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ELECTROMAGNETIC COMPATIBILITY TEST REPORT

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American Association for Laboratory Accreditation Certificate Number: 3657.02

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Manufacturer:	**Rothenbuhler Engineering**
Address:	524 Rhodes Road, P.O. Box 708 Sedro Woolley WA, 98284 USA
Applicable Test Standards:	47 CRF Parts 2 and 90
Equipment Tested:	**VHF Radios**
Model Number(s):	1200-1 Whistle Transmitter
FCC ID:	CW21200-1
IC Certification Number:	2758A-120001

REVISION HISTORY

Date	Report Number	Details	Author's Initials
February 28, 2020	E11031-1901_Rothenbuhler_12001_FCC, ISED_**Rev-1.1**	Revised	BB
February 12, 2020	E11031-1901_Rothenbuhler_12001_FCC, ISED_**Rev-1.0**	Final	BB
February 11, 2020	E11031-1901_Rothenbuhler_12001_FCC, ISED_**Rev-0.0**	Draft	BB

REPORT AUTHORIZATION

The data documented in this report is for the test equipment provided by Rothenbuhler Engineering for Declaration of Conformity. Tests were performed on the sample equipment as requested by Rothenbuhler Engineering for the purpose of demonstrating compliance to CFR Title 47 FCC Part 2 & 90, RSS–Gen Issue 5 & RSS–119 Issue 12, as agreed upon by Rothenbuhler Engineering as per Quote 19SH04182.

Rothenbuhler Engineering is responsible for the tested product configuration, continued product compliance, and for the appropriate auditing of subsequent products as required. This report may comprise partial list of tests that are required for FCC & ISED Declaration of Conformity and can only be produced by the manufacturer.

This is to certify that the following report is true and correct to the best of our knowledge.

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QAI EMC ACCREDITATION

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TABLE OF CONTENTS

Section I: EXECUTIVE SUMMARY

1.1 Purpose

This report demonstrates and documents the compliance of VHF Radio Device as per Sections 1.2 & 1.3.

1.2 Applicable Standards

The information documented in this report is based on the test methods and levels as per Quote 19SH04182:

- CFR Title 47 FCC Part 90 – Private Land Mobile Radio Services & CFR Title 47 FCC Part 2 – Frequency Allocations and Radio Treaty Matters; General Rules and Regulations:

  - 2.1046/90.205(d) – RF Power Output
  - 2.1047 – Modulation Characteristics
  - 2.1049 – Occupied Bandwidth
  - 90.210(d) – Emission Mask
  - 2.1051/90.210(d) – Spurious Emissions at Antenna Terminals
  - 2.1053/90.210(d) – Field Strength of Spurious Radiation
  - 2.1055/90.213 – Frequency Stability
  - 90.209(b)(5) – Bandwidth Limitations
  - 90.214 – Transient Frequency Behavior

- RSS 119 Issue 12 – Land Mobile and Fixed Equipment Operating in the Frequency Range 27.41–960 MHz

  - 5.3 – Frequency Stability
  - 5.4 – Transmitter Output Power
  - 5.5 – Channel Bandwidth, Authorized Bandwidth, Occupied Bandwidth and Spectrum Masks
  - 5.8 – Transmitter Unwanted Emissions Conducted & Radiated
  - 5.9 – Transient Frequency Behavior

1.3 Summary of Results

Standards/Specification: FCC Part 2 & Part 90, ISED RSS–Gen & RSS–119 Issue 12

No.	Test Description	Standard Clause	Result
3.1	RF Output Power/Peak Power	CFR Title 47 FCC 2.1046/90.205(d), RSS–119 Issue 12 (5.4)	PASS
3.2	Bandwidth Limitations	CFR Title 47 FCC 90.209(b)(5)	PASS
3.3	Occupied Bandwidth	CFR Title 47 FCC 2.1049, RSS–119 Issue 12 (5.5)	PASS
3.4	Spectrum Mask	CFR Title 47 FCC 90.210(d), RSS–119 Issue 12 (5.5)	PASS
3.5	Spurious Emissions at Antenna Port (Conducted)	CFR Title 47 FCC 2.1051/90.210(d), RSS–119 Issue 12 (5.8)	PASS
3.6	Frequency Stability	CFR Title 47 FCC 2.1055/90.213, RSS–119 Issue 12 (5.3)	PASS
3.7	Transient Frequency Behavior	CFR Title 47 FCC 90.214, RSS–119 Issue 12 (5.9)	PASS
3.8	Modulation Characteristics	CFR Title 47 FCC 2.1047	PASS
3.9	Field Strength of Spurious Emissions (Radiated)	CFR Title 47 FCC 2.1053/90.210(d), RSS–119 Issue 12 (5.5)	PASS

1.4 Applicable Test Methods

ANSI C63.4-2003	– Methods Of Measurement Of Radio-Noise Emissions From Low-Voltage Electrical And Electronic Equipment In The Range Of 9 kHz To 40 GHz
ANSI C63.10-2013	– American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
ANSI TIA 603E-2016	– Land Mobile FM or PM – Communications Equipment – Measurement and Performance Standards
CISPR 32:2015/AMD1:2019 V2.1	– Electromagnetic compatibility of multimedia equipment - Emission requirements

Section II: GENERAL INFORMATION

2.1 Product Description

The information provided in this section is for the Equipment Under Test (EUT) and the corresponding Auxiliary Equipment needed to perform the tests as a complete system.

EUT	
Functional Description	VHF Radios
Model	Model 1200–1 Whistle Transmitter
FCC ID	Original Product: CW21200–1
IC Certification Number	Original Product: 2758A–120001
Manufacturer	Rothenbuhler Engineering
Operating Frequency Range	Part 90 frequencies in 150 – 174 MHz range
As Tested Frequency	150.815, 161.875, 161.9625, 173.375 MHz
Transmit Power	500mW
Channel Spacing	12.5 kHz
Data Rate	8000 bps
Modulation Type	GMSK 8000 bps or Analog Voice (transmissions not simultaneous)
Emission Designation	
Modes of Operation	High Power (TX.HP) – Whistle Mode (GMSK data) and Voice/Microphone Low power (TX.LP) – as per TX.HP with 25% duty cycle Standby – No TX, Battery powered to detect switch closure only *1
Antenna Type	Integral antenna trace, folded dipole

Notes: *1 This mode of operation is not within scope of this report, see unintentional radiator report

Equipment Under Test (EUT)

Auxiliary Equipment	Charging unit with AC/DC power adapter included with product
Model Number	
Input	
Output	

2.2 Environmental Conditions

The equipment under test was operated and tested under the following environmental conditions:

Parameter	Conditions
Location	Indoors
Temperature	22.5ºC
Relative Humidity	32%
Atmospheric Pressure	101 kPa

2.3 Measurement Uncertainty

Parameter	Uncertainty
Radiated Emissions, 30MHz-1GHz	± 2.40 dB
Radiated Emissions, 1GHz-40GHz	± 2.48 dB
Conducted Emissions, 0.15MHz-30MHz	± 2.82 dB
Radio Frequency	±1.5 x 10-5 MHz
Total RF Power Conducted	±1.36 dB
Spurious Emissions, Conducted	±1.36 dB
RF Power Density, Conducted	±1.36 dB
Temperature	±1ºC
Humidity	±5 %
DC and low frequency voltages	±3 %

2.4 Worst Test Case

Worst-case orientation was determined during the preliminary testing.
The final radiated emissions were performed in the worst-case orientation.

2.5 Sample Calculations of Emissions Data

Radiated and conducted emissions were performed using EMC32 software developed by Rohdes & Schwarz. Transducer factors like Antenna factors, Cable Losses and Amplifier gains were stored in the test templates which are used to perform the emissions measurements. After test is finished, data is generated from the EMC32 consisting of product details, emission plots and final data tables as shown below.

Frequency (MHz)	Q-Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Ant. Ht. (cm)	Pol	Turntable Position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
42.663900	33.0	1000.000	120.000	100.0	H	70.0	13.2	7.5	40.5

Quasi-Peak reading shown in the table above is already corrected by the software using correction factor shown in column "Corr." The correction factor listed under "Corr." table calculated as:

Corr.(dB) = Antenna factor + Cable loss

Or

Corr.(dB) = Antenna factor + Cable Loss - Amp gain (if pre-amplifier was used)

The final Quasi peak reading shown in the data is calculated by the software using following equation:

Corrected Quasi-Peak (dBµV/m) = Raw Quasi-Peak Reading + Antenna factor + Cable loss

To obtain the final Quasi-Peak or Average reading during power line conducted emissions, transducer factors are included in the final measurement as shown below.

Frequency (MHz)	Q-Peak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150	44.3	1000.000	9.000	GND	0.6	21.7	66.0

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150	27.2	1000.000	9.000	GND	0.6	28.8	56.0

Quasi Peak or Average reading shown in above table is already corrected by the software using the correction factor shown in column "Corr." The correction factor listed under "Corr." table calculated as:

Corr.(dB) = Antenna factor + Cable loss

The final Quasi-peak or Average reading shown in the data is calculated by the software using following equation:

Corr. Quasi-Peak/Average Reading (dBµV) = Raw Quasi-Peak/Average Reading + Antenna factor + Cable loss

The allowable margin from the limits, as per the standards, were calculated for both radiated and conducted emissions:

Margin(dB) = Limit – Quasi-Peak or Average reading

2.6 Test Equipment

The tables below contain all the equipment used by QAI Laboratories in conducting all tests on the Equipment Under Test (EUT) as per Section 1.

Emissions Test Equipment

Sl. NO.	Manufacturer	Model	Description	Serial No.	S/W Version	Calibration Due Date
1	Sunol Sciences	SM46C	Turntable	051204-2	N/A	N/A
2	Sunol Sciences	TWR95	Mast	TREML0001	N/A	N/A
3	Sunol Sciences	JB3	Biconilog Antenna 30MHz – 2GHz	A120106	N/A	2022 May 10
4	Sunol Sciences	JB3	Biconilog Antenna 30MHz – 2GHz	02052019A	N/A	2022 May 10
5	Sunol Sciences	JB1	Biconilog Antenna 30MHz – 2GHz	A070209	N/A	2020 Aug 17
6	Sunol Sciences	DRH-118	Horn Antenna 1GHz-18GHz	A050905	N/A	2020 Aug 17
7	ETS Lindgren	2165	Turntable	00043677	N/A	N/A
8	ETS Lindgren	2125	Mast	00077487	N/A	N/A
9	Rohde & Schwarz	ESU40	EMI Receiver	100011	EMC32 v10.35.10/ FV 4.73 SP4	2020-Dec-01
10	EMCO	3825/2	LISN (150kHz-30MHz)	9002-1601	N/A	2020-Aug-25
11	ETS Lindgren	S201	5-meter Semi-Anechoic Chamber	1030	N/A	N/A
12	AH Systems	PAM118	Amplifier (10KHz-18GHz)	189	N/A	Conditional Use
13	California Instruments	PACS-1	Harmonics and flicker analyzer	52117	CTS3.0 v3.2.0.35	2020-May-23
14	California Instruments	OMNI 1-18 I	Programmable Impedance Flicker test	--	N/A	2020-May-23
15	California Instruments	3001ix	Power supply	HK52117	N/A	2020-May-23

Note: Equipment listed above have 3 years calibration interval.

Measurement Software List

Sl. No.	Manufacturer	Model	Version	Description
1	Rhode & Schwarz	EMC 32	6.20.0	Emissions Test Software
2	VI Automation	Via EMC Immunity Executive	1.0.308	Radiated and Conducted Immunity Test Program
3	TESEQ	WIN 3000	1.2.0	Surge, EFT & Voltage Dips Immunity Test Program
4	Thurlby Thandar Instruments	HA-PC Link Version	2.02	Harmonics and Flicker Test Program

Section III: DATA & TEST RESULTS

3.1 RF Output Power/Peak Power

Date Performed: January 20, 2020
Test Standard: CFR Title 47 FCC 2.1046 & 90.205(d), RSS – 119 Issue 12 (5.4)
Test Method: As per Section 1.1 of this report
Modifications: No modification of the EUT was required.

Result: The EUT complies with the applicable clause.

Required Limit: Manufacturer has declared conducted RMS Output Power of +27dBm or 500mW.
Output power shall be less than 30W ERP or as governed by system requirements.
Output power shall be within ±1.0 dB of the manufacturer's rated power.
Output power shall be less than +30dBm or 1W.

1200–1 Whistle Transmitter

Frequency MHz	Temperature	Output DATA dBm	Output CW dBm	Output 2KHz Tone dBm	Limit Part 90.205(d) dBm	Result
150.815	25C	27.8	27.9	27.7	30.0	PASS
161.875	25C	27.8	27.7	27.6	30.0	
161.9625	25C	27.9	27.8	27.7	30.0	PASS
173.375	25C	27.8	27.6	27.8	30.0	PASS

Note: The maximum measured output power is 27.9 dBm.

3.2 Bandwidth Limitations

Date Performed:	January 20, 2020
Test Standard:	CFR Title 47 FCC 90.209(b)(5) – Bandwidth Limitations
Test Method:	As per Section 1.1 of this report
Modifications:	No modification of the EUT was required.
Result:	The EUT complies with the applicable clause.

Channel spacing and authorized bandwidths compliance are demonstrated by compliance with the specified emission mask.

3.3 Occupied Bandwidth

Date Performed:	January 20, 2020
Test Standard:	CFR Title 47 FCC 2.1049, RSS–119 Issue 12 (5.5) – Occupied Bandwidth
Test Method:	As per Section 1.1 of this report
Modifications:	No modification of the EUT was required.
Result:	The EUT complies with the applicable clause.

The occupied bandwidth requirements compliance is demonstrated by compliance with the specified emission mask.

3.4 Spectrum Mask

Date Performed: January 20, 2020
Test Standard: CFR Title 47 FCC 90.210(d), RSS–119 Issue 12 (5.5) – Spectrum Mask
Test Method: As per Section 1.1 of this report
Modifications: No modification of the EUT was required.
Result: The EUT complies with the applicable clause.

Required Limit:

(d) Emission Mask D – 12.5 kHz channel bandwidth equipment. For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency from the center of the authorized bandwidth f0 to 5.625 kHz removed from f0: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least 7.27(fd−2.88 kHz) dB.

Emission Mask D for Transmitters Equipped With or Without an Audio Low–Pass Filter

Emission Mask D		
Displacement Frequency, f_d (kHz)	**Minimum Attenuation (dB)**	**Resolution Bandwidth - RBW**
$5.625 < f_d \leq 12.5$	$7.27(f_d - 2.88)$	100 Hz
$f_d > 12.5$	Whichever is the lesser: 70 or $50 + 10 \log_{10}(P)$	100 kHz < 1 GHz 1 MHz > 1 GHz

Note: The power of any emission shall be attenuated below the transmitter output power P of 1W as specified.

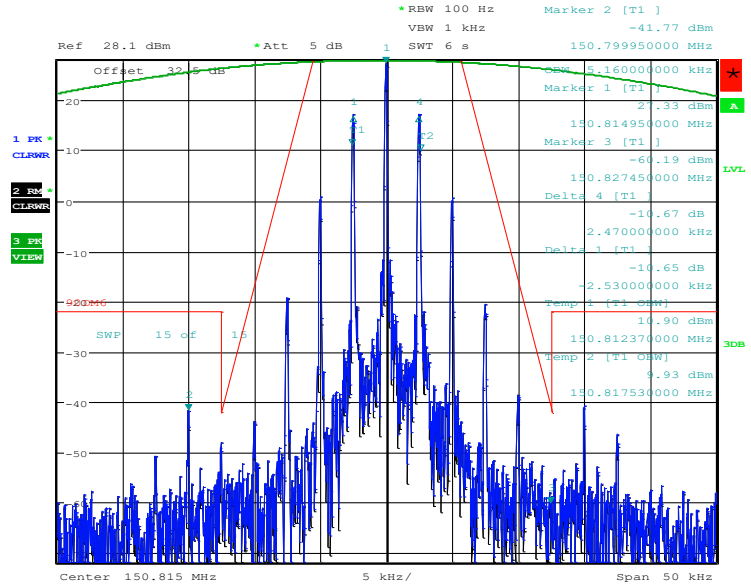


Figure 3.4.1 – Emission Mask D – 150.0815 MHz – FM 2500 Hz

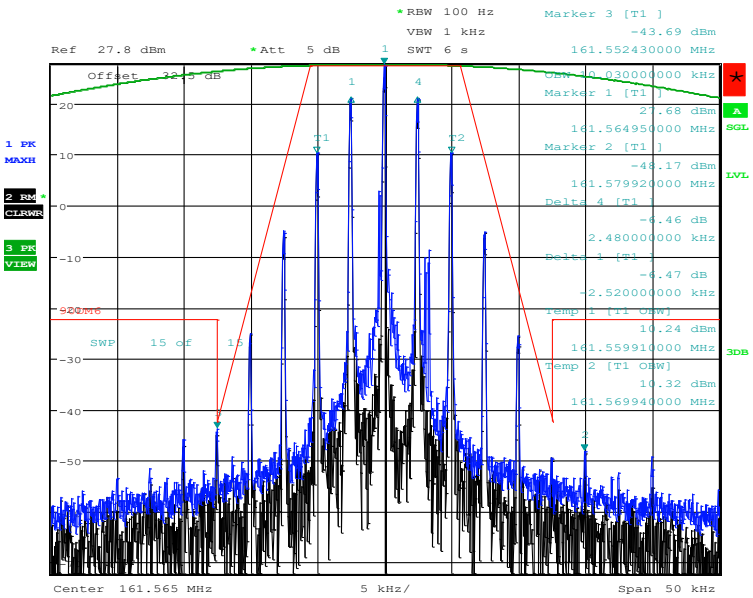


Figure 3.4.2 – Emission Mask D – 161.565 MHz – FM 2500 Hz

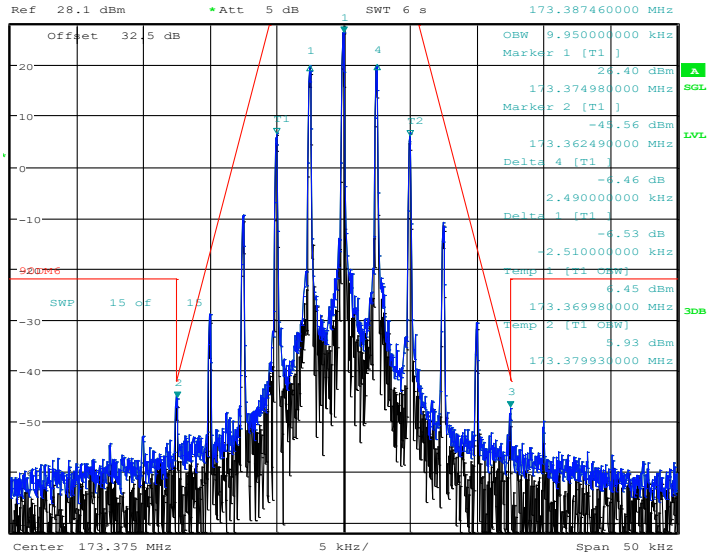


Figure 3.4.3 – Emission Mask D – 173.375 MHz – FM 2500 Hz

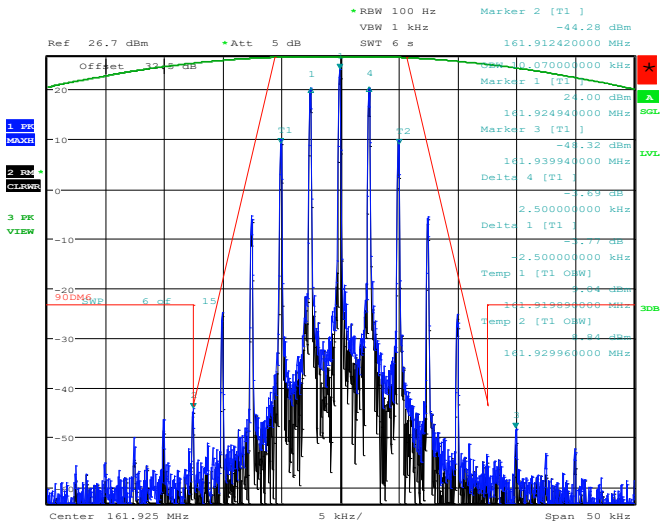


Figure 3.4.4 – Emission Mask D – 161.925 MHz – FM 2500 Hz

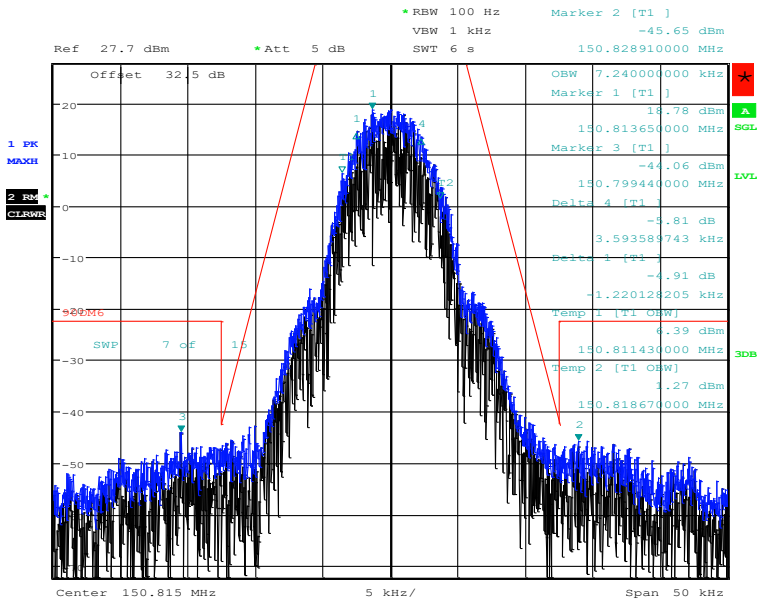


Figure 3.4.5 – Emission Mask D – 150.815 MHz – FM Data

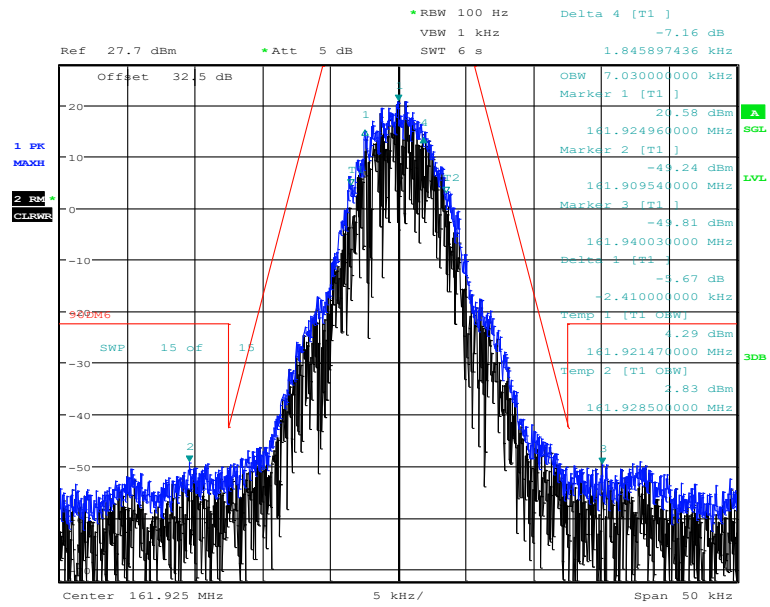


Figure 3.4.6 – Emission Mask D – 161.925 MHz – FM Data

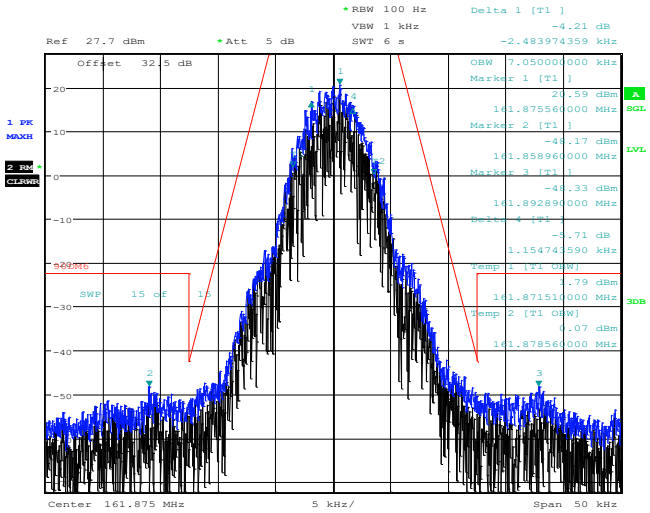


Figure 3.4.7 – Emission Mask D – 161.875 MHz – FM Data

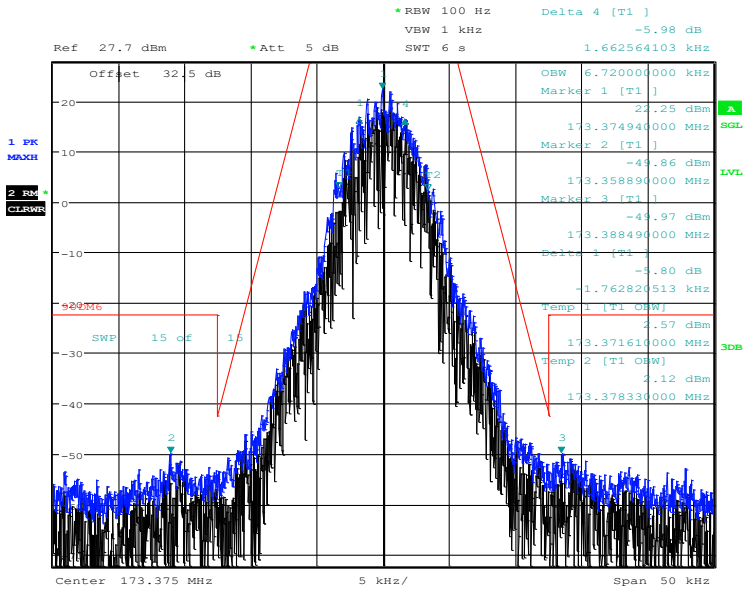


Figure 3.4.8 – Emission Mask D – 173.375 MHz – FM Data

3.5 Spurious Emissions at Antenna Terminals (Conducted)

Date Performed: January 14, 2020
Test Standard: CFR Title 47 FCC 2.1051/90.210(d), RSS–119 Issue 12 (5.8) – Spurious Emissions at Antenna Terminals (Conducted)
Test Method: As per Section 1.1 of this report
Modifications: No modification of the EUT was required.

Result: The EUT complies with the applicable clause.

Required Limit:

(d) Emission Mask D – 12.5 kHz channel bandwidth equipment. For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

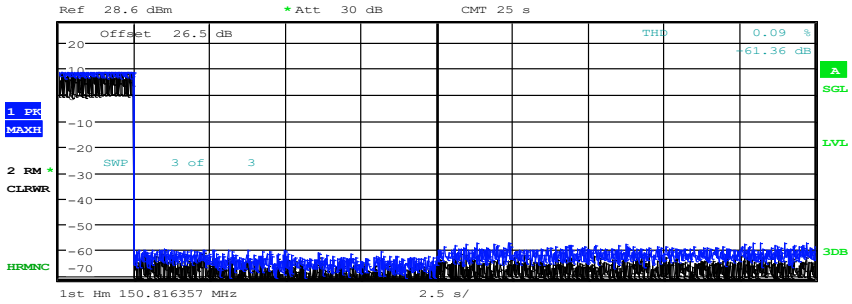
(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5 kHz: At least 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuation.

Emission Mask D for Transmitters Equipped With or Without an Audio Low Pass Filter

Displacement Frequency, f_d (kHz)	Minimum Attenuation (dB)	Resolution Bandwidth RBW
$f_d > 12.5$	Whichever is the lesser: 70 or 50 + 10 $\log_{10}$(P)	100kHz < 1GHz 1MHz > 1GHz

Note: The power of any emission shall be attenuated below the transmitter output power P of 1W as specified.

Measurement Data:



No	Frequency	RBW	Power
1	150.82 MHz	20 Hz	8.09 dBm
2	301.63 MHz	50 Hz	-70.76 dBc
3	452.45 MHz	100 Hz	-72.72 dBc
4	603.27 MHz	100 Hz	-73.45 dBc
5	754.08 MHz	100 Hz	-73.81 dBc
6	904.90 MHz	200 Hz	-69.78 dBc
7	1.06 GHz	200 Hz	-70.20 dBc
8	1.21 GHz	200 Hz	-70.06 dBc
9	1.36 GHz	200 Hz	-70.01 dBc
10	1.51 GHz	200 Hz	-69.70 dBc

Figure 3.5.1 – Conducted Spurious Emissions – Harmonics – Typical

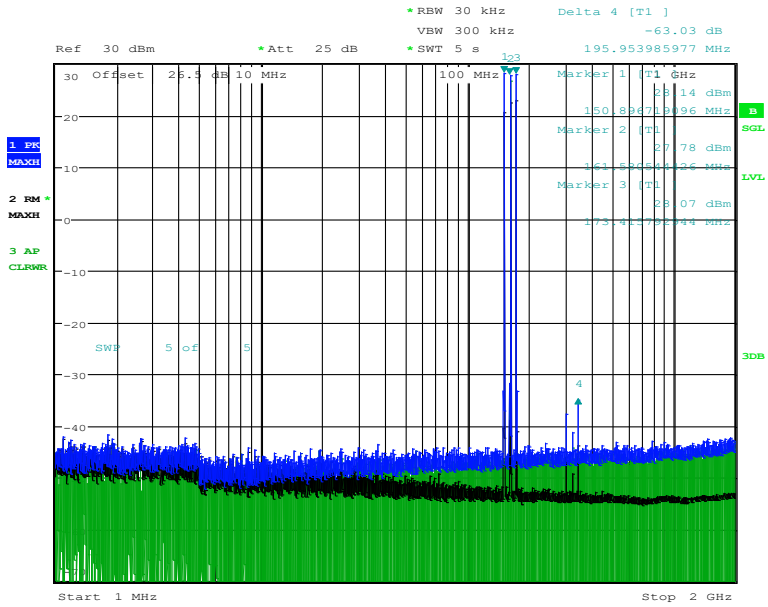


Figure 3.5.2 – Conducted Spurious Emissions – 100k-2G Hz – Worst-case

3.6 Spurious Emissions at Antenna Terminals (Conducted)

Date Performed: January 14, 2020
Test Standard: CFR Title 47 FCC 2.1055/90.213, RSS–119 Issue 12 (5.3) – Frequency Stability
Test Method: As per Section 1.1 of this report
Modifications: No modification of the EUT was required.
Result: The EUT complies with the applicable clause.

Required Limit:

In the 150-174 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth or designed for low-power operation of two watts or less, must have a frequency stability of 5.0 ppm.

The frequency stability shall be measured for hand carried, battery powered equipment by reducing primary supply voltage to the battery operating end point specified by the manufacturer.

The temperature was varied over the manufacturer's declared temperature range of -30C to 60C. The input voltage was varied over the manufacturer's declared operational battery voltage range of 3.0V to 4.2V (dc). The device automatically reduces power at lower than nominal battery voltage, this feature was disabled for the test.

Measurement Data:

	Frequency Drift Hz or ppm	Limit	Result
Temperature Range *1	< 150 Hz	750 Hz	PASS
	< 1.15 ppm	5 ppm	PASS
Voltage Variation *2	< 150 Hz	750 Hz	PASS
	< 1.15 ppm	5 ppm	PASS

Notes:
1 –Manufacturer declared temperature range of -30C to 60C.
2 – Operational battery voltage range of 3.0V to 4.2V (dc) examined.

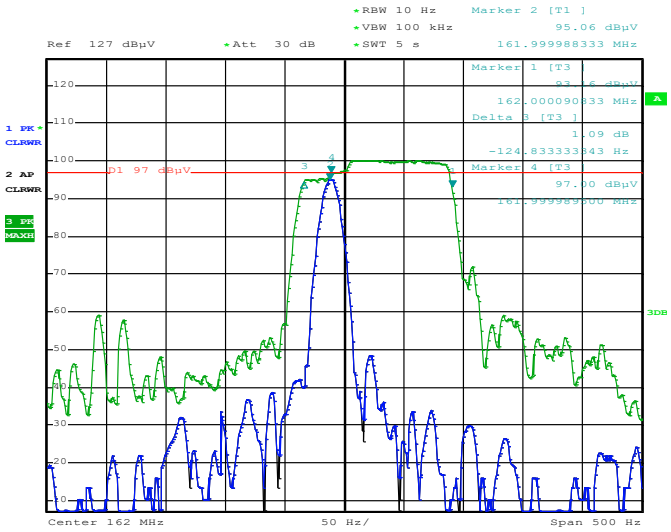


Figure 3.6.1 – Frequency Stability

3.7 Transient Frequency Behavior

Date Performed: January 20, 2020
Test Standard: CFR Title 47 FCC 90.214, RSS 119 Issue 12 (5.9) – Transient Frequency Behavior
Test Method: As per Section 1.1 of this report
Modifications: No modification of the EUT was required.
Result: The EUT complies with the applicable clause.

Required Limit:

Channel Bandwidth kHz	Time Interval (*1)	Maximum Frequency Difference kHz	Transient Duration Limit msec	Result
12.5	T1	±12.5	5	PASS
	T2	±6.25	20	PASS
	T3	±12.5	5	PASS

Notes:

*1 – ton: Instant when 1 kHz test signal is completely suppressed, including any capture time due to phasing.
t1: Time period immediately following ton.
t2: Time period immediately following t1.
t3: Time period from the instant when the transmitter is turned off until toff.
toff: the instant when the 1 kHz test signal starts to rise.

Measurement Data:

Notes:

1 – Full-scale or ±5 divisions of oscilloscope trace represents ±12.5 kHz, ±2.5 divisions of oscilloscope trace represents ±6.25 kHz.
2 – Cursors are shown at T1, 5 msec, T2, 25 msec and T3, 20 msec.

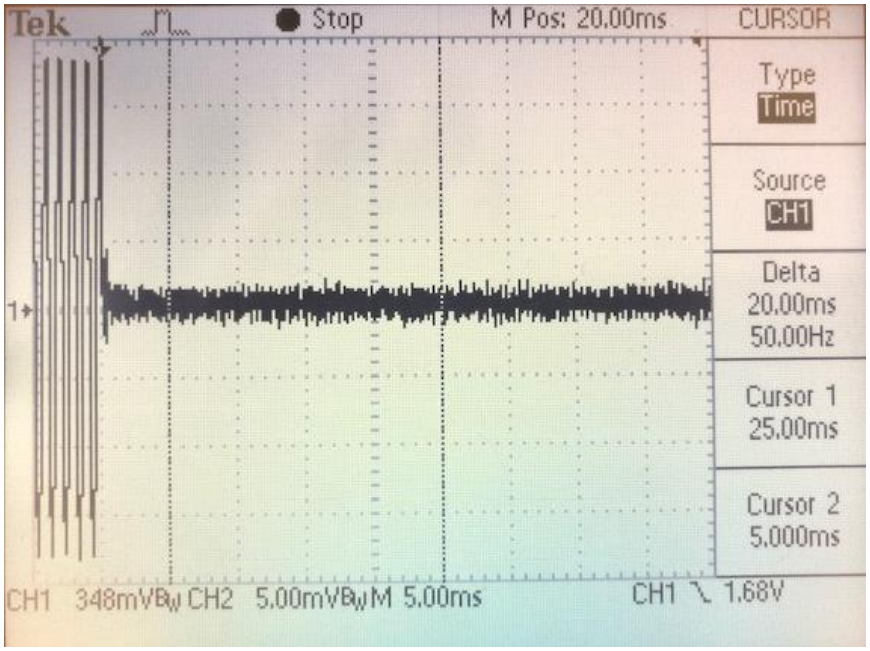


Figure 3.7.1 – Transient Frequency Behavior – Turn ON

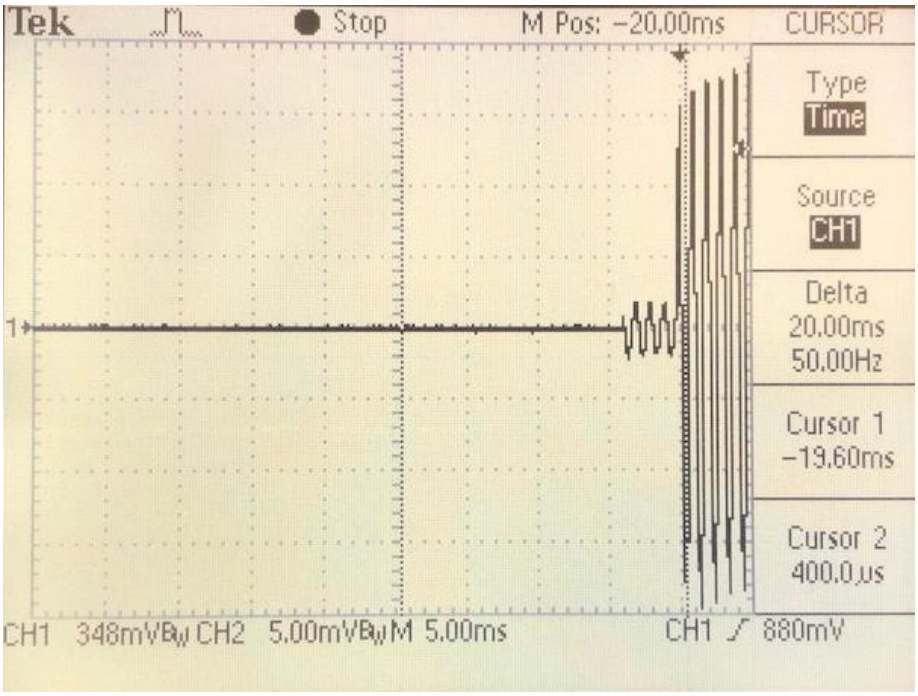


Figure 3.7.2 – Transient Frequency Behavior – Turn OFF

3.8 Modulation Characteristics

Date Performed:	January 20, 2020
Test Standard:	CFR Title 47 FCC 2.1047 – Modulation Characteristics
Test Method:	As per Section 1.1 of this report
Modifications:	No modification of the EUT was required.
Result:	The EUT complies with the applicable clause.

Required Limit:

(a) Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted. For equipment required to have an audio low–pass filter, a curve showing the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.

(b) Equipment which employs modulation limiting. A curve or family of curves showing the percentage of modulation versus the modulation input voltage shall be supplied. The information submitted shall be sufficient to show modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.

Measurement Data:

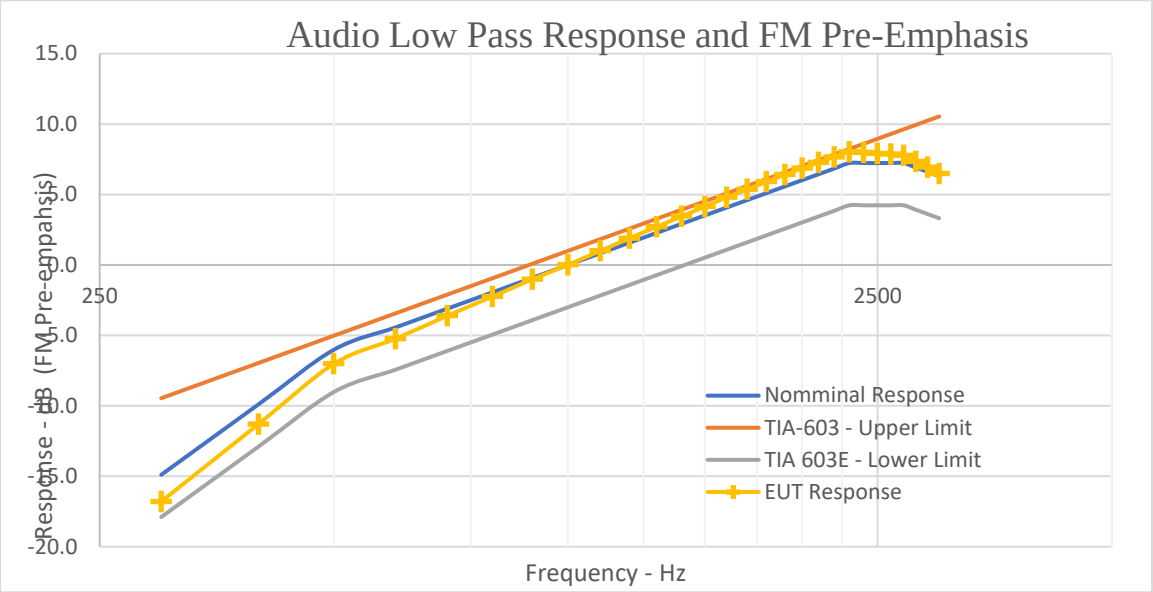


Figure 3.8.1 – Frequency Response of Audio Modulating Circuit – Typical

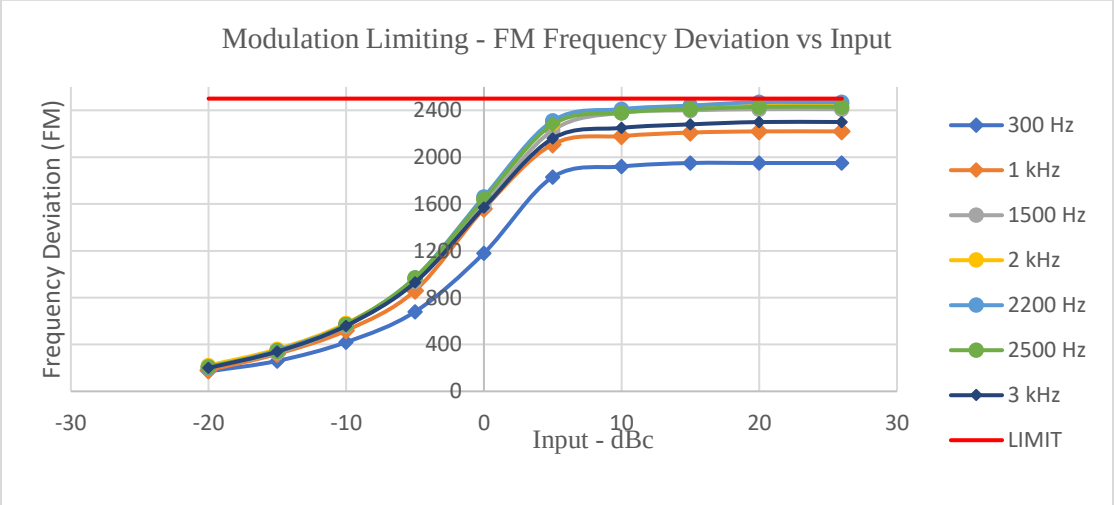


Figure 3.8.2 – FM Modulation Limiting – Demodulated RF Frequency Deviation – Worst-case

3.9 Field Strength of Spurious Emissions (Radiated)

Date Performed: January 20, 2020
Test Standard: CFR Title 47 FCC 2.1053/90.210(d), RSS–119 Issue 12 (5.5) – Field Strength of Spurious Emissions (Radiated)
Test Method: As per Section 1.1 of this report
Modifications: No modification of the EUT was required.
Result: The EUT complies with the applicable clause.

Required Limit:

(d) Emission Mask D – 12.5 kHz channel bandwidth equipment. For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5 kHz: At least 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuation.

Radiated emission limits; general requirements: The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency MHz	Limit Calculation	Limit dBc	Limit @ 3m dBuV/m
30 – 1000	50 + 10*Log(P)	47	77.5

Note 1: The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.
Note 2: The emissions limits shown in the above table are based on measurements employing a CISPR quasi–peak detector except for the frequency bands 990 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Calculation Example:

P = 500mW
= 50+10*Log(P)500mW
= 47dBc

Calculation at 3m
= 107 – 20*log (3m/1m) dB
= 97.5 dB
= -20 dBm + 97.5 dB
= 77.5 dBuV/m at 3m

Method of Measurement:

The EUT was tested in our 3 m SAC and was positioned on the center of the turntable. The transmitter was set for continuous transmission. The operating frequency of the device was measured for all radiated emissions 10 kHz to 4 GHz up to the 10th harmonic of the highest fundamental frequency. The EUT was pre–scanned in 3 different orthogonal orientations and was found to radiate highest when placed flat on the tabletop as indicated in the test photos.

Measurement Data:

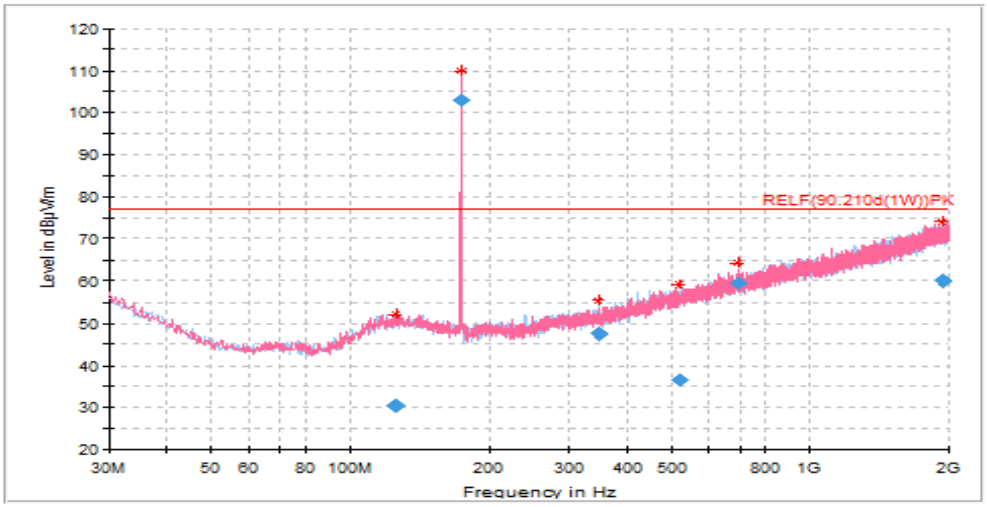


Figure 3.9.1 – Radiated Spurious Emissions – 20M-2G Hz – Worst-case

Notes:

1 – No detected emissions within 20dB of limit reported.

2 – Noise floor within 20dB of limit above 1 GHz examined with sufficiently narrow resolution bandwidth to reduce noise floor 10 dB.

3 – Radiated emissions examined at RF (radio) TX frequencies of 150.815, 162.0 & 174.0 MHz utilizing GMSK data & FM Voice modulation.

Appendix A: TEST SETUP PHOTOS - Short-term Confidentiality See Exhibit 19

Radiated Emissions Measurement Setup, 30MHz – 2GHz

Conducted Radio Measurement Setup

Frequency Stability Measurement Setup

Appendix B: ABBREVIATIONS

Abbreviation	Definition
AC	Alternating Current
AM	Amplitude Modulation
CISPR	Comité International Spécial des Perturbations Radioélectriques
DC	Direct Current
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EUT	Equipment Under Test
FCC	Federal Communications Commission
IC	Industry Canada
ICES	Interference Causing Equipment Standard
IEC	International Electrotechnical Commission
LISN	Line Impedance Stabilizing Network
OATS	Open Area Test Site
RF	Radio Frequency
RMS	Root-Mean-Square
SAC	Semi-Anechoic Chamber

END OF REPORT