

TEST REPORT

Report No. : 6050F
Date : 26th April 2006
Applicant : TAIYO YUDEN CO.,LTD.
8-1 Sakae-cho, Takasaki-shi, Gunma, 370-8522 Japan.
EUT : Bluetooth Module
FCC ID : RYYEYTF3CSFT
Model No. : EYTF3CSFT
Serial No. : 31
Receipt date of tested sample : 14th April 2005
Date of measurement : 17th April 2005 (Radiated Emission)
Test location : TAIYO YUDEN CO.,LTD. EMC Center
5607-2, Nakamuroda, Haruna-machi,
Gunma-Gun, Gunma, 370-3347, Japan.
Applied standard : FCC 47 CFR Part 15 Subpart C, Section 15.247, (10-1-05 Edition)
Procedure : ANSI C63.4-2003
Test results: PASS



Approved by :


Manager / Kenzo Furuta

Reviewed by :


Chief Engineer / Takeshi Matsumura

Tested by :




Engineer / Shin Itakura
Assistant / Yasuko Hirata

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Revised Record

Revised Record				
Number of Revised time	Date	Person in Charge	Detail of Revision	Approved by
Initial	26 th April 2006	S.Itakura	-	-

1 Test report

- (1) The measurements covered by this document have been performed in accordance with NVLAP requirements which include the requirements of ISO/IEC 17025 and are traceable to national or international standards of measurement.
- (2) This report summarizes the result of a single investigation and test result relate only to tested sample.
- (3) The report shall not be reproduced except in full without the written approval of the Taiyo Yuden Co.,Ltd.
- (4) This test report must not be used by the client to claim product endorsement by any government agency.(NVLAP or agency of the U.S. Government.)
- (5) We hereby certify that no party to the applications authorized hereunder is subject to a denial of benefits, including FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 853(a).

2 General Information

2.1 Product Description

EUT	: Bluetooth Module
Model No.	: EYTF3CSFT
Serial No.	: 31
FCC ID	: RYYEYTF3CSFT
Production stage	: Pre-Production
Summary of EUT	: 2.4GHz Bluetooth module
Modulation	: GFSK, $\pi/4$ DQPSK, 8DPSK
Power supply	: DC 3.3V
Weight	: 2.3g
Dimensions of EUT	: W26mm × D23mm × H2.65mm
Max antenna gain	: 0.7dBi
Antenna type	: Mono Pole Antenna Type
The clock frequencies used in this EUT:	
	1.MHz (IF-TX mode)
	1.5MHz (IF-RX mode)
	Fvco (1200.25 to 1239.25MHz[RX],1201 to 1240MHz[TX])
	X' tal (16 MHz)

EUT is attached to PC provided and it is a wireless applications to communicate with other Bluetooth devices.

This is operated within the bands 2400 – 2483.5MHz frequency hopping intentional radiators that comply with FCC15.247. It provides 79 channels. And it adopts an AFH function to prevent interference with other wireless applications.

EUT operates in the unlicensed 2.4 GHz ISM (Industrial Scientific Medical) band. A frequency hop transceiver is applied to combat interference and fading.

Two modulation modes are defined. A mandatory mode, called Basic Rate, uses a shaped, binary FM modulation to minimize transceiver complexity (GFSK). An optional mode, called Enhanced Data Rate, uses PSK modulation and has two variants: $\pi/4$ -DQPSK and 8DPSK. The symbol rate for all modulation schemes is 1 Ms/s. The gross air data rate is 1 Mbps for Basic Rate, 2 Mbps for Enhanced Data Rate using $\pi/4$ -DQPSK and 3 Mbps for Enhanced Data Rate using 8DPSK.

2.2 Applied Standard

47CFR part 15 Subpart C 15.247 is applied standard for this product. This product with other type antenna has been tested completely according to 15.247 (Refer to separated Test Report, No.5183F). Due to different type antenna, this product was tested for spurious emission again according to 15.247(d). This is report for it.

2.3 Summary of Test and Inspection Result

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
1	Radiated Emission	ANSI C63-4:2003	FCC 15.247(d)	Radiated	N/A	5.2dB Operating Frequency :2480MHz Direction:ZX Horizontal (AV) 4804.13MHz	Pass

2.4 Test Methodology

Interference measurements were made in accordance with ANSI C63.4-2003 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

2.5 Test Facility

1. FCC 47CFR, Part 15, Section 15.247 regulation test were performed on the shielded room, and radiated interference field strength test was performed on the 10 meter semi-anechoic chamber located at Taiyo Yuden Co.,Ltd. EMC Center, 5607-2 Nakamuroda Haruna-Machi Gunma-Gun Gunma, 370-3347 Japan.
2. This Laboratory is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) by United States Department of Commerce, National Institute of Standard and Technology (NIST) for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations.
3. These criteria encompass the requirements of ISO/IEC 17025:1999 and the relevant requirements of ISO 9002:1994 as suppliers of calibration or test results. Accreditation awarded for specific services, listed on the Scope of Accreditation for: ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS FCC. (NVLAP LAB CODE: 200607-0). Refer the certificate of the accreditation to Appendix 1.
4. This laboratory is listed by Federal Communications Commission, Equipment Authorization Division (Registration Number: 606514) and listed by Industry Canada.(No.4389)

3 System Test Configuration

3.1 Justification

1. Emission tests were performed with no deviation from the ANSI C63.4-2003 and FCC 47CFR, Part 15, Section 15.247 regulation tests were performed with no deviation from the FCC Public Notice DA00-705 released March 30, 2000.
2. The system was configured for testing a typical fashion. (as a customer would normally use it.)
3. Radiate testing in the range of 1 GHz to 25 GHz was investigated with the spectrum (peak detector function) under the FCC regulation section 15.209 (e) and 15.35 (b). The test performed at an antenna to EUT distance of 1 meter. The level of any unwanted emissions from EUT did not exceed the level of the fundamental emission (Compliance with 15.209 (c)). And test result found to be compliance with FCC regulation section 15.209 (a) Radiated emission limits (500 micro-volts/meter). Data is presented for the "worst case" measurements, that E.U.T was normal operated.
4. Radiate testing in the range of 30 MHz to 1000 MHz was performed at an antenna to EUT distance of 3 meters under the 15.209 (e) and 15.31(f)(1).

3.2 Operating modes

Signal packet type : DH5

DH5 : A 5 slot, Data High rate, ACL type packet. Supports a data payload of 0 to 339 bytes with CRC, no FEC, and fully transmits within five consecutive 625 microsecond transmission slots.

Signal pattern : PRBS9

PRBS9 : A periodic Pseudo Random Bit Sequence. $2^9 - 1$

Operating channel :

- a. Lowest frequency channel : CH0 2402MHz
- b. Middle frequency channel : CH39 2441MHz
- c. Highest frequency channel : CH78 2480MHz

Modulation : GFSK

All Tests were performed only in GFSK Modulation because the maximum conducted spurious emission from the bluetooth module was observed in GFSK Modulation.

3.3 List of accessories

	Product name	M/N	S/N	Manufacturer	Notes	FCC ID / DoC
a	Supporting equipment	-	31	TAIYO YUDEN Co.,Ltd	-	N/A
b	Personal Computer	PP04S	CN-0Y0119-36521-467-2020	DELL	-	FCC ID: QDS-BRCM1007
c	AC Adapter for PC	PA-1650-05D	-	DELL	-	N/A
d	Regulated DC power supply	PA18-3A	7010078	KENWOOD	-	N/A

3.4 Interface cables

	Cable Type	M/N	Connection	Ferrite core	Shielded	Material of connector	Length	Treatment for the extra length
1	Flexible Flat cable	-	a↔EUT	No	No	Plastic	0.17m	-
2	USB cable	-	EUT↔b	No	Yes	Metal	2.00m	-
3	DC cable	-	b↔c	Yes	Yes	Metal	0.90m	-
4	AC cable	-	c↔AC	No	No	Plastic	1.75m	-
5	AC cable	-	d↔AC	No	No	Plastic	1.95m	-
6	DC cable	-	a↔7	No	No	Plastic	0.50m	-
7	DC cable	-	6↔d	No	No	Plastic	0.92m	-

3.5 Special Test Condition

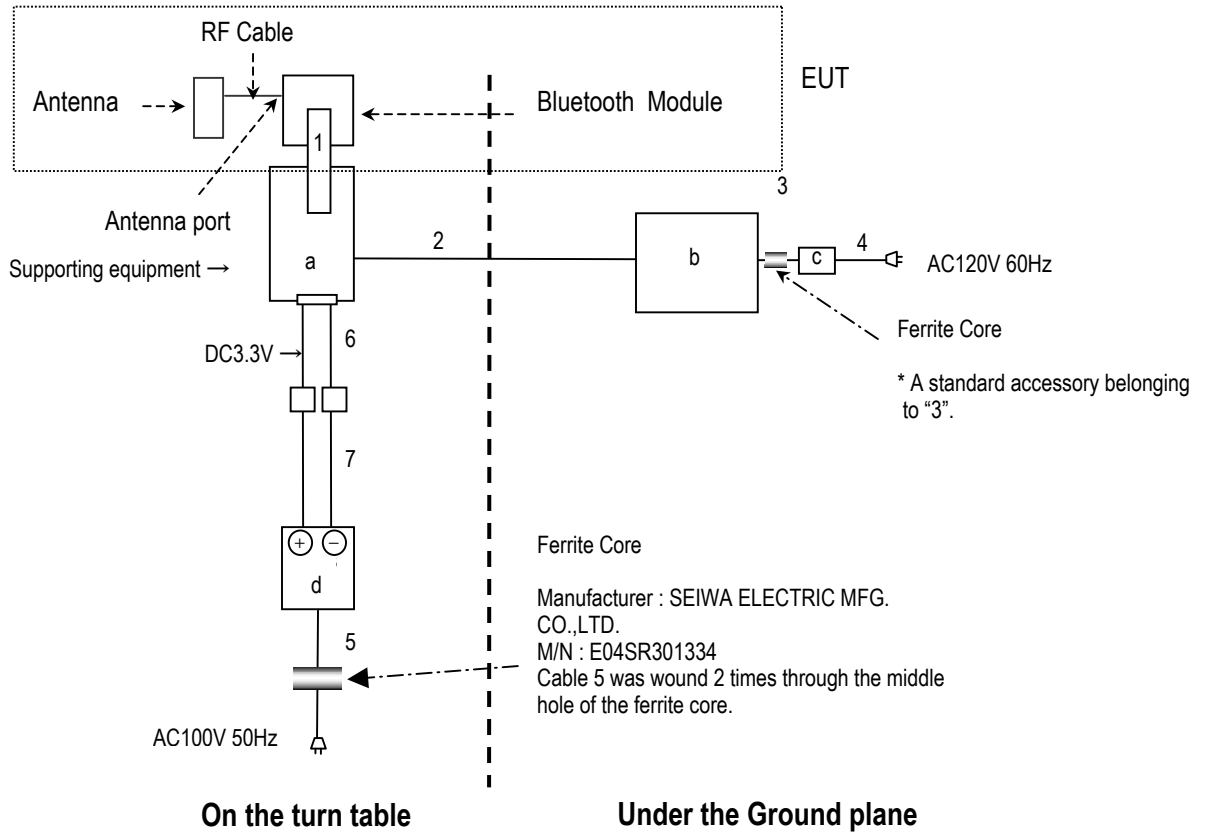
Nothing

3.6 Equipment Modifications

No modification has been carried out by the test laboratory.

3.7 Configuration of Tested System

These numbers and the marks in the picture are corresponding to the numbers and the marks in Tables shown at the Section 3.3 and 3.4.



4 Antenna Requirement

An antenna that uses an unique coupling to the intentional radiator was provided with EUT from manufacturer. The antenna is connected to the antenna port of the module through the RF cable that is 0.18m long. Connector type at the antenna port is U.FL-R-SMT-1 model supplied only from Hirose ELECTRIC CO.,LTD. Therefore, it found to be compliance with FCC regulation section 15.203 .

Antenna Data
 Manufacturer: FUJITSU LIMITED
 Model No.: CP209760
 Antenna Size : W12mm × D2mm
 Max Antenna Gain : 0.7dBi
 Antenna Type : Mono Pole Antenna Type

Refer to Section 6 of this REPORT.

5 Radiated Emission Test

5.1 Test Setup

The test setup was made according to ANSI STD C63.4-2003 clause 8 on the 10 meter semi-anechoic chamber, which allows a 3 or 1 m distance measurement. EUT was placed on non-conductive table (foam polystyrene). The height of this table was 0.8 m. The measurement has been conducted with both horizontal and vertical antenna polarization. The turntable has been fully rotated. The highest radiation of the equipment has been recorded. For further description of the configuration refer to the pictures of this report.

Distance between equipment and antenna : 3m (30MHz to 18GHz)
 : 1m (18GHz to 25GHz)

Spectrum Analyzer Setting

30~1000MHz	Detector : Quasi-Peak Bandwidth : 120kHz
1~25GHz	Detector : Peak and Average Bandwidth : 1MHz

Axial Direction

See Section 6.

5.2 Radiated Emission Calculation

Facility/ Equipment	Manufacturer	Model No.	Serial No.	Frequency Range	Calibration Date	Next Calibration Due
10m anechoic chamber	TDK Co.,Ltd	DA-06912	-	-	13 th -17 th .3.2006.	12 th .3.2007.
EMI Test Receiver	R&S	ESCS 30	100148	30-1000MHz	11 th .8.2005.	10 th .8.2006.
Spectrum Analyzer	Agilent Technologies	8563E	3416A02230	30-1000MHz	12 th .4.2006.	11 th .4.2007.
		E4446A	US42070181	1-40GHz	14 th .11.2005.	13 th .11.2006.
Amplifier		8449B	3008A00571	1-26.5GHz	6 th .3.2006.	5 th .3.2007.
8447D		2944A06812	30-1000MHz	13 th .2.2006.	12 th .2.2007.	
RF Selector	TDK Co.,Ltd	NS4900	0302-010	-	13 th .2.2006.	12 th .2.2007.
RF Cable	SUHNER	RG214	RG 1	30-1000MHz	13 th .2.2006.	12 th .2.2007.
		RG214	RG 3	30-1000MHz	13 th .2.2006.	12 th .2.2007.
		RG214	RG 8	30-1000MHz	13 th .2.2006.	12 th .2.2007.
		RG214	RG 5	30-1000MHz	13 th .2.2006.	12 th .2.2007.
		RG214	RG 6	30-1000MHz	13 th .2.2006.	12 th .2.2007.
		SUCOFLEX 106	SU1	1-18GHz	6 th .3.2006.	5 th .3.2007.
	SUCOFLEX 104	SU4	1-18GHz	6 th .3.2006.	5 th .3.2007.	
	HP	85381C	No.3	18-25GHz	28 th .6.2005.	27 th .6.2006.
85381C		No.5	18-25GHz	28 th .6.2005.	27 th .6.2006.	
Attenuator	KYORITSU	KPD-602	220142	30-1000MHz	13 th .2.2006.	12 th .2.2007.
Antenna	Schwarzbeck	BBA9106	No.4	30-300MHz	25 th .2.2006.	24 th .2.2007.
		UHALP9108-A	160	300-1000MHz	25 th .2.2006.	24 th .2.2007.
	EMCO	3115	9403-4232	1-18GHz	1 st .4.2005.	31 st .3.2007.
		3116	9311-2227	18-40GHz	1 st .4.2005.	31 st .3.2007.
Software	TOYO Corporation	EP5/RE Ver.2.0	0208086	-	-	-

5.3 Radiated Emission Calculation

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

$$c.f. = AF + CF + AL - AG - DF$$

$$RE = RA + c.f.$$

Where

- c.f. = Correction Factor (dB/m)
- RE = Radiated Emission (Emission Level - Result) (dBuV/m)
- RA = Receiver Amplitude (Reading Level) (dBuV)
- AF = Antenna Factor (dB/m)
- CF = Cable Attenuation Loss (dB)
- AG = Amplifier Gain (dB)
- AL = Attenuator Loss (dB)
- DF = Distance Factor
 - Distance between equipment and antenna: 3m = 0(dB)
 - Distance between equipment and antenna: 1m = 9.5(dB)

Assume a receiver reading of 41.3 dB μ V is obtained. The Correction Factor of -1.1 dB/m is added, giving a Radiated Emission of 40.2 dB μ V/m. The 40.2 dB μ V/m value was mathematically converted to its corresponding level in μ V/m.

$$RE = 41.3 + (-1.1) = 40.2 \text{ dB } \mu \text{ V/m}$$

$$\text{Level in } \mu \text{ V/m} = \text{Common Antilogarithm} : 10^{(40.2/20)} = 102.3 \mu \text{ V/m}$$

5.4 Test Results

(1) Transmitting mode at 2402MHz

Test Conditions (S/N of EUT : 31)

Test Date	17 th April 2006
Power	DC 3.3V
Temperature	19°C
Humidity	35%

Axial Direction : XY-Plane

Frequency [MHz]	Antenna Polarization	Meter Reading [dB(uV)]		Factor [dB/m]	Emission Level[dB(uV/m)]		Limits [dB(uV/m)]		Margin [dB]	
		Average	Peak		Average	Peak	Average	Peak	Average	Peak
1601.90	Horizontal	55.0	58.0	-12.3	42.7	45.7	54.0	74.0	11.3	28.3
3203.95	Horizontal	47.9	54.5	-4.6	43.3	49.9	54.0	74.0	10.7	24.1
4804.02	Horizontal	47.7	54.6	-0.5	47.2	54.1	54.0	74.0	6.8	19.9
7206.01	Horizontal	<32.3	<44.2	3.5	<35.8	<47.7	54.0	74.0	>18.2	>26.3
9608.01	Horizontal	<33.2	<44.4	5.7	<38.9	<50.1	54.0	74.0	>15.1	>23.9
12010.01	Horizontal	<32.9	<44.5	9.0	<41.9	<53.5	54.0	74.0	>12.1	>20.5

Axial Direction : YZ-Plane

Frequency [MHz]	Antenna Polarization	Meter Reading [dB(uV)]		Factor [dB/m]	Emission Level[dB(uV/m)]		Limits [dB(uV/m)]		Margin [dB]	
		Average	Peak		Average	Peak	Average	Peak	Average	Peak
1602.00	Horizontal	54.2	57.2	-12.3	41.9	44.9	54.0	74.0	12.1	29.1
3202.58	Horizontal	40.3	49.4	-4.6	35.7	44.8	54.0	74.0	18.3	29.2
4804.35	Vertical	48.6	55.8	-0.5	48.1	55.3	54.0	74.0	5.9	18.7
7206.01	Horizontal	<32.3	<44.2	3.5	<35.8	<47.7	54.0	74.0	>18.2	>26.3
9608.01	Horizontal	<33.2	<44.4	5.7	<38.9	<50.1	54.0	74.0	>15.1	>23.9
12010.01	Horizontal	<32.9	<44.5	9.0	<41.9	<53.5	54.0	74.0	>12.1	>20.5

Axial Direction : ZX-Plane

Frequency [MHz]	Antenna Polarization	Meter Reading [dB(uV)]		Factor [dB/m]	Emission Level[dB(uV/m)]		Limits [dB(uV/m)]		Margin [dB]	
		Average	Peak		Average	Peak	Average	Peak	Average	Peak
1601.03	Horizontal	54.3	57.4	-12.3	42.0	45.1	54.0	74.0	12.0	28.9
3204.22	Horizontal	47.1	53.8	-4.6	42.5	49.2	54.0	74.0	11.5	24.8
4804.13	Horizontal	49.3	56.5	-0.5	48.8	56.0	54.0	74.0	5.2	18.0
7206.01	Horizontal	<32.3	<44.2	3.5	<35.8	<47.7	54.0	74.0	>18.2	>26.3
9608.01	Horizontal	<33.2	<44.4	5.7	<38.9	<50.1	54.0	74.0	>15.1	>23.9
12010.01	Horizontal	<32.9	<44.5	9.0	<41.9	<53.5	54.0	74.0	>12.1	>20.5

The Mark "<", ">" in the table each means floor noise data and the data is below or over the shown value.

(2) Transmitting mode at 2441MHz

Test Conditions (S/N of EUT : 31)

Test Date	17 th April 2006
Power	DC 3.3V
Temperature	19°C
Humidity	35%

Axial Direction : XY-Plane

Frequency [MHz]	Antenna Polarization	Meter Reading [dB(uV)]		Factor [dB/m]	Emission Level[dB(uV/m)]		Limits [dB(uV/m)]		Margin [dB]	
		Average	Peak		Average	Peak	Average	Peak	Average	Peak
1628.09	Horizontal	56.7	59.1	-12.2	44.5	46.9	54.0	74.0	9.5	27.1
3255.88	Horizontal	47.5	54.1	-4.5	43.0	49.6	54.0	74.0	11.0	24.4
4881.65	Horizontal	46.1	53.5	-0.4	45.7	53.1	54.0	74.0	8.3	20.9
7323.01	Horizontal	<32.3	<43.7	3.6	<35.9	<47.3	54.0	74.0	>18.1	>26.7
9764.01	Horizontal	<32.9	<44.1	5.8	<38.7	<49.9	54.0	74.0	>15.3	>24.1
12205.01	Horizontal	<32.2	<44.0	8.8	<41.0	<52.8	54.0	74.0	>13.0	>21.2

Axial Direction : YZ-Plane

Frequency [MHz]	Antenna Polarization	Meter Reading [dB(uV)]		Factor [dB/m]	Emission Level[dB(uV/m)]		Limits [dB(uV/m)]		Margin [dB]	
		Average	Peak		Average	Peak	Average	Peak	Average	Peak
1628.05	Horizontal	54.6	57.8	-12.2	42.4	45.6	54.0	74.0	11.6	28.4
3253.75	Horizontal	43.3	51.1	-4.5	38.8	46.6	54.0	74.0	15.2	27.4
4881.62	Vertical	49.0	56.2	-0.4	48.6	55.8	54.0	74.0	5.4	18.2
7323.01	Horizontal	<32.3	<43.7	3.6	<35.9	<47.3	54.0	74.0	>18.1	>26.7
9764.01	Horizontal	<32.9	<44.1	5.8	<38.7	<49.9	54.0	74.0	>15.3	>24.1
12205.01	Horizontal	<32.2	<44.0	8.8	<41.0	<52.8	54.0	74.0	>13.0	>21.2

Axial Direction : ZX-Plane

Frequency [MHz]	Antenna Polarization	Meter Reading [dB(uV)]		Factor [dB/m]	Emission Level[dB(uV/m)]		Limits [dB(uV/m)]		Margin [dB]	
		Average	Peak		Average	Peak	Average	Peak	Average	Peak
1628.03	Horizontal	55.1	58.0	-12.2	42.9	45.8	54.0	74.0	11.1	28.2
3254.18	Horizontal	48.5	55.3	-4.5	44.0	50.8	54.0	74.0	10.0	23.2
4881.92	Horizontal	48.2	55.1	-0.4	47.8	54.7	54.0	74.0	6.2	19.3
7323.01	Horizontal	<32.3	<43.7	3.6	<35.9	<47.3	54.0	74.0	>18.1	>26.7
9764.01	Horizontal	<32.9	<44.1	5.8	<38.7	<49.9	54.0	74.0	>15.3	>24.1
12205.01	Horizontal	<32.2	<44.0	8.8	<41.0	<52.8	54.0	74.0	>13.0	>21.2

The Mark "<", ">" in the table each means floor noise data and the data is below or over the shown value.

(3) Transmitting mode at 2480MHz

Test Conditions (S/N of EUT : 31)

Test Date	17 th April 2006
Power	DC 3.3V
Temperature	19°C
Humidity	35%

Axial Direction : XY-Plane

Frequency [MHz]	Antenna Polarization	Meter Reading [dB(uV)]		Factor [dB/m]	Emission Level[dB(uV/m)]		Limits [dB(uV/m)]		Margin [dB]	
		Average	Peak		Average	Peak	Average	Peak	Average	Peak
1654.08	Horizontal	55.9	58.6	-12.1	43.8	46.5	54.0	74.0	10.2	27.5
3307.92	Horizontal	48.9	55.2	-4.5	44.4	50.7	54.0	74.0	9.6	23.3
4959.60	Horizontal	46.3	53.3	-0.4	45.9	52.9	54.0	74.0	8.1	21.1
7440.00	Horizontal	<33.0	<44.9	3.6	<36.6	<48.5	54.0	74.0	>17.4	>25.5
9919.99	Horizontal	<33.4	<46.8	6.1	<39.5	<52.9	54.0	74.0	>14.5	>21.1
12399.99	Horizontal	<32.2	<44.0	8.6	<40.8	<52.6	54.0	74.0	>13.2	>21.4

Axial Direction : YZ-Plane

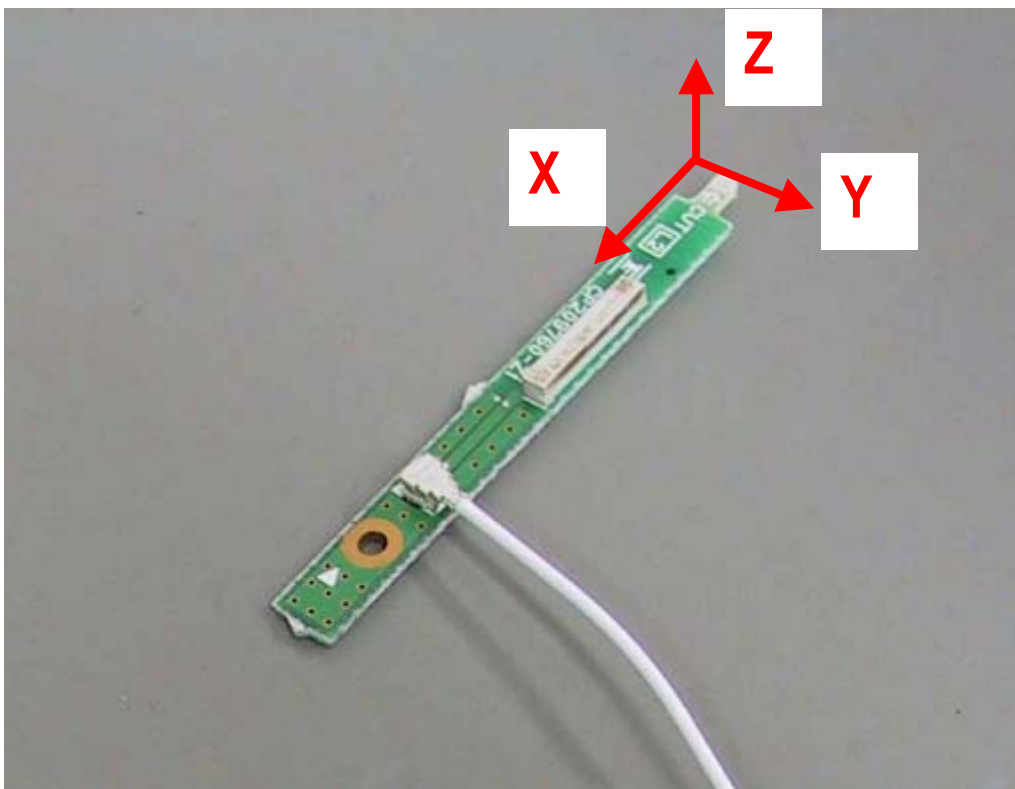
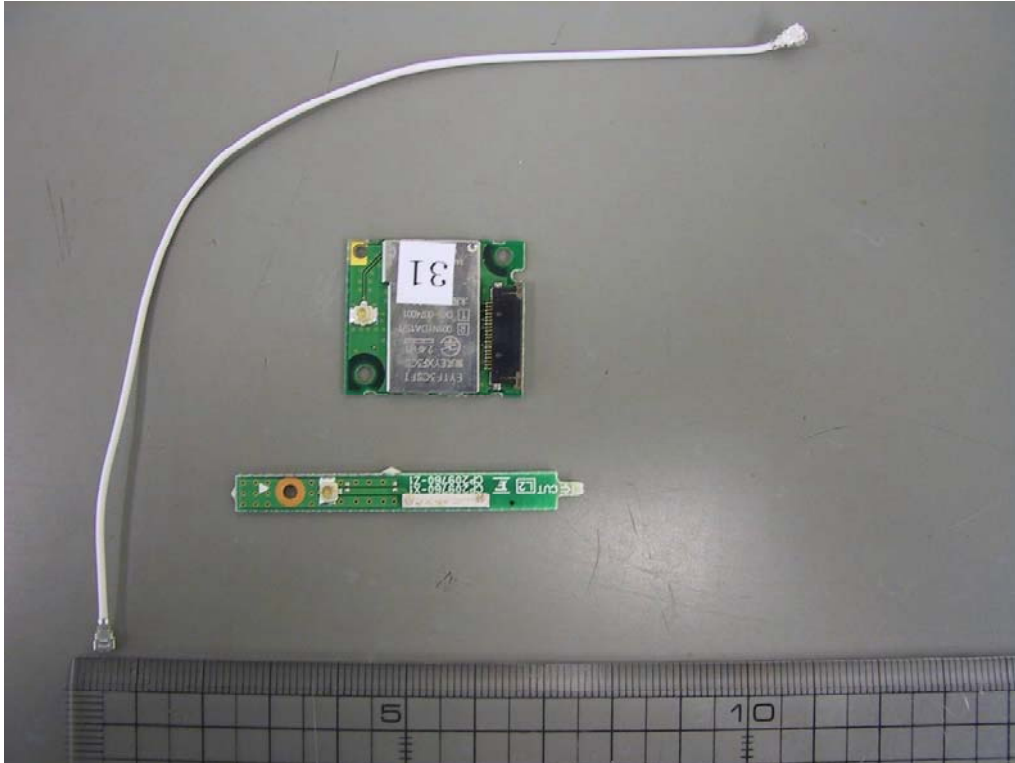
Frequency [MHz]	Antenna Polarization	Meter Reading [dB(uV)]		Factor [dB/m]	Emission Level[dB(uV/m)]		Limits [dB(uV/m)]		Margin [dB]	
		Average	Peak		Average	Peak	Average	Peak	Average	Peak
1653.99	Horizontal	54.5	58.0	-12.1	42.4	45.9	54.0	74.0	11.6	28.1
3307.72	Vertical	44.9	52.2	-4.5	40.4	47.7	54.0	74.0	13.6	26.3
4959.72	Vertical	47.5	54.4	-0.4	47.1	54.0	54.0	74.0	6.9	20.0
7440.00	Horizontal	<33.0	<44.9	3.6	<36.6	<48.5	54.0	74.0	>17.4	>25.5
9919.99	Horizontal	<33.4	<46.8	6.1	<39.5	<52.9	54.0	74.0	>14.5	>21.1
12399.99	Horizontal	<32.2	<44.0	8.6	<40.8	<52.6	54.0	74.0	>13.2	>21.4

Axial Direction : ZX-Plane

Frequency [MHz]	Antenna Polarization	Meter Reading [dB(uV)]		Factor [dB/m]	Emission Level[dB(uV/m)]		Limits [dB(uV/m)]		Margin [dB]	
		Average	Peak		Average	Peak	Average	Peak	Average	Peak
1654.15	Horizontal	55.5	58.2	-12.1	43.4	46.1	54.0	74.0	10.6	27.9
3307.93	Horizontal	50.0	56.6	-4.5	45.5	52.1	54.0	74.0	8.5	21.9
4959.67	Horizontal	48.2	55.2	-0.4	47.8	54.8	54.0	74.0	6.2	19.2
7440.00	Horizontal	<33.0	<44.9	3.6	<36.6	<48.5	54.0	74.0	>17.4	>25.5
9919.99	Horizontal	<33.4	<46.8	6.1	<39.5	<52.9	54.0	74.0	>14.5	>21.1
12399.99	Horizontal	<32.2	<44.0	8.6	<40.8	<52.6	54.0	74.0	>13.2	>21.4

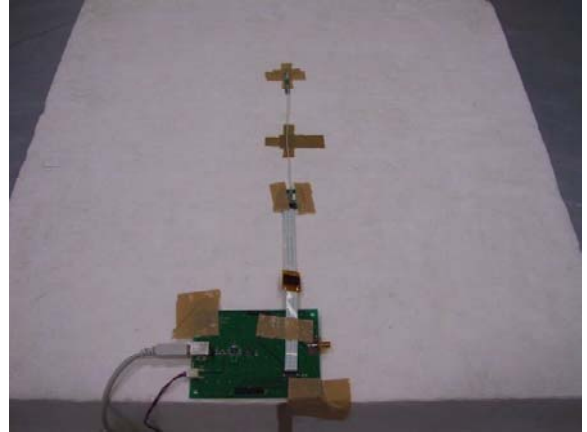
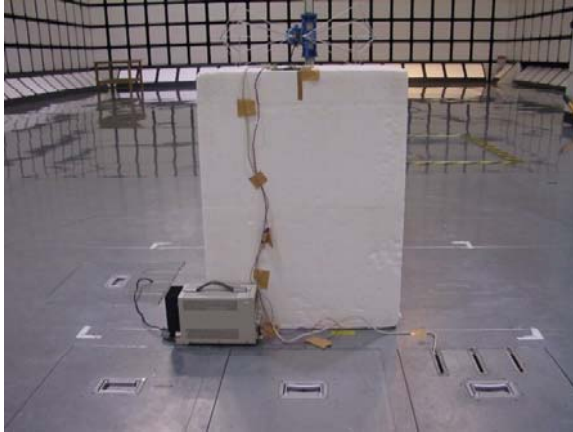
The Mark "<", ">" in the table each means floor noise data and the data is below or over the shown value.

6 PHOTOS OF TESTED EUT

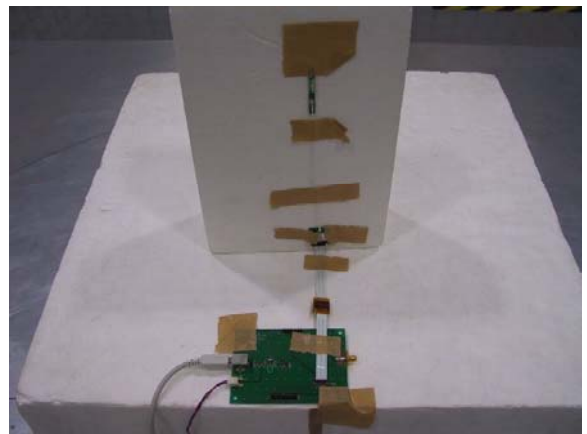
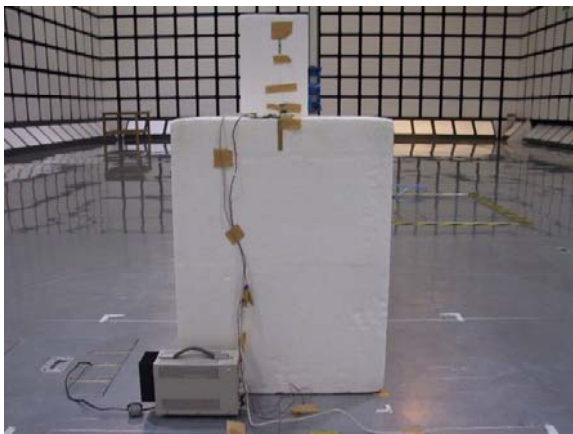


7 PHOTOS OF TEST SETUP

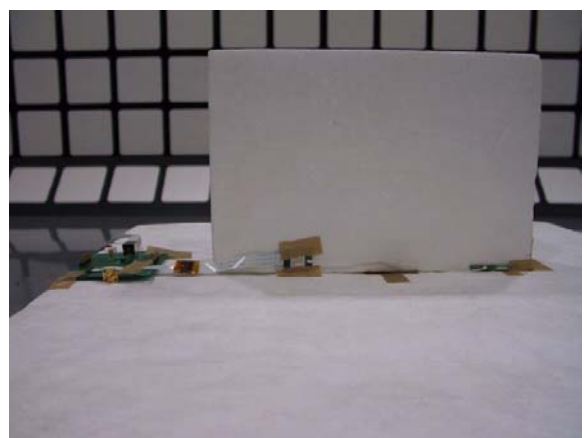
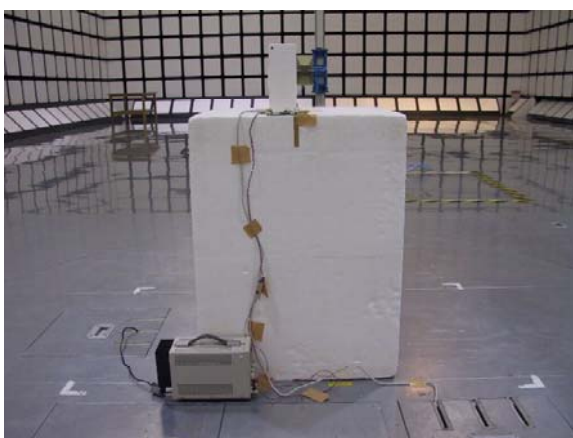
Axial Direction : XY-Plane



Axial Direction : YZ-Plane



Axial Direction : ZX-Plane



APPENDIX 1

United States Department of Commerce
National Institute of Standards and Technology

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Certificate of Accreditation to ISO/IEC 17025:1999


NVLAP LAB CODE: 200607-0

Taiyo Yuden Co., Ltd. EMC Center
Gunma-gun Gunma 370-3347
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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

2005-10-01 through 2006-09-30
Effective dates



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For the National Institute of Standards and Technology

NVLAP-01C (REV. 2005-05-19)