

APPENDIX 2:Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE / CE	2006/04/10 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	RE / CE	2006/03/04 * 12
MRENT-31	Spectrum Analyzer	Advantest	R3273	RE / CE	2006/04/24 * 12
MCC-25	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2005/08/30 * 12
MPA-10	Pre Amplifier	Agilent	8449B	RE	2005/09/07 * 12
MCC-47	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2005/08/30 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE	2006/01/09 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2006/02/23 * 12
MPA-09	Pre Amplifier	Agilent	8447D	RE	2005/09/07 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2005/10/10 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2005/10/14 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	CE	2006/02/23 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	CE (EUT)	2006/02/06 * 12
MOS-02	Digital Humidity Indicator	N.T	NT-1800	RE / CE	2004/11/25 * 24
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE / CE	-
MRENT-34	Power sensor	Anritsu	MA2411B	AT	2006/04/25 * 12
MRENT-35	Power Meter	Anritsu	ML2496A	AT	2006/04/25 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	AT	2005/09/16 * 12
MAT-20	Attenuator(10dB)(above1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	AT	2006/01/10 * 12
MCC-22	Microwave Cable 1G-40GHz	Storm	421-011 (90-011-080)	AT	2006/05/12 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	AT	2004/11/25 * 24

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

Test Item:

CE: AC Main Conducted Emission

RE: Radiated Spurious Emission

AT: Antenna Terminal Conducted Spurious Emission, Maximum Peak Output Power, Carrier Frequency Separation, 20dB Bandwidth and 99% Occupied Bandwidth, Number of Hopping Frequency, Dwell time

UL Apex Co., Ltd.

Head Office EMC Lab.

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

Telephone : +81 596 24 8116

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MF060b(14.06.06)

APPENDIX 3: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/06/21 17:25:31

Company : Sony EMCS Corporation Saitama TEC
Kind of EUT : Bluetooth Wireless Audio Adaptor
Model No. : HWS-BTA2W
Serial No. : R002

Report No. : 26JE0212-H0
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C / 56%
Operator : Kenichi Adachi

Mode / Remarks : BT Tx 2402MHz

LIMIT : FCC15C §15.207 (OP) / RSS-Gen / RSS-210
FCC15C §15.207 (AV) / RSS-Gen / RSS-210

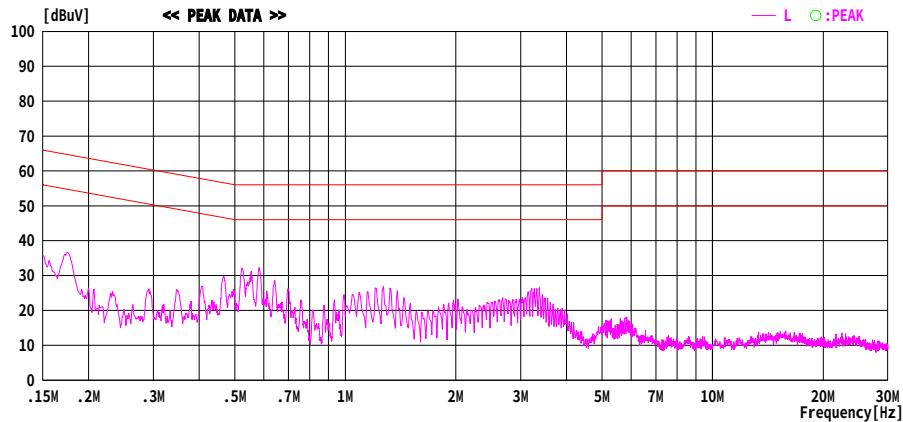
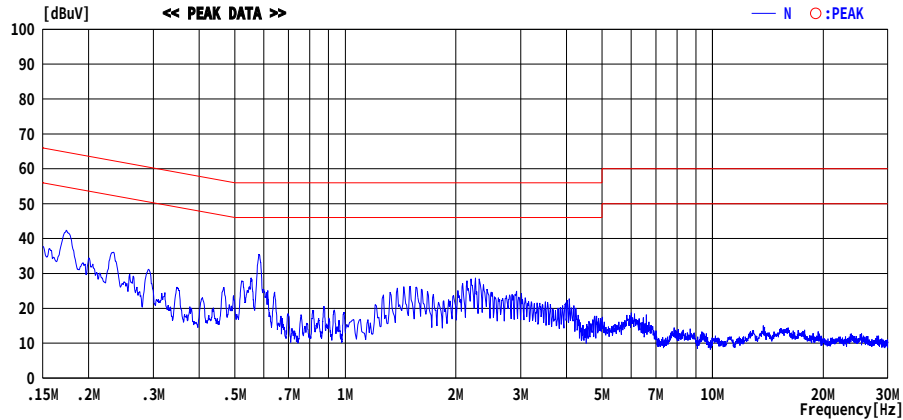


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

UL Apex Co., Ltd.

Head Office EMC Lab.

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

Telephone : +81 596 24 8116

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MF060b(14.06.06)

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/06/21 17:31:29

Company : Sony EMCS Corporation Saitama TEC
Kind of EUT : Bluetooth Wireless Audio Adaptor
Model No. : HWS-BTA2W
Serial No. : R002

Report No. : 26JE0212-HO
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C / 56%
Operator : Kenichi Adachi

Mode / Remarks : BT Tx 2441MHz

LIMIT : FCC15C § 15.207 (QP) / RSS-Gen / RSS-210
FCC15C § 15.207 (AV) / RSS-Gen / RSS-210

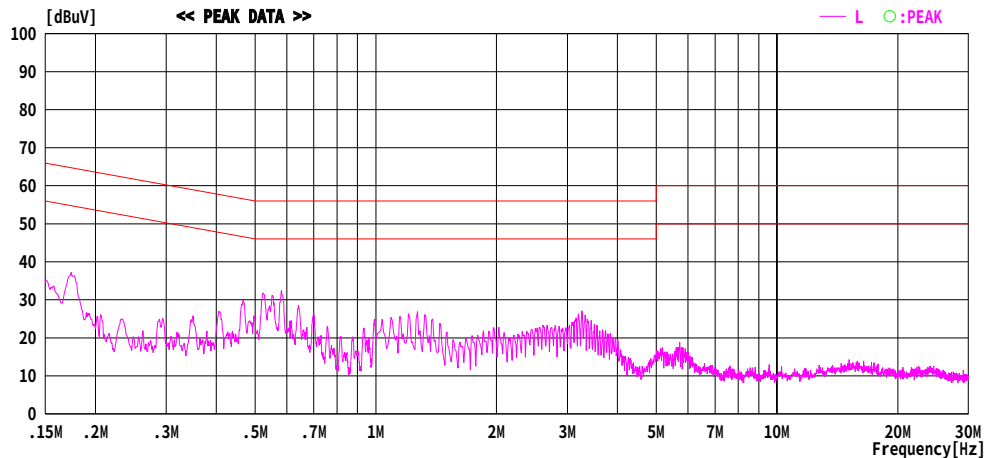
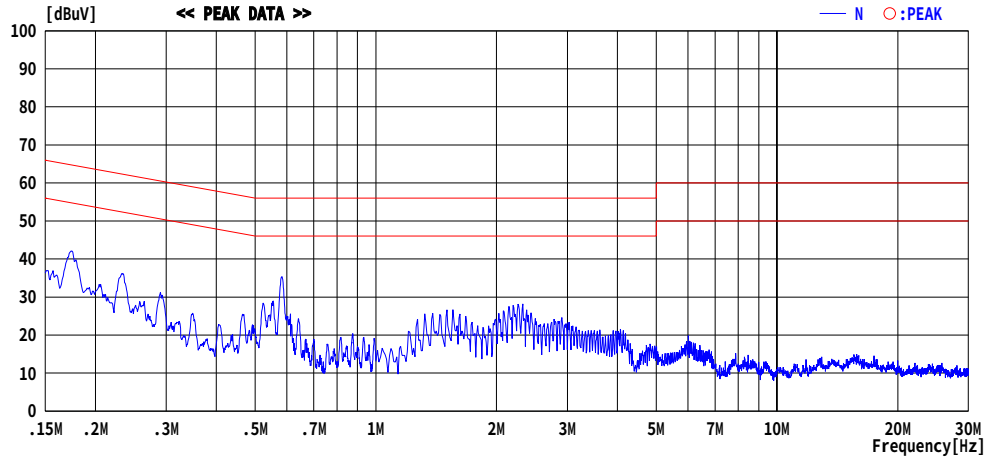


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/06/21 17:36:21

Company : Sony EMCS Corporation Saitama TEC
Kind of EUT : Bluetooth Wireless Audio Adaptor
Model No. : HWS-BTA2W
Serial No. : R002

Report No. : 26JE0212-HO
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C / 56%
Operator : Kenichi Adachi

Mode / Remarks : BT Tx 2480MHz

LIMIT : FCC15C § 15.207 (QP) / RSS-Gen / RSS-210
FCC15C § 15.207 (AV) / RSS-Gen / RSS-210

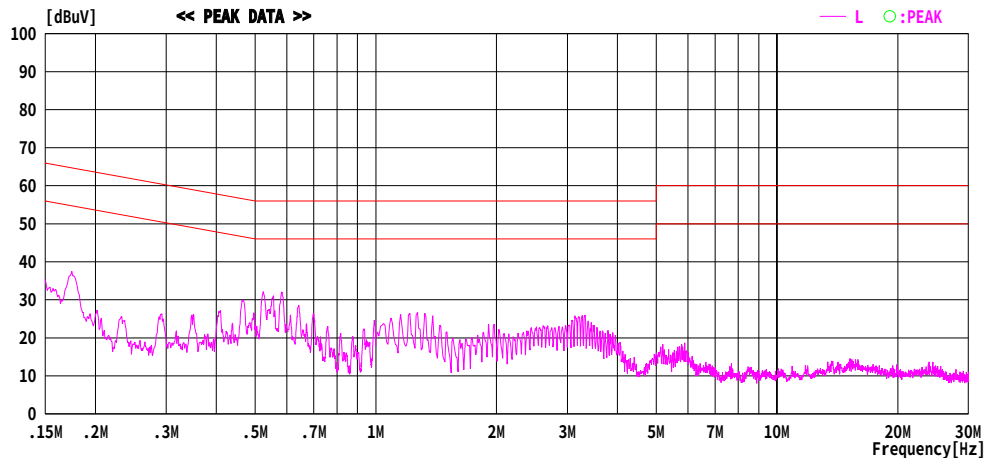
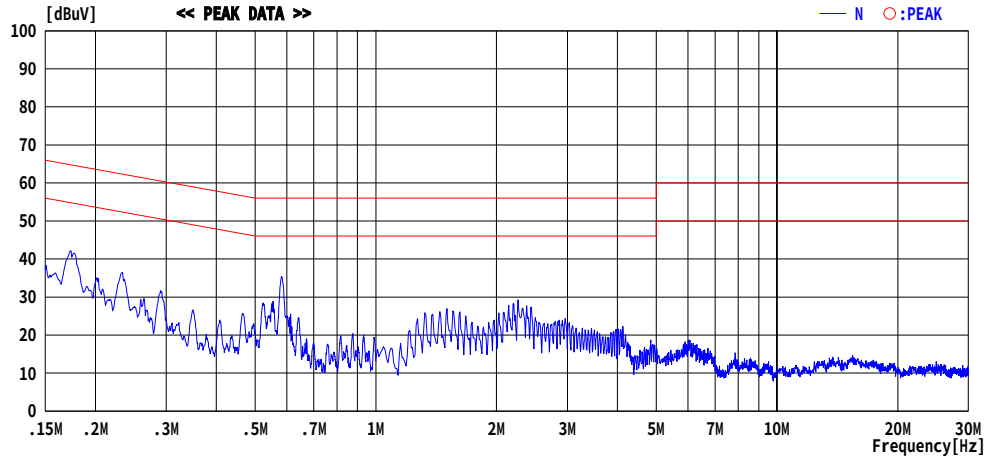


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

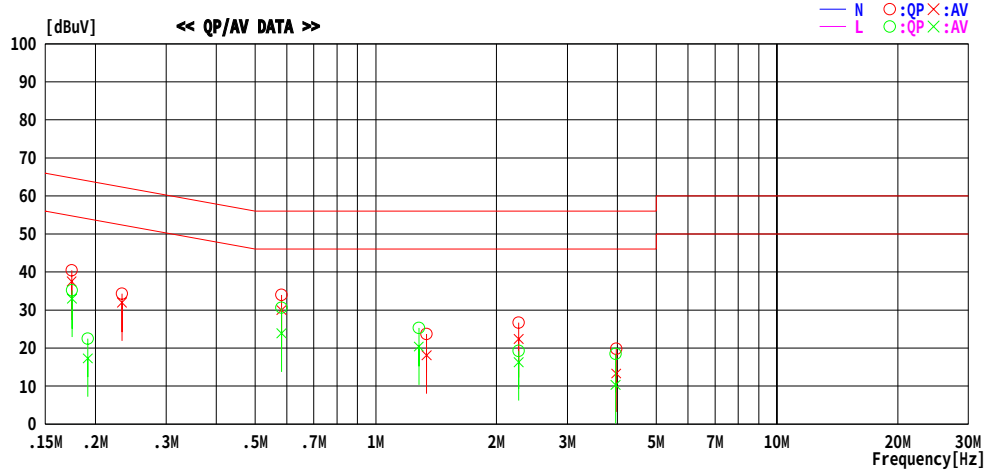
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/06/21 17:36:21

Company : Sony EMCS Corporation Saitama TEC
Kind of EUT : Bluetooth Wireless Audio Adaptor
Model No. : HWS-BTA2W
Serial No. : R002

Report No. : 26JE0212-HO
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C / 56%
Operator : Kenichi Adachi

Mode / Remarks : BT Tx 2480MHz

LIMIT : FCC15C § 15.207 (QP) / RSS-Gen / RSS-210
FCC15C § 15.207 (AV) / RSS-Gen / RSS-210



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase
	QP	AV		QP	AV	QP	AV	QP	AV	
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
0.17455	40.2	37.3	0.2	40.4	37.5	64.7	54.7	24.3	17.2	N
0.23292	33.9	31.6	0.4	34.3	32.0	62.3	52.3	28.0	20.3	N
0.58194	33.6	29.6	0.4	34.0	30.0	56.0	46.0	22.0	16.0	N
1.33798	23.2	17.6	0.5	23.7	18.1	56.0	46.0	32.3	27.9	N
2.26976	26.1	21.8	0.6	26.7	22.4	56.0	46.0	29.3	23.6	N
3.97180	19.0	12.5	0.8	19.8	13.3	56.0	46.0	36.2	32.7	N
0.17476	35.0	32.8	0.2	35.2	33.0	64.7	54.7	29.5	21.7	L
0.19150	22.3	17.1	0.2	22.5	17.3	64.0	54.0	41.5	36.7	L
0.58170	30.2	23.5	0.4	30.6	23.9	56.0	46.0	25.4	22.1	L
1.27951	24.8	19.9	0.5	25.3	20.4	56.0	46.0	30.7	25.6	L
2.26891	18.7	15.7	0.6	19.3	16.3	56.0	46.0	36.7	29.7	L
3.95605	17.7	9.5	0.8	18.5	10.3	56.0	46.0	37.5	35.7	L

CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/06/21 17:52:21

Company : Sony EMCS Corporation Saitama TEC
Kind of EUT : Bluetooth Wireless Audio Adaptor
Model No. : HWS-BTA2W
Serial No. : R002
Report No. : 26JE0212-HO
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C / 56%
Operator : Kenichi Adachi

Mode / Remarks : BT Rx 2441MHz

LIMIT : FCC15B ClassB(OP)(0.15-30MHz) / RSS-Gen / RSS-210
FCC15B ClassB(AV)(0.15-30MHz) / RSS-Gen / RSS-210

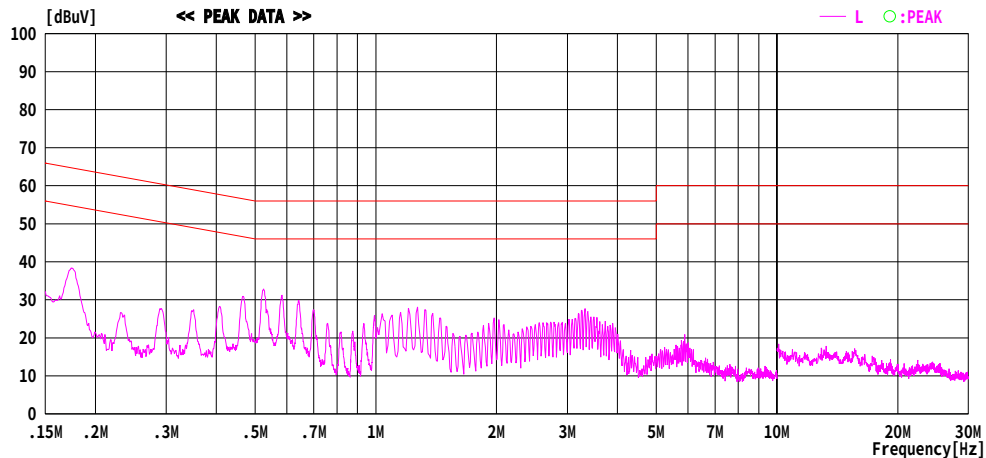
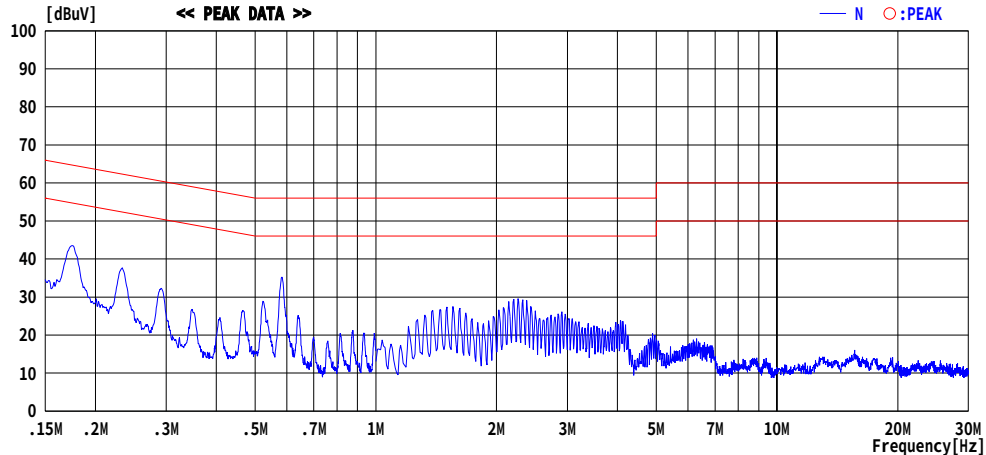


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Carrier Frequency Separation

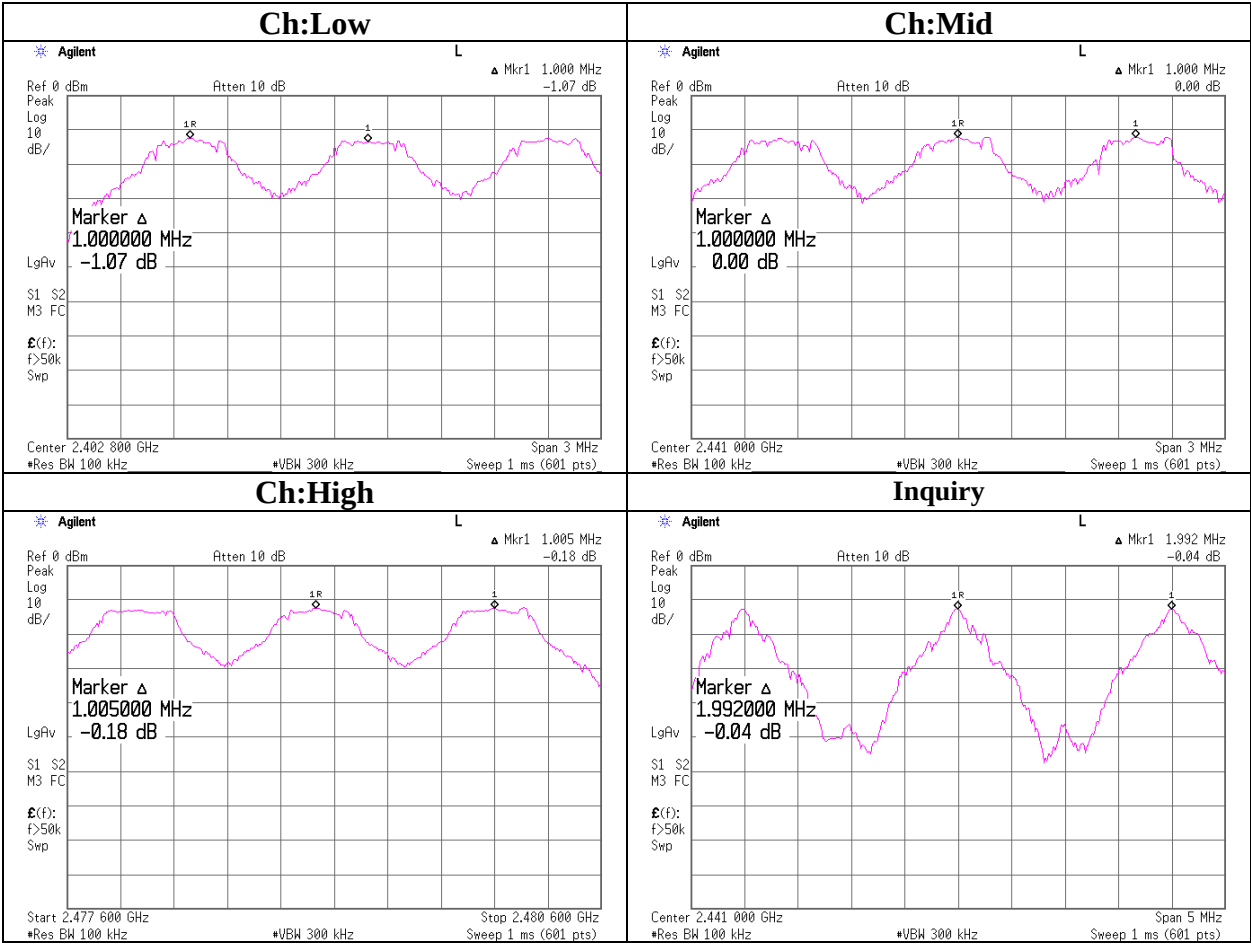
UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY : Sony EMCS Corporation Saitama TEC
EQUIPMENT : Bluetooth Wireless Audio Adaptor
MODEL : HWS-BTA2W
S/ N : R001
POWER : AC 120V / 60Hz
MODE : Tx(Hopping On)/Inquiry

REGULATION : FCC Part15 Subpart C 15.247(a)(1)
TEST DISTANCE : -
DATE : 06/22/2006
TEMPERATURE : 26deg.C
HUMIDITY : 60%
ENGINEER : Kenichi Adachi

Ch	Freq. [MHz]	Channel separation [MHz]	Limit
Low	2402.0	1.000	>20dB Bandwidth or 25[kHz](whichever is greater)
Mid	2441.0	1.000	>20dB Bandwidth or 25[kHz](whichever is greater)
High	2480.0	1.005	>20dB Bandwidth or 25[kHz](whichever is greater)
Inquiry	2441.0	1.992	>two-thirds of the 20dB Bandwidth or 25[kHz](whichever is greater)

Carrier Frequency Separation



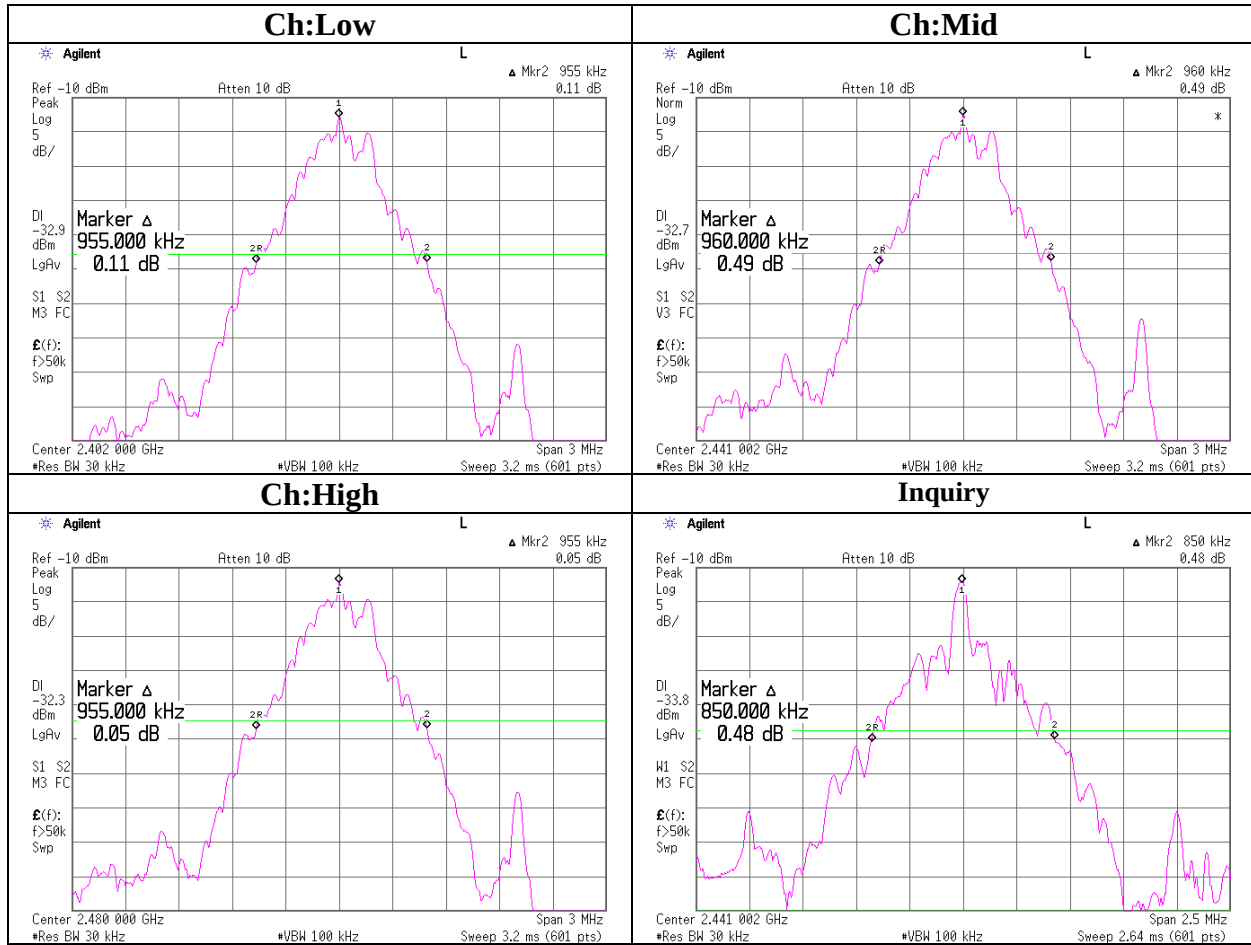
20dB Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY	: Sony EMCS Corporation Saitama TEC	REGULATION	: FCC Part15 Subpart C 15.247(a)(1)
EQUIPMENT	: Bluetooth Wireless Audio Adaptor	TEST DISTANCE	: -
MODEL	: HWS-BTA2W	DATE	: 06/22/2006
S/ N	: R001	TEMPERATURE	: 26deg.C
POWER	: AC 120V / 60Hz	HUMIDITY	: 60%
MODE	: Tx (Hopping off) /Inquiry	ENGINEER	: Kenichi Adachi

Ch	Freq.	20dB Bandwidth	Limit
	[MHz]	[MHz]	[MHz]
Low	2402.0	0.955	-
Mid	2441.0	0.960	-
High	2480.0	0.955	-
Inquiry	2441.0	0.850	-

20dB Bandwidth



Number of Hopping Frequency

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

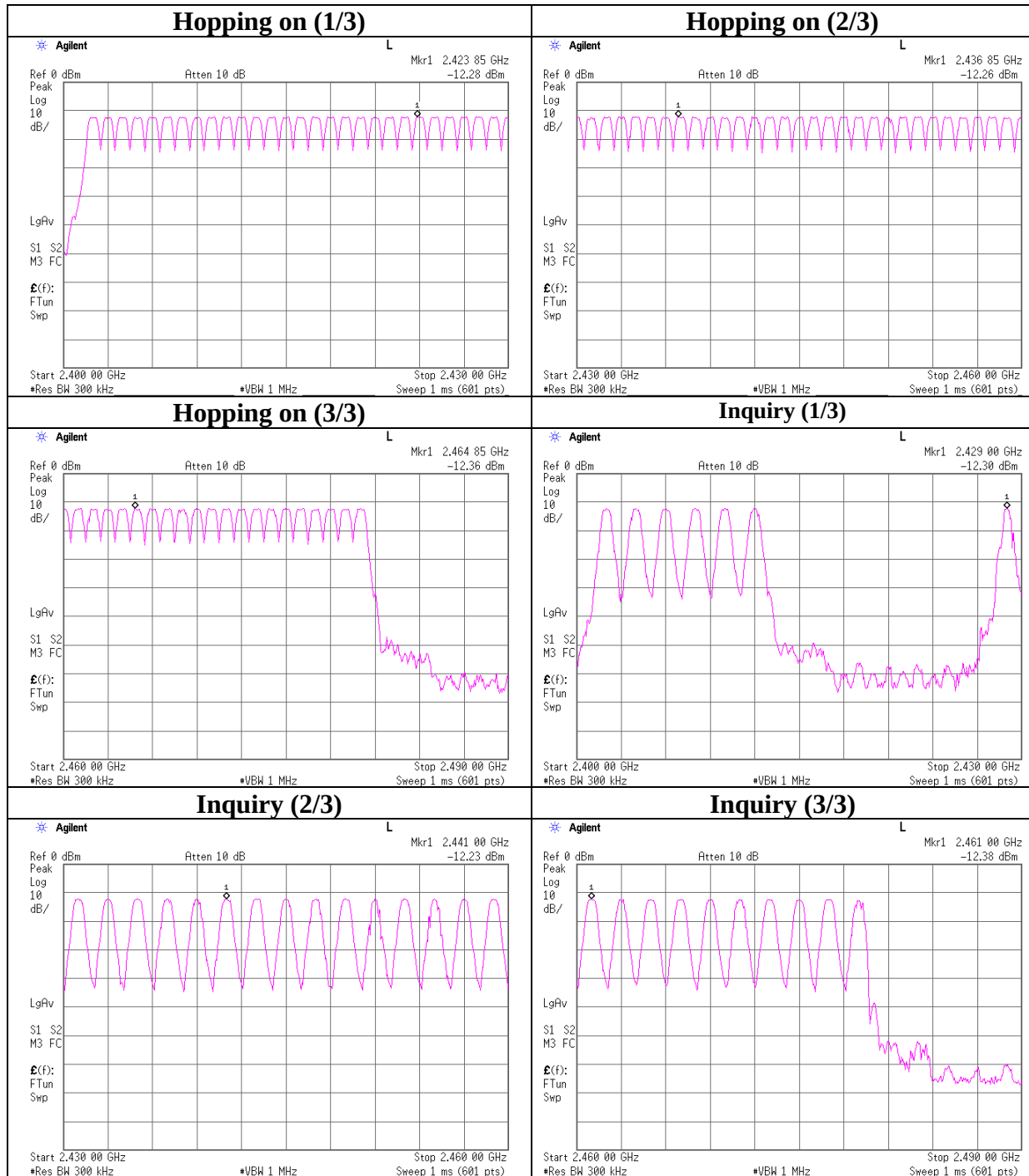
COMPANY : Sony EMCS Corporation Saitama TEC
EQUIPMENT : Bluetooth Wireless Audio Adaptor
MODEL : HWS-BTA2W
S/ N : R001
POWER : AC 120V / 60Hz
MODE : Tx (Hopping on) /Inquiry

REGULATION : FCC Part15 Subpart C 15.247(a)(1)(iii)
TEST DISTANCE : -
DATE : 06/22/2006
TEMPERATURE : 26deg.C
HUMIDITY : 60%
ENGINEER : Kenichi Adachi

Mode	Number of channel [time]	Limit [time]
Hopping	79	≥ 15

Mode	Number of channel [time]	Limit [time]
Inquiry	32	≥ 15

Number of Hopping Frequency



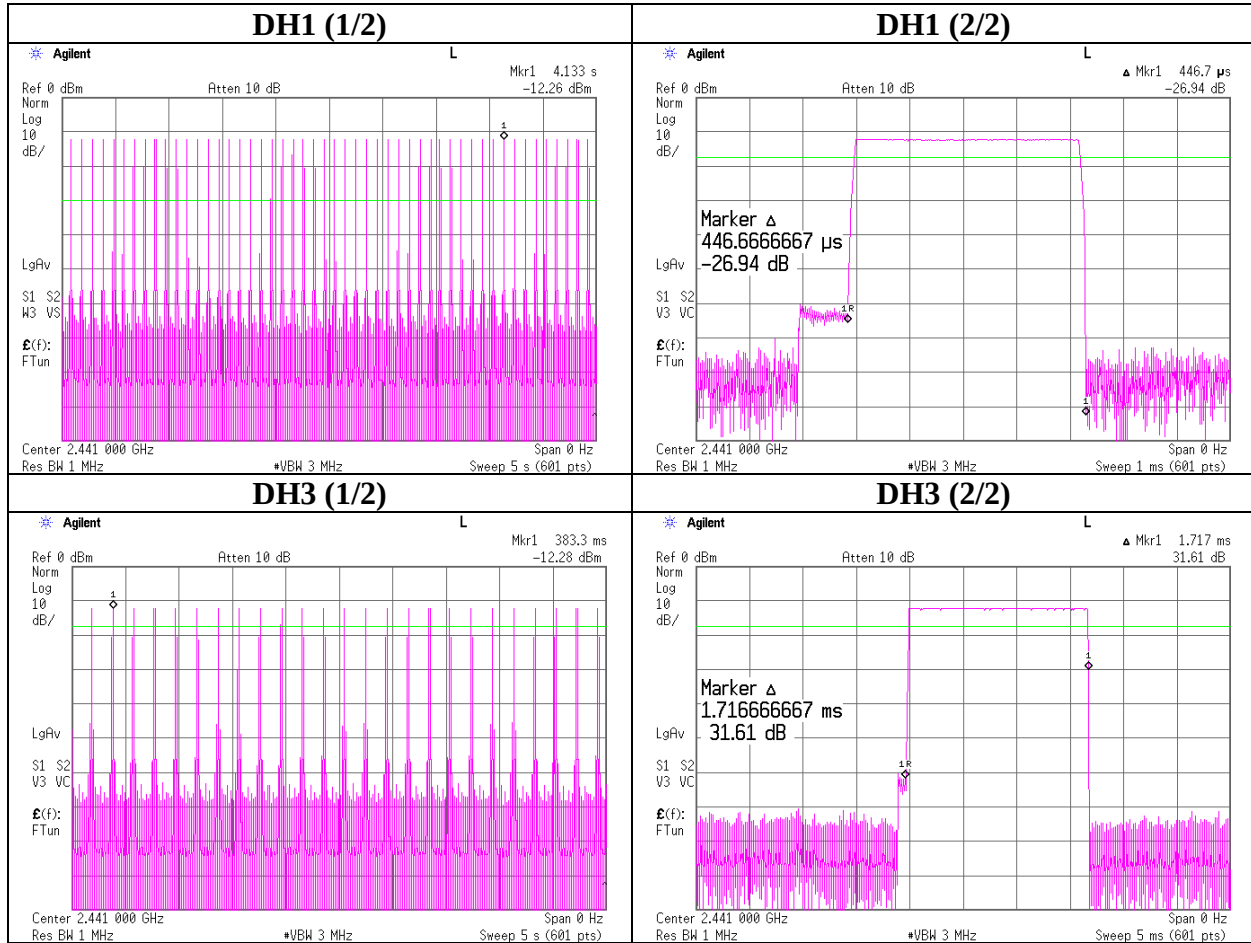
Dwell time

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

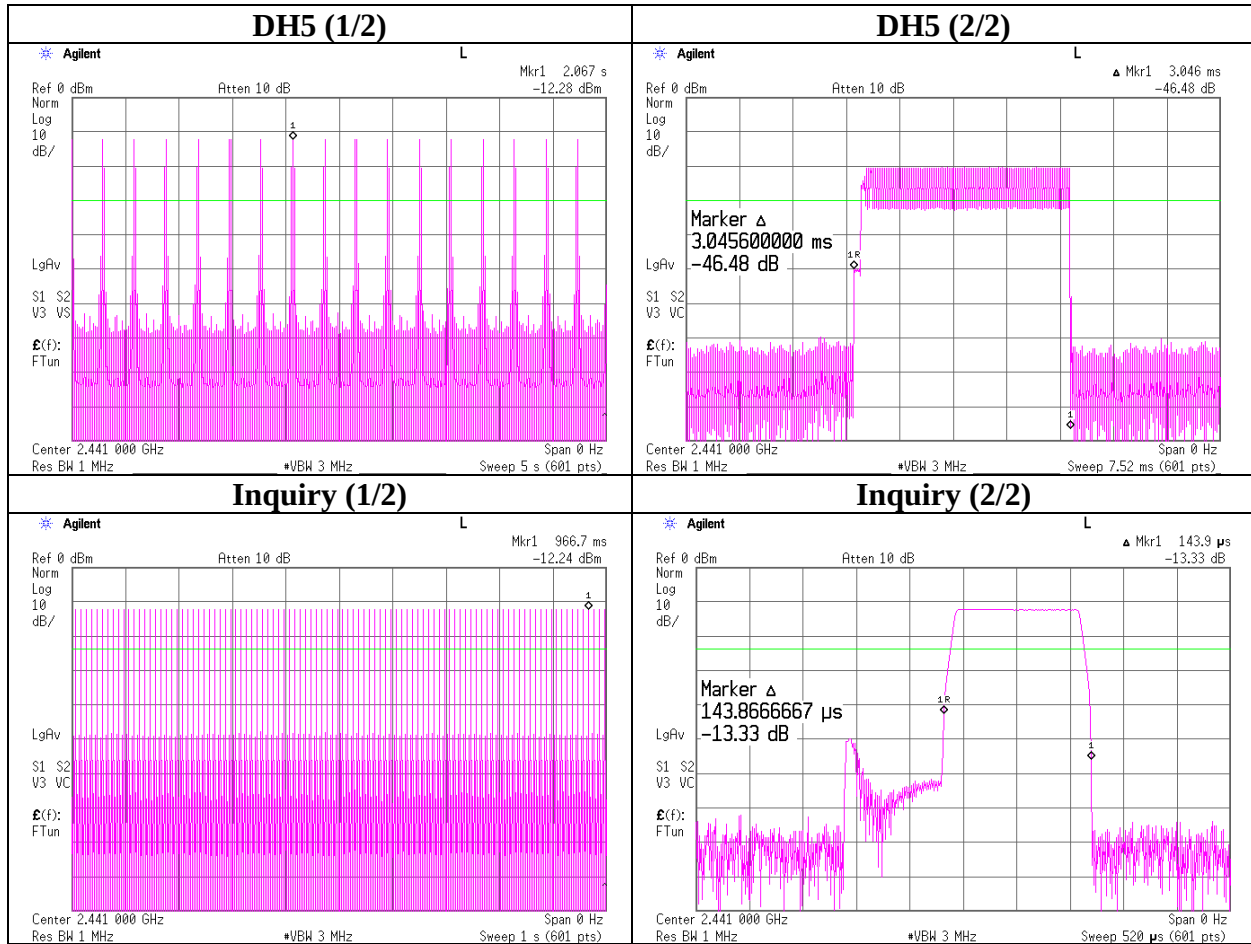
COMPANY	: Sony EMCS Corporation Saitama TEC	REGULATION	: FCC Part15 Subpart C 15.247(a)(1)(iii)
EQUIPMENT	: Bluetooth Wireless Audio Adaptor	TEST DISTANCE	: -
MODEL	: HWS-BTA2W	DATE	: 06/22/2006
S/ N	: R001	TEMPERATURE	: 26deg.C
POWER	: AC 120V / 60Hz	HUMIDITY	: 60%
MODE	: Tx (Hopping on) /Inquiry	ENGINEER	: Kenichi Adachi

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	50 times /5sec. x 31.6 = 316 times	0.447	141	400
DH3	25 times / 5sec. x 31.6 = 158 times	1.717	271	400
DH5	16 times / 5 sec. x 31.6 = 101 times	3.046	308	400
Inquiry	100 times / 1sec. x 12.8 = 1280 times	0.144	184	400

Dwell time



Dwell time



Maximum Peak Output Power

UL Apex Co., Ltd.
Head Office EMC Lab. No.7 Shielded Room

COMPANY	: Sony EMCS Corporation Saitama TEC	REGULATION	: FCC Part15 Subpart C 15.247(b)(1)
EQUIPMENT	: Bluetooth Wireless Audio Adaptor	TEST DISTANCE	: -
MODEL	: HWS-BTA2W	DATE	: 06/22/2006
S/ N	: R001	TEMPERATURE	: 26deg.C
POWER	: AC 120V / 60Hz	HUMIDITY	: 60%
MODE	: Tx(Hopping Off)/Inquiry	ENGINEER	: Kenichi Adachi

Ch	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
Low	2402.0	-1.08	0.00	0.00	-1.08	0.78	20.97	125	22.05
Mid	2441.0	-0.41	0.00	0.00	-0.41	0.91	20.97	125	21.38
High	2480.0	-0.47	0.00	0.00	-0.47	0.90	20.97	125	21.44
Inquiry	2441.0	-0.81	0.00	0.00	-0.81	0.83	20.97	125	21.78

Sample Calculation:

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

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

Radiated Spurious Emission

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

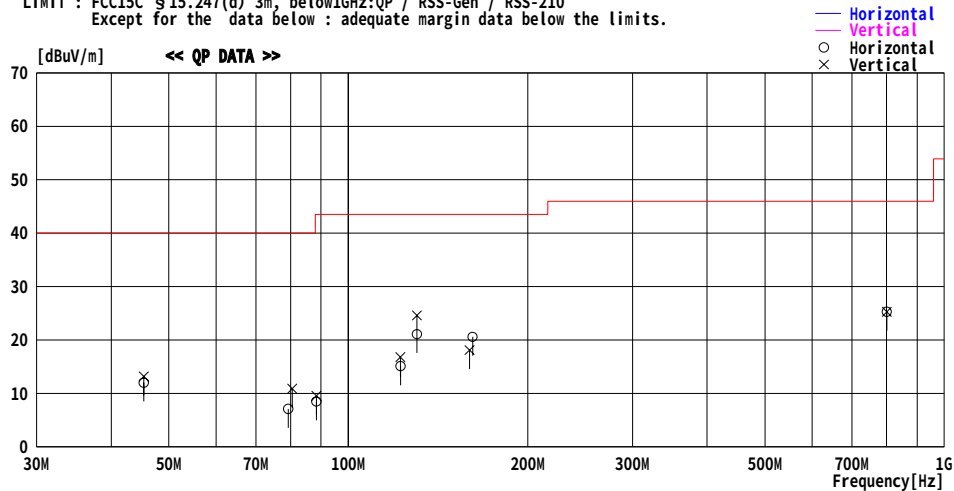
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/06/21 14:03:48

Company : Sony EMCS Corporation Saitama TEC
Kind of EUT : Bluetooth Wireless Audio Adaptor
Model No. : HWS-BTA2W
Serial No. : R002
Report No. : 26JE0212-HO
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C. / 49%
Operator : Kenichi Adachi

Mode / Remarks : Tx 2402MHz , EUT-max-axis(H: Y, V: X)

LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP / RSS-Gen / RSS-210
Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin
			Factor	Gain						
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
45.360	22.4	QP	11.6	-22.0	12.0	280	310	Hori.	40.0	28.0
45.360	23.6	QP	11.6	-22.0	13.2	245	100	Vert.	40.0	26.8
79.250	22.3	QP	6.3	-21.5	7.1	287	323	Hori.	40.0	32.9
80.500	26.2	QP	6.3	-21.6	10.9	329	100	Vert.	40.0	29.1
88.393	23.4	QP	7.6	-21.4	9.6	350	100	Vert.	43.5	33.9
88.395	22.3	QP	7.6	-21.4	8.5	227	301	Hori.	43.5	35.0
122.280	25.1	QP	12.7	-21.0	16.8	211	100	Vert.	43.5	26.7
122.360	23.4	QP	12.7	-21.0	15.1	359	324	Hori.	43.5	28.4
130.295	28.5	QP	13.5	-20.9	21.1	177	209	Hori.	43.5	22.4
130.305	32.0	QP	13.5	-20.9	24.6	132	100	Vert.	43.5	18.9
161.663	26.0	QP	15.3	-20.7	20.6	10	250	Hori.	43.5	22.9
159.682	23.6	QP	15.2	-20.7	18.1	323	100	Vert.	43.5	25.4
800.667	21.6	QP	21.4	-17.7	25.3	0	100	Hori.	46.0	20.7
800.667	21.6	QP	21.4	-17.7	25.3	0	100	Vert.	46.0	20.7

CHART:WITH FACTOR ANT TYPE : -30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz:-HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

Radiated Spurious Emission

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

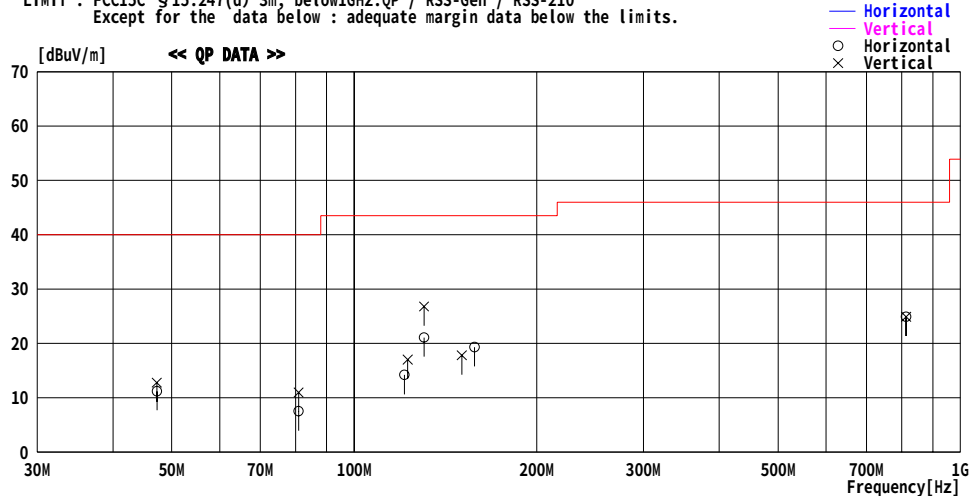
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/06/21 15:05:34

Company : Sony EMCS Corporation Saitama TEC
Kind of EUT : Bluetooth Wireless Audio Adaptor
Model No. : HWS-BTA2W
Serial No. : R002
Report No. : 26JE0212-HO
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C. / 49%
Operator : Kenichi Adachi

Mode / Remarks : Tx 2441MHz , EUT-max-axis(H: Y, V: X)

LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP / RSS-Gen / RSS-210
Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin
			Factor	Gain						
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
47.240	23.8	QP	11.0	-22.0	12.8	357	100	Vert.	40.0	27.2
47.280	22.3	QP	10.9	-22.0	11.2	311	318	Hori.	40.0	28.8
80.939	26.2	QP	6.4	-21.6	11.0	258	100	Vert.	40.0	29.0
80.959	22.7	QP	6.4	-21.6	7.5	238	199	Hori.	40.0	32.5
120.959	22.7	QP	12.6	-21.1	14.2	0	328	Hori.	43.5	29.3
122.480	25.3	QP	12.7	-21.0	17.0	219	100	Vert.	43.5	26.5
130.295	34.2	QP	13.5	-20.9	26.8	131	100	Vert.	43.5	16.7
130.292	28.5	QP	13.5	-20.9	21.1	248	308	Hori.	43.5	22.4
150.434	23.9	QP	14.8	-20.9	17.8	161	100	Vert.	43.5	25.7
157.841	24.9	QP	15.1	-20.7	19.3	220	297	Hori.	43.5	24.2
813.667	21.5	QP	21.3	-17.9	24.9	0	100	Vert.	46.0	21.1
813.667	21.5	QP	21.3	-17.9	24.9	0	100	Hori.	46.0	21.1

CHART:WITH FACTOR ANT TYPE : -30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

Radiated Spurious Emission

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

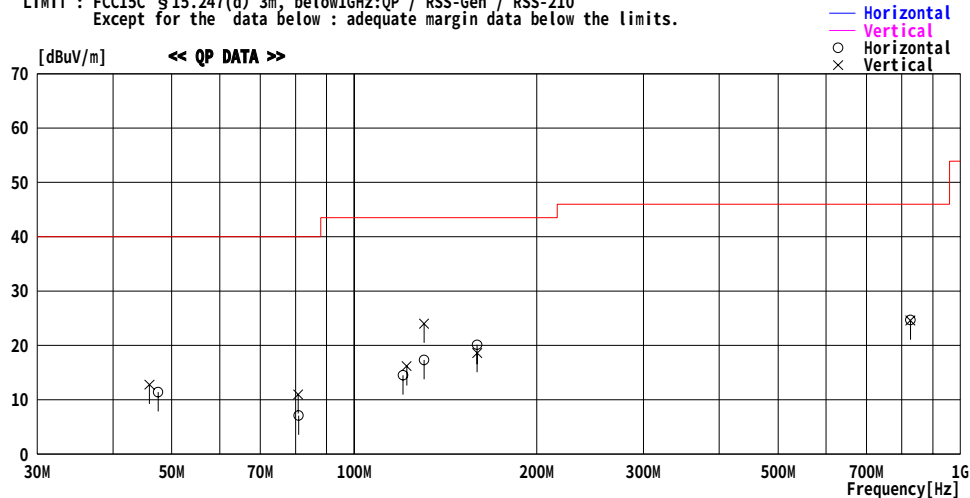
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/06/21 15:44:06

Company : Sony EMCS Corporation Saitama TEC
Kind of EUT : Bluetooth Wireless Audio Adaptor
Model No. : HWS-BTA2W
Serial No. : R002
Report No. : 26JE0212-HO
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C. / 49%
Operator : Kenichi Adachi

Mode / Remarks : Tx 2480MHz , EUT-max-axis(H: Y, V: X)

LIMIT : FCC15C §15.247(d) 3m, below1GHz:QP / RSS-Gen / RSS-210
Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin
			Factor	Gain						
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
45.920	23.4	QP	11.4	-22.0	12.8	89	100	Vert.	40.0	27.2
47.500	22.4	QP	10.9	-21.9	11.4	322	317	Hori.	40.0	28.6
80.789	26.2	QP	6.4	-21.6	11.0	229	100	Vert.	40.0	29.0
80.926	22.3	QP	6.4	-21.6	7.1	263	299	Hori.	40.0	32.9
120.376	23.1	QP	12.5	-21.1	14.5	354	299	Hori.	43.5	29.0
122.056	24.6	QP	12.7	-21.1	16.2	237	100	Vert.	43.5	27.3
130.292	31.4	QP	13.5	-20.9	24.0	112	100	Vert.	43.5	19.5
130.342	24.7	QP	13.5	-20.9	17.3	191	334	Hori.	43.5	26.2
159.433	24.1	QP	15.2	-20.7	18.6	132	100	Vert.	43.5	24.9
159.437	25.6	QP	15.2	-20.7	20.1	209	258	Hori.	43.5	23.4
826.667	21.5	QP	21.2	-18.1	24.6	0	100	Vert.	46.0	21.4
826.667	21.6	QP	21.2	-18.1	24.7	0	100	Hori.	46.0	21.3

CHART:WITH FACTOR ANT TYPE : -30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

Radiated Spurious Emission

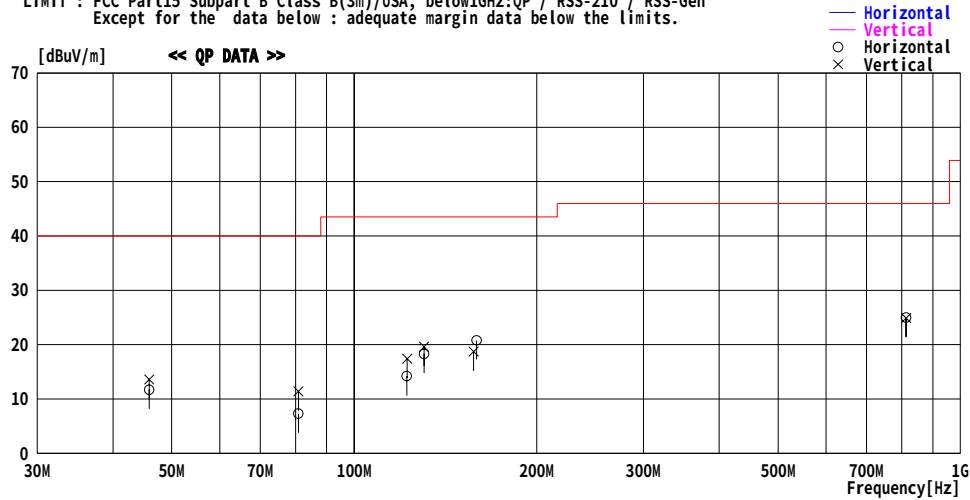
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/06/21 16:23:15

Company : Sony EMCS Corporation Saitama TEC
Kind of EUT : Bluetooth Wireless Audio Adaptor
Model No. : HWS-BTA2W
Serial No. : R002
Report No. : 26JE0212-HO
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C. / 49%
Operator : Kenichi Adachi

Mode / Remarks : Rx 2441MHz , EUT-max-axis(H: Y, V: X)

LIMIT : FCC Part15 Subpart B Class B(3m)/USA, below1GHz:QP / RSS-210 / RSS-Gen
Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
45.878	24.2	QP	11.4	-22.0	13.6	71	100	Vert.	40.0	26.4
45.901	22.3	QP	11.4	-22.0	11.7	0	329	Hori.	40.0	28.3
80.875	26.6	QP	6.4	-21.6	11.4	218	100	Vert.	40.0	28.6
80.876	22.5	QP	6.4	-21.6	7.3	224	285	Hori.	40.0	32.7
122.073	22.6	QP	12.7	-21.1	14.2	311	309	Hori.	43.5	29.3
122.308	25.7	QP	12.7	-21.0	17.4	229	100	Vert.	43.5	26.1
130.297	25.7	QP	13.5	-20.9	18.3	159	328	Hori.	43.5	25.2
130.308	27.0	QP	13.5	-20.9	19.6	132	100	Vert.	43.5	23.9
157.330	24.2	QP	15.1	-20.6	18.7	161	100	Vert.	43.5	24.8
159.107	26.3	QP	15.2	-20.7	20.8	11	230	Hori.	43.5	22.7
813.666	21.6	QP	21.3	-17.9	25.0	0	100	Hori.	46.0	21.0
813.667	21.5	QP	21.3	-17.9	24.9	0	100	Vert.	46.0	21.1

CHART:WITH FACTOR ANT TYPE : -30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

Radiated Spurious Emission

COMPANY : Sony EMCS Corporation Saitama TEC
EQUIPMENT : Bluetooth Wireless Audio Adaptor
MODEL : HWS-BTA2W
S/N : R002
POWER : AC 120V / 60Hz
MODE : Bluetooth Tx 2402MHz
AXIS : H: Y-axis / V: X-axis

UL-Apex Co.,Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber
REPORT No. : 26JE0212-HO
REGULATION : FCC Part 15 Subpart C 15.247(d) / RSS-210
TEST DISTANCE : 3m (1GHz to 10GHz) / 1m (10GHz to 26.5GHz)
DATE : 06/21/2006
TEMPERATURE : 26 deg.C.
HUMIDITY : 49 %
ENGINEER : Kenichi Adachi

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

No	Freq. [MHz]	Reading		Ant F. [dB/m]	Amp G. [dB]	Cable [dB]	Cable [dB]		Other1 [dB]		Result [dBuV/m]		Limit [dBuV]	Margin [dB]		Remark
		HOR	VER								HOR	VER		HOR	VER	
1	1601.85	47.1	47.9	25.53	-32.85	0.41	2.21	-	-	-	42.4	43.2	74.0	31.6	30.8	
2	2386.28	45.3	43.5	30.62	-32.41	0.35	2.61	-	-	-	46.5	44.7	74.0	27.5	29.3	
3*	2400.00	66.7	60.2	30.59	-32.41	0.35	2.62	-	-	-	67.8	61.3	74.0	-	-	
4	4804.00	41.8	43.0	35.66	-31.86	0.30	3.73	-	-	-	49.6	50.8	74.0	24.4	23.2	
5	7206.00	41.4	42.1	37.53	-31.46	0.49	4.65	-	-	-	52.6	53.3	74.0	21.4	20.7	*2
6	9608.00	42.9	42.1	36.58	-31.69	0.78	5.53	-	-	-	54.1	53.3	74.0	19.9	20.7	*2
7	12010.00	41.4	42.6	40.32	-31.25	1.06	6.65	-	-9.54	-	48.6	49.8	74.0	25.4	24.2	*2
8	14412.00	41.0	41.0	43.22	-30.98	1.09	7.37	-	-9.54	-	52.2	52.2	74.0	21.8	21.8	*2
9	16814.00	44.9	45.1	46.39	-30.80	1.00	7.97	-	-9.54	-	59.9	60.1	74.0	14.1	13.9	*2
10	19216.00	42.7	42.9	38.99	-30.04	0.94	8.81	-	-9.54	-	51.9	52.1	74.0	22.1	21.9	*2
11	21618.00	45.0	44.3	39.29	-30.31	0.80	9.14	-	-9.54	-	54.4	53.7	74.0	19.6	20.3	*2
12	24020.00	44.3	44.0	39.09	-30.38	1.34	9.45	-	-9.54	-	54.3	54.0	74.0	19.7	20.0	*2

* Reference data

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

No	Freq. [MHz]	Reading		Ant F. [dB/m]	Amp G. [dB]	Cable [dB]	Cable [dB]		Other1 [dB]		Result [dBuV/m]		Limit [dBuV]	Margin [dB]		Remark
		HOR	VER								HOR	VER		HOR	VER	
1	1601.85	39.50	42.60	25.53	-32.85	0.41	2.21	-	-	-	34.8	37.9	54.0	19.2	16.1	
2	2386.28	35.10	32.00	30.62	-32.41	0.35	2.61	-	-	-	36.3	33.2	54.0	17.7	20.8	
3*	2400.00	56.80	51.60	30.59	-32.41	0.35	2.62	-	-	-	57.9	52.7	54.0	-	-	
4	4804.00	30.90	31.00	35.66	-31.86	0.30	3.73	-	-	-	38.7	38.8	54.0	15.3	15.2	
5	7206.00	29.50	29.40	37.53	-31.46	0.49	4.65	-	-	-	40.7	40.6	54.0	13.3	13.4	*2
6	9608.00	30.40	30.20	36.58	-31.69	0.78	5.53	-	-	-	41.6	41.4	54.0	12.4	12.6	*2
7	12010.00	29.00	29.40	40.32	-31.25	1.06	6.65	-	-9.54	-	36.2	36.6	54.0	17.8	17.4	*2
8	14412.00	28.10	28.30	43.22	-30.98	1.09	7.37	-	-9.54	-	39.3	39.5	54.0	14.7	14.5	*2
9	16814.00	31.90	32.00	46.39	-30.80	1.00	7.97	-	-9.54	-	46.9	47.0	54.0	7.1	7.0	*2
10	19216.00	30.50	30.40	38.99	-30.04	0.94	8.81	-	-9.54	-	39.7	39.6	54.0	14.3	14.4	*2
11	21618.00	31.60	31.60	39.29	-30.31	0.80	9.14	-	-9.54	-	41.0	41.0	54.0	13.0	13.0	*2
12	24020.00	32.10	32.10	39.09	-30.38	1.34	9.45	-	-9.54	-	42.1	42.1	54.0	11.9	11.9	*2

* Reference data

20dBc(Fundamental to Spurious) (RBW: 100kHz, VBW:300kHz)

No	Freq. [MHz]	Reading		Ant F. [dB/m]	Amp G. [dB]	Cable [dB]	Cable [dB]				Result [dBuV/m]		Limit [dBuV]	Margin [dB]		Remark
		HOR	VER								HOR	VER		HOR	VER	
0	2402.00	92.30	85.80	30.59	-32.41	0.35	2.62	-	-	-	93.4	86.9	-	-	-	carrier
3	2400.00	47.80	43.46	30.59	-32.41	0.35	2.62	-	-	-	48.9	44.6	73.4	24.5	28.8	

Ant F.=Antenna Factor // Amp G.=PreAmp Gain // Cable L.=Cable Loss // ATT=Attenuator Loss (or Filter Loss)

CALCULATION RESULT = Reading + Ant.F. + Amp.G. + Cable L. + Cable L. + Other1

ANT Type below 30MHz=Loop // 30-300MHz=Biconical // 300-1000MHz=Logperiodic // above 1000MHz=Horn

Test Distance 1.0m (above 10GHz) : Other1 (Distance Factor(D = 20 log (3 / 1)) = 9.54 dB

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

*2) In the frequency over the third harmonic, the noise from the EUT was not seen.The data above is its base noise.

*3) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

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

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MF060b(14.06.06)

Radiated Spurious Emission

UL-Apex Co.,Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : Sony EMCS Corporation Saitama TEC EQUIPMENT : Bluetooth Wireless Audio Adaptor MODEL : HWS-BTA2W S/N : R002 POWER : AC 120V / 60Hz MODE : Bluetooth Tx 2441MHz AXIS : H: Y-axis / V: X-axis	REPORT No. : 26JE0212-HO REGULATION : FCC Part 15 Subpart C 15.247(d) / RSS-210 TEST DISTANCE : 3m (1GHz to 10GHz) / 1m (10GHz to 26.5GHz) DATE : 06/21/2006 TEMPERATURE : 26 deg.C. HUMIDITY : 49 % ENGINEER : Kenichi Adachi
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PK. DETECT (RBW: 1MHz, VBW:1MHz)

No	Freq. [MHz]	Reading		Ant F. [dB/m]	Amp G. [dB]	Cable [dB]	Cable [dB]		Other1 [dB]		Result [dBuV/m]		Limit [dBuV/]	Margin [dB]		Remark
		HOR	VER								HOR	VER		HOR	VER	
1	1627.86	49.2	48.9	25.91	-32.82	0.41	2.23	-	-	-	44.9	44.6	74.0	29.1	29.4	
2	4882.00	42.4	42.3	36.15	-31.84	0.31	3.77	-	-	-	50.8	50.7	74.0	23.2	23.3	
3	7323.00	41.9	42.2	37.86	-31.66	0.49	4.68	-	-	-	53.3	53.6	74.0	20.7	20.4	*2)
4	9764.00	42.7	42.1	36.55	-31.84	0.80	5.60	-	-	-	53.8	53.2	74.0	20.2	20.8	*2)
5	12205.00	40.8	40.8	40.39	-30.96	1.07	6.72	-	-9.54	-	48.5	48.5	74.0	25.5	25.5	*2)
6	14646.00	40.7	41.6	43.10	-31.08	1.08	7.40	-	-9.54	-	51.7	52.6	74.0	22.3	21.4	*2)
7	17087.00	43.6	44.8	46.13	-30.69	1.01	8.11	-	-9.54	-	58.6	59.8	74.0	15.4	14.2	*2)
8	19528.00	43.9	44.7	39.08	-29.72	0.91	8.86	-	-9.54	-	53.5	54.3	74.0	20.5	19.7	*2)
9	21969.00	43.6	44.2	39.55	-30.71	0.79	9.19	-	-9.54	-	52.9	53.5	74.0	21.1	20.5	*2)
10	24410.00	44.3	44.6	39.09	-30.52	1.33	9.52	-	-9.54	-	54.2	54.5	74.0	19.8	19.5	*2)

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

No	Freq. [MHz]	Reading		Ant F. [dB/m]	Amp G. [dB]	Cable [dB]	Cable [dB]		Other1 [dB]		Result [dBuV/m]		Limit [dBuV/]	Margin [dB]		Remark
		HOR	VER								HOR	VER		HOR	VER	
1	1627.86	44.50	45.00	25.91	-32.82	0.41	2.23	-	-	-	40.2	40.7	54.0	13.8	13.3	
2	4882.00	29.70	29.90	36.15	-31.84	0.31	3.77	-	-	-	38.1	38.3	54.0	15.9	15.7	
3	7323.00	29.50	29.30	37.86	-31.66	0.49	4.68	-	-	-	40.9	40.7	54.0	13.1	13.3	*2)
4	9764.00	30.10	30.00	36.55	-31.84	0.80	5.60	-	-	-	41.2	41.1	54.0	12.8	12.9	*2)
5	12205.00	28.50	28.70	40.39	-30.96	1.07	6.72	-	-9.54	-	36.2	36.4	54.0	17.8	17.6	*2)
6	14646.00	28.00	28.30	43.10	-31.08	1.08	7.40	-	-9.54	-	39.0	39.3	54.0	15.0	14.7	*2)
7	17087.00	31.50	31.40	46.13	-30.69	1.01	8.11	-	-9.54	-	46.5	46.4	54.0	7.5	7.6	*2)
8	19528.00	31.10	31.00	39.08	-29.72	0.91	8.86	-	-9.54	-	40.7	40.6	54.0	13.3	13.4	*2)
9	21969.00	31.50	31.60	39.55	-30.71	0.79	9.19	-	-9.54	-	40.8	40.9	54.0	13.2	13.1	*2)
10	24410.00	32.30	32.00	39.09	-30.52	1.33	9.52	-	-9.54	-	42.2	41.9	54.0	11.8	12.1	*2)

Ant F.=Antenna Factor // Amp G.=PreAmp Gain // Cable L.=Cable Loss // ATT=Attenuator Loss (or Filter Loss)

CALCULATION RESULT = Reading + Ant.F. + Amp.G. + Cable L. + Cable L. + Other1

ANT Type below 30MHz=Loop // 30-300MHz=Biconical // 300-1000MHz=Logperiodic // above 1000MHz=Horn

Test Distance 1.0m (above 10GHz) : Other1 (Distance Factor(D = 20 log (3 / 1)) = 9.54 dB

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

*2) In the frequency over the third harmonic, the noise from the EUT was not seen.The data above is its base noise.

*3) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

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

UL Apex Co., Ltd.

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MF060b(14.06.06)

Radiated Spurious Emission

UL-Apex Co.,Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : Sony EMCS Corporation Saitama TEC
EQUIPMENT : Bluetooth Wireless Audio Adaptor
MODEL : HWS-BTA2W
S/N : R002
POWER : AC 120V / 60Hz
MODE : Bluetooth Tx 2480MHz
AXIS : H: Y-axis / V: X-axis

REPORT No. : 26JE0212-HO
REGULATION : FCC Part 15 Subpart C 15.247(d) / RSS-210
TEST DISTANCE : 3m (1GHz to 10GHz) / 1m (10GHz to 26.5GHz)
DATE : 06/21/2006
TEMPERATURE : 26 deg.C.
HUMIDITY : 49 %
ENGINEER : Kenichi Adachi

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

No	Freq. [MHz]	Reading		Ant F. [dB/m]	Amp G. [dB]	Cable [dB]	Cable [dB]		Other1 [dB]		Result [dBuV/m]		Limit [dBuV/]	Margin [dB]		Remark
		HOR	VER								HOR	VER		HOR	VER	
1	1654.15	50.3	50.0	26.30	-32.78	0.41	2.25	-	-	-	46.5	46.2	74.0	27.5	27.8	
2	2483.52	46.3	44.0	30.43	-32.44	0.27	2.67	-	-	-	47.2	44.9	74.0	26.8	29.1	
3	4960.00	42.7	42.1	36.63	-31.83	0.32	3.81	-	-	-	51.6	51.0	74.0	22.4	23.0	
4	7440.00	42.2	42.1	38.18	-31.86	0.50	4.71	-	-	-	53.7	53.6	74.0	20.3	20.4	*2)
5	9920.00	43.3	43.6	36.52	-31.99	0.82	5.66	-	-	-	54.3	54.6	74.0	19.7	19.4	*2)
6	12400.00	42.3	42.6	40.46	-30.68	1.07	6.78	-	-9.54	-	50.4	50.7	74.0	23.6	23.3	*2)
7	14880.00	41.0	41.2	42.83	-30.99	1.06	7.42	-	-9.54	-	51.8	52.0	74.0	22.2	22.0	*2)
8	17360.00	44.1	44.0	46.18	-30.99	1.02	8.26	-	-9.54	-	59.0	58.9	74.0	15.0	15.1	*2)
9	19840.00	43.2	43.8	39.06	-30.30	0.88	8.92	-	-9.54	-	52.2	52.8	74.0	21.8	21.2	*2)
10	22320.00	44.6	44.0	39.54	-30.70	0.88	9.23	-	-9.54	-	54.0	53.4	74.0	20.0	20.6	*2)
11	24800.00	44.9	44.9	39.26	-30.56	1.32	9.60	-	-9.54	-	55.0	55.0	74.0	19.0	19.0	*2)

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

No	Freq. [MHz]	Reading		Ant F. [dB/m]	Amp G. [dB]	Cable [dB]	Cable [dB]		Other1 [dB]		Result [dBuV/m]		Limit [dBuV/]	Margin [dB]		Remark
		HOR	VER								HOR	VER		HOR	VER	
1	1654.15	47.30	45.20	26.30	-32.78	0.41	2.25	-	-	-	43.5	41.4	54.0	10.5	12.6	
2	2483.52	38.70	35.70	30.43	-32.44	0.27	2.67	-	-	-	39.6	36.6	54.0	14.4	17.4	
3	4960.00	29.70	30.50	36.63	-31.83	0.32	3.81	-	-	-	38.6	39.4	54.0	15.4	14.6	
4	7440.00	29.20	29.20	38.18	-31.86	0.50	4.71	-	-	-	40.7	40.7	54.0	13.3	13.3	*2)
5	9920.00	30.70	30.80	36.52	-31.99	0.82	5.66	-	-	-	41.7	41.8	54.0	12.3	12.2	*2)
6	12400.00	29.80	30.10	40.46	-30.68	1.07	6.78	-	-9.54	-	37.9	38.2	54.0	16.1	15.8	*2)
7	14880.00	28.40	28.80	42.83	-30.99	1.06	7.42	-	-9.54	-	39.2	39.6	54.0	14.8	14.4	*2)
8	17360.00	31.00	31.00	46.18	-30.99	1.02	8.26	-	-9.54	-	45.9	45.9	54.0	8.1	8.1	*2)
9	19840.00	30.50	30.60	39.06	-30.30	0.88	8.92	-	-9.54	-	39.5	39.6	54.0	14.5	14.4	*2)
10	22320.00	32.00	32.00	39.54	-30.70	0.88	9.23	-	-9.54	-	41.4	41.4	54.0	12.6	12.6	*2)
11	24800.00	31.90	32.00	39.26	-30.56	1.32	9.60	-	-9.54	-	42.0	42.1	54.0	12.0	11.9	*2)

Ant F.=Antenna Factor // Amp G.=PreAmp Gain // Cable L.=Cable Loss // ATT=Attenuator Loss (or Filter Loss)

CALCULATION RESULT = Reading + Ant.F. + Amp.G. + Cable L. + Cable L. + Other1

ANT Type below 30MHz=Loop // 30-300MHz=Biconical // 300-1000MHz=Logperiodic // above 1000MHz=Horn

Test Distance 1.0m (above 10GHz) : Other1 (Distance Factor(D = 20 log (3 / 1) = 9.54 dB

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

*2) In the frequency over the third harmonic, the noise from the EUT was not seen.The data above is its base noise.

*3) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

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

UL Apex Co., Ltd.

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MF060b(14.06.06)

Radiated Spurious Emission

UL-Apex Co.,Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : Sony EMCS Corporation Saitama TEC	REPORT No. : 26JE0212-HO
EQUIPMENT : Bluetooth Wireless Audio Adaptor	REGULATION : FCC Part 15 Subpart B 15.109 / RSS-210
MODEL : HWS-BTA2W	TEST DISTANCE : 3m
S/N : R002	DATE : 06/21/2006
POWER : AC 120V / 60Hz	TEMPERATURE : 26 deg.C.
MODE : Bluetooth Rx 2441MHz	HUMIDITY : 49 %
AXIS : H: Y-axis / V: X-axis	ENGINEER : Kenichi Adachi

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

No	Freq. [MHz]	Reading		Ant F. [dB/m]	Amp G. [dB]	Cable [dB]	Cable [dB]				Result [dBuV/m]		Limit [dBuV/]	Margin [dB]		Remark
		HOR	VER								HOR	VER		HOR	VER	
1	1626.51	50.0	50.1	25.89	-32.82	0.41	2.23	-	-	-	45.7	45.8	74.0	28.3	28.2	
2	3252.75	43.2	43.6	31.62	-32.05	0.25	2.99	-	-	-	46.0	46.4	74.0	28.0	27.6	
3	12205.00	42.6	42.3	40.39	-30.96	1.07	6.72	-	-	-	59.8	59.5	74.0	14.2	14.5	*2)

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

No	Freq. [MHz]	Reading		Ant F. [dB/m]	Amp G. [dB]	Cable [dB]	Cable [dB]				Result [dBuV/m]		Limit [dBuV/]	Margin [dB]		Remark
		HOR	VER								HOR	VER		HOR	VER	
1	1626.51	44.00	46.40	25.89	-32.82	0.41	2.23	-	-	-	39.7	42.1	54.0	14.3	11.9	
2	3252.75	31.20	31.00	31.62	-32.05	0.25	2.99	-	-	-	34.0	33.8	54.0	20.0	20.2	
3	12205.00	30.20	30.20	40.39	-30.96	1.07	6.72	-	-	-	47.4	47.4	54.0	6.6	6.6	*2)

Ant F.=Antenna Factor // Amp G.=PreAmp Gain // Cable L.=Cable Loss // ATT=Attenuator Loss (or Filter Loss)

CALCULATION RESULT = Reading + Ant.F. + Amp.G. + Cable L. + Cable L.

ANT Type below 30MHz=Loop // 30-300MHz=Biconical // 300-1000MHz=Logperiodic // above 1000MHz=Horn

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

*2) The data above is its base noise.

*3) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

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

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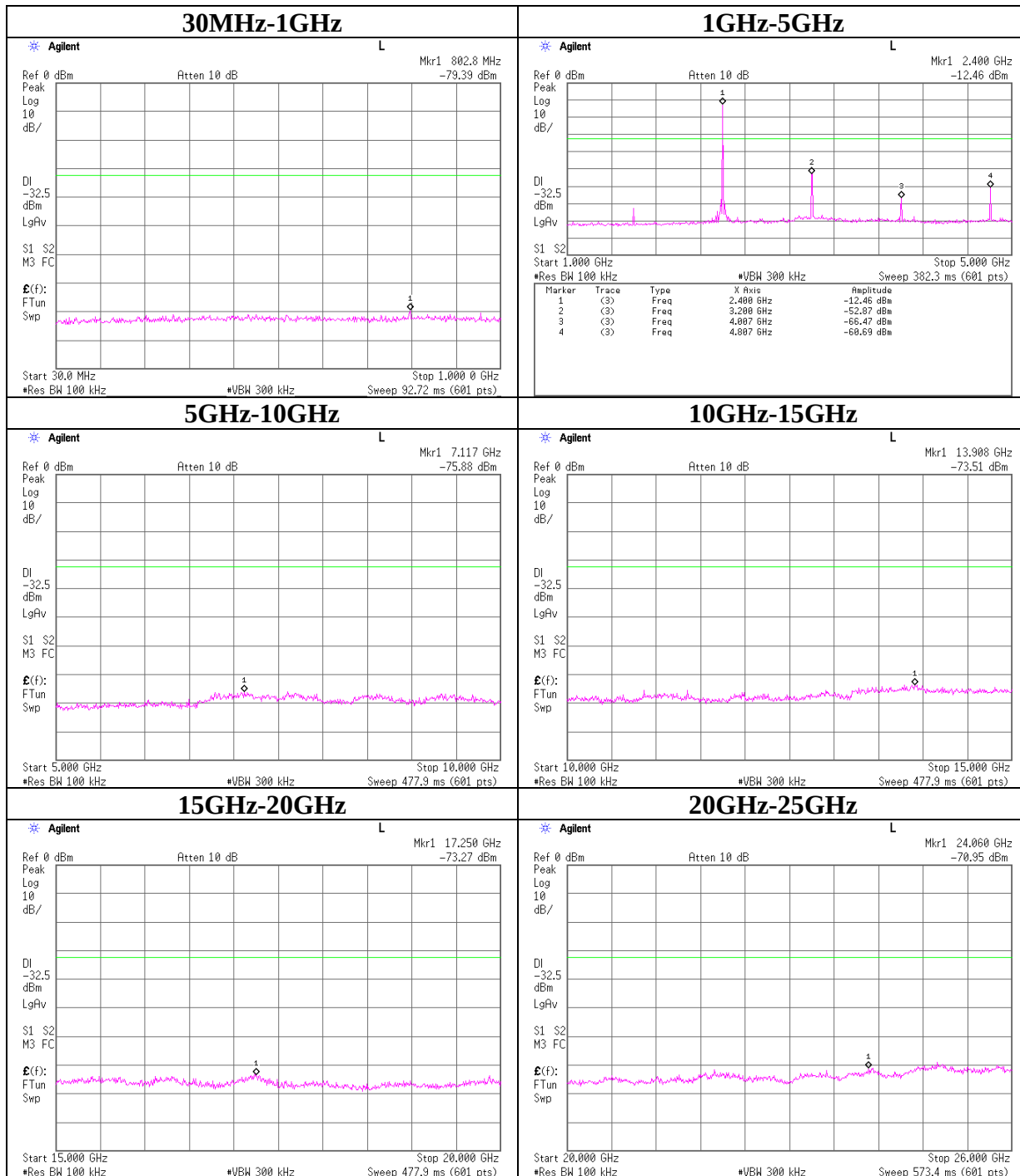
Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

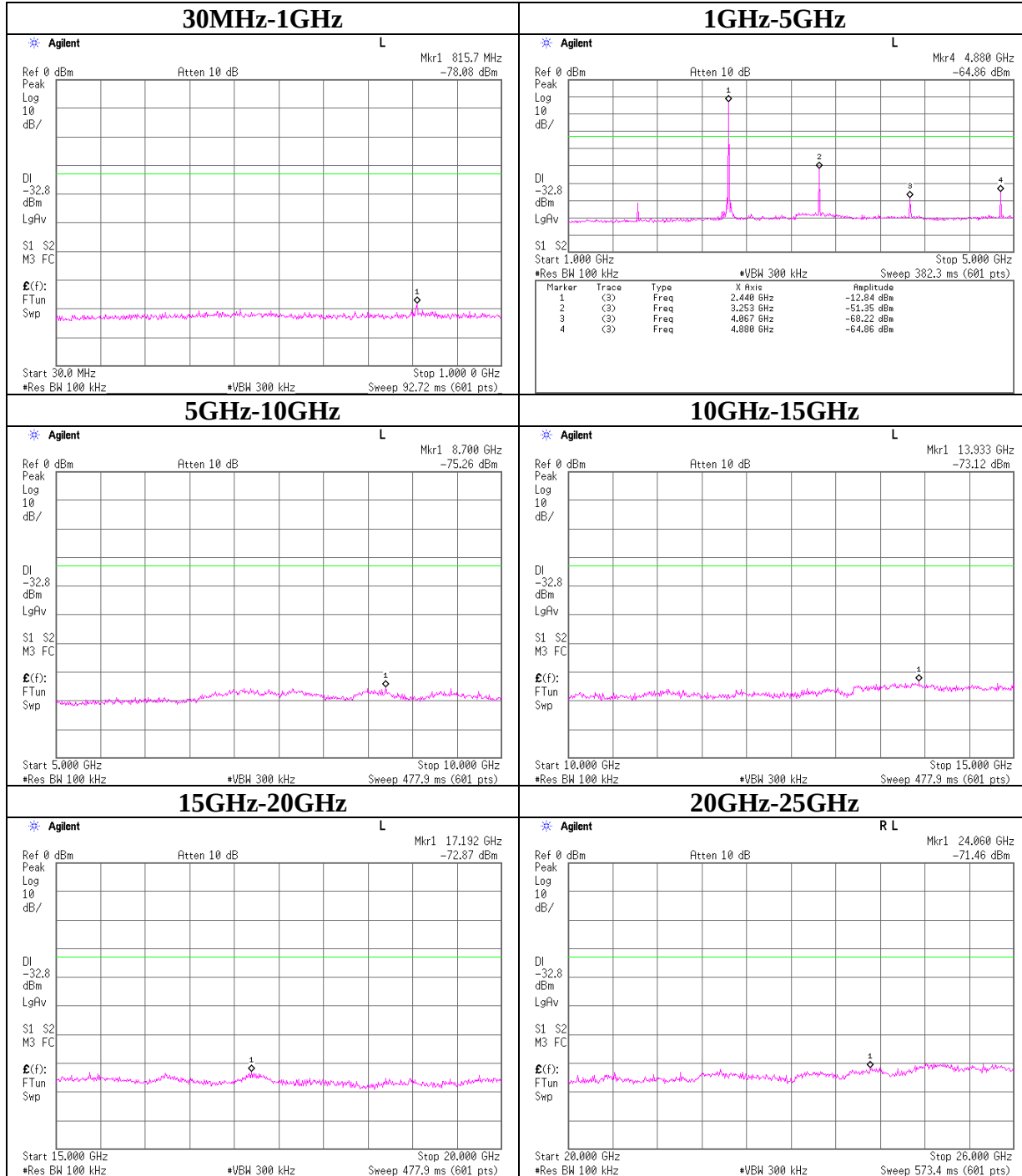
MF060b(14.06.06)

Conducted Spurious Emission

Ch:Low

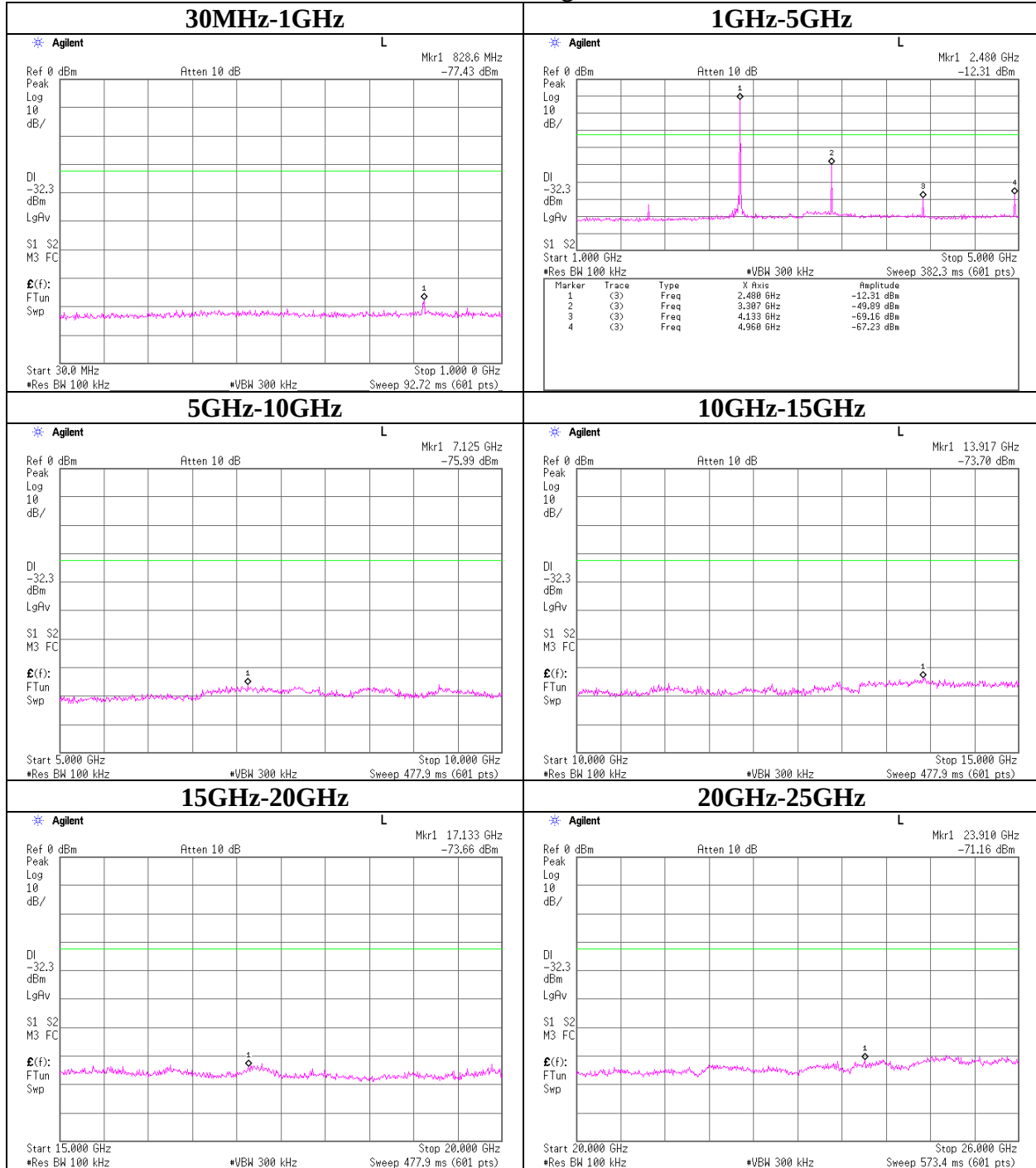


Conducted Spurious Emission
Ch:Mid

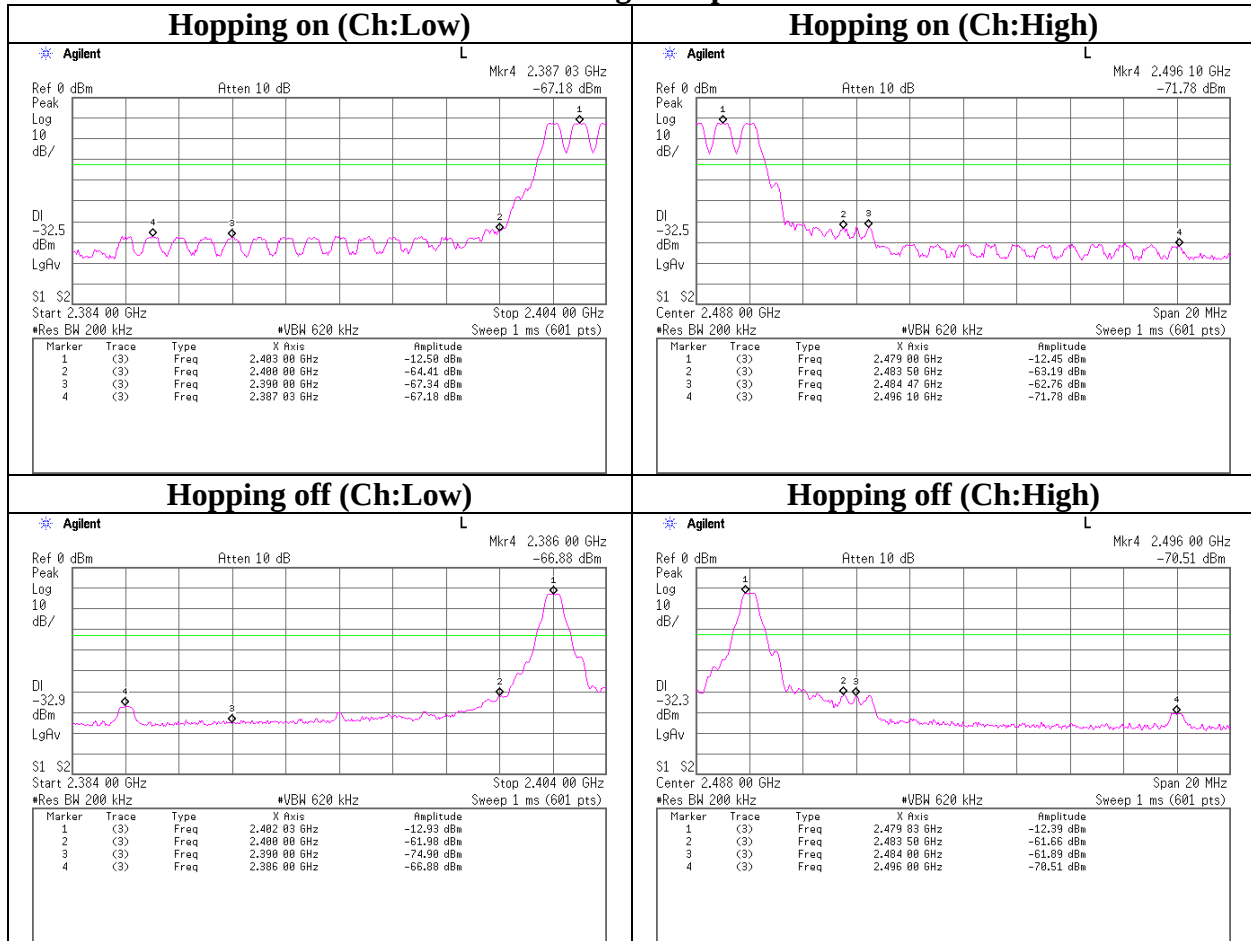


Conducted Spurious Emission

Ch:High



Conducted Spurious Emission
Band Edge compliance



99% Occupied Bandwidth

