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RF EXPOSURE REPORT

REPORT NO.: SA131220C10

MODEL NO.: XR600

FCC ID: SK6-XR630

RECEIVED: Dec. 12, 2013

TESTED: Dec. 24, 2013 ~ Mar. 06, 2014

ISSUED: Mar. 10, 2014

APPLICANT: Xirrus, INC.

ADDRESS: 2101 Corporate Center Driver Thousand Oaks,
California 91320

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 |
|-------------|-------------------|---------------|
| SA131220C10 | Original release. | Mar. 10, 2014 |



1. CERTIFICATION

PRODUCT: 802.11ac 3x3 AP
MODEL: XR600
BRAND: Xirrus
APPLICANT: Xirrus, INC.
TESTED: Dec. 24, 2013 ~ Mar. 06, 2014
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC Part 2 (Section 2.1091)**
FCC OET Bulletin 65, Supplement C (01-01)
IEEE C95.1

The above equipment (model: XR600) 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 : Maggie Wu , **DATE :** Mar. 10, 2014
Maggie Wu / Specialist

APPROVED BY : Ken Liu , **DATE :** Mar. 10, 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

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm²

Pout = 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 24cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

TEST MODE A (Radio 1)

| FREQUENCY BAND (MHz) | MODE | MAX POWER (dBm) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|----------------------|------------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412 ~ 2462 | 802.11b | 25.15 | 8.85 | 24 | 0.347 | 1 |
| | 802.11g | 26.41 | 8.85 | 24 | 0.464 | 1 |
| | 802.11n (20MHz) | 26.37 | 4.08 | 24 | 0.153 | 1 |
| | 802.11n (40MHz) | 24.58 | 4.08 | 24 | 0.101 | 1 |
| 5180 ~ 5240 | 802.11a | 11.49 | 10.74 | 24 | 0.023 | 1 |
| | 802.11n (20MHz) | 16.55 | 5.97 | 24 | 0.025 | 1 |
| | 802.11n (40MHz) | 16.83 | 5.97 | 24 | 0.026 | 1 |
| | 802.11ac (VHT80) | 15.50 | 10.74 | 24 | 0.058 | 1 |
| 5745 ~ 5825 | 802.11a | 24.50 | 10.74 | 24 | 0.462 | 1 |
| | 802.11n (20MHz) | 24.47 | 5.97 | 24 | 0.153 | 1 |
| | 802.11n (40MHz) | 24.52 | 5.97 | 24 | 0.155 | 1 |
| | 802.11ac (VHT80) | 23.49 | 10.74 | 24 | 0.366 | 1 |

2.4GHz Band:

- 802.11b/g: Directional gain = $4.08\text{dBi} + 10\log(3) = 8.85\text{dBi}$
- 802.11n (20MHz), 802.11n (40MHz): IEEE 802.11n, MCS = 16-23, NSS = 3,
Directional gain = $4.08\text{dBi} + 10\log(3/3) = 4.08\text{dBi}$

5GHz Band:

- 802.11a, 802.11ac (VHT80): Directional gain = $5.97\text{dBi} + 10\log(3) = 10.74\text{dBi}$
- 802.11n (20MHz), 802.11n (40MHz): IEEE 802.11n, MCS = 16-23, NSS = 3,
Directional gain = $5.97\text{dBi} + 10\log(3/3) = 5.97\text{dBi}$

TEST MODE B (Radio 2)

| FREQUENCY BAND (MHz) | MODE | MAX POWER (dBm) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|----------------------|------------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412 ~ 2462 | 802.11b | 24.98 | 8.85 | 24 | 0.334 | 1 |
| | 802.11g | 25.75 | 8.85 | 24 | 0.398 | 1 |
| | 802.11n (20MHz) | 25.68 | 4.08 | 24 | 0.131 | 1 |
| | 802.11n (40MHz) | 24.93 | 4.08 | 24 | 0.110 | 1 |
| 5180 ~ 5240 | 802.11a | 11.66 | 10.74 | 24 | 0.024 | 1 |
| | 802.11n (20MHz) | 16.54 | 5.97 | 24 | 0.025 | 1 |
| | 802.11n (40MHz) | 15.96 | 5.97 | 24 | 0.022 | 1 |
| | 802.11ac (VHT80) | 15.44 | 10.74 | 24 | 0.057 | 1 |
| 5745 ~ 5825 | 802.11a | 24.62 | 10.74 | 24 | 0.475 | 1 |
| | 802.11n (20MHz) | 24.43 | 5.97 | 24 | 0.151 | 1 |
| | 802.11n (40MHz) | 24.48 | 5.97 | 24 | 0.153 | 1 |
| | 802.11ac (VHT80) | 23.64 | 10.74 | 24 | 0.379 | 1 |

2.4GHz Band:

- 802.11b/g: Directional gain = $4.08\text{dBi} + 10\log(3) = 8.85\text{dBi}$
- 802.11n (20MHz), 802.11n (40MHz): IEEE 802.11n, MCS = 16-23, NSS = 3,
Directional gain = $4.08\text{dBi} + 10\log(3/3) = 4.08\text{dBi}$

5GHz Band:

- 802.11a, 802.11ac (VHT80): Directional gain = $5.97\text{dBi} + 10\log(3) = 10.74\text{dBi}$
- 802.11n (20MHz), 802.11n (40MHz): IEEE 802.11n, MCS = 16-23, NSS = 3,
Directional gain = $5.97\text{dBi} + 10\log(3/3) = 5.97\text{dBi}$

CONCLUSION:

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

The EUT is collocated two dual band RF modules (Radio 1, Radio 2), which cannot co-transmit in the same band.

1. WLAN 2.4GHz (Radio 1) + WLAN 5GHz (Radio 2) = 0.464 + 0.475 = 0.939
2. WLAN 5GHz (Radio 1) + WLAN 2.4GHz (Radio 2) = 0.462 + 0.398 = 0.860

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