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Report On

FCC and Industry Canada Testing of the
Iridium Extreme 9575N
In accordance with FCC 47 CFR Part 15B and ICES-003

COMMERCIAL-IN-CONFIDENCE

FCC ID: Q639575N
IC: 4629A-9575N

Document 75934781 Report 06 Issue 1 August 2016

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REPORT ON

FCC and Industry Canada Testing of the
Iridium Extreme 9575N
In accordance with FCC 47 CFR Part 15B and ICES-003

Document 75934781 Report 06 Issue 1

August 2016

PREPARED FOR

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PREPARED BY

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APPROVED BY

Matthew Russell
Authorised Signatory

DATED 26 August 2016

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 15B and ICES-003. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

J Tuckwell G Lawler

UKAS TESTING 0141

Product Service

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Product Service

SECTION 1

REPORT SUMMARY

FCC and Industry Canada Testing of the
Iridium Extreme 9575N
In accordance with FCC 47 CFR Part 15B and ICES-003

1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC and Industry Canada Testing of the Iridium Extreme 9575N to the requirements of FCC 47 CFR Part 15B and ICES-003.

Objective	To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Iridium Satellite LLC
Model Number(s)	Iridium Extreme 9575N
Serial Number(s)	P1638-GR-080
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B (2015) ICES-003 (2016)
Incoming Release Date	Declaration of Build Status 12 July 2016
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	35884 04 May 2016
Start of Test	15 July 2016
Finish of Test	02 August 2016
Name of Engineer(s)	J Tuckwell G Lawler
Related Document(s)	ANSI C63.4 (2014)

Product Service

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15B and ICES-003 is shown below.

Section	Specification Clause		Test Description	Result	Comments/Base Standard
	Part 15B	ICES-003			
Idle with GPS Receiver on					
2.1	15.107	6.1	AC Line Conducted Emissions	Pass	
2.2	15.109	6.2	Radiated Emissions	Pass	

Product Service

1.3 DECLARATION OF BUILD STATUS

MAIN EUT			
MANUFACTURING DESCRIPTION	9575N Satellite Phone		
MANUFACTURER	Iridium		
MODEL NAME/NUMBER	Iridum Extreme / 9575N		
PART NUMBER	IRIDN0215		
SERIAL NUMBER	P1638-GR-072 (E10006), P1638-GR-073 (E10008), P1638-GR-079 (H0025W), P1638-GR-080 (H002B5), P1638-GR-081 (H002BU)		
HARDWARE VERSION	Application Board: Rev K Sim Board: Rev C 9523N: rev D/V3, P1638-CN-028 V0.4, P1638-CN-030 V0.2, Engineering Mod #40 (P1638-HLOG-005 V1.49)		
SOFTWARE VERSION	HL16001 (Bluecore: 7662_3, ATMega: 7600, Transceiver: DB16003)		
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	1616 - 1626MHz		
RECEIVER FREQUENCY OPERATING RANGE (MHz)	1616 - 1626.5MHz		
COUNTRY OF ORIGIN	UK		
INTERMEDIATE FREQUENCIES	200kHz, 400kHz, 600kHz, 800kHz, 16.8MHz, 26MHz, 14.8MHz, 32.768kHz		
EMISSION DESIGNATOR(S): (I.e. G1D, GXW)	41K7Q7W		
MODULATION TYPES: (i.e. GMSK, QPSK)	DE-QPSK/DE-BPSK		
HIGHEST INTERNALLY GENERATED FREQUENCY	3254.6MHz		
OUTPUT POWER (W or dBm)	5.888W (37.7dBm)		
FCC ID	Q639575N		
INDUSTRY CANADA ID	4629A-9575N		
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Satellite phone for use with the Iridium satellite network.		
BATTERY/POWER SUPPLY			
MANUFACTURING DESCRIPTION	Iridium Extreme Battery Pack		
MANUFACTURER	Iridium/Palladium Energy		
TYPE			
PART NUMBER	BAT31001		
VOLTAGE	3.7V nominal, 4.2V charging		
COUNTRY OF ORIGIN	Assembled in China (Cells manufactured in Japan)		
MODULES (if applicable)			
MANUFACTURING DESCRIPTION	AC Travel Charger	Car Charger	USB data cable
MANUFACTURER	Iridium	Iridium	Iridium
TYPE	ACTC0401 (FW7650/6)	AUT0401 (FW7500/6)	USBC0901
POWER			
FCC ID			
COUNTRY OF ORIGIN	Germany	Germany	
INDUSTRY CANADA ID			
EMISSION DESIGNATOR			
DHSS/FHSS/COMBINED OR OTHER			
ANCILLARIES (if applicable)			
MANUFACTURING DESCRIPTION	Hands-free earpiece with microphone	Accessory adapters (2 units)	Magnetic vehicle mount antenna with 5' cable
MANUFACTURER	Iridium	Iridium	Iridium
TYPE		USB/Power Antenna /USB/Power	
PART NUMBER	HFHS0601	USB/Power: H3APU1101 Antenna /USB/Power: H3AA1101	PAA0601
SERIAL NUMBER			
COUNTRY OF ORIGIN		China	

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

Name: Jonathan Jones Position held: Senior Engineer
Date: 12/07/2016

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Iridium Extreme 9575N. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from a 3.7 V Battery charging via AC/DC adapter through 100 V AC supply.

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

Industry Canada Company Address Code
IC2932B-1 Octagon House, Fareham Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

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

1.7 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.

Product Service

SECTION 2

TEST DETAILS

FCC and Industry Canada Testing of the
Iridium Extreme 9575N
In accordance with FCC 47 CFR Part 15B and ICES-003

Product Service

2.1 AC LINE CONDUCTED EMISSIONS

2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.107
ICES-003, Clause 6.1

2.1.2 Equipment Under Test and Modification State

Iridium Extreme 9575N S/N: P1638-GR-080 - Modification State 0

2.1.3 Date of Test

15 July 2016

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

The test was performed in accordance with ANSI C63.4, Clause 7

Remarks

A mains supply cable of 1 m length was used to supply mains power to the EUT from the LISN.

All final measurements were assessed against the Class B emission limits in FCC 47 CFR Part 15, Clause 15.107 and ICES-003, Clause 6.1.

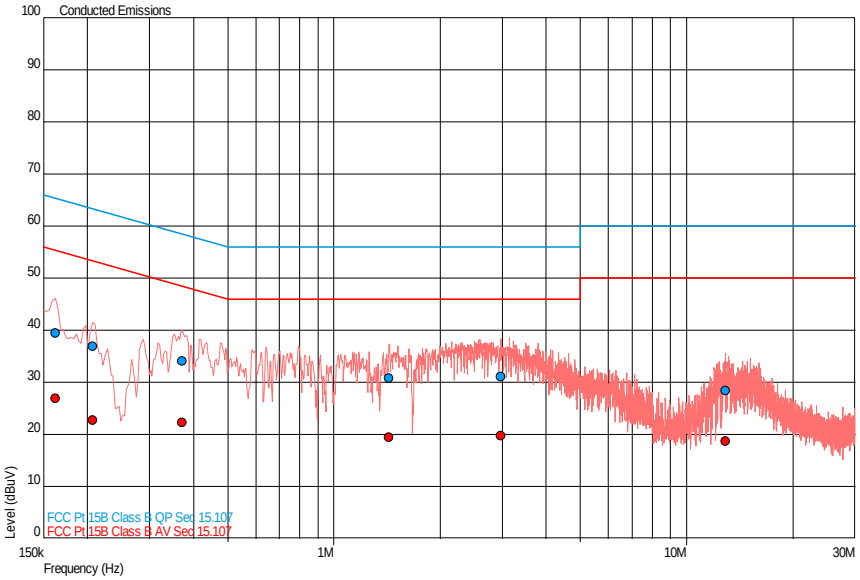
2.1.6 Environmental Conditions

Ambient Temperature	18.8°C
Relative Humidity	50.0%

Product Service

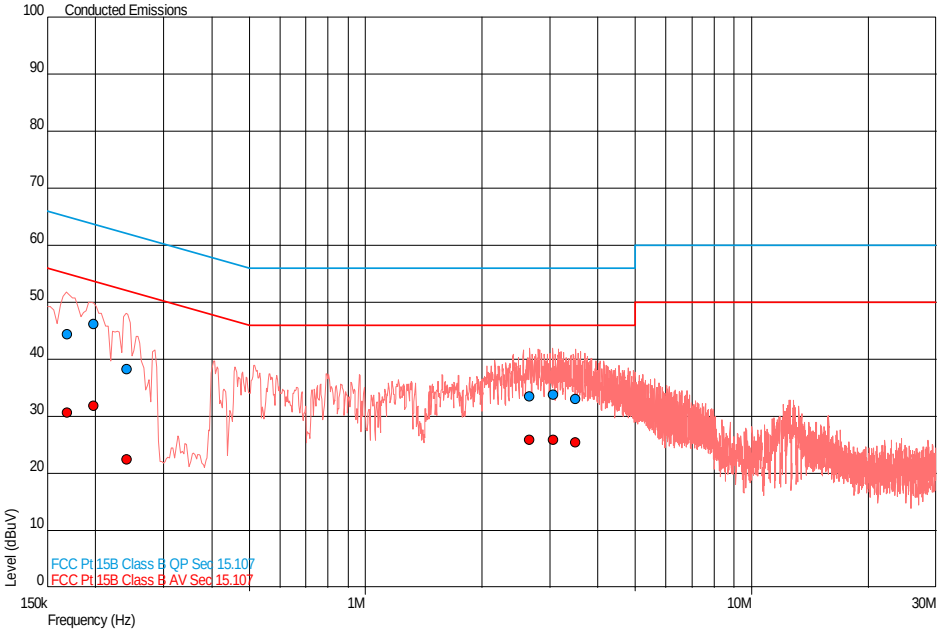
2.1.7 Test Results

Idle with GPS Receiver on, Live Line Results



Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (µV/m)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.162	39.4	65.4	-25.9	27.0	55.4	-28.4
0.208	37.0	63.3	-26.3	22.8	53.3	-30.5
0.372	34.1	58.5	-24.4	22.3	48.5	-26.2
1.433	30.8	56.0	-25.2	19.5	46.0	-26.5
2.977	31.2	56.0	-24.8	19.8	46.0	-26.2
12.881	28.5	60.0	-31.5	18.7	50.0	-31.3

Idle with GPS Receiver on, Neutral Line Results



Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (µV/m)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.169	44.3	65.0	-20.7	30.6	55.0	-24.4
0.198	46.1	63.7	-17.6	31.8	53.7	-21.9
0.241	38.3	62.1	-23.8	22.5	52.1	-29.5
2.664	33.6	56.0	-22.4	25.9	46.0	-20.1
3.064	33.8	56.0	-22.2	25.9	46.0	-20.1
3.499	33.1	56.0	-22.9	25.4	46.0	-20.6

FCC 47 CFR Part 15, Limit Clause 15.107 and ICES-003, Limit Clause 6.1

Class B

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

*Decreases with the logarithm of the frequency.

2.2 RADIATED EMISSIONS

2.2.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109
ICES-003, Clause 6.2

2.2.2 Equipment Under Test and Modification State

Iridium Extreme 9575N S/N: P1638-GR-080 - Modification State 0

2.2.3 Date of Test

15 July 2016 & 02 August 2016

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

The test was performed in accordance with ANSI C63.4, Clause 8.

Remarks

All final measurements were assessed against the Class B emission limits in FCC 47 CFR Part 15, Clause 15.109 and ICES-003, Clause 6.2.

2.2.6 Environmental Conditions

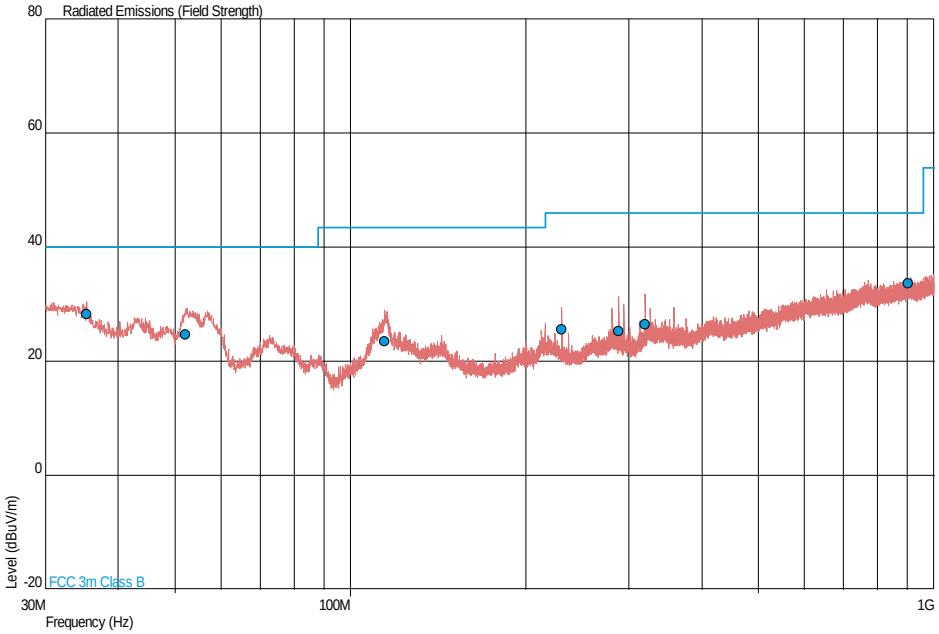
Ambient Temperature	18.8 - 19.9°C
Relative Humidity	50.0 - 75.0%

Product Service

2.2.7 Test Results

Idle with GPS Receiver on, 30 MHz to 1 GHz Results

Frequency (MHz)	Quasi-Peak Level (dBµV/m)	Quasi-Peak Level (µV/m)	Quasi-Peak Margin (dµV/m)	Quasi-Peak Margin (µV/m)	Angle (°)	Height (m)	Polarisation
35.335	28.4	26.3	-11.6	-73.7	353	1.00	Vertical
52.214	24.8	17.4	-15.2	-82.6	184	1.00	Vertical
114.553	23.6	15.1	-19.9	-134.9	0	1.97	Vertical
230.335	25.5	18.8	-20.5	-181.2	37	1.00	Horizontal
287.923	25.3	18.4	-20.7	-181.6	62	1.00	Horizontal
319.933	26.5	21.1	-19.5	-178.9	121	1.00	Horizontal
902.190	33.6	47.9	-12.4	-152.1	360	1.00	Horizontal

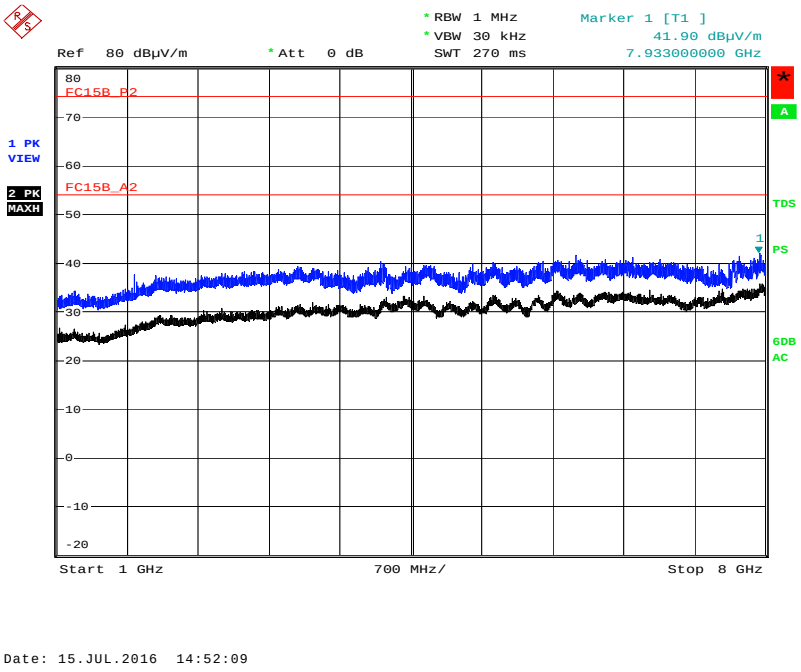


Idle with GPS Receiver on, 1 GHz to 17 GHz Results

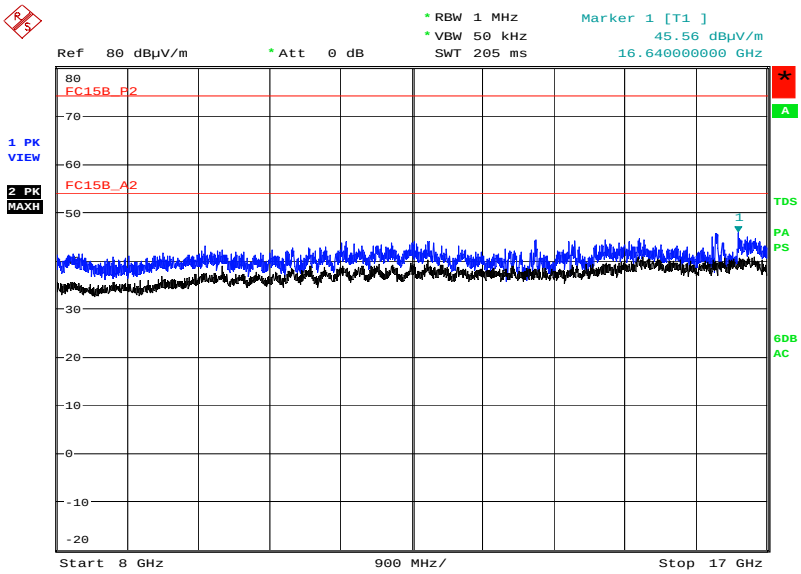
Frequency (MHz)	Average Level (dBµV/m)	Peak Level (dBµV/m)	Average Level (µV/m)	Peak Level (µV/m)	Angle (deg)	Height (m)	Polarisation
*							

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

Idle with GPS Receiver on, 1 GHz to 8 GHz Plot



Idle with GPS Receiver on, 8 GHz to 17 GHz Plot



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FCC 47 CFR Part 15, Limit Clause 15.109

Class B

Frequency of Emission (MHz)	Field Strength (µV/m)
30 to 88	100.0
88 to 216	150.0
216 to 960	200.0
Above 960	500.0

ICES-003, Limit Clause 6.2

Class B

Frequency of Emission (MHz)	Quasi-Peak (dBµV/m)
30 to 88	40.0
88 to 216	43.5
216 to 960	46.0
960 to 1000	54.0

Frequency of Emission (MHz)	Field Strength (dBµV/m)	
	Linear Average Detector	Peak Detector
Above 1000	54.0	74.0

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 – AC Line Conducted Emissions					
LISN	Rohde & Schwarz	ESH2-Z5	17	12	11-Feb-2017
Transient Limiter	Hewlett Packard	11947A	1032	12	19-Jul-2017
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Hygromer	Rotronic	Hygropalm	2404	12	21-Aug-2016
Compliance 5 Emissions	Schaffner	C5e Software V.5.00.00	3275	-	N/A - Software
Section 2.2 – Radiated Emissions					
Hygrometer	Rotronic	A1	1388	12	13-Apr-2017
Pre-Amplifier	Phase One	PS04-0086	1533	12	30-Jul-2016
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygromer	Rotronic	Hygropalm	2404	12	21-Aug-2016
Antenna (Bilog)	Chase	CBL6143	2904	24	11-Jun-2017
Compliance 5 Emissions	Schaffner	C5e Software V.5.00.00	3275	-	N/A - Software
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	2-Nov-2016
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	TU
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	6-Oct-2016
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	-	TU
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	29-Dec-2016

TU – Traceability Unscheduled

3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	MU
AC Line Conducted Emissions	± 3.2 dB
Radiated Emissions	30 MHz to 1 GHz: ± 5.1 dB 1 GHz to 40 GHz: ± 6.3 dB

Product Service

SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).