



FCC TEST REPORT

Declaration of Conformity

According to

47 CFR, Part 2, Part 15, CISPR PUB. 22

Applicant :	Matrix Sound Limited
Address :	95 High Street Hail Weston St Neots Cambridgeshire PE19 5JS
Equipment :	Wireless Dongle
Model No. :	Black RX
FCC ID :	OSY-WSR

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☐ Additional attachment as following record:

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FCC DOC TEST REPORT

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Applicant	: Matrix Sound Limited
Address	: 95 High Street Hail Weston St Neots Cambridgeshire PE19 5JS
Equipment	: Wireless Dongle
Model No.	: Black RX
FCC ID	: OSY-WSR

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 – 2009** and the energy emitted by this equipment was **passed CISPR PUB. 22, FCC Part 15** in both radiated and conducted emission class B limits. Testing was carried out on Jan 09, 2012 at CerpPASS Technology Corp.

Signature

Miro Chueh/ Technical director



1. Summary of Test Procedure and Test Result

Test Item	Normative References	Test Result
Conducted Emission	ANSI C63.4-2009 FCC Part 15 Subpart B	PASS
Radiated Emission	ANSI C63.4-2009 FCC Part 15 Subpart B	PASS



2. Test Configuration of Equipment under Test

1) Solidex audio corp
Room 202, Citic Concorde Building, No.556, Chang Tai Road Dong Cheng District, Dong Guan City Guang Dong Province, China
2) Hansong(Nanjing) Technology Ltd.
8th Kangping Road,Jiangning Economy and Technology Development Zone, Nanjing, 211106, China

2.1. Feature of Equipment under Test

Wireless Dongle	Model No:	Black RX
	Rating:	N/A
SWITCHING POWER SUPPLY	Model No.:	CPS008050100U
	Input:	100-240V~ 50/60Hz 0.2A
	Output:	5V/1A
Audio Cable	Non- Shielded, 0.8m	
Audio Cable	Non- Shielded, 0.5m	

Note: please refer to the user manual.

2.2. Test Mode and Test Manner

Test Manner	
	During testing, the interface cables and equipment positions were varied according to CISPR 22
	The complete test system included the iPod, Notebook, Sound Box and EUT for EMI test.
	Connect the Load, Meter and EUT.
	Adjust test mode, then test.
The pre-test modes	
	Test Mode1: Normal operation
Select the worst case of the pre-test modes as the final test mode	
	Test Mode1: Normal operation



2.3. Description of Support Unit

Device	Manufacturer	Model No.	Description
iPod	Apple	MA477TA/A	N/A
Notebook	SONY	PCG-718119	N/A
Sound Box	EACAN	A-600IIR	N/A

Cable	Quantity	Description
USB Cable	1	Shielded, 1.2
Audio Cable	1	Non- Shielded, 0.8m
Audio Cable	1	Non- Shielded, 0.5m



2.4. General Information of Test

Test Site:	Cerpass Technology (Suzhou) Co.,Ltd
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz
Frequency Range Investigated :	Conducted Emission Test: from 150kHz to 30 MHz Radiated Emission Test: from 30 MHz to 1,000 MHz Radiated Emission Test: from 1GHz to 18GHz
Test Distance :	The test distance of radiated emission below 1GHz from antenna to EUT is 3 M. The test distance of radiated emission above 1GHz from antenna to EUT is 3 M.

LABORATORY ACCREDITATION



2.5. Measurement Uncertainty

Conducted Emission		
The measurement uncertainty is evaluated as ± 2.71 dB.		
Radiated Emission		
(30MHz -1000MHz)	Horizontal	The measurement uncertainty is evaluated as ± 3.59 dB.
	Vertical	The measurement uncertainty is evaluated as ± 3.89 dB
(1G-18GHz)	Horizontal	The measurement uncertainty is evaluated as ± 2.31 dB.
	Vertical	The measurement uncertainty is evaluated as ± 2.15 dB.



3. Test of Conducted Emission

3.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2009 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Conducted Emission Limits:

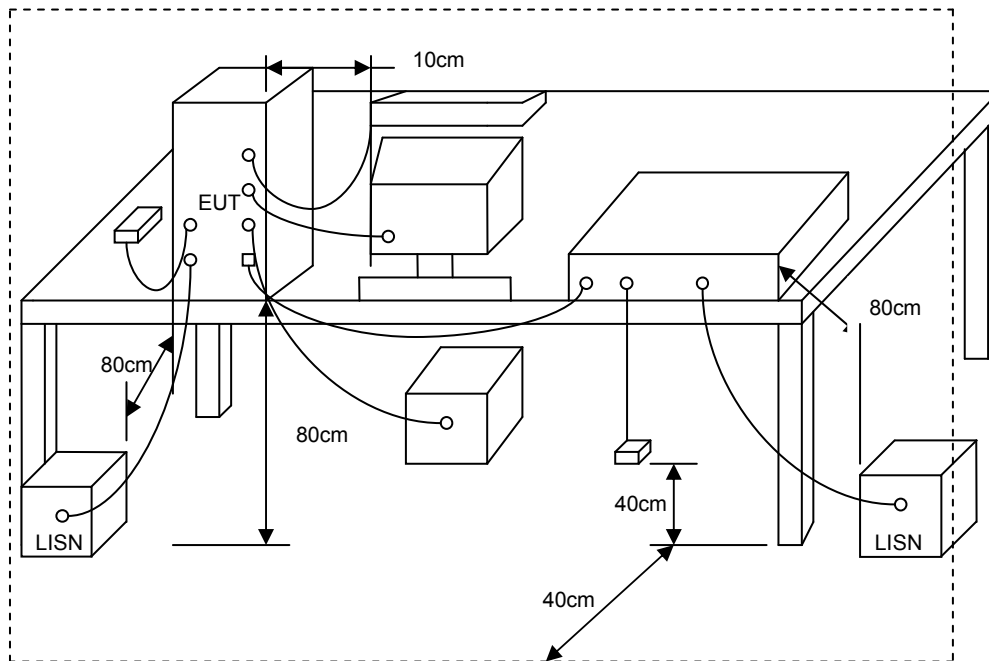
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

3.2. Test Procedures

- The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



3.3. Typical test Setup



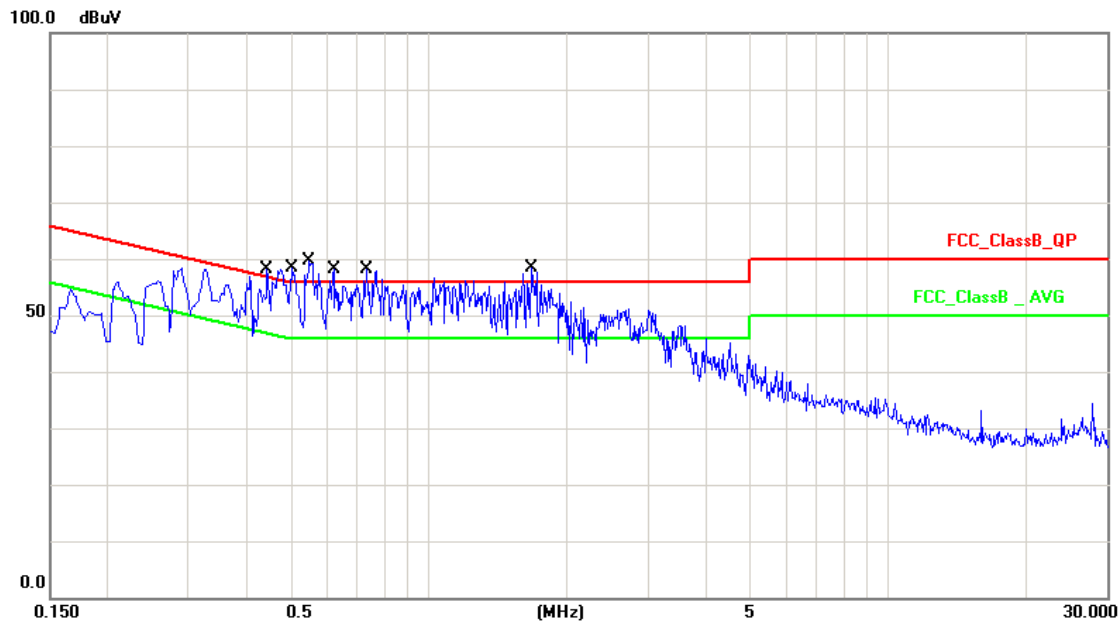
3.4. Measurement Equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100565	2011.01.15	2012.01.14
AMN	R&S	ESH2-Z5	100182	2011.03.14	2012.03.13
Two-Line V-Network	R&S	ENV216	100325	2011.03.14	2012.03.13
ISN	FCC	FCC-TLISN-T2-02	20379	2011.03.14	2012.03.13
ISN	FCC	FCC-TLISN-T4-02	20380	2011.03.14	2012.03.13
ISN	FCC	FCC-TLISN-T8-02	20381	2011.03.14	2012.03.13
Current Probe	R&S	EZ-17	100303	2011.03.14	2012.03.13
Passive Voltage Probe	R&S	ESH2-Z3	100026	2011.03.14	2012.03.13
Attenuator	R&S	ESH3-Z2	100529	2011.01.11	2012.01.10
Temperature/Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2011.08.14	2012.08.13



3.5. Test Result and Data

Test Mode :	Mode1: Normal operation		
AC Power :	AC 120V/60Hz	Phase :	LINE
Temperature :	22 °C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2012/01/09

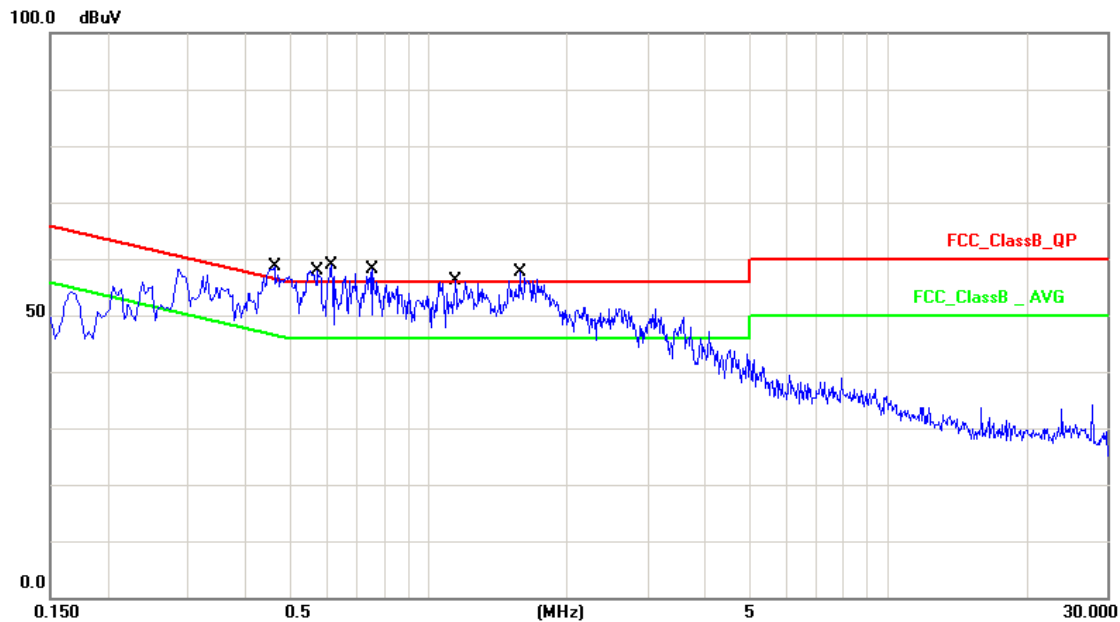


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4460	19.86	32.81	52.67	56.95	-4.28	QP
2	0.4460	19.86	19.93	39.79	46.95	-7.16	AVG
3	0.5060	19.85	32.84	52.69	56.00	-3.31	QP
4	0.5060	19.85	21.45	41.30	46.00	-4.70	AVG
5	0.5500	19.85	32.46	52.31	56.00	-3.69	QP
6	0.5500	19.85	22.30	42.15	46.00	-3.85	AVG
7	0.6220	19.85	30.75	50.60	56.00	-5.40	QP
8	0.6220	19.85	16.69	36.54	46.00	-9.46	AVG
9	0.7340	19.84	31.06	50.90	56.00	-5.10	QP
10	0.7340	19.84	18.77	38.61	46.00	-7.39	AVG
11	1.6780	19.72	30.71	50.43	56.00	-5.57	QP
12	1.6780	19.72	17.15	36.87	46.00	-9.13	AVG

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Mode1: Normal operation		
AC Power :	AC 120V/60Hz	Phase :	NEUTRAL
Temperature :	22 °C	Humidity :	50%
Pressure(mbar) :	1002	Date:	2012/01/09



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4620	19.50	32.33	51.83	56.66	-4.83	QP
2	0.4620	19.50	20.56	40.06	46.66	-6.60	AVG
3	0.5740	19.50	32.03	51.53	56.00	-4.47	QP
4	0.5740	19.50	18.95	38.45	46.00	-7.55	AVG
5	0.6140	19.50	31.08	50.58	56.00	-5.42	QP
6	0.6140	19.50	15.94	35.44	46.00	-10.56	AVG
7	0.7580	19.48	29.61	49.09	56.00	-6.91	QP
8	0.7580	19.48	16.90	36.38	46.00	-9.62	AVG
9	1.1420	19.45	29.06	48.51	56.00	-7.49	QP
10	1.1420	19.45	16.11	35.56	46.00	-10.44	AVG
11	1.5780	19.48	29.18	48.66	56.00	-7.34	QP
12	1.5780	19.48	13.83	33.31	46.00	-12.69	AVG

Note: Measurement Level = Reading Level + Correct Factor

Test engineer:



4. Test of Radiated Emission

4.1. Test Limit

Radiated emissions from 30 MHz to 18000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in ANSI C63.4-2009. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meter above the ground plane, as shown in section 3.2. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance Meters	Radiated ($\mu V / M$)	Radiated (dB $\mu V / M$)
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the below table.

Frequency (MHz)	Distance Meters	Radiated (dB $\mu V / M$)
30-230	10	30
230-1000	10	37

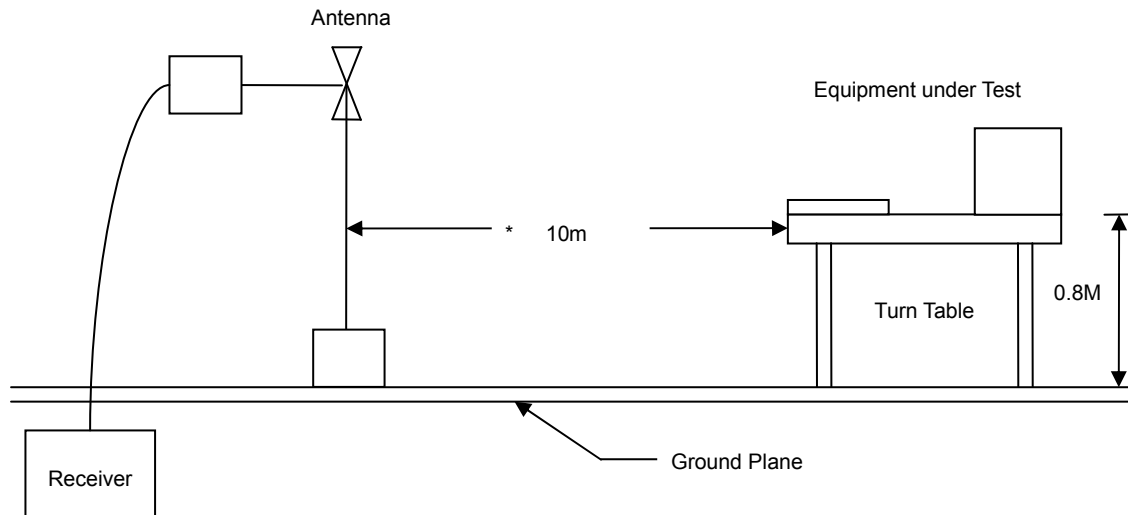
4.2. Test Procedures

- The EUT was placed on a Rota table top 0.8 meter above ground.
- The EUT was set 3/10 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be repeated one by one using the quasi-peak method and reported.

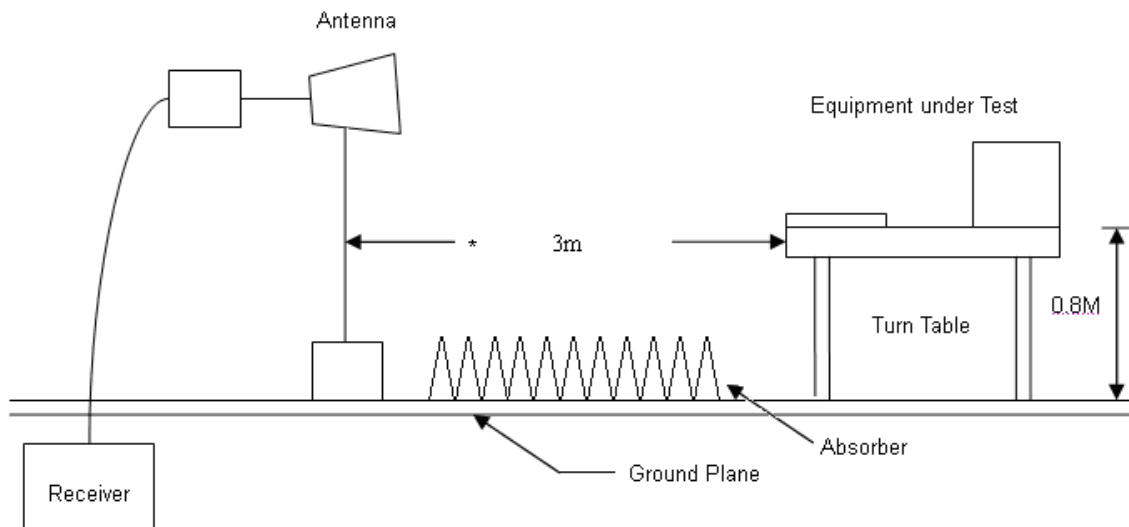


4.3. Typical test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup





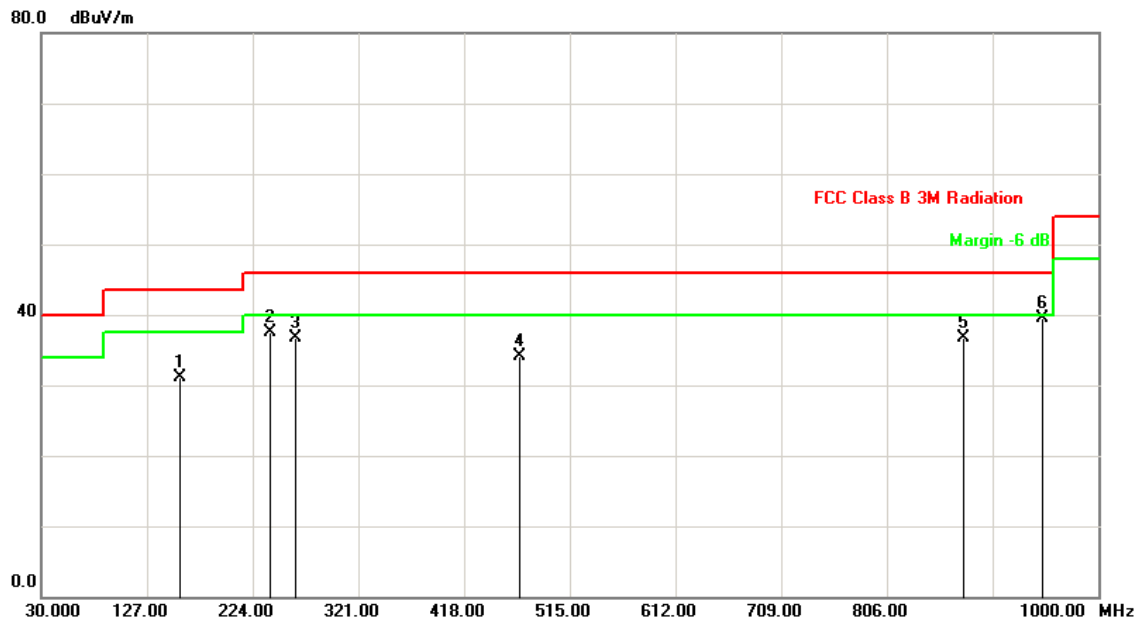
4.4. Measurement Equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	100563	2011.03.14	2012.03.13
H64 Amplifier	HP	8447F	3113A05582	2011.08.14	2012.08.13
Preamplifier	Agilent	8449B	3008A02342	2011.02.10	2012.02.09
Ultra Broadband Antenna	R&S	HL562	100362	2011.05.07	2012.05.06
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2011.05.07	2012.05.06
Spectrum Analyzer	R&S	FSP40	100324	2011.05.07	2012.05.06
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2011.08.14	2012.08.13



4.5. Test Result and Data (30MHz ~ 1000MHz)

Test Mode :	Mode 1: Normal Operation		
AC Power :	AC 120V/60Hz	Ant. Polarization:	Horizontal
Temp :	23°C	Humidity :	52%
Pressure(mbar) :	1002	Date :	2011/01/09

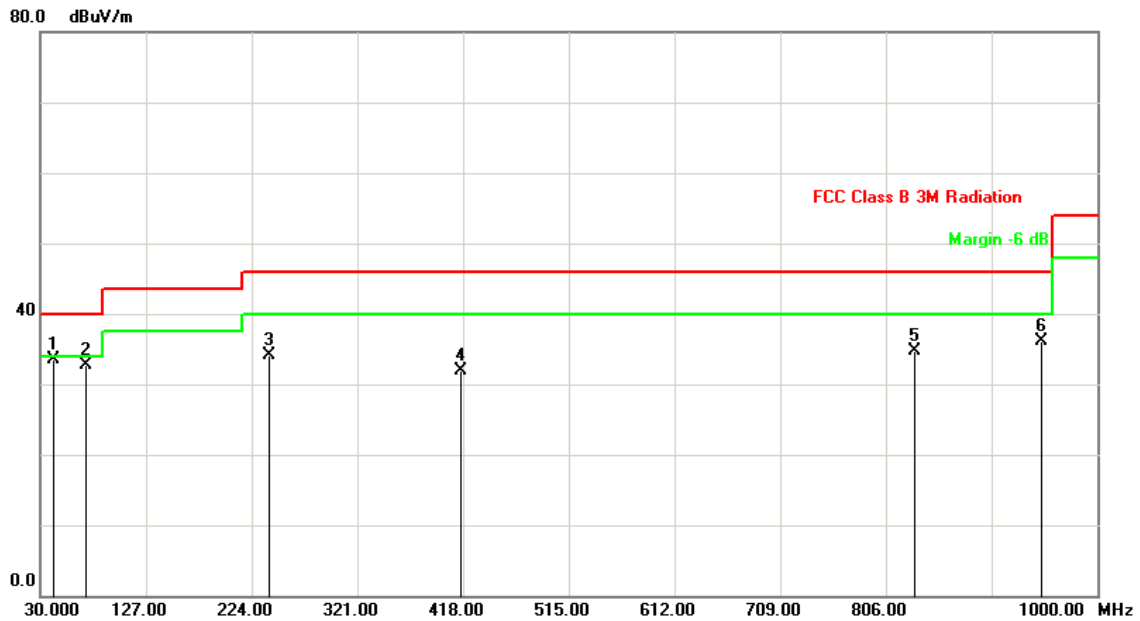


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	157.0700	-15.52	46.72	31.20	43.50	-12.30	QP	200	173
2	239.5200	-13.15	50.65	37.50	46.00	-8.50	QP	100	152
3	263.7700	-12.22	49.02	36.80	46.00	-9.20	QP	100	158
4	468.4400	-5.68	39.78	34.10	46.00	-11.90	QP	100	308
5	876.8100	2.58	34.22	36.80	46.00	-9.20	QP	100	311
6	948.5900	3.68	35.82	39.50	46.00	-6.50	QP	100	67

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Mode 1: Normal Operation		
AC Power :	AC 120V/60Hz	Ant. Polarization:	Vertical
Temp :	23°C	Humidity :	52%
Pressure(mbar) :	1002	Date :	2011/01/09



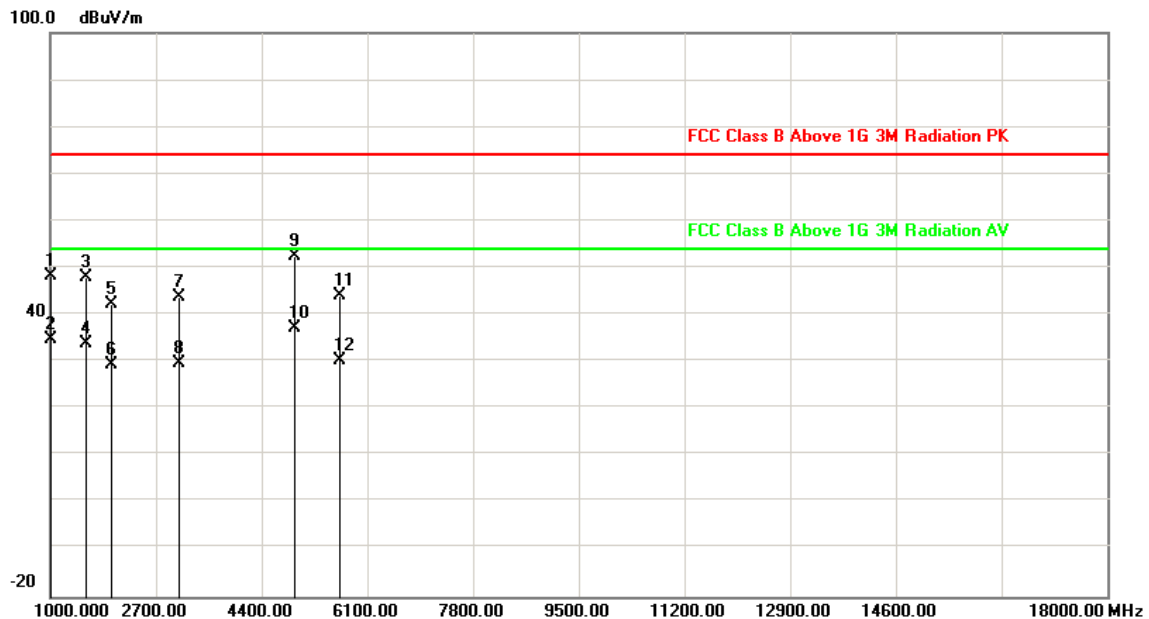
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	41.6400	-12.40	45.90	33.50	40.00	-6.50	QP	100	217
2	71.7100	-16.74	49.54	32.80	40.00	-7.20	QP	100	176
3	239.5200	-13.15	47.35	34.20	46.00	-11.80	QP	200	21
4	416.0600	-7.12	39.02	31.90	46.00	-14.10	QP	100	157
5	832.1900	1.70	33.10	34.80	46.00	-11.20	QP	100	109
6	948.5900	3.68	32.42	36.10	46.00	-9.90	QP	100	268

Note: Measurement Level = Reading Level + Correct Factor



4.6. Test Result and Data (1000MHz ~ 18000MHz)

Test Mode :	Mode 1: Normal Operation		
AC Power :	AC 120V/60Hz	Ant. Polarization:	Horizontal
Temp :	23°C	Humidity :	52%
Pressure(mbar) :	1002	Date :	2012/01/09

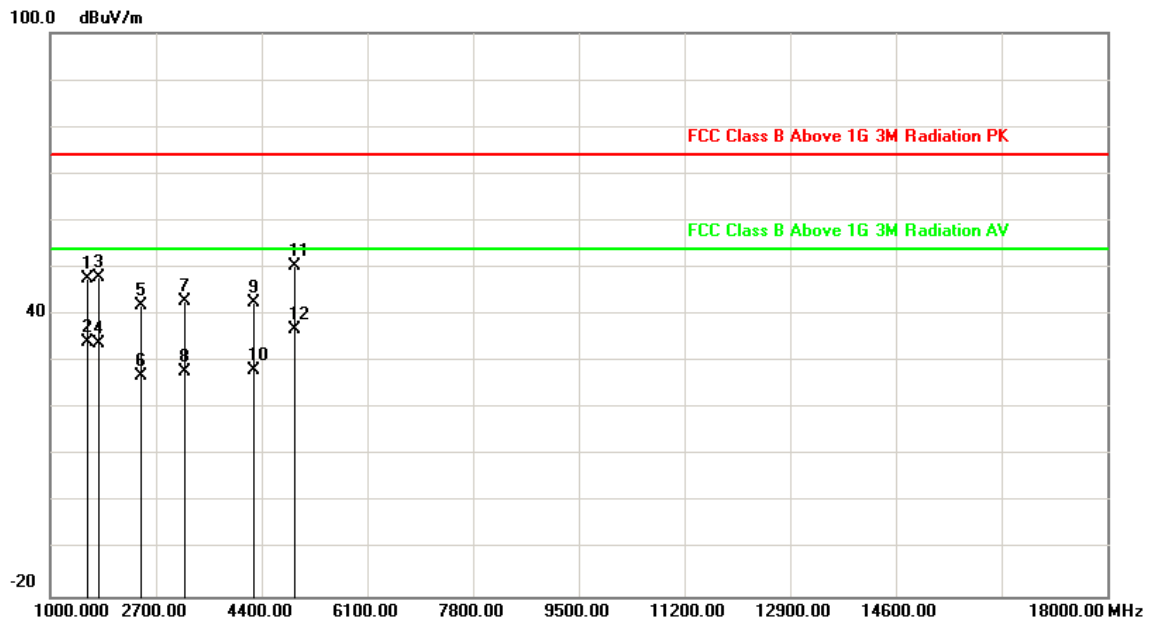


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	1000.0000	-6.87	54.99	48.12	74.00	-25.88	peak	200	0
2	1000.0000	-6.87	41.67	34.80	54.00	-19.20	AVG	200	0
3	1578.000	-4.46	52.41	47.95	74.00	-26.05	peak	100	99
4	1578.000	-4.46	38.26	33.80	54.00	-20.20	AVG	100	99
5	1986.000	-2.76	44.95	42.19	74.00	-31.81	peak	200	145
6	1986.000	-2.76	32.26	29.50	54.00	-24.50	AVG	200	145
7	3074.000	0.92	42.85	43.77	74.00	-30.23	peak	198	15
8	3074.000	0.92	28.88	29.80	54.00	-24.20	AVG	198	15
9	4927.000	6.67	45.88	52.55	74.00	-21.45	peak	199	74
10	4927.000	6.67	30.53	37.20	54.00	-16.80	AVG	199	74
11	5658.000	7.96	36.16	44.12	74.00	-29.88	peak	200	146
12	5658.000	7.96	22.44	30.40	54.00	-23.60	AVG	200	146

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Mode 1: Normal Operation		
AC Power :	AC 120V/60Hz	Ant. Polarization:	Vertical
Temp :	23°C	Humidity :	52%
Pressure(mbar) :	1002	Date :	2012/01/09



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	1595.000	-4.39	52.07	47.68	74.00	-26.32	peak	100	0
2	1595.000	-4.39	38.49	34.10	54.00	-19.90	AVG	100	0
3	1782.000	-3.61	51.58	47.97	74.00	-26.03	peak	101	88
4	1782.000	-3.61	37.51	33.90	54.00	-20.10	AVG	101	88
5	2462.000	-1.15	43.05	41.90	74.00	-32.10	peak	200	144
6	2462.000	-1.15	28.05	26.90	54.00	-27.10	AVG	200	144
7	3159.000	1.24	41.56	42.80	74.00	-31.20	peak	100	249
8	3159.000	1.24	26.66	27.90	54.00	-26.10	AVG	100	249
9	4264.000	5.02	37.53	42.55	74.00	-31.45	peak	200	179
10	4264.000	5.02	23.08	28.10	54.00	-25.90	AVG	200	179
11	4927.000	6.67	43.72	50.39	74.00	-23.61	peak	151	351
12	4927.000	6.67	30.03	36.70	54.00	-17.30	AVG	151	351

Note: Measurement Level = Reading Level + Correct Factor

Test engineer: Seben