EMI TEST REPORT

Test Report No. : 28DE0263-HO-01-A-R1

Applicant	:	**Edmo Distributors, Inc.**
Type of Equipment	:	**VHF AM TRANSCEIVER**
Model No.	:	**FL-760**
Test standard	:	**FCC Part 87: 2006**
FCC ID	:	**VOSFL760A**
Test Result	:	**Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the client product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. Original test report number of this report is 28DE0263-HO-01-A.

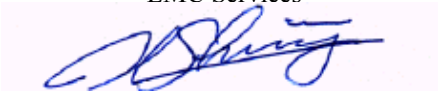
Date of test:

December 18, 2007 to January 29, 2008

Tested by:

Kenichi Adachi
EMC Services

Approved by :



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SECTION 1: Client information

Company name	: Edmo Distributors, Inc.
Address	: 12830 East Mirabeau Parkway, Spokane Valley, WA 99216 U.S.A.
Telephone Number	: +1-509-535-8280
Facsimile Number	: +1-509-535-8266
Contact Person	: Jeff Christensen

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment	: VHF AM TRANSCEIVER
Model No.	: FL-760
Serial No.	: Sample 1
Rating	: DC 13.8V (DC 11.7V to 16V) or DC 26V (DC 21V to 31V)
Country of Manufacture	: JAPAN
Receipt Date of Sample	: December 18, 2007
Condition of EUT	: Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	: No modification by the test lab.

2.2 Product Description

Model: FL-760 (referred to as the EUT in this report) is the VHF AM TRANSCEIVER.
The VHF AM TRANSCEIVER is used with the aircraft.

Equipment Type	: Transceiver
Emission Designation	: 6K00A3E
Frequency of Operation	: Transmitting: 118MHz to 136.975MHz Receiving: 108MHz ot 136.975MHz
Other Clock Frequency	: IF : 38.85MHz (1st) and 450kHz (2nd) 4.194304MHz (CPU), 38.4MHz (2nd Local), 12.8MHz (Tcxo)
Modulation	: AM
Channel spacing	: 25kHz
Method of Frequency Generation	: Synthesized method
Antenna Type	: 1 / 4 wave whip
Antenna Connector	: BNC
Opearating temperature range	: -20 deg.C. to +60 deg.C.
(Radio part) Opearating Voltage (inner)	: DC 9V

SECTION 3: Test specification, procedures and results

3.1 Test Specification

Test Specification : FCC Part87: 2006

Title : AVIATION SERVICES

3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	RF Output Power	FCC Section 2.1046, TIA/EIA-603-C Section 2.2.1	Section 87.131	-	N/A	-	Complied
2	Audio Frequency Response	FCC Section 2.1047(a), TIA/EIA-603-C Section 2.2.6	-	-	N/A	-	Complied
3	Modulation Limiting	FCC Section 2.1047(b) , TIA/EIA-603-C Section 2.2.3	Section 87.141(b)	-	N/A	-	Complied
4	Bandwidth of Emission	FCC Section 2.1049, TIA/EIA-603-C Section 2.2.11	Section 87.139(a), 87.135	-	N/A	-	Complied
5	Spurious Emission at Antenna Terminals	FCC Section 2.1051, TIA/EIA-603-C Section 2.2.13	Section 87.139(a)(3)	-	N/A	7.89dB 382.60MHz	Complied
6	Field Strength of Spurious Emission	Section 2.1053, TIA/EIA-603-C Section 2.2.12	Section 87.139(a)(3)	-	N/A	14.0dB 255.00MHz Horizontal	Complied
7	Frequency Stability Measurement	Section 2.1055, TIA/EIA-603-C Section 2.2.2	Section 87.133(a)	-	N/A	-	Complied
8	99% Occupied Bandwidth	Section 2.1049	(Reference)	-	N/A	-	N/A
Note: UL Japan, Inc.'s EMI Work Test Procedure QPM05.							

*These tests were also referred to TIA/EIA-603-C: 2004 "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards".

3.3 Uncertainty

EMI
The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Test room	Conducted emission	Radiated emission (10m*)			Radiated emission (3m*)			Radiated emission (3m*)	
	150kHz-30MHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	1GHz-18GHz	18GHz-40GHz
No.1 semi-anechoic Chamber (±)	3.7dB	3.1dB	4.7dB	4.4dB	3.2dB	3.7dB	4.4dB	5.9dB	6.1dB
No.2 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.3dB	3.9dB	5.9dB	6.1dB
No.3 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.2dB	4.4dB	5.9dB	6.1dB
No.4 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.2dB	4.4dB	5.9dB	6.1dB

*10m/3m = Measurement distance

Radiated emission test(3m)
The data listed in this test report has enough margin, more than the site margin.

3.4 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. Code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	IC4247-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	IC4247-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	N/A	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.5 Test setup and test instruments

Refer to APPENDIX 1 and 2.

SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

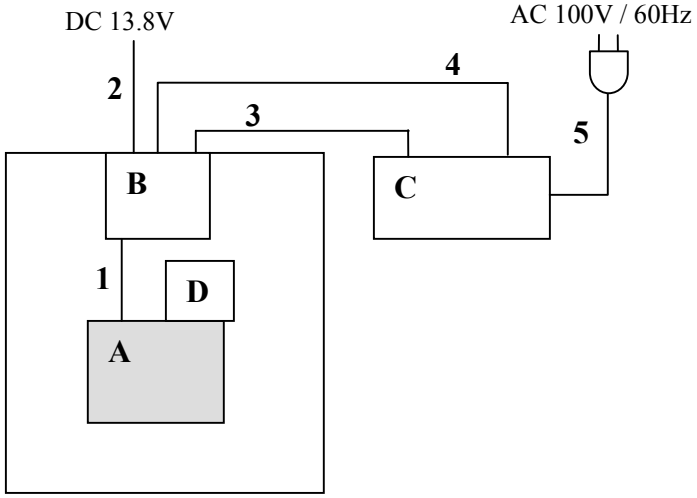
The sequence is used : Transmitting
-Low Channel: 118.0MHz,
-Mid Channel: 127.5MHz,
-High Channel: 136.975MHz

Justification : The system was configured in typical fashion (as a customer would normally use it) for testing.

4.2. Configuration and peripherals

4.2.1 Radiated emission

<Top view>



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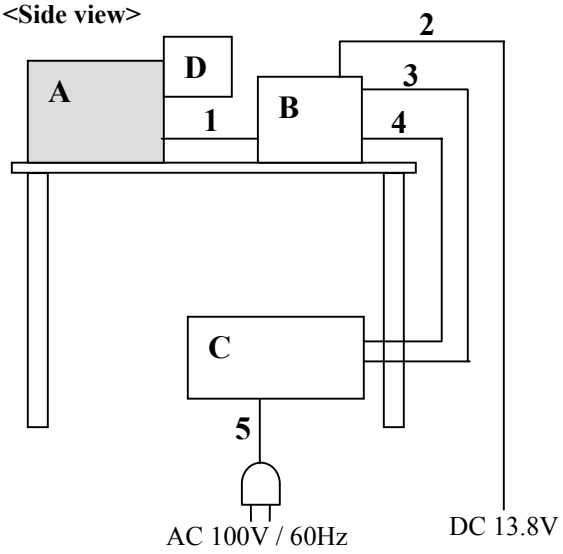
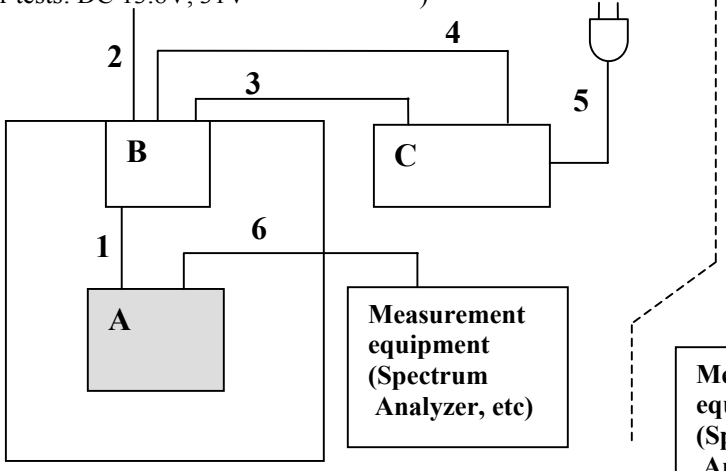


* Cabling and setup were taken into consideration and test data was taken under worst case conditions.

4.2.2 Antenna Terminal Test

<Top view>

(Frequency Stability: DC 11.7V, 26V, 31V,)
(Spurious, 99%Occupied BW: DC 31V,)
(Other tests: DC 13.8V, 31V)



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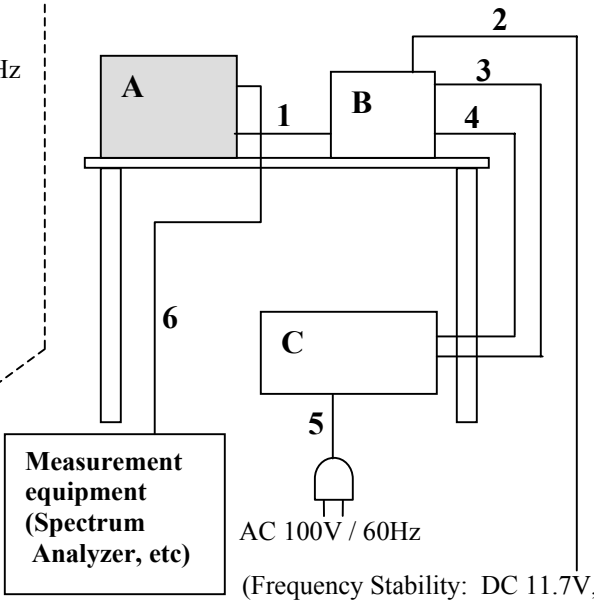


(Frequency Stability: DC 11.7V, 26V, 31V,)
(Spurious, 99%Occupied BW: DC 31V,)
(Other tests: DC 13.8V, 31V)

* Cabling and setup were taken into consideration and test data was taken under worst case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	VHF AM TRANSCEIVER	FL-760	Sample 1	Edmo Distributors	EUT
B	Jigu	-	-	CSR	-
C	Audio Analyzer	VA-2230	5040076	KENWOOD	-
D	Terminator	CT-03NP	1257639E	TME	-

List of cables used

No.	Name	Length (m)	Shield		Backshell Material
			Cable	Connector	
1	Signal Cable	0.05	Unshielded	Unshielded	Polyvinyl chloride
2	DC Cable	0.9	Unshielded	Unshielded	Polyvinyl chloride
3	Audio Cable	0.7	Shielded	Shielded	Polyvinyl chloride
4	Audio Cable	1.5	Shielded	Shielded	Polyvinyl chloride
5	AC Cable	2.0	Unshielded	Unshielded	Polyvinyl chloride
6	Coaxial Cable (Measurement)	1.0	Shielded	Shielded	Polyvinyl chloride

SECTION 5: RF Output power

5.1 Test Procedure : FCC Part 2.1046, Part 87.131, TIA/EIA-603-C section 2.2.1

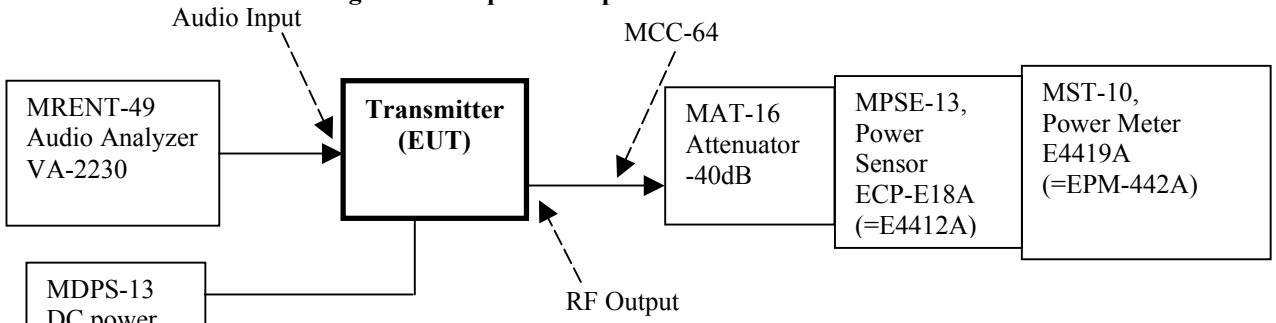
To achieve the maximum power output rating, measurement was taken with EUT.

The EUT was aligned for transmitter operation on 118MHz (Low), 127.5MHz(Mid), 136.975MHz (High) at full rated power.

Measured items is none modulation mode and modulation mode.
The Carrier is modulated by a 2.5kHz tone at an input level 16dB greater than that necessary to produce 50 percent modulation(1kHz). The input level shall be established at the frequency of maximum response of the audio modulation. (EUT audio input level: -23.5dBm = 50% modulation level: -39.5dBm + 16dB)

RF output level is measured with Power Meter on RF output port.

5.2 Test data : APPENDIX 2
5.3 Test result : Pass
5.4 Test instruments : MPM-10, MPSE-13, MAT-16, MCC-64, MRENT-49 , MDPS-13
5.5 Measurement Block Diagram of RF power output



< RF Power Measurement (FCC Part 2.1046, FCC87.131, TIA/EIA-603-C section 2.2.1) >

SECTION 6: Audio Frequency Response

6.1 Test Procedure : FCC Part 2.1047, TIA/EIA-603-C section 2.2.6

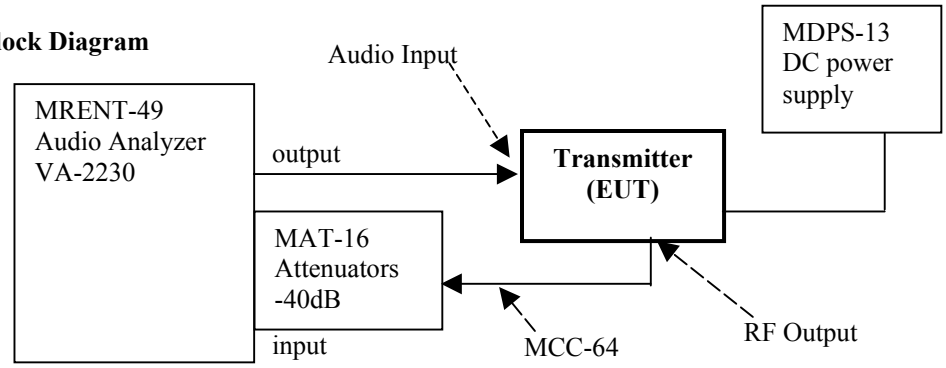
The EUT was aligned for transmitter operation on 127.5MHz at full rated power.

When frequency from 1kHz is applied to audio (Dynamic microphone port) input of EUT each input level that necessary to produce 20 percent modulation(1kHz).

RF output level is measured with Audio Analyzer (input audio signal frequency 300Hz to 3kHz).

6.2 Test Data : APPENDIX 2
5.3 Test Result : Pass
6.4 Test Instrument : MRENT-49, MCC-64 , MAT-16 , MDPS-13

6.5 Measurement Block Diagram



< Audio Frequency Response (FCC part 2.1047, TIA/EIA-603-C section 2.2.6) >

SECTION 7: Modulation Limiting

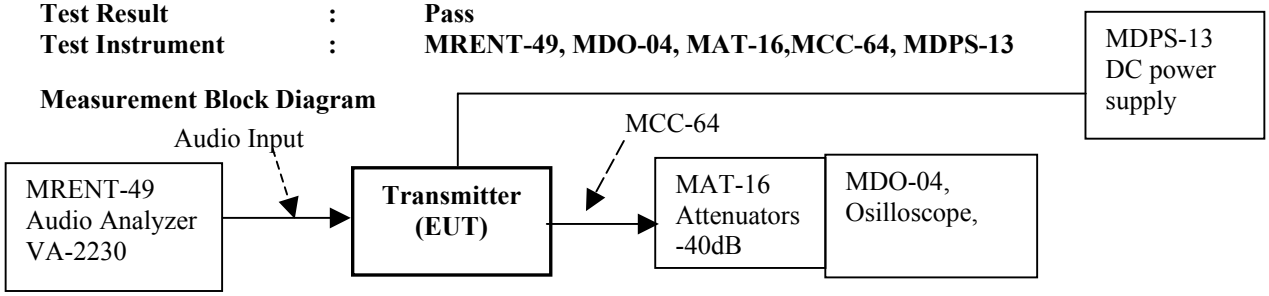
7.1 Test Procedure : FCC Part 2.1047, , Part 87.141(b), TIA/EIA-603-C section 2.2.3

The EUT was aligned for transmitter operation on 127.5MHz at full rated power.

When input Level from –80dBV to -35dBV is applied to audio (Dynamic microphone port) input of EUT each modulation frequency 300Hz, 1kHz and 3kHz, Amplifier Modulation rate is measured by Osilloscope.

7.2 Test Data : APPENDIX 2
7.3 Test Result : Pass
7.4 Test Instrument : MRENT-49, MDO-04, MAT-16,MCC-64, MDPS-13

7.5 Measurement Block Diagram



< Modulation Limiting (FCC part 2.1047, TIA/EIA-603-C section 2.2.3) >

SECTION 8: Bandwidth of Emission

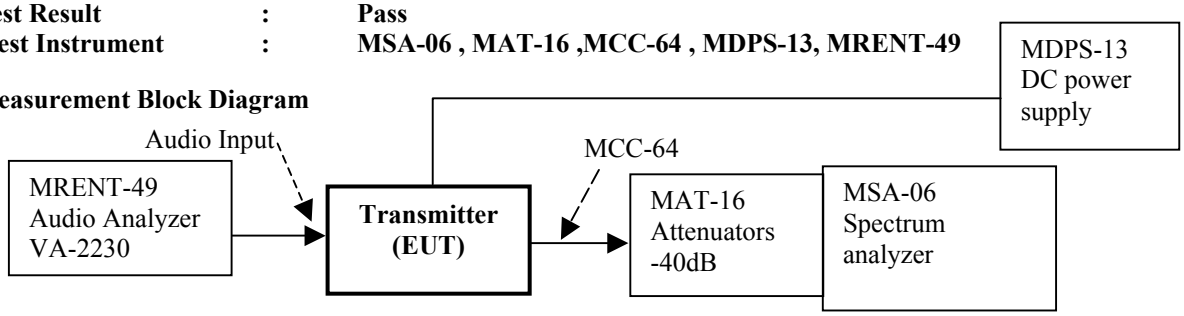
8.1 Test Procedure : FCC Part 2.1049 , Part 87.135, 87.139(a) , TIA/EIA-603-C section 2.2.11

1) Set the reference level the spectrum analyzer to the unmodulation carrier level on the EUT

2) The Carrier is modulated by a 2.5kHz tone at an input level 16dB greater than that necessary to produce 50 percent modulation(1kHz). The input level shall be established at the frequency of maximum response of the audio modulation. (EUT audio input level: -23.5dBm = 50% modulation level: -39.5dBm + 16dB)

8.2 Test Data : APPENDIX 2
8.3 Test Result : Pass
8.4 Test Instrument : MSA-06 , MAT-16 ,MCC-64 , MDPS-13, MREN-49

8.5 Measurement Block Diagram



< Emission Bandwidth (FCC Part 2.1049, FCC part 87.135, 87.139(a), TIA/EIA-603-C section 2.2.11) >

SECTION 9: Spurious emission at Antenna Terminals

9.1 Test Procedure : FCC Part 2.1051, part 87.139(a), TIA/EIA-603-C section 2.2.13

The EUT was aligned for transmitter operation on 118MHz (Low), 127.5MHz(Mid), 136.975MHz (High) at full rated power.

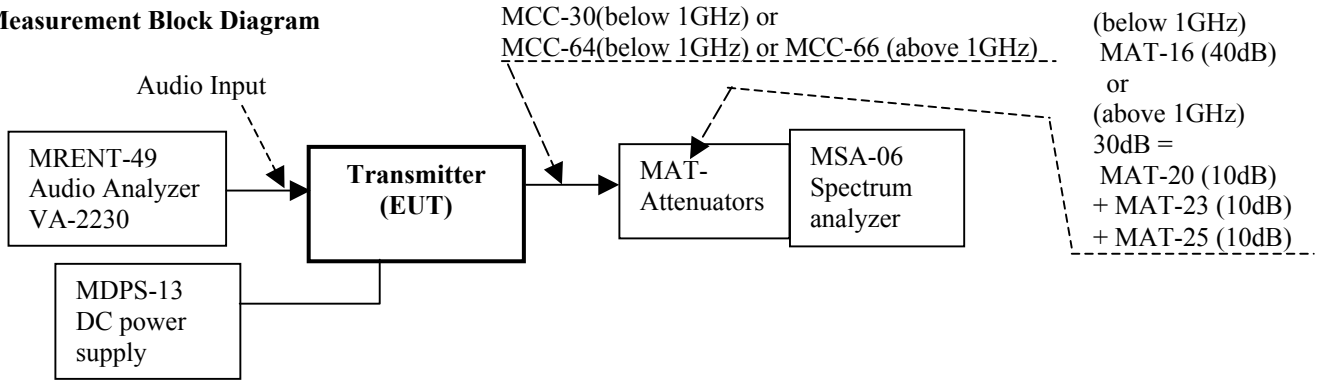
The Carrier is modulated by a 2.5kHz tone at an input level 16dB greater than that necessary to produce 50 percent modulation(1kHz). The input level shall be established at the frequency of maximum response of the audio modulation. (EUT audio input level: -23.5dBm = 50% modulation level: -39.5dBm + 16dB)

When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB, < (-13 dBm)

Frequency	Below 1GHz	Above 1GHz
Instrument used	Spectrum Analyzer	Spectrum Analyzer
IF Bandwidth	PK: RBW: 10kHz/VBW: 30kHz	PK: RBW: 1MHz/VBW: 3MHz

9.2 Test Data : APPENDIX 2
9.3 Test result : Pass
9.4 Test Instrument : MSA-06, MREN-49, MDPS-13,
+ [below 1GHz] MAT-16, MCC-64 or MCC-30,
+ [above 1GHz] MAT-20, MAT-23, MAT-25, MCC-66

9.5 Measurement Block Diagram



< Spurious Emission at Antenna Terminals (FCC Part 2.1051, part 87.139, TIA/EIA-603-C section 2.2.13) >

SECTION 10: Field Strength of Spurious Emission

10.1 Test Procedure FCC part 2.1053, part 87.139(a), TIA/EIA-603-C section 2.2.12

1) The EUT was aligned for transmitter operation on 118MHz (Low), 127.5MHz(Mid), 136.975MHz (High) at full rated power.

2) The Carrier is modulated by a 2.5kHz tone at an input level 16dB greater than that necessary to produce 50 percent modulation. The input level shall be established at the frequency of maximum response of the audio modulation.
(EUT audio input level: -23.5dBm = 50% modulation level: -39.5dBm + 16dB)

3) The RF ports was terminated with 50 ohm load and all ports was terminated with respective loads.

4) Tune-up the transmitter (EUT)

5) For each spurious measurement the receiving antenna is adjusted to the correct length for the frequency involved. These measurements are made from the lowest radio frequency generated in the EUT or 30MHz to the tenth harmonics of the carrier.

6) EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, raised 1m above the conducting ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.
The Radiated Electric Field Strength intensity has been measured in semi anechoic chamber with a ground plane and at a distance of 3m.
The measuring antenna height was varied between 1 to 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
The measurements were performed for both vertical and horizontal antenna polarization.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Spectrum Analyzer	Spectrum Analyzer
IF Bandwidth	PK: RBW: 10kHz/VBW: 300kHz	PK: RBW: 1MHz/VBW: 3MHz

7) Exchanged the EUT to the Substitution Antenna, the measurement was set for the same height 0.8m as the EUT. The frequency below 1GHz of the Substitution Antenna was used as the Half wave dipole Antenna, which is harmonized with the measured frequency in 6).
The frequency above 1GHz of the Substitution Antenna was used with Horn Antenna.
The Substitution Antenna was connected with the Signal Generator, and the polarized electromagnetic radiation of the Substitution Antenna was matched with the one of the measuring Antenna, which was set with the Signal Generator to the measured frequency in 6). Then, we set with the Output power (CW) of the Signal Generator where the measuring electromagnetic field is equal to the measured value in 6).
The measuring antenna height varied between 1 and 4m to obtain the maximum receiving level.
Its Output power of Signal Generator was recorded.

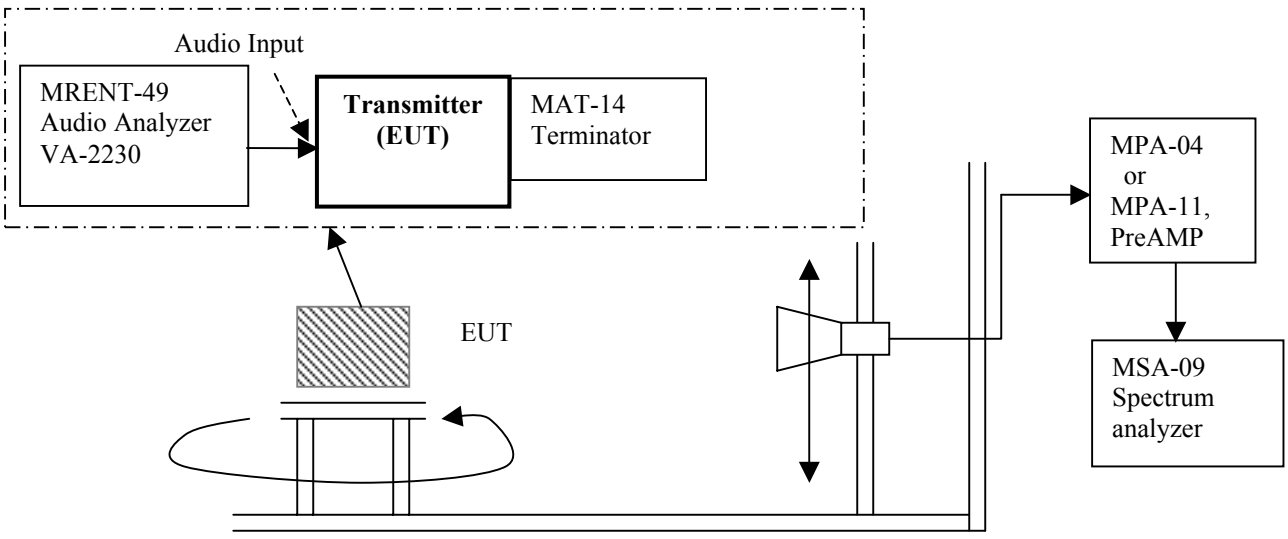
8) Equivalent Isotropic Radiated power was calculated by subtracting the cable loss and the attenuator loss connected between the Signal Generator and the Substitution Antenna from the Output power of the Signal Generator recorded in 7). For the usage of the Antenna (Horn Antenna) except for the Half wave dipole Antenna (2.15dBi) for the Substitution Antenna, the Equivalent Isotropic Radiated power was calculated by compensating the finite difference in the Antenna gain of the Half wave dipole Antenna, and Substitution Antenna.

When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB, < (-13 dBm)

10.2 Test Data : APPENDIX 2
10.3 Test Result : Pass

10.4 Test Instrument : MAEC-01, MTR-01, MCC-01, MPA-04, MAT-06, MBA-01, MLA-09, MAEC-03, MSA-09, MCC-56, MPA-11, MHA-20,

10.5 Measurement Block Diagram



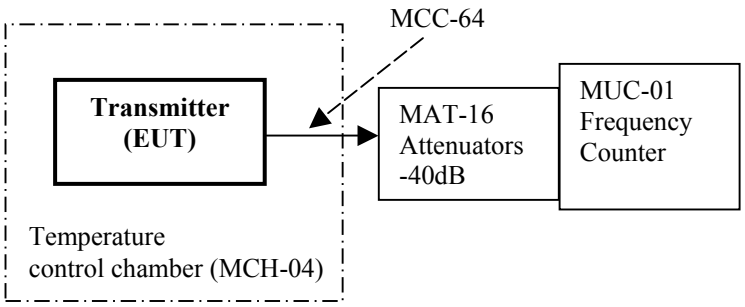
< Field Strength of Spurious Emission (FCC Part2.1053, part 87.139, TIA/EIA-603-C section 2.2.12) >

SECTION 11: Frequency Stability Measurement

11.1 Test Procedure : FCC part 2.1055, FCC 87.133(a), TIA/EIA-603-C section 2.2.2

The EUT was aligned for transmitter operation on 118MHz (Low), 127.5MHz(Mid), 136.975MHz (High) by unmodulation

11.2 Test Data : APPENDIX 2
11.3 Test Result : Pass
11.4 Test Instrument : MCH-04 , MUC-01 , MCC-64 , MAT-16 , MDPS-13
11.5 Measurement Block Diagram



< Frequency Stability(FCC Part 2.1055, part 87.133, TIA/EIA-603-C section 2.2.2) >