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FCC PART 87

TEST REPORT

APPLICANT	Avidyne Corporation
	420 N Wickham Road
	Melbourne FL 32935
FCC ID	RZY00060
MODEL NUMBER	DVX-740/750
PRODUCT DESCRIPTION	Aviation (Aircraft) Radio
DATE SAMPLE RECEIVED	June 12, 2006
DATE TESTED	June 15 th , 2006
TESTED BY	Joe Scoglio
APPROVED BY	Mario de Aranzeta
TIMCO REPORT NO.	A\AVIDYNE\1239AUT6\1239AUT6TestReport.doc
TEST RESULTS	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Certificate # 0955-01

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STATEMENT OF COMPLIANCE



Certificate # 0955-01

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report and demonstrate that the equipment complies with the appropriate standards. No modifications were made to the equipment during testing in order to demonstrate compliance with these standards.

I attest that the necessary measurements were made by me or under my supervision, at Timco Engineering, Inc. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.

Authorized by: Mario de Aranzeta



Signature:

Function: Engineer

Date: July 7th, 2006

Tested by: Joe Scoglio

Signature: on file

GENERAL INFORMATION

DUT Specification

The test results relate only to the items tested.	
DUT Description	AM Aviation Transciever (Aircraft)
FCC ID	RZY00060
Model Number	DVX-740/750
Operating Frequency	118.000 to 136.992 MHz
Type of Emission	6k0A3E
Modulation	AM
DUT Power Source	<input type="checkbox"/> 110–120Vac/50– 60Hz
	<input checked="" type="checkbox"/> DC Power 28 Vdc
	<input type="checkbox"/> Battery Operated Exclusively
Test Item	<input type="checkbox"/> Prototype
	<input checked="" type="checkbox"/> Pre-Production
	<input type="checkbox"/> Production
Type of Equipment	<input checked="" type="checkbox"/> Fixed
	<input type="checkbox"/> Mobile
	<input type="checkbox"/> Portable
Antenna	N/A
Antenna Connector	BNC

Test Facility: The test sites used by Timco Engineering Inc. for collecting radiated and conducted emission data is located at 849 NW State Road 45 Newberry, FL 32669 USA.

Test Condition: The DUT was tested in the laboratory in an environment with normal temperature and humidity. The temperature was 26°C with a relative humidity of 50%.

Modification to the DUT: No modification was made to the DUT during testing.

Test Exercise (e.g software description, test signal, etc.): The DUT was placed in continuous transmit mode of operation.

Applicable Standards: TIA 603-C-2004
FCC CFR 47 Part 87

Part 2.1033(c) (4) Type of Emission: 6K0A3E

$$\begin{aligned}B_n &= 2M \\M &= 3000 \\B_n &= 2(3000) = 6k\end{aligned}$$

The authorized bandwidth is 25 kHz.

Part 2.1033(c)(8) DC Voltages and Current into Final Amplifier:
POWER INPUT:

FINAL AMPLIFIER ONLY
INPUT POWER – HIGH: (28 Vdc)(3.0A) = 84 Watts

EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 12/7/05	12/7/07
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 12/7/05	12/7/07
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 12/8/05	12/8/07
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 12/8/05	12/8/07
Antenna: Biconnical	Electro- Metrics	BIA-25	1171	CAL 4/29/05	4/29/07
Antenna: Log-Periodic	Electro- Metrics	LPA-25	1122	CAL 8/26/04	8/26/06
Antenna: Double- Ridged Horn	Electro- Metrics	RGA-180	2319	CAL 12/29/04	12/29/06
LISN	Electro- Metrics	ANS-25/2	2604	CAL 8/27/04	8/27/06
Termaline Wattmeter	Bird Electronic Corporation	611	16405	CAL 7/16/04	7/16/06

TEST PROCEDURE

Power Line Conducted Interference: The procedure used was ANSI 63.4 2003 using a 50uH LISN. Both lines were observed with the UUT transmitting. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

Power Output: The RF power output was measured at the antenna feed point using a power meter.

Antenna Conducted Emissions: The RBW = 100 kHz, VBW = 300 kHz and the span set to 10.0 MHz and the spectrum was scanned from 30 MHz to the 10th Harmonic of the fundamental.

Radiation Interference: The test procedure used was ANSI/TIA 603 using an Agilent spectrum receiver with pre-selector. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz using an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a micro-volt at the output of the antenna.

RF POWER OUTPUT

Rule Part No.: Part 2.1046(a), Part 87.131

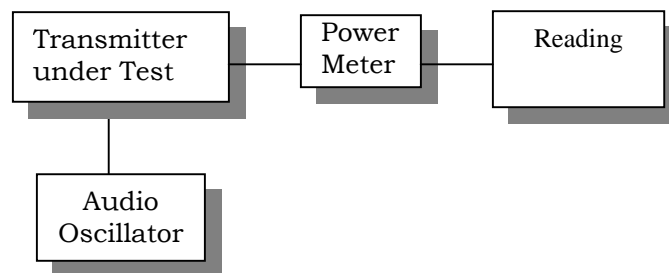
Test Requirements:

Method of Measurement: RF power is measured by connecting a 50-ohm, resistive wattmeter to the RF output connector. With a nominal battery voltage, and the transmitter properly adjusted the RF output measures:

For a Device that has a fixed antenna, RF power is measured as ERP as the antenna is permanently attached. The substitution method is used.

For this EUT, with a nominal battery voltage and the transmitter properly adjusted the RF conducted output measures:

Test Setup Diagram:



Test Data:

OUTPUT POWER: HIGH – 16.0 Watts

MODULATION CHARACTERISTICS

Rule Part No.: Part 2.1047(a)(b)

Test Requirements:

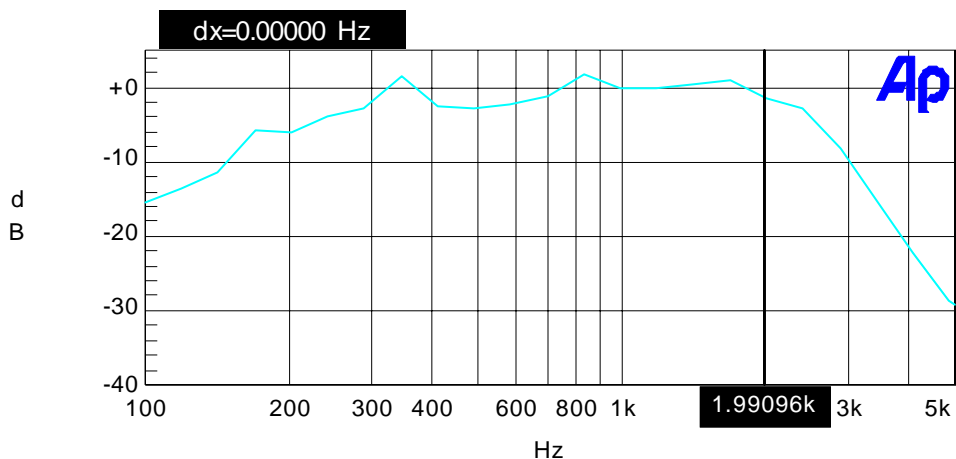
Method of Measurement:

Audio frequency response

The audio frequency response was measured in accordance with TIA/EIA Specification 603 with the exception that for an AM modulated transmitter the input was varied for a constant modulation of 20%. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 – 5000Hz shall be submitted. The audio frequency response curve is shown below.

1239aut6 audio freq response
max 90% audio level

06/26/06 12:00:14



Color	Line Style	Thick	Data	Axis	Cursor1
Cyan	Solid	1	Anlr.Level A!Normalize	Left	..

MaxFreq.at1

VOICE MODULATED COMMUNICATION EQUIPMENT

AUDIO INPUT VERSUS MODULATION

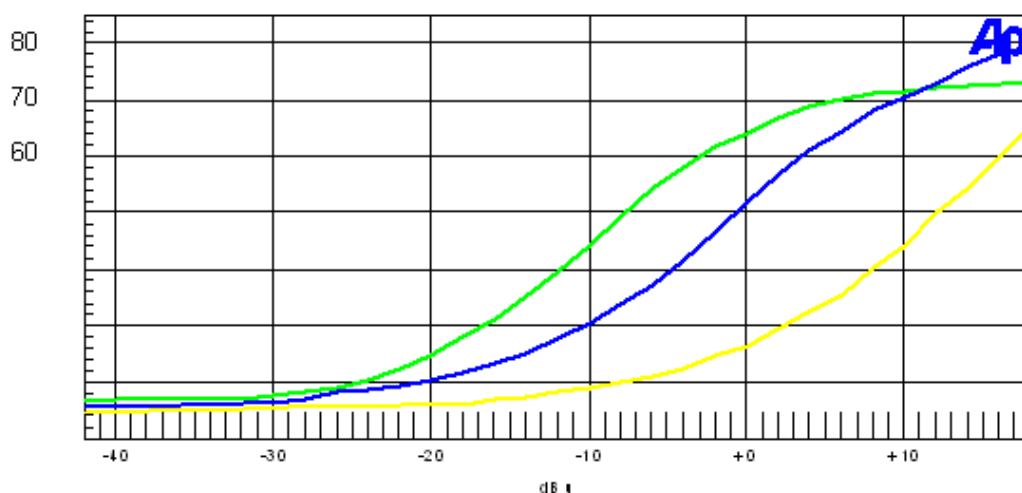
Rule Part No.: Part 2.1047(b) & 87.141

Test Requirements:

Method of Measurement: Modulation shall not exceed 100%, The audio input level needed for a particular percentage of modulation was measured in accordance with ANSI Specification 603. The audio input curves versus modulation are shown below. Curves are provided for audio input frequencies of 300, 1000, and 2500 Hz.

Test data: Please see the plots below

Modulation Limiting Plots:
2.5KHz (Green), 1.0KHz (Blue), and 300Hz (Yellow)



% modulation on the vertical scale

AUDIO LOW PASS FILTER

Rule Part No.: Part 2.1047(a), Part 87.141(F)

Test Requirements:

Method of Measurement:

Test Data: Not applicable. This rule part is only required for FM modulation.

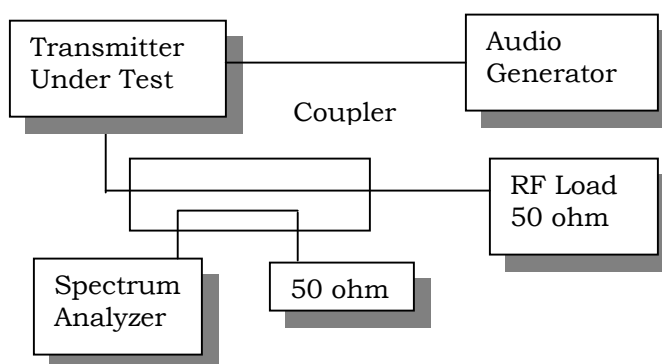
OCCUPIED BANDWIDTH

Rule Part No.: Part 2.1049, Part 87.139

Test Requirements: Data in the plots show that on any frequency removed from the assigned frequency by more than 250% of the authorized bandwidth: At least $43 + 10\log(P)\text{dB}$.

Method of Measurement:

Test Setup Diagram:

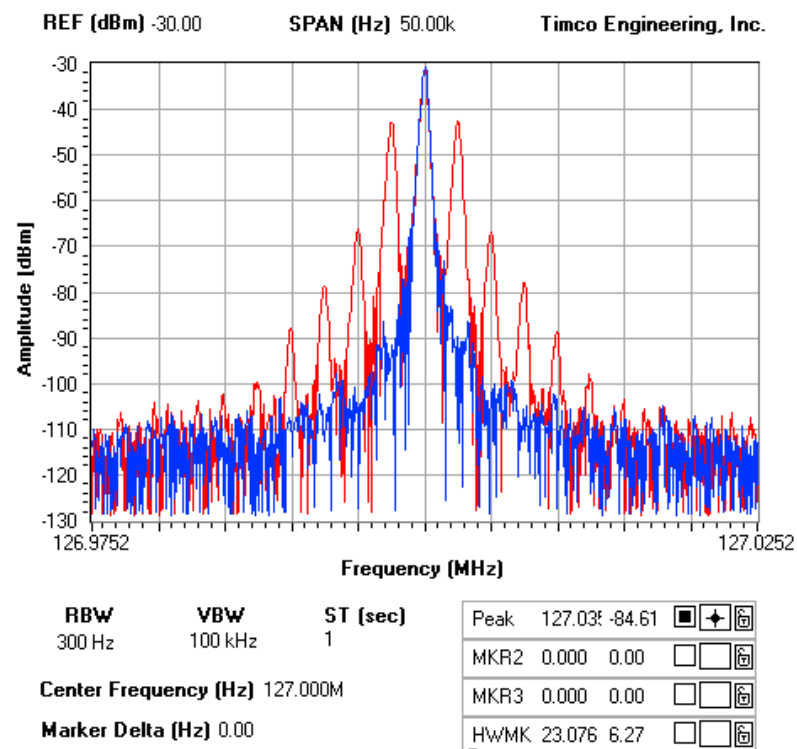


Test Data: See the plots below

The authorized BW is 25 kHz.

NOTES:

1239aut6 occupied bandwidth



SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED)

Rule Part No.: Part 2.1051(a)

Requirements: $43+10\log(16)= 55 \text{ dB}$

Method of Measurement: The carrier was modulated using a 2500 Hz tone. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental. The measurements were made in accordance with standard TIA/EIA-603.

Test Data:

Tuned Freq.	Emission Freq.	dB below carrier
118	118	0
	236	77
	354	82.1
	472	73.9
	590	100.2
	708	94.4
	826	94.5
	944	104.5
	1062	98.2
	1180	100.7

Tuned Freq.	Emission Freq.	dB below carrier
127	127	0
	254	67.5
	381	77.4
	508	79.9
	635	99.5
	762	89.5
	889	97.1
	1016	95.1
	1143	90.3
	1270	105.8

SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED) (continued)

Tuned Freq.	Emission Freq.	dB below Carrier
136	136	0
	272	72.7
	408	77
	544	84.2
	680	97
	816	83.2
	952	97.9
	1088	84.6
	1224	90.6
	1360	105.4

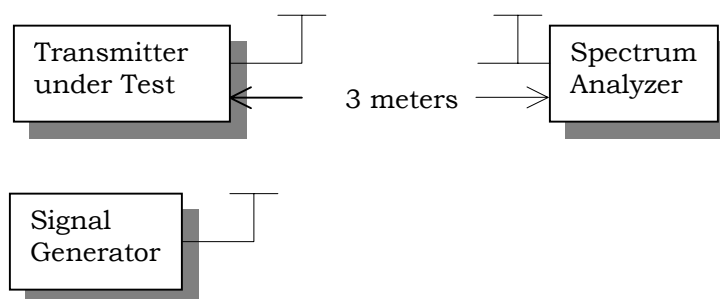
FIELD STRENGTH OF SPURIOUS EMISSIONS

Rule Parts. No.: Part 2.1053

Test Requirements: The FCC limits for radiated emissions are the same as previously stated for the conducted emissions.

Method of Measurements: The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per TIA/EIA STANDARD 603 using the substitution method.

Test Setup Diagram:



Test Data:

Emission Frequency MHz	Ant. Polarity V/H	DB Below Carrier (dBc)
118.00	0	0
236.00	H	80.35
354.00	H	90.05
472.00	H	91.62
590.00	H	98.38
708.00	V	80.93
826.00	V	98.71
944.00	V	84.64
1062.00	V	100.92

Field strength of Spurious Emissions (continued)

Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)
127.00	0	0
254.00	H	79.75
381.00	V	80.68
508.00	H	93.96
635.00	H	95.98
762.00	H	84.49
889.00	H	94.75
1016.00	V	88.32
1143.00	H	98.36

Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)
136.00	0	0
272.00	H	86.05
408.00	H	81.88
544.00	H	88.95
680.00	H	88.23
816.00	H	78.01
952.00	V	88.99
1088.00	V	93.26
1224.00	V	98.15

FREQUENCY STABILITY

Rule Parts. No.: Part 2.1055, Part 87.133

Requirements: Temperature range requirements: -30 to +50° C.
Voltage Variation +, -15% ± 20 PPM

Method of Measurements: TIA/EIA Specification 603

Test Data:

Temp	Frequency MHz	PPM
-30°C	121.199980	-0.17
-20°C	121.200020	0.17
-10°C	121.200030	0.25
0°C	121.200030	0.25
10°C	121.200050	0.41
20°C	121.200060	0.50
30°C	121.200060	0.50
40°C	121.200040	0.33
50°C	121.200010	0.08

Assigned Frequency (Ref. Frequency) (MHz)		121.200000
Battery %	Frequency (MHz)	Frequency Stability (PPM)
-15%	121.200050	0.41
+15%		

POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: Part 15.207

Requirements:

Frequency (MHz)	Quasi Peak Limits (dBuV)	Average Limits (dBuV)
0.15 – 0.5	66 – 56	56 – 46
0.5 – 5.0	56	46
5.0 – 30	60	50

Test Procedure: ANSI Standard C63.4-2003.
The spectrum was scanned from 0.15 to 30 MHz.

Test Data: The attached graphs represent the emissions read for power line conducted for this device. Both lines were observed.

Not Applicable