TEST REPORT

Part 15 Subpart C 15.225

1. Applicant
   - Name : HONG International Corp.
   - Address : #306 JNK Digital Tower, Digitalro-26gil, Guro-dong, Guro-gu, Seoul, Republic of Korea
   - FCC ID : ZUZ-VSPHOENIXS
   - IC : 9811A-VSPHOENIXS
2. Products
   - Name : Electronic Dart System
   - Model/Type : -VSPHOENIXS / Electronic Dart System
   - Manufacturer : HONG International Corp.
3. Test Standard : 47 CFR FCC Part 15 Subpart C
   RSS-210 Issue 8, RSS-Gen Issue 3
4. Test Method : ANSI C63.4-2009
5. Test Result : Positive
6. Dates of Test : March 10, 2012 to May 05, 2012
7. Date of Issue : May 07, 2012
8. Test Laboratory : Korea Standard Quality Laboratories
   FCC Designation Number : KR0024
   IC OATS Number : 9053A

Tested by	Approved by
Soon Ho, Kim	SungBum, Hong
Test Engineer:	Compliance Engineer:

Korea Standard Quality Laboratories
Testing Laboratories for EMC and Safety Compliance
www.ksqlab.com #102, Jangduk-Dong, Hwasung-City, Kyunggi-Do, KOREA

CONTENTS

Revision History

Issue Report No.	Issued Date	Revisions	Effect Section
KSQ-FCC120401	May 07, 2012	Initial Release	All

1. VERIFICATION OF COMPLIANCE

-. APPLICANT : HONG International Corp.

-. ADDRESS : #306 JNK Digital Tower, Digitalro-26gil, Guro-dong, Guro-gu, Seoul, Republic of Korea

-. CONTACT PERSON : Choong-Jae, Lee / Assistant Manager

-. TELEPHONE NO : +82-2-3667-3986

-. FCC ID : ZUZ-VSPHOENIXS

-. IC CERTIFICATION NO. : 9811A-VSPHOENIXS

DEVICE TYPE	FCC: DXX - Low Power Communication Device Transmitter IC: Category I Equipment
E.U.T. DESCRIPTION	Electronic Dart System
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	FCC: ANSI C63.4: 2009 IC: RSS-Gen Issue 3
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C, Section 15.225 RSS-210 Issue 8, RSS-Gen Issue 3
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	Yes
FINAL TEST WAS CONDUCTED ON	3 m open area test site

2. GENERAL INFORMATION

2.1 Product Description

The HONG International Corp., Model VSPHOENIXS (referred to as the EUTin this report) is a Electronic Dart System that is included a RF card reader. The product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Non-Metal
TX FREQUENCY	13.56 MHz
MODULATION	ASK
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1 MHz)	Main Board: 14.3MHz, Connector Board: 4MHz, Audio Board: 28.63636 MHz, Audio Control Board: 10MHz RF Board: 13.56MHz, RF LED Board: 20MHz
ANTENNA TYPE	Inserted into the main board (Pattern Antenna)
RATED SUPPLY VOLTAGE	120 V~, 60 Hz, 160 W
NUMBER OF PCB LAYERS	8 Layers: Main Board 4 Layers: Connector Board, Audio Board, Audio Control Board, RF Board and RF LED Board

2.2 Model Differences:

-. None

2.3 Related Submittal(s) / Grant(s)

-. Original

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in section 15.225 and the IC requirements stated in section 6 of the regulation, RSS-Gen Issue 3.

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2009 and RSS-210, Issue 8 & RSS-Gen Issue 3. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	GIGABYTE	GA-G31M-ES2L	DoC
Connector Board	HONG International Corp.	REV 1.61	N/A
Audio Board	HONG International Corp.	1.1	N/A
Audio Control Board	HONG International Corp.	1.1	N/A
RF Board	HONG International Corp.	N/A	N/A
RF LED Board	HONG International Corp.	LED_MD	N/A
LED Interface Board	HONG International Corp.	HONG-LED-INTERFACE VER1.2	N/A
Power Board	Open Digital Power	OFS75	N/A

3.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	FCC ID	Description	Connected to
VSPHOENIX.S	HONG International Corp.	ZUZ-VSPHOENIXS	Electronic Dart System (EUT)	-
VOSTRO 3350	DELL	-	NOTE BOOK	

3.3 Mode of operation during the test

-. To get a maximum radiated emission from the EUT, the EUT was continuously transmitted RF carrier and the card shall be used with the EUT and tested with together. And the ping testing mode was performed at the same time during the test.

3.4 Cable Description for the EUT

Ports Name	Shielded	Ferrite Bead	Metal Shell	Length (m)	Connected to
LAN	N	N	N	3.0	Notebook PC

3.5 Equipment Modifications

For getting Class B Limit, following modifications were made by the applicant.

-. Internal cable was changed to shielded type and ferrite core was added.

-. The gasket was added to the internal of PC case.

-. The ferrite core was added to the power cable of LCD monitor.

-. The ferrite core was added to the speaker cable.

3.6 Configuration of Test System

Line Conducted Test: The power of EUT was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission tests were performed by using the procedure in ANSI C63.4: 2009 7.3.3 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.4: 2009 8.3.1.1 and 13.1.4.1 to determine the worse operating conditions. The radiated emissions measurements were performed on the 3 m, EMI chamber and open-field test site. The EUT was placed on the ground plane as typical applications. For frequencies from 150 kHz to 30 MHz measurements were made of the magnetic H field. The measuring antenna is an electrically screened loop antenna. The frequency spectrum from 30 MHz to 1 000 MHz was scanned and maximum emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

3.7 Antenna Requirement

For intentional device, according to §15.203 and RSS-Gen Issue 3, section 7.1.2, 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.

Antenna Construction:

The transmitter antenna of the EUT is a PCB pattern antenna in the EUT, so there is no consideration of replacement by the user.

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Standby Mode	-
TX mode	X

4.2 Radiated Emissions Tests
During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
Standby Mode	-
TX mode	X

5. FINAL RESULT OF MEASURMENT

Temperature: 20 °C

5.1 Conducted Emission Test

Humidity Level : 32 % R.H.
Limits apply to : FCC CFR 47, PART 15 Section 15.207 and IC RSS-Gen, Section 7.2.4
Result : PASSED BY -22.64 dB at 13.56 MHz under average mode

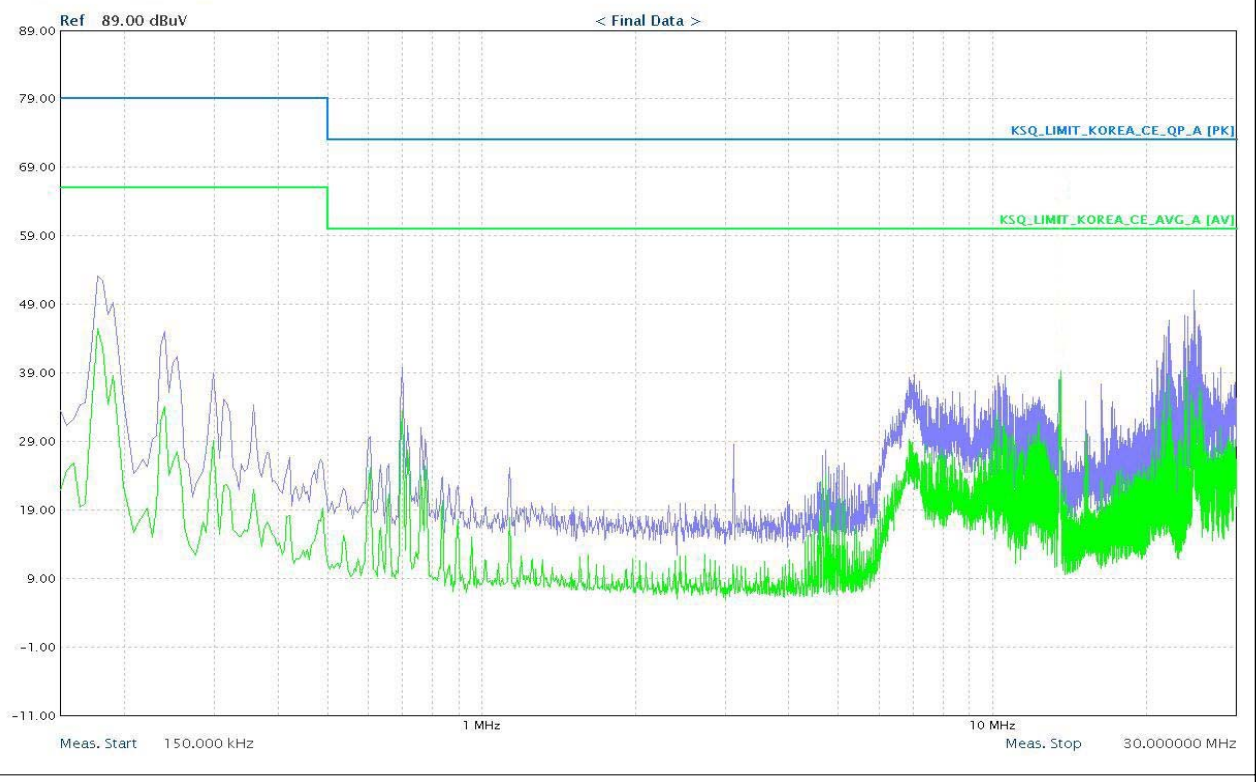
EUT Operating : Electronic Dart System
Condition : Transmitting Mode Date: March 12, 2012
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Frequency (MHz)	Line	Peak (dB V)		Margin (dB)
		Emission level	Q.P Limits	
0.17	N	46.81	79.00	-32.19
0.18	H	47.72	79.00	-31.28
0.24	N	37.12	79.00	-40.48
0.69	N	42.16	73.00	-30.84
0.72	H	44.15	73.00	-28.85
15.34	H	40.01	73.00	-32.99
Frequency (MHz)	**Line**	**Average (dB V)**		**Margin (dB)**
		Emission level	**Limits**	
0.17	N	42.72	66.00	-23.28
0.18	H	43.36	66.00	-22.64
15.32	N	35.43	60.00	-24.57
15.34	H	36.46	60.00	-23.54

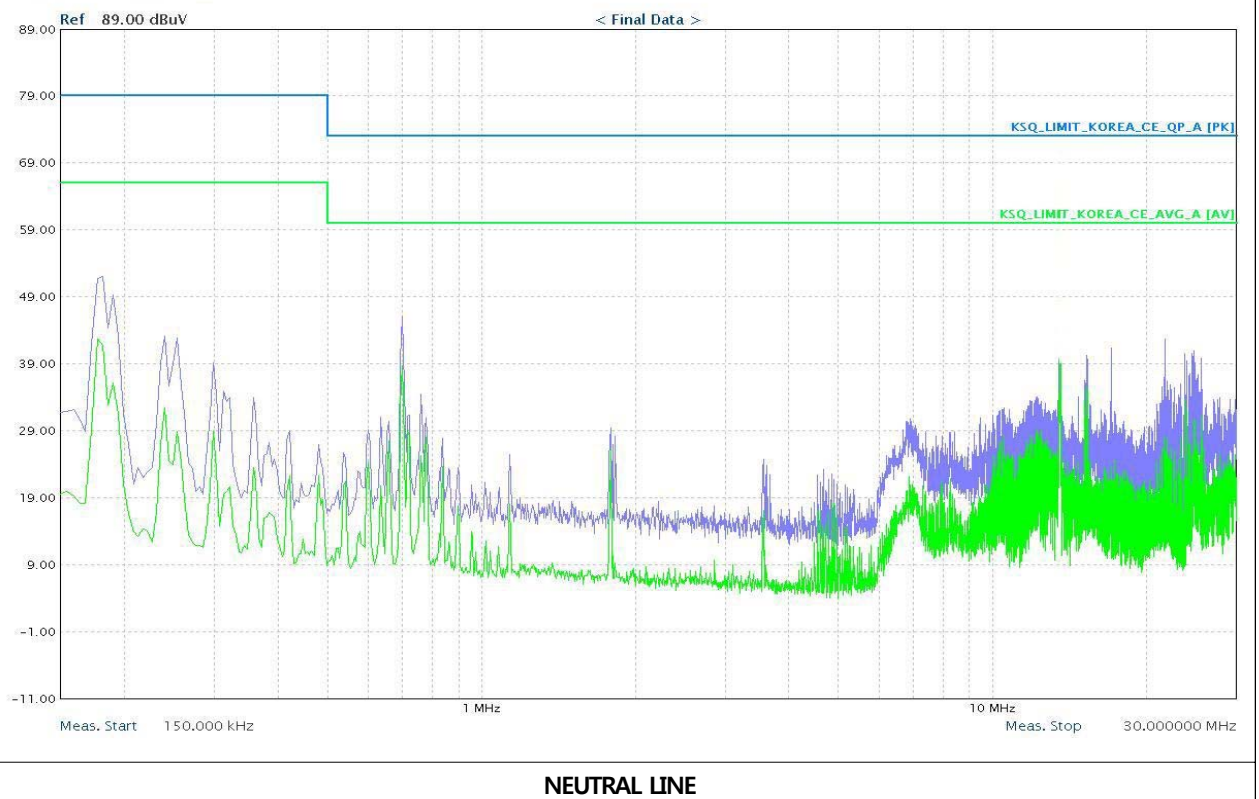
Line Conducted Emission Tabulated Data

Remark : "H": Hot Line, "N": Neutral Line.
See next page for an overview sweep performed with peak and average detector.

Tested by: Soon Ho, Kim / Project Engineer



HOT LINE



NEUTRAL LINE

5.2 Emission Test

5.2.1 Radiated Emissions

5.2.1.1 Regulation

FCC 47CFR15 – 15.209 (a)Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength limit (uV/m)	Field strength limit (dBuV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	48.5-13.8	300
0.490 – 1.705	24000/F(kHz)	33.8-23.0	30
1.705 – 30.0	30	29.5	30
30 –88	100	40.0	3
88 –216	150	43.5	3
216 – 960	200	46.0	3
Above 960	500	54.0	3

5.2.1.2 Measurement Procedure

Radiated Emissions Test, 9kHz to 30MHz (Magnetic Field Test)

1. The preliminary radiated measurements were performed to determine the frequency producing the maximum emissions at a distance of 3 meters according to Section 15.31(f)(2).

2. The EUT was placed on the top of the 0.8-meter height, 1 x 1.5 meter non-metallic table.

3. Emissions from the EUT are maximized by adjusting the orientation of the Loop antenna and rotating the EUT on the turntable. Manipulating the system cables also maximizes EUT emissions if applicable.

4. To obtain the final measurement data, each frequency found during preliminary measurements was re-examined and investigated. The test-receiver system was set upto average, peak, and quasi-peak detector with specified bandwidth.

Radiated Emissions Test, 30 MHz to 1000 MHz

1. The preliminary radiated measurements were performed to determine the frequency producing the maximum emissions in an anechoic chamber at a distance of 3 meters.

2. The EUT was placed on the top of the 0.8-meter height, 1 x 1.5 meter non-metallic table. To find the maximum emission levels, the height of a measuring antenna was changed and the turntable was rotated 360

3. The antenna polarization was also changed from vertical to horizontal. The spectrum was scanned from 30 to 1000 MHz using the Biconical and Logperiodue broadband antenna,

4. To obtain the final measurement data, the EUT was arranged on a turntable situated on a 4 x 4 meter at the Open Area Test Site. The EUT was tested at a distance 3 meters.

5. Each frequency found during preliminary measurements was re-examined and investigated. The test-receiver system was set up to average, peak, and quasi-peak detector function with specified bandwidth.

6. The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT

5.2.1.3 Calculation of the field strength limits below 30 MHz

1. No special calculation for obtaining the field strength in dBuV/m is necessary, because the EMI receiver and the active loop antenna operate as a system, where the reading gives directly the field strength result (dBuV/m). The antenna factors and cable losses are already taken into consideration.

2. For test distance other than what is specified, but fulfilling the requirements of section 15.31 (f)(2) the field strength is calculated by adding additionally an extrapolation factor of 40dB/decade (inverse linear distance for field strength measurements).

3. All following emission measurements were performed using the test receiver's average, peak, and quasi-peak detector function with specified bandwidth.

5.2.1.4 Test Results (Test mode : TX on)

Table 3: Test Data, Fundamental Frequency(Ver/hor) Date: Mar 04, 2012

Frequency(MHz)	Pol.	Reading(dBμV)	AFCL (dB/m)	Actual(dBμV/m)	Limit(dBμV/m)	Margin(dB)	Detector
13.560	V	45.46	9.94	55.40	124	68.60	QP
13.560	V	45.69	9.94	55.53	-	-	AV

Frequency(MHz)	Pol.	Reading(dBμV)	AFCL (dB/m)	Actual(dBμV/m)	Limit(dBμV/m)	Margin(dB)	Detector
13.561	H	42.57	9.94	52.51	124	71.49	QP
13.561	H	42.77	9.94	52.71	-	-	AV

FCC 47CFR15 - 15.209 (9 kHz - 30 MHz)

Table 4: Test Data, Radiated Emission below 30 MHz

Frequency(MHz)	Pol.	Height[m]	Angle [°]	(1) Reading (dBμV)	(2) AFCL (dB/m)	(3) Actual (dBμV/m)	(4) Limit (dBμV/m)	(5) Margin (dB)
0.048	H	1.30	176	37.85	12.38	50.23	113.98	63.78
1.264	H	1.28	178	19.96	12.18	32.14	65.57	33.47
9.424	V	1.35	265	11.94	9.98	21.92	69.54	47.62
13.136	V	1.42	271	12.05	9.73	21.78	69.54	47.76
16.100	V	1.38	274	11.89	9.44	21.33	69.54	48.21
20.384	H	1.33	180	10.21	8.83	19.04	69.54	50.50

Margin (dB) = Limit - Actual
[Actual = FS + AF + CL]

1. H = Horizonmal, V = Vertical Polarization

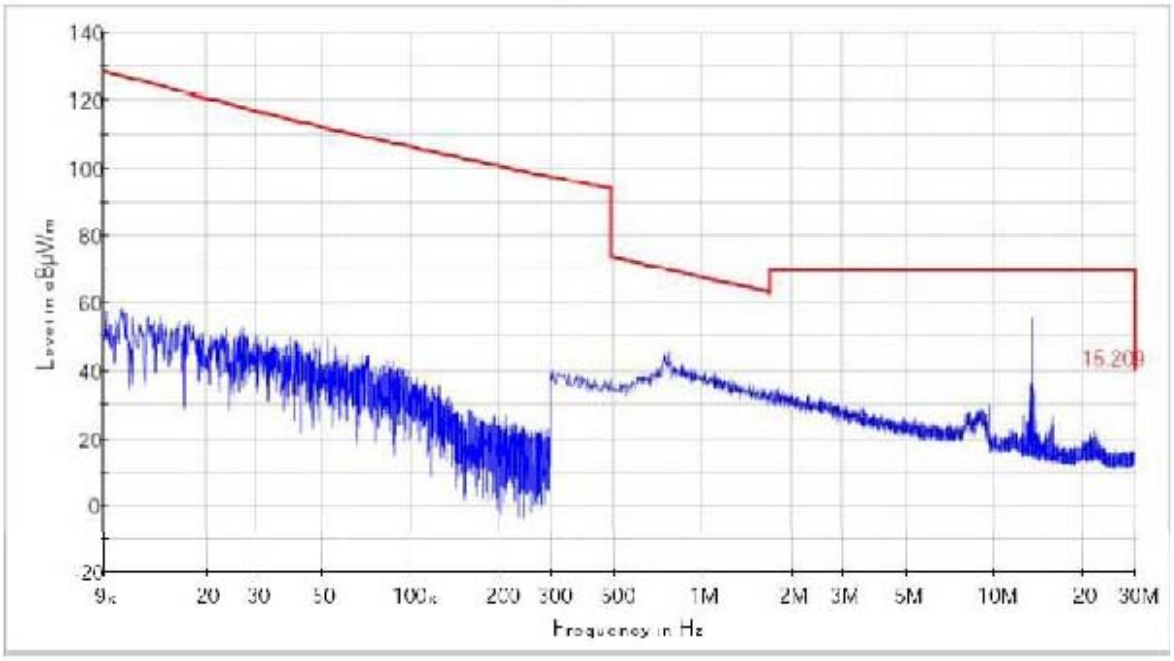
2. AF/CL = Antenna Factor and Cable Loss

3. FS = RA + DF

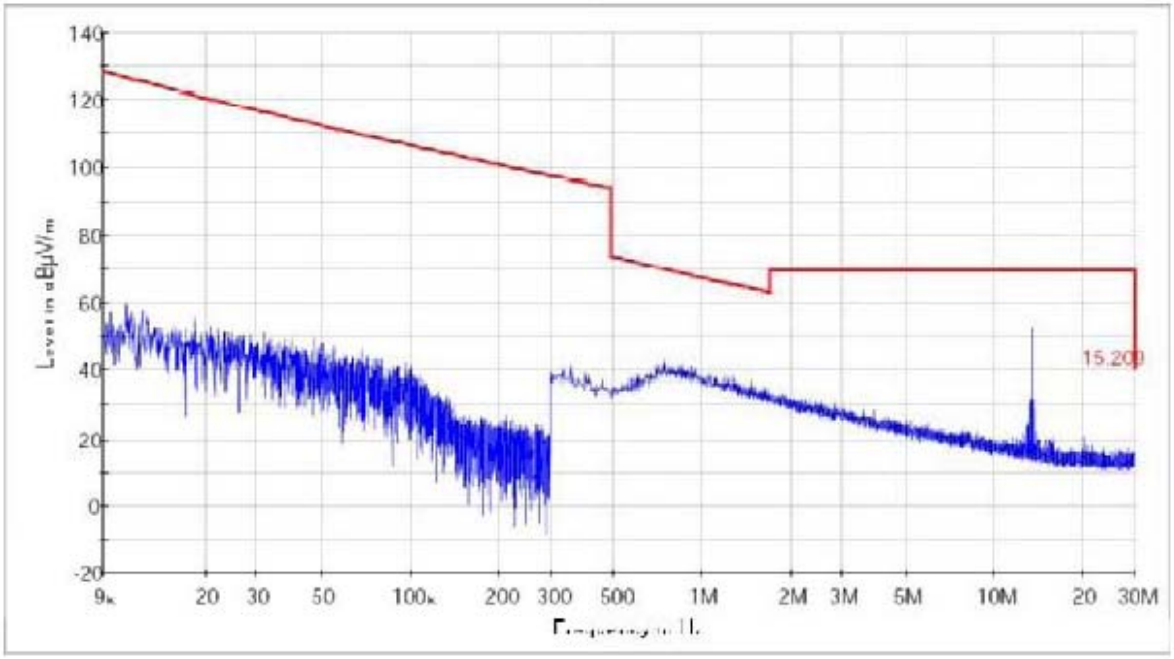
Whrer FS = Field strength in dBμV/m
RA = Reciever Amplitude in dBμV/m
DF = Distance Extrapolation Factor in dB

Figure 4: Radiated spurious emissions below 30 MHz

Spurious Emissions from 9 kHz to 30 Mhz – Vertical



Spurious Emissions from 9 kHz to 30 Mhz - Horizontal



5.2.1.5 Calculation of the field strength limits above 30MHz

1.No special calculation for obtaining the field strength in dBuV/m is necessary, because the EMI receiver and the active loopantenna operate as a system, where the reading gives directly the field strengthresult (dBuV/m). The antenna factors and cablelosses are already taken into consideration.

2. For test distance other than what is specified, but fulfilling the requirements of section 15.31 (f)(2) the fields trength is calculated by adding additionally an extrapolation factor of 40dB/decade (inverse linear distance for field strength measurements).

3. All following emission measurements were performed using the test receiver's average, peak, and quasi-peak detector function with specified bandwidth.

5.2.1.6 Test Results(Test mode : TXon) PASS

FCC 47CFR 15.209 and RSS 210 Annex A2.9(b)

Table5:Test Data ,Radiated Emission above 30MHz Date: Mar 04, 2012

Frequency(MHz)	Pol.	Height[m]	Angle [°]	Reading (dBμV)	AFCL (dB/m)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
176.28	H	1.58	181	24.12	9.58	33.70	43.5	9.80
203.40	H	1.61	181	22.61	11.69	34.30	43.5	9.20
230.52	H	1.62	176	21.46	12.54	34.00	46	12.00
304.12	H	1.65	170	21.75	14.35	36.10	46	9.90
709.60	V	1.83	164	4.47	21.93	26.40	46	19.60
811.44	H	1.78	175	7.49	23.61	31.10	46	14.90

FCC 47CFR15-15.205 Restricted Band

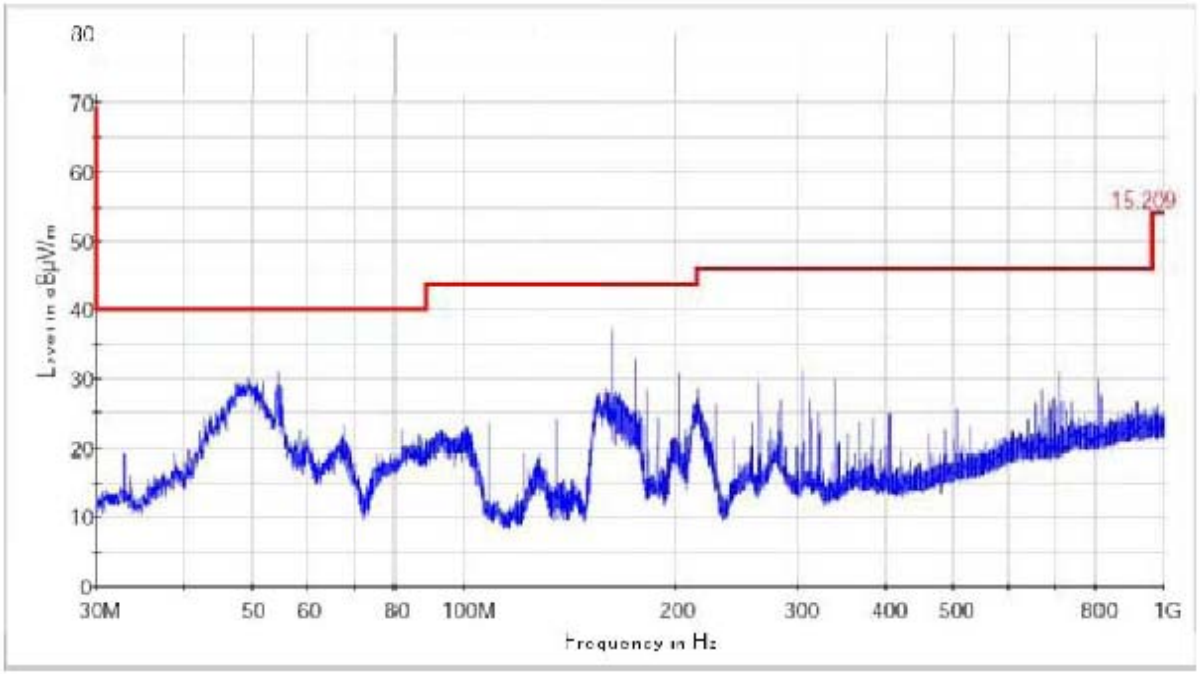
Frequency(MHz)	Pol.	Height[m]	Angle [°]	Reading (dBμV)	AFCL (dB/m)	Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
108.48	V	1.54	170	9.31	12.09	21.40	43.5	22.10
162.72	H	1.61	175	26.26	8.94	35.20	43.5	8.30
251.04	H	1.61	175	15.35	13.14	28.50	46.0	17.50
254.00	H	1.68	178	17.1	13.20	30.30	46.0	15.70
608.52	H	1.53	188	6.76	21.04	27.80	46.0	18.20

Margin (dB) = Limit - Actual
[Actual = Reading + AF + CL]

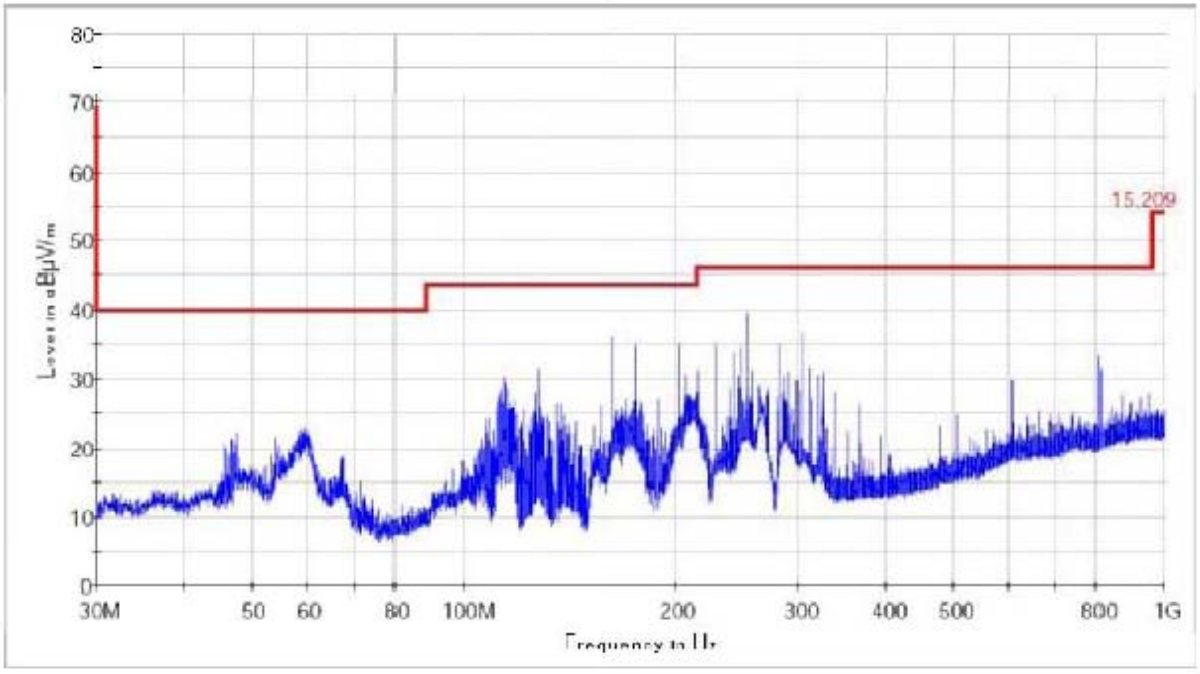
1. H = Horizonmal, V = Vertical Polarization

2. AF/CL = Antenna Factor and Cable Loss

Spurious Emission form 30 MHz to 1Ghz - Vertical



Spurous Emissions from 30 MHz to 1 GHz - Horizontal



5.3 Spectrum mask and Occupied bandwidth

5.3.1 Regulation

FCC 47CFR15 – 15.225 and IC RSS-210, Section A2.6

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

Frequency (MHz)	Field strength limit (uV/m) @ 30m	Field strength limit (dBuV/m) @ 30m	Field strength limit (dBuV/m) @ 3m
13.110 – 13.410	106	40.5	80.5
13.410 – 13.553	334	50.5	90.5
13.553 – 13.567	15,848	84.0	124.0
13.567 – 13.710	334	50.5	90.5
13.710 – 14.010	106	40.5	80.5

5.3.2 Measurement Procedure

Spectrum Mask

1. Place the EUT in the text fixture and switch it on

2. Use the following spectrum analyzer settings: RBW = VBW =1 kHz, Span = wide enough to capture the whole 13 MHz band including the frequency ranges were the 15.209 limit applies, Trace mode = Max Hold, select the limit line 15.225(a),(b),(c)

3. After trace stabilization,set the marker to the single peak.

4. The reference level will be calculated by the amount of the margin of the wanted signal to its 30 m emission limit plus marker value.

5. The whole signal trace has to be below the limit line.

Occupied Bandwidth

1. Place the EUT in the text fixture and switch it on.

2. Use the following spectrum analyzer settings: RBW = VBW =1 kHz, Span = wide enough to capture the 20 dB bandwidth, Trace mode = Max Hold.

3. After trace stabilization, set the first marker and the first display line to the signal peak. Set the second display line 20 dB below the first display line. The Second marker and its delta marker shall be set to cross point of the spectrum line and the second display line and note these frequencies.

4. Alternatively the 20 dB down function of the analyzer could be used, if this function will be applicable to the displayed spectrum.

5.3.3 Test Results (Test mode : Modulated) **PASS**

Figure 6: Spectrum Mask Figure 7: Occupied Bandwidth = 3.808 kHz

Figure 6:Spectrum Mask

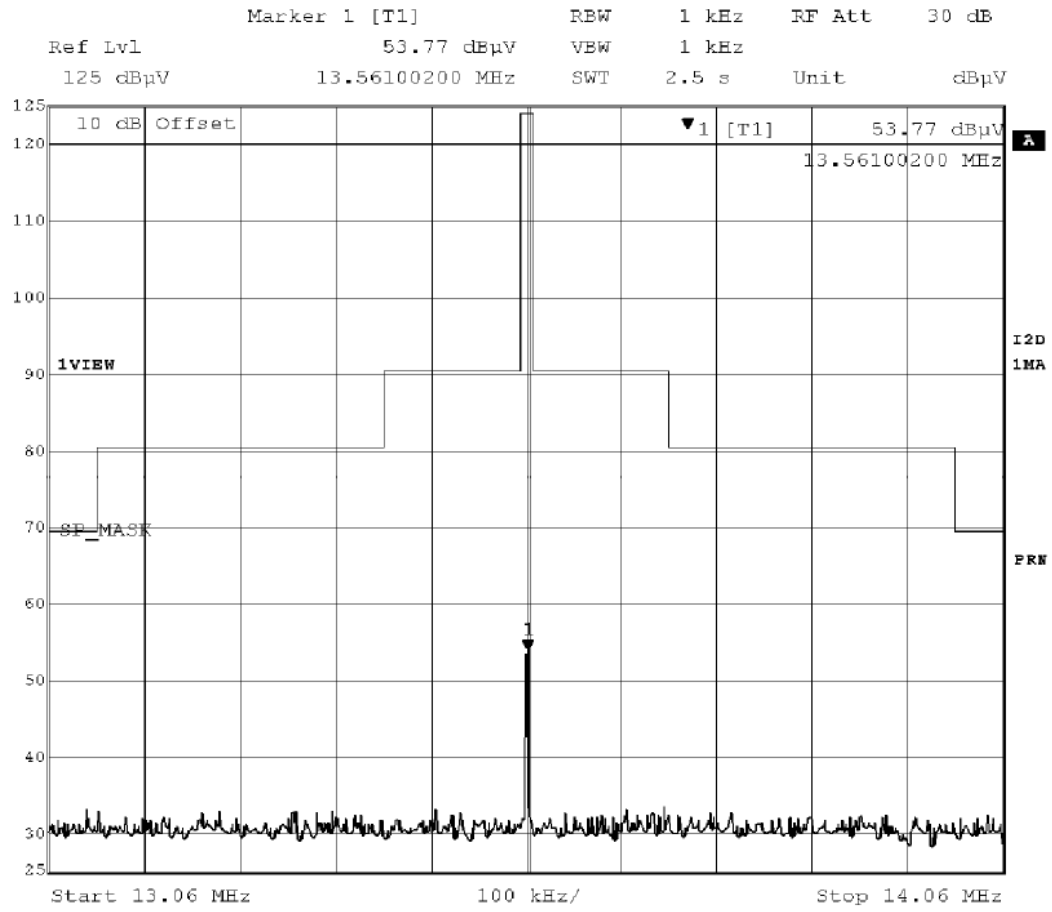
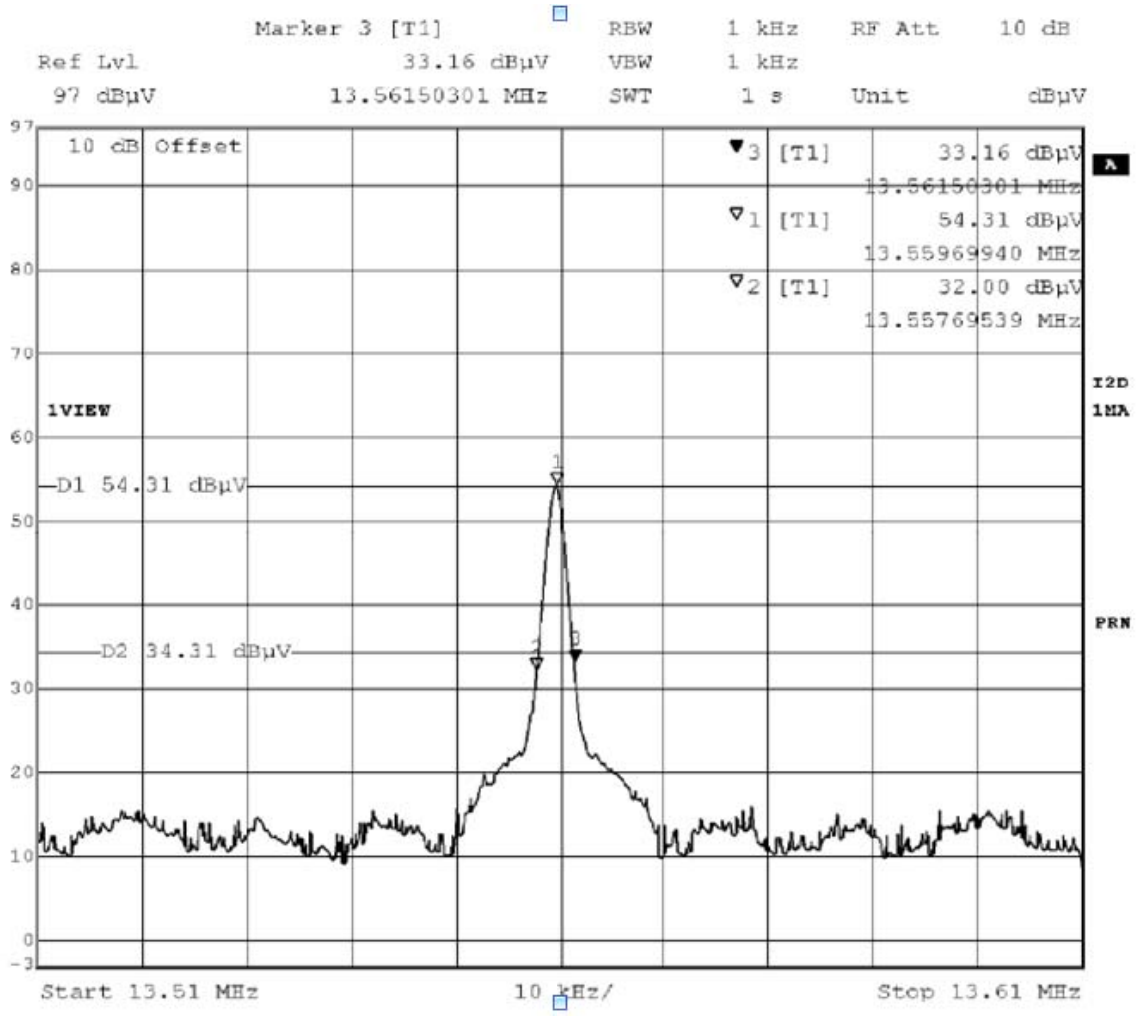


Figure 7: Occupied bandwidth

Occupied Bandwidth = 3.808 kHz



F_L	F_H	Bandwidth (F_H – F_L)
13.557695 (MHz)	13.561503 (MHz)	3.808 (KhZ)

5.4 FREQUENCY TOLERANCE OF CARRIER SIGNAL

5.4.1 Regulation

FCC 47CFR15 – 15.225(e)

The frequency tolerance of the carrier signal shall be maintained within +/-0.01% of the operating frequency over a temperature variation of –20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery-operated equipment, the equipment tests shall be performed using a new battery.

5.4.2 Measurement Procedure

Frequency stability versus environmental temperature

1.Supply the EUT with nominal AC voltage.

2.Turn the EUT off, and place it inside an environmental temperature chamber. For devices that are normally operated continuously, the EUT may be energized while inside the test chamber. For devices that have oscillator heaters, energize only the heater circuit while the EUT is inside the chamber.

3.RF output was connected to a frequency counter or other frequency-measuring instrument via feed through attenuators.

4.Set the temperature control on the chamber to the highest specified EUT operating temperature, and allow the temperature inside the chamber to stabilize at the set temperature before starting frequency measurements.

5.While maintaining a constant temperature inside the environmental chamber, turn the EUT on and record the operating frequency at startup and two, five, and ten minutes after the EUT is energized.

6.After all measurements have been made at the highest specified temperature turn the EUT off.

7.Repeat the above measurement process for the EUT with the test chamber set at the appropriate temperature.

Frequency Stability versus Input Voltage

1.At temperature (20 ± 5°C), supply the EUT with nominal AC voltage

2.Couple RF output to a frequency counter or other frequency-measuring instrument.

3.Turn the EUT on, and measure the EUT operating frequency at startup and two, five, and ten minutes after startup

4.Supply it with 85% of the nominal AC voltage and repeat above procedure.

5. Supply it with 115% of the nominal AC voltage and repeat above procedure.

5.4.3 Test Results: **PASS**

TEST MODE : TX on

Table 6: Test Data, Frequency Tolerance of carrier signal									
Reference Frequency : 13.56 MHz, LIMIT : within 1356 Hz									
Environment Temperature [C]	Power Supplied [AC]	Carrier Frequency Measured with Time Elapsed							
		STARTUP		2 minutes		5 minutes		10 minutes	
		[MHz]	Err[Hz]	[MHz]	Err[Hz]	[MHz]	Err[Hz]	[MHz]	Err[Hz]
+50	120	13.559 831	-169	13.559 812	-188	13.559 797	-203	13.559 781	-219
+40	120	13.559 873	-127	13.559 845	-155	13.559 835	-165	13.559 816	-184
+30	120	13.559 924	-76	13.560 002	2	13.560 035	35	13.560 051	51
+20	120	13.560 027	27	13.560 011	11	13.559 999	-1	13.559 992	-8
+10	120	13.559 635	-365	13.559 623	-377	13.559 616	-384	13.559 608	-392
0	120	13.559 670	-330	13.559 666	-334	13.559 661	-339	13.559 649	-351
-10	120	13.559 705	-295	13.559 700	-300	13.559 696	-304	13.559 689	-311
-20	120	13.559 708	-292	13.559 707	-293	13.559 706	-294	13.559 705	-295

Reference Frequency : 13.56 MHz, LIMIT : within 1356 Hz								
Power Supplied [AC]	Carrier Frequency Measured with Time Elapsed							
	STARTUP		2 minutes		5 minutes		10 minutes	
	[MHz]	Err[Hz]	[MHz]	Err[Hz]	[MHz]	Err[Hz]	[MHz]	Err[Hz]
85 %	13.559 790	-210	13.560 024	24	13.560 043	43	13.560 047	47
100 %	13.559 749	-251	13.559 947	-53	13.560 023	23	13.560 040	40
115 %	13.559 681	-319	13.559 809	-191	13.559 973	-27	13.560 038	38

Err[Hz] = Measured carrier frequency (MHz) – Reference Frequency (13.56 MHz)

6 EUT Description

Kind of EUT	Electronic Dart System
Operating Frequency Band	13.56 MHz
Device Category	☐ Portable (< 20 cm separation) ☐ Mobile (> 20 cm separation) ■ Others
Field Strength level	55.53 dB V/m
Used Antenna	Internal Pattern Antenna
Exposure Evaluation Applied	☐ MPE ☐ SAR ■ N/A

6.1 Exemption from Routine Evaluation Limits

The EUT shall be used more or less than 20cm from the user, but the operating frequency of the EUT is 13.56 MHz and output level is less than 2W(33 dBm), so the EUT exempted from routine RF exposure eveluation according to the rule RSS-102, section 2.5.2.

7 FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+ Meter reading (dB μV)
+ Cable Loss (dB)
+ Antenna Factor (Loss) (dB/m)

= Corrected Reading (dB μV/m)

-Specification Limit (dB V/m)
= dB Relative to Spec (± dB)

8. LIST OF TEST EQUIPMENT

No.	Description	Manufacturer	Model No.	Specifications	Next Cal. Data	Used equipment
1	EMI Test Receiver	LIG Nex1	LSA-265	3Hz~26.5GHz	12.12.18	■
2	Dipole ANT	ElectroMetrics	TDA-30/1-4	30~1GHz	12.03.23	□
3	Biconical ANT	ElectroMetrics	BIA-30S	30~300MHz	13.03.23	■
4	Log periodic ANT	ElectroMetrics	LPA-30	0.2~1GHz	13.03.23	■
5	Bilog Antenna	Schaffner-Chase EMC Ltd.	CBL6140A	50V, 5A	13.05.07	■
6	Turn Table	KEI	KEI-TURN	1500×1000×800	N/A	□
7	Turn Table	KEI	KEI-TURN	1500×1000×800	N/A	■
8	Loop ANT.	Com-Power	AL-130	9kHz~30MHz	13.03.24	■
9	Spectrum Analyzer	LIG Nex1	ISA-265	1kHz~26.5GHz	12.05.20	□
10	Function Generator	Agilent	33120A	15MHz sine&square	12.06.09	□
11	Frequency Counter	HP	5350B	10Hz~20GHz	12.06.09	□
12	Modulation Analyzer	Agilent	8901B	10MHz~1.3GHz	12.06.09	□
13	Audio Analyaer	Agilent	8903B	20Hz~100kHz	12.06.09	□
14	Attenuator	Agilent	8494B	0~11dB, 18GHz	12.06.09	□
15	Attenuator	Agilent	8496B	0~110dB, 18GHz	12.06.09	□
16	Attenuator	Agilent	8495B	0~70dB, 18GHz	12.06.09	□
17	Attenuator	TAE SUNG	SMA-1	6dB	12.09.02	□
18	Attenuator	TAE SUNG	SMA-2	6dB	12.09.02	□
19	Power Meter	Agilent	E4418B	100kHz~110GHz, 0.0001uW~25100mW	12.06.09	■
20	Power Sensor	HP	8485A	50MHz~26.5GHz	12.06.09	■
21	Vibration Tester	Gana	GNV-400	10~60Hz, 0~4mm	12.09.09	□
22	RF Cable	Gigalane	SMS-LL280-SMS-1.5M	1.5m	N/A	■
23	Temp & Humidity Chamber	Seoksan Tech	SE-CT-02	-40~150℃, 30~98%	12.06.09	■
24	Signal Generator	Leader Electronics	3220	100kHz~1.3GHz	12.06.09	■
25	Oscilloscope	Tektronix	TDS-350	200MHz	12.09.02	□
26	Drop Tester	Self-made	KSQ-01	150cm	N/A	□
27	Pre Amplifier	GTC	GA-1825A	0.1~18GHz	12.06.09	■
28	Continuous operation tester	GTC	CT-100	Local Control	N/A	□
29	CW Generator	HP	83711B	1~20GHz	12.06.09	■
30	POWER DIVIDER	Agilent	11636B	26.5GHz	12.06.09	□
31	Power Sensor	Agilent	8482B	100kHz ~ 4.2GHz	12.06.09	□
32	Attenuator	Winswell	53-30-33	dc-2.5GHz, 500W	12.06.09	□
33	DC Power Supply	Hanil	HPS-505A	50V, 5A	12.09.02	□
34	Slidacs	Hanchang	5KV	5kW, 300V	12.09.02	□
35	Termination	Kwang Yeok	KYTE-NJ-150W	150W	12.09.02	□
36	Band-limited filter	MITECH	KSQ-02	600Ω	12.09.02	□
37	Signal Generator	WILTRON	6759B	10MHz ~ 26.5GHz	12.09.02	□
38	Digital Multimeter	DONG HWA	DM-300A	AC/DC 500V Max,320mA Max	12.09.02	■
39	Horn ANT.	SCHWARZBECK	BBHA 9120D	700MHz ~ 18GHz	12.09.23	■
40	DC Power Supply	ALINCO	DM-340MW	15V, 30A	12.09.02	■
41	Spectrum Analyzer	ROHDE&SCHWARZ	FSV30	1kHz~30GHz	12.08.27	■