FCC Test Report

Rexon Technology Corp., Ltd.
Aviation Portable Radio, Model: PJ2

In accordance with FCC 47 CFR Part 87 and FCC 47 CFR Part 2

Prepared for: Rexon Technology Corp., Ltd.
No. 261
Jen Hwa Rd.
Tali
Taichung
TAIWAN

FCC ID: I7OPJ2

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Document Number: 75946622-02 | Issue: 01

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Matthew Russell	RF Team Leader	Authorised Signatory	23 October 2019

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

ENGINEERING STATEMENT
The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 87 and FCC 47 CFR Part 2. The sample tested was found to comply with the requirements defined in the applied rules.

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**DATE**
Graeme Lawler	Engineer	Testing	23 October 2019
Nandhini Mathivanan	Engineer	Testing	23 October 2019

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with and FCC 47 CFR Part 87: 2018 and FCC 47 CFR Part 2: 2018 for the tests detailed in section 1.3.

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Contents

1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	23 October 2019

Table 1

1.2 Introduction

Applicant	Rexon Technology Corp., Ltd.
Manufacturer	Rexon Technology Corp., Ltd.
Model Number(s)	PJ2
Serial Number(s)	R1907AV0003
Hardware Version(s)	SP170 Factory 0.0.0.6
Software Version(s)	PJ2_test.set
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 87: 2018 FCC 47 CFR Part 2: 2018
Order Number Date	Signed QAF 22-July-2019
Date of Receipt of EUT	05-August-2019
Start of Test	09-September-2019
Finish of Test	23-September-2019
Name of Engineer(s)	Graeme Lawler and Nandhini Mathivanan
Related Document(s)	ANSI C63.26: 2015 KDB 971168 D01 v02r02

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 87 and FCC 47 CFR Part 2 is shown below.

Section	Specification Clause		Test Description	Result	Comments/Base Standard
	Part 80	Part 2			
Configuration and Mode: VHF Transceiver					
2.1	87.131	-	Power and Emissions	Pass	KDB 971168 D01 v02r02
2.2	87.133	2.1055	Frequency Stability	Pass	KDB 971168 D01 v02r02
2.3	87.135	2.1049	Bandwidth of Emission	Pass	KDB 971168 D01 v02r02
2.4	87.137	-	Types of Emission	Declaration	
2.5	87.139	2.1051	Radiated Spurious Emissions	Pass	KDB 971168 D01 v02r02
2.6	87.139	2.1051	Spurious Emissions at Antenna Terminals	Pass	KDB 971168 D01 v02r02
2.7	87.141	-	Modulation Requirements	Pass	KDB 971168 D01 v02r02

Table 2

1.4 Application Form

Equipment Description

Technical Description: *(Please provide a brief description of the intended use of the equipment)*	Aviation Portable Radio
Manufacturer:	Rexon Technology Co., LTD
Model:	PJ2
Part Number:	700-01170-00000
Hardware Version:	SP170 Factory 0.0.0.6
Software Version:	PJ2_test.set
FCC ID (if applicable)	I7OPJ2
IC ID (if applicable)	Not Applicable

Intentional Radiators

Technology	Aviation Portable Radio
Frequency Band (MHz)	118.000 to 136.975
Conducted Declared Output Power (dBm)	32 (1.5 W)
Antenna Gain (dBi)	0
Supported Bandwidth(s) (MHz)	19 MHz
Modulation Scheme(s)	Amplitude Modulation
ITU Emission Designator	6K00A3E
Bottom Frequency (MHz)	118.000
Middle Frequency (MHz)	127.500
Top Frequency (MHz)	136.975

Un-intentional Radiators

Highest frequency generated or used in the device or on which the device operates or tunes	209.625MHz
Lowest frequency generated or used in the device or on which the device operates or tunes	118MHz
Class A Digital Device (Use in commercial, industrial or business environment) ☒ Class B Digital Device (Use in residential environment only) ☐	

AC Power Source

AC supply frequency: Click to edit (Hz)	
Click to edit V	Max current: Click to edit A
Single Phase ☐ Three Phase ☐	

DC Power Source

Nominal voltage: 9 V
Extreme upper voltage: 9.6 V
Extreme lower voltage: 7.2 V
Max current: 1.5. A

Battery Power Source

Voltage: 9 V
End-point voltage: 7.2 V *(Point at which the battery will terminate)*
Alkaline ☒ Leclanche ☐ Lithium ☐ Nickel Cadmium ☐ Lead Acid* ☐ **(Vehicle regulated)*
Other ☐ Please detail: Click to edit

Charging

Can the EUT transmit whilst being charged	Yes ☐ No ☒

Temperature

Minimum temperature: -30 °C	Maximum temperature: +50 °C

Antenna Characteristics

Antenna connector ☒ State impedance 50 Ohm
Temporary antenna connector ☐ State impedance Click to edit Ohm
Integral antenna ☐ Type Click to edit State impedance Click to edit dBi
External antenna ☒ Type Helical State impedance 0 dBi

Ancillaries (if applicable)

Manufacturer: Click to edit	Part Number: Click to edit
Model: Click to edit	Country of Origin: Click to edit

I hereby declare that the information supplied is correct and complete.

Name: Ken Chen
Position held: R&D Manager
Date: 29 July 2019

1.5 Product Information

1.5.1 Technical Description

Aviation Portable Radio.

1.5.2 Test Setup Diagram(s)

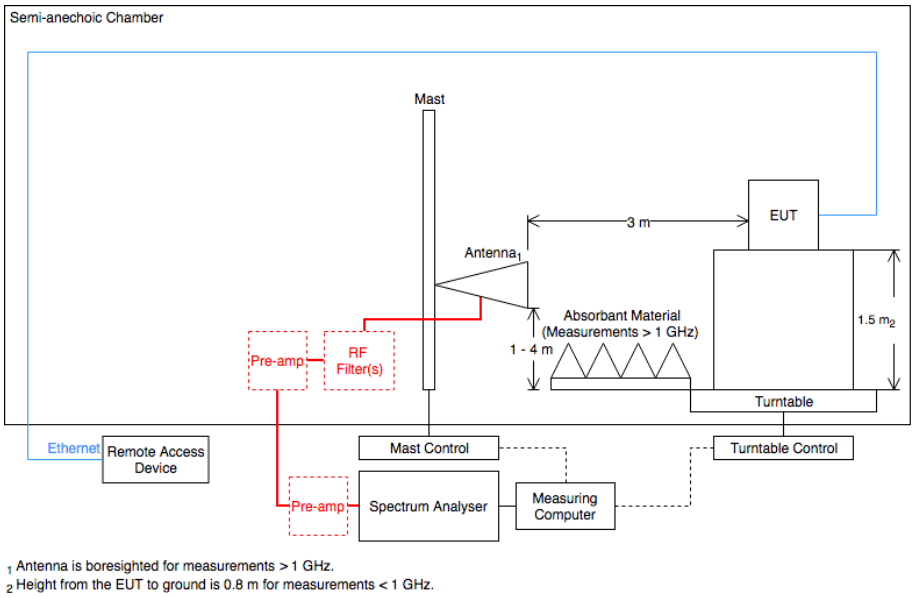

Figure 1 – Setup Diagram for Radiated Emissions

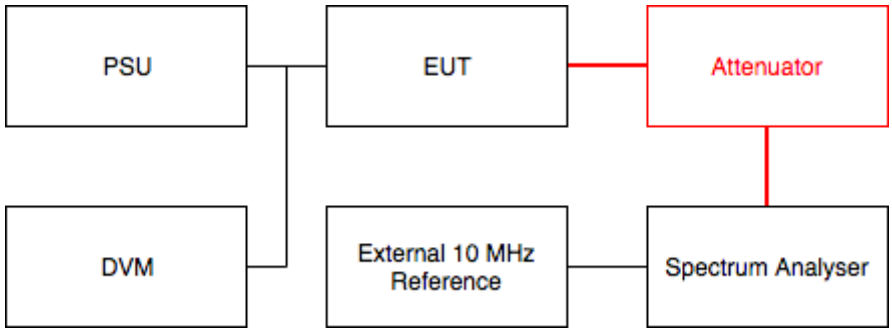

Figure 2 – Setup Diagram for Conducted Tests

1.5.3 EUT Configuration and Rationale for Radiated Spurious Emissions

The EUT was placed on the non-conducting platform in a manner typical of a normal installation.

Pre-scans were performed with the EUT orientated in X, Y and Z planes with reference to the ground plane. Ports on the EUT were terminated with loads as described in ANSI C63.4 clause 6.2.4.

1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.

The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Model: PJ2: Serial Number: R1907AV0003			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

1.8 Test Location

TÜV SÜD conducted the following tests at our Fareham Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: VHF Transceiver		
Power and Emissions	Nandhini Mathivanan	UKAS
Frequency Stability	Nandhini Mathivanan	UKAS
Bandwidth of Emission	Nandhini Mathivanan	UKAS
Spurious Emissions at Antenna Terminals	Nandhini Mathivanan	UKAS
Modulation Requirements	Nandhini Mathivanan	UKAS
Radiated Spurious Emissions	Graeme Lawler	UKAS

Table 4

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom

2 Test Details

2.1 Power and Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 87, Clause 87.131

2.1.2 Equipment Under Test and Modification State

PJ2, S/N: R1907AV0003 - Modification State 0

2.1.3 Date of Test

23-September-2019

2.1.4 Test Method

This test was performed in accordance with ANSI C63.26, Clause 5.2.3.3

2.1.5 Environmental Conditions

Ambient Temperature	21.6 °C
Relative Humidity	65.0 %

2.1.6 Test Results

VHF Transceiver

118.000 MHz		127.500 MHz		136.975 MHz	
Maximum Power (dBm)	Maximum Power (W)	Maximum Power (dBm)	Maximum Power (W)	Maximum Power (dBm)	Maximum Power (W)
31.249	1.333	31.136	1.299	31.097	1.287

Table 5 - Power Results

FCC 47 CFR Part 87, Limit Clause 87.131

<10 W

2.1.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Multimeter	Fluke	79 Series II	3057	12	19-Aug-2020
Attenuator (20dB, 250W)	Weinschel	45-20-43	4321	12	17-Jul-2020
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
PXA Signal Analyser	Keysight Technologies	N9030A	4653	12	06-Feb-2020
Hygrometer	Rotronic	HP21	4989	12	02-May-2020
Network Analyser	Keysight Technologies	E5063A	5018	12	20-May-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5098	12	04-Oct-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5108	12	05-Oct-2019
Electronic Calibration Module	Keysight Technologies	85093C	5188	12	21-May-2020
Programmable power supply Type 188 W	Rohde & Schwarz	HMP2020	101828 -FJ	-	O/P Mon

Table 6

O/P Mon – Output monitored using calibrated equipment

2.2 Frequency Stability

2.2.1 Specification Reference

FCC 47 CFR Part 87, Clause 87.133
FCC 47 CFR Part 2, Clause 2.1055

2.2.2 Equipment Under Test and Modification State

PJ2, S/N: R1907AV0003 - Modification State 0

2.2.3 Date of Test

13-September-2019 to 17-September-2019

2.2.4 Test Method

The EUT was connected to the modulation analyser and the frequency was recorded and then the error calculated. The frequency error is the difference between the declared transmitter frequency and measured frequency of the modulation analyser.

2.2.5 Environmental Conditions

Ambient Temperature	2.0 - 21.4 °C
Relative Humidity	53.1 %

2.2.6 Test Results

VHF Transceiver

Voltage	Frequency Error (ppm)		
	118.000 MHz	127.500 MHz	136.975 MHz
7.2 V DC	0.212	0.212	0.219
9.6 V DC	0.203	0.220	0.212

Table 7 - Frequency Stability Under Voltage Variations

Temperature	Frequency Error (ppm)		
	118.000 MHz	127.500 MHz	136.975 MHz
+50.0 °C	-0.220	-0.204	-0.204
+40.0 °C	-0.059	-0.055	-0.051
+30.0 °C	0.051	0.071	0.066
+20.0 °C	0.076	0.078	0.073
+10.0 °C	-0.602	-0.612	-0.606
0 °C	-0.559	-0.565	-0.562
-10.0 °C	-0.559	-0.580	-0.562
-20.0 °C	0.161	0.165	0.146
-30 °C	-0.042	-0.071	-0.044

Table 8 - Frequency Stability Under Temperature Variations

FCC 47 CFR Part 87, Limit Clause 87.133

20 ppm

2.2.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Modulation Analyser	Hewlett Packard	8901B	45	12	26-Sep-2019
Thermometer	Digitron	T208	2340	12	22-Nov-2019
Climatic Chamber	TAS	Micro 225	2892	-	O/P Mon
Multimeter	Fluke	79 Series II	3057	12	19-Aug-2020
Attenuator (20dB, 250W)	Weinschel	45-20-43	4321	12	17-Jul-2020
Power Supply	TTI	EL303R	4383	-	TU
Hygropalm Temperature and Humidity Meter	Rotronic	HP21	4410	12	13-Jun-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5098	12	04-Oct-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5108	12	05-Oct-2019
Programmable power supply Type 188 W	Rohde & Schwarz	HMP2020	101828 -FJ	-	O/P Mon

Table 9

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment

2.3 Bandwidth of Emission

2.3.1 Specification Reference

FCC 47 CFR Part 87, Clause 87.135
FCC 47 CFR Part 2, Clause 2.1049

2.3.2 Equipment Under Test and Modification State

PJ2, S/N: R1907AV0003 - Modification State 0

2.3.3 Date of Test

23-September-2019

2.3.4 Test Method

The test was performed in accordance with ANSI C63.26, Clause 5.4.4.

2.3.5 Environmental Conditions

Ambient Temperature	21.6 °C
Relative Humidity	65.0 %

2.3.6 Test Results

VHF Transceiver

Occupied Bandwidth (kHz)		
118.000 MHz	127.500 MHz	136.975 MHz
1.833	1.832	1.845

Table 10 - Occupied Bandwidth Results

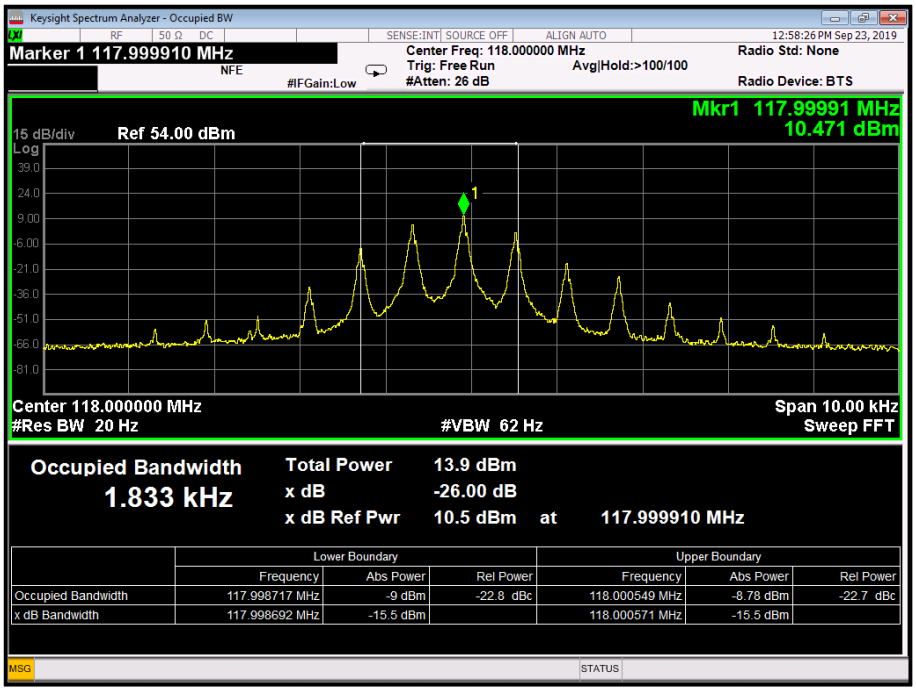

Figure 3 - Occupied Bandwidth - 118.000 MHz

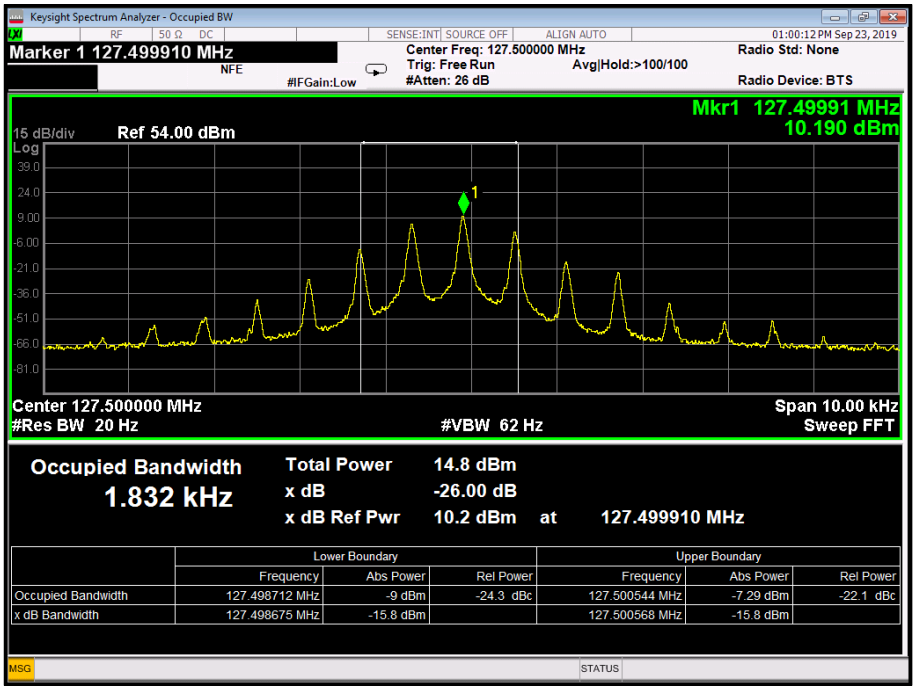

Figure 4 - Occupied Bandwidth - 127.500 MHz

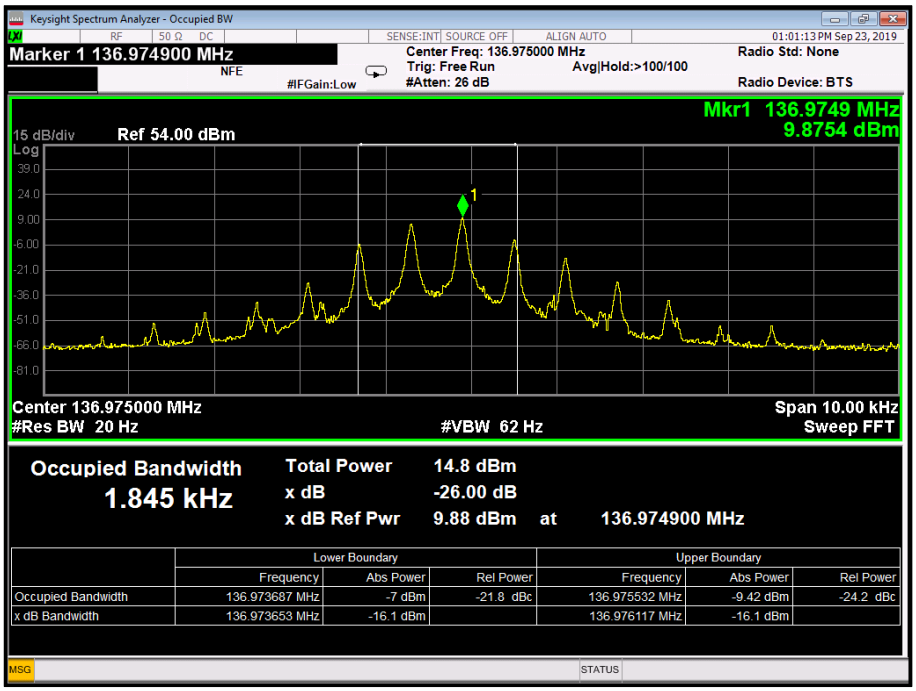

Figure 5 - Occupied Bandwidth - 136.975 MHz

FCC 47 CFR Part 87, Limit Clause 87.135(a)

The authorized bandwidth is the maximum occupied bandwidth authorised to be used by a station.

The authorised bandwidth declared by the manufacturer is: 6 kHz

2.3.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Multimeter	Fluke	79 Series II	3057	12	19-Aug-2020
Attenuator (20dB, 250W)	Weinschel	45-20-43	4321	12	17-Jul-2020
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
PXA Signal Analyser	Keysight Technologies	N9030A	4654	12	08-Oct-2019
Hygrometer	Rotronic	HP21	4989	12	02-May-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5098	12	04-Oct-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5108	12	05-Oct-2019
Programmable power supply Type 188 W	Rohde & Schwarz	HMP2020	101828-FJ	-	O/P Mon

Table 11

O/P Mon – Output Monitored using calibrated equipment

2.4 Types of Emission

2.4.1 Specification Reference

FCC 47 CFR Part 87, Clause 87.137

2.4.2 Equipment Under Test

PJ2

2.4.3 Test Method

A spectrum analyser was used to show a plot of the fundamental frequency.

2.4.4 Test Results

VHF Transceiver

The emission designator used by the equipment was declared by the manufacturer as:

6K00A3E

FCC 47 CFR Part 87, Limit Clause 87.137

The emission designator shall be specified.

2.5 Radiated Spurious Emissions

2.5.1 Specification Reference

FCC 47 CFR Part 87, Clause 87.139
FCC 47 CFR Part 2, Clause 2.1051

2.5.2 Equipment Under Test and Modification State

PJ2, S/N: R1907AV0003 - Modification State 0

2.5.3 Date of Test

09-September-2019

2.5.4 Test Method

Testing was performed in accordance with ANSI C63.26, clause 5.5.

The carrier was modulated with a 1 kHz tone to a depth of 85 %. The required level to achieve this modulation depth was 750 mV.

Prescans were performed using the Direct Field Strength method. Any emissions found to be within 10dB of the specification limit were formally measured using the Direct Field Strength method.

The rule part limit of -13dBm was converted to a field strength limit using equation c) in ANSI C63.26 clause 5.2.7

E (dBuV/m) = EIRP (dBm) - 20log(D) + 104.8 where D is the measurement distance.
For a measurement distance of 3 m:
E (dBuV/m) = -13 - 20log(3) + 104.8 = 82.2dBuV/m.

This limit line is found on the prescan plots.

2.5.5 Environmental Conditions

Ambient Temperature	15.5 °C
Relative Humidity	80.3 %

2.5.6 Test Results

VHF Transceiver

Frequency (MHz)	Level (dBm)
*	

Table 12 - 118.000 MHz - Emissions Results

*No emissions were detected within 10 dB of the limit.

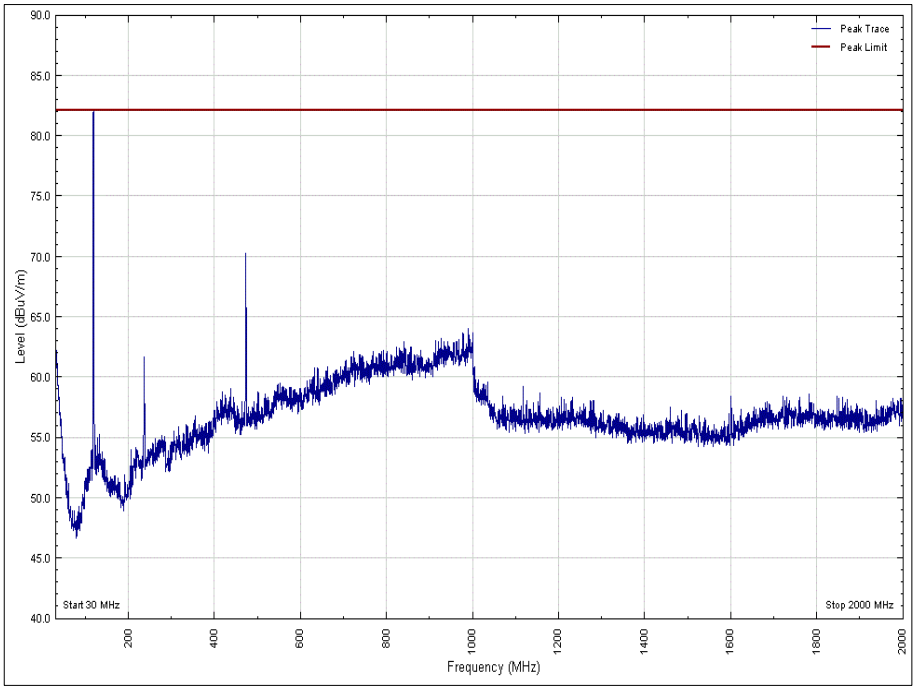

Figure 6 - 118.000 MHz - 30 MHz to 2 GHz - X Orientation Vertical

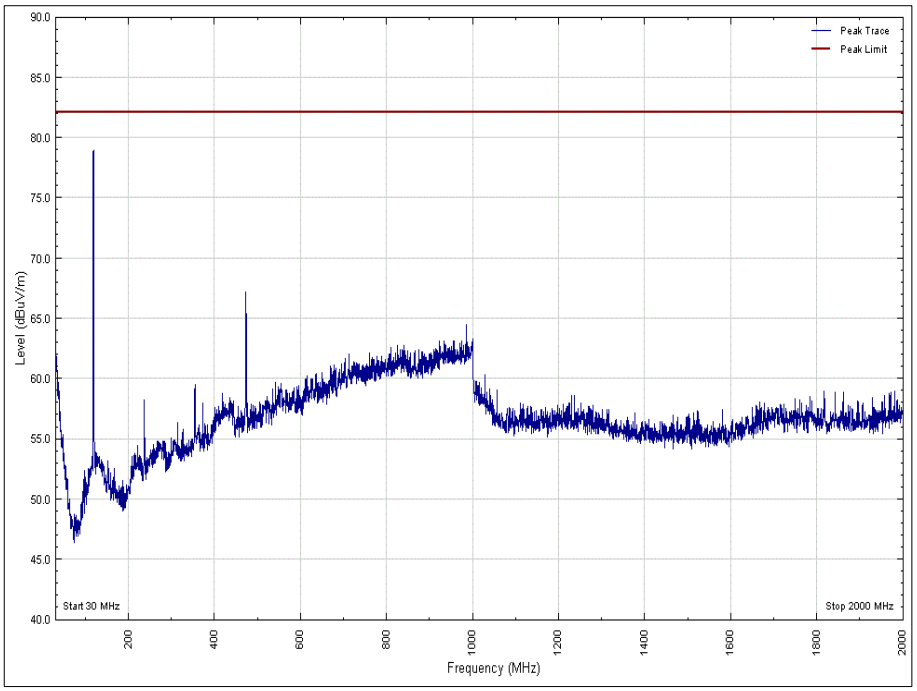

Figure 7 - 118.000 MHz - 30 MHz to 2 GHz - X Orientation Horizontal

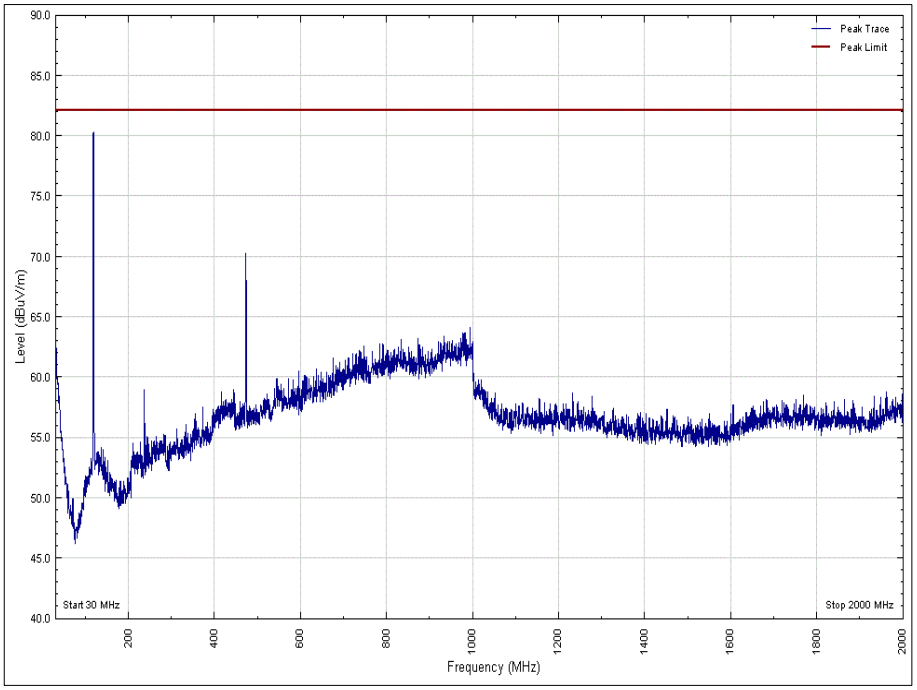

Figure 8 - 118.000 MHz - 30 MHz to 2 GHz - Y Orientation Vertical

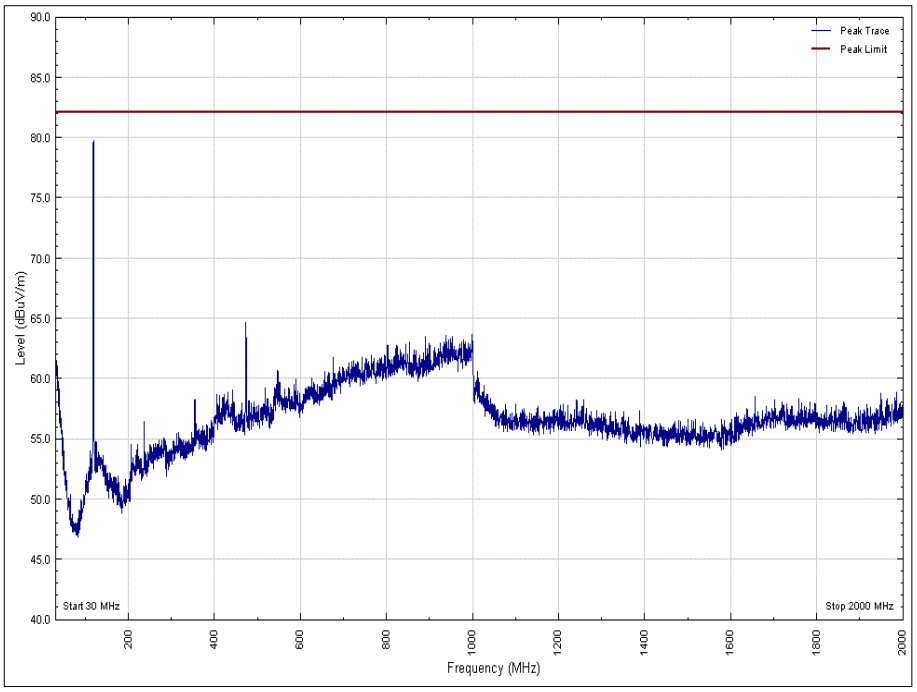

Figure 9 - 118.000 MHz - 30 MHz to 2 GHz - Y Orientation Horizontal

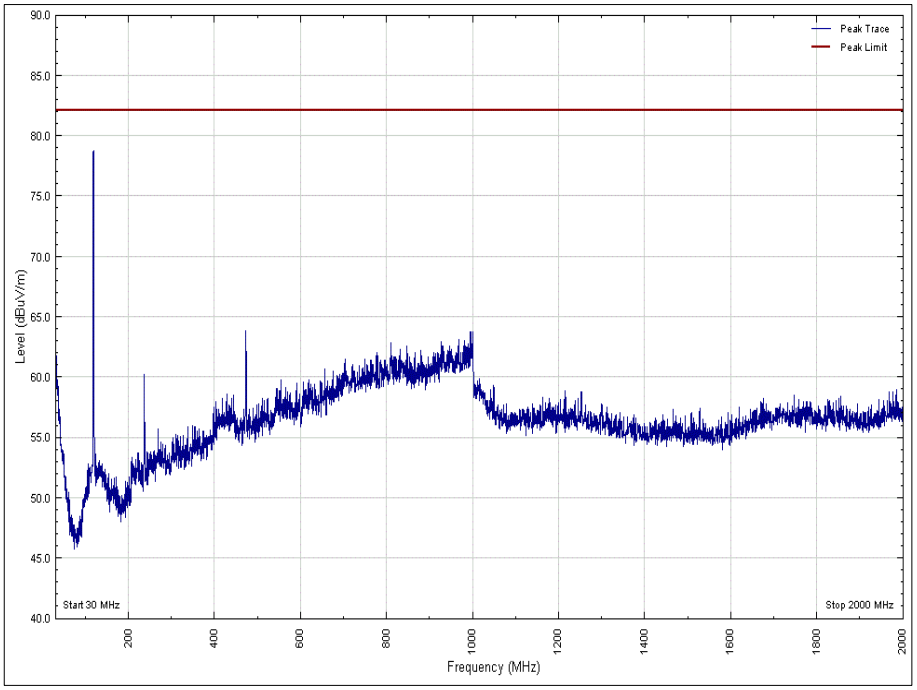

Figure 10 - 118.000 MHz - 30 MHz to 2 GHz - Z Orientation Vertical

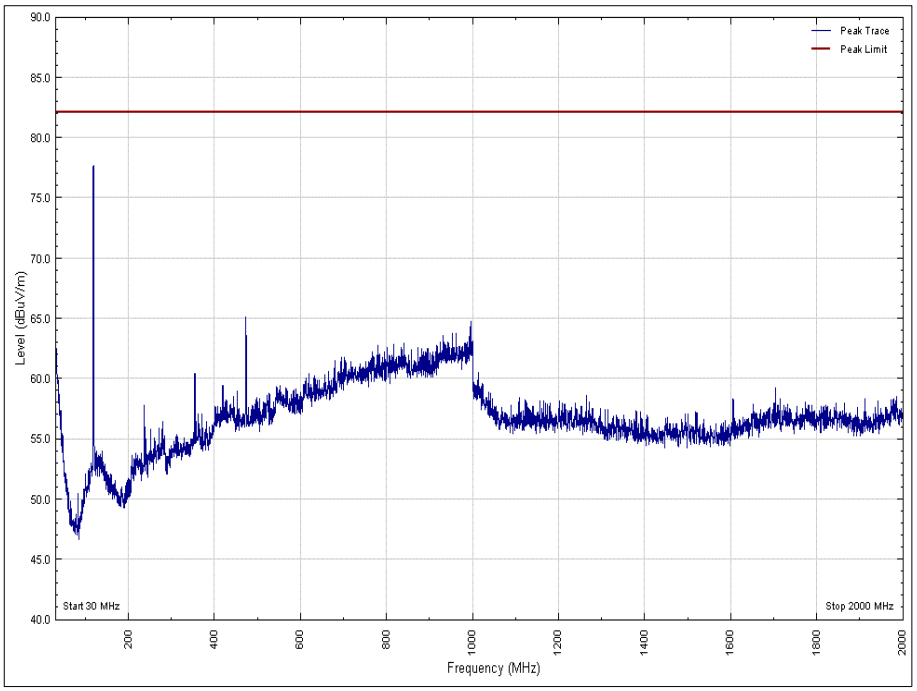

Figure 11 - 118.000 MHz - 30 MHz to 2 GHz - Z Orientation Horizontal

Frequency (MHz)	Level (dBm)
*	

Table 13 - 127.500 MHz - Emissions Results

*No emissions were detected within 10 dB of the limit.

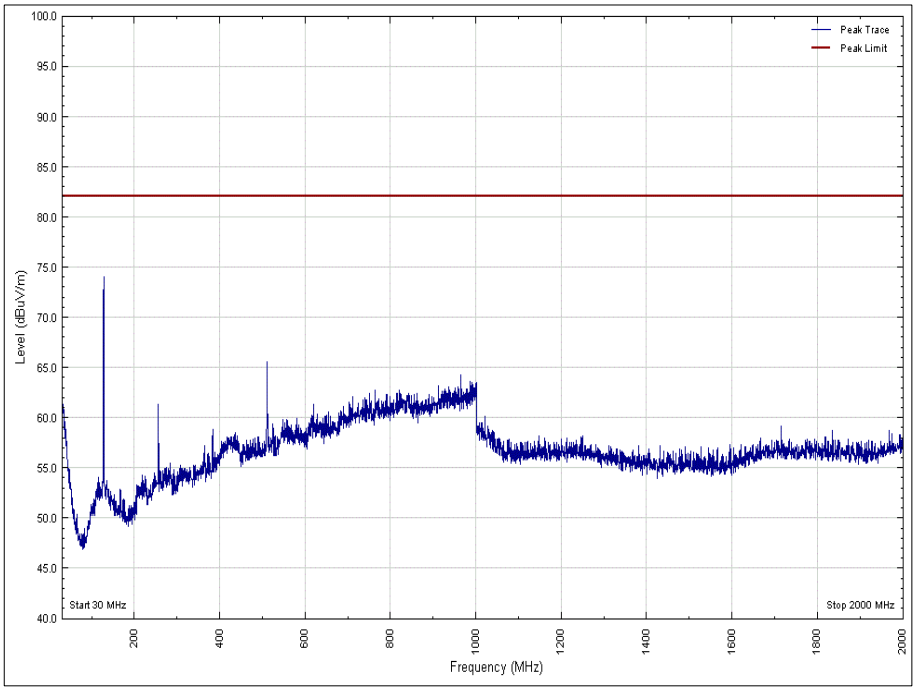

Figure 12 - 127.500 MHz - 30 MHz to 2 GHz - X Orientation Vertical

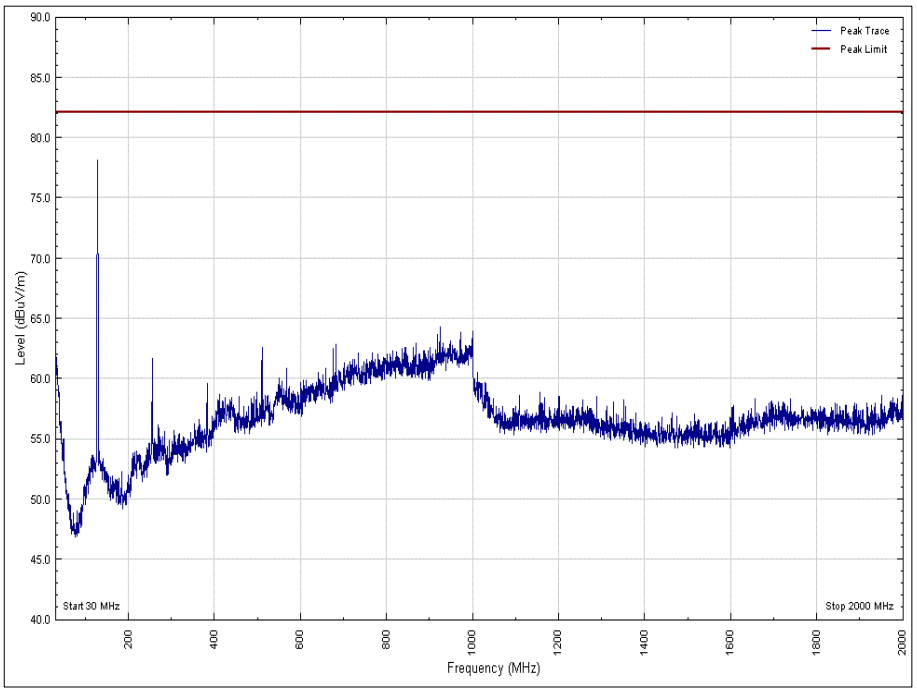

Figure 13 - 127.500 MHz - 30 MHz to 2 GHz - X Orientation Horizontal

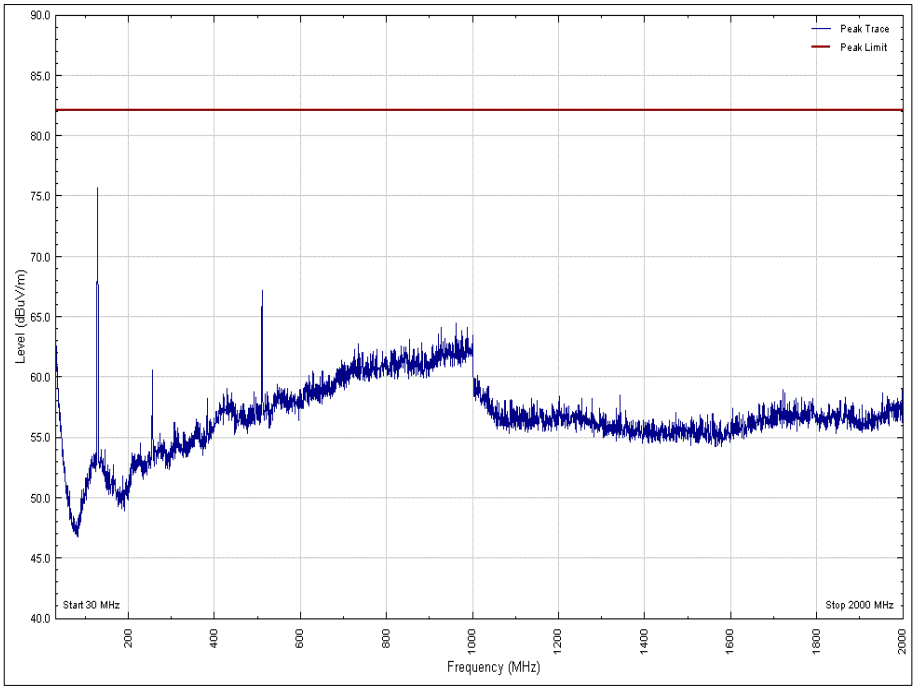

Figure 14 - 127.500 MHz - 30 MHz to 2 GHz - Y Orientation Vertical

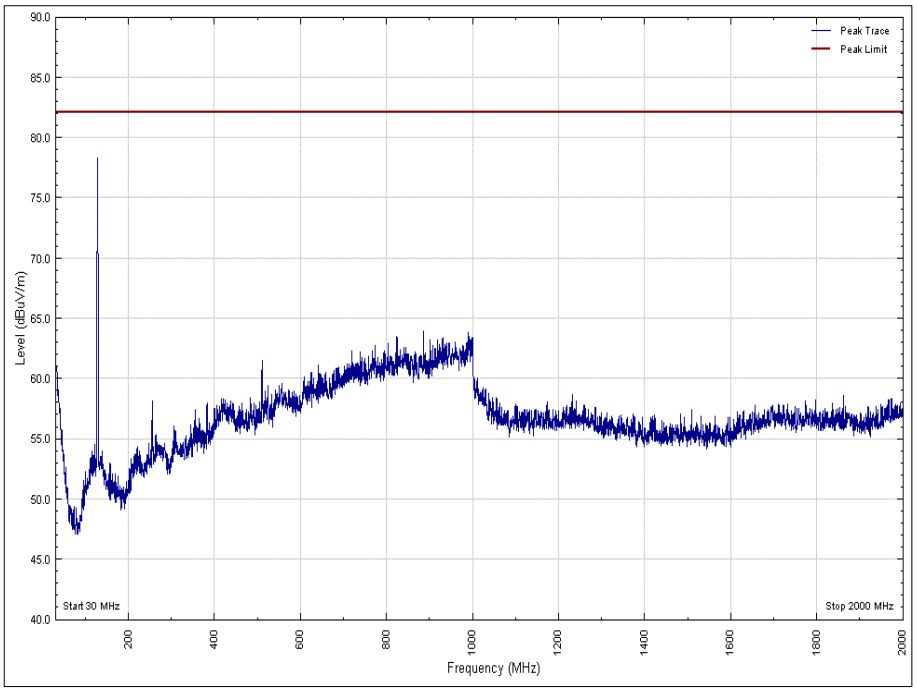

Figure 15 - 127.500 MHz - 30 MHz to 2 GHz - Y Orientation Horizontal

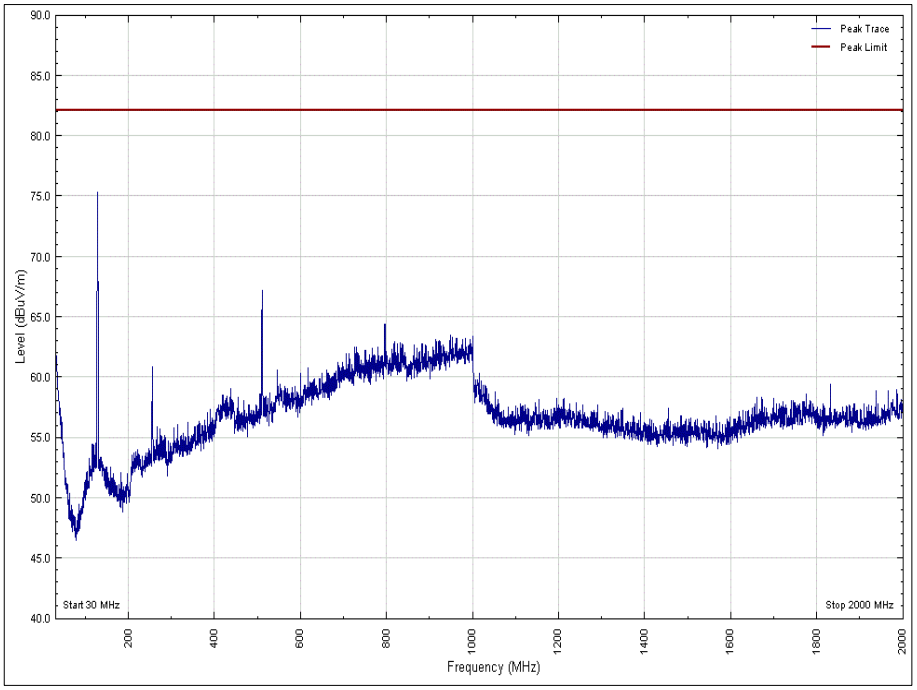

Figure 16 - 127.500 MHz - 30 MHz to 2 GHz - Z Orientation Vertical

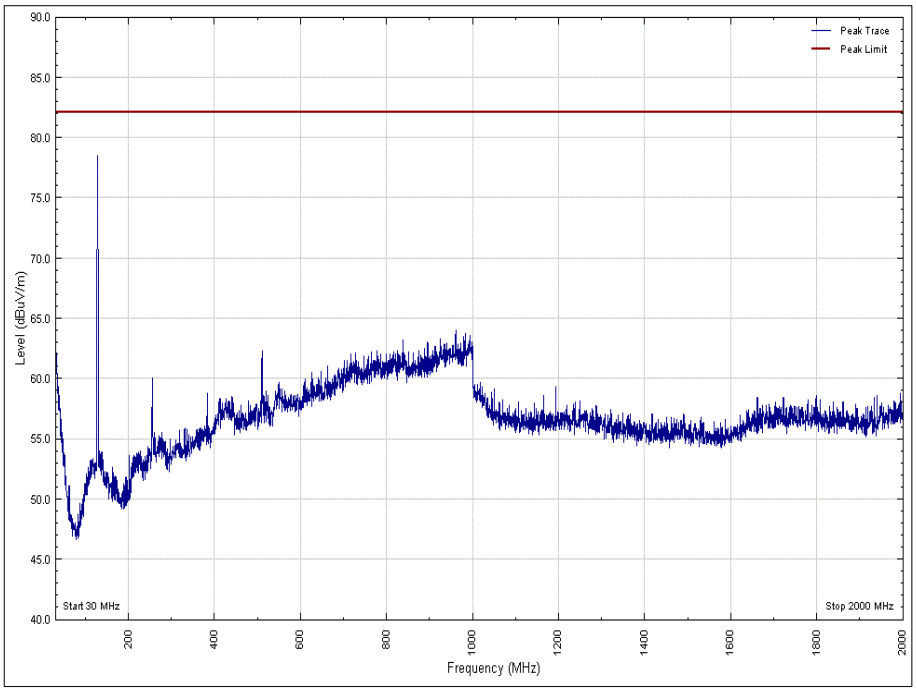

Figure 17 - 127.500 MHz - 30 MHz to 2 GHz - Z Orientation Horizontal

Frequency (MHz)	Level (dBm)
*	

Table 14 - 127.500 MHz - Emissions Results

*No emissions were detected within 10 dB of the limit.

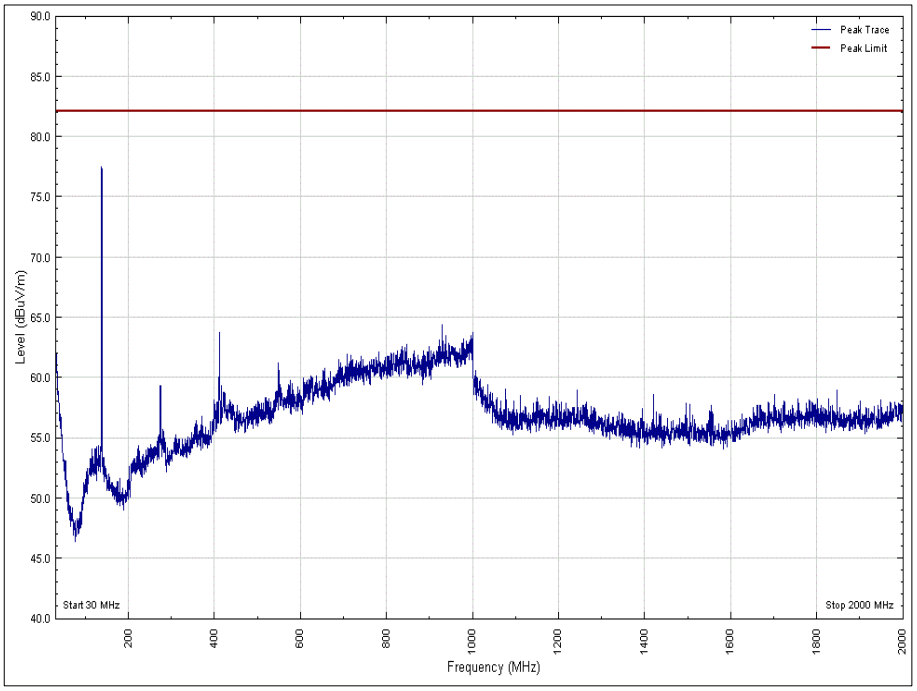

Figure 18 - 136.975 MHz - 30 MHz to 2 GHz - X Orientation Vertical

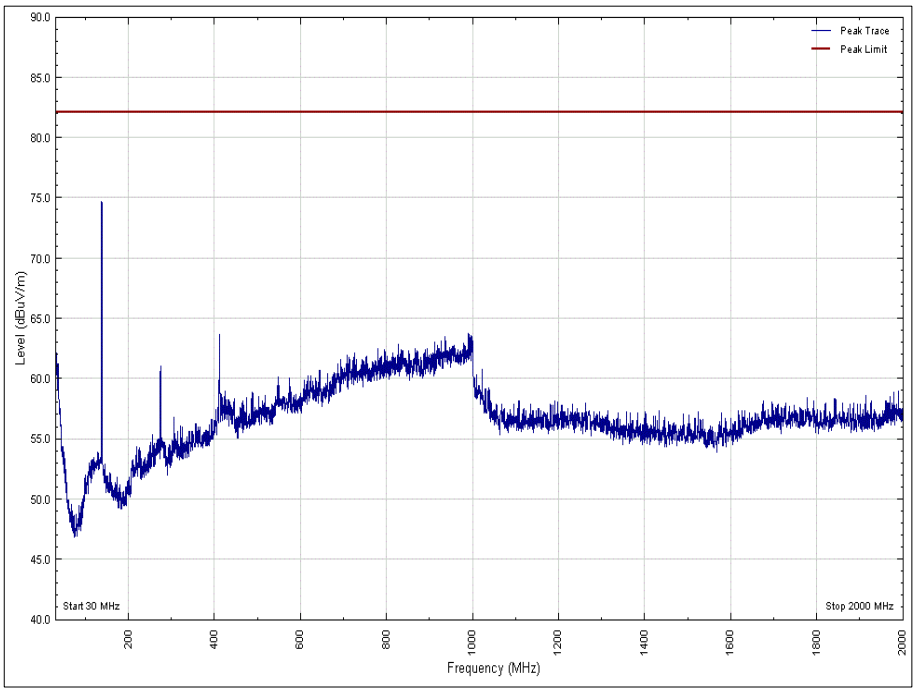

Figure 19 - 136.975 MHz - 30 MHz to 2 GHz - X Orientation Horizontal

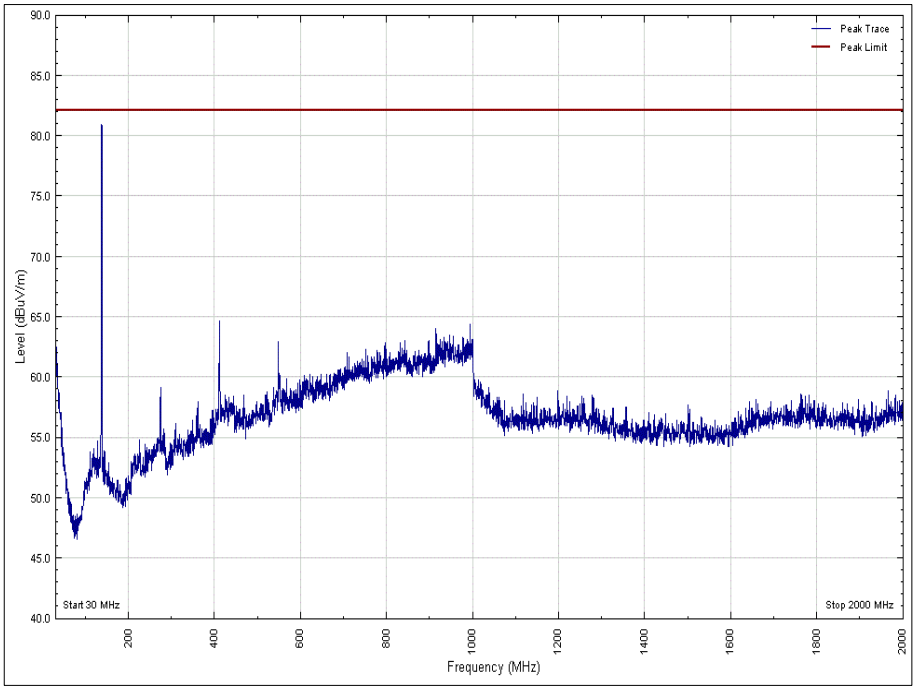

Figure 20 - 136.975 MHz - 30 MHz to 2 GHz - Y Orientation Vertical

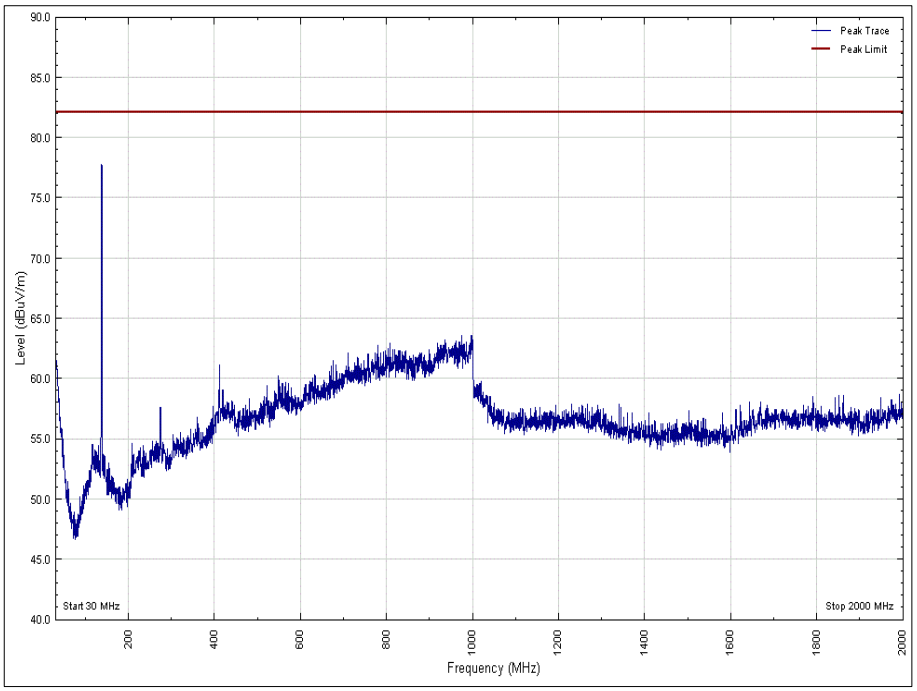

Figure 21 - 136.975 MHz - 30 MHz to 2 GHz - Y Orientation Horizontal

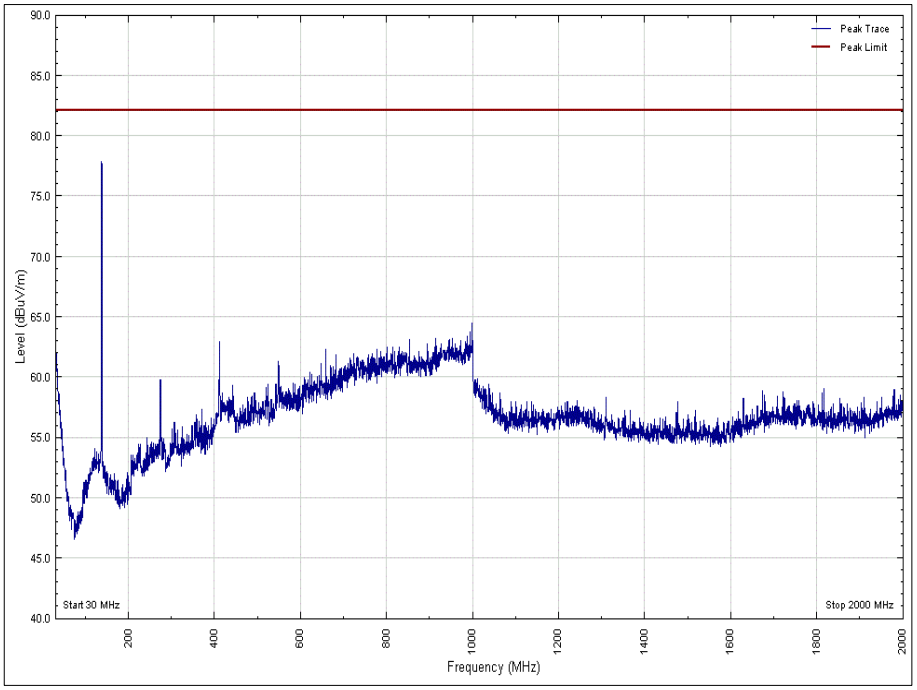

Figure 22 - 136.975 MHz - 30 MHz to 2 GHz - Z Orientation Vertical

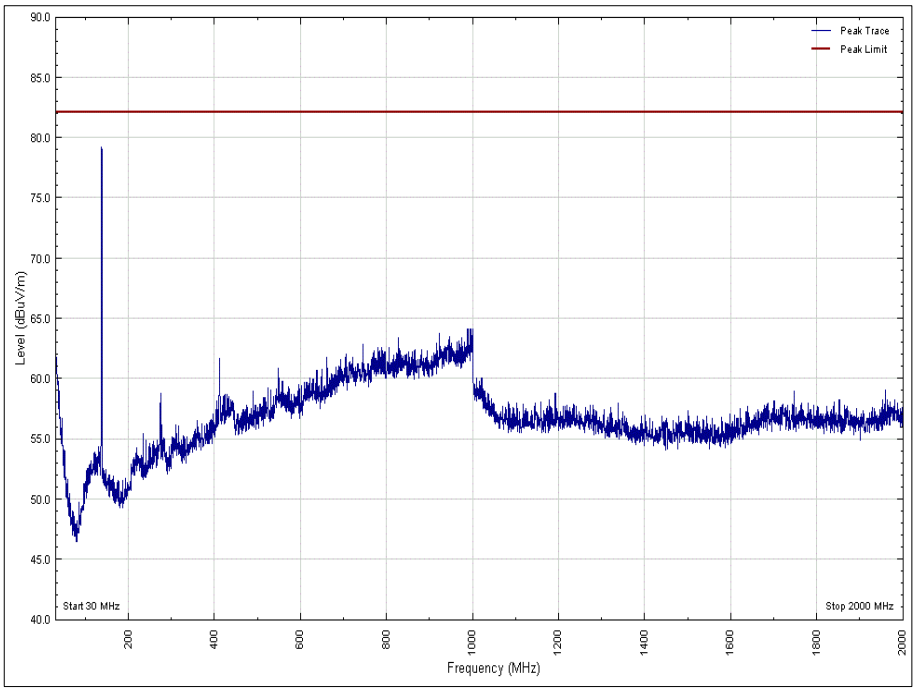

Figure 23 - 136.975 MHz - 30 MHz to 2 GHz - Z Orientation Horizontal

FCC 47 CFR Part 87, Limit Clause 87.139 (a)

Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091–5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:

(1) When the frequency is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth the attenuation must be at least 25 dB;

(2) When the frequency is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth the attenuation must be at least 35 dB.

(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB.

2.5.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Power Supply Unit	Hewlett Packard	6282A	132	-	TU
Load (50ohm)	Diamond Antenna	DL-30N	217	12	01-Apr-2020
Antenna with permanent attenuator (Bilog)	Schaffner	CBL6143	287	24	15-May-2020
Audio Analyser	Hewlett Packard	8903B	576	12	17-Jan-2020
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygromer	Rotronic	A1	2677	12	20-Feb-2020
Comb Generator	Schaffner	RSG1000	3034	-	TU
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	11-Dec-2019
Mast Controller	Maturo Gmbh	NCD	4810	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	4811	-	TU
Double Ridge Broadband Horn Antenna	Schwarzbeck	BBHA 9120 B	4848	12	11-Mar-2020
8m N-Type RF Cable	Teledyne	PR90-088-8MTR	5093	12	04-Oct-2019
EmX Emissions Software	TUV SUD	EmX	5125	-	Software
Test Receiver (ESW)	Rohde & Schwarz	ESW44	5351	12	31-Jul-2020

Table 15

TU - Traceability Unscheduled

2.6 Spurious Emissions at Antenna Terminals

2.6.1 Specification Reference

FCC 47 CFR Part 87, Clause 87.139
FCC 47 CFR Part 2, Clause 2.1051

2.6.2 Equipment Under Test and Modification State

PJ2, S/N: R1907AV0003 - Modification State 0

2.6.3 Date of Test

23-September-2019

2.6.4 Test Method

This test was performed in accordance with ANSI C63.26, Clause 5.7.

2.6.5 Environmental Conditions

Ambient Temperature	21.6 °C
Relative Humidity	65.0 %

2.6.6 Test Results

VHF Transceiver

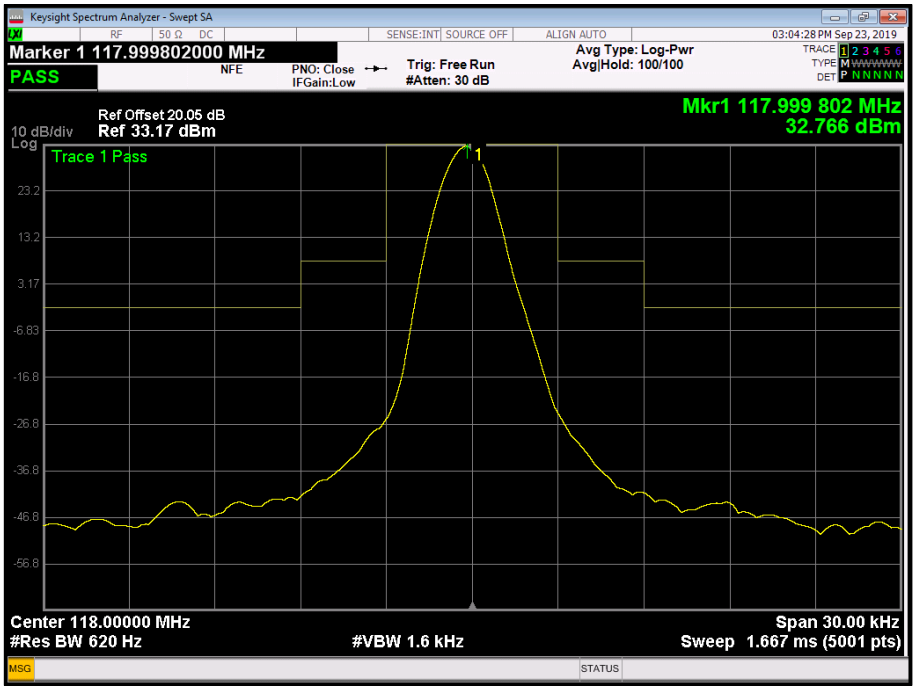

Figure 24 – 118.000 MHz - Transmitter Spectrum Mask

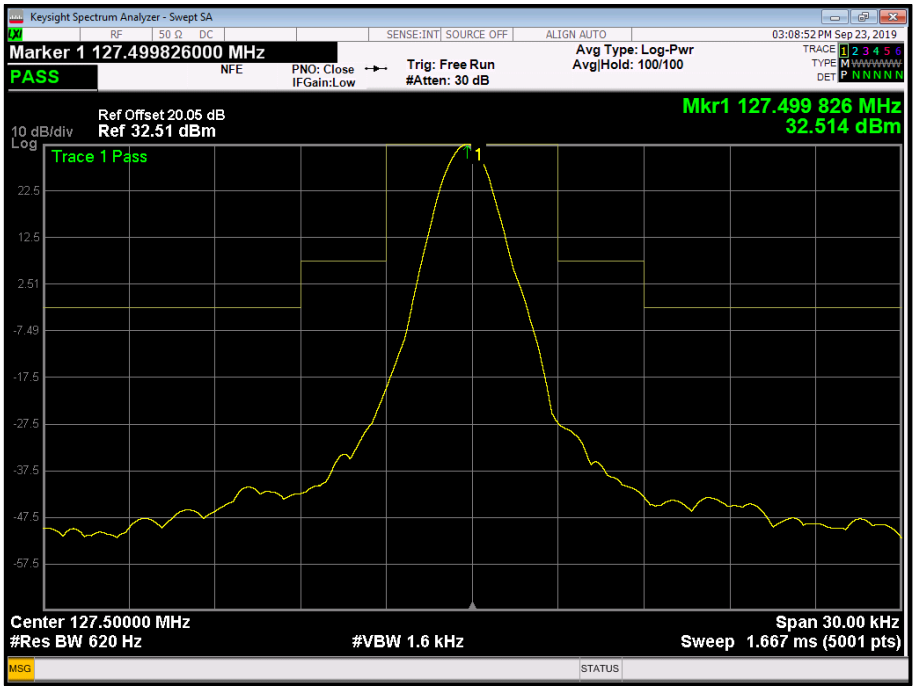

Figure 25 – 127.500 MHz - Transmitter Spectrum Mask

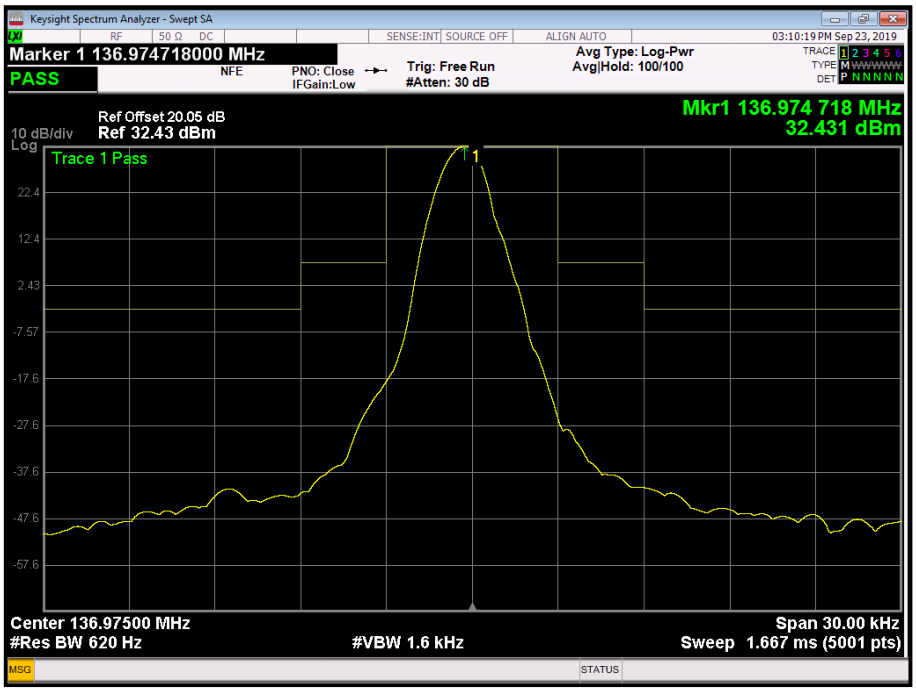

Figure 26 – 136.975 MHz - Transmitter Spectrum Mask

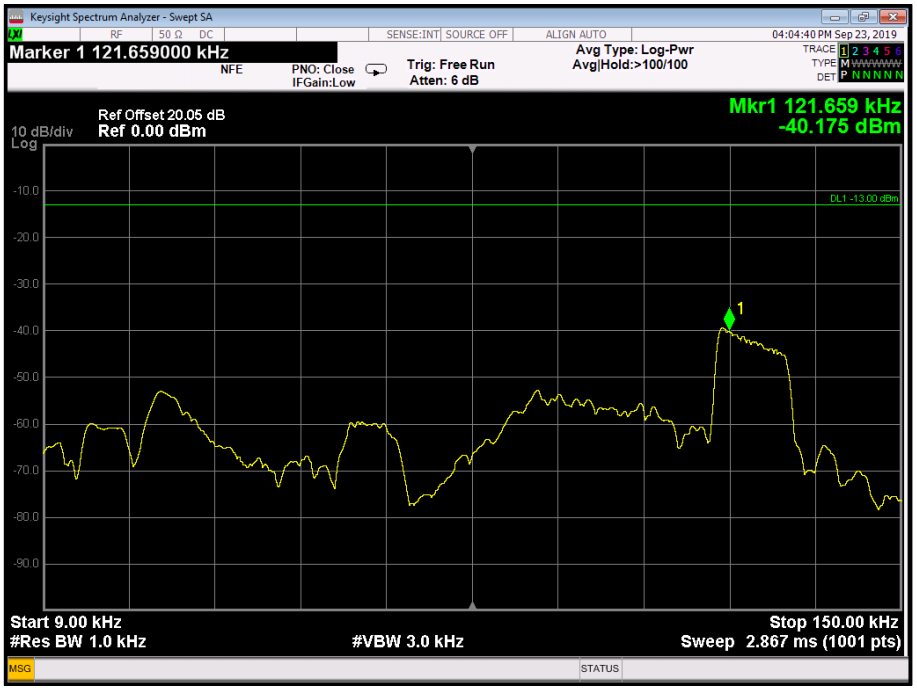

Figure 27 – 118.000 MHz - 9 kHz to 150 kHz

Figure 28 – 127.500 MHz - 9 kHz to 150 kHz

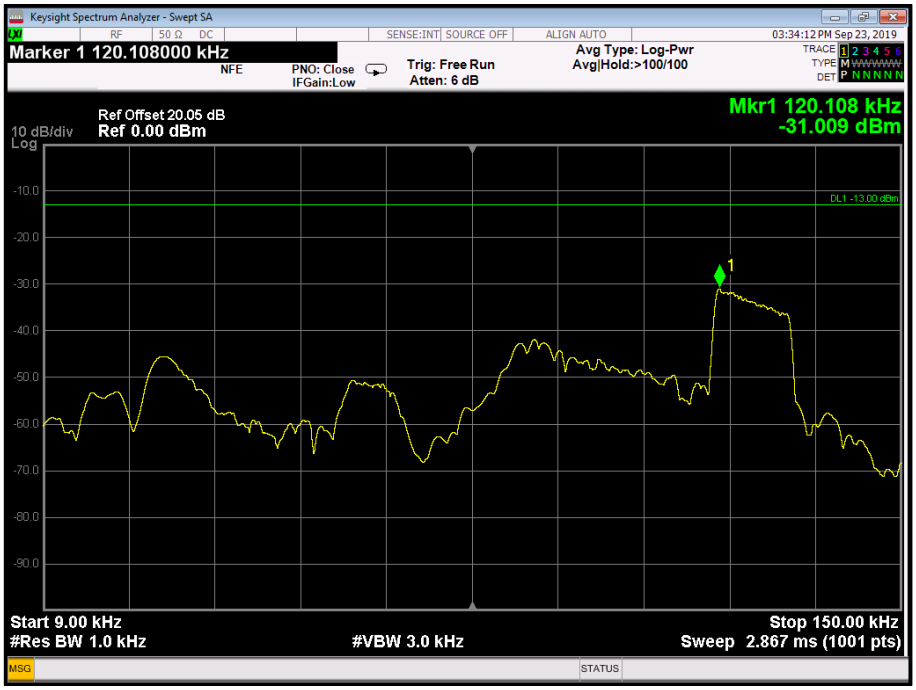

Figure 29 – 136.975 MHz - 9 kHz to 150 kHz

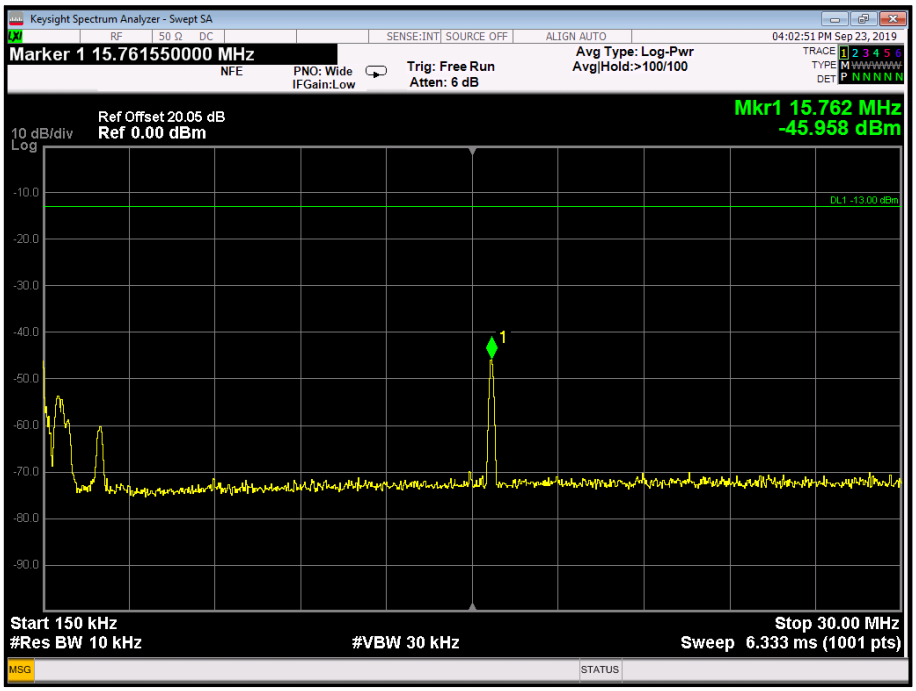

Figure 30 – 118.000 MHz - 150 kHz to 30 MHz

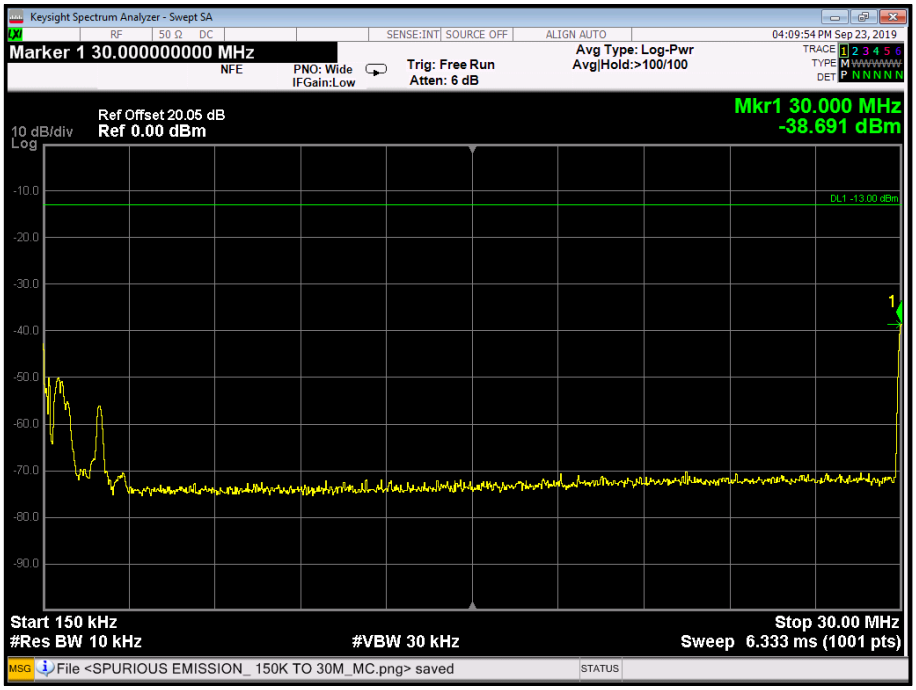

Figure 31 – 127.500 MHz - e.g. 150 kHz to 30 MHz

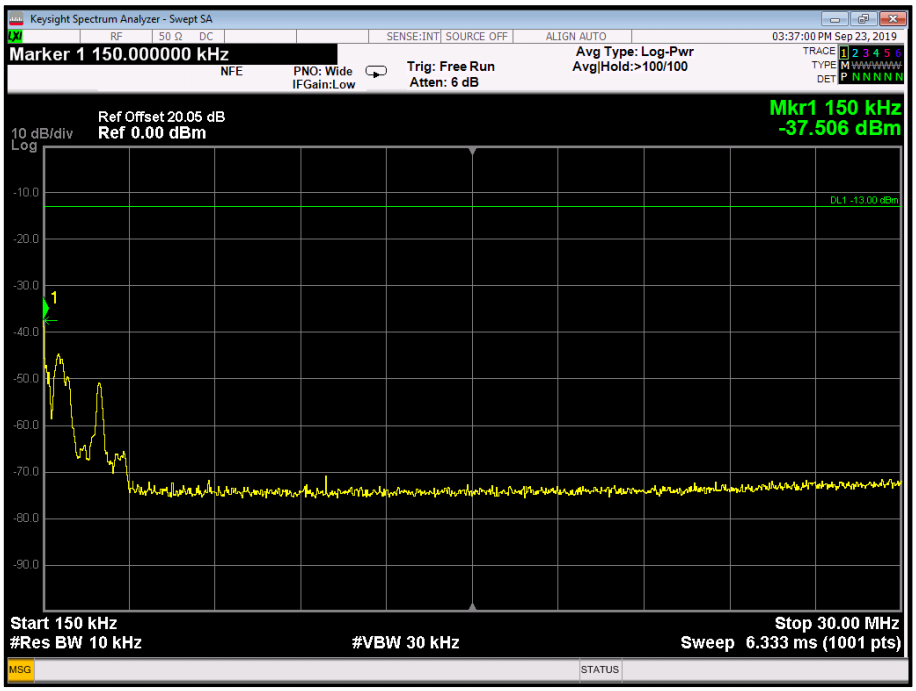

Figure 32 – 136.975 MHz - e.g. 150 kHz to 30 MHz

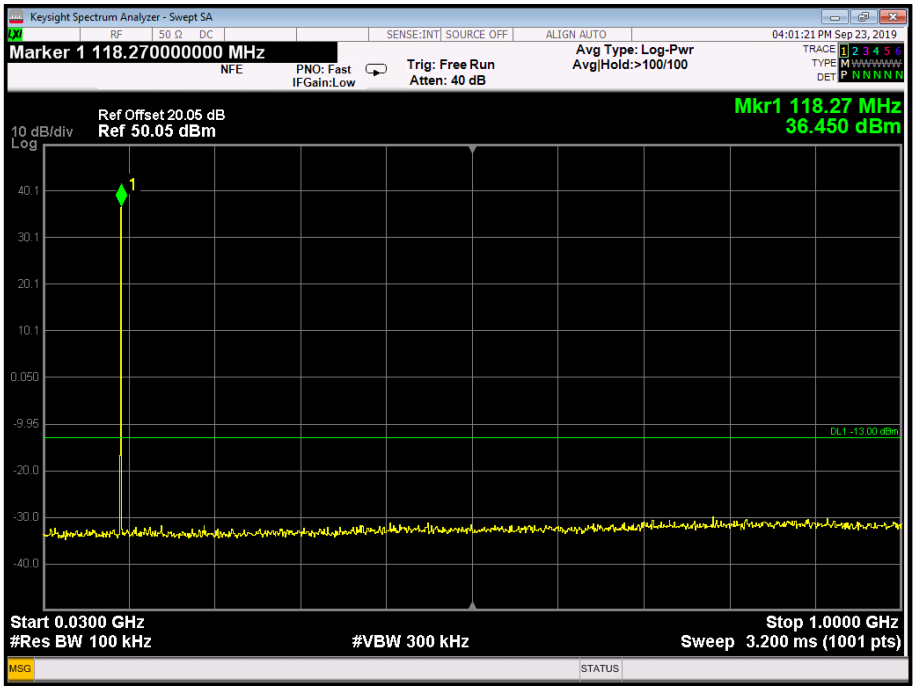

Figure 33 – 118.000 MHz - 30 MHz to 1 GHz

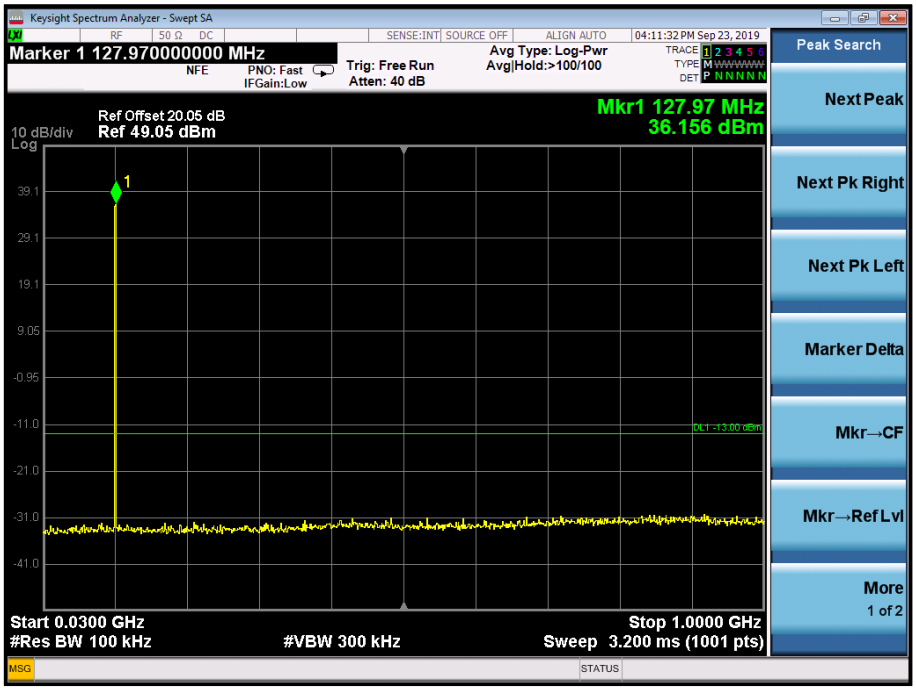

Figure 34 – 127.500 MHz - 30 MHz to 1 GHz

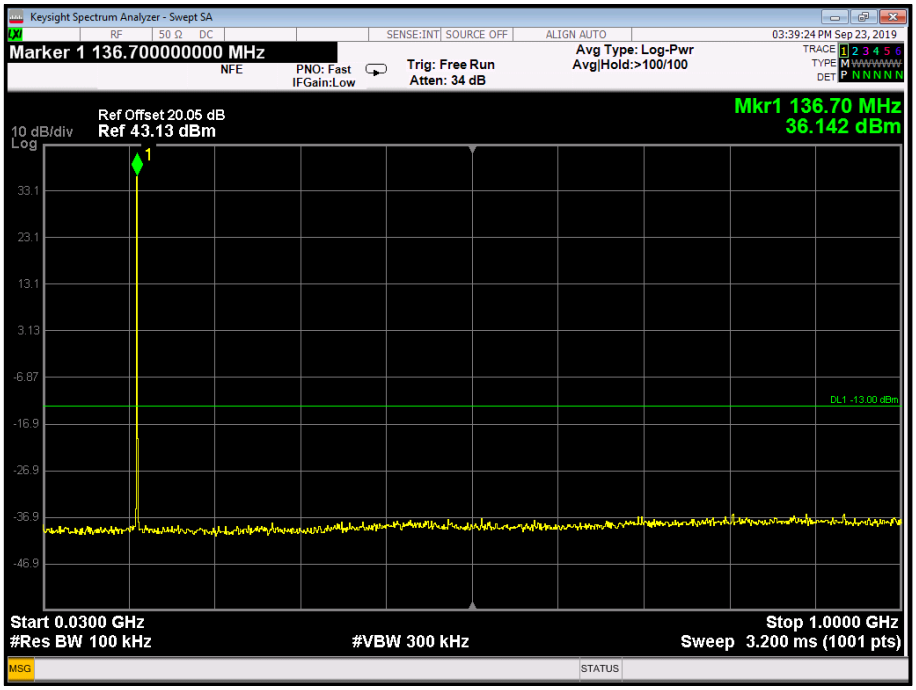

Figure 35 – 136.975 MHz - 30 MHz to 1 GHz

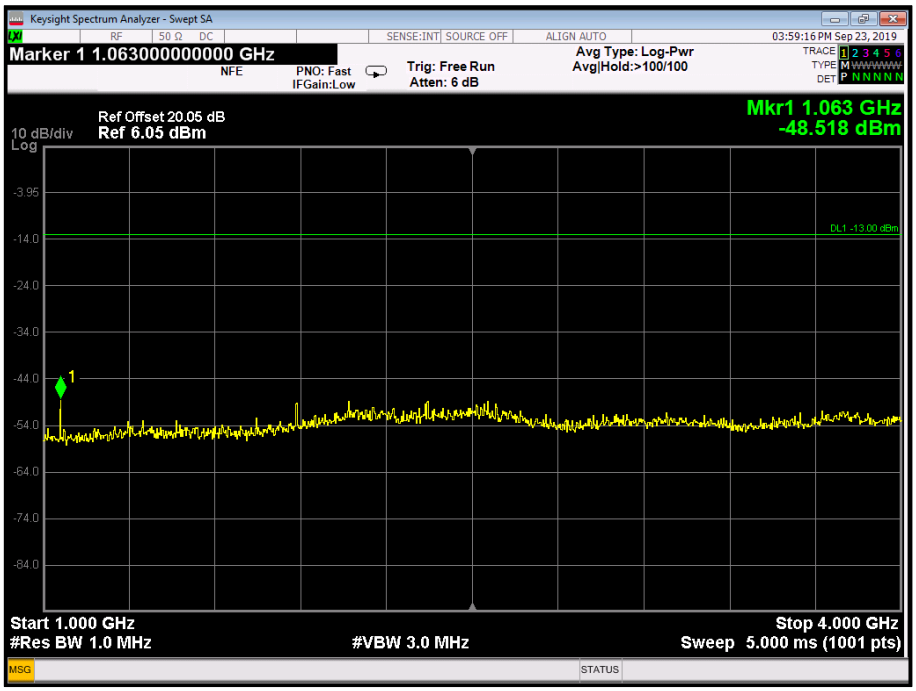

Figure 36 – 118.000 MHz - 1 GHz to 4 GHz

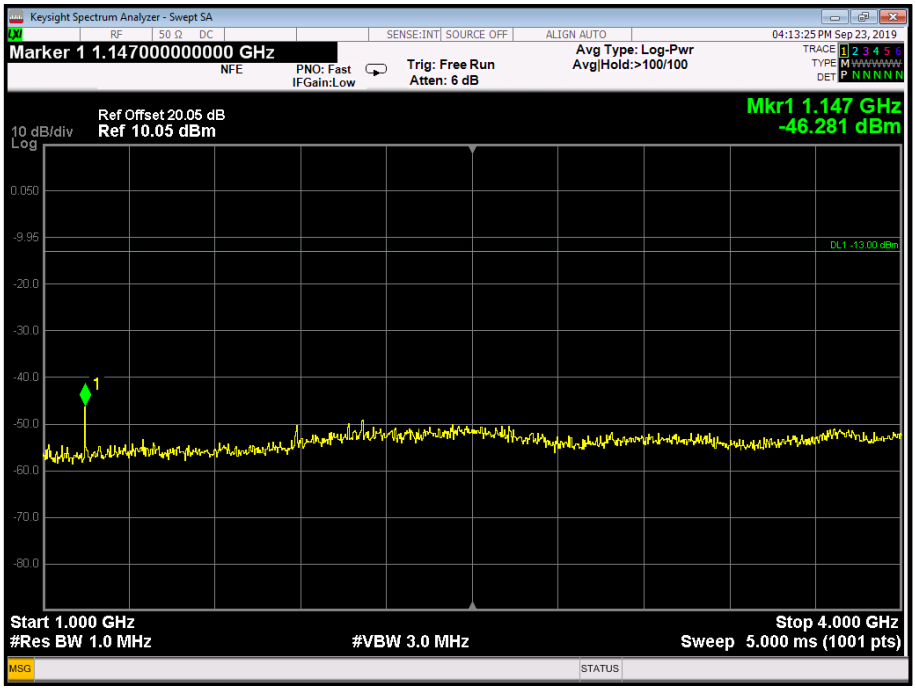

Figure 37 – 127.500 MHz - 1 GHz to 4 GHz

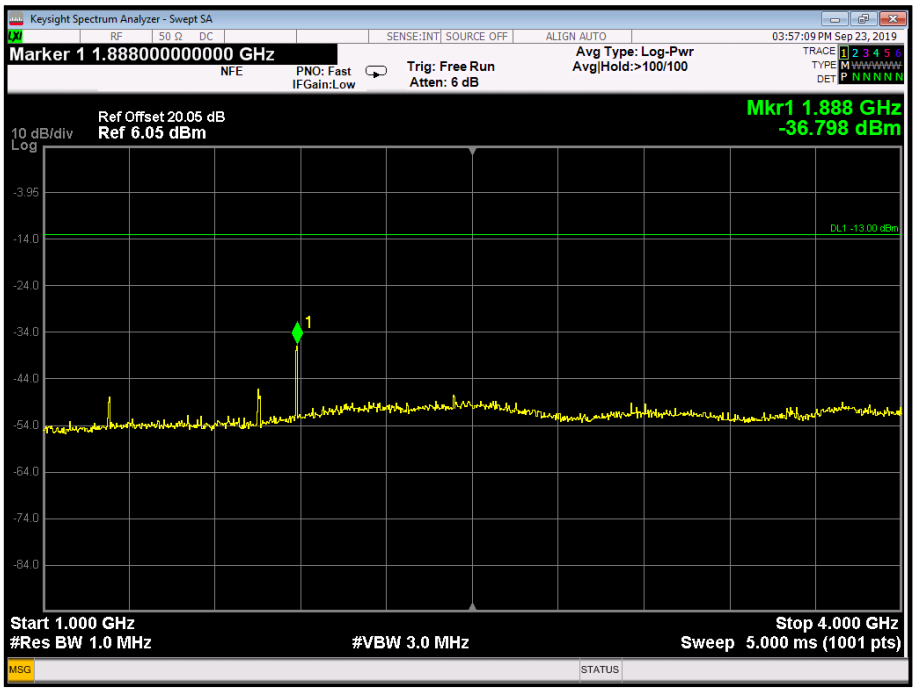

Figure 38 – 136.975 MHz - 1 GHz to 4 GHz

2.6.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Audio Analyser	Hewlett Packard	8903B	2212	12	10-Aug-2019
Multimeter	Fluke	79 Series II	3057	12	19-Aug-2020
Attenuator (20dB, 250W)	Weinschel	45-20-43	4321	12	17-Jul-2020
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
PXA Signal Analyser	Keysight Technologies	N9030A	4653	12	06-Feb-2020
Hygrometer	Rotronic	HP21	4989	12	02-May-2020
Network Analyser	Keysight Technologies	E5063A	5018	12	20-May-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5098	12	04-Oct-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5108	12	05-Oct-2019
Electronic Calibration Module	Keysight Technologies	85093C	5188	12	21-May-2020

Table 16

2.7 Modulation Requirements

2.7.1 Specification Reference

FCC 47 CFR Part 87, Clause 87.141

2.7.2 Equipment Under Test and Modification State

PJ2, S/N: R1907AV0003 - Modification State 0

2.7.3 Date of Test

13-September-2019

2.7.4 Test Method

The test was performed in accordance with KDB 971168 D01, clause 3.

Modulation Limiting Characteristics: Audio Frequency verse Amplitude Modulation depth. In Audio Analyser set frequency = 100 Hz, 1 kHz and 5 kHz and vary a Amplitude from 1mV to 1000 mV in Audio Analyser and Monitor the Amplitude Modulation depth in Modulation Analyser and record the Amplitude Modulation depth in Percentage.

Frequency Response Characteristics:
Set Amplitude = 1000 mV in Audio Analyser and vary a Frequency in Audio Analyser from 100 Hz to 5000 Hz in Audio Analyser. Through Modulation Analyser, Monitor and record the Amplitude Modulation depth in Percentage.

2.7.5 Environmental Conditions

Ambient Temperature	21.4 °C
Relative Humidity	53.1 %

2.7.6 Test Results

VHF Transceiver

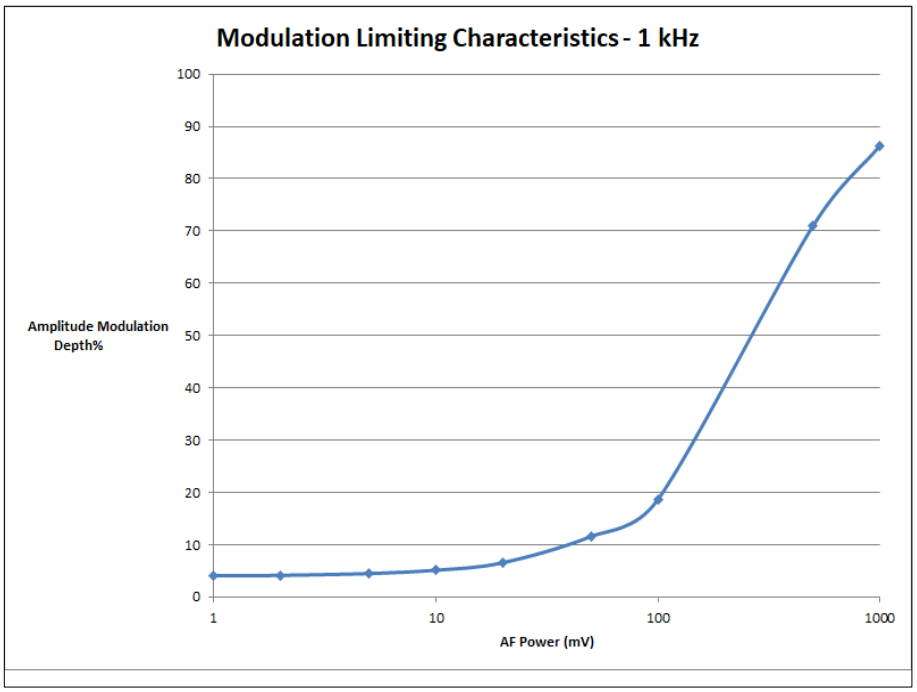

Figure 39 - Plot of the Modulation of the Transmission

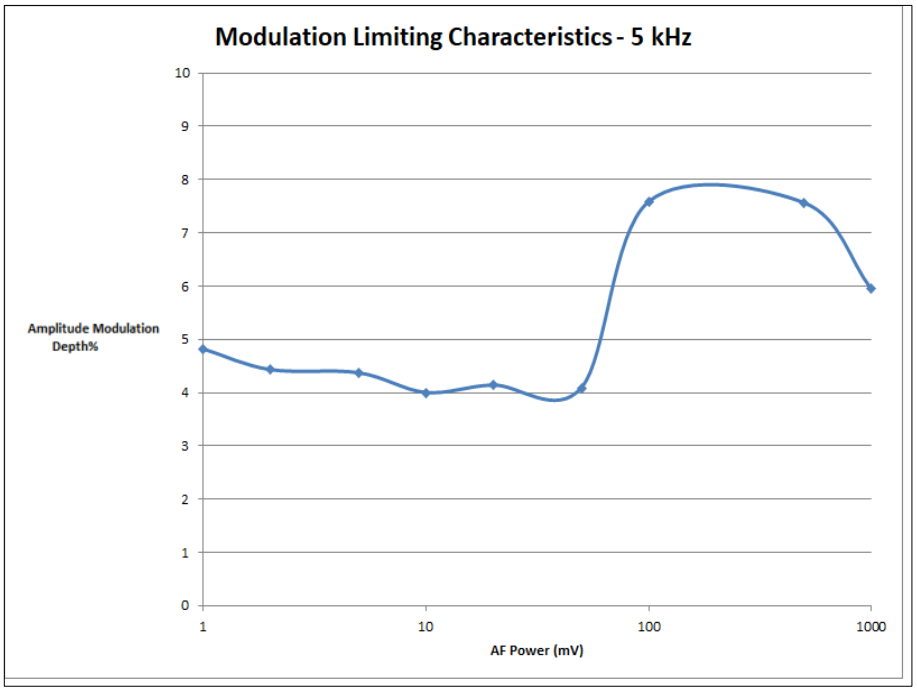

Figure 40 - Plot of the Modulation of the Transmission

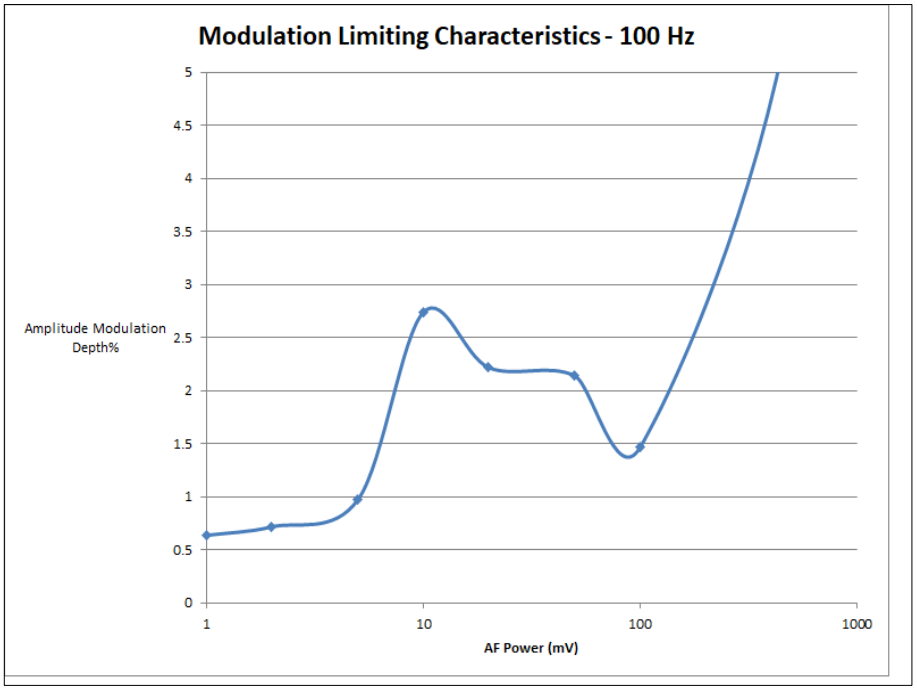

Figure 41 - Plot of the Modulation of the Transmission

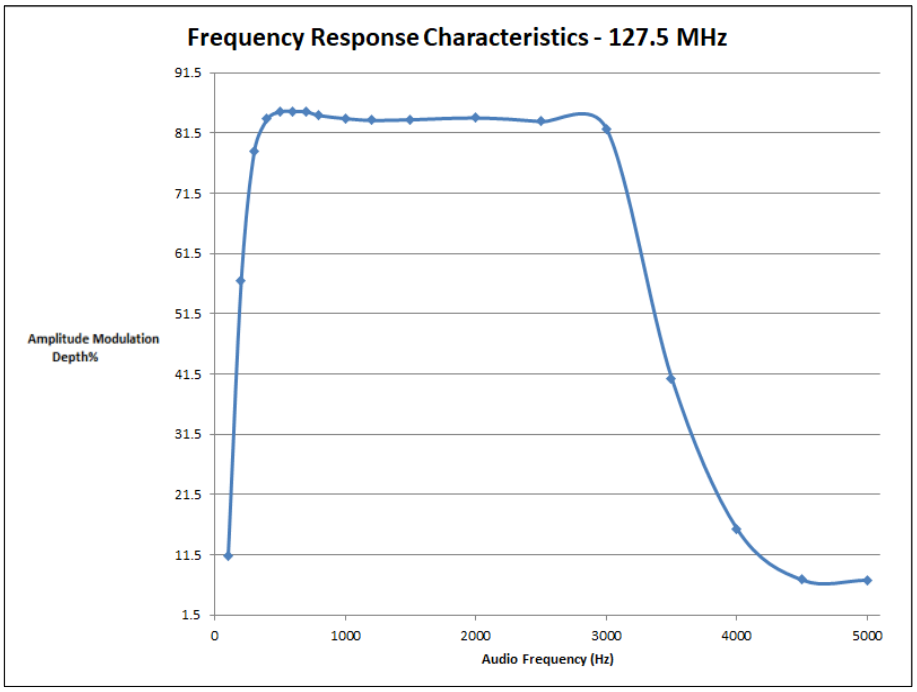

Figure 42 - Plot of the Modulation of the Transmission

2.7.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Modulation Analyser	Hewlett Packard	8901B	45	12	26-Sep-2019
Audio Analyser	Hewlett Packard	8903B	576	12	17-Jan-2020
Multimeter	Fluke	79 Series II	3057	12	19-Aug-2020
Attenuator (20dB, 250W)	Weinschel	45-20-43	4321	12	17-Jul-2020
Power Supply	TTI	EL303R	4383	-	TU
Hygropalm Temperature and Humidity Meter	Rotronic	HP21	4410	12	13-Jun-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5098	12	04-Oct-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5108	12	05-Oct-2019

Table 17

TU - Traceability Unscheduled

3 Photographs

3.1 Test Setup Photographs

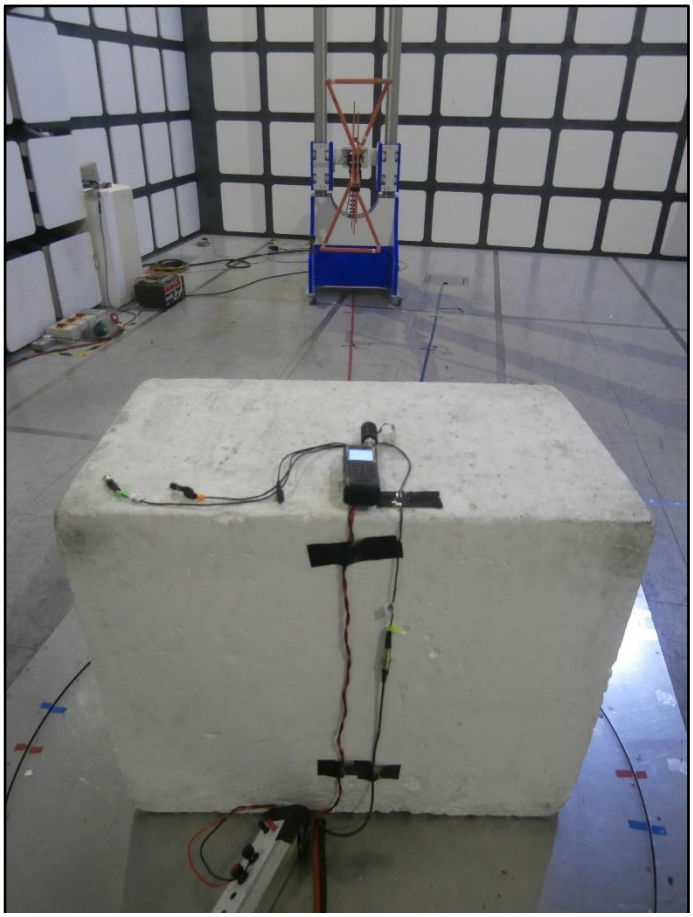

Figure 43 – Radiated Spurious Emissions 30 MHz to 2 GHz

4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Power and Emissions	± 3.2 dB
Frequency Stability	± 8.03 Hz
Bandwidth of Emission	± 0.090 kHz
Spurious Emissions at Antenna Terminals	± 3.45 dB
Radiated Spurious Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 18 GHz: ± 6.3 dB
Modulation Requirements	-

Table 18