

# RF EXPOSURE REPORT

**REPORT NO.:** SA131220C10F

**MODEL NO.:** XR600

**FCC ID:** SK6-XR630

**RECEIVED:** Aug. 29, 2014

**TESTED:** Aug. 29 ~ Sep. 04, 2014

**ISSUED:** Sep. 19, 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. 47-2, 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
SA131220C10F	Original release.	Sep. 19, 2014

## 1. CERTIFICATION

**PRODUCT:** 802.11ac 3x3 AP  
**MODEL:** XR600  
**BRAND:** Xirrus  
**APPLICANT:** Xirrus, INC.  
**TESTED:** Aug. 29 ~ Sep. 04, 2014  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**STANDARDS:** **FCC Part 2 (Section 2.1091)**  
**KDB 447498 D03**  
**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 :** Sep. 19, 2014  
Maggie Wu / Specialist

**APPROVED BY :** Ken Liu , **DATE :** Sep. 19, 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 <sup>2</sup> )	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

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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 <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
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
5260 ~ 5320	802.11a	18.40	10.74	24	0.113	1
	802.11n (20MHz)	20.61	5.97	24	0.063	1
	802.11n (40MHz)	19.91	5.97	24	0.054	1
	802.11ac (VHT80)	17.52	10.74	24	0.093	1
5500 ~ 5720	802.11a	18.43	10.74	24	0.114	1
	802.11n (20MHz)	20.32	5.97	24	0.059	1
	802.11n (40MHz)	20.13	5.97	24	0.056	1
	802.11ac (VHT80)	16.49	10.74	24	0.073	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 = 4.08dBi + 10log(3) = 8.85dBi
- 802.11n (20MHz), 802.11n (40MHz): IEEE 802.11n, MCS = 16-23, NSS = 3,  
Directional gain = 4.08dBi + 10log(3/3) = 4.08dBi

#### 5GHz Band:

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

## TEST MODE B (Radio 2)

FREQUENCY BAND (MHz)	MODE	MAX POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
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
5260 ~ 5320	802.11a	18.93	10.74	24	0.128	1
	802.11n (20MHz)	20.46	5.97	24	0.061	1
	802.11n (40MHz)	20.29	5.97	24	0.058	1
	802.11ac (VHT80)	17.90	10.74	24	0.101	1
5500 ~ 5720	802.11a	18.51	10.74	24	0.116	1
	802.11n (20MHz)	20.63	5.97	24	0.063	1
	802.11n (40MHz)	20.44	5.97	24	0.060	1
	802.11ac (VHT80)	17.30	10.74	24	0.088	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:

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

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

**---END---**