41039 Boyce Road
Fremont, CA. 94538

510-578-3500 Phone
510-440-9525 Fax

EMC Test Report

FCC Grant of Equipment Authorization
Canada Certification

FCC Part 15 Subpart C
RSS-210

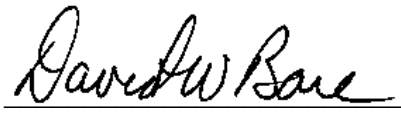
Model: TRACKER S

IC CERTIFICATION #:	3561A-TS
FCC ID:	OUNTS
APPLICANT:	Backcountry Access 2820 Wilderness Place, Unit H Boulder, CO 80301
TEST SITE(S):	National Technical Systems 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-4, 2845B-5
PROJECT NUMBER:	JD106538 / PR073144
REPORT DATE:	February 14, 2018
FINAL TEST DATES:	December 20 and 28, 2017
TOTAL NUMBER OF PAGES:	31

ACCREDITED
Testing Cert #0214.26

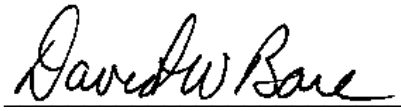
VALIDATING SIGNATORIES

PROGRAM MGR



David W. Bare
Chief Engineer

TECHNICAL REVIEWER:



David W. Bare
Chief Engineer

FINAL REPORT PREPARER:

David Guidotti
Senior Technical Writer

QUALITY ASSURANCE DELEGATE

Gary Izard
Technical Writer

REVISION HISTORY

Rev#	Date	Comments	Modified By
-	February 14, 2018	First release	

TABLE OF CONTENTS

COVER PAGE **1**
VALIDATING SIGNATORIES **2**
REVISION HISTORY **3**
TABLE OF CONTENTS **4**
SCOPE **5**
OBJECTIVE **6**
STATEMENT OF COMPLIANCE **6**
DEVIATIONS FROM THE STANDARDS **6**
TEST RESULTS SUMMARY **7**
MEASUREMENT UNCERTAINTIES 7
EQUIPMENT UNDER TEST (EUT) DETAILS **8**
GENERAL 8
ANTENNA SYSTEM 8
ENCLOSURE 8
MODIFICATIONS 8
SUPPORT EQUIPMENT 8
EUT INTERFACE PORTS 8
EUT OPERATION 8
TEST SITE **9**
GENERAL INFORMATION 9
RADIATED EMISSIONS CONSIDERATIONS 9
MEASUREMENT INSTRUMENTATION **10**
RECEIVER SYSTEM 10
INSTRUMENT CONTROL COMPUTER 10
FILTERS/ATTENUATORS 10
ANTENNAS 10
ANTENNA MAST AND EQUIPMENT TURNTABLE 11
INSTRUMENT CALIBRATION 11
TEST PROCEDURES **12**
EUT AND CABLE PLACEMENT 12
RADIATED EMISSIONS 12
BANDWIDTH MEASUREMENTS 15
SPECIFICATION LIMITS AND SAMPLE CALCULATIONS 15
GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS 15
SAMPLE CALCULATIONS - RADIATED EMISSIONS 16
APPENDIX A TEST EQUIPMENT CALIBRATION DATA **17**
APPENDIX B TEST DATA **18**
END OF REPORT **31**

SCOPE

An electromagnetic emissions test has been performed on the Backcountry Access model TRACKER S, pursuant to the following rules:

RSS-210 Issue 9 "Licence-Exempt Radio Apparatus: Category I Equipment"
RSS-Gen Issue 4 "General Requirements for Compliance of Radio Apparatus"
FCC Part 15 Subpart C

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in National Technical Systems test procedures:

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

National Technical Systems is accredited by the A2LA, certificate number 0214.26, to perform the test(s) listed in this report, except where noted otherwise.

OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, all unlicensed transmitters and transceivers require certification. Receive-only devices operating between 30 MHz and 960 MHz are subject to either certification or a manufacturer's declaration of conformity, with all other receive-only devices exempt from the technical requirements.

Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification. Class II devices are required to meet the appropriate technical requirements but are exempt from certification requirements.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

STATEMENT OF COMPLIANCE

The tested sample of Backcountry Access model TRACKER S complied with the requirements of the following regulations:

RSS-210 Issue 9 "Licence-Exempt Radio Apparatus: Category I Equipment"
RSS-Gen Issue 4 "General Requirements for Compliance of Radio Apparatus"
FCC Part 15 Subpart C

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

The test results recorded herein are based on a single type test of Backcountry Access model TRACKER S and therefore apply only to the tested sample. The sample was selected and prepared by Toni Leskela of Backcountry Access.

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report.

TEST RESULTS SUMMARY

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Integral Antenna	Unique or integral antenna required	Complies
15.207	RSS-Gen Table 3	AC Conducted Emissions	Testing was not performed as the EUT is Battery Powered.		N/A
15.209	RSS-Gen Table 5	Radiated Emissions	18.7 dBµV/m @ 0.914 MHz (-13.0 dB margin)	Refer to page 15	Complies
-	RSS-Gen 8.3	User Manual	No detachable antenna	Statement for products with detachable antenna	N/A
-	RSS-Gen 8.4	User Manual	In Owner's Manual	Statement for all products	Complies
-	RSP-100 RSS-Gen 6.6	Occupied Bandwidth	82 Hz	Information only	N/A

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
Radiated emission (field strength)	dBµV/m	25 to 1000 MHz	± 3.6 dB
		1000 to 40000 MHz	± 6.0 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Backcountry Access model TRACKER S is an avalanche beacon that is designed to assist in locating avalanche victims. Since the EUT could be placed in any position during operation, the EUT was treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 4.5 VDC supplied from non-rechargeable batteries.

The sample was received on December 20, 2017 and tested on December 20 and 28, 2017. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Backcountry Access	TRACKER S	Avalanche Beacon	17E00048	OUNTS

ANTENNA SYSTEM

The antenna system consists of three ferrite rod antennas.

ENCLOSURE

The EUT enclosure is primarily constructed of plastic. It measures approximately 7.5 cm wide by 2.5 cm deep by 11.5 cm high.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at NTS Silicon Valley.

SUPPORT EQUIPMENT

No support equipment was used during testing.

EUT INTERFACE PORTS

The I/O cabling configuration during testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
None	-	-	-	-

EUT OPERATION

During emissions testing the EUT was specially configured to transmit continuously at 457 kHz.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken at the test sites listed below. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission and with industry Canada.

Site	Designation / Registration Numbers		Location
	FCC	Canada	
Chamber 4	US0027	2845B-4	41039 Boyce Road Fremont, CA 94538-2435
Chamber 5	US0027	2845B-5	

ANSI C63.4 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement. The test site(s) contain separate areas for radiated and conducted emissions testing. Results from testing performed in this chamber have been correlated with results from an open area test site. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 7000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000 MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

Software is used to view and convert receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers. The software used for radiated and conducted emissions measurements is NTS EMI Test Software (rev 2.10)

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.10 specifies that the test height above ground for table mounted devices shall be 80 centimeters for testing below 1 GHz and 1.5m for testing above 1 GHz. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor as specified in ANSI C63.4. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.10, and the worst-case orientation is used for final measurements.

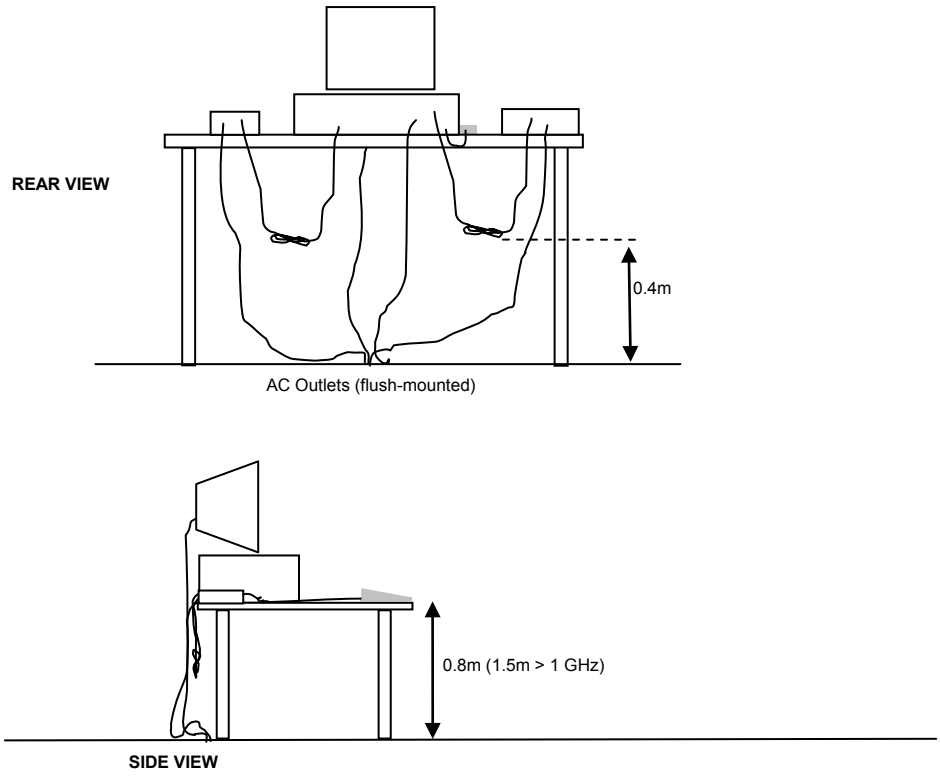
RADIATED EMISSIONS

A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360˚, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

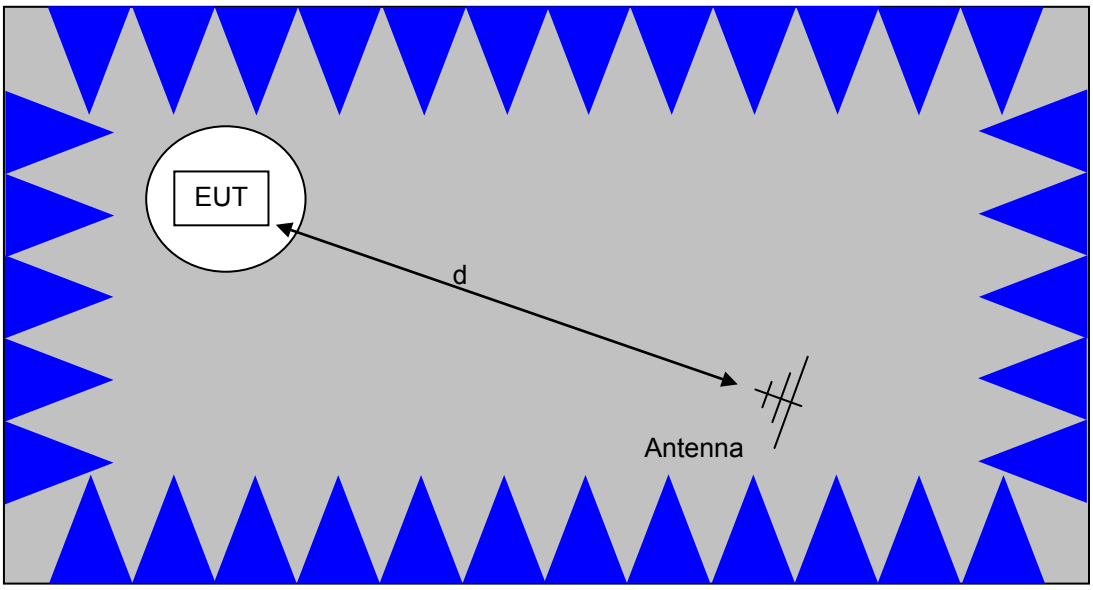
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.

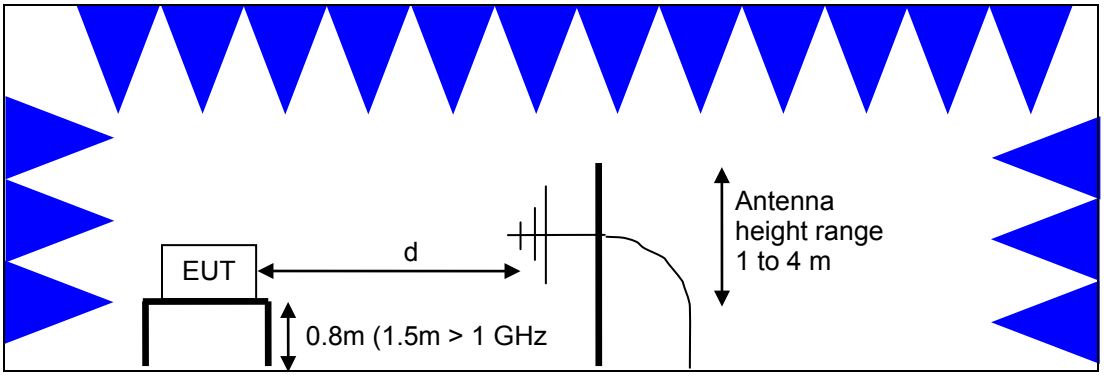


Typical Test Configuration for Radiated Field Strength Measurements



The anechoic materials on the walls and ceiling ensure compliance with the normalized site attenuation requirements of CISPR 16 / CISPR 22 / ANSI C63.4 for an alternate test site at the measurement distances used.

Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



Test Configuration for Radiated Field Strength Measurements
Semi-Anechoic Chamber, Plan and Side Views

BANDWIDTH MEASUREMENTS

The 6dB, 20dB, 26dB and/or 99% signal bandwidth are measured using the bandwidths recommended by ANSI C63.10 and RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands[1].

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	$2400/F_{KHz}$ @ 300m	$67.6-20*\log_{10}(F_{KHz})$ @ 300m
0.490-1.705	$24000/F_{KHz}$ @ 30m	$87.6-20*\log_{10}(F_{KHz})$ @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

[1] The restricted bands are detailed in FCC 15.205 and RSS-Gen Tables 4 and 56

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB
D_m = Measurement Distance in meters
D_s = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40*LOG_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m
F_d = Distance Factor in dB
R_c = Corrected Reading in dBuV/m
L_s = Specification Limit in dBuV/m
M = Margin in dB Relative to Spec

Appendix A Test Equipment Calibration Data

Radiated Emissions, 30 - 1,000 MHz, 20-Dec-17

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	10/12/2016	10/12/2018
Com-Power	Preamplifier, 30-1000 MHz	PA-103	1632	3/8/2017	3/8/2018
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1756	7/8/2017	7/8/2018

Radiated Emissions, 0.4 - 30 MHz, 28-Dec-17

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
Compower	Magnetic Loop Antenna, 9 kHz-30 MHz	AL-130	3003	8/9/2016	8/9/2018
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	9482	10/28/2016	10/28/2018

Appendix B Test Data

PR073144.1 Pages 19 – 30

Client:	Backcountry Access	Job Number:	PR073144
Product	TRACKER S	T-Log Number:	PR073144.1
System Configuration:	-	Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	
Emissions Standard(s):	FCC§15.209, RSS-210	Class:	-
Immunity Standard(s):		Environment:	Radio

EMC Test Data

For The

Backcountry Access

Product

TRACKER S

Date of Last Test: 12/28/2017

Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-

Radiated Emissions

(NTS Silicon Valley, Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 12/20 & 12/28/2017
Test Engineer: David Bare
Test Location: Fremont Chamber #4 & #5
Config. Used: 1
Config Change: None
EUT Voltage: Battery

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing. Any remote support equipment was located outside the semi-anechoic chamber. Any cables running to remote support equipment were routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.
The test distance and extrapolation factor (if applicable) are detailed under each run description.

Ambient Conditions:

Temperature: 19 °C
Rel. Humidity: 49 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	Radiated Emissions 30 - 1000 MHz, Preliminary	FCC §15.209	Eval	-
2	Radiated Emissions 30 - 1000 MHz, Maximized	FCC §15.209	Pass	20.2 dBµV/m @ 30.00 MHz (-19.8 dB)
3	Radiated Emissions 0.4 - 30 MHz, Preliminary	FCC §15.209	Eval	-
4	Radiated Emissions 0.4 - 30 MHz, Maximized	FCC §15.209	Pass	18.7 dBµV/m @ 0.914 MHz (-13.0 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

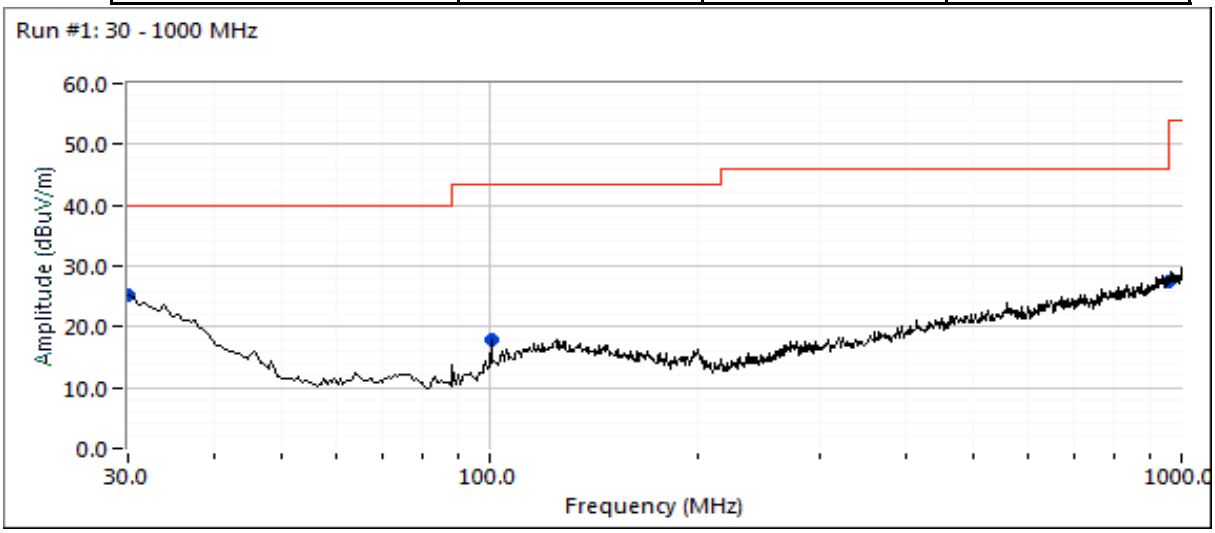
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-

Run #1: Preliminary Radiated Emissions, 30 - 1000 MHz

Test Parameters for Preliminary Scan(s)			
Frequency Range (MHz)	Prescan Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0



Preliminary peak readings captured during pre-scan

Frequency	Level	Pol	FCC §15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
30.000	25.3	V	40.0	-14.7	Peak	218	1.0	
100.300	18.0	H	43.5	-25.5	Peak	50	4.0	
956.500	27.5	V	46.0	-18.5	Peak	344	2.5	

Note 1:	No emissions observed above the noise floor of the measurement system.

Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-

Run #2: Maximized Readings From Run #1

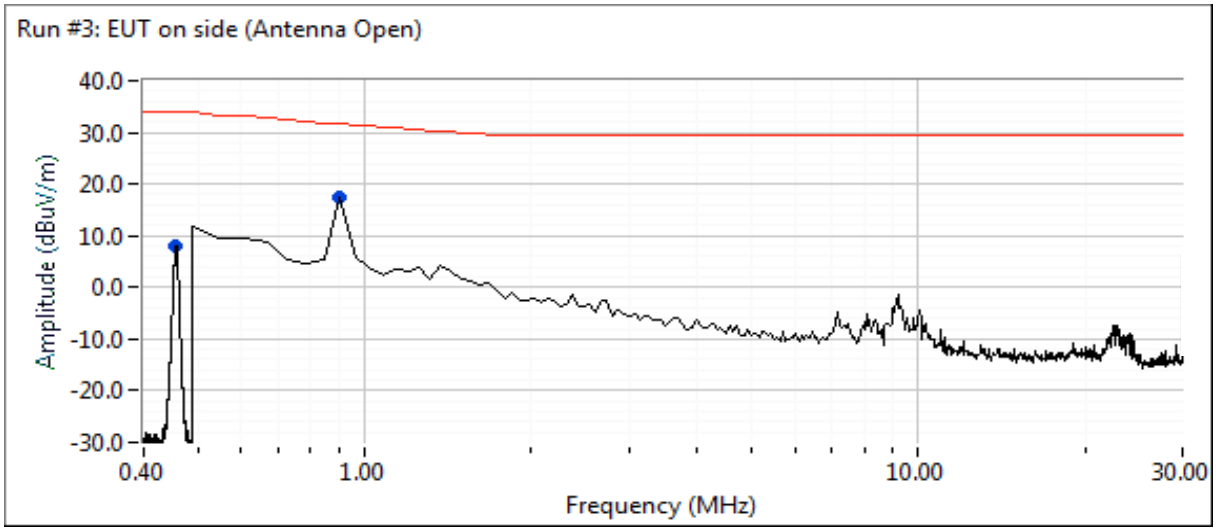
Test Parameters for Maximized Reading(s)			
Frequency Range (MHz)	Test Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0

Maximized quasi-peak readings

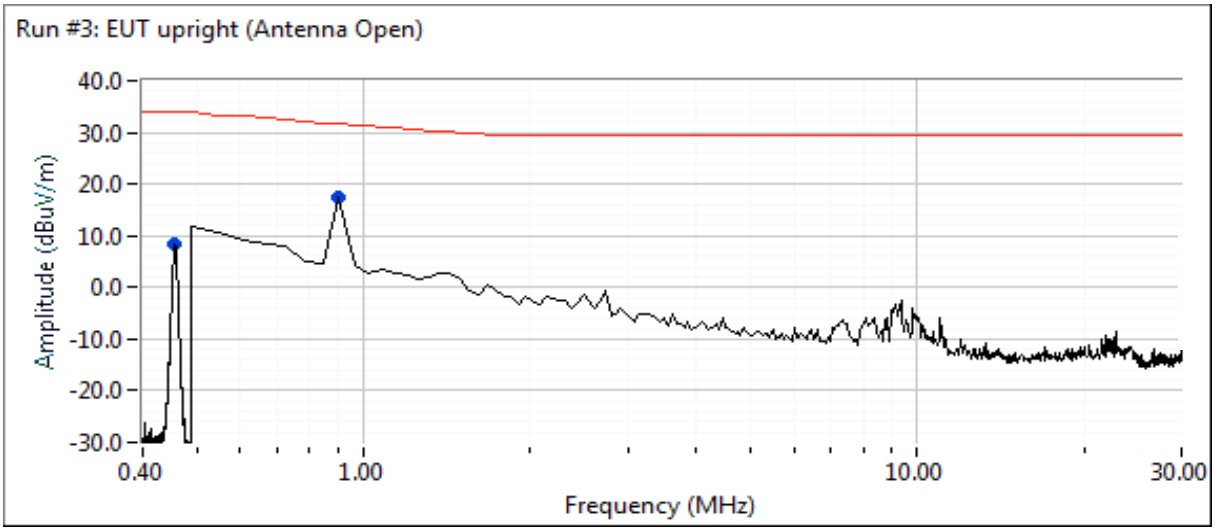
Frequency	Level	Pol	FCC §15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
30.000	20.2	V	40.0	-19.8	QP	218	1.0	QP (1.00s)
100.300	17.1	H	43.5	-26.4	QP	50	4.0	QP (1.00s)
956.500	23.3	V	46.0	-22.7	QP	343	2.5	QP (1.00s)

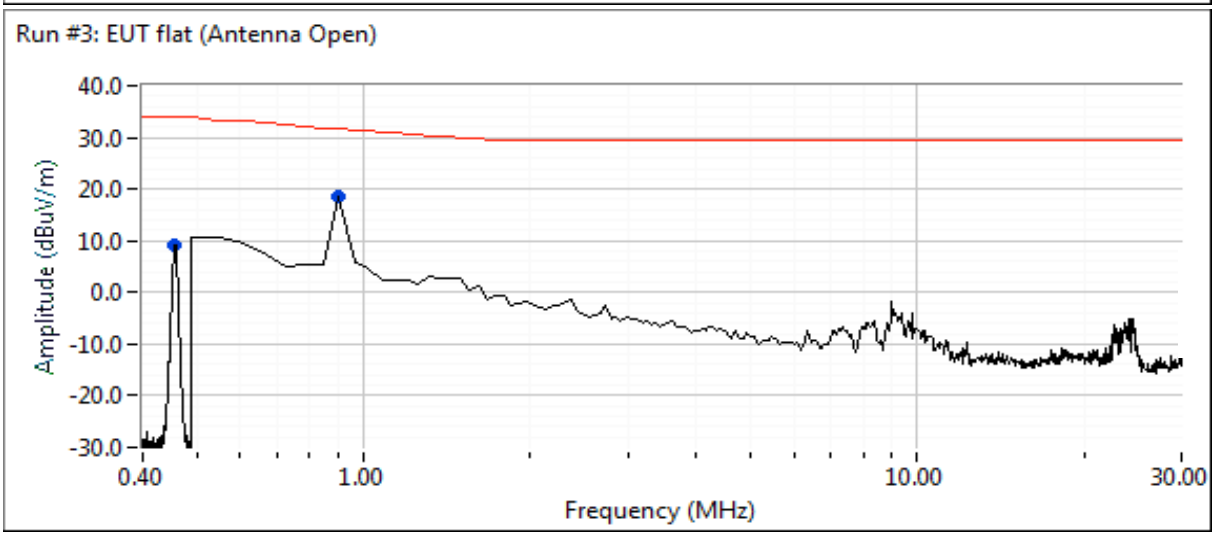
Run #3: Preliminary Radiated Emissions, 0.4 - 30 MHz

Test Parameters for Preliminary Scan(s)			
Frequency Range (MHz)	Prescan Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
0.4 - 0.49	3	300	-80.0
0.49 - 30	3	30	-40.0

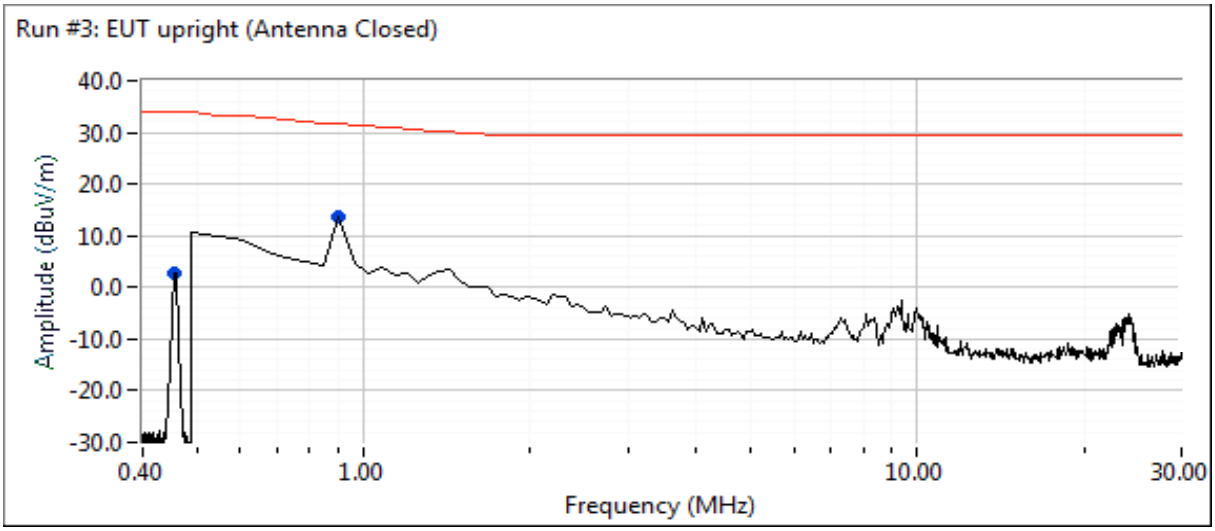


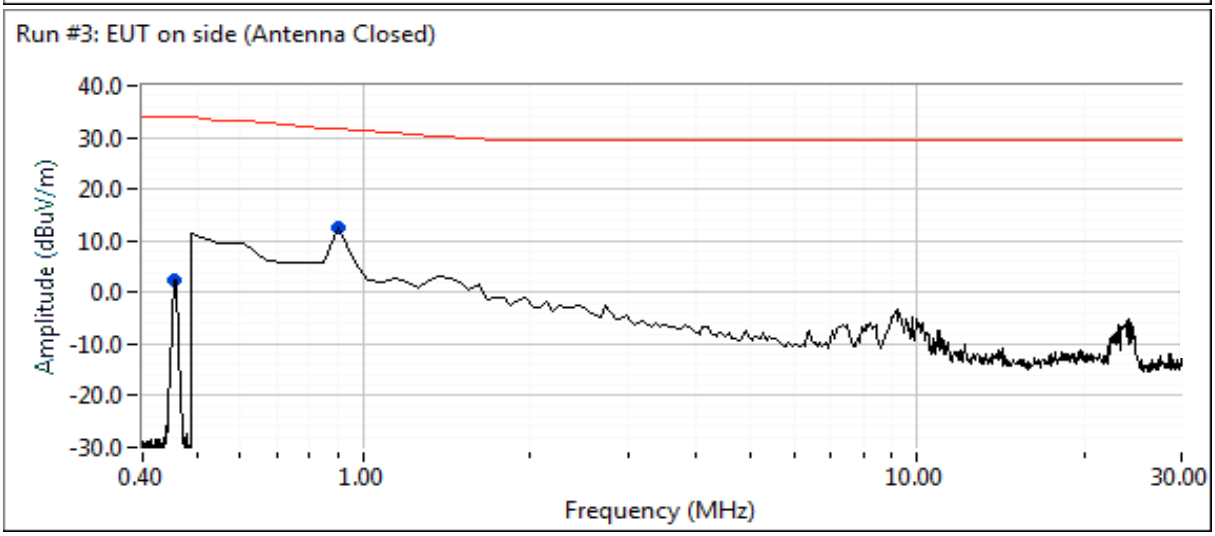
Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-



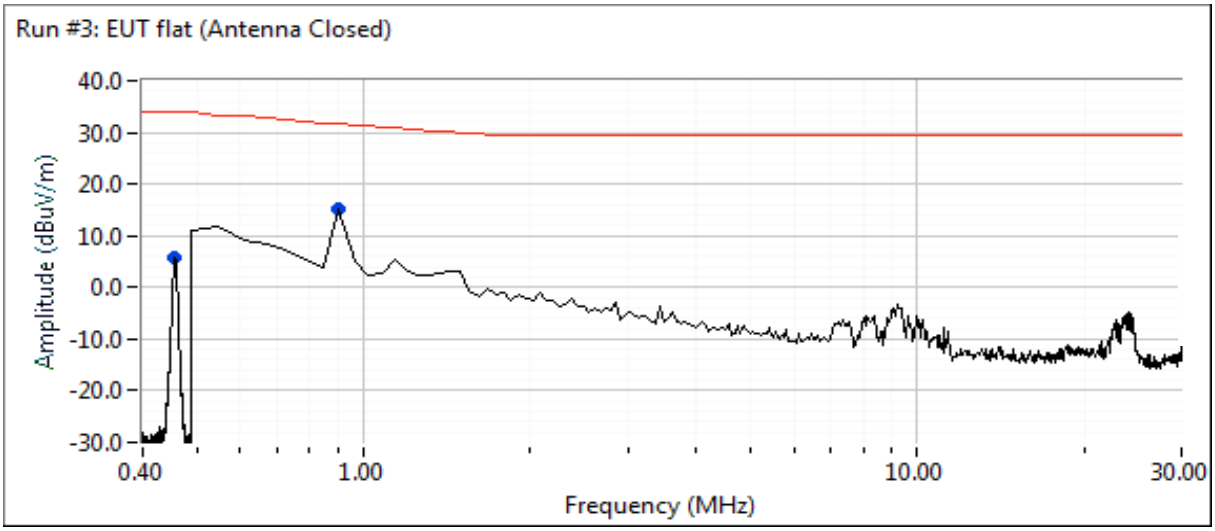


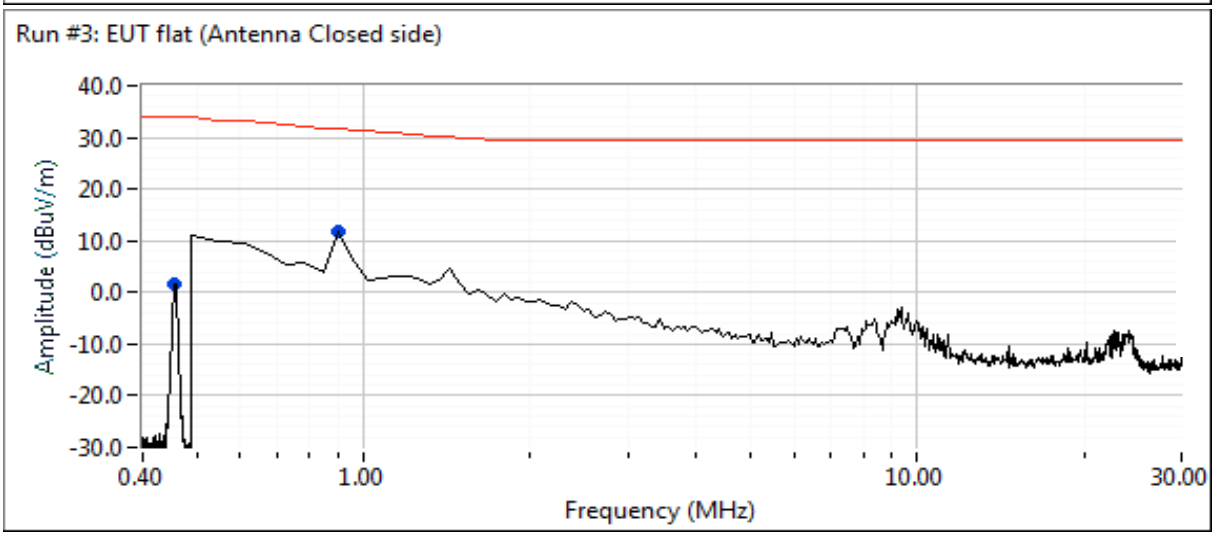
Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-



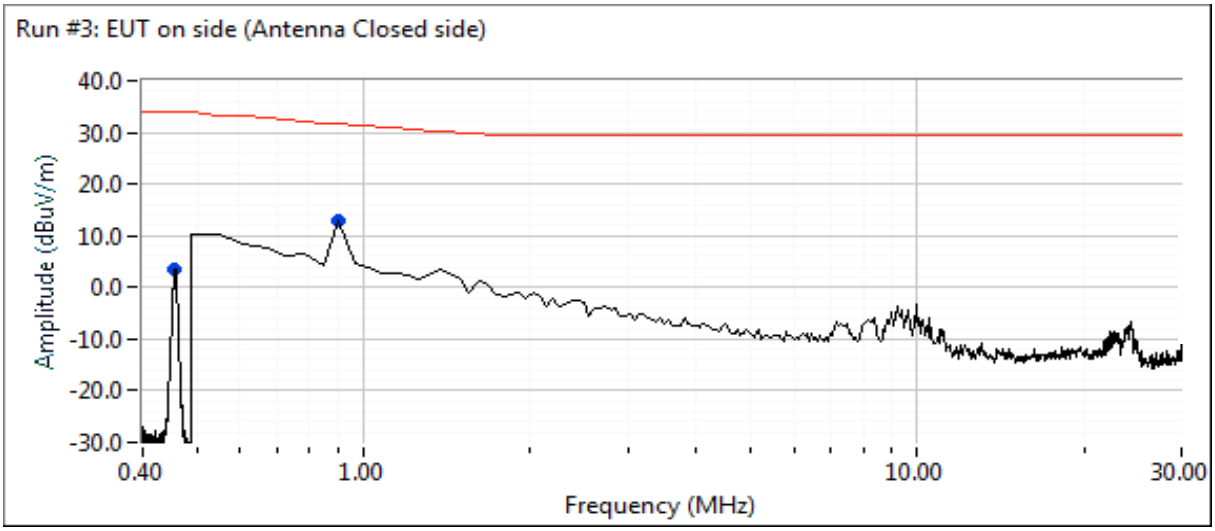


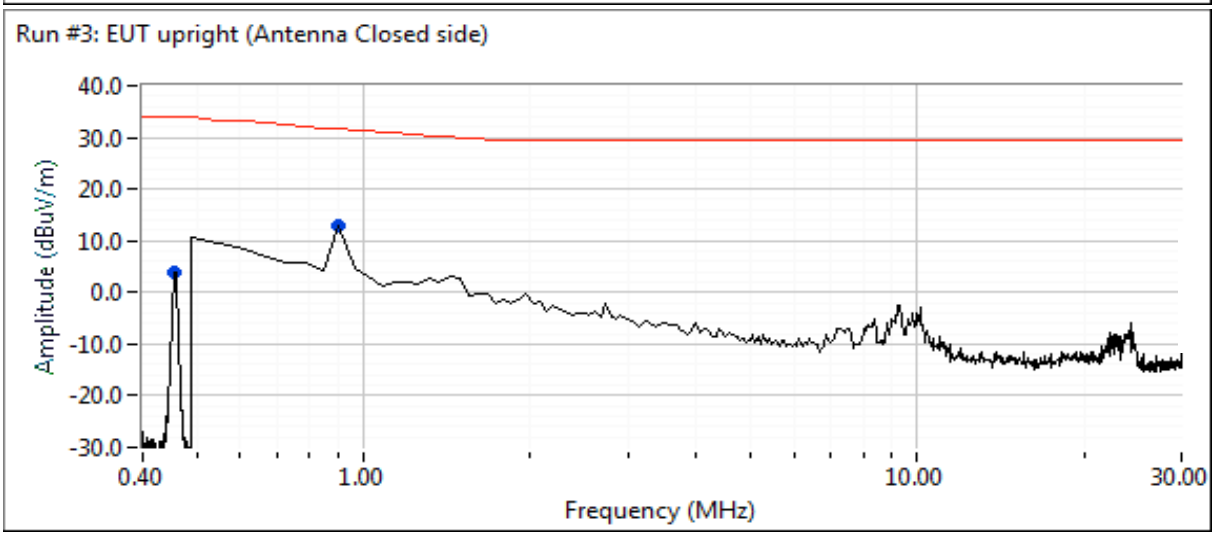
Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-





Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-





Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-

Preliminary peak readings captured during pre-scan

Frequency	Level	Antenna	FCC §15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	O/C	Limit	Margin	Pk/QP/Avg	degrees	meters	
0.457	8.0	O	33.8	-25.8	Peak	75	1.3	EUT on side
0.914	17.3	O	31.7	-14.4	Peak	80	1.3	EUT on side
0.457	8.2	O	33.8	-25.6	Peak	267	1.3	EUT upright
0.914	17.3	O	31.7	-14.4	Peak	275	1.3	EUT upright
0.457	9.3	O	33.8	-24.5	Peak	68	1.3	EUT flat
0.914	18.4	O	31.7	-13.3	Peak	77	1.3	EUT flat
0.457	2.9	C (up)	33.8	-30.9	Peak	191	1.3	EUT upright
0.914	13.5	C (up)	31.7	-18.2	Peak	198	1.3	EUT upright
0.457	2.5	C (up)	33.8	-31.3	Peak	196	1.3	EUT on side
0.914	12.6	C (up)	31.7	-19.1	Peak	30	1.3	EUT on side
0.457	5.6	C (up)	33.8	-28.2	Peak	152	1.3	EUT flat
0.914	15.1	C (up)	31.7	-16.6	Peak	319	1.3	EUT flat
0.457	1.7	C (side)	33.8	-32.1	Peak	67	1.0	EUT flat
0.914	11.7	C (side)	31.7	-20.0	Peak	30	1.0	EUT flat
0.457	3.5	C (side)	33.8	-30.3	Peak	116	1.0	EUT on side
0.914	12.8	C (side)	31.7	-18.9	Peak	119	1.0	EUT on side
0.457	3.7	C (side)	33.8	-30.1	Peak	283	1.0	EUT upright
0.914	12.8	C (side)	31.7	-18.9	Peak	274	1.0	EUT upright

Note 1:	Fundamental is not less than the harmonics as shown on the plots as the limit distance is 300 m at the fundamental and 30 m for the harmonics. Thus the level of the fundamental is 40 dB higher for direct comparison with the harmonic levels.

Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-

Run #4: Maximized Readings From Run #3

Test Parameters for Maximized Reading(s)			
Frequency Range (MHz)	Test Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
0.4 - 0.49	3	300	-80.0
0.49 - 30	3	30	-40.0

Maximized peak, average and/or quasi-peak readings

Frequency	Level	Antenna	FCC §15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	O/C	Limit	Margin	Pk/QP/Avg	degrees	meters	
0.457	8.4	O	33.8	-25.4	PK	270	1.3	PK (0.10s), EUT upright
0.457	8.0	O	33.8	-25.8	PK	106	1.3	PK (0.10s), EUT on side
0.457	9.3	O	33.8	-24.5	PK	66	1.3	PK (0.10s), EUT flat
0.914	18.7	O	31.7	-13.0	QP	64	1.3	QP (1.00s), EUT flat
0.914	17.3	O	31.7	-14.4	QP	99	1.3	QP (1.00s), EUT on side
0.914	17.9	O	31.7	-13.8	QP	275	1.3	QP (1.00s), EUT upright

Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-

RSS-GEN
Occupied Bandwidth

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

Measurements were made with the EUT held near a probe that was connected to a spectrum analyzer.

Radiated measurements are made with the EUT located on a non-conductive table, 3m from the measurement antenna.

Ambient Conditions:

Temperature: 19 °C

Rel. Humidity: 49 %

Summary of Results

Run #			Test Performed	Limit	Pass / Fail	Result / Margin
1			99% or Occupied Bandwidth	-	-	82 Hz

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

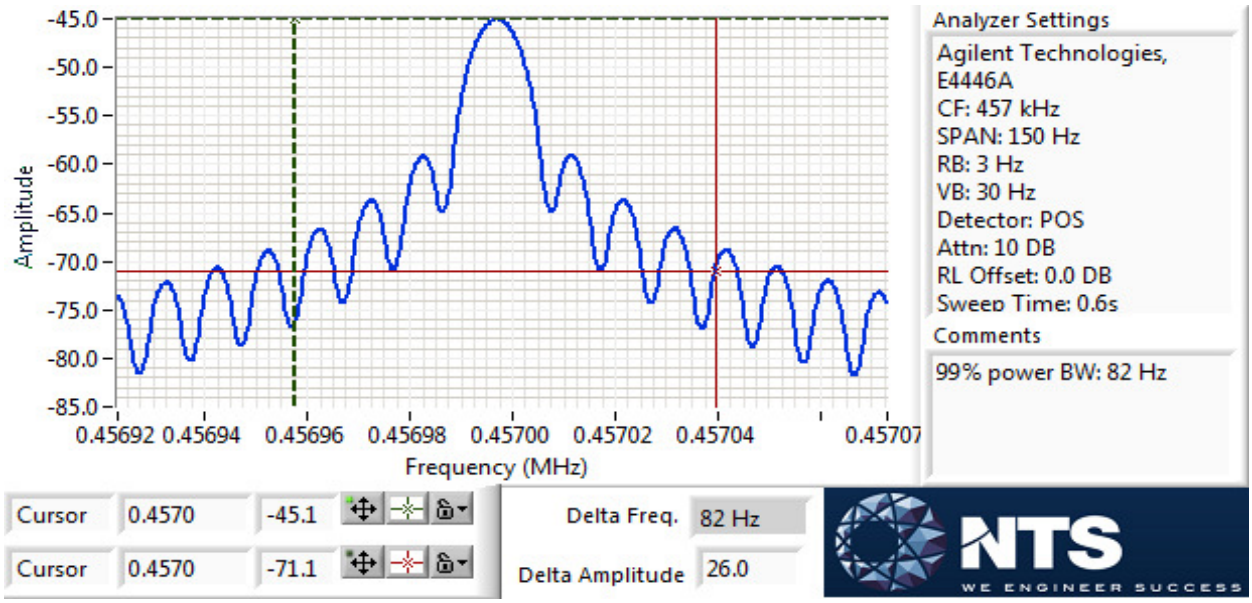
Client:	Backcountry Access	Job Number:	PR073144
Model:	TRACKER S	T-Log Number:	PR073144.1
		Project Manager:	Deepa Shetty
Contact:	Toni Leskela	Project Coordinator:	-
Standard:	FCC§15.209, RSS-210	Class:	-

Run #3: Signal Bandwidth

Date of Test: 12/28/2017 Config. Used: 1
Test Engineer: David Bare Config Change: None
Test Location: Fremont Chamber #2 EUT Voltage: Battery

Frequency (MHz)	Resolution Bandwidth	Bandwidth (kHz)	99%
0.47	3 Hz		0.082

Note 1:	99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and VB ≥ 3*RB and Span ≥ 1.5% and ≤ 5% of measured bandwidth.



End of Report

This page is intentionally blank and
marks the last page of this test report.