A RADIO TEST REPORT

FOR

BW BROADCAST Ltd

ON

TX 300 V2 FM BROADCAST TRANSMITTER

DOCUMENT NO. TRA017223-W-US-01

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TRaC Wireless Test Report	**:** TRA-017223-W-US-01
Applicant	**:** BW BROADCAST Ltd
Apparatus	**:** TX 300 V2 FM Broadcast Transmitter
Specification(s)	**:** CFR47 Part 73 subpart B & H 10-1-12 Edition **:** BETS-6 Issue 2 August 2005
Purpose of Test	**:** Certification
FCCID	**: 2ABPH-TX300V2**
Authorised by	**:** 
	: Radio Product Manager
Issue Date	**:**28th January 2014
Authorised Copy Number	**:** *PDF*

Total number of pages: 51

Contents

Section 1: Introduction

1.1 General

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on samples submitted to the Laboratory.

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1.2 Tests Requested By

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1.3 Manufacturer

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1.4 Apparatus Assessed

The following apparatus was assessed between: 10th - 23rd December 2013

TX 300 V2 FM Broadcast Transmitter 87.5MHz – 108.0MHz

1.5 Test Result Summary

Full details of test results are contained within Appendix A. The following table summarises the results of the assessment.

The statements relating to compliance with the standards below apply ONLY as qualified in the notes and deviations stated in sections 1.6 to 1.7 of this test report.

Full details of test results are contained within Appendix A. The following table summarises the results of the assessment.

Test Type	Regulation	Measurement standard	Result
RF Output Power	Part 2.1046, part 73.267 BETS – 6 Section 6	ANSI/TIA 603 – D 2010	Complies
Modulation Characteristics	Part 2.1047	ANSI/TIA 603 – D 2010	Complies
Emission Mask	Part 2.1049, 73.317 BETS – 6 Section 6 Clause 6.3.3	ANSI/TIA 603 – D 2010	Complies
Conducted Spurious Emissions (Antenna Terminal)	Part 2.1053 BETS – 6 Section 6 Clause 6.3.3	ANSI/TIA 603 – D 2010	Complies
Frequency Stability	Part 73.1545 Part 2.1055 BETS – 6 Clause 6.2	ANSI/TIA 603 – D 2010	Complies
Radiated spurious emissions (Cabinet radiation)	Part 73.1053	ANSI/TIA 603 – D 2010	Complies

Abbreviations used in the above table:

CFR : Code of Federal Regulations
REFE : Radiated Electric Field Emissions
ANSI : American National Standards Institution
PLCE : Power Line Conducted Emissions

1.6 Notes Relating To The Assessment

With regard to this assessment, the following points should be noted:

The results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

The apparatus was set up and exercised using the configurations, modes of operation and arrangements defined in this report only.

Particular operating modes, apparatus monitoring methods and performance criteria required by the standards tested to have been performed except where identified in Section 1.7 of this test report (Deviations from Test Standards).

For emissions testing, throughout this test report, “Pass” indicates that the results for the sample as tested were below the specified limit (refer also to Section 2, Measurement Uncertainty).

Where relevant, the apparatus was only assessed using the monitoring methods and susceptibility criteria defined in this report.

All testing with the exception of testing at the Open Area Test Site was performed under the following environmental conditions:

Temperature	: 17 to 23 °C
Humidity	: 45 to 75 %

All dates used in this report are in the format dd/mm/yy.

This assessment has been performed in accordance with the requirements of ISO/IEC 17025.

1.7 Deviations from Test Standards

There were no deviations from the standards tested to.

Section 2: Measurement Uncertainty

2.1 Radio Testing – General Uncertainty Schedule

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95% confidence where no required test level exists.

[1] Adjacent Channel Power

Uncertainty in test result = **1.86dB**

[2] Carrier Power

Uncertainty in test result (Power Meter) = **1.08dB**
Uncertainty in test result (Spectrum Analyser) = **2.48dB**

[3] Effective Radiated Power

Uncertainty in test result = **4.71dB**

[4] Spurious Emissions

Uncertainty in test result = **4.75dB**

[5] Maximum frequency error

Uncertainty in test result (Power Meter) = **0.113ppm**
Uncertainty in test result (Spectrum Analyser) = **0.265ppm**

[6] Radiated Emissions, field strength OATS 14kHz-18GHz Electric Field

Uncertainty in test result (14kHz – 30MHz) = **4.8dB**,
Uncertainty in test result (30MHz – 1GHz) = **4.6dB**,
Uncertainty in test result (1GHz – 18GHz) = **4.7dB**

[7] Frequency deviation

Uncertainty in test result = **3.2%**

[8] Magnetic Field Emissions

Uncertainty in test result = **2.3dB**

[9] Conducted Spurious

Uncertainty in test result – Up to 8.1GHz = **3.31dB**
Uncertainty in test result – 8.1GHz – 15.3GHz = **4.43dB**
Uncertainty in test result – 15.3GHz – 21GHz = **5.34dB**
Uncertainty in test result – Up to 26GHz = **3.14dB**

[10] Channel Bandwidth

Uncertainty in test result = **15.5%**

[11] Amplitude and Time Measurement – Oscilloscope

Uncertainty in overall test level = **2.1dB**,
Uncertainty in time measurement = **0.59%,**
Uncertainty in Amplitude measurement = **0.82%**

[12] Power Line Conduction

Uncertainty in test result = **3.4dB**

[13] Spectrum Mask Measurements

Uncertainty in test result = **2.59% (frequency)**
Uncertainty in test result = **1.32dB (amplitude)**

[14] Adjacent Sub Band Selectivity

Uncertainty in test result = **1.24dB**

[15] Receiver Blocking – Listen Mode, Radiated

Uncertainty in test result = **3.42dB**

[16] Receiver Blocking – Talk Mode, Radiated

Uncertainty in test result = **3.36dB**

[17] Receiver Blocking – Talk Mode, Conducted

Uncertainty in test result = **1.24dB**

[18] Receiver Threshold

Uncertainty in test result = **3.23dB**

[19] Transmission Time Measurement

Uncertainty in test result = **7.98%**

Section 3: Modifications

3.1 Modifications Performed During Assessment

No modifications were performed during the assessment

Appendix A: Formal Emission Test Results

Abbreviations used in the tables in this appendix:

Spec	: Specification
Mod	: Modification
EUT	: Equipment Under Test
SE	: Support Equipment
L	: Live Power Line
N	: Neutral Power Line
E	: Earth Power Line
Pk	: Peak Detector
QP	: Quasi-Peak Detector
Av	: Average Detector
CDN	: Coupling & decoupling network

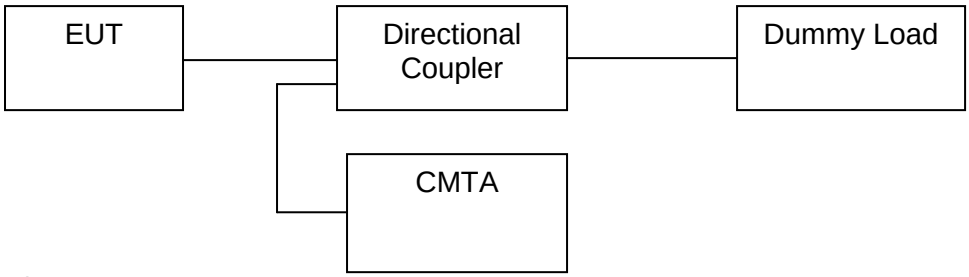
ALSR	: Absorber Lined Screened Room
OATS	: Open Area Test Site
ATS	: Alternative Test Site
Ref	: Reference
Freq	: Frequency
MD	: Measurement Distance
SD	: Spec Distance
Pol	: Polarisation
H	: Horizontal Polarisation
V	: Vertical Polarisation

A1 Transmitter Intentional Emission Conducted

Regulation	Title 47 of the CFR: Part73 Subpart (b) BETS – 6 Section 6
Measurement standard	ANSI/TIA 603 – D 2010
EUT sample number	S01
Modification state	0
SE in test environment	N/A
SE isolated from EUT	No
EUT set up	Refer to Appendix C
Temperature	20°C

Notes: Applicable Standard

(b) FM stations. Except as provided in paragraph (d), the transmitter output power of an FM station, with power output as determined by the procedures specified in § 73.267,which is authorized for output power more than 10 watts must be maintained as near as practicable to the authorized transmitter output power and may not be less than 90% nor more than 105% of the authorized power. FM stations operating with authorized transmitter output power of 10 watts or less, may operate at less than the authorized power, but not more than 105% of the authorized power.



Hi Power

FREQ. (MHz)	Level at CMTA (dBm)	Output Cable and Attenuator Loss (dB)	Conducted Output Power (dBm)	Conducted Output Power (Watts)	% of Declared Output Power
88.10	5.10	50.12	55.22	332.65	100.8
98.0	5.10	50.17	55.27	336.51	101.9
107.90	5.10	50.21	55.31	339.62	102.9
Output Power Limit			**90% ≤ Declared Output power ≤ 105%**		

The EUT was set to the maximum Transmitter output power.
The Manufacturers declared rated output power is 330W.

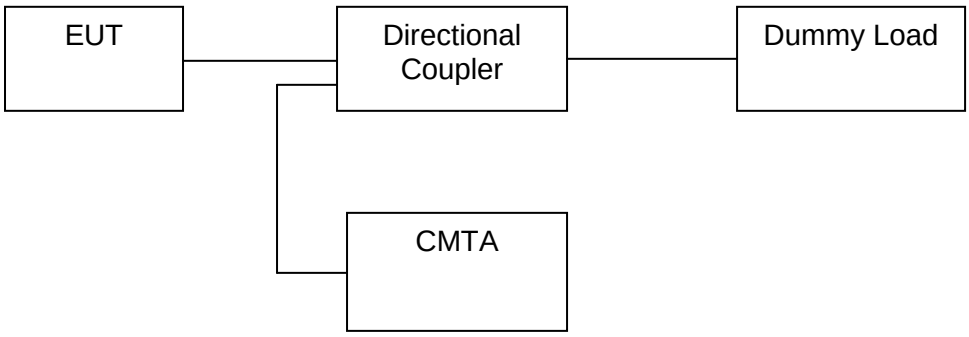
Part 2.1033 (c)(8) BETS-6 DC input to the final amplifier.
DC Voltage = 45.1Vdc
DC Current = 6.27A

Transmitter Intentional Emission Conducted

Regulation	BETS – 6 Section 6 Section 6.1.3
Measurement standard	ANSI/TIA 603 – D 2010
EUT sample number	S01
Modification state	0
SE in test environment	N/A
SE isolated from EUT	No
EUT set up	Refer to Appendix C
Temperature	20°C
Photographs (Appendix F)	

Notes: 6.1.3 Applicable Standard

The standard rating of power output for the transmitting equipment shall be as specified by the individual manufacturer. Adjustment of the power output of the transmitting equipment shall permit operation over a range of at least from 50% to rated power output.



Low Power

FREQ. (MHz)	Level at CMTA (dBm)	Output Cable and Attenuator Loss (dB)	Conducted Output Power (dBm)	Conducted Output Power (Watts)	Rated Output Power (Watts)	50% Rated Output Power Watts
88.10	-1	46.06	45.1	32.35	330	165
98.0	-1.01	46.13	45.1	32.35	330	165
107.90	-1.15	46.16	45.0	31.62	330	165
Output Power Limit			50% from the rated output power			

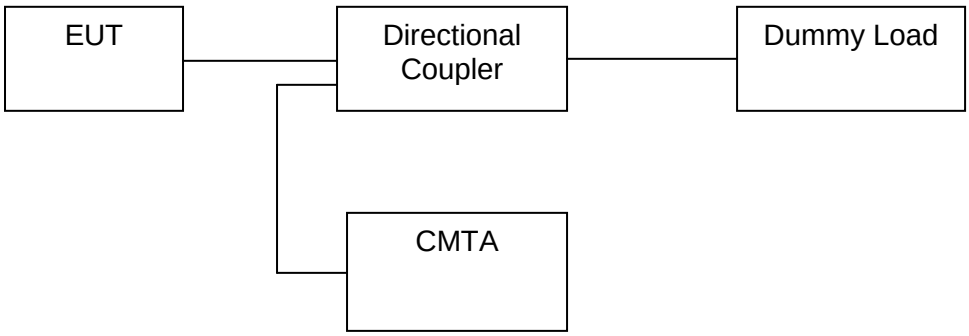
The EUT was set to the Minimum Transmitter output power.
The Manufacturers declared rated output power is 330W.

Transmitter Intentional Emission Conducted: AC voltage variations

Regulation	BETS – 6 Section 6 Section 6.1.3
Measurement standard	ANSI/TIA 603 – D 2010
EUT sample number	S01
Modification state	0
SE in test environment	N/A
SE isolated from EUT	No
EUT set up	Refer to Appendix C
Temperature	20°C
Photographs (Appendix F)	

Notes: 6.1.3 Applicable Standard

The standard rating of power output for the transmitting equipment shall be as specified by the individual manufacturer. The transmitting equipment shall be capable of being adjusted to deliver the rated power output when the AC input voltage varies by 5% from the rated value.



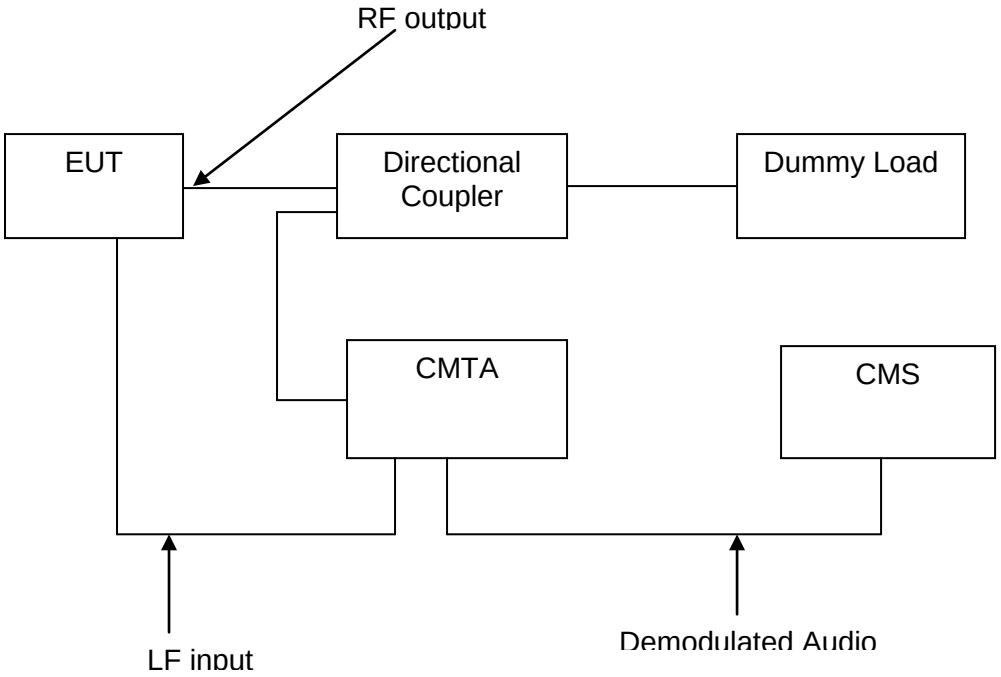
FREQ. (MHz)	Level at CMTA (dBm)	Output Cable and Attenuator Loss (dB)	Conducted Output Power (dBm)	Conducted Output Power (Watts)
88.10	5.10	50.12	55.22	332.65
98.0	5.10	50.17	55.27	336.51
107.90	5.10	50.21	55.31	339.62
AC Voltage 100%			110Vac	

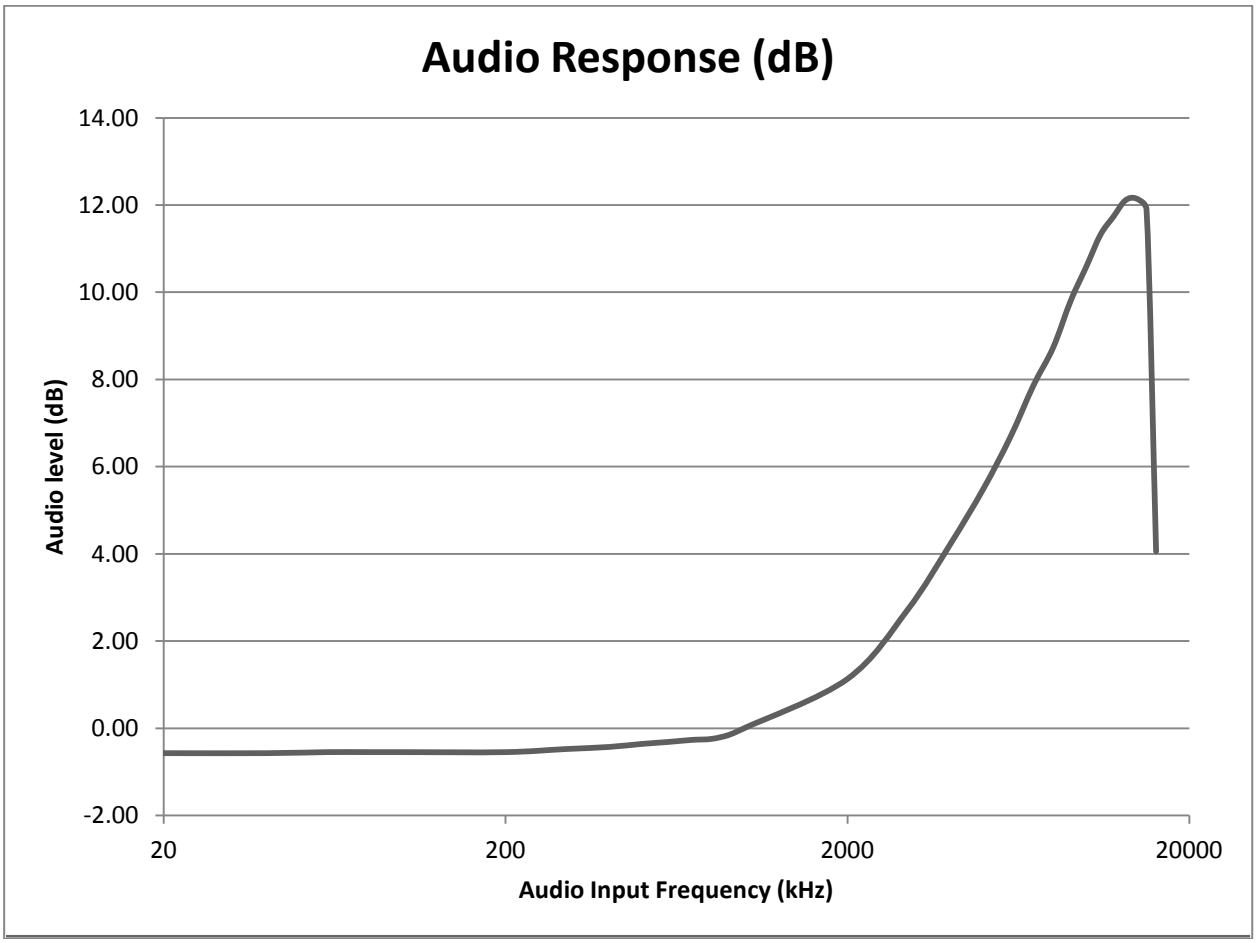
FREQ. (MHz)	Level at CMTA (dBm)	Output Cable and Attenuator Loss (dB)	Conducted Output Power (dBm)	Conducted Output Power (Watts)
88.10	5.10	50.12	55.22	332.65
98.0	5.10	50.17	55.27	336.51
107.90	5.10	50.21	55.31	339.62
AC Voltage 95%			104.5Vac	

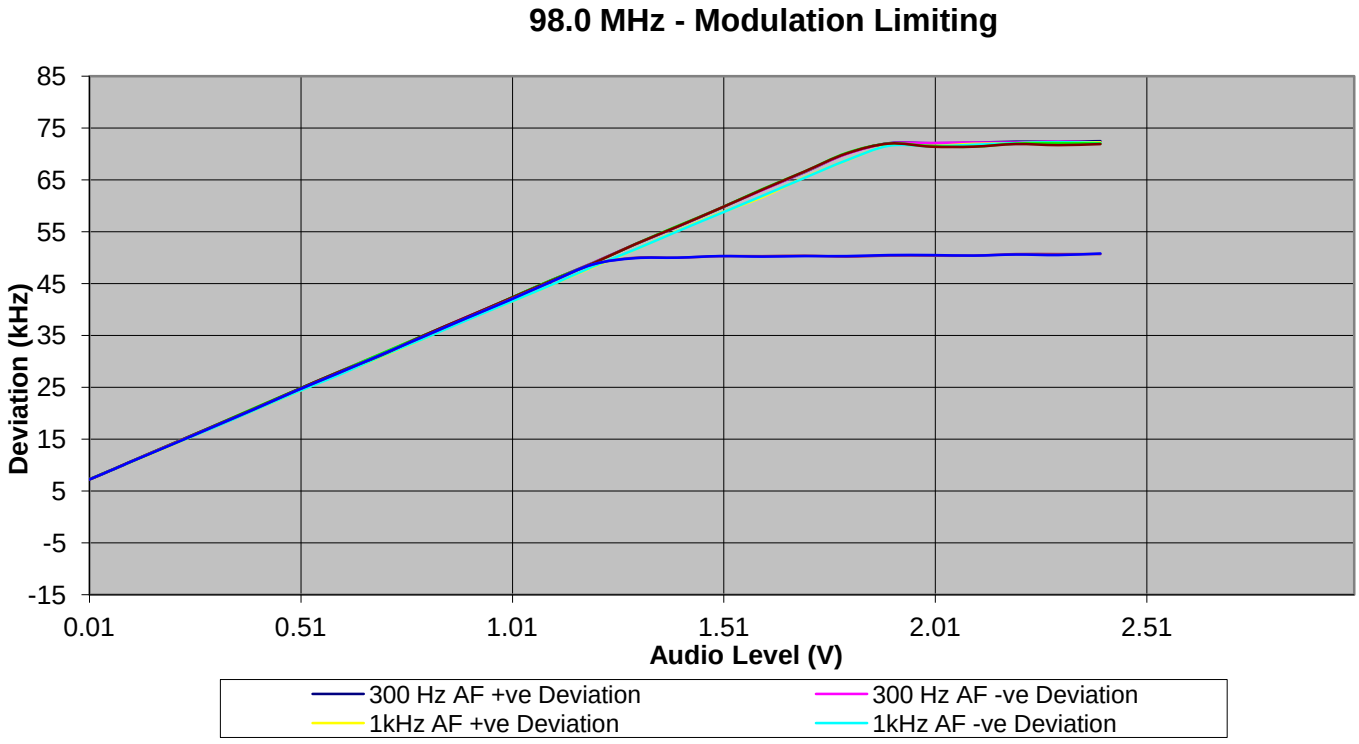
FREQ. (MHz)	Level at CMTA (dBm)	Output Cable and Attenuator Loss (dB)	Conducted Output Power (dBm)	Conducted Output Power (Watts)
88.10	5.10	50.12	55.22	332.65
98.0	5.10	50.17	55.27	336.51
107.90	5.10	50.21	55.31	339.62
AC Voltage 105%			115.5Vac	

A2 Modulation Characteristics - Audio Response – Part 2.1047

Regulation	Title 47 of the CFR: Part73 Subpart (b)
Measurement standard	ANSI/TIA 603 – D 2010
EUT sample number	S01
Modification state	0
SE in test environment	N/A
SE isolated from EUT	No
EUT set up	Refer to Appendix C
Temperature	20°C



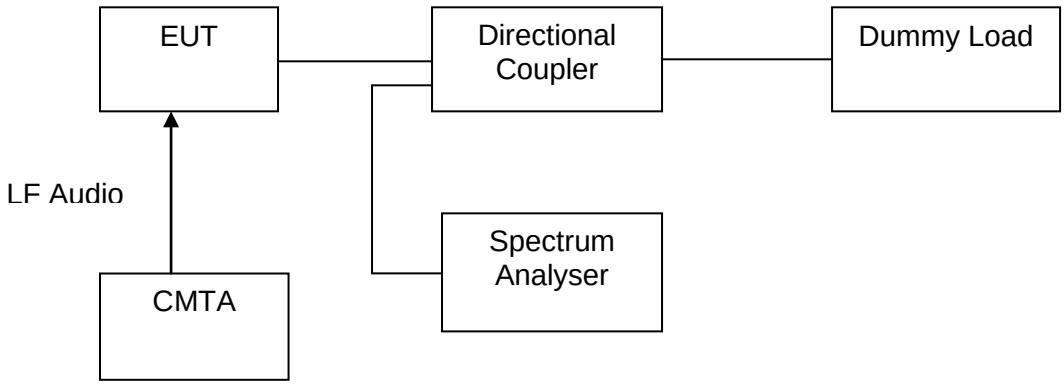

Audio Response (dB)
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-2.00
Audio level (dB)
20
200
2000
20000
Audio Input Frequency (kHz)


98.0 MHz - Modulation Limiting
85
75
65
55
45
35
25
15
5
-5
-15
Deviation (kHz)
0.01
0.51
1.01
1.51
2.01
2.51
Audio Level (V)
300 Hz AF +ve Deviation
300 Hz AF -ve Deviation
1kHz AF +ve Deviation
1kHz AF -ve Deviation

A3 Emission Mask Plots 2.1049 & 73.317 & BETS-6

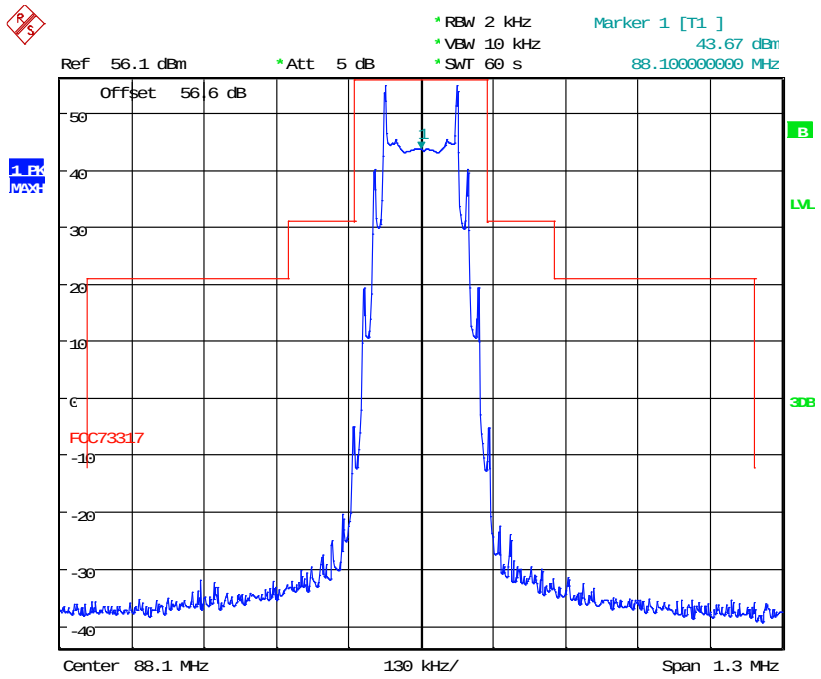
Regulation	Title 47 of the CFR: Part73 Subpart (b) BETS -6 Clause 6.3.3
Measurement standard	ANSI/TIA 603 – D 2010
EUT sample number	S01
Modification state	0
SE in test environment	N/A
SE isolated from EUT	No
EUT set up	Refer to Appendix C
Temperature	20°C

Any emission appearing on a frequency removed from the carrier by between 120 kHz and 240 kHz inclusive must be attenuated at least 25 dB below the level of the unmodulated carrier. Compliance with this requirement will be deemed to show the occupied bandwidth to be 240 kHz or less.
(c) Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz must be attenuated at least 35 dB below the level of the unmodulated carrier.
(d) Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated at least 43 + 10 Log10 (Power, in watts) dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.



Operating Frequency (MHz)	Audio Frequency Input		
	400Hz	1kHz	15kHz
88.10	Complies with Mask	Complies with Mask	Complies with Mask
98.00	Complies with Mask	Complies with Mask	Complies with Mask
107.90	Complies with Mask	Complies with Mask	Complies with Mask

88.1MHz 400Hz Audio Input



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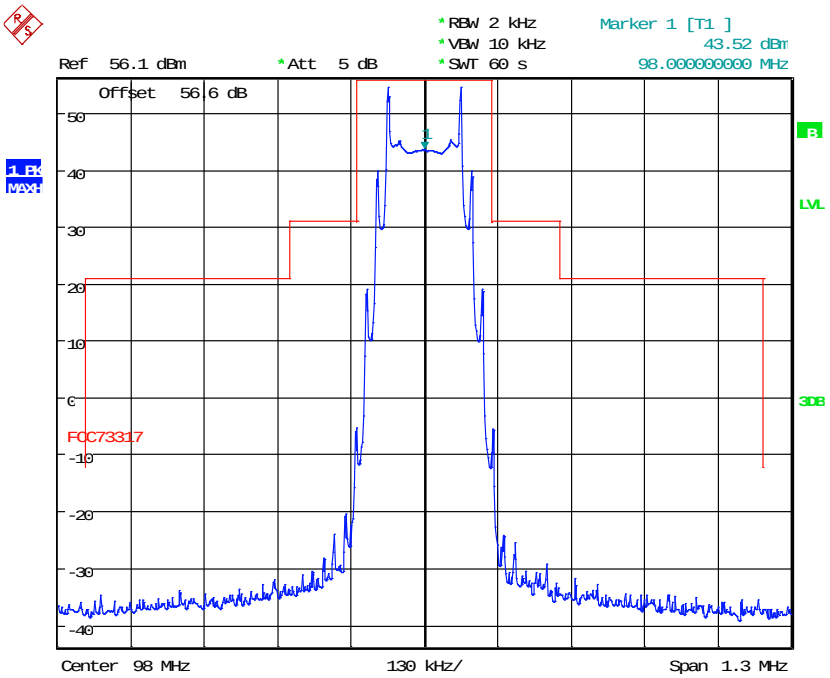
98.0MHz 400Hz Audio Input



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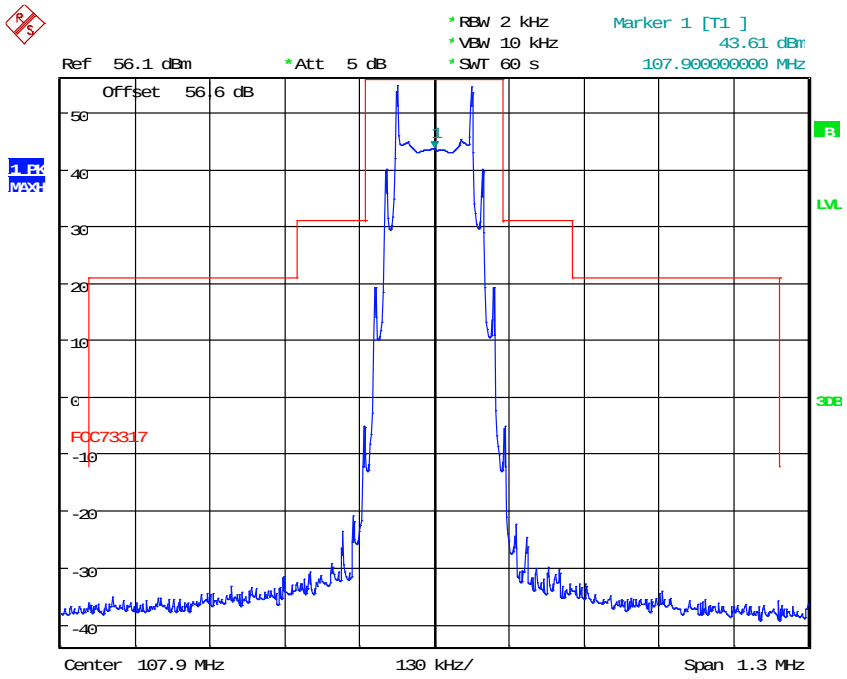
107.9MHz 400Hz Audio Input



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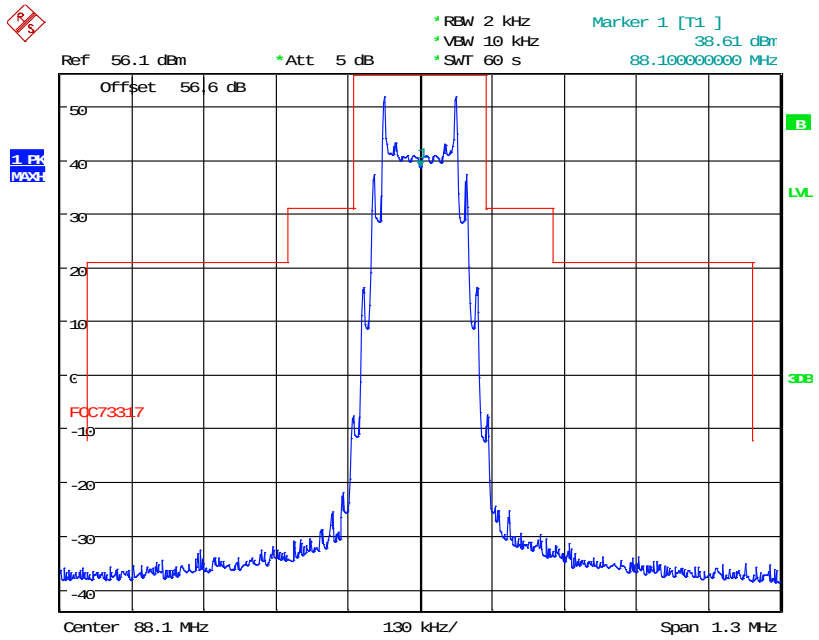
88.1MHz 1.0kHz Audio Input



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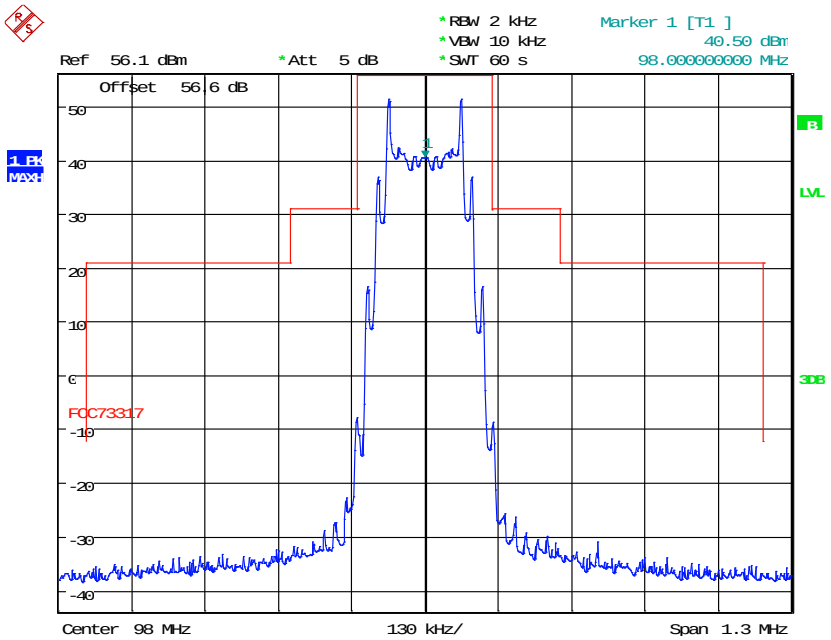
98.0MHz 1.0kHz Audio Input



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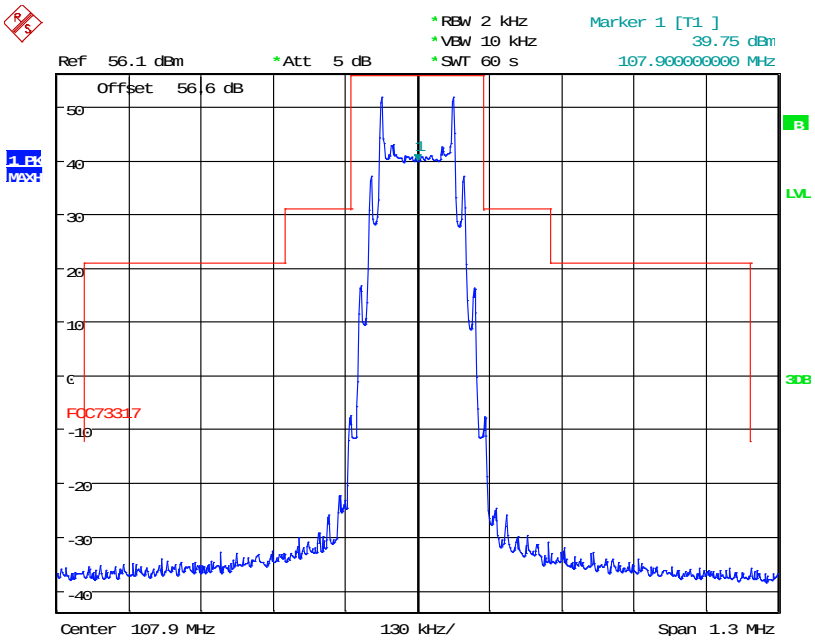
107.9MHz 1.0kHz Audio Input



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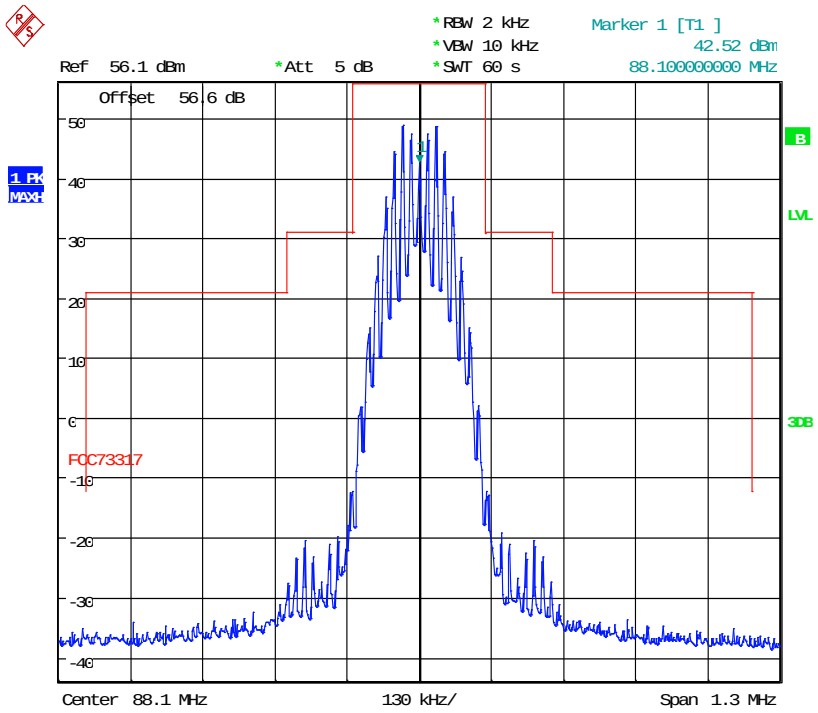
88.1MHz 15.0kHz Audio Input



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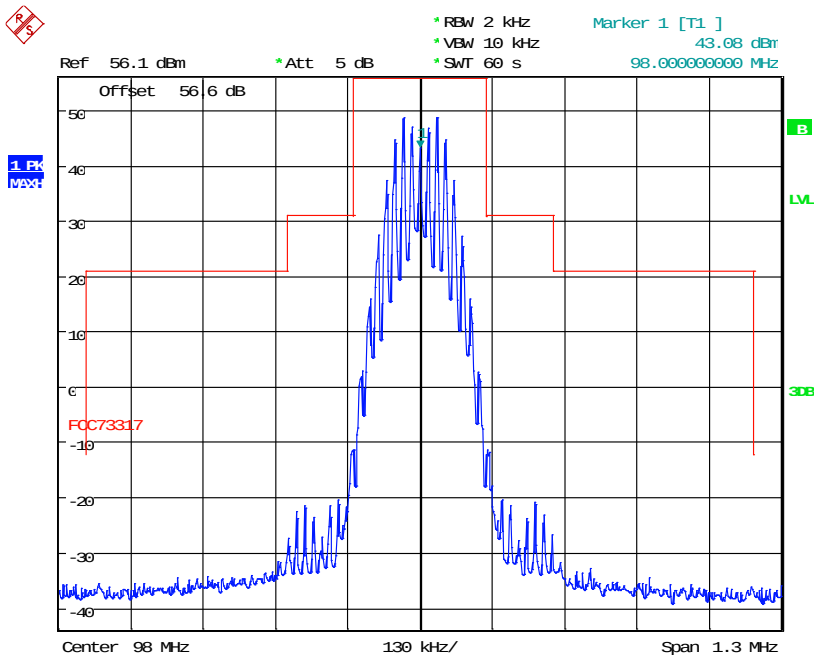
98.0MHz 15.0kHz Audio Input



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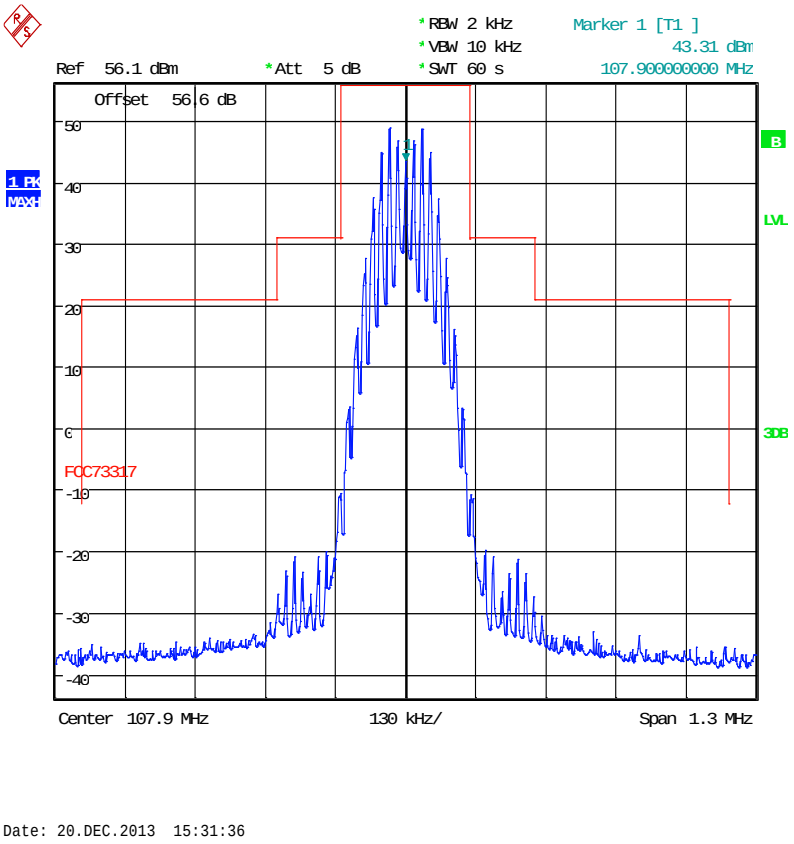
107.9MHz 15.0kHz Audio Input



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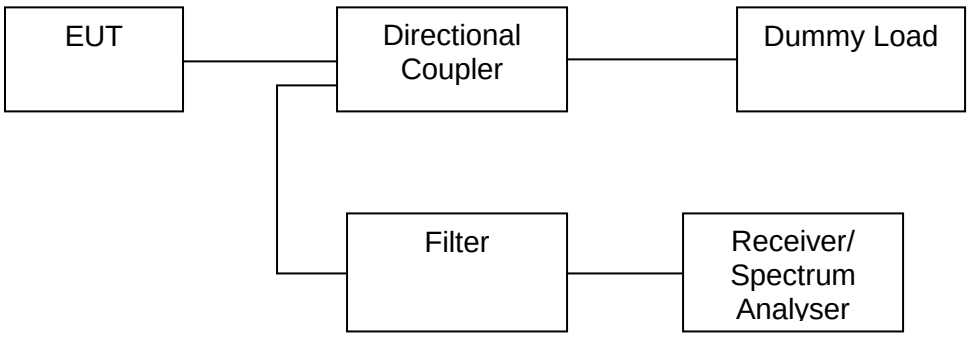
A4 Conducted Spurious emissions- (Antenna Terminal)

Regulation	Title 47 of the CFR: Part73 Subpart (b) Part 2.1053 BETS-6 Clause 6.3.3
Measurement standard	ANSI/TIA 603 – D 2010
EUT sample number	S01
Modification state	0
SE in test environment	N/A
SE isolated from EUT	No
EUT set up	Refer to Appendix C
Temperature	20°C



The test was set up as per the above diagram, The unit was rested operating at maximum power and on three test frequencies.

The spurious limit was calculated as follows:
On any frequency removed from the assigned frequency by more than 250% of the authorised bandwidth:

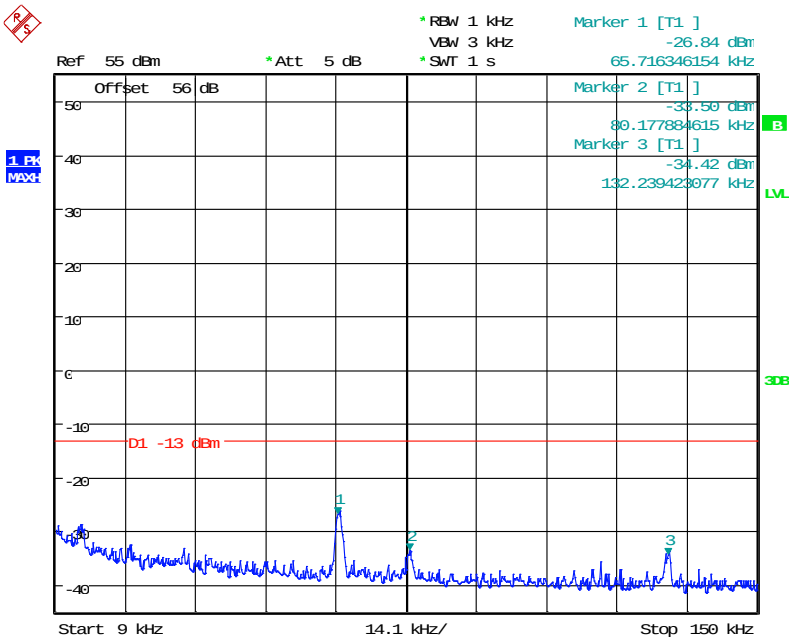
At least 43 + 10 log PdB
(10logPwatts) –(43+10log(Pwatts*1000) = Limit = -13dBm

Further emissions that are more than 20dB under the limit are not reported in the above table.

Operating Frequency (MHz)	Emission Frequency (MHz)	Emission Level (dBm)	Delta from limit (dB)	Limit (dBm)
88.10	264.30	-19.40	6.40	-13.0
	352.45	-31.45	18.45	-13.0
	440.50	-28.52	15.52	-13.0
	528.60	-25.38	12.38	-13.0
	616.75	-32.93	19.93	-13.0
	704.75	-26.16	13.16	-13.0
	792.85	-30..96	17.96	-13.0
98.00	196.00	-25.44	12.44	-13.0
	294.00	-15.41	2.41	-13.0
	392.00	-28.51	15.51	-13.0
	490.00	-32.31	19.31	-13.0
	588.00	-27.38	14.38	-13.0
	686.05	-31.82	18.82	-13.0
	783.95	-23.12	10.12	-13.0
	882.05	-32.00	19.00	-13.0
107.90	215.80	-23.50	10.50	-13.0
	323.70	-20.86	7.86	-13.0
	431.60	-26.73	13.73	-13.0
	539.50	-30.79	17.79	-13.0
	647.45	-25.43	12.43	-13.0
	755.30	-26.65	13.65	-13.0
	1079.00	-31.20	18.20	-13.0

Conducted Emission Plots 88.10MHz

9kHz – 150kHz



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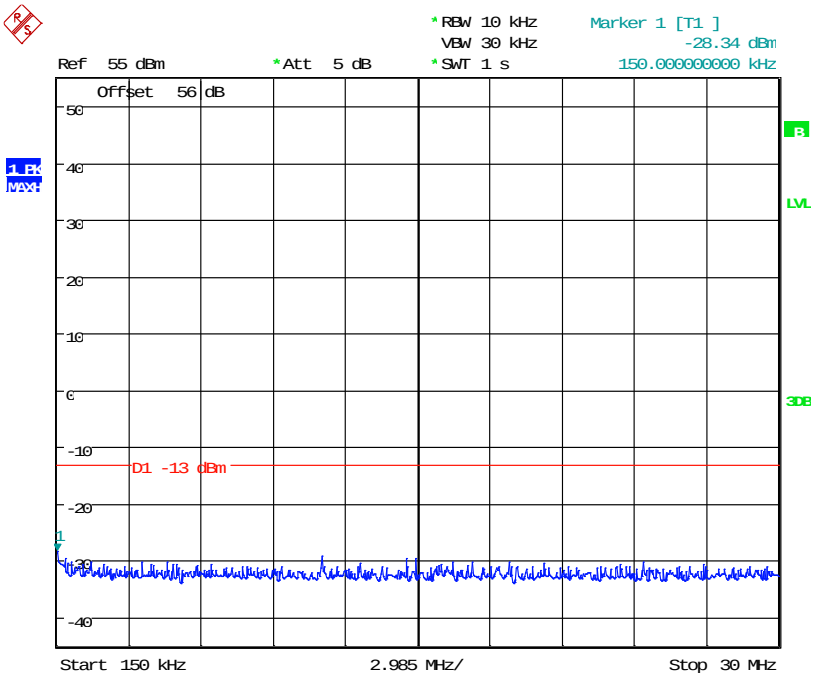
150kHz – 30MHz



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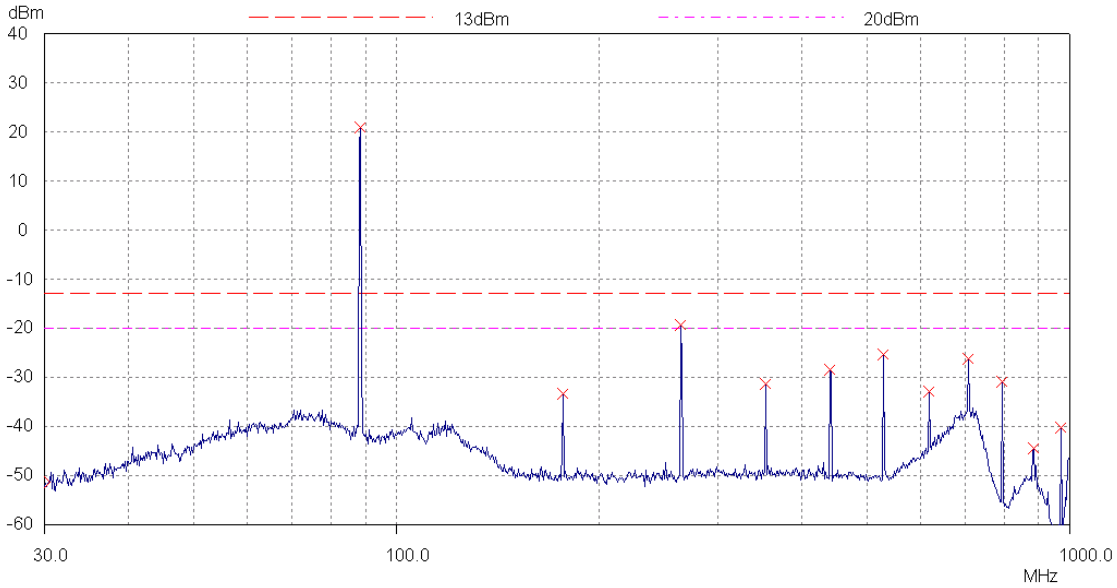
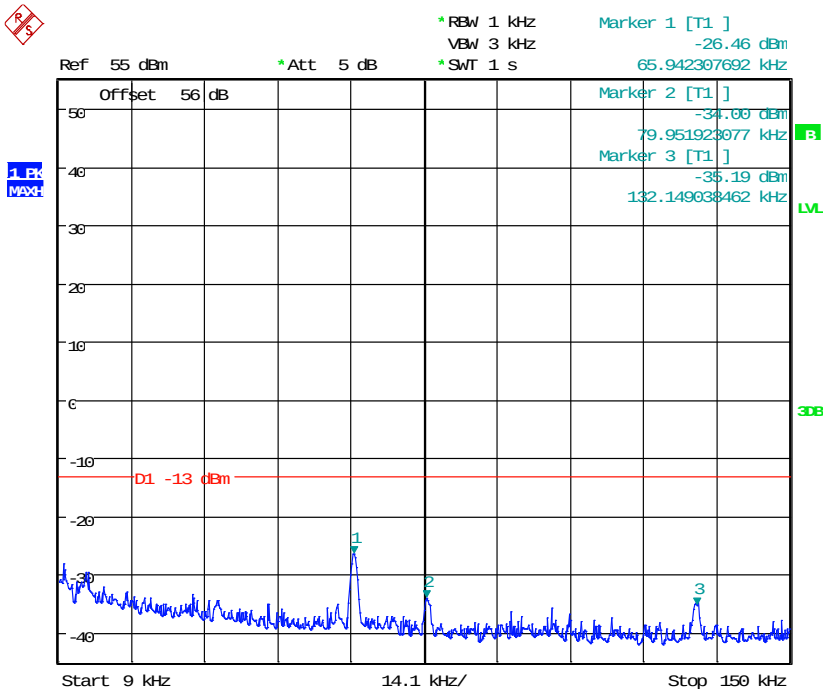
30MHz -1GHz



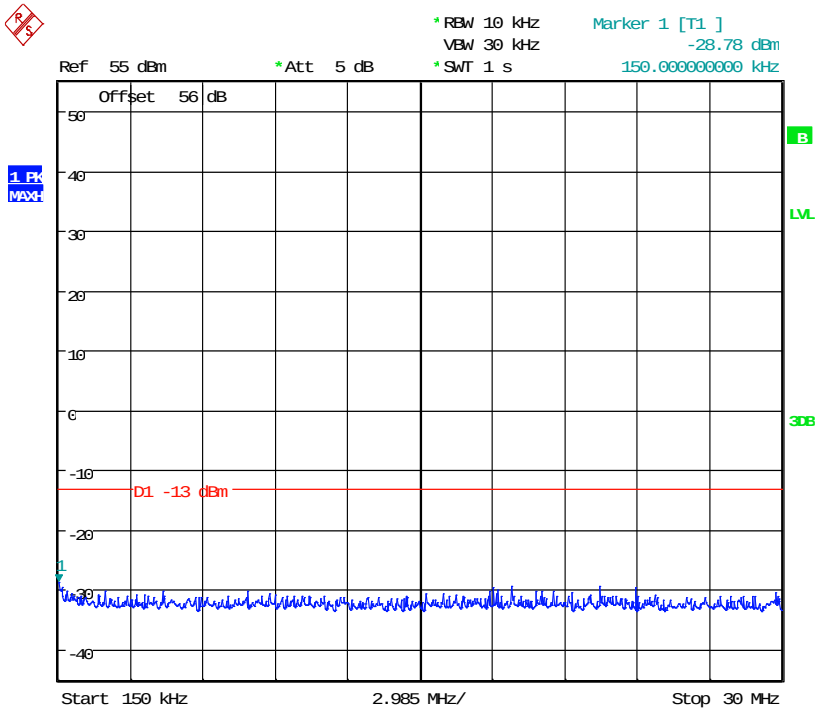
Conducted Emission Plots 98.00MHz

9kHz – 150kHz



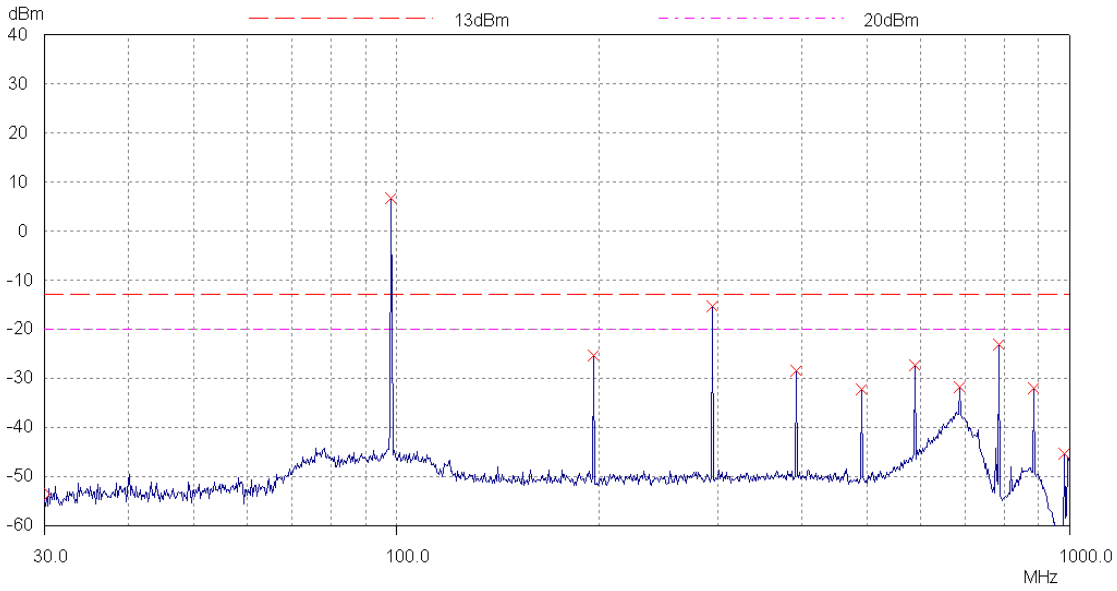
Date: 17.DEC.2013 15:55:46

150kHz – 30MHz



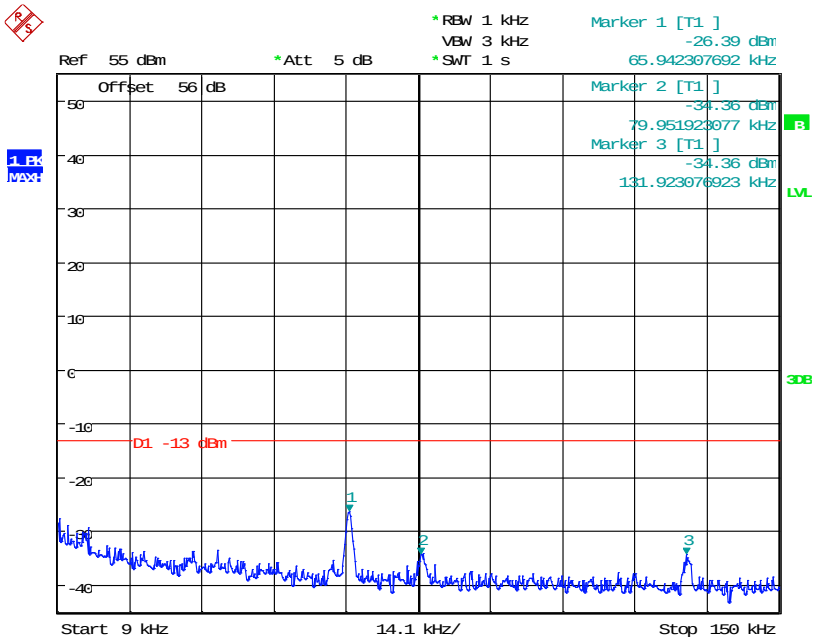
Date: 17.DEC.2013 15:56:26

30MHz -1GHz



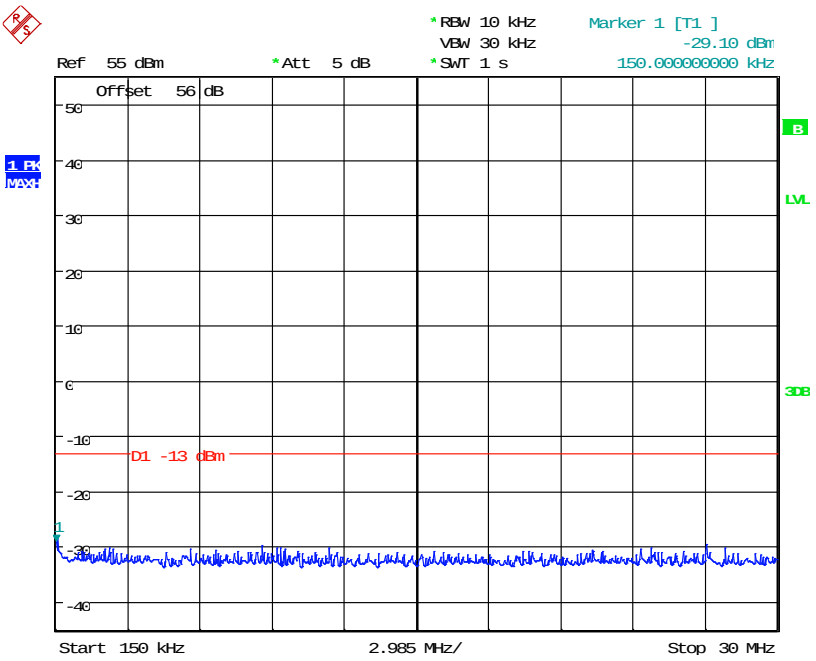
Conducted Emission Plots 107.9MHz

9kHz – 150kHz



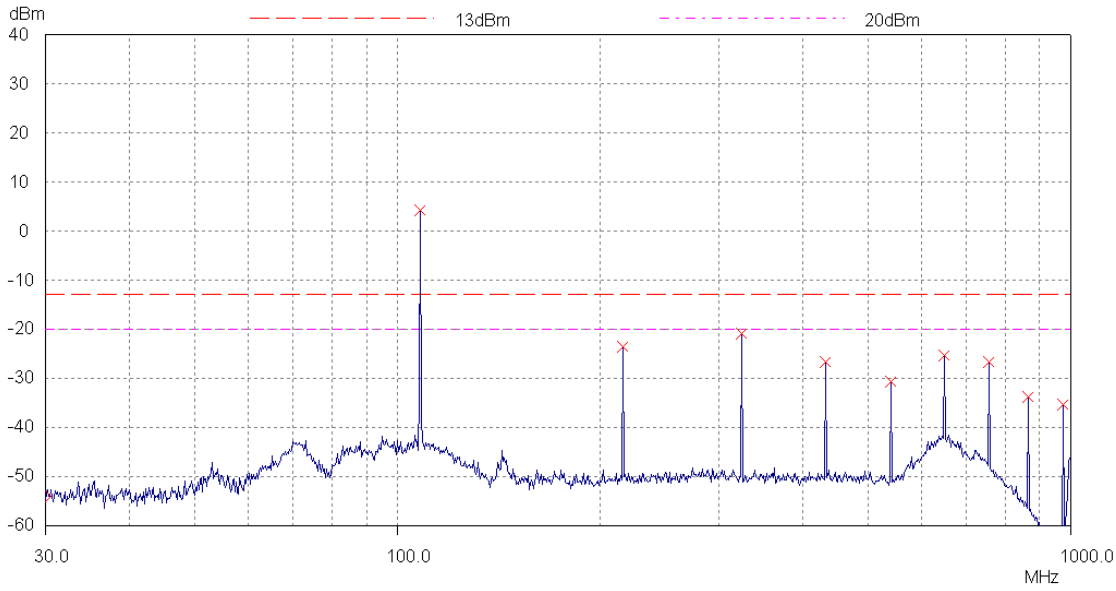
Date: 17.DEC.2013 15:57:56

150kHz – 30MHz

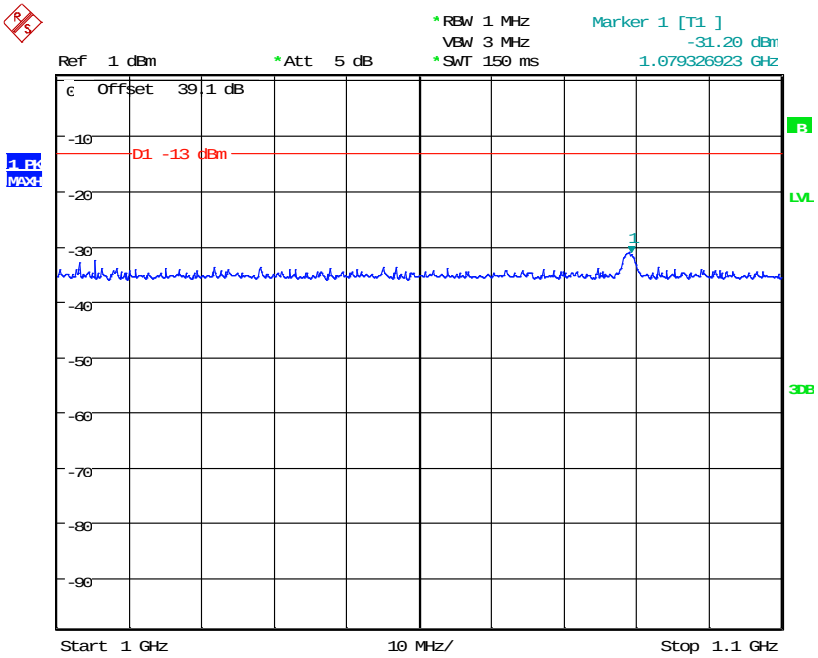


Date: 17.DEC.2013 15:58:30

30MHz -1GHz



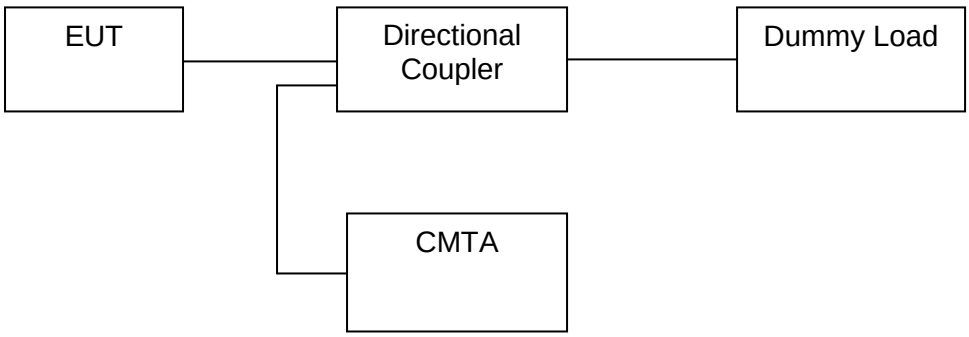
1.0GHz – 1.10GHz



Date: 18.DEC.2013 10:31:23

A5 Frequency Stability

Test Details:	
Regulation	Title 47 of the CFR, Part 73.1545 Part 2.1055 (a)(3) BETS – 6 Clause 6.2
Measurement standard	ANSI C63.10:2003
EUT sample number	S01
Modification state	0
SE in test environment	N/A
SE isolated from EUT	No
EUT set up	Refer to Appendix C



Applicable Standard: Part 2.1055 (3)(b)

From 0°C - 50°C Centigrade for equipment to be licensed for use in the Radio Broadcast Services under part 73.

Frequency measurements shall be made at the extremes of the specified temperature range and at the intervals of not more than 10°C centigrade through the range. A period of time sufficient to stabilise all of the components of the oscillator circuit at each temperature level prior to the frequency measurement.

Part 2.1055 (3)(d)

The frequency stability shall be measured with variation of the primary supply voltage 85%- 115%.

88.1MHz

Temperature °C	Frequency	Frequency error (kHz)
50	88.09978	-0.22
40	88.09983	-0.17
30	88.10015	0.15
20	88.10021	0.21
10	88.10028	0.28
0	88.10041	0.41
FCC Limit = 2.0kHz		

Temperature °C	Voltage	Fc (MHz)	Drift (kHz)
Tnom 21	115%= 126.5Vac	88.100270	0.27
	85% = 93.5Vac	88.100300	0.30

98.0MHz

Temperature °C	Frequency	Frequency error (kHz)
50	97.99980	-0.20
40	97.99980	-0.20
30	98.00020	0.20
20	98.00026	0.26
10	98.00031	0.31
0	98.00046	0.46
FCC Limit = 2.0kHz		

Temperature °C	Voltage	Fc (MHz)	Drift (kHz)
Tnom 21	115%= 126.5Vac	98.000270	0.27
	85% = 93.5Vac	98.000240	0.24

107.9MHz

Temperature °C	Frequency	Frequency error (kHz)
50	107.89984	-0.16
40	107.89981	-0.19
30	107.90025	0.25
20	107.90026	0.26
10	107.90031	0.31
0	107.90055	0.55
FCC Limit = 2.0kHz		

Temperature °C	Voltage	Fc (MHz)	Drift (kHz)
Tnom 21	115%= 126.5Vac	107.900260	0.26
	85% = 93.5Vac	107.900260	0.26

Frequency Stability BETS-6

Applicable Standard:6.2.3 The frequency of the carrier shall remain within ± 1kHz of the mean test frequency. After a warm-up period of one hour at rated AC input voltage, measure the frequency of the carrier at one minute intervals during a period of fifteen minutes. From these measurements, determine a mean test frequency. Then, measure and record the operating frequency at a temperature of 5°C at 85, 100 and 115% of the rated AC supply voltage. Repeat for a temperature of 45°C.

Mean Frequency 88.099999MHz

Temperature °C	Vac	Fc (MHz)	Drift (kHz)
45	85%	88.09984	-0.16
45	100%	88.09985	-0.15
45	115%	88.09987	-0.13
5	85%	88.10047	0.47
5	100%	88.10048	0.48
5	115%	88.10045	0.45

Mean Frequency 98.0000013MHz

Temperature °C	Vac	Fc (MHz)	Drift (kHz)
45	85%	97.99976	-0.24
45	100%	97.99980	-0.20
45	115%	97.99975	-0.25
5	85%	98.00041	0.41
5	100%	98.00045	0.45
5	115%	98.00040	0.40

Mean Frequency 107.899993MHz

Temperature °C	Vac	Fc (MHz)	Drift (kHz)
45	85%	107.89973	-0.26
45	100%	107.89976	-0.23
45	115%	107.89972	-0.27
5	85%	107.90040	0.41
5	100%	107.90041	0.42
5	115%	107.90039	0.40

A6 Radiated Emissions

The following test site was used for final measurements as specified by the standard tested to:

3m open area test site : [ ] 3m alternative test site : [X]

The effect of the EUT set-up on the measurements is summarised in note (c) below.

Test Details:	
Regulation	Title 47 of the CFR, Part 2.1049, 73.317 BETS-6 Clause 6.4
Measurement standard	ANSI C63.10:2003
EUT sample number	S01
Modification state	0
SE in test environment	N/A
SE isolated from EUT	No
EUT set up	Refer to Appendix C
Temperature	20°C
Photographs (Appendix F)	

The worst case radiated emission measurements for spurious emissions are listed below:

Operating Frequency (MHz)	Emission Frequency (MHz)	Emission Level (dBm)	Delta from limit (dB)	Limit (dBm)
88.10	969.1	-27.97	14.97	-13.0
98.00	784.0	-27.26	14.26	-13.0
107.90	863.2	-29.47	16.47	-13.0
107.90	971.1	-23.36	10.36	-13.0

Emissions that are 20dB lower than the limit are not shown.

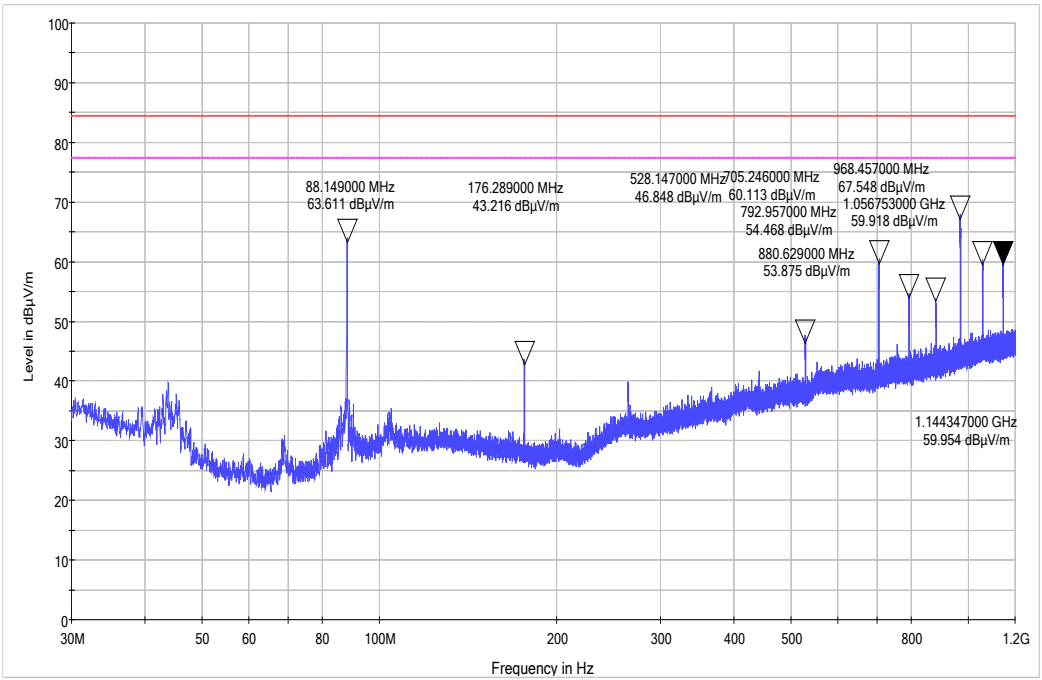
Operating Frequency (MHz)	Emission Frequency (MHz)	Emission Level (dBm)	Delta from limit (dB)	Limit (dBµV/m)@3mtrs
88.10	No significant emissions within 70dBc of the reference field strength			98.00
98.00				
107.90				

Reference field strength Calculated from the equation:

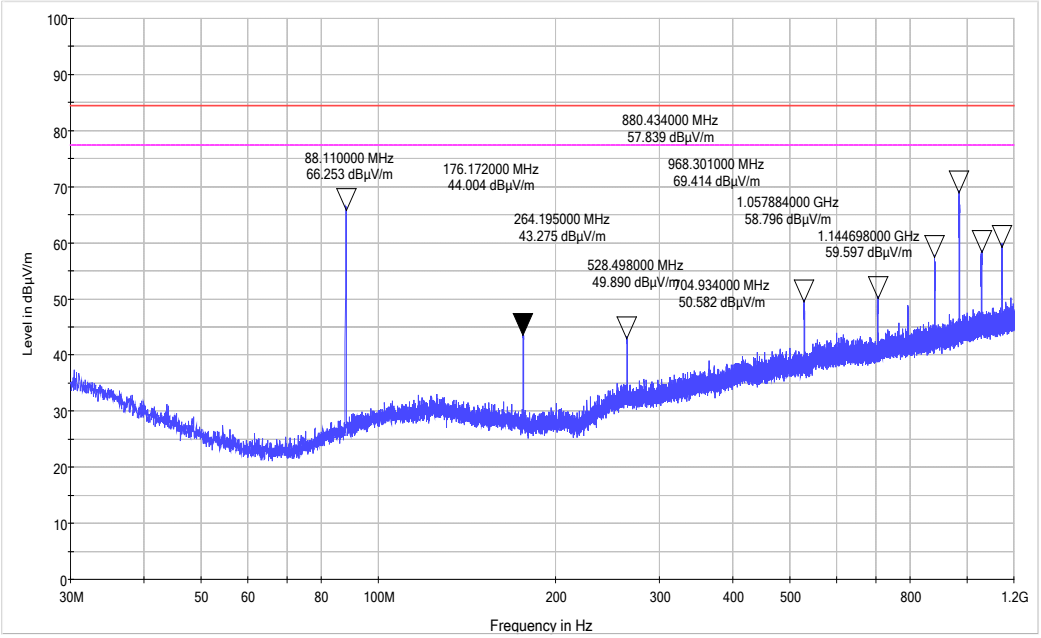
$E=7\sqrt{7}P/r$ volts per meter = 152 dBµV/m
Where P is the rated output power in watts and r is the distance in meters.

Emissions at any frequency shall be at least 54dB below the calculated field strength reference level. Any radiation weaker than 70dB below the reference level need not be recorded.

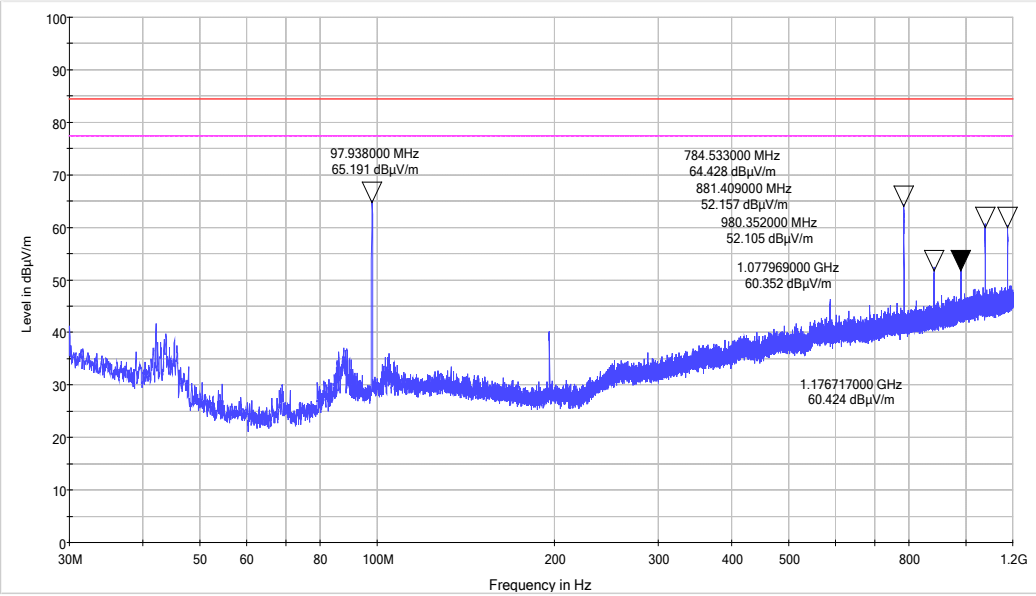
Tx 88.1MHz vertical



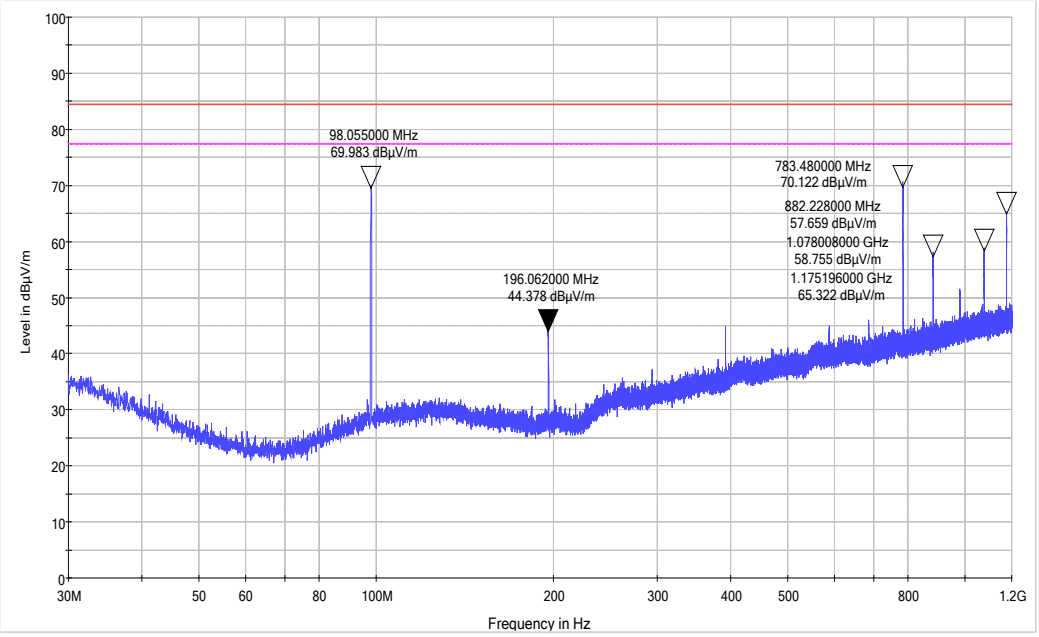
Tx 88.1MHz Horizontal



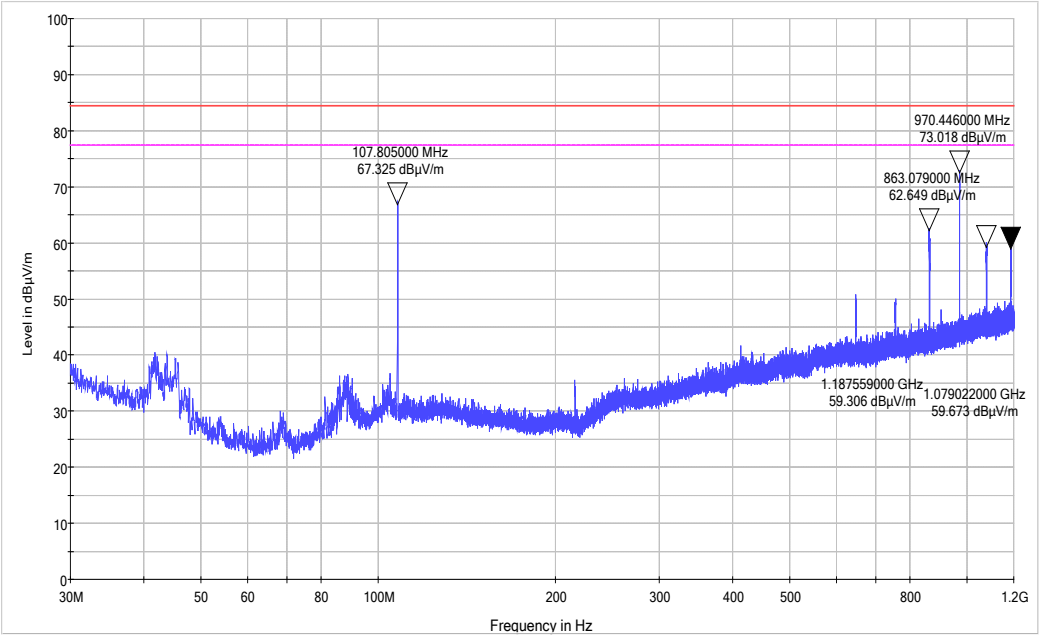
Tx 98.0MHz Vertical



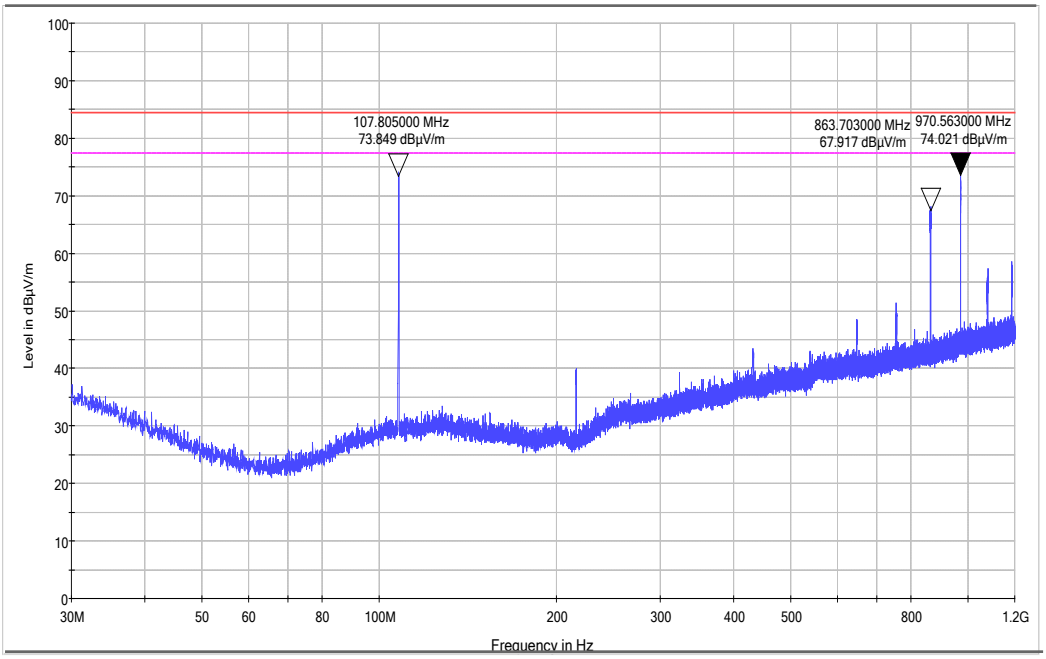
Tx 98.0MHz Horizontal



Tx 107.9MHz Vertical



Tx 107.9MHz Horizontal



Notes:

1 Any testing performed below 30 MHz was performed using a magnetic loop antenna in accordance with ANSI C63.10: section 4.5, Table 1 For emissions below 30MHz the cable losses are assumed to be negligible.
2 In accordance with 15.35(b), above 1 GHz, emissions measured using a peak detector shall not exceed a level 20 dB above the average limit.
3 Testing was performed with the EUT orientated in three orthogonal planes and the maximum emissions level recorded. In addition, the EUT antenna was varied within its range of motion in order to maximise emissions.
4 For Frequencies below 1 GHz, RBW = 120 kHz, testing was performed with CISPR16 compliant test receiver with QP detector. Above 1 GHz tests were performed using a spectrum analyser using the following settings:

Peak	RBW=VBW= 1MHz
Average	RBW=VBW= 1MHz

The upper and lower frequency of the measurement range was decided according to 47 CFR Part 15:2008 Clause 15.33(a) and 15.33(a)(1).

Appendix B: Additional Test and Sample Details

This appendix contains details of:

1. The samples submitted for testing.
2. Details of EUT operating mode(s)
3. Details of EUT configuration(s) (see below).
4. EUT arrangement (see below).

Throughout testing, the following numbering system is used to identify the sample and it's modification state:

Sample No: Sxx Mod w

where:

xx = sample number eg. S01
w = modification number eg. Mod 2

The following terminology is used throughout the test report:

Support Equipment (SE) is any additional equipment required to exercise the EUT in the applicable operating mode. Where relevant SE is divided into two categories:

SE in test environment: The SE is positioned in the test environment and is not isolated from the EUT (e.g. on the table top during REFE testing).

SE isolated from the EUT: The SE is isolated via filtering from the EUT. (e.g. equipment placed externally to the ALSR during REFE testing).

EUT configuration refers to the internal set-up of the EUT. It may include for example:

Positioning of cards in a chassis.
Setting of any internal switches.
Circuit board jumper settings.
Alternative internal power supplies.

Where no change in EUT configuration is **possible**, the configuration is described as “single possible configuration”.

EUT arrangement refers to the termination of EUT ports / connection of support equipment, and where relevant, the relative positioning of samples (EUT and SE) in the test environment.

For further details of the test procedures and general test set ups used during testing please refer to the related document "EMC Test Methods - An Overview", which can be supplied by TRaC Global upon request.

B1) Test samples

The following samples of the apparatus were submitted by the client for testing :

Sample No.	Description	Identification
S01	TX 300 V2 FM Broadcast transmitter	10388

B2) EUT Operating Mode During Testing.

During testing, the EUT was exercised as described in the following tables :

Test	Description of Operating Mode
tests detailed in this report	Transmitting at full and low power settings With LF audio fed via the two XLR connectors on the rear panel

B3) EUT Configuration Information.

The EUT was submitted for testing in one single possible configuration.

B4) List of EUT Ports

The tables below describe the termination of EUT ports:

Sample : S01

Port	Description of Cable Attached	Cable length	Equipment Connected
XLR	Audio cable	1mtr	CMTA
Base band /MPX/out	BNC – BNC cable	1mtr	TX 300 V2
Base band /MPX/in	BNC – BNC cable	1mtr	TX 300 V2
Lan	Ethernet Cable	1mtr	laptop
I/O -Alarms	9 way “D” type cable	1mtr	load
RS-232	9 way “D” type cable	1mtr	laptop
RF Mon	Not Applicable		Load
Mod Mon	Not Applicable		Load

B5 Details of Equipment Used

TRAC Ref	Type	Description	Manufacturer	Date Calibrated.
UH004	ESVS10	Receiver	R&S	11/02/2013
UH093	CBL6112B	Bilog	Chase	08/07/2013
L005	CMTA 52	Communications Analyser	R&S	27/03/2013
REF 940	ATS	Radio Chamber	Rainford EMC	09/07/2013
TRUH236	8251	Dummy Load	Bird	N/A
N/A	DC2000	Directional Coupler	AR	Cal in use
TRLUH272	N-Type	Coax cable	Trac	Cal in use
TRLUH272	N-Type	Coax Cable	Trac	Cal in use
TRL426	52 Series II	Temperature Indicator	Fluke	29/04/2013
REF976	34404a	Multimeter	Agilent	26/04/2013
TRL11	TCC 125-815P	Temperature Chamber	Sharetree	Use TRL426
TRLUH265(K)	TTR95-3EE	Notch Filter	Telonic Berkeley	Cal in use
TRL176	2042	Signal Generator	Marconi	29/11/2013
UH281	FSU46	Spectrum Analyser	R&S	06/03/2013
TRL420	CMS54	Radio Service Monitor	R&S	Cal in use

Appendix C: Additional Information

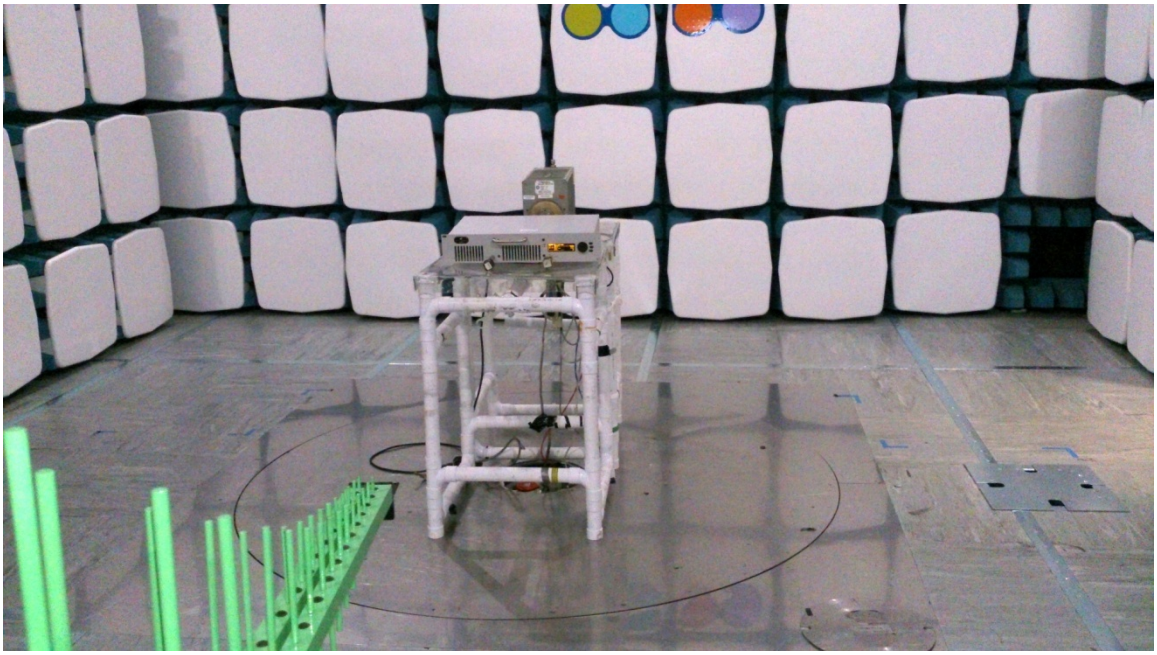
The Manufacturers declared rated output power is 330W and ±75kHz deviation FM Modulation

Appendix E: Photographs and Figures

The following photographs were taken of the test samples:

1. Test setup.
2. Overview front Panel
3. Overview Rear Panel
4. Overview Case removed

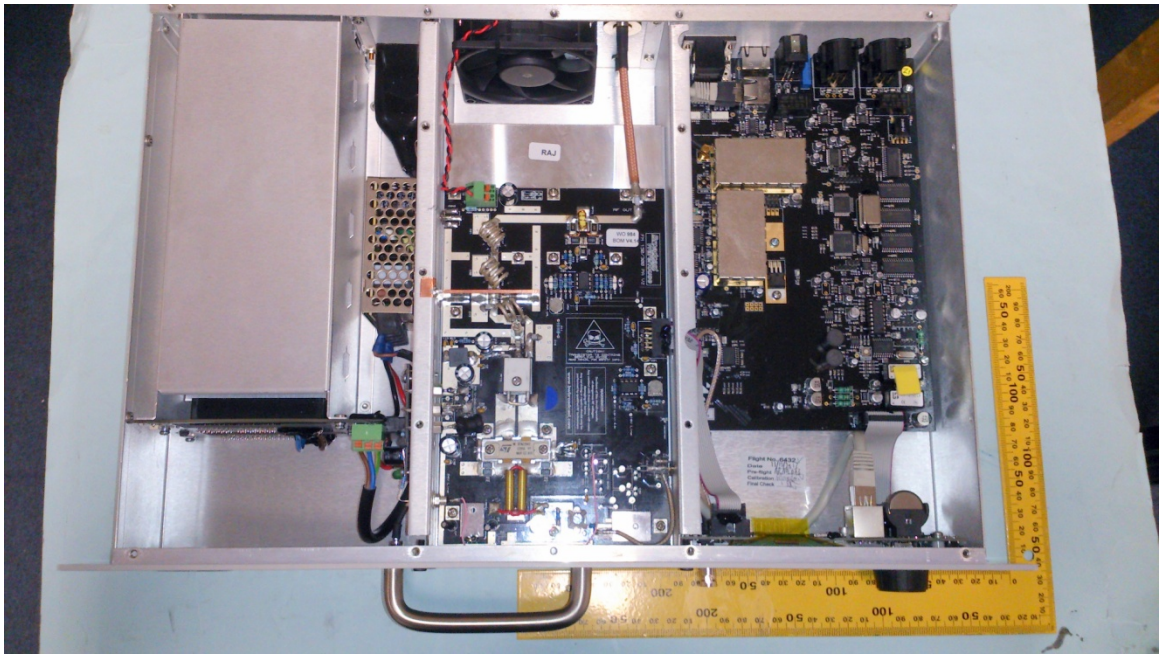
Photograph 1



Photograph 2

Photograph 3

Photograph 3



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