



# RF EXPOSURE REPORT

**REPORT NO.:** SA131125C08A

**MODEL NO.:** AT-TQ3600, AT-TQ3600-01

**FCC ID:** RSL-TQ3600

**RECEIVED:** Nov. 25, 2013

**TESTED:** Dec. 02 ~ Dec. 05, 2013

**ISSUED:** Dec. 13, 2013

**APPLICANT:** Allied Telesis R&D Center K.K.

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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
SA131125C08A	Original release	Dec. 13, 2013



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## 1. CERTIFICATION

**PRODUCT:** Wireless access point with PoE powered device function

**MODEL NO.:** AT-TQ3600, AT-TQ3600-01

**BRAND:**  **Allied Telesis™**

**APPLICANT:** Allied Telesis R&D Center K.K.

**TESTED:** Dec. 02 ~ Dec. 05, 2013

**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: AT-TQ3600) 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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Celine Chou / Specialist

**APPROVED BY** : Ken Liu , DATE : Dec. 13, 2013  
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

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

where

Pd = power density in mW/cm<sup>2</sup>

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 21cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 Calculation result of maximum conducted power

FREQUENCY BAND (MHz)	MODULATION MODE	AVG POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	802.11b	17.12	4.75	21	0.028	10
	802.11g	21.65	9.15	21	0.217	10
	802.11n (20MHz)	21.68	4.38	21	0.073	10
	802.11n (40MHz)	20.60	4.38	21	0.057	10
5180-5240	802.11a	11.22	11.14	21	0.031	10
	802.11n (20MHz)	14.84	6.41	21	0.024	10
	802.11n (40MHz)	15.44	6.41	21	0.028	10
5260-5320	802.11a	18.12	11.14	21	0.152	10
	802.11n (20MHz)	19.41	6.41	21	0.069	10
	802.11n (40MHz)	19.54	6.41	21	0.071	10
5500-5700	802.11a	18.16	11.14	21	0.154	10
	802.11n (20MHz)	19.38	6.41	21	0.068	10
	802.11n (40MHz)	19.62	6.41	21	0.072	10
5745-5825	802.11a	19.16	11.14	21	0.193	10
	802.11n (20MHz)	19.22	6.41	21	0.066	10
	802.11n (40MHz)	19.34	6.41	21	0.068	10

### NOTE:

#### 2.4GHz

1. 802.11b: Antenna gain = 4.75dBi
2. 802.11g: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 9.15 \text{dBi}$
3. 802.11n: Directional gain =  $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}] = 4.38 \text{dBi}$

#### 5GHz

1. 802.11a: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 11.14 \text{dBi}$
2. 802.11n: Directional gain =  $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}] = 6.41 \text{dBi}$

### CONCLUSION:

Both of the WLAN 2.4G & WLAN 5G can transmit simultaneously, the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + .....etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4G + WLAN 5.0G = 0.217 + 0.193 = 0.410

Therefore, the maximum calculation of this situation is 0.410, which is less than the "1" limit.