

**A RADIO TEST REPORT**  
**FOR**  
**BW BROADCAST Ltd**  
**ON**  
**TX 300 V2 FM BROADCAST TRANSMITTER**  
**DOCUMENT NO. TRA017223-W-US-01**

**HULL**

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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** : 28<sup>th</sup> January 2014

**Authorised Copy Number** : PDF

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**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**

This testing in this report was requested by :

BW Broadcast Ltd  
Unit 27  
IO Centre  
Croydon Road  
Croydon  
CR0 4WG

## **1.3 Manufacturer**

BW Broadcast Ltd  
Unit 27  
IO Centre  
Croydon Road  
Croydon  
CR0 4WG

## **1.4 Apparatus Assessed**

The following apparatus was assessed between: 10<sup>th</sup> - 23<sup>rd</sup> 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:

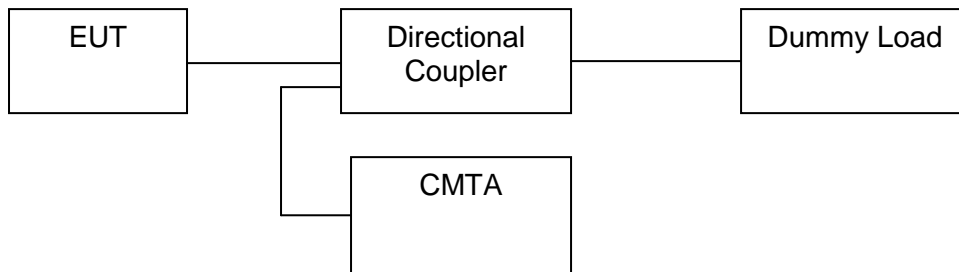
Spec	: Specification	ALSR	: Absorber Lined Screened Room
Mod	: Modification	OATS	: Open Area Test Site
		ATS	: Alternative Test Site
EUT	: Equipment Under Test		
SE	: Support Equipment	Ref	: Reference
		Freq	: Frequency
L	: Live Power Line		
N	: Neutral Power Line	MD	: Measurement Distance
E	: Earth Power Line	SD	: Spec Distance
Pk	: Peak Detector	Pol	: Polarisation
QP	: Quasi-Peak Detector	H	: Horizontal Polarisation
Av	: Average Detector	V	: Vertical Polarisation
CDN	: Coupling & decoupling network		

**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

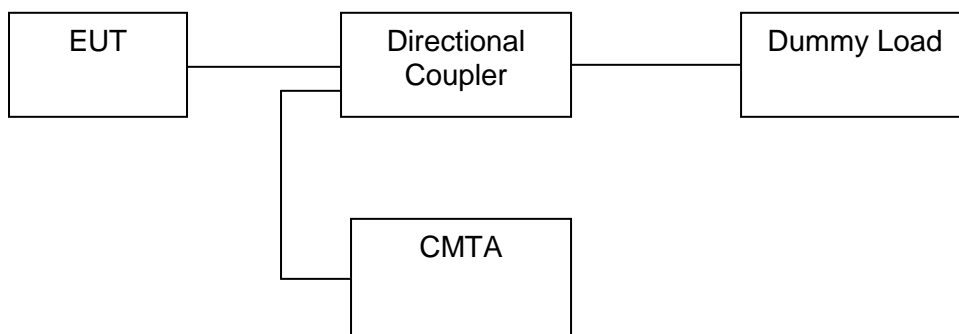
DC Current = 6.27A

**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
<b>Output Power Limit</b>			50% from the rated output power			

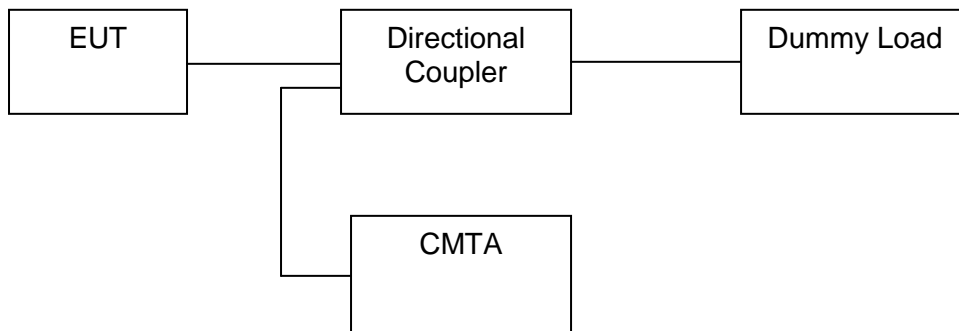
The EUT was set to the Minimum Transmitter output power.  
The Manufacturers declared rated output power is 330W.

**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.



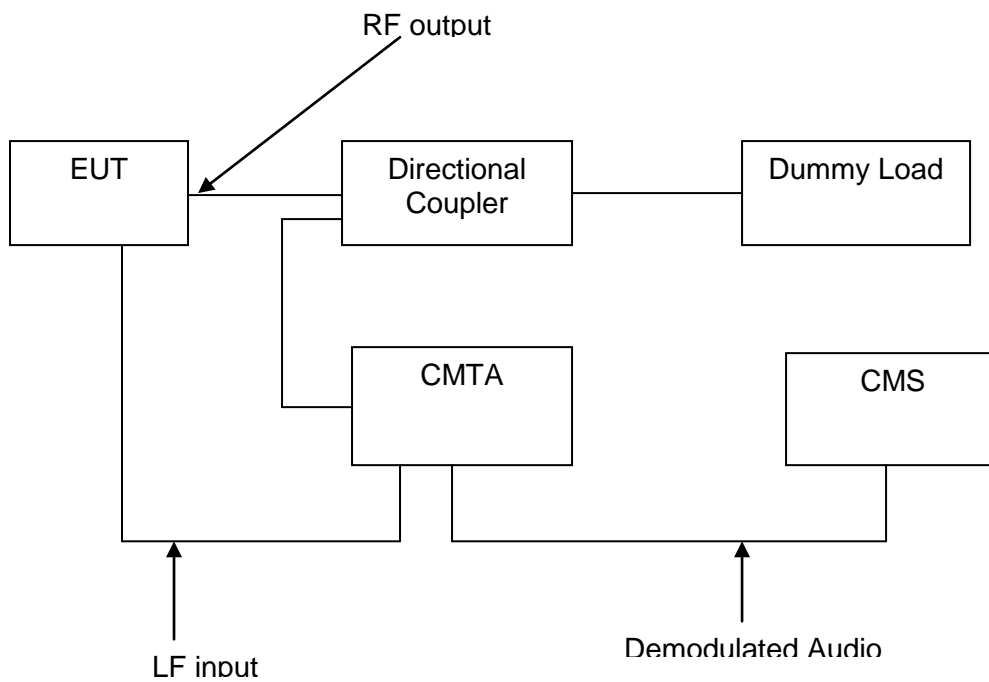
<b>FREQ. (MHz)</b>	<b>Level at CMTA (dBm)</b>	<b>Output Cable and Attenuator Loss (dB)</b>	<b>Conducted Output Power (dBm)</b>	<b>Conducted Output Power (Watts)</b>
88.10	5.10	50.12	55.22	332.65
98.0	5.10	50.17	55.27	336.51
107.90	5.10	50.21	55.31	339.62
<b>AC Voltage 100%</b>			110Vac	

<b>FREQ. (MHz)</b>	<b>Level at CMTA (dBm)</b>	<b>Output Cable and Attenuator Loss (dB)</b>	<b>Conducted Output Power (dBm)</b>	<b>Conducted Output Power (Watts)</b>
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
<b>AC Voltage 95%</b>			104.5Vac	

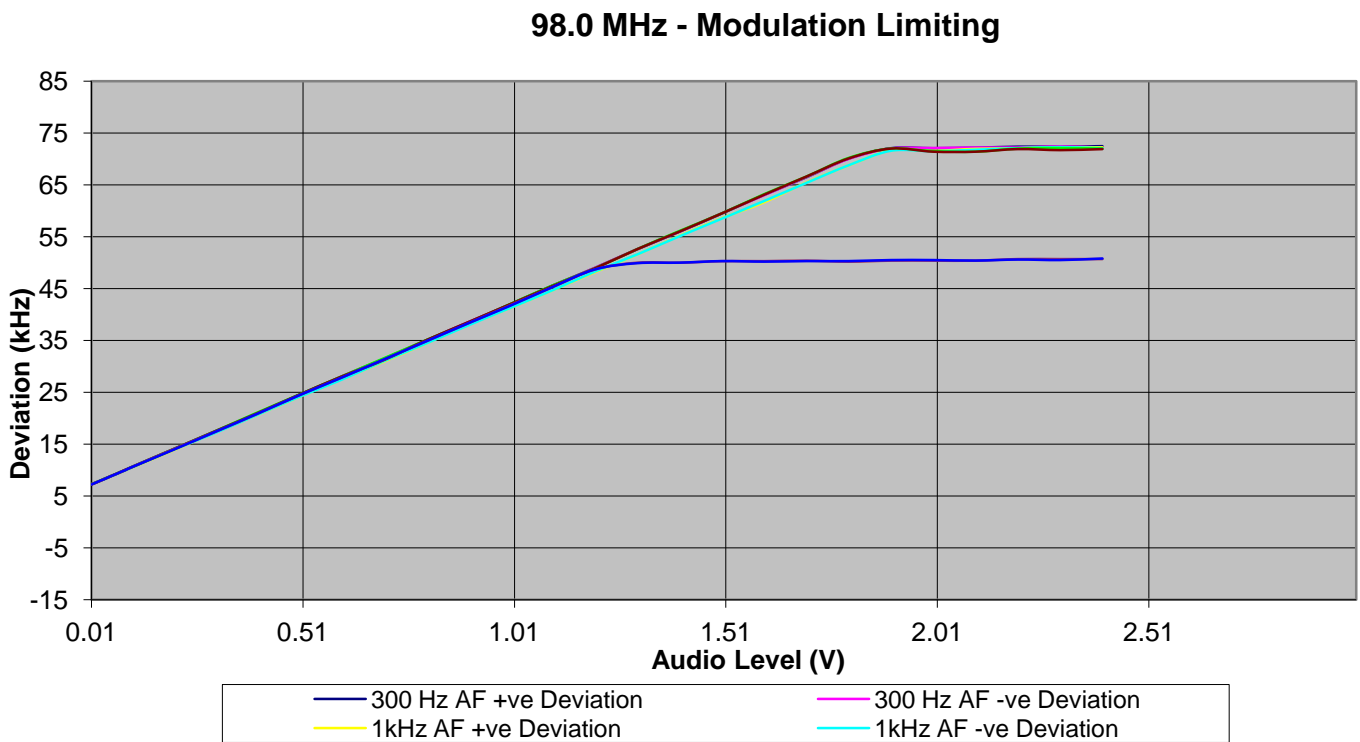
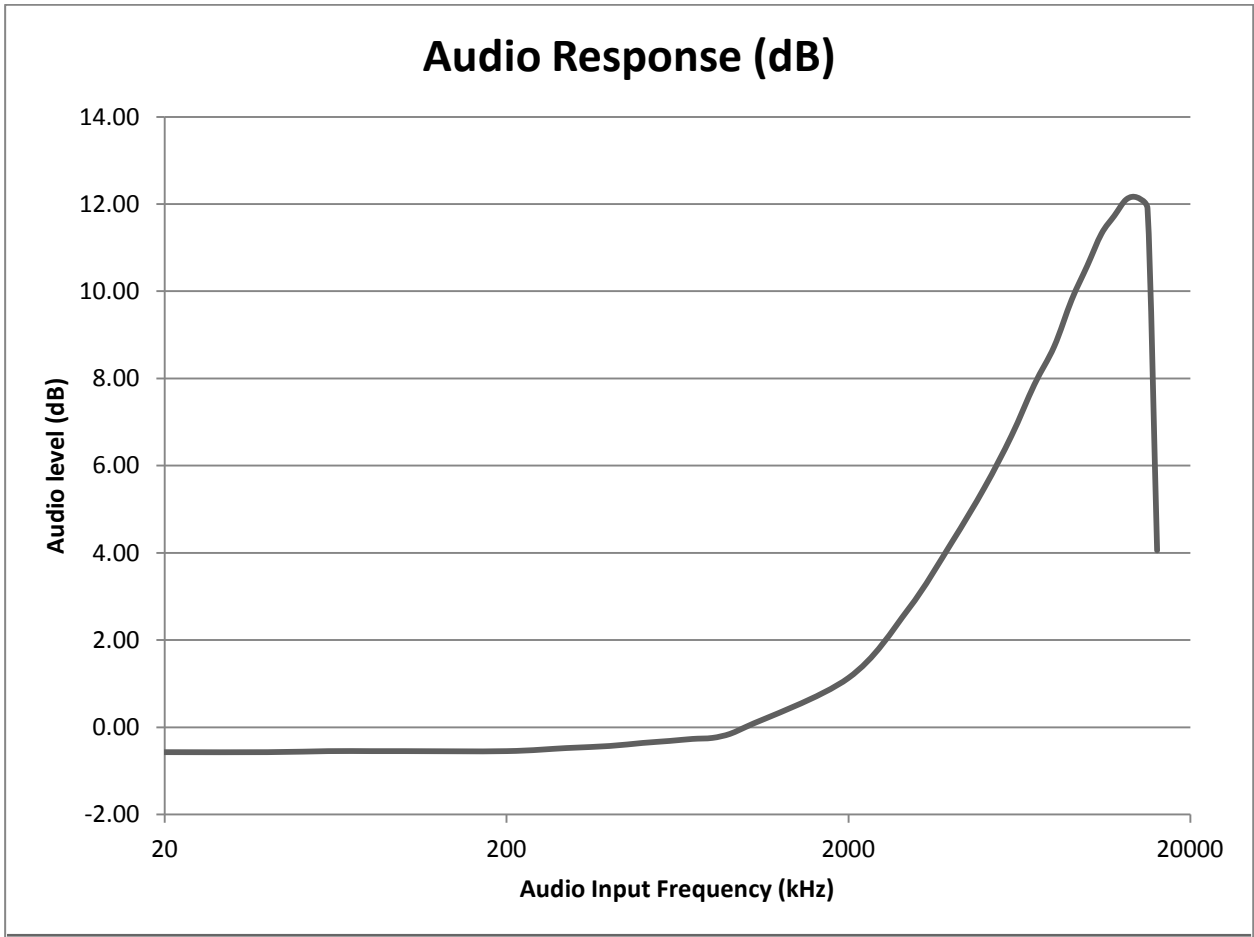
<b>FREQ. (MHz)</b>	<b>Level at CMTA (dBm)</b>	<b>Output Cable and Attenuator Loss (dB)</b>	<b>Conducted Output Power (dBm)</b>	<b>Conducted Output Power (Watts)</b>
88.10	5.10	50.12	55.22	332.65
98.0	5.10	50.17	55.27	336.51
107.90	5.10	50.21	55.31	339.62
<b>AC Voltage 105%</b>			115.5Vac	

**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







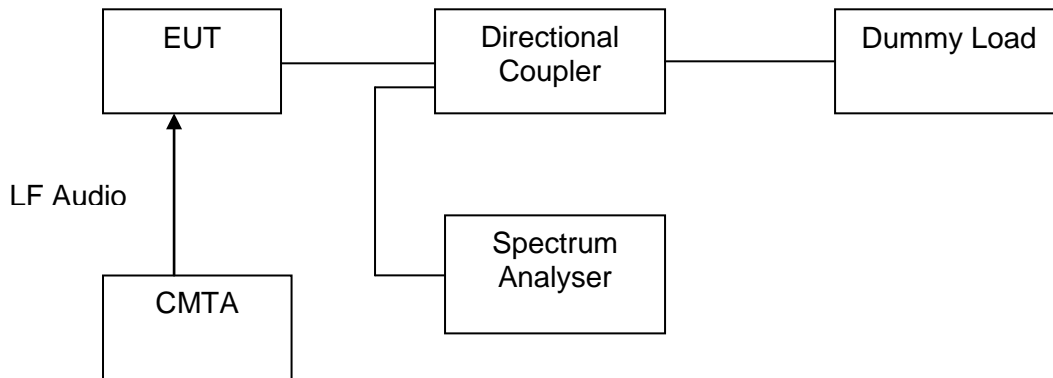
**A3 Emission Mask Plots 2.1049 & 73.317 & BETS-6**

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.

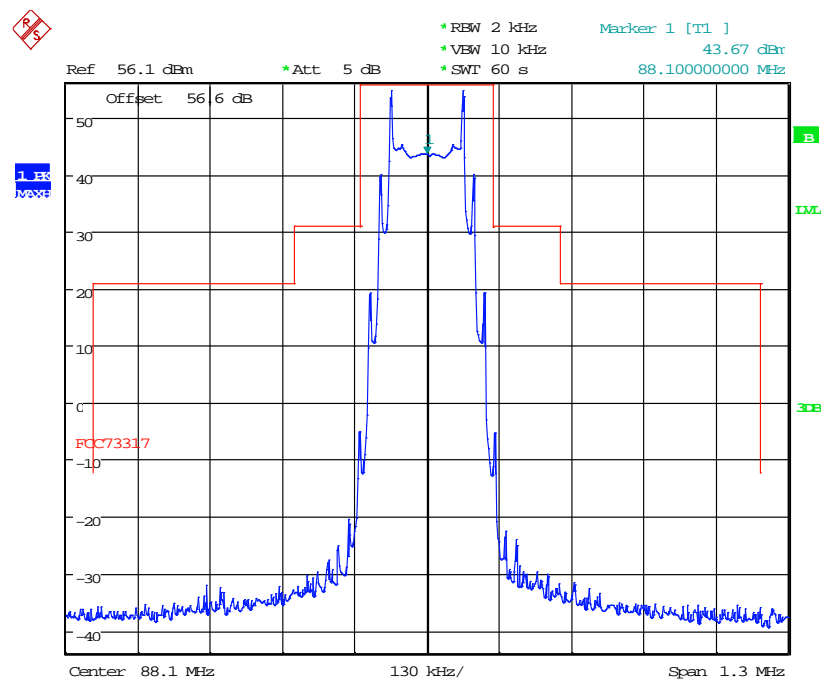
(c) Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz must be attenuated at least 35 dB below the level of the unmodulated carrier.

(d) Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated at least  $43 + 10 \log_{10}(\text{Power, in watts})$  dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.



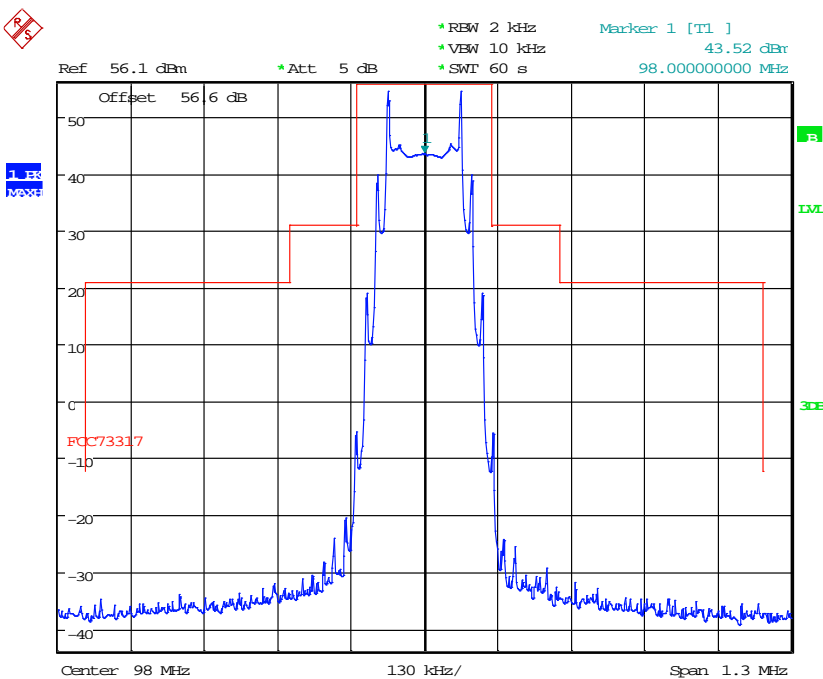
Operating Frequency (MHz)	Audio Frequency Input		
	400Hz	1kHz	15kHz
88.10	Complies with Mask	Complies with Mask	Complies with Mask
98.00	Complies with Mask	Complies with Mask	Complies with Mask
107.90	Complies with Mask	Complies with Mask	Complies with Mask

88.1MHz 400Hz Audio Input



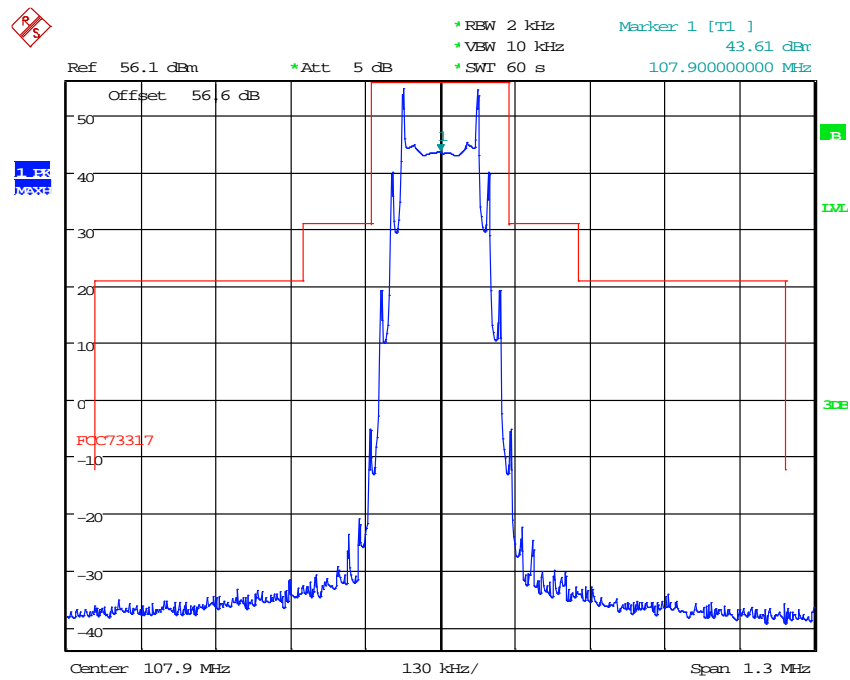
Date: 20.DEC.2013 15:20:31

98.0MHz 400Hz Audio Input



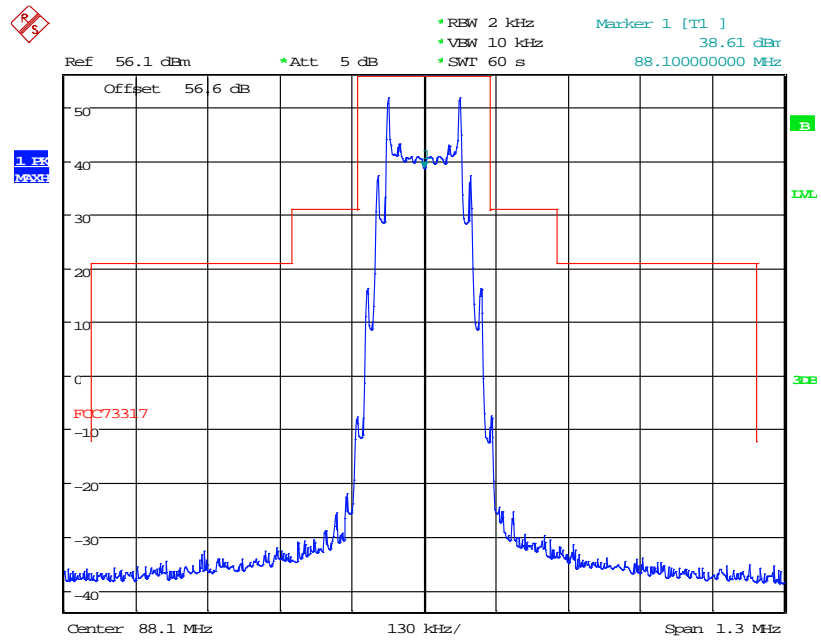
Date: 20.DEC.2013 15:25:09

107.9MHz 400Hz Audio Input



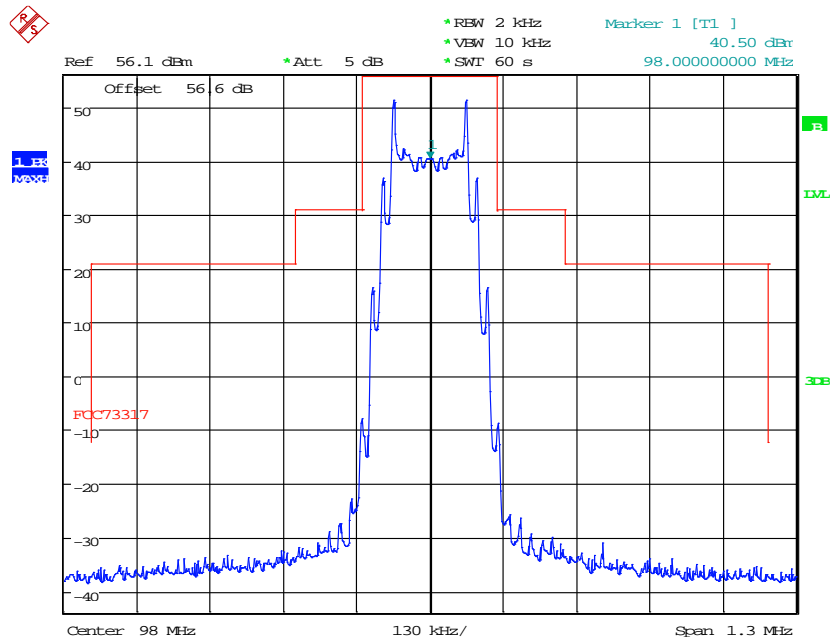
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## 88.1MHz 1.0kHz Audio Input



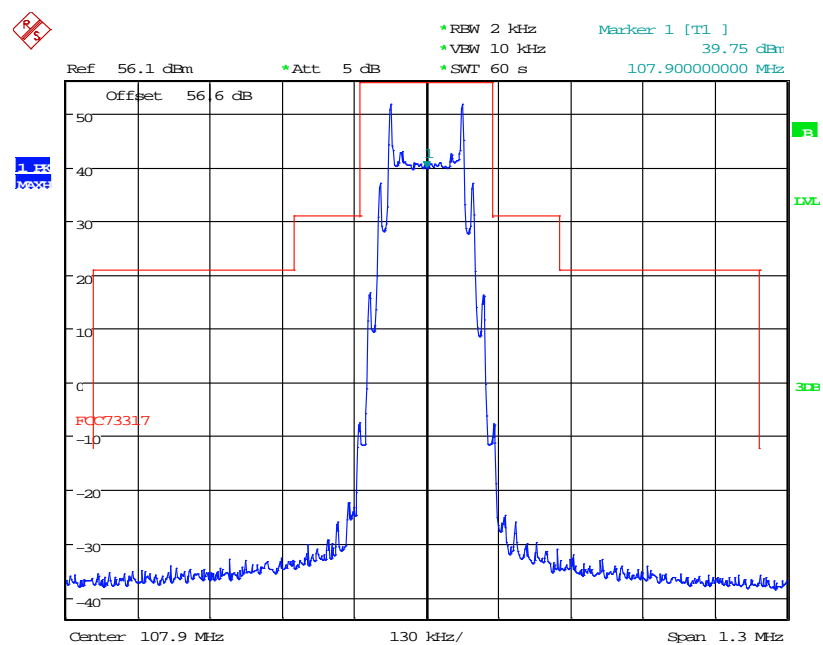
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## 98.0MHz 1.0kHz Audio Input



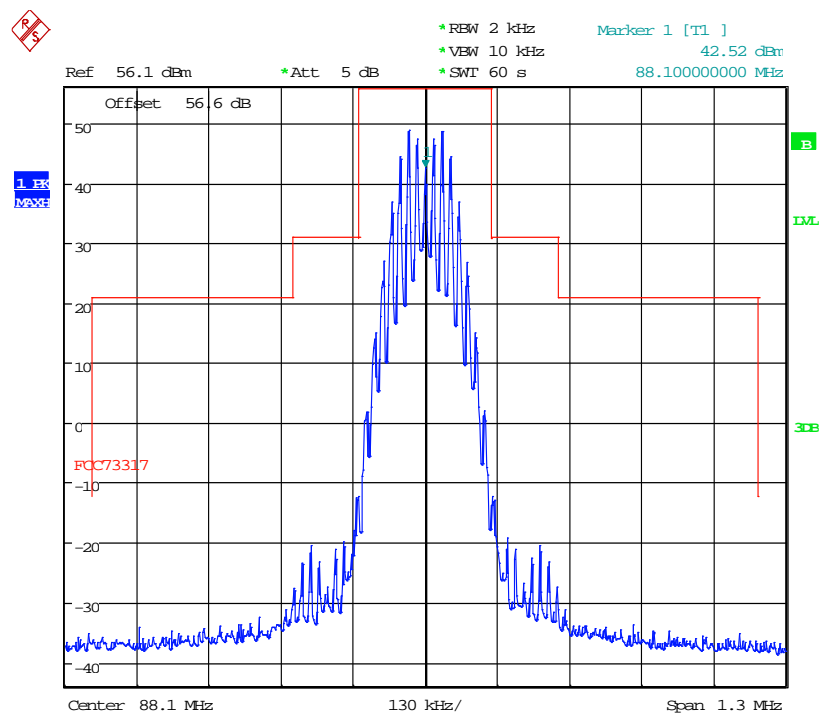
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107.9MHz 1.0kHz Audio Input



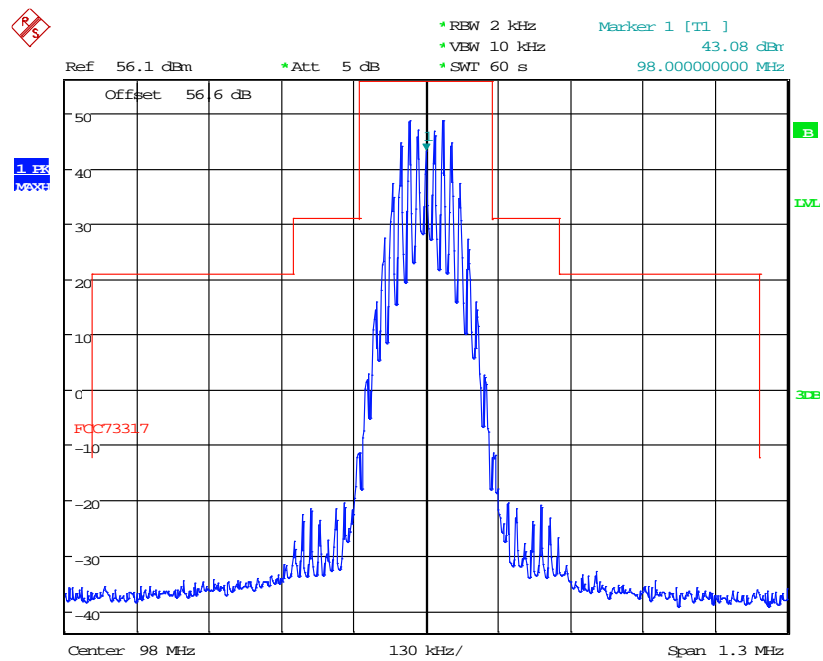
Date: 20.DEC.2013 15:34:17

88.1MHz 15.0kHz Audio Input



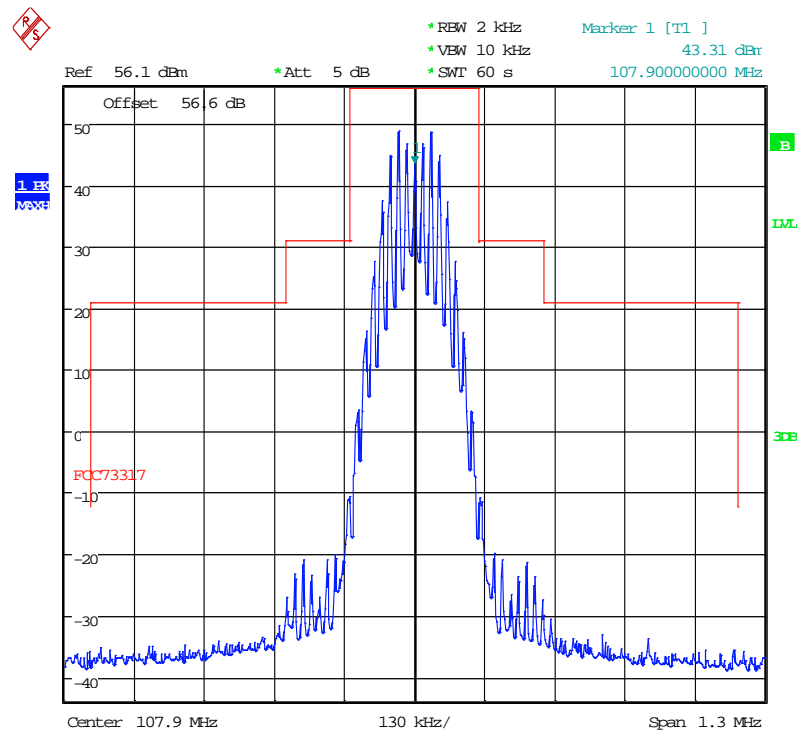
Date: 20.DEC.2013 15:16:43

98.0MHz 15.0kHz Audio Input



Date: 20.DEC.2013 15:29:16

107.9MHz 15.0kHz Audio Input

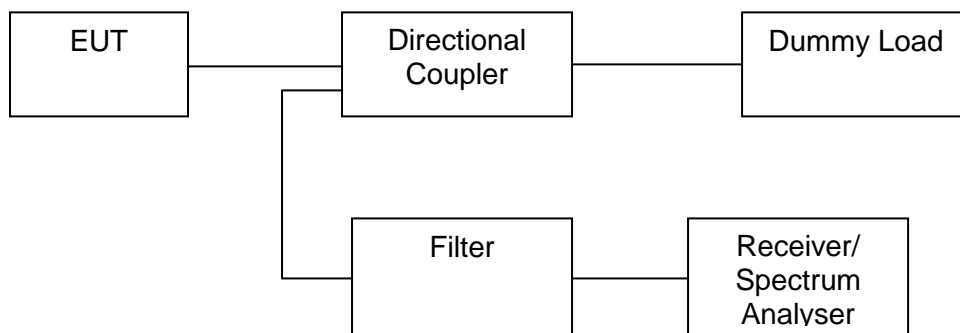


Date: 20.DEC.2013 15:31:36



**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:

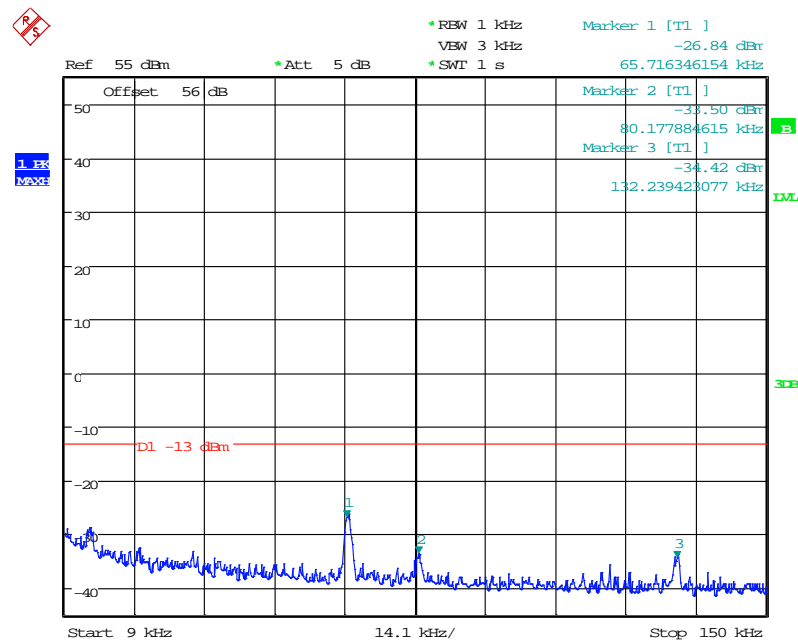
$$\text{At least } 43 + 10 \log \text{ PdB} \\ (10 \log \text{Pwatts}) - (43 + 10 \log (\text{Pwatts} * 1000)) = \text{Limit} = -13 \text{dBm}$$

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
107.90	882.05	-32.00	19.00	-13.0
	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

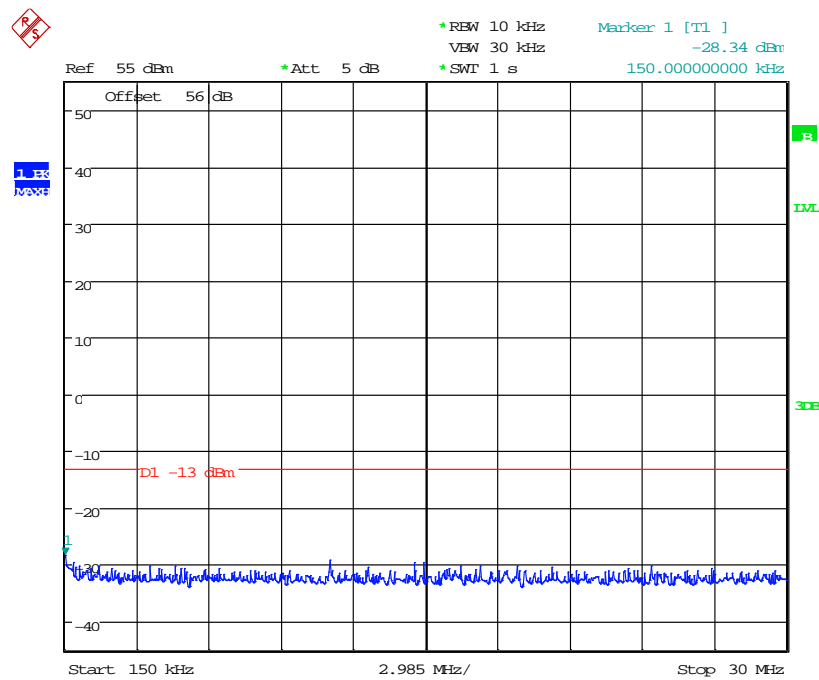
Conducted Emission Plots 88.10MHz

9kHz – 150kHz



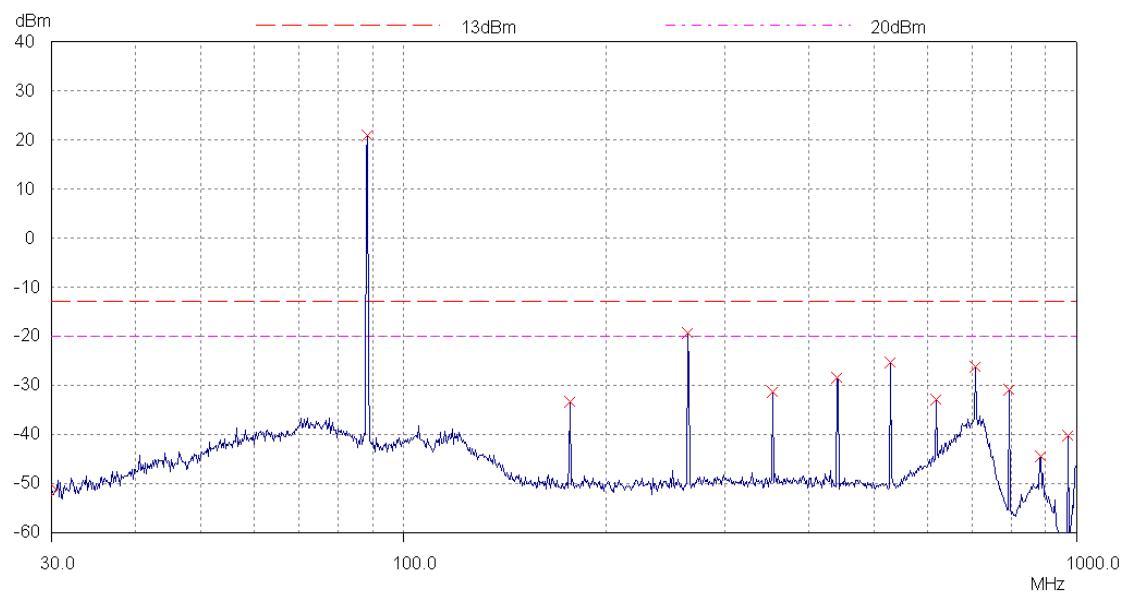
Date: 17.DEC.2013 15:53:59

150kHz – 30MHz



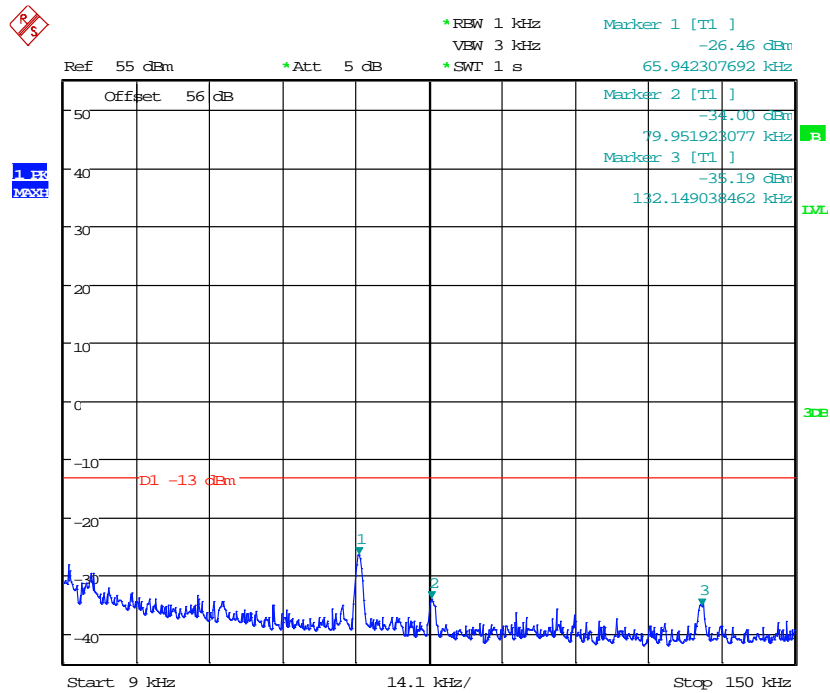
Date: 17.DEC.2013 15:52:29

30MHz -1GHz



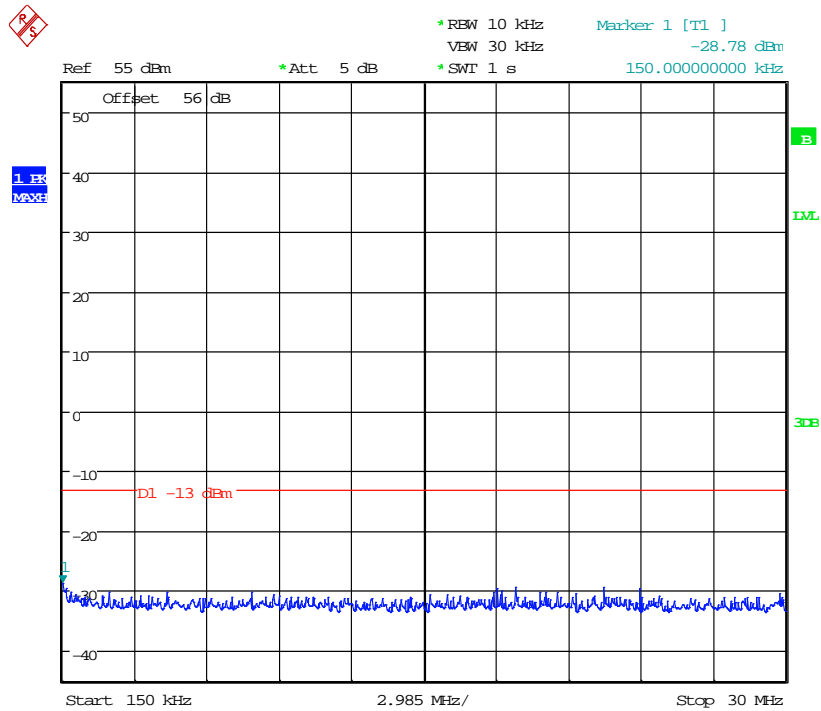
Conducted Emission Plots 98.00MHz

9kHz – 150kHz



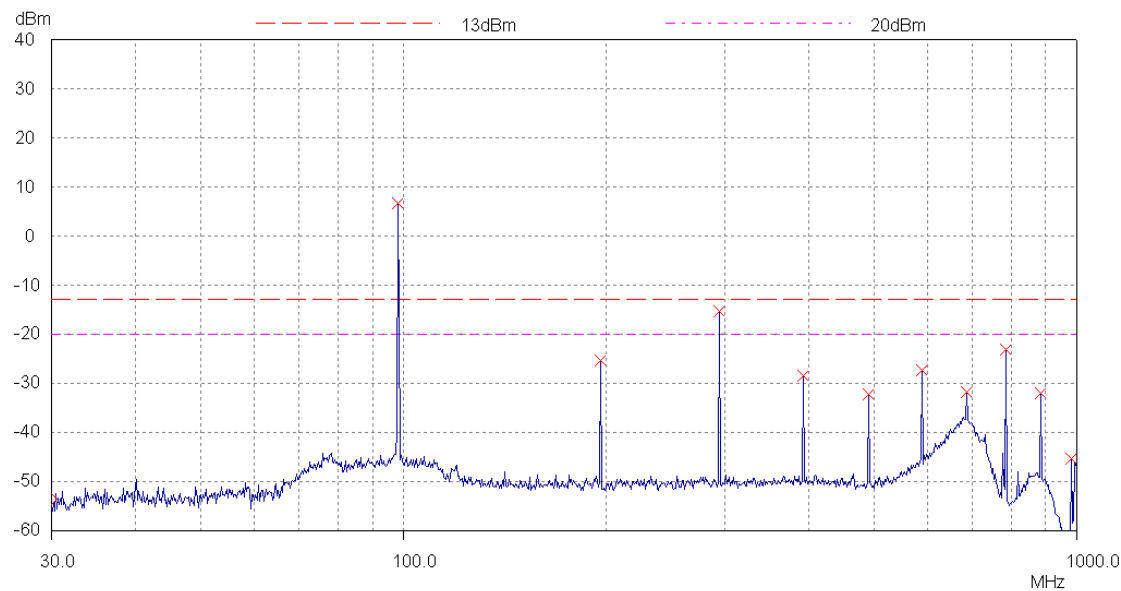
Date: 17.DEC.2013 15:55:46

150kHz – 30MHz



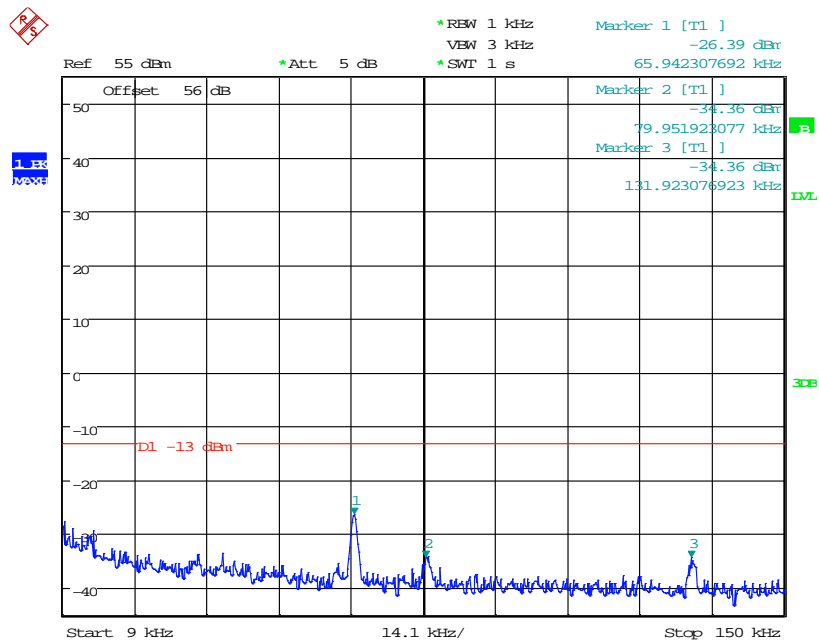
Date: 17.DEC.2013 15:56:26

30MHz -1GHz



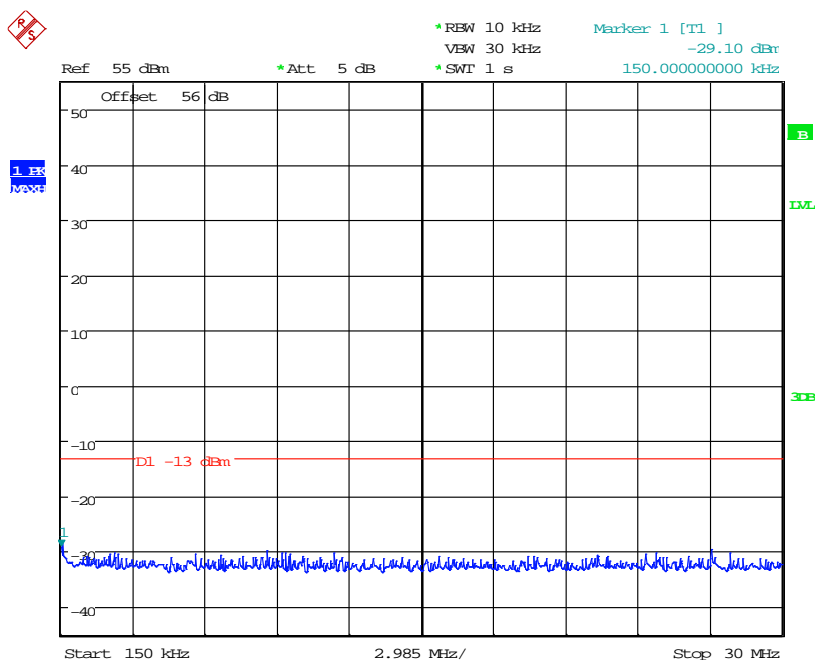
## Conducted Emission Plots 107.9MHz

9kHz – 150kHz



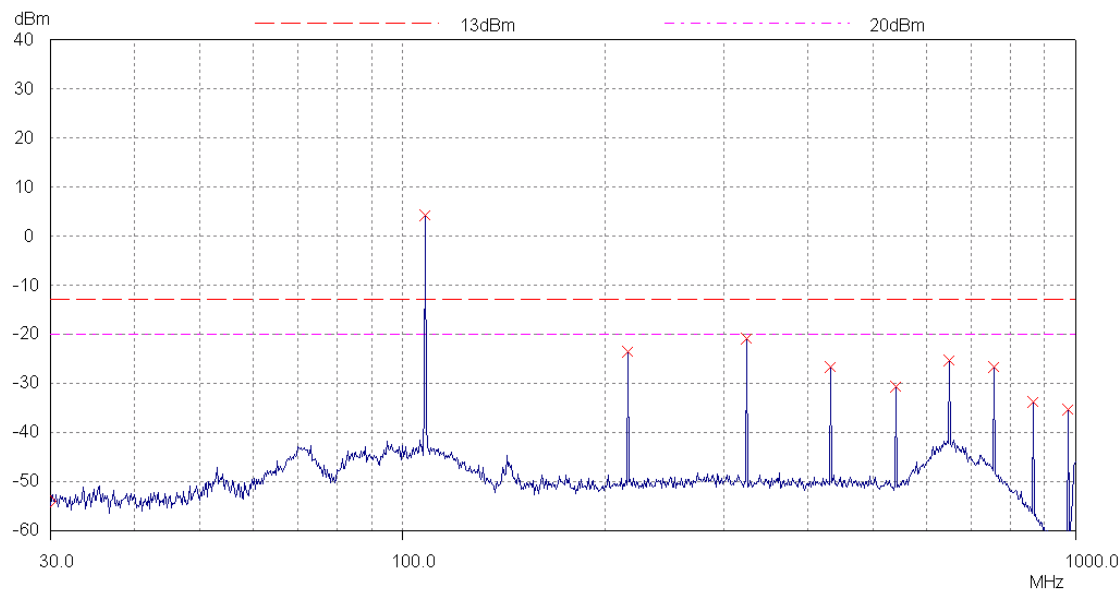
Date: 17.DEC.2013 15:57:56

150kHz – 30MHz

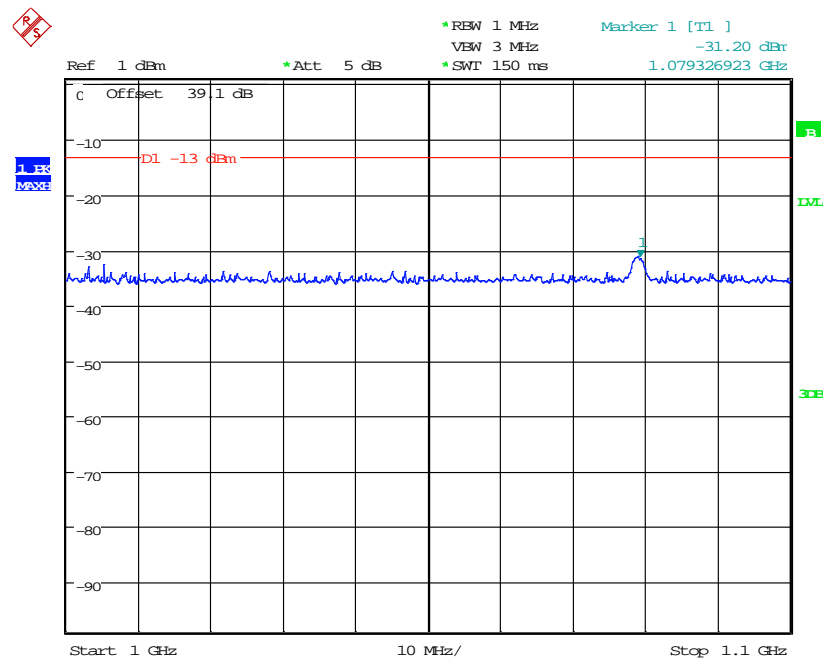


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30MHz -1GHz



1.0GHz – 1.10GHz

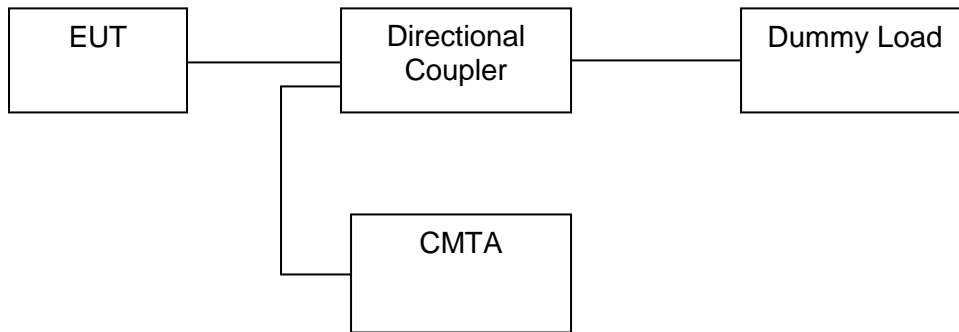


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**A5 Frequency Stability**

<b>Test Details:</b>	
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  $\pm 1\text{kHz}$  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 : ☒

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				

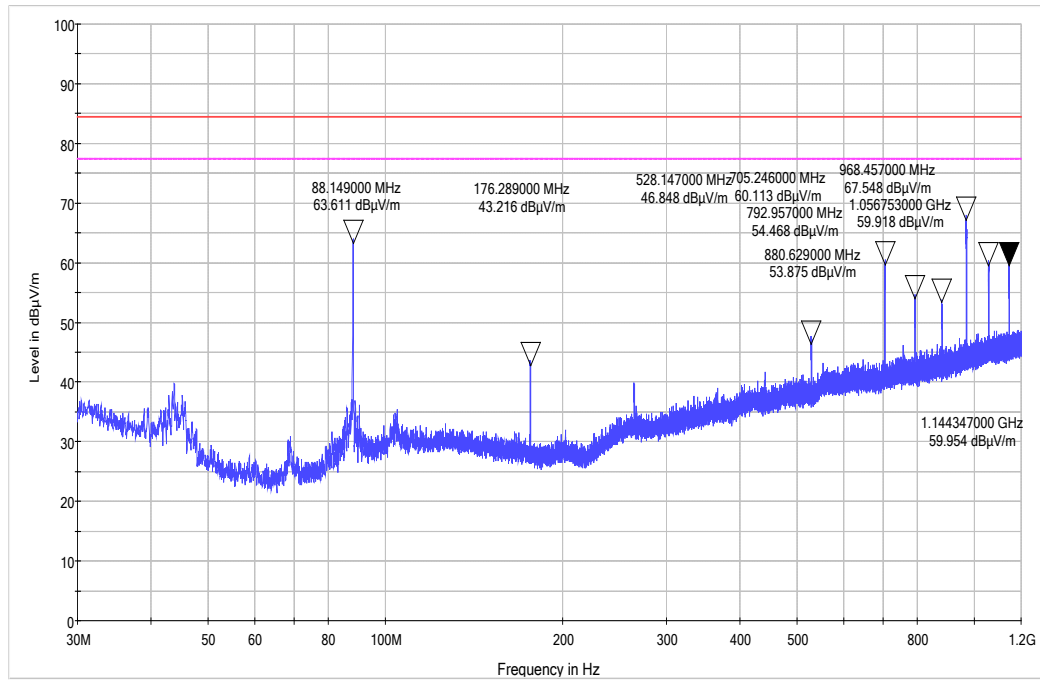
Reference field strength Calculated from the equation:

$$E = 7\sqrt{7P/r} \text{ volts per meter} = 152 \text{ dB}\mu\text{V/m}$$

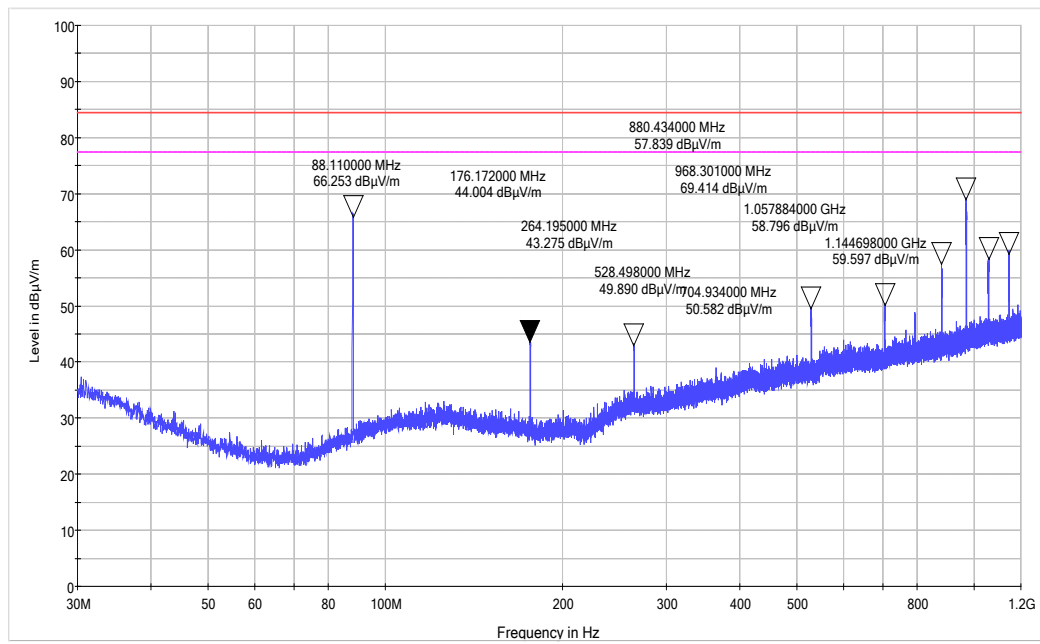
Where P is the rated output power in watts and r is the distance in meters.

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.

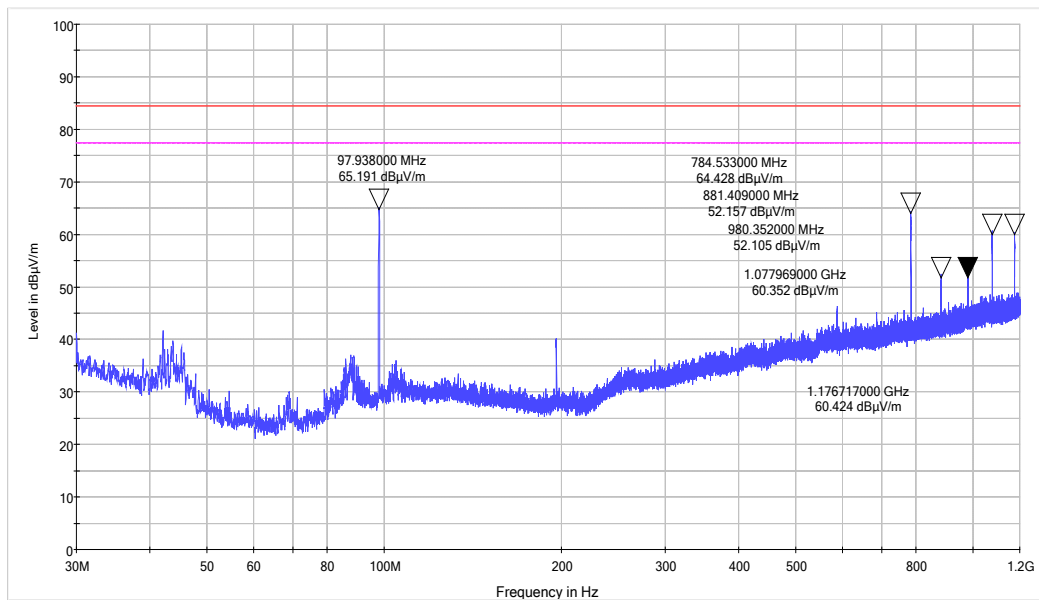
## Tx 88.1MHz vertical



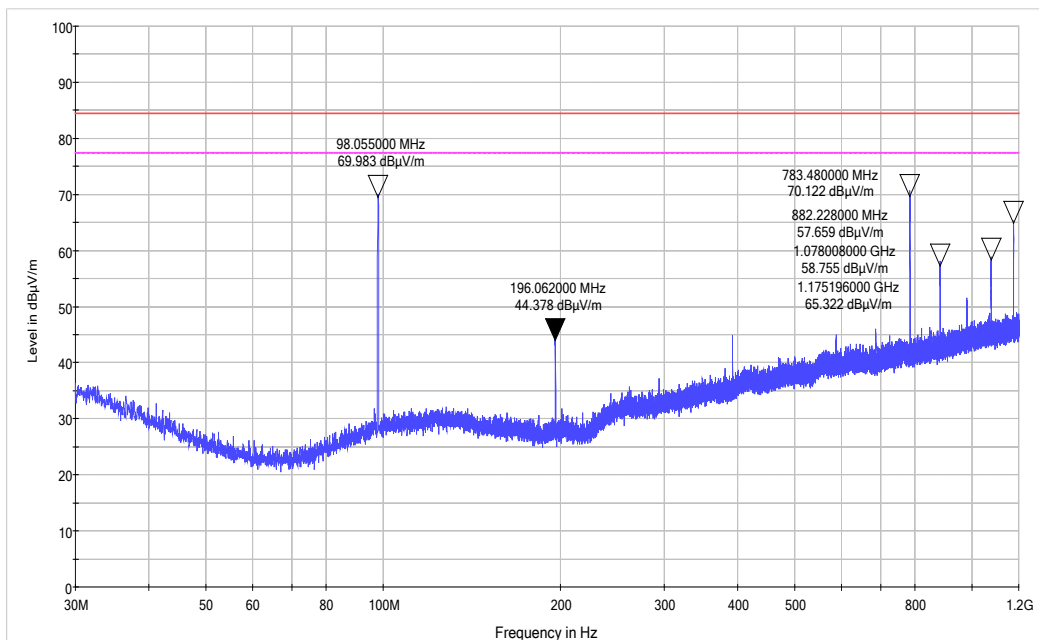
## Tx 88.1MHz Horizontal



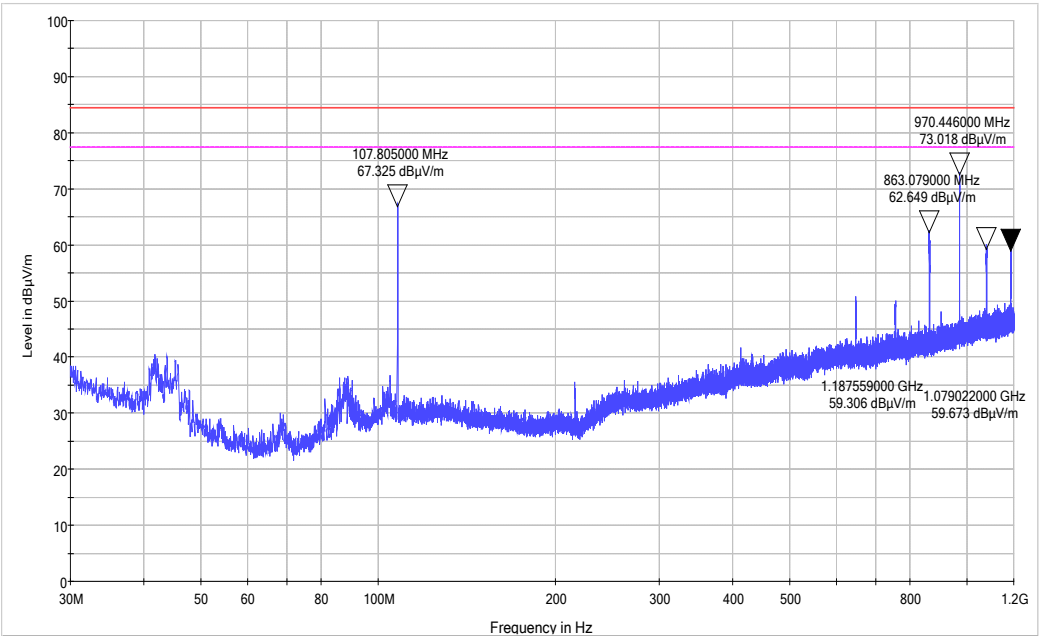
## Tx 98.0MHz Vertical



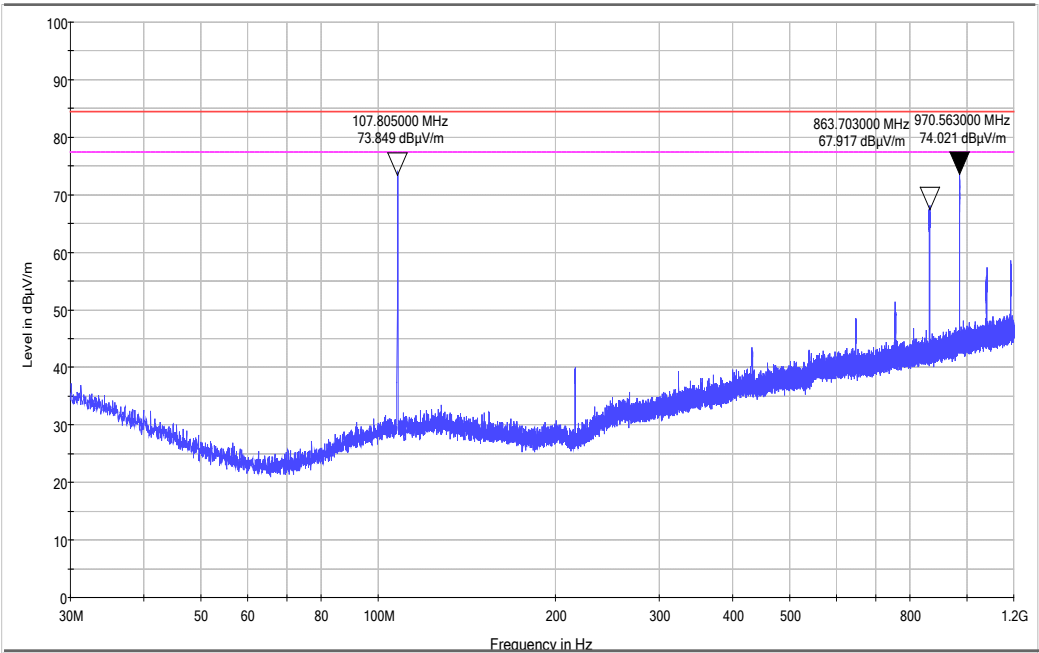
## Tx 98.0MHz Horizontal



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  $\pm 75\text{kHz}$  deviation FM Modulation

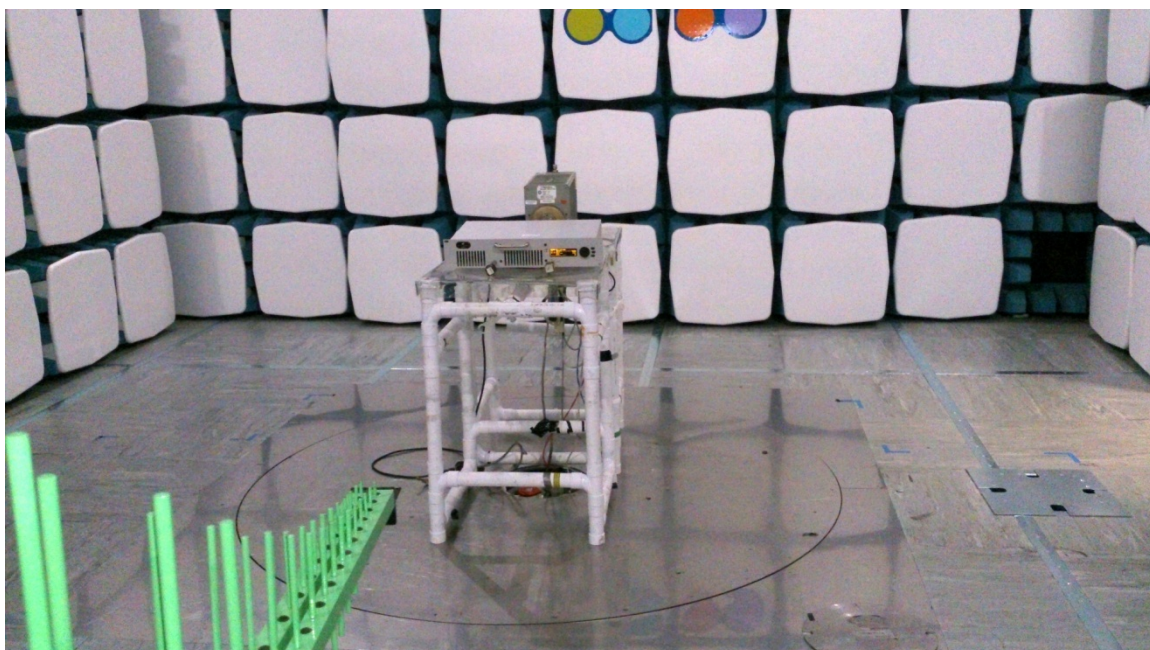
## **Appendix E:**

## **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

