

APPENDIX 2: Data of EMI test

[DSSS and other forms of modulation]

6dB Bandwidth 11b/g

UL Japan, Inc
Head Office EMC Lab. No.3 Measurement room

Company	: Sony Corporation	Regulation	: FCC Part15 Subpart C 15.247(a)(2) / RSS-210 A8.2(a)
Equipment	: Digital Media Player	Test Distance	: -
Model	: NWZ-X1050	Date	: November 1, 2008
S/N	: 003	Temperature	: 21deg.C.
Power	: DC 3.7V	Humidity	: 49%
Mode	: Tx, IEEE802.11b, 1Mbps	Engineer	: Hironobu Ohnishi
	: Tx, IEEE802.11g, 6Mbps		

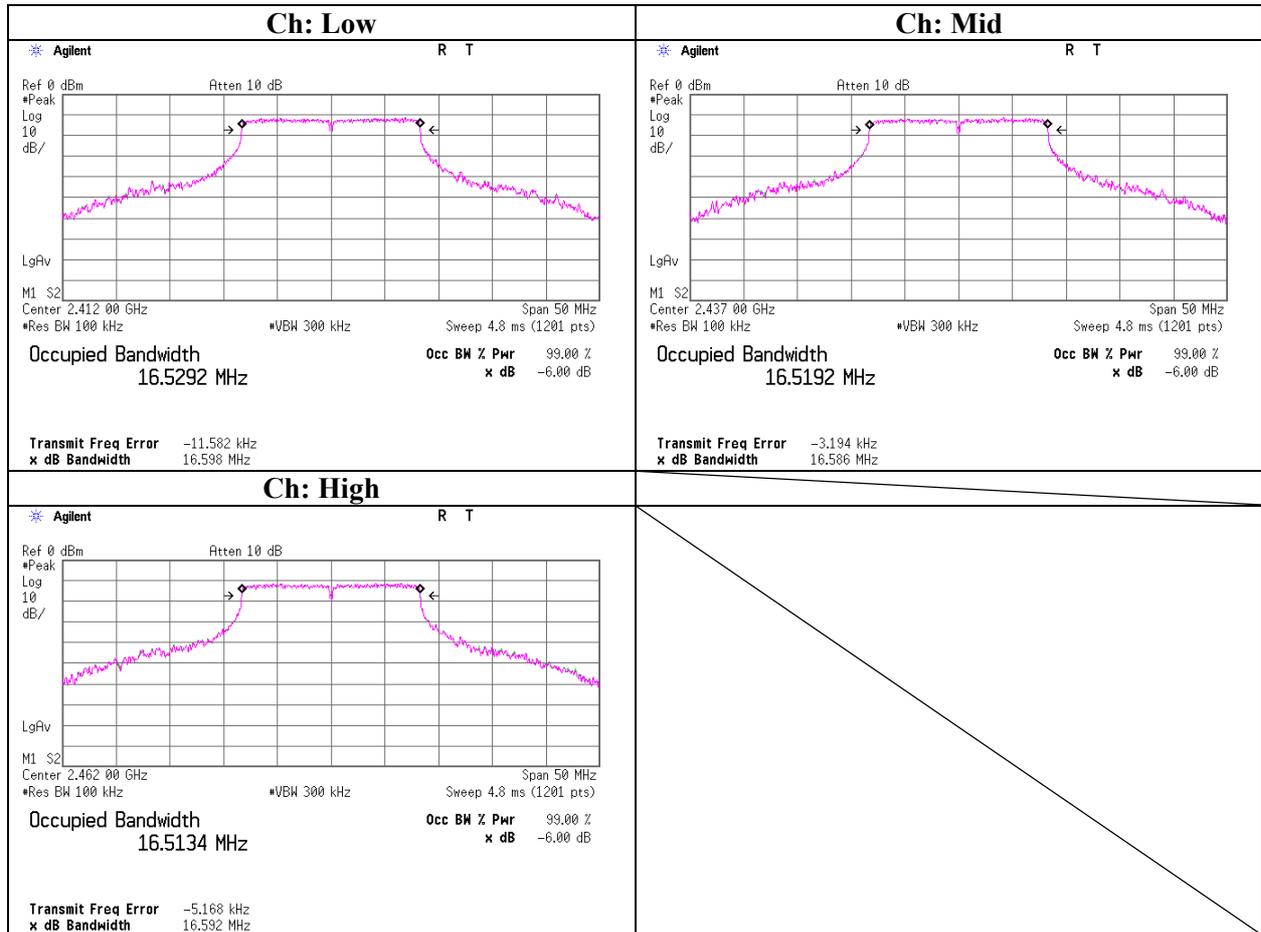
[IEEE802.11b]

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	10.016	>500
Mid	2437.0	10.017	>500
High	2462.0	10.001	>500

[IEEE802.11g]

Ch	Freq. [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
Low	2412.0	16.598	>500
Mid	2437.0	16.586	>500
High	2462.0	16.592	>500

6dB Bandwidth 11g



Maximum Peak Output Power

UL Japan, Inc.
Head Office EMC Lab. No.3 Shielded Room

Company : Sony Corporation
Equipment : Digital Media Player
Model No. : NWZ-X1050
Serial No. : 003
Power : DC3.7V
Mode : Tx, IEEE802.11b, 1Mbps,
: Tx, IEEE802.11g, 6Mbps

Regulation : FCC15.247(b)(3)/RSS-210A8.4(4)
Test distance : -
Date : October 30, 2008
Temperature : 25deg.C.
Humidity : 42%
Engineer : Akio Hayashi

[IEEE802.11b]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
Low	2412.0	7.82	0.50	10.04	18.36	68.55	30.00	1000	11.64
Mid	2437.0	7.85	0.50	10.04	18.39	69.02	30.00	1000	11.61
High	2462.0	7.73	0.50	10.04	18.27	67.14	30.00	1000	11.73

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Attenuator

[IEEE802.11g]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
Low	2412.0	12.48	0.50	10.04	23.02	200.45	30.00	1000	6.98
Mid	2437.0	12.43	0.50	10.04	22.97	198.15	30.00	1000	7.03
High	2462.0	12.27	0.50	10.04	22.81	190.99	30.00	1000	7.19

Sample Calculation:

Result = Reading + Cable Loss (supplied by customer) + Attenuator

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

Radiated Spurious Emission (above 1GHz)

	UL Japan, Inc.
Company : Sony Corporation	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Equipment : Digital Media Player	Regulation : FCC15.247(d) / RSS-210 A8.5
Model : NWZ-X1050	Test Distance : 3m(1-10GHz) / 1m(10-26.5GHz)
S/N : 004	Date : October 30, 2008 November 1, 2008
Power : DC 3.7V	Temperature : 24deg.C. 21deg.C.
Mode : Tx, IEEE802.11b, 2412MHz, 1Mbps	Humidity : 35% 49%
Position : H: Z-axis, V: Z-axis	Engineer : Akio Hayashi Hironobu Ohnishi

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.00	45.1	43.7	26.7	32.4	2.6	0.0	42.0	40.6	73.9	31.9	33.3
2	2400.00	49.1	47.7	26.7	32.4	2.6	0.0	46.0	44.6	73.9	27.9	29.3
3	4824.00	38.3	38.5	31.2	31.4	4.1	0.8	43.0	43.2	73.9	30.9	30.7
4	7236.00	38.3	38.5	35.7	31.2	4.6	0.7	48.1	48.3	73.9	25.8	25.6
5	9648.00	38.4	38.8	38.3	32.0	5.4	1.1	51.2	51.6	73.9	22.7	22.3
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	12060.00	NS	NS	-	-	-	-	-	-	73.9	-	-
7	14472.00	NS	NS	-	-	-	-	-	-	73.9	-	-
8	16884.00	NS	NS	-	-	-	-	-	-	73.9	-	-
9	19296.00	47.5	42.8	37.6	32.5	7.3	0.0	50.4	45.7	73.9	23.5	28.2
10	21708.00	NS	NS	-	-	-	-	-	-	73.9	-	-
11	24120.00	44.2	43.5	38.5	31.0	7.7	0.0	49.9	49.2	73.9	24.0	24.7

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.00	34.5	33.5	26.7	32.4	2.6	0.0	31.4	30.4	53.9	22.5	23.5
2	2400.00	39.5	38.3	26.7	32.4	2.6	0.0	36.4	35.2	53.9	17.5	18.7
3	4824.00	26.3	26.2	31.2	31.4	4.1	0.8	31.0	30.9	53.9	22.9	23.0
4	7236.00	25.3	25.6	35.7	31.2	4.6	0.7	35.1	35.4	53.9	18.8	18.5
5	9648.00	25.7	25.6	38.3	32.0	5.4	1.1	38.5	38.4	53.9	15.4	15.5
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	12060.00	NS	NS	-	-	-	-	-	-	53.9	-	-
7	14472.00	NS	NS	-	-	-	-	-	-	53.9	-	-
8	16884.00	NS	NS	-	-	-	-	-	-	53.9	-	-
9	19296.00	39.3	31.5	37.6	32.5	7.3	0.0	42.2	34.4	53.9	11.7	19.5
10	21708.00	NS	NS	-	-	-	-	-	-	53.9	-	-
11	24120.00	29.8	29.7	38.5	31.0	7.7	0.0	35.5	35.4	53.9	18.4	18.5

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB
*Except for the above table : All other spurious emissions were less than 20dB for the limit.
*Hi-Pass Filter was not used for factor 0.0dB of the above table.
*NS: Non signal.
*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Spurious Emission (above 1GHz)

	UL Japan, Inc.	
Company	: Sony Corporation	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Equipment	: Digital Media Player	Regulation : FCC15.247(d) / RSS-210 A8.5
Model	: NWZ-X1050	Test Distance : 3m(1-10GHz) / 1m(10-26.5GHz)
S/N	: 004	Date : October 30, 2008 November 1, 2008
Power	: DC 3.7V	Temperature : 24deg.C. 21deg.C.
Mode	: Tx, IEEE802.11b, 2437MHz, 1Mbps	Humidity : 35% 49%
Position	: H: Z-axis, V: Z-axis	Engineer : Akio Hayashi Hironobu Ohnishi

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	4874.00	40.1	41.2	31.3	31.3	4.1	0.8	45.0	46.1	73.9	28.9	27.8
2	7311.00	37.4	38.0	35.8	31.2	4.6	0.7	47.3	47.9	73.9	26.6	26.0
3	9748.00	37.0	36.8	38.4	32.0	5.5	1.2	50.1	49.9	73.9	23.8	24.0
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
4	12185.00	NS	NS	-	-	-	-	-	-	73.9	-	-
5	14622.00	NS	NS	-	-	-	-	-	-	73.9	-	-
6	17059.00	NS	NS	-	-	-	-	-	-	73.9	-	-
7	19496.00	47.3	41.7	37.6	32.5	7.3	0.0	50.2	44.6	73.9	23.7	29.3
8	21933.00	NS	NS	-	-	-	-	-	-	73.9	-	-
9	24370.00	42.9	42.9	38.6	30.6	7.7	0.0	49.1	49.1	73.9	24.8	24.8

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	4874.00	26.8	29.2	31.3	31.3	4.1	0.8	31.7	34.1	53.9	22.2	19.8
2	7311.00	24.2	28.1	35.8	31.2	4.6	0.7	34.1	38.0	53.9	19.8	15.9
3	9748.00	23.5	23.4	38.4	32.0	5.5	1.2	36.6	36.5	53.9	17.3	17.4
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
4	12185.00	NS	NS	-	-	-	-	-	-	53.9	-	-
5	14622.00	NS	NS	-	-	-	-	-	-	53.9	-	-
6	17059.00	NS	NS	-	-	-	-	-	-	53.9	-	-
7	19496.00	39.8	30.4	37.6	32.5	7.3	0.0	42.7	33.3	53.9	11.2	20.6
8	21933.00	NS	NS	-	-	-	-	-	-	53.9	-	-
9	24370.00	29.2	29.2	38.6	30.6	7.7	0.0	35.4	35.4	53.9	18.5	18.5

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB
*Except for the above table : All other spurious emissions were less than 20dB for the limit.
*Hi-Pass Filter was not used for factor 0.0dB of the above table.
*NS: Non signal.
*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Spurious Emission (above 1GHz)

	UL Japan, Inc.
Company	: Sony Corporation
Equipment	: Digital Media Player
Model	: NWZ-X1050
S/N	: 004
Power	: DC 3.7V
Mode	: Tx, IEEE802.11b, 2462MHz, 1Mbps
Position	: H: Z-axis, V: Z-axis
	Head Office EMC Lab. No.3 Semi Anechoic Chamber
	Regulation : FCC15.247(d) / RSS-210 A8.5
	Test Distance : 3m(1-10GHz) / 1m(10-26.5GHz)
	Date : October 30, 2008 November 1, 2008
	Temperature : 24deg.C. 21deg.C.
	Humidity : 35% 49%
	Engineer : Akio Hayashi Hironobu Ohnishi

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2483.50	47.2	48.0	26.9	32.4	2.7	0.0	44.4	45.2	73.9	29.5	28.7
2	4924.00	37.6	40.7	31.4	31.3	4.1	0.8	42.6	45.7	73.9	31.3	28.2
3	7386.00	39.8	38.3	35.9	31.2	4.6	0.7	49.8	48.3	73.9	24.1	25.6
4	9848.00	39.4	38.6	38.4	32.0	5.5	1.2	52.5	51.7	73.9	21.4	22.2
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	12310.00	NS	NS	-	-	-	-	-	-	73.9	-	-
6	14772.00	NS	NS	-	-	-	-	-	-	73.9	-	-
7	17234.00	NS	NS	-	-	-	-	-	-	73.9	-	-
8	19696.00	47.0	42.0	37.5	32.6	7.4	0.0	49.8	44.8	73.9	24.1	29.1
9	22158.00	NS	NS	-	-	-	-	-	-	73.9	-	-
10	24620.00	43.5	43.8	38.8	30.2	7.7	0.0	50.3	50.6	73.9	23.6	23.3

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2483.50	35.3	37.3	26.9	32.4	2.7	0.0	32.5	34.5	53.9	21.4	19.4
2	4924.00	28.3	27.2	31.4	31.3	4.1	0.8	33.3	32.2	53.9	20.6	21.7
3	7386.00	25.8	25.7	35.9	31.2	4.6	0.7	35.8	35.7	53.9	18.1	18.2
4	9848.00	26.5	26.4	38.4	32.0	5.5	1.2	39.6	39.5	53.9	14.3	14.4
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	12310.00	NS	NS	-	-	-	-	-	-	53.9	-	-
6	14772.00	NS	NS	-	-	-	-	-	-	53.9	-	-
7	17234.00	NS	NS	-	-	-	-	-	-	53.9	-	-
8	19696.00	39.4	31.2	37.5	32.6	7.4	0.0	42.2	34.0	53.9	11.7	19.9
9	22158.00	NS	NS	-	-	-	-	-	-	53.9	-	-
10	24620.00	30.4	30.4	38.8	30.2	7.7	0.0	37.2	37.2	53.9	16.7	16.7

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB
*Except for the above table : All other spurious emissions were less than 20dB for the limit.
*Hi-Pass Filter was not used for factor 0.0dB of the above table.
*NS: Non signal.
*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Spurious Emission (above 1GHz)

	UL Japan, Inc.
Company : Sony Corporation	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Equipment : Digital Media Player	Regulation : FCC15.247(d) / RSS-210 A8.5
Model : NWZ-X1050	Test Distance : 3m(1-10GHz) / 1m(10-26.5GHz)
S/N : 004	Date : October 30, 2008 November 1, 2008
Power : DC 3.7V	Temperature : 24deg.C. 21deg.C.
Mode : Tx, IEEE802.11g, 2412MHz, 6Mbps	Humidity : 35% 49%
Position : H: Z-axis, V: Z-axis	Engineer : Akio Hayashi Hironobu Ohnishi

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.00	65.4	61.8	26.7	32.4	2.6	0.0	62.3	58.7	73.9	11.6	15.2
2**	2400.00	78.9	74.3	26.7	32.4	2.6	0.0	75.8	71.2	73.9	-	-
3	4824.00	39.6	39.3	31.2	31.4	4.1	0.8	44.3	44.0	73.9	29.6	29.9
4	7236.00	38.1	38.4	35.7	31.2	4.6	0.7	47.9	48.2	73.9	26.0	25.7
5	9648.00	38.8	37.9	38.3	32.0	5.4	1.1	51.6	50.7	73.9	22.3	23.2
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	12060.00	NS	NS	-	-	-	-	-	-	73.9	-	-
7	14472.00	NS	NS	-	-	-	-	-	-	73.9	-	-
8	16884.00	NS	NS	-	-	-	-	-	-	73.9	-	-
9	19296.00	46.3	41.8	37.6	32.5	7.3	0.0	49.2	44.7	73.9	24.7	29.2
10	21708.00	NS	NS	-	-	-	-	-	-	73.9	-	-
11	24120.00	43.8	43.5	38.5	31.0	7.7	0.0	49.5	49.2	73.9	24.4	24.7

** Reference data

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.00	48.0	46.7	26.7	32.4	2.6	0.0	44.9	43.6	53.9	9.0	10.3
2**	2400.00	58.7	57.5	26.7	32.4	2.6	0.0	55.6	54.4	53.9	-	-
3	4824.00	26.7	26.7	31.2	31.4	4.1	0.8	31.4	31.4	53.9	22.5	22.5
4	7236.00	25.4	25.3	35.7	31.2	4.6	0.7	35.2	35.1	53.9	18.7	18.8
5	9648.00	25.3	25.2	38.3	32.0	5.4	1.1	38.1	38.0	53.9	15.8	15.9
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	12060.00	NS	NS	-	-	-	-	-	-	53.9	-	-
7	14472.00	NS	NS	-	-	-	-	-	-	53.9	-	-
8	16884.00	NS	NS	-	-	-	-	-	-	53.9	-	-
9	19296.00	39.7	31.3	37.6	32.5	7.3	0.0	42.6	34.2	53.9	11.3	19.7
10	21708.00	NS	NS	-	-	-	-	-	-	53.9	-	-
11	24120.00	29.8	29.8	38.5	31.0	7.7	0.0	35.5	35.5	53.9	18.4	18.4

** Reference data

20dBc (Fundamental) 2412.0 MHz (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
0	2412.00	95.0	93.8	26.8	32.4	2.7	0.0	92.1	90.9	-	-	-
2	2400.00	67.1	66.3	26.7	32.4	2.6	0.0	64.0	63.2	Funda-20dB	8.1	7.7

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*Hi-Pass Filter was not used for factor 0.0dB of the above table.

*NS: Non signal.

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Spurious Emission (above 1GHz)

	UL Japan, Inc.
Company : Sony Corporation	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Equipment : Digital Media Player	Regulation : FCC15.247(d) / RSS-210 A8.5
Model : NWZ-X1050	Test Distance : 3m(1-10GHz) / 1m(10-26.5GHz)
S/N : 004	Date : October 30, 2008 November 1, 2008
Power : DC 3.7V	Temperature : 24deg.C. 21deg.C.
Mode : Tx, IEEE802.11g, 2437MHz, 6Mbps	Humidity : 35% 49%
Position : H: Z-axis, V: Z-axis	Engineer : Akio Hayashi Hironobu Ohnishi

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	4874.00	40.1	39.5	31.3	31.3	4.1	0.8	45.0	44.4	73.9	28.9	29.5
2	7311.00	37.7	37.9	35.8	31.2	4.6	0.7	47.6	47.8	73.9	26.3	26.1
3	9748.00	38.7	38.8	38.4	32.0	5.5	1.2	51.8	51.9	73.9	22.1	22.0
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
4	12185.00	NS	NS	-	-	-	-	-	-	73.9	-	-
5	14622.00	NS	NS	-	-	-	-	-	-	73.9	-	-
6	17059.00	NS	NS	-	-	-	-	-	-	73.9	-	-
7	19496.00	46.8	42.2	37.6	32.5	7.3	0.0	49.7	45.1	73.9	24.2	28.8
8	21933.00	NS	NS	-	-	-	-	-	-	73.9	-	-
9	24370.00	43.1	42.3	38.6	30.6	7.7	0.0	49.3	48.5	73.9	24.6	25.4

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	4874.00	26.8	26.9	31.3	31.3	4.1	0.8	31.7	31.8	53.9	22.2	22.1
2	7311.00	24.8	24.7	35.8	31.2	4.6	0.7	34.7	34.6	53.9	19.2	19.3
3	9748.00	25.5	25.4	38.4	32.0	5.5	1.2	38.6	38.5	53.9	15.3	15.4
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
4	12185.00	NS	NS	-	-	-	-	-	-	53.9	-	-
5	14622.00	NS	NS	-	-	-	-	-	-	53.9	-	-
6	17059.00	NS	NS	-	-	-	-	-	-	53.9	-	-
7	19496.00	39.9	31.3	37.6	32.5	7.3	0.0	42.8	34.2	53.9	11.1	19.7
8	21933.00	NS	NS	-	-	-	-	-	-	53.9	-	-
9	24370.00	29.3	29.3	38.6	30.6	7.7	0.0	35.5	35.5	53.9	18.4	18.4

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB
*Except for the above table : All other spurious emissions were less than 20dB for the limit.
*Hi-Pass Filter was not used for factor 0.0dB of the above table.
*NS: Non signal.
*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Spurious Emission (above 1GHz)

	UL Japan, Inc.
Company : Sony Corporation	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Equipment : Digital Media Player	Regulation : FCC15.247(d) / RSS-210 A8.5
Model : NWZ-X1050	Test Distance : 3m(1-10GHz) / 1m(10-26.5GHz)
S/N : 004	Date : October 30, 2008 November 1, 2008
Power : DC 3.7V	Temperature : 24deg.C. 21deg.C.
Mode : Tx, IEEE802.11g, 2462MHz, 6Mbps	Humidity : 35% 49%
Position : H: Z-axis, V: Z-axis	Engineer : Akio Hayashi Hironobu Ohnishi

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2483.50	60.9	63.3	26.9	32.4	2.7	0.0	58.1	60.5	73.9	15.8	13.4
2	4924.00	39.3	39.6	31.4	31.3	4.1	0.8	44.3	44.6	73.9	29.6	29.3
3	7386.00	39.3	39.1	35.9	31.2	4.6	0.7	49.3	49.1	73.9	24.6	24.8
4	9848.00	39.9	40.0	38.4	32.0	5.5	1.2	53.0	53.1	73.9	20.9	20.8
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	12310.00	NS	NS	-	-	-	-	-	-	73.9	-	-
6	14772.00	NS	NS	-	-	-	-	-	-	73.9	-	-
7	17234.00	NS	NS	-	-	-	-	-	-	73.9	-	-
8	19696.00	47.5	41.3	37.5	32.6	7.4	0.0	50.3	44.1	73.9	23.6	29.8
9	22158.00	NS	NS	-	-	-	-	-	-	73.9	-	-
10	24620.00	43.7	44.4	38.8	30.2	7.7	0.0	50.5	51.2	73.9	23.4	22.7

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2483.50	41.5	43.5	26.9	32.4	2.7	0.0	38.7	40.7	53.9	15.2	13.2
2	4924.00	25.5	26.8	31.4	31.3	4.1	0.8	30.5	31.8	53.9	23.4	22.1
3	7386.00	25.8	25.8	35.9	31.2	4.6	0.7	35.8	35.8	53.9	18.1	18.1
4	9848.00	26.5	26.5	38.4	32.0	5.5	1.2	39.6	39.6	53.9	14.3	14.3
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
5	12310.00	NS	NS	-	-	-	-	-	-	53.9	-	-
6	14772.00	NS	NS	-	-	-	-	-	-	53.9	-	-
7	17234.00	NS	NS	-	-	-	-	-	-	53.9	-	-
8	19696.00	39.9	30.9	37.5	32.6	7.4	0.0	42.7	33.7	53.9	11.2	20.2
9	22158.00	NS	NS	-	-	-	-	-	-	53.9	-	-
10	24620.00	30.4	30.4	38.8	30.2	7.7	0.0	37.2	37.2	53.9	16.7	16.7

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.54 dB
*Except for the above table : All other spurious emissions were less than 20dB for the limit.
*Hi-Pass Filter was not used for factor 0.0dB of the above table.
*NS: Non signal.
*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Spurious Emission (above 1GHz)

UL Japan, Inc.

Company : Sony Corporation
Equipment : Digital Media Player
Model : NWZ-X1050
S/N : 004
Power : DC 3.7V
Mode : Rx, IEEE802.11b/g, 2437MHz
Position : H: Z-axis, V: Z-axis

Head Office EMC Lab. No.3 Semi Anechoic Chamber
Regulation : FCC15.109(a) / RSS-210 A8.5
Test Distance : 3m
Date : October 30, 2008
Temperature : 24deg.C.
Humidity : 35%
Engineer : Akio Hayashi

PK DETECT (Reference data) (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2437.00	40.1	41.3	26.8	32.4	2.7	0.0	37.2	38.4	73.9	36.7	35.5

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2437.00	27.3	27.3	26.8	32.4	2.7	0.0	24.4	24.4	53.9	29.5	29.5

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*Hi-Pass Filter was not used for factor 0.0dB of the above table.

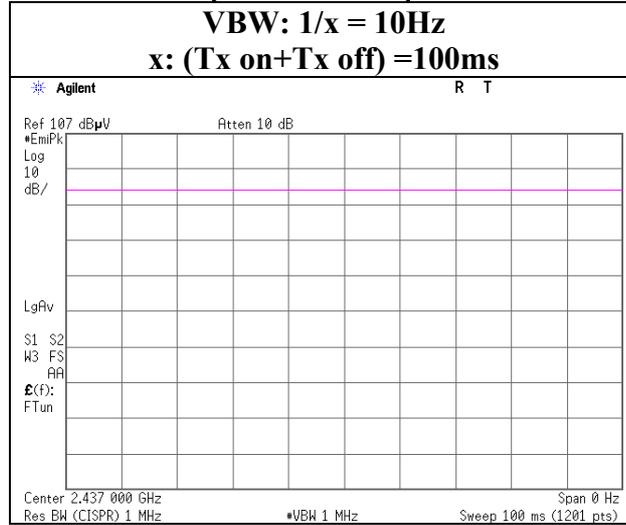
*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

VBW (AV) Calculation

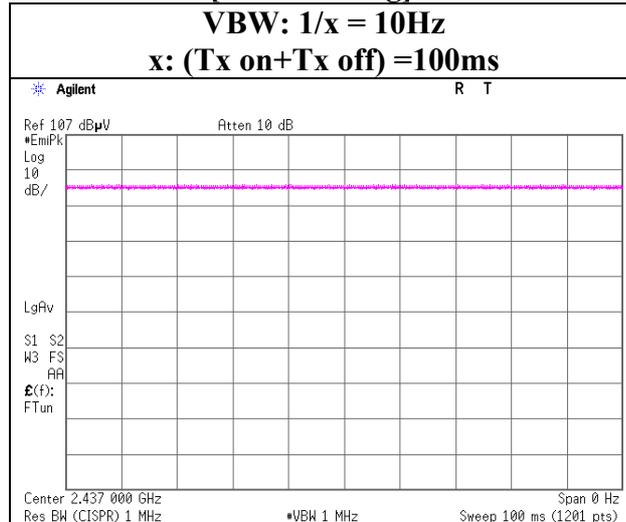
[IEEE802.11b]

VBW: $1/x = 10\text{Hz}$
x: (Tx on+Tx off) = 100ms

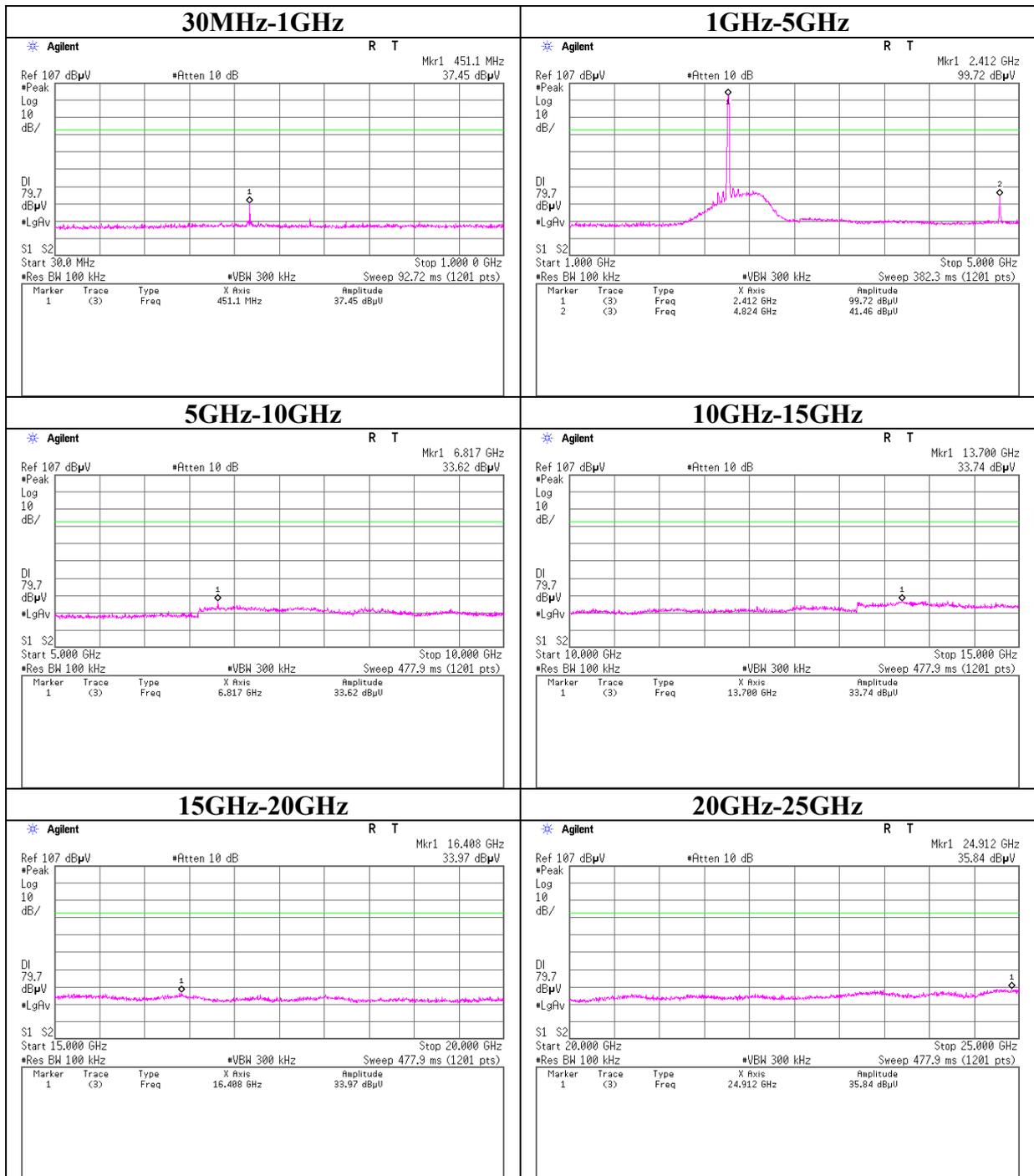


[IEEE802.11g]

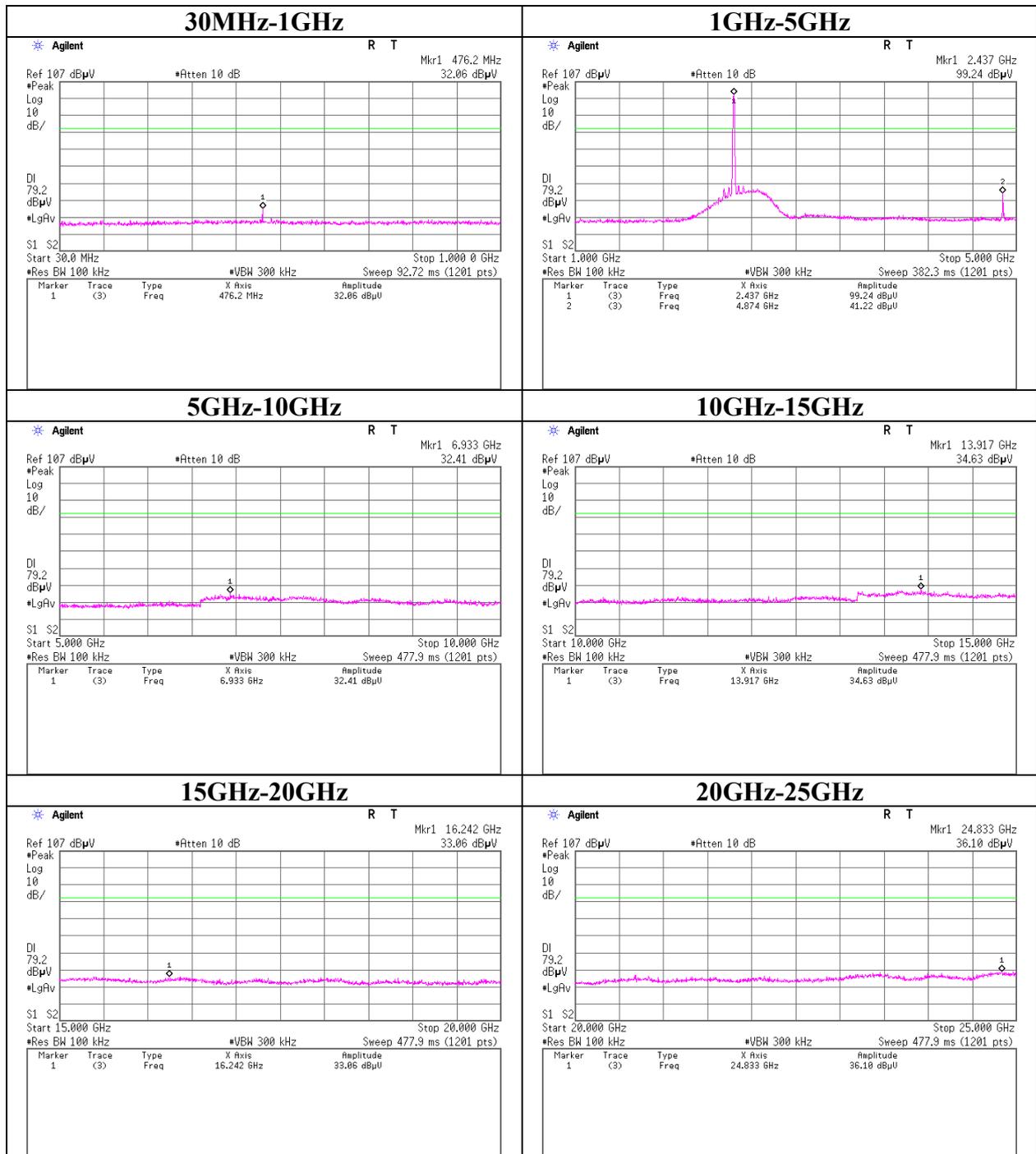
VBW: $1/x = 10\text{Hz}$
x: (Tx on+Tx off) = 100ms



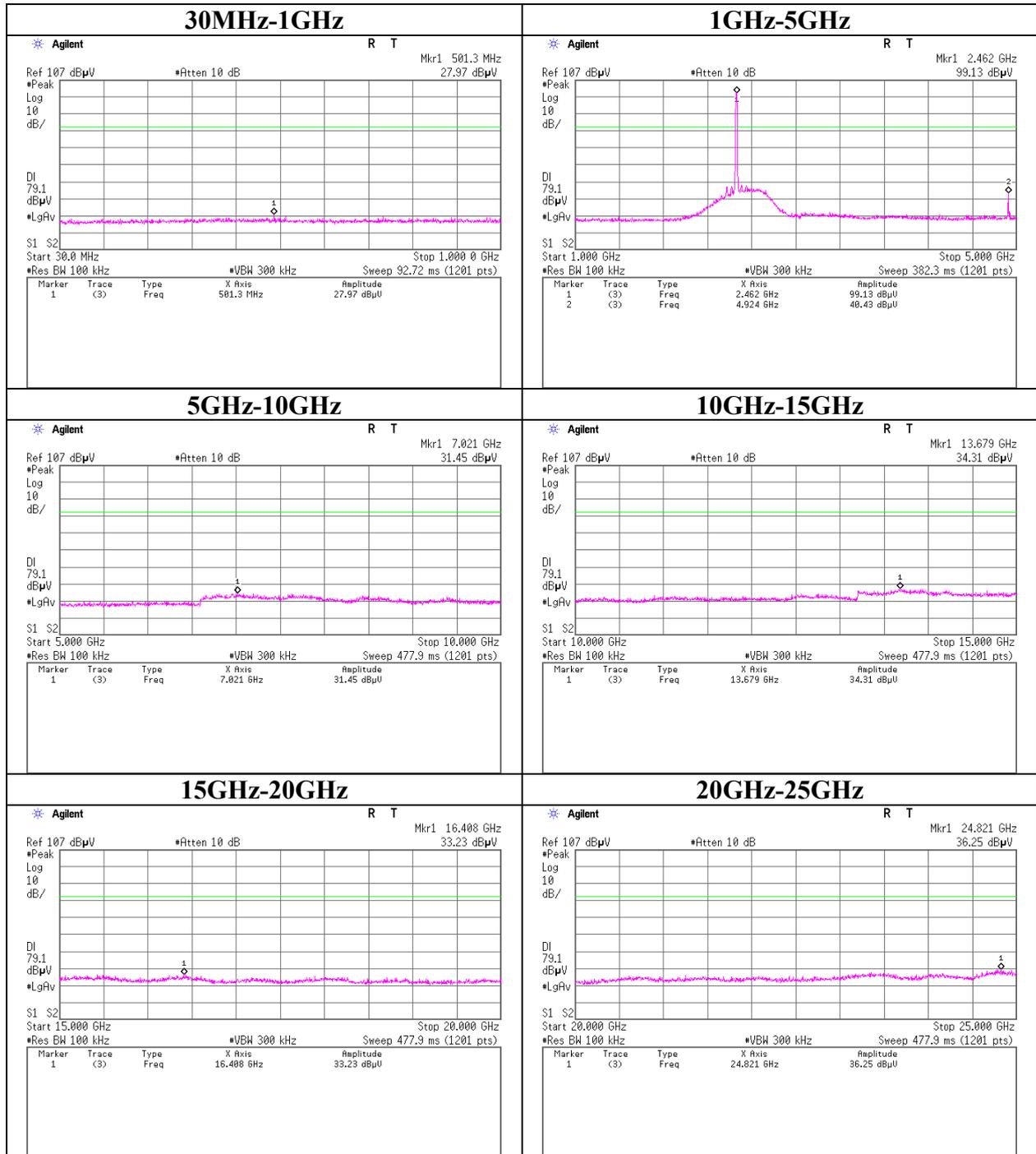
Conducted Spurious Emission
11b, Tx, Ch: Low



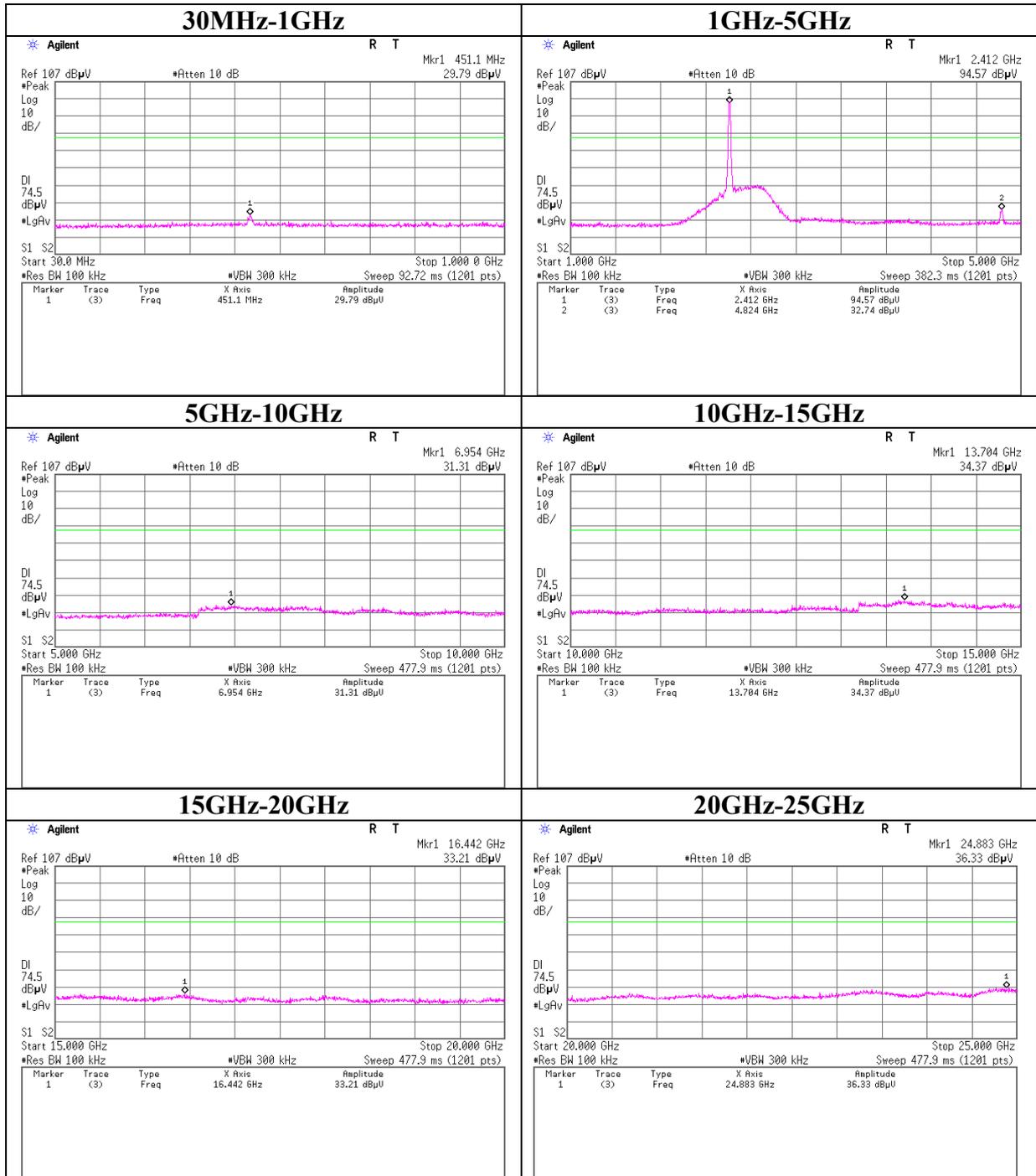
Conducted Spurious Emission
11b, Tx, Ch: Mid



Conducted Spurious Emission
11b, Tx, Ch: High

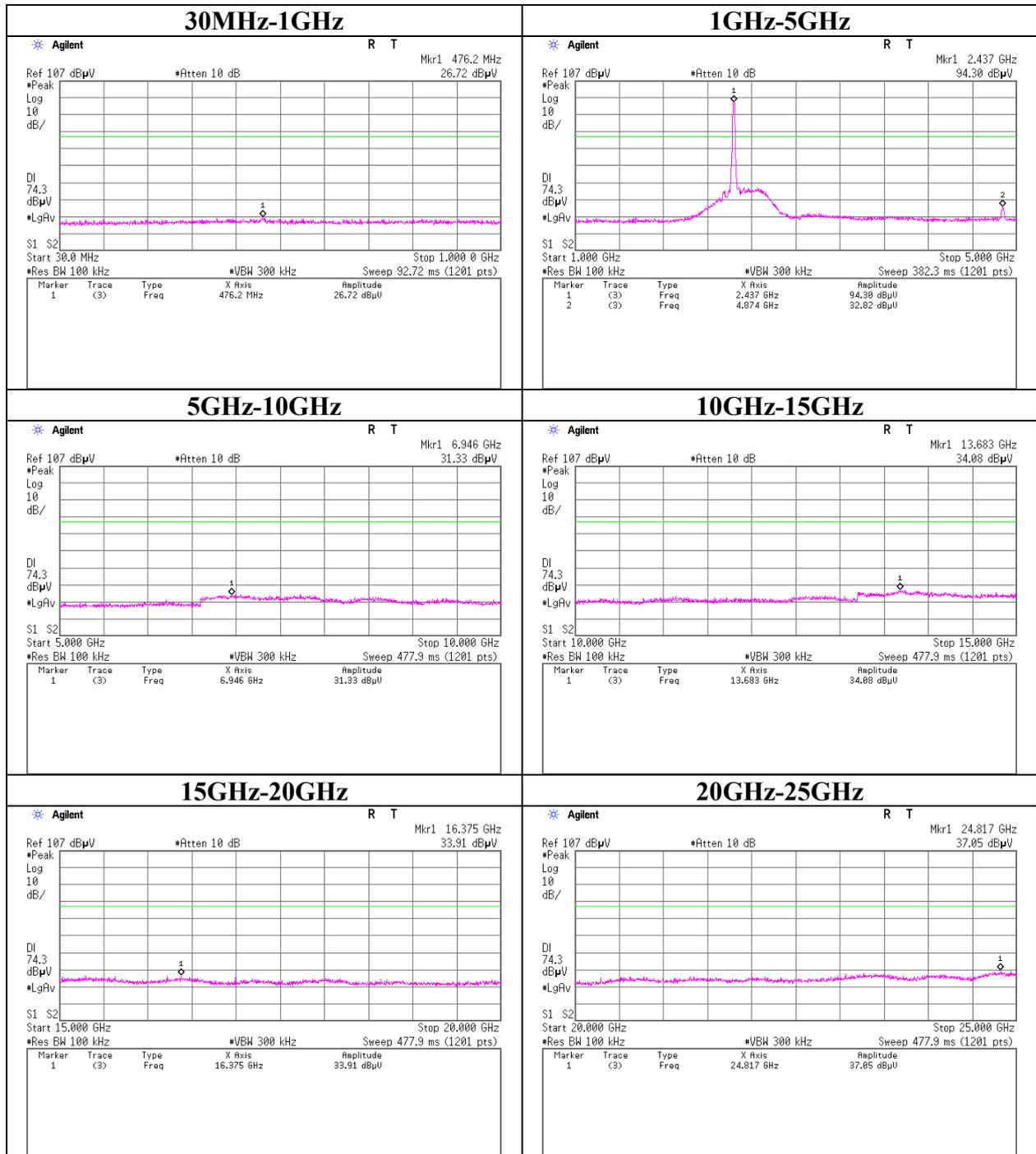


Conducted Spurious Emission
11g, Tx, Ch: Low

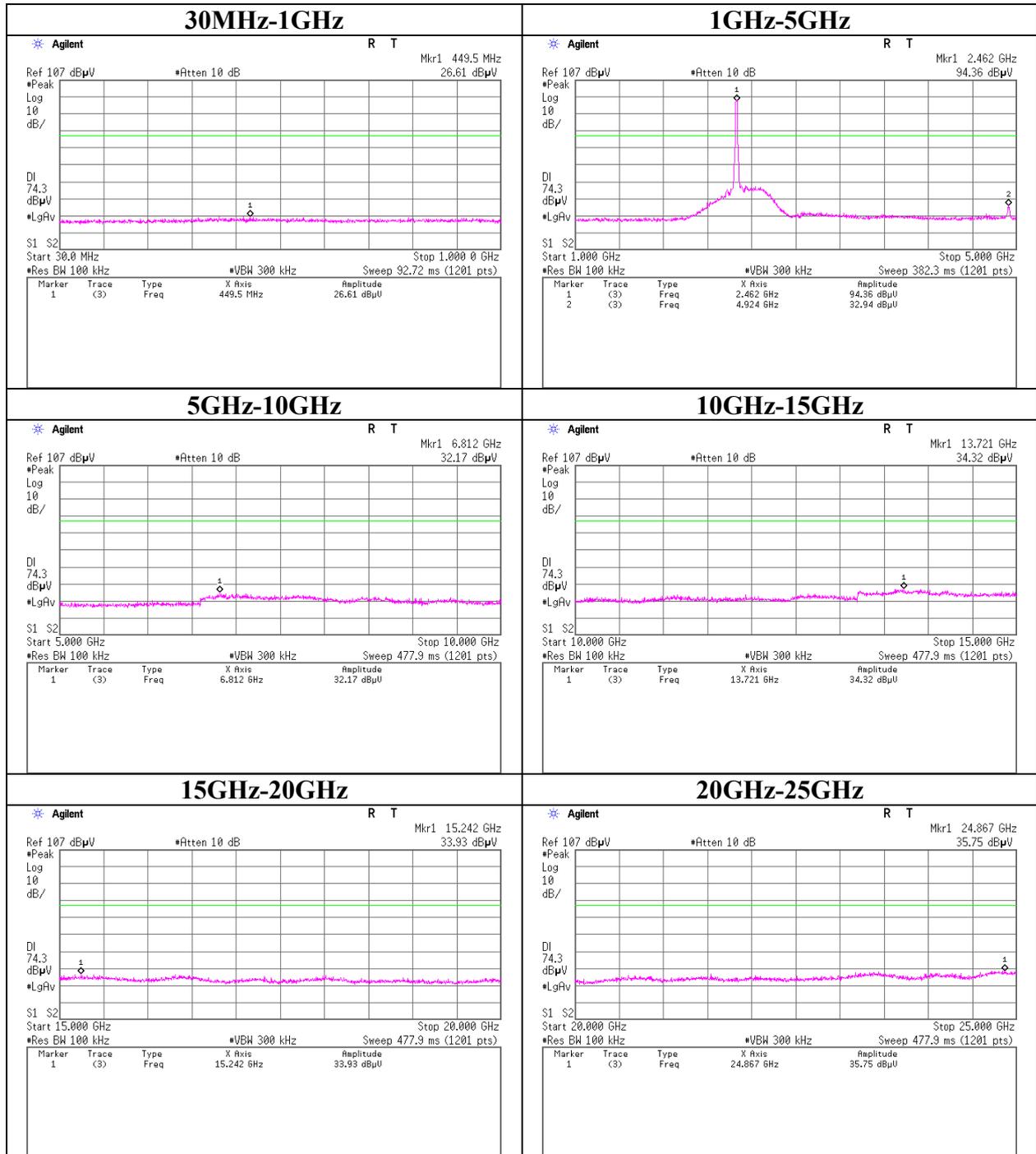


Conducted Spurious Emission

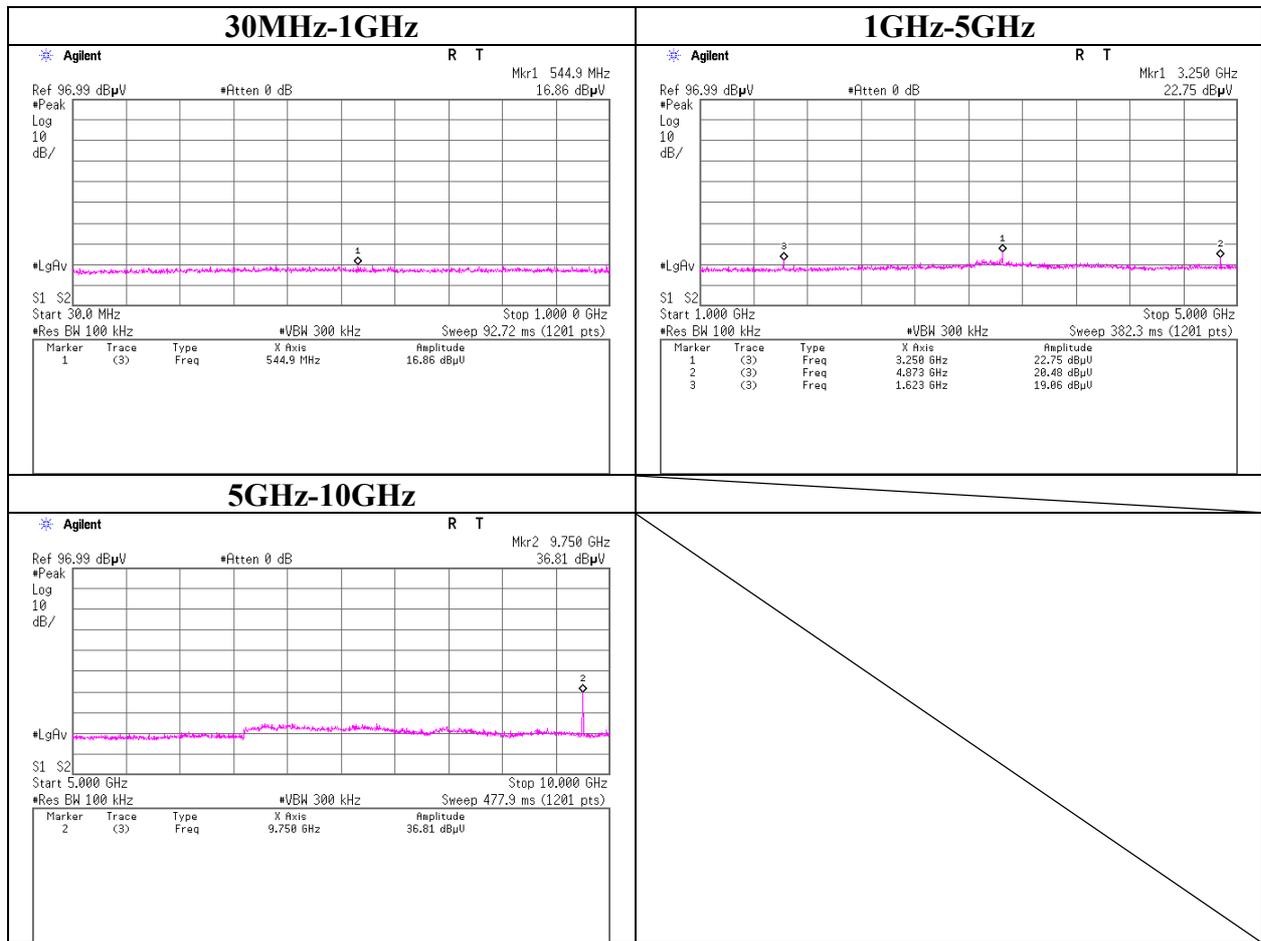
11g, Tx, Ch: Mid



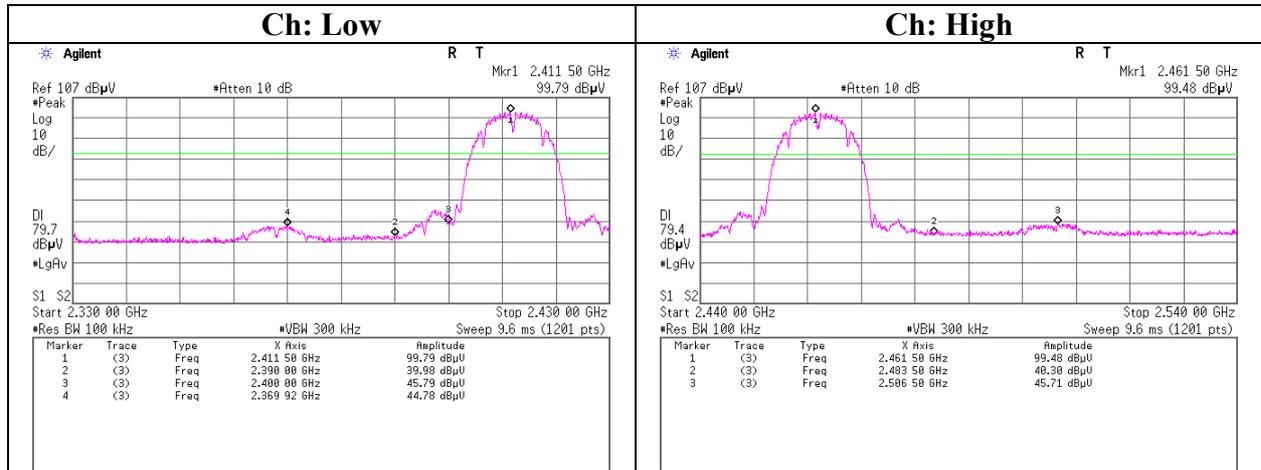
Conducted Spurious Emission
11g, Tx, Ch: High



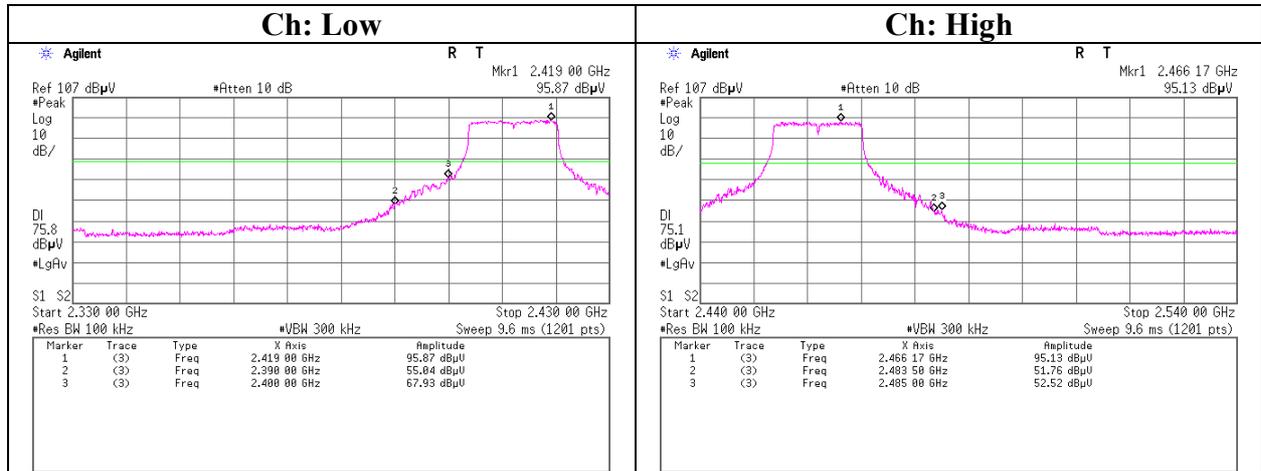
Conducted Spurious Emission
11b/g, Rx, Ch: Mid



Restricted Band Edge (Conducted)
11b



Restricted Band Edge (Conducted)
11g



Power Density
11b/g

Company : Sony Corporation
Equipment : Digital Media Player
Model : NWZ-X1050
S/N : 003
Power : DC 3.7V
Mode : Tx, IEEE802.11b, 1Mbps
 : Tx, IEEE802.11g, 6Mbps

UL Japan, Inc
Head Office EMC Lab. No.6 Measurement room
Regulation : FCC Part15 Subpart C 15.247(e) / RSS-210 A8.2(b)
Test Distance : -
Date : November 4, 2008
Temperature : 23deg.C.
Humidity : 45%
Engineer : Hironobu Ohnishi

[IEEE802.11b]

Ch	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2412.9	-13.64	1.38	10.09	-2.17	8.00	10.17
Mid	2437.9	-13.43	1.38	10.09	-1.96	8.00	9.96
High	2462.9	-12.92	1.38	10.09	-1.45	8.00	9.45

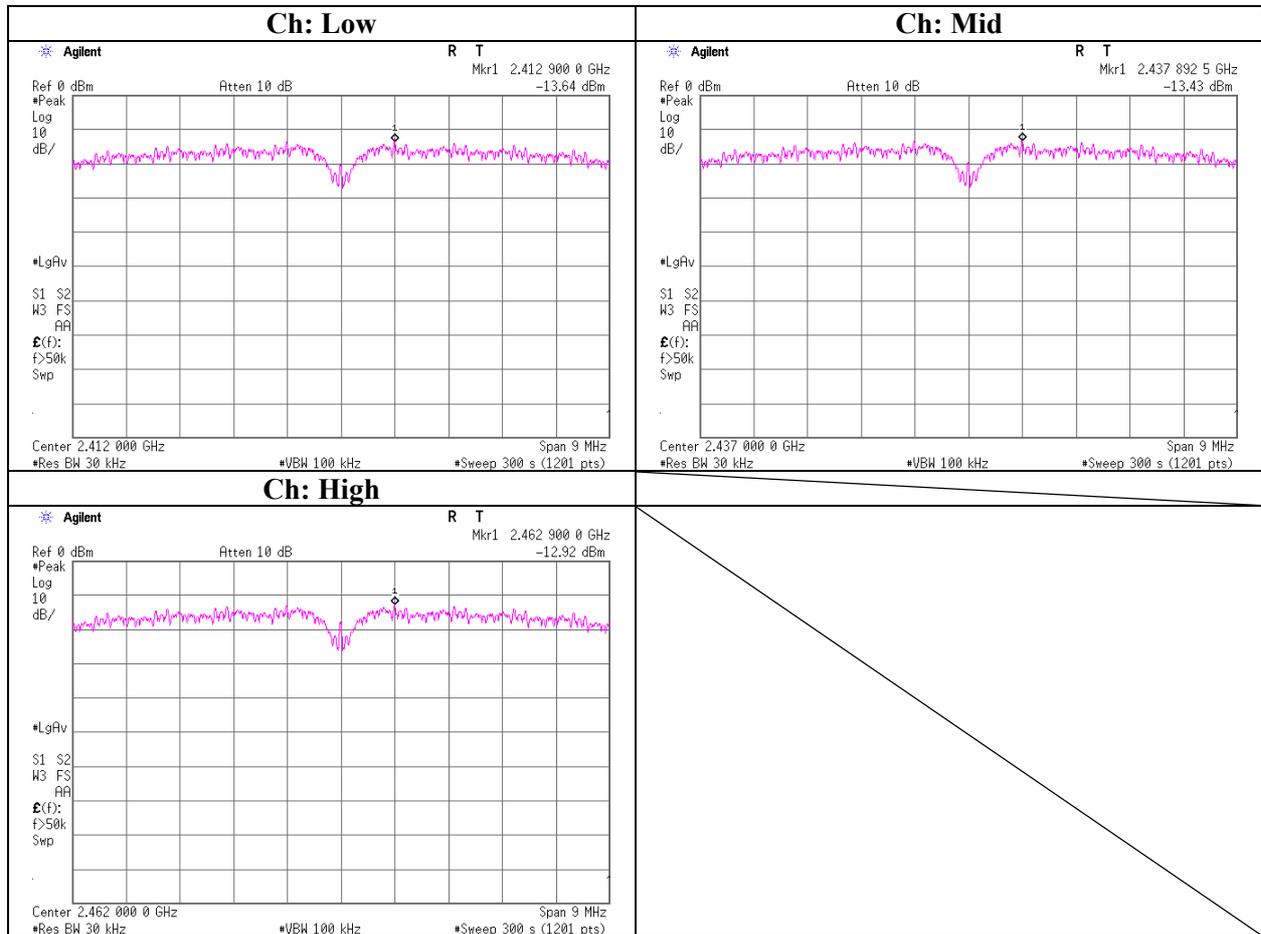
[IEEE802.11g]

Ch	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
Low	2418.9	-13.84	1.38	10.09	-2.37	8.00	10.37
Mid	2430.4	-14.57	1.38	10.09	-3.10	8.00	11.10
High	2455.1	-14.42	1.38	10.09	-2.95	8.00	10.95

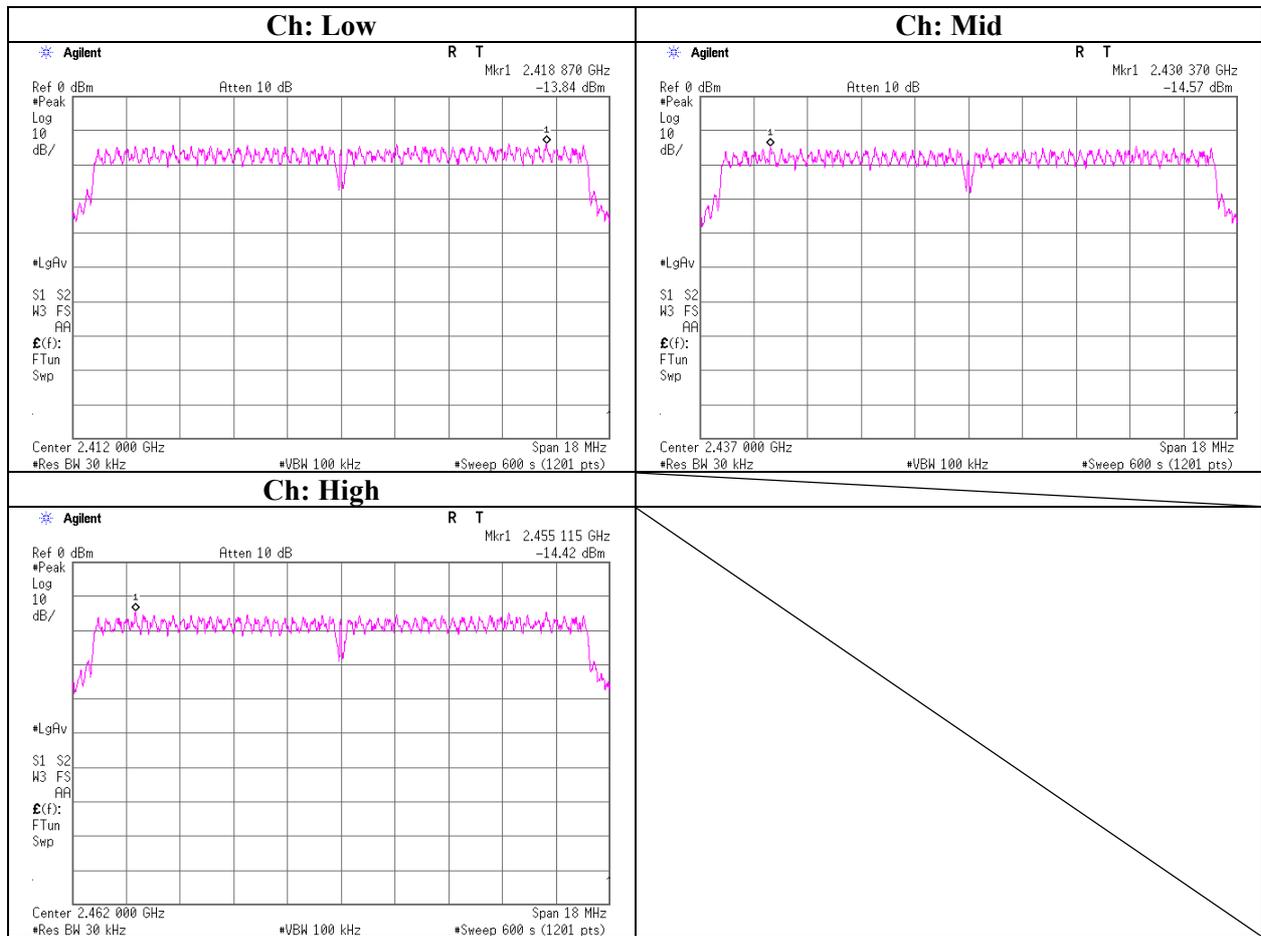
Sample Calculation:

Result = Reading + Cable Loss (Including customer's cable loss)+ Attenuator

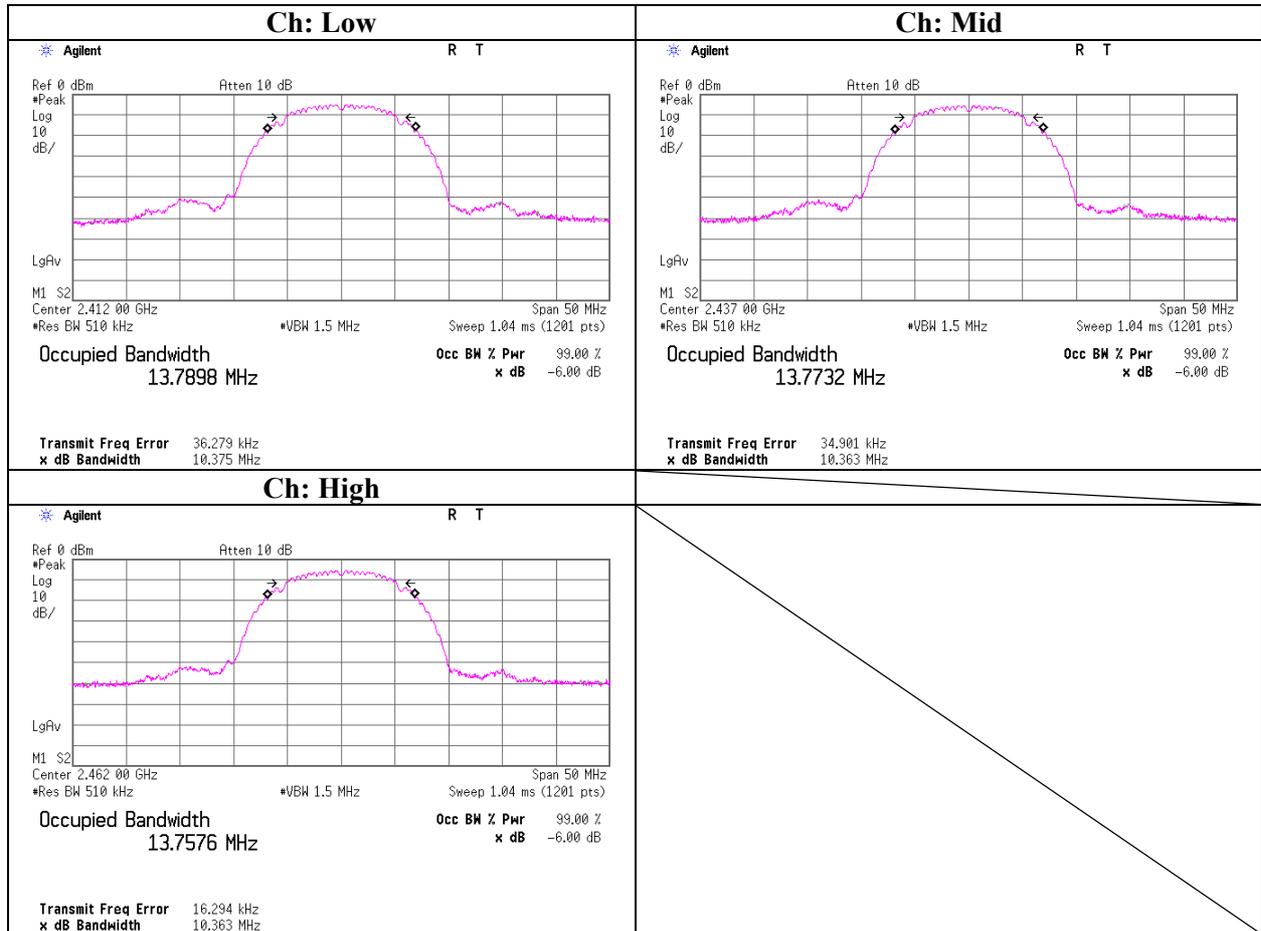
Power Density
11b



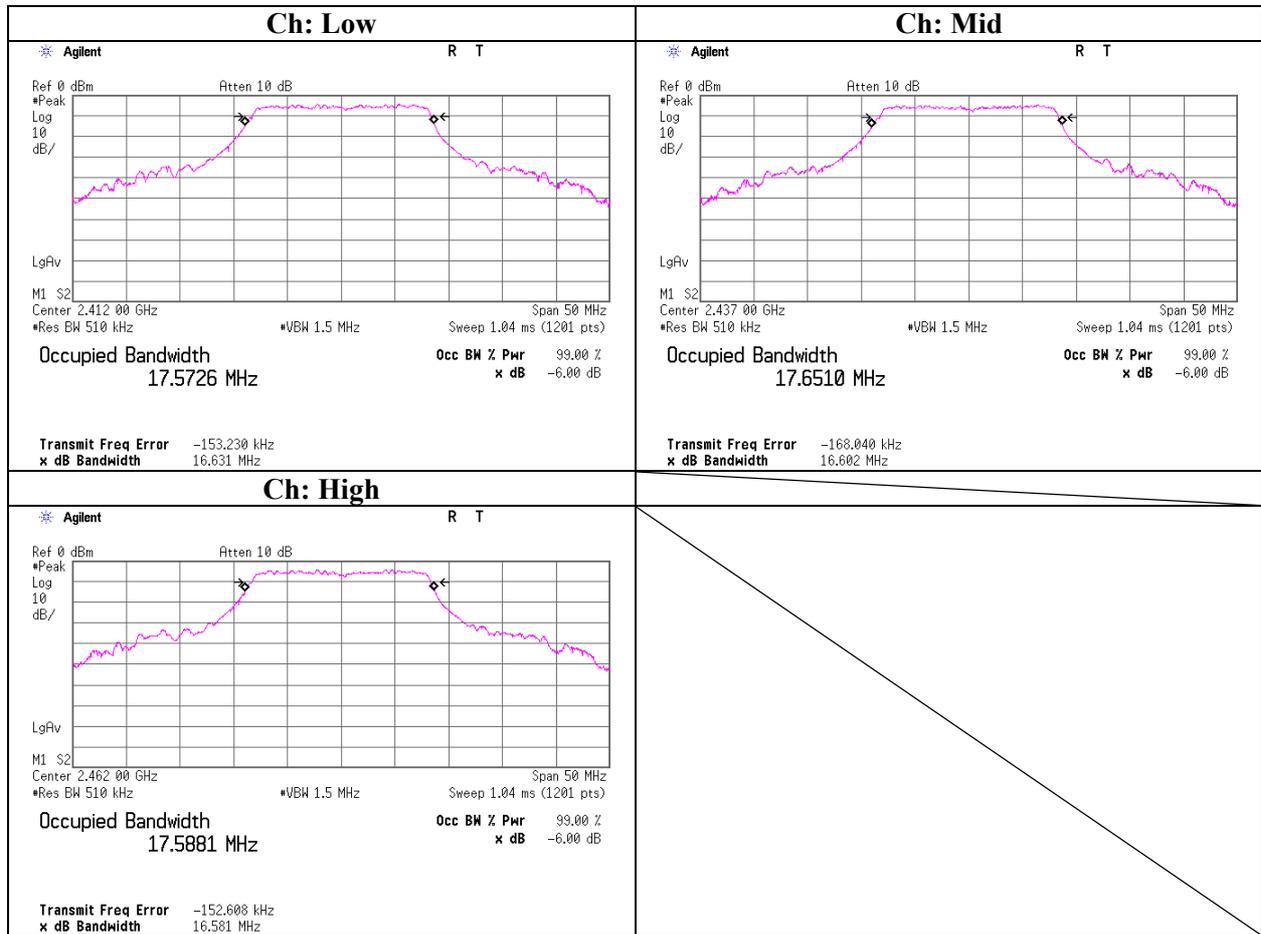
Power Density
11g



99% Occupied Bandwidth
11b



99% Occupied Bandwidth
11g



APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2008/03/25 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2008/01/10 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE	-
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	DA-10005	RE	-
MRENT-62	Spectrum Analyzer	Agilent	E4448A	DA-10005	RE	2007/11/27 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	DA-10005	RE	2008/04/23 * 12
MCC-56	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	287602(1m) / 284655(5m)	RE	2008/03/12 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2008/09/17 * 12
MHF-19	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCA	602	RE	2007/12/10 * 12
MCC-78	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278993/4	RE	2007/12/26 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2008/06/12 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2008/01/12 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2008/01/12 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2008/07/18 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	-	RE	2008/03/10 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2008/03/06 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2008/04/30 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2008/03/13 * 12
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE/AT	2008/02/27 * 12
MAT-22	Attenuator(10dB) DC-18GHz	Orient Microwave	BX10-0476-00	-	AT	2008/03/04 * 12
MCC-66	Microwave Cable 1G-40GHz	Schner	SUCOFLEX102	28636/2	AT	2008/04/04 * 12
MCC-114	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	290212/4	AT	2008/08/01 * 12
MAT-23	Attenuator(10dB) DC-18GHz	Orient Microwave	BX10-0476-00	-	AT	2008/03/05 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-180	-	AT	2008/01/10 * 12
MOS-12	Thermo-Hygrometer	Custom	CTH-180	-	AT	2008/01/10 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2008/09/24 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	2008/09/24 * 12
MAT-25	Attenuator(10dB)(above 1GHz)	Agilent	8493C	71642	AT	2008/06/25 * 12

The expiration date of the calibration is the end of the expired month.

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item: RE: Radiated Emission

AT: Antenna Terminal Conducted test

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124