



Engineering and Testing for EMC and Safety Compliance

APPLICATION CERTIFICATION FOR A CB RADIO

Radio Shack Corporation
100 Throckmorton Street, Suite 1300
Fort Worth, TX 76102-2802
Japan

MODEL: TRC-520
FCC ID: AAO2101710

January 23, 2001

STANDARDS REFERENCED FOR THIS REPORT	
PART 2; 1999	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS
PART 15; 1999	RADIO FREQUENCIES DEVICES
PART 95; 1998	PERSONAL RADIO SERVICES
OET BULLETIN No. 43; 1994	PEAK ENVELOPE POWER AND OUTPUT LIMITING IN THE CITIZENS BAND (CB) RADIO SERVICE
ANSI C63.4-1992	STANDARD FORMAT MEASUREMENT/TECHNICAL REPORT PERSONAL COMPUTER AND PERIPHERALS
ANSI/TIA/EIA 603-1; 1998	ADDENDUM TO ANSI/TIA/EIA 603-1992

FREQUENCY RANGE MHZ	CONDUCTED UNMODULATED OUTPUT POWER (W)	FREQUENCY TOLERANCE	EMISSION DESIGNATOR
26.965 TO 27.405	3.89	0.005%	6K00A3E

REPORT PREPARED BY:

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Administrative Writer: Melissa Fleming

Rhein Tech Laboratories, Inc.

Document Number: 2000500

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1 GENERAL INFORMATION

The following Application for FCC Type Certification of a Scanning Receiver is prepared on behalf of **Radio Shack Corporation** in accordance with Part 2, and Part 15, Subparts A and B of the Federal Communications Commissions Rules. The Equipment Under Test (EUT) was the **TRC-520, FCC ID: AAO2101710**. 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 ANSI C63.4 Methods of Measurement of Radio Noise Emissions, 1992. The instrumentation utilized for the measurements conforms to the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Some accessories are used to increase sensitivity and prevent overloading of the measuring instrument. These are explained in the appendix of this report. Calibration checks are performed regularly on the instruments, and all accessories including the high pass filter, preamplifier and cables.

1.1 MODIFICATIONS

No modifications were made to the EUT during testing.

1.2 RELATED SUBMITTAL(S)/GRANT(S)

This is an original certification submission.

1.3 TEST METHODOLOGY

Radiated testing was performed according to the procedures in ANSI C63.4 1992. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.4 TEST FACILITY

The open area test site and conducted measurement facility used to collect the radiated data is located on the parking lot of Rhein Tech Laboratories, Inc. 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report, submitted to and approved by the Federal Communication Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 1992).



2 SYSTEM TEST CONFIGURATION

2.1 JUSTIFICATION

To complete the test configuration required by the FCC, the EUT was configured typically as a customer will use it. A 13.8-volt DC supply powered the device.

2.2 FCC RULES AND REGULATIONS PART 2.202: NECESSARY BANDWIDTH AND EMISSION BANDWIDTH

Type of Emission: 6K00A3E

A = Amplitude modulated double side band

3 = A single channel containing analog information

E = Telephony including sound broadcasting

Necessary Bandwidth and Emission Bandwidth:

25kHz channel bandwidth: $B_n = 6k00A3E$

Calculation:

Max modulation (M) in kHz = 3KHz

$B_n = 2 \times M = 2 \times 3KHz = 6KHz = 6K00$

2.3 EXERCISING THE EUT

There were no special EUT exercising EUT software used, once the unit was powered on, it started transmitting.

3 FCC RULES AND REGULATIONS PART 2 §2.1046 (A): RF POWER OUTPUT: CONDUCTED

3.1 TEST PROCEDURE

OET bulletin 43 for PEP measurement was used

The EUT RF output Power was measured in the AM mode with an HP 437 B peak power meter and HP 8903 modulation analyzer with a supply voltage of 13.8 volts. A PEP output power plot versus audio microphone input plot is attached.

3.2 TEST DATA

The following channels (in MHz) were tested: 1, 20, and 40

The worst-case Output Power (highest) levels are shown for the un-modulated and Peak Envelope power.

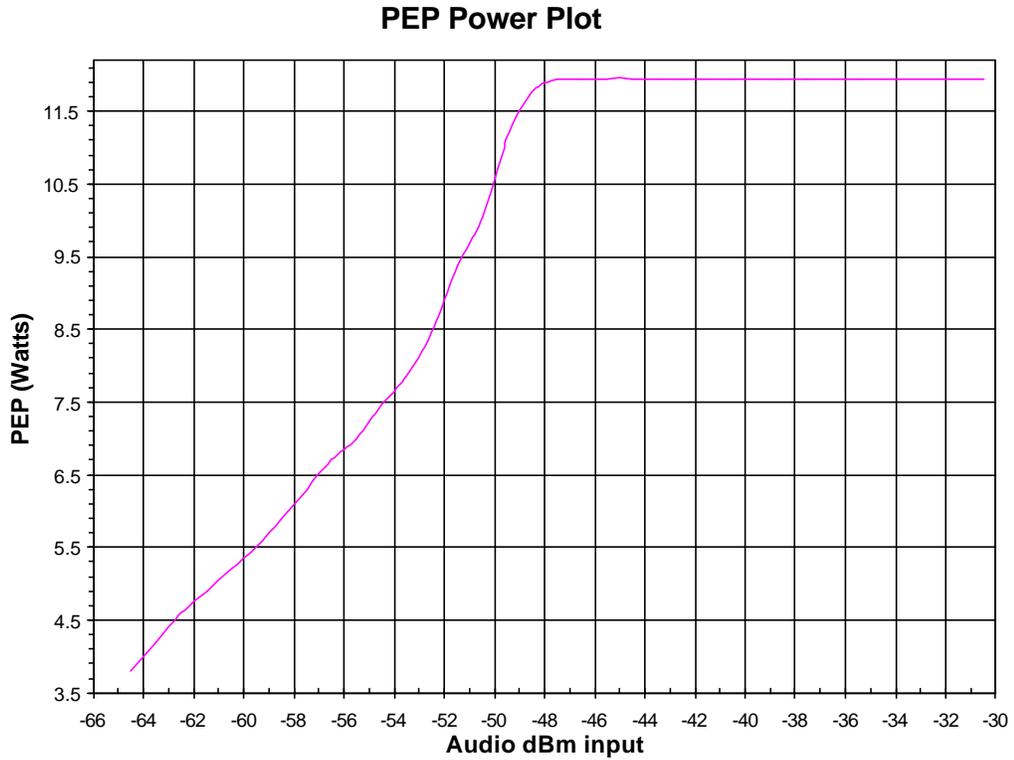
3.3 UNMODULATED CARRIER OUTPUT POWER AND PEAK ENVELOPE POWER (PEP)

EUT RF output Power was measured in the un-modulated mode with an HP 437 B peak power meter. The PEP was measured with an HP 8903 modulation analyzer and an HP audio signal generator.

CHANNEL	PEAK UNMODULATED POWER (WATTS)	PEP MODULATED POWER (WATTS)
1	3.86	11.95
20	3.89	11.95
40	3.84	11.94



3.4 PEP POWER PLOT



REP POWER OUTPUT VS AUDIO INPUT



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4 §95.625: CB TRANSMITTER FREQUENCIES AND TOLERANCE

Channel	Assigned Frequency (MHz)	Measured Frequency (MHz)	% Deviation (%)	Limit (%)
1	26.965	26.9650	0	0.005
2	26.975	26.9750	0	0.005
3	26.985	26.9850	0	0.005
4	27.005	27.0050	0	0.005
5	27.015	27.0150	0	0.005
6	27.025	27.0250	0	0.005
7	27.035	27.0350	0	0.005
8	27.055	27.0550	0	0.005
9	27.065	27.0650	0	0.005
10	27.075	27.0750	0	0.005
11	27.085	27.0850	0	0.005
12	27.105	27.1050	0	0.005
13	27.115	27.1150	0	0.005
14	27.125	27.1250	0	0.005
15	27.135	27.1350	0	0.005
16	27.155	27.1550	0	0.005
17	27.165	27.1650	0	0.005
18	27.175	27.1750	0	0.005
19	27.185	27.1850	0	0.005
20	27.205	27.2050	0	0.005
21	27.215	27.2150	0	0.005
22	27.225	27.2250	0	0.005
23	27.255	27.2550	0	0.005
24	27.235	27.2350	0	0.005
25	27.245	27.2450	0	0.005
26	27.265	27.2650	0	0.005
27	27.275	27.2750	0	0.005
28	27.285	27.2850	0	0.005
29	27.295	27.2950	0	0.005
30	27.305	27.3050	0	0.005
31	27.315	27.3150	0	0.005
32	27.325	27.3250	0	0.005
33	27.335	27.3350	0	0.005
34	27.345	27.3450	0	0.005
35	27.355	27.3550	0	0.005
36	27.365	27.3650	0	0.005
37	27.375	27.3749	0.000001	0.005
38	27.385	27.3849	0.000001	0.005
39	27.395	27.3949	0.000001	0.005
40	27.405	27.4049	0.000001	0.005



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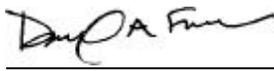
5 CONFORMANCE STATEMENT

STANDARDS REFERENCED FOR THIS REPORT	
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FREQUENCY RANGE MHZ	CONDUCTED CW OUTPUT POWER (W)	FREQUENCY TOLERANCE	EMISSION DESIGNATOR
26.965 TO 27.405	3.89	0.005%	6K00A3E

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described above. Modifications were not made during testing to the equipment in order to achieve compliance with these standards.

Furthermore, there was no deviation from, additions to or exclusions from the ANSI C63.4 test methodology.

Signature: 

Date: January 23, 2001

Typed/Printed Name: Desmond A. Fraser

Position: President
(NVLAP Signatory)

 Accredited by the National Voluntary Accreditation Program for the specific scope of accreditation under Lab Code 20061-0.

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



6 EMISSIONS EQUIPMENT LIST

RTL Asset Number	Manufacturer	Model	Part Type	Serial Number	Calibration due date
900969	Hewlett Packard	85650A	Quasi-Peak Adapter (30 Hz – 40 GHz)	2412A00414	03/23/01
900929	Hewlett Packard	85650A	Quasi-Peak Adapter (30 Hz – 40 GHz)	2811A01276	03/28/01
900901	Hewlett Packard	85650A	Quasi-Peak Adapter (30 Hz – 40 GHz)	3145A01599	11/02/01
900339	Hewlett Packard	85650A	Quasi-Peak Adapter (30 Hz – 40 GHz)	2521A00743	03/27/01
900042	Hewlett Packard	85650A	Quasi-Peak Adapter (30 Hz – 40 GHz)	2521A01032	11/05/01
900924	Amplifier Research	75A220	Amplifier (10 kHz – 220 MHz)		N/A
900933	Hewlett Packard	11975A	Power Amplifier (2 - 8 GHz)	2304A00348	11/15/01
901067	Hewlett Packard	8903B	Audio Analyzer	2303A00307	06/28/01
901055	Hewlett Packard	8901A Opt. 002-003	Modulation Analyzer	2545A04102	06/08/01
900926	Hewlett Packard	8753D	RF Vector Network Analyzer	3410A09659	03/28/01
901089	Hewlett Packard	HP875ET	Transmission/Reflection Network Analyzer	US39170052	N/A
900968	Hewlett Packard	8567A	Spectrum Analyzer (10 kHz – 1.5 GHz)	2602A00160	03/23/01
900903	Hewlett Packard	8567A	Spectrum Analyzer (10 kHz – 1.5 GHz)	2841A00614	11/02/01
900897	Hewlett Packard	8567A	Spectrum Analyzer (10 kHz – 1.5 GHz)	2727A00535	11/08/01
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	03/27/01
900912	Hewlett Packard	8568A	RF Spectrum Analyzer (100 Hz – 1.5 GHz)	2634A02704	08/02/01
900824	Hewlett Packard	8591E	RF Spectrum Analyzer (9 KHz – 1.8 GHz)	3710A06135	11/14/01
900724	ARA	LPB-2520	Log Periodic / Biconical Antenna (25-1000 MHz)	1037	2/1/01
900725	ARA	LPB-2520	Log Periodic / Biconical Antenna (25-1000 MHz)	1036	07/12/01
900967	A.H. Systems	TDS-206/535-1 through TDS-206/535-4	Tuned Dipole set (30 – 1000 MHz)	126, 128, 129, 132	12/15/00
900154	Compliance Design	Roberts Dipole	Adjustable Elements Dipole antenna (30-1000MHz)	N/A	7/26/01
900814	Electro-Metrics	RGA-60	Double Ridges Guide Antenna (1-18 GHz)	2310	2/26/01
900081	EMCO	3146	Log-Periodic Antenna (200-1000 MHz)	1850	
900800	EMCO	3301B	Active Monopole (Rod antenna) (30 Hz – 50 MHz)	9809-4071	05/02/01
900151	Rohde and Schwarz	HFH2-Z2	Loop Antenna (9kHz-30 MHz)	82825/019	05/26/01
900791	Schaffner –Chase	CSL6112	Bilog antenna (30 MHz – 2GHz)	2099	2/22/01
901053	Schaffner –Chase	CBL6112B	Bilog Chase antenna (200 MHz – 2 GHz)	2648	05/24/01
900060	Hewlett Packard	86634B	Auxiliary Section for External Pulse Modulator	1314A02913	11/08/01
901041	ACO Pacific	511E	Sound Level Calibrator	028751	In calibration
900970	Hewlett Packard	85662A	Spectrum Analyzer Display	254211239	03/23/01
900930	Hewlett Packard	85662A	Spectrum Analyzer Display	3144A20839	03/28/01
900911	Hewlett Packard	85662A	Spectrum Analyzer Display	2542A12739	08/02/01
900902	Hewlett Packard	85662A	Spectrum Analyzer Display	2848A17585	11/02/01
900896	Hewlett Packard	85662A	Spectrum Analyzer Display	2816A16471	11/02/01
900914	Hewlett Packard	8546OA	RF Filter Section, (100 KHz to 6.5 GHz)	3330A00107	11/07/01
901057	Hewlett Packard	3336B	Synthesizer/Level Generator	2514A02585	06/21/01
900059	Hewlett Packard	8660C	Signal Generator (9 KHz – 3200 MHz)	1947A02956	11/08/01
900960	Hewlett Packard	8444A	Tracking Generator (0.5 – 1500MHz)	2325A07827	03/08/01
900917	Hewlett Packard	8648C	Synthesized. Signal Generator (9 KHz – 3200 MHz)	3537A01741	03/28/01



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RTL Asset Number	Manufacturer	Model	Part Type	Serial Number	Calibration due date
900821	Hewlett Packard	33120A	15 MHz Function / Arbitrary Waveform Generator	US36029992	11/14/01
900059	Hewlett Packard	8660C	Synthesized. Signal Generator (9 kHz – 3200 MHz)	1947A02956	11/08/01
900195	Tektronix	CFG280	Function Generator (0.1 Hz – 11 MHz)	TW12167	N/A
900927	Tektronix	ASG 100	Audio Signal Generator	B03274 V2.3	N/A
900268	Taylor	5565	Hygrometer / Thermometer	N/A	09/05/01
901056	Hewlett Packard	8954A, Opt.H03	Transceiver Interface	2924A00830	06/02/01
901088	Hewlett Packard	8954A	Transceiver Interface	2146A00139	07/28/01
901082	AFJ International	AFJ LS16	LISN (9 kHz – 30 MHz)	16010020081	06/16/01
901083	AFJ International	AFJ LS16	LISN (9 kHz – 30 MHz)	16010020082	06/16/01
901084	AFJ International	AFJ LS16	LISN (9 kHz – 30 MHz)	16010020080	06/16/01
901090	Bajog electronic	4V-100/200	LISN (150 kHz – 30 MHz)	00-44-007	08/03/01
900726	Solar	7225-1	LISN	N/A	03/29/01
900727	Solar	7225-1	LISN	N/A	03/29/01
900078	Solar	7225-1	LISN	N/A	03/29/01
900077	Solar	7225-1	LISN	N/A	03/29/01
901054	Hewlett Packard	HP 3586B	Selective Level Meter	1928A01892	06/08/01
900793	Hewlett Packard	432A	Thermistor Power Meter	1848a22632	N/A
900721	Hewlett Packard	8447D	Preamplifier (0.1-1300 MHz)	2727A05397	N/A
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20Hz-2GHz)	3146A01309	11/14/01
900566	Amplifier Research	FP 2000	Isotropic Field Probe	20760	08/29/01
900854	Solar Electronics Co	9119-IN	RF Current Probe	972501	
900849	Solar Electronics Co	9121-IN	Injection Probe (10 MHz – 1 GHz)	953501	
900848	Solar Electronics Co	9320-IN	RF Current Probe	990521	
900913	Hewlett Packard	85462A	EMI Receiver RF Section (9 KHz – 6.5 GHz)	3325A00159	03/29/01



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7 RADIATED EMISSIONS MEASUREMENTS FOR RECEIVERS AND DIGITAL INTERFACE DEVICES

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one meter and three meter distances, in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to insure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three-meter, open-field test site. The EUT was placed on a nonconductive turntable approximately 0.8 meters above the ground plane. The spectrum was examined from 30 MHz to 1000 MHz using a Hewlett Packard 8566B spectrum analyzer, a Hewlett Packard 85650A quasi-peak adapter, and EMCO log periodic and biconical antenna. In order to gain sensitivity, a New Circuits ZHL-4240W preamplifier was connected in series between the antenna and the input of the spectrum analyzer.

At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations. The spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. No video filter less than 10 times the resolution bandwidth was used. When any clock exceeds 108 MHz, the EUT was tested between 1 and 2 Gigahertz in peak mode with the resolution bandwidth set at 1 MHz as stated in ANSI C63.4. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Note: Rhein Tech Laboratories, Inc. has implemented procedures to minimize errors that occur from test instruments, calibration, procedures, and test setups. Test instrument and calibration errors are documented from the manufacturer or calibration lab. Other errors have been defined and calculated within the Rhein Tech quality manual, section 6.1. Rhein Tech implements the following procedures to minimize errors that may occur: yearly as well as daily calibration methods, technician training, and emphasis to employees on avoiding error.



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

8.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.12

The transmitter is terminated with a 50 Ω load and is modulated with a 2,500 Hz sine wave at an input level 16 dB greater than that required to produce 50% modulation at 1000 Hz. The substitution method from TIA/EIA-603 was used for this test.

8.2 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.

8.2.1 RADIATED EMISSIONS: (TRANSMITTER INTO A 50 OHM LOAD, CHANNEL 20)

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Signal Generator Reading (dBm)	Cable Loss and TX Antenna Gain Correction (dB)	Corrected Signal Generator Level (dBm) ERP	3.89W Power (dBm)	Margin from Power (dB)
54.410	47.8	-72.4	-1.6	-74.0	35.9	-109.9
81.615	55.4	-59.4	-0.6	-60.0	35.9	-95.9
108.820	50.2	-59.8	-0.7	-60.5	35.9	-96.4
136.025	74.0	-34.4	-1.4	-35.8	35.9	-71.7
163.230	57.8	-51.7	-1.2	-52.9	35.9	-88.8
190.435	68.1	-37.7	-2.2	-39.9	35.9	-75.8
217.640	81.3	-25.2	-2.4	-27.6	35.9	-63.5

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature: 

Date: January 13, 2001

Typed/Printed Name: Daniel Baltzell



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8.2.2 RADIATED EMISSIONS: (RECEIVER) CH 20 AT 27.205 MHz

See section Radiated emissions measurements for receivers and digital interface devices for test methodology. The 1st LO = 16.51 MHz @ CH 20, 2nd LO = 10.24 MHz, 1st IF+ 10.695, and 2nd IF = 0.455MHz were investigated and tested. The worst-case emission was detected when CH 20 (27.205 MHz) – 2nd LO (10.24 MHz) = 16.965 MHz. The emissions below represent this mode.

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
151.806	Qp	V	270	1.0	54.4	-16.9	37.5	43.5	-6.0
303.406	Qp	H	120	1.0	56.8	-13.2	43.6	46.0	-2.4
455.109	Qp	H	120	1.0	45.9	-9.2	36.7	46.0	-9.3
606.813	Qp	H	180	2.5	49.0	-5.8	43.2	46.0	-2.8
758.516	Qp	H	260	1.2	43.6	-3.8	39.8	46.0	-6.2
910.219	Qp	H	320	1.0	41.5	-2.4	39.1	46.0	-6.9

**All readings are quasi-peak, unless stated otherwise.*

TEST PERSONNEL:

Signature: _____

Date: January 13, 2001

Typed/Printed Name: Daniel Baltzell



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9 FCC RULES AND REGULATIONS PART 2 §2.1049 (C) (1): OCCUPIED BANDWIDTH

OCCUPIED BANDWIDTH - COMPLIANCE WITH THE EMISSION MASKS

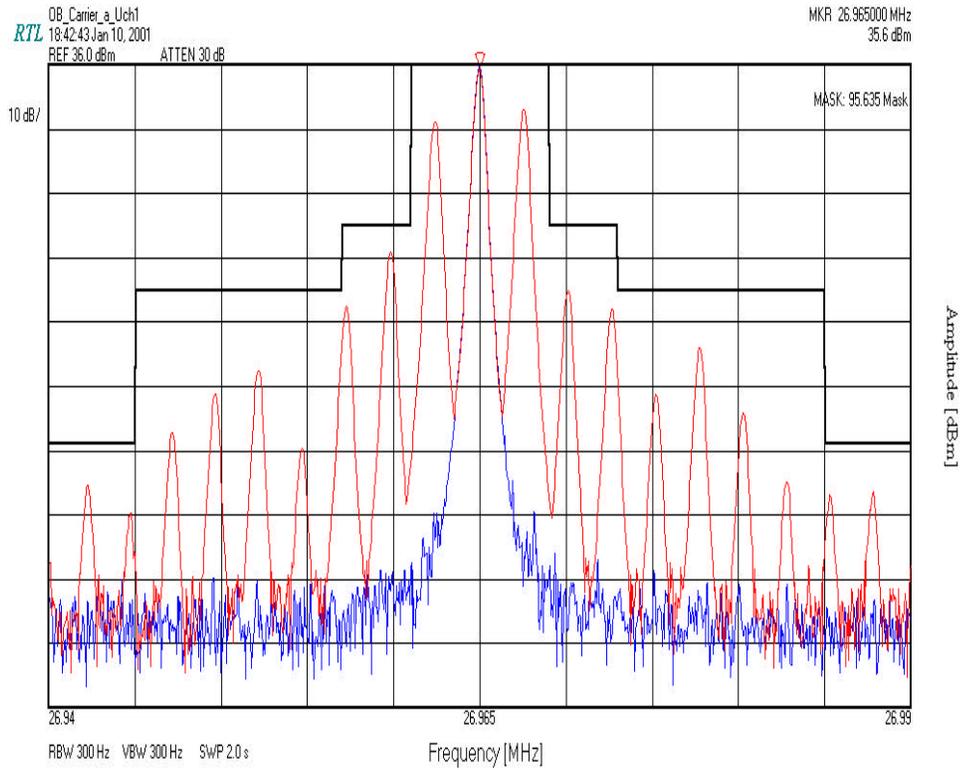
9.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.11

Device with audio modulation: Transmitter is modulated with a 2500 Hz sine wave at an input level of 16 dB greater than that required to produce 50% modulation. The plots are in compliance with paragraph 95.633 (a) of the rules



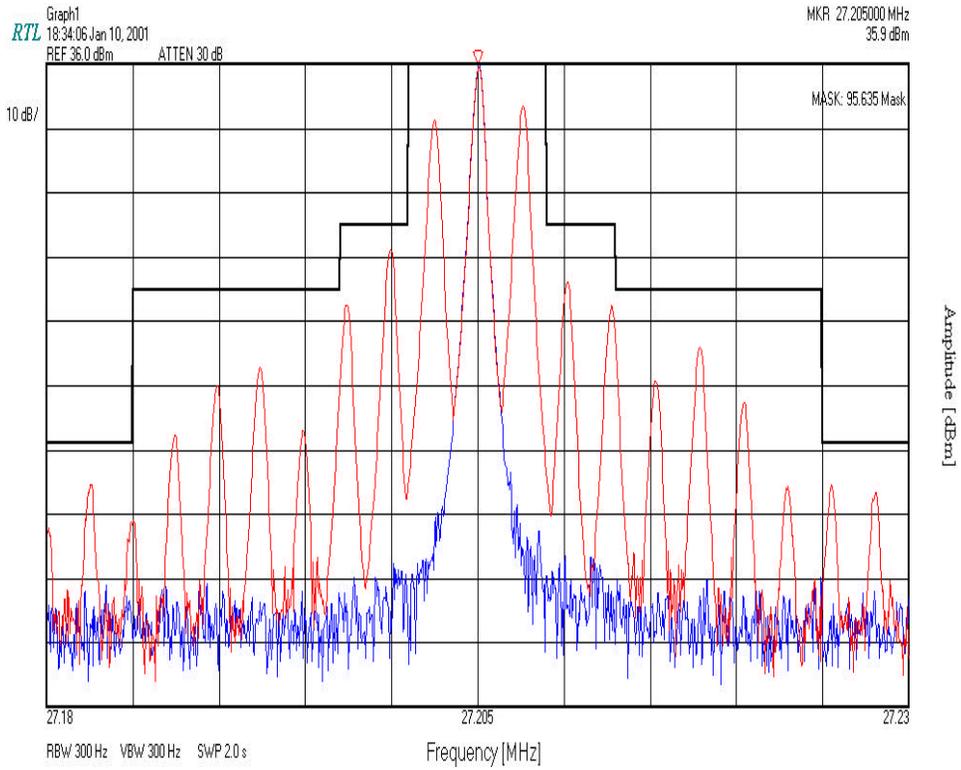
9.2 TEST DATA



95.633 (a) emission bandwidth for channel 1



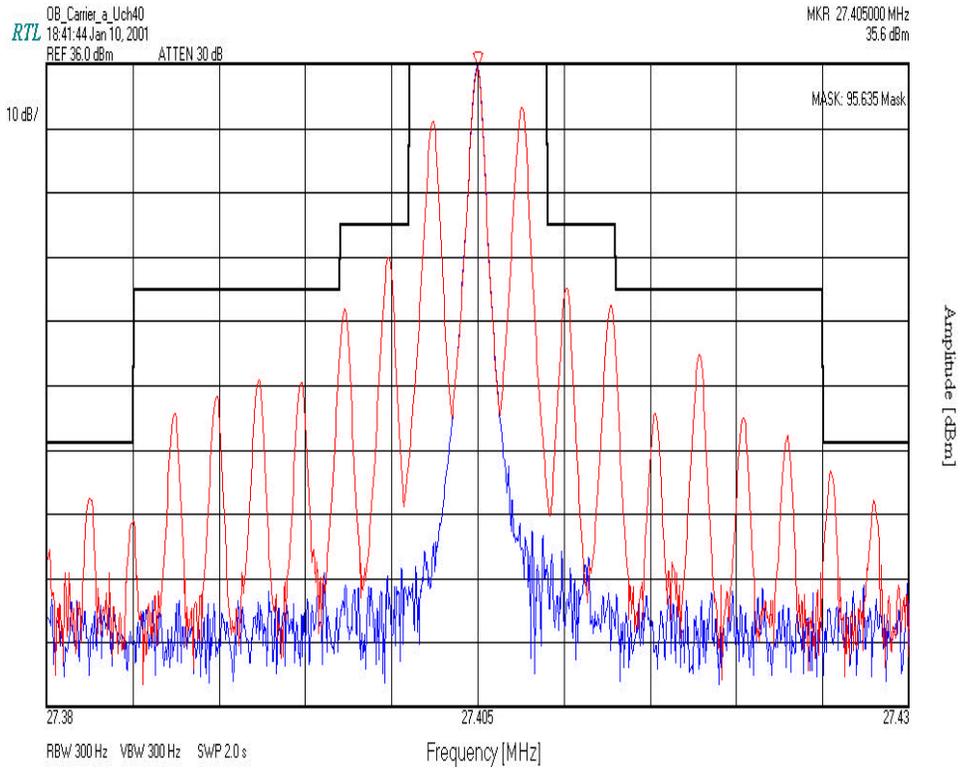
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95.633 (a) emission bandwidth for channel 20



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95.633 (a) emission bandwidth for channel 40



10 FCC RULES AND REGULATIONS PART 2 §2.1051: SPURIOUS EMISSIONS AT ANTENNA TERMINALS

10.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, Section 2.2.13

The transmitter is terminated with a 50Ω load connected to a spectrum analyzer.

The transmitter is modulated with a 2,500 Hz sine wave at an input level 16 dB greater than that required producing 50% modulation at 1000 Hz.

10.2 TEST DATA

Frequency range of measurement per Part 2.1057: 9kHz to 10 x Fc. FCC Limits: -23dBm

The following channels were investigated: Channels 1, Channels 20, and Channels 40.

The worst case (unwanted emissions) channels are shown. The magnitude of emissions attenuated more than 20 dB below the FCC limit need not be recorded.

Channel 1 (Spurious harmonic emissions at the Antenna Terminal)

Harmonic	Frequency (MHz)	Emission (dBm)	Limit (dBm)	Margin (dB)
2	53.93	-35.1	-23	-12.1
3	80.895	-34.9	-23	-11.9
4	107.86	-43.7	-23	-20.7
5	134.825	-43.3	-23	-20.3
6	161.79	-42.9	-23	-19.9
7	188.755	-42	-23	-19.0
8	215.72	-42	-23	-19.0
9	242.685	-43.1	-23	-20.1
10	269.65	-42.5	-23	-19.5

Channel 20 (Spurious harmonic emissions at the Antenna Terminal)

Harmonic	Frequency (MHz)	Emission (dBm)	Limit (dBm)	Margin (dB)
2	54.41	-36.8	-23	-13.8
3	81.615	-35.1	-23	-12.1
4	108.82	-42.6	-23	-19.6
5	136.025	-42.6	-23	-19.6
6	163.23	-42.6	-23	-19.6
7	190.435	-41.7	-23	-18.7
8	217.64	-42.6	-23	-19.6
9	244.845	-42.4	-23	-19.4
10	272.05	-42.6	-23	-19.6

Channel 40 (Spurious harmonic emissions at the Antenna Terminal)

Harmonic	Frequency (MHz)	Emission (dBm)	Limit (dBm)	Margin (dB)
2	54.81	-35.6	-23	-12.3
3	82.215	-36.8	-23	-13.8
4	109.62	-43.1	-23	-20.1
5	137.025	-42.5	-23	-19.5
6	164.43	-42.4	-23	-19.4
7	191.835	-41.6	-23	-18.6
8	219.24	-42.7	-23	-19.7
9	246.645	-42.6	-23	-19.6
10	274.05	-43	-23	-20.0



Transmitter Channel 1 (Spurious emissions at the Antenna Terminal)

Frequency (MHz)	Emission (dBm)	Limit (dBm)	Margin (dB)
13.65	-32.9	-23	-9.9
16.44	-35	-23	-12.0
23.97	-36.1	-23	-13.1
26.64	-40.7	-23	-17.7
26.82	-39.7	-23	-16.7
27.24	-41.1	-23	-64.1
27.6	-41.5	-23	-18.5
27.84	-40.6	-23	-17.6
28.41	-40.7	-23	-17.7
30.12	-37.9	-23	-14.9
54.01	-36.1	-23	-13.1
64.92	-42.9	-23	-19.9
81.16	-36.2	-23	-13.2
168.3	-42.8	-23	-19.8
189.5	-41.9	-23	-18.9
310.6	-42.8	-23	-19.8
432.1	-41	-23	-18.0
459.2	-41	-23	-18.0
486.3	-40.9	-23	-17.9

Transmitter Channel 20 (Spurious emissions at the Antenna Terminal)

Frequency (MHz)	Emission (dBm)	Limit (dBm)	Margin (dB)
13.74	-40.4	-23	-17.4
16.68	-34.2	-23	-11.2
24.06	-36.1	-23	-13.1
26.52	-41.5	-23	-18.5
27	-40.9	-23	-17.9
27.45	-41.1	-23	-64.1
27.78	-40.8	-23	-17.8
27.93	-41.0	-23	-18.0
28.41	-40.8	-23	-17.8
30.52	-37.1	-23	-14.1
54.48	-34.7	-23	-11.4
81.85	-35.8	-23	-12.8
191.2	-42.6	-23	-19.6
381.4	-42.8	-23	-19.8
408.8	-42.0	-23	-19.0
436.2	-40.9	-23	-17.9
463.5	-39.3	-23	-16.3
490.6	-42.2	-23	-19.2
626	-42.9	-23	-19.9
743	-42.6	-23	-19.6
863	-42.9	-23	-19.9



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Channel 40 (Spurious emissions at the Antenna Terminal)

Frequency (MHz)	Emission (dBm)	Limit (dBm)	Margin (dB)
13.86	-38.4	-23	-15.4
16.89	-32.2	-23	-9.2
24.18	-35.7	-23	-12.7
26.91	-41.1	-23	-18.1
27.3	-41	-23	-18
27.39	-38.8	-23	-15.8
27.66	-41.1	-23	-54.1
28.05	-40.1	-23	-17.1
28.41	-41.2	-23	-18.2
30.81	-37.9	-23	-14.9
54.88	-39.0	-23	-16.0
82.49	-39.1	-23	-16.1
406.9	-42.8	-23	-19.8
439.3	-41.4	-23	-18.4
466.9	-40	-23	-17
494.5	-40.7	-23	-17.7
630.5	-42.6	-23	-19.6
861	-42.9	-23	-19.9



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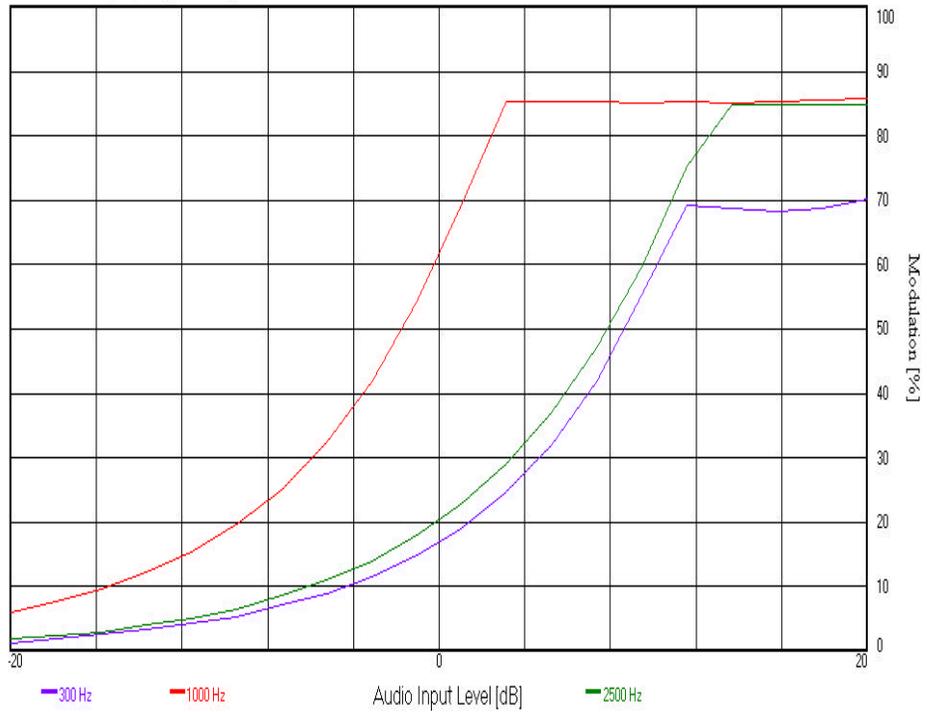
11 FCC PART 2 § 2.1047(B): MEASUREMENT REQUIRED: MODULATION CHARACTERISTICS (MODULATION LIMITING)

The audio input level is adjusted for 50% modulation at 1000 Hz. Using this level as a reference (0 dB) the audio input level is varied from the reference to a level 20 dB above it for modulation frequencies of 300, 1000, and 2500 Hz. The % modulation obtained as a function of the input level is recorded and displayed as positive and negative peaks. The curves show compliance with paragraph §95.637 of the rules.



Modulation Limiting Positive Peak

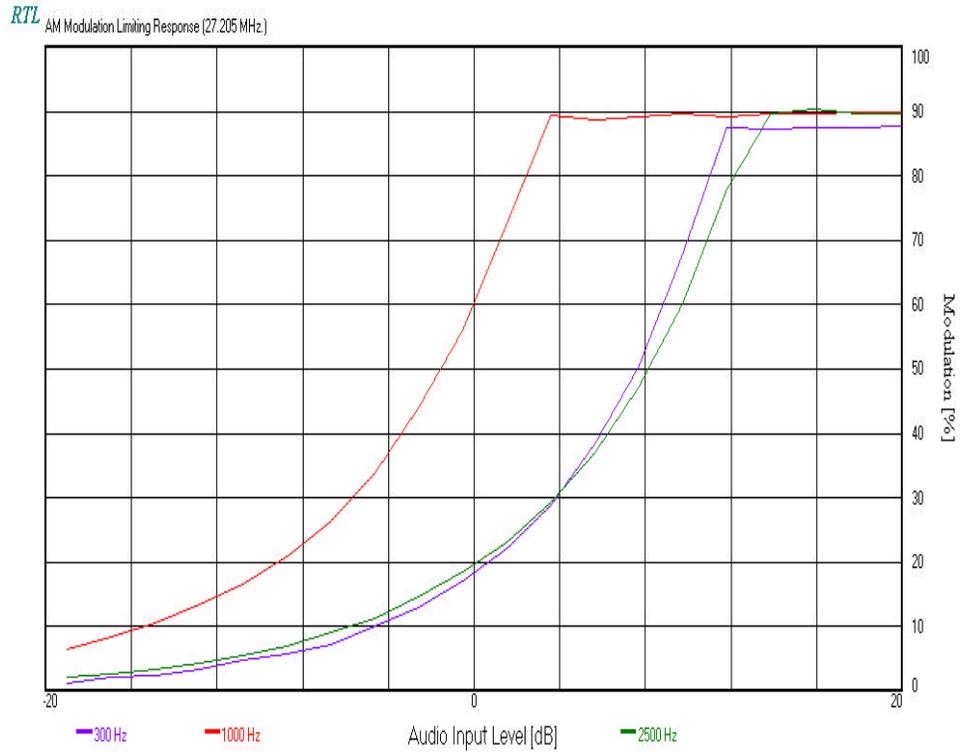
RTL AM Modulation Limiting Response (27.205 MHz)





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Modulation Limiting Negative Peak





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12 FCC RULES AND REGULATIONS PART 2 §2.1047 (A): MODULATION CHARACTERISTICS – AUDIO LOW PASS FILTER

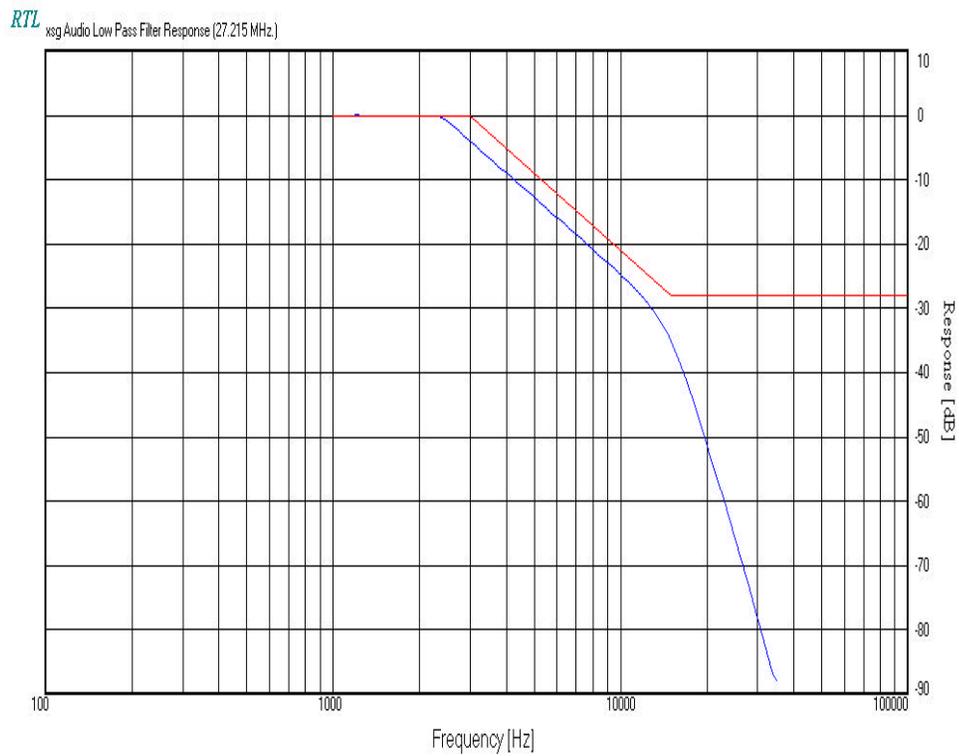
12.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, 2.2.15

The Audio Low Pass Filter Response is the frequency response of the post limiter low pass filter circuit above 3000 Hz.

12.2 TEST DATA

AUDIO LOW PASS FILTER





12.3 FCC RULES AND REGULATIONS PART 2 §2.1047 (A): MODULATION CHARACTERISTICS - AUDIO FREQUENCY RESPONSE

12.4 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.6

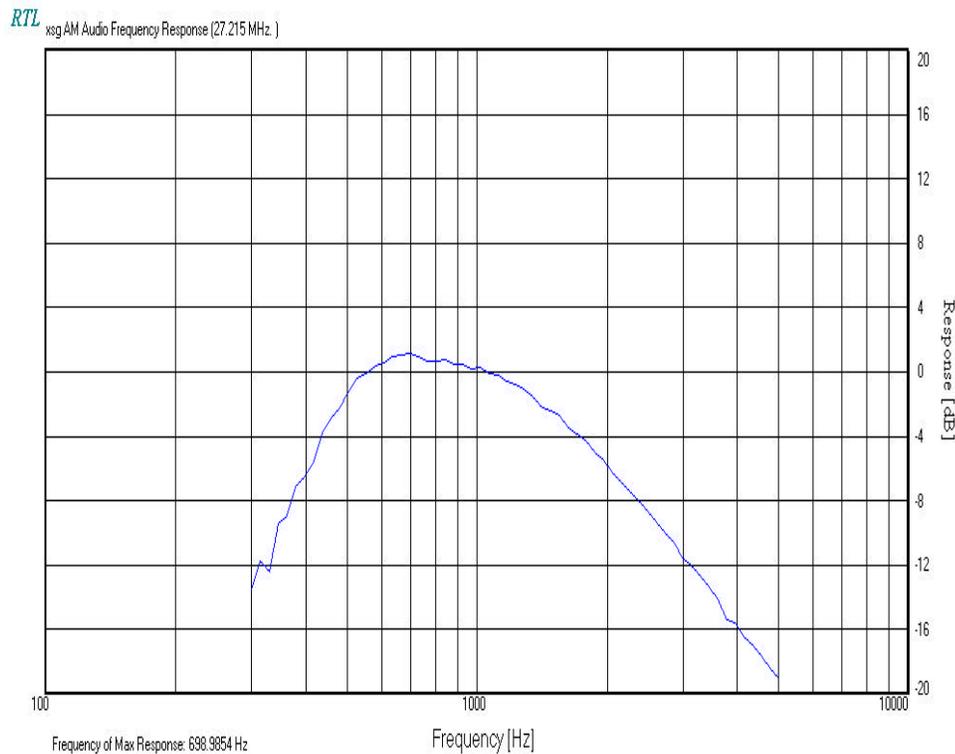
The audio frequency response is the degree of closeness to which the frequency deviation of the transmitter follows a prescribed characteristic.

The input audio level at 1000 Hz is set to produce 50% of modulation. This point is shown as the 0 dB reference level, noted Modref. The audio signal generator was varied from 100Hz to 5kHz with the input level held constant. The modulation in kHz was recorded using a modulation analyzer as Modfreq.

The response in dB relative to 1 kHz was calculated as follows: Audio Frequency Response = 20 LOG (Modfreq/Modref). The maximum audio frequency response = 699 Hz

12.4.1 TEST DATA

Audio Frequency Response



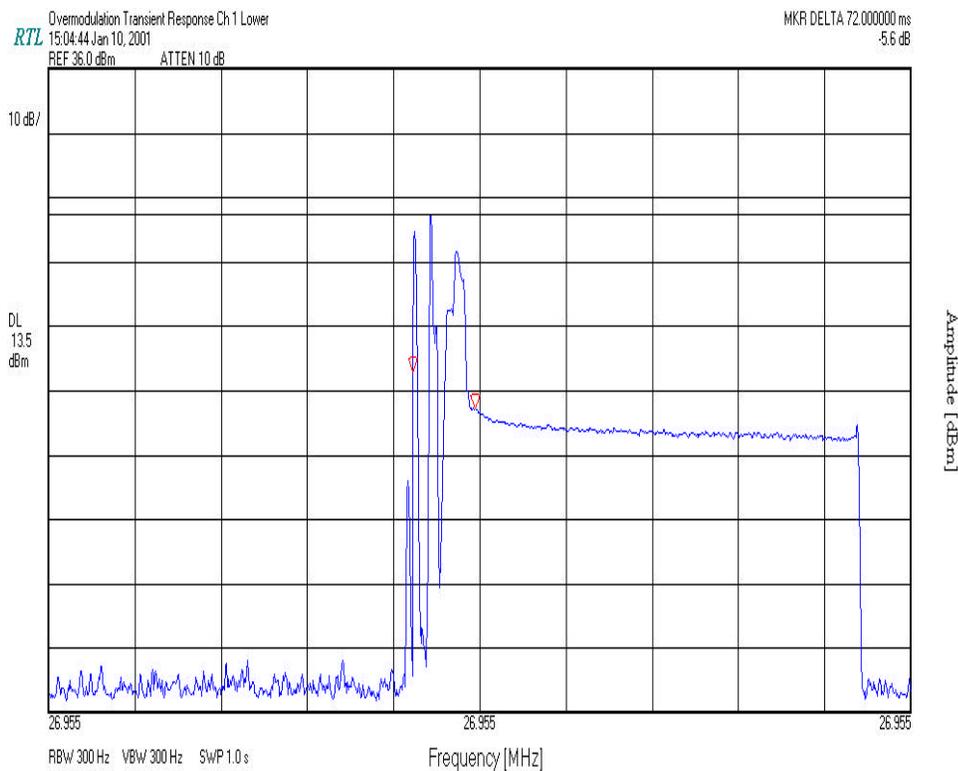


12.5 FCC RULES AND REGULATIONS PART 2 §2.987 (B) (2): MODULATION CHARACTERISTICS–OVERMODULATION TRANSIENT RESPONSE

12.6 TEST PROCEDURE

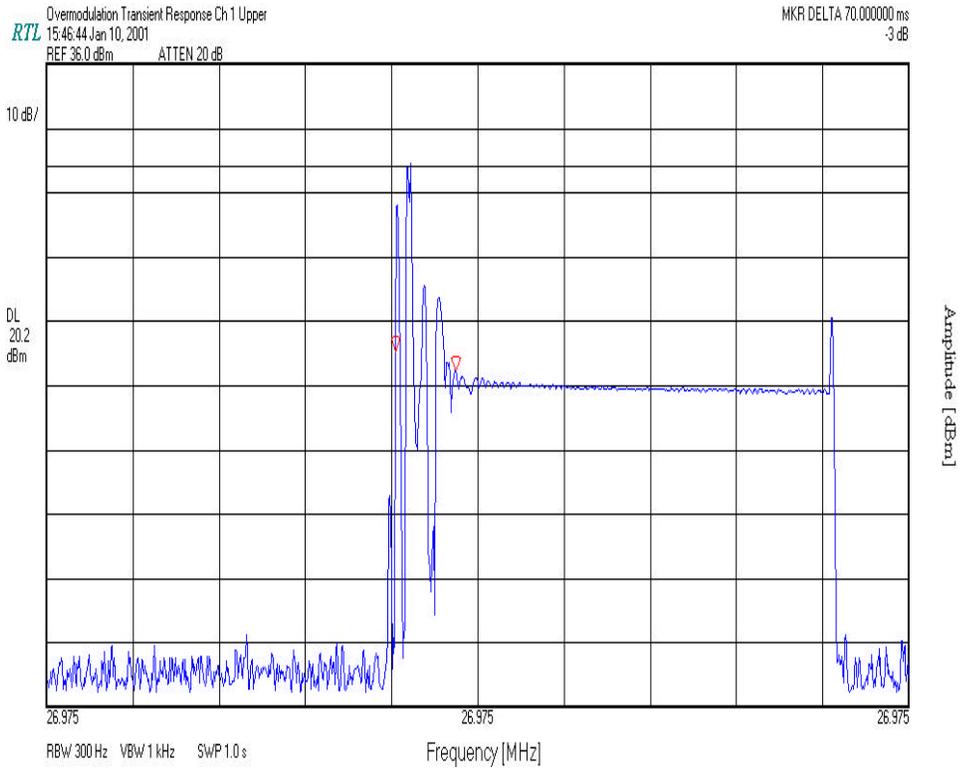
FCC Rules and Regulations

Over modulation transient response was measured by applying to the microphone input a 2500 Hz one Pulse Per Second tone, 16 dB above that which is required to produce a 50% modulation at the frequency of maximum response. The spectrum analyzer was set for occupied bandwidth measurements. The spectrum analyzer tuned to the upper and lower adjacent channels (+/-10kHz) at 0 span to observe the transient caused by the pulsed modulation, sweep time is 10 seconds, reference level 36 dBm.





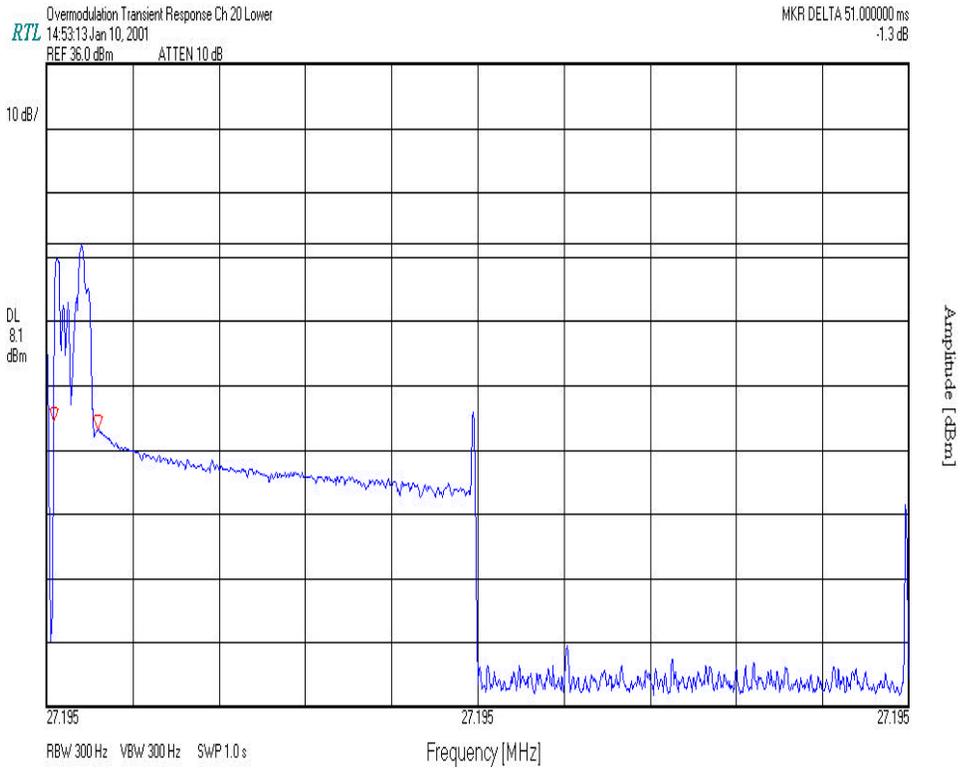
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Over modulation transient response upper channel 1



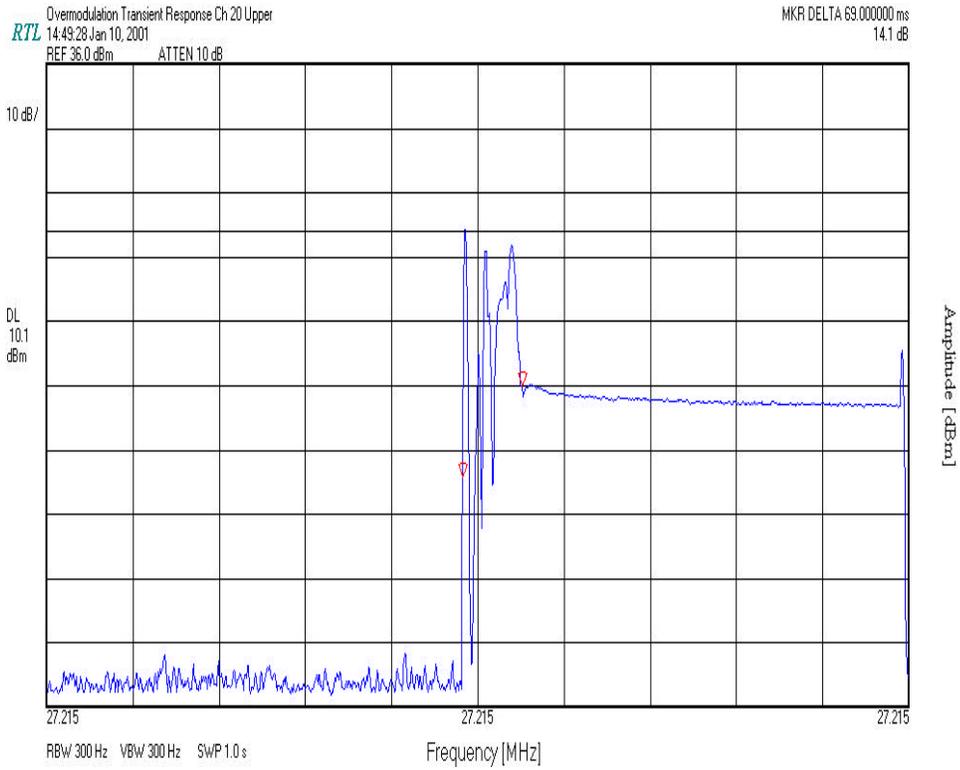
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Over modulation transient response lower channel 20



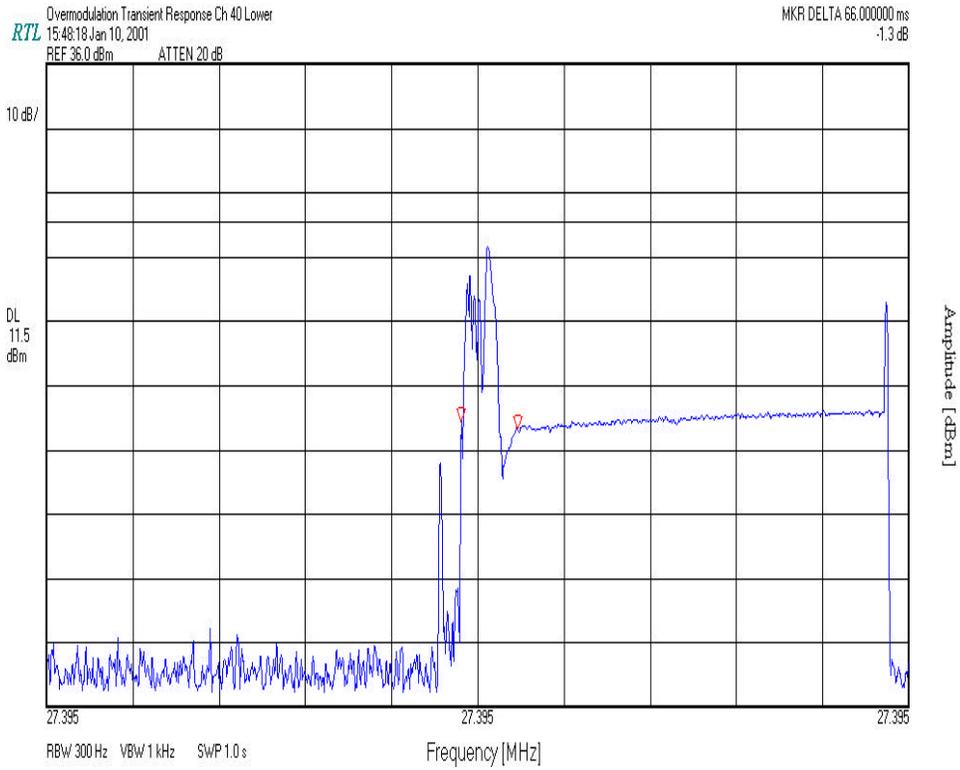
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Over modulation transient response upper channel 20



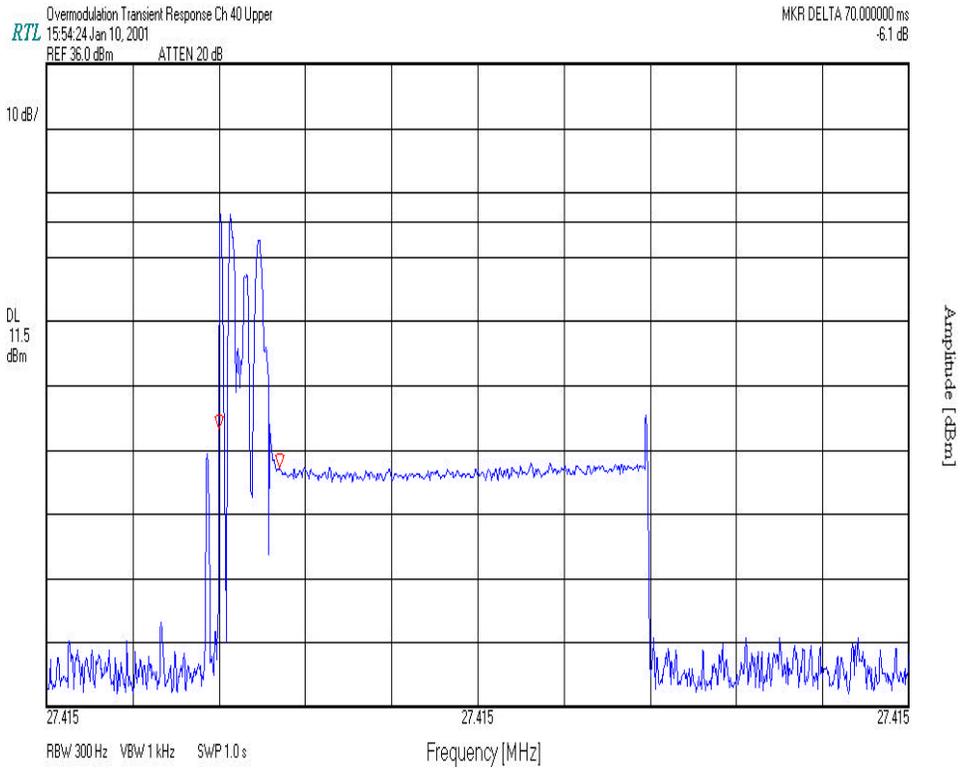
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Over modulation transient response lower channel 40



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Over modulation transient response upper channel 40



13 FCC RULES AND REGULATION PART 2 §2.1055: FREQUENCY STABILITY

13.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.2

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

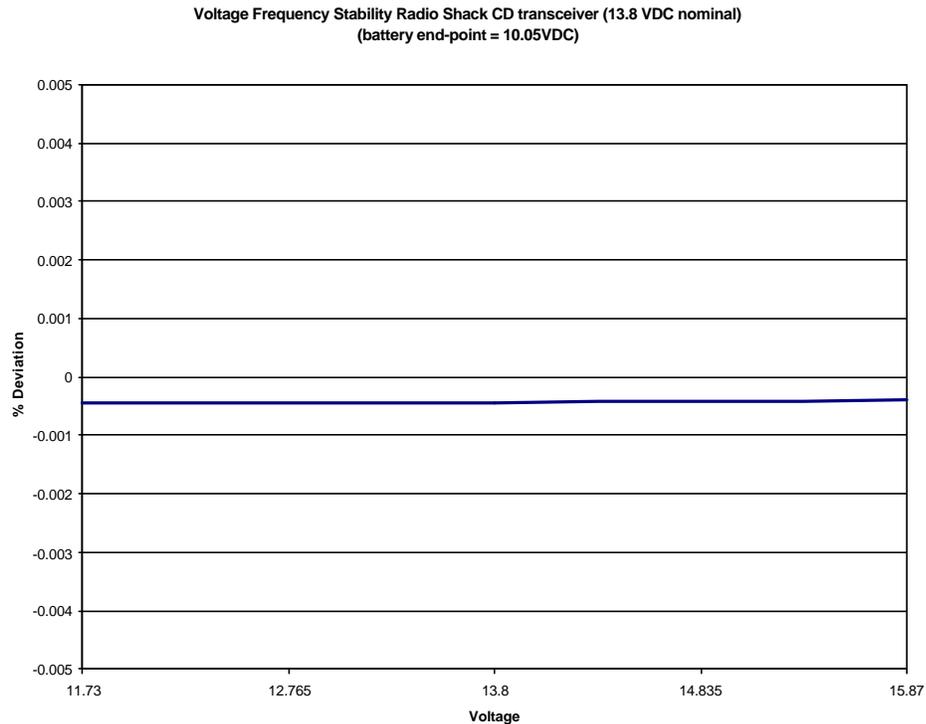
The EUT was evaluated over the temperature range -30°C to $+50^{\circ}\text{C}$.

The temperature was initially set to -30°C and a 2-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 $\frac{1}{2}$ 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 85% to 115% of the nominal voltage.

13.2 TEST DATA

13.2.1 FREQUENCY STABILITY/VOLTAGE VARIATION



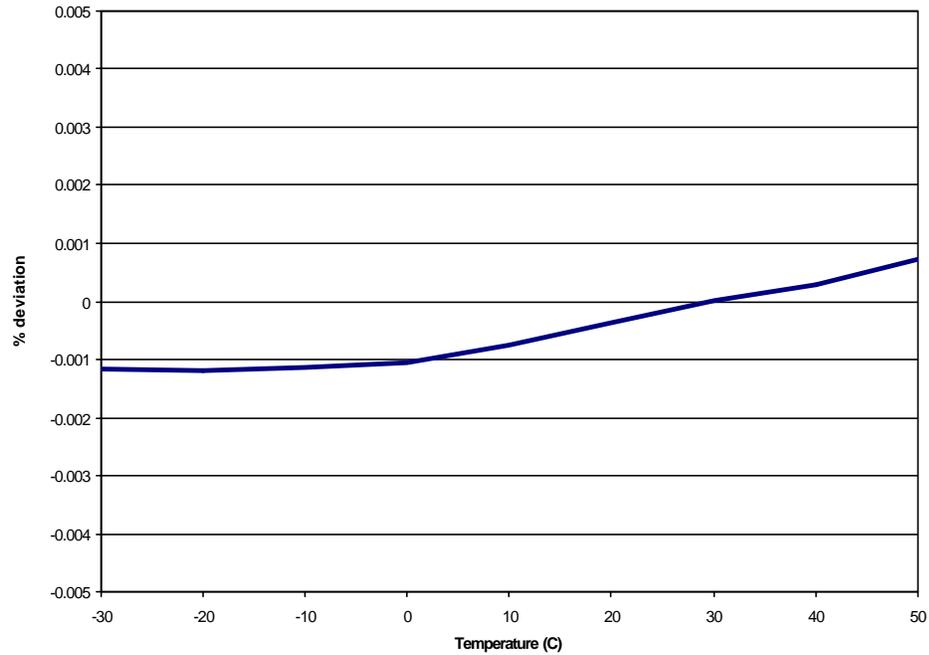
The worst-case voltage deviation is show above. Limit is 0.005% frequency tolerance.



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13.2.2 FREQUENCY STABILITY/TEMPERATURE VARIATION

Temperature Frequency Stability Radio Shack Transceiver (Channel 20)



The worst-case temperature deviation is show above. Limit is 0.005% frequency tolerance.

14 FCC RULES AND REGULATIONS PART 95.667: CB TRANSMITTER POWER

Please see the Bills of Materials section of this report.