



Engineering and Testing for EMC and Safety Compliance

FCC PART 95 TEST REPORT

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MODEL: JMCB-2003
HANDLEBAR-MOUNTED CB RADIO

FCC ID: QJ5-JMCB-2003

August 21, 2003

STANDARDS REFERENCED FOR THIS REPORT	
PART 2: 10-1-02	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS
PART 15: 10-1-02	RADIO FREQUENCY DEVICES - §15.109: RADIATED EMISSION LIMITS
PART 95: 10-1-02	PERSONAL RADIO SERVICES
ANSI C63.4-2000	INTERIM STANDARD FOR METHODS OF MEASUREMENT OF RADIO-NOISE EMISSIONS FROM LOW-VOLTAGE ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE RANGE OF 9 kHz TO 40 GHz
TIA/EIA-382-A	MINIMUM STANDARDS – CITIZENS BAND RADIO SERVICE AMPLITUDE MODULATED (AM) TRANSCEIVERS OPERATING IN THE 27 MHz BAND
RSS-136: Issue 5; October 2002	Land and Mobile Station Radiotelephone Transmitters and Received Operating in the 26.960 - 27.410 MHz General Radio Service Band

Frequency Range	Output Power (W) Conducted	Frequency Tolerance (%)	Emission Designator
26.965 - 27.405 MHz	2.317	0.0023	6K00A3E

REPORT PREPARED BY TEST ENGINEER: Daniel Baltzell

Document Number: 2003126/ QRTL03-853

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1 GENERAL INFORMATION

The following Type Certification Report is prepared on behalf of **J & M Corp.** in accordance with the Federal Communications Commission and Industry Canada Rules and Regulations. The Equipment Under Test (EUT) was the **JMCB-2003 HANDLEBAR-MOUNTED CB RADIO; FCC ID: QJ5-JMCB-2003**. The test results reported in this document relate only to the item that was tested.

All measurements contained in this application were conducted in accordance with FCC Rules and Regulations CFR 47 Parts 2, 15 and 95, Industry Canada RSS-136, and ANSI C63.4-2000 Interim Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz. EIA/TI-382-A was used as a guiding document for testing. The instrumentation utilized for the measurements conforms to the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Calibration checks are performed regularly on the instruments, and all accessories including high pass filter, coaxial attenuator, preamplifier and cables.

1.1 TEST FACILITY

The open area test site and conducted measurement facility used to collect the radiated data is located at Rhein Tech Laboratories, Inc. 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report dated March 3, 1994, submitted to and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4-2000).

1.2 RELATED SUBMITTAL(S)/GRANT(S)

This is an original application report; a separate DoC report for receiver and digital compliance has also been prepared.

1.3 MODIFICATIONS

The following modifications were made to the unit during testing to reduce failing levels found for the weather receive LO harmonic frequencies: RW55 changed to 330k Ω , CW1 changed to 3pF, CW2 changed to 6pF, RM7 changed to 330k Ω , the trace cut on RW55 and a jumper wire added, a cut trace at the end of the trace joining RT9 and the jumper wire.

2 CONFORMANCE STATEMENT

STANDARDS REFERENCED FOR THIS REPORT	
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Frequency Range	Maximum Measured Output Power (W) Conducted	Frequency Tolerance (ppm)	Emission Designator
26.965 - 27.405 MHz	2.317	0.0023	6K00A3E

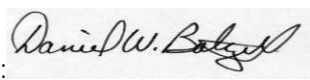
We, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this attached test record. See section 1.3 for modifications to the unit during testing. Furthermore, there was no deviation from, additions to, or exclusions from, the above standards.

Signature: 

Date: August 21, 2003

Typed/Printed Name: Desmond A. Fraser

Position: President

Signature: 

Date: August 21, 2003

Typed/Printed Name: Daniel W. Baltzell

Position: Test Engineer

 Accredited by the National Voluntary Accreditation Program for the specific scope of accreditation under Lab Code 200061-0.

Note: This report may not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

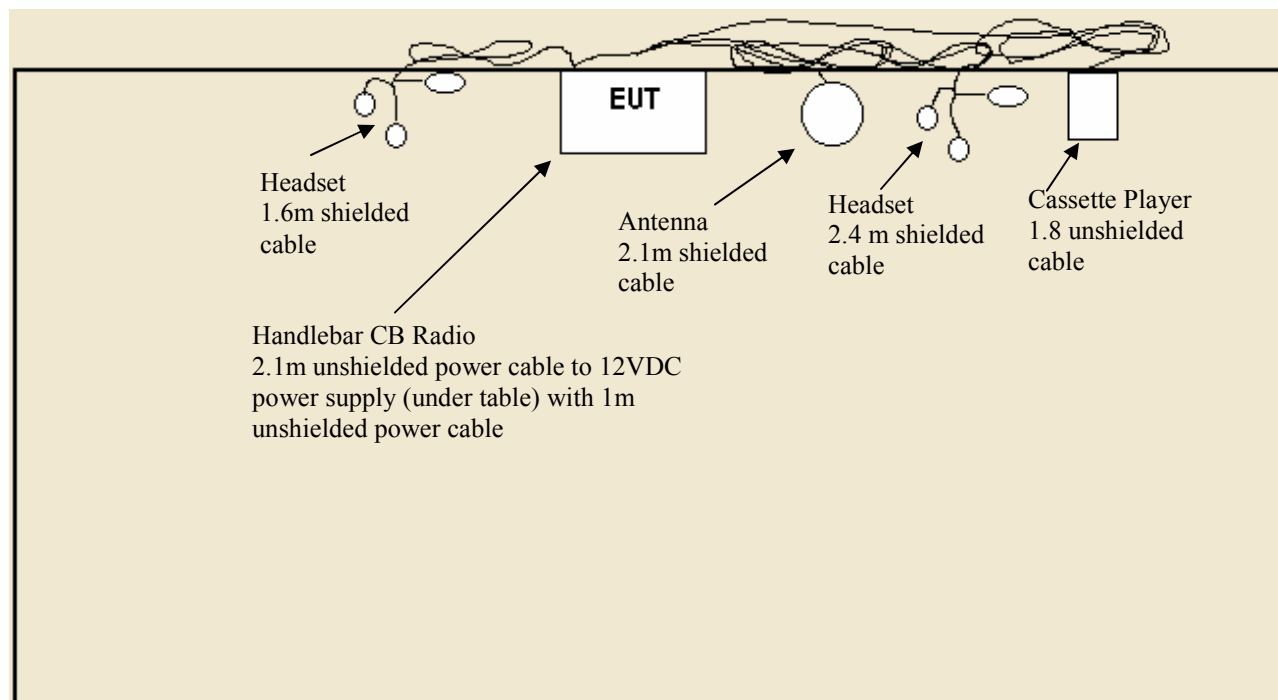
3 TESTED SYSTEM DETAILS

Listed below are the identifiers and descriptions of all equipment, cables, and internal devices used with the EUT for this test, as applicable.

TABLE 3-1: EQUIPMENT UNDER TEST (EUT)

Part	Manufacturer	Model	Serial Number	FCC ID	Cables	RTL Bar Code
CB Radio (EUT)	J&M Corp	JMCB-2003 (FCC SAMPLE #1)	H3080001	Sample	2.1 M UNSHIELDED	15374
CB Radio (EUT)	J&M Corp	JMCB-2003 (FCC SAMPLE #3)	H3080003	Sample	2.1 M SHIELDED	15375
Antenna	Shakespeare	4050-B	N/A	Sample	2.1M SHIELDED	15371
Headset Assembly	J&M Corp	HS-ECD271B-0F	57025	Sample	1.6M SHIELDED	15372
Headset Assembly	J&M Corp	HS-ECD271B-0F	56989	Sample	2.4M SHIELDED	15373
Cassette Player	Radio Shack	SCP-59	N/A	N/A	1.8M SHIELDED	900691
Power Supply	Alinco	DM-33MVT 32A	1638	N/A	1M UNSHIELDED	901124

FIGURE 3-1: CONFIGURATION OF TESTED SYSTEM



4 FCC RULES AND REGULATIONS PART 2.1033(C)(4) AND 2.202(G): TYPE OF EMISSION

Type of Emission: 6K00A3E

95.633 Allowed Authorized Bandwidth = 8.0 kHz

95.625 Frequency Range: 26.965 – 27.405 MHz

Calculation:

Max modulation (M) in kHz = 3 kHz

$B_n = 2 * M = 2 * 3 \text{ kHz} = 6 \text{ kHz}$ Amplitude Modulation

5 FCC RULES AND REGULATIONS PART § 95.645 CONTROL ACCESSIBILITY

It is verified that no control, switch or other type of adjustment which, when manipulated, can result in a violation of the rules, is accessible from the transmitter operating panel or from exterior of the transmitter enclosure.

6 FCC RULES AND REGULATIONS PART § 95.667 CB TRANSMITTER POWER

The dissipation rating of the final amplifier which supplies RF power to the antenna terminal must not exceed 10 W. This device uses a 2SC2078, 27 MHz High Frequency Power Amplifier. The collector dissipation is listed at 1.2 Watts.

7 FCC RULES AND REGULATIONS PART § 95.669 EXTERNAL CONTROLS

The following external transmitter controls, connections or devices exist with this transmitter:

- (1) Primary power connection
- (2) Microphone connection
- (3) Antenna terminals
- (4) On-off switch for primary power to transmitter
- (5) Channel frequency selector switch
- (6) Pilot lamp(s) or meter(s) to indicate the presence of RF output power or that the transmitter control circuits are activated to transmit

8 FCC RULES AND REGULATIONS PART 2.1033(C)(8): VOLTAGES AND CURRENT INTO FINAL AMPLIFIER STAGE

TRANSMITTER POWER AMP -----	VOLTAGE 12.5 V
	CURRENT 727 mA
TRANSMITTER DRIVER AMP -----	VOLTAGE 12.5 V
	CURRENT 120 mA

9 FCC RULES AND REGULATIONS PART 2 §2.1046 (A) AND 95.639(C)(1): RF POWER OUTPUT: CONDUCTED

9.1 TEST PROCEDURE

Limit = 4 Watts

The EUT was connected to a coaxial attenuator having a 50Ω load impedance. The audio input was disabled.

9.2 TEST DATA

TABLE 9-1: RF POWER OUTPUT (HIGH POWER): CARRIER OUTPUT POWER (UNMODULATED)

Channel	Frequency (MHz)	High Power Measured (Watt)	Low Power Measured (Watt)
1	26.965	2.317	0.386
2	26.975	2.317	0.385
3	26.985	2.317	0.385
4	27.005	2.317	0.383
5	27.015	2.317	0.382
6	27.025	2.317	0.382
7	27.035	2.317	0.380
8	27.055	2.317	0.379
9	27.065	2.317	0.378
10	27.075	2.312	0.377
11	27.085	2.312	0.375
12	27.105	2.312	0.375
13	27.115	2.312	0.374
14	27.125	2.312	0.373
15	27.135	2.312	0.372
16	27.155	2.307	0.372
17	27.165	2.307	0.371
18	27.175	2.307	0.369
19	27.185	2.307	0.368
20	27.205	2.301	0.367
21	27.215	2.296	0.365
22	27.225	2.296	0.363
23	27.255	2.296	0.365
24	27.235	2.296	0.364
25	27.245	2.291	0.371
26	27.265	2.286	0.362
27	27.275	2.280	0.361
28	27.285	2.280	0.361
29	27.295	2.280	0.361
30	27.305	2.275	0.360
31	27.3115	2.270	0.359
32	27.325	2.270	0.358
33	27.335	2.270	0.357
34	27.345	2.265	0.356
35	27.355	2.265	0.356
36	27.365	2.265	0.355
37	27.375	2.259	0.354
38	27.385	2.259	0.353
39	27.395	2.254	0.352
40	27.405	2.254	0.352

TABLE 9-2: TEST EQUIPMENT USED FOR TESTING (RF POWER OUTPUT - CONDUCTED)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901184/901186	Agilent	E4416A/E9323A	Power Meter / Sensor	GB41050573/US15410380	07/19/04
901139	Weinschel Corp.	48-20-34 DC-18GHz	Attenuator, (100 W 20dB)	BK5859	5/13/04

TEST PERSONNEL:

<u>DANIEL W. BALTZELL</u>		AUGUST 11, 2003
TEST TECHNICIAN/ENGINEER	SIGNATURE	DATE OF TEST

10 CONDUCTED SPURIOUS AND HARMONIC EMISSIONS - §2.1051

10.1 TEST PROCEDURE

The transmitter antenna terminal is connected with the 50 Ω impedance input to the spectrum analyzer. The worst case peak channel test data is provided.

10.2 CONDUCTED SPURIOUS AND HARMONIC TEST EQUIPMENT

TABLE 10-1: CONDUCTED SPURIOUS AND HARMONIC TEST EQUIPMENT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	7/15/04
901134	Par Electronics	27-50 (25 W)	Notch Filter	N/A	9/15/03

10.3 CONDUCTED SPURIOUS AND HARMONIC TEST DATA - §2.1051

TABLE 10-2: CONDUCTED SPURIOUS AND HARMONIC DATA §2.1051

Operating Frequency (MHz):	26.965
Channel:	1
Measured Power at the Antenna Port (dBm):	33.65
Limit (dBc):	60

Frequency (MHz)	Measured Level (corrected dBc)	Margin (dB)
53.930	63.6	-3.6
80.895	64.1	-4.1
107.860	82.2	-22.2
134.825	84.4	-24.4
161.790	95.1	-35.1
188.755	90.7	-30.7
215.720	106.4	-46.4
242.685	104.3	-44.3
269.650	113.3	-53.3

Operating Frequency (MHz):	27.205
Channel:	20
Measured Power at the Antenna Port (dBm):	33.62
Limit (dBc):	60

TABLE 10-3: CONDUCTED SPURIOUS AND HARMONIC DATA §2.1051

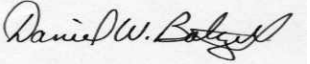
Frequency (MHz)	Measured Level (corrected dBc)	Margin (dB)
54.410	67.8	-7.8
81.615	64.4	-4.4
108.820	83.9	-23.9
136.025	87.9	-27.9
163.230	95.1	-35.1
190.435	97.9	-37.9
217.640	109.1	-49.1
244.845	102.5	-42.5
272.050	109.6	-49.6

Operating Frequency (MHz):	27.405
Channel:	40
Measured Power at the Antenna Port (dBm):	33.53
Limit (dBc):	60

TABLE 10-4: CONDUCTED SPURIOUS AND HARMONIC DATA §2.1051

Frequency (MHz)	Measured Level (corrected dBc)	Margin (dB)
54.810	71.3	-11.3
82.215	64.6	-4.6
109.620	83.4	-23.4
137.025	88.4	-28.4
164.430	96.5	-36.5
191.835	98.3	-38.3
219.240	98.9	-38.9
246.645	104.6	-44.6
274.050	107.0	-47.0

TEST PERSONNEL:

DANIEL W. BALTZELL		AUGUST 18, 2003
TEST TECHNICIAN/ENGINEER	SIGNATURE	DATE OF TEST

11 FCC RULES AND REGULATIONS PART 2 §2.1053 (A): FIELD STRENGTH OF SPURIOUS RADIATION

11.1 TEST PROCEDURE

Analog Modulation: The transmitter is modulated with a 2,500 Hz sine wave at an input level 16 dB greater than that required to produce 50% of the rated system deviation.

The spurious emissions levels were measured and the device under test was replaced by a substitution antenna connected to a signal generator. This signal generator level was then corrected by subtracting the cable loss from the substitution antenna to the signal generator and the gain of the antenna was further corrected to a half wave dipole.

11.2 TEST DATA

The worst-case emissions test data are shown. The magnitude of emissions attenuated more than 20 dB below the FCC limit need not be recorded.

TABLE 11-1: FIELD STRENGTH OF SPURIOUS RADIATION CHANNEL 1 – 26.965 MHz

Radiated Spurious Emissions
Low Channel 1 (26.965 MHz)
Limit = 60 dBc
Conducted Power = 33.65 dBm = 2.3 W

Frequency (MHz)	Spectrum Analyzer Level (dBuV)	Signal Generator Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd)	Corrected Signal Generator Level (dBc)	Margin (dB)
53.930	61.6	-64.5	0.1	-1.0	91.4	-31.4
80.895	64.2	-62.3	0.1	0.0	92.7	-32.7
107.860	58.8	-63.4	0.2	0.0	88.3	-28.3
134.825	64.9	-58.1	0.1	-0.5	88.7	-28.7
161.790	69.0	-55.7	0.1	-0.1	90.9	-30.9
188.755	69.9	-57.0	0.2	-0.3	92.7	-32.7
215.720	71.0	-55.2	0.2	-0.6	91.7	-31.7
242.685	57.0	-67.6	0.2	-0.6	90.2	-30.2
269.650	55.6	-67.3	0.2	-0.6	88.5	-28.5

*This insertion loss corresponds to the cable connecting the RF Signal Generator to the ½ wave dipole antenna.

TABLE 11-2: FIELD STRENGTH OF SPURIOUS RADIATION CHANNEL 20 – 27.205 MHz

Radiated Spurious Emissions
Low Channel 20 (27.205 MHz)
Limit = 60 dBc
Conducted Power = 33.62 dBm = 2.3 W

Frequency (MHz)	Spectrum Analyzer Level (dBuV)	Signal Generator Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd)	Corrected Signal Generator Level (dBc)	Margin (dB)
54.410	58.2	-67.8	0.1	-1.0	91.3	-31.3
81.615	66.8	-59.4	0.1	0.0	92.5	-32.5
108.820	60.0	-61.1	0.2	0.0	87.3	-27.3
136.025	64.1	-57.9	0.1	-0.5	87.8	-27.8
163.230	69.1	-55.8	0.1	-0.1	91.2	-31.2
190.435	68.2	-60.5	0.2	-0.4	94.5	-34.5
217.640	68.3	-57.7	0.2	-0.6	91.6	-31.6
244.845	58.4	-66.0	0.2	-0.6	90.1	-30.1
272.050	55.6	-67.2	0.2	-0.6	88.4	-28.4

*This insertion loss corresponds to the cable connecting the RF Signal Generator to the ½ wave dipole antenna.

TABLE 11-3: FIELD STRENGTH OF SPURIOUS RADIATION CHANNEL 40 – 27.405 MHz

Radiated Spurious Emissions
Low Channel 40 (27.405 MHz)
Limit = 60 dBc
Conducted Power = 33.53 dBm = 2.3 W

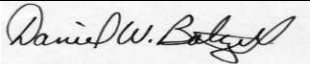
Frequency (MHz)	Spectrum Analyzer Level (dBuV)	Signal Generator Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd)	Corrected Signal Generator Level (dBc)	Margin (dB)
54.810	58.1	-68.3	0.1	-1.0	91.8	-31.8
82.215	69.4	-56.6	0.1	0.0	92.4	-32.4
109.620	59.8	-61.2	0.2	0.0	87.2	-27.2
137.025	66.0	-56.1	0.1	-0.5	88.0	-28.0
164.430	67.7	-57.4	0.1	-0.1	91.4	-31.4
191.835	72.0	-55.0	0.2	-0.4	92.9	-32.9
219.240	67.5	-58.4	0.2	-0.6	91.5	-31.5
246.645	58.3	-66.0	0.2	-0.6	90.0	-30.0
274.050	55.4	-67.6	0.2	-0.6	88.7	-28.7

*This insertion loss corresponds to the cable connecting the RF Signal Generator to the ½ wave dipole antenna.

TABLE 11-4: TEST EQUIPMENT USED FOR TESTING (FIELD STRENGTH OF SPURIOUS RADIATION)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901053	Schaffner-Chase	CBL6112	Antenna (25 MHz – 2 GHz)	2648	7/03/04
900905	Rhein Tech Labs	PR-1040	Pre Amplifier 40dB (10 MHz – 2 GHz)	1006	9/10/03
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	07/15/04
900917	Hewlett Packard	8648C	Synthesized. Signal Generator (9 kHz to 3200 MHz)	3537A01741	05/02/04

TEST PERSONNEL:

DANIEL W. BALTZELL		AUGUST 13, 2003
TEST TECHNICIAN/ENGINEER	SIGNATURE	DATE OF TEST

12 FCC RULES AND REGULATIONS PART 2 §2.1049 (C) (1) AND 95.633(A), 95.635(B): OCCUPIED BANDWIDTH

The authorized bandwidth for emission type A3E is 8 kHz.

OCCUPIED BANDWIDTH - COMPLIANCE WITH THE EMISSION MASK

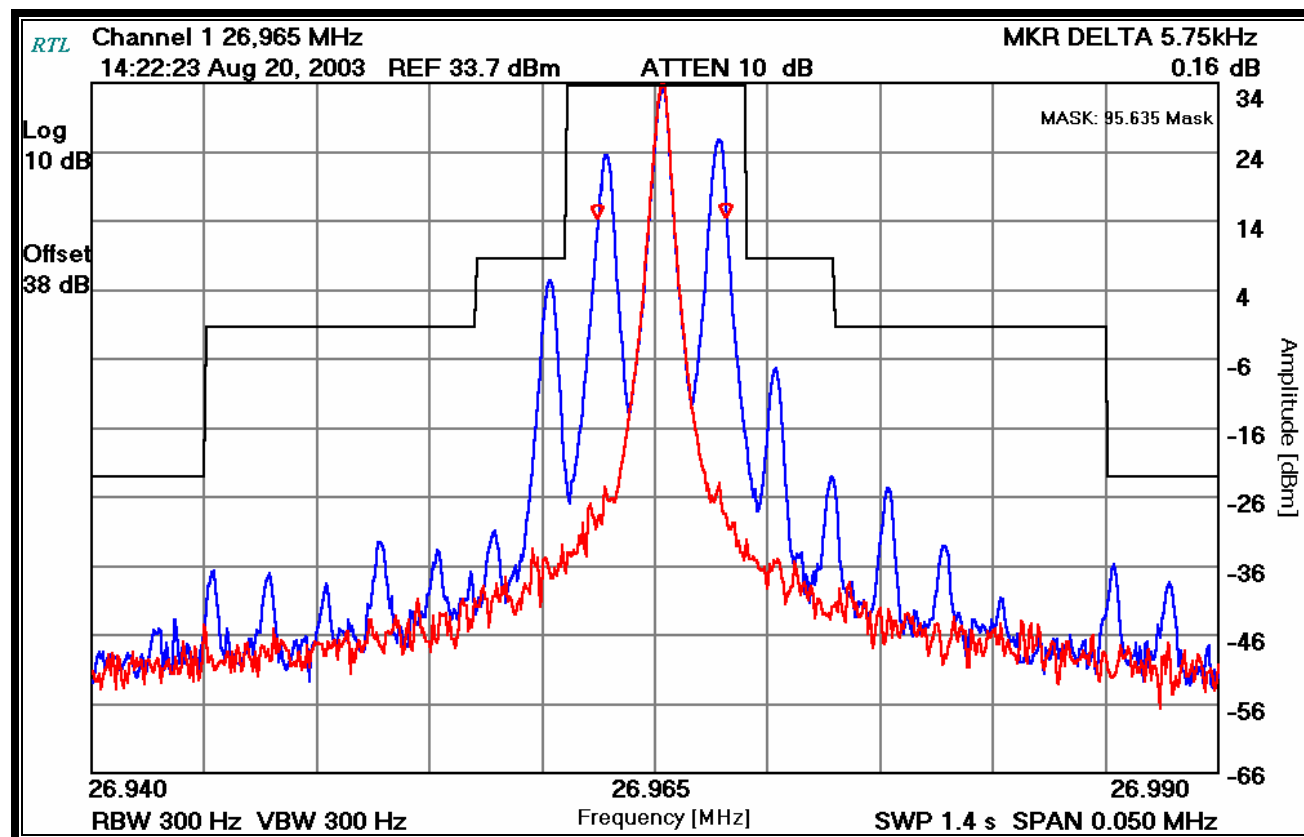
- (1) At least 25 dB (decibels) on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth.
- (3) At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 250% of the authorized bandwidth.
- (8) At least $53 + 10 \log_{10}(T)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250%.
- (9) At least 60 dB on any frequency twice or greater than twice the fundamental frequency.

12.1 TEST PROCEDURE

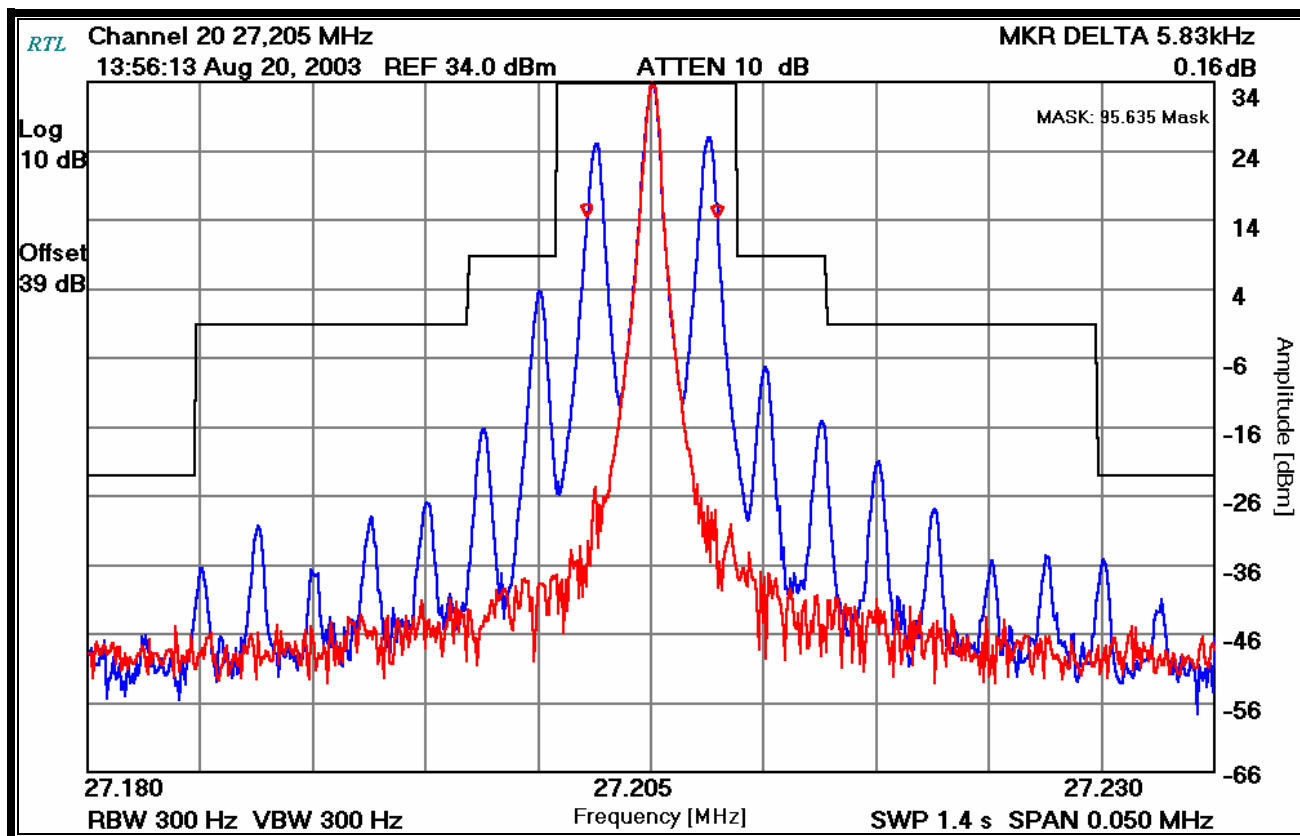
Device with audio modulation: Transmitter was modulated with a 2,500 Hz sine wave at an input level of 16 dB greater than that required to produce 50% of rated system deviation.

12.2 TEST DATA

PLOT 12-1: OCCUPIED BANDWIDTH 26.965 MHZ (5.75 KHZ)



PLOT 12-2: OCCUPIED BANDWIDTH 27.205 MHZ (5.83 KHZ)



PLOT 12-3: OCCUPIED BANDWIDTH 27.405 MHZ (5.83 KHZ)

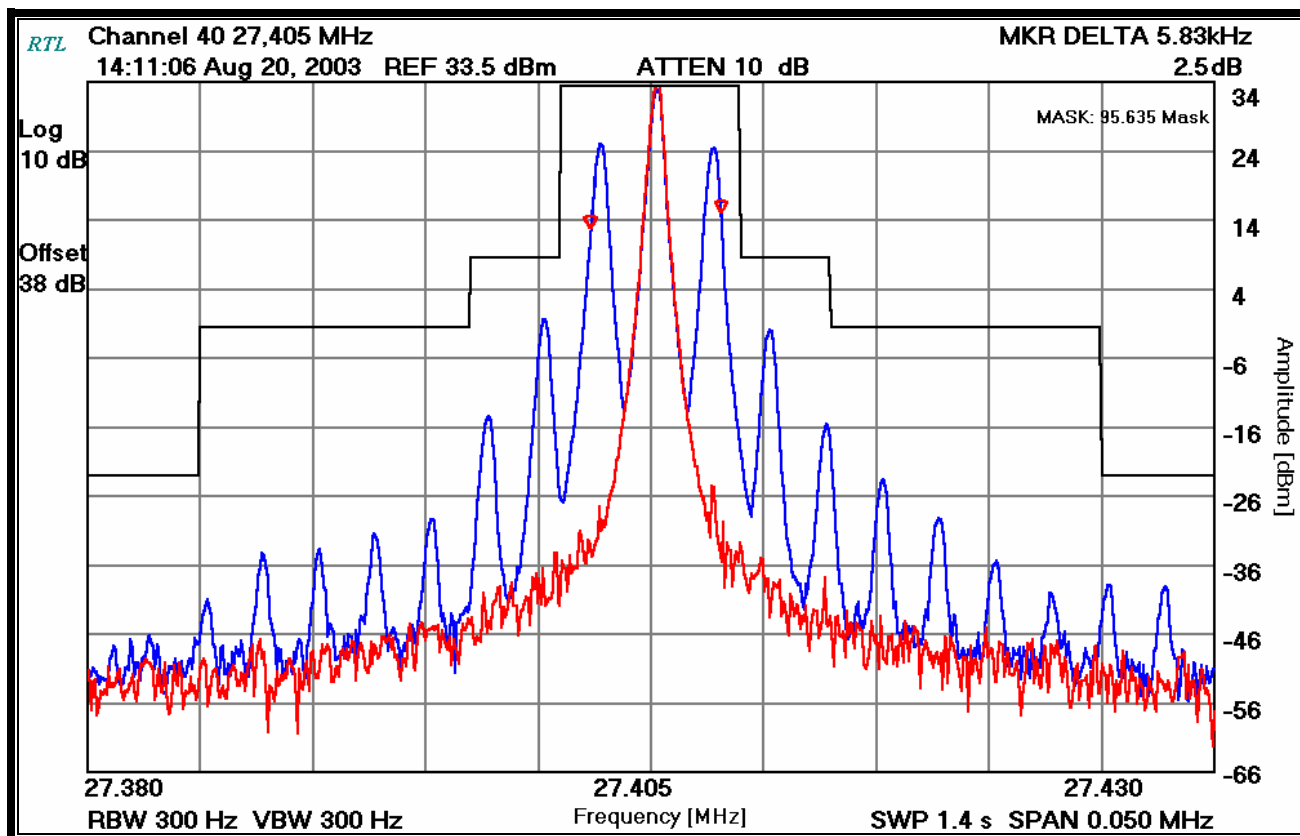


TABLE 12-1: TEST EQUIPMENT USED FOR TESTING (OCCUPIED BANDWIDTH)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901215	Hewlett Packard	8596EM (9 kHz - 12.8 GHz)	EMC Analyzer	3826A00144	8/23/04
901057	Hewlett Packard	3336B	Synthesizer/Level Generator	2514A02585	8/6/04
901139	Weinschel Corp.	48-20-34 DC-18 GHz	Attenuator, 100W 20dB	BK5859	5/13/04

TEST PERSONNEL:

DANIEL W. BALTZELL		AUGUST 21, 2003
TEST TECHNICIAN/ENGINEER	SIGNATURE	DATE OF TEST

13 FCC RULES AND REGULATION PART 2 §2.1055 AND 95.625(B): FREQUENCY STABILITY

13.1 TEST PROCEDURE

The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.

The EUT was evaluated over the temperature range -30°C to +50°C.

The temperature was initially set to -30°C and a 1-hour period was observed for stabilization of the EUT. The frequency stability was measured within one minute after application of primary power to the transmitter. The temperature was raised at intervals of 10 degrees centigrade through the range. A one half hour period was observed to stabilize the EUT at each measurement step and the frequency stability was measured within one minute after application of primary power to the transmitter. Additionally, the power supply voltage of the EUT was varied from the battery end point to maximum voltage.

Each CB transmitter must be maintained within a frequency tolerance of 0.005%.

The worst-case test data are shown below in Table 9-1.

13.2 TEST DATA

13.2.1 FREQUENCY STABILITY/TEMPERATURE VARIATION

Limit is 0.005% for CB transmitters. Worst-case deviation was found to be -0.0023 % at -20°C.

PLOT 13-1: TEMPERATURE FREQUENCY STABILITY

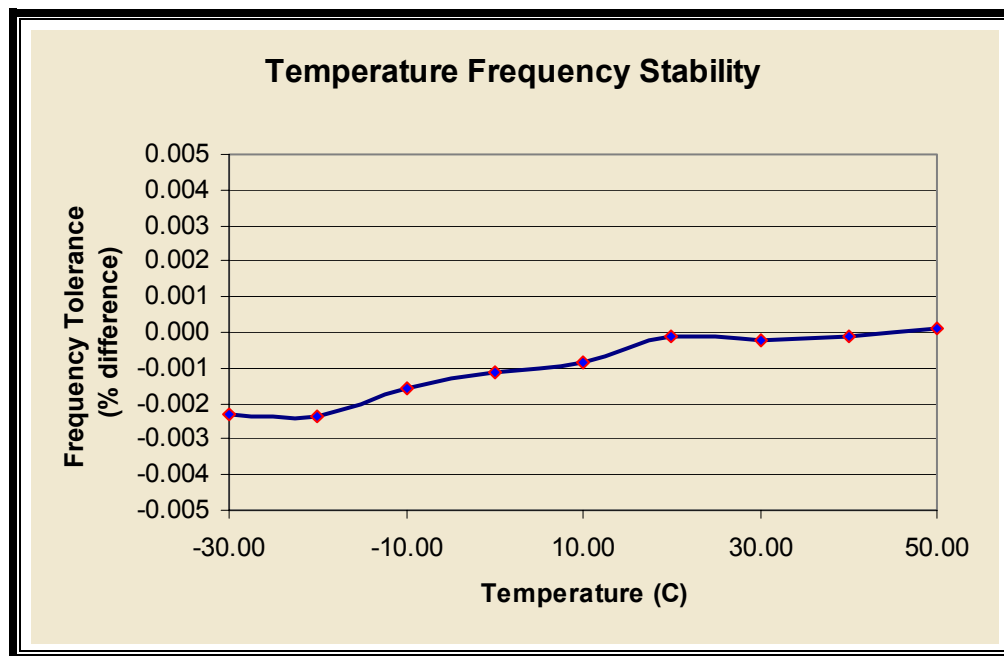


TABLE 13-1: TEMPERATURE FREQUENCY STABILITY CHANNEL 2, 27.205 MHz

Temperature °C	Measured Frequency (MHz)	Frequency Tolerance (% difference)
-30	27.204375	-0.00230
-20	27.204363	-0.00234
-10	27.204578	-0.00155
0	27.204690	-0.00114
10	27.204775	-0.00083
20	27.204970	-0.00011
30	27.204938	-0.00023
40	27.204975	-0.00009
50	27.205025	0.00009

TABLE 13-2: TEST EQUIPMENT USED FOR TESTING (FREQUENCY STABILITY/TEMPERATURE)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900946	Tenney Engineering, Inc.	TH65	Temperature Chamber with Humidity	11380	2/4/04
901215	Hewlett Packard	8596EM (9 kHz-12.8 GHz)	EMC Analyzer	3826A00144	08/23/04
901139	Weinschel Corp.	48-20-34 DC-18GHz	Attenuator, 100W 20dB	BK5859	5/13/04

TEST PERSONNEL:

DANIEL W. BALTZELL		AUGUST 11, 2003
TEST TECHNICIAN/ENGINEER	SIGNATURE	DATE OF TEST

13.2.2 FREQUENCY STABILITY/VOLTAGE VARIATION

Worst-case variation is 0.00075 % at 7.12 VDC.

PLOT 13-2: VOLTAGE FREQUENCY STABILITY

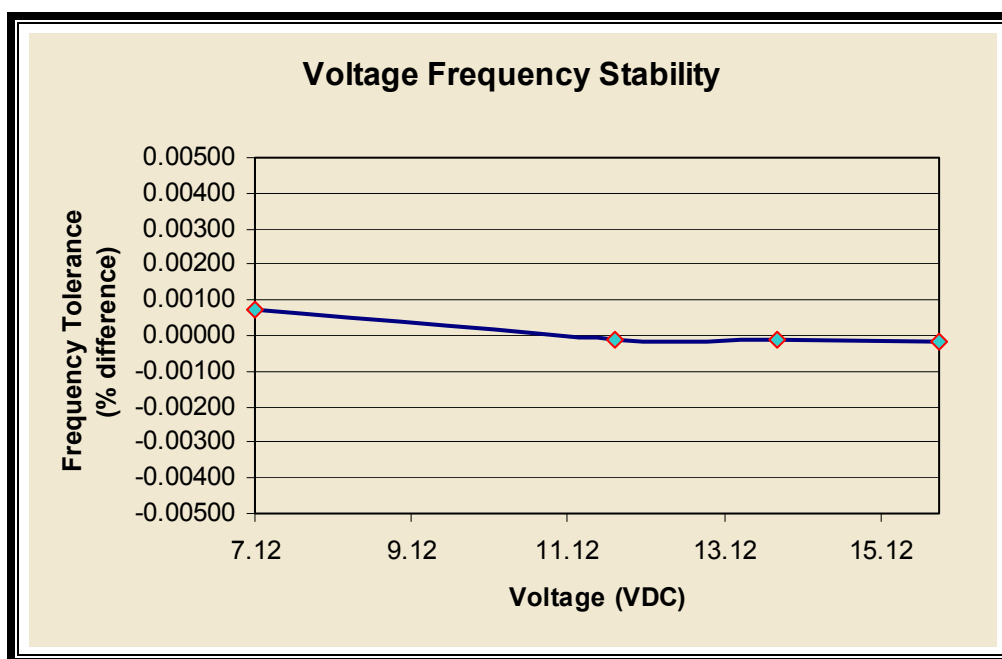


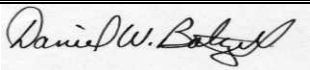
TABLE 13-3: FREQUENCY STABILITY/VOLTAGE VARIATION CHANNEL 2 - 27.205 MHZ

Voltage (Vdc)	Measured Frequency (MHz)	Frequency Tolerance (% difference)
7.12	27.205205	0.00075
11.73	27.204963	-0.00014
13.80	27.204975	-0.00009
15.87	27.204950	-0.00018

TABLE 13-4: TEST EQUIPMENT USED FOR TESTING (FREQUENCY STABILITY/VOLTAGE)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901215	Hewlett Packard	8596EM (9 kHz-12.8 GHz)	EMC Analyzer	3826A00144	08/23/04
901118	Hewlett Packard	8901A Opt. 002-003	Modulation Analyzer	2406A00178	06/18/04
901139	Weinschel Corp.	48-20-34 DC-18GHz	Attenuator, 100W 20dB	BK5859	5/13/04

TEST PERSONNEL:

DANIEL W. BALTZELL		AUGUST 11, 2003
TEST TECHNICIAN/ENGINEER	SIGNATURE	DATE OF TEST

14 FCC PART 2 §2.1047 (A) AND 95.637(C): MODULATION CHARACTERISTICS

14.1 AUDIO FREQUENCY RESPONSE

The guiding document for the Audio Frequency Response test was EIA/TIA-382-A.

14.2 TEST PROCEDURE

The audio frequency response is the amplitude versus the frequency relationship between the audio applied to the microphone input and the resulting modulation level over the usable voice frequency range.

Method of Measurement: Operate the transmitter under standard test conditions and monitor the output with a modulation monitor or calibrated test receiver. The audio input signal applied through a suitable impedance matching network, as specified by the manufacturer, shall be adjusted to obtain 50% modulation at the maximum audio frequency response of the transmitter, and this point shall be taken as the 0 dB reference level. Vary the modulating frequency from 100 Hz to 10,000 Hz and record the input levels necessary to maintain a constant 50% modulation.

The audio level in dB relative to the 0 dB reference level as a function of the modulating frequency is plotted below.

Minimum Standard: The transmitter audio frequency response shall be smooth and free from any dips and discontinuities throughout the range of 100 Hz to 5000 Hz. The transmitter audio frequency response shall be within + 2 dB and -14 dB between 300 Hz and 3000 Hz as compared to the 0 dB reference level at 1000 Hz under standard test conditions.

The response in dB relative to 1 kHz was calculated as follows:

Audio Frequency Response = $20 \text{ LOG } (\text{DEVamp}/\text{DEVref})$

14.3 TEST DATA

PLOT 14-1: MODULATION CHARACTERISTICS - AUDIO FREQUENCY RESPONSE

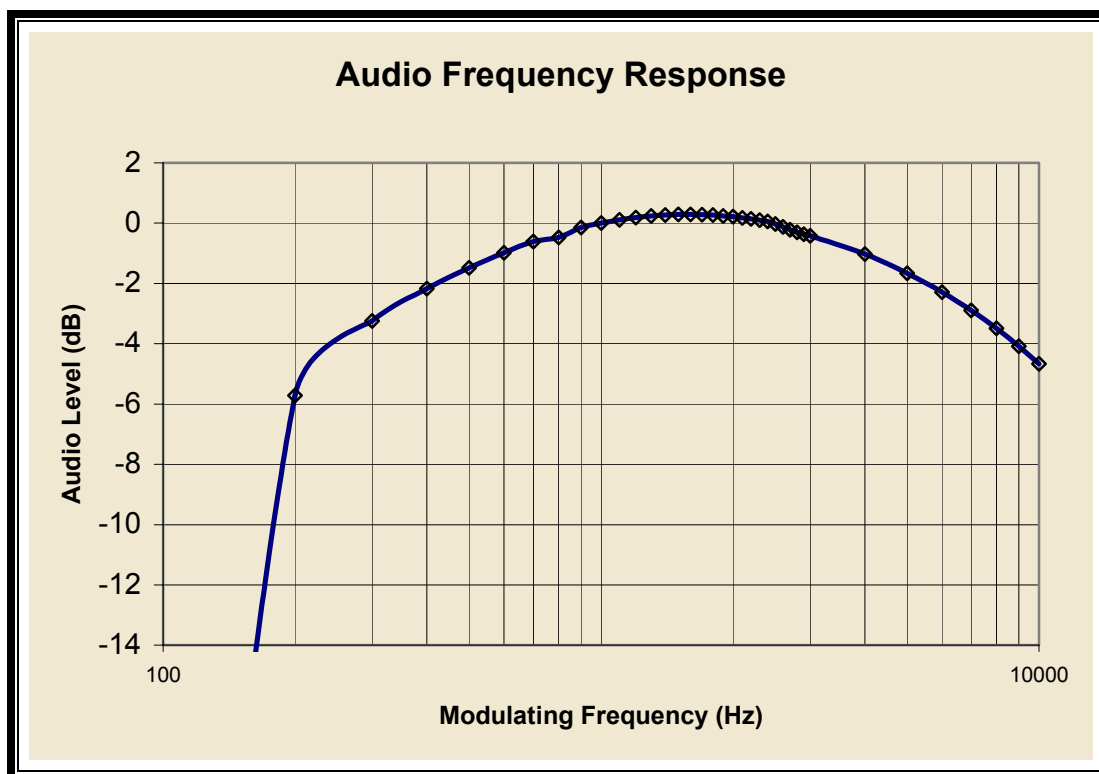


TABLE 14-1: TEST EQUIPMENT USED FOR TESTING (AUDIO FREQUENCY RESPONSE)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901057	Hewlett Packard	3336B	Synthesizer/Level Generator	2514A02585	8/6/04
901118	Hewlett Packard	8901A Opt. 002-003	Modulation Analyzer	2406A00178	6/18/04
901140	Weinschel Corp.	47-10-34 DC-18GHz	Attenuator, 50W 10dB	BK6203	5/13/04

TEST PERSONNEL:

DANIEL W. BALTZELL		AUGUST 21, 2003
TEST TECHNICIAN/ENGINEER	SIGNATURE	DATE OF TEST

15 FCC RULES AND REGULATIONS PART 2 §2.1047 (B) AND 95.637(C): MODULATION CHARACTERISTICS

15.1 MODULATION LIMITING

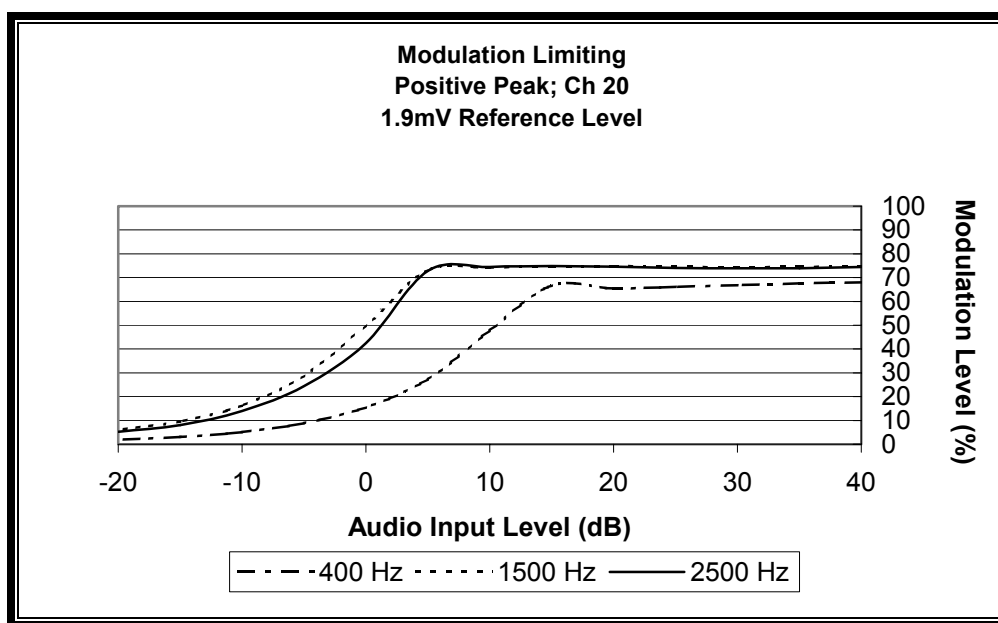
The guiding document for the Audio Frequency Response test was EIA/TIA-382-A.

15.2 TEST PROCEDURE

The transmitter is modulated by a sinusoidal audio signal applied to the microphone input jack. First the audio input frequency is adjusted to deliver 50% modulation at the audio frequency that produces the maximum modulation level. Record the modulation input level (mV) and use this level as 0 dB for plotting modulation limiting. Increment the audio signal level to 40 dB above the reference level. Record the modulation level (%). Repeat the measurements using a 400 Hz and a 2500 Hz sinusoidal audio signal. Record the modulation level (%). Perform for both positive and negative modulation.

15.3 TEST DATA

PLOT 15-1: MODULATION LIMITING (POSITIVE PEAK)



PLOT 15-2: MODULATION LIMITING (NEGATIVE PEAK)

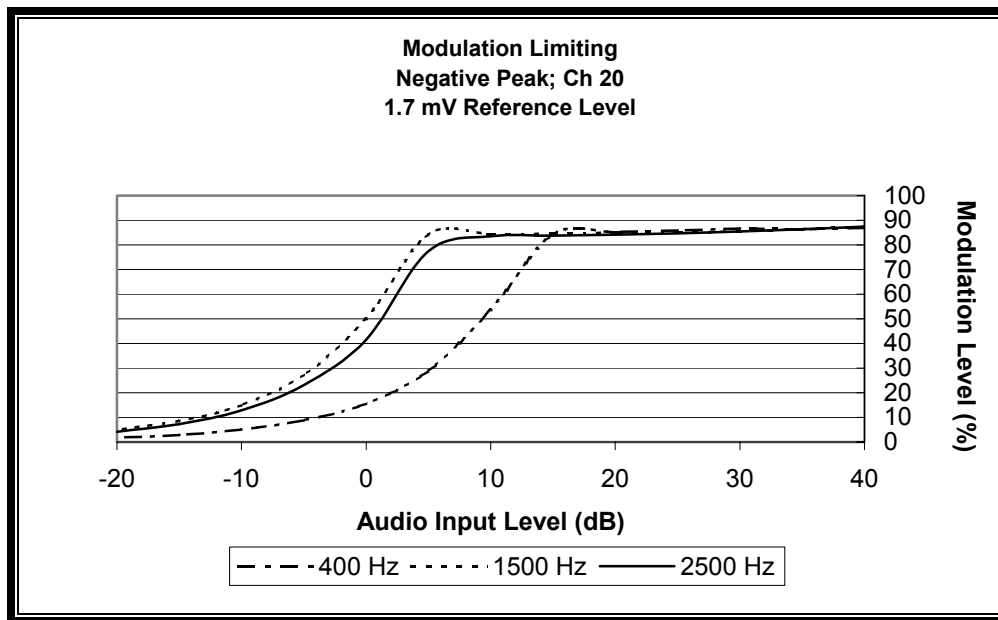


TABLE 15-1: TEST EQUIPMENT USED FOR TESTING (MODULATION LIMITING)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901057	Hewlett Packard	3336B	Synthesizer/Level Generator	2514A02585	8/6/04
901118	Hewlett Packard	8901A Opt. 002-003	Modulation Analyzer	2406A00178	6/18/04
901140	Weinschel Corp.	47-10-34 DC-18GHz	Attenuator, 50W 10dB	BK6203	5/13/04

TEST PERSONNEL:

DANIEL W. BALTZELL		AUGUST 21, 2003
TEST TECHNICIAN/ENGINEER	SIGNATURE	DATE OF TEST

16 CONCLUSION

The data in this measurement report shows that the **J & M Corp. Model JMCB-2003 HANDLEBAR-MOUNTED CB RADIO, FCC ID: QJ5-JMCB-2003** complies with all the applicable requirements of Parts 2, 15 and 95 of the FCC Rules, and Industry Canada RSS-136, Issue 5, October 2002.