

# FCC and ISED Test Report

Ocean Signal Limited  
Model: PLB-450

In accordance with FCC 47 CFR Part 80, FCC 47 CFR Part 2, ISED RSS-182 and ISED RSS-GEN (AIS Homing Transmitter)

Prepared for: Ocean Signal Limited  
Ocivan Way  
Margate  
CT9 4NN  
United Kingdom



Add value.  
Inspire trust.

FCC ID: XYE PLB3

IC: 9296A PLB3

## COMMERCIAL-IN-CONFIDENCE

Document 75950037-07 Issue 01

### SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Matthew Russell	Senior Engineer	Authorised Signatory	20 June 2022

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 80, FCC 47 CFR Part 2, ISED RSS-182 and ISED RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Neil Rousell	20 June 2022	
Testing	Graeme Lawler	20 June 2022	

FCC Accreditation  
90987 Octagon House, Fareham Test Laboratory

ISED Accreditation  
12669A Octagon House, Fareham Test Laboratory

### EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 80: 2020, FCC 47 CFR Part 2: 2020, ISED RSS-182: Issue 6 (2021-06) and ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021) for the tests detailed in section 1.3.



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# 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	20-June-2022

**Table 1**

## 1.2 Introduction

Applicant	Ocean Signal Limited
Manufacturer	Ocean Signal Limited
Model Number(s)	PLB-450
Manufacturer Declared Variant(s)	PLB3
Serial Number(s)	TA000009 (conducted PLB-450) TA000011 (radiated PLB-450)
Hardware Version(s)	Issue 01.00
Software Version(s)	00.03.00
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 80: 2020 FCC 47 CFR Part 2: 2020 ISED RSS-182: Issue 6 (2021-06) ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021)
Order Number	10113
Date	16-September-2020
Date of Receipt of EUT	07-June-2021 and 26-July-2021
Start of Test	19-January-2022
Finish of Test	20-February-2022
Name of Engineer(s)	Neil Rousell and Graeme Lawler



**1.3 Brief Results**

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 80, FCC 47 CFR Part 2, ISED RSS-182 and ISED RSS-GEN is shown below.

Section	Specification Clause				Test Description	Result	Comments/Base Standard
	FCC Part 80	FCC Part 2	RSS-182	RSS-GEN			
Configuration and Mode: Battery Powered - AIS only							
2.1	80.205	2.1049	-	6.7	Bandwidths	Pass	
2.2	80.209	2.1055	7.4	6.11	Transmitter Frequency Tolerances	Pass	
2.3	80.211	2.1051	7.9	6.13	Radiated Spurious Emissions	Pass	
2.4	80.211	2.1051	7.9	6.13	Spurious Emissions at Antenna Terminals	Pass	
2.5	80.213	2.1047	7.7	-	Modulation Requirements	Pass	
2.6	80.215	2.1046	7.5	6.12	Transmitter Power	Pass	

**Table 2**



1.4 Application Form

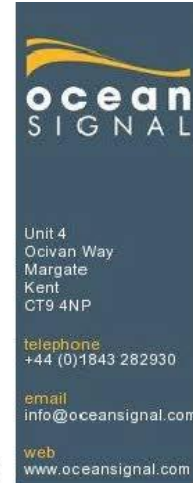
<b>MAIN EUT</b>	
<b>MANUFACTURING DESCRIPTION</b>	Personal Locator Beacon
<b>MANUFACTURER</b>	Ocean Signal Ltd
<b>MODEL</b>	PLB3, RescueME PLB3, PLB-450, ResQLink AIS
<b>PART NUMBER</b>	900S-03356 (PLB3, RescueME PLB3) , 900S-03767 (PLB-450, ResQLink AIS)
<b>HARDWARE VERSION</b>	Issue 01.00 (All models)
<b>SOFTWARE VERSION</b>	Not Applicable
<b>FIRMWARE VERSION</b>	500S-03492 Issue 00.03.00
<b>PSU VOLTAGE/FREQUENCY/CURRENT</b>	6V
<b>HIGHEST INTERNALLY GENERATED FREQUENCY</b>	406.031 MHz
<b>FCC ID (if applicable)</b>	XYE PLB3
<b>INDUSTRY CANADA ID (if applicable)</b>	9296A PLB3
<b>TECHNICAL DESCRIPTION</b> (a brief technical description of the intended use and operation)	Personal Locator Beacon incorporating 162 MHz AIS Man Overboard positioning, 406MHz Cospas Sarsat Satellite rescue and 121.5MHz homing capabilities.Product is designed to operate whilst attached to a lifejacket.
<b>COUNTRY OF ORIGIN</b>	UK
<b>RF CHARACTERISTICS (if applicable)</b>	
<b>TRANSMITTER FREQUENCY OPERATING RANGE (MHz)</b>	121.5MHz, 161.975MHz, 162.025 MHz & 406.031MHz
<b>RECEIVER FREQUENCY OPERATING RANGE (MHz)</b>	N/A
<b>INTERMEDIATE FREQUENCIES</b>	N/A
<b>EMISSION DESIGNATOR(S):</b> <a href="https://fccid.io/Emissions-Designator/">https://fccid.io/Emissions-Designator/</a>	3K20A3X, 16K0GXW, 16K0G1D
<b>MODULATION TYPES: (i.e. GMSK, QPSK)</b>	Swept tone AM, GMSK, BPSK
<b>OUTPUT POWER (W or dBm)</b>	16dBm ±2dBm (121.5MHz), 31.2 dBm (AIS), 37dBm (406MHz)
<b>SEPARATE BATTERY/POWER SUPPLY (if applicable)</b>	

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

Name:  Mark Newton  
 Position held: Approvals Manager  
 Date: 12-04-2022



## 1.5 Manufacturer's Declared Variant(s)



16th December 2021

### **Ocean Signal Limited PLB3 (rescueME PLB3) and ACR PLB-450 (ResQLink AIS) – Statement of Equivalence**

Dear Sir/Madam,

The Ocean Signal PLB3 and ACR PLB-450 are essentially the same product with different exterior labels and body colours (Ocean Signal Yellow and ACR Chartreuse) as shown in Figure 1.

The electronics, battery, firmware and functionality are identical in both products.

Both products are manufactured by Ocean Signal Limited at their manufacturing site in the UK under the same quality system and testing regime.

The Manuals, Quick Start guides and retail boxes for each product have different branding accordingly.

Justification for acceptance of both models as having equivalent performance is based upon comparison Satellite Quality testing during Cospas Sarsat Pre - Application Type Approval. (Reference email from Eric Harpell, 13/09/2021).

The two branded products will also have additional names that may be used in different markets as follows:

PLB3 will also be known as rescueME PLB3.  
PLB-450 will also be known as ResQLink AIS.

Signed on behalf of Ocean Signal Limited.

Mark Newton  
Approvals Manager

Registration No  
6627101

Vat No  
938 4374 89

Registered Office  
27 New Dover Road  
Canterbury  
Kent  
CT1 3DN



Figure 1



## 1.6 Product Information

### 1.6.1 Technical Description

The Equipment under test (EUT) was an Ocean Signal Ltd, PLB-450.

The primary function of the EUT is to be used as a personal locator beacon.

### 1.7 Deviations from the Standard

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

### 1.8 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: PLB-450, Serial Number: TA000009			
2	Update to FW V.03.00	Ocean Signal	27-October-2021
Model: PLB-450, Serial Number: TA000011			
2	Update to FW V.03.00	Ocean Signal	27-October-2021

**Table 3**

### 1.9 Test Location

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

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: Battery Powered - AIS only		
Bandwidths	Neil Rousell	UKAS
Transmitter Frequency Tolerances	Neil Rousell	UKAS
Radiated Spurious Emissions	Graeme Lawler	UKAS
Spurious Emissions at Antenna Terminals	Neil Rousell	UKAS
Modulation Requirements	Neil Rousell	UKAS
Transmitter Power	Neil Rousell	UKAS

**Table 4**

Office Address:

TÜV SÜD  
Octagon House  
Concorde Way  
Fareham  
Hampshire  
PO15 5RL  
United Kingdom





## 2 Test Details

### 2.1 Bandwidths

#### 2.1.1 Specification Reference

FCC 47 CFR Part 80, Clause 80.205  
FCC 47 CFR Part 2, Clause 2.1049  
ISED RSS-GEN, Clause 6.7

#### 2.1.2 Equipment Under Test and Modification State

PLB-450, S/N: TA000009 - Modification State 2

#### 2.1.3 Date of Test

19-January-2022

#### 2.1.4 Test Method

The EUT, transmitting at maximum power and modulated by the standard AIS test signal using a PRBS packet payload was connected to a spectrum analyser via a cable and attenuator. The RBW of the spectrum analyser was set to at least 1% of the emission bandwidth and the VBW set to >3 times the RBW and the occupied bandwidth measurement function of the analyser was used and the 99% bandwidth recorded.

#### 2.1.5 Environmental Conditions

Ambient Temperature	22.9 °C
Relative Humidity	32.4 %

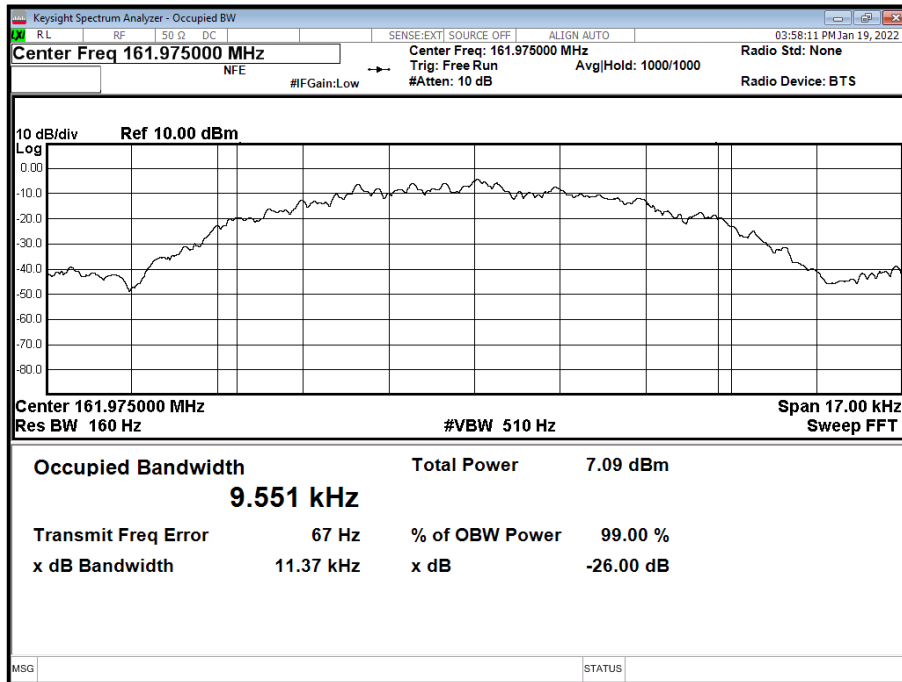


**2.1.6 Test Results**

Battery Powered - AIS only

Occupied Bandwidth (kHz)
11.4

**Table 5 - Occupied Bandwidth Results – 161.975 MHz**



**Figure 1 - 161.975 MHz Occupied Bandwidth**

FCC 47 CFR Part 80, Limit Clause 80.205

< 20 kHz

Industry Canada RSS-GEN, Limit Clause

None Specified.



**2.1.7 Test Location and Test Equipment Used**

This test was carried out in RF Laboratory 2.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	29-Jan-2022
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	31-Jan-2022
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	30-Jun-2022
1 metre K-Type Cable	Florida Labs	KMS-180SP-39.4-KMS	4519	12	18-Nov-2022
PXA Signal Analyser	Keysight Technologies	N9030A	4654	12	24-Nov-2022
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	06-Apr-2022
Attenuator 5W 30dB DC-18GHz	Aaren	AT40A-4041-D18-30	5503	12	14-Apr-2022

**Table 6**



## **2.2 Transmitter Frequency Tolerances**

### **2.2.1 Specification Reference**

FCC 47 CFR Part 80, Clause 80.209  
FCC 47 CFR Part 2, Clause 2.1055  
ISED RSS-182, Clause 7.4  
and ISED RSS-GEN, Clause, 6.11.

### **2.2.2 Equipment Under Test and Modification State**

PLB-450, S/N: TA000009 - Modification State 2

### **2.2.3 Date of Test**

24-January-2022

### **2.2.4 Test Method**

The EUT was transmitting at maximum power on the AIS channel modulated using the standard AIS test signal with PRBS packet payload. The EUT was connected to the spectrum analyser via a cable and attenuator. The external frequency reference of the spectrum analyser was locked to a 10 MHz rubidium frequency reference. The FM DEMOD function of the spectrum analyser was used to record the carrier frequency error. In accordance with 2.1055, the temperature was varied from -20°C to +55° in 10° steps.

### **2.2.5 Environmental Conditions**

Ambient Temperature	20.6 °C
Relative Humidity	36.5 %



**2.2.6 Test Results**

Battery Powered - AIS only

Temperature	Frequency Error (ppm)
	161.975 MHz
+55.0 °C	-0.41
+50.0 °C	-0.28
+40.0 °C	-0.34
+30.0 °C	-0.32
+20.0 °C	-0.47
+10.0 °C	-0.28
0 °C	-0.63
-10.0 °C	-0.52
-20.0 °C	-0.36

**Table 7 - Frequency Stability Under Temperature Variations**

FCC 47 CFR Part 80, Limit Clause 80.209

± 10 ppm.

**2.2.7 Test Location and Test Equipment Used**

This test was carried out in RF Laboratory 2.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Climatic Chamber	Votsch	VT4002	161	-	O/P Mon
Digital Temperature Indicator	Fluke	51	1385	12	02-Mar-2022
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	30-Jun-2022
1 metre K-Type Cable	Florida Labs	KMS-180SP-39.4-KMS	4519	12	18-Nov-2022
PXA Signal Analyser	Keysight Technologies	N9030A	4654	12	24-Nov-2022
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	06-Apr-2022
Attenuator 5W 30dB DC-18GHz	Aaren	AT40A-4041-D18-30	5503	12	14-Apr-2022

**Table 8**

O/P Mon – Output Monitored using calibrated equipment



## **2.3 Radiated Spurious Emissions**

### **2.3.1 Specification Reference**

FCC 47 CFR Part 80, Clause 80.211  
FCC 47 CFR Part 2, Clause 2.1051  
ISED RSS-182, Clause 7.9  
ISED RSS-GEN, Clause, 6.13.

### **2.3.2 Equipment Under Test and Modification State**

PLB-450, S/N: TA000011 - Modification State 2

### **2.3.3 Date of Test**

20-February-2022

### **2.3.4 Test Method**

A preliminary profile of the Radiated Spurious Emissions was obtained up to the 10th harmonic by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

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

Prescans and final measurements were performed using the direct field strength method.

Field strength measurements were performed and then converted to Equivalent Power Measurements in accordance with ANSI C63.26, Clause 5.2.7 equation c)

Example calculation:

$E \text{ (dBuV/m)} + 20\log(d) - 104.8 = \text{EIRP (dBm)}$  where (d) is the measurement distance.

$82.2 \text{ (dBuV/m)} + 20\log(3) - 104.8 = \text{EIRP (dBm)}$   
 $-13.0 = \text{EIRP (dBm)}$

### **2.3.5 Environmental Conditions**

Ambient Temperature	19.6 °C
Relative Humidity	42.3 %



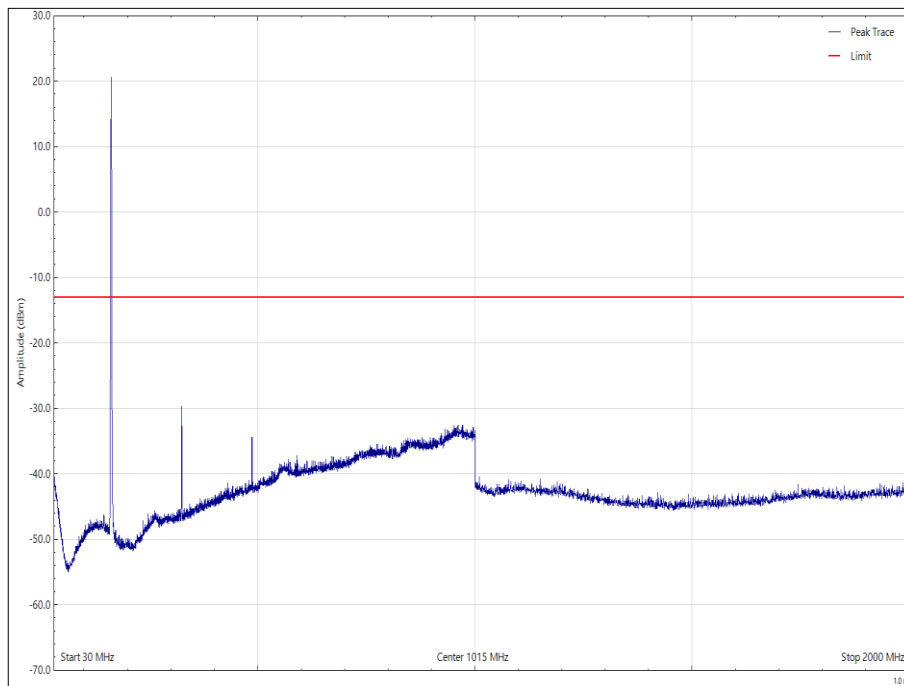
### 2.3.6 Test Results

Battery Powered - AIS only

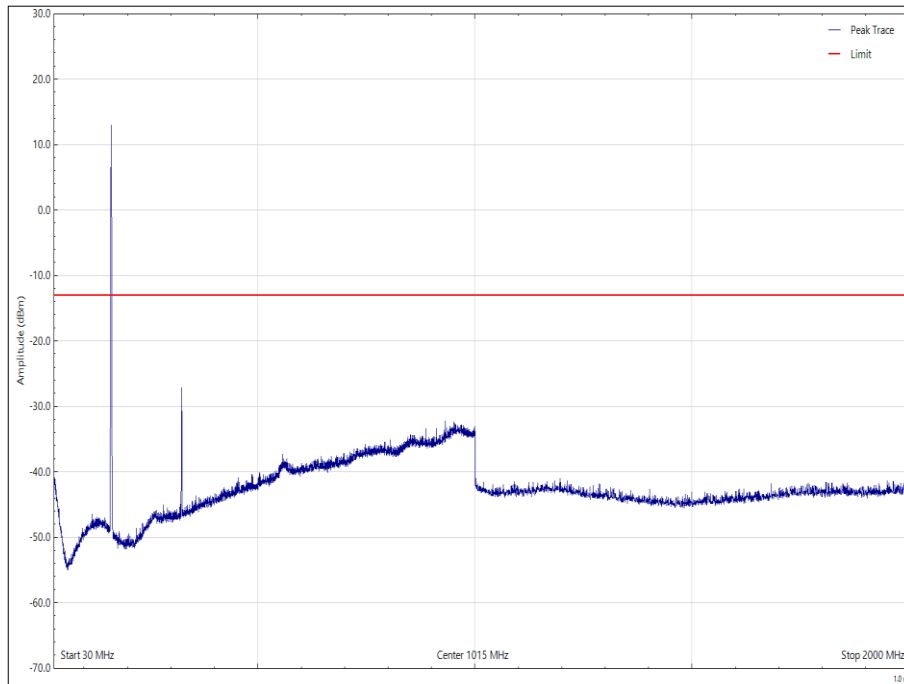
Frequency (MHz)	Level (dBm)
*	

**Table 9 - Emissions Results**

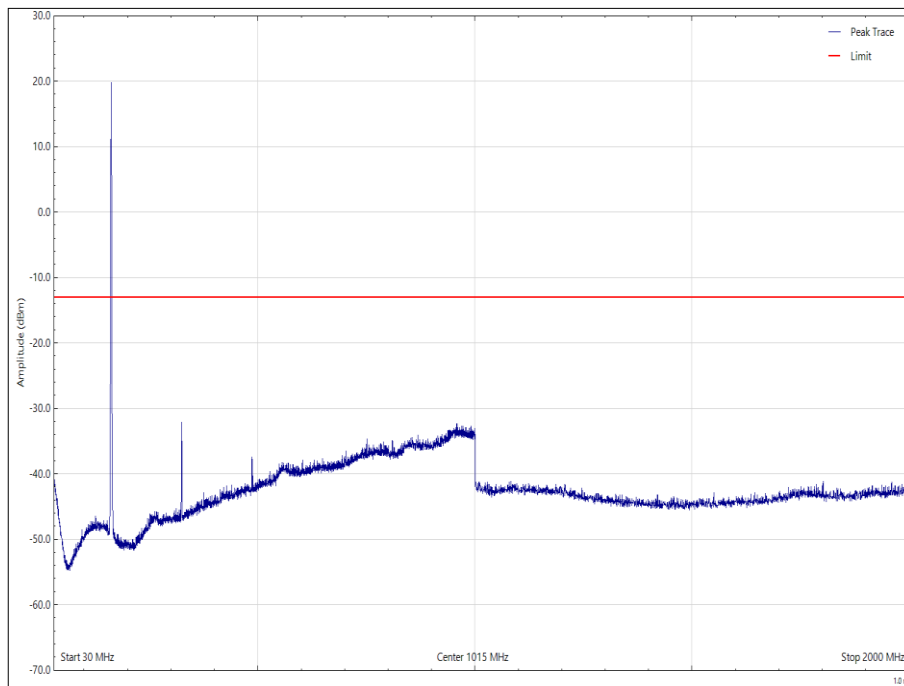
\*No emissions were detected within 10 dB of the limit.



**Figure 2 - 30 MHz to 2 GHz - Vertical - X Orientation**



**Figure 3 - 30 MHz to 2 GHz - Horizontal - X Orientation**



**Figure 4 - 30 MHz to 2 GHz - Vertical - Y Orientation**



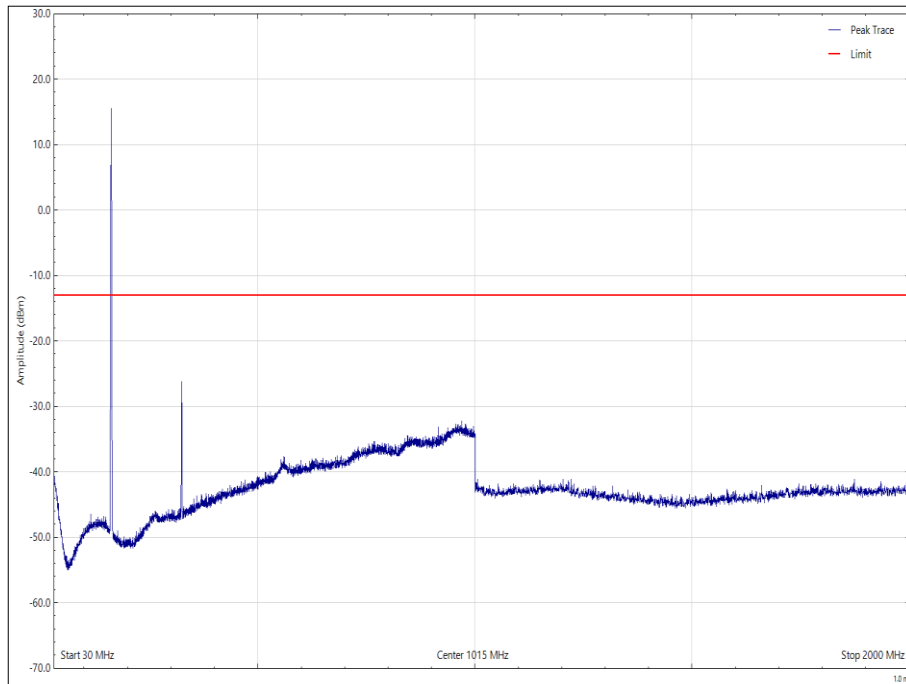


Figure 5 - 30 MHz to 2 GHz - Horizontal - Y Orientation

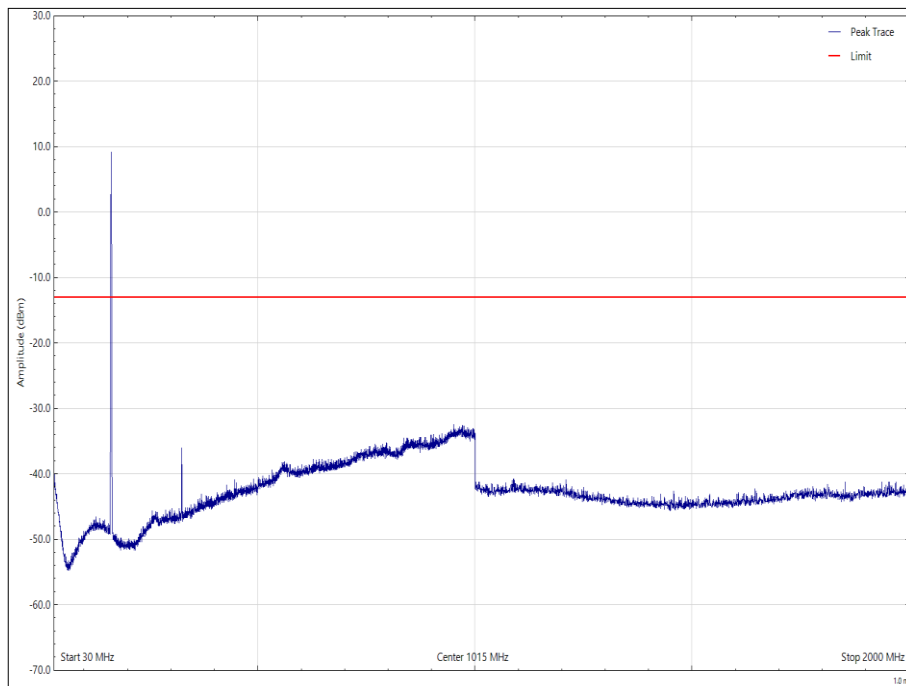
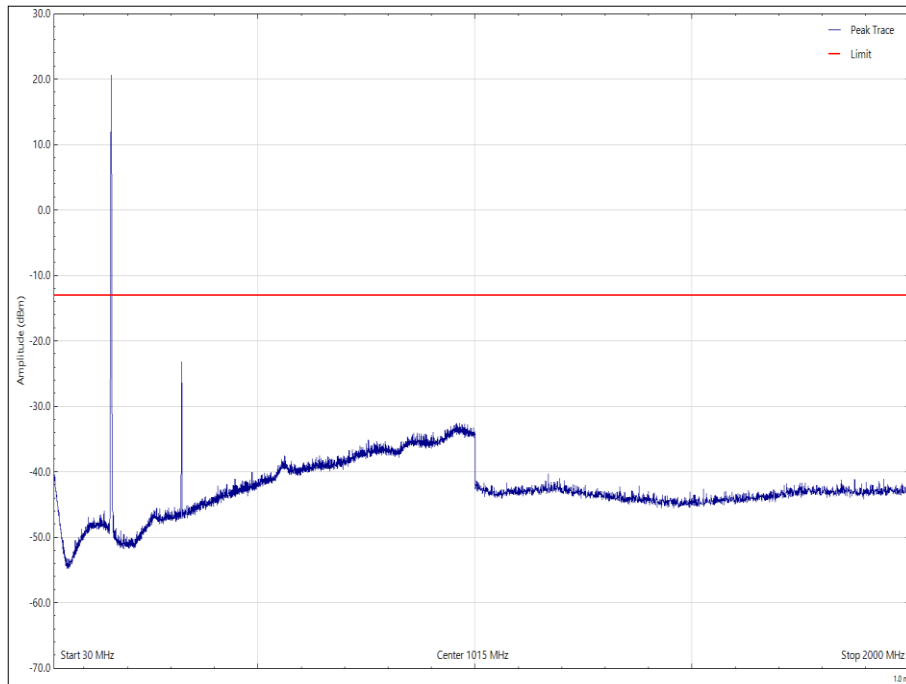


Figure 6 - 30 MHz to 2 GHz - Vertical - Z Orientation



**Figure 7 - 30 MHz to 2 GHz - Horizontal - Z Orientation**



### 2.3.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 12.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Comb Generator	Schaffner	RSG1000	3034	-	TU
Test Receiver	Rohde & Schwarz	ESU40	3506	12	18-Mar-2022
Cable (K-Type to K-Type, 2 m)	Scott Cables	KPS-1501-2000-KPS	4526	6	06-Mar-2022
Emissions Software	TUV SUD	EmX V2.1.11	5125	-	Software
Cable (N-Type to N-Type, 8 m)	Teledyne	PR90-088-8MTR	5450	6	08-Mar-2022
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5481	12	31-Mar-2022
Antenna (DRG, 1 GHz to 10 GHz)	Schwarzbeck	BBHA 9120 B	5611	12	15-Oct-2022
Turntable & Mast Controller	Maturo Gmbh	NCD/498/2799.01	5612	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	5613	-	TU
Turntable	Maturo Gmbh	Turntable 1.5 SI-2t	5614	-	TU
Antenna (Bi-Log, 30 MHz to 1 GHz)	Teseq	CBL6111D	5615	24	16-Oct-2022
Screened Room (12)	MVG	EMC-3	5621	36	11-Aug-2023

**Table 10**

TU - Traceability Unscheduled



## **2.4 Spurious Emissions at Antenna Terminals**

### **2.4.1 Specification Reference**

FCC 47 CFR Part 80, Clause 80.211  
FCC 47 CFR Part 2, Clause 2.1051  
ISED RSS-182, Clause 7.9  
ISED RSS-GEN, Clause, 6.13.

### **2.4.2 Equipment Under Test and Modification State**

PLB-450, S/N: TA000009 - Modification State 2

### **2.4.3 Date of Test**

21-January-2022

### **2.4.4 Test Method**

For emissions where the frequency is removed less than 250% of the authorized bandwidth measurements were performed as follows:

The EUT was connected to a spectrum analyser via a cable and attenuator. The path loss between the EUT and analyser was calibrated using a network analyser and entered in to the spectrum analyser as a reference level offset. The reference level for the mask was established with an RBW approximately 2 or 3 times the emission bandwidth. The RBW was then reduced to at least 1% of the emission bandwidth, with a VBW of 3 times RBW. The mask as per FCC CFR 47 Part 80.211 (f) was applied.

For emissions where the frequency is removed more than 250% of the authorized bandwidth measurements were performed as follows:

A network analyser was used to measure the path loss and the worst case was entered as a reference level offset in to the spectrum analyser. The EUT was connected to a spectrum analyser via an attenuator and cable. The spectrum analyser was configured with an RBW of 3 kHz between 9 kHz and 150 kHz and RBW of 30 kHz between 150 kHz and 2 GHz with the trace set to max hold using a peak detector.

### **2.4.5 Environmental Conditions**

Ambient Temperature	22.9 °C
Relative Humidity	32.4 %



### 2.4.6 Test Results

#### Battery Powered - AIS only

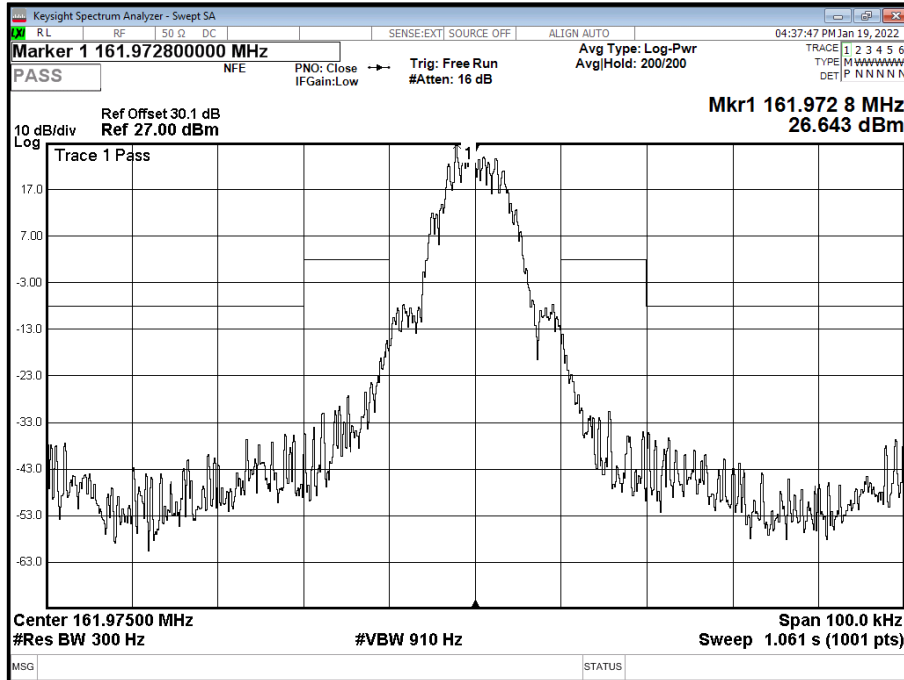


Figure 8 - 161.975 MHz - Transmitter Spectrum Mask

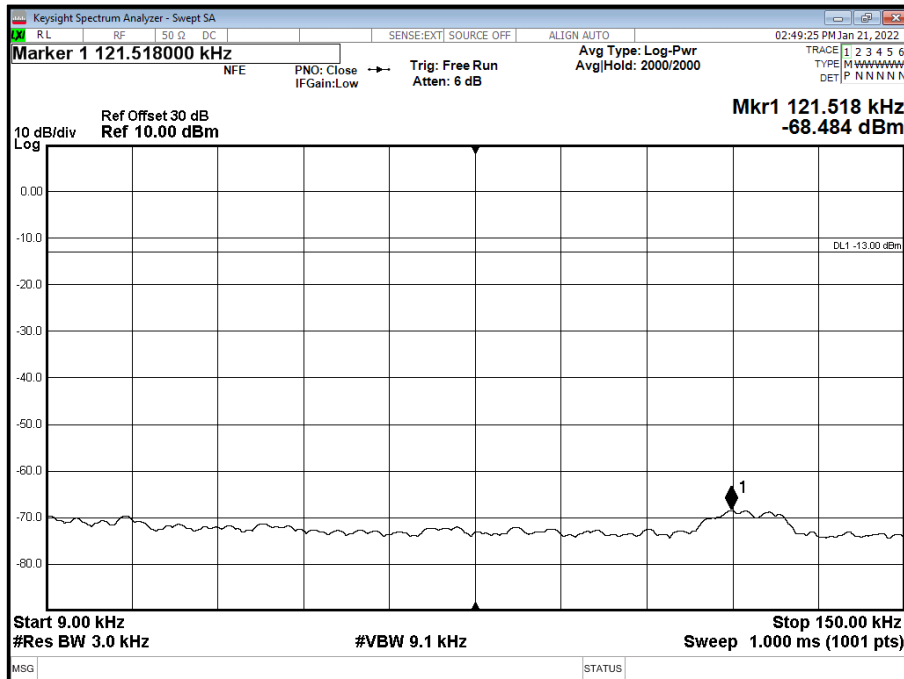


Figure 9 - 161.975 MHz - 9 kHz to 150 kHz

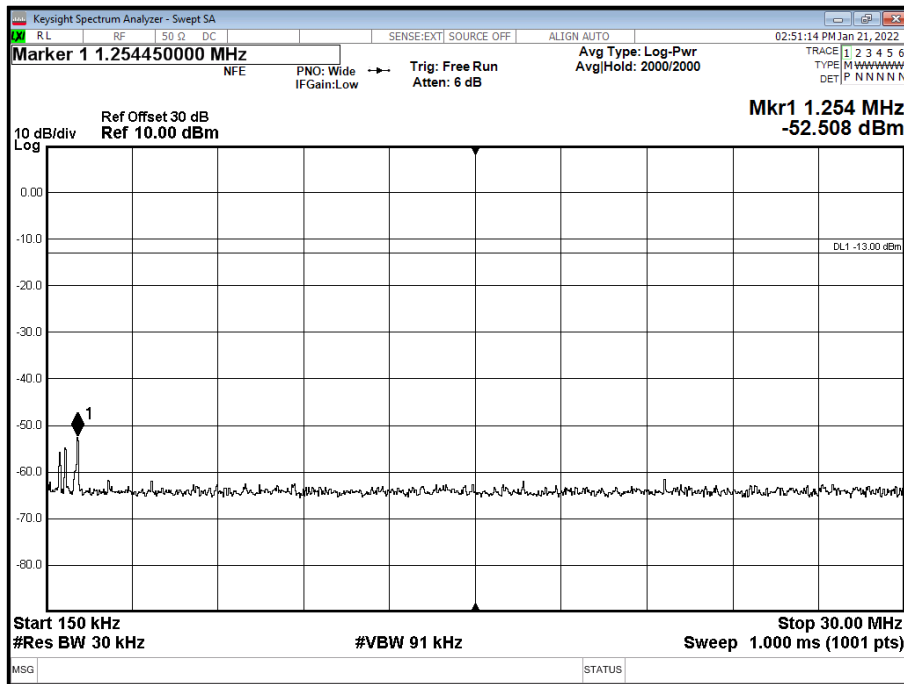


Figure 10 - 161.975 MHz - 150 kHz to 30 MHz

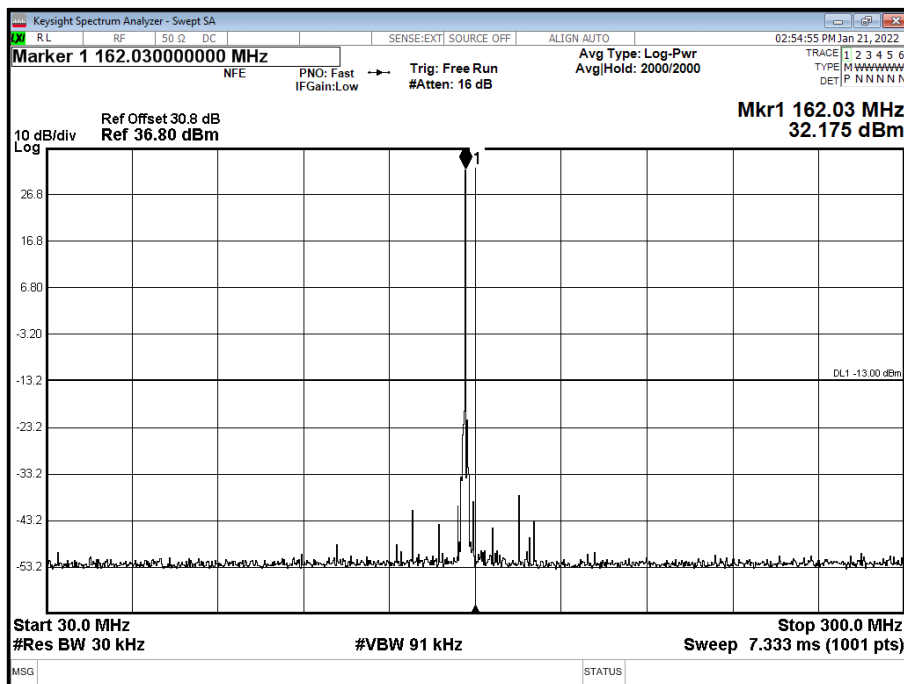


Figure 11 - 161.975 MHz - 30 MHz to 300 MHz

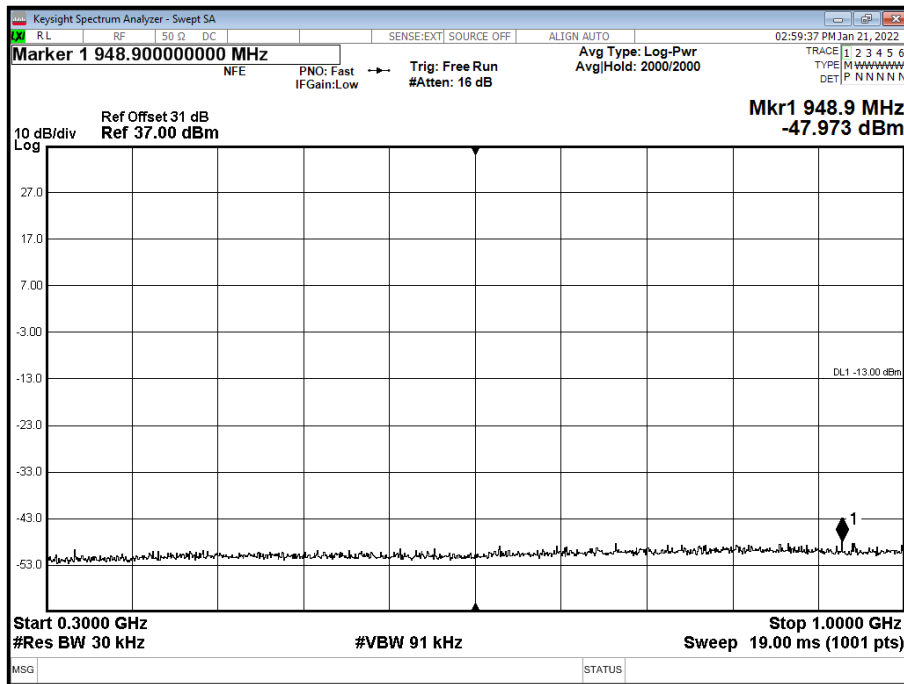


Figure 12 - 161.975 MHz - 300 MHz to 1 GHz

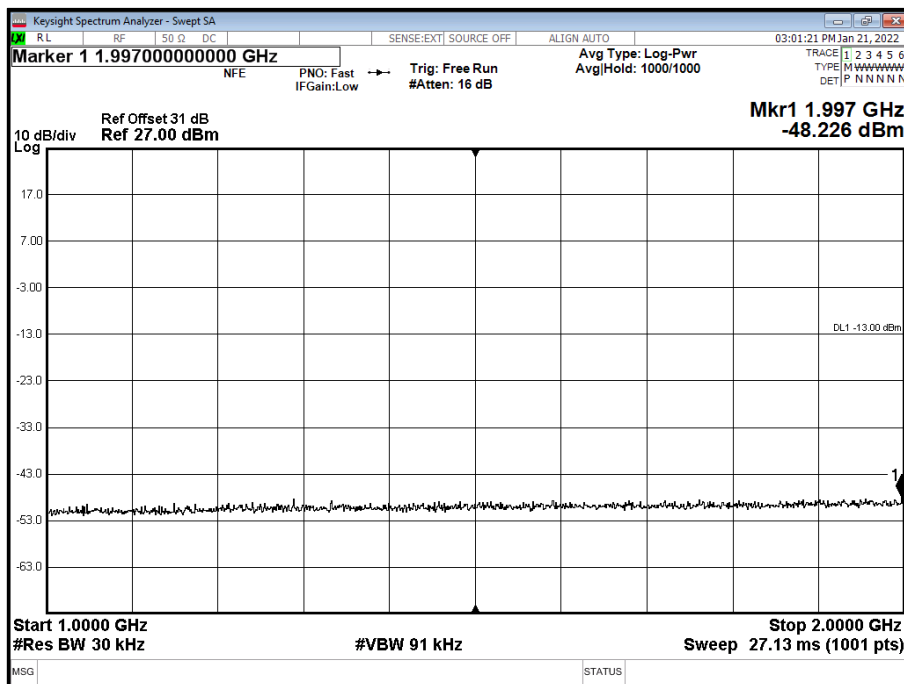


Figure 13 - 161.975 MHz - 1 GHz to 2 GHz



**2.4.7 Test Location and Test Equipment Used**

This test was carried out in RF Laboratory 2.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	29-Jan-2022
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	31-Jan-2022
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	30-Jun-2022
1 metre K-Type Cable	Florida Labs	KMS-180SP-39.4-KMS	4519	12	18-Nov-2022
PXA Signal Analyser	Keysight Technologies	N9030A	4654	12	24-Nov-2022
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	06-Apr-2022
Attenuator 5W 30dB DC-18GHz	Aaren	AT40A-4041-D18-30	5503	12	14-Apr-2022

**Table 11**





## **2.5 Modulation Requirements**

### **2.5.1 Specification Reference**

FCC 47 CFR Part 80, Clause 80.213  
FCC 47 CFR Part 2, Clause 2.1047  
ISED RSS-182, Clause 7.7.

### **2.5.2 Equipment Under Test and Modification State**

PLB-450, S/N: TA000009 - Modification State 2

### **2.5.3 Date of Test**

21-January-2022

### **2.5.4 Test Method**

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 80.213 (d).

The EUT was transmitting at maximum power, modulated by the standard AIS test signal using PRBS packet payload. The EUT was connected to a spectrum analyser via a cable and attenuator, using the FM demodulation function of the spectrum analyser, the peak frequency deviation was observed and shown in the plots below.

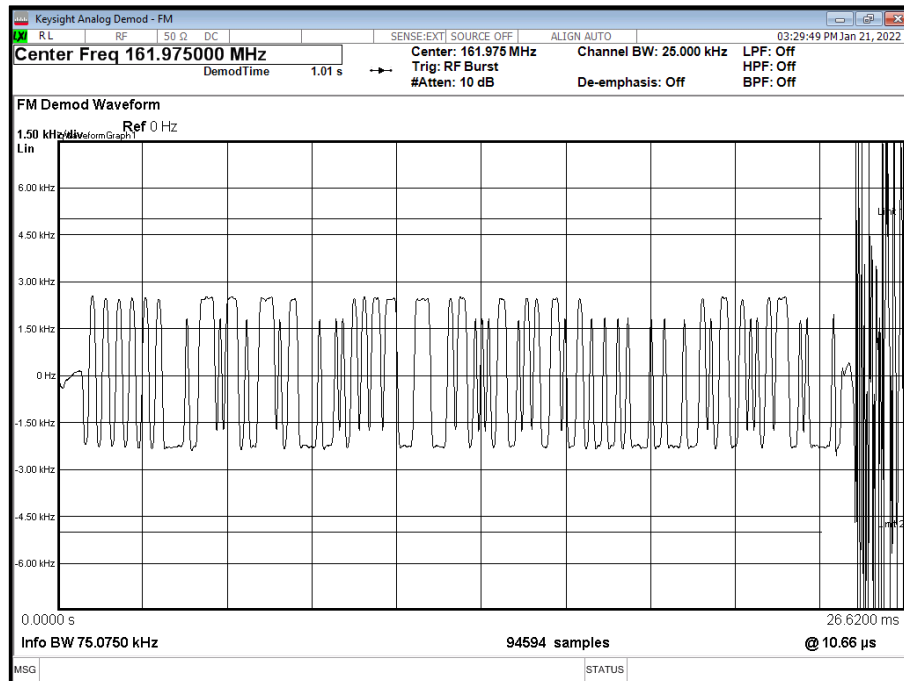
### **2.5.5 Environmental Conditions**

Ambient Temperature	22.9 °C
Relative Humidity	32.4 %



## 2.5.6 Test Results

### Battery Powered - AIS only



**Figure 14- 161.975 MHz - PRBS**

#### FCC 47 CFR Part 80, Limit Clause 80.213(d)

Ship and coast station transmitters operating in the 156–162 MHz and 216–220 bands must be capable of proper operation with a frequency deviation that does not exceed  $\pm 5$  kHz when using any emission authorized by § 80.207

#### Industry Canada RSS-182, Limit Clause 5.7

The VHF AIS equipment shall comply with the following characteristics.

Transmitter frequency:	161.975 MHz (channel AIS1) 162.025 MHz (channel AIS2)
Channel spacing:	25 kHz or 12.5 kHz
Modulation scheme:	GMSK/FM
Modulation index:	0.5 max. for 25 kHz channel spacing 0.25 max. for 12.5 kHz channel spacing
Transmission rate:	9600 bps



### 2.5.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 2.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	30-Jun-2022
1 metre K-Type Cable	Florida Labs	KMS-180SP-39.4-KMS	4519	12	18-Nov-2022
PXA Signal Analyser	Keysight Technologies	N9030A	4654	12	24-Nov-2022
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	06-Apr-2022
Attenuator 5W 30dB DC-18GHz	Aaren	AT40A-4041-D18-30	5503	12	14-Apr-2022

**Table 12**



**2.6 Transmitter Power**

**2.6.1 Specification Reference**

FCC 47 CFR Part 80, Clause 80.215  
FCC 47 CFR Part 2, Clause 2.1046  
ISED RSS-182, Clause 7.5  
ISED RSS-GEN, Clause, 6.12.

**2.6.2 Equipment Under Test and Modification State**

PLB-450, S/N: TA000009 - Modification State 2

**2.6.3 Date of Test**

19-January-2022

**2.6.4 Test Method**

The test was performed in accordance with ANSI C63.26, clause 5.2.3.3.

**2.6.5 Environmental Conditions**

Ambient Temperature	22.7 °C
Relative Humidity	32.4 %



**2.6.6 Test Results**

Battery Powered - AIS only

161.975 MHz	
Result (dBm)	Result (W)
31.46	1.4

**Table 13 - Transmitter Power Results**

FCC 47 CFR Part 80, Limit Clause 80.215 (e)

Ship station frequencies above 27500 kHz. The maximum power must not exceed the values listed below:

- Ships Stations: 156 to 162 MHz - 25 W
- Marine Utility Stations and Handheld Portable Transmitters: 156 to 162 MHz - 10 W

Industry Canada RSS-182, Limit Clause 5.6

The output power for equipment certified under RSS-182 shall not exceed the limits specified in the table below:

Radio Equipment Type	Maximum Power
Coast Station	50 W
Ship Stations	25 W
Shipborne hand-held portable transmitter	6 W

**Table 14 – Power Limits Table (RSS-182)**

Ship station transmitters shall have power control features implemented to reduce the carrier power to 1 W or less for use at short ranges, except for DSC equipment operating on the 156.525 MHz (channel 70) frequency, for which the power reduction facility is optional.

Survival two-way radiotelephones should have a minimum equivalent isotropically radiated power (e.i.r.p.) of 0.25 W.



**2.6.7 Test Location and Test Equipment Used**

This test was carried out in RF Laboratory 2.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	29-Jan-2022
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	31-Jan-2022
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	30-Jun-2022
1 metre K-Type Cable	Florida Labs	KMS-180SP-39.4-KMS	4519	12	18-Nov-2022
PXA Signal Analyser	Keysight Technologies	N9030A	4654	12	24-Nov-2022
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	06-Apr-2022
Attenuator 5W 30dB DC-18GHz	Aaren	AT40A-4041-D18-30	5503	12	14-Apr-2022

**Table 15**

### 3 Photographs

#### 3.1 Test Setup Photographs



Figure 15 – Test Setup - 1 GHz to 2 GHz, Orientation X



**Figure 16 – Test Setup - 1 GHz to 2 GHz, Orientation Y**





**Figure 17 – Test Setup - 1 GHz to 2 GHz, Orientation Z**



## 4 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Bandwidths	± 58.05 Hz
Transmitter Frequency Tolerances	± 11 Hz
Radiated Spurious Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 18 GHz: ± 6.3 dB
Spurious Emissions at Antenna Terminals	± 3.45 dB
Modulation Requirements	-
Transmitter Power	± 3.2 dB

**Table 16**

### Measurement Uncertainty Decision Rule – Accuracy Method

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2007, Clause 4.4.3 and 4.5.1. (Procedure 2). The measurement results are directly compared with the test limit to determine conformance with the requirements of the standard.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8.