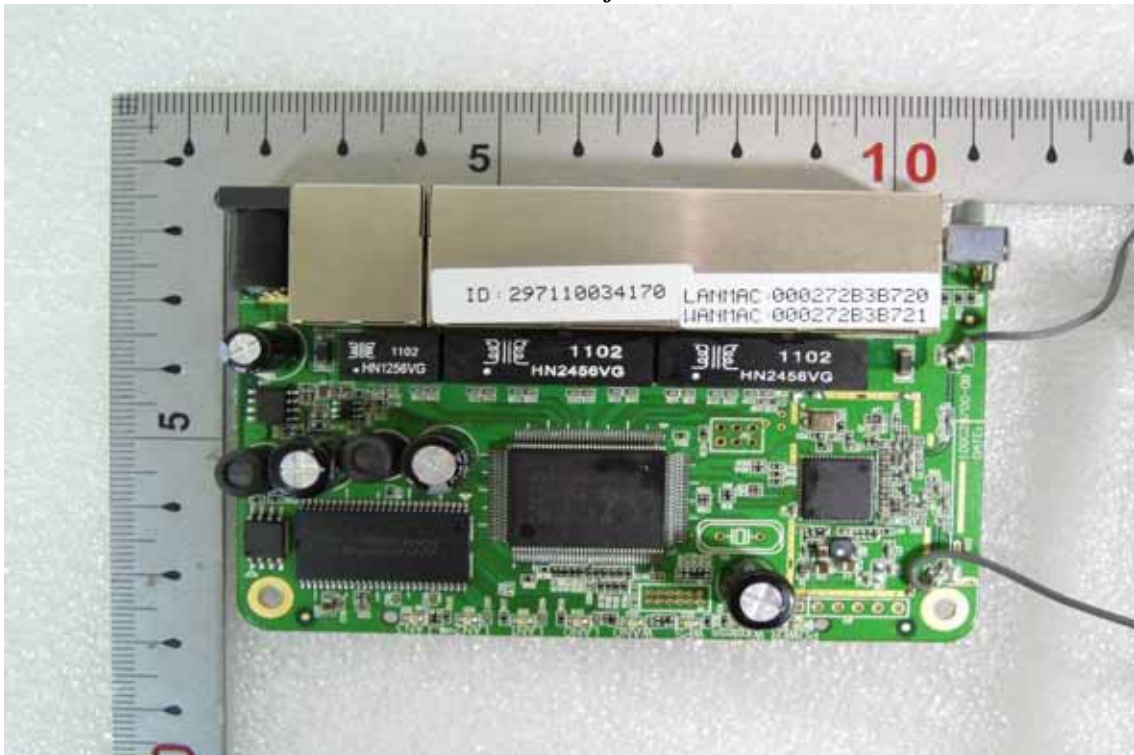


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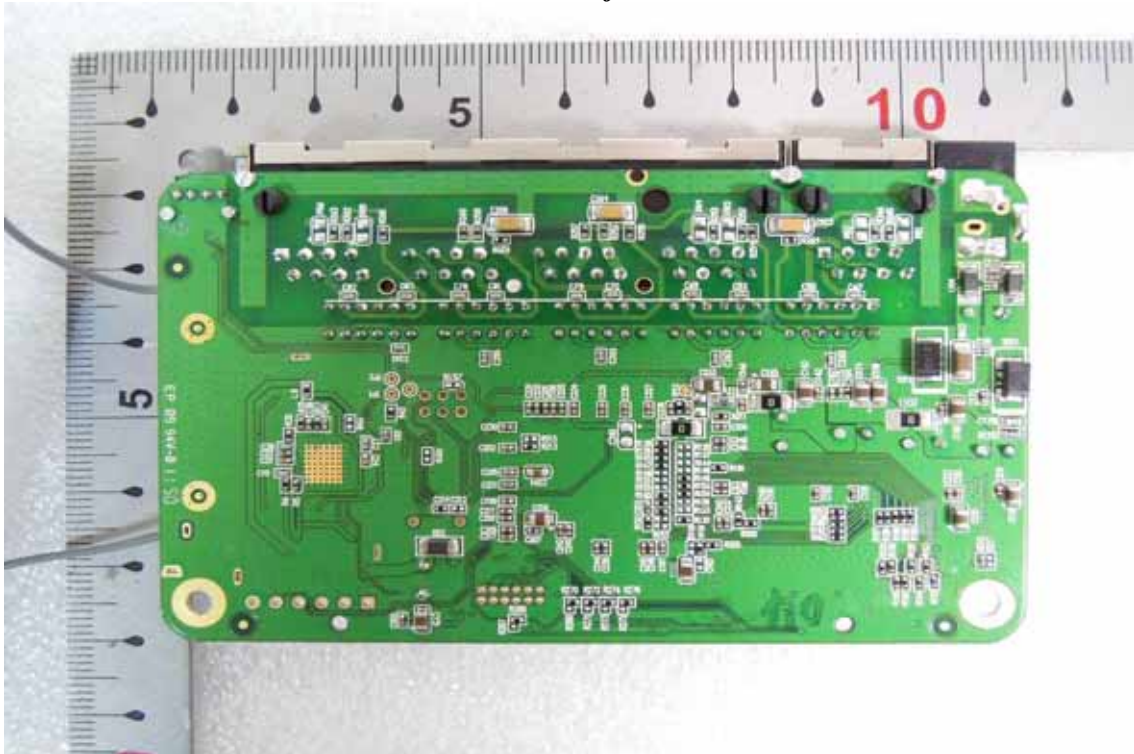
Open View of EUT - 1



Internal View of EUT - 1



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Internal View of EUT – 2

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