



RF EXPOSURE REPORT

REPORT NO.: SA120614E05

MODEL NO.: WUMC710

FCC ID: Q87-WUMC710

RECEIVED: June 22, 2012

TESTED: June 01 to 15, 2012

ISSUED: July 12, 2012

APPLICANT: Cisco Consumer Products LLC

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

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RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|-------------|-------------------|---------------|
| SA120614E05 | Original release | July 12, 2012 |



1. CERTIFICATION

PRODUCT: 802.11ac Wireless Ethernet Bridge
BRAND NAME: Cisco
MODEL NO.: WUMC710
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: Cisco Consumer Products LLC
TESTED: July 04, 2012
STANDARDS: FCC Part 2 (Section 2.1091)
FCC OET Bulletin 65, Supplement C (01-01)
IEEE C95.1

The above equipment (Model: WUMC710) 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 : Phoenix Huang , **DATE:** July 12, 2012
(Phoenix Huang, Specialist)

APPROVED BY : May Chen , **DATE:** July 12, 2012
(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 provided to the EUT, please refer to the following table:

| Transmitter Circuit | Antenna Type | Gain (dBi) (Include cable loss) | Frequency range (MHz to MHz) | Cable Loss (dB) | Cable Length (cm) |
|---------------------|--------------|------------------------------------|---------------------------------|-----------------|-------------------|
| Chain (0) | Balanced | 4.87 | 5150 – 5825 | 0.8 | 13 |
| Chain (1) | Balanced | 4.49 | 5150 – 5825 | 0.73 | 12.7 |
| Chain (2) | Balanced | 4.04 | 5150 – 5825 | 0.85 | 15.5 |

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

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 | 171.845 | 9.24 | 20 | 0.28699 | 1.00 |

$$\text{Directional gain} = 10 \log[(10^{G1(\text{Chain0})/20} + 10^{G2(\text{Chain1})/20} + 10^{G3(\text{Chain2})/20})^2 / 3]$$

Effective Legacy Gain (dBi) = 9.24

802.11n (HT20):

| FREQUENCY BAND (MHz) | MAX POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/ cm ²) | LIMIT (mW/cm ²) |
|----------------------|----------------|--------------------|---------------|--------------------------------------|-----------------------------|
| 5745 ~ 5825 | 169.758 | 4.87 | 20 | 0.10365 | 1.00 |

802.11n (HT40):

| FREQUENCY BAND (MHz) | MAX POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/ cm ²) | LIMIT (mW/cm ²) |
|----------------------|----------------|--------------------|---------------|--------------------------------------|-----------------------------|
| 5755 ~ 5795 | 240.256 | 4.87 | 20 | 0.14669 | 1.00 |

802.11ac (VHT80):

| FREQUENCY BAND (MHz) | MAX POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/ cm ²) | LIMIT (mW/cm ²) |
|----------------------|----------------|--------------------|---------------|--------------------------------------|-----------------------------|
| 5775 | 328.245 | 4.87 | 20 | 0.20041 | 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 | 13.196 | 9.24 | 20 | 0.02204 | 1.00 |

$$\text{Directional gain} = 10 \log[(10^{G1(\text{Chain0})/20} + 10^{G2(\text{Chain1})/20} + 10^{G3(\text{Chain2})/20})^2 / 3]$$

Effective Legacy Gain (dBi) = 9.24

802.11n (HT20):

| FREQUENCY BAND (MHz) | MAX POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/ cm ²) | LIMIT (mW/cm ²) |
|----------------------|----------------|--------------------|---------------|--------------------------------------|-----------------------------|
| 5180 ~ 5240 | 28.954 | 4.87 | 20 | 0.01768 | 1.00 |

802.11n (HT40):

| FREQUENCY BAND (MHz) | MAX POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/ cm ²) | LIMIT (mW/cm ²) |
|----------------------|----------------|--------------------|---------------|--------------------------------------|-----------------------------|
| 5190 ~ 5230 | 47.349 | 4.87 | 20 | 0.02891 | 1.00 |

802.11ac (VHT80):

| FREQUENCY BAND (MHz) | MAX POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/ cm ²) | LIMIT (mW/cm ²) |
|----------------------|----------------|--------------------|---------------|--------------------------------------|-----------------------------|
| 5210 | 48.464 | 4.87 | 20 | 0.02959 | 1.00 |

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