

849 NW STATE ROAD 45

NEWBERRY, FL 32669 USA

PH: 888.472.2424 OR 352.472.5500

FAX: 352.472.2030

EMAIL: linfo@timcoengr.com
HTTP://WWW.TIMCOENGR.COM

HANDHELD MARINE RADIO PER FCC PT 80 & IC RSS-182 TEST REPORT

APPLICANT	Navman NZ Ltd.
ADDRESS	13-17 Kawana Street
	Northcote Auckland New Zealand
FCC ID	RAYLHR20US
IC LABEL	IC: 4697A-LHR20U
TESTED MODEL	LHR-20U
FAMILY MODEL(S)	EHR-10U, LHR-22U
PRODUCT DESCRIPTION	Handheld Marine Radio
DATE SAMPLE RECEIVED	August 21, 2007
DATE TESTED	August 24,2 007
TESTED BY	Nam Nguyen
APPROVED BY	Mario de Aranzeta
TIMCO REPORT NO.	2874AUT7TestReport.PDF
TEST RESULTS	□ PASS □ FAIL

THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.





TABLE OF CONTENTS

ATTESTATION	3
REPORT SUMMARY	4
TEST ENVIRONMENT AND TEST SETUP	4
DUT DESCRIPTION	5
TECHNICAL SUMMARY	6
TEST EQUIPMENT	8
TEST PROCEDURE	9
TEST RESULT	11
RF POWER OUTPUT	11
MODULATION CHARACTERISTICS	12
OCCUPIED BANDWIDTH	15
SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED)	16
FIELD STRENGTH OF SPURIOUS EMISSIONS (RADIATED)	17
RECEIVER RADIO INTERFERENCE	18
FREQUENCY STABILITY	20
POWER LINE CONDUCTED INTERFERENCE	21

Applicant: Navman NZ Ltd. FCC ID: RAYLHR20US, IC: 4697A-LHR20U



ATTESTATION

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.



Certificate #0955-01

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made by me or under my supervision, at Timco Engineering, Inc. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.

Authorized by: Mario de Aranzeta

Signature: On File

Function: Test Lab Supervisor / Engineer

Date: September 4, 2007

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



REPORT SUMMARY

Disclaimer	The test results relate only to the items tested.		
Purpose of Test	To show the DUT in compliance with FCC CFR 47 Part 80 and Industry Canada RSS-182 requirements for handheld marine radio.		
Test Procedures	ANSI/TIA 603-C: 2004, FCC CFR 47 Part 80, ANSI C63.4: 2003		
	IC RSS-182		
Related Approval(s)/	N/A		
Report(s)			

TEST ENVIRONMENT AND TEST SETUP

Test Facility	All tests were conducted by Timco Engineering Inc. located at 849 NW State Road 45, Newberry, FL 32669 USA
Laboratory Test Condition	Temperature: 26°C Relative humidity: 50%.
Deviation from the standards	
Modification to the DUT	No modification was made.
Test Exercise (software etc.)	The DUT was placed in continuous transmitting mode of operation.
System Setup	No testing accessories. The DUT is a stand alone device.

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



DUT DESCRIPTION

Manufactured by	Navman NZ Ltd.	
Product Description	Handheld Marine Radio	
FCC ID	RAYLHR20US	
IC Label	IC: 4697A-LHR20U	
M/N	LHR-20U (representing the worst-case scenario)	
Family M/Ns	HER-10U, LHR-22U	
Trade Name	Lowrance for LHR-20U and LHR-22U	
	Eagle for EHR-10U	
S/N	20070816001	
Model Variance	LHR-20U and EHR-10U are the exactly same except the power supplies.	
	LHR-20U uses Li-ion re-chargeable battery. There is protection circuit inside the Li-ion battery.	
	EHR-10U uses Ni-MH battery pack; and the charger circuit is on the small PCB board connected to the Ni-MH battery pack, i.e., inside the AA tray. One poly fuse is supplied with Ni-MH battery pack.	
	LHR-22U is exactly same as LHR20 except color of the enclosure.	
Power Source	LHR-20U: DC12V 800mA	
	EHR-10U: DC12V 200mA	
Test Accessories	LHR-20U: AC/DC Adaptor Class 2 m/n: PI-41-691US (Input: 120Vac 60 Hz 19W, Output: 12V DC 800mA)	
	EHR-10U: Plug-in Power Supply, m/n: PI-35-24D (Input: AC120V 60 Hz 5W, Output: 12V DC 200mA)	
Test Item	Preproduction	
Type of DUT	Portable	

Applicant: Navman NZ Ltd. FCC ID: RAYLHR20US, IC: 4697A-LHR20U



TECHNICAL SUMMARY

FCC Rule Part	Item	Description
IC Rule Part		
Pt 2.1033(c) (6)	Operating	156.025 ~ 157.425 MHz
RSS-182	Frequency	
Pt 80.205 (a)	Occupied	16 kHz
RSS-182	Bandwidth	
Pt 2.1033(c)(7)	Power Range	There is a user power switch for High/Low Power.
RSS-182	and Controls	Maximum Output Power Rating: High 5 Watts, 1 Watt into a 50-ohm resistive load.
Pt 2.1033(c)(8)	DC Voltages	Power Input Final Amplifier Only
RSS-182	and Current into Final	High Low Vce = 7.40 V Vce = 7.40 V
	Amplifier	Ice = 1.50 A. Ice = 0.76 A
	F	Pin = 11.10 Watts Pin = 5.62 Watts
Pt 2.1046	Max. Output	High: 5 W
Pt 80.215 (b)(2)	Pwr	Low: 1 W
RSS-182		(Limit: 10W)
Pt 80.205(a)	Modulation	Voice
Pt 80.271(a)(6)	Antenna Spec	SMA
Pt 2.1033(c)	Type of	Bn = 2(M) + 2DK
Pt 80.205(a) (5)	Emissions	M = 3000
		D = 4900
		K=1
		Bn = 2(3000) + 2(4900) = 15.8 kHz
Pt 80.203 (b)	External Controls	The transmitter is capable of changing frequency between 156.05 – 157.425 MHz by external control. The available channels are shown in the user manual description channel list. These channels are preprogrammed by the manufacturer and are inaccessible to the station operator.

[Continued]

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



FCC Rule Part	Item	Description
IC Rule Part		
Pt 80.203 (c)	Five minutes continuous transmission test.	The antenna was connected to a dummy load and the radio was locked in a transmit PTT mode. An external timer digital clock was used to observe the duration of the un-modulated transmission. The transmitter turned off and the radio went to receive mode at 4 minutes, 58 seconds as displayed by the external digital clock.
Pt 80.203 (n) Pt 80.225	DSC Capability	This radio does not have DSC capability in the 156 – 162 MHz band.
Pt 80.873	G3E	This radio is capable of G3E emission on 156.300
Pt 80.956	Transmissions	and 156.800 MHz
Pt 80.911 (a)		
Pt 80.911 (c)	Certified	N/A
	transmitting power	(With 13.6 VDC applied and with the radio connected to a 50 ohm resistive wattmeter, the output power was measured at 156.300 and 156.800 MHz with a measured reading of 25 Watts under normal speech modulation.)
Pt 80.911 (d)(2)	80.959	N/A
		(With the power supply set to 13.6 VDC, and the output of the transmitter terminated in a 50 ohm matching artificial load, the transmitter output power was monitored over a 10 minute continuous operational period while in full power. The output power varied from the nominal 25 Watts output power to 24.8 Watts output power.)

Applicant: Navman NZ Ltd. FCC ID: RAYLHR20US, IC: 4697A-LHR20U



TEST EQUIPMENT

Device	Manufacturer	Model	Serial	Cal/Char	Due Date
			Number	Date	
Analyzer	HP	8566B Opt	3138A07786	CAL	12/7/07
Tan Tower		462	3144A20661	12/7/05	
Spectrum					
Analyzer					
Analyzer	HP	85685A	3221A01400	CAL	12/7/07
Tan Tower				12/7/05	
RF					
Preselector					
Analyzer	HP	85650A	3303A01690	CAL	12/8/07
Tan Tower				12/8/05	
Quasi-Peak					
Adapter					
Analyzer	HP	8449B-H02	3008A00372	CAL	12/8/07
Tan Tower				12/8/05	
Preamplifier					
Antenna:	Electro-	BIA-25	1171	CAL	7/18/09
Biconnical	Metrics			7/18/07	
Antenna:	Electro-	LPA-25	1122	CAL	12/1/08
Log-Periodic	Metrics			12/1/06	, ,
Antenna:	Electro-	RGA-180	2319	CAL	12/29/08
Double-	Metrics			12/29/06	, ,
Ridged Horn					
LISN	Electro-	ANS-25/2	2604	CAL	10/5/08
	Metrics	,		10/5/06	
Termaline	Bird	611	16405	CAL	3/15/09
Wattmeter	Electronic			3/15/07	, ,
	Corporation				

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



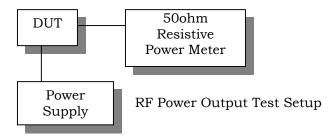
TEST PROCEDURE

Power Line Conducted Interference

The procedure used was ANSI 63.4-2003 using a 50uH LISN. Both lines were observed with the DUT transmitting. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

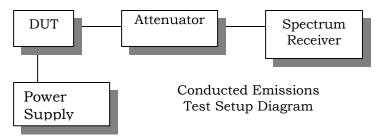
RF Power Output

The RF power output was measured at the antenna feed point using a peak power meter. A 50-ohm, resistive wattmeter was connected to the RF output connector. With a nominal battery voltage, and the transmitter properly adjusted the RF output measures:



Spurious Emissions At Antenna Terminals (Conducted)

The carrier was modulated 100%. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz. The measurements were made in accordance with standard ANSI/TIA-603-C: 2004



Radiation Interference

The test procedure used was ANSI/TIA-603-C: 2004 and ANSI C63.4-2003 using an Agilent spectrum receiver with pre-selector. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



Modulation Characteristic

Audio frequency response

The audio frequency response was measured in accordance with ANSI/TIA 603-C: 2004.

Audio Low Pass Filter

The audio low pass filter for voice-modulated equipment was measured in accordance with ANSI/TIA 603-C: 2004.

Audio Input versus modulation

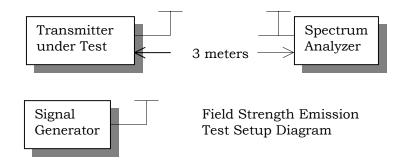
The audio input level needed for a particular percentage of modulation was measured in accordance with ANSI/TIA 603-C: 2004. Curves are provided for audio input frequencies of 300, 1000, and 3000 Hz.

Frequency Stability

The frequency stability was measured per ANSI/TIA 603-C: 2004.

Field Strength of Spurious Emissions

The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per ANSI/TIA 603-C: 2004 using the substitution method.



Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



TEST RESULT

RF POWER OUTPUT

Rule Part No.: Pt 2.1046(a), Pt 80.215, RSS-182

Requirements: Pt 80.215: 10 W

RSS-182: 5 W

Test Data: High Power = 5 W

Low Power = 1 W

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



MODULATION CHARACTERISTICS

Rule Parts No.: Pt 2.1047(a)(b), Pt 80, RSS-182

Requirements: A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 – 5000Hz shall be submitted.

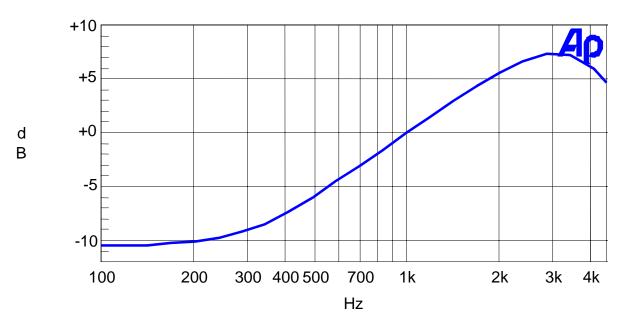
For voice modulated communication equipment, a curve or equivalent data showing audio low pass filter shall be submitted.

Audio input versus modulation cannot exceed 100%.

RSS-182: The audio-frequency band shall be limited to 3000 kHz.

Test Data:

Audio Frequency Response Plot



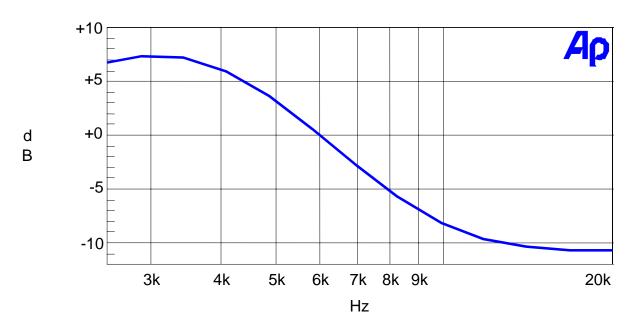
Color	Line Style	Thick	Data	Axis
Blue	Solid	2	Anlr.Level A!Normalize	Left

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



Audio Low Pass Filter



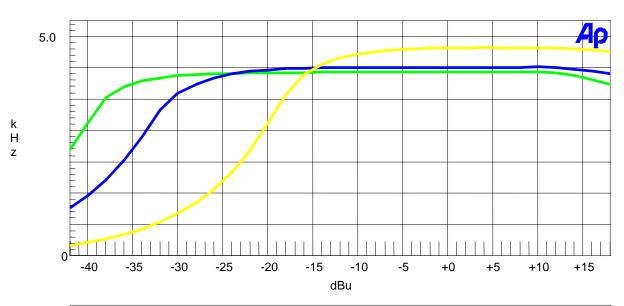
Color	Line Style	Thick	Data	Axis
Blue	Solid	2	Anlr.Level A!Normalize	Left

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



Modulation Limiting Plots: 2.5 KHz (Green), 1.0 KHz (Blue), and 300 Hz



Color	Line Style	Thick	Data	Axis
Green	Solid	3	Anlr.Level A	Left
Blue	Solid	3	Anlr.Level A	Left
Yellow	Solid	3	Anlr.Level A	Left

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



OCCUPIED BANDWIDTH

Rule Parts No: Pt 2.1049, Pt 80.213(b), RSS-182

Test Requirement:

On any frequency removed from the assigned frequency by more than 50%, but not more than 100%: At least 25dB.

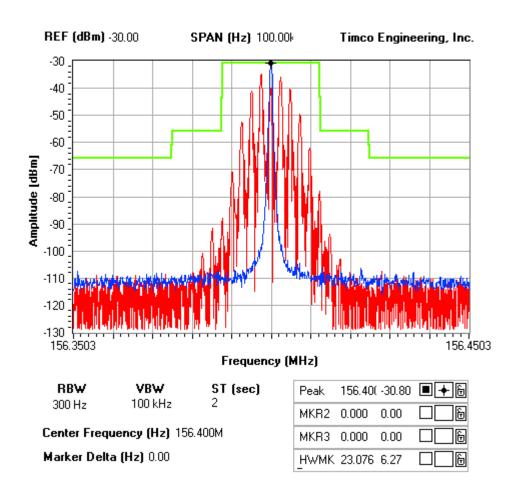
On any frequency removed from the assigned frequency by more than 100%, but not more than 250%: At least 35dB.

On any frequency removed from the assigned frequency by more than 250%, of the authorized bandwidth: At least 43 + log(P)dB.

RSS-182: The nominal authorized channel bandwidth for voice is 16 kHz. For data modulation, an authorized bandwidth of 20 kHz is permitted.

Test Data:

NOTES:NAVMAN NZ, LTD. - FCC ID: RAYLHR20
OCCUPIED BANDWIDTH PLOT



Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED)

Rule Part No.: Pt 2.1051(a), Pt 80.211(d)(2)

Requirements: High Power: 43 + 10log(Po)=50 + 10log(5)= 50dB

Low Power: $43 + 10\log(Po) = 50 + 10\log(1) = 43 \text{ dB}$

Test Data:

5W

	1
Emission	dB Below
Frequency	Carrier
MHz	(dBc)
312.80	84.1
469.20	75.8
625.60	92.4
782.00	85.5
938.40	88.4
1094.80	83.3
1251.20	86.3
1407.60	95.9
1564.00	91.5

Emission	dB Below
Frequency	Carrier
MHz	(dBc)
314.85	84.4
472.28	75.8
629.70	88.1
787.13	88.4
944.55	88.7
1101.98	82.9
1259.40	87.8
1416.83	95.5
1574.25	93.1

1 W

Emission	dB Below
Frequency	Carrier
MHz	(dBc)
312.80	73.7
469.20	88.5
625.60	74.8
782.00	77.5
938.40	85.9
1094.80	80.1
1251.20	79.6
1407.60	90.7
1564.00	85.5
312.80	73.7

Emission	dB Below
Frequency	Carrier
MHz	(dBc)
314.85	73.3
472.28	87.9
629.70	74.6
787.13	77.5
944.55	85.3
1101.98	79.8
1259.40	80.4
1416.83	90.3
1574.25	86.8
314.85	73.3

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



FIELD STRENGTH OF SPURIOUS EMISSIONS (RADIATED)

Rule Parts. No.: Part 2.1053

Requirements: High Power: $43 + 10\log(P_0) = 43 + 10\log(5) = 50$ dB

Low Power: $43 + 10\log(P_0) = 43 + 10\log(1) = 43 \text{ dB}$

Test Data:

5 W

Ant.	dB Below
Polarity	Carrier
V/H	(dBc)
Н	82.74
Н	90.91
Н	87.55
Н	86.42
Н	94.08
V	67.69
Н	85.80
Н	90.80
	Polarity V/H H H H H V

Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)
314.85	H	79.14
472.28	Н	89.73
629.7	Н	85.42
787.13	Н	86.63
944.55	Н	87.57
1101.98	V	75.65
1259.4	Н	85.35
1416.83	Н	90.35

1 W

Emission Frequency MHz	Ant. Polarity V/H	dB Below Carrier (dBc)
312.8	Н	76.45
469.2	Н	87.32
625.6	Н	76.16
782	Н	81.73
938.4	V	92.59
1094.8	V	78.50
1251.2	Н	81.91
1407.6	Н	81.41
1564	Н	83.42
312.8	Н	76.45

Emission	Ant.	dB Below
Frequency	Polarity	Carrier
MHz	V/H	(dBc)
314.85	Н	76.35
472.28	Н	87.34
629.7	Н	76.33
787.13	Н	80.14
944.55	V	93.98
1101.98	V	76.36
1259.4	Н	82.46
1416.83	Н	82.26
1574.25	Н	84.32
314.85	Н	76.35

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



RECEIVER RADIO INTERFERENCE

Rule Part No.: Pt 1509, RSS-GEN

Requirements:

Frequency	Limits
30 - 88	40.0 dBμV/m measured @ 3 meters
80 – 216	43.5 dBμV/m measured @ 3 meters
216 – 960	46.0 dBμV/m measured @ 3 meters
Above 960	54.0 dBμV/m measured @ 3 meters

Test Data:

Tuned	Emission	Meter	Ant.	Coax	Correction	Field	Margin
Frequency	Frequency	Reading	Polarity	Loss	Factor	Strength	dB
MHz	MHz	dBuV	V/H	dB	dB/m	dBuV/m	
156.4	135.00	3.6	V	0.69	13.00	17.29	26.22
156.4	135.00	4.5	Н	0.69	13.10	18.29	25.22
156.4	270.00	4.2	Н	1.04	13.50	18.74	27.26
156.4	270.00	4.9	V	1.04	13.30	19.24	26.76
156.4	405.00	4.4	Н	1.21	16.15	21.76	24.25
156.4	405.00	5.5	V	1.21	15.80	22.51	23.50
156.4	540.00	4.0	Н	1.42	18.30	23.72	22.28
156.4	540.00	4.2	V	1.42	18.10	23.72	22.28
156.4	675.00	4.5	V	1.68	20.50	26.68	19.33
156.4	675.00	5.1	Н	1.68	20.85	27.63	18.38
157.4	136.00	3.9	V	0.69	12.96	17.55	25.95
157.4	136.00	4.9	Н	0.69	13.10	18.69	24.81
157.4	272.00	4.2	Н	1.04	13.56	18.80	27.20
157.4	272.00	4.3	V	1.04	13.36	18.70	27.30
157.4	408.00	4.7	Н	1.21	16.18	22.09	23.91
157.4	408.00	4.8	V	1.21	15.86	21.87	24.13
157.4	544.00	3.9	Н	1.43	18.42	23.75	22.25
157.4	544.00	4.9	V	1.43	18.10	24.43	21.57
157.4	680.00	5.1	V	1.68	20.50	27.28	18.72
157.4	680.00	5.3	Н	1.68	21.00	27.98	18.02

[Continued]

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



Tuned	Emission	Meter	Ant.	Coax	Correction	Field	Margin
Frequency	Frequency	Reading	Polarity	Loss	Factor	Strength	dB
MHz	MHz	dBuV	V/H	dB	dB/m	dBuV/m	
163.3	141.88	3.4	Н	0.69	13.25	17.34	26.16
163.3	141.88	4.1	V	0.69	12.91	17.70	25.80
163.3	283.76	4.5	V	1.07	13.71	19.28	26.72
163.3	283.76	4.6	Н	1.07	13.88	19.55	26.45
163.3	425.64	4.2	V	1.23	16.06	21.49	24.51
163.3	425.64	4.5	Н	1.23	16.37	22.10	23.90
163.3	567.52	3.9	V	1.50	18.18	23.58	22.42
163.3	567.52	4.2	Н	1.50	18.72	24.42	21.58
163.3	709.40	4.6	V	1.72	20.51	26.83	19.17
163.3	709.40	5.3	Н	1.72	21.00	28.02	17.98

Applicant: Navman NZ Ltd. FCC ID: RAYLHR20US, IC: 4697A-LHR20U



FREQUENCY STABILITY

Rule Parts. No.: Pt 2.1055, Pt 80.209(a)

Requirements: -30 to +50° C.

Voltage Variation +, -15% ±10.0 PPM or ±0.0010%

RSS-182: ± 5.0 PPM or $\pm 0.0005\%$

Test Data:

Full Battery, Frequency 156.400053 MHz

Tan Battery, Treq.	i e	
Test Voltage (Vdc)	Frequency	Unit
Test Temperature (°C]	Stability	[ppm]
-30C	156.399289	-4.85
-20C	156.399655	-2.51
-10C	156.399795	-1.62
0C	156.399898	-0.96
10C	156.399994	-0.35
20C	156.400043	-0.03
30C	156.400052	0.03
40C	156.400106	0.37
50C	156.400320	1.74

85% Voltage, Frequency 156.400 048 MHz

OU70 VOITAGE, ITEGE	acticy 100, 100 c	7 10 111112
20C	156,400,053	-0.03

Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U

Report: W:\N\NAVMAN NZ_RAY\2874AUT7\2874AUT7TestReport.doc

Page 20 of 28



POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: Part 15.207

Requirements:

Frequency (MHz)	Quasi Peak Limits (dBuv)	Average Limits (dBuV)
0.15 - 0.5	66 – 56 *	56 – 46 *
0.5 - 5.0	56	46
5.0 – 30	60	50
* Decreases with logarithm of frequency		

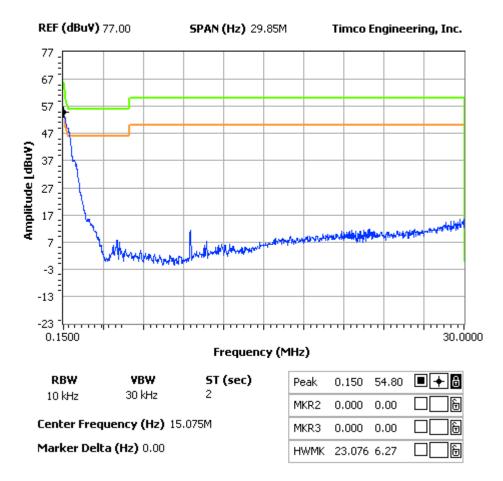
776 Test Data:

LHR-20U - Line 1

NOTES:

NAVMAN NZ, LTD. - FCC ID: RAYLHR20 POWER LINE CONDUCTED PLOT - LINE 1

FCC 15.107 Mask Class B



Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



LHR-20U – Line 1 – Average

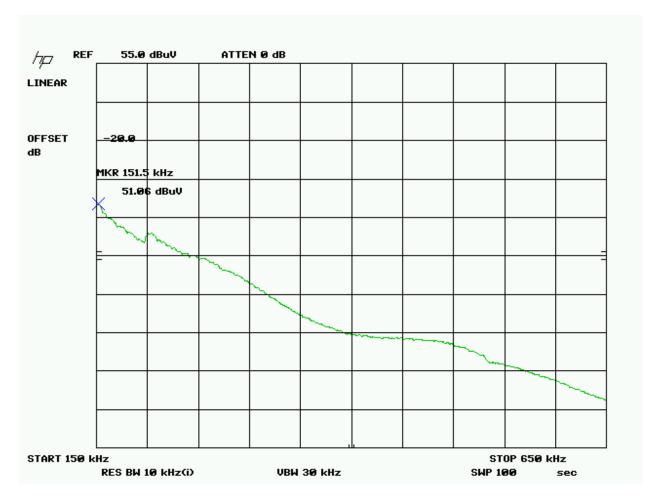


Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



LHR-20U – Line 1 – Quasi Peak



Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4697A-LHR20U



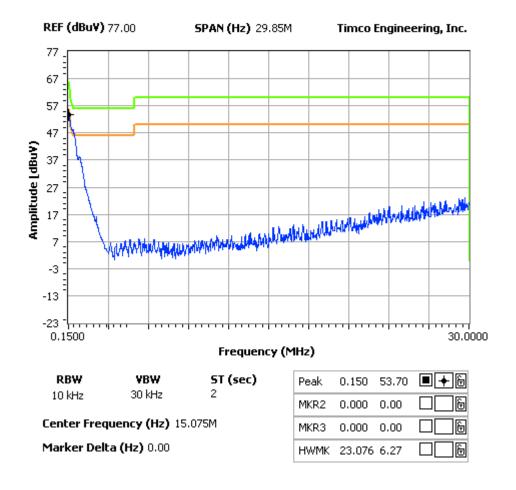


LHR-20U - Line 2

NOTES:

NAVMAN NZ, LTD. - FCC ID: RAYLHR20 POWER LINE CONDUCTED PLOT - LINE 2

FCC 15.107 Mask Class B



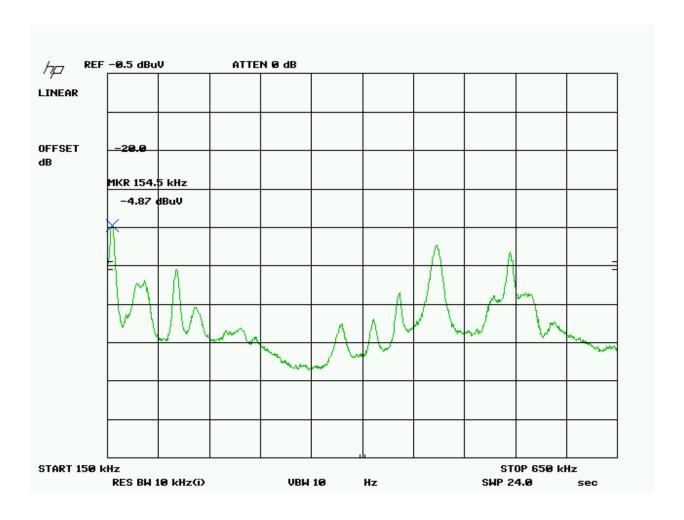
Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4769A-LHR20U





LHR-20U - Line 2 - Average



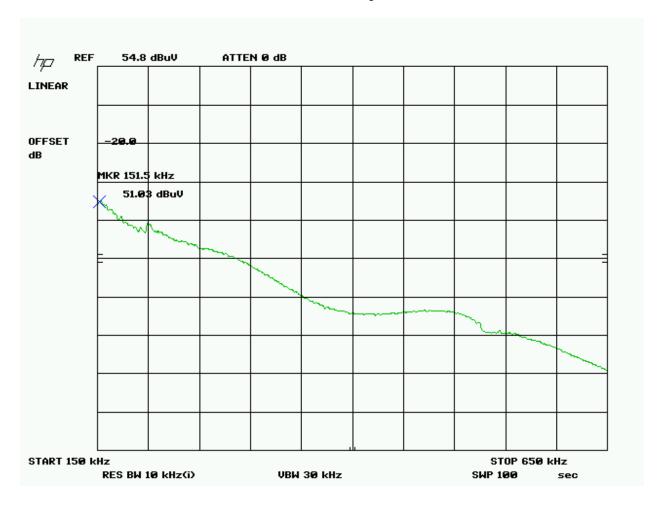
Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4769A-LHR20U





LHR-20U – Line 2 – Quasi Peak



Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4769A-LHR20U



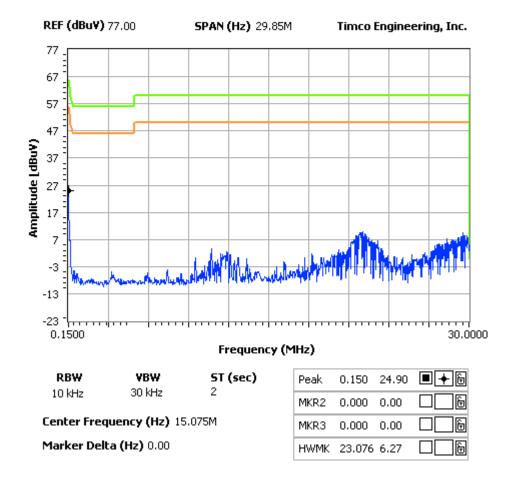


EHR-10U - Line 1

NOTES:

NAVMAN NZ, LTD. - HANDHELD MARINE RADIO - MODEL ERH10 POWER LINE CONDUCTED PLOT - LINE 1

FCC 15.107 Mask Class B



Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4769A-LHR20U



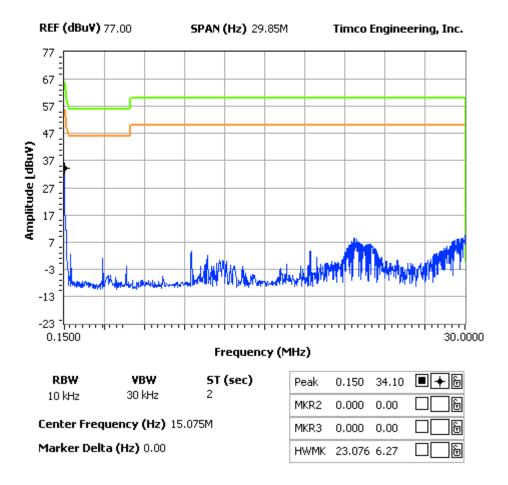


EHR-10U - Line 2

NOTES:

NAVMAN NZ, LTD. - HANDHELD MARINE RADIO - MODEL ERH10 POWER LINE CONDUCTED PLOT - LINE 2

FCC 15.107 Mask Class B



Applicant: Navman NZ Ltd.

FCC ID: RAYLHR20US, IC: 4769A-LHR20U