FCC TEST REPORT

FCC ID : WY9IFM-2

Applicant : Telnova Technology Co., Ltd
Address of Applicant : F/7,jiuzhou Electric Building B, South District,Hi-Tech Industrial Park,Nan shan,Shenzhen,P,R.China

Equipment Under Test (EUT) :

Product description : FM TRANSMITTER
Model No. : IFM-2
Modulation : FM
Operation Frequency : 88.1 MHz ~107.9MHz

Standards : FCC 15 Subpart C Paragraph 15.239

Date of Test : Jan.5, 2008

Test Engineer : Olic huang

Reviewed By : Phillo zhong

PERPARED BY:
Waltek Services (Shenzhen) Co., Ltd.
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2 Contents

3 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Band Edge	FCC PART 15: 2007	ANSI C63.4: 2003	Note	PASS
Radiated Emission (30MHz to 1GHz)	FCC PART 15: 2007	ANSI C63.4: 2003	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15: 2007	ANSI C63.4: 2003	N/A	N/A

Note : denote that for more details of the EUT , please refer to the relating test items as below .

Remark : the methods of measurement in all the test items were according to ANSI C63.4: 2003.

4 General Information

4.1Client Information

Applicant:	Telnova Technology Co., Ltd
Address of Applicant:	F/7,jiuzhou Electric Building B, South District,Hi-Tech Industrial Park,Nan shan,Shenzhen,P,R.China.
Manufacturer:	Telnova Technology Co., Ltd
Address of Manufacturer:	F/7,jiuzhou Electric Building B, South District,Hi-Tech Industrial Park,Nan shan,Shenzhen,P,R.China.

4.2General Description of E.U.T.

Product description:	FM TRANSMITTER
Model No.:	IFM-2

4.3Details of E.U.T.

Power Supply:	IPod supply

4.4Description of Support Units

The EUT has been tested as an independent unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a FM TRANSMITTER . The FM Transmitter tests were done in this report.The standards used were FCC 15 Paragraph 15.205, Paragraph 15.207,Paragraph 15.209 and Paragraph 15.239.

4.6 Test Facility

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

- **FCC – Registration No.: 880581**

  Waltek Services(Shenzhen) Co., Ltd. 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 880581,June 24， 2008.

- **IC – Registration No.:IC 7760**

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration IC7760,July 24， 2008.

4.7 Test Location

All Emissions testswere performed at:-
1/F, Fukangtai Building,West Baima Rd.,Songgang Street, Baoan District, Shenzhen 518105, Guangdong,China.

5 Equipment Used during Test

Equipment	Brand Name	Model	Related standards	Cal.Intal Months	Last Cal. Date	Serial No
3m Semi-anechoic chamber						
EMC Analyzer	Agilent	E7405A	ISO9001:2000	12	Jan-08	MY45114943
Trilog Broadband Antenne 30-3000 MHz	SCHWARZBECK MESS-ELEKTROM	VULB9163	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	336
Broad-band Horn Antenna	SCHWARZBECK MESS-ELEKTROM	BBHA 9120 D	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	667
Broadband Preamplifier	SCHWARZBECK MESS-ELEKTROM	BBV 9718	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	9718-148
10m Coaxial Cable with N-male Connectors usable	SCHWARZBECK MESS-ELEKTROM	AK 9515 H	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	-
10m 50 Ohm Coaxial Cable with N-plug,individual length,usable up to 3(5)GHz, Connectors	SCHWARZBECK MESS-ELEKTROM	AK 9513	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	-
Positioning Controller	C&C LAB	CC-C-IF	ISO9001	12	Jan-08	MF7802108
Color Monitor	SUNSPO	SP-14C	ISO9001	12	Jan-08	-
EMI Shielded Room						
Test Receiver	ROHDE&SCHWARZ	ESPI	ISO9001	12	Jan-08	101155
Two-Line V-Network	ROHDE&SCHWARZ	ENV216	ISO9001 EN/ISO/IEC 17025	12	Jan-08	100115
Absorbing Clamp	ROHDE&SCHWARZ	MDS-21	ISO9001 EN/ISO/IEC 17025	12	Jan-08	100205
10m 50 Ohm Coaxial Cable with N-plug,individual length,usable up to 3(5)GHz, Connectors	SCHWARZBECK MESS-ELEKTROM	AK 9514	EN/ISO/IEC 17025 DIN EN ISO9001	12	Jan-08	-
Other						
IPod	Apple	A199	-----	--	--	YM6513CVVQ5

6 Conducted Emission Test

Test Requirement:	FCC Part15 Paragraph 15.207
Test Method:	Based on FCC Part15 Paragraph 15.207
Test Date:	-------
Frequency Range:	150kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 Test Equipment

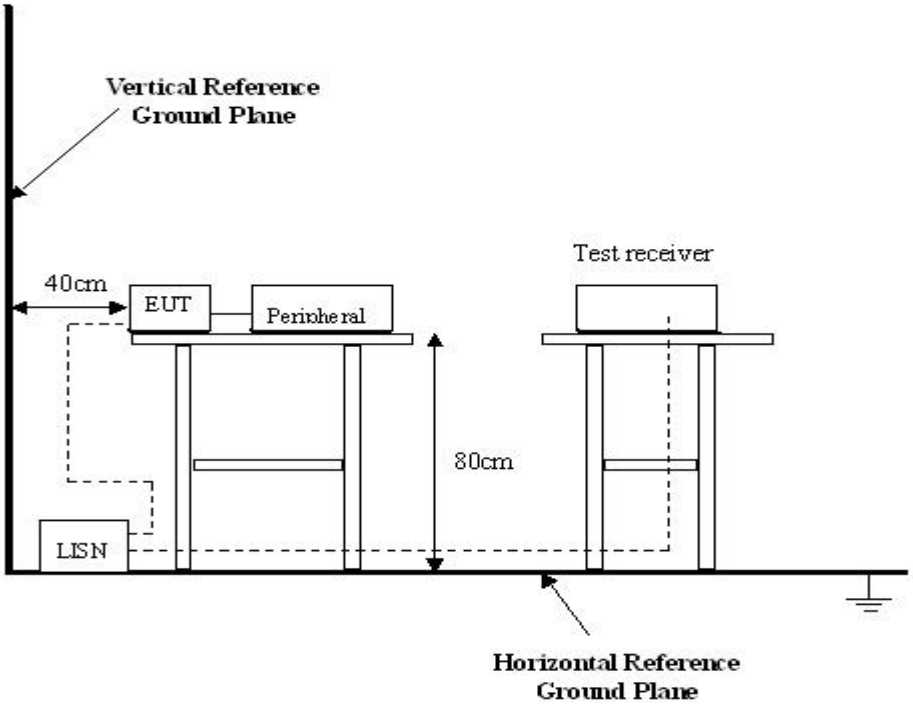
Please refer to Section 5 this report.

6.2 Test Procedure

1. The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.
2. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.
3. Compliance test was performed test in the EUT was connect the IPod output.

6.3 Conducted Test Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.207 limits.



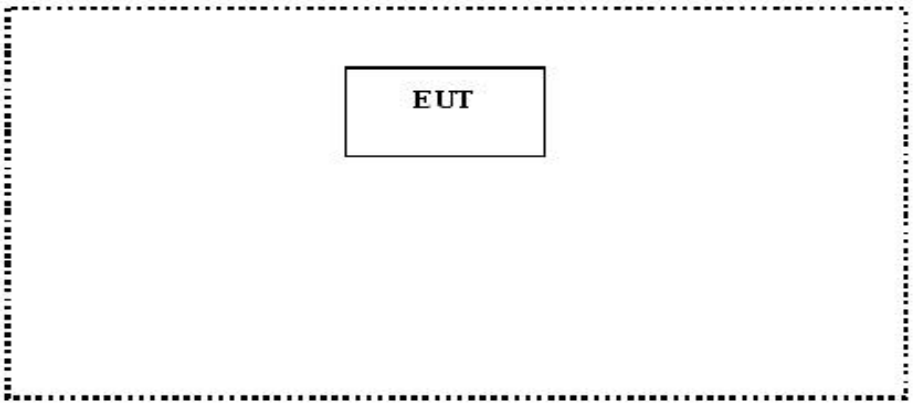
6.4 EUT Operating Condition

Operating condition is according to ANSI C63.4:2003.

A. Setup the EUT and simulators as shown on follow.

B. Enable RF signal and confirm EUT active.

C. Modulate output capacity of EUT up to specification.



6.5 Conducted Emission Limits

66-56 dBμV between 0.15MHz & 0.5MHz
56 dBμVbetween 0.5MHz & 5MHz
60 dBμV between 5MHz & 30MHz

Note: In the above limits, the tighter limit applies at the band edges.

6.6 Conducted Emission Test Result

Owing to the EUT using DC supply , so this test was not performed.

7 Radiation Emission Test

Test Requirement:	FCC Part15 Paragraph 15.239
Test Method:	Based on ANSI C63.4:2003
Test Date:	Jan.5, 2008
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Detector:	Peak for pre-scan (120kHz resolution bandwidth)
	Quasi-Peak if maximised peak within 6dB of limit

7.1 Test Equipment

Please refer to Section 5 this report.

7.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

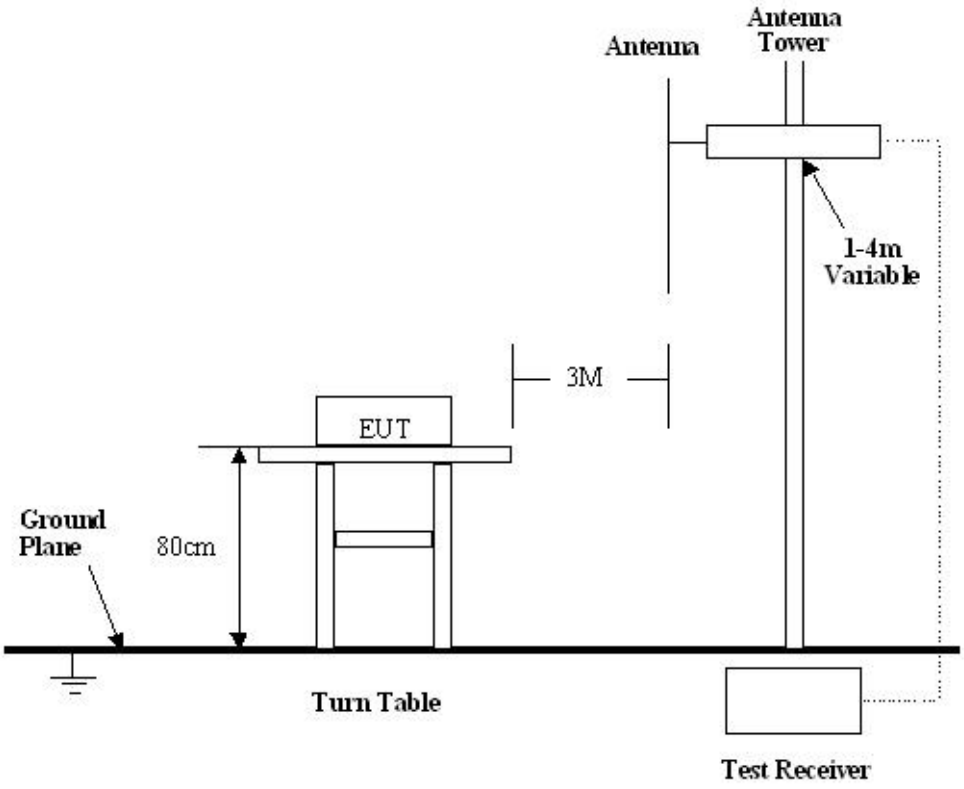
Based on ANSI C63.4:2003, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at CCS EMC Laboratory is +2.9 dB.

7.3 Test Procedure

1. The DC supply in the equipment under test for radiated emissions test. And the EUT was connected to the IPod to make the FM Transmitter in normal working mode.
2. This is a handhold device,The radiation emission should be tested under 3-axes(X,Y,Z) position(X denotes lying on the table,Y denotes side stand and Z denotes vertical stand),After pre-test,It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
3. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
4. All data was recorded in the peak and average detection mode.
5. The EUT was under working mode during the final qualification test and the configuration was used to represent the worst case results.
6. The EUT was testing at the frequency points 88.1MHz,98.1MHz,107.9 MHz.

7.4 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.209 and Paragraph 15.239 limits.



7.5 Spectrum Analyzer Setup

According to FCC Part15 Paragraph 15.239 Rules, the system was tested to 1000 MHz.

Start Frequency.....30 MHz
Stop Frequency .....1000 MHz
Sweep Speed Auto
IF Bandwidth.....100 kHz
Video Bandwidth.....100KHz
Quasi-Peak Adapter Bandwidth .....120 kHz
Quasi-Peak Adapter Mode.....Normal
Resolution Bandwidth 100KHz

7.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Class B Limit

7.7 Summary of Test Results

According to the data in section 7.10, the EUT complied with the FCC Part15 Paragraph 15.239 standards.

7.8 EUT Operating Condition

Same as section 6.4 of this report. Compliance test was performed in the transmitter operation Mode.

7.9 Radiated Emissions Limit

A. FCC Part 15 subpart C Paragraph 15.239 Limit

Fundamental Frequency(MHZ)	Field Strength of Fundamental	
	uV/m	dBuV/m
88-108	250	48

Note: (1) RF Voltage(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 instrumentaion employing an average detector.Measurement using instrumentation with a peak detector function,corresponding to 20dB above the maximum permitted average limit.

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

Frequency(MHZ)	Distance(m)	Field strength(dBuV/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.

As shown in 15.35(b),for frequencies above 1000MHz,the field strength limits are based on average detector,however,the peak field strength of any emission shall not exceed the maximum permitted average limits,specified above by more than 20dB under any condition of modulation.

7.10 Radiated Emissions Test Result

Formula of conversion factors:the field strength at 3m was egtablished by adding The meter reading of the spectrum analyer (which is set to read in units of dBuV) To the antenna correction factor supplied by the antenna manufacturer. The antenna Correction factors are stared in terms of dB.The gain of the pressletor was accounted For in the spectrum analyser meter reading.

Example:

Freq(MHz) Meter Reading +ACF=FS

33 20dBuV+10.36dB=30.36dBuV/m @3m

Radiated Emission Test Data

A. Test Item: Radiated Emission Test Data

Test Voltage: IPod supply

Test Mode: TX ON

Temperature: 24 °C

Humidity: 52%RH

Test Result: PASS

The below is the Fundamental and Harmonic

Frequency (MHz)	Detector	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
Low Frequency							
88.10	AV	Vertical	40.20	48.00	7.80	1.1	50
176.20	AV	Vertical	37.20	43.50	8.30	1.1	50
246.30	AV	Vertical	36.00	46.00	8.00	1.2	20
352.40	AV	Vertical	35.36	46.00	10.64	1.3	150
440.50	AV	Vertical	35.02	46.00	10.98	1.2	150
528.60	AV	Vertical	35.01	46.00	10.99	1.2	0
616.70	AV	Vertical	34.85	46.00	11.15	1.1	30
704.80	AV	Vertical	34.00	46.00	12.00	1.2	180
792.90	AV	Vertical	34.00	54.00	12.00	1.2	140
881.00	AV	Vertical	34.11	54.00	11.89	1.2	15
88.10	AV	Horizontal	43.25	48.00	4.75	1.1	0

176.20	AV	Horizontal	40.50	43.50	3.00	1.1	20
246.30	AV	Horizontal	39.60	46.00	6.40	1.2	60
352.40	AV	Horizontal	40.20	46.00	5.80	1.1	140
440.50	AV	Horizontal	41.02	46.00	4.98	1.1	15
528.60	AV	Horizonta	40.00	46.00	6.00	1.0	60
616.70	AV	Horizontal	39.96	46.00	6.04	1.1	10
704.80	AV	Horizontal	36.62	46.00	9.38	1.2	20
792.90	AV	Horizontal	34.65	54.00	9.35	1.2	80
881.00	AV	Horizontal	32.75	54.00	11.25	1.0	0
88.10	PK	Vertical	48.50	68.00	19.50	1.2	0
176.20	PK	Vertical	45.23	63.50	18.27	1.2	10
246.30	PK	Vertical	39.68	66.00	26.32	1.2	120
352.40	PK	Vertical	37.42	66.00	28.58	1.2	120
440.50	PK	Vertical	35.63	66.00	30.37	1.0	180
528.60	PK	Vertical	36.22	66.00	29.78	1.5	0
616.70	PK	Vertical	35.89	66.00	30.11	1.0	120
704.80	PK	Vertical	35.67	66.00	30.33	1.2	0
792.90	PK	Vertical	35.20	74.00	38.80	1.3	50
881.00	PK	Vertical	33.82	74.00	40.18	1.2	140
88.10	PK	Horizontal	47.56	68.00	20.44	1.3	0
176.20	PK	Horizontal	41.26	63.50	32.74	1.2	40
246.30	PK	Horizontal	39.69	66.00	27.31	1.1	100
352.40	PK	Horizontal	38.65	66.00	27.35	1.2	190
440.50	PK	Horizontal	36.84	66.00	29.16	1.0	60
528.60	PK	Horizontal	36.35	66.00	29.65	1.2	60
616.70	PK	Horizontal	34.85	66.00	31.15	1.2	110
704.80	PK	Horizontal	33.57	66.00	32.43	1.3	10
792.90	PK	Horizontal	34.00	74.00	40.00	1.2	0
881.00	PK	Horizontal	34.00	74.00	40.00	1.3	10
Middle Frequency							
98.10	AV	Vertical	43.23	48.00	4.77	1.2	0
196.20	AV	Vertical	40.40	43.50	3.10	1.2	0
294.30	AV	Vertical	39.30	46.00	6.70	1.1	60
392.40	AV	Vertical	39.00	46.00	7.00	1.1	10
490.50	AV	Vertical	38.00	46.00	8.00	1.2	120

588.60	AV	Vertical	38.40	46.00	7.60	1.2	0
686.70	AV	Vertical	36.30	46.00	9.70	1.1	10
784.80	AV	Vertical	35.39	46.00	10.61	1.6	20
882.90	AV	Vertical	32.68	54.00	21.32	1.5	100
980.00	AV	Vertical	29.89	54.00	24.11	1.2	45
98.10	AV	Horizontal	43.66	48.00	4.34	1.4	0
196.20	AV	Horizontal	41.00	43.50	2.50	1.0	10
294.30	AV	Horizontal	41.02	46.00	5.98	1.2	60
392.40	AV	Horizontal	40.58	46.00	5.42	1.0	40
490.50	AV	Horizontal	38.70	46.00	7.30	1.8	135
588.60	AV	Horizonta	38.70	46.00	7.30	1.0	60
686.70	AV	Horizontal	37.70	46.00	8.30	1.3	10
784.80	AV	Horizontal	36.62	46.00	9.38	1.0	90
882.90	AV	Horizontal	34.61	54.00	19.39	1.5	60
980.00	AV	Horizontal	35.00	54.00	19.00	1.0	10
98.10	PK	Vertical	49.63	68.00	18.37	1.2	0
196.20	PK	Vertical	46.00	63.50	17.50	1.1	10
294.30	PK	Vertical	43.00	66.00	23.00	1.2	120
392.40	PK	Vertical	39.99	66.00	26.01	1.3	120
490.50	PK	Vertical	38.63	66.00	27.37	1.0	180
588.60	PK	Vertical	36.22	66.00	29.78	1.5	20
686.70	PK	Vertical	35.89	66.00	30.11	1.0	120
784.80	PK	Vertical	34.66	66.00	31.34	1.2	30
882.90	PK	Vertical	33.00	74.00	41.00	1.1	10
980.00	PK	Vertical	32.02	74.00	41.98	1.2	20
98.10	PK	Horizontal	47.99	68.00	20.01	1.3	10
196.20	PK	Horizontal	41.30	63.50	32.20	1.2	40
294.30	PK	Horizontal	38.25	66.00	27.75	1.5	100
392.40	PK	Horizontal	37.33	66.00	28.67	1.0	90
490.50	PK	Horizontal	36.19	66.00	29.81	1.0	60
588.60	PK	Horizontal	35.63	66.00	30.37	1.1	0
686.70	PK	Horizontal	33.73	66.00	32.27	1.2	10
784.80	PK	Horizontal	33.57	66.00	32.43	1.3	30
882.90	PK	Horizontal	30.01	74.00	43.99	1.3	90

980.00	PK	Horizontal	30.00	74.00	44.00	1.1	330
High Frequency							
107.90	AV	Vertical	42.62	48.00	5.38	1.2	0
215.80	AV	Vertical	40.01	43.50	3.49	1.2	100
323.70	AV	Vertical	41.25	46.00	4.75	1.2	60
431.60	AV	Vertical	40.40	46.00	5.60	1.5	120
539.50	AV	Vertical	40.70	46.00	5.30	1.5	120
647.40	AV	Vertical	38.42	46.00	7.58	1.2	90
755.30	AV	Vertical	36.30	46.00	9.70	1.2	10
863.20	AV	Vertical	35.39	46.00	10.61	1.3	120
971.10	AV	Vertical	32.68	54.00	21.32	1.1	100
107.90	AV	Horizontal	41.60	48.00	6.40	1.4	100
215.80	AV	Horizontal	40.00	43.50	3.50	1.6	10
323.70	AV	Horizontal	40.00	46.00	6.00	1.4	60
431.60	AV	Horizontal	39.36	46.00	6.64	1.0	40
539.50	AV	Horizontal	38.70	46.00	7.30	1.2	135
647.40	AV	Horizonta	38.70	46.00	7.30	1.0	60
755.30	AV	Horizontal	37.70	46.00	8.30	1.2	0
863.20	AV	Horizontal	36.62	46.00	9.38	1.5	90
971.10	AV	Horizontal	40.11	54.00	13.89	1.5	60
107.90	PK	Vertical	47.20	68.00	20.80	1.2	0
215.80	PK	Vertical	46.00	63.50	17.50	1.1	10
323.70	PK	Vertical	38.01	66.00	27.99	1.4	120
431.60	PK	Vertical	37.42	66.00	28.58	1.2	120
539.50	PK	Vertical	35.63	66.00	30.37	1.0	180
647.40	PK	Vertical	36.22	66.00	29.78	1.5	0
755.30	PK	Vertical	35.89	66.00	30.11	1.0	120
863.20	PK	Vertical	38.67	66.00	27.33	1.3	0
971.10	PK	Vertical	38.78	74.00	35.22	1.5	0
107.90	PK	Horizontal	46.80	68.00	21.20	1.3	0
215.80	PK	Horizontal	41.26	63.50	32.74	1.2	40
323.70	PK	Horizontal	36.25	66.00	27.75	1.5	100
431.60	PK	Horizontal	37.33	66.00	28.67	1.0	90
539.50	PK	Horizontal	33.19	66.00	32.81	1.0	60
647.40	PK	Horizontal	33.62	66.00	32.38	1.5	60

755.30	PK	Horizontal	30.73	66.00	35.27	1.3	110
863.20	PK	Horizontal	33.57	66.00	32.43	1.3	180
971.10	PK	Horizontal	34.00	74.00	40.00	1.1	0

8 Antenna Requirement.

According to the FCC Part 15 Paragraph 15.203, 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. The use of a permanently attached antenna to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product has a permanent antenna, fulfill the requirement of this section

9 Band Edge

9.1 Test Equipment

Please refer to Section 5 this report.

9.2 Test Procedure

1.The EUT, peripherals were put on the turntable which table size is 1mX1.5m, table high 0.8m. All set up is according to ANSI C63.4:2003.

2. The antenna high were varied from 1m to 4m high to find the maximum emission for each frequency.

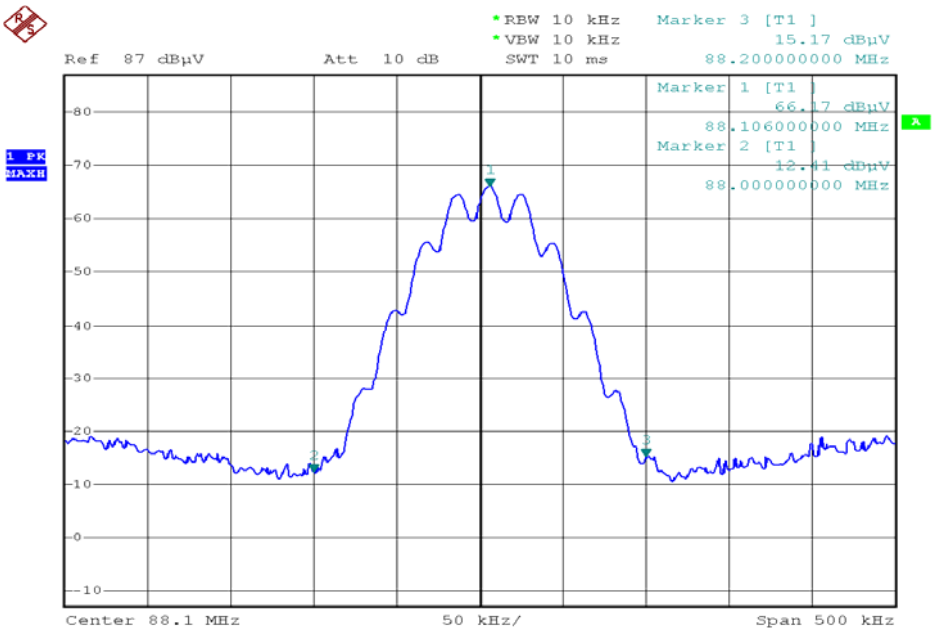
3. The field strength of any emissions radiated on any frequency outside of the specified 200KHz band shall not exceed the general radiated emission limits in Section 15.209.

4. The market sample was tested for frequency testing at 88.1 MHz.,98.1 MHz.,107.9 MHz..

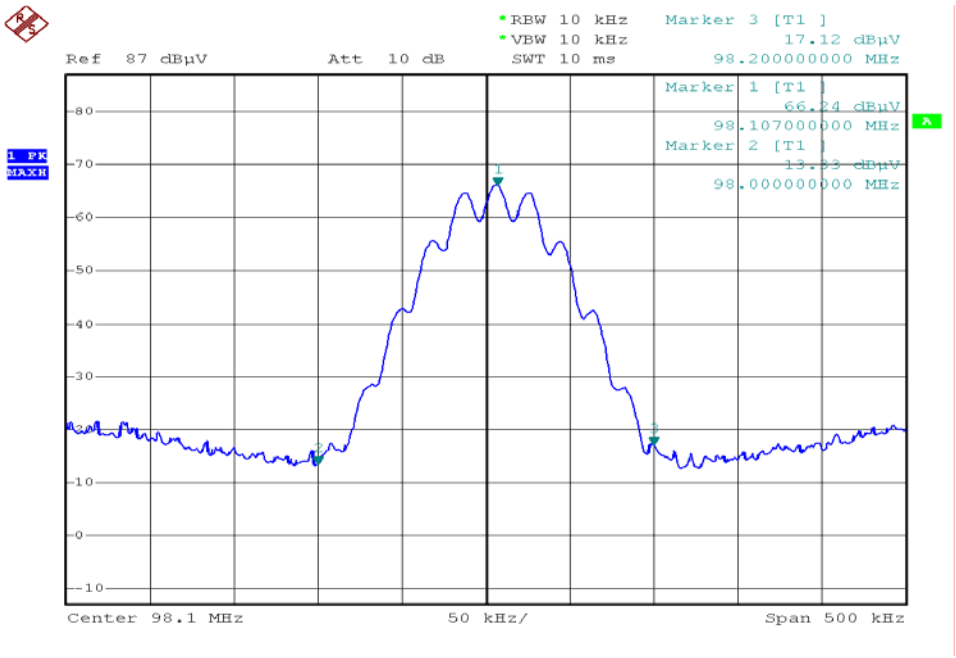
9.3 Band Edge Test Result

Test Item:	Band Edge Test
Test Voltage:	IPod supply
Test Mode:	TX ON
Temperature:	24 °C
Humidity:	52%RH

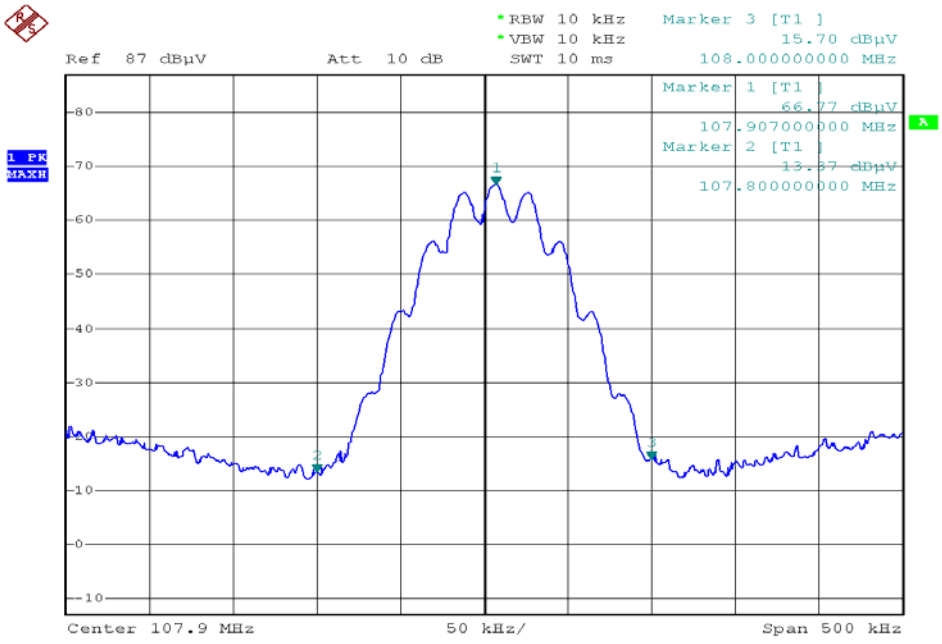
88.1 MHz.



98.1 MHz.



107.9 MHz

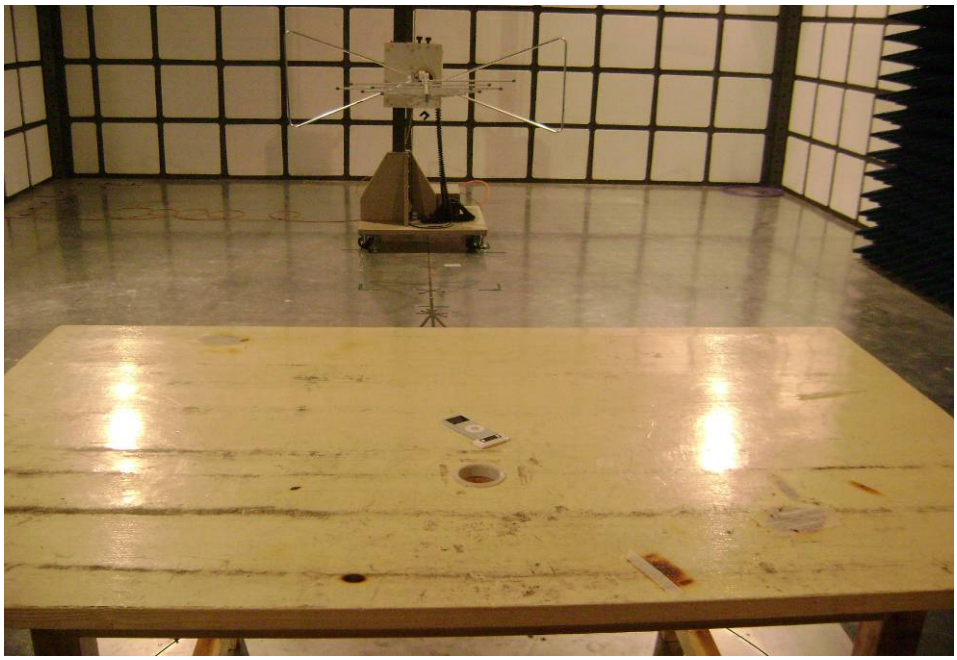


Note: (1) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.

(2) The average measurement was not performed when the peak measured data under the limit of average detection.

10 Photographs of Testing

10.1 Radiation Emission Test View

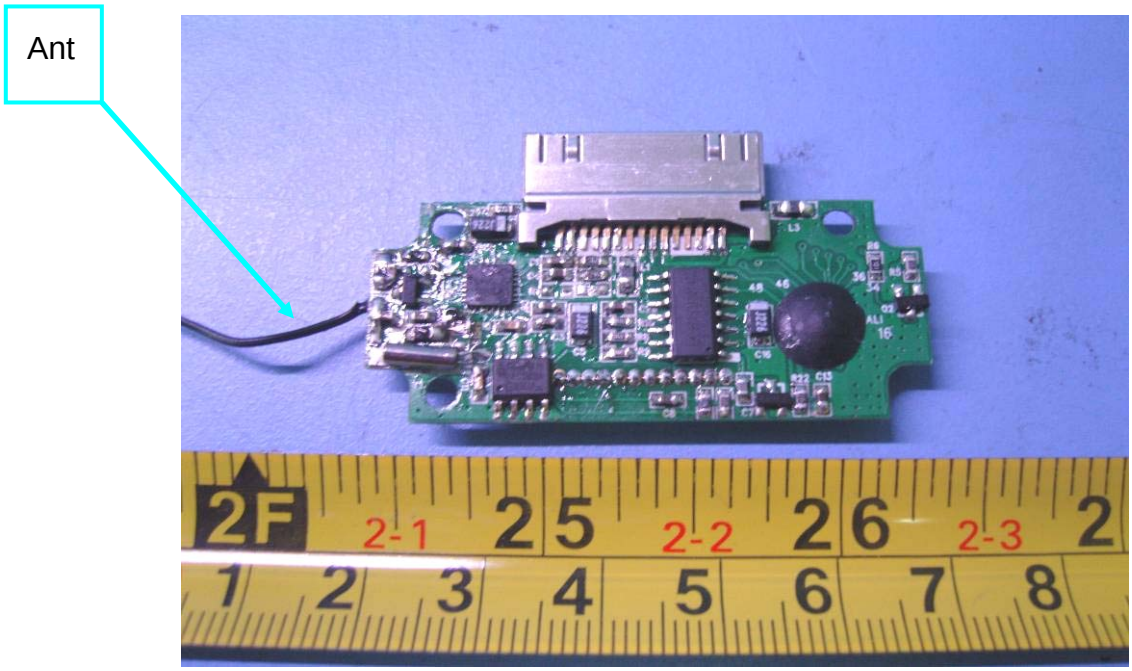


11 Photographs - Constructional Details

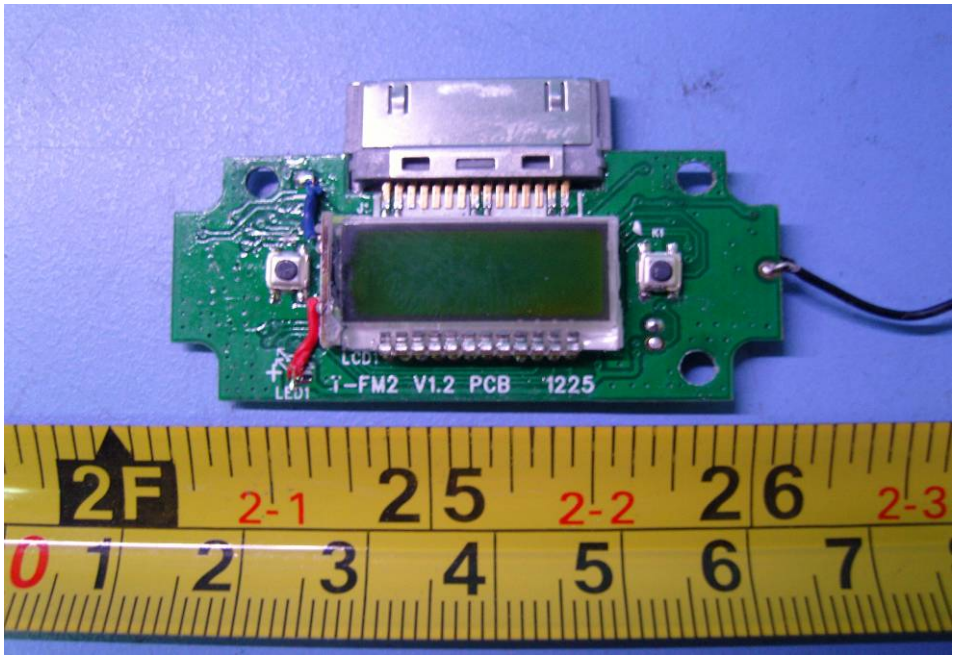
11.1 EUT - Front View

11.2 EUT - Back View

11.3 PCB - Front View



11.4 PCB - Back View



12 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. 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.

Proposed Label Location on EUT

EUT Bottom View/proposed FCC Mark Location