
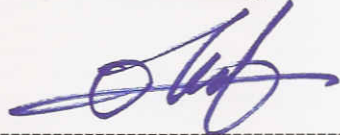


FCC TEST REPORT

Reference No. : G-44-2013-00777
 Applicant : Chois Technology Co., Ltd.
 Equipment Under Test (EUT) :
 Product Name : Xpointer mobile Receiver
 Model Name : XPR200
 FCC Type : Declaration of Conformity
 Applied Standards : FCC Part 15 : 2011, Subpart B, Class B
 ANSI C63.4 : 2009
 CISPR 22 : 2008
 Date of Receipt : February 27, 2013
 Date of Test : March 12, 2013 ~ March 13, 2013
 Date of Issue : March 21, 2013
 Test Results : Complied

Tested by	:	 <hr style="border-top: 1px dashed black;"/> Paul Kang
Reviewed by	:	 <hr style="border-top: 1px dashed black;"/> Carl Lee

Remarks :

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."

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1. General Information

1.1 Client Information

Applicant : Chois Technology Co., Ltd.
 Address of Applicant : 1104, Incheon, IT Tower, 592-5, Dowha-1dong, Namgu, Incheon, Korea

Manufacturer : Chois Technology Co., Ltd.
 Address of Manufacturer : 1104, Incheon, IT Tower, 592-5, Dowha-1dong, Namgu, Incheon, Korea

1.2 Test Laboratory

Name and Address : SGS Korea Co., Ltd.
 413-15, Gomae-dong, Giheung-gu, Yongin-si
 Gyeonggi-do, 446-901, Korea

FCC Registration No. : 656853
 Phone : + 82 31 548 0712
 Fax : + 82 31 548 0719
 e-mail : carl.lee@sgs.com

1.3 General Information of E.U.T.

Product Name	Xpointer mobile Receiver
Model Name	XPR200
Serial No.	None
FCC ID	RVBXPR200
EMI Classification	Class B
Highest Internal Frequency	2.4 GHz
I/O Ports	AC Power
Test Voltage	AC 120 V, 60 Hz

1.4 Operating Modes and Conditions

Operating mode	Monitoring method
Connecting notebook PC and EUT. Connecting BT communication and mobile phone.	Check the connection of notebook PC and BT communication of mobile phone

1.5 Auxiliary Equipments

Description	Model	Serial No.	Manufacturer	FCC ID
Notebook PC	2008GU4	L3-HV023	Lenovo	DOC
Mobile Phone	A1387	-	APPLE	BCG-E2380A

Note: Auxiliary equipments are declared according to FCC procedure.

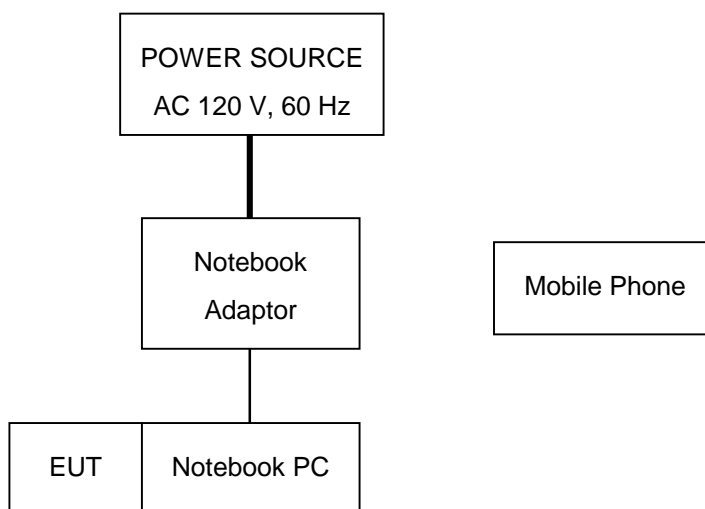
1.6 Cable List

Start		END		Cable Spec.	
Name	I/O Port	Name	I/O Port	Length	Shield
Notebook Adaptor	AC IN	POWER SOURCE	-	0.8	Unshield
Notebook PC	DC IN	Notebook Adaptor	DC OUT	1.2	Unshield
EUT	USB	Notebook PC	USB	-	-

1.7 System Configurations

Description	Model	Serial No.	Manufacturer
MAIN BOARD	X-controller B4_REV.A	-	-

1.8 Test System Layout



1.9 Modifications

There was no modified item during the test.

1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 : 20011, Subpart B ANSI C63.4 : 2009 CISPR 22 : 2008	Applicable	No Deviation

1.11 Summary of Test Results

Test Item	Standards	Results
Conducted Emission	FCC Part 15 : 2011, Subpart B ANSI C63.4 : 2009 CISPR 22 : 2008	Complied
Radiated Emission	FCC Part 15 : 2011, Subpart B ANSI C63.4 : 2009 CISPR 22 : 2008	Complied

Note : Test methods of all test items are performed according to the basic standards in this table.

EMISSION

2.1 Test Results

Test Items	Standards	Test Results
Conducted Emission	FCC Part 15 : 2011, Subpart B ANSI C63.4 : 2009 CISPR 22 : 2008	Complied
Radiated Emission	FCC Part 15 : 2011, Subpart B ANSI C63.4 : 2009 CISPR 22 : 2008	Complied

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 MHz ~ 30 MHz	9 kHz	-
Radiated Emission	30 MHz ~ 1 GHz	120 kHz	10 m & 3 m
	Above 1 GHz	1 MHz	3 m

Note : 10 m method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 MHz ~ 1 GHz. Except this, 3 m method is applied to Class B equipment over the frequency range of 30 MHz ~ 1 GHz and Class A and Class B equipment above 1 GHz.

2.2.2 Test Limits

-Conducted Emission Limits

Frequency Range	Limits(dB(μ V))		Class
	Quasi-peak	Average	
0.15 MHz ~ 0.5 MHz	79	66	Class A
0.5 MHz ~ 30 MHz	73	60	
0.15 MHz ~ 0.5 MHz	66 to 56	56 to 46	Class B
0.5 MHz ~ 5 MHz	56	46	
5 MHz ~ 30 MHz	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

-Radiated Emission Limits below 1 GHz

Frequency Range	Limits(dB(μ V/m))		Class
	Quasi-peak		
30 MHz ~ 88 MHz	39.1		Class A (10 m method)
88 MHz ~ 216 MHz	43.5		
216 MHz ~ 960 MHz	46.4		
960 MHz ~ 1 GHz	49.5		
30 MHz ~ 88 MHz	40		Class B (3 m method)
88 MHz ~ 216 MHz	43.5		
216 MHz ~ 960 MHz	46		
960 MHz ~ 1 GHz	54		

-Radiated Emission Limits above 1 GHz (3m method)

Frequency Range	Limits(dB(μ V/m))		Class
	Average	Peak	
Above 1 GHz	59.5	79.5	Class A
Above 1 GHz	54	74	Class B

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/decade because it was measured at 3m distance not 10m distance.

2.3 Conducted Emission

The initial preliminary exploratory scans were performed over the measuring frequency range (0.15 MHz to 30 MHz) using a max hold mode incorporating a Peak detector and Average detector and using the software of EMC32 (Version V8.50 from R&S). The final test data was measured using a Quasi-Peak detector and Average detector.

2.3.1 Test Equipments

Equipment	Model	Manufacturer	Serial No	Last Cal. Date
2-LINE V-NETWORK	ENV216	R & S	101180	2012.05.14
Pulse Limiter	ESH3-Z2	R & S	100283	2012.11.19
EMI TEST RECEIVER	ESCI7	R&S	100778	2012.08.01
Shielded Room	-	SY Corp.	-	-

2.3.2 Test Site

Shield Room in Giheung Laboratory

2.3.3 Environment Conditions

Temperature : 19.8 ~ 20.0 °C

Humidity : 29.0 ~ 30.0 % R.H.

Atmospheric Pressure : 101.3 kPa

Test Date : March 12, 2013

2.3.4 Test Results

Freq. (MHz)	Line (H/N)	Level (dB μ V)		CL (dB)	Pulse Limiter (dB)	LISN (dB)	Result (dB μ V)		Limit (dB μ V)		Margin (dB)	
		Q/P	A/V				Q/P	A/V	Q/P	A/V	Q/P	A/V
0.45	N	22.1	18.4	0.0	9.8	9.5	41.5	37.8	56.9	46.9	15.4	9.1
0.45	H	24.0	18.3	0.0	9.8	9.6	43.4	37.7	56.9	46.9	13.5	9.2
1.36	N	19.6	16.9	0.0	9.8	9.5	39.0	36.3	56.0	46.0	17.0	9.7
1.36	H	17.9	13.6	0.0	9.8	9.6	37.3	33.0	56.0	46.0	18.7	13.0
1.86	H	16.3	14.0	0.0	9.8	9.6	35.7	33.4	56.0	46.0	20.3	12.6
1.86	N	17.6	15.1	0.0	9.8	9.6	37.0	34.5	56.0	46.0	19.0	11.5
12.31	H	12.6	7.4	0.1	9.9	9.6	32.2	27.0	60.0	50.0	27.8	23.0
28.58	N	14.4	8.9	0.2	10.0	9.7	34.2	28.7	60.0	50.0	25.8	21.3

Measurement Uncertainty : ± 2.70 dB (The confidential level is about 95 %, K = 2)

- Note :
- Line (H) : Hot
 - Line (N) : Neutral
 - Margin = Limit – Result
 - Result = Level + CL + LISN

Ex) In case

Freq ; 0.5 MHz, level ; 30 dB(μ V), CL ; 0.2 dB, LISN ; 9.5 dB

Result = Level + CL + LISN

$$= 30 + 0.2 + 9.5$$

$$= 39.7$$

Margin = Limit – Result

$$= 79 - 39.7$$

$$= 39.3$$

See Appendix A (Conducted Emission)

2.4 Radiated Emission

The initial preliminary exploratory scans were performed over the measuring frequency range (30 MHz to 1 GHz) using a max hold mode incorporating a Peak detector and using the software of EMC32 (Version V8.50 from R&S). The test data was measured using a Quasi-Peak detector below 1 GHz and a Peak and Average detector above 1 GHz. This test was performed up to 12 GHz (5 times frequency of the highest internal frequency of 2.4 GHz). Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

2.4.1 Test Equipments

Equipment	Model	Manufacturer	Serial No	Last Cal. Date
EMI Test Receiver	ESU40	R&S	100075	2013.02.15
Trilog Antenna	VULB9163	SCHWARZBECK	9163-437	2012.10.04
Double-Ridged Waveguide	HF906	R&S	100608	2012.08.13
Preamplifier	AFS42-0010180025-S-42	MITEQ	900699	2012.07.07
Amplifier	8447D	HP	1726A01265	2012.09.17
10 m Semi-Anechoic Chamber	-	SY Corp.	-	-

Note : The Antenna calibration period is 2 years, but the other equipment calibration period are 1 year.

2.4.2 Test Site

10 m Semi-Anechoic Chamber in Giheung Laboratory

2.4.3 Environment Conditions

Temperature : 19.4 ~ 20.5 °C

Humidity : 27.0 ~ 28.0 % R.H.

Atmospheric Pressure : 101.3 kPa

Test Date : March 13, 2013

2.4.4 Test Results

Below 1 GHz

Freq. (MHz)	Level (dB(μ V))	Pol. (H/V)	H (cm)	A (°)	AF (dB)	CL (dB)	Amp. (dB)	F/S (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
31.2	37.9	V	160	136	12.32	0.72	26.60	24.3	40.0	15.7
77.2	40.8	V	150	134	8.57	1.17	26.53	24.0	40.0	16.0
216.0	46.5	H	300	171	11.04	1.76	26.07	33.2	43.5	10.3
240.0	43.8	H	200	166	11.75	1.86	26.02	31.4	46.0	14.6
298.7	46.7	H	190	34	13.03	2.09	25.90	35.9	46.0	10.1
995.5	35.4	V	100	180	21.71	3.99	25.92	35.2	54.0	18.8

Measurement Uncertainty : ± 4.41 dB (The confidential level is about 95 %, $K = 2$)

Note 1: • AF = Antenna Factor • CL = Cable Loss • Amp = Amplifier Gain
 • POL H = Horizontal • POL V = Vertical • A : Angle
 • H : Height • Margin = Limit – Result • Result = Level + AF + CL – Amp

Ex) In case:

Freq ; 100 MHz, level ; 30 dB(μ V/m), AF ; 10 dB/m, CL ; 4 dB, Amp ; 25 dB

Result = Level + AF + CL – Amp

$$= 30 + 10 + 4 - 25$$

$$= 19$$

Margin = Limit – Result

$$= 43.5 - 19$$

$$= 24.5$$

See Appendix B (Radiated Emission Below 1 GHz)

Above 1 GHz

Freq. (MHz)	Level (dB(μ V))	Pol. (H/V)	A ($^{\circ}$)	H (cm)	AF (dB)	CL (dB)	Amp. (dB)	F/S (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak Detector										
4496.9	37.6	V	70	100	32.40	12.20	37.80	44.4	74.0	29.6
4573.9	36.0	H	66	100	32.42	12.21	37.80	42.8	74.0	31.2
6000.0	34.5	H	90	100	34.03	14.40	37.30	45.6	74.0	28.4
10561.2	31.6	H	150	100	38.09	19.08	35.95	52.8	74.0	21.2
11376.3	32.2	V	310	100	38.39	19.71	37.19	53.1	74.0	20.9
Average Detector										
4496.9	22.8	V	70	100	32.40	12.20	37.80	29.6	54.0	24.4
4573.9	22.7	H	66	100	32.42	12.21	37.80	29.5	54.0	24.5
6000.0	21.2	H	90	100	34.03	14.40	37.30	32.3	54.0	21.7
10561.2	18.6	H	150	100	38.09	19.08	35.95	39.8	54.0	14.2
11376.3	19.3	V	310	100	38.39	19.71	37.19	40.2	54.0	13.8

Measurement Uncertainty : ± 4.13 dB (The confidential level is about 95 %, $K = 2$)

- Note 1:
- AF = Antenna Factor
 - POL H = Horizontal
 - H : Height
 - CL = Cable Loss
 - POL V = Vertical
 - Margin = Limit – Result
 - Amp = Amplifier Gain
 - A : Angle
 - Result = Level + AF + CL – Amp

Ex) In case:

Freq ; 2000 MHz, level ; 30 dB(μ V/m), AF ; 10 dB/m, CL ; 4 dB, Amp ; 25 dB

Result = Level + AF + CL – Amp

$$= 30 + 10 + 4 - 25$$

$$= 19$$

Margin = Limit – Result

$$= 43.5 - 19$$

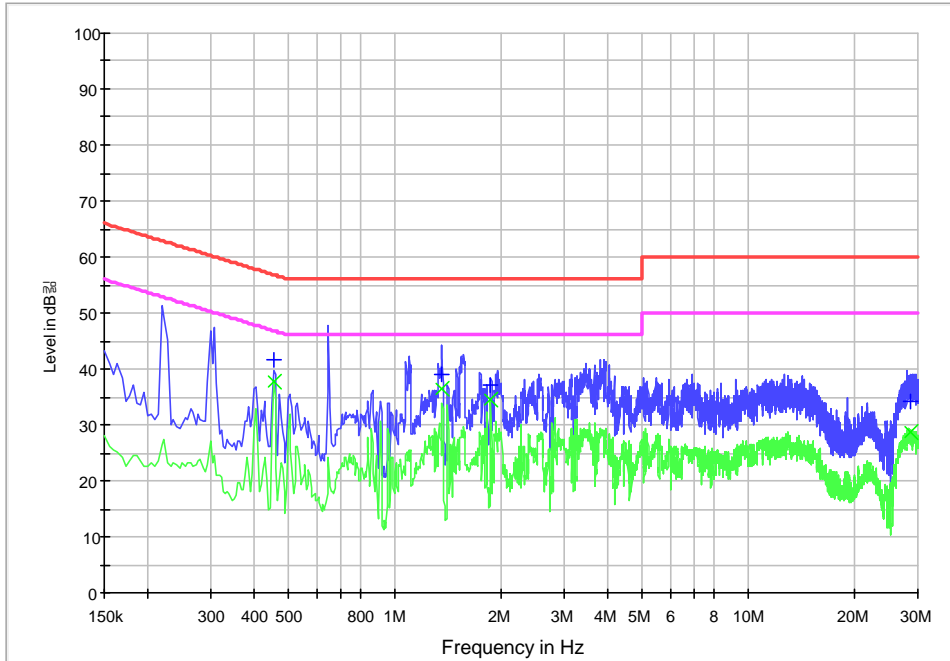
$$= 24.5$$

See Appendix C(Radiated Emission Above 1 GHz)

Appendix A : Conducted Emission

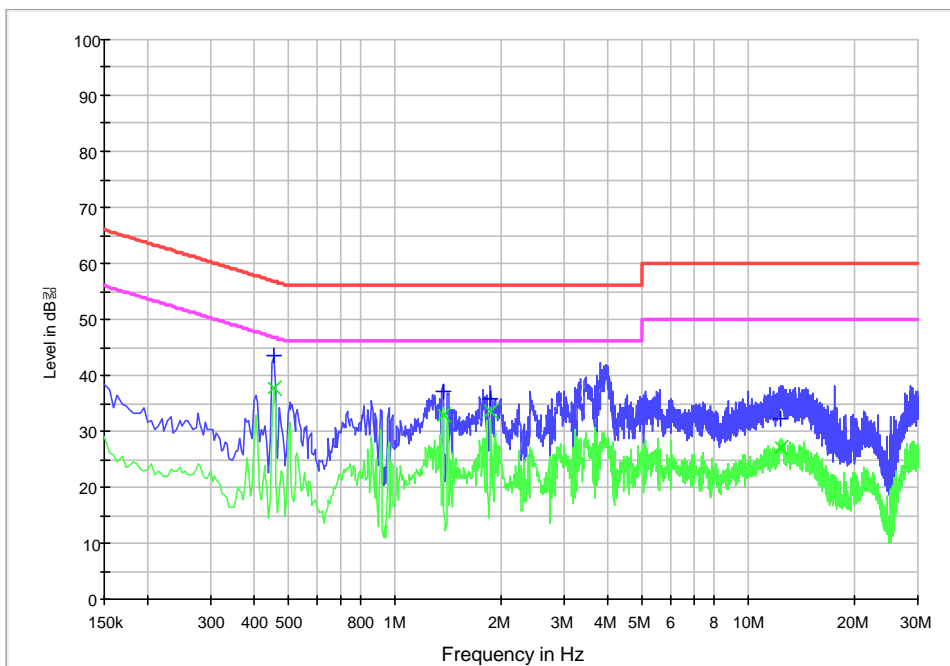
Neutral

LISN ENV216 (150kHz-30MHz) Pre



Hot

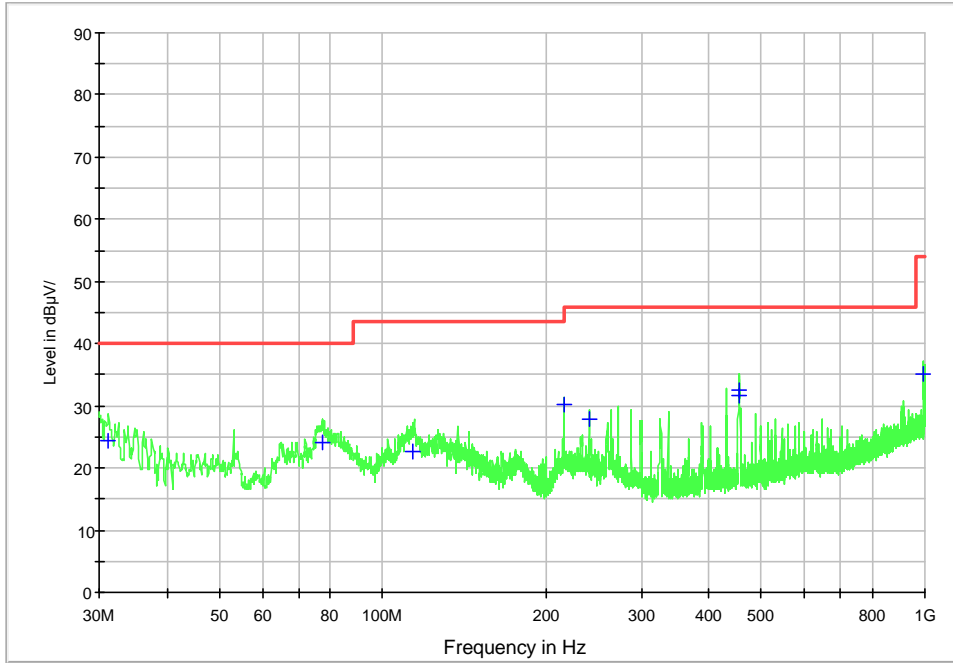
LISN ENV216 (150kHz-30MHz) Pre



Appendix B : Radiated Emission Below 1 GHz

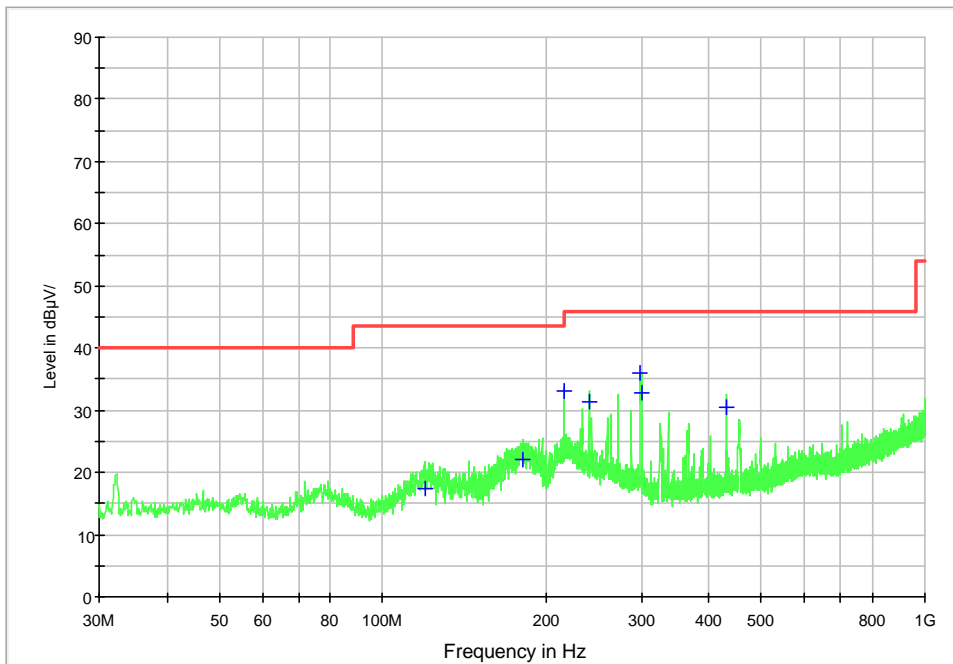
Vertical

CISPR11



Horizontal

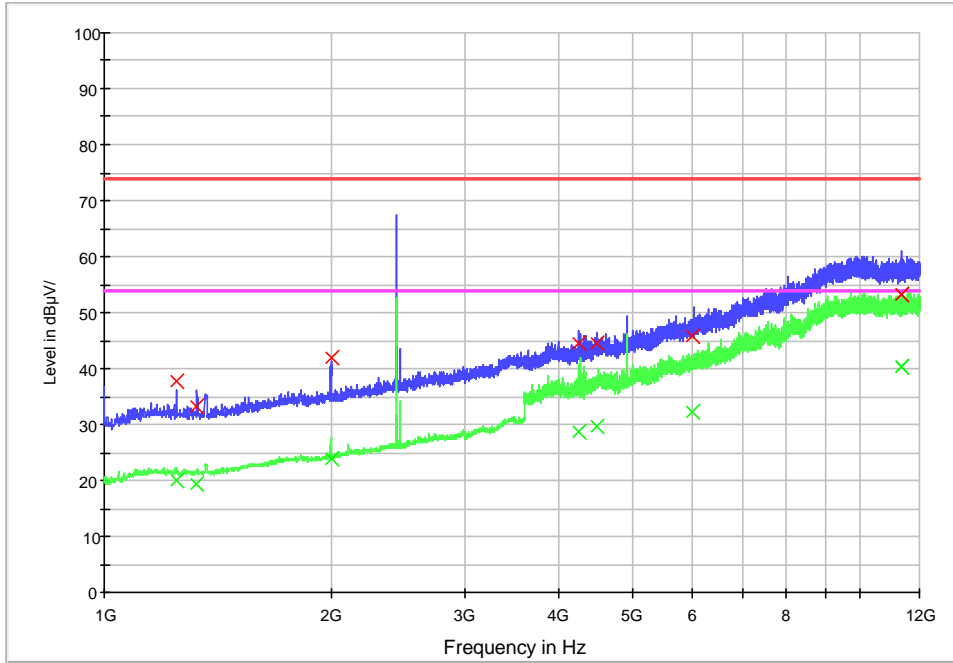
CISPR11



Appendix C : Radiated Emission Above 1 GHz

Vertical

EMI Sweep (1GHz-6GHz) Pre



Horizontal

EMI Sweep (1GHz-6GHz) Pre

