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TEST REPORT

Report No.: Z01C-06327

Issue Date: September 5, 2006

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
- Class II Permissive Change -

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

Applicant	:	MITSUMI ELECTRIC CO., LTD. 2-11-2, TSURUMAKI, TAMA-SHI, TOKYO 206-8567, Japan Phone: +81-42-310-5333 Fax.: +81-42-310-5168
Equipment under test (EUT)	:	Wii Remote Controller
FCC ID	:	POO-WC45
IC Certification Number	:	4250A-WC45
Model Number	:	RVL-003
Serial Number	:	N/A
EUT Condition	:	Pre-production

Test procedure	:	ANSI C63.4-2003
Date of test	:	August 28, 30, 2006
Test place	:	Site 3, Shielded room
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.

This test report must not be used by client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Authorized by: Jun Shimanuki
General Manager of EMC Technical Division

NVLAP LAB CODE 200306-0

Table of contents

1. Summary of Test

1.1 Purpose of test

This test report is issued for the purpose of re-testing due to the change in circuit board.

1.2 Summary of test results

Table-A presents the list of the measurement items for Spread Spectrum, Frequency hopping devices under FCC Part 15 Subpart C and Industry Canada RSS-210 Issue 6.

Table-A: List of the measurements

Test Items Section	Test Items				Condition	Result
	Transmit mode [Tx]:	Limit				
15.247(a)(1) RSS-210 A8.1(1)	Occupied Bandwidth (20dB Bandwidth)	None			Conducted	**Pass**
RSS-Gen 4.4.1	99% Occupied bandwidth	No limit			Conducted	**Pass**
15.247(a)(1) A8.1(2)	Carrier Frequency Separation	Systems shall have hopping channel carrier frequencies separated by a minimum of; 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.			Conducted	**Pass**
15.247(a)(1)(iii) A8.1(4)	Number of Hopping Frequencies	Shall have more than 15 channels.			Conducted	**Pass**
15.247(a)(1)(iii) A8.1(4)	Time of Occupancy (Dwell Time)	The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.			Conducted	**Pass**
15.247(b)(1) 15.31(e) A8.4(2)	Maximum Peak Output Power - Conducted -	Shall not exceed 0.125 W.			Conducted	**Pass**
15.247(c) A8.5	Band Edge Compliance of RF Conducted Emissions	In any 100KHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power.			Conducted	**Pass**
15.247(c) RSS-210 A8.5 RSS-Gen 4.7, 4.8	Spurious Emissions	In any 100KHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power.			Conducted Radiated	**Pass**
15.247(c) 15.205 15.209 RSS-210 A8.5	Restricted Bands of Operation	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	**Pass**
15.247(d) A8.2(2)	Transmitter power spectral Density	Shall not be greater than 8 dBm in any 3KHz band.			Conducted	**Pass**
15.207 RSS-Gen 7.2.2	AC Power Line Conducted Emissions 150kHz – 30MHz	**MHz**	**QP[dBuV]**	**AV[dBuV]**	Conducted	**N/A**
		0.15 - 0.50	66 - 56	56 - 46		
		0.50 - 5	56	46		
		5 - 30	60	50		

Note: Conducted Emissions measurement is not applicable because the EUT is powered by dry batteries.

2. Equipment description

2.1 EUT information

No.	EUT	Company	Model No.	Serial No.	FCC ID/DoC	Comment
1	Wii Remote Controller	NINTENDO	RVL-003	N/A	POO-WC45	EUT

Oscillator(s)/Crystal(s) Operating frequency : 24MHz

Power ratings : DC 3.0V(dry battery)

Port(s) : I/O

Size : (W) 36 x (D) 148 x (H) 34 mm

Operating mode : Test mode

Variation of model(s) : Not applicable

[RF Specification]

Protocol : Bluetooth
Spread method : Frequency hopping spread spectrum (FHSS)
Communication method : TDD
Frequency Range : 2402MHz – 2480MHz
Number of FR Channels : 79 Channels
Modulation Method : Gauss Ian Frequency Shift Keying (GFSK)
Nominal Bit Rates : 1600hops/s
Symbol rate on channel : 1Mbps
Channel Separation : 1MHz
Output power : 1.630mW
Antenna (Rx and Tx) : Integral antenna
Antenna gain : 1.2dBi
RF type : Tranceiver
Intended use : Data transmission
RF emission type designator : 882KF1D

2.2 Operating channels and frequencies.

Channel	Frequency [MHz]	Channel	Frequency [MHz]	Channel	Frequency [MHz]
1	2402	28	2429	55	2456
2	2403	29	2430	56	2457
3	2404	30	2431	57	2458
4	2405	31	2432	58	2459
5	2406	32	2433	59	2460
6	2407	33	2434	60	2461
7	2408	34	2435	61	2462
8	2409	35	2436	62	2463
9	2410	36	2437	63	2464
10	2411	37	2438	64	2465
11	2412	38	2439	65	2466
12	2413	39	2440	66	2467
13	2414	40	2441	67	2468
14	2415	41	2442	68	2469
15	2416	42	2443	69	2470
16	2417	43	2444	70	2471
17	2418	44	2445	71	2472
18	2419	45	2446	72	2473
19	2420	46	2447	73	2474
20	2421	47	2448	74	2475
21	2422	48	2449	75	2476
22	2423	49	2450	76	2477
23	2424	50	2451	77	2478
24	2425	51	2452	78	2479
25	2426	52	2453	79	2480
26	2427	53	2454		
27	2428	54	2455		

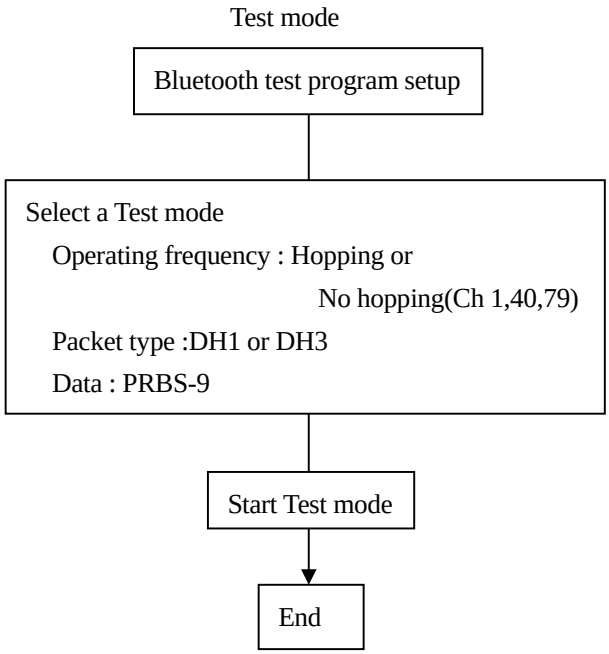
2.3 Operating flow

2.3.1 Operating condition

The test was carried out under the following conditions during the test.

2.3.2 Test mode

Following programs were performed continuously.



3. Configuration information

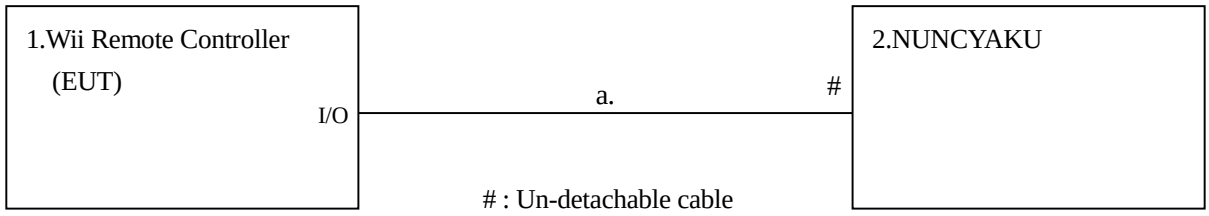
3.1 Peripheral(s) used

No.	Equipment	Company	Model No.	Serial No.	DoC / FCC ID	Comment
2	NUNCYAKU	NINTENDO	RVL-004	N/A	N/A	-

3.2 Cable(s) information

No.	Cable	Length [m]	Shield	Connector	From	To	Comment
a	Controller cable	0.7	Shielded	Metal	EUT	Nunchaku	-

3.3 System configuration



Note 1: Numbers assigned to equipment or cables on this diagram are corresponded to the list in "2.1 EUT information", "3.1 Peripheral(s) used and "3.2 Cable(s) information".

4. Test Instruments

List of Measuring Instruments

Equipment	Company	Model No.	Serial No.	Cal. due
Spectrum Analyzer (100Hz-1.5GHz)	Agilent Technologies	8568B	2732A03847	Nov. 2006
Spectrum Analyzer (100kHz-26GHz)	ADVANTEST	R3271A	65050042	Nov. 2006
Spectrum Analyzer (9kHz – 13.2GHz)	Agilent Technologies	E4405B	US40240628	May. 2007
Spectrum Analyzer (9kHz – 26.5GHz)	Agilent Technologies	E7405A	US41160344	Jul. 2007
Preamplifier (100kHz-1.2GHz)	NOGAWA	5331	060110	Jan. 2007
Preamplifier (1GHz-26.5GHz)	Agilent Technologies	8449B	3008A01008	Jan. 2007
Test Receiver (9kHz-30MHz)	ROHDE&SCHWARZ	ESHS10	835499/012	Apr.2007
Test Receiver (25MHz-1.5GHz)	Kyoritsu Electrical Works, Ltd.	KNM-5002	4N-200-5	Dec. 2006
	Kyoritsu Electrical Works, Ltd.	KCV-6002	4-288-2	Dec. 2006
Loop Antenna	ROHDE&SCHWARZ	HFH2-Z2	892246/010	Dec. 2007
Biconical Antenna	Schwarzbeck	VHA9103/BBA9106	1488	Jun. 2007
Log Periodic Antenna	Schwarzbeck	UHALP9108A	0398	Jun. 2007
Double Ridged Guide Antenna	EMCO	3115	9408-4327	Aug. 2007
HORN Antenna	Schwarzbeck	BBHA9170	BBHA9170189	Oct.2007
Microwave cable	Suhner	SUCOFLEX 104/15m SUCOFLEX 104/1m	108014/4 108015/4	Jan. 2007
Coaxial cable	Fujikura	8D-SFA/15m	YTCRFC#3R-001	Jul. 2007
		8D-SFA/15m	YTCRFC#3R-002	Jul. 2007
		8D-2W/8m	YTCRFC#3R-003	Jul. 2007
		5D-2W/1m	YTCRFC#3R,3C-001	Jul.2007
Coax cable	N/A	N/A	N/A	Apr. 2007
Coaxial Switch	ANRITSU	MP59B	6200331883	Jun. 2007
Site attenuation	ZACTA Technology Corp.	Site 3	N/A	Nov. 2006

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

5. Test Type and Results

5.1. 20dB Bandwidth / Occupied Bandwidth

5.1.1 Test Procedure [FCC 15.247(a)(1), IC RSS-210 A8.1(1)]

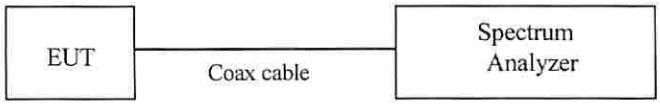
The bandwidth at 20 dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.
The spectrum analyzer is set to:
- RBW=30kHz, VBW=300kHz, Span=3MHz, Sweep=auto

The EUT was set to operate with following conditions.
- No hopping [ch 1 (low), ch 40 (mid) and ch 79 (high)]

The test mode of EUT is as follows.
- Test mode

5.1.2 Test Instruments and Measurement Setup

Equipment	Company	Model Number		Serial Number
Spectrum Analyzer	Agilent Technologies	E7405A		US41160344
Coax cable: - Spectrum Analyzer <=> EUT	N/A	Length: 5cm	Loss: 0.1dB	N/A



5.1.3 Limit of Bandwidth at 20 dB below

None

5.1.4 Measurement Result

[Test mode]

Channel	Center Frequency [MHz]	20dB Bandwidth [MHz]	Occupied Bandwidth [MHz]
1	2402.0	0.972	0.855
40	2441.0	0.975	0.875
79	2480.0	0.962	0.882

5.1.5 Trace Data

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

Test Personnel:

Tester Signature: Hiroaki Suzuki

Tester Name: Hiroaki Suzuki

Date : Aug. 30, 2006
Temperature : 26.0 [°C]
Humidity : 66.0 [%]
Test place : Shielded room

5.2. Carrier Frequency Separation

5.2.1 Test Procedure [FCC 15.247(a)(1), IC RSS-210 A8.1(2)]

The adjacent channel interval 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, Span=3MHz, Sweep=auto

The EUT was set to operate with following conditions.

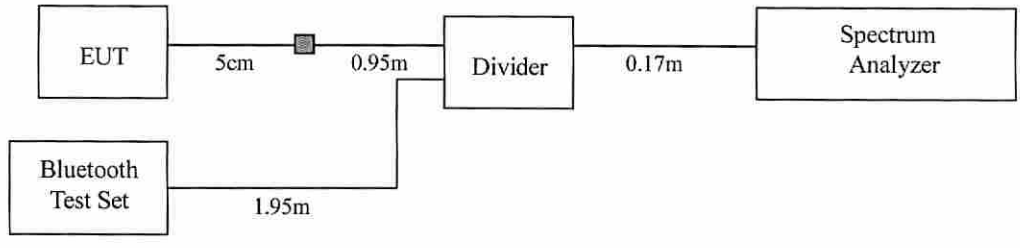
- Hopping

The test mode of EUT is as follows.

- Test mode

5.2.2 Test Instruments and Measurement Setup

Equipment	Company	Model Number	Serial Number
Spectrum Analyzer	Agilent Technologies	E7405A	US41160344
Coax cable: - EUT <=> Connector	N/A	Length: 5cm	N/A
Coax cable: - Connector <=> Divider	N/A	Length: 0.95m	N/A
Coax cable: - Bluetooth Test Set <=> Divider	N/A	Length: 1.95m	N/A
Coax cable: - Divider <=> Spectrum Analyzer	N/A	Length: 0.17m	N/A



5.2.3 Limit of Carrier Frequency Separation

Systems shall have hopping channel carrier frequencies separated by a minimum of;
25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

5.2.4 Measurement Result

[Test mode]

Channel Separation [MHz]	Limit [MHz]	PASS / FAIL
1.013	>two-thirds of the 20dB Bandwidth =660kHz	PASS

5.2.5 Trace Data

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

Test Personnel:

Tester Signature: Hiro Suzuki

Tester Name: Hiroaki Suzuki

Date : Aug. 30, 2006
Temperature : 27.0 [°C]
Humidity : 57.0 [%]
Test place : Shielded room

5.3. Number of Hopping Frequencies

5.3.1 Test Procedure [FCC 15.247(a)(1)(iii), IC RSS-210 A8.1(4)]

The number of hopping channels 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, Span=Arbitrary setting, Sweep=auto

The EUT was set to operate with following conditions.

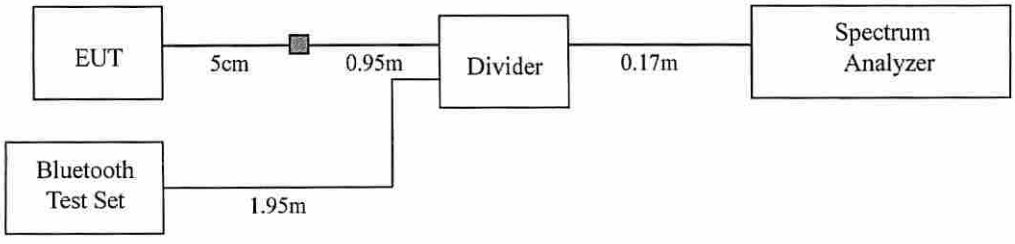
- Hopping

The test mode of EUT is as follows.

- Test mode

5.3.2 Test Instruments and Measurement Setup

Equipment	Company	Model Number	Serial Number
Spectrum Analyzer	Agilent Technologies	E7405A	US41160344
Coax cable: - EUT <=> Connector	N/A	Length: 5cm	N/A
Coax cable: - Connector <=> Divider	N/A	Length: 0.95m	N/A
Coax cable: - Bluetooth Test Set <=> Divider	N/A	Length: 1.95m	N/A
Coax cable: - Divider <=> Spectrum Analyzer	N/A	Length: 0.17m	N/A



5.3.3 Limit of Number of Hopping Frequencies

Shall have more than 15 channels.

5.3.4 Measurement Result

[Test mode]

Number of channels	Limit	PASS / FAIL
79	≧15 channel	PASS

5.3.5 Trace Data

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

Test Personnel:

Tester Signature: Hiro Suzuki

Tester Name: Hiroaki Suzuki

Date : Aug. 30, 2006
Temperature : 27.0 [°C]
Humidity : 57.0 [%]
Test place : Shielded room

5.4. Time of Occupancy (Dwell Time)

5.4.1 Test Procedure [FCC 15.247(a)(1)(iii), IC RSS-210 A8.1(4)]

The time occupancy of hopping channel 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=1MHz, VBW=1MHz, Span=0MHz, Sweep=5ms

The EUT was set to operate with following conditions.

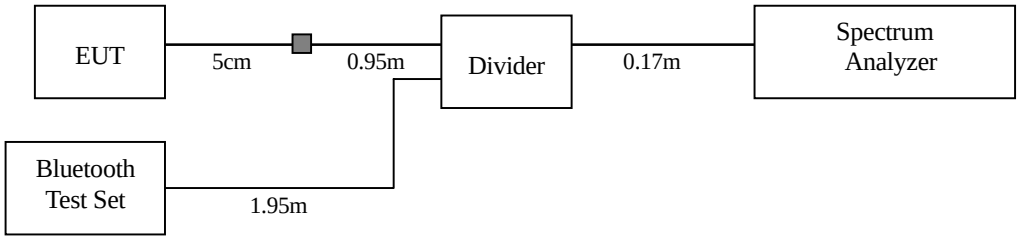
- Hopping [ch 1 (low), ch 40 (mid) and ch 79 (high)]

The test mode of EUT is as follows.

- Test mode

5.4.2 Test Instruments and Measurement Setup

Equipment	Company	Model Number	Serial Number
Spectrum Analyzer	Agilent Technologies	E4405B	US40240628
Coax cable: - EUT <=> Connector	N/A	Length: 5cm	N/A
Coax cable: - Connector <=> Divider	N/A	Length: 0.95m	N/A
Coax cable: - Bluetooth Test Set <=> Divider	N/A	Length: 1.95m	N/A
Coax cable: - Divider <=> Spectrum Analyzer	N/A	Length: 0.17m	N/A



5.4.3 Limit of Time of Occupancy (Dwell Time)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

5.4.4 Measurement Result

[Test mode]

Channel	Frequency [MHz]	Packet type	Dwell Time [ms]	Occupancy time of 31.6 seconds [s]	Limit	PASS / FAIL
1	2402.0	DH1	0.375	0.120	< 0.4 s	PASS
		DH3	1.625	0.260	< 0.4 s	PASS
40	2441.0	DH1	0.375	0.120	< 0.4 s	PASS
		DH3	1.612	0.258	< 0.4 s	PASS
79	2480.0	DH1	0.375	0.120	< 0.4 s	PASS
		DH3	1.613	0.258	< 0.4 s	PASS

The hopping rates of Bluetooth devices change with different types of payload. The longer the payload is, the slower the hopping rate. The hopping rate scenario is defined in Bluetooth core specification.

Calculation :
Occupancy time of 31.6 seconds * = time domain slot length x hop rate / number of hop per channel x 31.6

5.4.5 Trace Data

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

Test Personnel:

Tester Signature: 

Tester Name: Hiroaki Suzuki

Date : Aug. 30, 2006
Temperature : 27.0 [°C]
Humidity : 57.0 [%]
Test place : Shielded room

5.5. Maximum Peak Output Power - Conducted -

5.5.1 Test Procedure [FCC 15.247(b)(1), 15.31(e), IC RSS-210 A8.4(2)]

The peak power 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=3MHz, VBW=3MHz, Span=10MHz, Sweep=auto

The EUT was set to operate with following conditions.

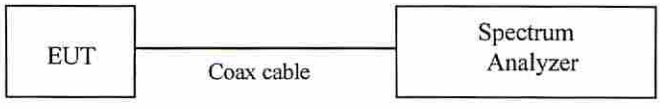
- No hopping [ch 1 (low), ch 40 (mid) and ch 79 (high)]

The test mode of EUT is as follows.

- Test mode in Battery operation. (new)

5.5.2 Test Instruments and Measurement Setup

Equipment	Company	Model Number		Serial Number
Spectrum Analyzer	Agilent Technologies	E4405B		US40240628
Coax cable: - Spectrum Analyzer <=> EUT	N/A	Length: 5cm	Loss: 0.1dB	N/A



5.5.3 Limit of Maximum Peak Output Power

0.125 watt or less.

5.5.4 Measurement Result

[Test mode (new Battery)]

channel	Center Frequency [MHz]	Factor [dB]	Reading [dBm]	Antenna Gain of EUT [dBi]	Level [dBm]	Peak Output Power [mW]	Limit [mW]	PASS /FAIL
1	2402.0	0.1	-0.356	1.2	0.944	1.243	≦125	PASS
40	2441.0	0.1	0.257	1.2	1.557	1.431	≦125	PASS
79	2480.0	0.1	0.822	1.2	2.122	1.630	≦125	PASS

Calculation :

Reading (dBm) + Factor (dB) + Antenna Gain of EUT (dBi) = Level (dBm)

10logP = Level (dBm)

$P = 10^{(\text{Maximum Peak Output Power (dBm)} / 10)}$ (mW)

5.5.5 Trace Data

As for the chart of the observed RF profiles, refer to **Appendix E**.

Test Personnel:

Tester Signature: Hiro Suzuki

Tester Name: Hiroaki Suzuki

Date : Aug. 30, 2006
Temperature : 27.0 [°C]
Humidity : 50.0 [%]
Test place : Shielded room

5.6 Band Edge Compliance of RF Conducted Emissions

5.6.1 Test Procedure [FCC 15.247 (c), IC RSS-210 A8.5]

The Band Edge 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, Span=Arbitrary setting, Sweep=Auto

The EUT was set to operate with following conditions.

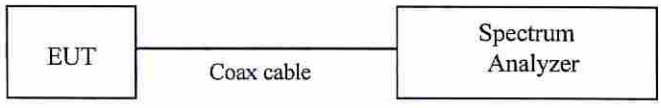
- No hopping [ch 1 (low) and ch 79 (high)]

The test mode of EUT is as follows.

- Test mode

5.6.2 Test Instruments and Measurement Setup

Equipment	Company	Model Number		Serial Number
Spectrum Analyzer	Agilent Technologies	E7405A		US41160344
Coax cable: - Spectrum Analyzer <=> EUT	N/A	Length: 5cm	Loss: 0.1dB	N/A



5.6.3 Limit of Band-edge Compliance of RF Conducted Emissions

In any 100KHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power.

5.6.4 Measurement Results of Band-edge

[No hopping]

Channel	Frequency [MHz]	RF power Level [dBm]	Band-edge Frequency [MHz]	Band-edge Level [dBm]	Difference Level [dBm]	Limit [dBm]	PASS / FAIL
1	2402.0	-1.16	2401.01	-34.90	33.74	At least 20dB below from peak of RF.	PASS
79	2480.0	-0.03	2481.55	-44.97	44.94	At least 20dB below from peak of RF.	PASS

5.6.5 Trace Data

As for the chart of the observed RF profiles, refer to **Appendix F.**

Test Personnel:

Tester Signature: Hiro Suzuki

Tester Name: Hiroaki Suzuki

Date : Aug. 30, 2006
Temperature : 27.0 [°C]
Humidity : 50.0 [%]
Test place : Shielded room

5.7. Spurious Emissions - Conducted -

5.7.1 Test Procedure [FCC 15.247(c), IC RSS-210 A8.5, RSS-Gen 4.7&4.8]

The spurious emissions (Conducted) 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=300kHz, Span=Arbitrary setting, Sweep=Auto

The EUT was set to operate with following conditions.

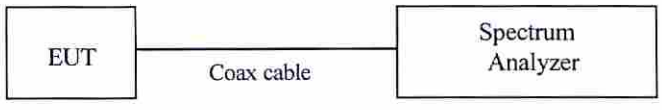
- No hopping [ch 1 (low), ch 40 (mid) and ch 79 (high)]

The test mode of EUT is as follows.

- Test mode

5.7.2 Test Instruments and Measurement Setup

Equipment	Company	Model Number		Serial Number
Spectrum Analyzer	Agilent Technologies	E 7405A		US41160344
Coax cable: - Spectrum Analyzer <=> EUT	N/A	Length: 5cm	Loss: 0.1dB	N/A



5.7.3 Limit of Spurious Emissions - Conducted -

In any 100KHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power.

5.7.4 Measurement Results of Spurious Emissions - Conducted -

[No hopping]

Channel	Frequency [MHz]	Limit [dBm]	Results Chart	PASS / FAIL
1	2402.0	At least 20dB below from peak of RF.	Appendix H	PASS
40	2441.0	At least 20dB below from peak of RF.	Appendix H	PASS
79	2480.0	At least 20dB below from peak of RF.	Appendix H	PASS

5.7.5 Trace Data

As for the chart of the observed RF profiles, refer to **Appendix G**.

Test Personnel:

Tester Signature: Hiro Suzuki

Tester Name: Hiroaki Suzuki

Date : Aug. 30, 2006
Temperature : 26.0 [°C]
Humidity : 65.0 [%]
Test place : Shielded room

5.8. Spurious Emissions - Radiated - (9kHz – 25GHz)

5.8.1 Test Procedure [FCC 15.205/209/247(c), IC RSS-210 A8.5, RSS-Gen 4.7&4.8]

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 1.5meter surface, 0.8meter height styrene form 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 fundamental frequency generated in the EUT is 2402-2480MHz, 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.

5.8.2 Test Instruments and Measurement Setup

Spurious Emissions Test Instrumentation

[Testing below 30MHz]

Equipment	Company	Model Number	Serial Number
Spectrum Analyzer (100Hz-1.5GHz)	Agilent Technologies	8568B	2732A03847
Test Receiver (9kHz-30MHz)	ROHDE&SCHWARZ	ESHS10	835499/012
Loop Antenna	ROHDE&SCHWARZ	HFH2-Z2	892246/010
Coaxial cable	N/A	RG213	N/A
	Fujikura	5D-2W/1m	YTCRFC#3R,3C-001
Coaxial Switch	Anritsu	MP59B	6200331883

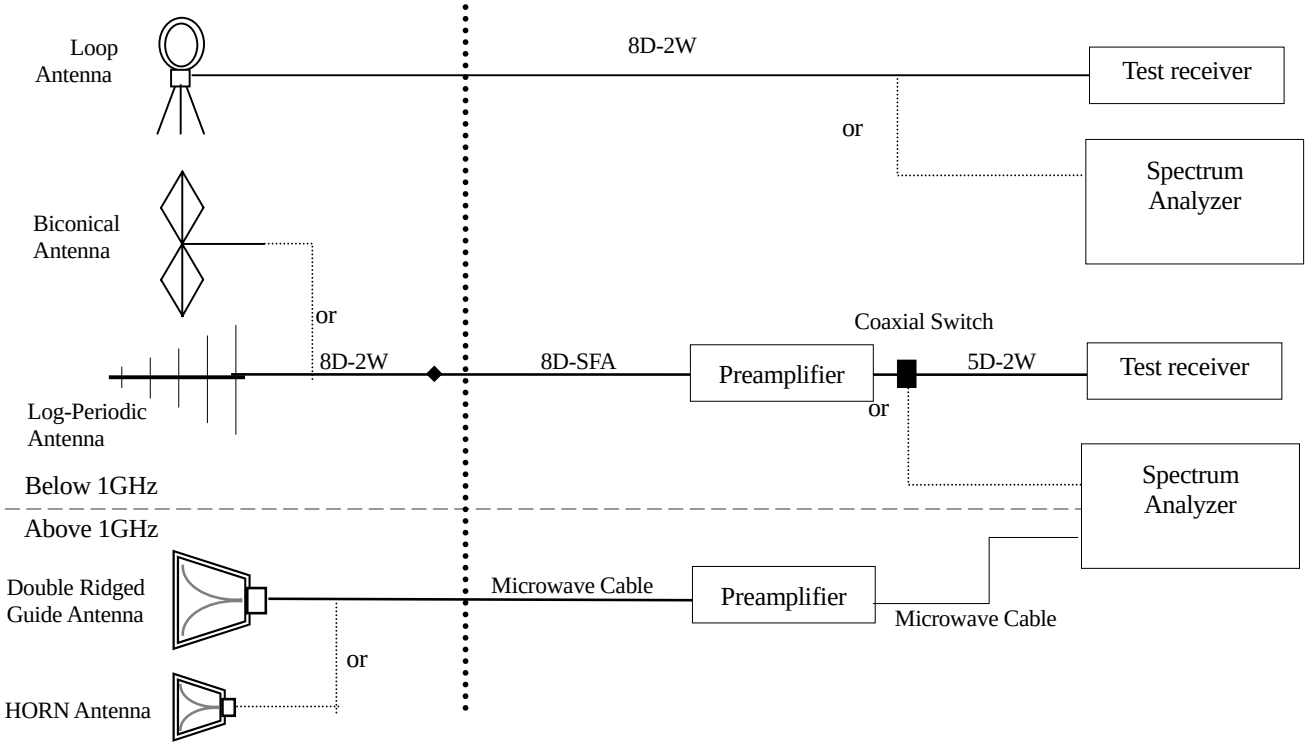
[Testing 30MHz-1GHz]

Equipment	Company	Model Number	Serial Number
Spectrum Analyzer (100Hz-1.5GHz)	Agilent Technologies	8568B	2732A03847
Preamplifier (100kHz-1.2GHz)	NOGAWA	5331	060110
Test Receiver (25MHz-1.5GHz)	Kyoritsu Electrical Works, Ltd.	KNM-5002	4N-200-5
	Kyoritsu Electrical Works, Ltd.	KCV-6002	4-288-2
Biconical Antenna	Schwarzbeck	VHA9103/BBA9106	1488
Log Periodic Antenna	Schwarzbeck	UHALP9108A	0398
Coaxial cable	Fujikura	8D-SFA/15m	YTCRFC#3R-001
		8D-SFA/15m	YTCRFC#3R-002
		8D-2W/8m	YTCRFC#3R-003
		5D-2W/1m	YTCRFC#3R,3C-001
Coaxial Switch	Anritsu	MP59B	6200331883

[Testing above 1GHz]

Equipment	Company	Model Number	Serial Number
Spectrum Analyzer	ADVANTEST	R3271A	65050042
Preamplifier	Agilent Technologies	8449B	3008A01008
Double Ridged Guide Antenna	EMCO	3115	9408-4327
HORN Antenna	Schwarzbeck	BBHA9170	BBHA9170189
Microwave cable	Suhner	SUCOFLEX 104/15m SUCOFLEX 104/1m	108014/4 108015/4

Test configuration for Spurious emissions



5.8.3 Limit of Spurious 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.

5.8.4 Sample of field strength calculation

Spurious Emission **dBμV /m = 20log$_{10}$ (μV/m)**

Limit @147.6MHz = 150μV/m = 43.5dBμV/m
Reading = 42.8dBμV Ant. Factor + Cable Loss - Amp. Gain = 14.2 + 3.0 - 30.0 = -12.8dB Total = 42.8 - 12.8 = 30.0dBμV/m Margin = 43.5 - 30.0 = 13.5dB

5.8.5 Measurement Results

The minimum margins to the limits are as follows:

Channel	Frequency [MHz]	Pol. [H/V]	Antenna Height [m]	Table Degree [deg.]	Margin [dB]	Detecter
1	636.02	H	1.8	95	10.1	Quasi-peak
40	636.02	H	1.8	90	9.9	Quasi-peak
79	4959.94	H	1.0	335	9.7	Average

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 9.7dB.
4. No emissions were detected in frequency range 9KHz to 30MHz at the 3 meters distance.

5.8.6 Data

As for the data of the observed RF profiles, refer to **Appendix H**.

5.9. Restricted Band of Operation

5.9.1 Test Procedure [FCC 15.205, 15.209, 15.247(c), IC RSS-210 A8.5]

The peak power 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=1MHz, VBW=1MHz, Span=Arbitrary setting, Sweep=auto

The EUT was set to operate with following conditions.

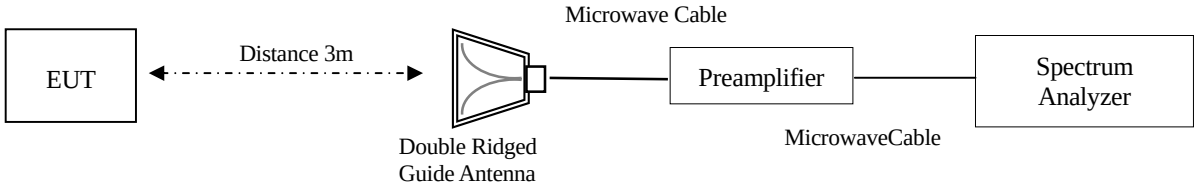
- Hopping

The test mode of EUT is as follows.

- Test mode

5.9.2 Test Instruments and Measurement Setup

Equipment	Company	Model Number	Serial Number
Spectrum Analyzer	ADVANTEST	R3271A	65050042
Preamplifier	Agilent Technologies	8449B	3008A01008
Double Ridged Guide Antenna	EMCO	3115	9408-4327
Microwave cable	Suhner	SUCOFLEX 104/15m SUCOFLEX 104/1m	108014/4 108015/4



5.9.3 Limit of Restricted Band of Operation

Emission at the boundary of the restricted band provided by 15.205 shall be lower than 15.209 limit.

5.9.4 Measurement Result

Frequency [MHz]	Pol. [H/V]	Reading [dBuV/m]		Factor [dB]	Emission Level [dBuV/m]		Limit [dBuV/m]		Margin [dB]		PASS /FAIL
		Peak	Ave.		Peak	Ave.	Peak	Ave.	Peak	Ave.	
2390.0	H	45.3	34.6	-2.0	43.3	32.6	74.0	54.0	30.7	21.4	PASS
2390.0	V	45.0	34.5	-2.0	43.0	32.5	74.0	54.0	31.0	21.5	PASS
2483.5	H	55.5	51.7	-1.3	54.2	50.4	74.0	54.0	19.8	3.6	PASS
2483.5	V	49.3	46.4	-1.3	48.0	45.1	74.0	54.0	26.0	8.9	PASS

5.9.5 Trace Data

As for the chart of the observed RF profiles, refer to **Appendix I**.

Test Personnel:

Tester Signature: Hiro Suzuki

Tester Name: Hiroaki Suzuki

Date : Aug. 28, 2006
Temperature : 27.1 [°C]
Humidity : 45.1 [%]
Test place : Site 3

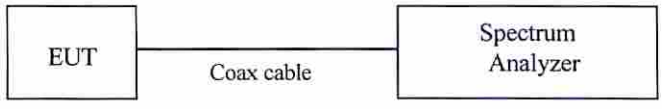
5.10. Transmitter Power Spectral Density

5.10.1. Test Procedure [FCC 15.247(d)/247(f), IC RSS-210 A8.2(2)]

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=10KHz, Span=300kHz, Sweep = 100 sec.

5.10.2 Test Instruments and Measurement Setup

Equipment	Company	Model Number		Serial Number
Spectrum Analyzer	Agilent Technologies	E7405A		US41160344
Coax cable: - Spectrum Analyzer <=> EUT	N/A	Length: 5cm	Loss: 0.1dB	N/A



5.10.3 Limit of Transmitter Power Spectral Density

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

5.10.4 Measurement Results

Ch No.	Frequency [MHz]	Reading [dBm]	Factor (Cable loss) [dB]	Level [dBm]	Limit [dBm]	Margin [dB]
1	2402.0	-15.60	0.1	-15.59	8.0	22.59
40	2441.0	-12.95	0.1	-12.85	8.0	22.89
79	2480.0	-10.98	0.1	-10.88	8.0	25.24

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

5.10.5 Trace Data

As for the chart of the observed RF profiles, refer to **Appendix J**.

Test Personnel:

Tester Signature: Hiro Suzuki

Tester Name: Hiroaki Suzuki

Date : Aug. 30, 2006
Temperature : 26.0 [°C]
Humidity : 65.0 [%]
Test place : Shielded room

5.11. Antenna requirement

According to FCC section 15.203., an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
The antenna is pattern antenna mounted inside of the EUT. Therefore, the EUT complies with the antenna requirement of FCC section 15.203.

6. Uncertainty of measurement

Expanded uncertainties stated were calculated with a coverage Factor k=2.
Please note that these results are not taken into account when determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission at mains port (150kHz - 30MHz)	±2.6dB
Radiated emission (9kHz - 30MHz)	±4.1dB
Radiated emission (30MHz - 1000MHz)	±4.1dB
Radiated emission (1000MHz – 26.5GHz)	±3.6dB

7. Laboratory description

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. Facility type:
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
3m anechoic chamber
Shielded room

3. Facility filing information:
1) NVLAP accreditation: NVLAP Lab. code: 200306-0

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 11, 2005
Site 2	4224-2	January 11, 2005
Site 3	4224-3	January 11, 2005

3) VCCI site filing: Pursuant to V–5/2003.04 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, 2006
Site 2	R-137	C-133	September 30, 2006
Site 3	R-138	C-134	September 30, 2006

4) ETL SEMKO authorization:
Authorized as an EMC test laboratory.

5) TUV Rheinland authorization:
Authorized as an EMC test laboratory.

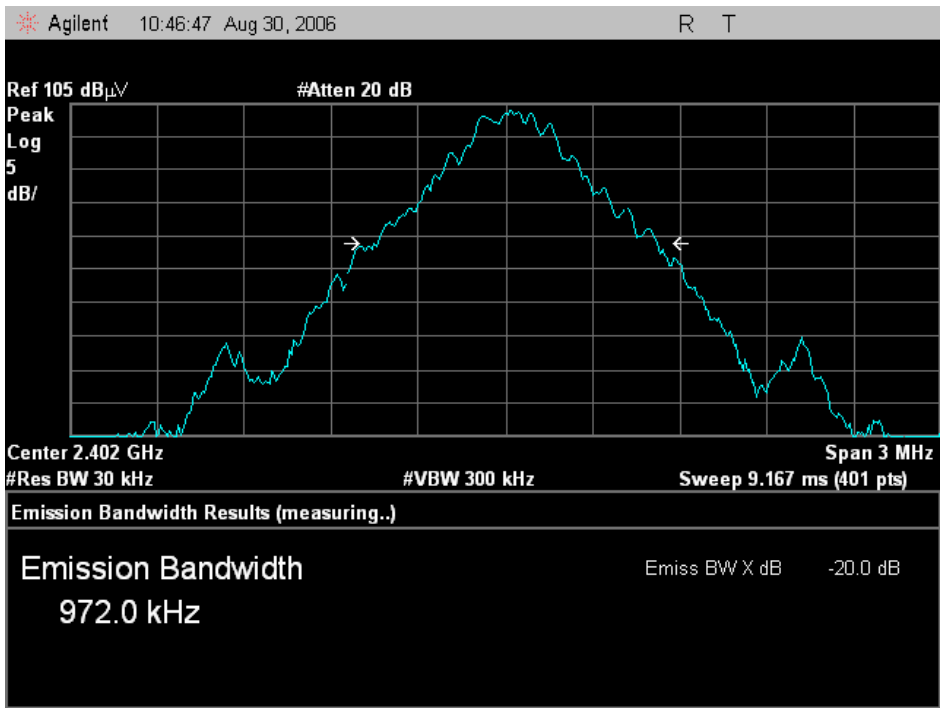
Appendix A

20dB Bandwidth / Occupied Bandwidth

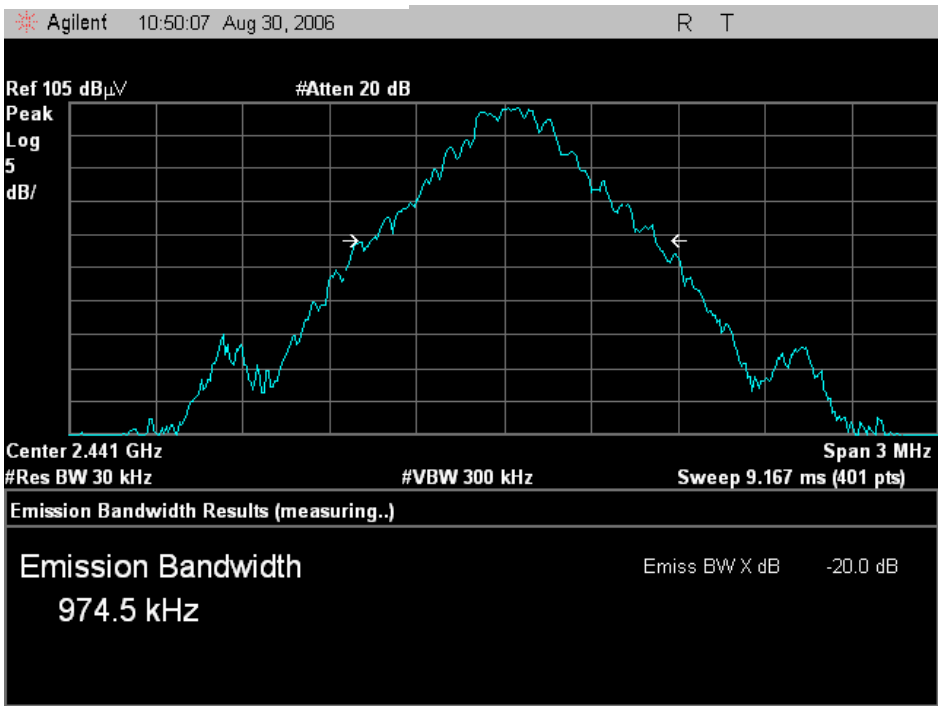
Trace Data

Trace Data of 20dB Bandwidth

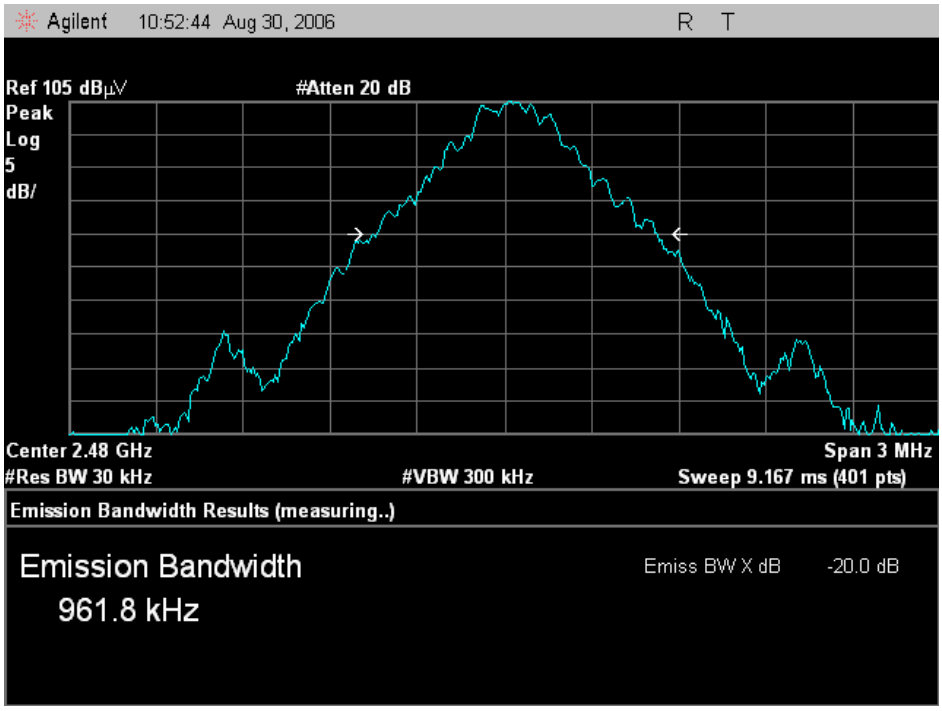
Channel Low : 2402.0MHz [Channel 1]



Channel Middle : 2441.0MHz [Channel 40]

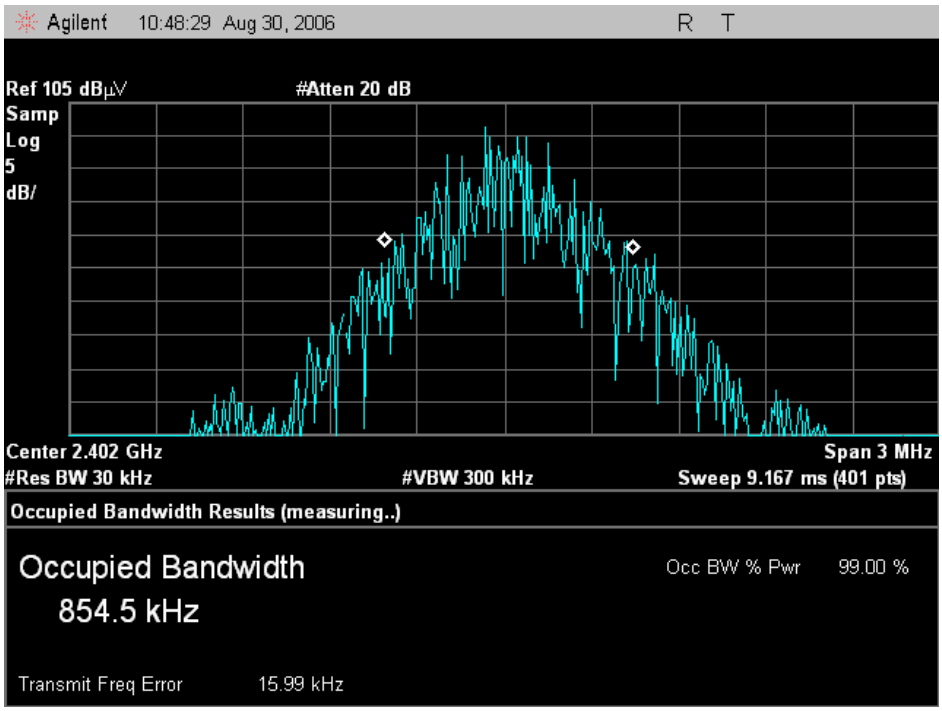


Channel High : 2480.0MHz [Channel 79]

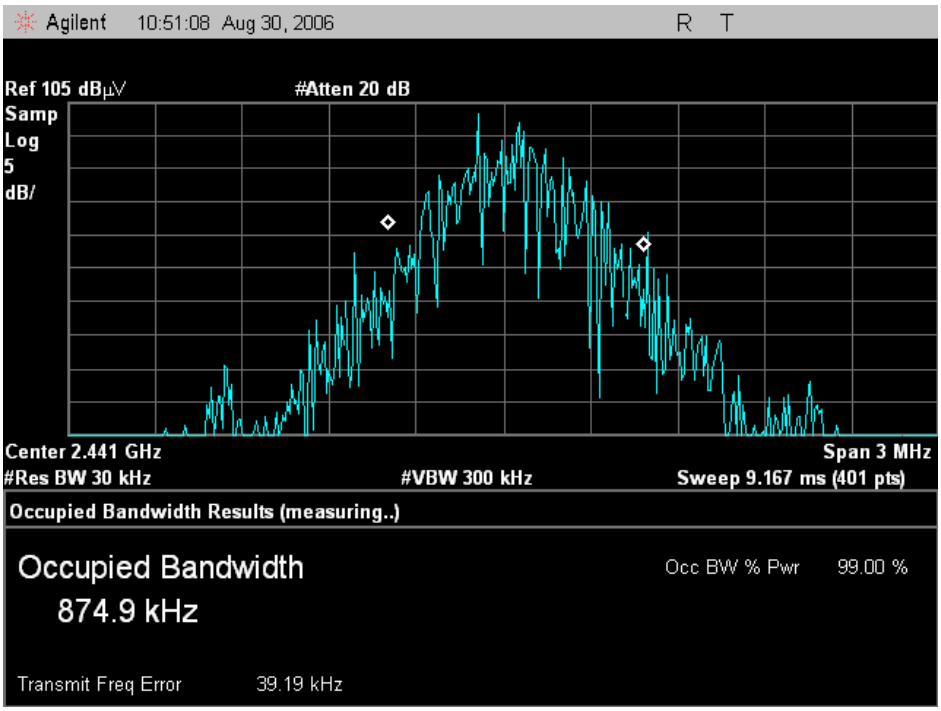


Trace Data of Occupied Bandwidth

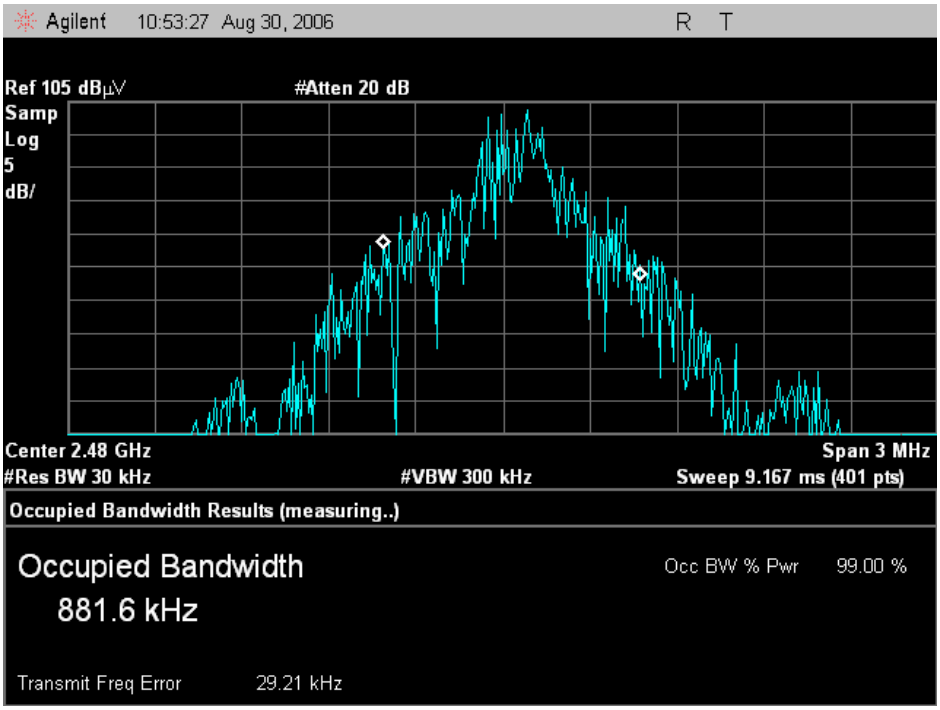
Channel Low : 2402.0MHz [Channel 1]



Channel Middle : 2441.0MHz [Channel 40]



Channel High : 2480.0MHz [Channel 79]

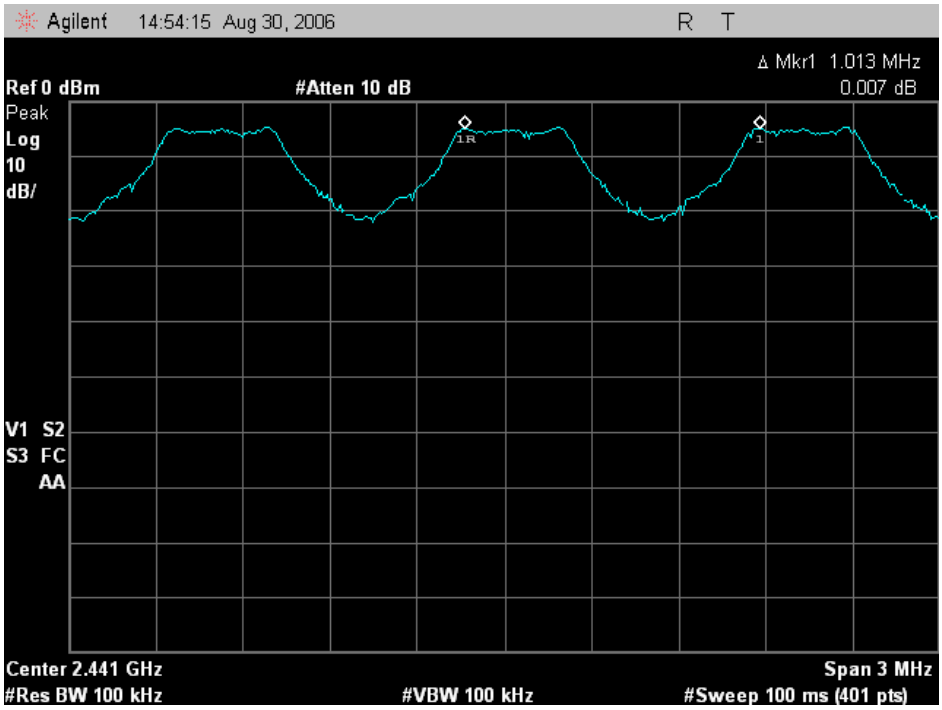


Appendix B

Carrier Frequency Separation
Trace Data

Carrier Frequency Separation

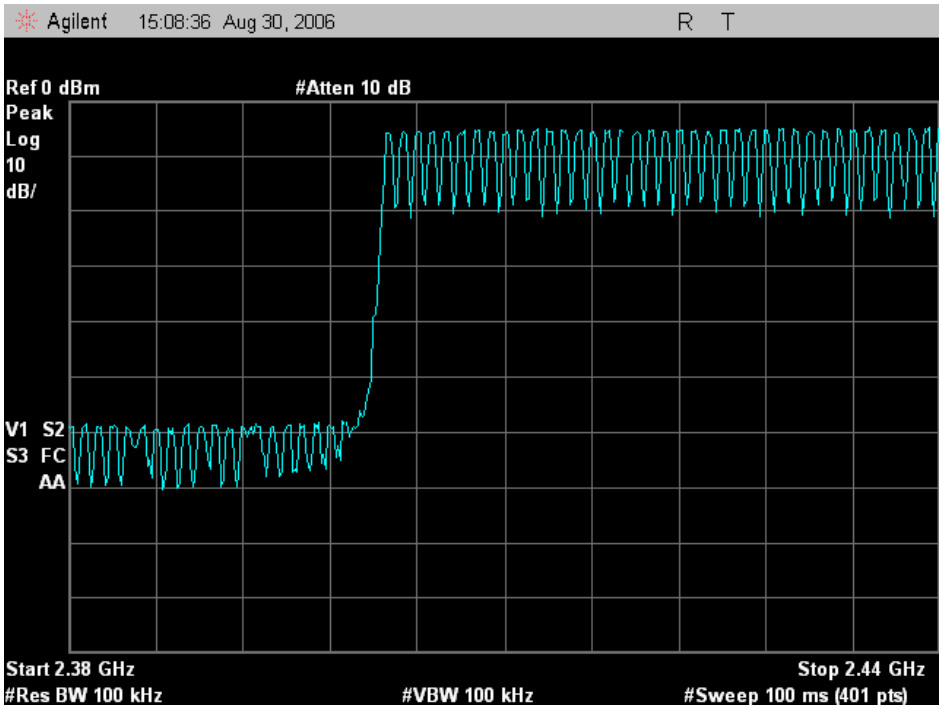
CH: Middle (2441MHz) Hopping



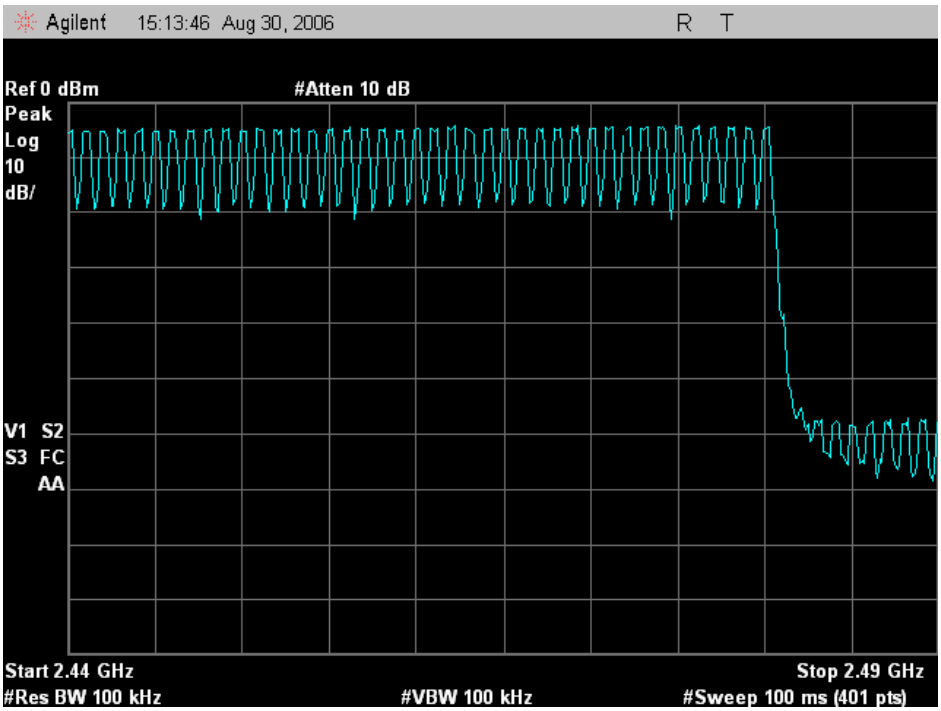
Appendix C

Number of Hopping Frequencies Trace Data

CH: Low (2402MHz) Hopping



CH: High (2480MHz) Hopping

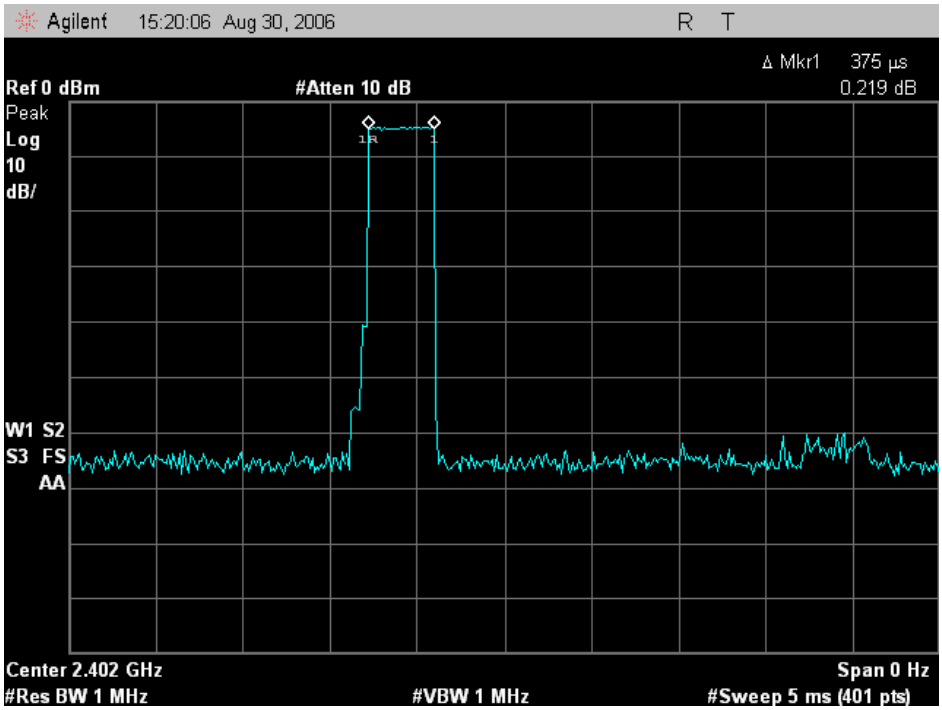


Appendix D

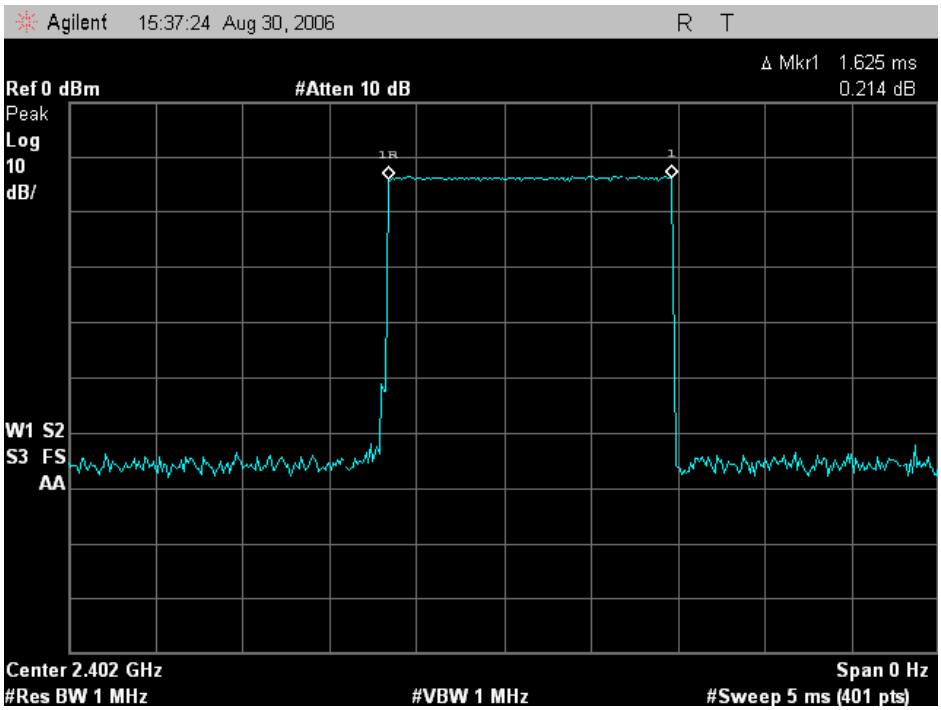
Time of Occupancy (Dwell Time) Trace Data

Channel Low : 2402.0MHz [Channel 1]

DH1

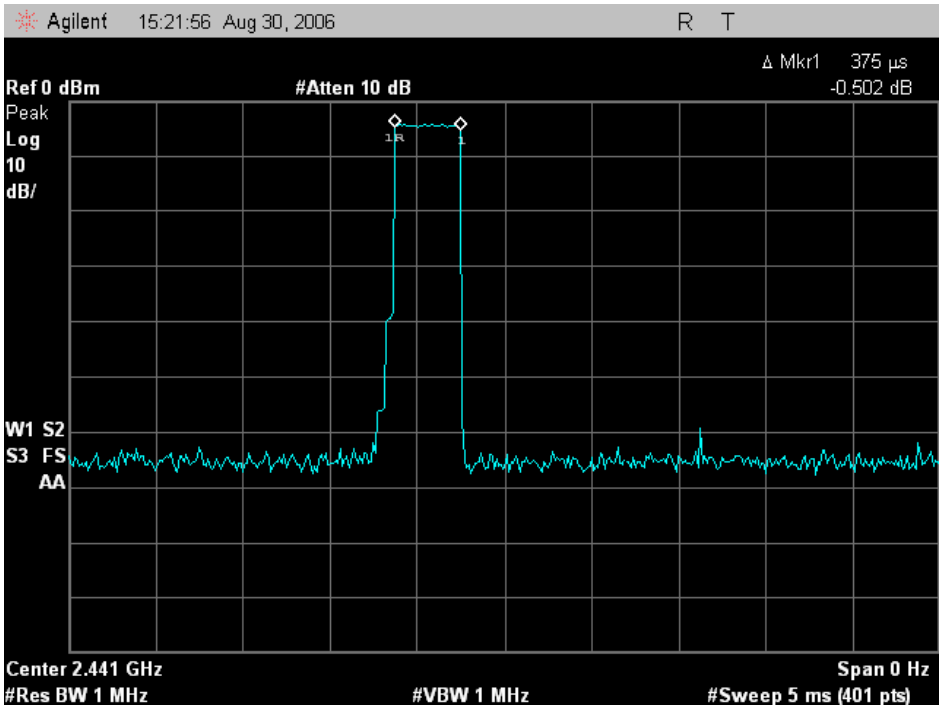


DH3

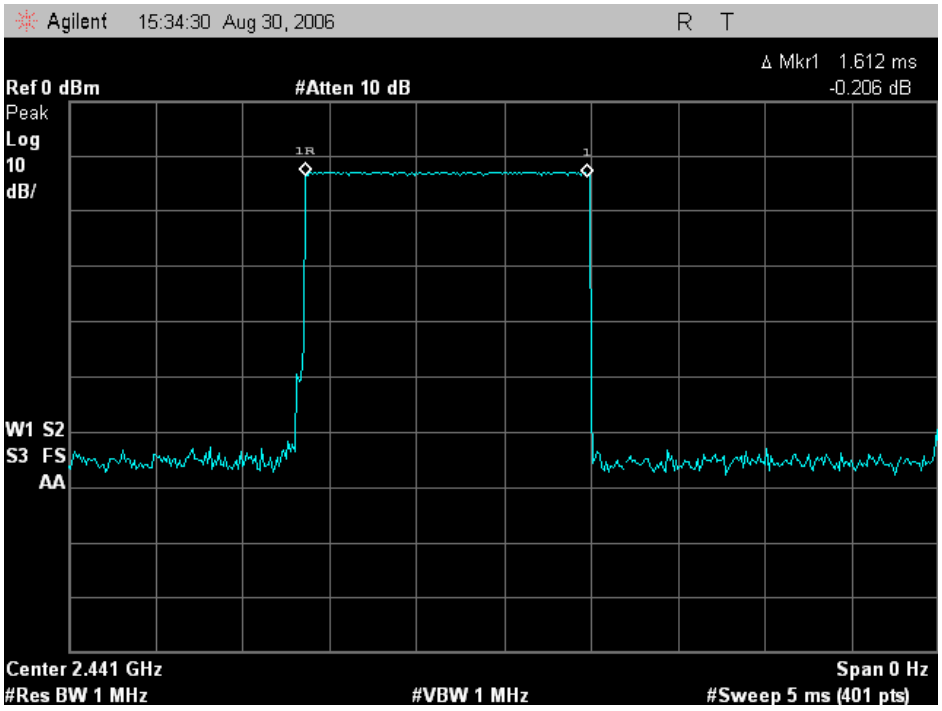


Channel Middle : 2441.0MHz [Channel 40]

DH1

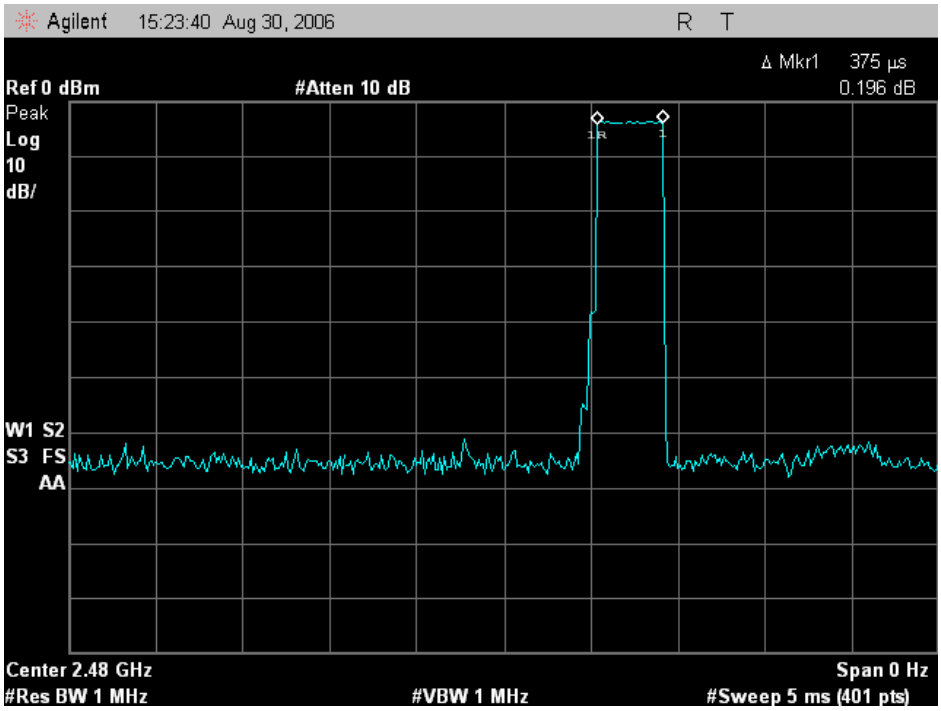


DH3

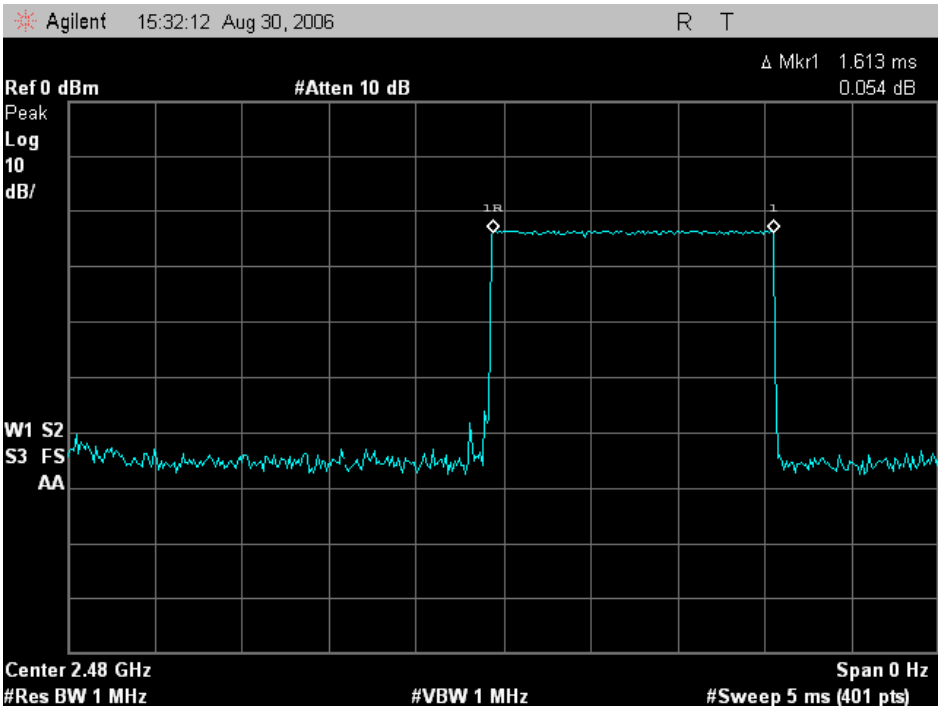


Channel High : 2480.0MHz [Channel 79]

DH1



DH3

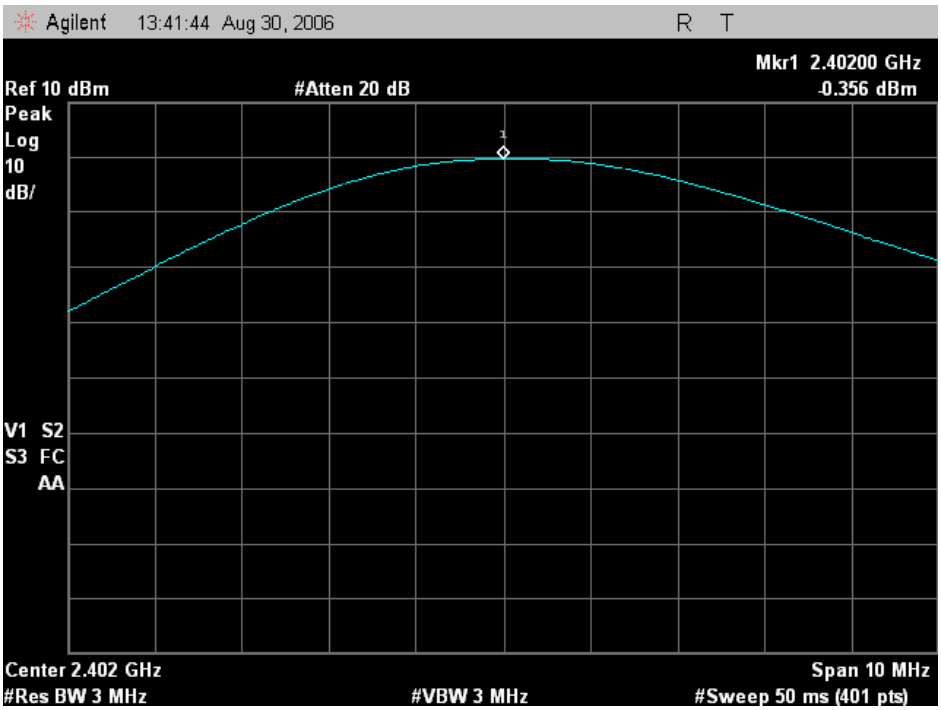


Appendix E

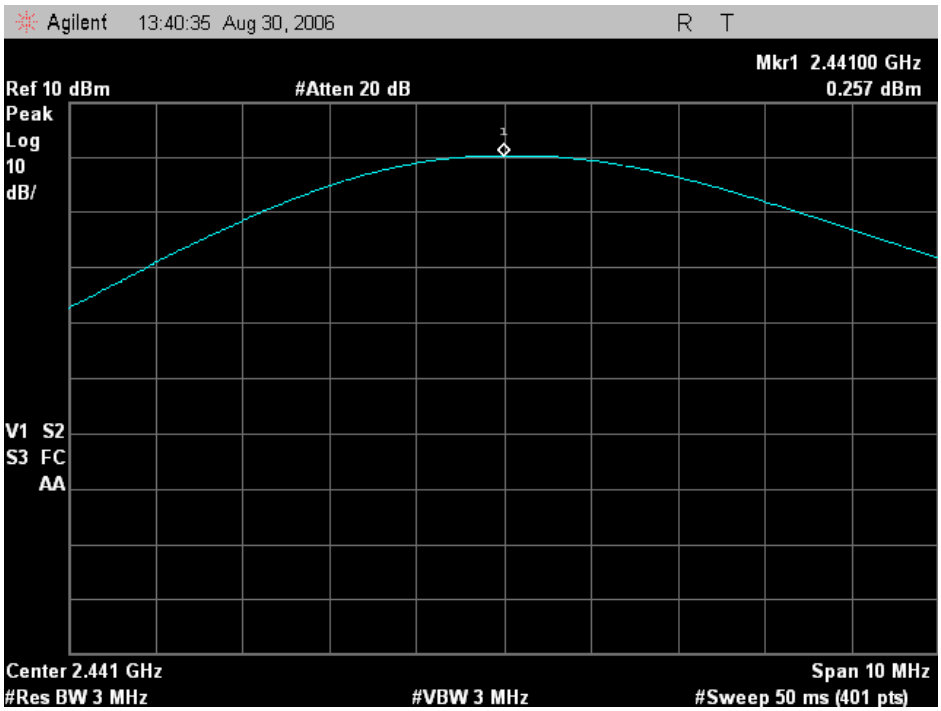
Maximum Peak Output Power - Conducted - Trace Data

- Test mode in Battery operation (Full charge) -

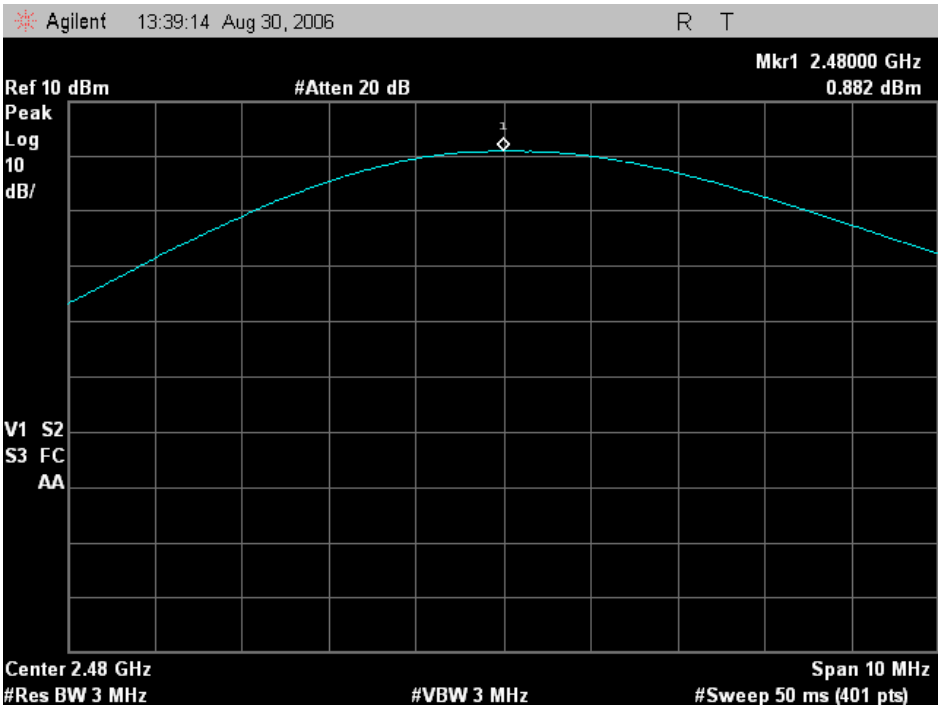
Channel Low : 2402.0MHz [Channel 1]



Channel Middle : 2441.0MHz [Channel 40]



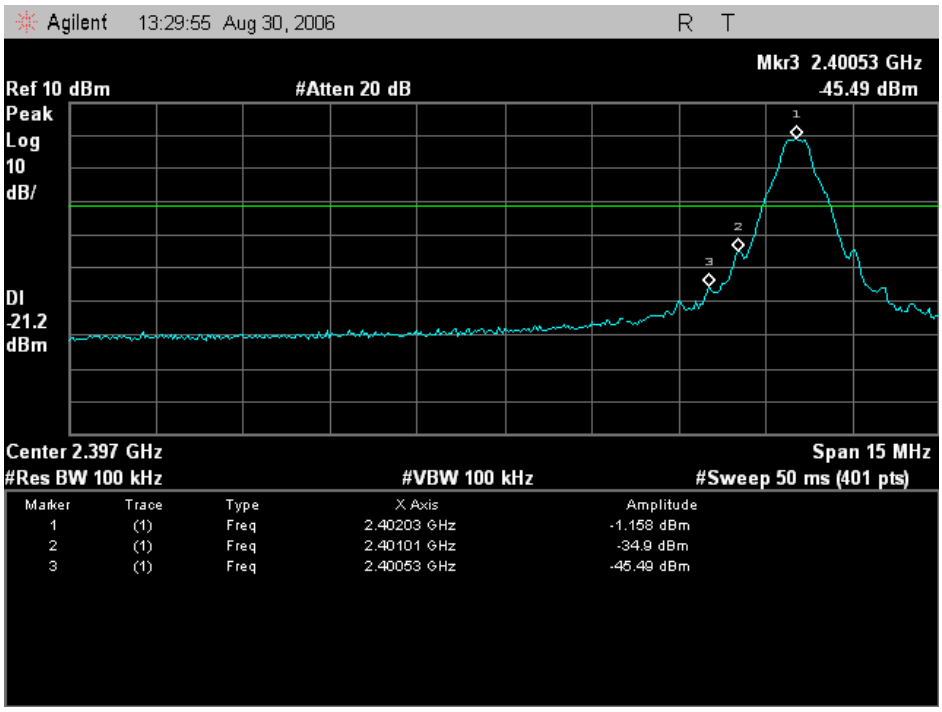
Channel High : 2480.0MHz [Channel 79]



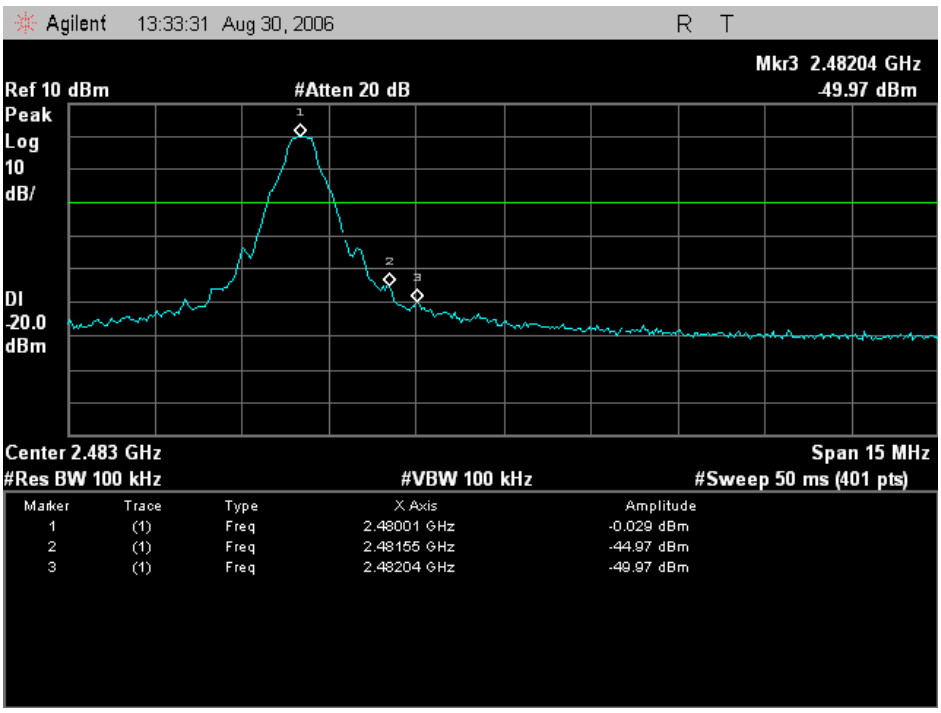
Appendix F

Band Edge Compliance of RF Conducted Emissions Trace Data

Channel Low : 2402.0MHz [Channel 1]



Channel High : 2480.0MHz [Channel 79]

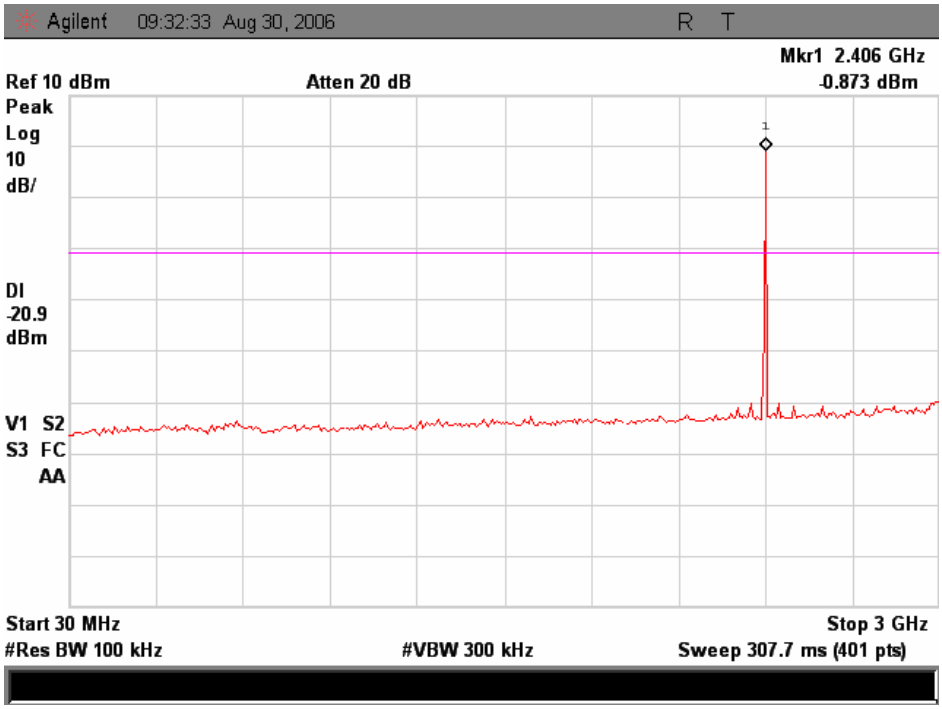


Appendix G

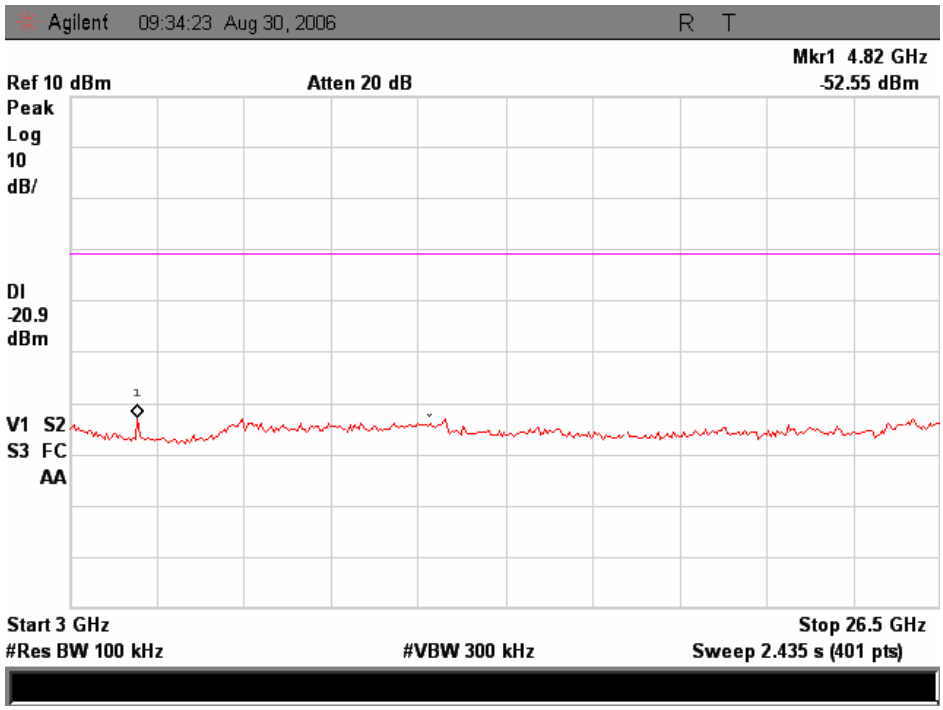
Spurious Emissions - Conducted - Trace Data

Channel Low : 2402.0MHz [Channel 1]

30MHz-3GHz

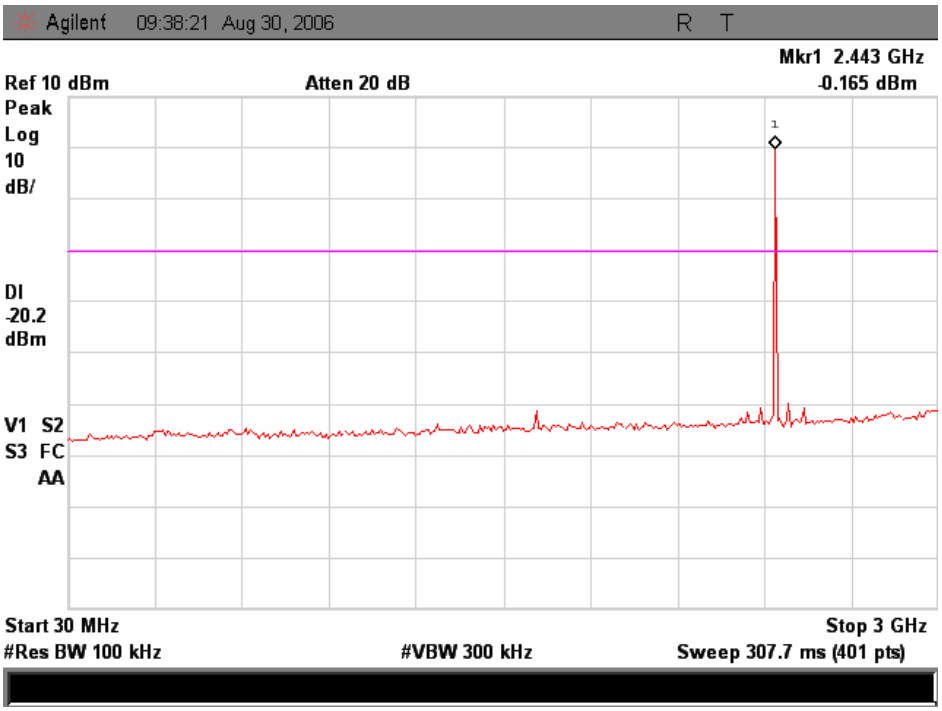


3GHz-26.5GHz

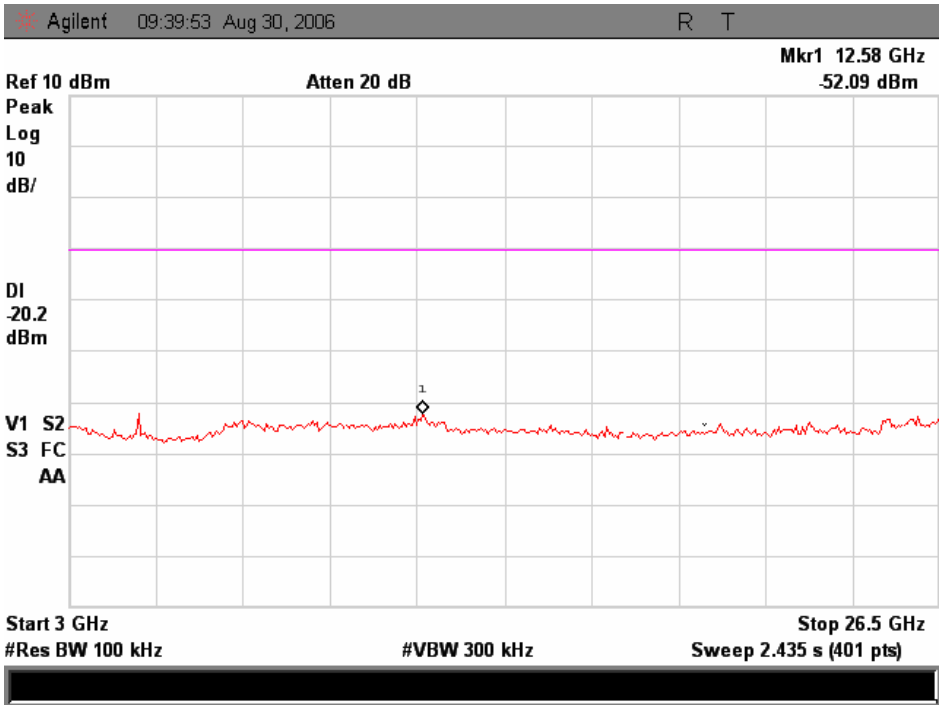


Channel Middle : 2441.0MHz [Channel 40]

30MHz-3GHz

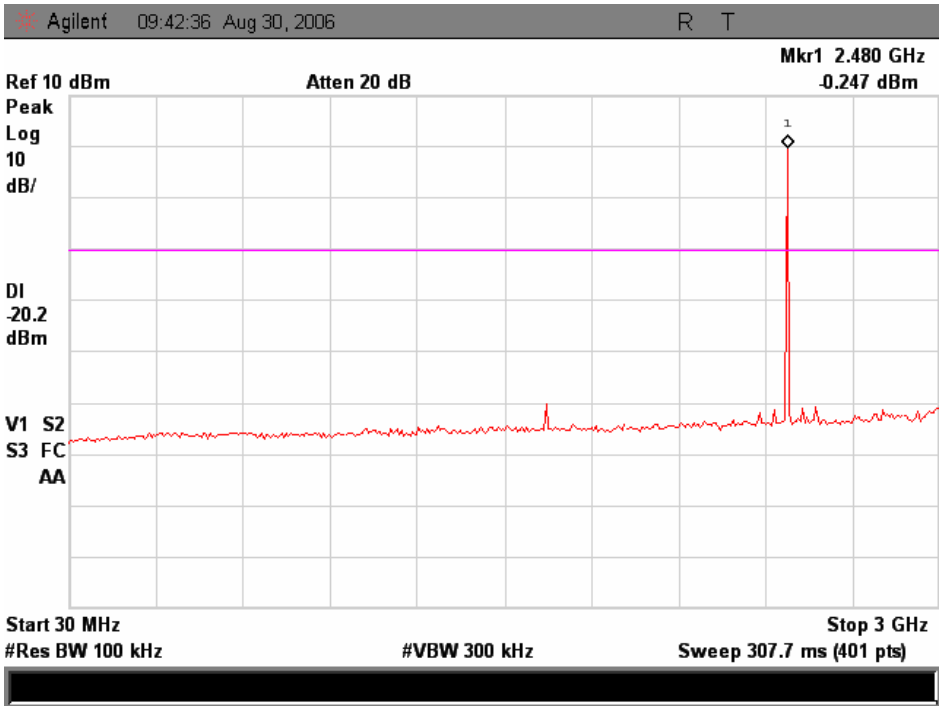


3GHz-26.5GHz

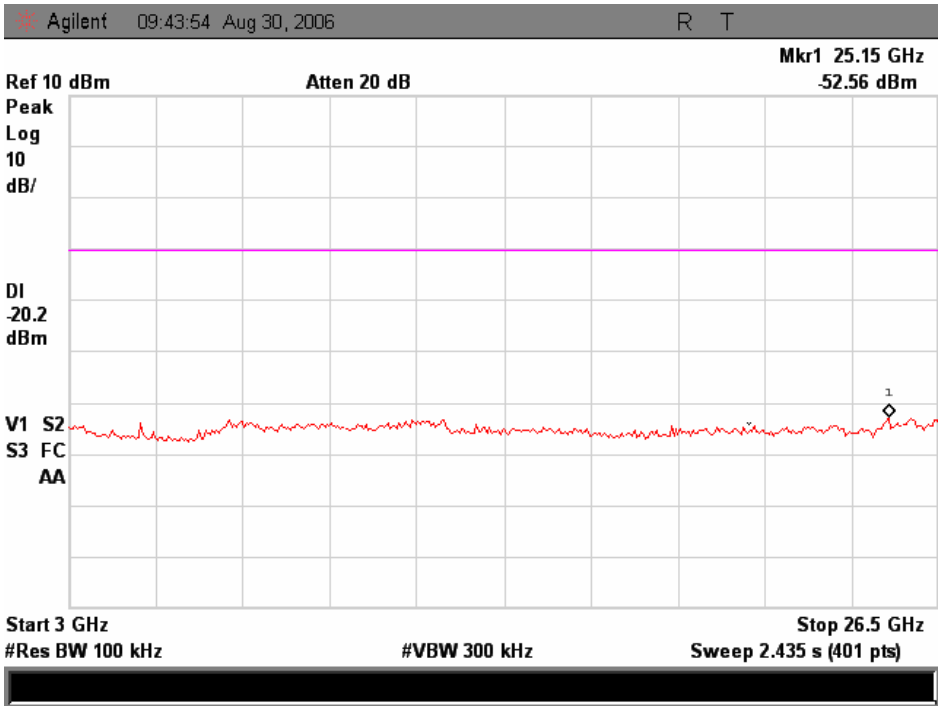


Channel High : 2480.0MHz [Channel 79]

30MHz-3GHz



3GHz-26.5GHz



Appendix H

Spurious Emissions - Radiated - Data

***** RADIATED EMISSION *****

Sheet number : 1

Standard : FCC Part 15 Subpart C
Class : N/A
Distance [m] : 3
Date of test : 2006/8/28
Test site : 3
Temperature [°C] : 27.1
Humidity [%] : 45.1
Operator : H.Suzuki
Signature :
Company name : MITSUMI ELECTRIC CO., LTD
EUT : Wii Remote Controller
Model number : RVL-003
Serial number : N/A
Test mode : Test mode
Comment :

Antenna Pol. HOR/VER	Height [m]	Table Radian [Deg.]	Reading Frequency [MHz]	Level [dBµV]	Factor [dB/m]	Emission Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]		Comment
No hoppung Channel 1:2402MHz										
HOR	2.9	265	192.02	28.5	-12.2	16.3	43.5	27.2		
HOR	1.6	105	216.02	36.6	-11.4	25.2	46.0	20.8		
HOR	1.5	90	228.02	38.0	-11.1	26.9	46.0	19.1		
HOR	1.0	275	348.02	47.7	-13.4	34.3	46.0	11.7		
HOR	1.8	80	600.02	42.3	-7.4	34.9	46.0	11.1		
HOR	1.8	95	636.02	42.7	-6.8	35.9	46.0	10.1		
HOR	1.8	95	648.02	39.4	-6.6	32.8	46.0	13.2		
HOR	1.0	255	4804.06	44.1	6.8	50.9	74.0	23.1		Peak
HOR	1.0	255	4804.06	33.6	6.8	40.4	54.0	13.6		Average
VER	1.0	100	4804.00	43.1	6.8	49.9	74.0	24.1		Peak
VER	1.0	100	4804.00	33.0	6.8	39.8	54.0	14.2		Average
No hoppung Channel 40:2441MHz										
HOR	1.0	260	348.02	47.9	-13.4	34.5	46.0	11.5		
HOR	1.7	65	600.02	43.2	-7.4	35.8	46.0	10.2		
HOR	1.8	90	636.02	42.9	-6.8	36.1	46.0	9.9		
HOR	1.8	90	648.02	39.7	-6.6	33.1	46.0	12.9		
HOR	1.0	250	4882.04	44.8	6.8	51.6	74.0	22.4		Peak
HOR	1.0	250	4882.04	34.9	6.8	41.7	54.0	12.3		Average
VER	1.0	5	4881.99	43.9	6.8	50.7	74.0	23.3		Peak
VER	1.0	5	4881.99	34.7	6.8	41.5	54.0	12.5		Average
No hoppung Channel 79:2480MHz										
HOR	1.0	275	348.02	49.0	-13.4	35.6	46.0	10.4		
HOR	1.7	85	600.02	42.1	-7.4	34.7	46.0	11.3		
HOR	1.7	80	636.02	41.9	-6.8	35.1	46.0	10.9		
HOR	1.7	90	648.02	39.5	-6.6	32.9	46.0	13.1		
HOR	1.0	335	4959.94	46.2	7.2	53.4	74.0	20.6		Peak
HOR	1.0	335	4959.94	37.1	7.2	44.3	54.0	9.7	*	Average
VER	1.0	115	4960.00	44.3	7.2	51.5	74.0	22.5		Peak
VER	1.0	115	4960.00	34.7	7.2	41.9	54.0	12.1		Average

* : The worst emission. Factor : Antenna Factor + Cable Loss - Amp Gain Ver.2.80 I-3#023

Appendix I

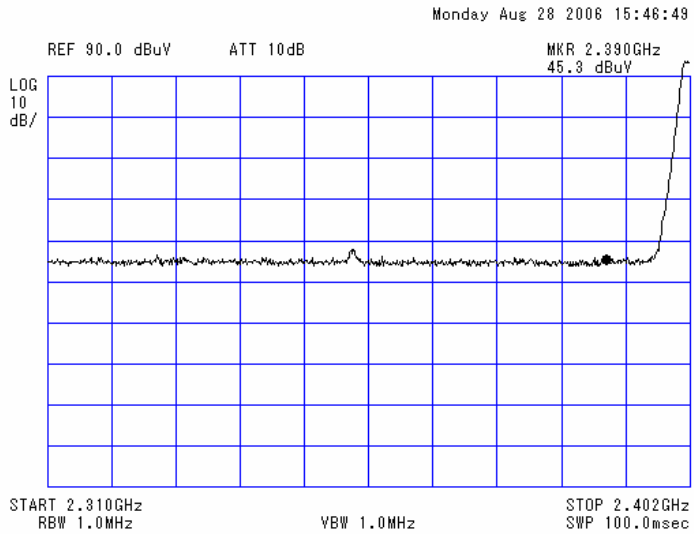
Appendix I

Restricted Band of Operation

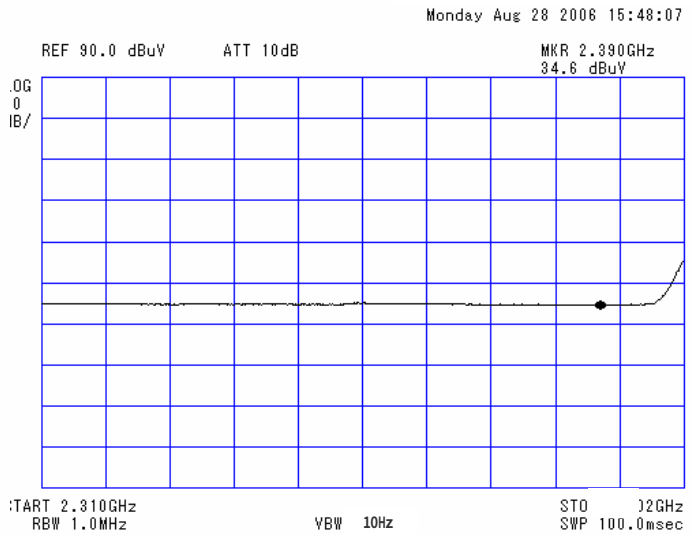
Trace data

- 2390.0MHz Horizontal -

Peak

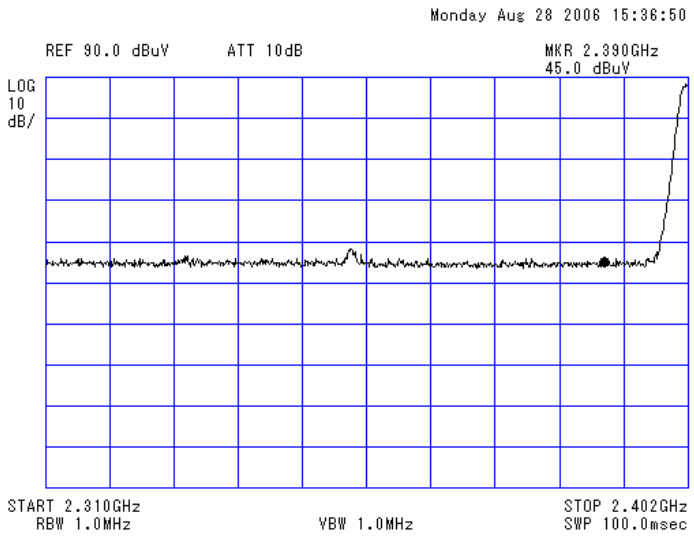


Average

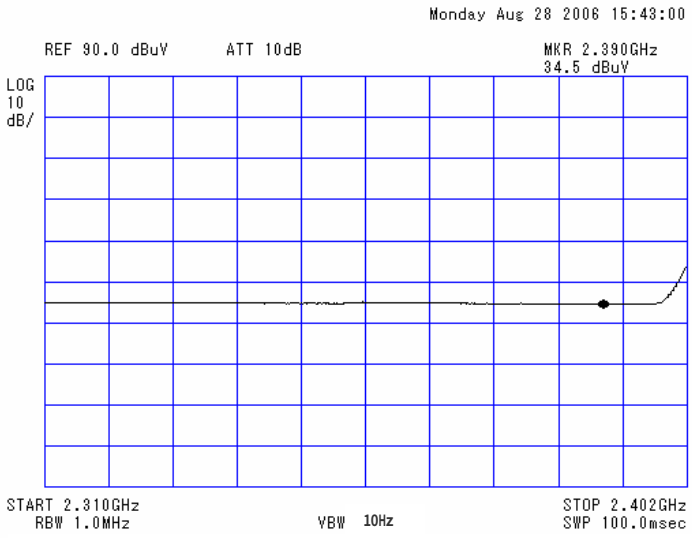


- 2390.0MHz Vertical -

Peak

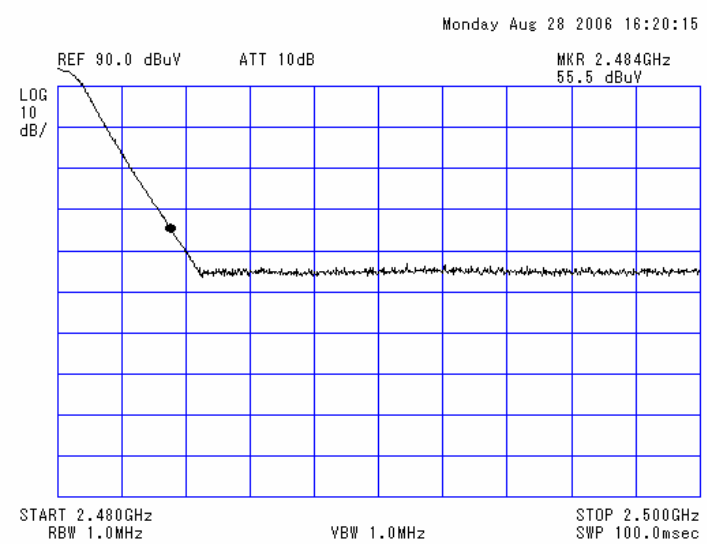


Average

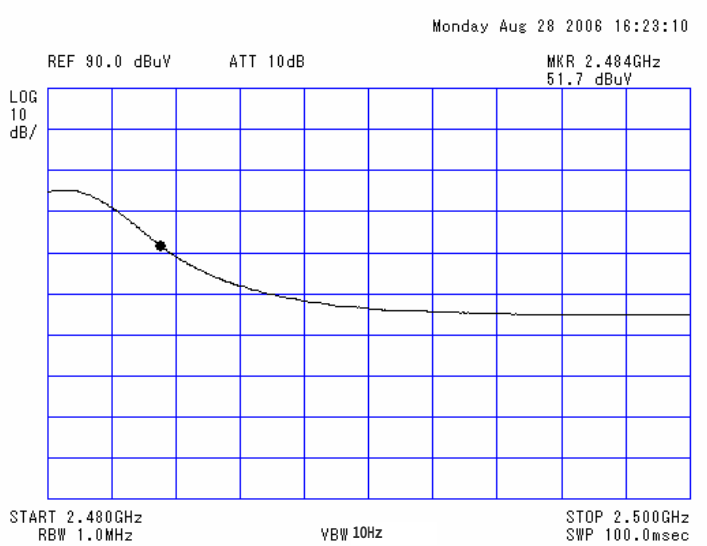


- 2483.5MHz Horizontal -

Peak

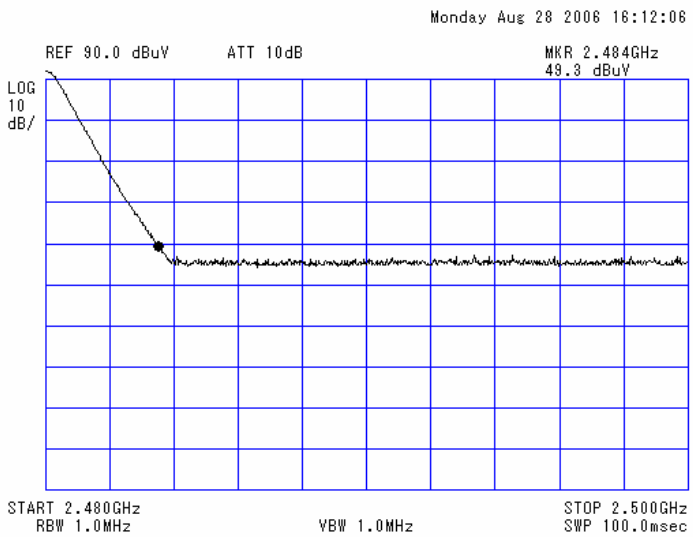


Average

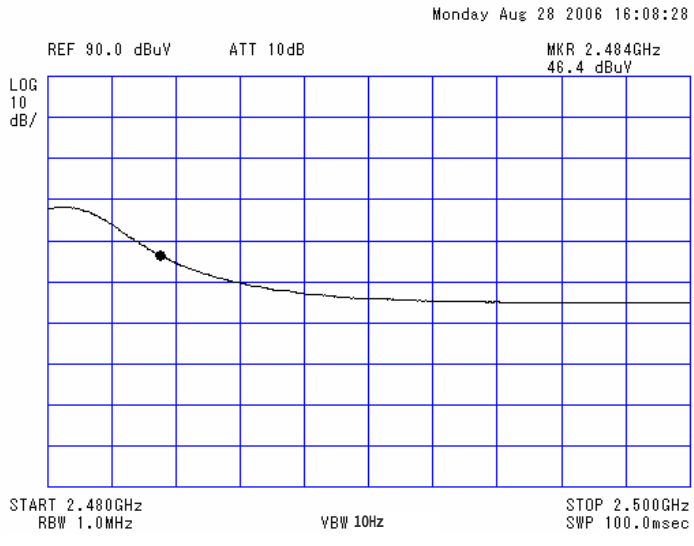


- 2483.5MHz Vertical -

Peak



Average

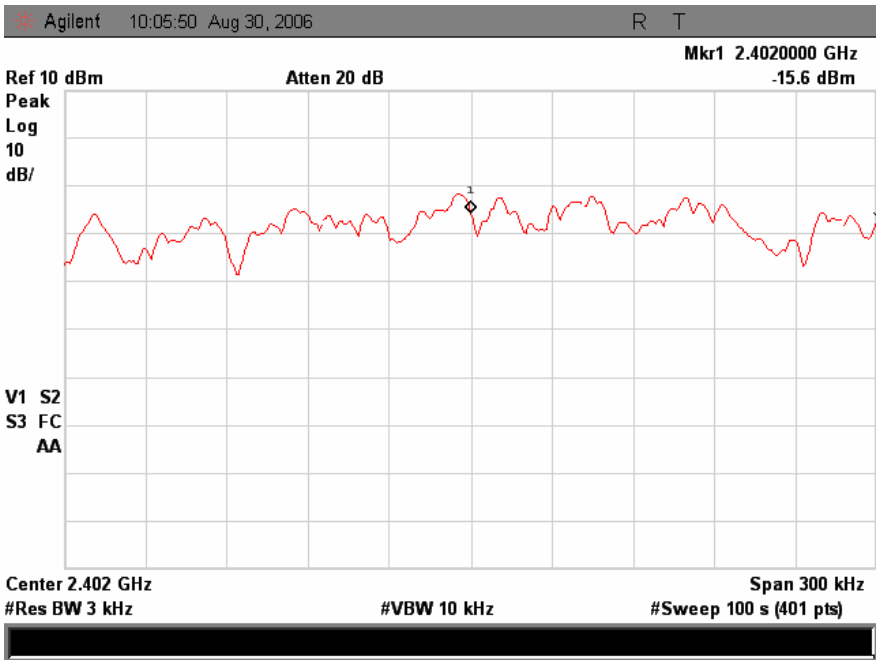


Appendix J

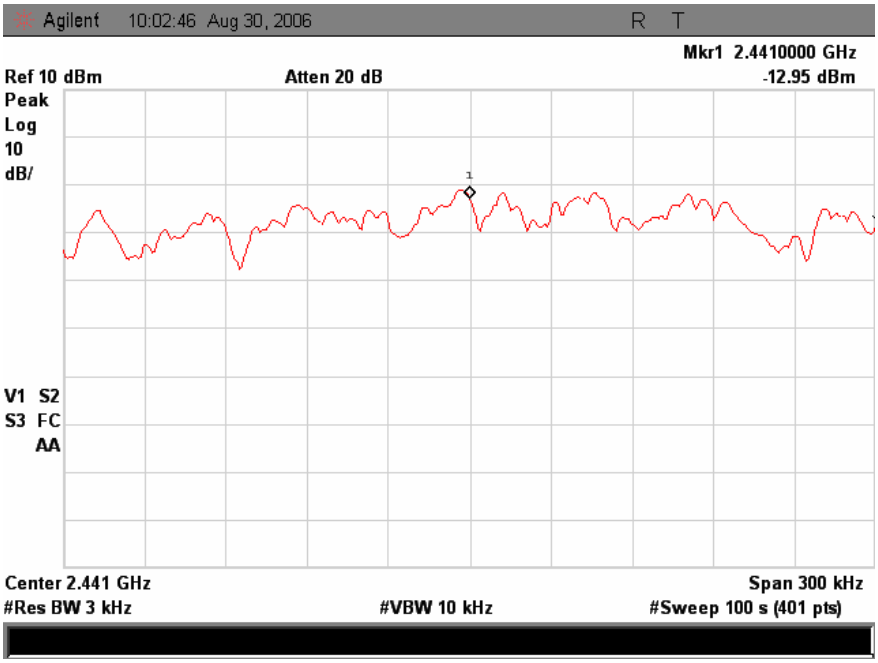
Appendix J

Transmitter Power Spectral Density
Trace data

Channel Low : 2402.0MHz [Channel 1]



Channel Middle : 2441.0MHz [Channel 40]



Channel High : 2480.0MHz [Channel 79]