



**Spectrum Research
& Testing Lab., Inc.**
No.167,Ln. 780, Shan-Tong
Rd., Ling 8, Shan-Tong Li,
Chung-Li City, Taoyuan County
320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A12053104
Report No.: FCCA12053104
FCC ID: R5M4U-BK1201B
Page: 1 of 8
Date: Jan. 15, 2013

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Jeff Lo, Date: 01/15/2013
(Jeff Lo)

Approved By : Johnson Ho, Date: 1/15/2013
(Johnson Ho, Director)

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1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.

DC power source, 9.0Vdc of battery or 9Vdc adapter (Tx) and AC 120 V/60Hz for PC (Rx, from USB port), was used during the test.

1.3 EUT MODIFICATION

- No modification in SRT Lab.

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2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	4U-GFSK RF Module
MODEL NO.	4U-BK1201B
POWER SUPPLY	DC 9V power source from battery or power adapter
CABLE	NA
FREQUENCY BAND	2.400 GHz ~ 2.4835 GHz
CARRIER FREQUENCY	2.410 GHz
NUMBER OF CHANNEL	1
RATED RF OUTPUT POWER	75.90 dBuV/m
MODULATION TYPE	GFSK
MODE OF OPERATION	Simplex
ANTENNA TYPE	Printed PCB Antenna
ANTENNA GAIN	2 dBi
OPERATING TEMPERATURE RANGE	-40 ~ 85°C

NOTE:

For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

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3.1 RF POWER EXPOSURE EVALUATION TEST

3.1.1 LIMIT

According to the requirement of IEEE C95.1 and FCC OET Bulletin 65.

Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength(E) (V/m)	Magnetic Field Strength(H) (A/m)	Power density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	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

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength(E) (V/m)	Magnetic Field Strength(H) (A/m)	Power density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
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: 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: 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 cannot exercise control over their exposure.

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3.1.2 TEST PROCEDURE

1. The EUT was operating in transmitter mode and could be controlled its channel. The power instrument read power value.
2. The EUT uses a chip antenna and the antenna gain is 0dBi declared by manufacturer.
3. As discussed in OET Bulletin 65, calculations can be made to predict RF field strength and power density levels around typical RF sources. For example, in the case of a non-directional antenna, a prediction for power density in the far-field of the antenna can be made by use of the general Equations (1) or (2) below [for conversion to electric or magnetic field strength see Equation (3) above]. These equations are generally accurate in the far-field of an antenna but will over-predict power density in the near field, where it could be used for making a "worst case" or conservative prediction.

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

$$S = \text{connect power}/4\pi R^2 \quad (\text{Eq. 2})$$

$$S = E^2/3770 = 37.7H^2 \quad (\text{Eq. 3})$$

where: S = power density (mW/cm^2)

E = electric field strength (V/m)

H = magnetic field strength (A/m)

S = power density (in appropriate units, e.g. mW/cm^2)

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 (dBi)

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

where: connect power = equivalent (or effective) isotropically radiated power.

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3.1.3 EUT OPERATING CONDITION

1. Setup the EUT and all peripheral devices .
2. Turn on the power of all equipment and EUT.
3. We will use the following programs under Windows XP system to test EUT.

3.1 "EMI Test" program.

PC sent "H" pattern signal and detect following peripherals directly or via EUT:

- Color Monitor
- Keyboard
- Mouse
- Printer
- HDD

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3.1.4 CONNECT POWER AT THE ANTENNA CONNECTOR RESULT

Temperature:	22°C	Humidity:	53%RH
Spectrum Detector:	PK.	Tested Mode:	TX
Tested By:	Jeff Lo	Modulation Type:	GFSK
Tested Date:	Jan. 15, 2013		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	MPE Distance (cm)	Antenna Gain (dBi)	PEAK POWER OUTPUT		Calculated RF Exposure (mW/cm ²)	LIMIT (mW/cm ²)
				dBm	mW		
1	2410	20	2	-29.09	0.0012	0.000000023	1.0