STC Test Report

Date : 2007-08-14
No. : HM158900

Applicant (MUE001): MAXX DIGITAL LTD.
Unit 5, 5/F., Honour Industrial Centre 6 Sun Yip Street, Chai Wan, Hong Kong.

Manufacturer: DONGGUAN MEICHENG ELECTRONICS & ELECTRICAL CO., LTD.
DONGGUAN CITY CHENGQU, SANHUAN ROAD, TIANBAO INDUSTRIAL ESTATE, GUANGDONG PROVINCE, CHINA

Description of Samples:

Product:	2GB FLASH BASED MP3 PLAYER w/FM TRANSMITTER
Brand Name:	MAXX DIGITAL
Model Number:	MP620TR
FCC ID:	VEH61020DM07

Date Samples Received: 2007-06-08, 2007-07-21

Date Tested: 2007-06-12 to 2007-08-13

Investigation Requested: Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2006 and ANSI C63.4:2003 for FCC Certification.

Conclusions: The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

Remarks: For additional models details, see page 5.

Dr. LEE Kam Chuen,
ElectroMagnetic Compatibility Department
For and on behalf of
The Hong Kong Standards and Testing Centre Ltd.

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Appendix B

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1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.
EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate
New Territories, Hong Kong

Telephone: 852 2666 1888
Fax: 852 2664 4353

1.2 Applicant Details

Applicant

MAXX DIGITAL LTD.
Unit 5, 5/F., Honour Industrial Centre 6 Sun Yip Street,
Chai Wan, Hong Kong.

Manufacturer

DONGGUAN MEICHENG ELECTRONICS & ELECTRICAL CO., LTD.
DONGGUAN CITY CHENGQU, SANHUAN ROAD,
TIANBAO INDUSTRIAL ESTATE, GUANGDONG PROVINCE, CHINA

1.3 Equipment Under Test [EUT]

Description of Sample

Model Name:	2GB FLASH BASED MP3 PLAYER w/FM TRANSMITTER
Manufacturer:	DONGGUAN MEICHENG ELECTRONICS & ELECTRICAL CO., LTD.
Brand Name:	MAXX DIGITAL
Model Number:	MP620TR
Additional Model Name:	1GB FLASH BASED MP3 PLAYER w/FM TRANSMITTER
Additional Model Number:	MP610TR
Input Voltage:	1.5Vd.c. ("AAA" size battery x 1)

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a MAXX DIGITAL LTD., 2GB FLASH BASED MP3 PLAYER w/FM TRANSMITTER. The EUT continues to transmit while button is being pressed. It is voice transmission, Modulation by IC. and type is frequency modulation.

1.4 Date of Order

2007-06-08, 2007-07-21

1.5 Submitted Sample(s):

2 Samples

1.6 Test Duration

2007-06-12 to 2007-08-13

1.7 Country of Origin

China

2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2006 and ANSI C63.4: 2003 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION
Results Summary

Test Condition	Test Requirement	Test Method	Class / Severity	Test Result	
				Pass	Failed
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.239	ANSI C63.4:2003	N/A	☒	☐
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2003	N/A	☒	☐
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2003	N/A	☒	☐

Note: N/A - Not Applicable

3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions (30 – 1000MHz)

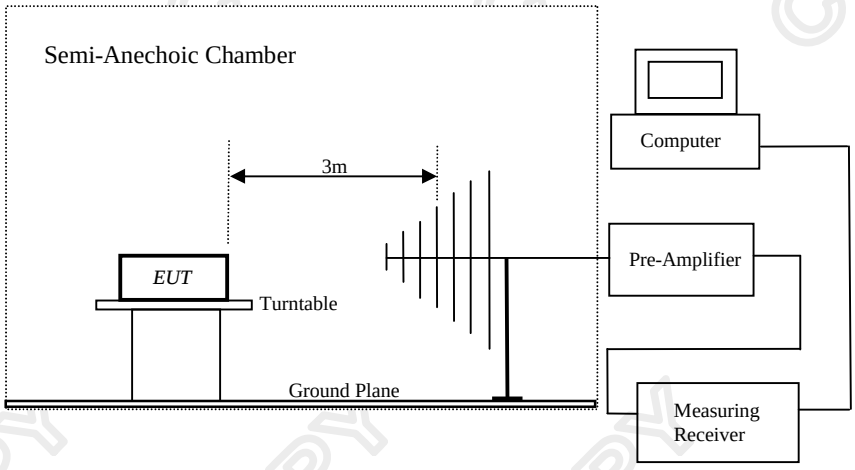
Test Requirement:	FCC 47CFR 15.239
Test Method:	ANSI C63.4:2003
Test Date:	2007-08-13
Mode of Operation:	Tx mode, MP3 play mode, Voice record mode & Download mode (Connected to PC)

Test Method:

The sample was placed 0.8m above the ground plane of semi-anechoic Chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

* Semi-anechoic chamber located on the G/F of HKSTC with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

Test Setup:



Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.239]:

Frequency Range of Fundamental [MHz]	Peak Limits [μV/m]	Average Limits [μV/m]
88-108	2,500	250

Results of Tx mode (94MHz): PASS

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
94.00	36.10	9.9	46.0	199.5	2,500	Horizontal

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
94.00	33.10	9.9	43.0	141.3	250	Horizontal

Remarks:
Correction Factor included Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty: 30MHz to 1GHz 5.2dB

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Limits [μV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of Tx mode (94MHz): PASS

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
193.70	16.2	11.6	27.8	24.5	150	Horizontal
282.00	< 1.0	14.0	< 15.0	< 5.6	200	Vertical
376.00	< 1.0	17.5	< 18.5	< 8.4	200	Vertical
470.00	< 1.0	10.2	< 11.2	< 3.6	200	Vertical
564.00	< 1.0	11.9	< 12.9	< 4.4	200	Vertical
658.00	< 1.0	12.4	< 13.4	< 4.7	200	Vertical
752.00	< 1.0	13.2	< 14.2	< 5.1	200	Vertical
846.00	< 1.0	15.0	< 16.0	< 6.3	200	Vertical
940.00	< 1.0	16.1	< 17.1	< 7.2	200	Vertical

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty: 30MHz to 1GHz 5.2dB

Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.239]:

Frequency Range of Fundamental [MHz]	Peak Limits [μV/m]	Average Limits [μV/m]
88-108	2,500	250

Results of Tx mode (96MHz): PASS

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
96.00	35.60	10.0	45.6	190.5	2,500	Horizontal

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
96.00	30.50	10.0	40.5	105.9	250	Horizontal

Remarks:
Correction Factor included Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty: 30MHz to 1GHz 5.2dB

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Limits [μV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of Tx mode (96MHz): PASS

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
192.00	< 1.0	11.6	< 12.6	< 4.3	150	Vertical
288.00	< 1.0	14.0	< 15.0	< 5.6	200	Vertical
388.00	17.9	17.9	35.8	61.7	200	Horizontal
480.00	< 1.0	10.2	< 11.2	< 3.6	200	Vertical
576.00	< 1.0	11.9	< 12.9	< 4.4	200	Vertical
672.00	< 1.0	12.4	< 13.4	< 4.7	200	Vertical
768.00	< 1.0	13.2	< 14.2	< 5.1	200	Vertical
864.00	< 1.0	15.0	< 16.0	< 6.3	200	Vertical
960.00	< 1.0	16.1	< 17.1	< 7.2	200	Vertical

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty: 30MHz to 1GHz 5.2dB

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Limits [μV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of MP Play mode: PASS

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
192.00	17.4	11.6	29.0	28.2	150	Horizontal

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty: 30MHz to 1GHz 5.2dB

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Limits [μV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of Voice mode: PASS

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
96.40	18.2	10.0	28.2	25.7	150	Horizontal
193.70	16.0	11.6	27.6	24.0	150	Horizontal

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty: 30MHz to 1GHz 5.2dB

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Limits [μV/m]
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of Download mode (Connected to PC): PASS

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
137.10	30.6	9.1	39.7	96.6	150	Horizontal
160.00	25.5	10.7	36.2	64.6	150	Horizontal
251.40	23.5	13.8	37.3	73.3	200	Horizontal

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty: 30MHz to 1GHz 5.2dB

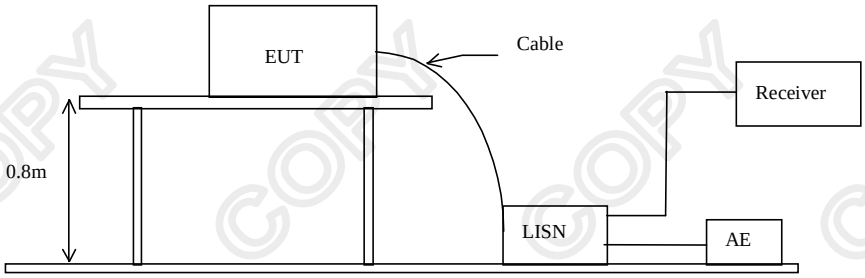
3.1.1 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.107
Test Method:	ANSI C63.4:2003
Test Date:	2007-06-12
Mode of Operation:	Download mode (connected to PC)

Test Method:

The test was performed in accordance with ANSI C63.4: 2003, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Test Setup:



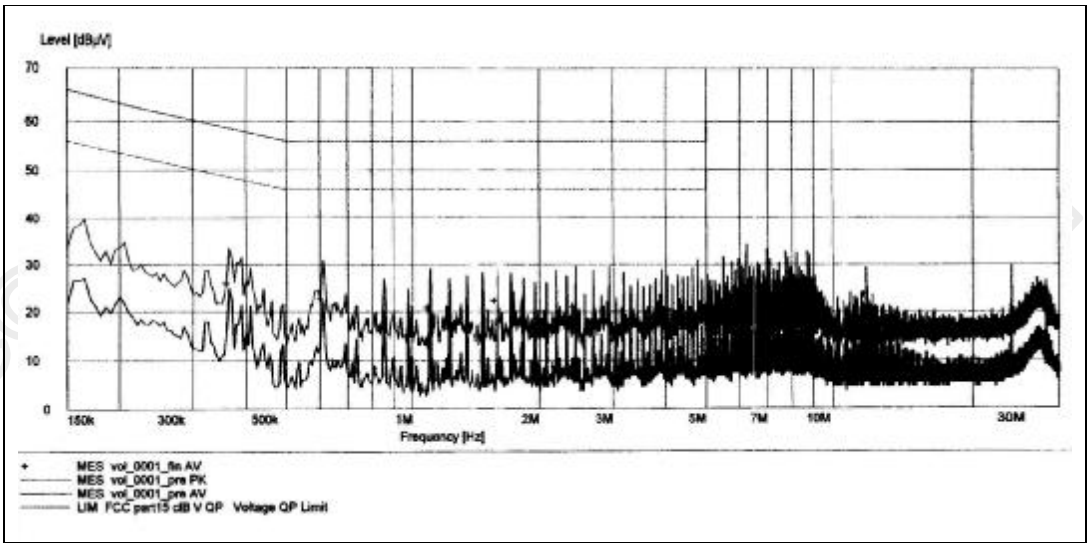
Limit for Conducted Emissions (FCC 47 CFR 15.107):

Frequency Range [MHz]	Quasi-Peak Limits [dBµV]	Average [dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Results of Download mode (connected to PC): PASS



Remarks:
Calculated measurement uncertainty: 3.97dB

3.2 20B Bandwidth of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.227
Test Method:	ANSI C63.4:2003 (Section 13.1.7)
Test Date:	2007-08-13
Mode of Operation:	Tx mode

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Test Setup:

As Test Setup of clause 3.1.1 in this test report.

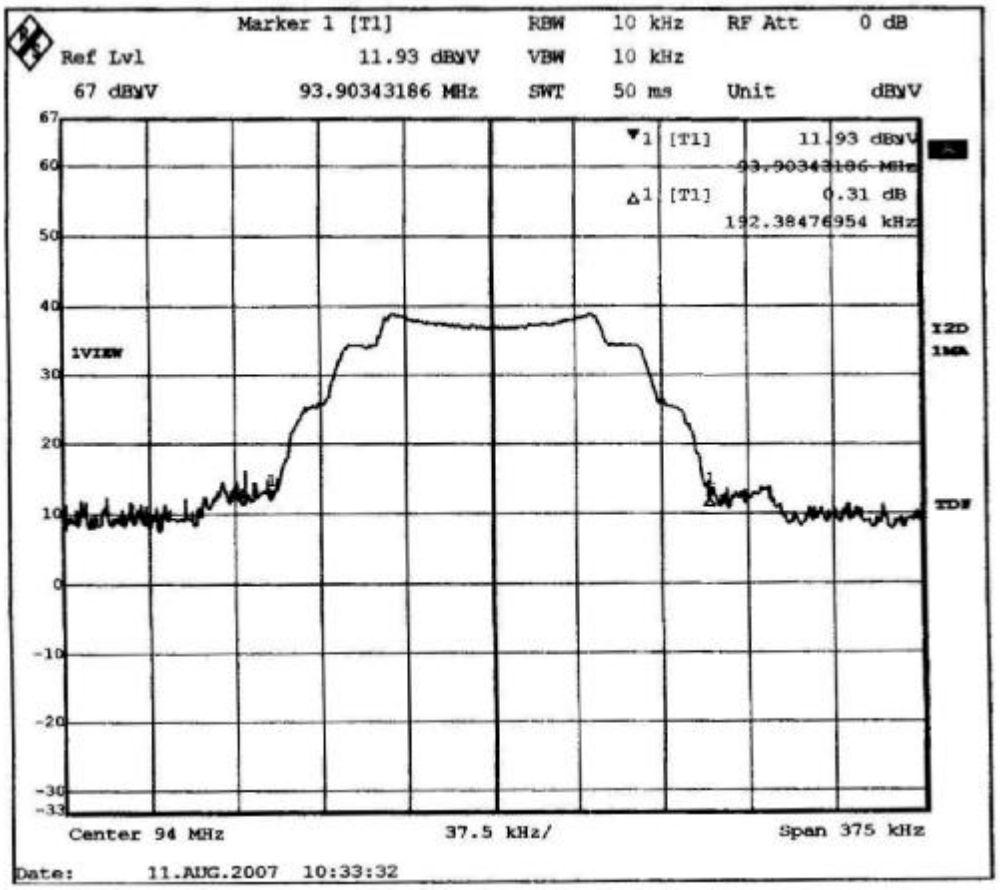
Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [kHz]	FCC Limits [kHz]
94.01	192.38	200

Result:

The following figure is the measured bandwidth of Fundamental Emission.

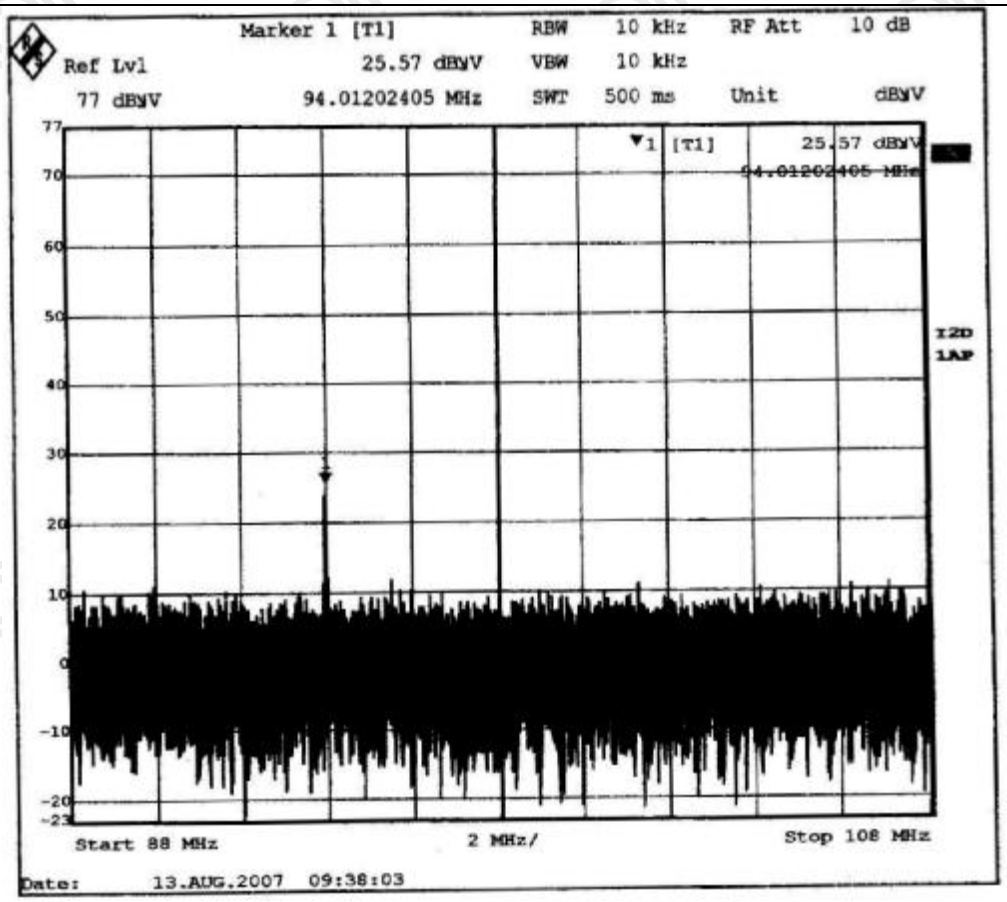
20dB Bandwidth of Fundamental Emission



Result:

The following figure is the measured bandwidth of Fundamental Emission.

20dB Bandwidth of Fundamental Emission



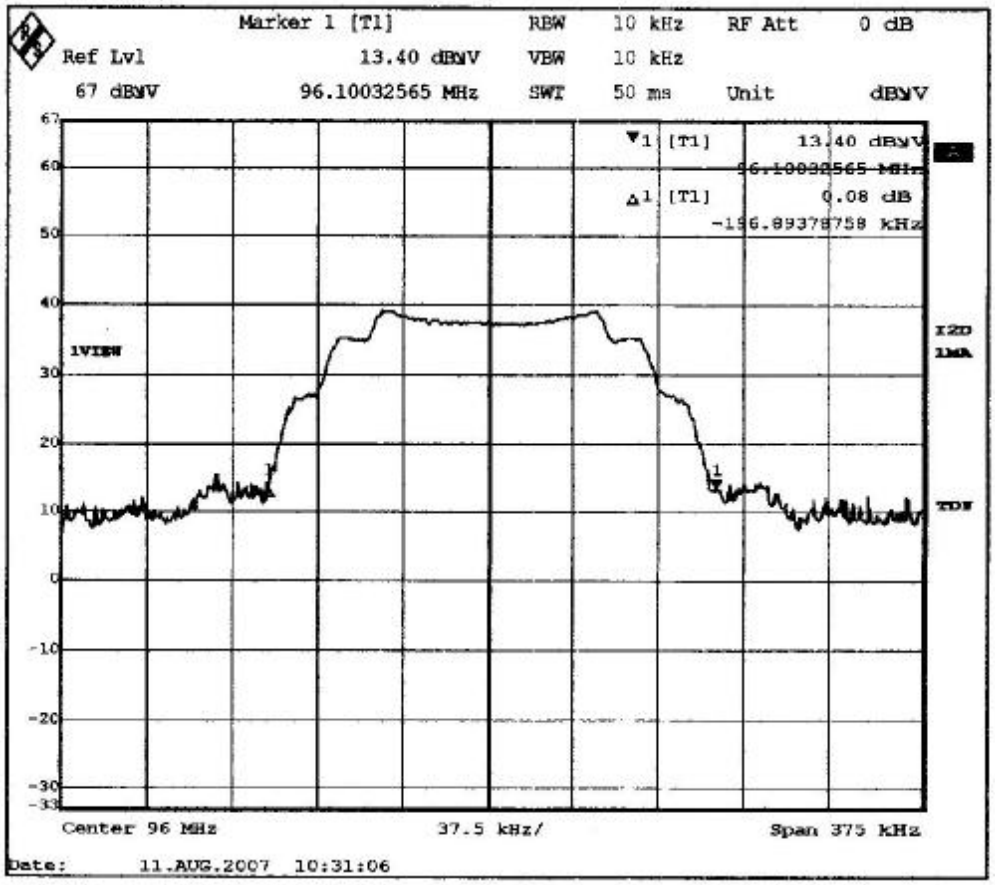
Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [kHz]	FCC Limits [kHz]
96.01	196.89	200

Result:

The following figure is the measured bandwidth of Fundamental Emission.

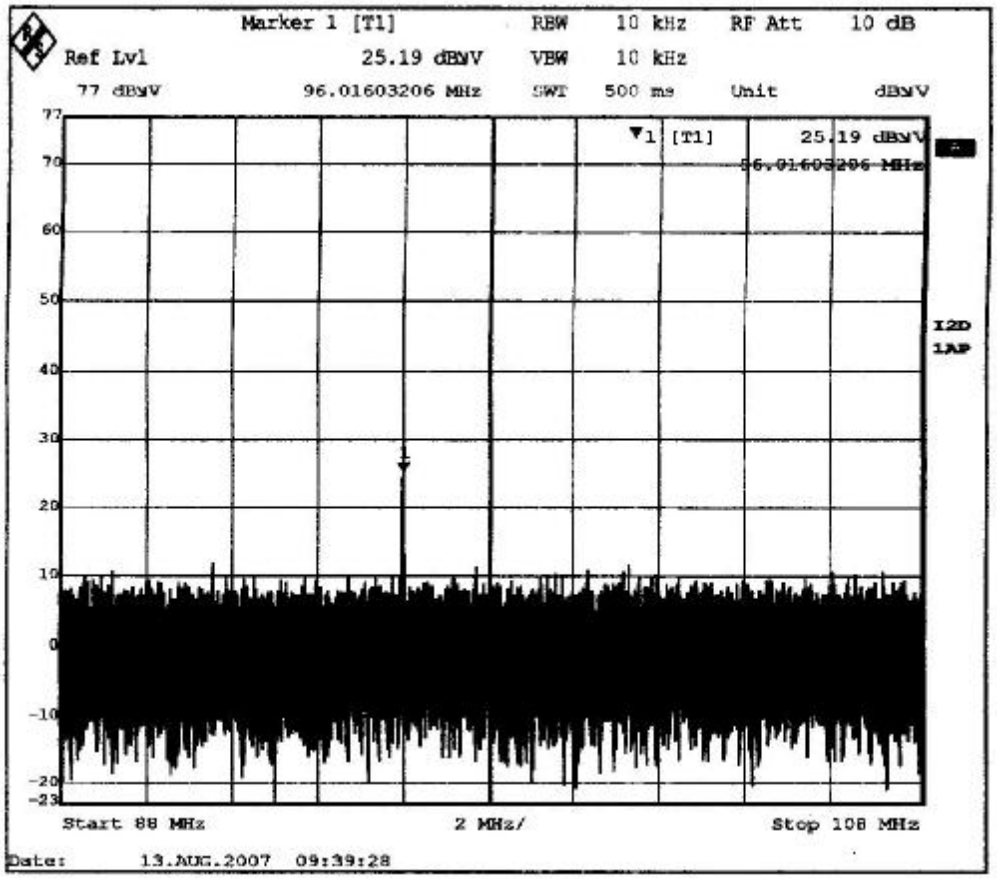
20dB Bandwidth of Fundamental Emission



Result:

The following figure is the measured bandwidth of Fundamental Emission.

20dB Bandwidth of Fundamental Emission



3.3 Operation Description

The transmitter is a FM transmitter operating at 94MHz & 96MHz band. The transmitter is powered by 1.5Vd.c. and the transmitting frequency is crystal controlled. The operation is achieved b y different combinations of from frequency modulation signal on the 94MHz & 96MHz carrier frequency.

Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM007	SPECTRUM ANALYZER	HEWLETT PACKARD	HP85660B	3144A21192	2006/12/29	2007/12/29
EM008	SPECTRUM ANALYZER DISPLAY	HEWLETT PACKARD	HP85662A	3144A20514	2006/12/29	2007/12/29
EM009	QUASIPEAK ADAPTOR	HEWLETT PACKARD	HP85650A	3303A01702	2006/12/29	2007/12/29
EM010	RF PRESELECTOR	HEWLETT PACKARD	HP85685A	3221A01410	2006/12/29	2007/12/29
EM011	ATTENUATOR/SWITCH	HEWLETT PACKARD	HP11713A	2508A10595	2006/12/29	2007/12/29
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262	2006/12/29	2007/12/29
EM020	HORN ANTENNA	ETS-LINGGREN	3115	4032	2006/07/11	2008/07/11
EM022	LOOP ANTENNA	ETS-LINGGREN	6502	1189-2424	2006/07/26	2008/07/26
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB 7	100072	22007/06/08	2008/06/08
EM215	MULTIDEVICE CONTROLER	ETS-LINGGREN	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	ETS-LINGGREN	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	ETS-LINGGREN	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINGGREN	FACT-3	--	2007/05/02	2008/05/02
EM219	BICONILOG ANTENNA	ETS-LINGGREN	3142C	00029071	2006/02/01	2008/02/01
EM229	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB 40	100248	2007/07/11	2008/07/11

Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM119	LISN	ROHDE & SCHWARZ	ESH3-Z5	0831.5518.52	2006/07/15	2007/07/15
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB 7	100072	22007/06/08	2008/06/08
EM197	LISN	ETS-LINGGREN	4825/3	1193	2006/09/25	2007/09/25
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057-99A	2006/01/12	2008/01/12

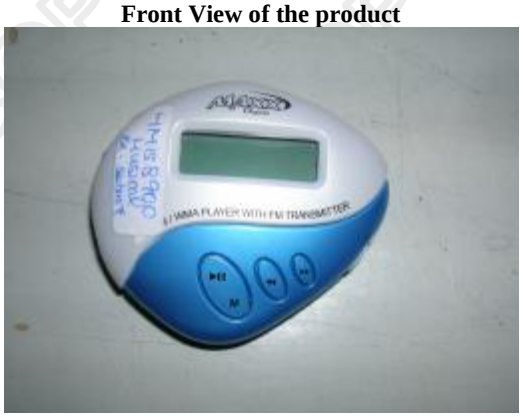
Remarks:-

CM Corrective Maintenance
N/A Not Applicable or Not Available
TBD To Be Determined

Appendix B

Photographs of EUT

Front View of the product



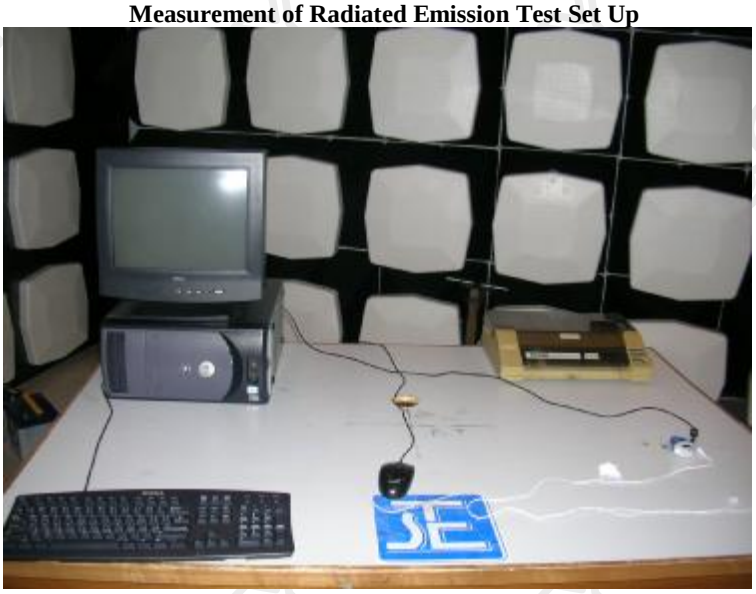
Rear View of the product

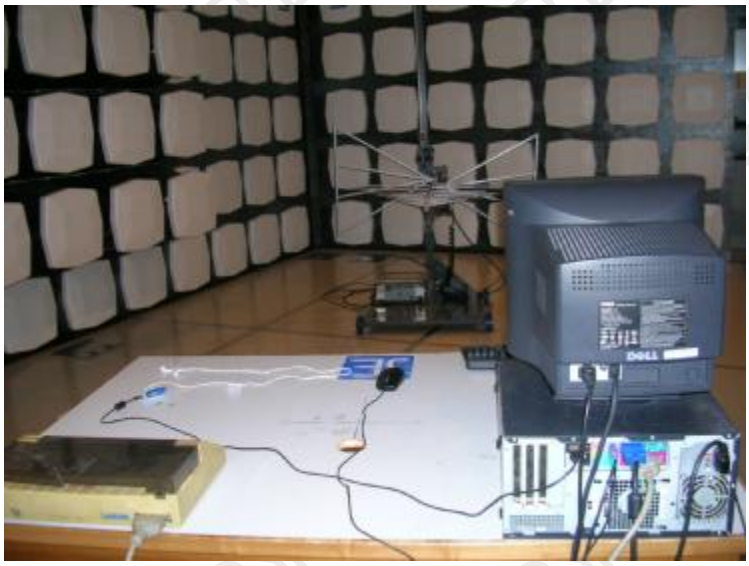
Front View of the product

Rear View of the product

Photographs of EUT

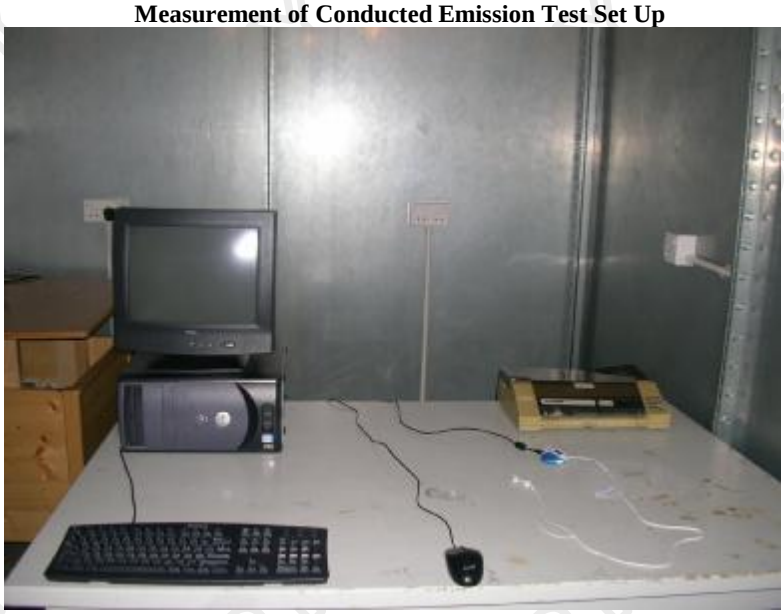
Measurement of Radiated Emission Test Set Up





Photographs of EUT

Measurement of Conducted Emission Test Set Up



******* End of Test Report *******