



FCC Licensed Transmitter Test Report

for

FM Broadcast Transmitter
TX 150/300

Reference Standard 47CFR Part 2, Subpart J : Oct 2005
Manufacturer Broadcast Warehouse
For type of equipment and serial number, refer to section 3
Report Number 10-058/2950/3B/05
Report Produced by: -

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2. Summary of Test Results

The FM Broadcast Transmitter TX 150/300 was tested for compliance to the following standard for licensed transmitters: -

47CFR Part 2, Subpart J: Oct 2005
47CFR Part 73: Oct 2005

Title	References	Results
1. RF Power Output.	47CFR Part 2, Subpart J	conducted: PASSED
		radiated: NOT APPLICABLE
2. Modulation Characteristics.	47CFR Part 2, Subpart J	frequency response: PASSED
		modulation limiting: PASSED
3. Occupied Bandwidth	47CFR Part 2, Subpart J	PASSED
4. Spurious Emissions at Antenna Terminals.	47CFR Part 2, Subpart J	PASSED
5. Field Strength of Spurious Radiation.	47CFR Part 2, Subpart J	PASSED
6. Frequency Stability.	47CFR Part 2, Subpart J	PASSED

This report relates to the equipment tested as identified by a unique serial number and at the time it was tested. It does not relate to any other similar equipment and performance of the product before or after the test cannot be guaranteed.

The measurement uncertainty, where stated, is the expanded uncertainty based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Date of Test: 21 - 31 Oct 2005

Test Engineer:

Paul Darragh
Digitally signed by Paul Darragh
DN: CN = Paul Darragh, C = GB, OU = RN Electronics
Date: 2006.01.31 20:58:30 Z

Approved By:



3. Information about Equipment Under Test

Applicant	Broadcast Warehouse PO BOX 1630 Croydon CR9 4XX
Brand name of EUT(s)	Broadcast Warehouse Limited
Model Number(s) of EUT(s)	TX 150/300
FCC Identifier(s)	TUO TX150-300
Serial Numbers of EUT(s)	not stated
Date when equipment was received by RN Electronics Limited	6th Oct 2005
Date of test:	21 - 31 Oct 2005
Customer order number:	not stated
Visual description of EUT:	19" rack mountable unit with LCD display and monitor ports on front panel. All other ports on rear.
Main function of the EUT:	FM broadcast transmission of audio.

EUT Information specification.

Height	88mm
Width	480mm
Depth	353mm
Weight	5kg
Voltage	230Vac
Current required from above voltage source	not stated

EUT Configurations for testing.

Choice of model(s) for type testing	this is the highest power model of range, also tested lower power model (see report 10-058/2950/3A/05)
Method of achieving an unmodulated carrier frequency	remove stereo pilot tone jumper and reduce audio input to 0V.
Audio capsule / test fixture used	not applicable
Declared power level (dBm)	312W
Declared channel bandwidth (kHz)	200 kHz
Channel frequencies used	87.5MHz (low), 97.7MHz (mid), 108.0MHz (high)

Description of ancillary equipment connected to the equipment under test, for the purpose of tests, can be found in Section10. Auxiliary Equipment.

Any modifications made to the EUT, whilst under test, can be found in Section 11. Modifications

This report was printed on: 31 January 2006

4. Specifications

The tests were performed by RN Electronics Engineer Paul Darragh who set up the tests, the test equipment, and operated it in accordance with the **R.N. Electronics Ltd** procedures manual and the relevant standards listed below.

4.1 Relevant Standards

	Standard Number	Version	Description
4.1.1	47CFR Part 73	Oct 2005	Part 73 - Radio Broadcast Services. [Subpart B - FM Broadcast Stations; Subpart H - Rules Applicable to All Broadcast Stations]
4.1.2	47CFR Part 2, Subpart J	Oct 2005	Part 2 - Frequency Allocations And Radio Treaty Matters; General Rules And Regulations.
4.1.3	ITU Rec. SM.329	10 (02/03)	Unwanted emissions in the spurious domain

4.2 Measurement Uncertainty

Parameter	Uncertainty
RF frequency	<±1 x 10 ⁻⁷
Audio Output power	<±0.5 dB
Radiated RF power	<±6 dB
Conducted RF power variations using a test fixture	<±0.75 dB
Maximum frequency deviation:	
	- within 300 Hz and 6 kHz of audio frequency <±5 %
	- within 6 kHz and 25 kHz of audio frequency <±3 dB
Deviation limitation	<±5 %
Radiated emission of transmitter valid up to 12.75 GHz	<±6 dB
Radiated emission of receiver valid up to 12.75 GHz	<±6 dB
Transmitter switch off time	<±5 %

4.2 Tests at Extremes of Temperature and Voltage

The following test conditions were used to simulate testing at nominal or extremes.

Temperature Test Conditions		Voltage Test Conditions	
T amb	per ambient conditions of the laboratory	V nom	110 / 230 Vac
T cold	0°C	V min	85 V ac
T hot	50°C	V max	260 Vac

- ☐ A permanent internal RF port was used for testing.
- ☐ A test fixture was used for testing.
- ☐ A temporary RF port was created for testing.
- ☒ The equipment external RF port was used for testing.

5. Tests, Methods and Results

5.1 Carrier Power

5.1.1 Conducted

5.1.1.1 Test Methods

Test Requirements	47CFR Part 2, Subpart J
Test Method:	47CFR Part 2, Subpart J, Clause §2.1046
Limits:	47CFR Part 2, Subpart J, Clause §73.1560(b)

5.1.1.1.1 Configuration of EUT

The EUT was placed in a temperature controlled chamber and thermal balance was achieved before testing commenced. Measurements were made at the 50 ohm coaxial transmit / receive port.

5.1.1.1.2 Test Procedure

Tests were made in accordance with the Test Method noted above using the measuring equipment noted in the 'Test Equipment' Section. The power stated is the maximum power observed from an average power detector.

5.1.1.2 Test results

Ambient conditions.

Temperature: 21°C

Relative humidity: 76%

TABLE OF OUTPUT POWER RESULTS

Output Power	+55 dBm
Channel Spacing	200 kHz
Modulation	FM

Test Conditions		Carrier Power (dBm)		
		Low	Mid	High
Temp Ambient	Volts Nominal	55.01	54.92	54.86
Maximum Transmitter Power observed (W)		317		
Variation in Transmitter power observed (%)		98.1 to 101.6		

Limits for > 10 Watt transmitters 90 to 105 % rated power.

5.1.1.3 Test Equipment used

H16, CO31, CO32, TMS86, TMS10
See Section 9 for more details

5.1.2 Radiated

NOT APPLICABLE.

EUT does not include an integral antenna.

5.2 Modulation Characteristics

5.2.1 Frequency response

5.2.1.1 Test Methods

Test Requirements	47CFR Part 2, Subpart J
Test Method:	47CFR Part 2, Subpart J, Clause §2.1047
Limits:	47CFR Part 2, Subpart J, Clause §73.1570(b)

5.2.1.1 Configuration of EUT

The EUT was tested on the bench / in the chamber with the door open and ambient conditions were monitored.

5.2.1.2 Test Procedure

Tests were made in accordance with the Test Method noted above using the measuring equipment noted in the 'Test Equipment' Section.

5.2.2 Test Results

Ambient conditions.

Temperature: 18°C Relative humidity: 66%

TABLE OF AUDIO RESPONSE PLOTS

Output Power	+55 dBm
Channel Spacing	200 kHz
Modulation	FM

Test Conditions		Reference to plot		
		Low	Mid	High
Temp Ambient	Volts Nominal	001	002	003

Results for this test are presented graphically, please refer to section6. Graphical Results.

5.2.3 Test Equipment used

TMS10, H16, TMS48, TMS55, TMS70, TMS208
See Section 9 for more details

5.2.2 Modulation Limiting

5.2.2.1 Test Methods

Test Requirements	47CFR Part 2, Subpart J
Test Method:	47CFR Part 2, Subpart J, Clause §2.1047
Limits:	47CFR Part 2, Subpart J, none

5.2.2.1 Configuration of EUT

The EUT was tested on the bench / in the chamber with the door open and ambient conditions were monitored.

5.2.2.2 Test Procedure

Tests were made in accordance with the Test Method noted above using the measuring equipment noted in the 'Test Equipment' Section.

5.2.3 Test Results

Ambient conditions.

Temperature: 18°C Relative humidity: 57%

TABLE OF MODULATION LIMITING PLOTS

Output Power	+55 dBm
Channel Spacing	200 kHz
Modulation	FM

Test Conditions		Reference to plot		
		Low	Mid	High
Temp Ambient	Volts Nominal	004	005	006

Results for this test are presented graphically, please refer to section6. Graphical Results.

5.2.4 Test Equipment used

TMS10, TMS48, TMS55, TMS70, H16, TMS208
See Section 9 for more details

5.3 Occupied Bandwidth

5.3.1 Test Methods

Test Requirements:	47CFR Part 2, Subpart J
Test Method:	47CFR Part 2, Subpart J, Clause §2.1049
Limits:	47CFR Part 2, Subpart J, Clause §73.317(b)&(c)

5.3.1.1 Configuration of EUT

The EUT was tested on the bench / in the chamber with the door open and ambient conditions were monitored. Stereo input was provided from a single 15kHz audio tone input to left and right inputs at the appropriate level. The pilot tone jumper was enabled for this test.

5.3.1.2 Test Procedure

Tests were made in accordance with the Test Method noted above, using the measuring equipment noted in the 'Test Equipment' section.

5.3.1.3 Test Results

Ambient conditions.

Temperature: 18°C

Relative humidity: 87%

TABLE OF SPECTRUM PLOTS

Output Power	+55 dBm
Channel Spacing	200 kHz
Modulation	FM

	Reference to plot / Result		
	Low	Mid	High
Bandwidth plot	007	008	009
Occupied Bandwidth (kHz)	126.0	123.0	120.0
Maximum Occupied Bandwidth Observed (kHz)	126.0		

Limits are shown on the respective plots.

5.3.1.4 Test Equipment used

TMS10, H16, TMS70, E2, CO16, TMS48, TMS55

See Section 9 for more details

5.4 Spurious Emissions at Antenna Terminals

5.4.1 Conducted

5.4.1.1 Test Methods

Test Requirements 47CFR Part 2, Subpart J
Test Methods: 47CFR Part 2, Subpart J, §2.1051
ITU-R Rec. SM.329

Limits: 47CFR Part 2, Subpart J, Clause §73.317(d)

5.4.1.1.1 Configuration of EUT

The EUT was tested on the bench / in the chamber with the door open and ambient conditions were monitored.

5.4.1.1.2 Test Procedure

Tests were made in accordance with the Test Method noted above using the measuring equipment noted in the 'Test Equipment' Section. The power stated is the maximum power observed using a peak detector.

5.4.1.2 Test results

Ambient conditions.

Temperature: 18°C

Relative humidity: 82%

Channel Name	Low
Channel Spacing	200 kHz
Modulation Type	FM
Power Level	+55 dBm

Spurious Frequency (MHz)	Measured Spurious Level (dBm)
none	
Frequency Range	Plot Number
0.009 - 0.150	2950/3 Plot 010
0.150 - 30	2950/3 Plot 011
30 - 120	2950/3 Plot 012
120 - 1,000	2950/3 Plot 013
1,000 - 2,900	2950/3 Plot 014

Channel Name	Mid
Channel Spacing	200 kHz
Modulation Type	FM
Power Level	+55 dBm

Spurious Frequency (MHz)	Measured Spurious Level (dBm)
none	
Frequency Range	Plot Number
0.009 - 0.150	2950/3 Plot 015
0.150 - 30	2950/3 Plot 016
30 - 120	2950/3 Plot 017
120 - 1,000	2950/3 Plot 018
1,000 - 2,900	2950/3 Plot 019

Channel Name	High
Channel Spacing	200 kHz
Modulation Type	FM
Power Level	+55 dBm

Spurious Frequency (MHz)	Measured Spurious Level (dBm)
none	
Frequency Range	Plot Number
0.009 - 0.150	2950/3 Plot 020
0.150 - 30	2950/3 Plot 021
30 - 120	2950/3 Plot 022
120 - 1,000	2950/3 Plot 023
1,000 - 2,900	2950/3 Plot 024

Emissions more than 20dB below the limit have not been recorded.

Limits are shown on the respective plots.

Limit line is calculated as follows: power of EUT is 312W = 54.9 dBm

required attenuation is $43 + 10 \text{ LOG}(312) = 67.9 \text{ dB}$

i.e. required level is $54.9 - 67.9 = -13 \text{ dBm}$

5.4.1.3 Test Equipment used

TMS10, E2, H16, TMS48, TMS55, CO16, TMS70

See Section 9 for more details

5.5 Field Strength of Spurious Radiation.

5.5.1 Test Methods

Test Requirements:	47CFR Part 2, Subpart J
Test Methods:	47CFR Part 2, Subpart J, §2.1053 ITU-R Rec. SM.329
Limits:	47CFR Part 2, Subpart J, Clause §73.317(d)

5.5.1.1 Configuration of EUT

The EUT was placed in a vertical position in a shielded anechoic chamber. Measurements were made at 3m distance, then substitution was performed using a known signal generator.

5.5.1.2 Test Procedure

Tests were made in accordance with the Test Methods noted above using the measuring equipment noted in the 'Test Equipment' Section.

5.5.2 Test Results

Ambient conditions.

Temperature: 18°C

Relative humidity: 50%

Channel Name	Low
Frequency	87.5 MHz
Channel Spacing	200kHz
Modulation Type	FM
Power Level	312W

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Antenna Polarisation	EUT Polarisation
none			
Range (MHz)	Polarisation	Plot #	
30 - 300	H	025	
30 - 300	V	026	
300 - 1000	H	027	
300 - 1000	V	028	
1000 - 1100	H	029	
1000 - 1100	V	030	

Channel Name	Mid
Frequency	97.7 MHz
Channel Spacing	200kHz
Modulation Type	FM
Power Level	312W

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Antenna Polarisation	EUT Polarisation
none			
Range (MHz)	Polarisation	Plot #	
30 - 300	H	031	
30 - 300	V	032	
300 - 1000	H	033	
300 - 1000	V	034	
1000 - 1100	H	035	
1000 - 1100	V	036	

Channel Name	High
Frequency	108 MHz
Channel Spacing	200kHz
Modulation Type	FM
Power Level	312W

Spurious Frequency (MHz)	Measured Spurious Level (dBm)	Antenna Polarisation	EUT Polarisation
none			
Range (MHz)	Polarisation	Plot #	
30 - 300	H	037	
30 - 300	V	038	
300 - 1000	H	039	
300 - 1000	V	040	
1000 - 1100	H	041	
1000 - 1100	V	042	

The plots referred to in the above tables may be found in section 6. Graphical Results

5.5.3 Test Equipment Used

E226, TMS933
See Section 9 for more details

5.6 Frequency Error

5.6.1 Test Methods

Test Requirements:	47CFR Part 2, Subpart J
Test Method:	47CFR Part 2, Subpart J, Clause §2.1055
Limits:	47CFR Part 2, Subpart J, Clause §73.1545

5.6.1.1 Configuration of EUT

The EUT was placed in a temperature controlled chamber and thermal balance was achieved before testing commenced. Measurements were made at the 50 ohm coaxial transmit / receive port.

5.6.1.2 Test Procedure

Tests were made in accordance with the Test Method noted above using the measuring equipment noted in the 'Test Equipment' Section. At each temperature extreme, the EUT was switched on in the transmit condition for one minute, after which the tests were conducted.

5.6.2 Test results

Ambient conditions.

Temperature: 21°C

Relative humidity: 70%

Radio parameters.

O/P Power: 312W

Modulation: FM (carrier only)

TABLE OF FREQUENCY ERROR RESULTS

Channel Spacing	200 kHz
Modulation	FM

Test Conditions		Frequency Reading (MHz)		
Temperature (C)	Voltage (V)	Low	Mid	High
0	nominal	87.500571	97.700146	107.999709
10	nominal	87.500527	97.700034	107.999617
20	nominal	87.500462	97.700000	107.999496
20	85	87.500472	97.699960	107.999485
20	260	87.500502	97.700000	107.999501
30	nominal	87.500203	97.699607	107.999165
40	nominal	87.500247	97.699747	107.999253
50	nominal	87.500167	97.699707	107.999237
Maximum Frequency Error observed (Hz)		+571 / -835		

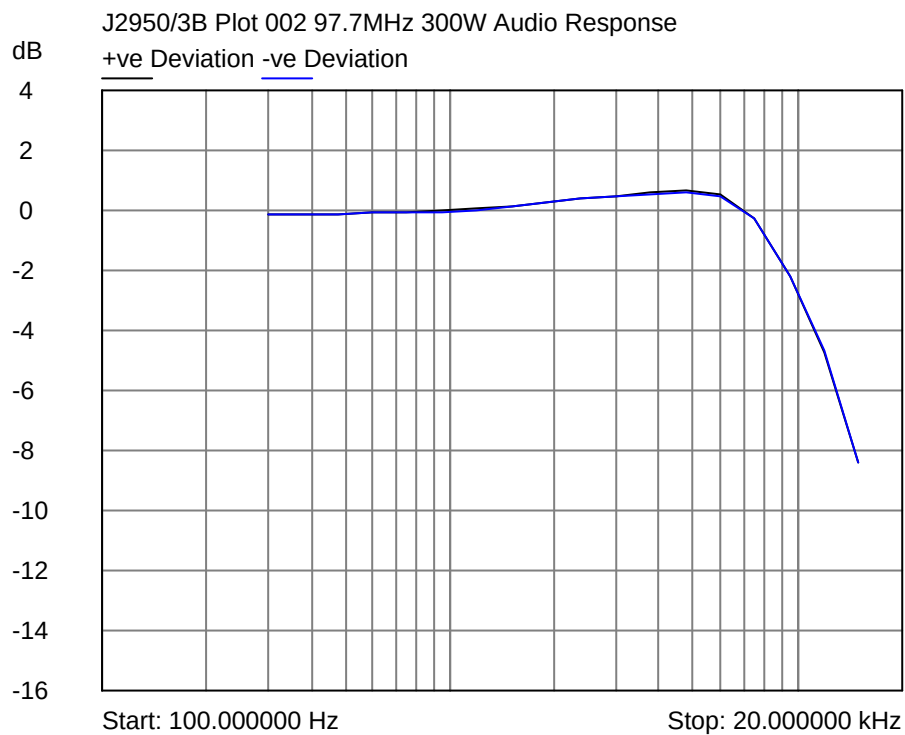
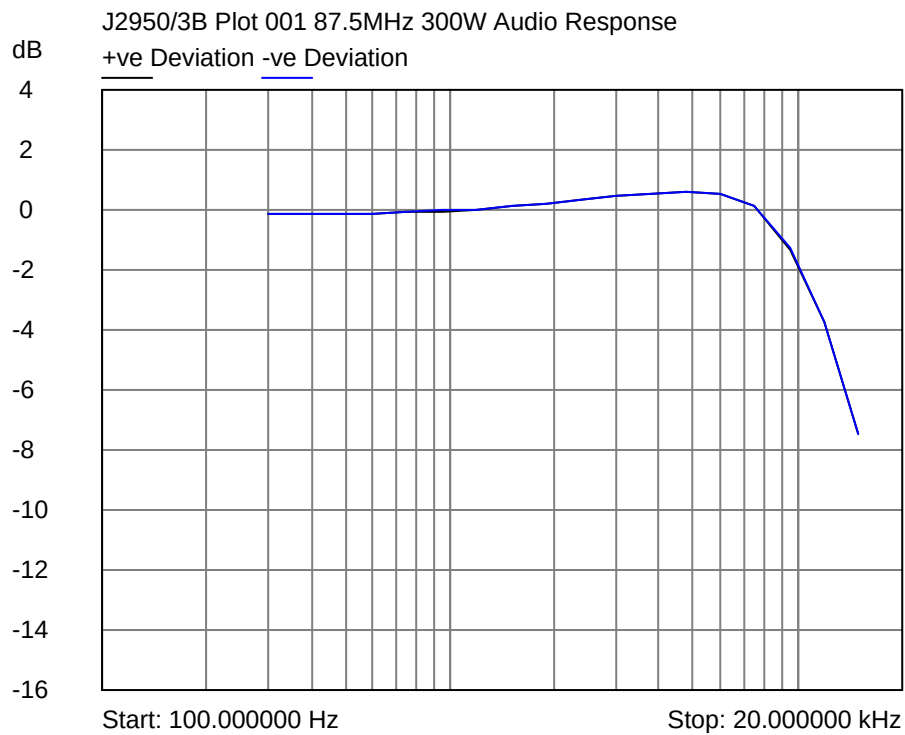
Limits for > 10 Watt transmitters +/- 2000 Hz from the assigned frequency.

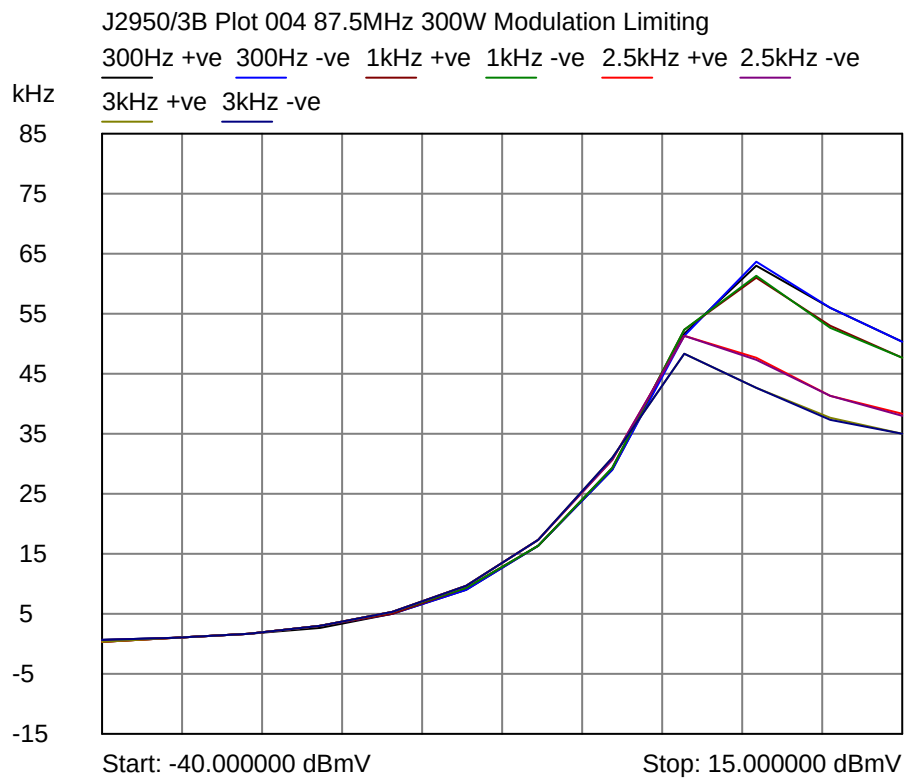
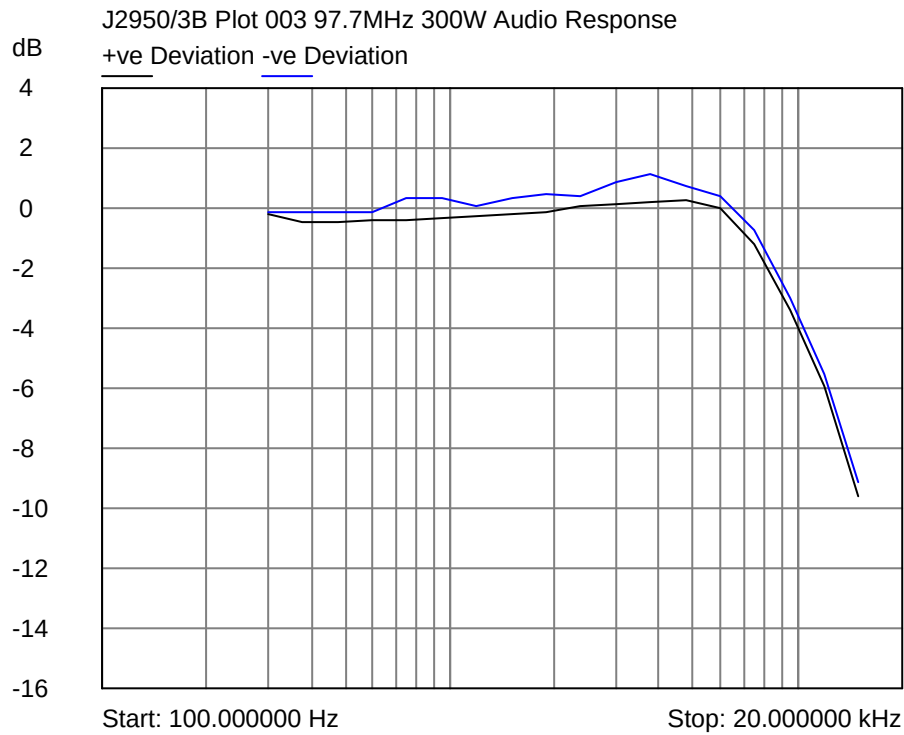
5.6.3 Test Equipment used

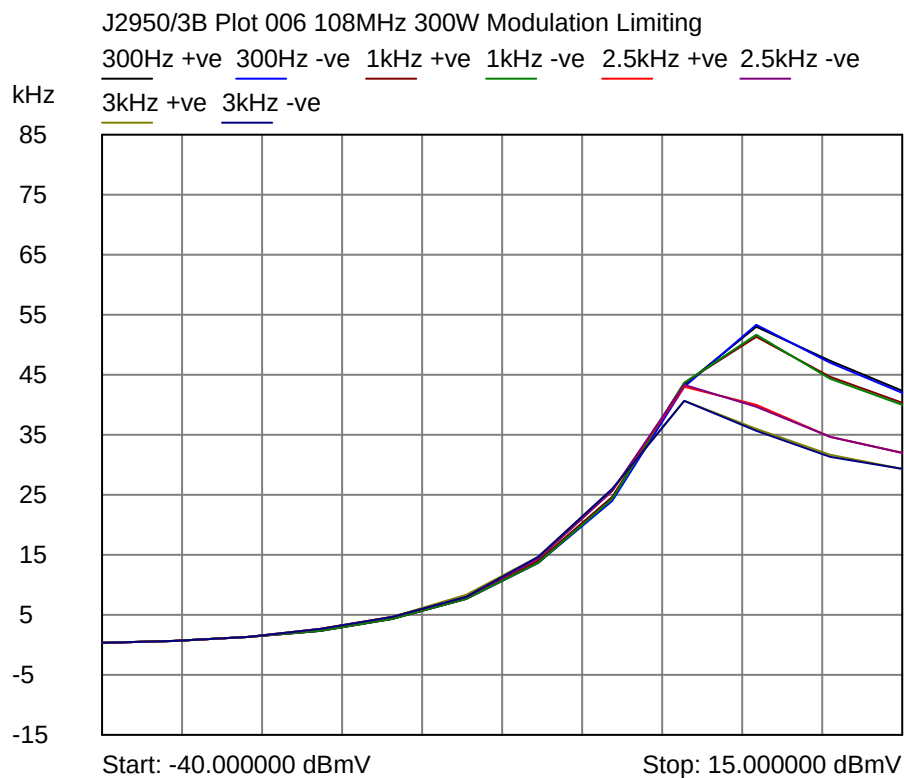
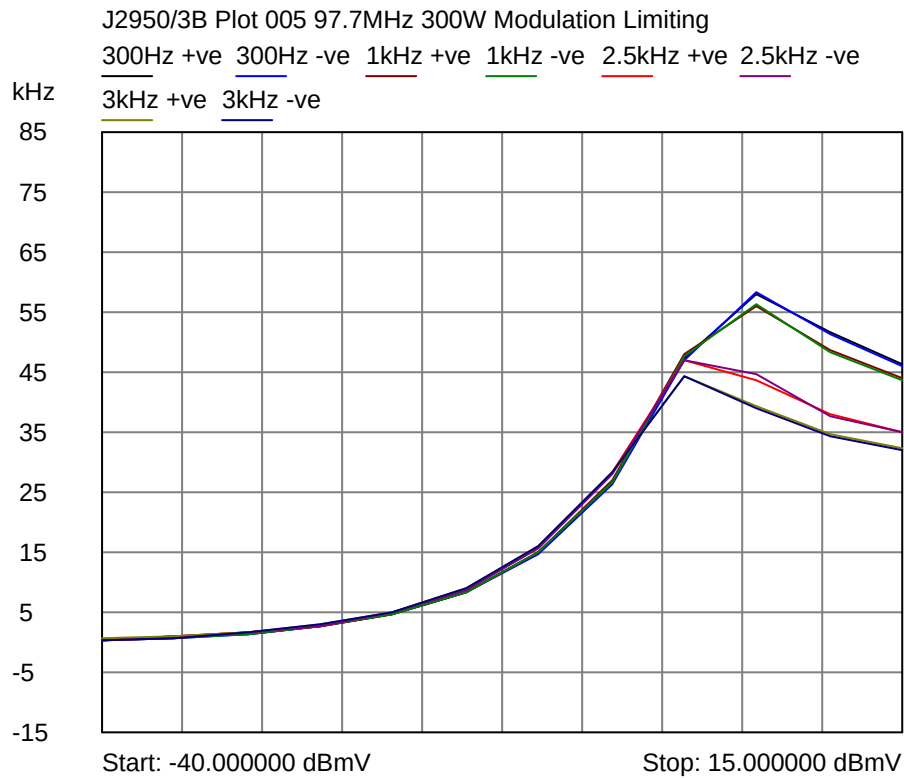
TMS10, E2, TMS70, H16, E257, CO16

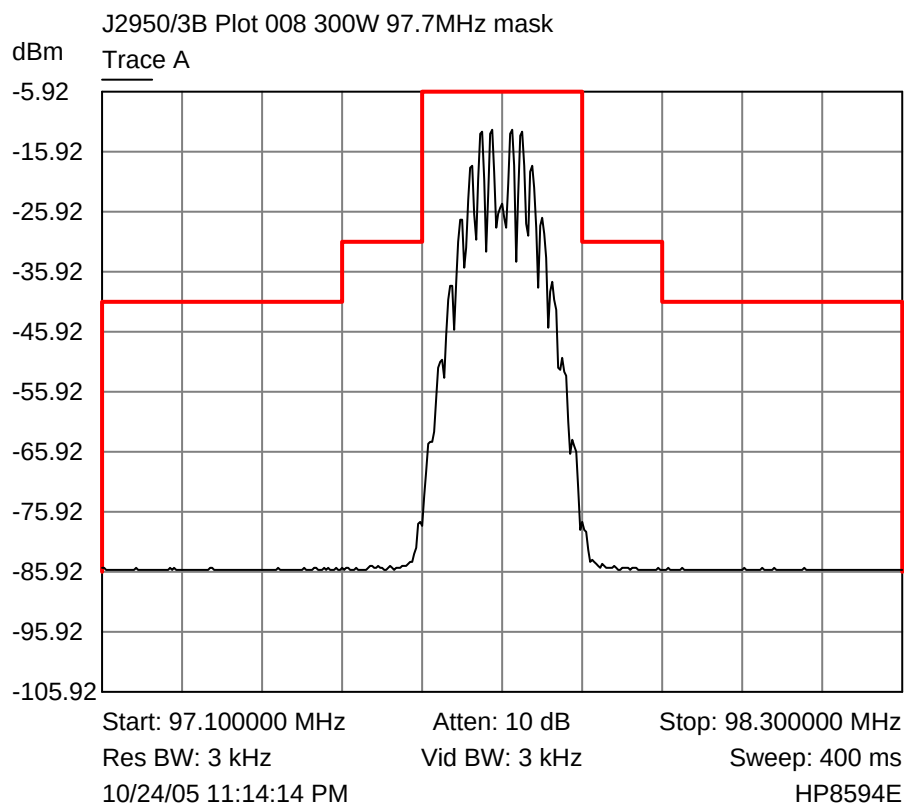
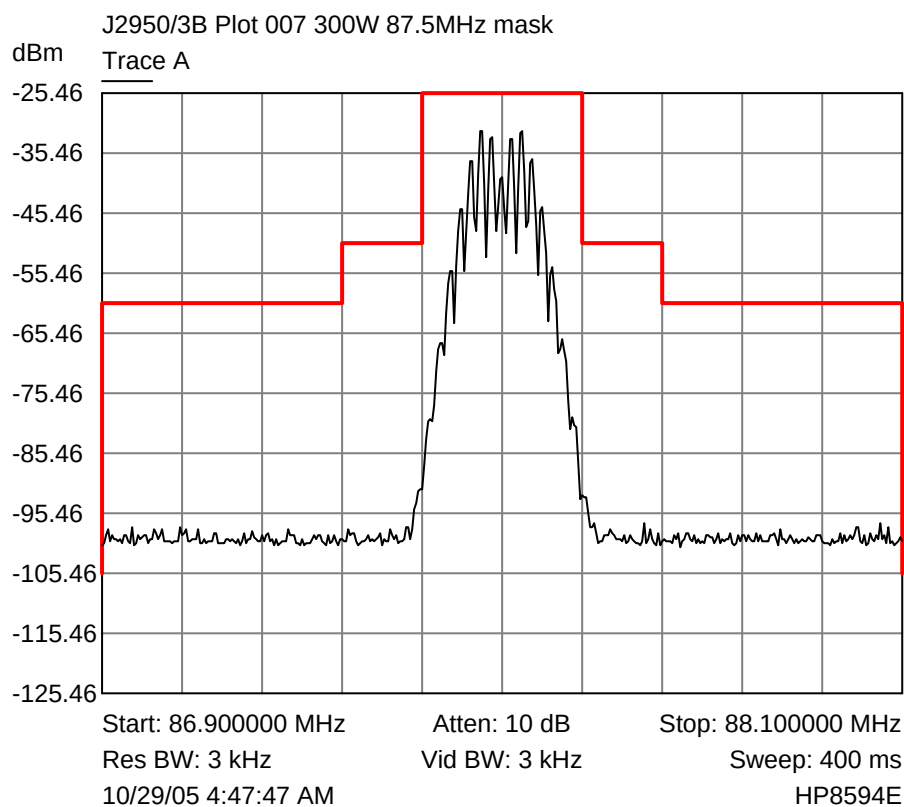
See Section 9 for more details

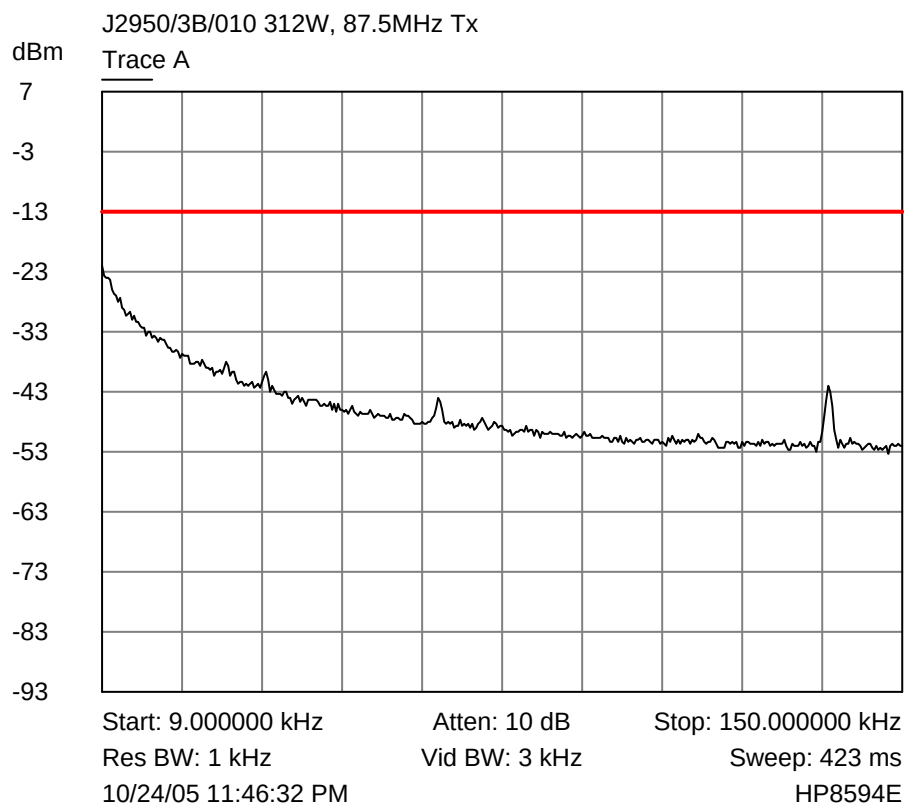
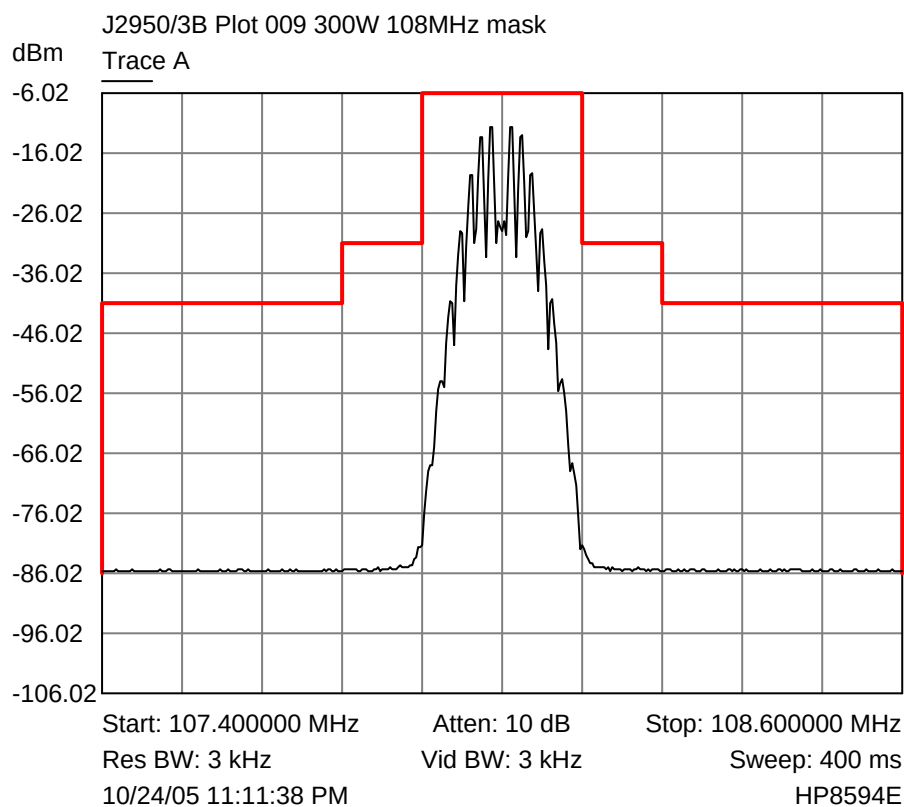
6. Graphical Results

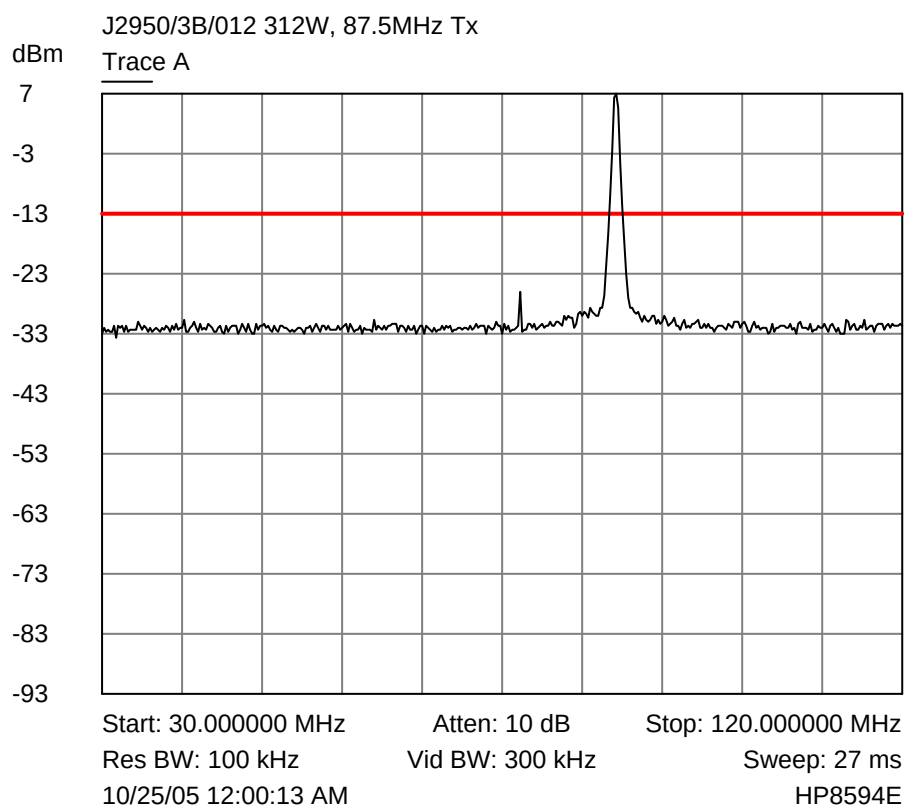
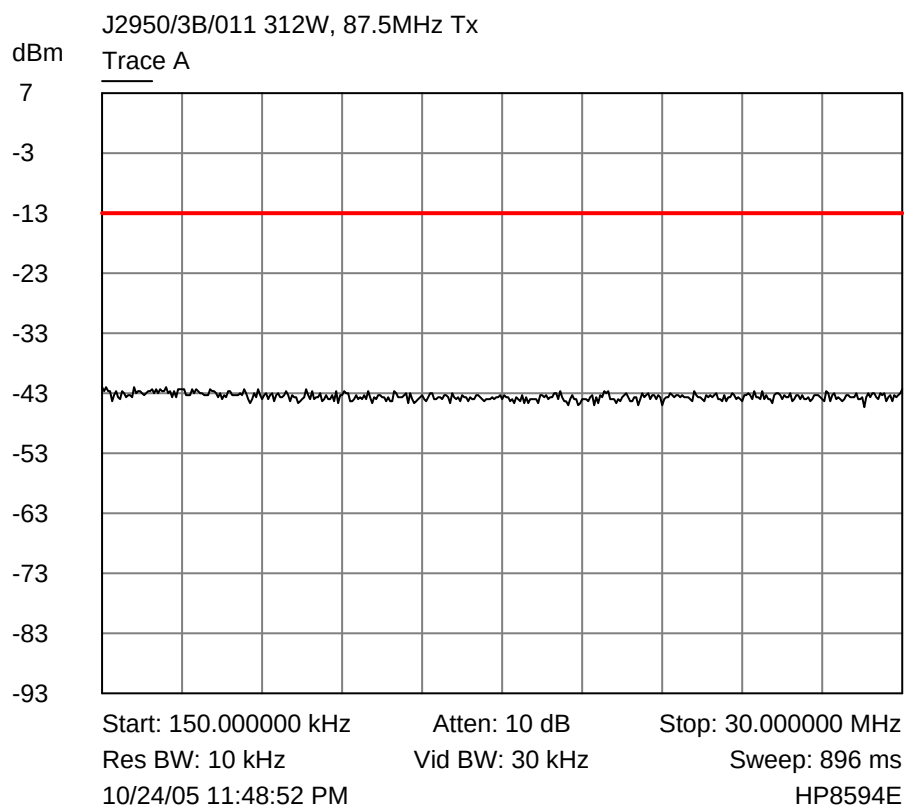


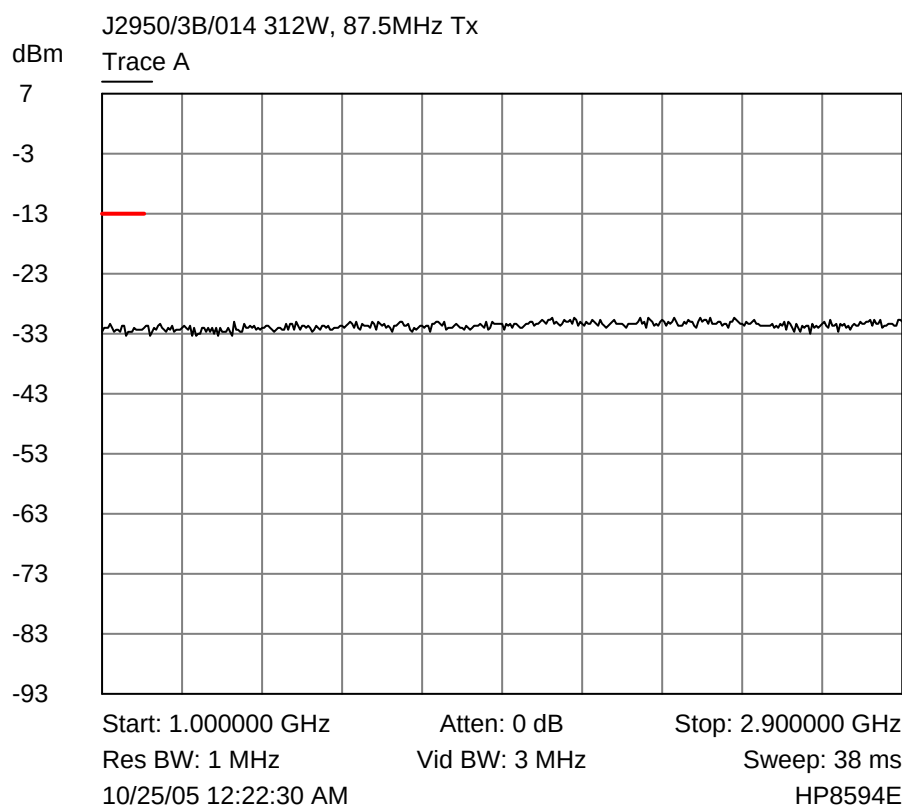
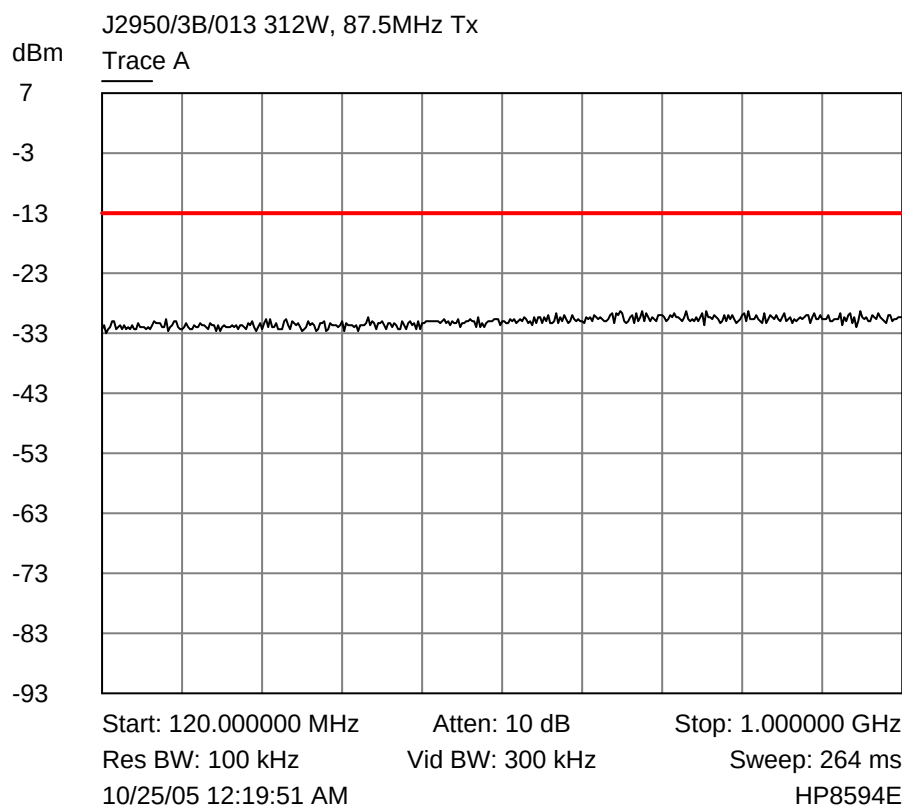


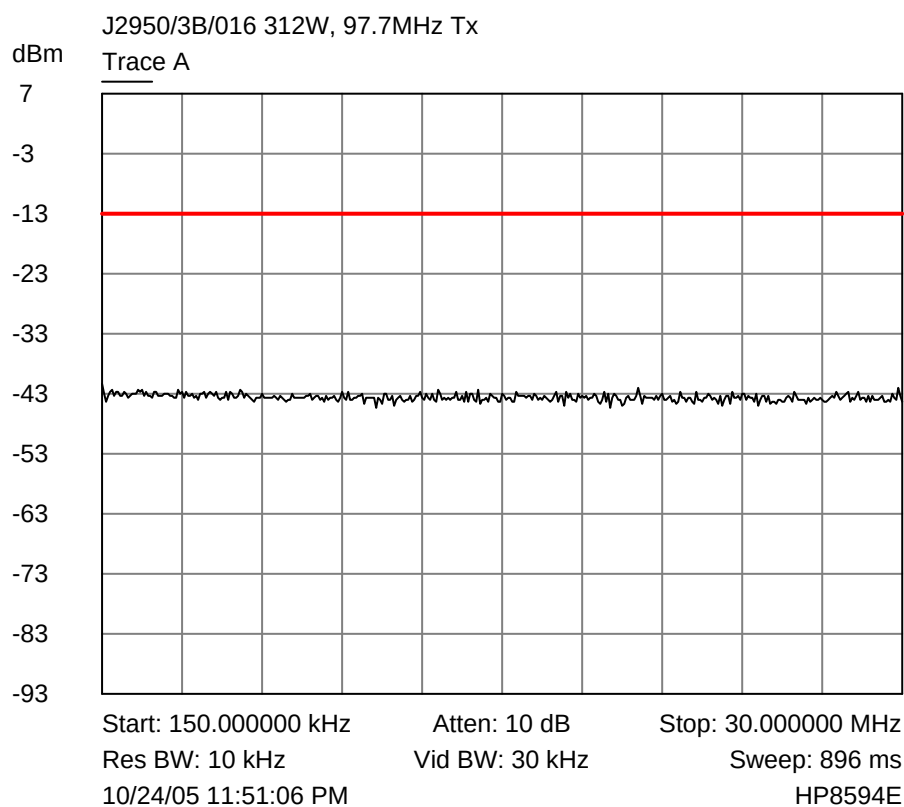
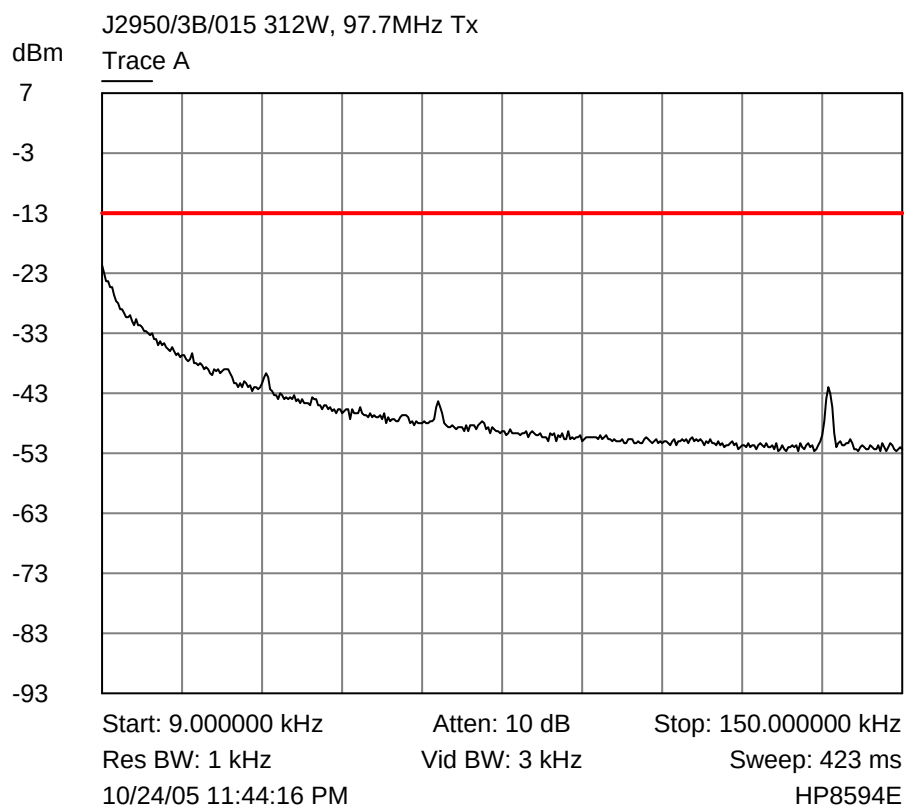


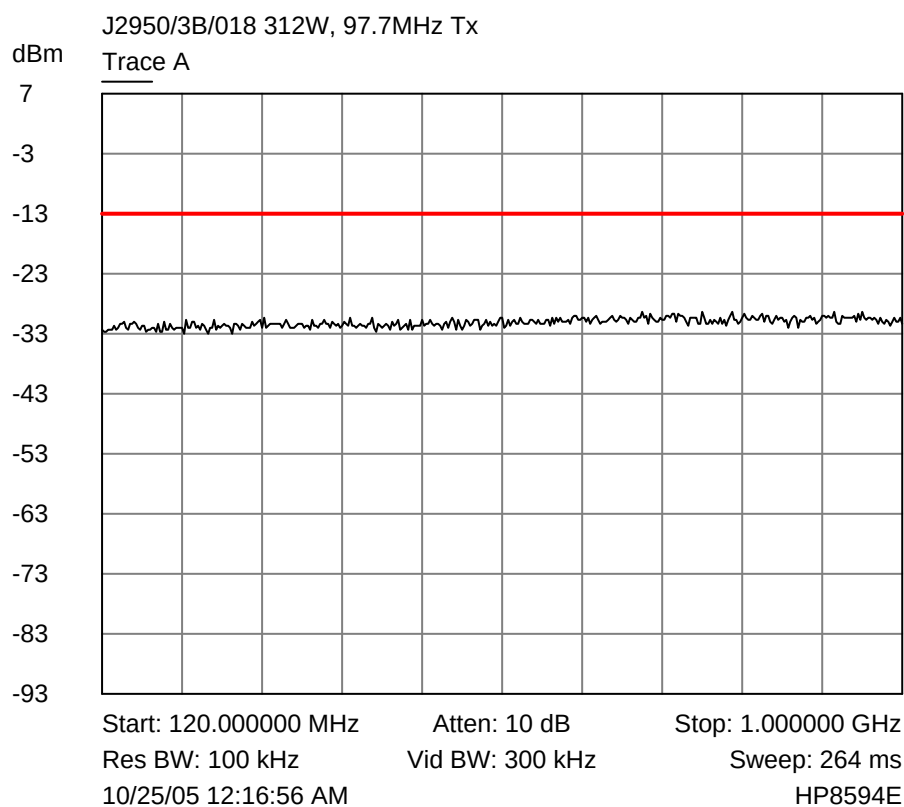
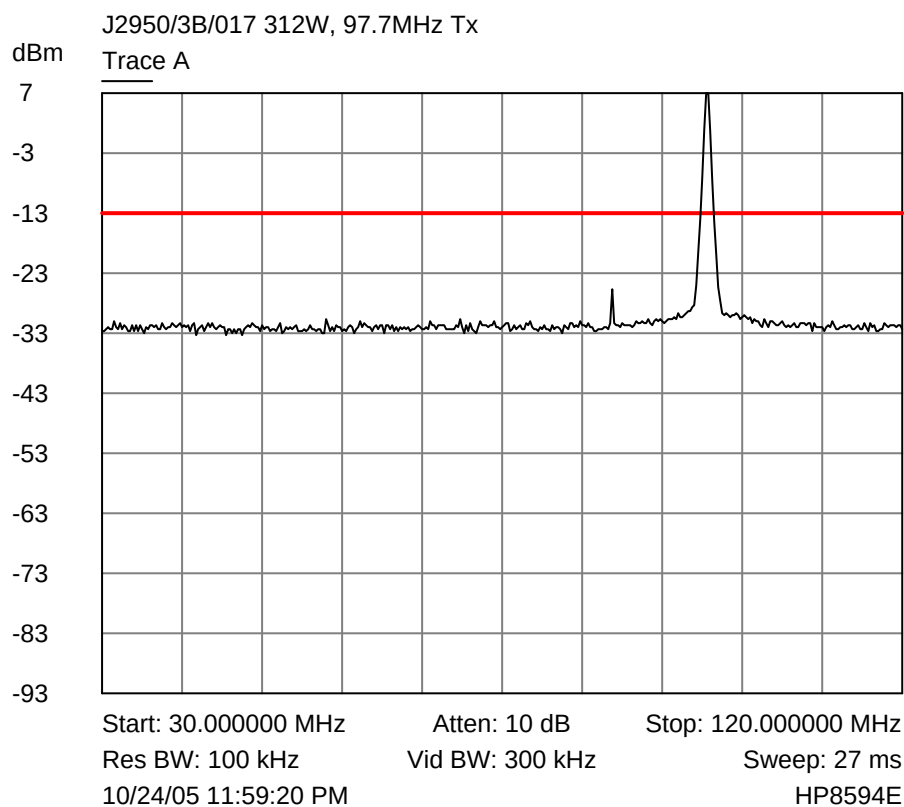


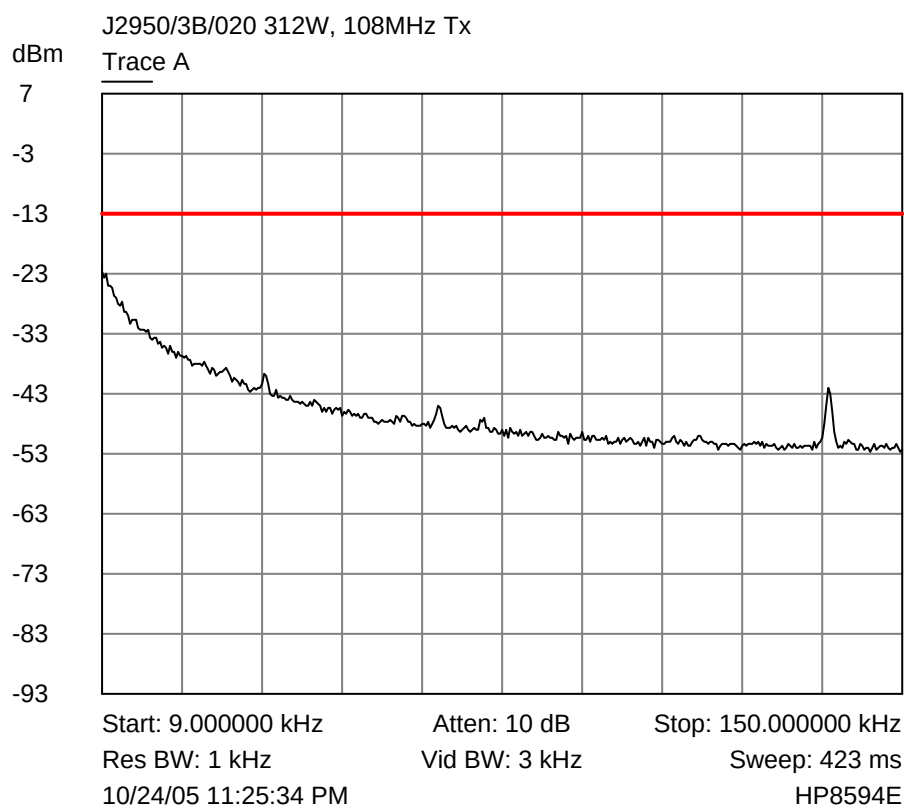
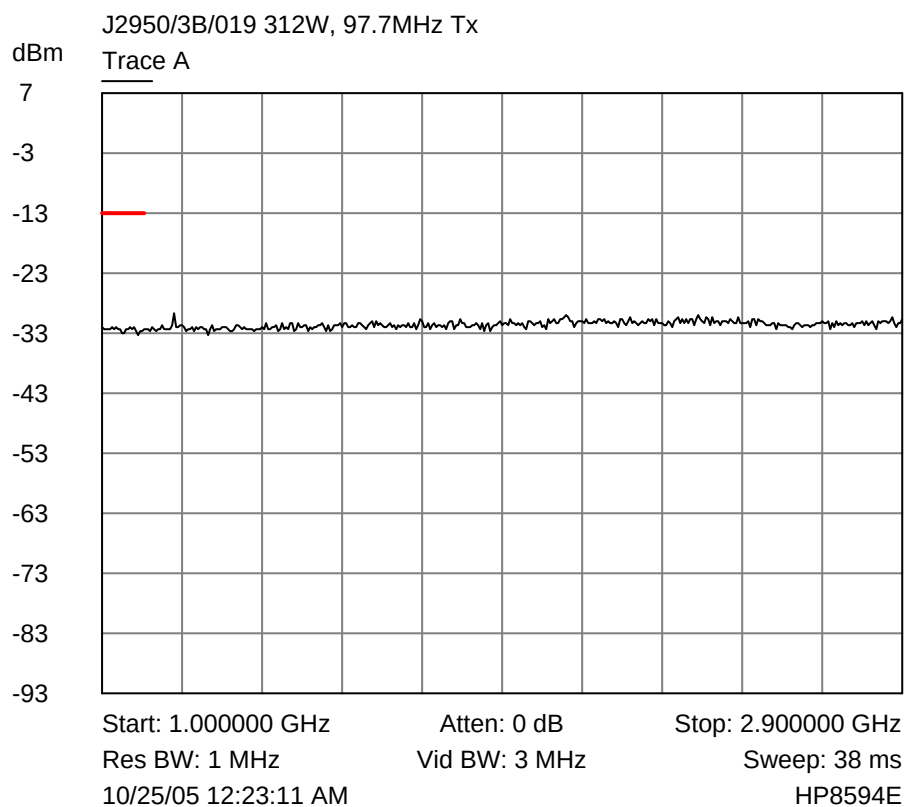


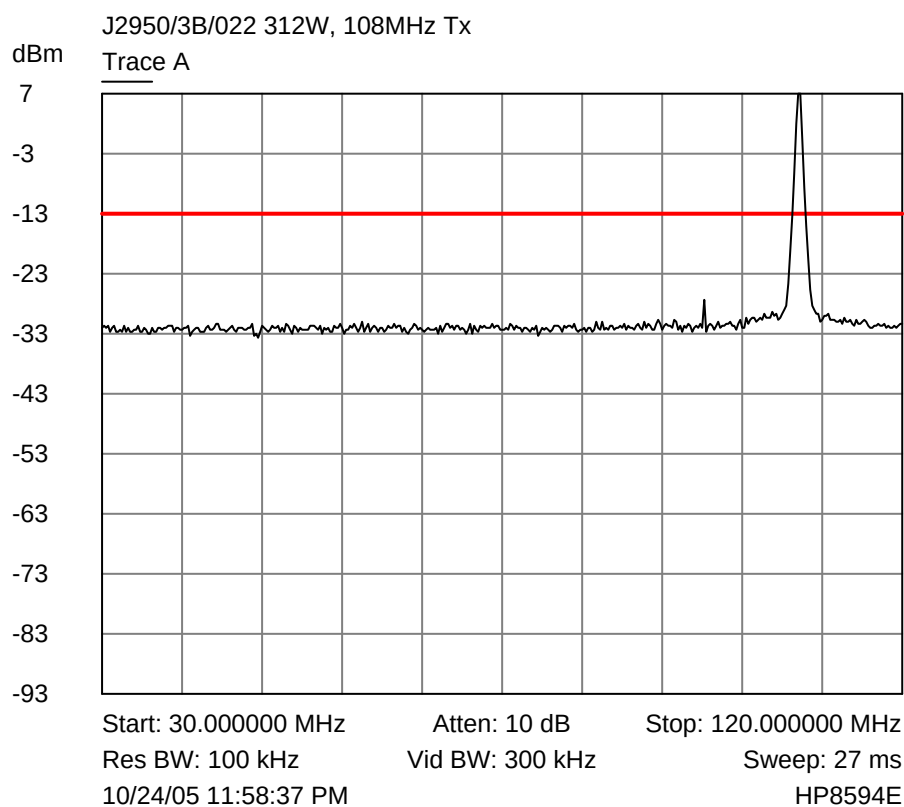
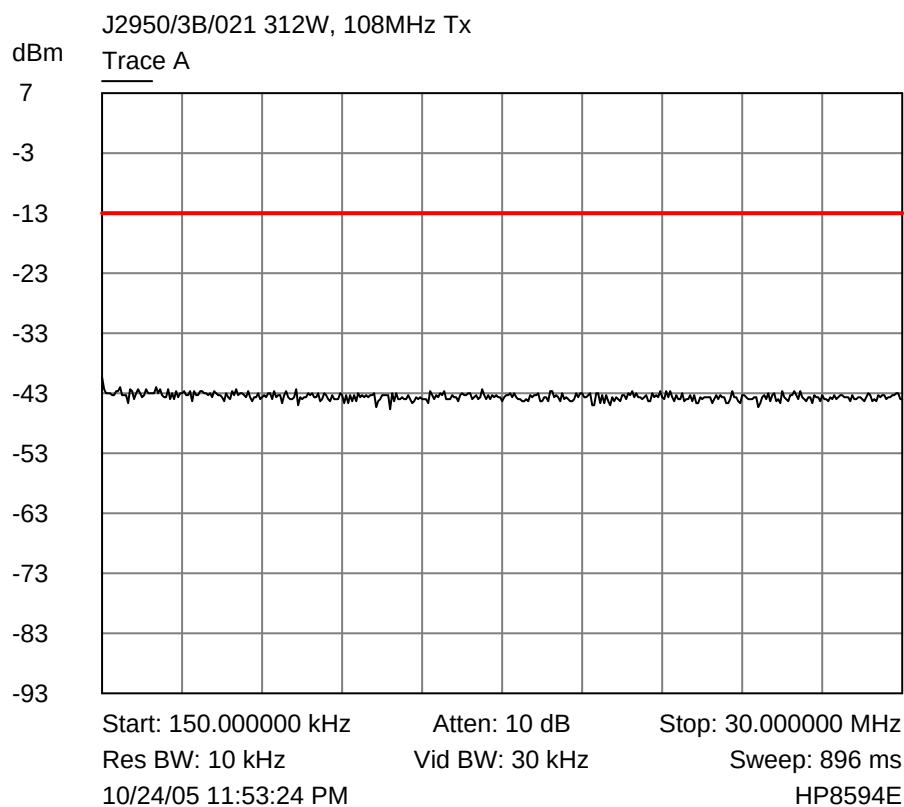


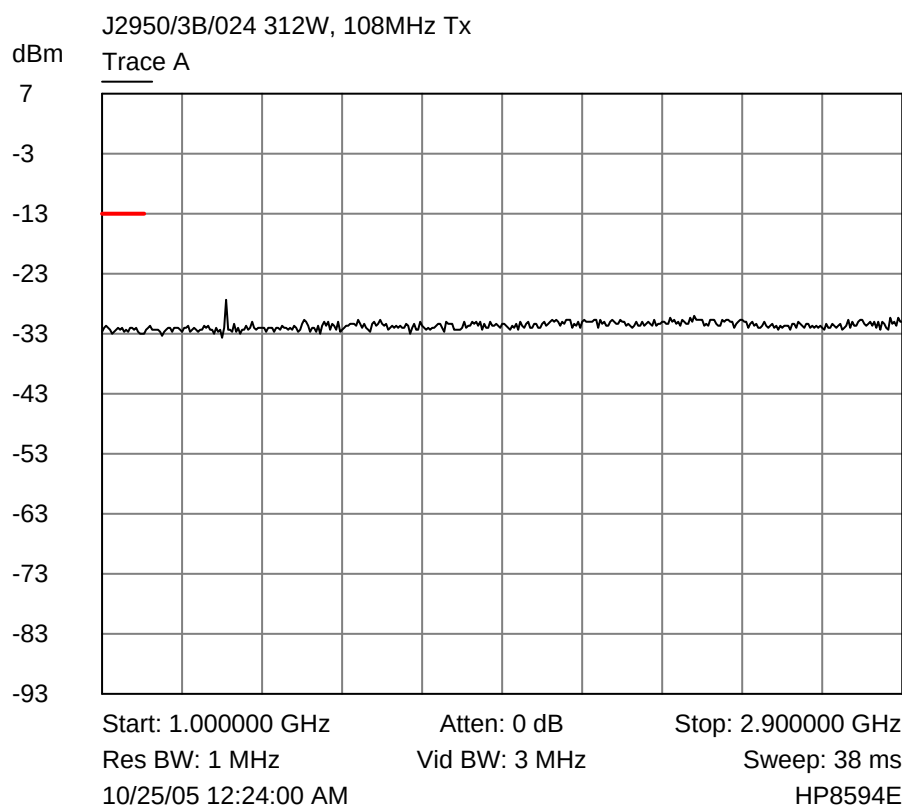
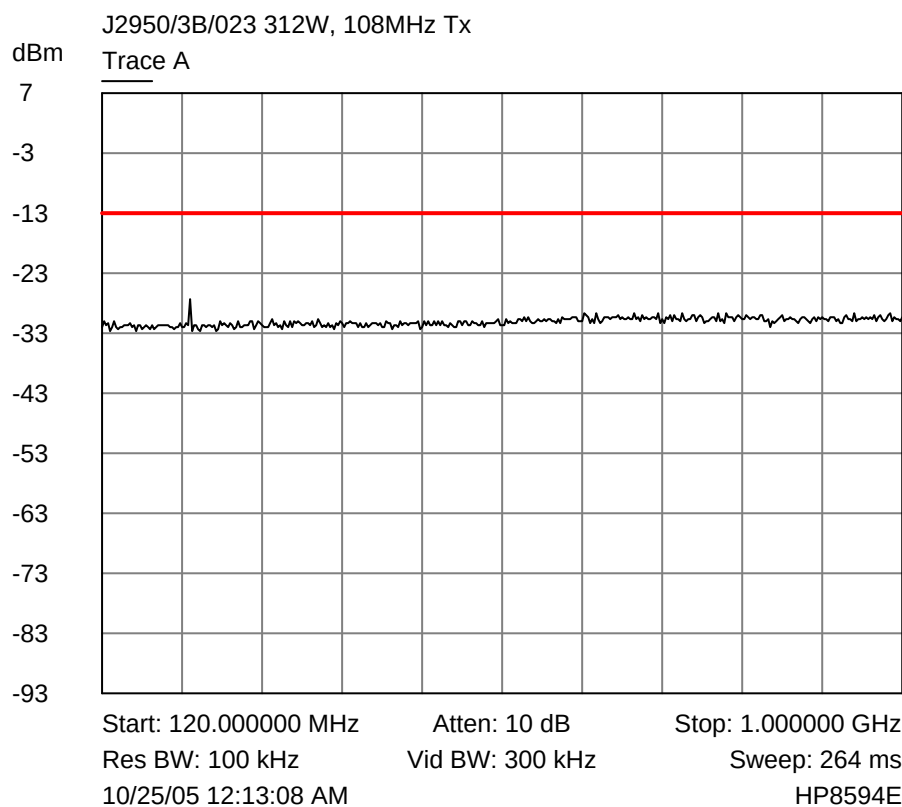












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RADIATED EMISSION PLOT J2950/3B/025

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 30.0 MHz

RL #1F BW 120 kHz

AVG BW 300 kHz

STOP 300.0 MHz

SWP 700 msec

RADIATED EMISSION PLOT J2950/3B/026

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 30.0 MHz

RL #1F BW 120 kHz

AVG BW 300 kHz

STOP 300.0 MHz

SWP 700 msec

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RADIATED EMISSION PLOT J2950/3B/027

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 300.0 MHz

RL #1F BW 120 kHz

AVC BW 300 kHz

STOP 1.0000 GHz

SWP 700 msec

RADIATED EMISSION PLOT J2950/3B/028

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 300.0 MHz

RL #1F BW 120 kHz

AVC BW 300 kHz

STOP 1.0000 GHz

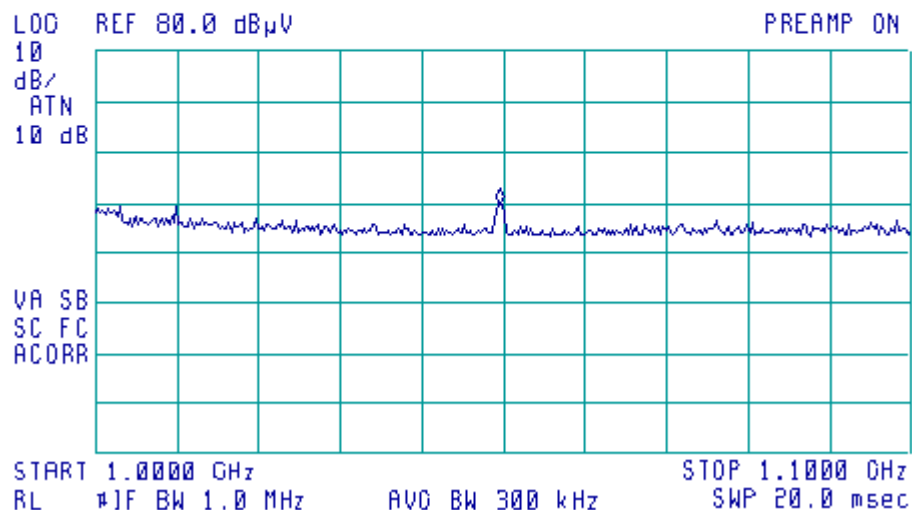
SWP 700 msec

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RADIATED EMISSION PLOT J2950/3B/029

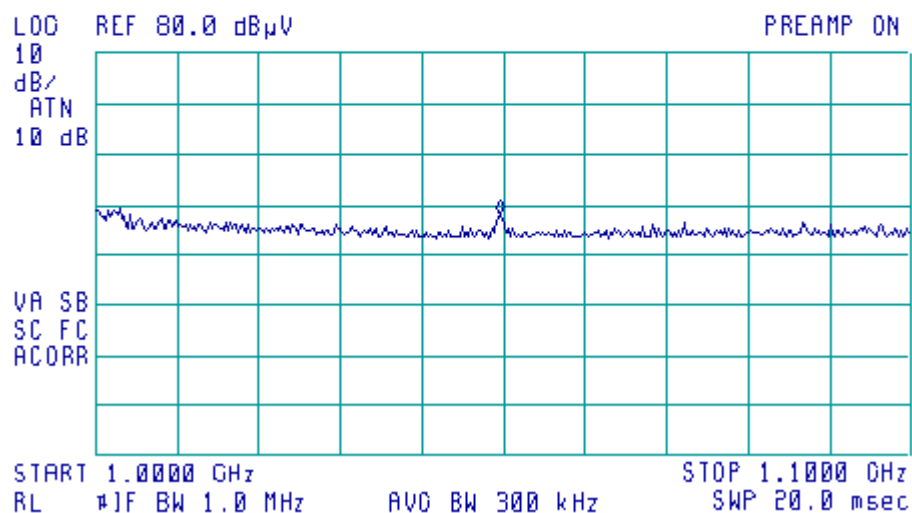
16:21:21 FEB 03, 2005

ACTV DET: PEAK
MEAS DET: PEAK AVG
MKR 1.0495 GHz
49.64 dBμV

**RADIATED EMISSION PLOT J2950/3B/030**

16:21:21 FEB 03, 2005

ACTV DET: PEAK
MEAS DET: PEAK AVG
MKR 1.0495 GHz
47.92 dBμV



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RADIATED EMISSION PLOT J2950/3B/031

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 30.0 MHz

RL #1F BW 120 kHz

AVG BW 300 kHz

STOP 300.0 MHz

SWP 700 msec

RADIATED EMISSION PLOT J2950/3B/032

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 30.0 MHz

RL #1F BW 120 kHz

AVG BW 300 kHz

STOP 300.0 MHz

SWP 700 msec

ALL RIGHTS RESERVED

RADIATED EMISSION PLOT J2950/3B/033

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 300.0 MHz

RL #1F BW 120 kHz

AVC BW 300 kHz

STOP 1.0000 GHz

SWP 700 msec

RADIATED EMISSION PLOT J2950/3B/034

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 300.0 MHz

RL #1F BW 120 kHz

AVC BW 300 kHz

STOP 1.0000 GHz

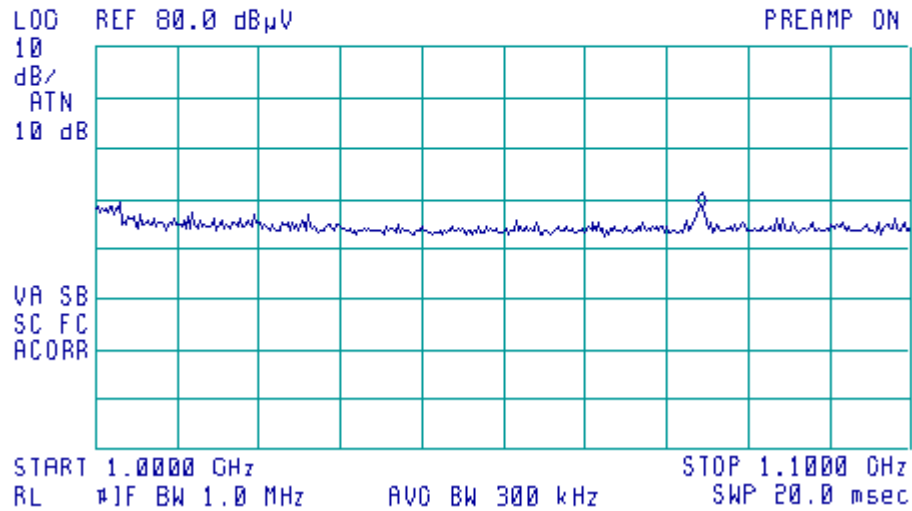
SWP 700 msec

ALL RIGHTS RESERVED

RADIATED EMISSION PLOT J2950/3B/035

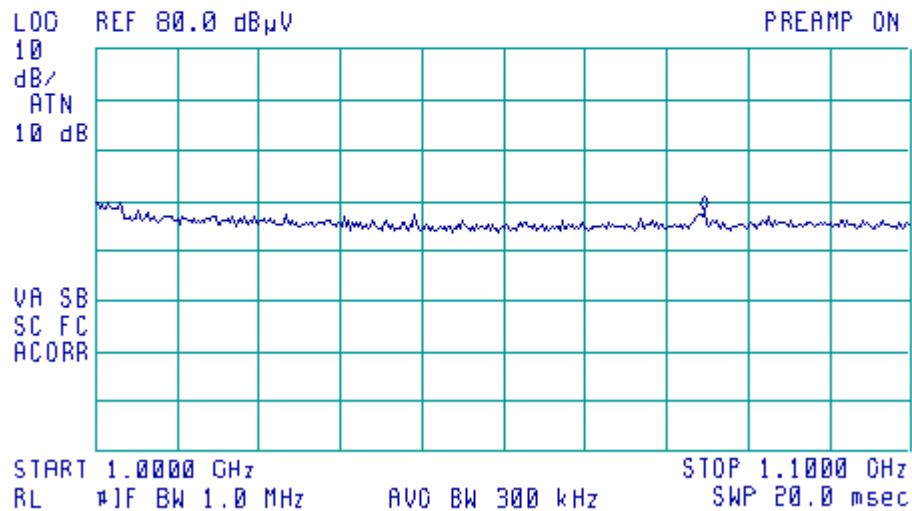
16:21:21 FEB 03, 2005

ACTV DET: PEAK
MEAS DET: PEAK AVG
MKR 1.0743 GHz
40.35 dBμV

**RADIATED EMISSION PLOT J2950/3B/036**

16:21:21 FEB 03, 2005

ACTV DET: PEAK
MEAS DET: PEAK AVG
MKR 1.0745 GHz
47.86 dBμV



ALL RIGHTS RESERVED

RADIATED EMISSION PLOT J2950/3B/037

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 30.0 MHz

RL #1F BW 120 kHz

AVC BW 300 kHz

STOP 300.0 MHz

SWP 700 msec

RADIATED EMISSION PLOT J2950/3B/038

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 30.0 MHz

RL #1F BW 120 kHz

AVC BW 300 kHz

STOP 300.0 MHz

SWP 700 msec

ALL RIGHTS RESERVED

RADIATED EMISSION PLOT J2950/3B/039

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 300.0 MHz

RL #1F BW 120 kHz

AVC BW 300 kHz

STOP 1.0000 GHz

SWP 700 msec

RADIATED EMISSION PLOT J2950/3B/040

11:45:03 JUL 25, 2003 12:35:11 JAN 29, 2004

ACTV DET: PEAK

MEAS DET: PEAK QP

LOC REF 100.0 dB μ V/m

10

dB/

ATN

20 dB

VA SB

SC FC

ACORR

START 300.0 MHz

RL #1F BW 120 kHz

AVC BW 300 kHz

STOP 1.0000 GHz

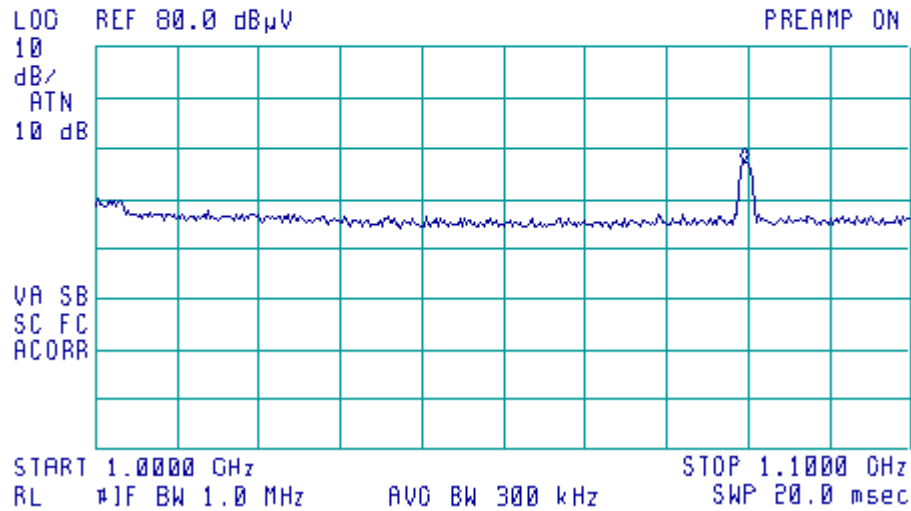
SWP 700 msec

ALL RIGHTS RESERVED

RADIATED EMISSION PLOT J2950/3B/041

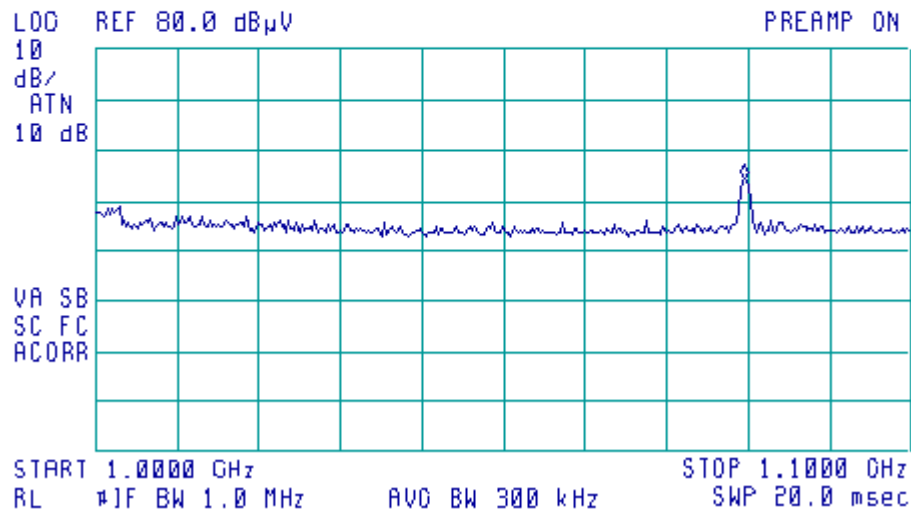
16:21:21 FEB 03, 2005

ACTV DET: PEAK
MEAS DET: PEAK AVG
MKR 1.0795 GHz
57.06 dB μ V

**RADIATED EMISSION PLOT J2950/3B/042**

16:21:21 FEB 03, 2005

ACTV DET: PEAK
MEAS DET: PEAK AVG
MKR 1.0795 GHz
54.44 dB μ V



7. Photographs

7.1 EUT Front View



7.2 EUT Reverse Angle



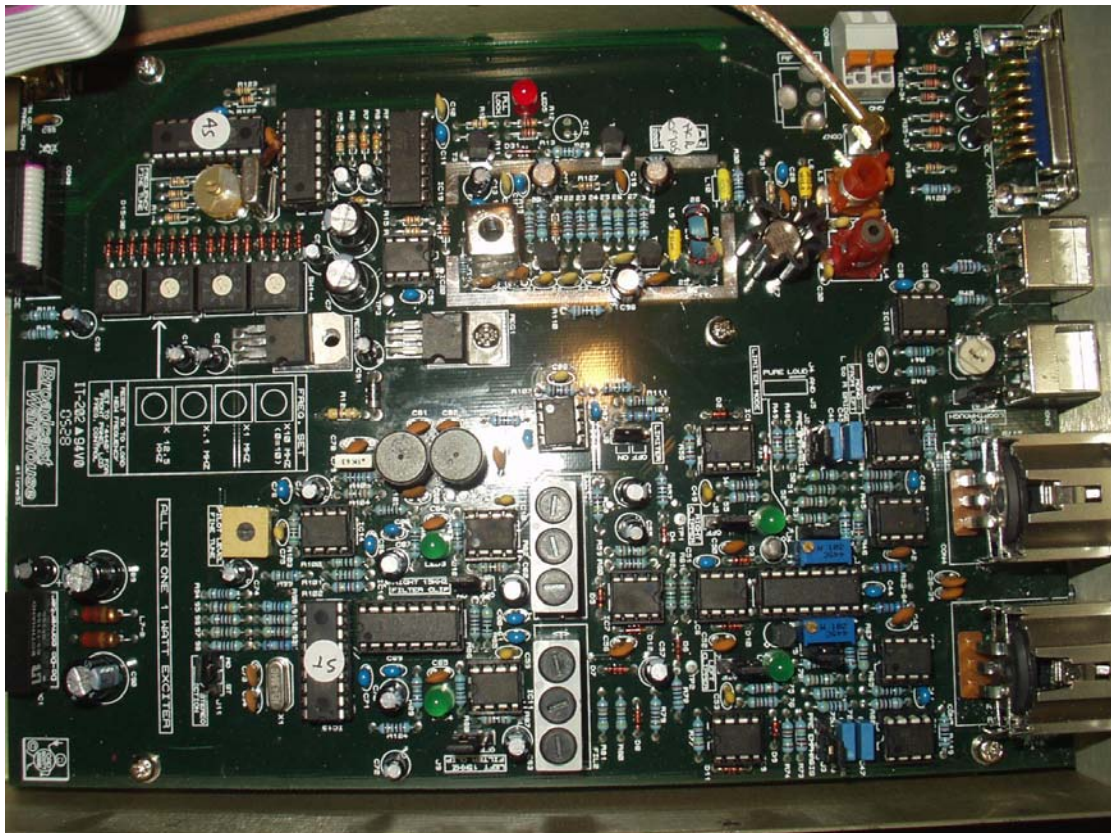
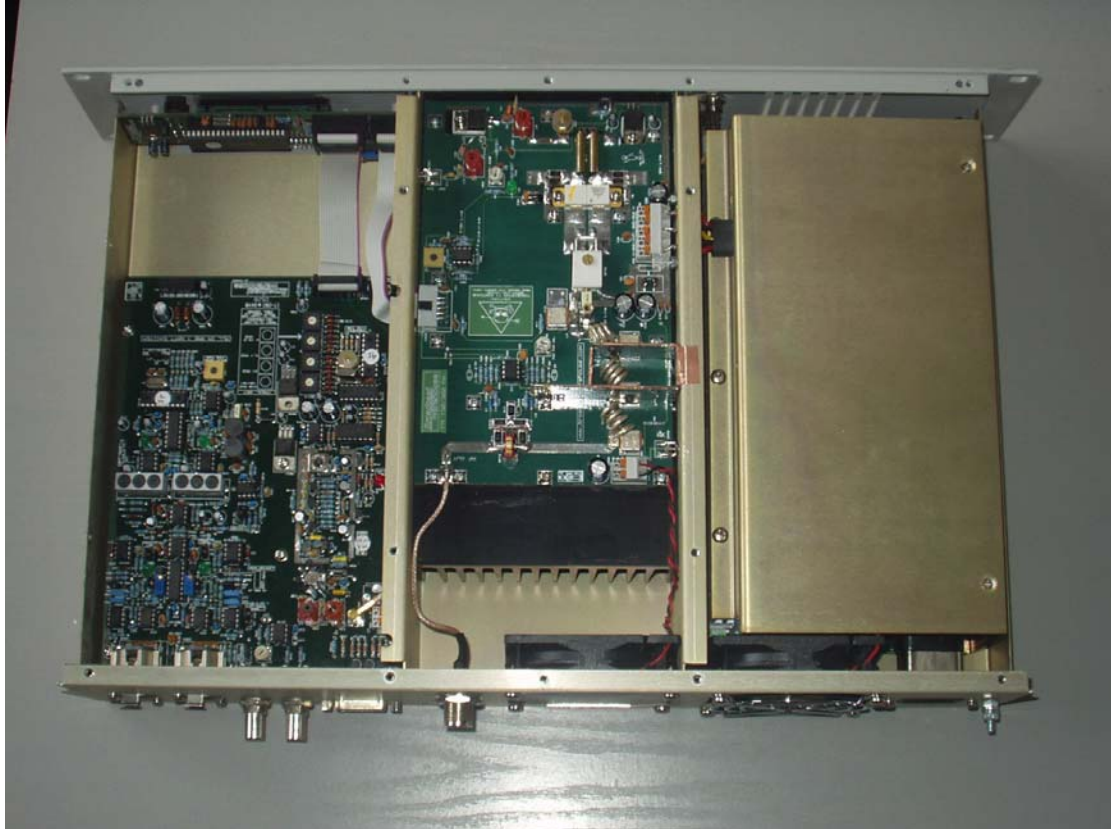
7.3 EUT Antenna Connector Port

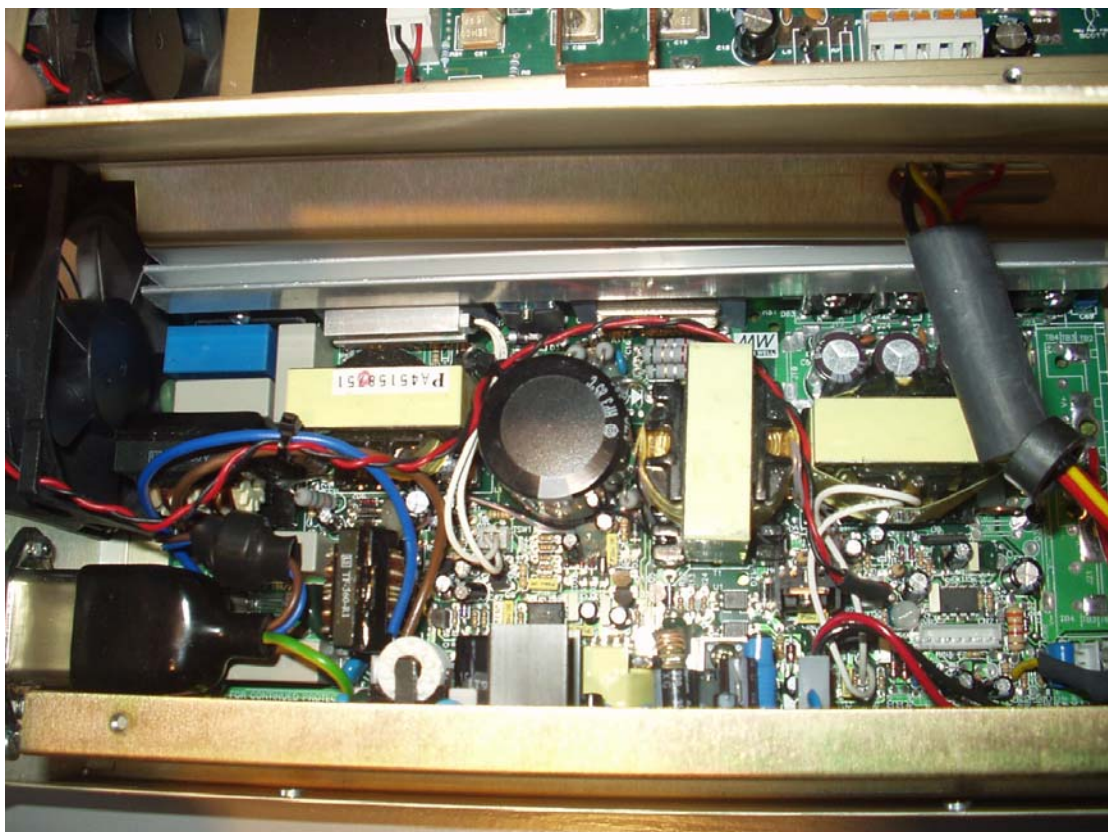
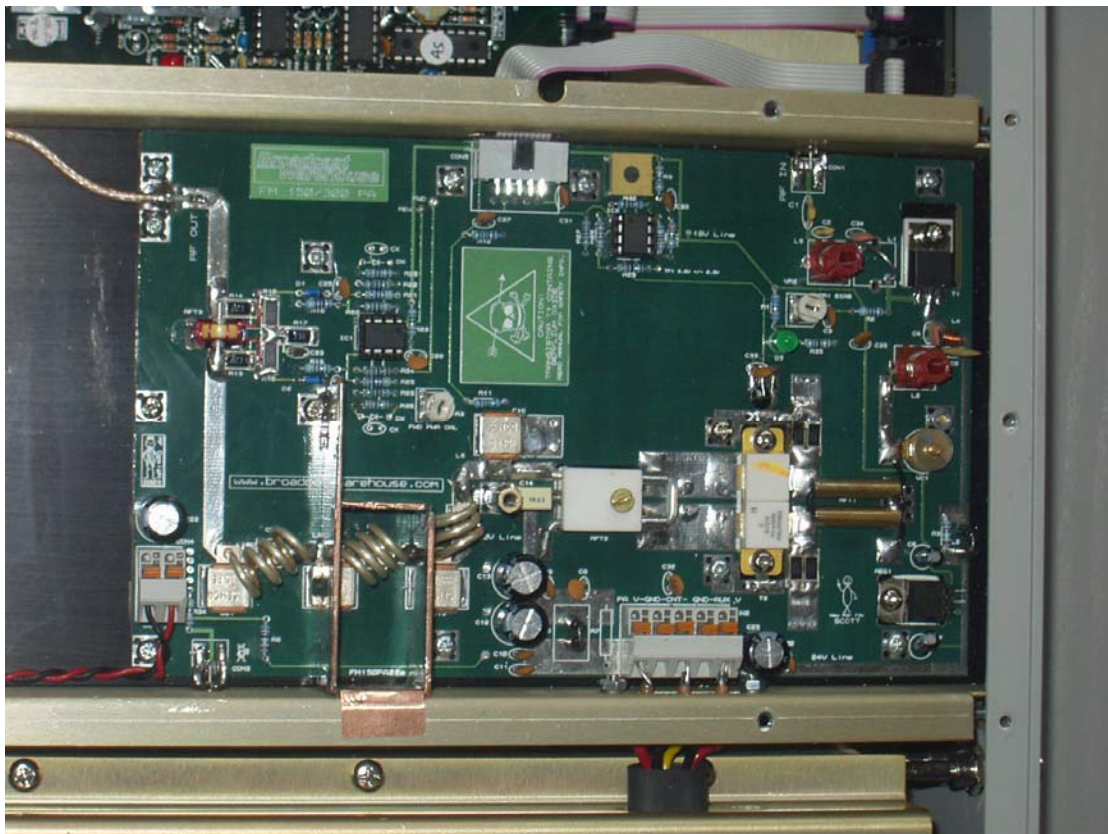


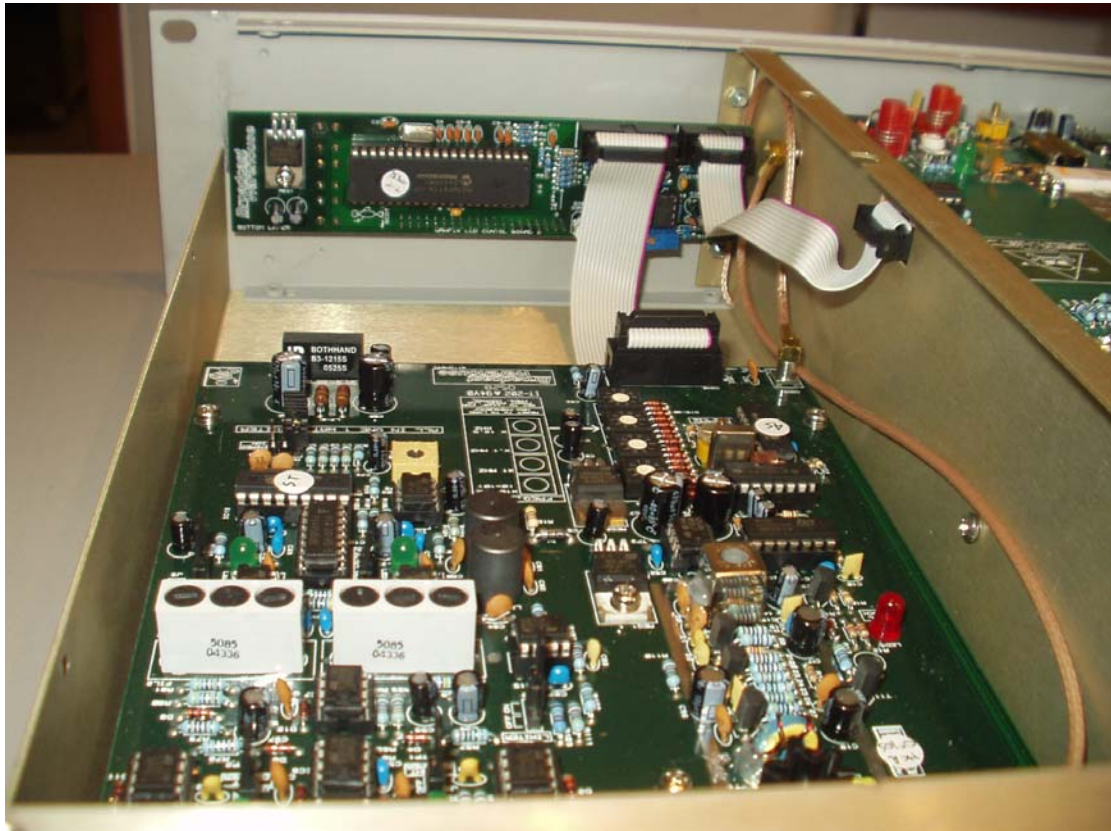
7.4 EUT Display / Controls



7.5 EUT Internal Construction







7.6 EUT Identification Label



7.7 EUT Chassis



7.8 Test set-up, spurious emissions

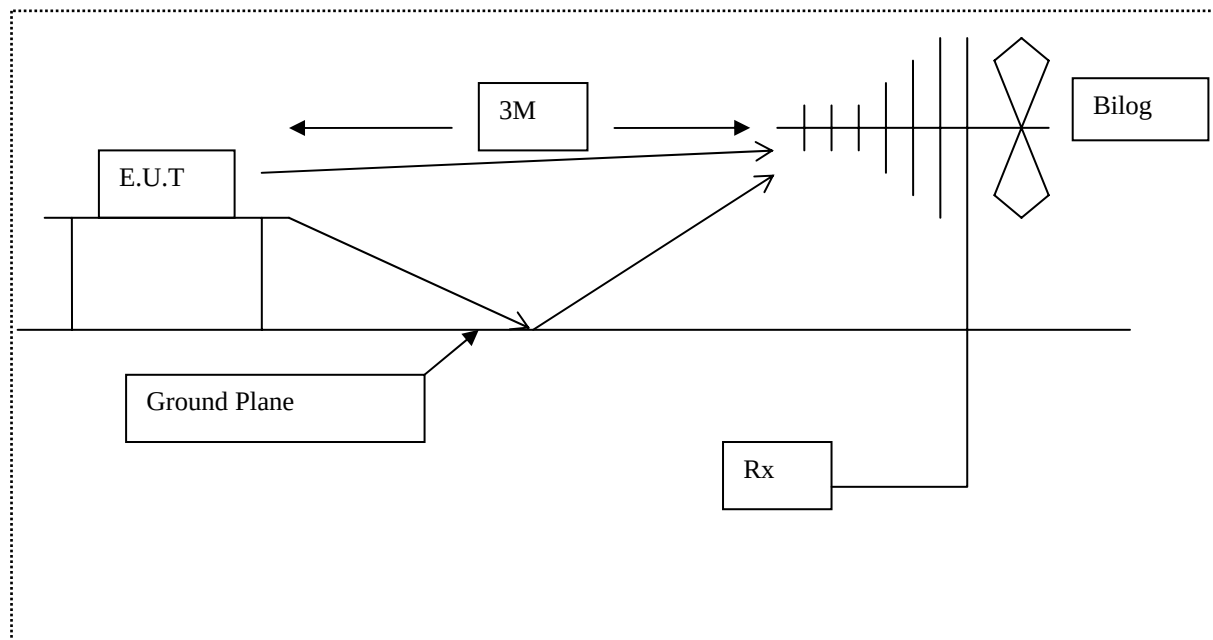


Diagram of the radiated emissions test setup.

8. Signal Leads

Port Name	Cable Type	Length used
Mains	three point IEC connection	2m
RF output	N-type antenna port	2m
		5m
I/O control	RS232 to PC programme	
Baseband In	internally connected	n/c
Baseband Out	internally connected	n/c
Left	XLR mono audio	5m
Right	XLR stereo audio	1m
Earth	earth strap	n/c
RF Mon	BNC monitoring port	n/c
MOD Mon	BNC monitoring port	n/c

9. Test Equipment Calibration list

The Following is a list of the test equipment currently in use at **R.N. Electronics Ltd.** EMC test facility. In line with our procedures, to meet the requirements of ISO 9001, the equipment used will be within calibration for the period during which testing was carried out.

RNNo	Model	Description	Manufacturer
C016	OFS-1A	Off Air Frequency Standard	Halcyon
C031	437B	Power Meter	Hewlett Packard
C032	8482A	Power Sensor	Hewlett Packard
E2	HP8594E	Spectrum Analyser + EMC S/ware	Hewlett Packard
E226	8546A	EMI Receiver	Hewlett Packard
E257	6820.17.A	20 dB Attenuator	Huber & Suhner
H16	8327-300	30dB, 1000Watt, Attenuator	Tenuline
TMS10	TH200	ThermoHygrometer	RS Components
TMS208		6 dB splitter	Suhner
TMS48	8901B	Modulation Analyser	Hewlett Packard
TMS55	8903B	Audio Analyser	Hewlett Packard
TMS69	R3271	Spectrum Analyser	Advantest
TMS70	8323	30 dB Attenuator 100W	Bird
TMS86	25-A-MFN-20	20 dB Attenuator	Bird
TMS933	CBL6141A	Bilog Antenna 30MHz - 2GHz	York EMC

10. Auxiliary Equipment

10.1 Supplied by Broadcast Warehouse

Auxiliary equipment used for the purpose of test supplied by the above has been listed below

Manufacturer	Description	Model Number	Serial Number
Broadcast warehouse	PC control software	BW TX MON/CON V1.0	-

10.2 Supplied by RN Electronics Limited

Auxiliary equipment used for the purpose of test supplied by the above has been listed below

RN Number	Manufacturer	Description	Model Number	Serial Number
none				

11. Modifications

In order for the EUT to produce the results shown within this report the following modifications, if any, were implemented.

- Additional screws fitted along centre line at front and back of lid, and at front only of base.
- Feed through caps fitted to wall between PSU and AMP stage.
- Alternative rear fan guard fitted on PSU fan.
- Removal of C12.
- Adjustment of Fine frequency control to centre carrier on frequency.



Certificate of Test

The equipment noted below has been tested by **R.N. Electronics Limited** and conforms with the relevant subpart of chapter 47 of the Code of Federal Regulations tested per 47CFR2 subpart J.

This certificate relates to the equipment, as identified by unique serial number(s) and further detailed in the referenced report, in the condition(s) at the time it was tested. It does not relate to any other similar equipment and performance of the product before or after the test cannot be guaranteed. Furthermore, this is a certificate of test only and should not be confused with an equipment authorisation.

Equipment:	FM Broadcast Transmitter
Model Number:	TX 150/300
Unique Serial Number:	not stated
Manufacturer:	Broadcast Warehouse Limited
Customer Purchase Order Number:	not stated
R.N. Electronics Limited Report Number:	10-058/2950/3B/05
Test Standards:	CFR 47 FCC Part 2 subpart J : Oct 2005 ↳ CFR 47 FCC Part 73 subpart B : Oct 2005 ↳ CFR 47 FCC Part 73 subpart H : Oct 2005
Date:	21 - 31 Oct 2005

The measurement uncertainty gives a 95% confidence that the equipment meets the limits specified in the standards

For and on behalf of
R.N. Electronics Limited

Signature:

Paul Darragh	Digitally signed by Paul
	Darragh
	DN: CN = Paul Darragh, C
	= GB, OU = RN Electronics
	Date: 2006.01.31 20:58:11

Technical Manager

QMF21J – 3; FCC CFR 47 PART 2 J OCT 2004; ISSUE 01 OCT 05