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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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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA131125C08A	Original release	Dec. 13, 2013



A D T

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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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

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

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

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 ²)	LIMIT (mW/cm ²)
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

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

5GHz

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