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# 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  
(H.K.) Ltd., Taoyuan Branch

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This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.



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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

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

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 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:

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

CPD = Calculation power density

LPD = Limit of power density

$$\text{WLAN 2.4G} + \text{WLAN 5.0G} = 0.217 + 0.193 = 0.410$$

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