



卓時檢測
TIMEWAY TESTING LABORATORY



ISO/IEC17025 Accredited Lab.

Report No: FCC0809025

File reference No:

2008-09-16

Applicant: FORMATION LTD.

Product: Wireless Transmitter

Model No: CEW040

Trademark:

Test Standards: FCC Part 15 Subpart C, Paragraph 15.235

Test result:

It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.235 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung
Manager

Dated: Sep. 16 .2008

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.

Tel (755) 83448688

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TECHNICAL



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 meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 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 No.: IC 5205A-01.

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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: FORMATION LTD.
Address: Suite 915-918,9/F Corporation Square, 8 Lam Lok St., Kowloon Bay, Hong Kong
Telephone: 852-2305 7122
Fax: 852-2318 1131

1.3 Description of EUT

Product: Wireless Transmitter
Brand Name:
Model Number: CEW040
Additional Model Name
Rating: 4.5V DC input
Operation Frequency 49.86MHz
Frequency Tuning 49.86MHz
Type of Modulation FM
Antenna Designation A permanent fixed antenna, which is built-in, designed as an indispensable part of the EUT.

1.4 Submitted Sample: 1 Sample

1.5 Test Duration

2008-09-08 to 2008-09-16

1.6 Test Uncertainty

Conducted Emissions Uncertainty = $\pm 3.0\text{dB}$
Radiated Emissions Uncertainty = $\pm 6.0\text{dB}$

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1.7 Test Engineer

The sample tested by Terry Tang

Print Name: Terry Tang

2.0	Test Equipments				
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2007-12-05	2008-12-04
Absorbing Clamp	ROHDE&SCHWARZ	MDS-21	100126	2007-12-05	2008-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2007-12-05	2008-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2007-12-05	2008-12-04
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2007-12-05	2008-12-04
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2008-04-26	2009-04-25
4-WIRE ISN	ROHDE&SCHWARZ	ENY 41	830663/044	2008-02-18	2009-02-17
GG ENY22 Double 2-Wire ISN	ROHDE&SCHWARZ	ENY22	83066/016	2008-02-18	2009-02-17
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2008-02-18	2009-02-17
System Controller	CT	SC100	-	2008-02-18	2009-02-17
Printer	EPSON	PHOTO EX3	CFNH234850	2008-02-18	2009-02-17
FM-AM Signal Generator	JUNGJIN	SG-150M	389911177	2008-02-18	2009-02-17
Color TV Pattern Generator	PHILIPS	PM5418	LO621747	2008-02-18	2009-02-17
Computer	IBM	8434	1S8434KCE99BLX LO*	-	-
Oscillator	KENWOOD	AG-203D	3070002	2008-02-18	2009-02-17
Spectrum Analyzer	HAMEG	HM5012	-	2008-04-26	2009-04-25
Power Supply	LW	APS1502	-	-	-

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5K VA AC Power Source	California Instruments	5001iX	56060	2008-02-18	2009-02-17
CDN	EM TEST	CDN M2/M3	-	2008-02-18	2009-02-17
Attenuation	EM TEST	ATT6/75	-	2008-02-18	2009-02-17
Resistance	EM TEST	R100	-	2008-02-18	2009-02-17
Electromagnetic Injection Clamp	LITTHI	EM101	35708	2008-02-18	2009-02-17
Signal Generator	ROHDE&SCHWARZ	SMT03	100029	2008-02-18	2009-02-17
Power Amplifier	AR	150W1000	300999	2008-02-18	2009-02-17
Field probe	Holaday	HI-6005	105152	2008-02-18	2009-02-17
Bilog Antenna	Chase	CBL6111C	2576	2008-02-18	2009-02-17
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2008-02-18	2009-02-17
3m OATS	--	--	N/A	2008-02-18	2009-02-17
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2008-08-18	2009-08-17
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2008-04-26	2009-04-25

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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	Notes
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.235 Limit	Field Strength of Fundamental	PASS	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	PASS	Meets Class B Limit
Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the Radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).	Band Edge Test	PASS	The field strength of any Emissions, which appear Outside of this band, shall not exceed the general Radiated emission limits in Section 15.209.

3.2 Test Standards

FCC Part 15 Subpart C, Paragraph 15.235

4.0 EUT Modification

No modification by Shenzhen Timeway Technology Consulting Co.,Ltd

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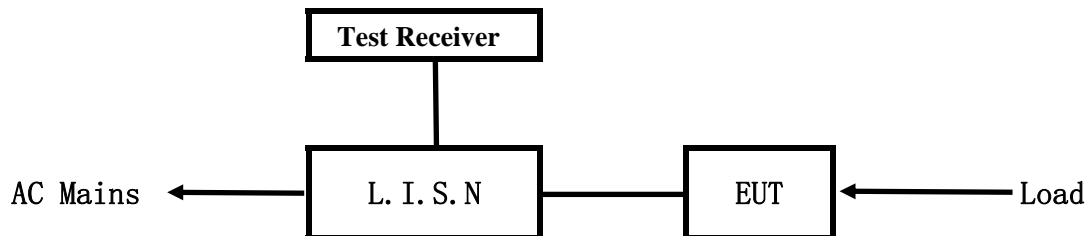
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5. Power Line Conducted Emission Test

5.1 Schematics of the test

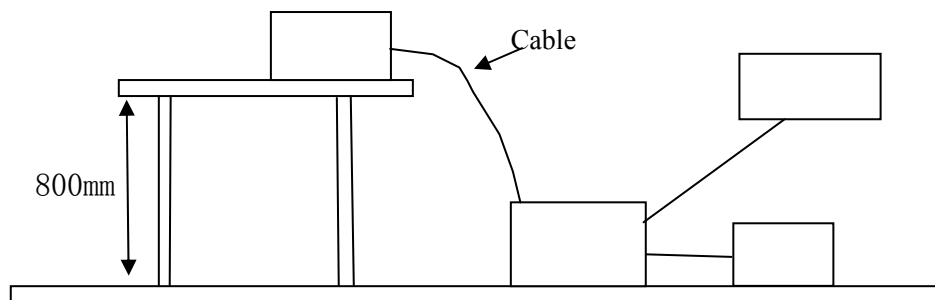


EUT: Equipment Under Test

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 –2001.

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.

Note: EUT can be powered by vehicle with 12V electrical system or batteries. During radiated emission test, EUT power by a regulated DC power supply because it produced more emission at this time.

A. EUT

Device	Manufacturer	Model	FCC ID
Wireless Transmitter	FORMATION LTD.	CEW040	UU7CEW040

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B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
Adaptor	Honor	ADS-7.5A-06 05003GPCU	N/A	1.0m

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 Turn on power ,EUT transmitting

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Class A Limits (dB μ V)		Class B Limits (dB μ 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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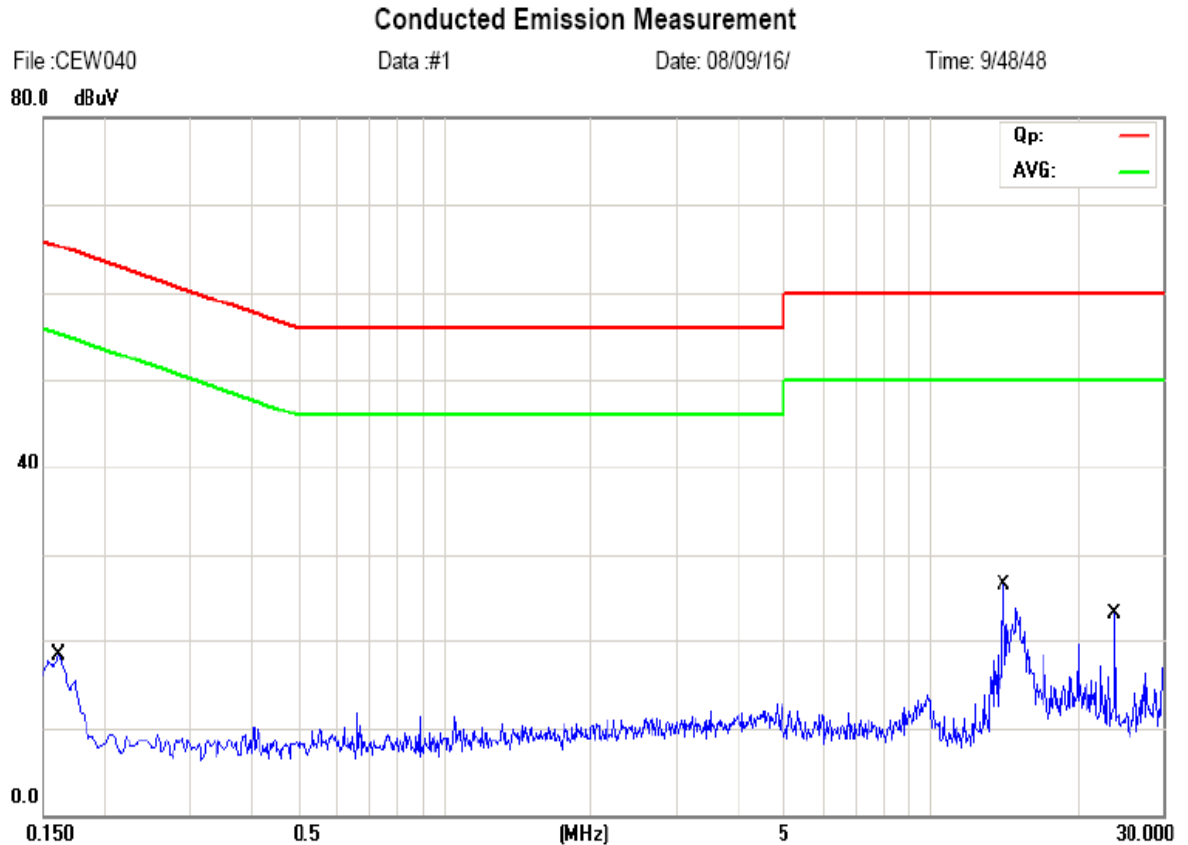
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A: Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Transmitting
Level: Class B
Results: Pass
Please refer to following diagram for individual



Frequency (MHz)	Reading(dBμV)				Limit	
	Neutral		Live		(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.1694	20.99	17.72	-	-	64.99	54.99
14.001	28.70	23.00			60.00	50.00
22.5136	24.35	20.15			60.00	50.00

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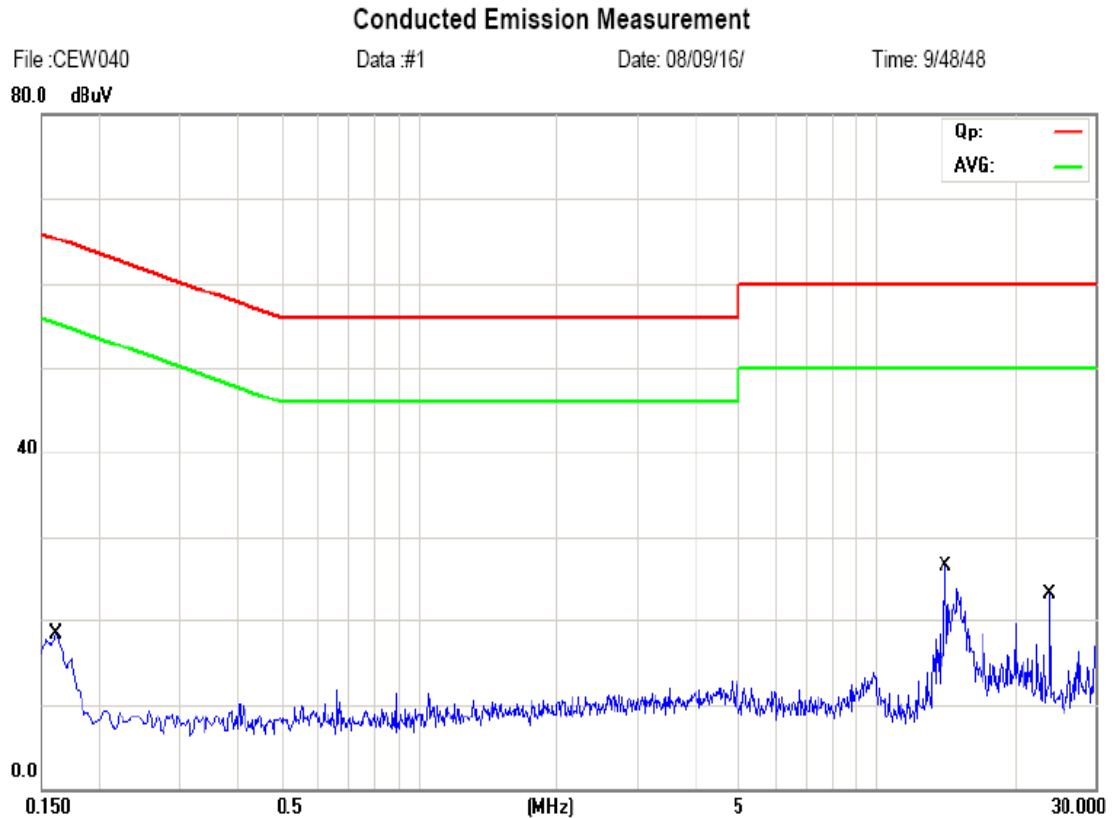
B: Conducted Emission on Live Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Transmitting

Level Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Reading(dBμV)				Limit	
	Neutral		Live		(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.1697	-	-	21.52	17.22	64.98	54.98
13.9288	-	-	31.37	26.77	60.00	50.00
22.5678	-	-	24.12	19.88	60.00	50.00

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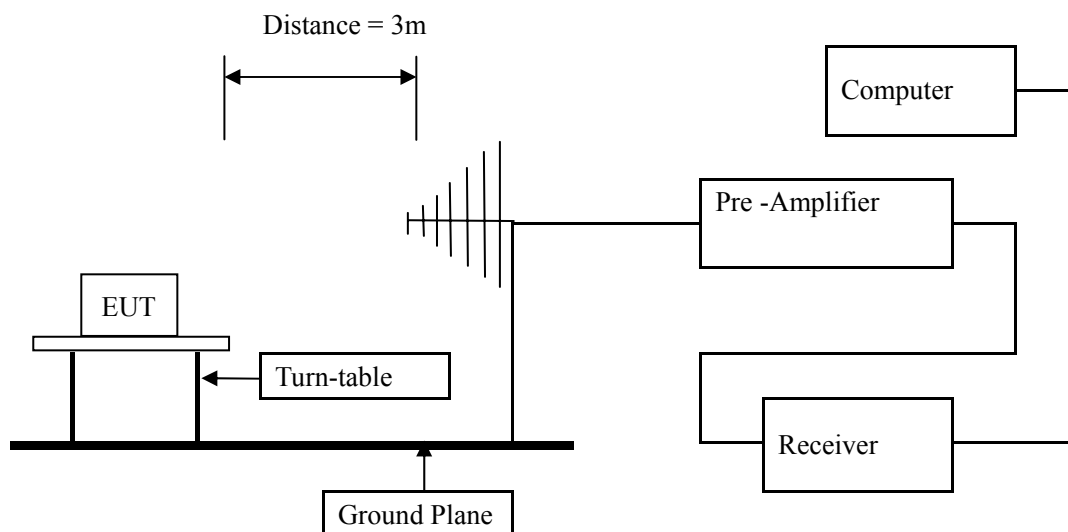


6 Radiated Emission Test

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 1 GHz was investigated. ,All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. VBW 300KHz .All readings are above 1 GHz, peak values with a resolution bandwidth of 1MHz. VBW 3MHz with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

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6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

A FCC Part 15 Subpart C Paragraph 15.235 Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)	
	Micro-volts /m	dBuV/m
49.82 to 49.90	10,000	80.00

- Note:
1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- Test Uncertainty: ± 6 dB

6.5 Test result**A Fundamental Radiated Emission Data**

Product:	Wireless Transmitter	Test Mode:	Transmitting
Test Item:	Radiated Emission Data	Temperature:	25°C
Test Voltage:	4.5V	Humidity:	56%
Test Result:	Pass		

Frequency (MHz)	Emission PK/AV (dBuV/m)	Horiz / Vert	Limits PK/AV (dBuV/m)	Margin (dB)
49.84	75.75 (PK)	Vertical	100	24.25
49.84	74.92 (AV)	Vertical	80	5.08
49.84	65.57 (PK)	Horizontal	100	34.43
49.84	64.89 (AV)	Horizontal	80	15.11

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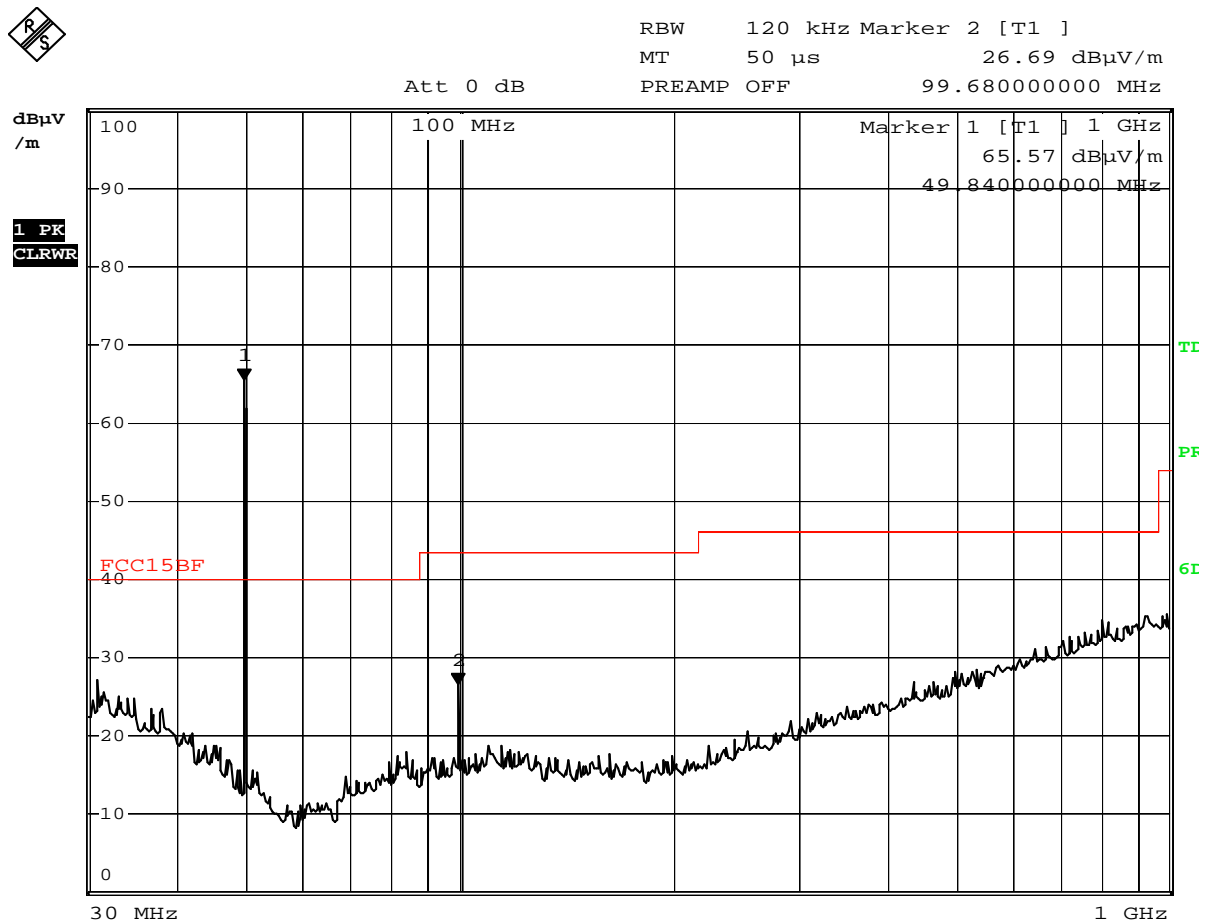
B. General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Transmitting

Results: Pass

Please refer to following diagram for individual



Comment: Wireless Transmitter -H
Date: 16.SEP.2008 15:31:20

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
32.456	24.89	H	40.00
99.680	26.69	H	43.50
903.560	34.35	H	46.00

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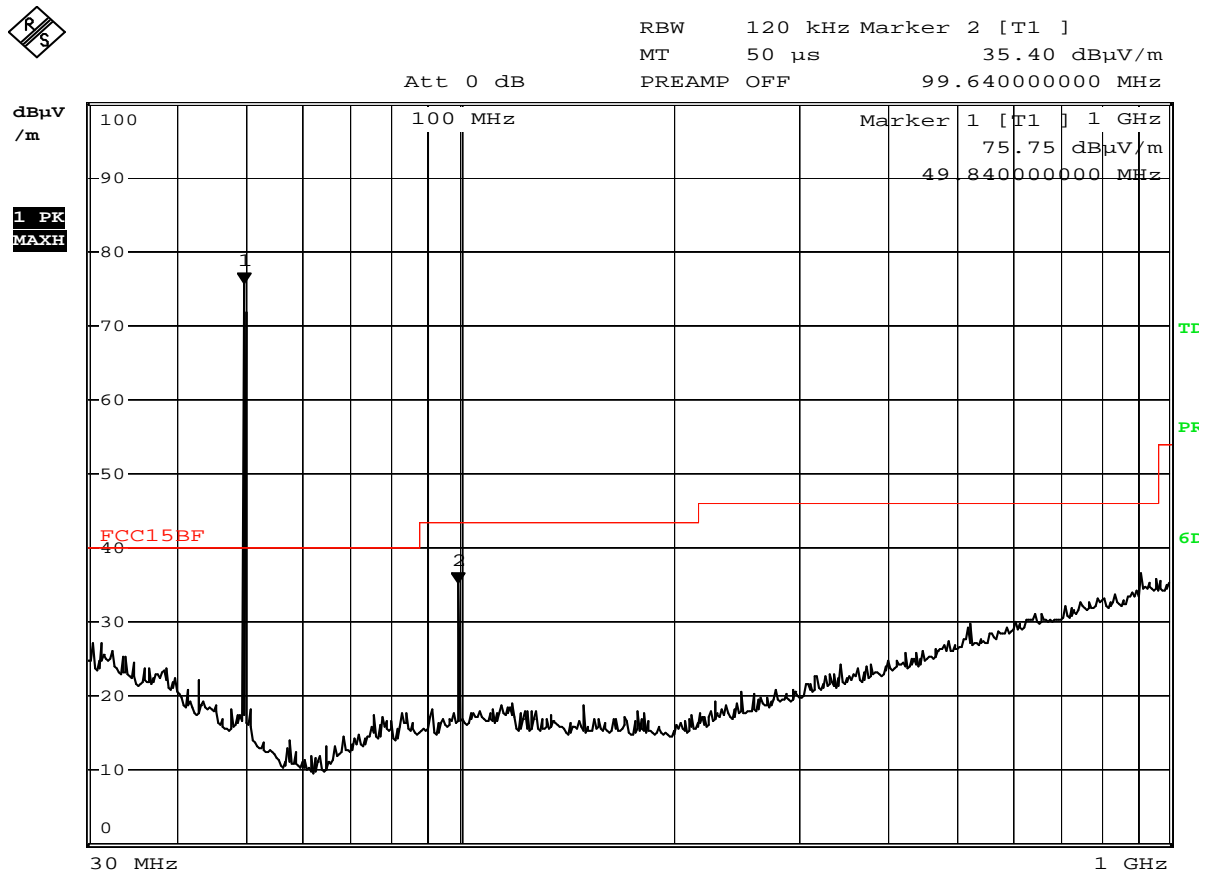
B. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Transmitting

Results: Pass

Please refer to following diagram for individual



Comment: Wireless Transmitter -V
Date: 16.SEP.2008 15:30:36

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
32.023	26.33	V	40.00
99.640	35.46	V	43.50
900.698	35.54	V	46.00

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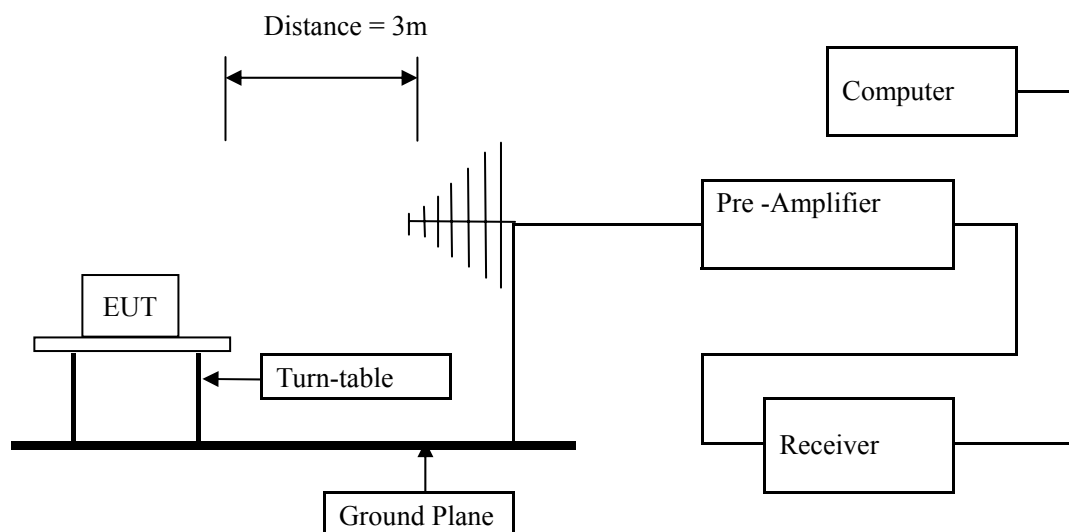


7. Band Edge

7.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 10 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
- (3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (4) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (5) The antenna polarization : Vertical polarization and Horizontal polarization.

7.2 Radiated Test Setup



For the actual test configuration , please refer to the related items – Photos of Testing

7.3 Configuration of The EUT

Same as section 5.3 of this report

7.4 EUT Operating Condition

Same as section 5.3 of this report.

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7.5 Band Edge Limit

(1) The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in §15.209, whichever permits the higher emission levels. The field strength of any emissions removed by more than 10 kHz from the band edges shall not exceed the general radiated emission limits in §15.209

(2) Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated Emission limits specified in Section 15.209(a) (see Section 15.205(c)).

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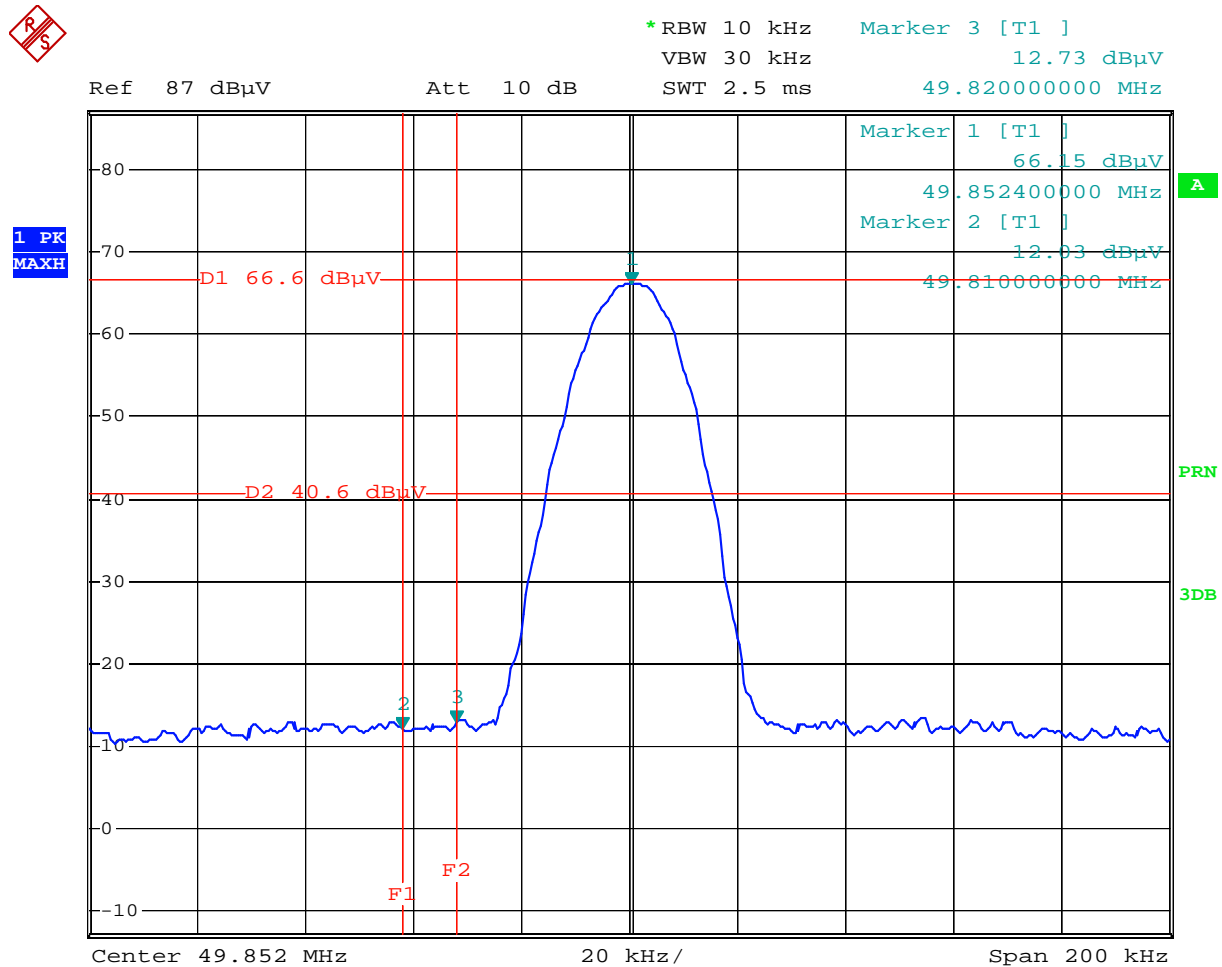
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7.6 Band Edge Test Result

Product:	Wireless Transmitter	Test Mode:	Transmitting
Test Item:	Band Edge (Lower)	Temperature:	25°C
Test Voltage:	DC 4.5V	Humidity:	56%
Bandwidth		Test Result:	Pass

Test Figure:



Comment: Bandedge-lower

Date: 16.SEP.2008 15:52:12

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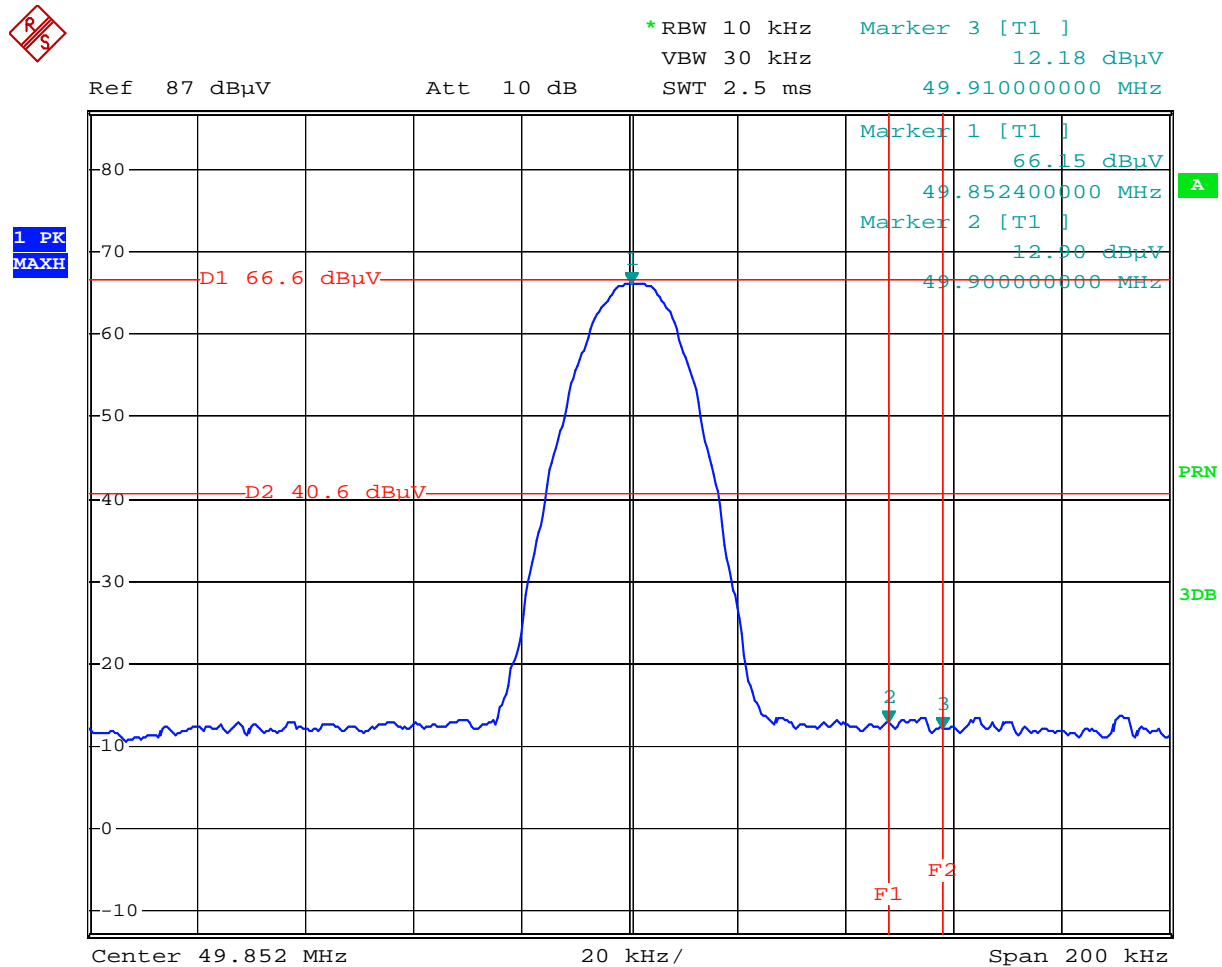
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7.6 Band Edge Test Result

Product:	Wireless Transmitter	Test Mode:	Transmitting
Test Item:	Band Edge (Upper)	Temperature:	25°C
Test Voltage:	DC 4.5V	Humidity:	56%
Bandwidth		Test Result:	Pass

Test Figure:



Comment: Bandedge-upper

Date: 16.SEP.2008 15:53:50

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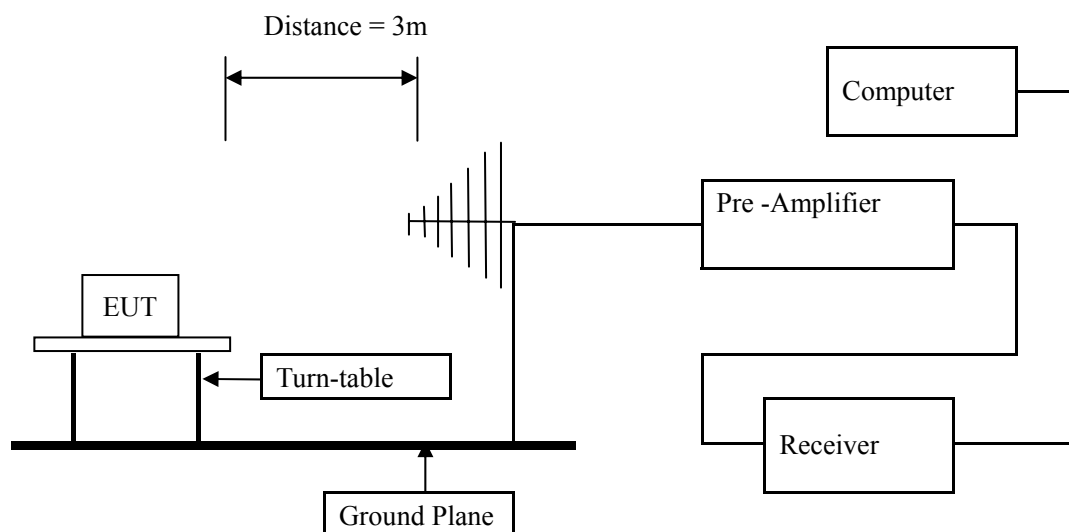


8. 20 dB Bandwidth

8.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 10 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
- (3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (4) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (5) The antenna polarization : Vertical polarization and Horizontal polarization.

8.2 Radiated Test Setup



For the actual test configuration , please refer to the related items – Photos of Testing

8.3 Configuration of The EUT

Same as section 5.3 of this report

8.4 EUT Operating Condition

Same as section 5.3 of this report.

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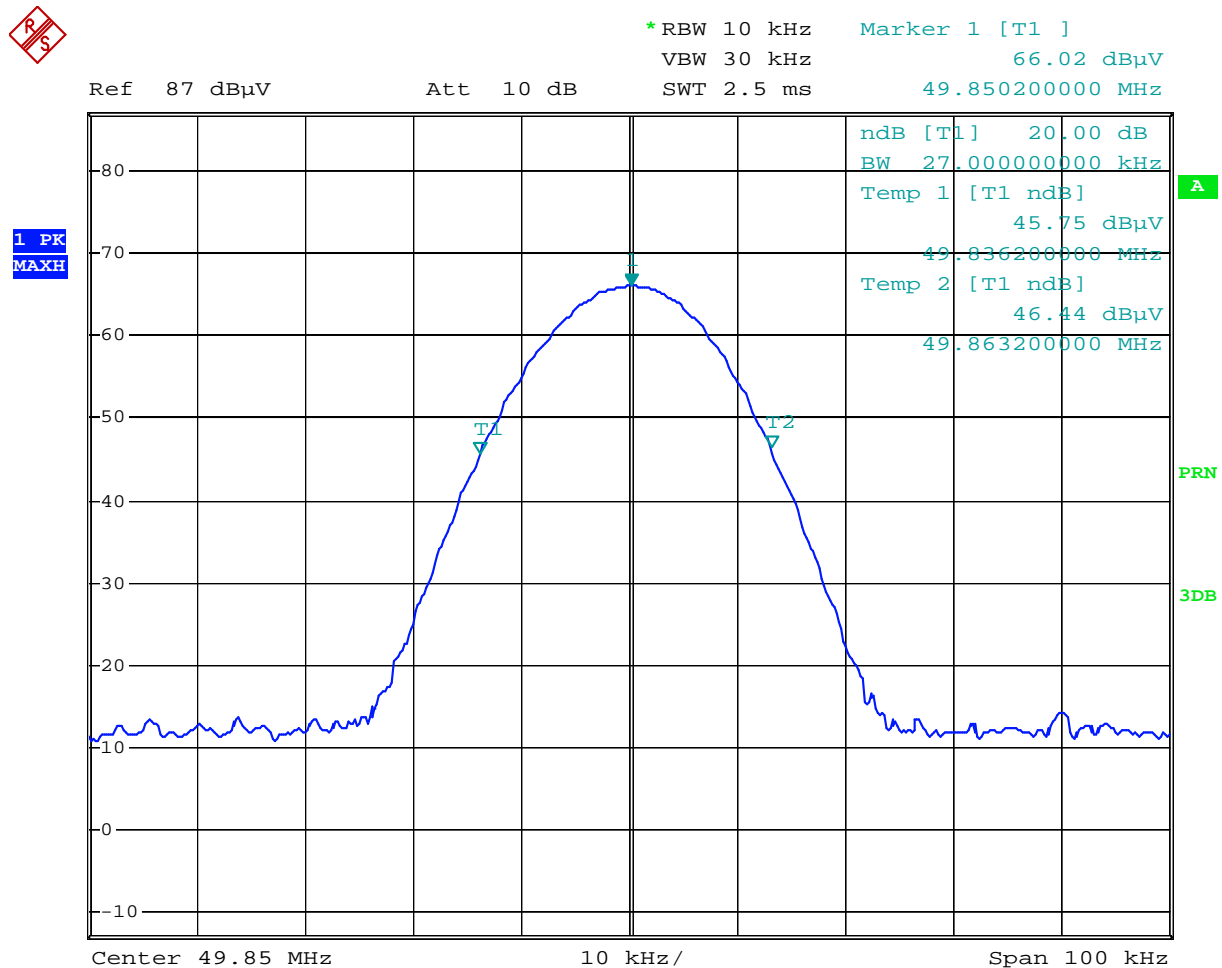
8.5 20dB Bandwidth Requirement

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission,

8.6 20dB Bandwidth Test Result

Product:	Wireless Transmitter	Test Mode:	Transmitting
Test Item:	20dB Bandwidth	Temperature:	25°C
Test Voltage:	DC 4.5V	Humidity:	56%
Bandwidth		Test Result:	Pass

Test Figure:



Comment: 20dB bandwidth

Date: 16.SEP.2008 15:46:41

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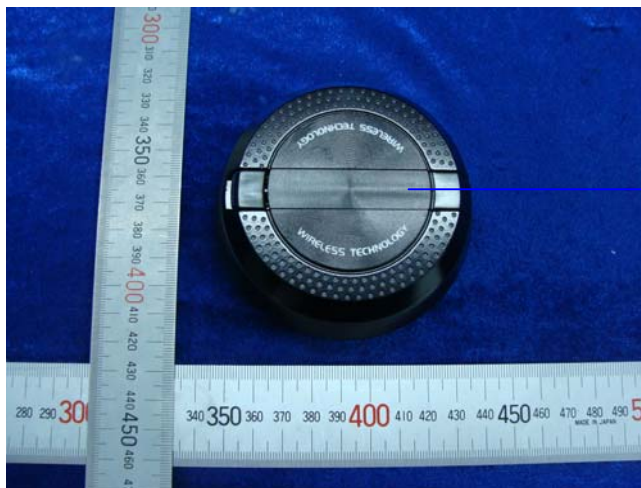
8.0 FCC ID Label

FCC ID: UU7CEW040

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



FCC ID Label Location

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9.0 Photo of testing

9.1 Conducted test View



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9.2 Radiated emission test view



DSC-H10 F8.0 1/400s ISO125

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9.3 Photo for the EUT

Front View1



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Back View



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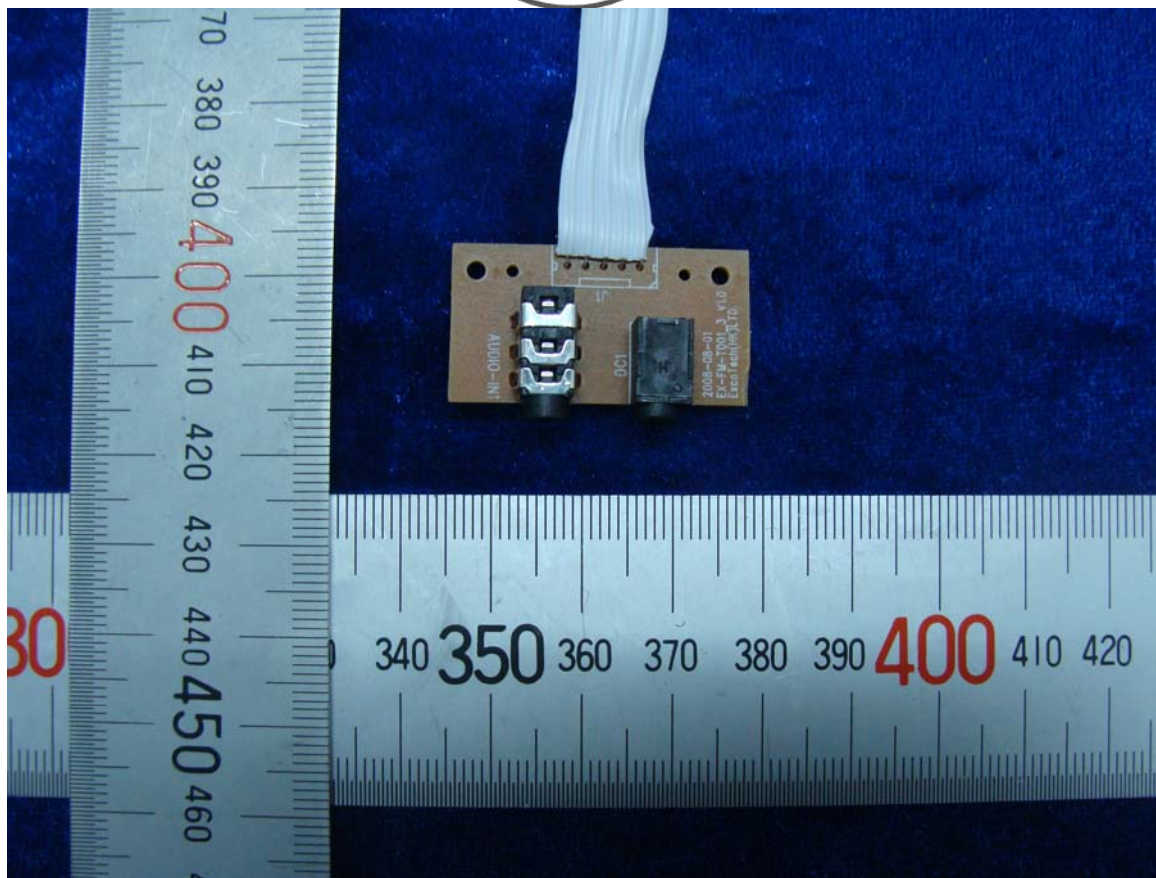
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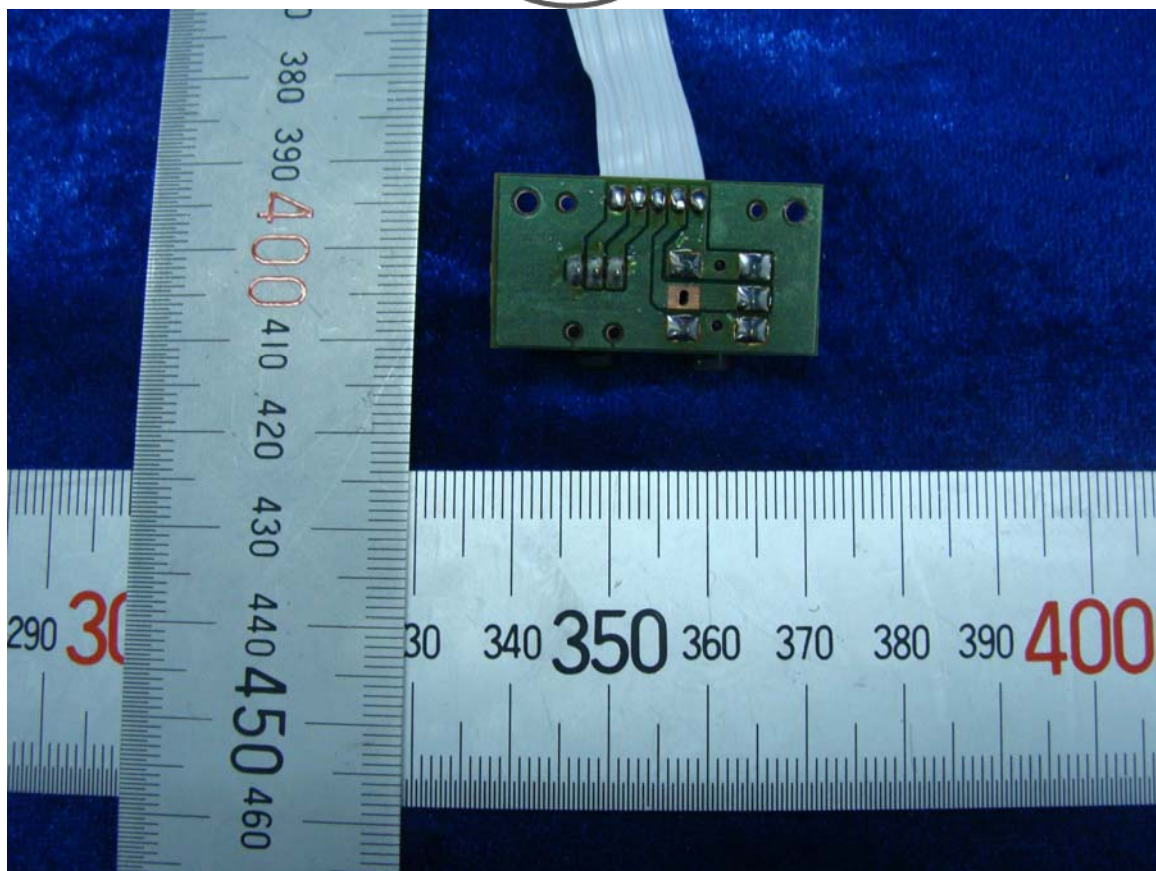
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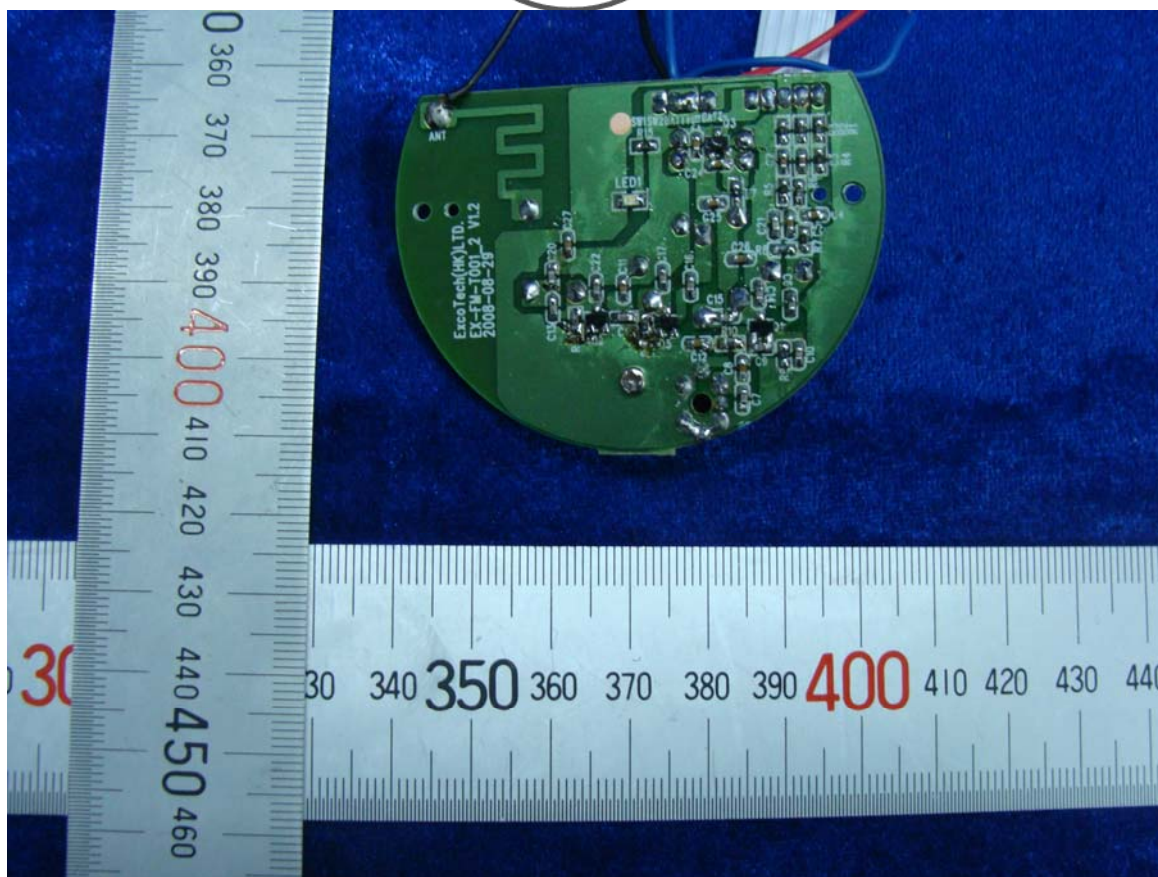
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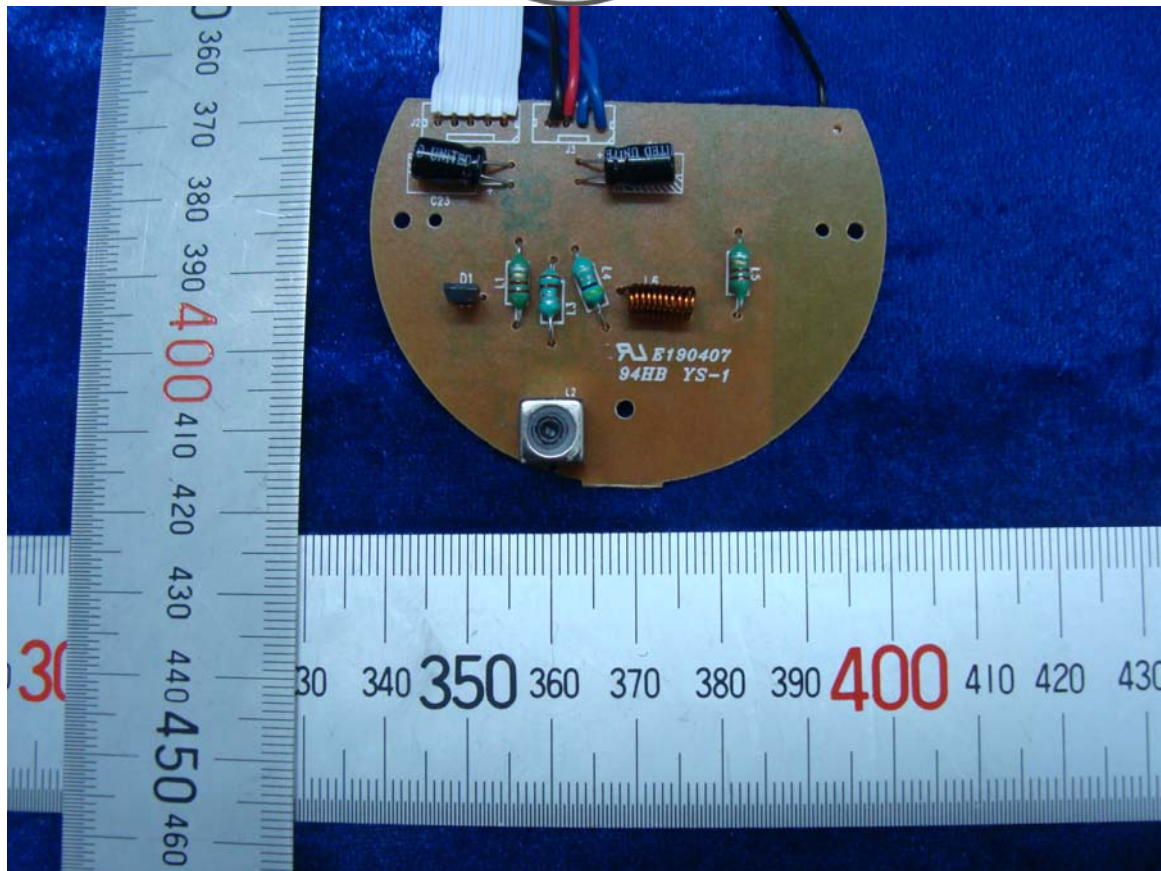
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