

RF Exposure Evaluation of

E.U.T. : Smartphone Wireless System / VoIP
Server

FCC ID. : D6XIG7600

MODEL : IG7600 / IPX-25 / X-25

for

APPLICANT : TECOM CO., LTD.

ADDRESS : 23, R&D Road 2 Science-Based Industrial Park
Hsin-Chu Taiwan R.O.C.

Prepared by

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Report Number : 13-08-RBF-008-MPE

TEST REPORT CERTIFICATION

Applicant : TECOM CO., LTD.
23, R&D Road 2 Science-Based Industrial Park Hsin-Chu Taiwan
R.O.C.

Manufacturer : TECOM CO., LTD.
23, R&D Road 2 Science-Based Industrial Park Hsin-Chu Taiwan
R.O.C.

Description of EUT

- a) Type of EUT : Smartphone Wireless System / VoIP Server
- b) Trade Name : MOCET / MOCET / Xblue
- c) Model No. : IG7600 / IPX-25 / X-25
- e) Power Supply : Adapter:LTE10W-S2
I/P:100-240Vac,50/60Hz,0.5A
O/P:12.Vdc,1.5A,MAX:18W

Regulation Applied : OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), the equipment fulfills the requirements on power density for general population/uncontrolled exposure and therefore fulfills the requirements of 47 CFR Part 15.247 (b)(5).

Note: 1. The result of the testing report relate only to the item tested.

- 2. The testing report shall not be reproduced expect in full, without the written approval of ETC

Date Test Item Received : Aug. 12, 2013
Date Test Campaign Completed : Oct. 04, 2013
Date of Issue : Oct. 22, 2013

Test Engineer :

Jiapeng Chen

(Jiapeng Chen, Engineer)

Approve & Authorized Signer :

S. S. Liou

S. S. Liou, Section Manager
EMC Dept. II of ELECTRONICS
TESTING CENTER, TAIWAN

Product Information:

Type of EUT: Smartphone Wireless System / VoIP Server

FCC ID: D6XIG7600

Manufacturer: TECOM CO., LTD.

Model: IG7600 / IPX-25 / X-25

Description:

PRODUCT	Smartphone Wireless System / VoIP Server
MODEL NO.	IG7600 / IPX-25 / X-25
FCC ID	D6XIG7600
POWER SUPPLY	Adaptor Model No.: LTE18W-S2 I/P: 100-240Vac, 50/60Hz, 0.5A; O/P: 12Vdc, 1.5A
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11 / 5.5 / 2 / 1Mbps 802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps Draft 802.11n (20MHz) (800ns GI): 130 / 117 / 104 / 78 / 65 / 58.5 / 52 / 39 / 26 / 19.5 / 13 / 6.5Mbps. Draft 802.11n (40MHz) (400ns GI): 270 / 243 / 216 / 162 / 135 / 121.5 / 108 / 81 / 54 / 40.5 / 27 / 13.5Mbps.
FREQUENCY RANGE	802.11b & 802.11g: 2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz)

Maximum conducted output power (measured): **18.93** dBm or **77.625**mW

The following table lists the provided authorized antennas:

Model	Antenna Type	Antenna Gain	
		(dBi)	Numeric
F1B_5DB316-52	External Antenna	5.0	3.16
RFA-02-P91-70-55	Internal Antenna	2.0	1.58

Below is an example of the RF Exposure Statement:

IMPORTANT NOTE: To comply with the FCC RF exposure compliance requirements, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. No change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

Relative Requirement for Compliance

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following:

TABLE 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)	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1.0 mW/cm² uncontrolled exposure limit. The formula shown in OET Bulletin 65 is used in the calculation.

Equation from page 19 of OET Bulletin 65, Edition 97-01 is:

$$S = PG / 4 \pi R^2$$

where: S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

hence

$$R = (PG / 4 \pi S)^{1/2}$$

For our device

P = 77.625mW

G = 3.16

R = 20 cm

S = (77.625 * 3.16) / (4 * π * 20²) = 0.049 mW/cm² < 1.0 mW/cm²

For complying the FCC limits for general population/uncontrolled exposure, the power density limit is 1.0 mW/cm². The calculation result of the power density at a distance of 20 cm of our device is less than the limit.

This means that according to OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), the equipment fulfills the requirements on power density for general population/uncontrolled exposure and therefore fulfills the requirements of 47 CFR Part 15.247 (b)(5).