

# TEST REPORT

Report No.: Z01C-02079

Issue Date: March 29, 2002

The device, as described herewith, was tested pursuant to applicable test procedure indicated below and complies with the requirements of:

## FCC Part15 Subpart C / IC RSS-210

The test results are traceable to the international or national standards.

Applicant	:	MITSUMI ELECTRIC CO., LTD. 1601, Sakai, Atsugi-shi Kanagawa-ken 243-8533 JAPAN Phone: +81-46-230-3422 Fax: +81-46-230-3500
Equipment under test (EUT)	:	WIRELESS CONTROLLER & RECEIVER for VIDEOGAME
FCC ID	:	EW4DOLAW
Trade Name	:	NINTENDO GAMECUBE WIRELESS COTROLLER WAVEBIRD
Model Number	:	DOL-004
Serial Number	:	N/A
EUT Condition	:	Pre-production

Test procedure	:	ANSI C63.4-1992
Date of test	:	February 26, March 25, 2002
Test place	:	Site 1,3
Test results	:	Complied

Zacta Technology Corporation certifies that no party to the application is subject to a denial of federal benefits that include FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21U.S.C. 853(a).

The results in this report are applicable only to the samples tested.  
This report shall not be re-produced except in full without  
the written approval of ZACTA Technology Corporation.

Authorized by:   
Hiroaki Suzuki / Chief Engineer

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## 1. Summary of Test Results

Table-A presents the list of the measurement items for Spread Spectrum, Direct Sequence devices under FCC Part 15 Subpart C and Industry Canada RSS-210.

The section numbers of upper portion are showing FCC number, and the other (lower) ones are for IC.

The receiver portion of the EUT has been tested and verified to comply with FCC Part15, Subpart B, and Class B.

Table-A List of the measurements

Test Items Section	Test Items		Condition	Result
	Transmit mode [Tx]:	Limit		
15.247(a)(2) 5.9.1	Bandwidth at 6 dB below	The minimum 6dB bandwidth shall be at least 500KHz	Conducted	Pass
15.247(b)(1) 6.2.2(o)(b)	Maximum Peak Output Power	Shall not exceed 1.0 W.	Conducted	Pass
15.247(c) 5.9.1 6.2.2(o)(e1)	Occupied BW (or Band-edge) Out of Band Emissions (Bandwidth at 20 dB below)	The radiated emission in any 100KHz of outband shall be at least 20dB below the highest inband spectral density.	Conducted	Pass
15.247(d) 6.2.2(o)(b)	Transmitter power spectral Density	Shall not be greater than 8 dBm in any 3KHz band.	Conducted	Pass
15.247(e) 6.2.2(o)(b)	Processing gain	10 dB	Conducted	Pass (Note 1)
15.207 6.6	AC Power Conducted Emissions 450kHz – 30MHz	250uV	Not applicable	- (Note 2)
15.205 / 209 6.2.1/6.3	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Shall not exceed the limits specified in RSS-210.	Radiated (9kHz-1GHz)	Pass
			Radiated (1-25GHz)	

Note1: See "Processing Gain Test Report"

Note2: The EUT operates with a battery and does not connect to the public supply system. Therefore, this test is not applied to the EUT.

## 2. Equipment description

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### 2.1 EUT information

No.	EUT	Company	Model No.	Serial No.	FCC ID/DoC	Comment
1	WIRELESS CONTROLLER & RECEIVER for VIDEOGAME	MITSUMI	DOL-004	N/A	EW4DOLAW	-

Oscillator(s)/Crystal(s) : 14.4MHz  
 Operating frequency : 28.8MHz  
 Power ratings : DC +1.7V~3.3V  
 Port(s) : N/A  
 Size : (W) 141 x (D) 103 x (H) 67 mm  
 Operating mode : Game play mode  
 Variation of model(s) : Not applicable  
 Frequency Range : 2404.8MHz – 2.480GHz  
 Number of FR Channels : 16 Channels  
 Channel Separation : 4.8MHz  
 Modulation Method : Gauss Ian Frequency Shift Keying (GFSK)  
 Spread Method : Direct Sequence Spread Spectrum  
 Nominal Bit Rates : 96kbps  
 Output power : 0.34mW  
 Antenna : PCB pattern antenna  
 Power Supply : Dry Battery  
 External Connections : N/A

## 2.2 Operating channels and frequencies.

Channel	Frequency [MHz]	Test performed	Channel	Frequency [MHz]	Test performed
1	2479.2	X	9	2438.4	X
2	2474.4		10	2433.6	
3	2404.8	X	11	2445.6	
4	2409.6		12	2450.4	
5	2419.4		13	2460.0	
6	2414.4		14	2455.2	
7	2424.0		15	2464.8	
8	2428.8		16	2469.6	

\* Full testing with bit rates 96kbps only

Lowest Frequency Channel: 3 channel  
Middle Frequency Channel: 9 channel  
Highest Frequency Channel: 1 channel

### 3. Configuration information

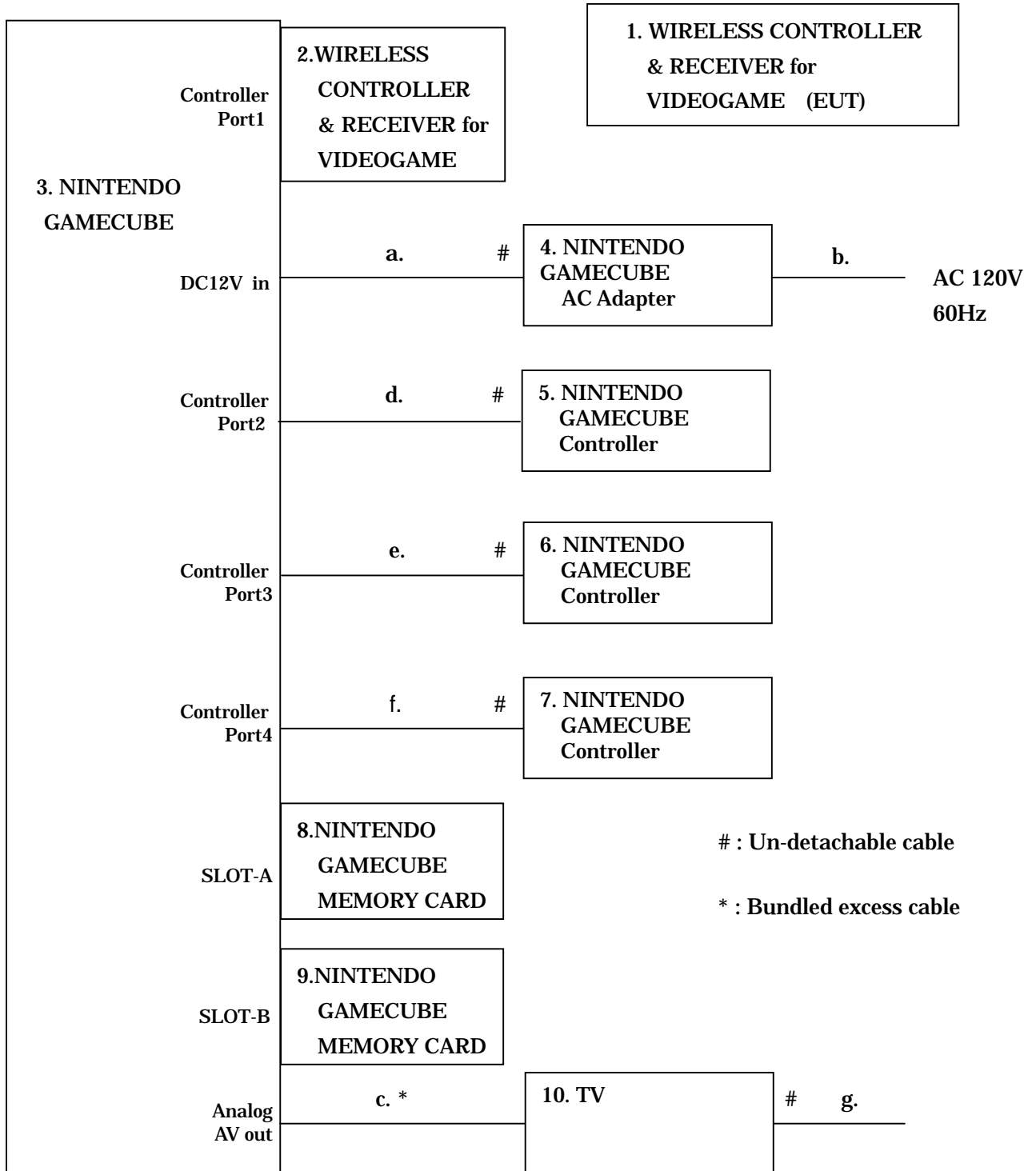
#### 3.1 Peripheral(s) information (Controller Port 1 connected)

No.	Equipment	Company	Model No.	Serial No.	DoC / FCC ID	Comment
2	WIRELESS CONTROLLER & RECEIVER for VIDEOGAME	NINTENDO	DOL-005	-	-	Accessory
3	NINTENDO GAMECUBE	NINTENDO	DOL-001 (JPN)	DN11015316	-	-
4	NINTENDO GAMECUBE AC Adapter	NINTENDO	DOL-002	-	-	-
5	NINTENDO GAMECUBE Controller	NINTENDO	DOL-003	-	-	-
6	NINTENDO GAMECUBE Controller	NINTENDO	DOL-003	-	-	-
7	NINTENDO GAMECUBE Controller	NINTENDO	DOL-003	-	-	-
8	NINTENDO GAMECUBE Memory Card	NINTENDO	DOL-008	-	-	-
9	NINTENDO GAMECUBE Memory Card	NINTENDO	DOL-008	-	-	-
10	TV	SONY	KV-G14M2	1000307	-	-

#### 3.2 Cable(s) information (Controller Port 1 connected)

No.	Cable	Length [m]	Shield	Connector	From	To	Comment
a	DC cable	1.0	Unshielded	Metal	AC Adapter	GAME CUBE	-
b	AC power cord for AC Adapter	1.6	Unshielded	Plastic	AC Adapter	AC outlet	-
c	Stereo AV cable	2.4	Unshielded	Plastic	GAME CUBE	TV	Bundled excess cable
d	Controller cable	2.0	Unshielded	Metal	GAME CUBE	Controller	-
e	Controller cable	2.0	Unshielded	Metal	GAME CUBE	Controller	-
f	Controller cable	2.0	Unshielded	Metal	GAME CUBE	Controller	-
g	AC power cord for TV	2.0	Unshielded	Plastic	TV	AC outlet	-

### 3.3 System configuration (Controller Port 1 Connected)



Note: Numbers assigned to equipment or cables on this diagram are corresponded to the list in “2.1 EUT information”, “3.1 Peripheral(s) information” and “3.2 Cable(s) information”.



### 3.4 Peripheral(s) information (Controller Port 1,2,3 and 4 connected)

No.	Equipment	Company	Model No.	Serial No.	DoC / FCC ID	Comment
2	WIRELESS CONTROLLER & RECEIVER for VIDEOGAME	NINTENDO	DOL-005	-	-	-
3	NINTENDO GAMECUBE	NINTENDO	DOL-001 (JPN)	DN11015316	-	-
4	NINTENDO GAMECUBE AC Adapter	NINTENDO	DOL-002	-	-	-
5	NINTENDO GAMECUBE Memory Card	NINTENDO	DOL-008	-	-	-
6	NINTENDO GAMECUBE Memory Card	NINTENDO	DOL-008	-	-	-
7	TV	SONY	KV-G14M2	1000307	-	-

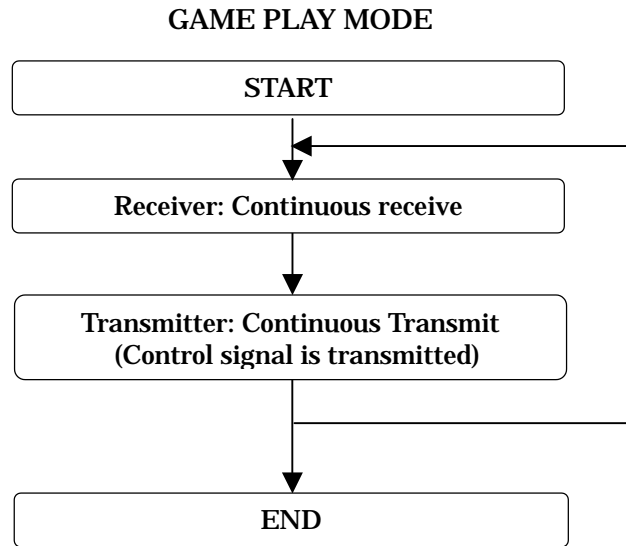
### 3.5 Cable(s) information (Controller Port 1,2,3 and 4 connected)

No.	Cable	Length [m]	Shield	Connector	From	To	Comment
a	DC cable	1.0	Unshielded	Metal	AC Adapter	GAME CUBE	-
b	AC power cord for GAME CUBE	1.6	Unshielded	Plastic	GAME CUBE	AC outlet	-
c	Stereo AV cable	2.4	Unshielded	Plastic	GAME CUBE	TV	Bundled excess cable
d	AC power cord for TV	2.0	Unshielded	Plastic	TV	AC outlet	-



### 3.7 Operating flow

Following programs were performed continuously.



Note: All tests were performed using the game soft "WAVERACE".

## 4. Test Instruments

### List of Measuring Instruments

Equipment	Company	Model No.	Serial No.	Calibration date	Period
Spectrum Analyzer (100Hz-1.5GHz)	Agilent Technologies	8568B	2517A0132	Jul. 2001	1 year
Spectrum Analyzer (100kHz-26.5GHz)	ADVANTEST	R3271A	65050042	Jun. 2001	1 year
Preamplifier (100kHz-1.2GHz)	Anritsu	MH648A	M96057	Oct. 2001	1 year
Preamplifier (1GHz-26.5GHz)	Agilent Technologies	HP8449B	3008A00589	Jun. 2001	1 year
Test Receiver (9kHz-30MHz)	ROHDE&SCHWARZ	ESHS10	842884/009	Oct. 2001	1 year
Test Receiver (25MHz-1.5GHz)	Kyoritsu Electrical Works, Ltd	KNM-5002 KCV-6002	4N-195-2 4-269-2	Mar. 2001	1 year
Power Meter	Agilent Technologies	EPM-442A	GB37480814	Aug.2001	1 year
Power Sensor	Agilent Technologies	8482A	US37290688	Aug.2001	1 year
Loop Antenna	ROHDE&SCHWARZ	HFH2-Z2	892246/010	Nov. 2001	1 year
Biconical Antenna	Schwarzbeck	VHA9103/BBA9106	1635	Jun. 2001	1 year
Log Periodic Antenna	Schwarzbeck	UHALP9108A	0436	Oct. 2001	1 year
Double Ridged Guide Antenna	EMCO	3115	4327	Sep. 2001	1 year
HORN Antenna	EMCO	3160-9	1312	Sep.2001	1 year
50 terminator	Agilent Technologies	11593A	N/A	Aug. 2001	1 year
Coaxial cable	Suhner	SUCOFLEX 104/15m SUCOFLEX 104/1m	108014/4 108015/4	Jun. 2001	1 year
Coaxial cable	Fujikura	8D-2W/15m 10D-SFA/29m 5D-2W/1m	YTCRFC#1R	May. 2001	1 year
Coaxial cable	Fujikura	8D-2W/15m	YTCRFC#1C	May. 2001	1 year
Coaxial cable	Hitachi Cable	C0-6F-SB-CX50	N/A	Feb. 2002	1 year
Coaxial Switch	Anritsu	MP59B	6100097273	May. 2001	1 year
Site attenuation	ZACTA Technology Corp.	Site 1	N/A	Nov. 2001	1 year

\*The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.

## 5. Test Type and Results

### 5.1. Bandwidth at 6 dB below

#### 5.1.1 Test Procedure [ FCC 15.247(a)(2), IC 5.9.1 ]

The bandwidth at 6 dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to:

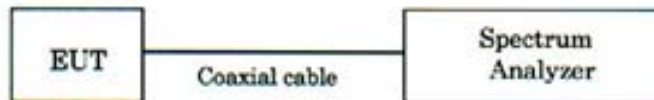
RBW=100KHz, VBW=100KHz\*1, Span=5MHz,

Sweep=suitable duration based on the EUT specification

\*1: To be adjusted accordingly based on the spectrum stability

#### 5.1.2 Test Instruments and Measurement Setup

Description	Company	Model Number	Serial Number
Spectrum Analyzer	ADVANTEST	R3271A	65050042
Coaxial cable: Spectrum Analyzer ↔ EUT	Suhner	Length: 100 cm Loss: 0.6dB	10801514
	Hitachi Cable	Length: 10cm Loss: 0.5dB	



#### 5.1.3. Limit of Bandwidth at 6 dB below

The minimum 6dB bandwidth shall be at least 500KHz

#### 5.1.4 Measurement Result

Channel	Center Frequency [MHz]	Lower Frequency [MHz]	Upper Frequency [MHz]	Bandwidth at 6 dB below [MHz]	PASS / FAIL
3	2404.8	2404.01	2405.58	1.571	PASS
9	2438.4	2437.59	2439.21	1.621	PASS
1	2479.2	2478.67	2480.33	1.657	PASS

#### 5.1.5 Trace Data

As for the chart of the observed RF profiles, refer to Annex A.

Test Personnel:

Tester Signature:

Tester Name:

  
Kiyoshi Endo

Date : Feb. 26, 2002

Temperature : 15.1 [°C]

Humidity : 33.1 [%]

## 5.2. Transmitter Output Power

### 5.2.1 Test Procedure [ FCC 15.247(b)(1), IC 6.2.2(o)(b) ]

A transmitter antenna terminal of EUT is connected to the input of a RF power sensor. Measurement is made while EUT is operating in transmission mode at the appropriate center frequency.

### 5.2.2 Test Instruments and Measurement Setup

Description	Company	Model Number	Serial Number
Power Meter	Agilent Technologies	EPM-442A	GB37480814
Power Sensor	Agilent Technologies	8482A	US37290688
Coaxial cable: Spectrum Analyzer ↔ EUT	Suhner Hitachi Cable	Length: 100 cm Loss: 0.6dB Length: 10cm Loss: 0.5dB	10801514 -



### 5.2.3. Limit of Transmitter Output Power

Frequency range	RF power output
2400-2483.5MHz	1.0 Watt (30dBm)

### 5.2.4 Measurement Results

Channel	Measured Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Results		Limit -[1W]- [dBm]	Margin [dB]
				[dBm]	[mW]		
3	2404.8	-5.20	0.5	-4.70	0.3388	30.0	34.7
9	2438.4	-5.40	0.5	-4.90	0.3236	30.0	34.9
1	2479.2	-5.51	0.5	-5.01	0.3155	30.0	35.0

Note: Transmitter Output Power Level (Margin) = Limit - [Reading + Factor (Cable)]

Test Personnel:

Tester Signature:

Tester Name:

Kiyoshi Endo

Date : Feb. 26, 2002

Temperature : 15.1 [°C]

Humidity : 33.1 [%]

### 5.3. Occupied Bandwidth / Band-edge, and Out of Band Emissions

#### 5.3.1 Test Procedure [ FCC 15.247 (c), IC 5.9.1, IC6.2.2 (o)(e1) ]

The bandwidth at 20 dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

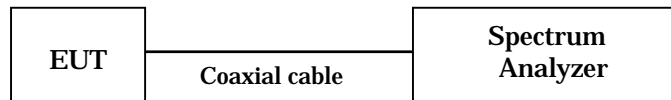
The spectrum analyzer is set to :

RBW=100KHz, VBW=100KHz\*1, Span=5MHz(Band edge)/100MHz(Out of Band Emissions),  
Sweep=suitable duration based on the EUT specification

\*1: To be adjusted accordingly based on the spectrum stability

#### 5.3.2 Test Instruments and Measurement Setup

Description	Company	Model Number	Serial Number
Spectrum Analyzer	ADVANTEST	R3271A	65050042
Coaxial cable: - Spectrum Analyzer <=> EUT	Suhner Hitachi Cable	Length: 100 cm Loss: 0.6dB Length: 10cm Loss: 0.5dB	10801514 -



#### 5.3.3. Limit of Occupied Bandwidth / Band-edge (at 20 dB below), and Out of Band Emissions

##### Occupied Bandwidth

The radiated emission in any 100KHz bandwidth outside the frequency band shall be at least 20dB below the highest inband spectral density.

##### Band-edge Compliance

The bandedge of the emission operating on the channel closest to a restricted bands of operation shall not fall within a restricted bands except for spurious emissions that conform to the specified limits.

#### 5.3.4 Measurement Results of Occupied Bandwidth / Band-edge

Channel	Occupied Bandwidth				Band-edge	
	Center Frequency [MHz]	Lower Frequency [MHz]	Upper Frequency [MHz]	Bandwidth at 20dB Below [MHz]	Margin to Lower Limit [MHz]	Margin to Upper Limit [MHz]
3	2404.8	2403.55	2406.05	2.50	3.55	
9	2438.4	2437.04	2439.68	2.64		
1	2479.2	2477.84	2480.52	2.68		2.98



### 5.3.5 Measurement Results of Out of Band Emissions

All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest inband spectral density.

### 5.3.6 Trace Data

As for the chart of the observed RF profiles, refer to Annex B.

Test Personnel:

Tester Signature:

Tester Name:

  
Kiyoshi Endo

Date : Feb. 26, 2002

Temperature : 15.1 [°C]

Humidity : 33.1 [%]



**5.4. Transmitter Power Spectral Density**

**5.4.1. Test Procedure [ FCC 15.247(d), IC 6.2.2(o)(b) ]**

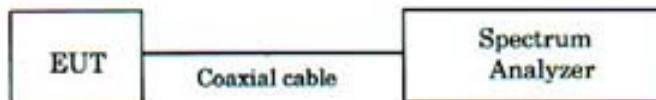
The peak power density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to:

RBW= 3KHz, VBW=100KHz, Span=2MHz, Sweep = 1.0 seconds

**5.4.2 Test Instruments and Measurement Setup**

Description	Company	Model Number	Serial Number
Spectrum Analyzer	ADVANTEST	R3271A	65050042
Coaxial cable: Spectrum Analyzer ↔ EUT	Suhner Hitachi Cable	Length: 100 cm Loss: 0.6dB Length: 10cm Loss: 0.5dB	10801514 -



**5.4.3. Limit of Transmitter Power Spectral Density**

The peak power spectral density shall not be greater than 8dBm in any 3kHz band.

**5.4.4 Measurement Results**

Ch No.	Frequency [MHz]	Spectrum Analyzer Reading [dBm]	Factor (Cable loss) [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
3	2404.8	-21.9	1.1	-20.8	8.0	28.8
9	2438.4	-23.0	1.1	-21.9	8.0	29.9
1	2479.2	-22.7	1.1	-21.6	8.0	29.6

Note: Transmitter Power Spectral Density Level (Margin) = Limit - [Reading + Factor (Cable)]

**5.4.5 Trace Data**

As for the chart of the observed RF profiles, refer to Annex C.

Test Personnel:

Tester Signature:

Tester Name:

Kiyoshi Endo

Date : Feb. 26, 2002

Temperature : 15.1 [°C]

Humidity : 33.1 [%]

## 5.5. Restricted Bands Radiations (9kHz – 25GHz)

### 5.5.1 Test Procedure [ FCC 15.205/209 , IC 6.2.1/6.3 ]

Radiated emission measurements are performed at 3m distance with the broadband antenna (Loop antenna, Biconical antenna, log-periodic antenna and double-ridged guide antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1 to 4 meters and stopped at height producing the maximum emission. As for the Loop antenna, it is positioned with its plane vertical, and the center of the Loop is 1.0meter above the ground plane. Frequency Range: 9kHz –1GHz is scanned and investigated with the test receiver, and above 1GHz, with the spectrum analyzer. The detector function of the test receiver is set to CISPR Quasi-peak mode and the bandwidth is set to 120kHz. Peak and average detectors are used for measurements above 1GHz. The bandwidth of the spectrum analyzer is set to 1MHz.

The EUT and support equipment are placed on a 1 meter x 2.3meter surface, 0.8meter height wooden table. The turntable is rotated by 360 degrees and stopped at azimuth of producing the maximum emission.

Interconnecting cables, which hanging closer than 40cm to the horizontal metal ground plane are bundled its excess in center. The highest frequency generated in the EUT is 2483.5MHz, therefore the frequency was investigated up to 25GHz, as specified in CFR section 15.33, and at least six highest emissions are reported. The test results represent the worst-case emission for each emission with manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation.

Sufficient time for the EUT, support equipment, and test equipment are allowed in order for them to warm up to their normal operating condition.

### 5.5.2 Test Instruments and Measurement Setup

#### Radiated Emission Test Instrumentation

[Testing below 30MHz]

Description	Company	Model Number	Serial Number
Spectrum Analyzer (100Hz-1.5GHz)	Agilent Technologies	8568B	2517A0132
Test Receiver (9kHz-30MHz)	ROHDE&SCHWARZ	ESHS10	842884/009
Loop Antenna	ROHDE&SCHWARZ	HFH2-Z2	892246/010
Coaxial cable	Fujikura	8D-2W/15m	YTCRFC#1C

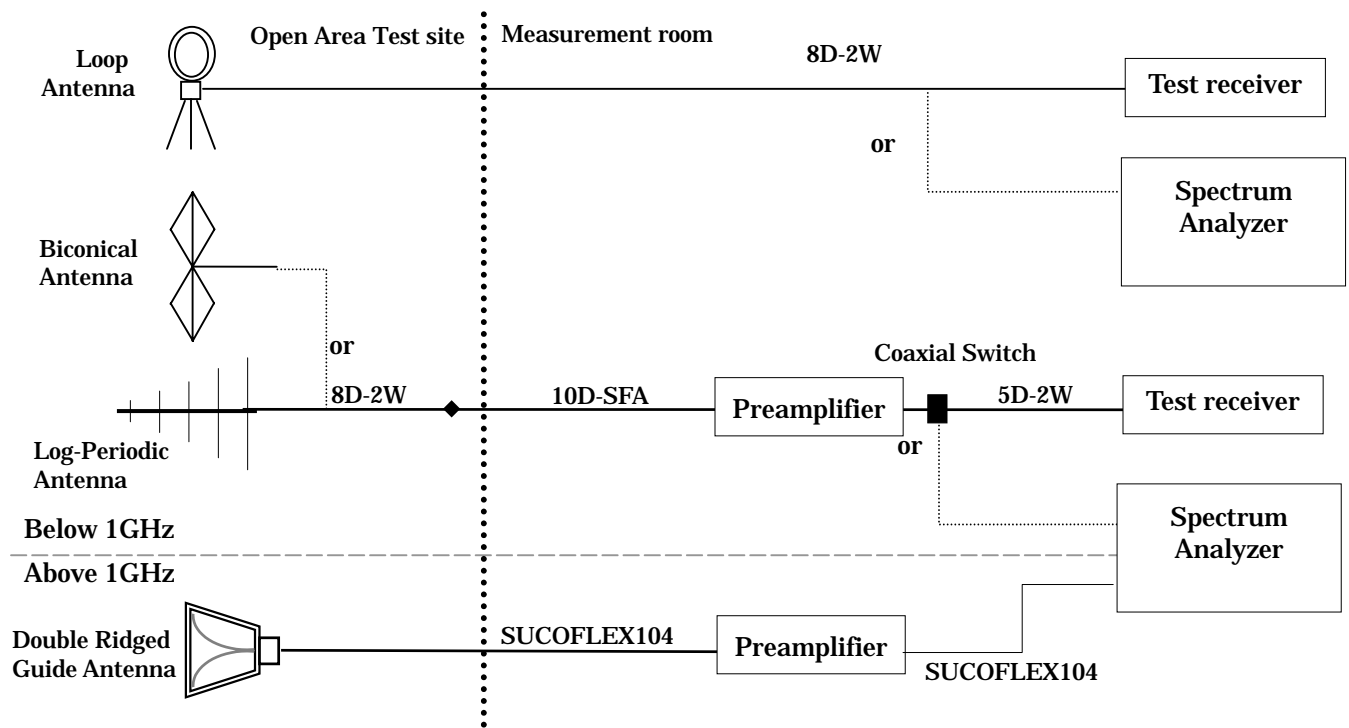
[Testing 30MHz-1GHz]

Description	Company	Model Number	Serial Number
Spectrum Analyzer (100Hz-1.5GHz)	Agilent Technologies	8568B	2517A0132
Preamplifier (100kHz-1.2GHz)	Anritsu	MH648A	M96057
Test Receiver (25MHz-1.5GHz)	Kyoritsu Electrical Works, Ltd	KNM-5002 KCV-6002	4N-195-2 4-269-2
Biconical Antenna	Schwarzbeck	VHA9103/BBA9106	1635
Log Periodic Antenna	Schwarzbeck	UHALP9108A	0436
Coaxial cable	Fujikura	8D-2W/8m 10D-SFA/29m 5D-2W/1m	YTCRFC#1R
Coaxial Switch	Anritsu	MP59B	6100097273

[Testing above 1GHz]

Description	Company	Model Number	Serial Number
Spectrum Analyzer	ADVANTEST	R3271A	65050042
Preamplifier	Agilent Technologies	HP8449B	3008A00589
Double Ridged Guide Antenna	EMCO	3115	4327
HORN Antenna	EMCO	3160-9	1312
Coaxial cable	Suhner	SUCOFLEX 104/15m SUCOFLEX 104/1m	108014/4 108015/4

**Test configuration for Radiated emission**



**5.5.3. Limit of Radiated Emission Measurement**

Frequency [MHz]	Field Strength	
	[uV/m]	[dBuV/m]
0.009 – 0.490	2400 / F [kHz]	20logE [uV/m]
0.490 – 1.705	24000 / F [kHz]	20logE [uV/m]
1.705-30	30	29.5
30 – 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.0
Above 960	500	54.0

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20 log Emission [uV/m]
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

#### 5.5.4 Sample of field strength calculation

Radiated Emission  $\text{dB } \mu\text{V/m} = 20\log_{10} (\mu\text{V/m})$

<b>Class B</b>
Limit @147.6MHz = 150 $\mu\text{V/m}$ = 43.5dB $\mu\text{V/m}$
Reading = 42.8dB $\mu\text{V}$ Ant. Factor + Cable Loss - Amp. Gain = 14.2 + 3.0 - 30.0 = -12.8dB Total = 42.8 - 12.8 = 30.0dB $\mu\text{V/m}$
Margin = 43.5 - 30.0 = <u>13.5dB</u>

#### 5.5.5 Measurement Results

The minimum margins to the limits are as follows:

Ch No.	Frequency [MHz]	Test Receiver Reading [dB $\mu\text{V}$ ]	Antenna Polarity	Antenna Height [m]	Table Degree [°]	Factor [dB]	Margin [dB]
3	691.20	43.7	Horizontal	1.4	290	-4.7	7.0
9	691.20	43.4	Horizontal	1.2	220	-4.7	7.3
1	691.20	44.4	Horizontal	1.5	270	-4.7	6.3
1,2,3,9	662.40	43.9	Horizontal	3.2	160	-5.6	7.7

Note:

- 1.Emission Level (Margin) = Limit – [Reading + Factor (Antenna + Cable - Amp)]
- 2.The 6 highest emissions relative to the limits are reported.
- 3.The EUT was found to comply to the limits of FCC Part15 Subpart C and RSS-210 with a margin of 6.3dB.
4. No emissions were detected in frequency range 9KHz to 30MHz at the 3 meters distance.
- 5.Test was performed with and without pushing the operation button of EUT, however, emission level was not changed.

#### 5.5.6 Data

As for the chart of the observed RF profiles, refer to Annex D.

## 6. Laboratory Description

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### 6.1 Description for Test Site

1. Location: ZACTA Technology Corporation Yonezawa Testing Center  
4149-7 Hachimanpara 5-chome Yonezawa-shi Yamagata 992-1128 Japan  
Phone: +81-238-28-2880 Fax: +81-238-28-2888

2. The Number and Type of Site:

Site name: Site 1, Site 2 and Site 3 - Total 3 sites.

Site type: Whether protected site

\*3m/10m Radiated emission & Conducted emission testing can be performed on each site

3. Facility filing information:

1) FCC site filing: Pursuant to CFR47 § 2.948

Site name	Filing date (Terms of validity: 3 years)
Site 1, Site 2 and Site 3	March 6, 2000

2) Industry Canada Oats site filing: Pursuant to RSS 212, Issue 1 (Provisional)

Site name	Sites on file: Oats 3m/10m	Filing date (Terms of validity: 3 years)
Site 1	4224-1	January 31, 2002
Site 2	4224-2	January 31, 2002
Site 3	4224-3	January 31, 2002

3) VCCI site filing: Pursuant to V-5/99.05 VCCI Regulations for Registration of measurement facilities

Site name	Radiated emission Registration No.	Conducted emission Registration No.	Duration of Registration
Site 1	R-136	C-132	September 30, 2003
Site 2	R-137	C-133	September 30, 2003
Site 3	R-138	C-134	September 30, 2003

4) NVLAP Accreditation:

NVLAP Lab. code: 200306-0

NVLAP information: NVLAP accreditation does not constitute any product endorsement by NVLAP or any agent of the U.S. Government

Scope of accreditation

Emission test methods: CISPR22, FCC Part15-Digital Devices (Conducted/Radiated emissions), AS/NZS3548.

Immunity test methods: IEC 61000-4-2, 4-3, 4-4, 4-5, 4-6, 4-8, 4-11.

## 6.2 Uncertainty

Expanded Uncertainties stated were calculated with a coverage Factor  $k=2$ .

$\pm 2.97\text{dB}$  . . . For Conducted Emission

$\pm 5.23\text{dB}$  . . . For 3m Radiated Emission

$\pm 4.26\text{dB}$  . . . For 10m Radiated Emission

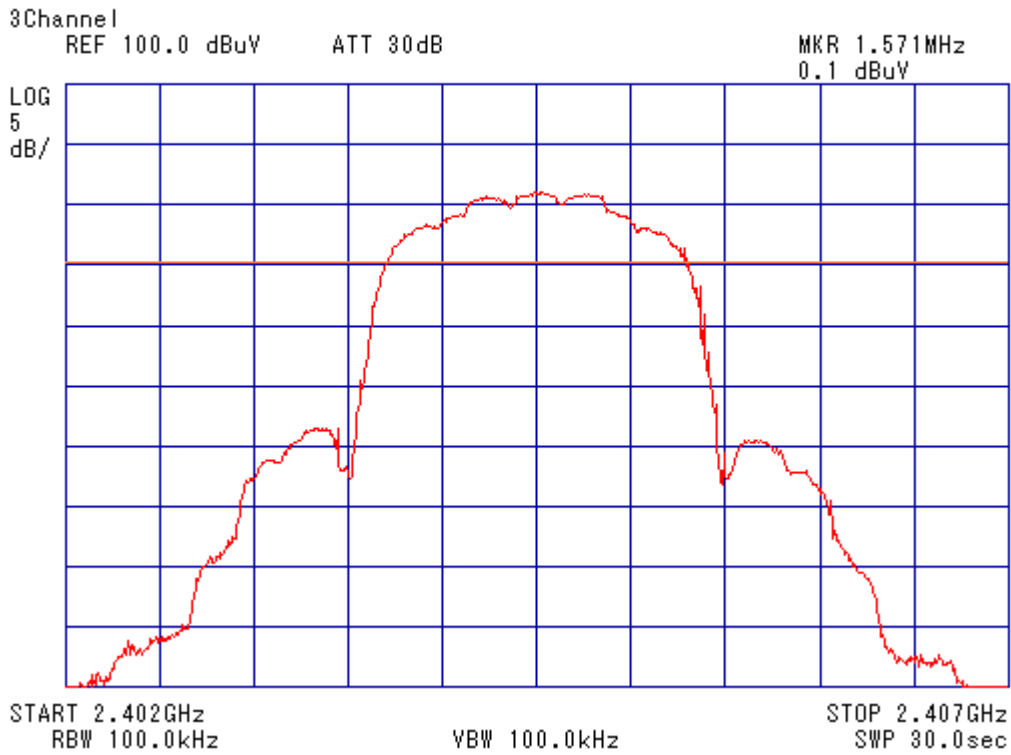
## Annex A

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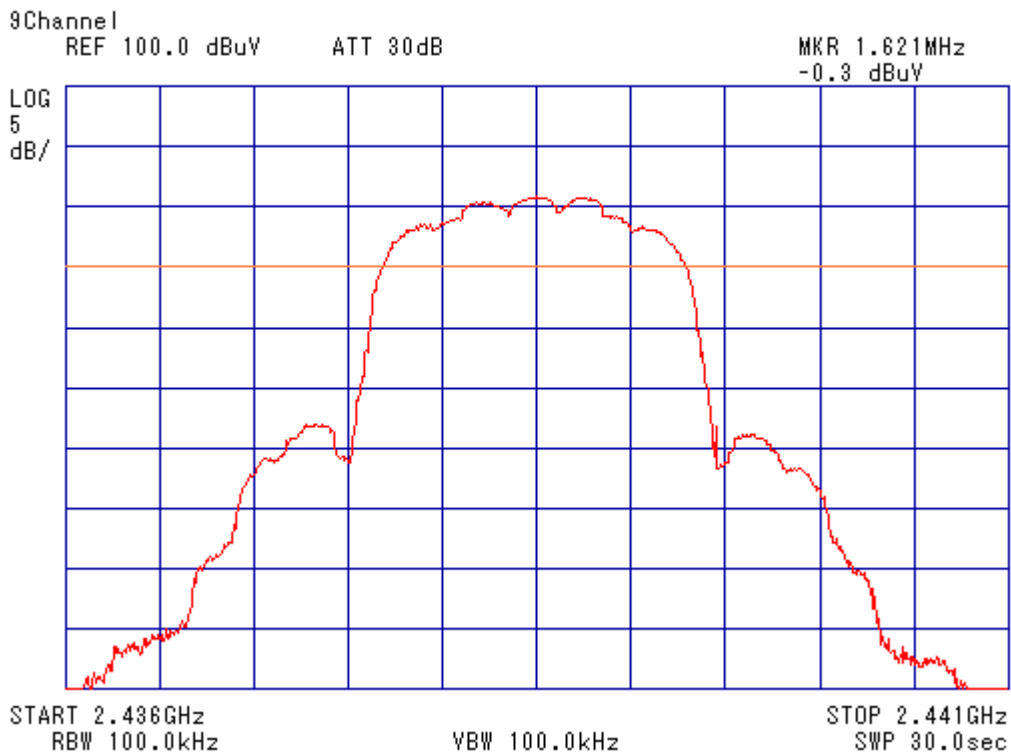
**Annex A**  
**Bandwidth at 6dB below**  
**Trace Data**



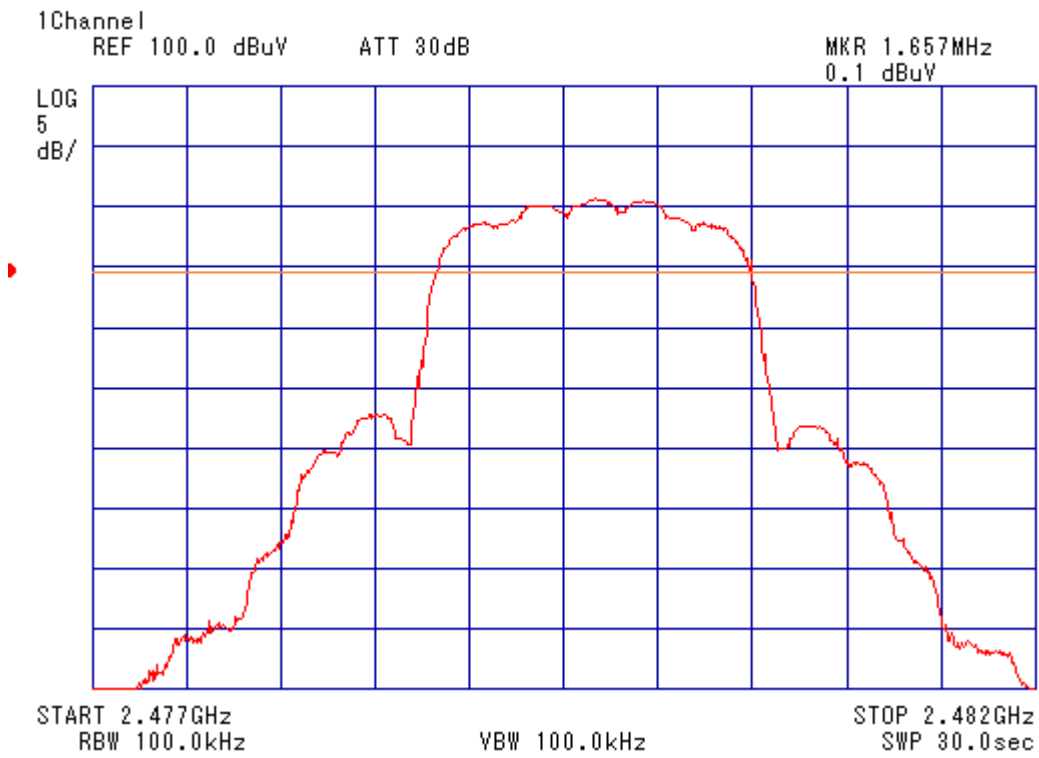
Channel Low : 2404.8MHz [3 channel]



Channel Middle : 2438.4MHz [9 channel]



Channel High : 2479.2MHz [1 channel]



## Annex B

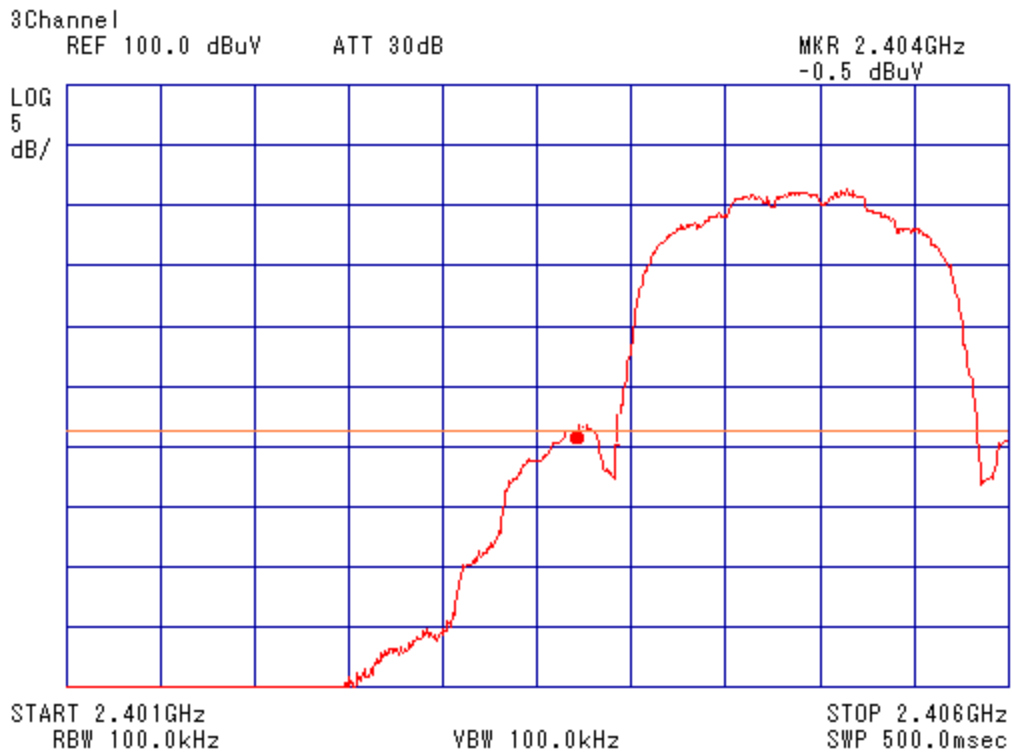
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### Annex B

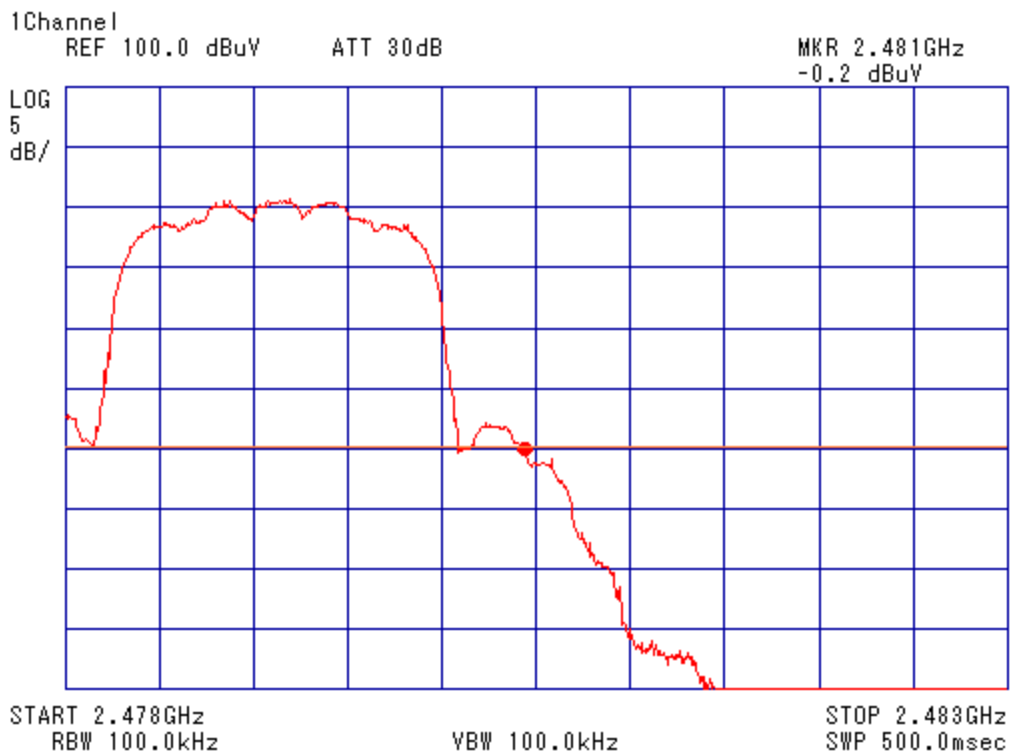
**Occupied Bandwidth / Band-edge (at 20 dB below),  
and Out of Band Emissions**

**Trace Data**

**Trace Data of Band-edge**  
**Channel Low : 2404.8MHz [3 channel]**



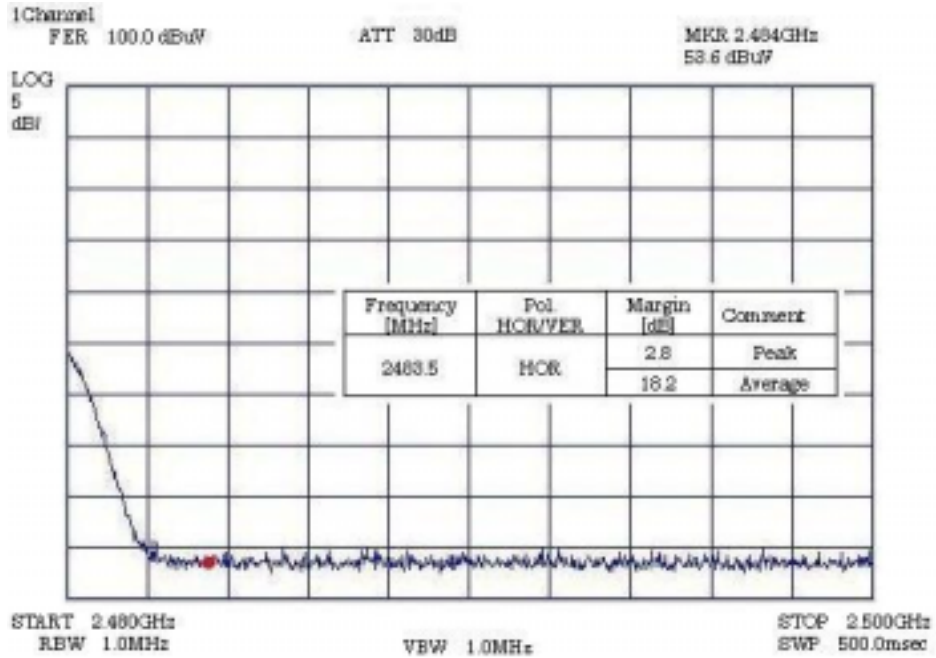
**Channel High : 2479.2MHz [1 channel]**



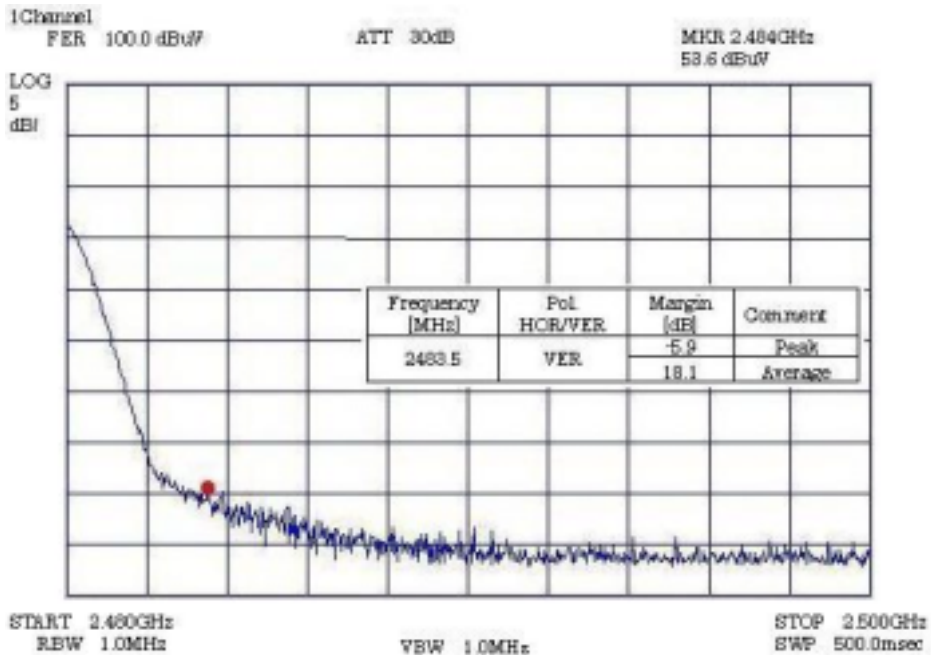
**Restricted Bands of Radiations (2.480GHz - 2.500GHz)**

**Channel High : 2479.2MHz [1 channel]**

**- Horizontal polarization -**



**- Vertical polarization -**







## Annex C

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### Annex C

### Transmitter Power Spectral Density

### Trace Data







## Annex D

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### Annex D

#### Restricted Bands Radiations (9kHz – 25GHz)

#### Data

\*\*\*\*\* RADIATED EMISSION \*\*\*\*\*

Standard : FCC Part15 SubpartC  
 Distance [m] : 3  
 Date of test : 2002/3/25  
 Test Site : 3  
 Temperature [°C] : 22.9  
 Humidity [%] : 27.7  
 Operator : K.Endo  
 Company Name : MITSUMI ELECTRIC CO.,LTD.  
 EUT : WIRELESS CONTROLLER & RECEIVER for VIDEOGAME  
 Model Number : DOL-004  
 Serial Number : N/A  
 Test Mode : Game Play  
 Comment : Controller Port 1 connected

Sheet Number : 1

Signature :



Antenna Pol.	Antenna Height [m]	Table Radian [Deg.]	Reading Frequency [MHz]	Reading Level [dB $\mu$ V]	Factor [dB/m]	Emission Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Comment
Channel High: 2479.2MHz [Channel 1]									
HOR	1.7	150	115.21	42.9	-16.5	26.4	43.5	17.1	
HOR	1.0	50	324.00	51.1	-12.9	38.2	46.0	7.8	
VER	1.1	70	324.01	47.4	-12.9	34.5	46.0	11.5	
VER	1.0	170	486.00	45.7	-9.1	36.6	46.0	9.4	
VER	1.0	185	518.40	37.0	-8.5	28.5	46.0	17.5	
HOR	1.4	255	662.40	41.6	-5.6	36.0	46.0	10.0	
HOR	1.5	270	691.20	44.4	-4.7	39.7	46.0	6.3	*
VER	1.4	145	691.21	39.2	-4.7	34.5	46.0	11.5	
HOR	1.2	260	748.81	37.3	-3.4	33.9	46.0	12.1	
VER	1.2	135	748.81	35.7	-3.4	32.3	46.0	13.7	
VER	1.0	10	4959.20	23.9	8.6	32.5	54.0	21.5	Ave
VER	1.0	10	4959.20	30.0	8.6	38.6	54.0	15.4	Peak
Channel Middle:2438.4MHz [Channel 9]									
HOR	1.7	20	115.21	37.2	-16.5	20.7	43.5	22.8	
HOR	1.0	50	324.00	48.8	-12.9	35.9	46.0	10.1	
VER	1.7	320	324.00	48.9	-12.9	36.0	46.0	10.0	
VER	1.2	180	486.00	43.5	-9.1	34.4	46.0	11.6	
VER	1.0	150	518.40	34.4	-8.5	25.9	46.0	20.1	
HOR	1.4	220	662.40	40.7	-5.6	35.1	46.0	10.9	
HOR	1.2	220	691.20	43.4	-4.7	38.7	46.0	7.3	
VER	2.0	20	691.21	38.6	-4.7	33.9	46.0	12.1	
HOR	1.1	200	748.81	38.8	-3.4	35.4	46.0	10.6	
VER	1.4	280	748.81	36.3	-3.4	32.9	46.0	13.1	
VER	1.0	10	4876.71	21.4	8.3	29.7	54.0	24.3	Ave
VER	1.0	10	4876.71	33.9	8.3	42.2	54.0	11.8	Peak
Channel Low : 2404.8MHz [Channel 3]									
HOR	1.4	20	115.21	37.3	-16.5	20.8	43.5	22.7	
HOR	1.3	330	324.00	49.1	-12.9	36.2	46.0	9.8	
VER	1.9	330	324.01	43.1	-12.9	30.2	46.0	15.8	
VER	1.5	150	486.00	39.5	-9.1	30.4	46.0	15.6	
VER	1.2	10	518.40	37.7	-8.5	29.2	46.0	16.8	
HOR	1.4	240	662.40	40.3	-5.6	34.7	46.0	11.3	
HOR	1.4	290	691.20	43.7	-4.7	39.0	46.0	7.0	
VER	1.1	90	691.21	39.5	-4.7	34.8	46.0	11.2	
HOR	1.3	260	748.81	36.6	-3.4	33.2	46.0	12.8	
VER	1.2	200	748.81	35.3	-3.4	31.9	46.0	14.1	
VER	1.0	10	4809.60	21.6	8.3	29.9	54.0	24.1	Ave
VER	1.0	10	4809.60	32.4	8.3	40.7	54.0	13.3	Peak

\* : The worst emission.

Factor: Antenna Factor + Cable Loss - Amp Gain

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\*\*\*\*\* RADIATED EMISSION \*\*\*\*\*

Standard : FCC Part15 SubpartC  
 Distance [m] : 3  
 Date of test : 2002/3/25  
 Test Site : 3  
 Temperature [℃] : 22.9  
 Humidity [%] : 27.7  
 Operator : K.Endo  
 Company Name : MITSUMI ELECTRIC CO., LTD.  
 EUT : WIRELESS CONTROLLER & RECEIVER for VIDEOGAME  
 Model Number : DOL-004  
 Serial Number : N/A  
 Test Mode : Game Play  
 Comment : Controller Port 1,2,3,4 Conncted

Sheet Number : 2

Signature :



Antenna Pol.	Height [m]	Table Radian [Deg.]	Reading Frequency [MHz]	Reading Level [dB $\mu$ V]	Factor [dB/m]	Emission Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Comment
Port1=Channel 1, Port2=Channel 3, Port3=Channel 9, Port4=Channel 2									
HOR	3.4	40	115.21	39.8	-16.5	23.3	43.5	20.2	
HOR	3.2	290	324.00	41.1	-12.9	28.2	46.0	17.8	
VER	3.1	36	324.01	36.9	-12.9	24.0	46.0	22.0	
VER	3.2	200	486.00	37.3	-9.1	28.2	46.0	17.8	
VER	3.2	0	518.40	29.3	-8.5	20.8	46.0	25.2	
HOR	3.2	160	662.40	43.9	-5.6	38.3	46.0	7.7	*
HOR	3.2	0	691.20	40.3	-4.7	35.6	46.0	10.4	
VER	3.2	150	691.21	39.5	-4.7	34.8	46.0	11.2	
HOR	3.2	25	748.81	33.5	-3.4	30.1	46.0	15.9	
VER	3.2	230	748.81	36.7	-3.4	33.3	46.0	12.7	
VER	1.0	10	4809.60	23.9	8.3	32.2	54.0	21.8	Ave
VER	1.0	10	4809.60	36.2	8.3	44.5	54.0	9.5	Peak

\*:The worst emission.

Factor:Antenna Factor + Cable Loss - Amp Gain

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