



卓時檢測  
TIMEWAY TESTING LABORATORY



ISO/IEC17025 Accredited Lab.

Report No:

FCC 1004227-01

File reference No:

2010-06-08

Applicant:

XINWEI ELECTRONIC CO.LTD QUANZHOU

Product:

Transceiver

Model No:

nf-173

Trademark:

NanFone

Test Standards:

FCC Part 90

Test result:

It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4 and FCC Part 90, regulations for the evaluation of electromagnetic compatibility

Approved By

*Jack Chung*

Jack Chung  
Manager

Dated:

Jun 01, 2010

**Results appearing herein relate only to the sample tested**

**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

**SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD**

5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District,  
Shenzhen,CHINA.

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Fax (755) 83442996



### **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

#### **CNAL-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

#### **FCC-Registration No.: 899988**

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 899988.

#### **IC- Registration No.: IC5205A-01**

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-01.

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Test Report Conclusion  
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## 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD  
Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District,  
Shenzhen,CHINA.  
Telephone: (755) 83448688  
Fax: (755) 83442996  
Site on File with the Federal Communications Commission – United States  
Registration Number: 899988  
For 3m & 10 m OATS  
Site Listed with Industry Canada of Ottawa, Canada  
Registration Number: IC: 5205A-01  
For 3m & 10 m OATS

### 1.2 Applicant Details

Applicant: XINWEI ELECTRONIC CO.LTD QUANZHOU  
Address: WAN AN TANG XI INDUSTRIAL AREA QUANZHOU FUJIAN CHINA  
Telephone: 0595 22656123  
Fax: 0595 22885157

### 1.3 Description of EUT

Product: Transceiver  
Manufacturer: XINWEI ELECTRONIC CO.LTD QUANZHOU  
Brand Name: NanFone  
Model Number: nf-173  
Power Source Adapter Model: HU10180-6022A Input: 100-240V~0.18A 60/50Hz  
Output: DC5V 500mA  
Type of Modulation FM  
Frequency range 446.00625MHz-464.37500MHz  
Channel Spacing 12.5kHz  
Frequency Selection By operation  
Channel Number 13  
Antenna: Whip antenna with the length of 80mm and the antenna gain is 2.15dBi  
Emission Designor 11K0F3E

### 1.4 Submitted Sample: 2 Sample

### 1.5 Test Duration

2010-05-05-2010-06-01

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1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

*Terry Tang*

The sample tested by \_\_\_\_\_

Print Name: Terry Tang

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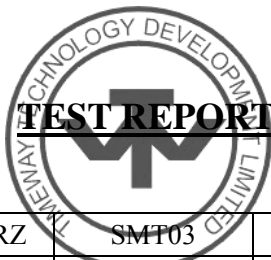


2.0 Test Equipments					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2009-12-05	2010-12-04
Absorbing Clamp	ROHDE&SCHWARZ	MDS-21	100126	2009-12-05	2010-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2009-12-05	2010-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2009-12-05	2010-12-04
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2009-12-05	2010-12-04
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2010-03-29	2011-03-28
4-WIRE ISN	ROHDE&SCHWARZ	ENY 41	830663/044	2010-02-17	2011-02-16
GG ENY22 Double 2-Wire ISN	ROHDE&SCHWARZ	ENY22	83066/016	2010-02-17	2011-02-16
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2010-02-17	2011-02-16
System Controller	CT	SC100	-	2010-02-17	2011-02-16
Printer	EPSON	PHOTO EX3	CFNH234850	2010-02-17	2011-02-16
FM-AM Signal Generator	JUNGJIN	SG-150M	389911177	2010-02-17	2011-02-16
Color TV Pattern Generator	PHILIPS	PM5418	LO621747	2010-02-17	2011-02-16
Computer	IBM	8434	1S8434KCE99 BLXLO*	-	-
Oscillator	KENWOOD	AG-203D	3070002	2010-02-17	2011-02-16
Spectrum Analyzer	HAMEG	HM5012	-	-	-
Power Supply	LW	APS1502	-	-	-
5K VA AC Power Source	California Instruments	5001iX	56060	2010-02-17	2011-02-16
CDN	EM TEST	CDN M2/M3	-	2010-02-17	2011-02-16
Attenuation	EM TEST	ATT6/75	-	2010-02-17	2011-02-16
Resistance	EM TEST	R100	-	2010-02-17	2011-02-16
Electromagnetic Injection Clamp	LITTHI	EM101	35708	2010-02-17	2011-02-16
Inductive Components	EM TEST	MC2630	-	2010-02-17	2011-02-16
Antenna	EM TEST	MS100	-	2010-02-17	2011-02-16

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Signal Generator	ROHDE&SCHWARZ	SMT03	100029	2010-02-17	2011-02-16
Power Amplifier	AR	150W1000	300999	2010-02-17	2011-02-16
Field probe	Holaday	HI-6005	105152	2010-02-17	2011-02-16
Bilog Antenna	Chase	CBL6111C	2576	2010-02-17	2011-02-16
Loop Antenna	EMCO	6502	00042960	2010-02-17	2011-02-16
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2010-02-17	2011-02-16
Modulation Analyzer	HP	8901B	3104A03367	2009-06-16	2010-06-15
3m OATS	--	--	N/A	2010-02-17	2011-02-16

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### 3.0 Technical Details

#### 3.1 Summary of test results

The EUT has been tested according to the following specifications:			
	Standard	Test Type	Result
	FCC Part 15.207	Conducted Emission	Compliant
	FCC Part 90.205	Maximum Transmitter Power	Compliant
	FCC Part 90.207	Modulation Characteristic	Compliant
	FCC Part 90.209	Occupied Bandwidth	Compliant
	FCC Part 90.210	Emission Mask	Compliant
	FCC Part 90.213	Frequency Tolerance	Compliant
	FCC Part 90.214	Transient Frequency Behavior	Compliant

#### 3.2 Test Standards

**FCC Part 90**

#### 4.0 EUT Modification

**No modification by Shenzhen Timeway Technology Consulting Co.,Ltd**

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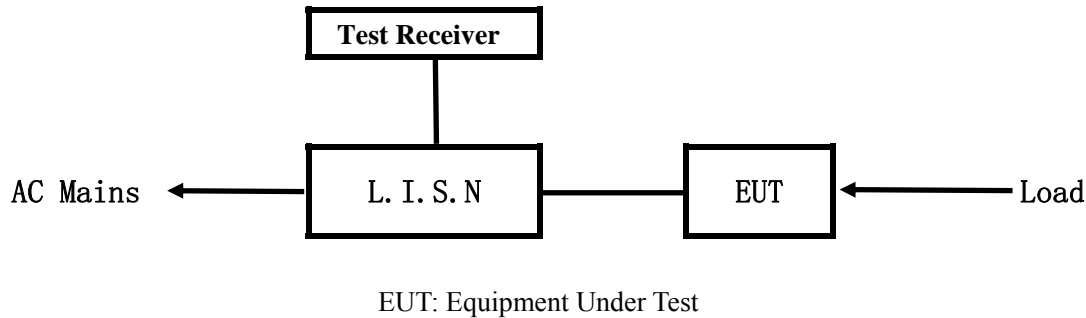
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## 5. Power Line Conducted Emission Test

### 5.1 Schematics of the test

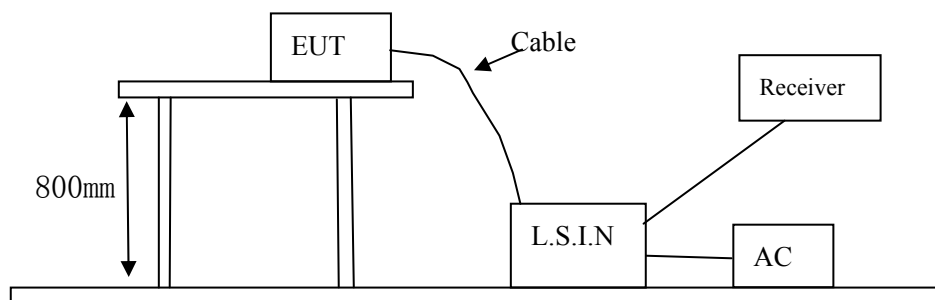


### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



### 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

One channels are provided to the EUT

#### A. EUT

Device	Manufacturer	Model	FCC ID
Transceiver	Xinwei Electronic Co.Ltd Quanzhou	Nf-173	UUPNF173

#### B. Internal Device

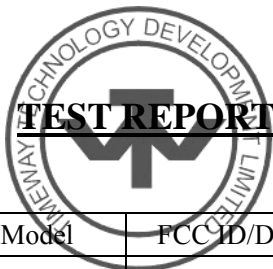
Device	Manufacturer	Model	FCC ID/DOC
N/A			

#### C. Peripherals

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Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

#### 5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

#### 5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency(MHz)	Class A Limits (dB $\mu$ V)		Class B Limits (dB $\mu$ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	73.0	60.0	56.0	46.0
5.00 ~ 30.00	73.0	60.0	60.0	50.0

- Notes:
1. \*Decreasing linearly with logarithm of frequency.
  2. The tighter limit shall apply at the transition frequencies

#### 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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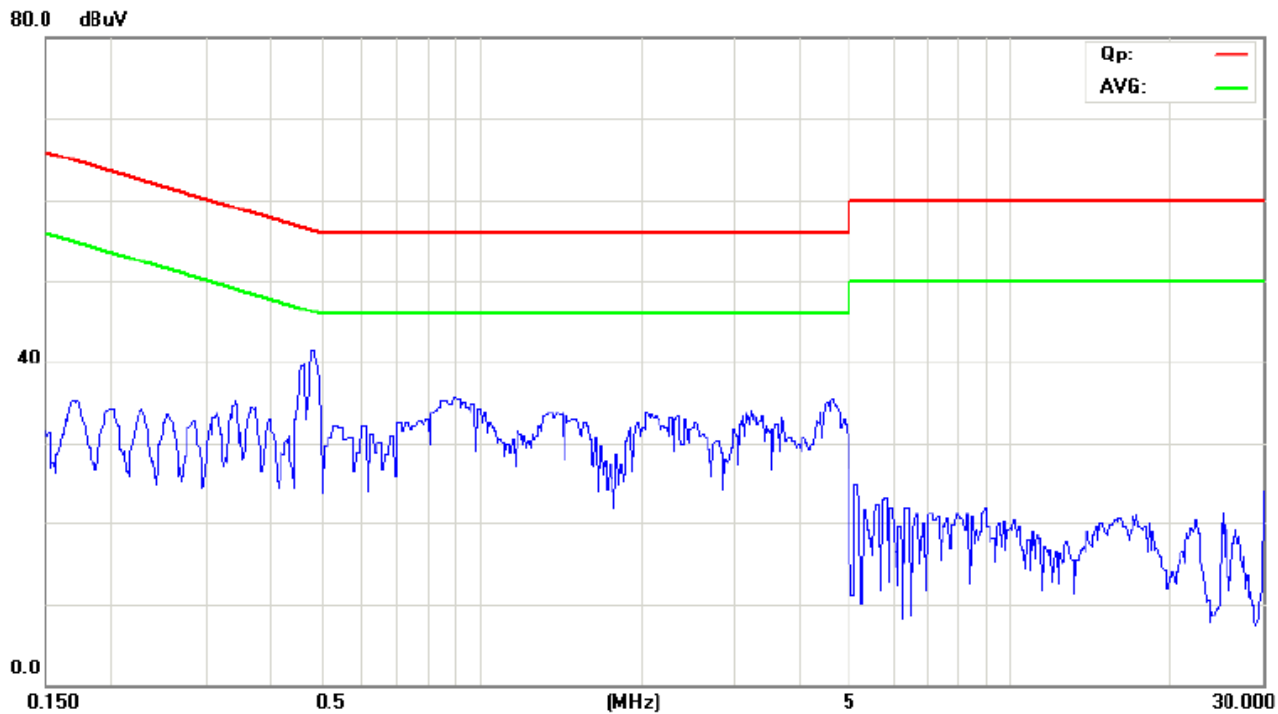


**A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)**

EUT set Condition: Charging

**Results: Pass**

Please refer to following diagram for individual



Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Line		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.4807	34.59	27.38	--	--	56.33	46.33

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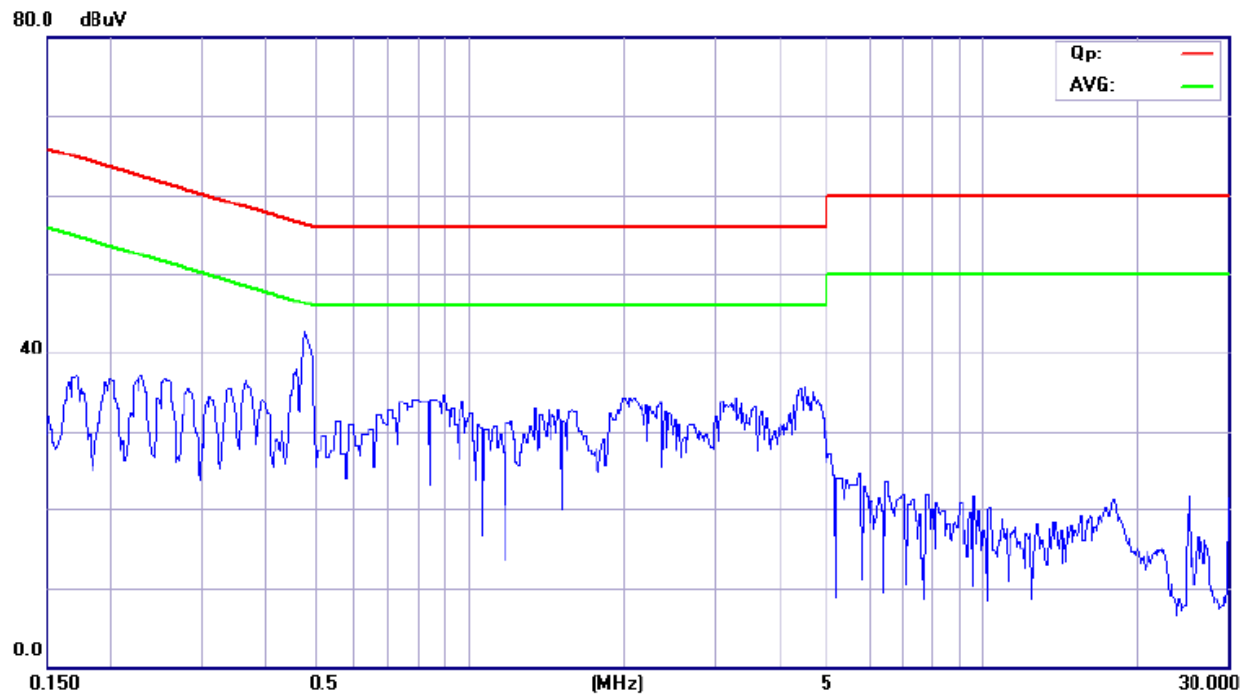


B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Charging

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.4746	--	--	36.70	28.46	56.43	46.43

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## 6. Frequency Tolerance

### 6.1 Applicable standard

In the 421–512 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm.

Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.

### 6.2 Measurement Procedure

#### 6.2.1 Frequency stability versus environmental temperature

1. Setup the configuration per figure 1 for frequencies measurement inside an environment chamber, Install new battery in the EUT.
2. Turn on EUT and set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1KHz and Video Resolution Bandwidth to 1KHz and Frequency Span to 50KHz. Record this frequency as reference frequency.
3. Set the temperature of chamber to 60°C. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10°C decreased per stage until the lowest temperature -30°C is measured, record all measured frequencies on each temperature step.

#### 6.2.2 Frequency stability versus input voltage

1. Setup the configuration per figure 1 for frequencies measured at temperature if it is within 15°C to 25°C. Otherwise, an environment chamber set for a temperature of 20°C shall be used. The EUT shall be powered by DC 3.7-4.2 V
2. Set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1 KHz and Video Resolution Bandwidth to 1KHz. Record this frequency as reference frequency.
3. Supply the EUT primary voltage at the operating end point which is specified by manufacturer and record the frequency.

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### 6.3 TEST SETUP BLOCK DIAGRAM

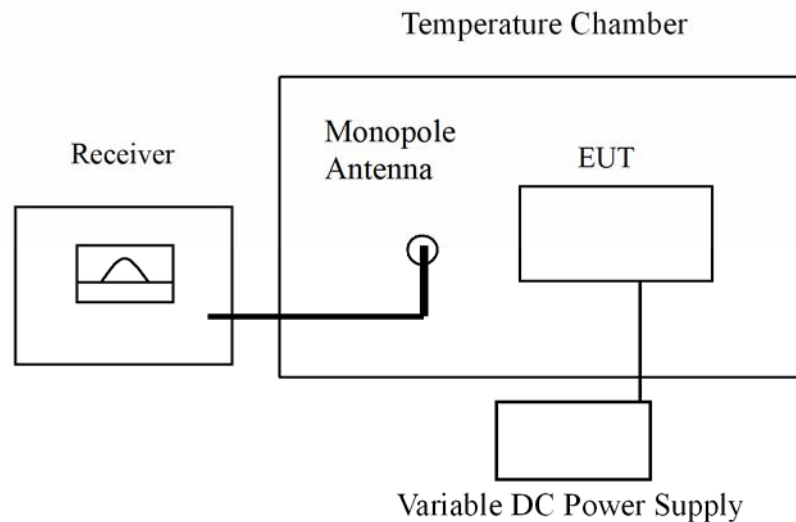


Figure 1

### 6.5 TEST RESULT

(1) Frequency stability versus input voltage (battery operation end point voltage is 3.5V)

Channel	Power Supplied (Vdc)	Frequency Measured (MHz)	Frequency Deviation (ppm)	Nominal Frequency	Limit(ppm)
CH1	3.5V	446.00616	0.20	446.00625MHz	2.5
CH10	3.5V	463.97455	0.97	463.97500MHz	2.5
CH13	3.5V	464.37510	0.22	464.37500MHz	2.5

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(2)Frequency stability versus ambient temperature

**Test Results****CH13**

Environment Temperature(°C)	Power Supplied (Vdc)	Frequency Measured (MHz)	Frequency Deviation (ppm)	Nominal Frequency	Limit(ppm)
50	4.2	464.37517	0.37	464.37500MHz	2.5
40	4.2	464.37521	0.45	464.37500MHz	2.5
30	4.2	464.37513	0.28	464.37500MHz	2.5
20	4.2	464.37512	0.28	464.37500MHz	2.5
10	4.2	464.37528	0.60	464.37500MHz	2.5
0	4.2	464.37530	0.65	464.37500MHz	2.5
-10	4.2	464.37542	0.90	464.37500MHz	2.5
-20	4.2	464.37524	0.52	464.37500MHz	2.5
-30	4.2	464.37531	0.67	464.37500MHz	2.5

**CH9**

Environment Temperature(°C)	Power Supplied (Vdc)	Frequency Measured (MHz)	Frequency Error (ppm)	Nominal Frequency	Limit(ppm)
50	4.2	463.97452	1.03	463.97500MHz	2.5
40	4.2	463.97464	0.78	463.97500MHz	2.5
30	4.2	463.97472	0.60	463.97500MHz	2.5
20	4.2	463.97448	1.12	463.97500MHz	2.5
10	4.2	463.97482	0.39	463.97500MHz	2.5
0	4.2	463.97440	1.30	463.97500MHz	2.5
-10	4.2	463.97477	0.50	463.97500MHz	2.5
-20	4.2	463.97476	0.52	463.97500MHz	2.5
-30	4.2	463.97468	0.69	463.97500MHz	2.5

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Environment Temperature(°C)	Power Supplied (Vdc)	Frequency Measured (MHz)	Frequency Error (ppm)	Nominal Frequency	Limit(ppm)
50	4.2	446.00616	0.20	446.00625MHz	2.5
40	4.2	446.00604	0.47	446.00625MHz	2.5
30	4.2	446.00608	0.38	446.00625MHz	2.5
20	4.2	446.00642	0.38	446.00625MHz	2.5
10	4.2	446.00633	0.18	446.00625MHz	2.5
0	4.2	446.00649	0.54	446.00625MHz	2.5
-10	4.2	446.00588	0.83	446.00625MHz	2.5
-20	4.2	446.00595	0.67	446.00625MHz	2.5
-30	4.2	446.00611	0.31	446.00625MHz	2.5

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## 7. EMISSION BANDWIDTH and Mask

### 7.1 PROVISIONS APPLICABLE

Emission Mask D—12.5 kHz channel bandwidth equipment. For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

- (1) On any frequency from the center of the authorized bandwidth  $f_0$  to 5.625 kHz removed from  $f_0$ : Zero dB.
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least  $7.27(f_d - 2.88 \text{ kHz})$  dB.
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 12.5 kHz: At least  $50 + 10 \log(P)$  dB or 70 dB, whichever is the lesser attenuation.
- (4) The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide (usually two to three times the channel bandwidth) to capture the true peak emission of the equipment under test. In order to show compliance with the emissions mask up to and including 50 kHz removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100 Hz with the measuring instrument in a peak hold mode. A sufficient number of sweeps must be measured to insure that the emission profile is developed. If video filtering is used, its bandwidth must not be less than the instrument resolution bandwidth. For emissions beyond 50 kHz from the edge of the authorized bandwidth, see paragraph (m) of this section. If it can be shown that use of the above instrumentation settings do not accurately represent the true interference potential of the equipment under test, then an alternate procedure may be used provided prior Commission approval is obtained.

### 7.2 MEASUREMENT PROCEDURE

- 1). The EUT was placed on a turn table which is 0.8m above ground plane.
- 2). The EUT was modulated by 2.5 KHz Sine wave audio signal, The level of the audio signal employed is 16 dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 2.5 kHz
- 3). Set SPA Center Frequency = fundamental frequency, RBW=VBW= 300 Hz, Span =50 KHz.
- 4). Set SPA Max hold. Mark peak, -26 dB.

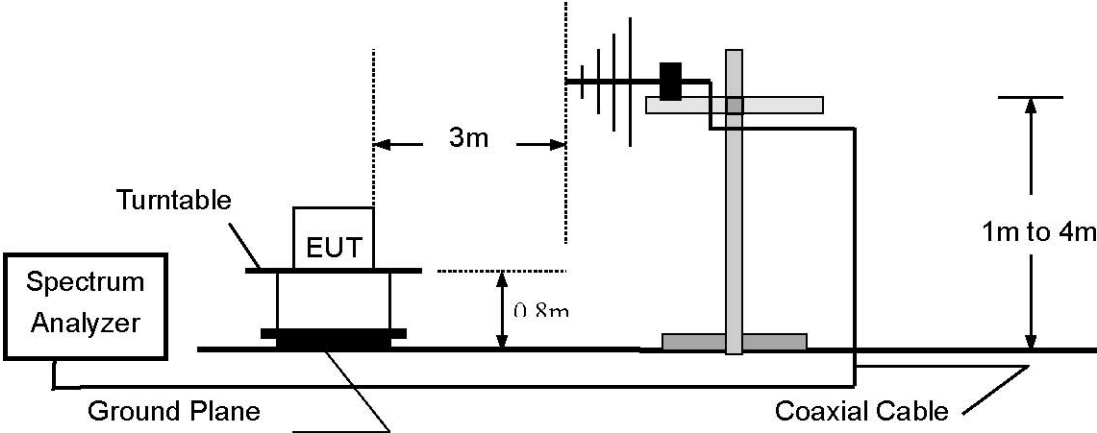
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7.3 Test Setup Block Diagram



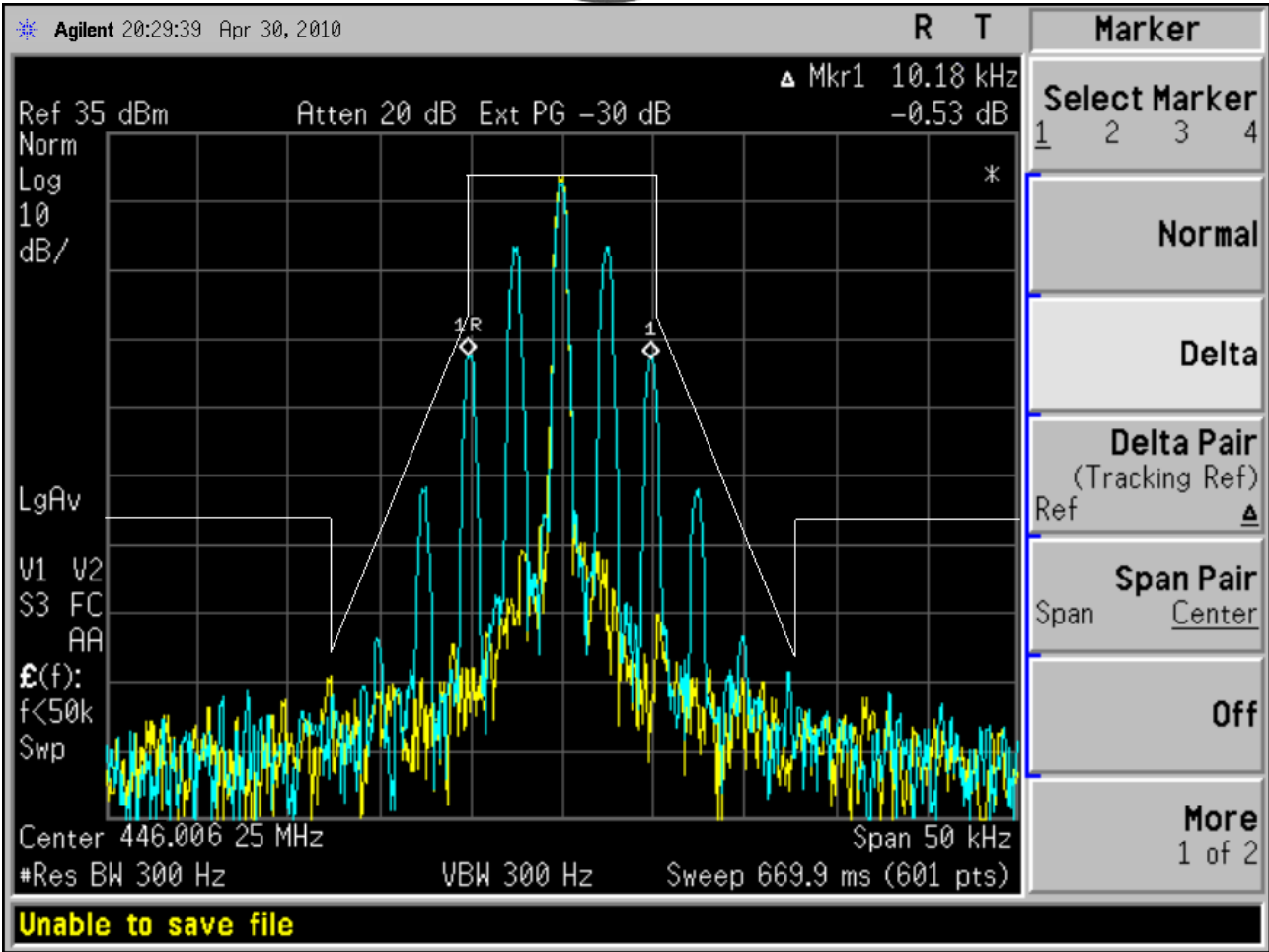
7.4 Measurement Result:

26 dB Bandwidth			
Operating Frequency	Test Data	Limits	Result
446.00625MHz (CH1)	10.18KHz	11.25 KHz	Pass

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7.5 Test Plots:



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## 8. UNWANTED RADIATION

### 8.1 PROVISIONS APPLICABLE

8.1.1 According to Section 90.210, the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with 12.5 KHz channel bandwidth:

- (1) On any frequency from the centre of the authorized bandwidth  $f_0$  to 5.625 KHz removed from  $f_0$ :  
Zero dB
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 5.625 KHz but no more than 12.5 KHz: At least  $7.27(f_d - 2.88 \text{ KHz})$  dB
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 12.5 kHz: At least  $50 + 10 \log(P)$  dB or 70 dB, whichever is the lesser attenuation.

### 8.2 MEASUREMENT PROCEDURE (Radiated Emissions)

- (1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
- (2). The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
- (3). The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- (4). The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- (5). The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
- (6). The transmitter shall then be rotated through  $360^\circ$  in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- (7). The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
- (8). The maximum signal level detected by the measuring receiver shall be noted.
- (9). The measurement shall be repeated with the test antenna set to horizontal polarization.
- (10). Replace the antenna with a proper Antenna (substitution antenna).
- (11). The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
- (12). The substitution antenna shall be connected to a calibrated signal generator.
- (13). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- (14). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

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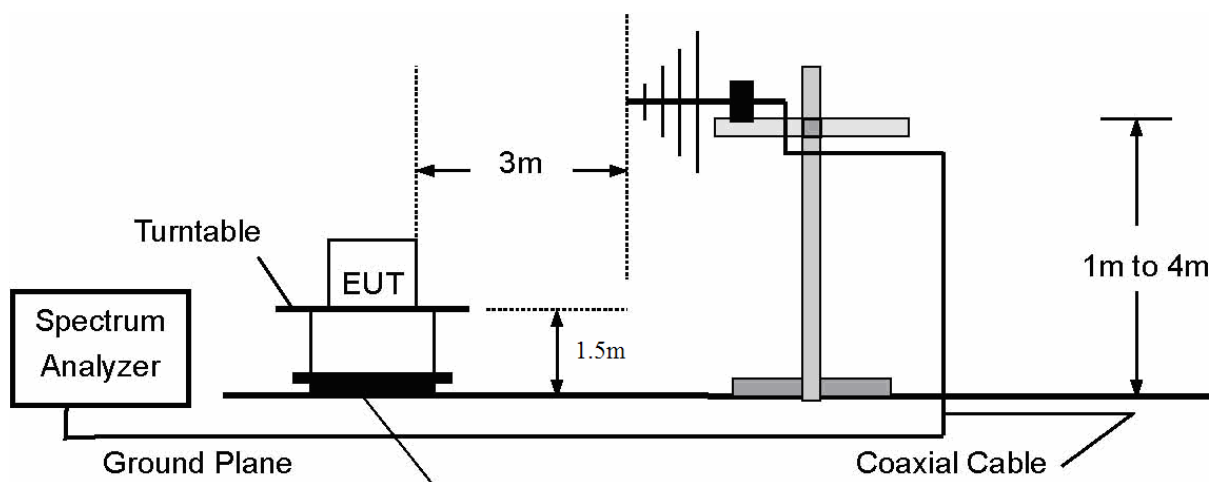
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- (15). The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
- (16). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
- (17). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

### 8.3 Test setup Block Diagram



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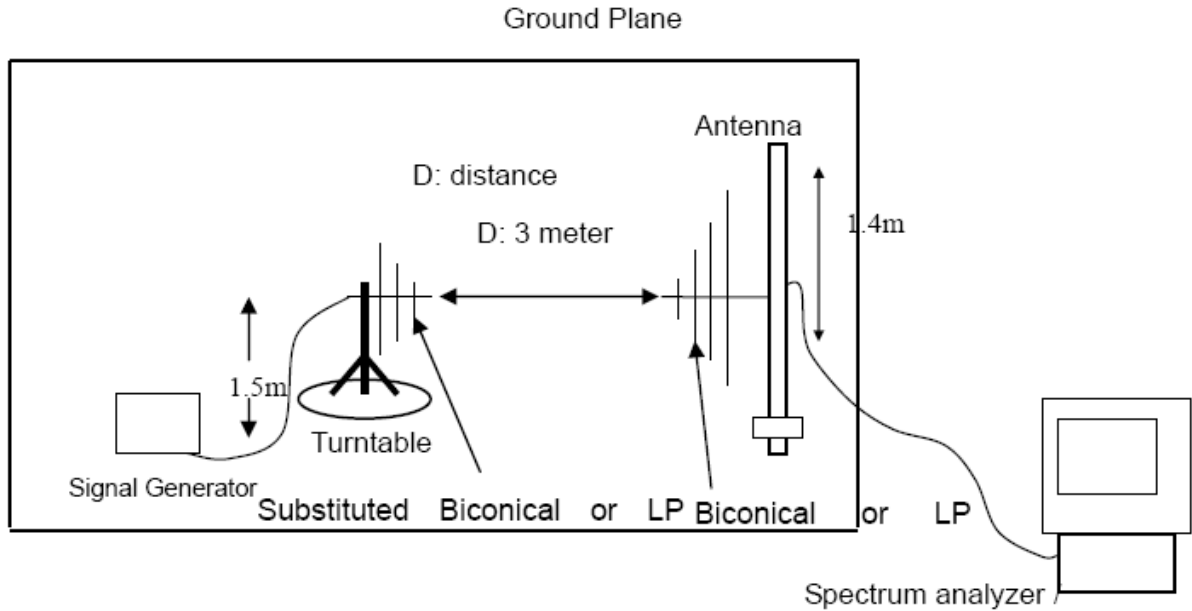
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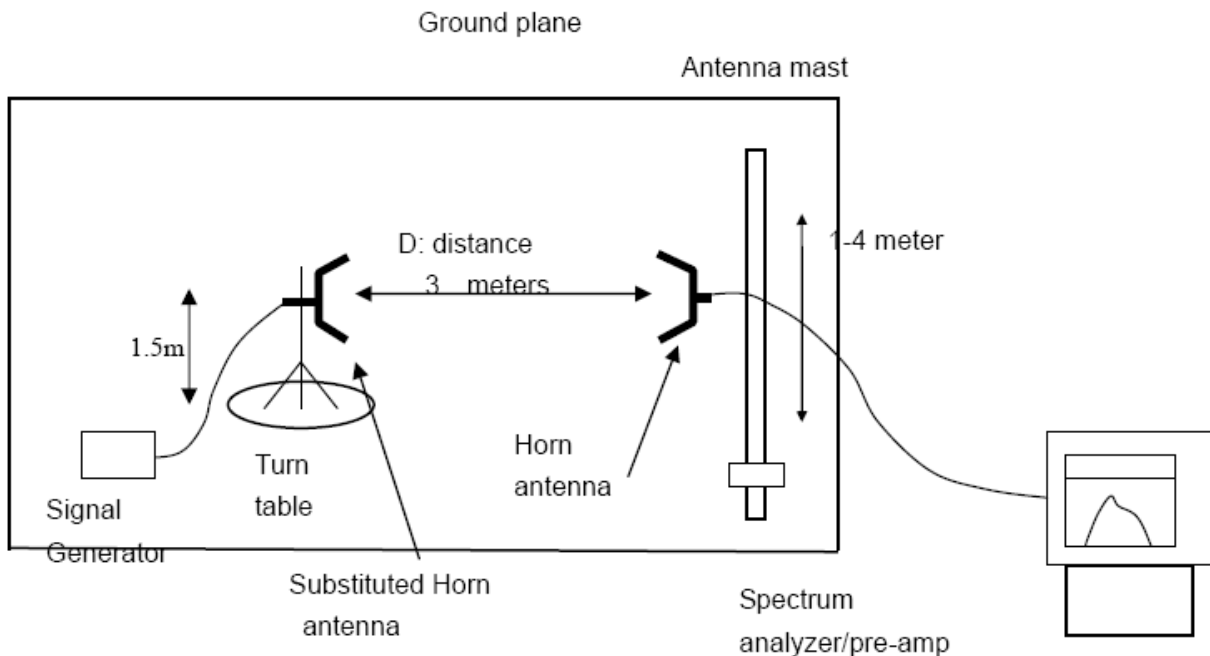


#### 8.4 Sunsituation Method: (Radiated Emissions)

##### Radiated Below 1GHz



##### Radiated Above 1 GHz



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## 8.5 MEASUREMENT RESULTS:

Calculation: Limit (dBm)= EL-50-10log10 (TP)

Notes: EL is the emission level of the Output Power expressed in dBm, in this application, the EL is 35.09 dBm

Limit (dBm)=35.09-10log10 (TP) = -20

### CH1

Frequency (MHz)	Antennal Polarity	Emission (dBm)	Limit (dBm)
433.20	Vertical	-46.98	-20
458.84	Vertical	-45.00	-20
892.04	Vertical	-34.90	-20
1338.06	Vertical	-36.28	-20
892.04	Horizontal	-36.60	-20
1338.06	Horizontal	-40.21	-20

### CH13

Frequency (MHz)	Antennal Polarity	Emission (dBm)	Limit (dBm)
451.56	Vertical	-48.44	-20
477.20	Vertical	-48.68	-20
928.76	Vertical	-38.20	-20
1393.18	Vertical	-41.29	-20
928.76	Horizontal	-40.37	-20
1393.18	Horizontal	-42.86	-20

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## 8.6 Conducted Emissions

### 8.6.1. Measurement Procedure

- 1). The eut antenna port connect to the spectrum analyzer through a attenuator.
- 2). Let the eut working in transmitter and used the spectrum to measure the conducted emission.
- 3). The output of the antenna shall be connected to the spectrum.

The setup of test receiver: Detector: Peak RBW: 120kHz for 30-1000MHz ,1MHz for above1GHz

VBW: 300kHz for 30-1000MHz 3MHz for above1GHz

### 8.6.2. Test Setup Block Diagram (block diagram of configuration)



### 8.6.3 Test Result

CH1

Frequency (MHz)	Emission (dBm)	Limit (dBm)
893.086	-51.77	-20
432.385	-46.47	-20
459.599	-46.92	-20

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## 9. Modulation Characteristics

### 9.1 PROVISIONS APPLICABLE

According to CFR 47 section 2.1047(a), for Voice Modulation Communication Equipment, the frequency response of the audio modulation circuit over a range of 100 to 5000Hz shall be measured.

### 9.2 MEASUREMENT METHOD

#### 9.2.1 Modulation Limit

- (1). Configure the EUT as shown in figure 1, adjust the audio input for 60% of rated system deviation at 1KHz using this level as a reference (0dB) and vary the input level from -20 to +20dB. Record the frequency deviation obtained as a function of the input level.
- (2). Repeat step 1 with input frequency changing to 300, 1000, 1500 and 3000Hz in sequence.

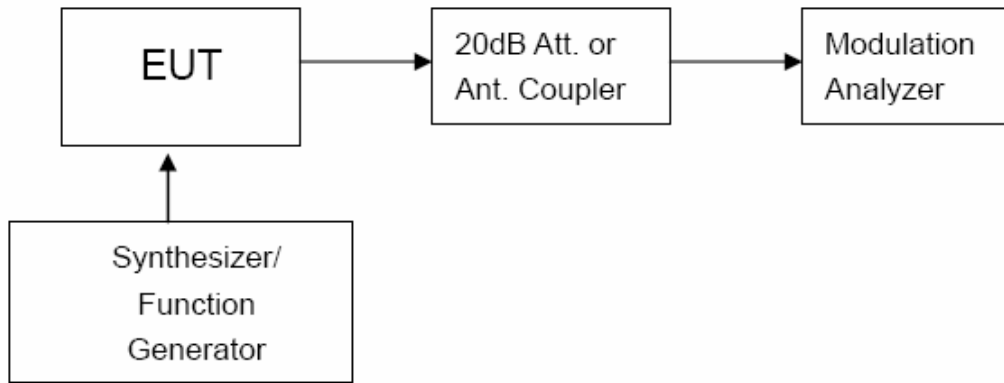
#### 9.2.2 Audio Frequency Response

- (1). The EUT and test equipment were set up as shown in figure 2.
- (2). Adjust the Modulation Analyzer for the following setting:
  - a) High-pass filter : off
  - b) Low-pass filter : 15 kHz
  - c) Detector : positive peak
  - d) Function : FM
- (3). The audio signal input was adjusted to obtain 20 % modulation at 1 kHz, and this point was taken as the 0 dB reference level.
- (4). With input levels held constant and below limiting at all frequencies, the audio signal generator was varied from 300 Hz to 5 kHz.
- (5). The response in dB relative to 1 kHz was then measured, using the Modulation Analyzer.

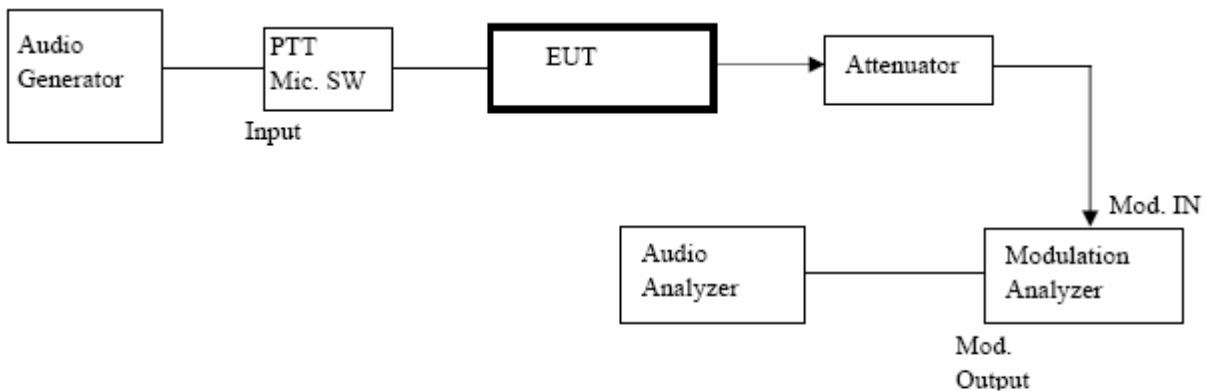
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**Figure 1: Modulation characteristic measurement configuration**



**Figure 2: Audio Frequency Response Measurement Configure**

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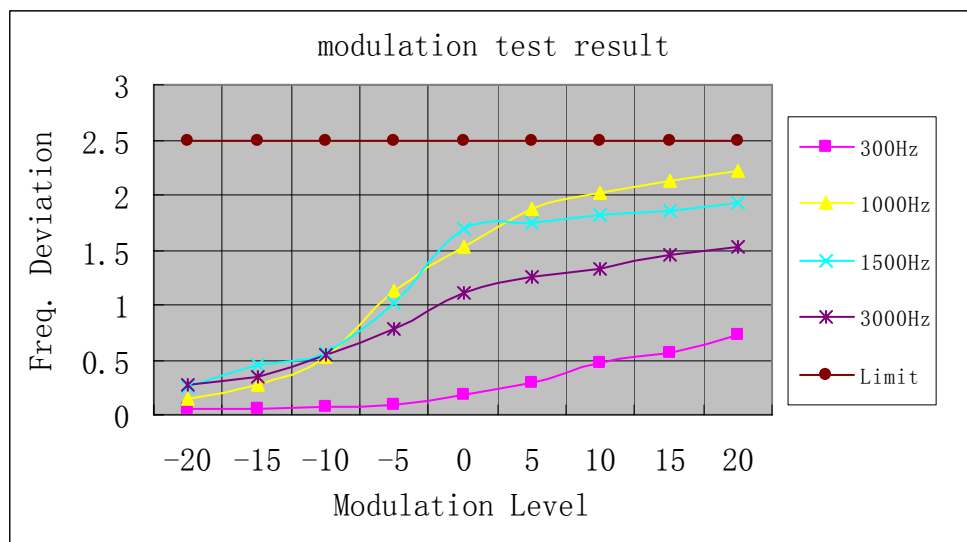


## 9.4 MEASUREMENT RESULT

### (a). Modulation Limit:

#### CH9

Modulation Level (dB)	Peak Freq. Deviation At 300 Hz	Peak Freq. Deviation At 1000 Hz	Peak Freq. Deviation At 1500 Hz	Peak Freq. Deviation At 3000 Hz
-20	0.05	0.15	0.25	0.28
-15	0.06	0.27	0.46	0.35
-10	0.07	0.53	0.56	0.55
-5	0.10	1.12	1.02	0.79
0	0.18	1.53	1.70	1.10
+5	0.30	1.88	1.75	1.25
+10	0.48	2.01	1.81	1.33
+15	0.56	2.12	1.86	1.46
+20	0.73	2.22	1.92	1.52



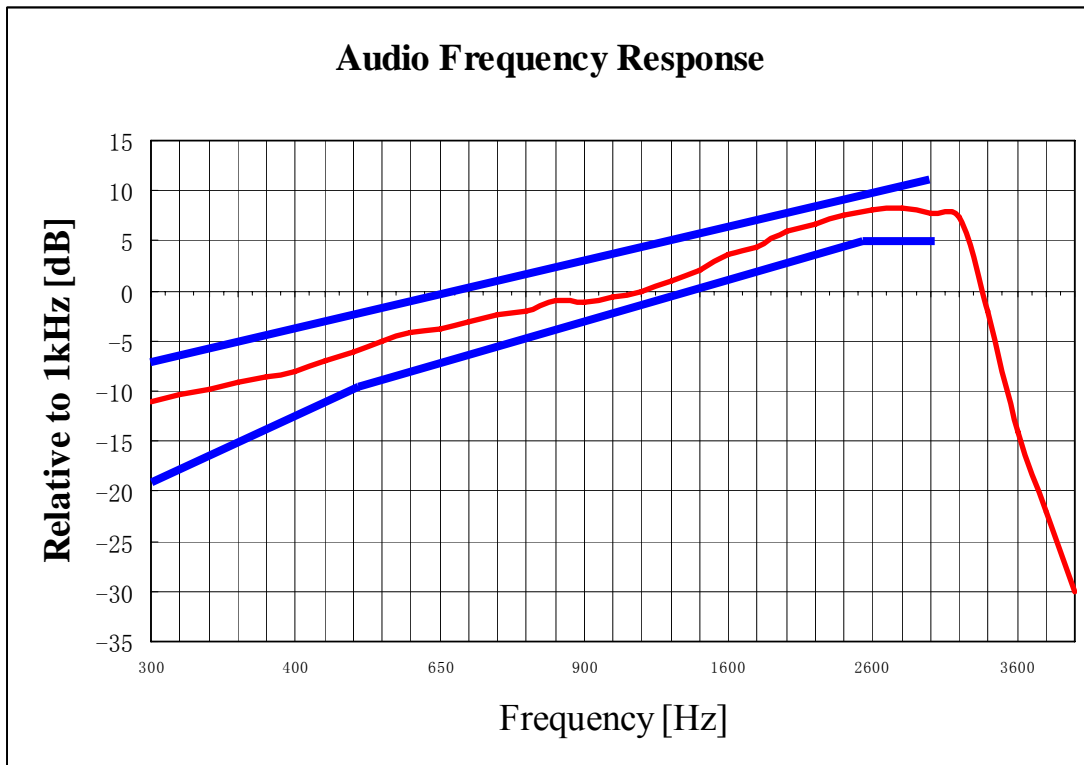
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**(b). Audio Frequency Response:**



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## 10. MAXIMUM TRANSMITTER POWER (CONDUCTED OUTPUT POWER)

### 10.1 PROVISIONS APPLICABLE

Per FCC §2.1046 and §90.205: Maximum ERP is dependent upon the station's antenna HAAT and required service area.

### 10.2 TEST PROCEDURE

The RF output of Two-way Radio was conducted to a spectrum analyzer through an appropriate attenuator.

Spectrum analyzer setting: RBW=10kHz, VBW=30kHz, PK detector

### 10.3 TEST RESULT

Calculation Formula:  $CP = R + A + L$

\* Note:

CP: The final Conducted Power

R : The reading value from spectrum analyzer

A : The attenuation value of the used attenuator

L : The loss of all connection cables

Conducted Power Measurement Results		
Channel Separation	Channel	Measurement Result (dBm)
12.5 KHz	CH1	32.40
	CH7	32.35
	CH13	32.94

Maximun ERP=32.94+antenna Gain=32.94+2.15=35.09dBm

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## 11. TRANSMITTER FREQUENCY BEHAVIOR

### 11.1 PROVISIONS APPLICABLE

Transmitters designed to operate in the 150–174 MHz and 421–512 MHz frequency bands must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

$t_3$  is the time period from the instant when the transmitter is turned off until  $t_{\text{off}}$ .

$t_{\text{off}}$  is the instant when the 1 kHz test signal starts to rise.

<sup>2</sup> During the time from the end of  $t_2$  to the beginning of  $t_3$ , the frequency difference must not exceed the limits specified in § 90.213.

Time intervals <sup>1,2</sup>	Maximum frequency difference <sup>3</sup>	All equipment	
		150 to 174 MHz	421 to 512 MHz

#### Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels

$t_1$ <sup>4</sup> .....	±25.0 kHz	5.0 ms	10.0 ms
$t_2$ .....	±12.5 kHz	20.0 ms	25.0 ms
$t_3$ <sup>4</sup> .....	±25.0 kHz	5.0 ms	10.0 ms

#### Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels

$t_1$ <sup>4</sup> .....	±12.5 kHz	5.0 ms	10.0 ms
$t_2$ .....	±6.25 kHz	20.0 ms	25.0 ms
$t_3$ <sup>4</sup> .....	±12.5 kHz	5.0 ms	10.0 ms

#### Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels

$t_1$ <sup>4</sup> .....	±6.25 kHz	5.0 ms	10.0 ms
$t_2$ .....	±3.125 kHz	20.0 ms	25.0 ms
$t_3$ <sup>4</sup> .....	±6.25 kHz	5.0 ms	10.0 ms

<sup>1</sup><sub>on</sub> is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.

$t_1$  is the time period immediately following  $t_{\text{on}}$ .

$t_2$  is the time period immediately following  $t_1$ .

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$t_3$  is the time period from the instant when the transmitter is turned off until  $t_{\text{off}}$ .

$t_{\text{off}}$  is the instant when the 1 kHz test signal starts to rise.

<sup>2</sup> During the time from the end of  $t_2$  to the beginning of  $t_3$ , the frequency difference must not exceed the limits specified in § 90.213.

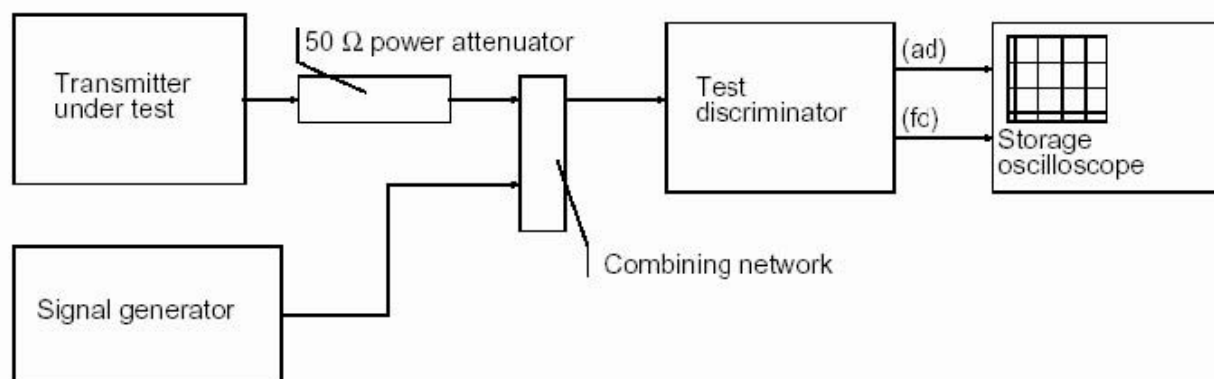
<sup>3</sup> Difference between the actual transmitter frequency and the assigned transmitter frequency.

<sup>4</sup> If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

## 11.2 Test Method

TIA/EIA-603 2.2.19

## 11.3 Test setup Block Diagram



## 11.4 MEASURE RESULT

The report refers only to the sample tested and does not apply to the bulk.

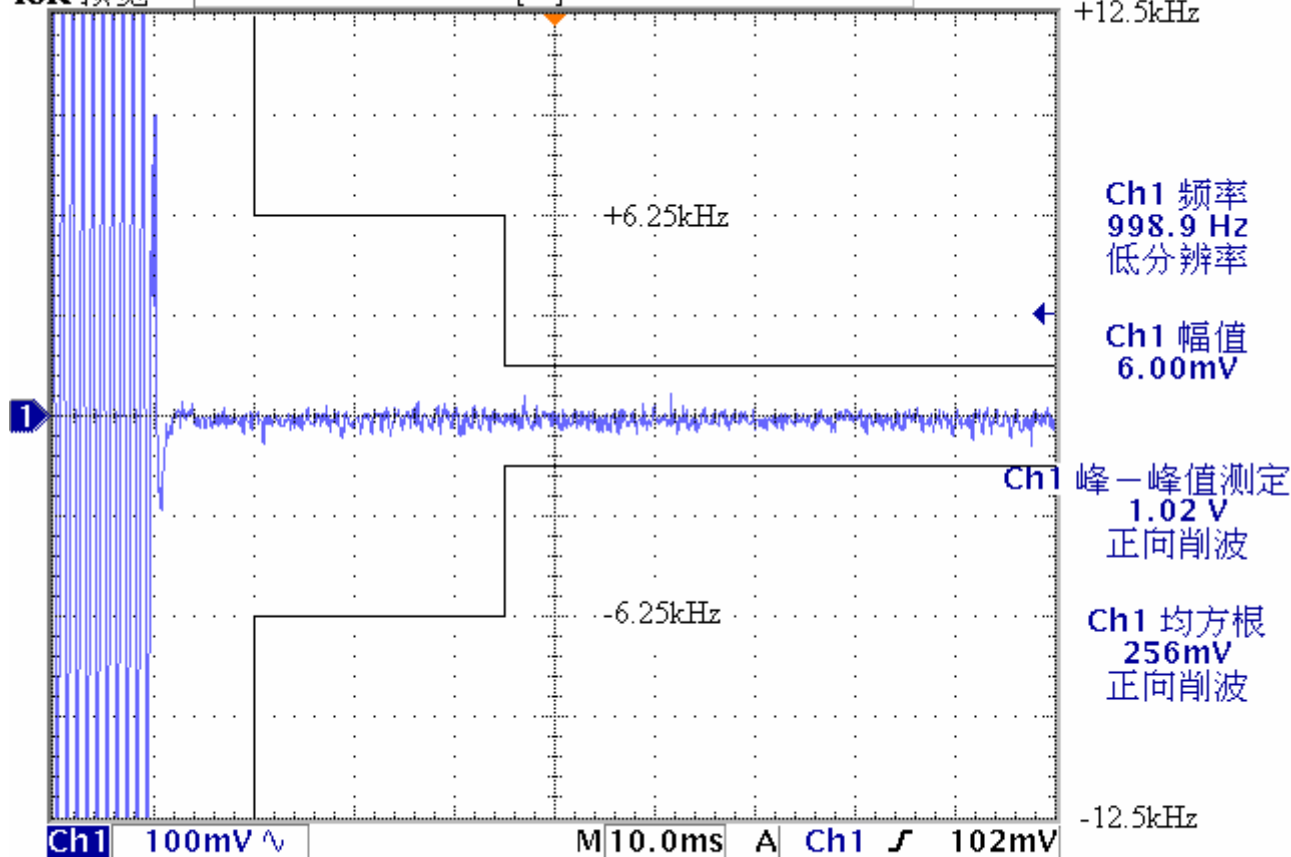
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Transmitter Frequency Behaviour @ 12.5 KHz Channel Separation--Off to On at 406-470MHz

Tek 预览

29 5月 2010  
16:05:10

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## 12. Radiated Emission on Receiving Mode

### 12.1 Provisions Applicable

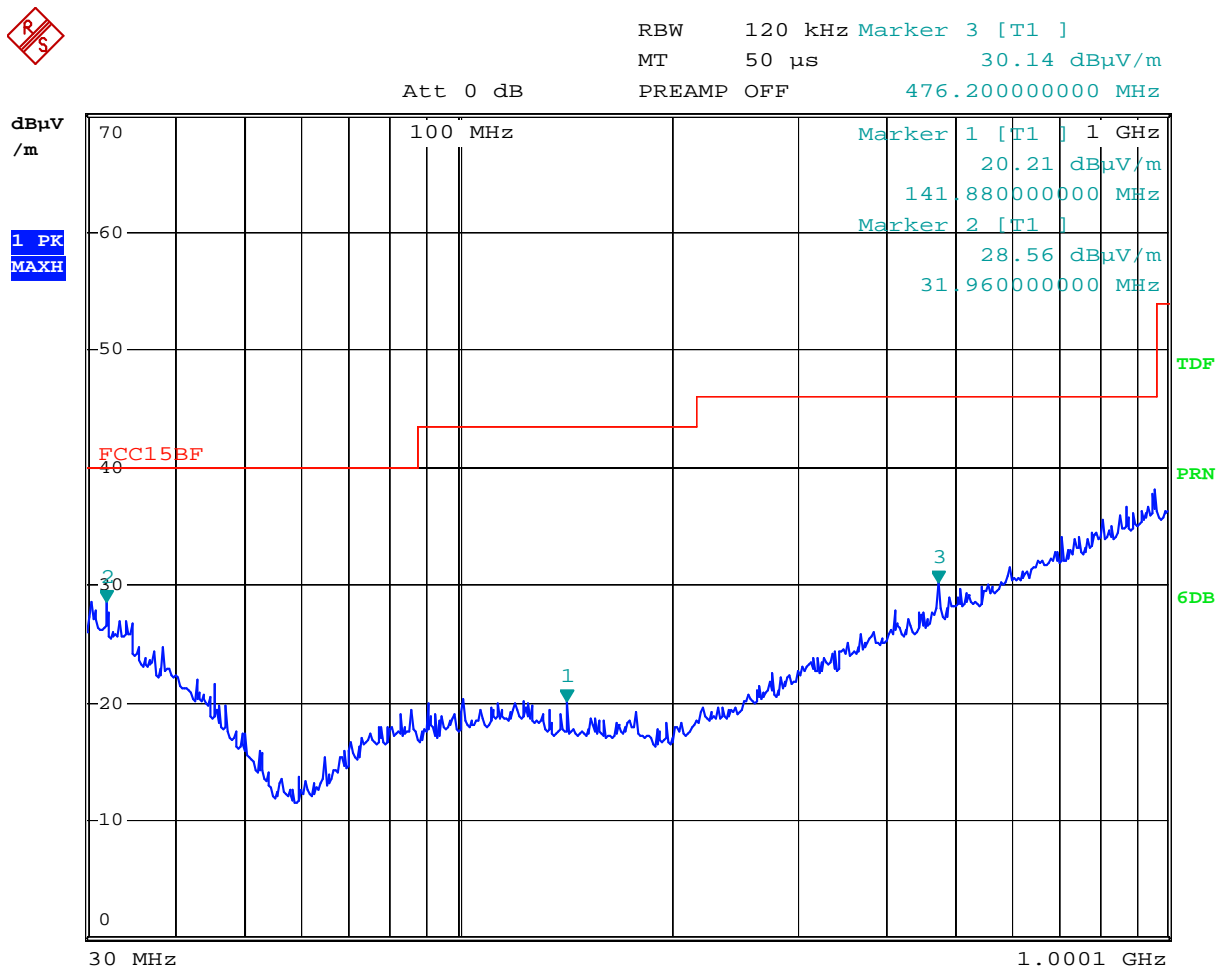
FCC Part 15 Subpart B Section 15.109

### 12.2 TEST METHOD

ANSI C 63.4: 2003

### 12.4 MEASURE RESULT (MEASURED AT 3M USING FCC PART15 B LIMITS)

#### RADIATED EMISSION TEST RESULTS – HORIZONTAL



Date: 4.MAY.2010 14:28:02

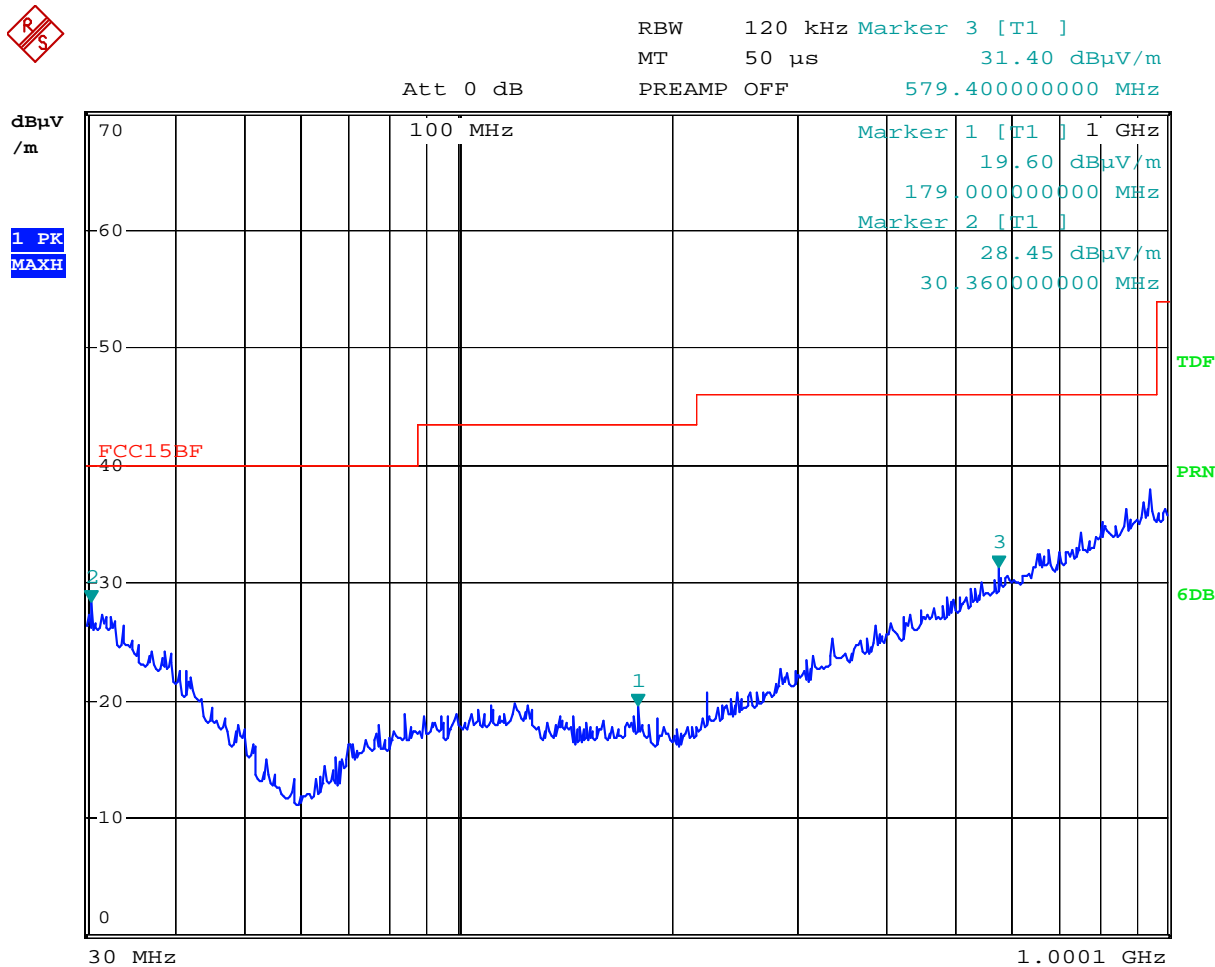
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RADIATED EMISSION TEST RESULTS – VERTICAL



Date: 4.MAY.2010 14:51:35

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**FCC ID: UUPNF173**

### 13.0 FCC ID Label

**This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### **Mark Location:**



FCC ID Label Location

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#### 14.0 Photo of testing

14.1 Conducted test View--

N/A

14.2 Radiated emission test view



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Outside View



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Interior View

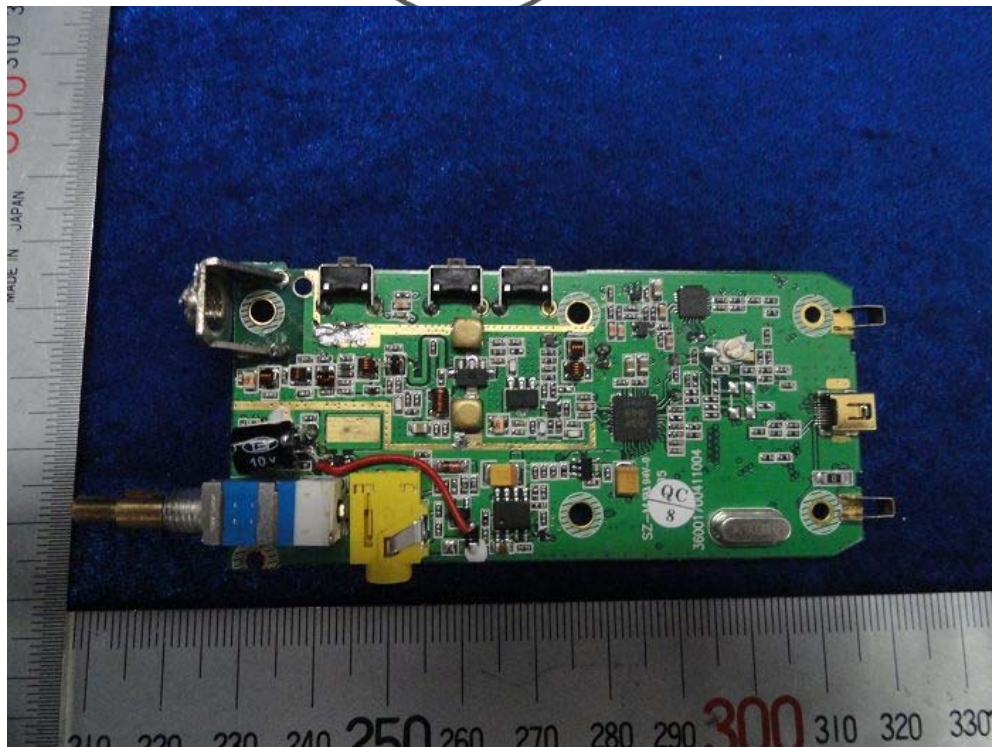


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**-End of the report-**

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