

TEST REPORT

Test Report No.: 7171F

Applicant : TAIYO YUDEN CO., LTD.
EUT : Complete Class2 Bluetooth Module
Model No. : EYBMABA
Serial No. : 1 (Conducted & Radiated Emission Test)
2 (Conducted RF Test via Antenna Terminal)
FCC ID : RYYEYBMABA
Issue Date : 28 November 2007
Date of Test : 12-14 November 2007 (Radiated Emission Test)
22 November 2007 (Conducted Emission Test)
12, 13 November 2007
(Conducted RF Test via Antenna Terminal)
Test Standard : FCC Part 15 Subpart C § 15.207, 15.247 (10-1-06 Edition)
Procedure : ANSI C63.4: 2003 PUBLIC NOTICE DA 00-705
PUBLIC NOTICE DA 00-1407
Test Results : PASS

Approved By:


Manager / Kenzo Furuta 2007-11-28

Reviewed By:


Chief Engineer / Takeshi Matsumura 2007-11-28

Tested By:


Engineer / Yukihiro Minegishi 2007-11-28
Engineer / Kentaro Fukuda 2007.11.28

NVLAP LAB CODE 200607-0

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Revised Record

Revised Record				
Number of Revised Time	Date	Person in Charge	Detail of Revision	Approved By
Initial	28 November 2007	K. Fukuda	-	-

1 Test Report

- (1) This report summarizes the result of a single investigation and test result relate only to tested sample.
- (2) The report shall not be reproduced except in full without the written approval of the TAIYO YUDEN Co., Ltd.
- (3) This test report must not be used by the client to claim product endorsement by any government agency.
- (4) 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).
- (5) The test results in this report are traceable to international standards.

2 General Information

2.1 Applicant Information

Company Name	TAIYO YUDEN CO., LTD.
Address	6-16-20, Ueno, Taito-ku, Tokyo 110-0005, JAPAN

2.2 Product Description

EUT	Complete Class2 Bluetooth Module
Model No.	EYBMABA
Serial No	1 (Conducted & Radiated Emission) 2 (Conducted RF Test via Antenna Terminal)
FCC ID	RYEYBMABA
Production Stage	Pre-Production
Type of Wide Band Modulation	FHSS with AFH
Type of Modulation	GFSK, $\pi/4$ -DQPSK and 8DPSK
ITU Code	F1D, G1D
Power Supply	DC 3.3V
Operating Voltage Range	DC 3.0V Min. DC 3.6V Max.
AC Adaptor	-
Operating Temperature Range	0°C Min. 70°C Max.
Weight	3g
Dimensions of EUT	W 15mm × D 31mm × H 5.3mm
Antenna Type	Monopole
Max Antenna Gain	1.10dBi
Operating Clocks	26MHz
Receipt Date of Tested Sample	9 November 2007

EUT is Complete Class2 Bluetooth Module.

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. Refer to Appendix 1.

The antenna is fixed on the internal printed circuit board of EUT, and the users cannot replace it with the other one.

2.3 Summary of Test and Inspection Result

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
1	AC Powerline Conducted Emission	ANSI C63.4: 2003	FCC 15.207	Conducted Emission Test	N/A	17.0 dB Transmitting Mode: 2480MHz 8DPSK Modulation Frequency: 4.989MHz Power Line: L1	Pass
2	Carrier Frequency Separation	ANSI C63.4: 2003	FCC 15.247 (a)(1)	Conducted RF Test via Antenna Terminal	N/A	-	Pass
3	Number of Hopping Frequency	Public Notice DA00-705	FCC 15.247 (a)(1)(iii)		N/A	-	Pass
4	Dwell Time	Public Notice DA00-1407	FCC 15.247 (a)(1)(iii)		N/A	-	Pass
5	Maximum Peak Output Power		FCC 15.247 (b)(1)		N/A	-	Pass
6	Band Edge Compliance		FCC 15.247(d)		N/A	-	Pass
7	Spurious RF Conducted Emission		FCC 15.247(d)		N/A	-	Pass
8	Radiated Emission		FCC 15.247(d)		Radiated Emission Test	N/A	10.9dB Transmitting Mode: 2480MHz GFSK Modulation Frequency: 4960.000MHz Axial Direction: ZX-Plane Antenna Polarization: Vertical
9	E.I.R.P.	FCC 15.247 (b)(5)	Conducted Calculated	N/A	-	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

TAIYO YUDEN CO., LTD. EMC Center.
5607-2, Nakamuroda-machi, Takasaki-shi, Gunma, 370-3347, Japan.

1. FCC 47CFR, Part 15 Subpart B 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-machi, Takasaki-shi, Gunma, 370-3347 Japan.
2. RSS210 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-machi, Takasaki-shi, Gunma, 370-3347, Japan.
3. 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.
4. These criteria encompass the requirements of ISO/IEC 17025:2005 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 2.
5. This laboratory is listed by Federal Communications Commission, Equipment Authorization Division (Registration Number: 606514) and listed by Industry Canada (No.4389A-1).

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 and Public Notice DA00-1407 released June 26, 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). For above 18GHz, 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).
5. All tests were performed with the representative channel operation as follows.
 - a. Lowest Frequency Channel: CH0 2402MHz
 - b. Middle Frequency Channel: CH39 2441MHz
 - c. Highest Frequency Channel: CH78 2480MHz

3.2 Operating Modes

Transmitting Mode

Modulation		GFSK, $\pi/4$ DQPSK and 8DPSK
Signal Pattern		PRBS9
Signal Packet Type	GFSK	DH1, DH3, DH5 for Dwell time test. DH5 for other test
	$\pi/4$ DQPSK	2-DH5
	8DPSK	3-DH5
Representative Channel		CH0 2402MHz (Lowest Frequency Channel)
		CH39 2441MHz (Middle Frequency Channel)
		CH78 2480MHz (Highest Frequency Channel)

Remarks:

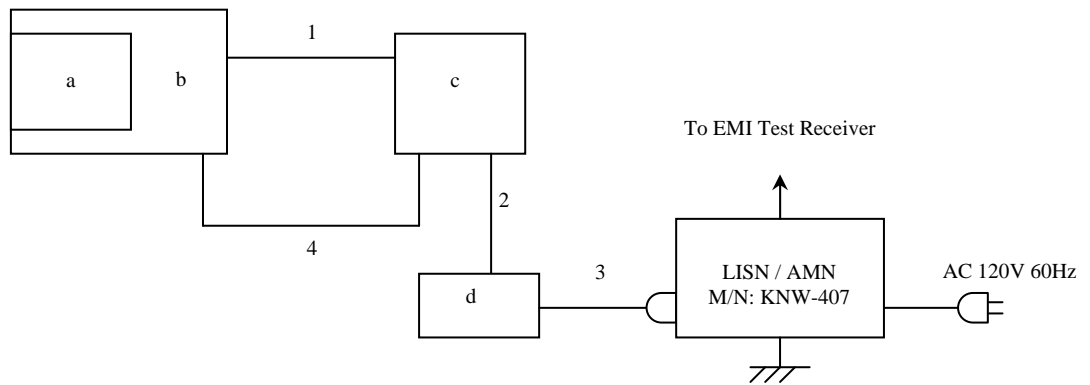
Signal Pattern PRBS9:	<u>Periodic Pseudo Random Bit Sequence, $2^9 - 1$</u>
Signal Packet Type:	
DH1, 3, 5:	<u>Data high rate, ACL type packet</u> <u>Data payload with CRC, without FEC</u> <u>Fully transmission within one consecutive 625-microsecond transmission slots</u> <u>Number of slot = 1(DH1), 3(DH3), 5(DH5)</u> <u>Data size of payload = 27bytes (DH1), 183bytes (DH3), 339bytes (DH5)</u>
2-DH5:	<u>This packet is similar to the DH5 packet except that the payload is modulated using $\pi/4$-DQPSK. The 2-DH5 packet has between 2 and 681 information bytes (including the 2-byte payload header) plus a 16-bit CRC code. The 2-DH5 packet may occupy up to five time slots.</u>
3-DH5:	<u>This packet is similar to the DH5 packet except that the payload is modulated using 8DPSK. The 3-DH5 packet has between 2 and 1023 information bytes (including the 2-byte payload header) plus a 16-bit CRC code. The 3-DH5 packet may occupy up to five time slots.</u>
Software (Controller):	<u>Broadcom Bluetool version 1.0.0.6 software supplied by Broadcom Corporation was used to set up the Bluetooth operating mode.</u>

3.3 Configuration of Tested System

(1) Conducted Emission Test

These numbers and the marks in the picture are corresponding to the numbers and the marks in tables shown at the Section 3.4 and 3.5.

Power Supply of EUT: DC 3.3V from Note PC “c”.

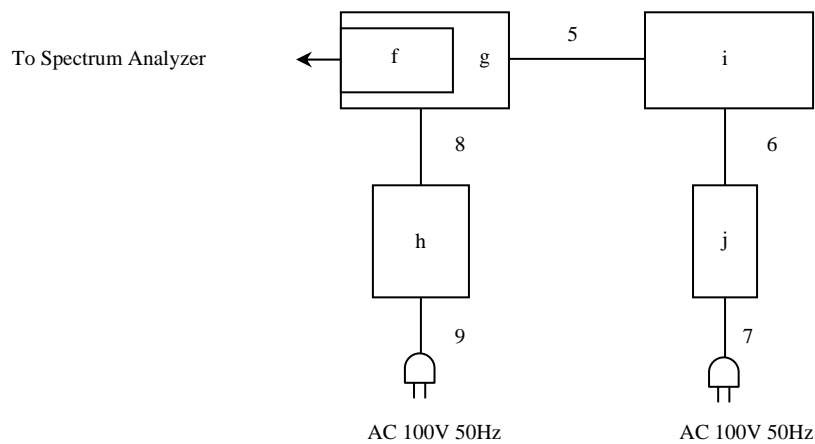


(2) Conducted RF Test via Antenna Terminal

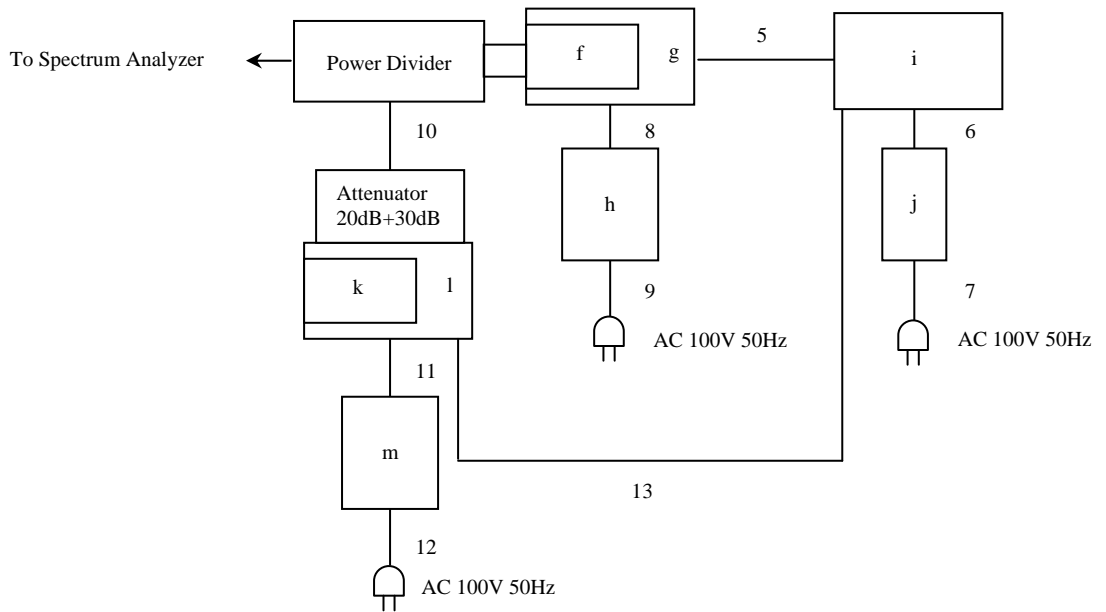
These numbers and the marks in the picture are corresponding to the numbers and the marks in tables shown at the Section 3.4 and 3.5.

Power Supply of EUT: DC 3.3V from Regulated DC Power Supply “h”.

Test Setting for Normal Frequency Hopping and Non Frequency Hopping Mode



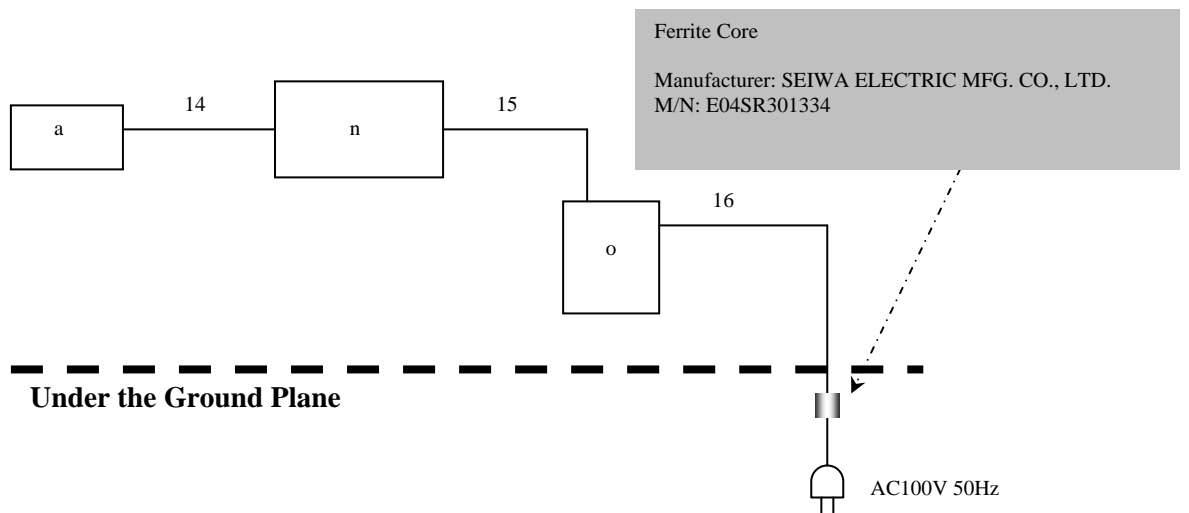
Test Setting for Adaptive Frequency Hopping Mode



(3) Radiated Emission Test

These numbers and the marks in the picture are corresponding to the numbers and the marks in tables shown at the Section 3.4 and 3.5.

Power Supply of EUT: DC 3.3V from Regulated DC Power Supply "o".



3.4 List of Accessories and EUT

	Product Name	M/N	S/N	Manufacturer	EUT / Accessory	FCC ID / DoC
a	Complete Class2 Bluetooth Module	EYBMABA	1	TAIYO YUDEN CO., LTD.	EUT	RYYEYBMABA
b	Supporting Equipment	TE7446	7171C	TAIYO YUDEN CO., LTD.	Accessory	-
c	Note PC	PSJ11N- 00F002	14059256J	TOSHIBA	Accessory	DoC
f	Complete Class2 Bluetooth Module	EYBMABA	2	TAIYO YUDEN CO., LTD.	EUT	RYYEYBMABA
g	Supporting Equipment	TE7446	7171B	TAIYO YUDEN CO., LTD.	Accessory	-
h	Regulated DC Power Supply	PA18-3A	6010074	KENWOOD	Accessory	-
i	Note PC	PP02L	CN-07G696- 1296122J- 5102	DELL	Accessory	-
j	AC Adapter for Note PC	ADP-70EB	TH-0936U- 17991-22F- 3XX9	DELL	Accessory	-
k	Bluetooth Module	ELSMLBA XX	No.11	TAIYO YUDEN CO., LTD.	Accessory	-
l	Supporting Equipment	k-22	No.15	TAIYO YUDEN CO., LTD.	Accessory	-
m	Regulated DC Power Supply	PA18-3A	6110066	KENWOOD	Accessory	-
n	Supporting Equipment	TE7446	7171A	TAIYO YUDEN CO., LTD.	Accessory	-
o	Regulated DC Power Supply	PA18-1.2	2110071	KENWOOD	Accessory	-

3.5 Interface Cables

	Cable Type	M/N	Shielded	Ferrite Core	Material of Connector	Length	Treatment for the Extra Length
1	DC Cable	-	No	No	Plastic	0.31m	-
2	DC Cable	-	No	No	Metal	1.75m	Fold back and forth in the center
3	AC Cable	-	No	No	Plastic	1.98m	-
4	Serial Cable	-	Yes	No	Metal	1.57m	-
5	Serial Cable	-	No	No	Plastic	1.80m	-
6	DC Cable	-	No	Yes	Plastic	1.75m	
7	AC Cable	-	No	No	Plastic	1.00m	-
8	DC Cable	-	No	No	Plastic	0.40m	
9	AC Cable	-	No	No	Plastic	2.00m	-
10	RF Cable		Yes	No	Metal	1.50m	RF2
11	DC Cable	-	No	No	Plastic	0.40m	
12	AC Cable	-	No	No	Plastic	2.00m	-
13	Serial Cable	-	No	No	Plastic	1.50m	-
14	Flat Cable	-	No	No	Plastic	0.16m	-
15	DC Cable	-	No	No	Plastic	1.40m	-
16	AC Cable	-	No	No	Plastic	2.06m	-

3.6 Test Instruments

About test instruments for all tests, please refer to appendix 3.

3.7 Special Test Condition

Nothing

3.8 Equipment Modifications

No modification has been carried out by TAIYO YUDEN CO., LTD. EMC Center.

4 Antenna Requirement

The EUT provides a permanently attached antenna and it was found to be compliant with FCC regulation section 15.203.

Antenna Type	Monopole
Antenna Gain	1.10dBi

5 AC Powerline Conducted Emission

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations.

5.1 Test Setup

Conducted emission measurements were performed from 150kHz to 30 MHz.

The test setup was made according to ANSI STD C63.4: 2003 clause 7 in the Shielded room.

The rear of non-conductive wooden table top was placed 0.4 m from a vertical metal reference plane that one of the wall.

Rears of the peripherals were all aligned and flush with rear of non-conductive wooden tabletop.

The height of this table was 0.8 m and 1.5 m wide x 1.0 m deep size.

The spacing between the each equipment was 10 cm.

Connection of the PC connected EUT USB Adaptor to the Artificial Mains Network (AMN)/ Line Impedance Stabilization Network (LISN) was required.

The distance between the closet surface of the EUT and the closet surface of the AMN (LISN) was 0.8 m.

Connection of the all other equipment to the second AMN (LISN) was required. The distance between the peripherals and the closet surface of the second AMN (LISN) was minimum 0.8 m.

The second artificial mains network is terminated with 50ohm terminator.

Where a mains flexible cord is provided by the manufacture this is 2.0 m long and excess cable was folded back and forth as far as possible to 0.8 m so as to form a bundle not exceeding 0.4 m in length.

Interconnecting cables of table top equipment that hang closer than 0.4 m to the floor ground plane were folded back and forth forming a bundle 30 to 40 cm long, hanging approximately in the middle between ground plane and table.

The measurement has been conducted with both L1 (Neutral) and L2 (Line) power supply polarization.

The maximum voltage emission was verified with the cable routing and the location of the peripherals.

The highest voltage emission has been recorded.

For further description of the configuration refer to separate document named "Test Setup Photos (7171F)".

Test Receiver Setting:

150kHz~30MHz:

Detector Mode	Quasi-Peak and Average
Bandwidth	10kHz

5.2 Conducted Emission Calculation

The basic equation with a sample calculation is as follows:

$$\begin{aligned} \text{c.f.} &= \text{CF} + \text{AL} \\ \text{CE} &= \text{RA} + \text{c.f.} \end{aligned}$$

Where	c.f.	:	Correction Factor [dB]
	CE	:	Conducted Emission (Emission Level - Result) [dBuV]
	RA	:	Receiver Amplitude (Reading Level) [dBuV]
	CF	:	Cable Attenuation Loss [dB]
	AL	:	Attenuator Loss [dB]

Assume a receiver reading of 40.8 dBuV is obtained.

The Factor of 3.4dB is added, giving a terminal voltage of 44.2 dBuV. The 44.2 dBuV value was mathematically converted to its corresponding level in uV.

$$\text{CE} = 40.8 + 3.4 = 44.2 \text{ dBuV}$$

$$\text{Level in uV} = \text{Common Antilogarithm: } 10^{(44.2 \text{ dBuV}/20)} = 162.2 \text{ uV}$$

5.3 Test Results

Product	: Complete Class2 Bluetooth Module	Model	: EYBMABA
Serial No.	: 1	Test Standard	: FCC Part15 Subpart C §15.207
Power Supply	: DC 3.3V from Note PC (AC 120V 60Hz)	Temp. / Humid.	: 15.4°C / 44.9%
Operator	: Fukuda		
Remark	: Transmitting Mode 8DPSK Modulation		

AC Powerline Conducted Emission: Lch (2402MHz)

Frequency [MHz]	Line Phase	Reading [dB(uV)]		Factor [dB]	Level [dB(uV)]		Limit [dB(uV)]		Margin [dB]		Remark
		QP / AV	QP / AV		QP / AV	QP / AV	QP / AV	QP / AV			
0.15409	L1	32.5	7.2	3.5	36.0	10.7	65.8	55.8	29.8	45.1	
0.1987	L1	40.4	31.3	3.4	43.8	34.7	63.7	53.7	19.9	19.0	
0.2641	L1	32.6	24.2	3.4	36.0	27.6	61.3	51.3	25.3	23.7	
0.3306	L1	26.4	20.7	3.4	29.8	24.1	59.4	49.4	29.6	25.3	
0.3972	L1	28.2	25.4	3.4	31.6	28.8	57.9	47.9	26.3	19.1	
4.9217	L1	28.4	25.4	3.5	31.9	28.9	56.0	46.0	24.1	17.1	
0.150	L2	34.1	10.1	3.5	37.6	13.6	66.0	56.0	28.4	42.4	
0.1976	L2	41.4	32.1	3.4	44.8	35.5	63.7	53.7	18.9	18.2	
0.2655	L2	34.4	25.8	3.4	37.8	29.2	61.3	51.3	23.5	22.1	
0.331	L2	26.8	20.9	3.4	30.2	24.3	59.4	49.4	29.2	25.1	
0.3975	L2	28.4	24.1	3.4	31.8	27.5	57.9	47.9	26.1	20.4	
4.921	L2	24.9	21.9	3.5	28.4	25.4	56.0	46.0	27.6	20.6	

AC Powerline Conducted Emission: Mch (2441MHz)

Frequency [MHz]	Line Phase	Reading [dB(uV)]		Factor [dB]	Level [dB(uV)]		Limit [dB(uV)]		Margin [dB]		Remark
		QP / AV			QP / AV		QP / AV		QP / AV		
0.150	L1	33.5	9.3	3.5	37.0	12.8	66.0	56.0	29.0	43.2	
0.1981	L1	40.5	31.4	3.4	43.9	34.8	63.7	53.7	19.8	18.9	
0.2638	L1	32.9	24.3	3.4	36.3	27.7	61.3	51.3	25.0	23.6	
0.3308	L1	26.4	20.6	3.4	29.8	24.0	59.4	49.4	29.6	25.4	
0.3979	L1	28.3	25.5	3.4	31.7	28.9	57.9	47.9	26.2	19.0	
4.9881	L1	28.5	25.4	3.5	32.0	28.9	56.0	46.0	24.0	17.1	
0.150	L2	32.8	9.8	3.5	36.3	13.3	66.0	56.0	29.7	42.7	
0.1979	L2	41.5	32.1	3.4	44.9	35.5	63.7	53.7	18.8	18.2	
0.2645	L2	34.3	25.9	3.4	37.7	29.3	61.3	51.3	23.6	22.0	
0.3303	L2	28.0	22.3	3.4	31.4	25.7	59.4	49.4	28.0	23.7	
0.3977	L2	28.3	27.3	3.4	31.7	30.7	57.9	47.9	26.2	17.2	
4.9872	L2	26.1	22.8	3.5	29.6	26.3	56.0	46.0	26.4	19.7	

AC Powerline Conducted Emission: Hch (2480MHz)

Frequency [MHz]	Line Phase	Reading [dB(uV)]		Factor [dB]	Level [dB(uV)]		Limit [dB(uV)]		Margin [dB]		Remark
		QP / AV			QP / AV		QP / AV		QP / AV		
0.150	L1	33.2	9.2	3.5	36.7	12.7	66.0	56.0	29.3	43.3	
0.1982	L1	40.6	31.3	3.4	44.0	34.7	63.7	53.7	19.7	19.0	
0.2646	L1	32.9	23.5	3.4	36.3	26.9	61.3	51.3	25.0	24.4	
0.3307	L1	26.2	20.4	3.4	29.6	23.8	59.4	49.4	29.8	25.6	
0.3976	L1	28.2	25.4	3.4	31.6	28.8	57.9	47.9	26.3	19.1	
4.9891	L1	28.3	25.5	3.5	31.8	29.0	56.0	46.0	24.2	17.0	
0.1501	L2	33.1	9.8	3.5	36.6	13.3	66.0	56.0	29.4	42.7	
0.1981	L2	41.5	32.0	3.4	44.9	35.4	63.7	53.7	18.8	18.3	
0.2649	L2	34.1	25.7	3.4	37.5	29.1	61.3	51.3	23.8	22.2	
0.3301	L2	27.9	21.9	3.4	31.3	25.3	59.4	49.4	28.1	24.1	
0.3975	L2	28.2	25.8	3.4	31.6	29.2	57.9	47.9	26.3	18.7	
4.989	L2	26.0	23.3	3.5	29.5	26.8	56.0	46.0	26.5	19.2	

6 20dB Bandwidth

6.1 Test Setup

The spectrum analyzer was connected to the transmitter output port through the RF cable.

Spectrum Analyzer Setting:

Detector Mode	Peak
RBW	30kHz
VBW	30kHz
Span	2MHz
Sweep Time	Auto

6.2 Test Results

Serial No. : 2
 Power : DC 3.3V
 Mode : Transmitting Mode, Non Frequency Hopping
 Temperature : 22.7°C
 Humidity : 58.2%

(1) Operation Mode: Transmitting Mode (GFSK Modulation)

CH	Frequency [MHz]	20dB Bandwidth [MHz]
0ch(Lowest)	2402.0	0.982
39ch(Middle)	2441.0	0.982
78ch(Highest)	2480.0	0.990

(2) Operation Mode: Transmitting Mode ($\pi/4$ -DQPSK Modulation)

CH	Frequency [MHz]	20dB Bandwidth [MHz]
0ch(Lowest)	2402.0	1.299
39ch(Middle)	2441.0	1.295
78ch(Highest)	2480.0	1.303

(3) Operation Mode: Transmitting Mode (8DPSK Modulation)

CH	Frequency [MHz]	20dB Bandwidth [MHz]
0ch(Lowest)	2402.0	1.307
39ch(Middle)	2441.0	1.311
78ch(Highest)	2480.0	1.307

7 Carrier Frequency Separation

7.1 Test Setup

The spectrum analyzer was connected to the transmitter output port through the RF cable.

Spectrum Analyzer Setting:

Detector Mode	Peak
RBW	100kHz
VBW	300kHz
Span	3MHz
Sweep Time	Auto

7.2 Test Results

Serial No.	:	2
Power	:	DC 3.3V
Mode	:	Transmitting Mode, Frequency Hopping Transmitting Mode, Adoptive Frequency Hopping
Temperature	:	Frequency Hopping: 22.7°C Adoptive Frequency Hopping: 23.4°C
Humidity	:	Frequency Hopping: 58.2 % Adoptive Frequency Hopping: 47.7%
Regulation	:	FCC Part15 C §15.247 (a)(1)

(1) Operating Mode: Transmitting Mode (GFSK Modulation)
Transmitting Mode, Frequency Hopping (79ch)

Channel	Channel Separation [MHz]	Limit *1 [MHz]
Low Frequency (0ch-1ch)	1.010	> 0.655
Middle Frequency (38ch-39ch)	1.016	> 0.655
High Frequency (77ch-78ch)	1.046	> 0.660

Transmitting Mode, Adoptive Frequency Hopping (20ch)

Channel	Channel Separation [MHz]	Limit *1 [MHz]
Low Frequency (0ch-1ch)	1.028	> 0.655
Middle Frequency (38ch-39ch)	1.010	> 0.655
High Frequency (77ch-78ch)	1.034	> 0.660

(2) Operating Mode: Transmitting Mode ($\pi/4$ -DQPSK Modulation)
Transmitting Mode, Frequency Hopping (79ch)

Channel	Channel Separation [MHz]	Limit *1 [MHz]
Low Frequency (0ch-1ch)	1.022	> 0.866
Middle Frequency (38ch-39ch)	1.010	> 0.864
High Frequency (77ch-78ch)	1.034	> 0.869

Transmitting Mode, Adoptive Frequency Hopping (20ch)

Channel	Channel Separation [MHz]	Limit *1 [MHz]
Low Frequency (0ch-1ch)	1.028	> 0.866
Middle Frequency (38ch-39ch)	0.998	> 0.864
High Frequency (77ch-78ch)	1.022	> 0.869

(3) Operating Mode: Transmitting Mode (8DPSK Modulation)
Transmitting Mode, Frequency Hopping (79ch)

Channel	Channel Separation [MHz]	Limit *1 [MHz]
Low Frequency (0ch-1ch)	1.010	> 0.872
Middle Frequency (38ch-39ch)	1.004	> 0.874
High Frequency (77ch-78ch)	0.998	> 0.872

Transmitting Mode, Adoptive Frequency Hopping (20ch)

Channel	Channel Separation [MHz]	Limit *1 [MHz]
Low Frequency (0ch-1ch)	0.992	> 0.872
Middle Frequency (38ch-39ch)	1.004	> 0.874
High Frequency (77ch-78ch)	1.022	> 0.872

*1: Limit value of Carrier Frequency Separation is 2/3 of 20dB Bandwidth.
Refer the result of 20dB Bandwidth to Section 6.

8 Number of Hopping Frequency

8.1 Test Setup

The spectrum analyzer was connected to the transmitter output port through the RF cable.

Spectrum Analyzer Setting:

Detector Mode	Peak
RBW	300kHz
VBW	300kHz
Sweep Time	Auto

8.2 Test Results

Serial No.	:	2
Power	:	DC 3.3V
Mode	:	Transmitting Mode, Frequency Hopping Transmitting Mode, Adoptive Frequency Hopping
Temperature	:	Frequency Hopping: 22.7°C Adoptive Frequency Hopping : 23.4°C
Humidity	:	Frequency Hopping: 58.2% Adoptive Frequency Hopping: 47.7%
Regulation	:	FCC Part15 C §15.247 (a)(1)(iii)

(1) Operating Mode: Transmitting Mode (GFSK Modulation)

Mode	Number of Channel [time]	Limit [time]
Transmitting Mode Frequency Hopping (79ch)	79	>=15
Transmitting Mode Adoptive Frequency Hopping (20ch)	20	>=15

(2) Operating Mode: Transmitting Mode ($\pi/4$ -DQPSK Modulation)

Mode	Number of Channel [time]	Limit [time]
Transmitting mode Frequency Hopping (79ch)	79	>=15
Transmitting mode Adoptive Frequency Hopping (20ch)	20	>=15

(3) Operating Mode: Transmitting Mode (8DPSK Modulation)

Mode	Number of Channel [time]	Limit [time]
Transmitting Mode Frequency Hopping (79ch)	79	>=15
Transmitting Mode Adoptive Frequency Hopping (20ch)	20	>=15

Adaptive Frequency Hopping: Intelligent hopping techniques to avoid interference to other transmission.

9 Dwell Time

9.1 Test Setup

The spectrum analyzer was connected to the transmitter output port through the RF cable.

Spectrum Analyzer Setting:

Detector Mode	Peak
RBW	1MHz
VBW	1MHz
Span	0Hz
Sweep Time	Auto

9.2 Test Results

Serial No.	:	2
Power	:	DC 3.3V
Mode	:	Transmitting Mode (DH1, DH3, DH5), Frequency Hopping Transmitting Mode (DH1, DH3, DH5), Adaptive Frequency Hopping
Temperature	:	Frequency Hopping: 22.7°C Adaptive Frequency Hopping: 23.4°C
Humidity	:	Frequency Hopping: 58.2% Adaptive Frequency Hopping: 47.7%
Regulation	:	FCC Part15 C §15.247 (a)(1)(iii)

(1) Operating Mode: Transmitting Mode, Frequency Hopping (79ch)

GFSK Modulation			$\pi/4$ -DQPSK Modulation			8DPSK Modulation		
Packet	Dwell Time [ms]	Limit [ms]	Packet	Dwell Time [ms]	Limit [ms]	Packet	Dwell Time [ms]	Limit [ms]
DH1	121.96	400	DH1	124.52	400	DH1	123.88	400
DH3	262.72	400	DH3	262.72	400	DH3	263.36	400
DH5	309.98	400	DH5	308.92	400	DH5	310.41	400

(2) Operating Mode: Transmitting Mode, Adaptive Frequency Hopping (20ch)

GFSK Modulation			$\pi/4$ -DQPSK Modulation			8DPSK Modulation		
Packet	Dwell Time [ms]	Limit [ms]	Packet	Dwell Time [ms]	Limit [ms]	Packet	Dwell Time [ms]	Limit [ms]
DH1	122.88	400	DH1	124.16	400	DH1	124.48	400
DH3	262.88	400	DH3	262.56	400	DH3	262.88	400
DH5	309.06	400	DH5	311.94	400	DH5	309.06	400

Data of Dwell Time (Frequency Hopping (79ch))

Time of Occupancy (Dwell Time) for Packet Type DH1

The frequency-hopping rate of Bluetooth system is 1600hops per 1 second.
A DH1 packet needs 1 time slot for transmitting and 1 time slot for receiving.

In a DH1 packet, it hops 800 times for transmitting per 1 second.
The number of hopping channel is 79.
The number of times[A] that appears in 1 channel per 1 second is as follows.
 $800/79=10.13$ [times]

The average time of occupancy on any channel shall not be greater than 0.4 seconds (400ms) within a period of 0.4 seconds multiplied by the number of hopping channels employed $0.4 \times 79 = 31.6$ seconds
The number of times[A] that appears in 1 channel per 31.6 seconds is as follows.
 $10.13 \times 31.6 = 320.11$ [times]

Transmitting time is 0.381 ms.
Then, dwell time is $320.11 \times 0.381 \text{ ms} = 121.96 \text{ ms}$ per 31.6 seconds.

Time of Occupancy (Dwell Time) for Packet Type DH3

The frequency-hopping rate of Bluetooth system is 1600hops per 1 second.
A DH3 packet needs 3 times slot for transmitting and 1 time slot for receiving.

In a DH3 packet, it hops 400 times for transmitting per 1 second.
The number of hopping channel is 79.
The number of times that appears in 1 channel per 1 second is as follows.
 $400/79=5.06$ [times]

The average time of occupancy on any channel shall not be greater than 0.4 seconds (400ms) within a period of 0.4 seconds multiplied by the number of hopping channels employed $0.4 \times 79 = 31.6$ seconds
The number of times that appears in 1 channel per 31.6 seconds is as follows.
 $5.06 \times 31.6 = 159.90$ [times]

Transmitting time is 1.643ms.
Then, dwell time is $159.90 \times 1.643\text{ms} = 262.72\text{ms}$ per 31.6 seconds.

Time of Occupancy (Dwell Time) for Packet Type DH5

The frequency-hopping rate of Bluetooth system is 1600hops per 1 second.
A DH5 packet needs 5 times slot for transmitting and 1 time slot for receiving.

In a DH5 packet, it hops 266.67 times for transmitting per 1 second.
The number of hopping channel is 79.
The number of times that appears in 1 channel per 1 second is as follows.
 $266.67/79=3.38$ [times]

The average time of occupancy on any channel shall not be greater than 0.4 seconds (400ms) within a period of 0.4 seconds multiplied by the number of hopping channels employed $0.4 \times 79 = 31.6$ seconds
The number of times that appears in 1 channel per 31.6 seconds is as follows.
 $3.38 \times 31.6 = 106.67$ [times]

Transmitting time is 2.906 ms.
Then, dwell time is $106.67 \times 2.906\text{ms} = 309.98\text{ms}$ per 31.6 seconds.

Data of Dwell Time (Frequency Hopping (20ch))

Time of Occupancy (Dwell Time) for Packet Type DH1

The frequency-hopping rate of Bluetooth system is 1600hops per 1 second.
A DH1 packet needs 1 time slot for transmitting and 1 time slot for receiving.

In a DH1 packet, it hops 800 times for transmitting per 1 second.
The number of hopping channel is 20.
The number of times that appears in 1 channel per 1 second is as follows.
 $800/20=40$ [times]

The average time of occupancy on any channel shall not be greater than 0.4 seconds (400ms) within a period of 0.4 seconds multiplied by the number of hopping channels employed $0.4 \times 20 = 8.0$ seconds
The number of times that appears in 1 channel per 8.0 seconds is as follows.
 $40 \times 8.0 = 320.00$ [times]

Transmitting time is 0.384 ms.
Then, dwell time is $320.00 \times 0.384\text{ms} = 122.88\text{ms}$ per 8.0 seconds.

Time of Occupancy (Dwell Time) for Packet Type DH3

The frequency-hopping rate of Bluetooth system is 1600hops per 1 second.
A DH3 packet needs 3 times slot for transmitting and 1 time slot for receiving.

In a DH3 packet, it hops 400 times for transmitting per 1 second.
The number of hopping channel is 20.
The number of times that appears in 1 channel per 1 second is as follows.
 $400/20=20$ [times]

The average time of occupancy on any channel shall not be greater than 0.4 seconds (400ms) within a period of 0.4 seconds multiplied by the number of hopping channels employed $0.4 \times 20 = 8.0$ seconds
The number of times that appears in 1 channel per 8.0 seconds is as follows.
 $20 \times 8.0 = 160.00$ [times]

Transmitting time is 1.643 ms.
Then, dwell time is $160.00 \times 1.643\text{ms} = 262.88\text{ms}$ per 8.0 seconds.

Time of Occupancy (Dwell Time) for Packet Type DH5

The frequency-hopping rate of Bluetooth system is 1600hops per 1 second.
A DH5 packet needs 5 times slot for transmitting and 1 time slot for receiving.

In a DH5 packet, it hops 266.67 times for transmitting per 1 second.
The number of hopping channel is 20.
The number of times that appears in 1 channel per 1 second is as follows.
 $266.67/20=13.34$ [times]

The average time of occupancy on any channel shall not be greater than 0.4 seconds (400ms) within a period of 0.4 seconds multiplied by the number of hopping channels employed $0.4 \times 20 = 8.0$ seconds
The number of times that appears in 1 channel per 8.0 seconds is as follows.
 $13.34 \times 8.0 = 106.72$ [times]

Transmitting time is 2.896 ms.
Then, dwell time is $106.72 \times 2.896\text{ms} = 309.06\text{ms}$ per 8.0 seconds.

10 Maximum Peak Output Power

10.1 Test Setup

The spectrum analyzer was connected to the transmitter output port through the RF cable.

Spectrum Analyzer Setting:

Detector Mode	Peak
RBW	1MHz
VBW	1MHz
Span	5MHz
Sweep Time	Auto

10.2 Test Results

Serial No. : 2
 Power : DC 3.3V
 Mode : Transmitting Mode, Non Frequency Hopping
 Temperature : 22.7°C
 Humidity : 58.2 %
 Regulation : FCC Part15 C §15.247 (b)(1)

(1) Operating Mode: Transmitting Mode (GFSK Modulation)

CH	Frequency [MHz]	Reading [dBm]	Cable Loss1 [dB]	Cable Loss2 [dB]	Result		Limit	
					[dBm]	[mW]	[dBm]	[mW]
0ch(Lowest)	2402	-3.28	0.56	0.50	-2.22	0.600	30.0	1000
39ch(Middle)	2441	-2.49	0.60	0.50	-1.39	0.726	30.0	1000
78ch(Highest)	2480	-2.12	0.57	0.50	-1.05	0.785	30.0	1000

(2) Operating Mode: Transmitting Mode ($\pi/4$ -DQPSK Modulation)

CH	Frequency [MHz]	Reading [dBm]	Cable Loss1 [dB]	Cable Loss2 [dB]	Result		Limit	
					[dBm]	[mW]	[dBm]	[mW]
0ch(Lowest)	2402	-1.32	0.56	0.50	-0.26	0.942	30.0	1000
39ch(Middle)	2441	-0.70	0.60	0.50	0.40	1.096	30.0	1000
78ch(Highest)	2480	-0.44	0.57	0.50	0.63	1.156	30.0	1000

(3) Operating Mode: Transmitting Mode (8DPSK Modulation)

CH	Frequency [MHz]	Reading [dBm]	Cable Loss1 [dB]	Cable Loss2 [dB]	Result		Limit	
					[dBm]	[mW]	[dBm]	[mW]
0ch(Lowest)	2402	-1.06	0.56	0.50	0.00	1.000	30.0	1000
39ch(Middle)	2441	-0.32	0.60	0.50	0.78	1.197	30.0	1000
78ch(Highest)	2480	0.01	0.57	0.50	1.08	1.282	30.0	1000

Result = Reading + Cable Loss1 + Cable Loss2

Note: Cable Loss1: RF Cable

Cable Loss2: Conversion cable used for connecting to SMA type

11 Band Edge Compliance

11.1 Test Setup

The spectrum analyzer was connected to the transmitter output port through the RF cable.

Spectrum Analyzer Setting:

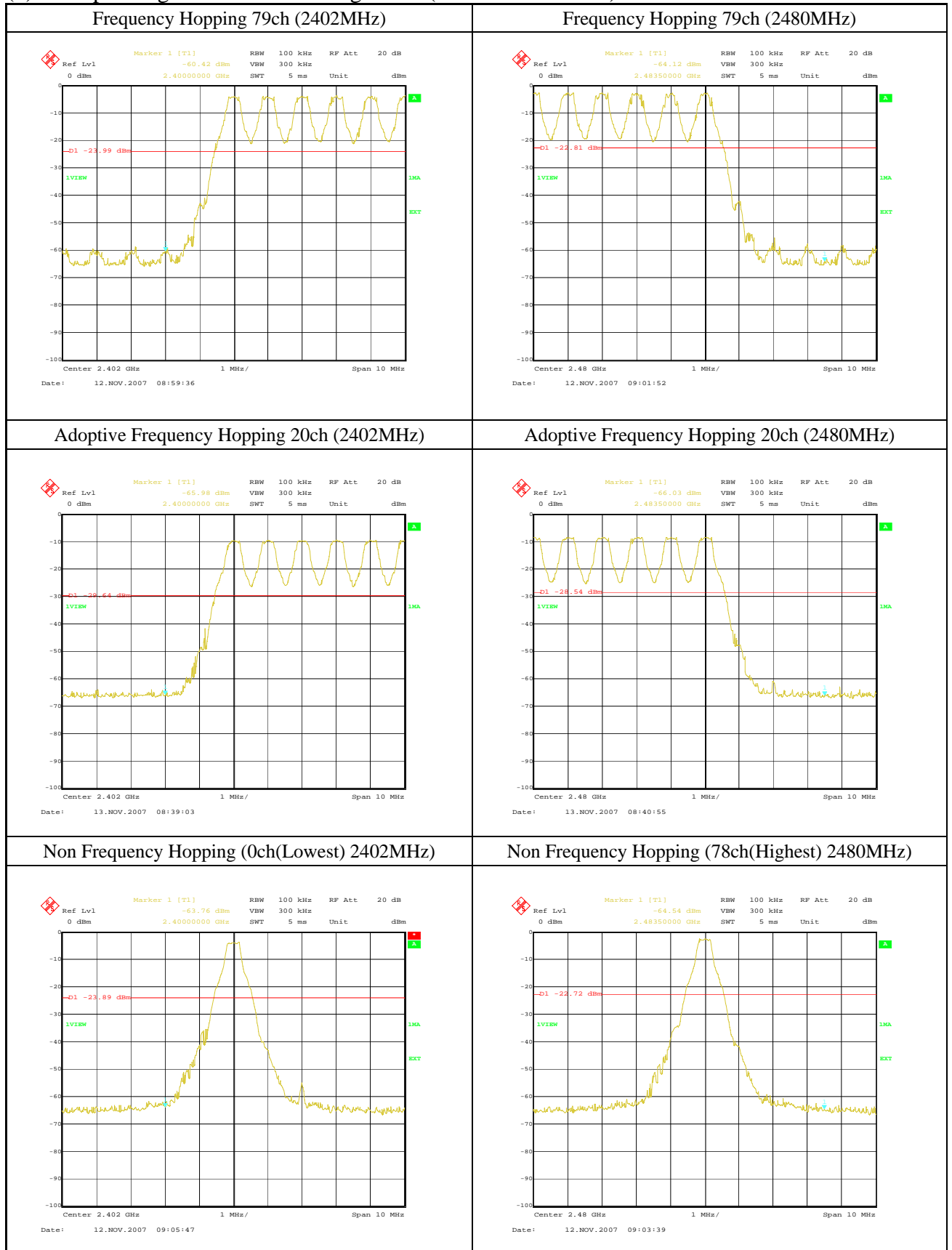
Detector Mode	Peak
RBW	100kHz
VBW	100kHz
Span	10MHz
Sweep Time	Auto

11.2 Test Results

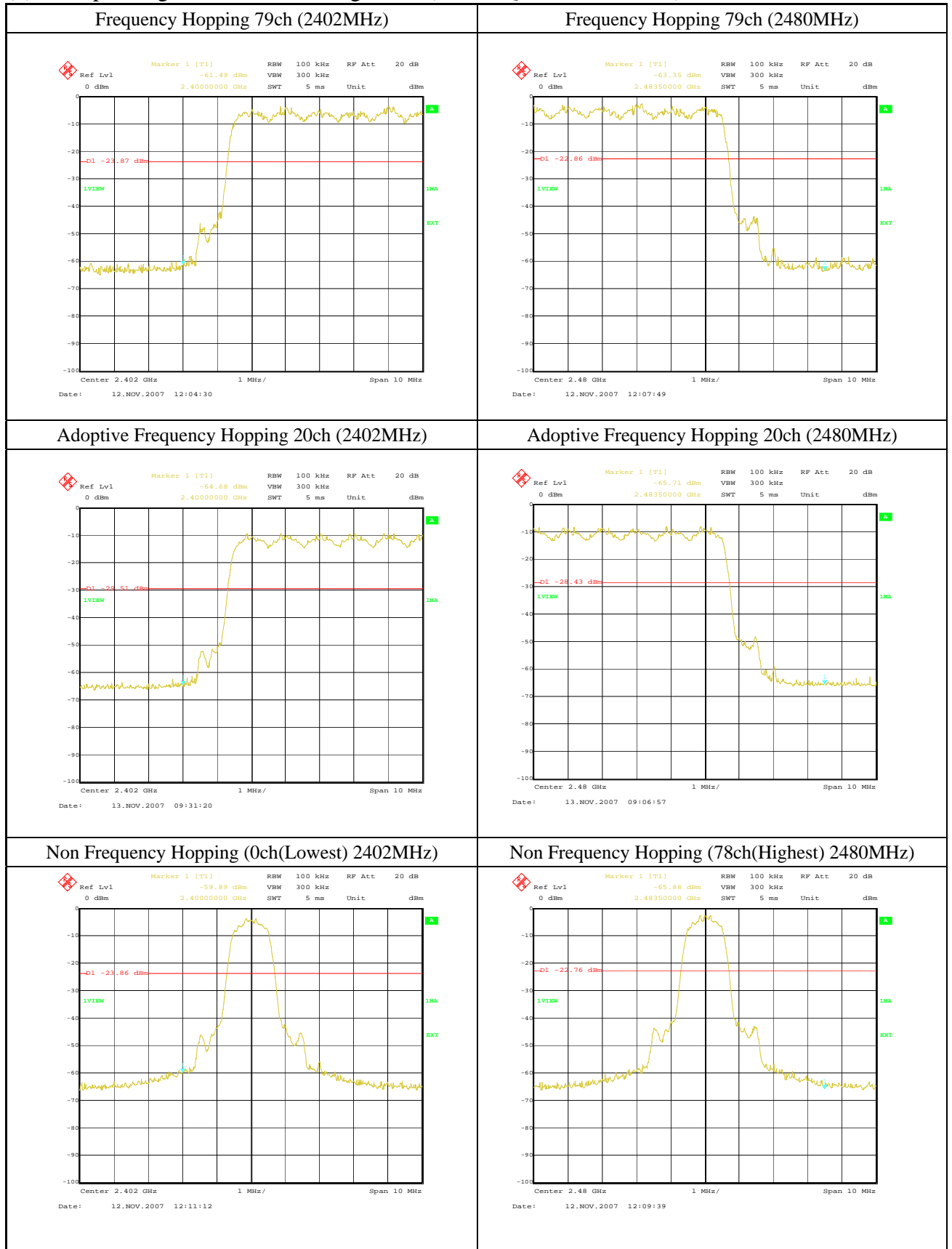
Serial No.	:	2
Power	:	DC 3.3V
Mode	:	Transmitting Mode, Frequency Hopping (79ch) Transmitting Mode, Adoptive Frequency Hopping (20ch) Transmitting Mode, Non Frequency Hopping
Temperature	:	Frequency Hopping: 22.7°C Adoptive Frequency Hopping: 23.4°C
Humidity	:	Frequency Hopping: 58.2% Adoptive Frequency Hopping: 47.7%
Regulation	:	FCC Part15 C §15.247 (d)

The spectrum data are attached next page. Display line indicates the 20dB offset below highest level. It shows compliance with the requirement in part 15.247(d).

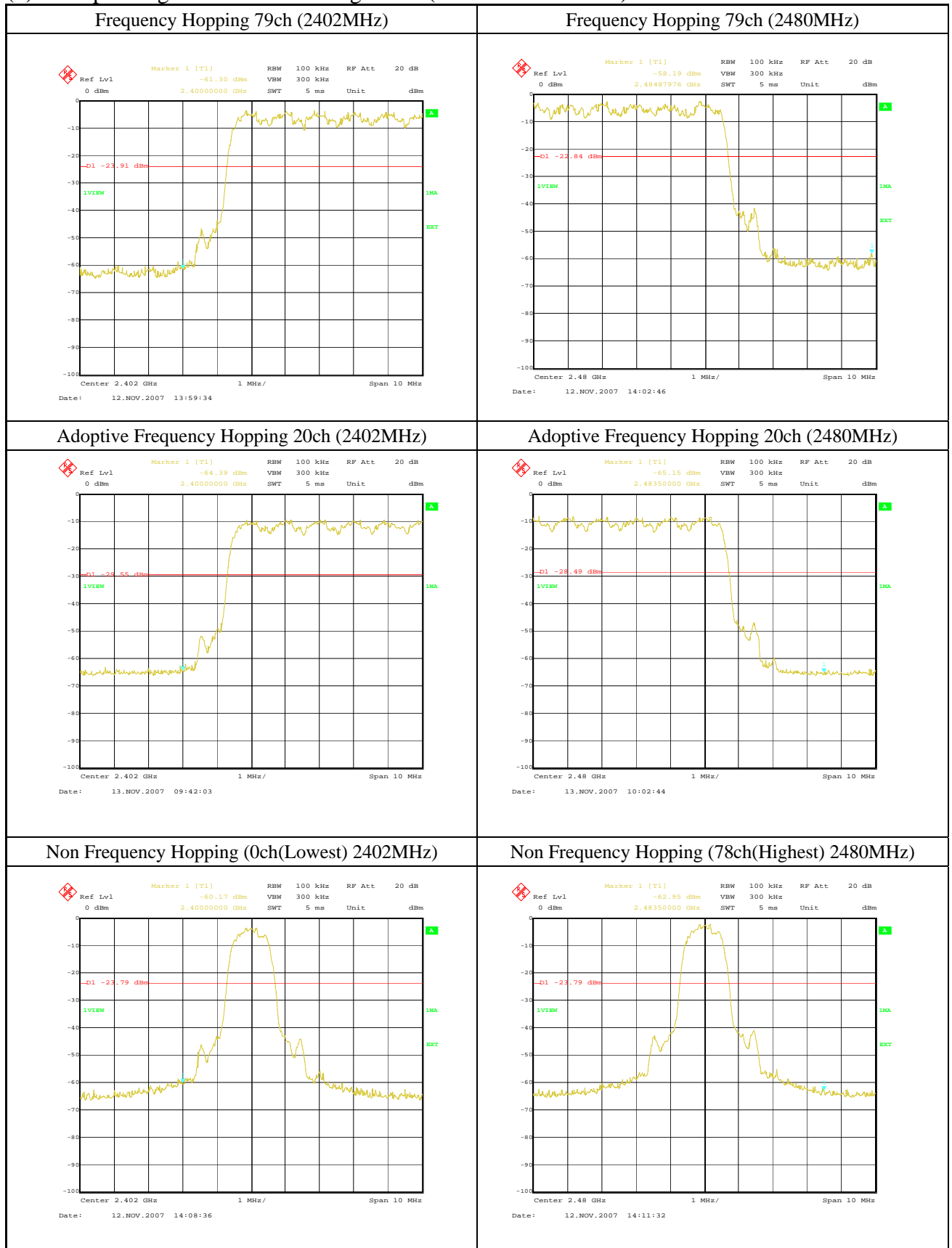
(1) Operating Mode: Transmitting Mode (GFSK Modulation)



(2) Operating Mode: Transmitting Mode ($\pi/4$ -DQPSK Modulation)



(3) Operating Mode: Transmitting Mode (8DPSK Modulation)



12 Spurious RF Conducted Emission

12.1 Test Setup

The spectrum analyzer was connected to the transmitter output port through the RF cable.

Spectrum Analyzer Setting:

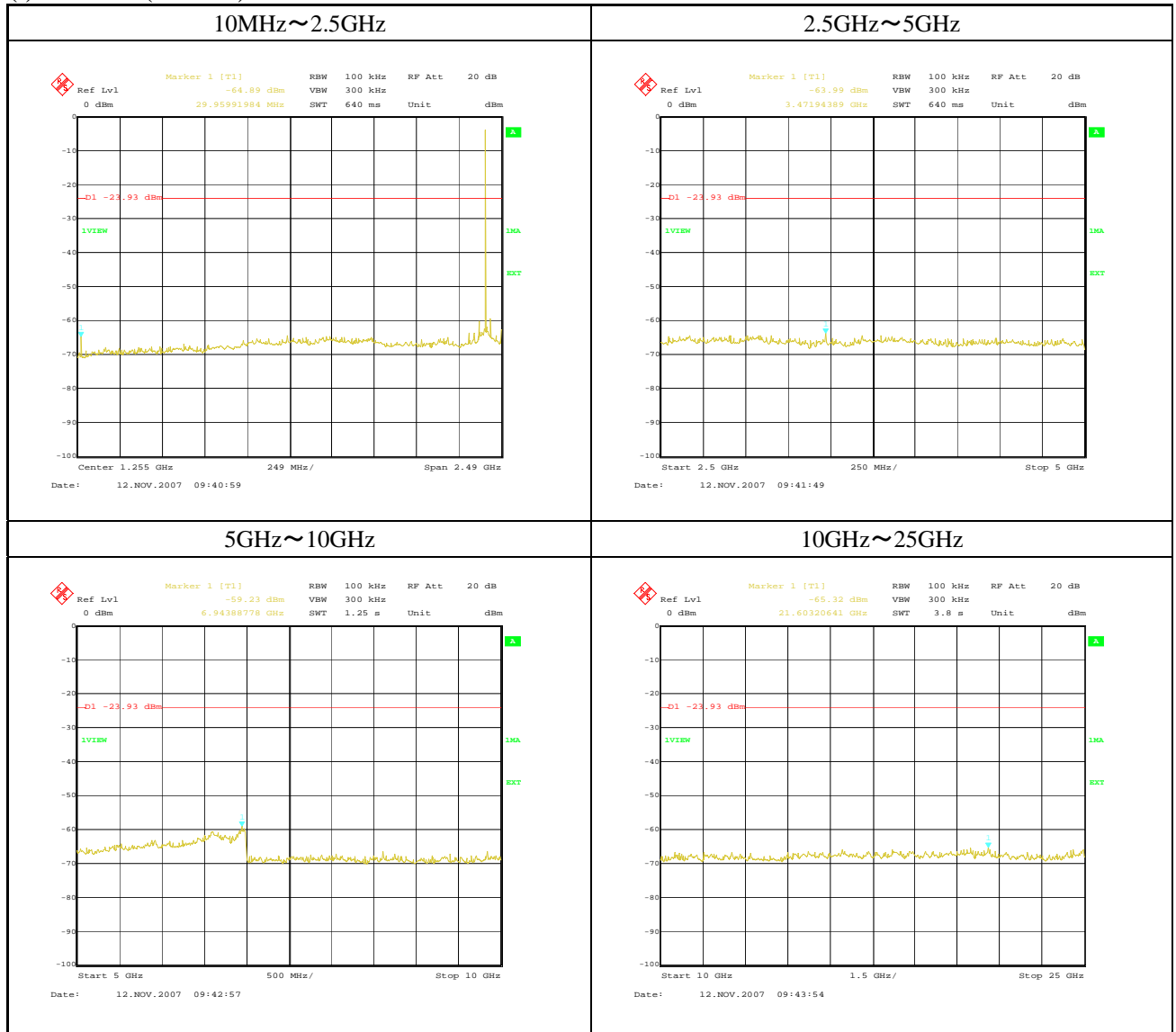
Detector Mode	Peak
RBW	100kHz
VBW	100kHz
Sweep Time	Auto

12.2 Test Results

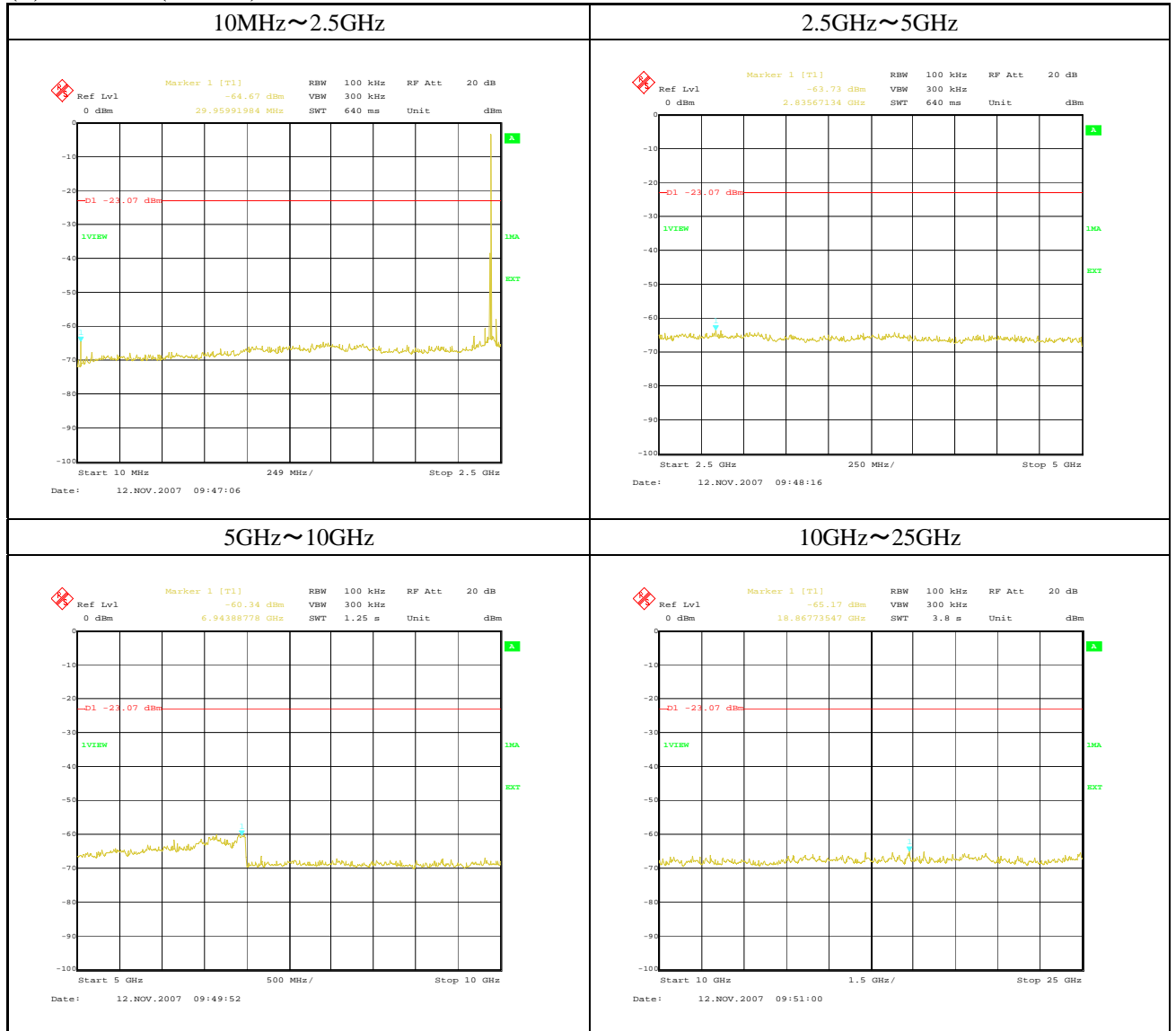
Serial No. : 2
Power : DC 3.3V
Mode : Transmitting Mode, Non Frequency Hopping
Temperature : 22.7°C
Humidity : 58.2 %
Regulation : FCC Part15 C §15.247 (d)

The spectrum data are attached next page. Display line indicates the 20dB offset below highest level. It shows compliance with the requirement in part 15.247(d).

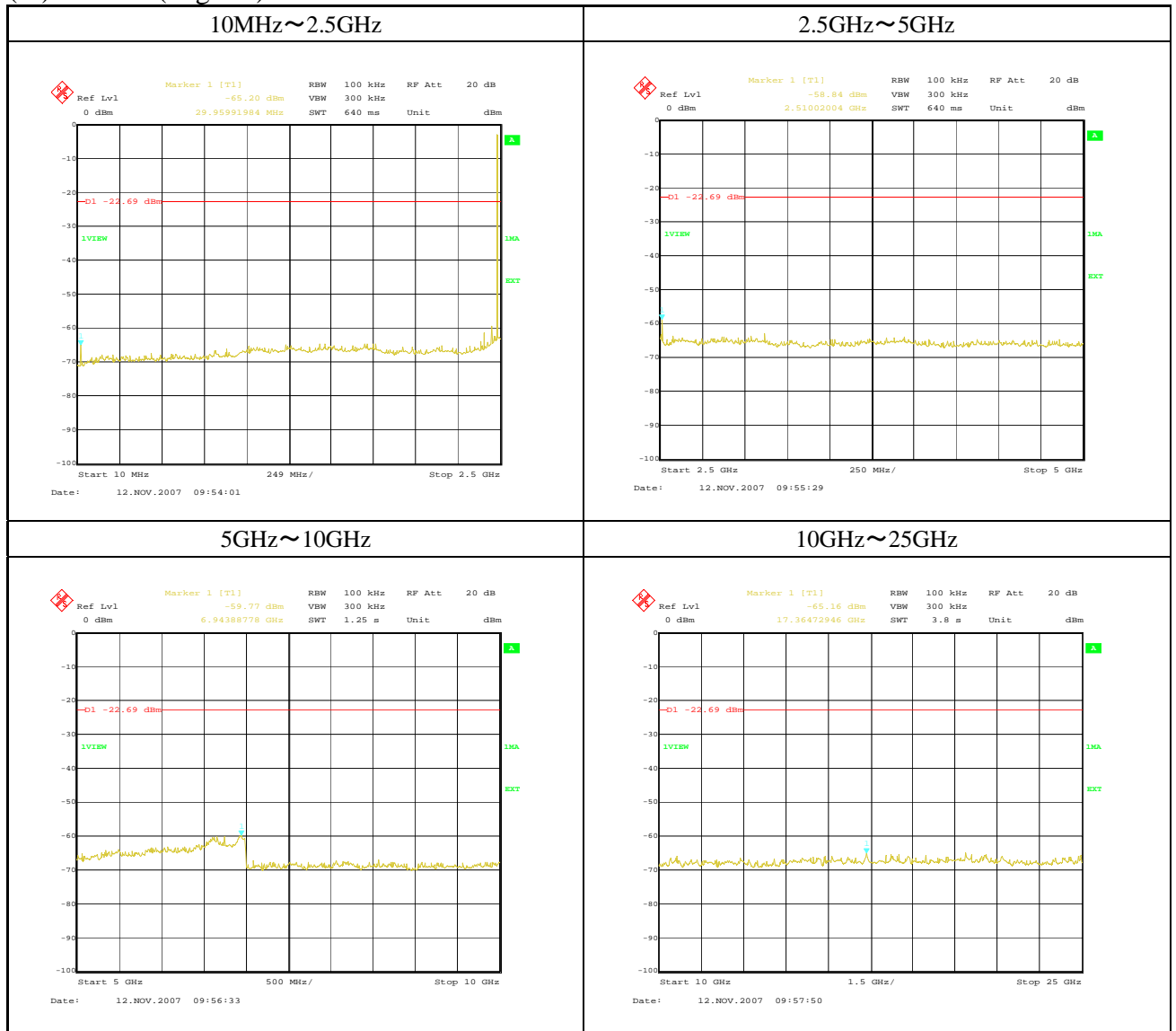
- (1) Operating Mode: Transmitting Mode (GFSK Modulation)
- (i) 0ch (Lowest) 2402MHz



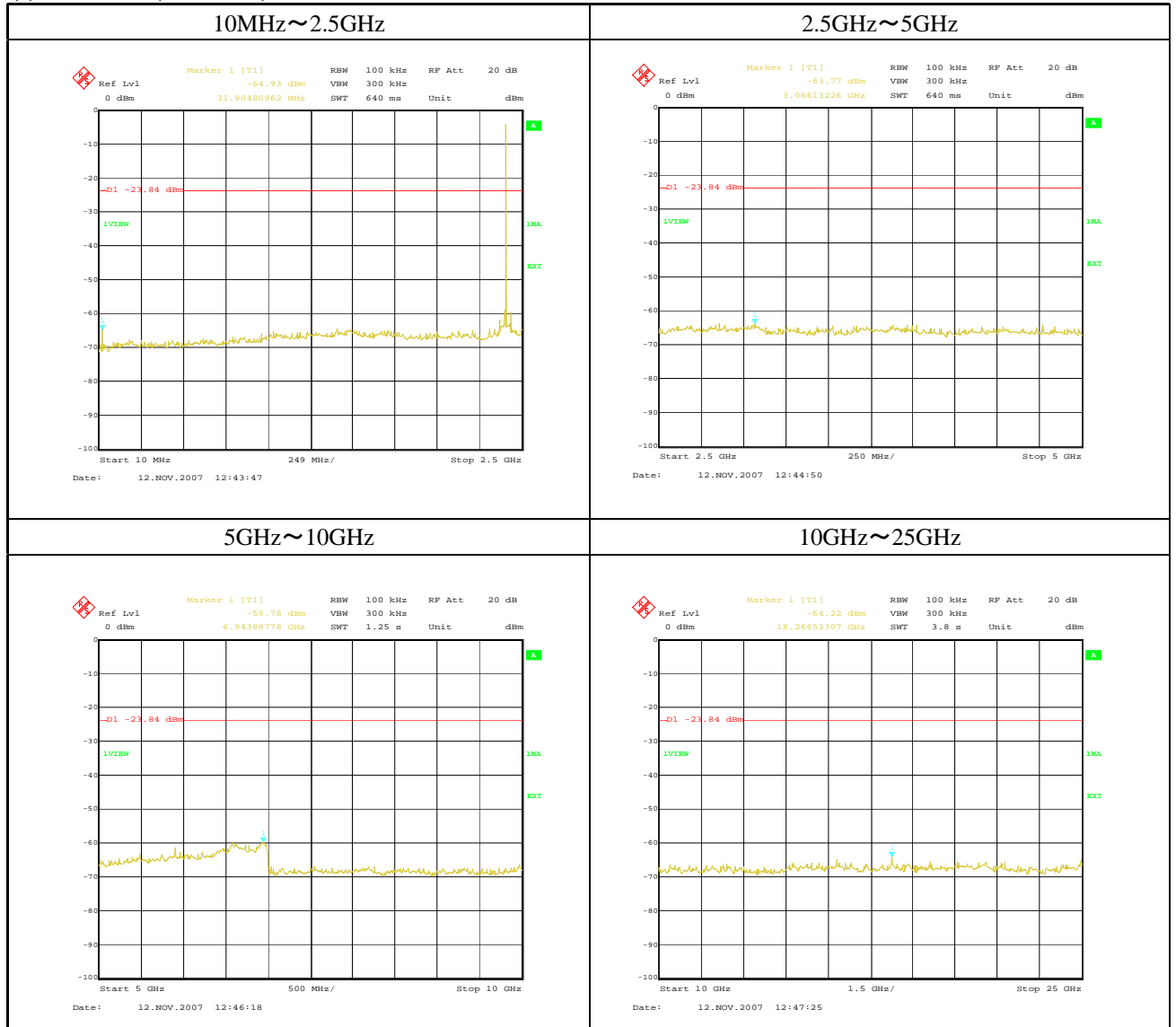
(ii) 39ch (Middle) 2441MHz



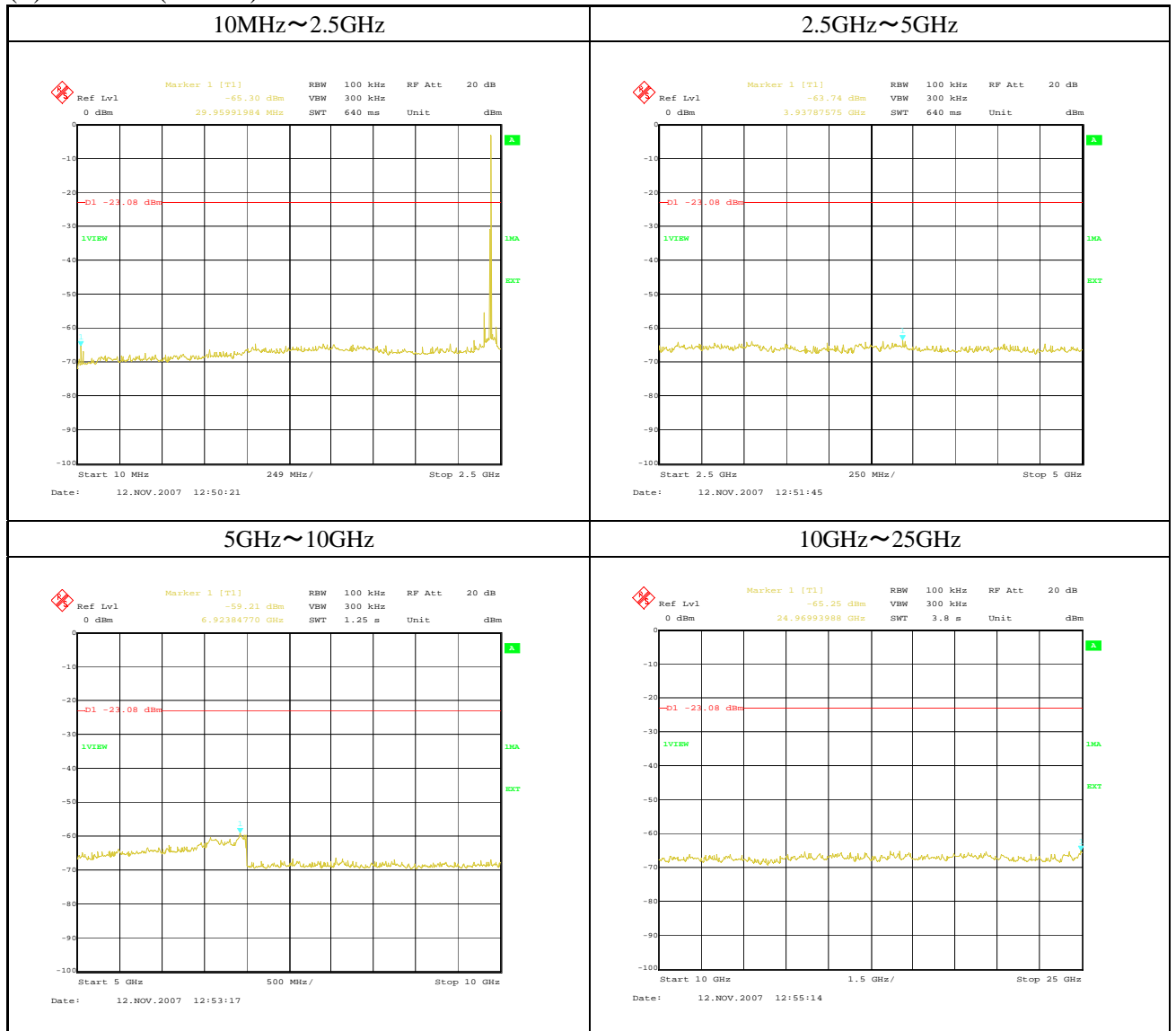
(iii) 78ch (Highest) 2480MHz



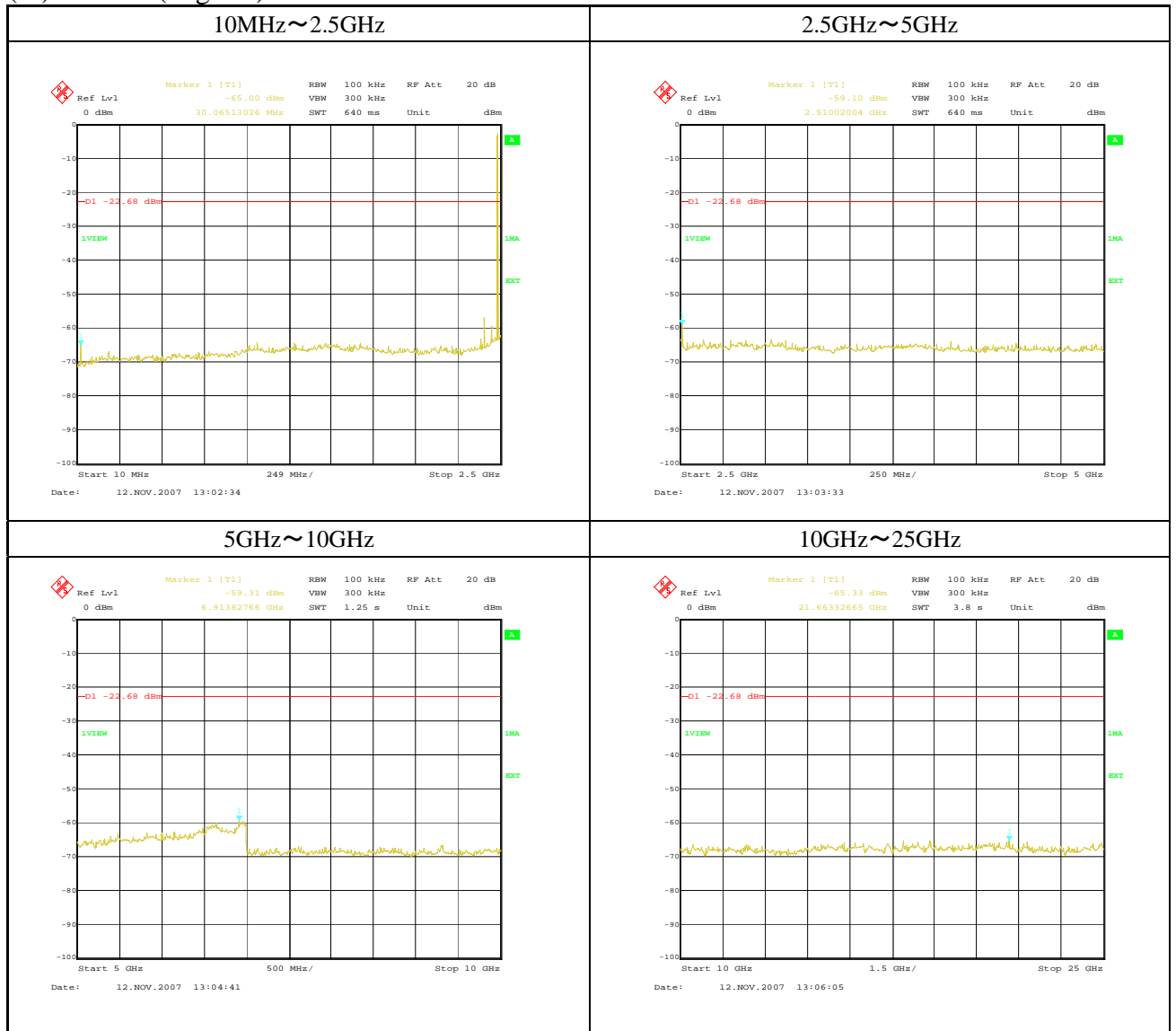
(2) Operating Mode: Transmitting Mode ($\pi/4$ -DQPSK Modulation)
 (i) 0ch (Lowest) 2402MHz



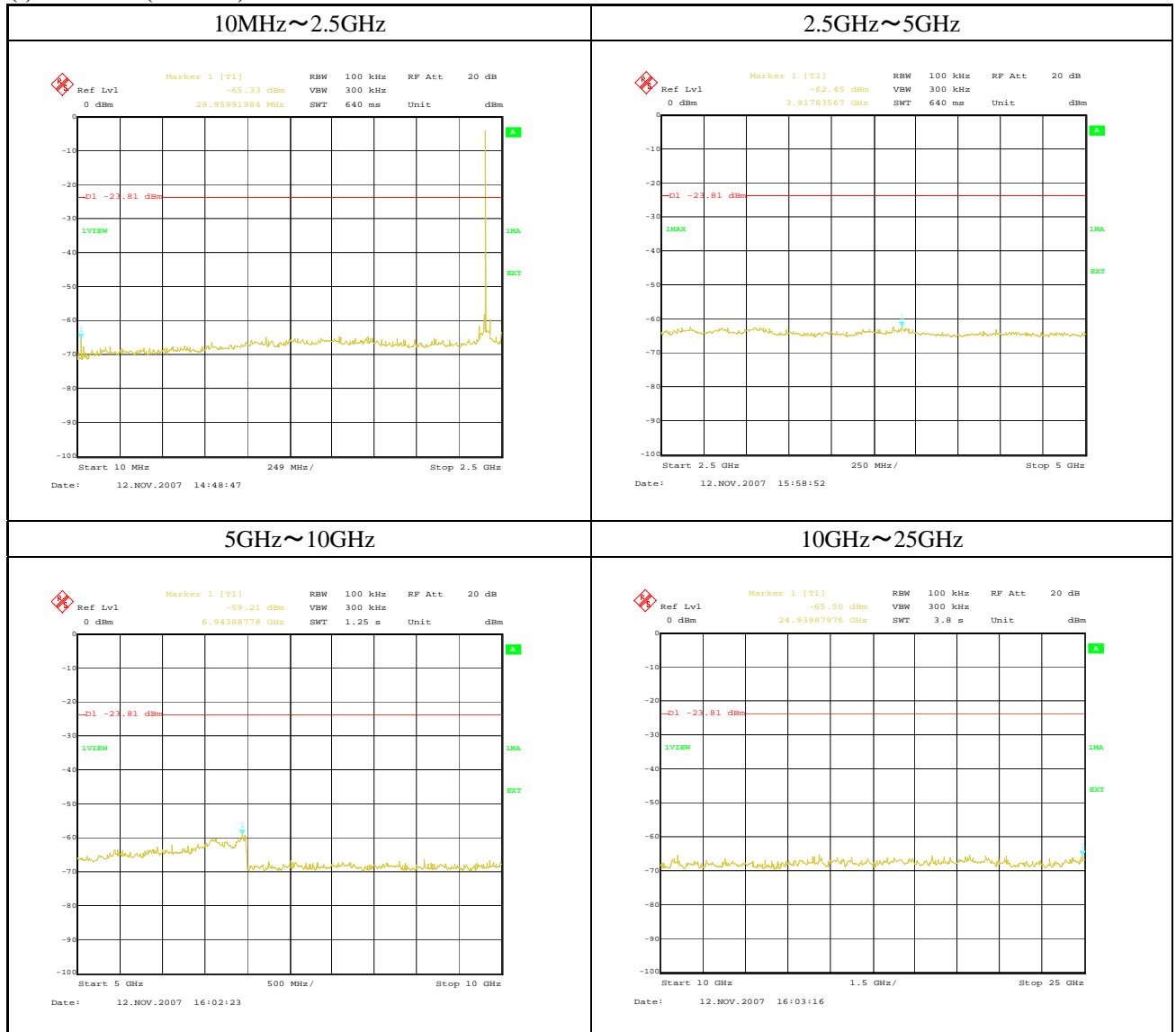
(ii) 39ch (Middle) 2441MHz



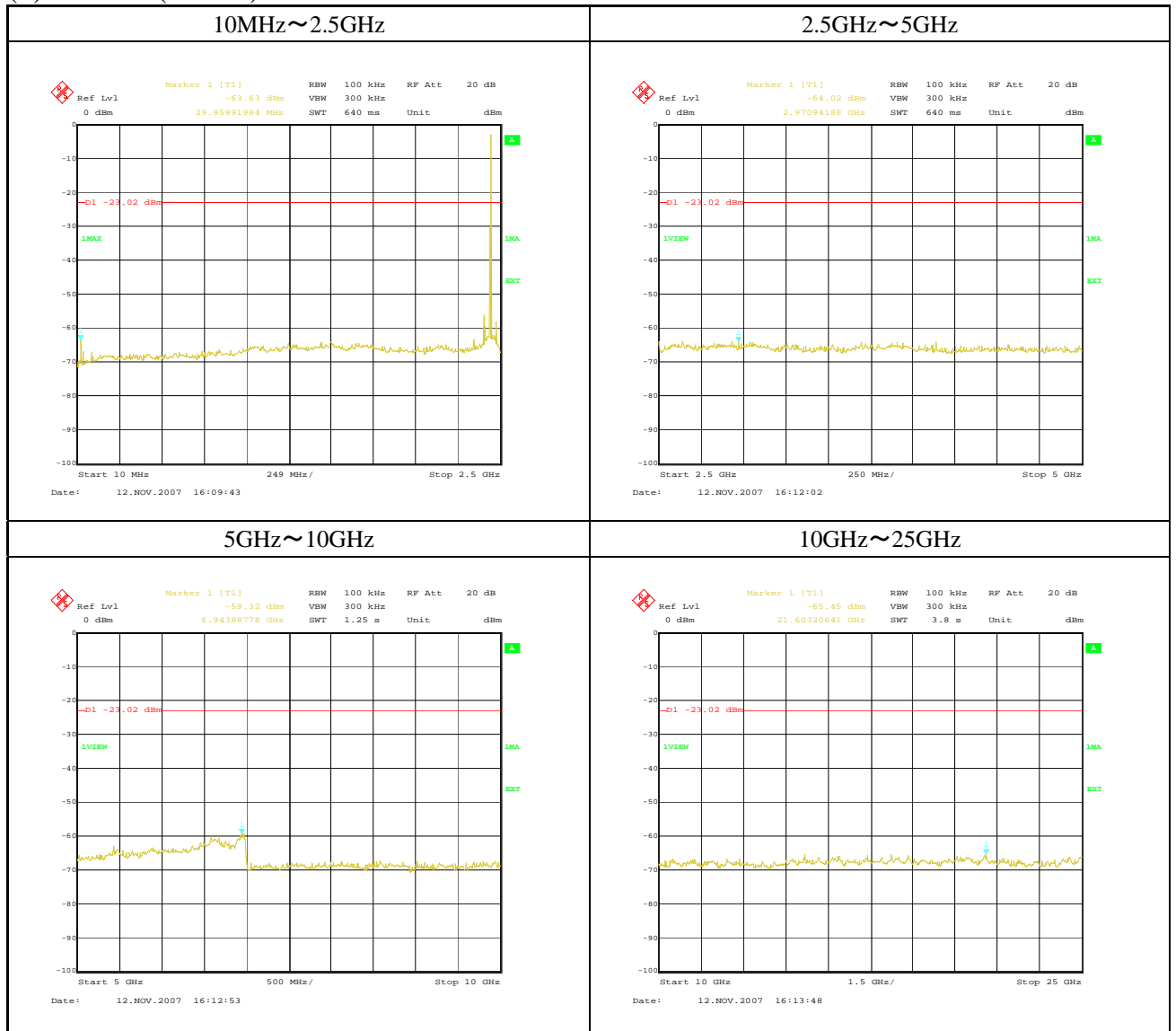
(iii) 78ch (Highest) 2480MHz



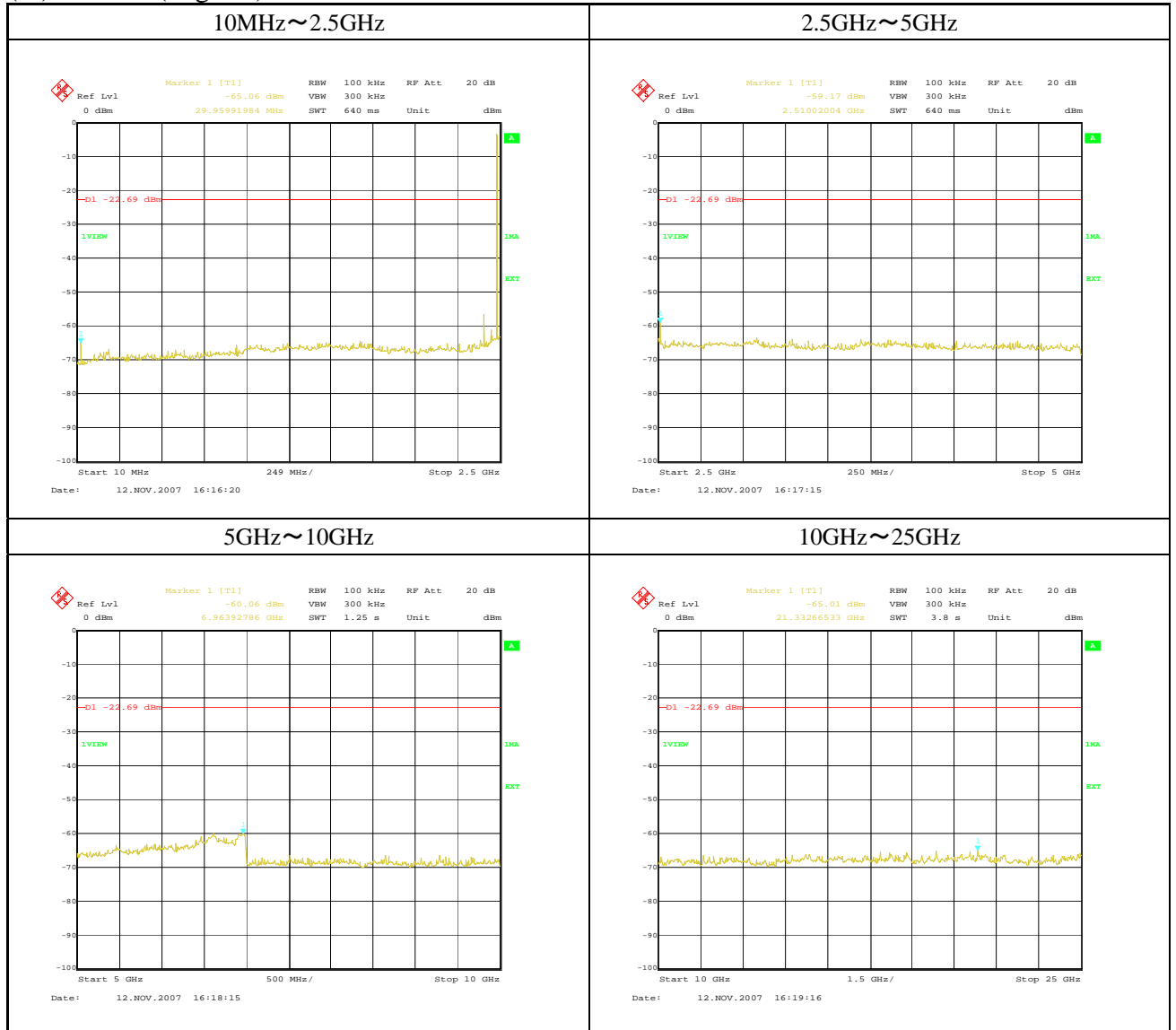
- (3) Operating Mode: Transmitting Mode (8DPSK Modulation)
- (i) 0ch (Lowest) 2402MHz



(ii) 39ch (Middle) 2441MHz



(iii) 78ch (Highest) 2480MHz



13 Radiated Emission

13.1 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 separate document named "Test Setup Photos (7171F)".

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

Test Receiver Setting:

30~1000MHz:

Detector Mode	Quasi-Peak
Bandwidth	120kHz

Spectrum Analyzer Setting:

1~25GHz:

Detector Mode	Peak and Average
Bandwidth	Peak: RBW: 1MHz, VBW: 1MHz
	Average: RBW: 1MHz, VBW: 10Hz

13.2 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:

$$\begin{aligned} \text{c.f.} &= \text{AF} + \text{CF} + \text{AL} - \text{AG} - \text{DF} \\ \text{RE} &= \text{RA} + \text{c.f.} \end{aligned}$$

Where

c.f.	:	Correction Factor [dB(1/m)]
RE	:	Radiated Emission (Emission Level - Result) [dB(uV/m)]
RA	:	Receiver Amplitude (Reading Level) [dBuV]
AF	:	Antenna Factor [dB(1/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 36.5 dBuV is obtained.

The Correction Factor of -2.0 dB/m is added, giving a Radiated Emission of 34.5 dBuV/m.

The 34.5 dBuV/m value was mathematically converted to its corresponding level in uV/m.

$$\text{RE} = 36.5 + (-2.0) = 34.5 \text{ dBuV/m}$$

$$\text{Level in uV/m} = \text{Common Antilogarithm: } 10^{(34.5/20)} = 53.1 \text{ uV/m}$$

13.3 Test Results

Product	: Complete Class2 Bluetooth Module	Model	: EYBMBA
Serial No.	: 1	Test Standard	: FCC Part15 Subpart C §15.247(d)
Power Supply	: DC 3.3V	Temp. / Humid.	: Below 1GHz: 19.1°C / 39.2%
Operator	: Fukuda		: Above 1GHz: 18.5°C / 51.9%
Remark	: Transmitting Mode GFSK Modulation		

Radiated Emission: Lch (2402MHz)

Axial Direction: XY-Plane

Below 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
64.005	V	32.7			-11.0	21.7			40.0	18.3			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2390.000	H			45.8	-5.2			40.6	74.0			33.4	
2390.000	H		34.3		-5.2		29.1		54.0		24.9		
2390.000	V			46.6	-5.2			41.4	74.0			32.6	
2390.000	V		34.4		-5.2		29.2		54.0		24.8		
4804.000	H			46.7	1.2			47.9	74.0			26.1	
4804.000	H		38.6		1.2		39.8		54.0		14.2		
4804.000	V			44.3	1.2			45.5	74.0			28.5	
4804.000	V		33.5		1.2		34.7		54.0		19.3		
7206.000	H			42.8	4.1			46.9	74.0			27.1	* Floor Noise
7206.000	H		31.3		4.1		35.4		54.0		18.6		* Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: YZ-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
64.009	V	32.8			-11.0	21.8			40.0	18.2			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2390.000	H			45.2	-5.2			40.0	74.0			34.0	Floor Noise
2390.000	H		32.7		-5.2		27.5		54.0		26.5		Floor Noise
2390.000	V			45.6	-5.2			40.4	74.0			33.6	
2390.000	V		33.7		-5.2		28.5		54.0		25.5		
4804.000	H			42.2	1.2			43.4	74.0			30.6	Floor Noise
4804.000	H		30.7		1.2		31.9		54.0		22.1		Floor Noise
4804.000	V			45.1	1.2			46.3	74.0			27.7	
4804.000	V		33.8		1.2		35.0		54.0		19.0		
7206.000	H			42.8	4.1			46.9	74.0			27.1	* Floor Noise
7206.000	H		31.3		4.1		35.4		54.0		18.6		* Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: ZX-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
64.007	V	32.9			-11.0	21.9			40.0	18.1			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2390.000	H			45.2	-5.2			40.0	74.0			34.0	Floor Noise
2390.000	H		32.7		-5.2		27.5		54.0		26.5		Floor Noise
2390.000	V			48.9	-5.2			43.7	74.0			30.3	
2390.000	V		36.9		-5.2		31.7		54.0		22.3		
4804.000	H			42.2	1.2			43.4	74.0			30.6	Floor Noise
4804.000	H		30.7		1.2		31.9		54.0		22.1		Floor Noise
4804.000	V			49.8	1.2			51.0	74.0			23.0	
4804.000	V		41.0		1.2		42.2		54.0		11.8		
7206.000	H			42.8	4.1			46.9	74.0			27.1	* Floor Noise
7206.000	H		31.3		4.1		35.4		54.0		18.6		* Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Radiated Emission: Mch (2441MHz)**Axial Direction: XY-Plane****Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
64.005	V	32.8			-11.0	21.8			40.0	18.2			*
96.006	V	29.5			-12.7	16.8			43.5	26.7			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
4882.000	V			45.6	1.4			47.0	74.0			27.0	
4882.000	V		34.7		1.4		36.1		54.0		17.9		
4882.000	H			47.7	1.4			49.1	74.0			24.9	
4882.000	H		39.8		1.4		41.2		54.0		12.8		
7323.000	H			44.8	4.7			49.5	74.0			24.5	Floor Noise
7323.000	H		31.8		4.7		36.5		54.0		17.5		Floor Noise
9764.000	H			44.1	7.1			51.2	74.0			22.8	* Floor Noise
9764.000	H		30.9		7.1		38.0		54.0		16.0		* Floor Noise
12070.000	H			45.9	8.2			54.1	74.0			19.9	Floor Noise
12070.000	H		32.6		8.2		40.8		54.0		13.2		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: YZ-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
64.008	V	32.9			-11.0	21.9			40.0	18.1			*
96.008	V	29.3			-12.7	16.6			43.5	26.9			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
4882.000	V			44.4	1.4			45.8	74.0			28.2	
4882.000	V		33.7		1.4		35.1		54.0		18.9		
4882.000	H			44.3	1.4			45.7	74.0			28.3	Floor Noise
4882.000	H		31.1		1.4		32.5		54.0		21.5		Floor Noise
7323.000	H			44.8	4.7			49.5	74.0			24.5	Floor Noise
7323.000	H		31.8		4.7		36.5		54.0		17.5		Floor Noise
9764.000	H			44.1	7.1			51.2	74.0			22.8	* Floor Noise
9764.000	H		30.9		7.1		38.0		54.0		16.0		* Floor Noise
12070.000	H			45.9	8.2			54.1	74.0			19.9	Floor Noise
12070.000	H		32.6		8.2		40.8		54.0		13.2		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: ZX-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
64.009	V	32.9			-11.0	21.9			40.0	18.1			*
96.000	V	29.3			-12.7	16.6			43.5	26.9			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
4882.000	V			48.1	1.4			49.5	74.0			24.5	
4882.000	V		39.4		1.4			40.8	54.0			13.2	
4882.000	H			44.3	1.4			45.7	74.0			28.3	Floor Noise
4882.000	H		31.1		1.4			32.5	54.0			21.5	Floor Noise
7323.000	H			44.8	4.7			49.5	74.0			24.5	Floor Noise
7323.000	H		31.8		4.7			36.5	54.0			17.5	Floor Noise
9764.000	H			44.1	7.1			51.2	74.0			22.8	* Floor Noise
9764.000	H		30.9		7.1			38.0	54.0			16.0	* Floor Noise
12070.000	H			45.9	8.2			54.1	74.0			19.9	Floor Noise
12070.000	H		32.6		8.2			40.8	54.0			13.2	Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Radiated Emission: Hch (2480MHz)**Axial Direction: XY-Plane****Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
64.008	V	32.9			-11.0	21.9			40.0	18.1			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2483.500	H			49.2	-4.9			44.3	74.0			29.7	
2483.500	H		35.2		-4.9		30.3		54.0		23.7		
2483.500	V			47.9	-4.9			43.0	74.0			31.0	
2483.500	V		34.9		-4.9		30.0		54.0		24.0		
4960.000	H			48.6	1.6			50.2	74.0			23.8	
4960.000	H		40.0		1.6		41.6		54.0		12.4		
4960.000	V			46.5	1.6			48.1	74.0			25.9	
4960.000	V		37.4		1.6		39.0		54.0		15.0		
7440.000	H			43.0	4.8			47.8	74.0			26.2	Floor Noise
7440.000	H		32.4		4.8		37.2		54.0		16.8		Floor Noise
9920.000	H			45.2	7.2			52.4	74.0			21.6	* Floor Noise
9920.000	H		31.6		7.2		38.8		54.0		15.2		* Floor Noise
12400.000	H			45.0	7.8			52.8	74.0			21.2	Floor Noise
12400.000	H		32.3		7.8		40.1		54.0		13.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: YZ-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
64.007	V	32.9			-11.0	21.9			40.0	18.1			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
2483.500	H			45.0	-4.9			40.1	74.0			33.9	Floor Noise
2483.500	H	32.9			-4.9		28.0		54.0		26.0		Floor Noise
2483.500	V			46.8	-4.9			41.9	74.0			32.1	
2483.500	V	34.9			-4.9		30.0		54.0		24.0		
4960.000	H			44.3	1.6			45.9	74.0			28.1	Floor Noise
4960.000	H	31.1			1.6		32.7		54.0		21.3		Floor Noise
4960.000	V			45.2	1.6			46.8	74.0			27.2	
4960.000	V	32.5			1.6		34.1		54.0		19.9		
7440.000	H			43.0	4.8			47.8	74.0			26.2	Floor Noise
7440.000	H	32.4			4.8		37.2		54.0		16.8		Floor Noise
9920.000	H			45.2	7.2			52.4	74.0			21.6	* Floor Noise
9920.000	H	31.6			7.2		38.8		54.0		15.2		* Floor Noise
12400.000	H			45.0	7.8			52.8	74.0			21.2	Floor Noise
12400.000	H	32.3			7.8		40.1		54.0		13.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: ZX-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
64.009	V	32.9			-11.0	21.9			40.0	18.1			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
2483.500	H			45.0	-4.9			40.1	74.0			33.9	Floor Noise
2483.500	H		32.9		-4.9		28.0		54.0		26.0		Floor Noise
2483.500	V			51.8	-4.9			46.9	74.0			27.1	
2483.500	V		37.4		-4.9		32.5		54.0		21.5		
4960.000	H			44.3	1.6			45.9	74.0			28.1	Floor Noise
4960.000	H		31.1		1.6		32.7		54.0		21.3		Floor Noise
4960.000	V			49.6	1.6			51.2	74.0			22.8	
4960.000	V		41.5		1.6		43.1		54.0		10.9		
7440.000	H			43.0	4.8			47.8	74.0			26.2	Floor Noise
7440.000	H		32.4		4.8		37.2		54.0		16.8		Floor Noise
9920.000	H			45.2	7.2			52.4	74.0			21.6	* Floor Noise
9920.000	H		31.6		7.2		38.8		54.0		15.2		* Floor Noise
12400.000	H			45.0	7.8			52.8	74.0			21.2	Floor Noise
12400.000	H		32.3		7.8		40.1		54.0		13.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Product	: Complete Class2 Bluetooth Module	Model	: EYBMBA
Serial No.	: 1	Test Standard	: FCC Part15 Subpart C §15.247(d)
Power Supply	: DC 3.3V	Temp. / Humid.	: Below 1GHz: 19.1°C / 39.2%
Operator	: Fukuda		: Above 1GHz: 19.4°C / 43.2%
Remark	: Transmitting Mode		
	: $\pi/4$ -DQPSK Modulation		

Radiated Emission: Lch (2402MHz)

Axial Direction: XY-Plane

Below 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
48.005	V	31.2			-9.3	21.9			40.0	18.1			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2390.000	H			45.9	-5.2			40.7	74.0			33.3	
2390.000	H		33.7		-5.2		28.5		54.0		25.5		
2390.000	V			45.7	-5.2			40.5	74.0			33.5	
2390.000	V		33.8		-5.2		28.6		54.0		25.4		
4804.000	H			48.4	1.2			49.6	74.0			24.4	
4804.000	H		37.1		1.2		38.3		54.0		15.7		
4804.000	V			45.2	1.2			46.4	74.0			27.6	
4804.000	V		33.6		1.2		34.8		54.0		19.2		
7206.000	H			42.8	4.1			46.9	74.0			27.1	* Floor Noise
7206.000	H		31.3		4.1		35.4		54.0		18.6		* Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: YZ-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.010	V	31.2			-9.3	21.9			40.0	18.1			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
2390.000	H			46.0	-5.2			40.8	74.0			33.2	
2390.000	H		34.5		-5.2		29.3		54.0		24.7		
2390.000	V			45.1	-5.2			39.9	74.0			34.1	
2390.000	V		33.7		-5.2		28.5		54.0		25.5		
4804.000	H			49.3	1.2			50.5	74.0			23.5	
4804.000	H		39.3		1.2		40.5		54.0		13.5		
4804.000	V			44.7	1.2			45.9	74.0			28.1	
4804.000	V		32.6		1.2		33.8		54.0		20.2		
7206.000	H			42.8	4.1			46.9	74.0			27.1	* Floor Noise
7206.000	H		31.3		4.1		35.4		54.0		18.6		* Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: ZX-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
48.010	V	31.3			-9.3	22.0			40.0	18.0			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2390.000	H			45.8	-5.2			40.6	74.0			33.4	
2390.000	H		34.1		-5.2		28.9		54.0		25.1		
2390.000	V			48.3	-5.2			43.1	74.0			30.9	
2390.000	V		36.9		-5.2		31.7		54.0		22.3		
4804.000	H			42.2	1.2			43.4	74.0			30.6	Floor Noise
4804.000	H		30.7		1.2		31.9		54.0		22.1		Floor Noise
4804.000	V			51.0	1.2			52.2	74.0			21.8	
4804.000	V		39.9		1.2		41.1		54.0		12.9		
7206.000	H			42.8	4.1			46.9	74.0			27.1	* Floor Noise
7206.000	H		31.3		4.1		35.4		54.0		18.6		* Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Radiated Emission: Mch (2441MHz)**Axial Direction: XY-Plane****Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.010	V	31.2			-9.3	21.9			40.0	18.1			*
64.009	V	32.8			-11.0	21.8			40.0	18.2			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
4882.000	V			46.2	1.4			47.6	74.0			26.4	
4882.000	V	34.2			1.4	35.6			54.0		18.4		
4882.000	H			47.8	1.4			49.2	74.0			24.8	
4882.000	H	36.7			1.4	38.1			54.0		15.9		
7323.000	H			44.8	4.7			49.5	74.0			24.5	Floor Noise
7323.000	H	31.8			4.7	36.5			54.0		17.5		Floor Noise
9764.000	H			44.1	7.1			51.2	74.0			22.8	* Floor Noise
9764.000	H	30.9			7.1	38.0			54.0		16.0		* Floor Noise
12070.000	H			45.9	8.2			54.1	74.0			19.9	Floor Noise
12070.000	H	32.6			8.2	40.8			54.0		13.2		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: YZ-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.005	V	31.1			-9.3	21.8			40.0	18.2			*
64.007	V	32.8			-11.0	21.8			40.0	18.2			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
4882.000	V			43.6	1.4			45.0	74.0			29.0	Floor Noise
4882.000	V		31.4		1.4		32.8		54.0		21.2		Floor Noise
4882.000	H			50.6	1.4			52.0	74.0			22.0	
4882.000	H		39.9		1.4		41.3		54.0		12.7		
7323.000	H			44.8	4.7			49.5	74.0			24.5	Floor Noise
7323.000	H		31.8		4.7		36.5		54.0		17.5		Floor Noise
9764.000	H			44.1	7.1			51.2	74.0			22.8	* Floor Noise
9764.000	H		30.9		7.1		38.0		54.0		16.0		* Floor Noise
12070.000	H			45.9	8.2			54.1	74.0			19.9	Floor Noise
12070.000	H		32.6		8.2		40.8		54.0		13.2		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: ZX-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.008	V	31.3			-9.3	22.0			40.0	18.0			*
64.010	V	32.8			-11.0	21.8			40.0	18.2			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
4882.000	V			49.7	1.4			51.1	74.0			22.9	
4882.000	V		39.2		1.4		40.6		54.0		13.4		
4882.000	H			44.3	1.4			45.7	74.0			28.3	Floor Noise
4882.000	H		31.1		1.4		32.5		54.0		21.5		Floor Noise
7323.000	H			44.8	4.7			49.5	74.0			24.5	Floor Noise
7323.000	H		31.8		4.7		36.5		54.0		17.5		Floor Noise
9764.000	H			44.1	7.1			51.2	74.0			22.8	* Floor Noise
9764.000	H		30.9		7.1		38.0		54.0		16.0		* Floor Noise
12070.000	H			45.9	8.2			54.1	74.0			19.9	Floor Noise
12070.000	H		32.6		8.2		40.8		54.0		13.2		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Radiated Emission: Hch (2480MHz)

Axial Direction: XY-Plane

Below 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.009	V	31.3			-9.3	22.0			40.0	18.0			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
2483.500	H			49.2	-4.9			44.3	74.0			29.7	
2483.500	H		37.0		-4.9		32.1		54.0		21.9		
2483.500	V			47.4	-4.9			42.5	74.0			31.5	
2483.500	V		35.8		-4.9		30.9		54.0		23.1		
4960.000	H			49.9	1.6			51.5	74.0			22.5	
4960.000	H		39.1		1.6		40.7		54.0		13.3		
4960.000	V			46.9	1.6			48.5	74.0			25.5	
4960.000	V		36.1		1.6		37.7		54.0		16.3		
7440.000	H			43.0	4.8			47.8	74.0			26.2	Floor Noise
7440.000	H		32.4		4.8		37.2		54.0		16.8		Floor Noise
9920.000	H			45.2	7.2			52.4	74.0			21.6	* Floor Noise
9920.000	H		31.6		7.2		38.8		54.0		15.2		* Floor Noise
12400.000	H			45.0	7.8			52.8	74.0			21.2	Floor Noise
12400.000	H		32.3		7.8		40.1		54.0		13.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: YZ-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.011	V	31.0			-9.3	21.7			40.0	18.3			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
2483.500	H			46.4	-4.9			41.5	74.0			32.5	
2483.500	H		34.6		-4.9		29.7		54.0		24.3		
2483.500	V			47.0	-4.9			42.1	74.0			31.9	
2483.500	V		34.7		-4.9		29.8		54.0		24.2		
4960.000	H			44.3	1.6			45.9	74.0			28.1	Floor Noise
4960.000	H		31.1		1.6		32.7		54.0		21.3		Floor Noise
4960.000	V			45.6	1.6			47.2	74.0			26.8	
4960.000	V		33.9		1.6		35.5		54.0		18.5		
7440.000	H			43.0	4.8			47.8	74.0			26.2	Floor Noise
7440.000	H		32.4		4.8		37.2		54.0		16.8		Floor Noise
9920.000	H			45.2	7.2			52.4	74.0			21.6	* Floor Noise
9920.000	H		31.6		7.2		38.8		54.0		15.2		* Floor Noise
12400.000	H			45.0	7.8			52.8	74.0			21.2	Floor Noise
12400.000	H		32.3		7.8		40.1		54.0		13.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: ZX-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.012	V	31.3			-9.3	22.0			40.0	18.0			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
2483.500	H			45.0	-4.9			40.1	74.0			33.9	Floor Noise
2483.500	H		32.9		-4.9		28.0		54.0		26.0		Floor Noise
2483.500	V			50.7	-4.9			45.8	74.0			28.2	
2483.500	V		38.1		-4.9		33.2		54.0		20.8		
4960.000	H			44.3	1.6			45.9	74.0			28.1	Floor Noise
4960.000	H		31.1		1.6		32.7		54.0		21.3		Floor Noise
4960.000	V			50.4	1.6			52.0	74.0		22.0		
4960.000	V		39.8		1.6		41.4		54.0		12.6		
7440.000	H			43.0	4.8			47.8	74.0			26.2	Floor Noise
7440.000	H		32.4		4.8		37.2		54.0		16.8		Floor Noise
9920.000	H			45.2	7.2			52.4	74.0			21.6	* Floor Noise
9920.000	H		31.6		7.2		38.8		54.0		15.2		* Floor Noise
12400.000	H			45.0	7.8			52.8	74.0			21.2	Floor Noise
12400.000	H		32.3		7.8		40.1		54.0		13.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Product	: Complete Class2 Bluetooth Module	Model	: EYBMBA
Serial No.	: 1	Test Standard	: FCC Part15 Subpart C §15.247(d)
Power Supply	: DC 3.3V	Temp. / Humid.	: Below 1GHz: 19.1°C / 39.2%
Operator	: Fukuda		: Above 1GHz: 19.4°C / 43.2%
Remark	: Transmitting Mode		
	: 8DPSK Modulation		

Radiated Emission: Lch (2402MHz)

Axial Direction: XY-Plane

Below 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK		Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
48.006	V	31.3		-9.3	22.0			40.0	18.0			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK		Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2390.000	H		45.2	-5.2			40.0	74.0			34.0	Floor Noise
2390.000	H	32.7		-5.2		27.5		54.0		26.5		Floor Noise
2390.000	V		46.1	-5.2			40.9	74.0			33.1	
2390.000	V	34.3		-5.2		29.1		54.0		24.9		
4804.000	H		45.7	1.2			46.9	74.0			27.1	
4804.000	H	34.6		1.2		35.8		54.0		18.2		
4804.000	V		44.6	1.2			45.8	74.0			28.2	
4804.000	V	33.8		1.2		35.0		54.0		19.0		
7206.000	H		42.8	4.1			46.9	74.0			27.1	* Floor Noise
7206.000	H	31.3		4.1		35.4		54.0		18.6		* Floor Noise
9608.000	H		44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H	31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H		45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H	32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: YZ-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
48.007	V	31.0			-9.3	21.7			40.0	18.3			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2390.000	H			45.2	-5.2			40.0	74.0			34.0	Floor Noise
2390.000	H		32.7		-5.2		27.5		54.0		26.5		Floor Noise
2390.000	V			46.0	-5.2			40.8	74.0			33.2	
2390.000	V		34.2		-5.2		29.0		54.0		25.0		
4804.000	H			49.6	1.2			50.8	74.0			23.2	
4804.000	H		38.0		1.2		39.2		54.0		14.8		
4804.000	V			44.8	1.2			46.0	74.0			28.0	
4804.000	V		33.4		1.2		34.6		54.0		19.4		
7206.000	H			42.8	4.1			46.9	74.0			27.1	* Floor Noise
7206.000	H		31.3		4.1		35.4		54.0		18.6		* Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: ZX-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
48.009	V	31.3			-9.3	22.0			40.0	18.0			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2390.000	H			45.2	-5.2			40.0	74.0			34.0	Floor Noise
2390.000	H		32.7		-5.2		27.5		54.0		26.5		Floor Noise
2390.000	V			50.4	-5.2			45.2	74.0			28.8	
2390.000	V		37.0		-5.2		31.8		54.0		22.2		
4804.000	H			42.2	1.2			43.4	74.0			30.6	Floor Noise
4804.000	H		30.7		1.2		31.9		54.0		22.1		Floor Noise
4804.000	V			51.2	1.2			52.4	74.0			21.6	
4804.000	V		40.4		1.2		41.6		54.0		12.4		
7206.000	H			42.8	4.1			46.9	74.0			27.1	* Floor Noise
7206.000	H		31.3		4.1		35.4		54.0		18.6		* Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Radiated Emission: Mch (2441MHz)Axial Direction: XY-Plane

Below 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.007	V	31.2			-9.3	21.9			40.0	18.1			*
64.006	V	32.8			-11.0	21.8			40.0	18.2			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
4882.000	H			48.7	1.4			50.1	74.0			23.9	
4882.000	H		37.3		1.4		38.7		54.0		15.3		
4882.000	V			45.5	1.4			46.9	74.0			27.1	
4882.000	V		34.0		1.4		35.4		54.0		18.6		
7323.000	H			44.8	4.7			49.5	74.0			24.5	Floor Noise
7323.000	H		31.8		4.7		36.5		54.0		17.5		Floor Noise
9764.000	H			44.1	7.1			51.2	74.0			22.8	* Floor Noise
9764.000	H		30.9		7.1		38.0		54.0		16.0		* Floor Noise
12070.000	H			45.9	8.2			54.1	74.0			19.9	Floor Noise
12070.000	H		32.6		8.2		40.8		54.0		13.2		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: YZ-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.008	V	31.0			-9.3	21.7			40.0	18.3			*
64.004	V	32.7			-11.0	21.7			40.0	18.3			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
4882.000	H			44.3	1.4			45.7	74.0			28.3	Floor Noise
4882.000	H		31.1		1.4			32.5	54.0		21.5		Floor Noise
4882.000	V			46.6	1.4			48.0	74.0			26.0	
4882.000	V		34.9		1.4			36.3	54.0		17.7		
7323.000	H			44.8	4.7			49.5	74.0			24.5	Floor Noise
7323.000	H		31.8		4.7			36.5	54.0		17.5		Floor Noise
9764.000	H			44.1	7.1			51.2	74.0			22.8	* Floor Noise
9764.000	H		30.9		7.1			38.0	54.0		16.0		* Floor Noise
12070.000	H			45.9	8.2			54.1	74.0			19.9	Floor Noise
12070.000	H		32.6		8.2			40.8	54.0		13.2		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: ZX-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
48.011	V	31.3			-9.3	22.0			40.0	18.0			*
64.008	V	32.8			-11.0	21.8			40.0	18.2			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)]			Factor [dB/m]	Level [dB(uV/m)]			Limit [dB(uV/m)]	Margin [dB]			Remark
		QP	AV	PK		QP	AV	PK		QP	AV	PK	
4882.000	H			44.3	1.4			45.7	74.0			28.3	Floor Noise
4882.000	H		31.1		1.4			32.5	54.0			21.5	Floor Noise
4882.000	V			49.6	1.4			51.0	74.0			23.0	
4882.000	V		39.2		1.4			40.6	54.0			13.4	
7323.000	H			44.8	4.7			49.5	74.0			24.5	Floor Noise
7323.000	H		31.8		4.7			36.5	54.0			17.5	Floor Noise
9764.000	H			44.1	7.1			51.2	74.0			22.8	* Floor Noise
9764.000	H		30.9		7.1			38.0	54.0			16.0	* Floor Noise
12070.000	H			45.9	8.2			54.1	74.0			19.9	Floor Noise
12070.000	H		32.6		8.2			40.8	54.0			13.2	Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Radiated Emission: Hch (2480MHz)Axial Direction: XY-PlaneBelow 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
48.007	V	31.2			-9.3	21.9			40.0	18.1			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2483.500	H			49.5	-4.9			44.6	74.0			29.4	
2483.500	H	37.3			-4.9		32.4		54.0		21.6		
2483.500	V		48.0		-4.9			43.1	74.0			30.9	
2483.500	V	36.7			-4.9		31.8		54.0		22.2		
4960.000	H			50.6	1.6			52.2	74.0			21.8	
4960.000	H	39.5			1.6		41.1		54.0		12.9		
4960.000	V			47.8	1.6			49.4	74.0			24.6	
4960.000	V	36.8			1.6		38.4		54.0		15.6		
7206.000	H			42.8	4.1			46.9	74.0			27.1	Floor Noise
7206.000	H	33.7			4.1		37.8		54.0		16.2		Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H	31.3			7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H	32.9			8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: YZ-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
48.013	V	31.0			-9.3	21.7			40.0	18.3			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2483.500	H			47.6	-4.9			42.7	74.0			31.3	
2483.500	H		35.9		-4.9		31.0		54.0		23.0		
2483.500	V			48.6	-4.9			43.7	74.0			30.3	
2483.500	V		36.1		-4.9		31.2		54.0		22.8		
4960.000	H			44.9	1.6			46.5	74.0			27.5	Floor Noise
4960.000	H		30.9		1.6		32.5		54.0		21.5		Floor Noise
4960.000	V			46.0	1.6			47.6	74.0			26.4	
4960.000	V		34.3		1.6		35.9		54.0		18.1		
7206.000	H			42.8	4.1			46.9	74.0			27.1	Floor Noise
7206.000	H		33.7		4.1		37.8		54.0		16.2		Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

Axial Direction: ZX-Plane**Below 1GHz**

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
48.009	V	31.1			-9.3	21.8			40.0	18.2			*

Above 1GHz

Frequency [MHz]	Pol. [H / V]	Reading [dB(uV)] QP / AV / PK			Factor [dB/m]	Level [dB(uV/m)] QP / AV / PK			Limit [dB(uV/m)]	Margin [dB] QP / AV / PK			Remark
2483.500	H			48.6	-4.9			43.7	74.0			30.3	
2483.500	H		36.8		-4.9		31.9		54.0		22.1		
2483.500	V			49.5	-4.9			44.6	74.0			29.4	
2483.500	V		37.3		-4.9		32.4		54.0		21.6		
4960.000	H			44.9	1.6			46.5	74.0			27.5	Floor Noise
4960.000	H		30.9		1.6		32.5		54.0		21.5		Floor Noise
4960.000	V			50.2	1.6			51.8	74.0			22.2	
4960.000	V		38.7		1.6		40.3		54.0		13.7		
7206.000	H			42.8	4.1			46.9	74.0			27.1	Floor Noise
7206.000	H		33.7		4.1		37.8		54.0		16.2		Floor Noise
9608.000	H			44.4	7.0			51.4	74.0			22.6	* Floor Noise
9608.000	H		31.3		7.0		38.3		54.0		15.7		* Floor Noise
12010.000	H			45.7	8.2			53.9	74.0			20.1	Floor Noise
12010.000	H		32.9		8.2		41.1		54.0		12.9		Floor Noise

Note: * = Out of Restricted Band.

This frequency is out of the restricted bands, so radiated emission limits specified in Section 15.209 does not apply.

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)).

14 EIRP Calculation from Peak Power

15.247 (b)(5): Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

(Limit [W] = $60 / f$ [MHz], 24mW at 2.5GHz)

EIRP Calculation:

A	B	C		Limit [mW] $60 / f$ [MHz]
Specified Antenna Gain [dBi]	Max. RF Output Power at Antenna Terminal [dBm]	Total EIRP		
		[dBm]	[mW]	
1.1	1.08	2.18	1.65	25

Calculation: C [dBm] = A [dBi] + B [dBm]

EIRP = 2.18dBm = 1.65mW

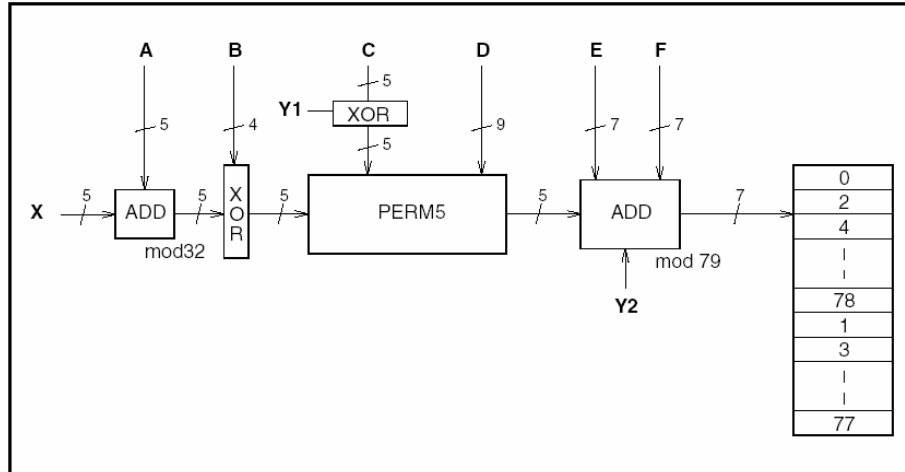
15 Photos of Tested EUT and Test Setup

Setup photo with EUT has been submitted as separate document named “Test Setup Photos (7171F)”.

Appendix 1: AFH-Hopping Sequence

AFH-Hopping Sequence is provided for in the Bluetooth Spec 1.2. Here is an outline below.

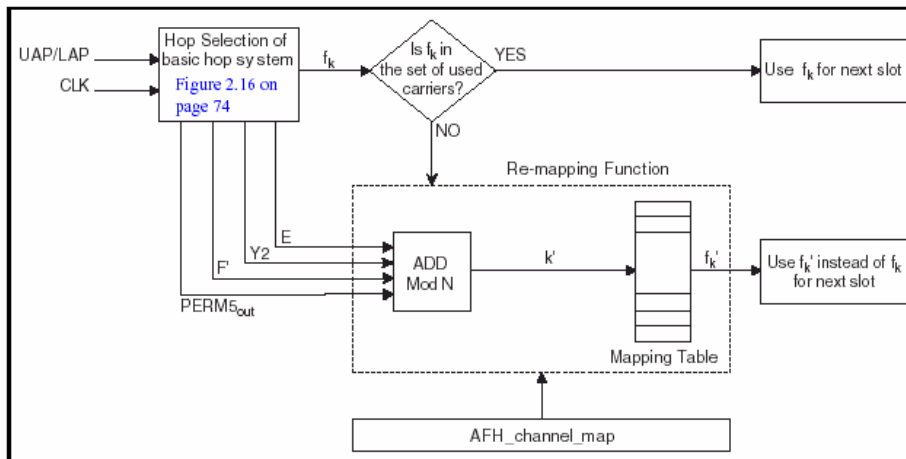
1. In the case of 79Hopping



Due to the above flow, 32 hops are made into 5 ways. Then, the sign of the sign head 160 is formed. The remainder that is worked out by dividing with 79 is assigned to Hopping Channel.

Each parameter of the above figure uses the value calculated from the Bluetooth clock and the Bluetooth address, which are shown in the next page.

2. In the case of AFH-Hopping



Also in the case of AFH, the fundamental sign adopt the sign head 160 that is the same as the case of 79Hopping. Hopping Pattern uses the value that is worked out by dividing with the number of AFH-Channel's. Then, available Hopping becomes even as well as 79Hopping.

The selection of the communication Channel is done by the communication error rate and the receiving signal strength. Frequency is determined by pairing the channel and the value, which is divided by the number of AFH-Channel one-to-one.

It is decided in the specifications that Communication Channel has to have "20Channels" at least. However, if the number of communication Channel is controlled to be under 20 back to 79Channel-Hopping, and select the communication Channel again.

3. The parameter list which decides Hopping-Pattern

	Page scan / Interlaced Page Scan / Inquiry scan / Interlaced Inquiry Scan	Page/Inquiry	Master/Slave page response and Inquiry response	Connection state
X	$CLKN_{16-12} /$ $(CLKN_{16-12} + 16) \bmod 32 /$ $Xir_{4-0} /$ $Xir_{4-0} + 16) \bmod 32$	Xp_{4-0} / Xi_{4-0}	$Xprm_{4-0} /$ $Xprs_{4-0} /$ Xir_{4-0}	CLK_{6-2}
Y1	0	$CLKE_1 / CLKN_1$	$CLKE_1 / CLKN_1 / 1$	CLK_1
Y2	0	$32 \times CLKE_1 /$ $32 \times CLKN_1$	$32 \times CLKE_1 /$ $32 \times CLKN_1 /$ 32×1	$32 \times CLK_1$
A	A_{27-23}	A_{27-23}	A_{27-23}	$A_{27-23} \oplus CLK_{25-21}$
B	A_{22-19}	A_{22-19}	A_{22-19}	A_{22-19}
C	$A_{8,6,4,2,0}$	$A_{8,6,4,2,0}$	$A_{8,6,4,2,0}$	$A_{8,6,4,2,0} \oplus CLK_{20-16}$
D	A_{18-10}	A_{18-10}	A_{18-10}	$A_{18-10} \oplus CLK_{15-7}$
E	$A_{13,11,9,7,5,3,1}$	$A_{13,11,9,7,5,3,1}$	$A_{13,11,9,7,5,3,1}$	$A_{13,11,9,7,5,3,1}$
F	0	0	0	$16 \times CLK_{27-7} \bmod 79$
F'	n/a	n/a	n/a	$16 \times CLK_{27-7} \bmod N$

Appendix 2: Certificate of Accreditation

United States Department of Commerce
National Institute of Standards and Technology

NVLAP[®]

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200607-0

Taiyo Yuden Co., Ltd. EMC Center
Takasaki-shi Gunma 370-3347
JAPAN

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated 18 June 2005).*

2007-10-01 through 2008-09-30
Effective dates



Sally S. Bruce
For the National Institute of Standards and Technology

NVLAP-01C (REV. 2006-09-13)

Appendix 3: Test Instruments

1. Conducted Emission Test

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date (Interval (year))	
Shielded Room	TDK Co., Ltd	DA-06912	-	-	●
EMI Test Receiver	Rohde & Schwarz	ESHS 10	100005	28 July 2007 (1)	●
Spectrum Analyzer	Agilent Technologies	8567A	3001A00673	30 July 2007 (1)	●
AMN / LISN	KYORITSU ELECTRICAL WORK	KNW-407	8-680-1	30 July 2007 (2)	●
		KNW-242	8-818-8		○
Cable	SUHNER	RG223	CE-1	3 August 2007 (1)	●
		RG223	CE-2		●
		RG214	CE-3		●
Attenuator	KYORITSU	KPD-602	5K325		●
RF Selector	TDK Co., Ltd	NS4900	0302-009		●
Hydro Thermograph	SEKONIC	ST-200	HD01-000779	7 February 2007 (1)	●
Software	TOYO Corporation	EP5/CE Ver.2.0	0208085	-	●

2. Conducted RF Test via Antenna Terminal

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date (Interval (year))	
Spectrum Analyzer	Rohde & Schwarz	FSIQ26	840061/0004	14 February 2007 (1)	●
	Agilent Technologies	E4446A	US42070181	17 October 2007 (1)	○
Power Meter	Rohde & Schwarz	NRVD	838380/0043	5 February 2007 (1)	○
	Agilent Technologies	N1911A	MY45100612	8 June 2007 (1)	○
Power Sensor	Rohde & Schwarz	NRV-Z1	838357/0001	5 February 2007 (1)	○
	Agilent Technologies	N1922A	MY45240439	8 June 2007 (1)	○
RF Cable	SUHNER	SUCOFLEX 104	RF2-2	3 July 2007 (1)	●
		SUCOFLEX 104E	RF3-3	4 April 2007 (1)	○
Power Divider	Aeroflex / Inmet	6005-03	RF-8	3 July 2007 (1)	●
Multi Meter	Advantest	R6451A	67840312	19 September 2007 (1)	●
	Agilent Technologies	34401A	MY41038383	5 June 2007 (1)	○
Temperature Chamber	TABAI ESPEC	PU-2KTH	14006759	6 February 2007 (1)	○
Hydro Thermograph	SEKONIC	ST-200	HD01-000797	6 September 2007 (1)	●
Hydro Thermograph	SEKONIC	ST-200	HD01-000779	7 February 2007 (1)	●

3. Radiated Emission Test

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date (Interval (year))	
10m Anechoic Chamber	TDK Co., Ltd.	DA-06912	-	5-9 February 2007 (1)	●
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100148	31 July 2007 (1)	●
Spectrum Analyzer	Agilent Technologies	E4407B	MY44221019	23 April 2007 (1)	●
		E4446A	US42070181	17 October 2007 (1)	●
Amplifier	Agilent Technologies	83017A	3950M00169	1 August 2007 (1)	●
		8447D	2944A06812		●
RF Selector	TDK Co., Ltd	NS4900	0302-010		●
Tunable Filter	TOYO Corporation	NF-49BT	No.1		○
RF Filter	Microtronics	ERM50702-01	020		○
RF Cable	SUHNER	RG214	RG1		●
		RG214	RG3		●
		RG214	RG5		●
		RG214	RG7		●
	HP	HP8120-4782	163 9232		●
	SUHNER	SUCOFLEX 106	SU1	●	
		SUCOFLEX 103	SU5	●	
		SUCOFLEX 103	SU6	○	
HP	85381C	No.3	●		
Attenuator	KYORITSU	KPD-602	220142	●	
Antenna	Schwarzbeck	BBA9106	No.3	22 December 2006 (1)	○
		UHALP9108-A	0160		○
		VULB9160	3179		●
		VHA9103	No.3 (+D3-1, 2)		○
		UHA9105	No.3		○
	EMCO	3115	9403-4232	28 March 2007 (2)	●
		3116	9311-2227		●
Hydro Thermograph	SEKONIC	ST-50	HE01-00511	7 February 2007 (1)	●

Note:

- : Applied by measurement.
- : Not applied by measurement.