

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT  
INTENTIONAL RADIATOR CERTIFICATION TO  
FCC PART 15 SUBPART B & C REQUIREMENT**

OF

Dual Channel Deactivator

MODEL No.: DB202

FCC ID: N6K-DB202

REPORT NO: KAN120830051E

ISSUE DATE: October 24, 2012

Prepared for  
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**VERIFICATION OF COMPLIANCE**

Applicant:	HANGZHOU CENTURY CO., LTD 1418-48# Moganshan Road Hangzhou, Zhejiang, P.R.China
Product Description:	Dual Channel Deactivator
Model Number:	DB202
File Number:	KAN120830051E
Date of Test:	October 8, 2012 to October 23, 2012

**We hereby certify that:**

The above equipment was tested by NINGBO EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.223.

The test results of this report relate only to the tested sample identified in this report.

*Approved By*



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*Andy.wang/Manager*  
**NINGBO EMTEK CO., LTD.**

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## 1. GENERAL INFORMATION

### 1.1. Product Description

The EUT is a short range, lower power, Details of technical specification, refers to the description in follows:

- a. Operation Frequency: 8.2MHz
- b. Number of Channel: 2 (Both channel are transmitted at the same time. Both channels can be used at the same time or only use one of them. Both channels are used during testing.)
- c. Power Supply: Input: 100-240VAC~ 50/60Hz, Output: 12VDC/1.25A

### 1.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: N6K-DB202 filing to comply with Section 15.223 of the FCC Part 15 Subpart C Rules.

### 1.3. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 -2009. Radiated testing was performed at an antenna to EUT distance 3 meters.

### 1.4. Special Accessories

Not available for this EUT intended for grant.

### 1.5. Equipment Modifications

Not available for this EUT intended for grant.

## 1.6. Test Facility

Site Description	
EMC Lab.	: Accredited by FCC, June 14, 2011 The Certificate Registration Number is 463622.
	Accredited by Industry Canada, May 2, 2011 The Certificate Registration Number is 46405-9469..
Name of Firm	: NINGBO EMTEK CO., LTD.
Site Location	: 1F Building 4, 1177#, Lingyun Road, National Hi-Tech Zone, Ningbo, Zhejiang, China

### 9KHz~30MHz Radiated emission item Subcontracted in Shenzhen Emtek:

EMC Lab.	The Certificate Registration Number is 406365.
Name of Firm	: SHENZHEN EMTEK CO., LTD.
Site Location	: Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

## 1.7. Measurement Uncertainty

Conducted Emission Uncertainty	: 2.8dB
Radiated Emission Uncertainty	: 3.7dB (30M~26GHz Polarize: H)
(3m Chamber)	3.6dB (30M~26GHz Polarize: V)
	3.0dB (9KHz~30MHz)

## 2. SYSTEM TEST CONFIGURATION

### 2.1.EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2.EUT Exercise

The EUT (Dual Channel Deactivator ) has been tested under Normal Operating and standby condition. No software used to control the EUT for staying in continuous transmitting and receiving mode for testing.

### 2.3.Requirement for Compliance

#### 2.3.1.Conducted Emissions

According to §15.207, For intentional radiator device is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

Frequency(MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies  
 2.The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

2.3.2.Radiated Emissions

(a) FCC Part 15, Subpart C Section 15.223(a). The field strength of any emission within the band 1.705-10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters. However, if the bandwidth of the emission is less than 10% of the center frequency, the field strength shall not exceed 15 microvolts/meter or (the bandwidth of the device in kHz) divided by (the center frequency of the device in MHz) microvolts/meter at a distance of 30 meters, whichever is the higher level. For the purposes of this Section, bandwidth is determined at the points 6 dB down from the modulated carrier. The emission limits in this paragraph are based on measurement instrumentation employing an average detector. The provisions in Section 15.35(b) for limiting peak emissions apply.

Frequency(MHz)	Field Strength	Field Strength	Measurement
	(microvolts/meter)	(dBuV/m)	distance (meters)
1.705 -10	58.54	35.35	30

Remark: The EUT's 6dB bandwidth is 480kHz (see bandwidth section), which is less than 10% of the center frequency (820kHz). However the bandwidth of the device (kHz) divided by the center frequency of the device (MHz) is  $480 / 8.2 = 58.54$  microvolts/meter at 30 meters is the emission limit.

Limit =  $20 * \text{Log}(58.54 \mu\text{V/m}) = 35.35 \text{ dB}\mu\text{V/m}$  at 30 meters

The interpolated limit at 3 m =  $35.35 \text{ dB}\mu\text{V/m} + (40 * \text{Log}(30\text{m}/3\text{m}))$

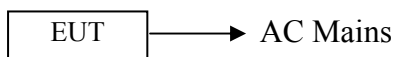
Using the Average detector, the limit would be;  $35.35 \text{ dB}\mu\text{V/m} + 40\text{dB} = 75.35 \text{ dB}\mu\text{V/m}$  at 3m.

Using the Peak detector, the limit would be;  $75.35 \text{ dB}\mu\text{V/m} + 20 \text{ dB} = 95.35 \text{ dB}\mu\text{V/m}$  at 3m.

(b) FCC Part 15, Subpart C Section 15.223(b). The field strength of emissions outside of the band 1.705-10.0 MHz shall not exceed the general radiated emission limits in Section 15.209.

Frequency(MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

2.4.Configuration of Tested System



### 2.5. Description of support units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1.	Dual Channel Deactivator	CENTURY	DB202	N6K-DB202	N/A	EUT
Note: Unless otherwise denoted as EUT in 『Remark』 column , device(s) used in tested system is a support equipment.						

### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§ 15.207	Conducted Emission	Compliant
§ 15.209, § 15.223	Radiated Emission	Compliant

### 4. DESCRIPTION OF TEST MODES

Test Mode	Frequency(MHz)
TX	8.2

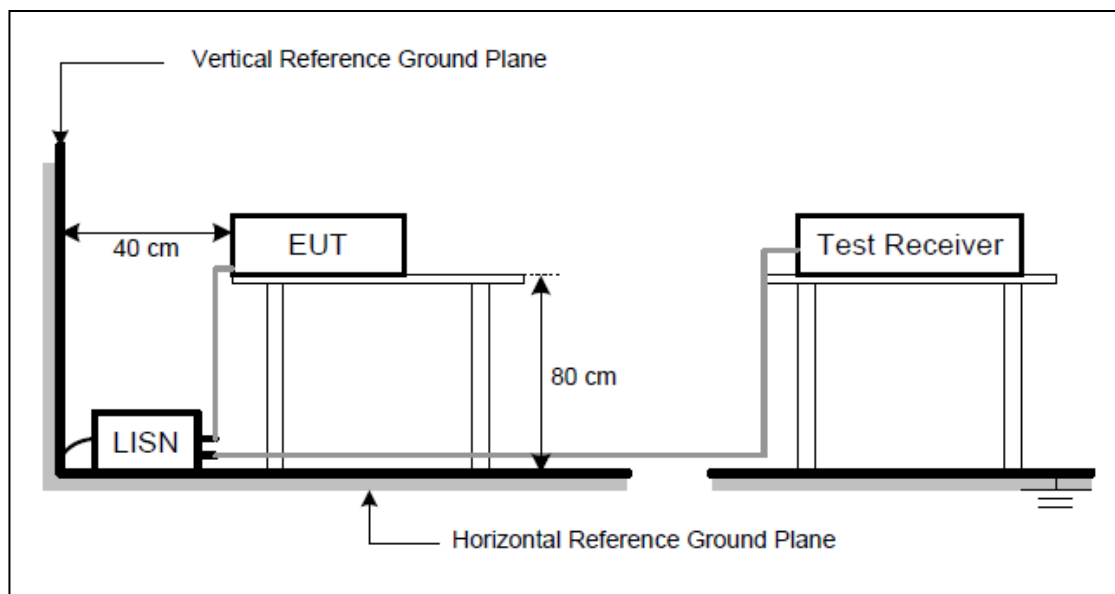


## 5. CONDUCTED EMISSIONS TEST

### 5.1.Measurement Procedure:

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 5.2.Test SET-UP



### 5.3.Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Receiver	Rohde & Schwarz	ESCI	101108	08/02/2012	08/01/2013
L.I.S.N	Rohde & Schwarz	ENV216	101193	08/02/2012	08/01/2013
L.I.S.N	Schwarzbeck	NSLK 8126	8126-462	08/02/2012	08/01/2013
Pulse Limiter	MTS-systemtechnik	IMP-136	2611115-001-0033	08/02/2012	08/01/2013

## 5.4.Measurement Result:

Date of Test:	October 10, 2012	Temperature:	22℃
Frequency Detector:	0.15~30MHz	Humidity:	55%
Test Result:	PASS	Test Mode:	TX

Test Line	Frequency MHz	Emission Level QP dB(μV)	Emission Level AV dB(μV)	Limits QP dB(μV)	Limits AV dB(μV)	Margin QP dB(μV)	Margin AV dB(μV)
Neutral	0.170	54.60	31.10	64.96	54.96	-10.36	-23.86
	0.362	47.60	28.30	58.68	48.68	-11.08	-20.38
	8.168	50.70	25.90	60.00	50.00	-9.30	-24.10
	16.384	39.00	24.80	60.00	50.00	-21.00	-25.20
	24.58	41.60	23.70	60.00	50.00	-18.40	-26.30
	28.676	43.70	37.10	60.00	50.00	-16.30	-12.90
Line	0.186	54.30	31.10	64.21	54.21	-9.91	-23.11
	0.358	45.50	26.80	58.77	48.77	-13.27	-21.97
	8.188	50.20	23.70	60.00	50.00	-9.80	-26.30
	16.480	39.50	24.70	60.00	50.00	-20.50	-25.30
	24.688	41.40	24.50	60.00	50.00	-18.60	-25.50
	28.676	44.20	37.60	60.00	50.00	-15.80	-12.40

5.5. Conducted Measurement Photos:



## 6. RADIATED EMISSION TEST

### 6.1.Measurement Procedure

a. 9KHz-30MHz

The radiated emission measurement was made at 3m. The EUT was placed on a nonconductive support 0.8m above the ground plane. The antenna height was set at 1 m. The spectrum was examined from 9kHz - 30MHz. At each frequency, the EUT was rotated 360° in order to determine the emission’s maximum level. Loop antenna was rotated around its vertical axis

b. 30MHz-1000MHz

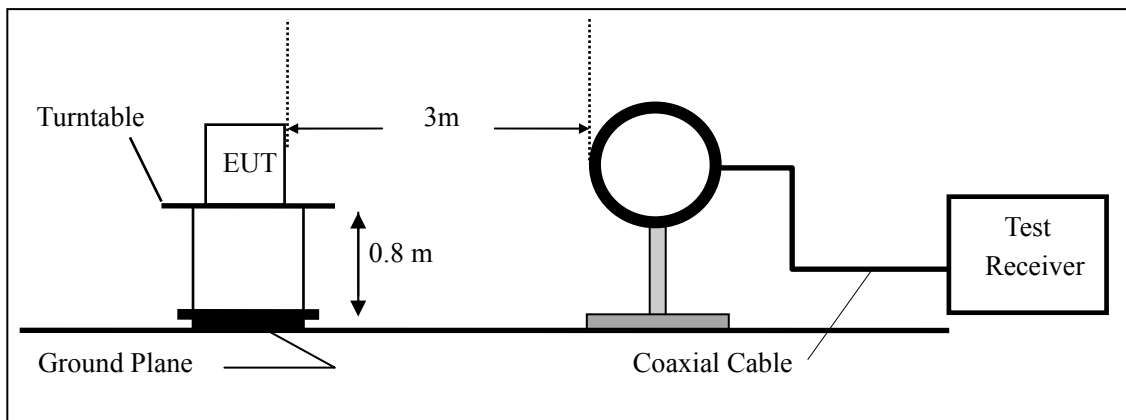
The radiated emission measurement was made at 3m. The EUT was placed on a nonconductive support 0.8m above the ground plane. The spectrum was examined from 30 - 1000MHz. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 m in order to determine the emission’s maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

### 6.2.Measurement Equipment Used:

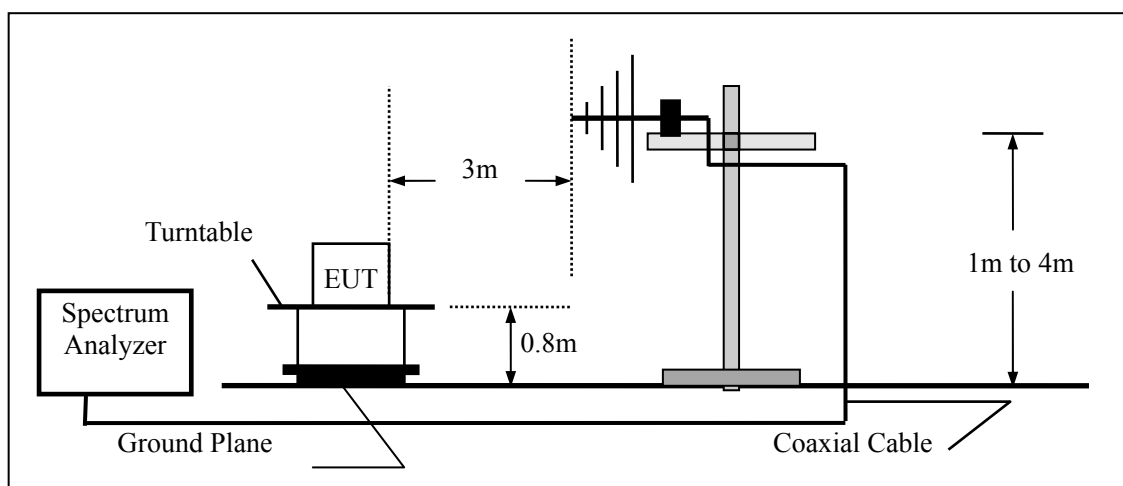
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
9KHz-30MHz					
Spectrum Analyzer	Rohde & Schwarz	ESU	1302.6005.26	05/29/2012	05/28/2013
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/29/2012	05/28/2013
Loop Antenna	Schwarzbeck	FMZB 1519	1519-012	05/29/2012	05/28/2013
30MHz-1000MHz					
Spectrum Analyzer	Rohde & Schwarz	ESCI	101107	08/02/2012	08/01/2013
EMI Test Receiver	Rohde & Schwarz	ESCI	101107	08/02/2012	08/01/2013
Pre-Amplifier	Compliance Direction Systems Inc.	PAP-0203	22015	08/02/2012	08/01/2013
Bilog Antenna	Schwarzbeck	VULB9163	9163-467	08/02/2012	08/01/2013

### 6.3. Test SET-UP

#### (a) Radiated Emission Test Set-Up, Frequency Below 30MHz



#### (b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



## 6.4. Radiated Measurement Result

### 6.4.1. Field Strength of Fundamental:

Operation Mode:	TX	Test Date:	October 18, 2012
Frequency Range:	9K~30MHz	Temperature:	22 °C
Test Result:	PASS	Humidity :	55 %
Measured Distance:	3m	Test By:	King

#### Sleep position (Pad)

Freq. (MHz)	Emission Level (dBuV)		Limit 3m (dBuV/m)		Margin(dB)	
	PK	AV	PK	AV	PK	AV
8.20	73.07	37.40	95.35	75.35	-22.28	-37.95

#### Stand up position (Pad)

Freq. (MHz)	Emission Level (dBuV)		Limit 3m (dBuV/m)		Margin(dB)	
	PK	AV	PK	AV	PK	AV
8.20	75.85	40.18	95.35	75.35	-19.50	-35.17

**Note:** (1) The field strength level was established by adding the meter reading of the EMI test receiver to the factors associated with antenna correction factor & cable loss. In addition, pulse correction factor (duty cycle) -35.67dB derived from clause 8.4 of this report was used to calculate the average level.

(2) Emission Level= Reading Level+ Probe Factor +Cable Loss

## 6.4.2.Emissions Outside the band:

## (a) 9KHz-30MHz

Operation Mode:	TX	Test Date:	October 18, 2012
Frequency Range:	9K~30MHz	Temperature:	22 °C
Test Result:	PASS	Humidity :	55 %
Measured Distance:	3m	Test By:	King

## Sleep position (Pad)

Freq. (MHz)	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
16.400	39.4	69.54	-30.14	QP
24.600	35.3	69.54	-34.24	QP

## Stand up position (Pad)

Freq. (MHz)	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
16.400	41.3	69.54	-28.24	QP
24.600	33.8	69.54	-35.74	QP

**Note:** (1) All Readings are QP Value.

(2) Emission Level= Reading Level+Probe Factor +Cable Loss

## (b) 30MHz-1000MHz

Operation Mode:	TX	Test Date :	October 11, 2012
Frequency Range:	30M~1000MHz	Temperature :	22 °C
Test Result:	PASS	Humidity :	55 %
Measured Distance:	3m	Test By:	Iris

## Sleep position (Pad)

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
32.863	V	34.90	40.00	-5.10	QP
49.186	V	30.20	40.00	-9.80	QP
98.142	V	30.20	43.50	-13.30	QP
163.755	V	28.40	43.50	-15.10	QP
185.788	V	36.30	43.50	-7.20	QP
311.086	V	35.00	46.00	-11.00	QP
180.016	H	36.70	43.50	-6.80	QP
184.489	H	38.10	43.50	-5.40	QP
188.412	H	38.70	43.50	-4.80	QP
196.672	H	37.50	43.50	-6.00	QP
311.086	H	41.70	46.00	-4.30	QP
327.887	H	42.00	46.00	-4.00	QP

## Stand up position (Pad)

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
32.696	V	33.60	40.00	-6.40	QP
98.095	V	35.20	43.50	-8.30	QP
147.403	V	36.30	43.50	-7.20	QP
164.330	V	35.60	43.50	-7.90	QP
185.695	V	37.30	43.50	-6.20	QP
310.872	V	36.50	46.00	-9.50	QP
327.887	V	37.50	46.00	-8.50	QP
163.755	H	39.00	43.50	-4.50	QP
184.254	H	39.90	43.50	-3.60	QP
188.365	H	39.20	43.50	-4.30	QP
229.293	H	40.50	46.00	-5.50	QP
261.975	H	40.90	46.00	-5.10	QP
295.146	H	40.80	46.00	-5.20	QP
310.953	H	41.90	46.00	-4.10	QP
327.667	H	41.50	46.00	-4.50	QP

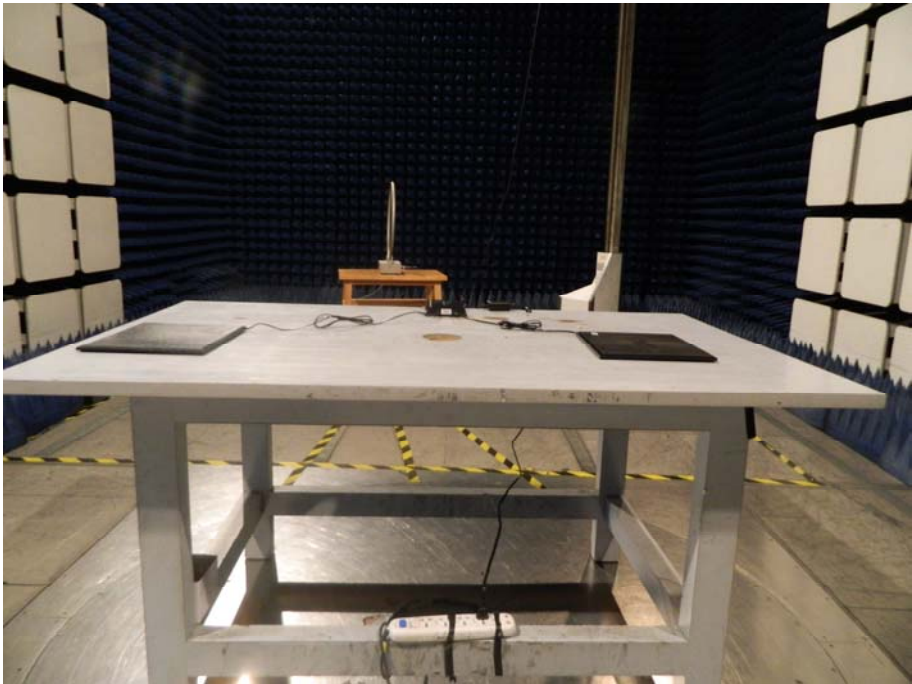
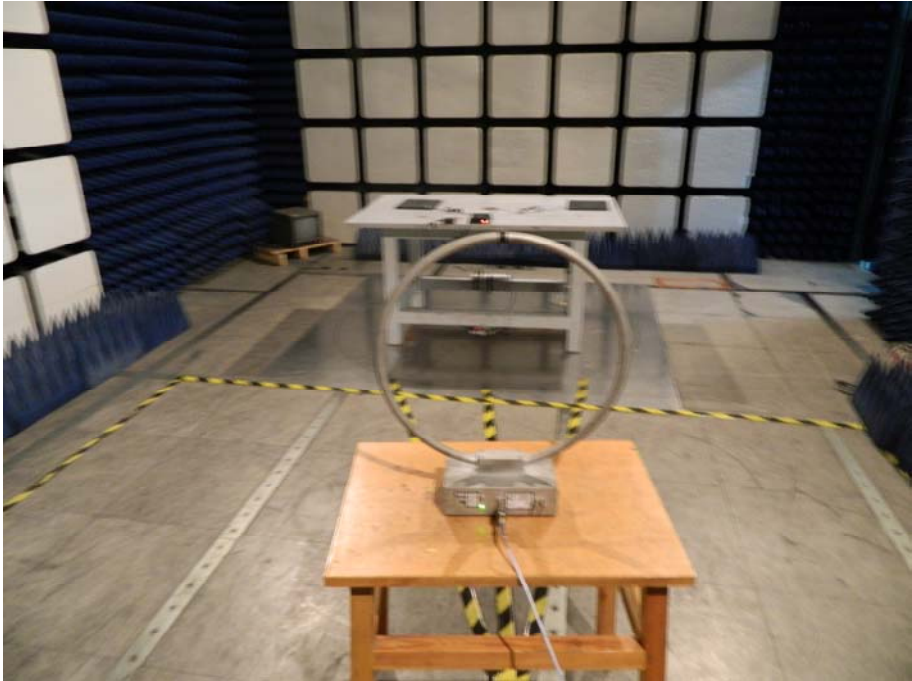
**Note:** (1) All Readings are QP Value.

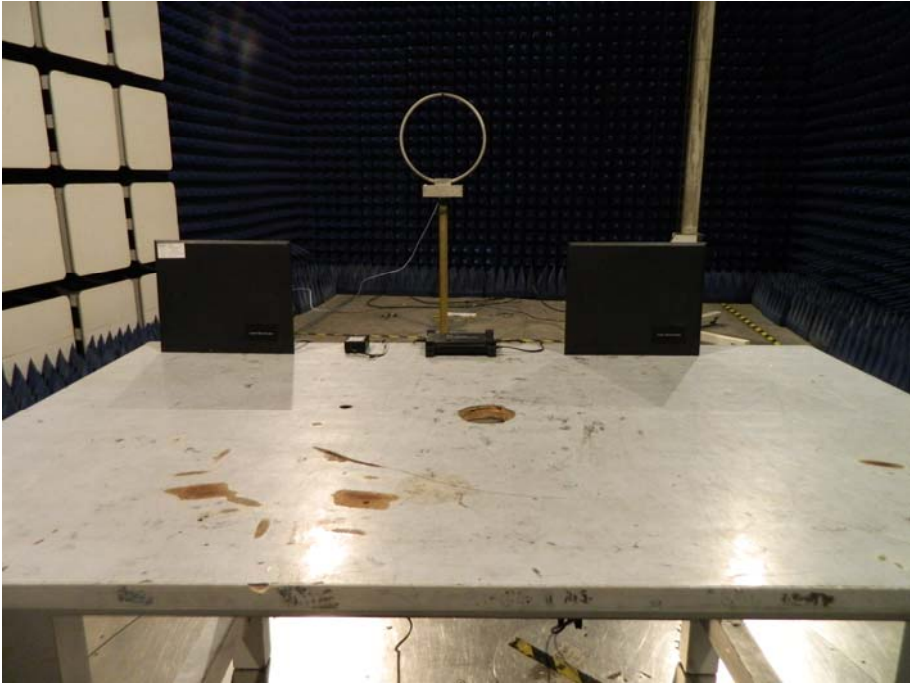
(2) Emission Level= Reading Level+Probe Factor +Cable Loss



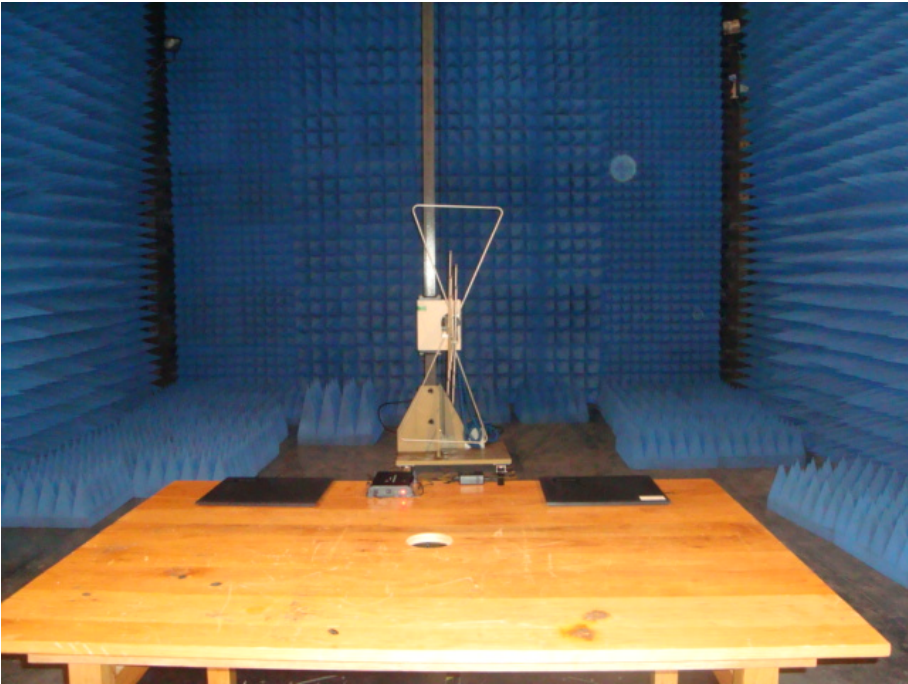
6.5.Radiated Measurement Photos:

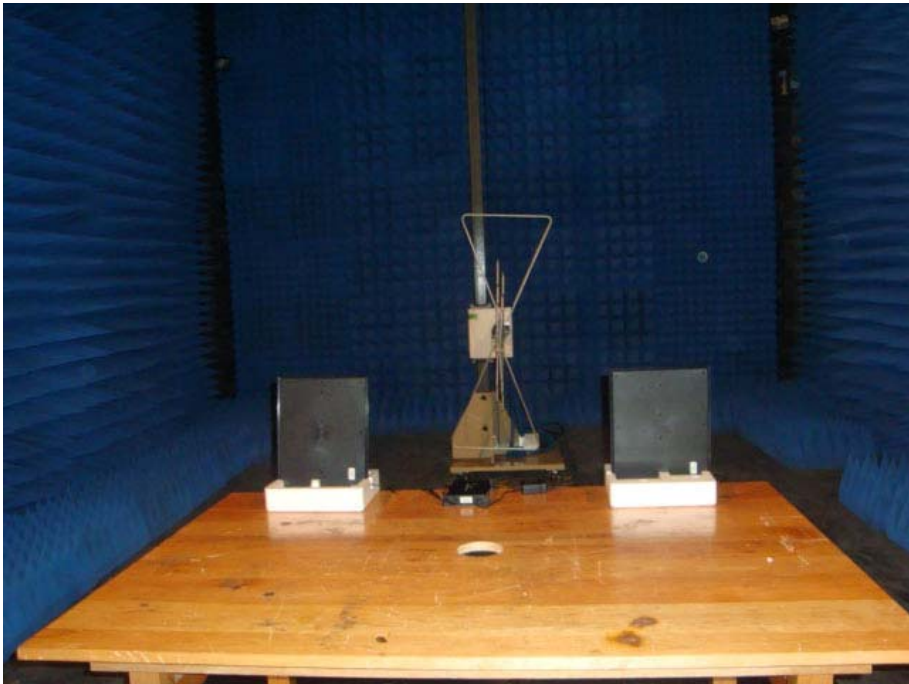
9K~30MHz:





**30M~1000MHz:**





## 7. EMISSION BANDWIDTH

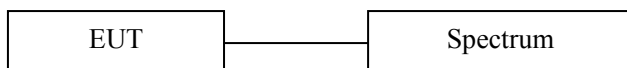
### 7.1.Measurement Procedure

- a. The EUT was placed on a turn table which is 0.8m above ground plane.
- b. Set EUT as normal operation
- c. Set SPA Center Frequency = fundamental frequency, RBW=10KHz, VBW= 30KHz
- d. Set SPA Max hold. Mark peak.

### 7.2.Measurement Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	ESCI	101107	08/02/2012	08/01/2013

### 7.3.Test Setup



### 7.4.Test Results

Operation Mode:	TX	Test Date:	October 11, 2012
Temperature:	22 °C	Humidity :	55 %
Test specification:	FCC Part 15 Section 15.223(a)	Test By:	Iris
6dB Bandwidth:	480KHz		

### 6dB Bandwidth Test Date



## 8. DUTY CYCLE

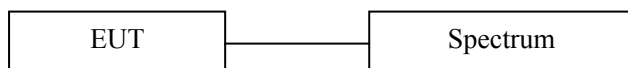
### 8.1.Measurement Procedure

- a. The EUT was placed on a turn table which is 0.8m above ground plane.
- b. Set EUT as normal operation
- c. Set SPA Center Frequency = fundamental frequency, RBW=10KHz, VBW= 30KHz
- d. Set SPA Max hold. Mark peak.

### 8.2.Measurement Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	ESCI	101107	08/02/2012	08/01/2013

### 8.3.Test Setup



### 8.4.Test Results

The duty cycle was determined by the following equation:

$$\text{Duty Cycle (\%)} = \frac{\text{Total on interval in a complete pulse train}}{\text{Length of a complete pulse train}} * 100\%$$

To calculate the actual field intensity, the duty cycle correction factor in decibel is needed for later use and be obtained from following conversion:

$$\text{Duty Cycle Correction Factor (dB)} = 20 * \text{Log (Duty Cycle)}$$

$$\text{Total on interval in a complete pulse train} = 640\text{us} + 200\text{us} * 2 + 180\text{us} * 2 + 280\text{us} = 1.68\text{ms}$$

$$\text{Length of a complete pulse train} = 102\text{ms}$$

$$\text{Duty Cycle (\%)} = 1.68 \text{ ms} / 102 \text{ ms} * 100\% = 1.647\%$$

$$\text{Duty Cycle Correction Factor (dB)} = 20 * \text{Log (1.647\%)} = -35.67$$

### Duty Cycle Test Data

