CONFORMANCE TEST REPORT
FOR
FCC 47 CFR, Part 15 Subpart C
and
Canada RSS-210

Report No.: 09-02-MAS-188-01

Client:	Ezurio Limited.
Product:	Bluetooth Intelligent Serial Module Version II, 3.3V
Model:	BTM405
FCC ID:	PI407B
IC ID:	1931B-BISM33
Manufacturer/supplier:	Sanmina-SCI (Thailand) Ltd
Date test item received:	2009/02/23
Date test campaign completed:	2009/03/13
Date of issue:	2009/03/13

Total number of pages of this test report: 25 pages
Total number of pages of photos: External photos 2 pages
Internal photos 3 pages
Setup photos 4 pages

Test Engineer	Checked By	Approved By
Ivan Tsai	David You	Joe Hsieh

ELECTRONICS TESTING CENTER, TAIWAN
NO.8, LANE 29, WENMING RD.,
LESHAN TSUEN, GUISHAN SHIANG,
TAOYUAN COUNTY, TAIWAN 33383,
R.O.C.TAIWAN, R.O.C.

TEL: (03) 3276170~4
INT: +886-3-3276170~4
FAX: (03) 3276188
INT: +886-3-3276188

Client	: Ezurio Limited.
Address	: Saturn House, Mercury Park, Wycombe Lane, Wooburn Green HP10 0HH UK
Manufacturer	: Sanmina-SCI (Thailand) Ltd
Address	: 90 Moo 1 Tiwanon Road, Banmai Muang, Pathumthani 12000, Thailand
EUT	: Bluetooth Intelligent Serial Module Version II, 3.3V
Trade name	: EZURiO
Model No.	: BTM405
Power Source	: DC 5V (From DC Power Supply to Test Jig)
Regulations applied	: FCC 47 CFR, Part 15 Subpart C (2008)
	Canada RSS-210 Issue 7 (2008) / RSS-Gen Issue 2 (2008)

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

The compliance test is only certified for the test equipment and the results of the testing report relate only to the item tested. The compliance test of this report was conducted in accordance with the appropriate standards. It's not intention to assure the quality and performance of the product. This report shall not be reproduced except in full, without the approval of ETC. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

Laboratory Introduction: Electronics Testing Center, Taiwan is recognized, filed and mutual recognition arrangement as following:

① ISO9001: TüV Product Service

② ISO/IEC 17025: BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance

③ Filing: FCC, Industry Canada, VCCI

④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through TAF

⑤ FCC Registration Number: 90588, 91094, 91095

NVLAP Lab Code 200133-0

Table of Contents Page

1 GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : Bluetooth Intelligent Serial Module Version II, 3.3V
b) Trade Name : EZURiO
c) Model No. : BTM405

※ The modification points are as followe to allow use of external antennas:

1. Removal of ceramic patch antenna.
2. Addition of U.FL connector.

New external antennas:

(1) Ceramic Patch Antenna, Model: CABPB1240A

(2) 1/2 Wave Coaxial Dipole Antenna, Model: WCR2400-IP04

This test report pretest some items to check the new EUT is still conform to the rule of FCC.

1.2 Characteristics of Device

The EUT is a Bluetooth Intelligent Serial Module Version II, based on the Bluetooth technology. Bluetooth is a short-range radio link intended to be a cable replacement between portable or fixed electronic devices. Bluetooth operates in the unlicensed ISM Band at 2.4GHz.

1.3 Test Methodology

All testing were performed according to the procedures in ANSI C63.4 (2003) an FCC CFR 47 Part 2 and Part 15.

1.4 Modifiction List of EUT

N/A

1.5 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.
This site has been accreditation as a FCC filing site.

1.6 Test Summary

Requirement	FCC Paragraph #	IC Paragraph #	Test Pass
Spurious Emissions	15.247 (d)	RSS-210_A8.5	☒
Radiated Emission	15.247 (d)	RSS-210_2.2	☒

2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:

A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:

A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device :

A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:

A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Radiated Emission Requirement

For unintentional device, according to §15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	Distance Meters	Radiated dB μV/m	Radiated μV/m
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
above 960	3	54.0	500

For intentional device, according to §15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

According to 15.247 (d), radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

2.3 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.25
0.495 - 0.505 **	16.69475 - 16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425 - 16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475 - 156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

To comply with the FCC RF exposure compliance requirement, this device and its antenna must not be co-located or operating to conjunction with any other antenna or transmitter.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

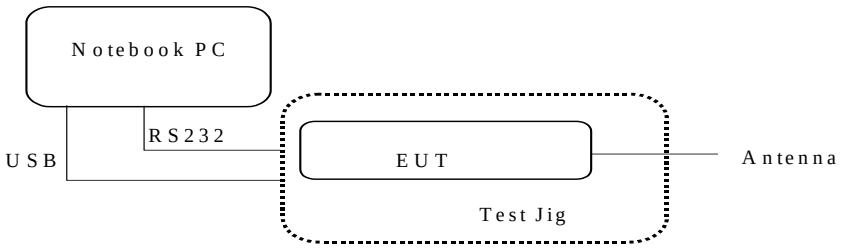
For the purposes of this test report ancillary equipment is defined as equipment which is used in conjunction with the EUT to provide operational and control features to the EUT during the test. Notebook PC was used to control the RF channel under the hightest, middle and lowest frequency and transmit the maximun RF power. Customer would not use it. But never the less ancillary equipment can influence the test results.

3.2 Devices for Tested System

Device	Manufacture	Model	Cable Description
* Bluetooth Intelligent Serial Module Version II, 3.3V	Sanmina-SCI (Thailand) Ltd	BTM405	0.05m*1, Unshielded Signal Line/Chip antenna
Test Jig	N/A	N/A	1.5m Unshielded Signal Line/USB 1.2m Unshielded Signal Line/RS232
Notebook PC	HP	nx6320	3.3m*1, Unshielded Power Line

Remark

1. "*" means equipment under test.



2. Software setting: Bluetest.exe
   Power setting (Ext, Int): (255, 61)

4 RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For unintentional radiator, the radiated emission shall comply with §15.109(a).

For intentional radiators, according to §15.247 (a), operation under this provision is limited to frequency hopping and digitally modulated, and the out band emission shall be comply with § 15.247 (c)

4.2 Measurement Procedure

A.Preliminary Measurement For Portable Devices.

For movable devices, the following procedure was performed to determine the maximum emission axis of EUT (X,Y and Z axis):

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antennna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. The axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.
4. The position in which the maximum noise occurred was “Z axis”. (Please see the test setup photos)

B. Final Measurement

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively. Turn on EUT and make sure that it is in continuous operating function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions and then each selected frequency is precisely measured. As the same purpose, for emission measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission measured below and above 1 GHz, set the spectrum analyzer on a 120 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

Figure 1 : Frequencies measured below 1 GHz configuration

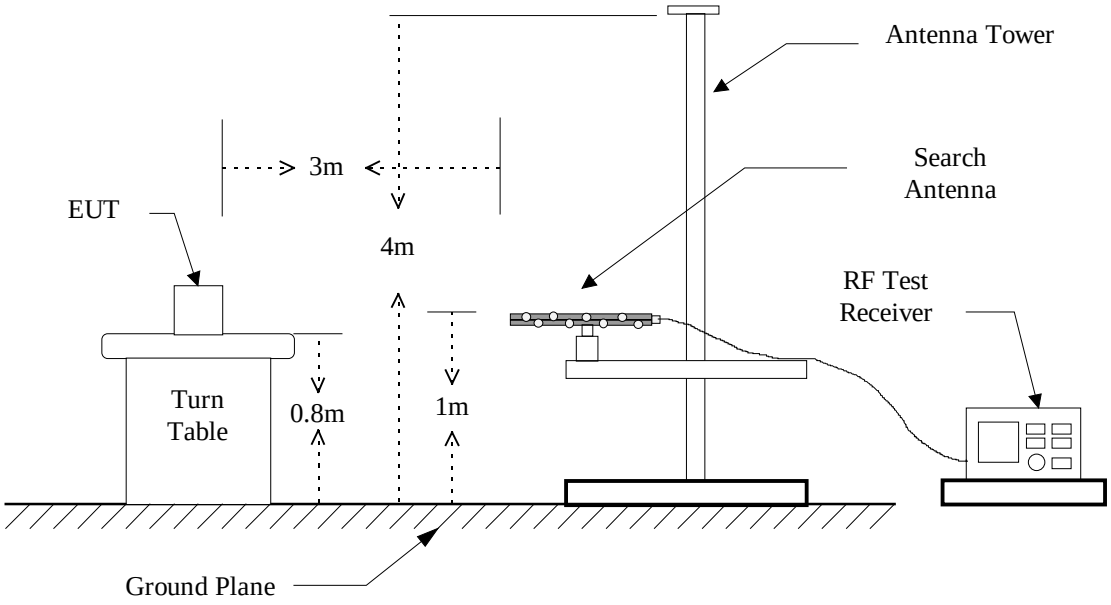
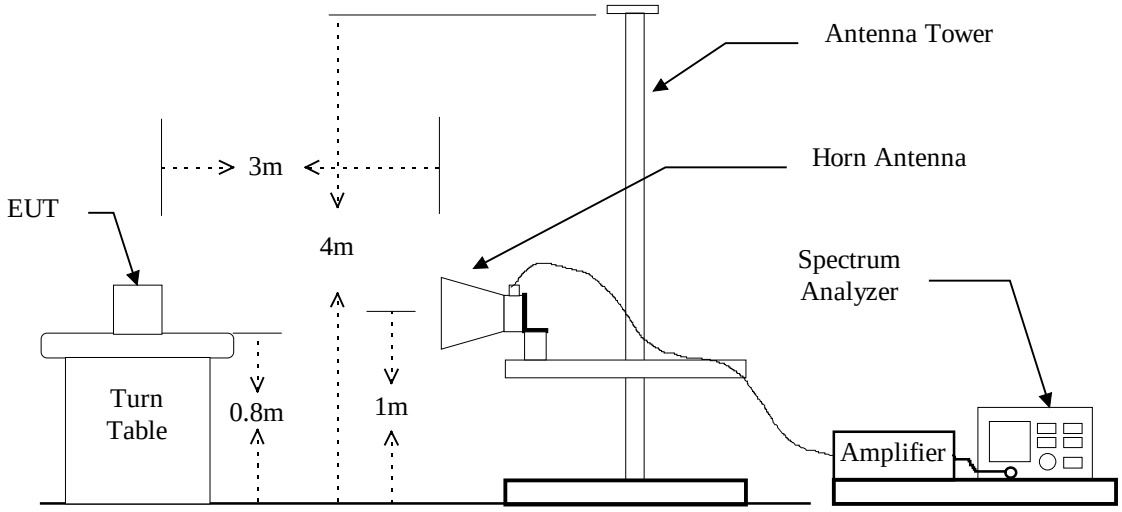


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Measuring Instrument

The following instrument are used for radiated emissions measurement :

Equipment	Manufacturer	Model No.	Next Cal. Due
EMI Test Receiver	R&S	ESIB7	07/17/2009
Spectrum Analyzer	Rohde & Schwarz	FSU46	11/24/2009
Horn Antenna	EMCO	3115	06/12/2009
BiLog Antenna	Schaffner	CBL 6112B	07/03/2009
Horn Antenna	COM-POWER	AH-118	04/20/2009
Preamplifier	Hewlett-Packard	8449B	09/21/2009
SYNESIZED SWEEPER	AGILENT	83640B	09/21/2009

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	300 kHz
	RF Test Receiver	Peak	120 kHz	300 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10 Hz

4.4 Radiated Emission Data

4.4.1 RF Portion

4.4.1.1 Patch antenna

a) Channel 0

Operation Mode : Transmitting
Fundamental Frequency : 2402 MHz
Test Date : Feb. 24, 2009 Temperature : 21℃ Humidity : 64%

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
1201.000	---	---	---	---	-15.0	---	---	74.0	54.0
4804.000	---	---	---	---	0.6	---	---	74.0	54.0
12010.000	---	---	---	---	1.1	---	---	74.0	54.0
16216.000	---	---	---	---	11.2	---	---	74.0	54.0

b) Channel 39

Fundamental Frequency : 2441 MHz

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
1220.500	---	---	---	---	-15.0	---	---	74.0	54.0
4882.000	---	---	---	---	0.5	---	---	74.0	54.0
7323.000	---	---	---	---	2.9	---	---	74.0	54.0
12205.000	---	---	---	---	1.1	---	---	74.0	54.0
19528.000	---	---	---	---	10.7	---	---	74.0	54.0

c) Channel 78

Fundamental Frequency : 2480 MHz

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
1240.000	---	---	---	---	-15.0	---	---	74.0	54.0
4960.000	---	---	---	---	0.5	---	---	74.0	54.0
7440.000	---	---	---	---	2.9	---	---	74.0	54.0
12400.000	---	---	---	---	4.2	---	---	74.0	54.0
19840.000	---	---	---	---	10.7	---	---	74.0	54.0
22320.000	---	---	---	---	10.5	---	---	74.0	54.0

Note :

1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.
3. Item "Margin" referred to Average limit while there is only peak result.
4. The radiation emissions have been measured to beyond the tenth harmonic of the fundamental
frequency and show the significant frequencies, other means the value is too low to be detected.

4.4.1.2 Dipole antenna

b) Channel 0

Operation Mode : Transmitting
Fundamental Frequency : 2402 MHz
Test Date : Feb. 24, 2009 Temperature : 21℃ Humidity : 64%

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
1201.000	---	---	---	---	-15.0	---	---	74.0	54.0
4804.000	---	---	---	---	0.6	---	---	74.0	54.0
12010.000	---	---	---	---	1.1	---	---	74.0	54.0
16216.000	---	---	---	---	11.2	---	---	74.0	54.0

b) Channel 39

Fundamental Frequency : 2441 MHz

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
1220.500	---	---	---	---	-15.0	---	---	74.0	54.0
4882.000	---	---	---	---	0.5	---	---	74.0	54.0
7323.000	---	---	---	---	2.9	---	---	74.0	54.0
12205.000	---	---	---	---	1.1	---	---	74.0	54.0
19528.000	---	---	---	---	10.7	---	---	74.0	54.0

c) Channel 78

Fundamental Frequency : 2480 MHz

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
1240.000	---	---	---	---	-15.0	---	---	74.0	54.0
4960.000	---	---	---	---	0.5	---	---	74.0	54.0
7440.000	---	---	---	---	2.9	---	---	74.0	54.0
12400.000	---	---	---	---	4.2	---	---	74.0	54.0
19840.000	---	---	---	---	10.7	---	---	74.0	54.0
22320.000	---	---	---	---	10.5	---	---	74.0	54.0

Note :

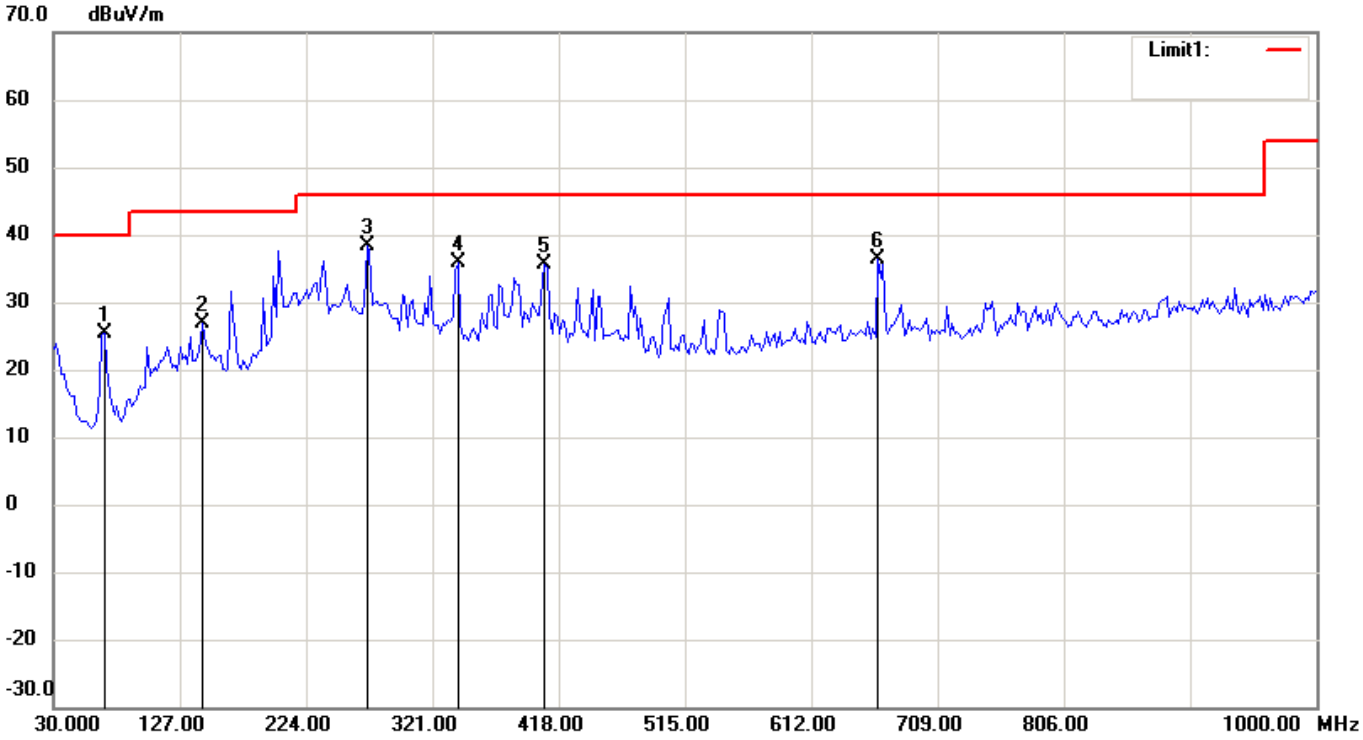
1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.
3. Item "Margin" referred to Average limit while there is only peak result.
4. The radiation emissions have been measured to beyond the tenth harmonic of the fundamental
frequency and show the significant frequencies, other means the value is too low to be detected.

4.4.2 Other Emission

4.4.2.1 Patch antenna

4.4.2.1.1 below 1GHz

File: ivan **Data:** #98 **Date:** 2009/2/24 **Temperature:** 21 ℃
Time: PM 05:54:47 **Humidity:** 64 %

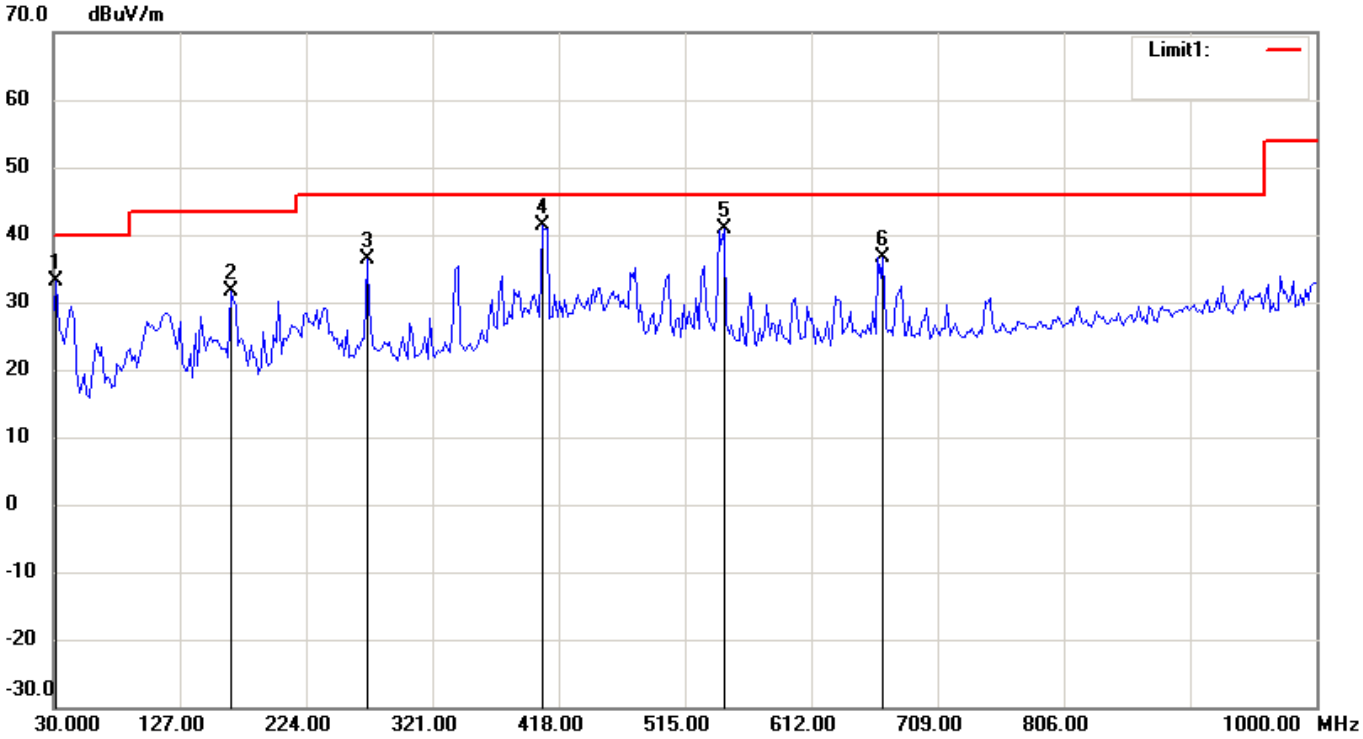


Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Horizontal
EUT: Bluetooth Intelligent Serial Module Version II, 3.3V **Distance:** 3m
Model: BTM405
Test Mode:
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	68.8778	17.55	peak	7.86	25.41	40.00	-14.59
2	144.6894	13.55	peak	13.36	26.91	43.50	-16.59
3	271.0421	23.30	peak	15.07	38.37	46.00	-7.63
4	341.0220	17.88	peak	17.98	35.86	46.00	-10.14
5	407.1142	15.84	peak	19.86	35.70	46.00	-10.30
6	663.7074	12.33	peak	23.93	36.26	46.00	-9.74

File: **ivan** **Data:** **#99** **Date:** **2009/2/24** **Temperature:** **21 ℃**

Time: **PM 05:56:19** **Humidity:** **64 %**



Condition: **FCC Part15 RE-Class B_30-1000MHz** **Polarization:** **Vertical**

EUT: **Bluetooth Intelligent Serial Module Version II, 3.3V** **Distance:** **3m**

Model: **BTM405**

Test Mode:

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	31.9439	13.37	peak	19.79	33.16	40.00	-6.84
2	166.0721	19.26	peak	12.33	31.59	43.50	-11.91
3	271.0421	21.30	peak	15.07	36.37	46.00	-9.63
4	405.1703	21.48	peak	19.83	41.31	46.00	-4.69
5	545.1303	19.28	peak	21.65	40.93	46.00	-5.07
6	667.5952	12.73	peak	23.93	36.66	46.00	-9.34

4.4.2.1.2 above 1GHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)
Radiated emission frequencies above 1 GHz to 25 GHz were too low to be measured.						

4.4.2.1.3 above 1GHz (RX Mode)

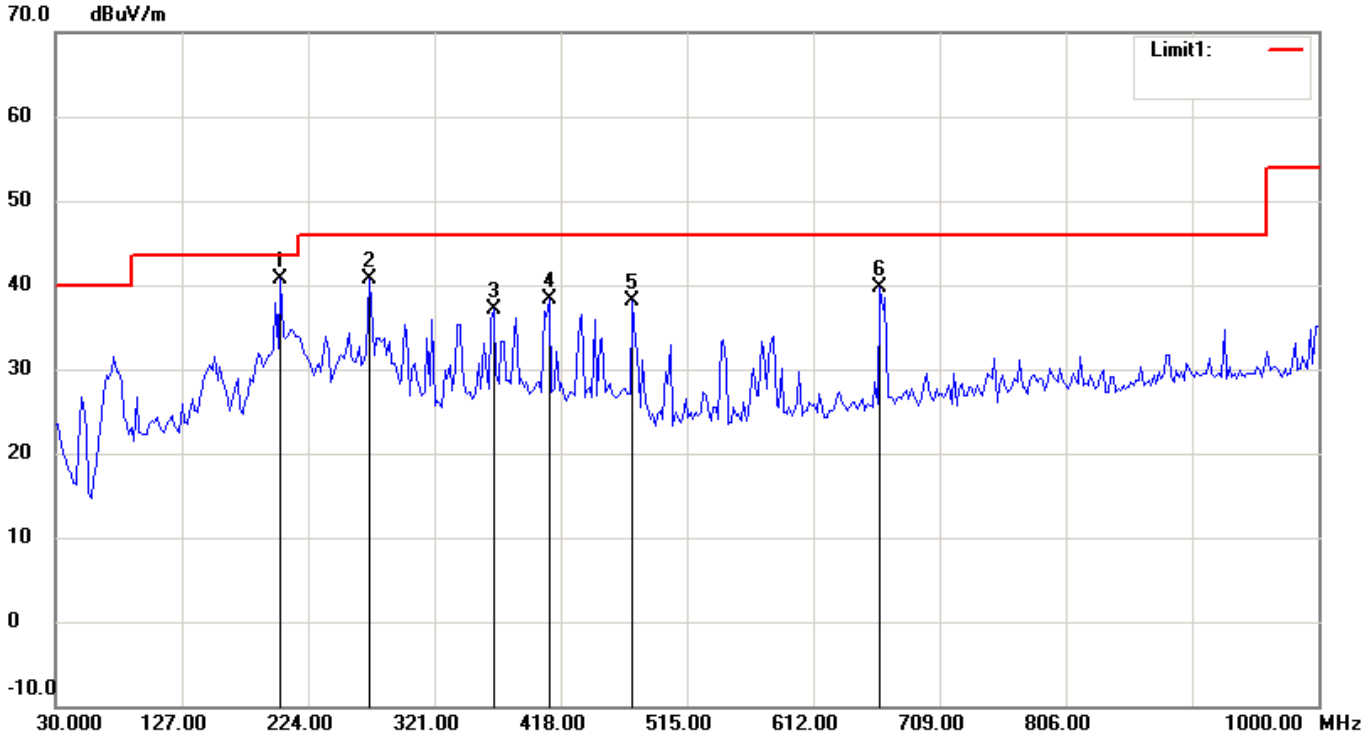
No emission found.

Note:
1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±4.1dB (1GHz≦f≦18GHz).
4. Remark “---” means that the emissions level is too low to be measured.

4.4.2.2 Dipole antenna

4.4.2.2.1 below 1GHz

File: ivan **Data:** #146 **Date:** 2009/3/9 **Time:** PM 01:10:06 **Temperature:** 20 ℃ **Humidity:** 63 %

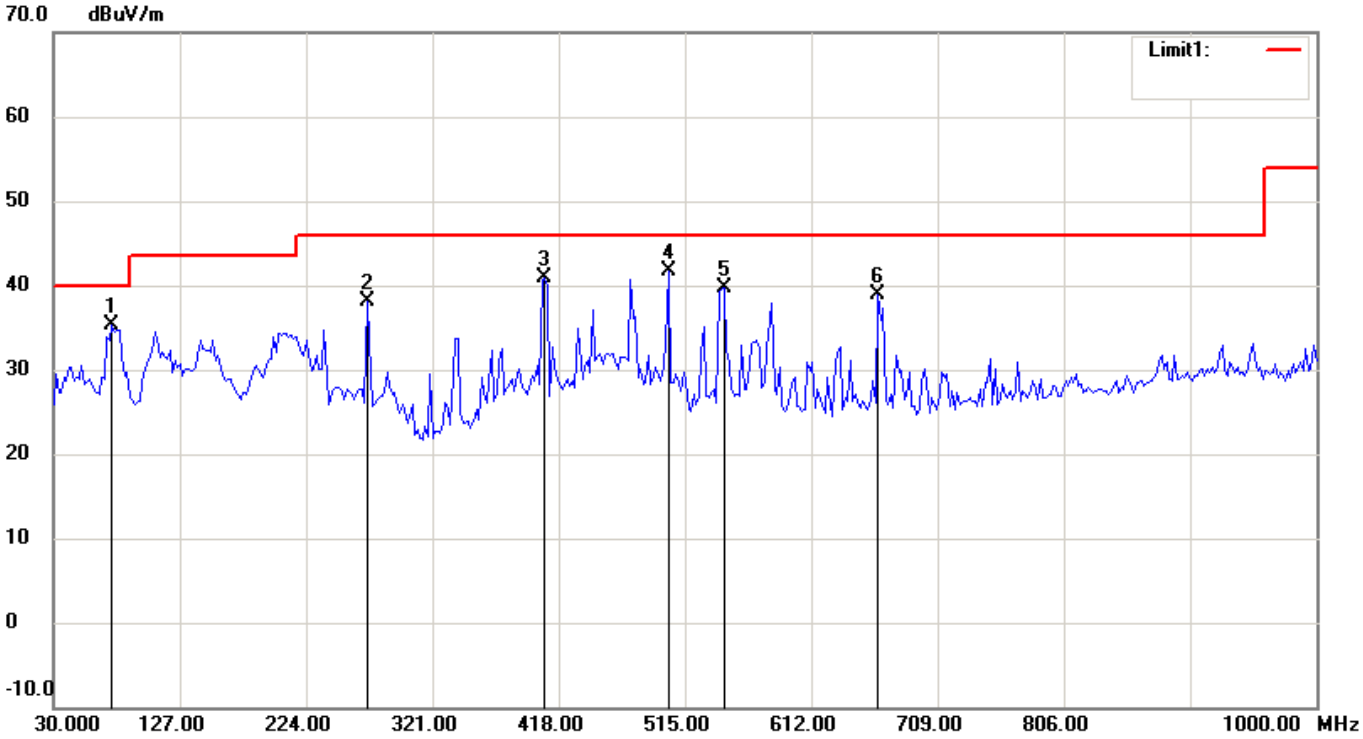


Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Horizontal
EUT: Bluetooth Intelligent Serial Module Version II, 3.3V **Distance:**
Model: BTM405
Test Mode:
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	203.0060	28.24	peak	12.54	40.78	43.50	-2.72
2	271.0421	25.58	peak	15.07	40.65	46.00	-5.35
3	366.2926	17.19	peak	19.82	37.01	46.00	-8.99
4	409.0581	18.36	peak	19.89	38.25	46.00	-7.75
5	473.2064	17.65	peak	20.39	38.04	46.00	-7.96
6	663.7074	15.87	peak	23.93	39.80	46.00	-6.20

File: ivan **Data:** #147 **Date:** 2009/3/9 **Temperature:** 20 ℃

Time: PM 01:12:07 **Humidity:** 63 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Vertical

EUT: Bluetooth Intelligent Serial Module Version II, 3.3V **Distance:**

Model: BTM405

Test Mode:

Note: RF-LO-H

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	74.7094	26.98	peak	8.32	35.30	40.00	-4.70
2	271.0421	22.94	peak	15.07	38.01	46.00	-7.99
3	407.1142	21.01	peak	19.86	40.87	46.00	-5.13
4	502.3647	20.82	peak	20.90	41.72	46.00	-4.28
5	545.1303	18.01	peak	21.65	39.66	46.00	-6.34
6	663.7074	14.97	peak	23.93	38.90	46.00	-7.10

4.4.2.2.2 above 1GHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)
Radiated emission frequencies above 1 GHz to 25 GHz were too low to be measured.						

4.4.2.2.3 above 1GHz (RX Mode)

No emission found.

Note:
1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±4.1dB (1GHz≦f≦18GHz).
4. Remark “---” means that the emissions level is too low to be measured.

4.4.3 Radiated Measurement at Bandedge with Fundamental Frequencies

4.4.3.1 Patch antenna

(A)

Channel 0

Operation Mode : Transmitting

Fundamental Frequency : 2402 MHz

Test Date : Feb. 24, 2009 Temperature : 21℃ Humidity : 64%

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
2400.000	26.4	16.3	27.0	17.9	30.3	57.3	48.2	74.0	54.0

Note:

The result is the highest value of radiated emission from restrict band of 2310 ~2390 MHz.

(B)

Channel 78

Operation Mode : Transmitting

Fundamental Frequency : 2480 MHz

Test Date : Feb. 24, 2009 Temperature : 21℃ Humidity : 64%

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
2483.500	28.7	21.4	30.6	21.8	30.3	60.9	52.1	74.0	54.0

Note:

The result is the highest value of radiated emission from restrict band of 2483.5 ~2500 MHz.

4.4.3.2 Dipole antenna

(A)

Channel 0

Operation Mode : Transmitting

Fundamental Frequency : 2402 MHz

Test Date : Feb. 24, 2009 Temperature : 21℃ Humidity : 64%

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
2390.000	25.4	16.7	27.2	17.7	30.3	57.5	48.0	74.0	54.0

Note:

The result is the highest value of radiated emission from restrict band of 2310 ~2390 MHz.

(B)

Channel 78

Operation Mode : Transmitting

Fundamental Frequency : 2480 MHz

Test Date : Feb. 24, 2009 Temperature : 21℃ Humidity : 64%

Frequency (MHz)	Reading (dBuV) H Peak	H Ave	V Peak	V Ave	Factor (dB) Corr.	Result @3m (dBuV/m) Peak (H/V Max.)	Result @3m (dBuV/m) Ave (H/V Max.)	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.
2483.500	28.9	21.3	30.7	21.8	30.3	61.0	52.1	74.0	54.0

Note:

The result is the highest value of radiated emission from restrict band of 2483.5 ~2500 MHz.

4.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where

Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

5 ANTENNA REQUIREMENT

5.1 Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to §15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2 Antenna Construction and Directional Gain

	New External Antenna	Model	Gain	Connector
1	Ceramic Patch	CABPB1240A	1.9dBi	U.FL
2	1/2 Wave Coaxial Dipole	WCR2400-IP04	2.0dBi	U.FL

The directional gain of the antenna does not exceed 6 dBi. The power won’t be reduced.

6 OUTPUT POWER MEASUREMENT

6.1 Standard Applicable

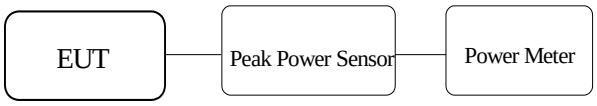
For frequency hopping systems, operating in the 2400-2483.5MHz band employing at least 75 hopping channels. The transmitter output power shall not exceed 1.0 watt. For all other frequency hopping systems in this band 2400-2483.5 MHz band, the transmitter output power shall not exceed 0.125 watt.

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125 W.

6.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 3. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz and VBW to 3 MHz.
4. Measure the highest amplitude appearing on spectral display and record the level to calculate result data.
5. Repeat above procedures until all frequencies measured were complete.

Figure 3: Output Power measurement configuration.



6.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Power Meter	Boonton	4532-0102	05/04/2009
Peak Power Sensor	Boonton	56518	05/04/2009

6.4 Measurement Data

Test Date : Feb. 24, 2009 Temperature : 21℃ Humidity : 64%

Channel	Frequency (MHz)	Maximum Peak Output Power (dBm)	Maximum Peak Output Power (mW)	FCC Limit (mW)	Chart
0	2402	1.7	1.48	1000	-
39	2441	3.3	2.14	1000	-
78	2480	1.6	1.45	1000	-