

RADIO REPORT

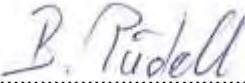
FCC 47 CFR Part 24E, FCC 47 CFR Part 27

ISED Canada RSS-133, Issue 7
ISED Canada RSS-139, Issue 4 Amendment 1
ISED Canada RSS-130, Issue 2

Report Reference No	G0M-2303-1961-TFCMOCORSE-V07
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	    DAkkS - Registration number : D-PL-12092-01-03 (ISED) ISED Testing Laboratory site: 3470A DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	Navico Inc.
Address	4500 S. 129th East Avenue, Ste. 200 OK 74134 Tulsa USA
Test Specification	47 CFR Part 24E 47 CFR Part 27 ISED RSS-133, Issue 7: 2024-07 ISED RSS-139, Issue 4 Amendment 1: 2022-10 ISED RSS-130, Issue 2: 2019-02
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Marine and recreational IoT Gateway and vessel management system
Model(s)	Connect 1
Model(s) number	80-911-0270-00
Brand Name(s)	CZone
Hardware Version(s)	E4
Software Version(s)	emc_tests_op11587 / 1.0
FCC ID	RAYE3801
IC	978B-E3801
Test Result	PASSED

Test Report No.: G0M-2303-1961-TFCMOCORSE-V07

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Possible test case verdicts:	
Required by standard but not tested	N/T
Not required by standard	N/R
Not applicable to EUT	N/A
Test object does meet the requirement	P(PASS)
Test object does not meet the requirement	F(FAIL)
Testing:	
Test Lab Temperature	20 °C – 23 °C
Test Lab Humidity	32 % – 38 %
Date of receipt of test item	2023-05-16
Report:	
Compiled by	Stephan Liebich
Supervised by (+ signature) (Responsible for Test)	Burkhard Pudell 
Approved by (+ signature) (Senior Radio Expert)	Radwan Jaafar 
Date of Issue	2025-03-11
Total number of pages	70
General Remarks:	
<p>The test results presented in this report relate only to the object tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.</p>	
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.	
Additional Comments:	
None	

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2023-11-22	Initial Release	--
02	2024-02-05	Replaced document: G0M-2303-1961-TFCMOCORSE-V01 Replaced by: G0M-2303-1961-TFCMOCORSE-V02 Reason: - Brand name updated - Model name updated - Model number added	G. Offorji
03	2024-05-30	Replaced document: G0M-2303-1961-TFCMOCORSE-V02 Replaced by: G0M-2303-1961-TFCMOCORSE-V03 Reason: - Applicant updated - Address update	St. Liebich
04	2024-12-18	Replaced document: G0M-2303-1961-TFCMOCORSE-V03 Replaced by: G0M-2303-1961-TFCMOCORSE-V04 Reason: - Update master data	St. Liebich
05	2025-01-10	Replaced document: G0M-2303-1961-TFCMOCORSE-V04 Replaced by: G0M-2303-1961-TFCMOCORSE-V05 Reason: - Update radiated power results according antenna gain	A. Ibraimov
06	2025-02-06	Replaced document: G0M-2303-1961-TFCMOCORSE-V05 Replaced by: G0M-2303-1961-TFCMOCORSE-V06 Reason: - Update radio module, FCC ID of the module and reference module report - Update test modes - Recalculation of radiated power results - Add spurious emission test results	A. Ibraimov
07	2025-03-11	Replaced document: G0M-2303-1961-TFCMOCORSE-V06 Replaced by: G0M-2303-1961-TFCMOCORSE-V07 Reason: - Correction of applicant address on page 1	A. Ibraimov

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V _{NOM}	Nominal supply voltage

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1 Equipment (Test Item) Under Test

Description	Marine and recreational IoT Gateway and vessel management system	
Model(s)	Connect 1	
Model(s) number	80-911-0270-00	
Brand Name(s)	CZone	
Serial Number(s)	EHE22000056	
Test Sample Id(s)	44397	
Hardware Version(s)	E4	
Software Version(s)	emc_tests_op11587 / 1.0	
PMN	Connect 1	
HVIN	E4/A	
FVIN	1.18.0	
HMN	n/a	
IC	978B-E3801	
FCC ID	RAYE3801	
Equipment type	End Product	
Radio type	Transceiver	
Radio technologies	LTE FDD NB-IoT, LTE Cat M1	
NB-IoT frequency bands	FDD 2 : UL = 1850 - 1910 MHz, DL = 1930 - 1990 MHz FDD 4 : UL = 1710 - 1755 MHz, DL = 2110 - 2155 MHz FDD12 : UL = 699 - 716 MHz, DL = 729 - 746 MHz FDD13 : UL = 777 - 787 MHz, DL = 746 - 756 MHz	
Modulations	$\pi/2$ - BPSK, $\pi/4$ - QPSK, QPSK, 16-QAM	
Number of modules	1	
Radio Module	Type	NB-IoT, Cat M1 Radio module
	Model	ME910G1-W1
	Manufacturer	Telit
	HW Version	Not specified
	SW Version	Not specified
	FCC-ID	RI7ME910G1W1
	IC	5131A-ME910G1W1
Antenna	Type	External antenna
	Model	JCG913L-2
	Manufacturer	JC Antenna
	Gain	3 dBi (antenna datasheet)
Supply Voltage	V _{NOM}	13.8 V DC
AC/DC-Adaptor	None	
Manufacturer	Fell Technology AS Bragernes Torg 2 3017 Drammen NORWAY	

1.3 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
SIM	Communication Tester	R&S	CMW500	Base Station Simulator
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.4 Test Modes

1.4.1 Test modes - Transmitter and receiver radiated emissions, Radiated power calculation

Mode	Description
NB1 FDD2 / EMI1	Channel = 19198 Mode = RMC TPC = Max power Modulation = $\pi/4$ - QPSK Bandwidth = 45 kHz Number of tones = 3 Start tone offset = 3
LTE FDD4 / EMI1	Channel = 19965 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 3 MHz Number of resource blocks = 1 Resource block offset = 0
NB1 FDD12 / EMI1	Channel = 23095 Mode = RMC TPC = Max power Modulation = $\pi/4$ - QPSK Bandwidth = 45 kHz Number of tones = 3 Start tone offset = 3
NB1 FDD13 / EMI1	Channel = 23230 Mode = RMC TPC = Max power Modulation = $\pi/4$ - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD4 / EMI1	Channel = 19198 Mode = RMC TPC = Max power Modulation = QPSK Subcarrier spacing = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD12 / EMI2	Channel = 23012 Mode = RMC TPC = Max. Power Modulation = QPSK Subcarrier spacing = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD13 / EMI2	Channel = 23230 Mode = RMC TPC = Max. Power Modulation = QPSK Subcarrier spacing = 3.75 kHz Number of tones = 1 Start tone offset = 0
LTE FDD4 / Receive	Channel = 1965 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 3 MHz Number of resource blocks = 0 Resource block offset = 0 Narrowband index = Low

NB1 FDD2 / Receive	Channel = 1198 Mode = No scheduling Modulation = $\pi/4$ - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD12 / Receive	Channel = 5095 Mode = No scheduling Modulation = $\pi/4$ - QPSK Bandwidth = 45 kHz Number of tones = 3 Start tone offset = 3
NB1 FDD13 / Receive	Channel = 5230 Mode = No scheduling Modulation = $\pi/4$ - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD2 / PMAX	Channel = 19198 Mode = RMC TPC = Max power Modulation = QPSK Subcarrier spacing = 15 kHz Number of tones = 3 Start tone offset = 3
NB1 FDD4 / PMAX	Channel = 20398 Mode = RMC TPC = Max power Modulation = QPSK Subcarrier spacing = 15 kHz Number of tones = 3 Start tone offset = 3
NB1 FDD12 / PMAX	Channel = 23095 Mode = RMC TPC = Max power Modulation = QPSK Subcarrier spacing = 15 kHz Number of tones = 3 Start tone offset = 3
NB1 FDD13 / PMAX	Channel = 23230 Mode = RMC TPC = Max power Modulation = QPSK Subcarrier spacing = 15 kHz Number of tones = 3 Start tone offset = 3
LTE FDD2 / PMAX	Channel = 18900 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 1.4 MHz Number of resource blocks = 1 Resource block offset = 0 Narrowband index = Low
LTE FDD4 / PMAX	Channel = 20175 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 1.4 MHz Number of resource blocks = 1 Resource block offset = 0 Narrowband index = Low

LTE FDD12 / PMAX	Channel = 23017 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 1.4 MHz Number of resource blocks = 1 Resource block offset = 0 Narrowband index = Low
LTE FDD13 / PMAX	Channel = 23230 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 10 MHz Number of resource blocks = 5 Resource block offset = 1 Narrowband index = High
LTE FDD2 / QPSK	Channel = 18900 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 0 Narrowband index = Low
LTE FDD2 / QAM	Channel = 18900 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 20 MHz Number of resource blocks = 6 Resource block offset = 0 Narrowband index = Low
LTE FDD4 / QPSK	Channel = 20175 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 0 Narrowband index = Low
LTE FDD4 / QAM	Channel = 20175 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 20 MHz Number of resource blocks = 6 Resource block offset = 0 Narrowband index = Low
LTE FDD12 / QPSK	Channel = 23130 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 10 MHz Number of resource blocks = 1 Resource block offset = 0 Narrowband index = High
LTE FDD12 / QAM	Channel = 23060 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 10 MHz Number of resource blocks = 5 Resource block offset = 0 Narrowband index = Low

LTE FDD13 / QPSK	Channel = 23230 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 10 MHz Number of resource blocks = 5 Resource block offset = 1 Narrowband index = High
LTE FDD13 / QAM	Channel = 23230 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 10 MHz Number of resource blocks = 5 Resource block offset = 1 Narrowband index = High
<p>Comment: The test modes for NB1 FDD2 / EMI1, LTE FDD4 / EMI1, NB1 FDD12 / EMI1, NB1 FDD13 / EMI1 are based on worst case evaluation of the conducted output power from module test reports "STS1912245W01" and "STS1912245W02" issued by "Shenzhen STS Test Services Co., Ltd." on 2020-03-11.</p> <p>The test modes for NB1 FDD4 / EMI1, NB1 FDD12 / EMI2, NB1 FDD13 / EMI2, are chosen on worst case evaluation of spurious emission test results, the remaining non mentioned test modes are chosen on worst case conducted output power from test reports "50289118 001" and "50289118 002" issued by "TÜV Rheinland (Shenzhen) Co., Ltd." on 2020-01-15.</p> <p>Above mentioned test reports do belong to two different modules ME910G1WW and ME910G1W1. Both modules are from same series but are not identical. Module ME910G1WW was declared by customer, however module ME910G1W1 is built into EUT. Spurious emission results of module test reports for module ME910G1W1 have been evaluated and critical test modes were retested. Output power calculation is updated to be correct with ME910G1W1 module measurements.</p>	

1.5 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dB μ V. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyzer (dB}\mu\text{V)} + \text{A.F. (dB/m)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Field strength limit:

This is the FCC Class B radiated emission limit (in units of dB μ V/m). The FCC limits are given in units of μ V/m. The following formula is used to convert the units of μ V/m to dB μ V/m:

$$\text{Field strength limit (dB}\mu\text{V/m)} = 20 \cdot \log (\mu\text{V/m})$$

Example only for radiated field strength:

Reading + AF	= Net Reading	:	Net reading	- Field strength limit	= Margin
+21.5 dB μ V	+ 26 dB/m	:	47.5 dB μ V/m	- 57.0 dB μ V/m	= -9.5

Di:

This is the measurement distance between the test sample and the measurement antenna in meter (m)

ERP:

This is the emitted power by the test sample as Effective Radiated Power (dBm)

EIRP:

This is the emitted power by the test sample as Effective Isotropic Radiated Power (dBm)

Calculation of measurement result:

ERP = Net field strength (dB μ V/m) + 20 · log(Di) - 106.95

EIRP = Net field strength (dB μ V/m) + 20 · log(Di) - 104.8

P_{Watt}:

This is power in Watts

P_{dBm}:

This is power in dBm. P_{dBm} = 10 · log(P_{Watt} · 1000)

Power limit:

This is the radiated emission limit expressed in P_{dBm}. FCC limits are typically given as an attenuation of carrier power in dB by the formula x + 10 · log(P_{Watt})

Calculation example of emission limit:

Assuming x = 43

Power-Limit = P_{dBm} - 43 + 10 · log(P_{Watt})

Power-Limit = 30 dBm - 43 + 10 · log(1 W) = -13 dBm

Example only for radiated power:

Reading + AF	= Net Reading
+21.5 dB μ V + 26 dB/m	= 47.5 dB μ V/m

Net Reading + 20 · log(Di) - 104.8	= EIRP
47.5 dB μ V/m + 20 · log(3 m) - 104.8	= -47.8 dBm

EIRP - Power limit	= Margin
-47.8 dBm - (-13dBm)	= -34.8 dB

2 Result Summary

Test Summary				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
47 CFR §24.232 47 CFR §27.50 ISED RSS-133 §5.5 ISED RSS-139 §6.5 ISED RSS-130 §4.6	Radiated power	ANSI C63.26 KDB 971168	PASS	Calculations based on measurements in module test reports, referenced in test modes section
47 CFR §2.1047 ISED RSS-130 §4.1 ISED RSS-133 §5.3 ISED RSS-139 §6.2	Modulation characteristics	ANSI C63.26 KDB 971168	N/T	See note 1
47 CFR §24.235 47 CFR §27.54 ISED RSS-130 §4.3 ISED RSS-133 §5.4 ISED RSS-139 §6.4	Frequency stability	ANSI C63.26 KDB 971168	N/T	See note 1
47 CFR §2.1049	Occupied Bandwidth	ANSI C63.26 KDB 971168	N/T	See note 1
47 CFR §24.238 47 CFR §27.53 ISED RSS-133 §5.6 ISED RSS-139 §6.6 ISED RSS-130 §4.7	Transmitter out-of-band unwanted emissions	ANSI C63.26 KDB 971168	N/T	See note 1
47 CFR §24.238 47 CFR §27.53 47 CFR §90.691 ISED RSS-133 §5.6 ISED RSS-139 §6.6 ISED RSS-130 §4.7	Transmitter conducted spurious emissions	ANSI C63.26 KDB 971168	N/T	See note 1
47 CFR §24.238 47 CFR §27.53 47 CFR §90.691 ISED RSS-133 §5.6 ISED RSS-139 §6.6 ISED RSS-130 §4.7	Transmitter radiated spurious emissions	ANSI C63.26 KDB 971168	PASS	--
ISED RSS-133 §3.4 ISED RSS-139 §3.1 ISED RSS-130 §3.3 ISED RSS-Gen §7	Receiver radiated spurious emissions	ANSI C63.4	PASS	--
Note 1: These test cases are not retested because the radio module was already tested. Original module test reports are: "50289118 001" and "50289118 002" issued by "TÜV Rheinland (Shenzhen) Co., Ltd." on 2020-01-15. Comment: The Decision Rule is applied on the basis of ETSI TR 102 273 and ETSI TR 100 028. These standards provide guidance on how to calculate and apply measurement uncertainty whilst providing maximum uncertainties allowance. In all cases due consideration will be given to ILAC-G8:09/2019. Where a result is considered conditional in respect of its proximity to the limit line, the customer would be made aware of situation so that they can make an informed decision on how to proceed.				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - Radiated power

3.1.1 Information

Test Information	
Reference	47 CFR §24.232 47 CFR §27.50 ISED RSS-133 §5.5 ISED RSS-139 §6.5 ISED RSS-130 §4.6
Measurement Method	Calculation based on module report conducted results referenced in test modes section
Operator	Azamat Ibraimov
Date	2025-02-03

3.1.2 Limits

Limits - Portable equipment					
Band	Frequency range [MHz]	Power limit [dBm ERP]	Power limit [W ERP]	Power limit [dBm EIRP]	Power limit [W EIRP]
LTE FDD 2	1850 - 1910	-	-	33	2
LTE FDD 4	1710 - 1755	-	-	30	1
LTE FDD12	699 - 716	34.77	3	-	-
LTE FDD13	777 - 787	34.77	3	-	-

3.1.3 Procedure

Test Procedure - Calculation
<ol style="list-style-type: none">1. The highest conducted output power for each radio band is determined from the modular approval report2. The antenna gain for the corresponding transmission frequency is added to the conducted output power3. The calculated radiated power is compared to the transmitter output power limit

3.1.4 Results

Test Results - FDD2						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD2 / PMAX	21.4	3	24.4	33	-8.60	PASS
NB1 FDD2 / PMAX	20.87	3	23.87	33	-9.13	PASS
LTE FDD2 / QPSK	21.08	3	24.08	33	-8.92	PASS
LTE FDD2 / QAM	20.92	3	23.92	33	-9.08	PASS

Test Results - FDD4						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD4 / PMAX	21.16	3	24.16	30	-5.84	PASS
NB1 FDD4 / PMAX	20.29	3	23.29	30	-6.71	PASS
LTE FDD4 / QPSK	20.93	3	23.93	30	-6.07	PASS
LTE FDD4 / QAM	20.79	3	23.79	30	-6.21	PASS

Test Results - FDD12						
Mode	Power [dBm]	Antenna gain [dBd]	Radiated power [dBm ERP]	Limit [dBm ERP]	Margin [dB]	Result
LTE FDD12 / PMAX	21.6	0.85	22.45	34.77	-12.32	PASS
NB1 FDD12 / PMAX	20.92	0.85	21.77	34.77	-13.00	PASS
LTE FDD12 / QPSK	21.31	0.85	22.16	34.77	-12.61	PASS
LTE FDD12 / QAM	21.19	0.85	22.04	34.77	-12.73	PASS

Test Results - FDD13						
Mode	Power [dBm]	Antenna gain [dBd]	Radiated power [dBm ERP]	Limit [dBm ERP]	Margin [dB]	Result
LTE FDD13 / PMAX	21.39	0.85	22.24	34.77	-12.53	PASS
NB1 FDD13 / PMAX	20.99	0.85	21.84	34.77	-12.93	PASS
LTE FDD13 / QPSK	21.39	0.85	22.24	34.77	-12.53	PASS
LTE FDD13 / QAM	21.14	0.85	21.99	34.77	-12.78	PASS

3.2 Test Conditions and Results - Transmitter radiated emissions

3.2.1 Information

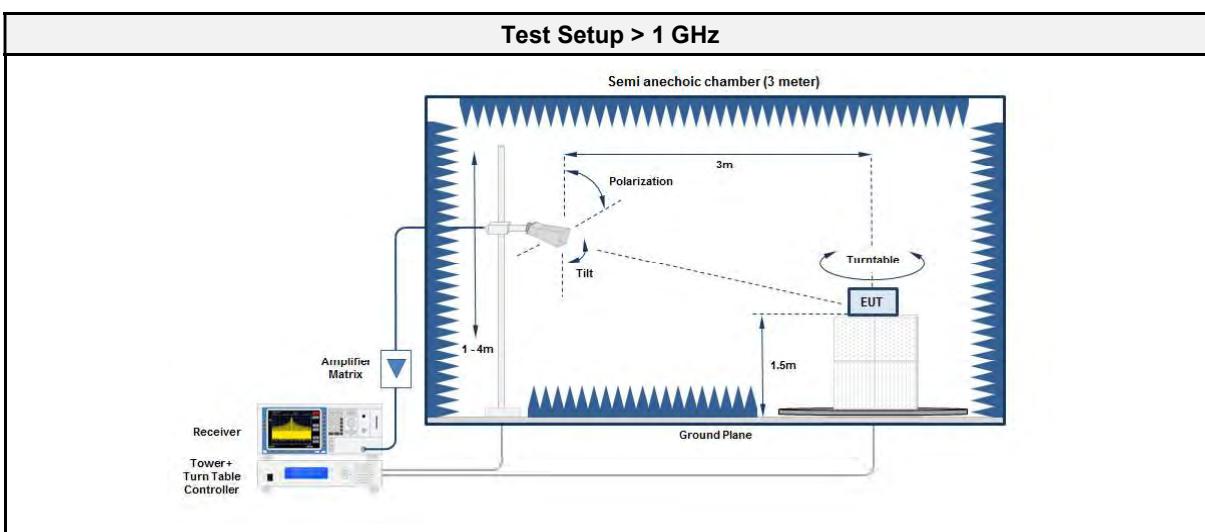
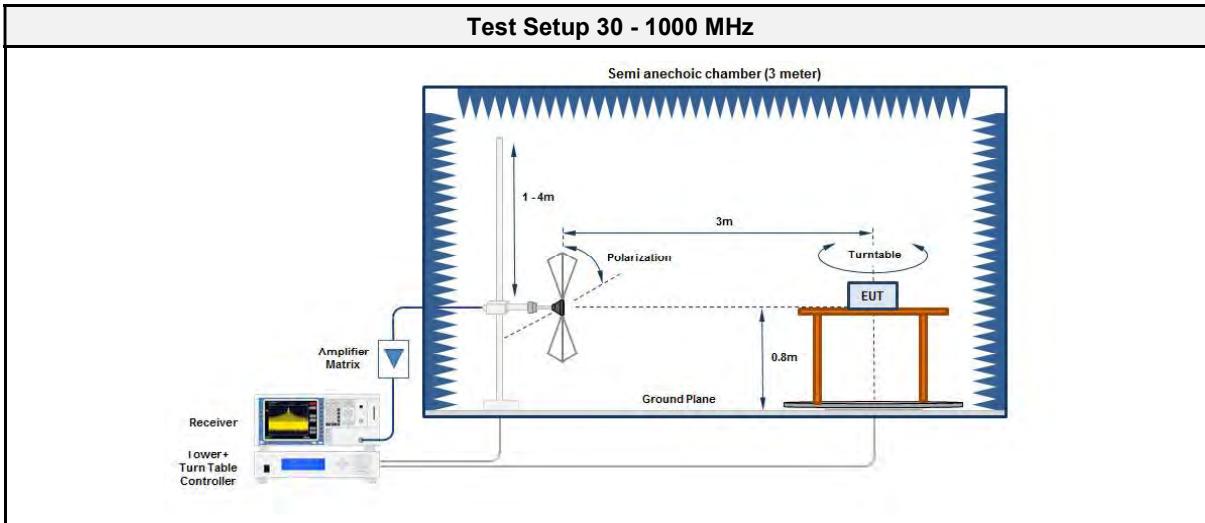
Test Information	
Reference	47 CFR §24.238 47 CFR §27.53 ISED RSS-133 §5.6 ISED RSS-139 §6.6 ISED RSS-130 §4.7
Measurement Method	FCC KDB 971168 D01 Section 7 ANSI C63.26-2015 5.5
Measurement Uncertainty	± 5.95 dB
Operator	Azamat Ibraimov, Florian Voigt
Date	2023-08-17 - 2025-02-03

3.2.2 Limits

Limits FCC				
Band	Frequency range [MHz]	Bandwidth	Attenuation [dB]	Limit [dBm]
LTE FDD 2	-	1 MHz	$43 + \log_{10}(P[W])$	-13
LTE FDD 4	-	1 MHz	$43 + \log_{10}(P[W])$	-13
LTE FDD12	-	100 kHz	$43 + \log_{10}(P[W])$	-13
LTE FDD13	-	100 kHz	$43 + \log_{10}(P[W])$	-13
LTE FDD13	763-775	6.25 kHz	$65 + \log_{10}(P[W])$	-35
LTE FDD13	793-805	6.25 kHz	$65 + \log_{10}(P[W])$	-35
LTE FDD13	1559-1610	700 Hz	-	-50
LTE FDD13	1559-1610	1 MHz	-	-40

Limits ISED				
Band	Frequency range [MHz]	Bandwidth	Attenuation [dB]	Limit [dBm]
LTE FDD 2	-	1 MHz	$43 + \log_{10}(P[W])$	-13
LTE FDD 4	-	1 MHz	$43 + \log_{10}(P[W])$	-13
LTE FDD12	-	100 kHz	$43 + \log_{10}(P[W])$	-13
LTE FDD13	-	100 kHz	$43 + \log_{10}(P[W])$	-13
LTE FDD13	763-775	6.25 kHz	$65 + \log_{10}(P[W])$	-35
LTE FDD13	793-806	6.25 kHz	$65 + \log_{10}(P[W])$	-35
LTE FDD13	1559-1610	700 Hz	-	-50
LTE FDD13	1559-1610	1 MHz	-	-40

3.2.3 Setup



3.2.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8
EMC Software	Raditeq B.V.	RadiMation	2024.1.4

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2022-11	2025-11
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2023-02	2024-02
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	EF01824	2022-10	2023-10

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF01011	2022-11 2024-07	2023-11 2027-07
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2023-02	2024-02
EMI Test Receiver	R&S	ESW44	EF01856	2024-04	2025-04
Antenna	Schwarzbeck	BBHA 9120D	EF01561	2021-11	2024-11
Horn antenna	Schwarzbeck	BBHA 9120D	EF00019	2023-12	2026-12
Horn antenna	Amplifier Research	ATH18G40	EF01152	2020-11	2023-11

3.2.5 Procedure

Test Procedure 30 - 1000 MHz					
<ol style="list-style-type: none"> 1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector 					

Test Procedure > 1 GHz					
<ol style="list-style-type: none"> 1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector 					

3.2.6 Results

Test Results - FDD2						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
NB1 FDD2 / EMI1	600.142	-48.50	ver	-13.00	-35.53	PASS

Test Results - FDD4						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD4 / EMI1	600.118	-38.50	ver	-13.00	-25.50	PASS
LTE FDD4 / EMI1	3000	-50.80	ver	-13.00	-37.79	PASS
LTE FDD4 / EMI1	4500	-47.10	ver	-13.00	-34.12	PASS
NB1 FDD4 / EMI1	2154.833	-34.3	ver	-13.00	-21.32	PASS
NB1 FDD4 / EMI1	4499.8	-45	ver	-13.00	-31.98	PASS
NB1 FDD4 / EMI1	5264.2	-43.6	ver	-13.00	-30.64	PASS

Test Results - FDD12						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
NB1 FDD12 / EMI1	600.772	-46.10	ver	-13.00	-33.11	PASS
NB1 FDD12 / EMI1	4501	-48.00	ver	-13.00	-34.98	PASS
NB1 FDD12 / EMI2	1398.16	-52.5	ver	-13.00	-39.54	PASS
NB1 FDD12 / EMI2	2097.37	-44.8	ver	-13.00	-31.81	PASS
NB1 FDD12 / EMI2	4499.89	-47.2	ver	-13.00	-34.23	PASS

Test Results - FDD13						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
NB1 FDD13 / EMI1	600.093	-48.70	ver	-13.00	-35.66	PASS
NB1 FDD13 / EMI1	1564	-48.60	hor	-40.00	-08.58	PASS
NB1 FDD13 / EMI1	1564	-61.60	hor	-50.00	-11.58	PASS
NB1 FDD13 / EMI1	1564	-44.10	ver	-40.00	-04.11	PASS
NB1 FDD13 / EMI1	1564	-54.30	ver	-50.00	-04.28	PASS
NB1 FDD13 / EMI1	4500	-49.10	ver	-13.00	-36.11	PASS
NB1 FDD13 / EMI2	1573.387	-52	hor	-40.00	-12	PASS
NB1 FDD13 / EMI2	1573.425	-54.7	ver	-50.00	-4.68	PASS
NB1 FDD13 / EMI2	1573.425	-55.7	ver	-50.00	-5.75	PASS
NB1 FDD13 / EMI2	1573.425	-56.3	hor	-50.00	-6.32	PASS
NB1 FDD13 / EMI2	1573.447	-50.6	ver	-40.00	-10.62	PASS
NB1 FDD13 / EMI2	4499.89	-47.1	ver	-13.00	-34.14	PASS

3.3 Test Conditions and Results - Receiver radiated emissions

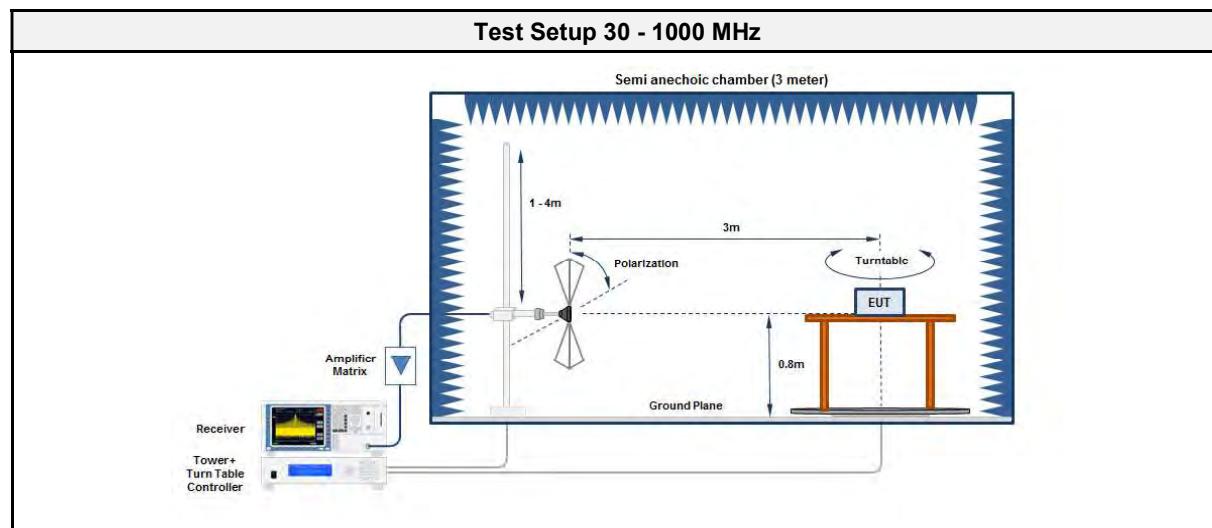
3.3.1 Information

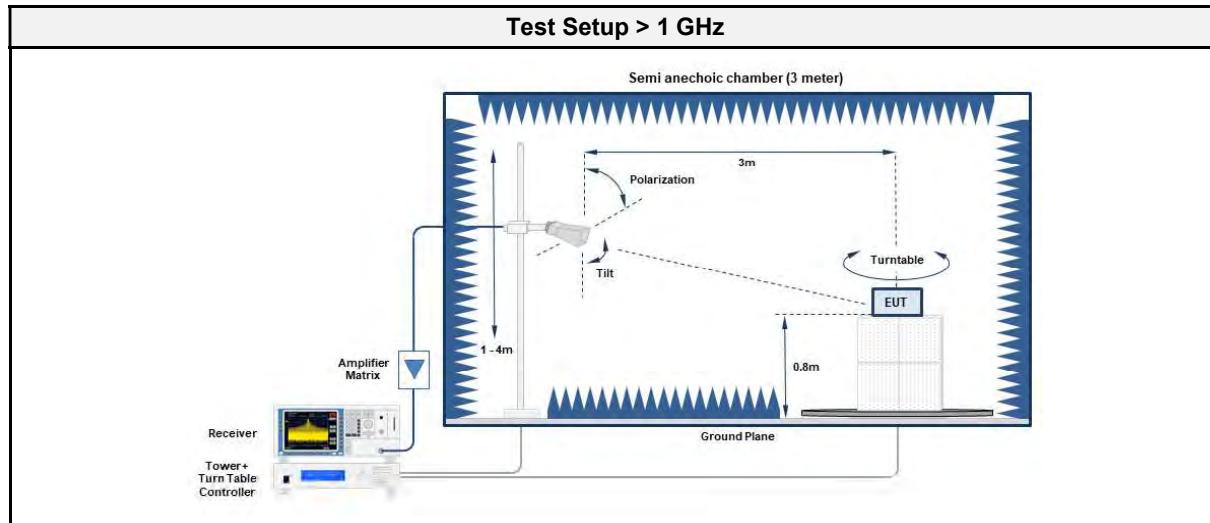
Test Information	
Reference	ISED RSS-133 §3.4, ISED RSS-130 §3.3, ISED RSS-139 §3.4, ISED RSS-Gen §7.4
Measurement Method	ANSI C63.4-2014 8.1-8.3
Measurement Uncertainty	± 5.95 dB
Operator	Azamat Ibraimov
Date	2023-08-21 - 2023-09-19

3.3.2 Limits

Limits			
Frequency range [MHz]	Bandwidth	Detector	Limit [dB μ V/m @ 3 m]
30 - 88	100 kHz	Quasi-peak	40
88 - 216	100 kHz	Quasi-peak	43.5
216 - 960	100 kHz	Quasi-peak	46
960 - 1000	100 kHz	Quasi-peak	54
> 1000	1 MHz	Average	54

3.3.3 Setup





3.3.4 Equipment

Test Software					
Description	Manufacturer	Name		Version	
EMC Software	DARE Instruments	RadiMatM		2020.1.8	

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2022-11	2025-11
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2023-02	2024-02
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	EF01824	2022-10	2023-10

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF01011	2022-11	2023-11
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2023-02	2024-02
Antenna	Schwarzbeck	BBHA 9120D	EF01561	2021-11	2024-11
Horn Antenna	Schwarzbeck	HWRD 650	EF01679	2021-03	2024-03

3.3.5 Procedure

Test Procedure 30 - 1000 MHz					
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground					
2. EUT set to test mode					
3. The receiver is set to peak detection with max hold					
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m					
5. All significant emissions are measured again using the corresponding final detector					

Test Procedure > 1 GHz					
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground					
2. EUT set to test mode					
3. The receiver is set to peak detection with max hold					
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m					
5. All significant emissions are measured again using the corresponding final detector					

3.3.6 Results

Test Results - LTE FDD2							
Mode	Frequency [MHz]	Level [dB μ V/m]	Detector	Polarization	Limit [dB μ V/m]	Margin [dB]	Result
NB1 FDD2 / Receive	148.8007	31.60	pk	hor	43.50	-11.89	PASS
NB1 FDD2 / Receive	444.6507	40.70	pk	hor	46.00	-05.25	PASS
NB1 FDD2 / Receive	599.2688	38.70	pk	ver	46.00	-07.34	PASS
NB1 FDD2 / Receive	3000	47.50	pk	ver	74.00	-26.50	PASS
NB1 FDD2 / Receive	3000	43.49	avg	ver	53.98	-10.49	PASS
NB1 FDD2 / Receive	7501	41.86	pk	ver	74.00	-32.14	PASS
NB1 FDD2 / Receive	7501	37.47	avg	ver	53.98	-16.51	PASS
NB1 FDD2 / Receive	10500	43.24	pk	ver	74.00	-30.76	PASS
NB1 FDD2 / Receive	10500	37.16	avg	ver	53.98	-16.82	PASS

Test Results - LTE FDD4							
Mode	Frequency [MHz]	Level [dB μ V/m]	Detector	Polarization	Limit [dB μ V/m]	Margin [dB]	Result
LTE FDD4 / Receive	199.7742	28.90	pk	hor	43.50	-14.58	PASS
LTE FDD4 / Receive	359.9906	39.70	qpk	hor	46.00	-06.31	PASS
LTE FDD4 / Receive	600.7879	36.30	qpk	ver	46.00	-09.69	PASS
LTE FDD4 / Receive	1501	43.08	pk	hor	74.00	-30.92	PASS
LTE FDD4 / Receive	1501	24.90	avg	hor	53.98	-29.08	PASS
LTE FDD4 / Receive	3000	44.82	pk	ver	74.00	-29.18	PASS
LTE FDD4 / Receive	3000	39.50	avg	ver	53.98	-14.48	PASS
LTE FDD4 / Receive	4500	49.36	pk	ver	74.00	-24.64	PASS
LTE FDD4 / Receive	4500	44.23	avg	ver	53.98	-09.75	PASS

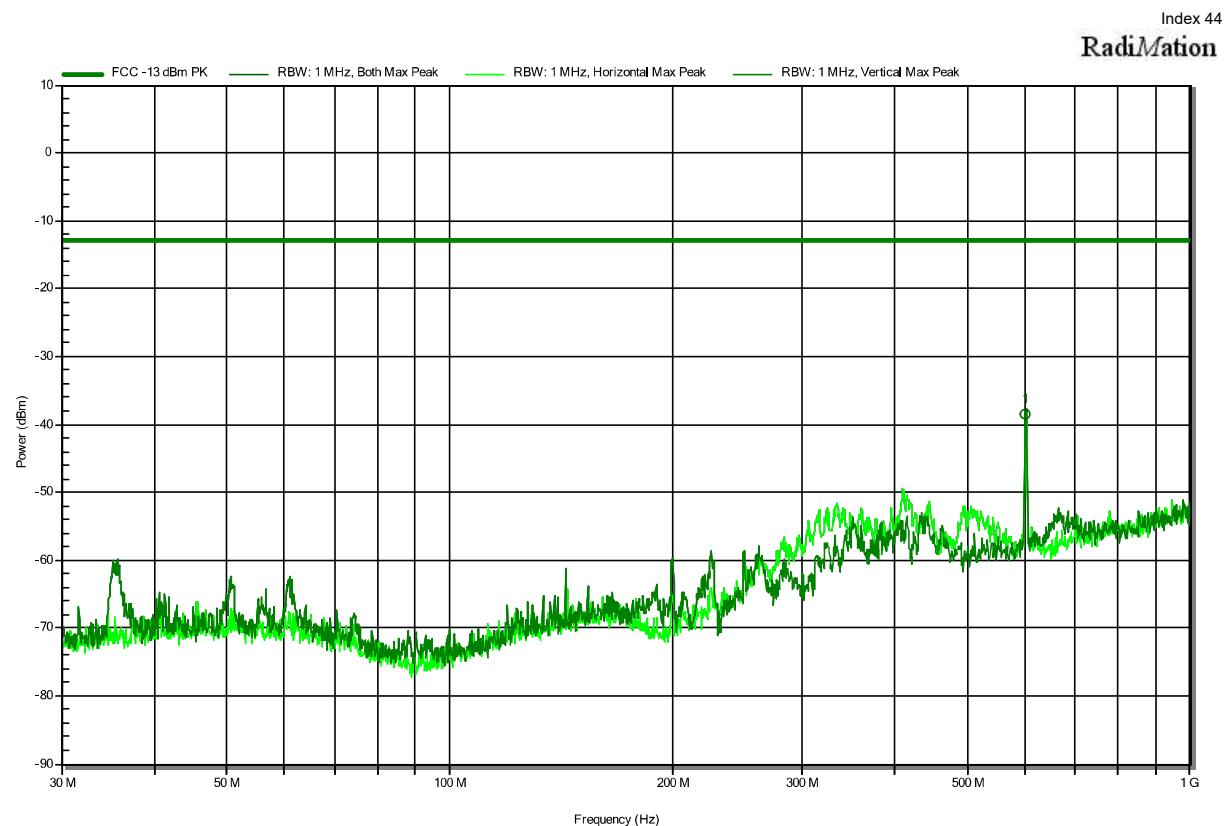
Test Results - LTE FDD12							
Mode	Frequency [MHz]	Level [dB μ V/m]	Detector	Polarization	Limit [dB μ V/m]	Margin [dB]	Result
NB1 FDD12 / Receive	249.9874	36.40	qpk	hor	46.00	-09.62	PASS
NB1 FDD12 / Receive	359.996	33.90	qpk	ver	46.00	-12.11	PASS
NB1 FDD12 / Receive	600.7266	36.70	qpk	ver	46.00	-09.30	PASS

Test Results - LTE FDD13							
Mode	Frequency [MHz]	Level [dB μ V/m]	Detector	Polarization	Limit [dB μ V/m]	Margin [dB]	Result
NB1 FDD13 / Receive	249.9594	36.20	qpk	hor	46.00	-09.84	PASS
NB1 FDD13 / Receive	359.9866	39.90	qpk	hor	46.00	-06.11	PASS
NB1 FDD13 / Receive	600.3183	33.50	qpk	ver	46.00	-12.54	PASS

ANNEX A Transmitter radiated emissions

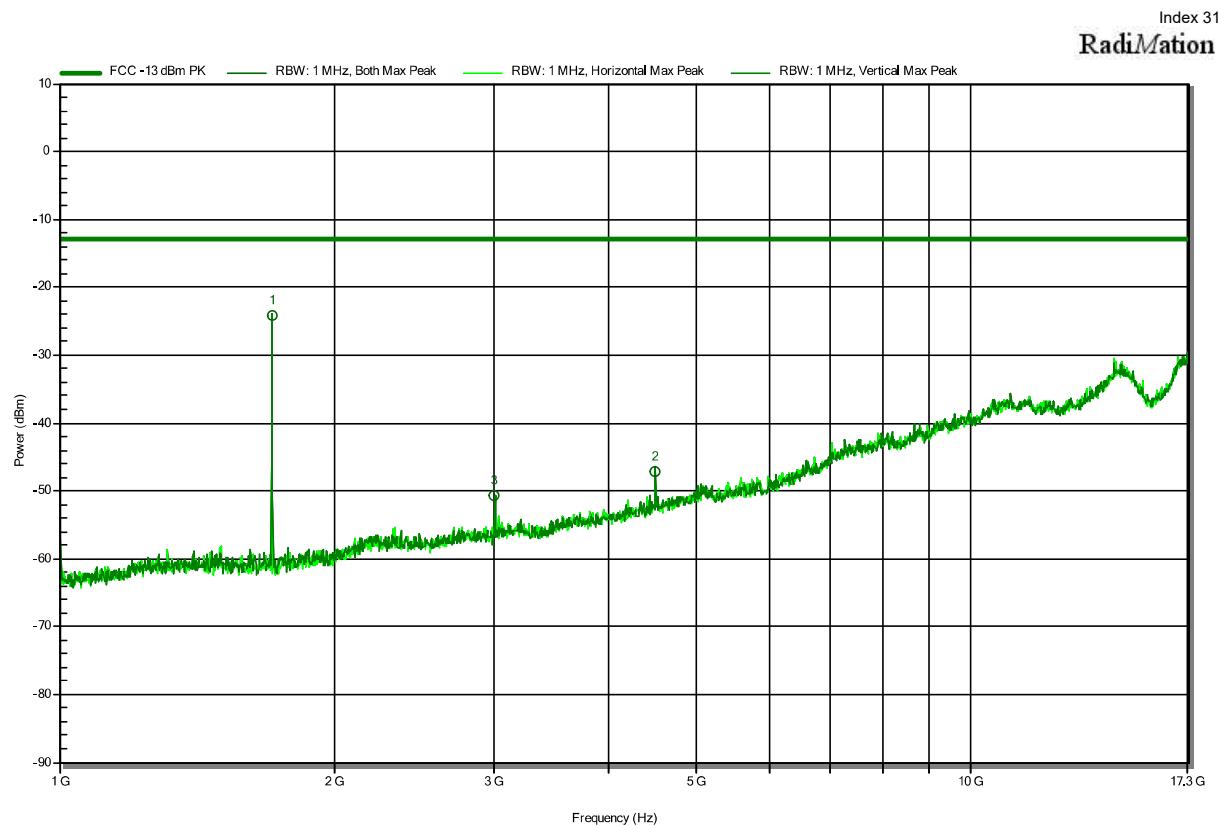
Radiated Spurious Emissions according to RSS-139; 47 CFR Part 27 Subpart C

Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck VULB 9168
 Measurement distance: 3 m
 Mode: Tx; LTE Cat M1, FDD4, 3 MHz, CH_19965, RB 1#0
 Test Date: 2023-08-21
 Note:



Radiated Spurious Emissions according to RSS-139; 47 CFR Part 27 Subpart C

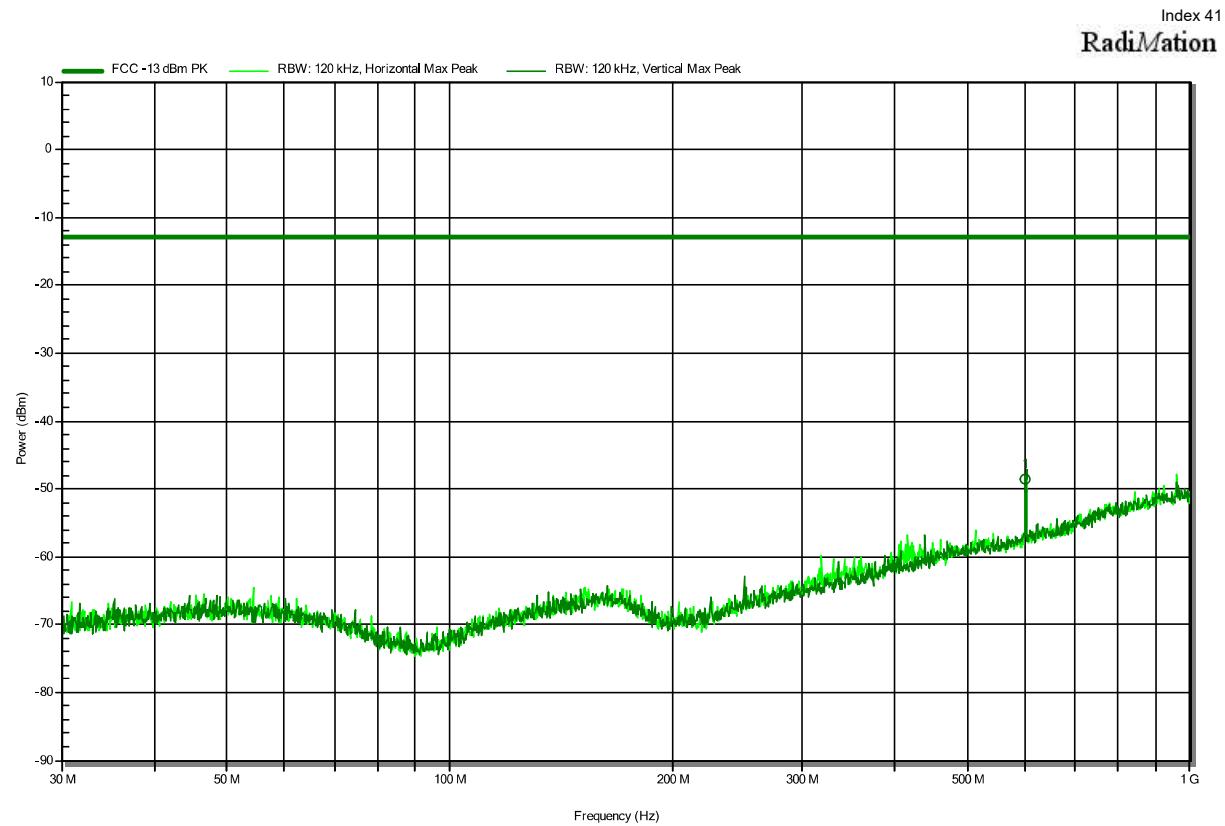
Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; LTE Cat M1, FDD4, 3 MHz, CH_19965, RB 1#0
 Test Date: 2023-08-17
 Note: Marker 1 is uplink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.71 GHz	-24.1 dBm	---	---	Uplink	Vertical
3 GHz	-50.8 dBm	-13 dBm	-37.79 dB	Pass	Vertical
4.5 GHz	-47.1 dBm	-13 dBm	-34.12 dB	Pass	Vertical

Radiated Spurious Emissions according to RSS-133; 47 CFR Part 24 Subpart E

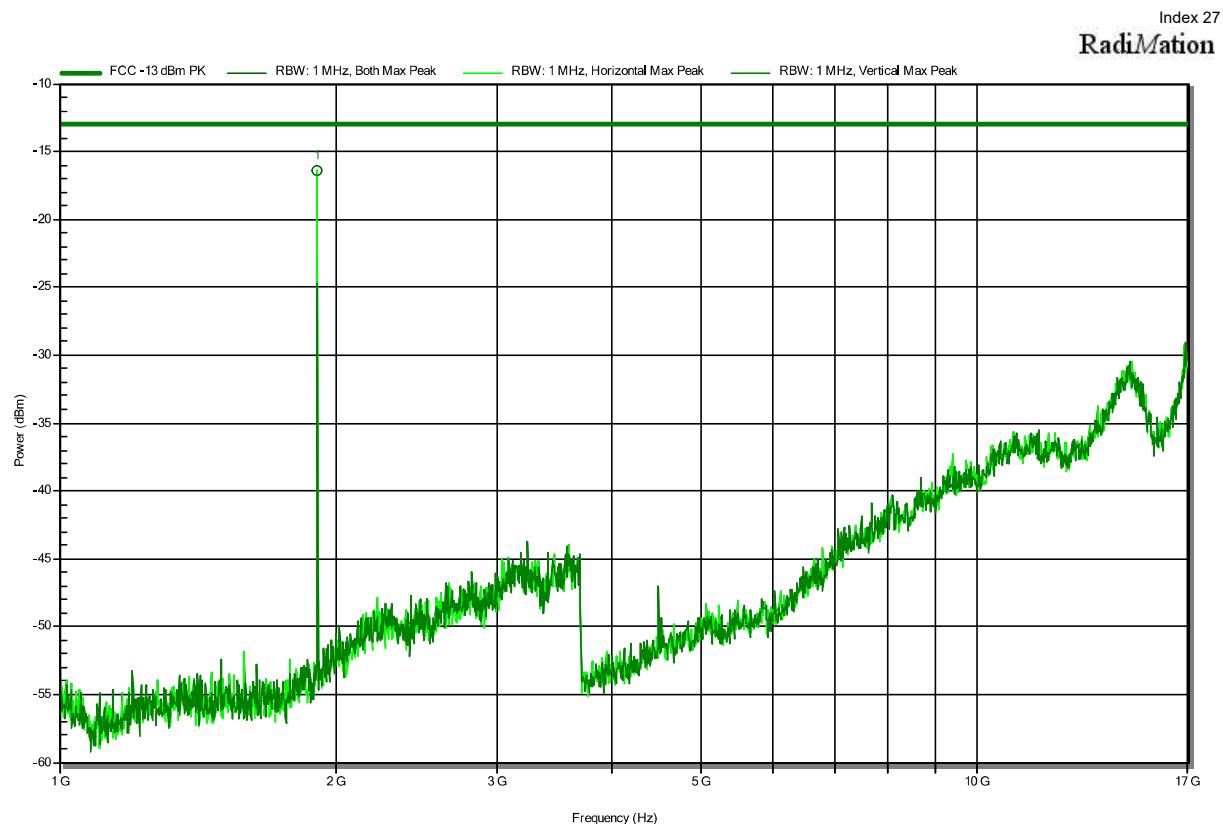
Project Number: G0M-2303-1961
Applicant: Navico Inc.
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Connect 1
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: A.Ibraimov
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck VULB 9168
Measurement distance: 3 m
Mode: Tx; NB-IoT, FDD2, 15kHz, tone 3, offset 3, CH_19198
Test Date: 2023-08-21
Note:



Frequency 600.142 MHz	Peak -48.5 dBm	Peak Limit -13 dBm	Peak Difference -35.53 dB	Peak Status Pass	Polarization Vertical
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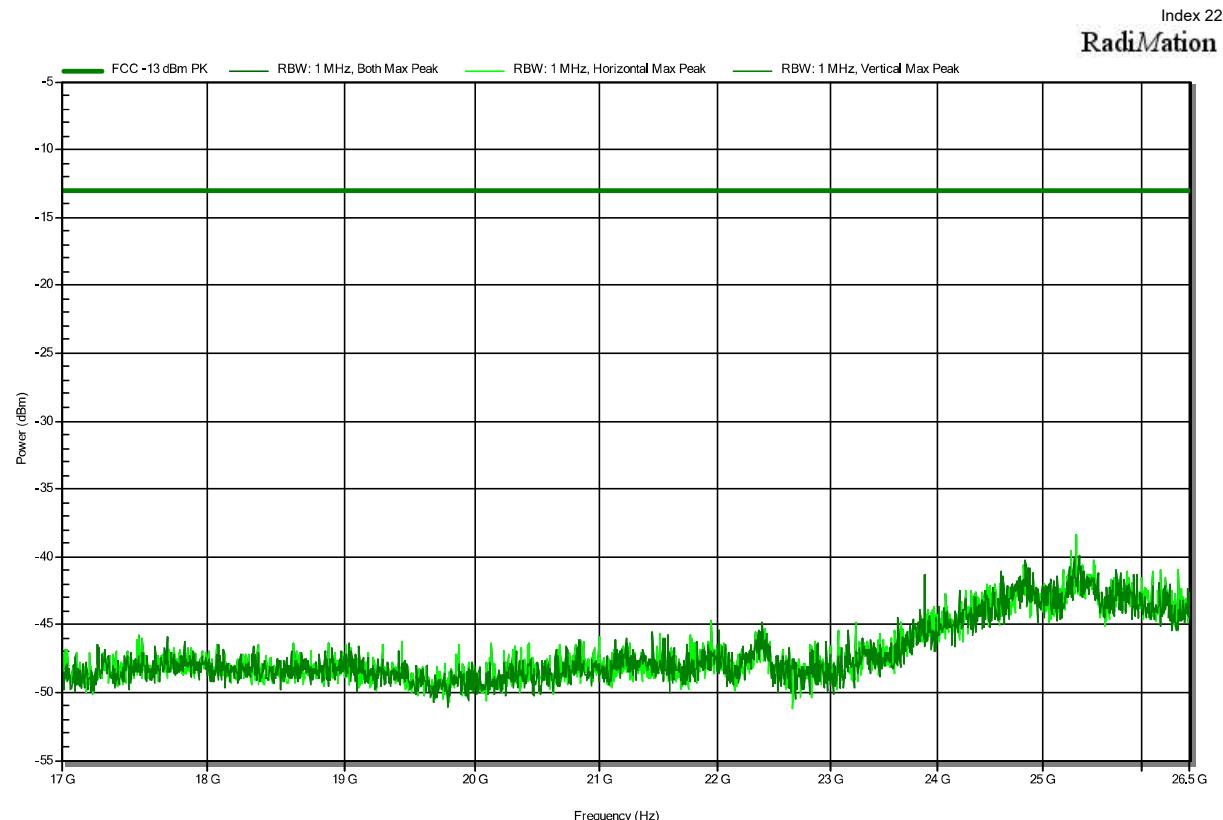
Radiated Spurious Emissions according to RSS-133; 47 CFR Part 24 Subpart E

Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; NB-IoT, FDD2, 15kHz, tone 3, offset 3, CH_19198
 Test Date: 2023-08-17
 Note: Marker 1 Uplink



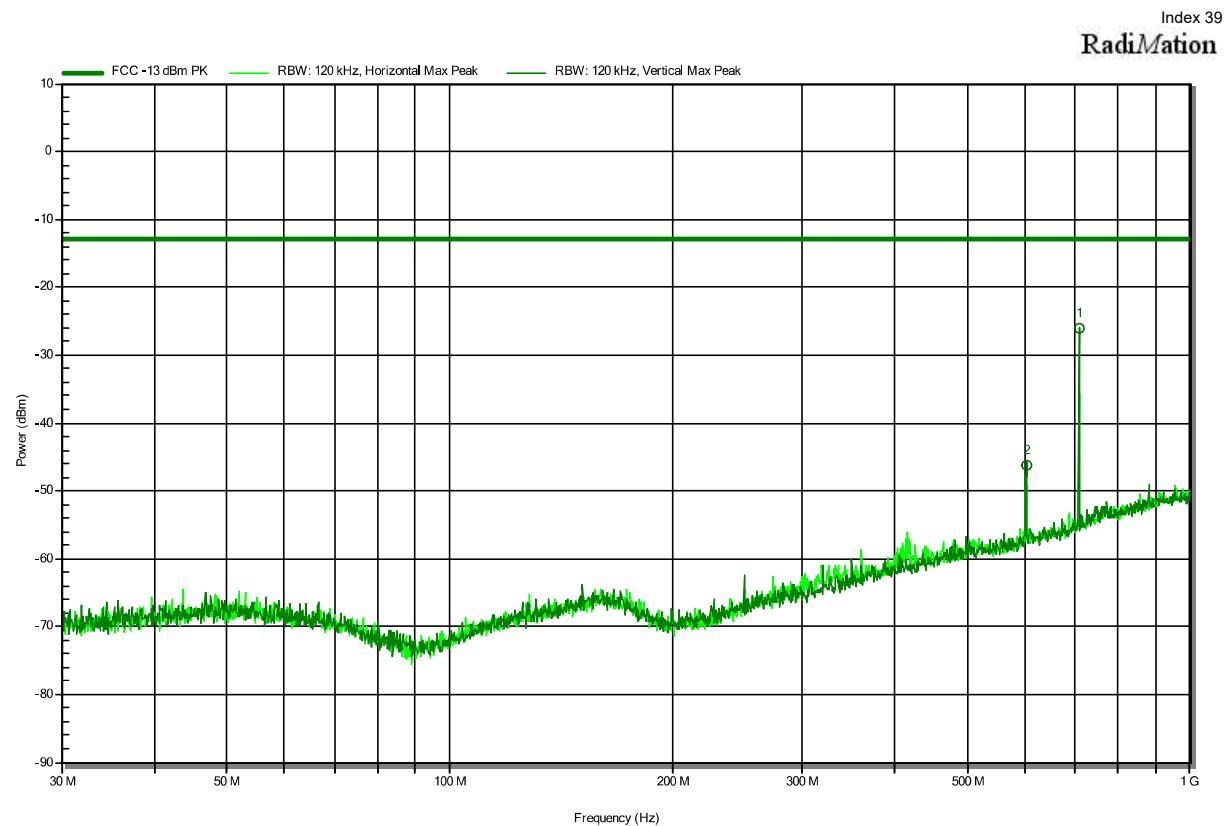
Radiated Spurious Emissions according to RSS-133; 47 CFR Part 24 Subpart E

Project Number: G0M-2303-1961
Applicant: Navico Inc.
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Connect 1
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: A.Ibraimov
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Amplifier Research AT4560
Measurement distance: 3 m
Mode: Tx; NB-IoT, FDD2, 15kHz, tone 3, offset 3, CH_19198
Test Date: 2023-08-17
Note:



Radiated Spurious Emissions according to RSS-130; 47 CFR Part 27 Subpart C

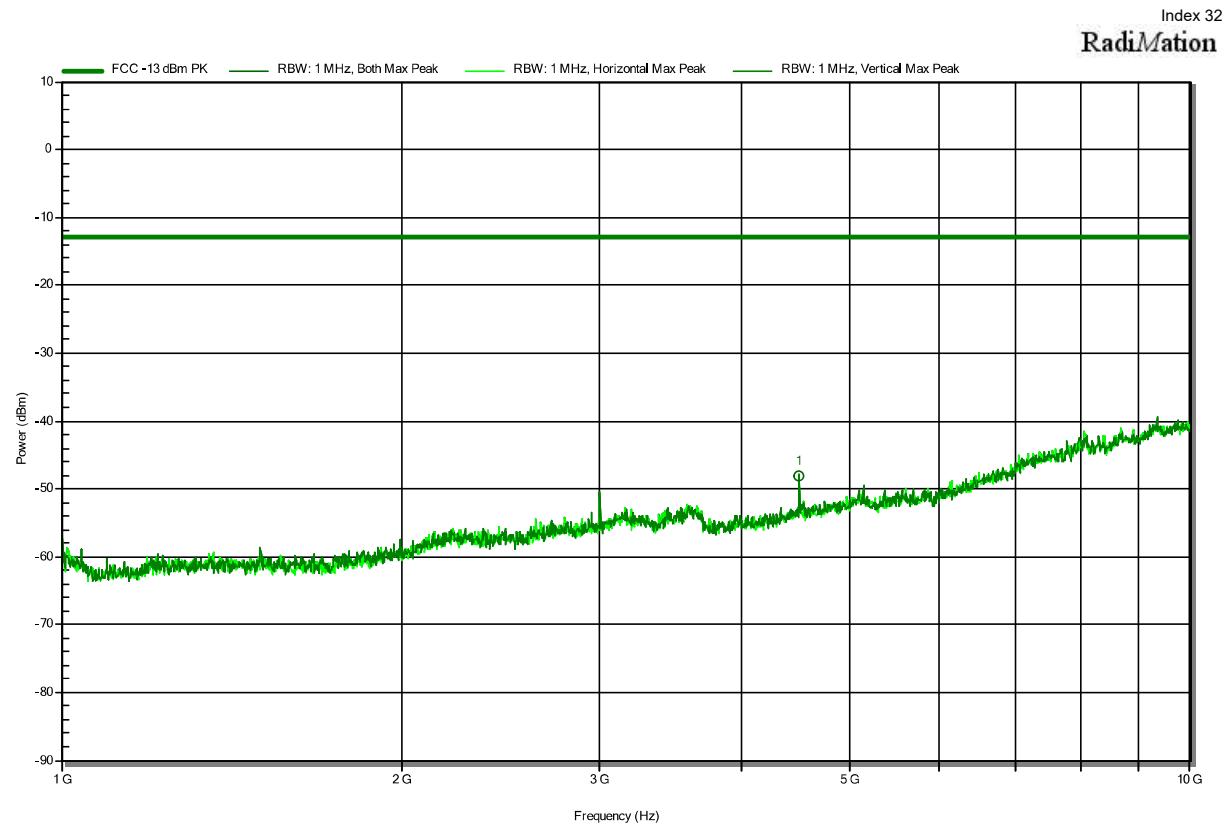
Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck VULB 9168
 Measurement distance: 3 m
 Mode: Tx; NB-IoT, FDD12, 15kHz, tone 3, offset 3, CH_23095
 Test Date: 2023-08-21
 Note: Marker 1 = Uplink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
600.772 MHz	-46.1 dBm	-13 dBm	-33.11 dB	Pass	Vertical
707.472 MHz	-25.9 dBm	---	---	Uplink	Vertical

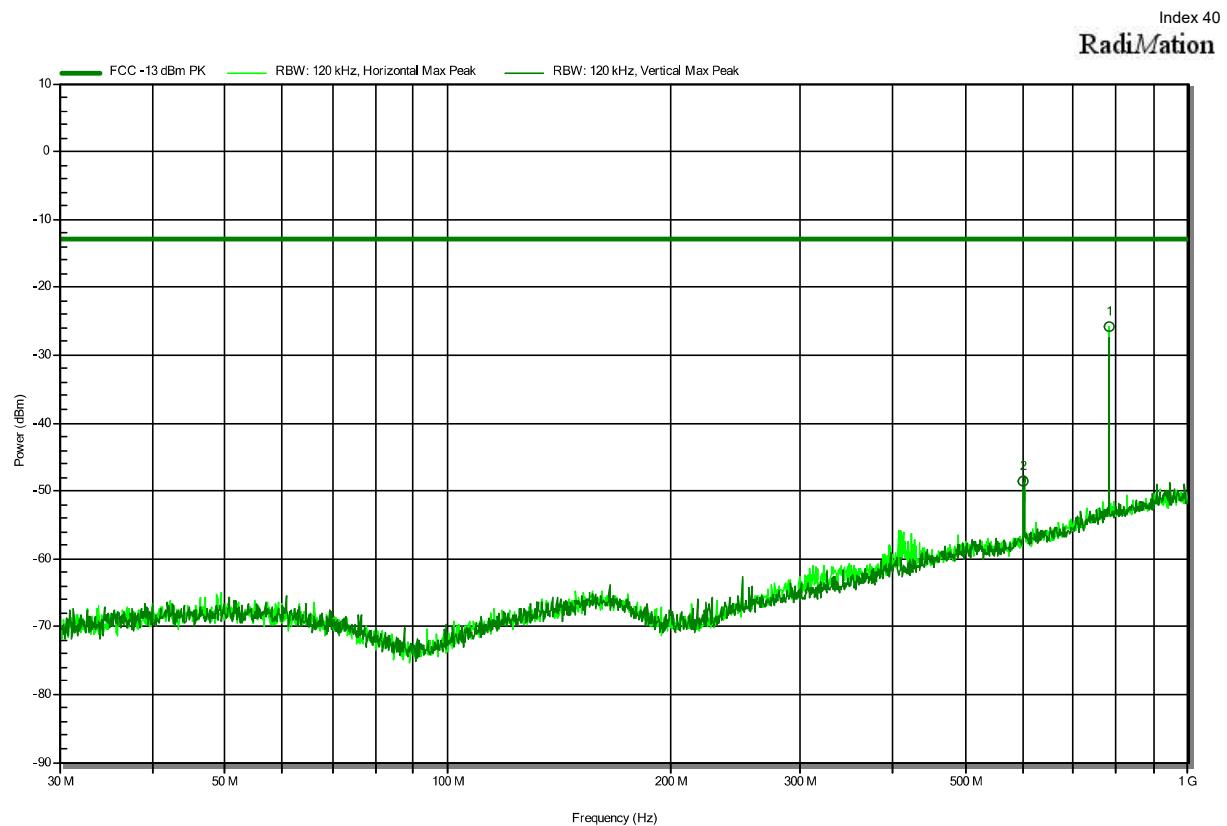
Radiated Spurious Emissions according to RSS-130; 47 CFR Part 27 Subpart C

Project Number: G0M-2303-1961
Applicant: Navico Inc.
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Connect 1
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: A.Ibraimov
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D
Measurement distance: 3 m
Mode: Tx; NB-IoT, FDD12, 15kHz, tone 3, offset 3, CH_23095
Test Date: 2023-08-17
Note:



Radiated Spurious Emissions according to RSS-130; 47 CFR Part 27 Subpart C

Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck VULB 9168
 Measurement distance: 3 m
 Mode: Tx; NB-IoT, FDD13, 15kHz, tone 1, offset 0, CH_23230
 Test Date: 2023-08-21
 Note: Marker 1 = Uplink



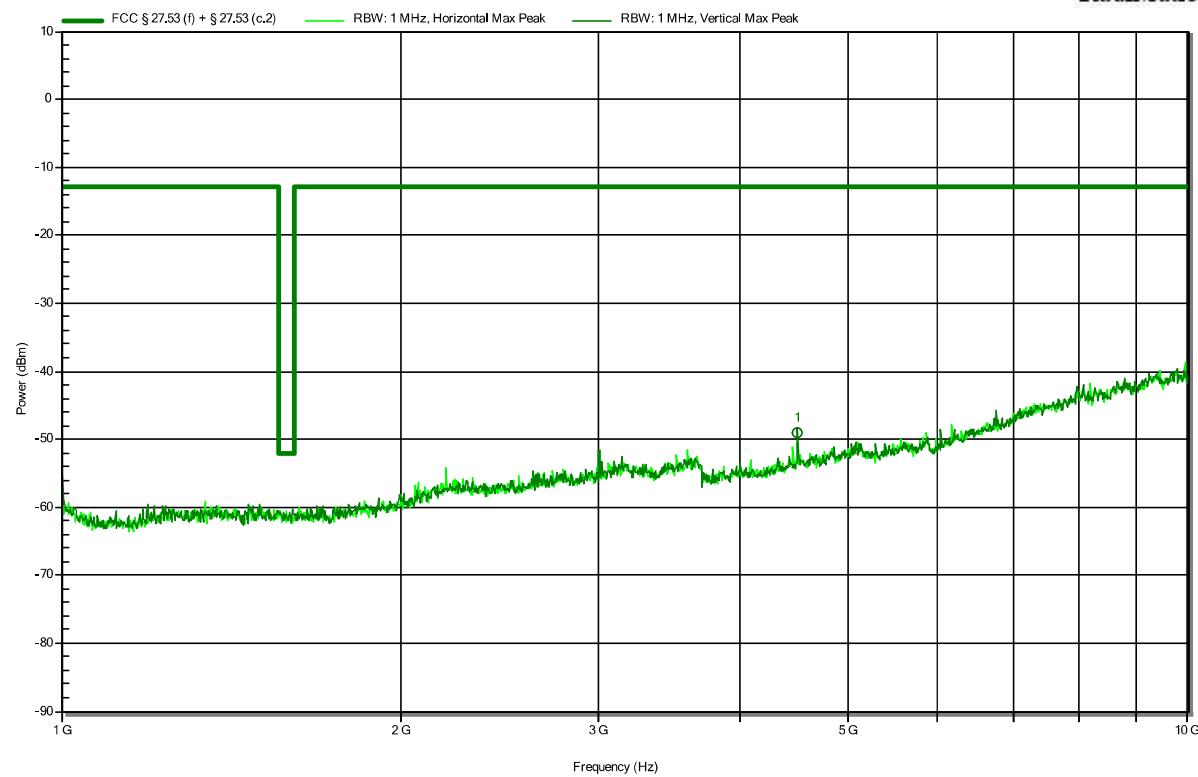
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
600.093 MHz	-48.7 dBm	-13 dBm	-35.66 dB	Pass	Vertical
781.92 MHz	-25.7 dBm	---	---	Uplink	Horizontal

Radiated Spurious Emissions according to RSS-130; 47 CFR Part 27 Subpart C

Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; NB-IoT, FDD13, 15kHz, tone 1, offset 0, CH_23230
 Test Date: 2023-08-17
 Note:

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RadiMation

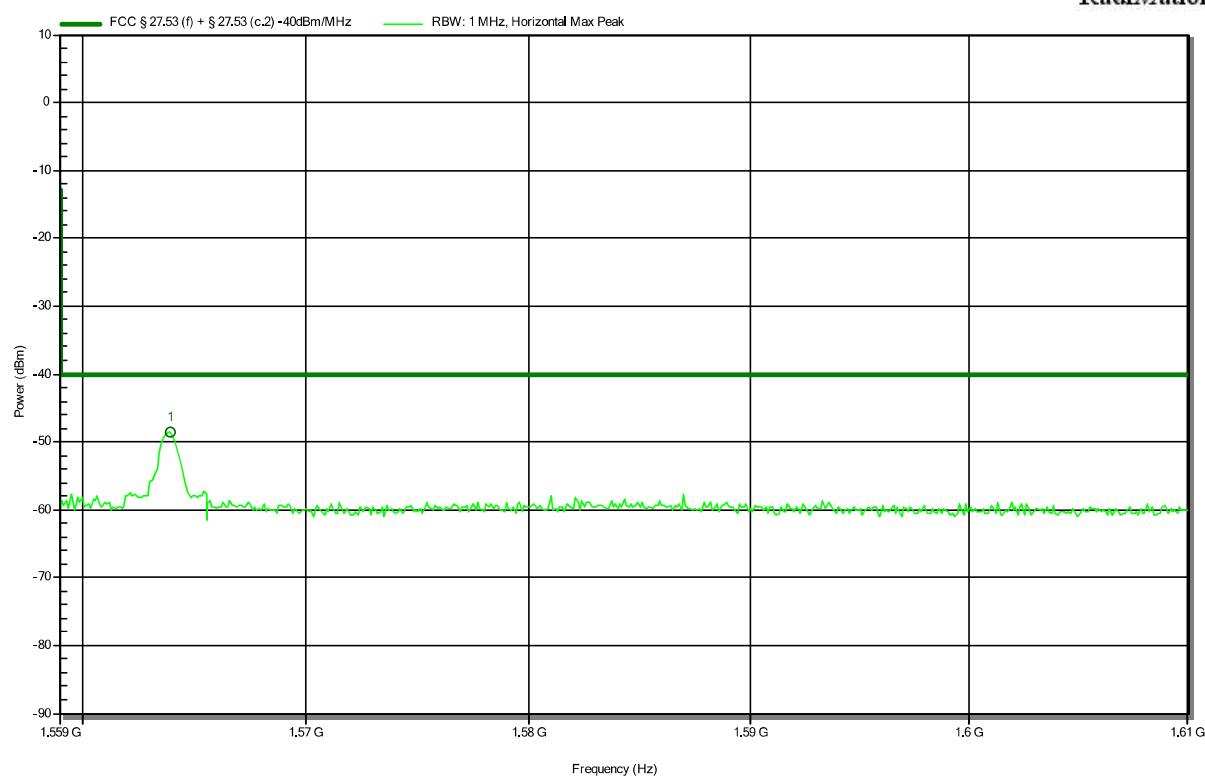


Frequency 4.5 GHz	Peak -49.1 dBm	Peak Limit -13 dBm	Peak Difference -36.11 dB	Peak Status Pass	Polarization Vertical
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Radiated Spurious Emissions according to RSS-130; 47 CFR Part 27 Subpart C

Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; NB-IoT, FDD13, 15kHz, tone 1, offset 0, CH_23230
 Test Date: 2023-08-17
 Note: With antenna

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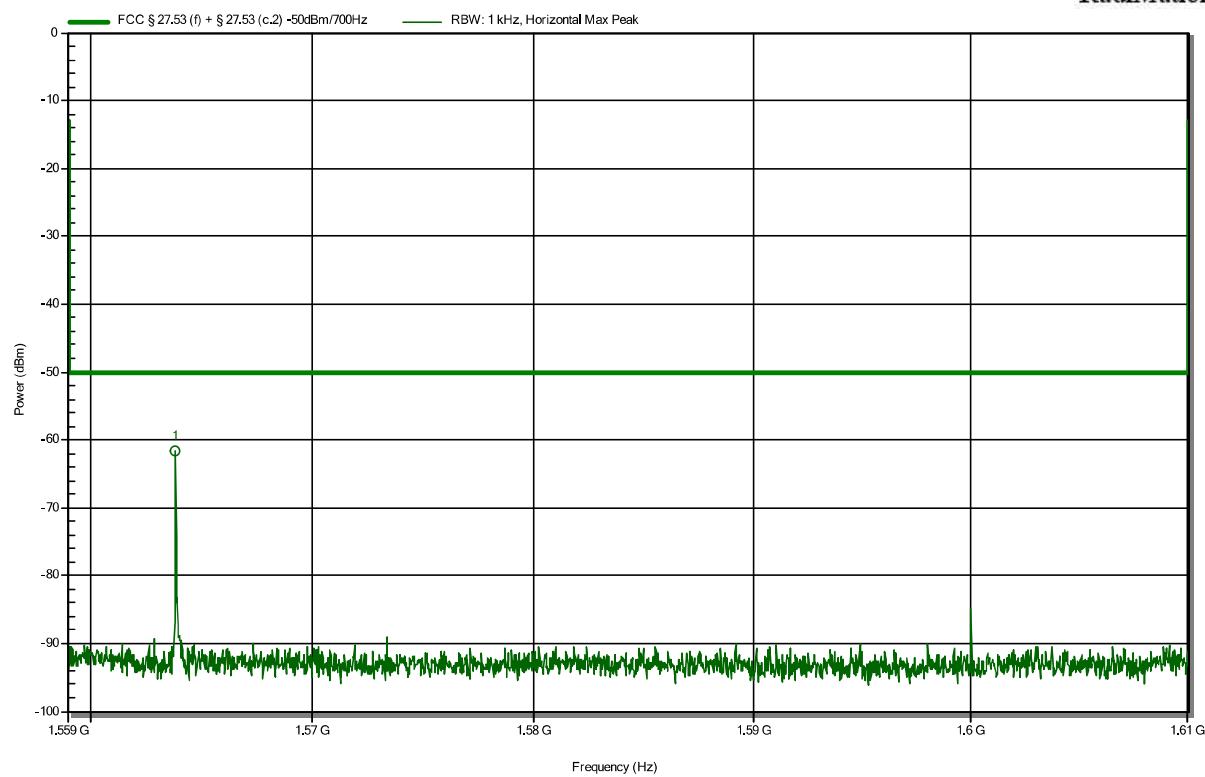
RadiMation


Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.564 GHz	-48.6 dBm	-40 dBm	-8.58 dB	Pass	Horizontal

Radiated Spurious Emissions according to RSS-130; 47 CFR Part 27 Subpart C

Project Number: G0M-2303-1961
Applicant: Navico Inc.
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Connect 1
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: A.Ibraimov
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D
Measurement distance: 3 m
Mode: Tx; NB-IoT, FDD13, 15kHz, tone 1, offset 0, CH_23230
Test Date: 2023-08-17
Note: With antenna

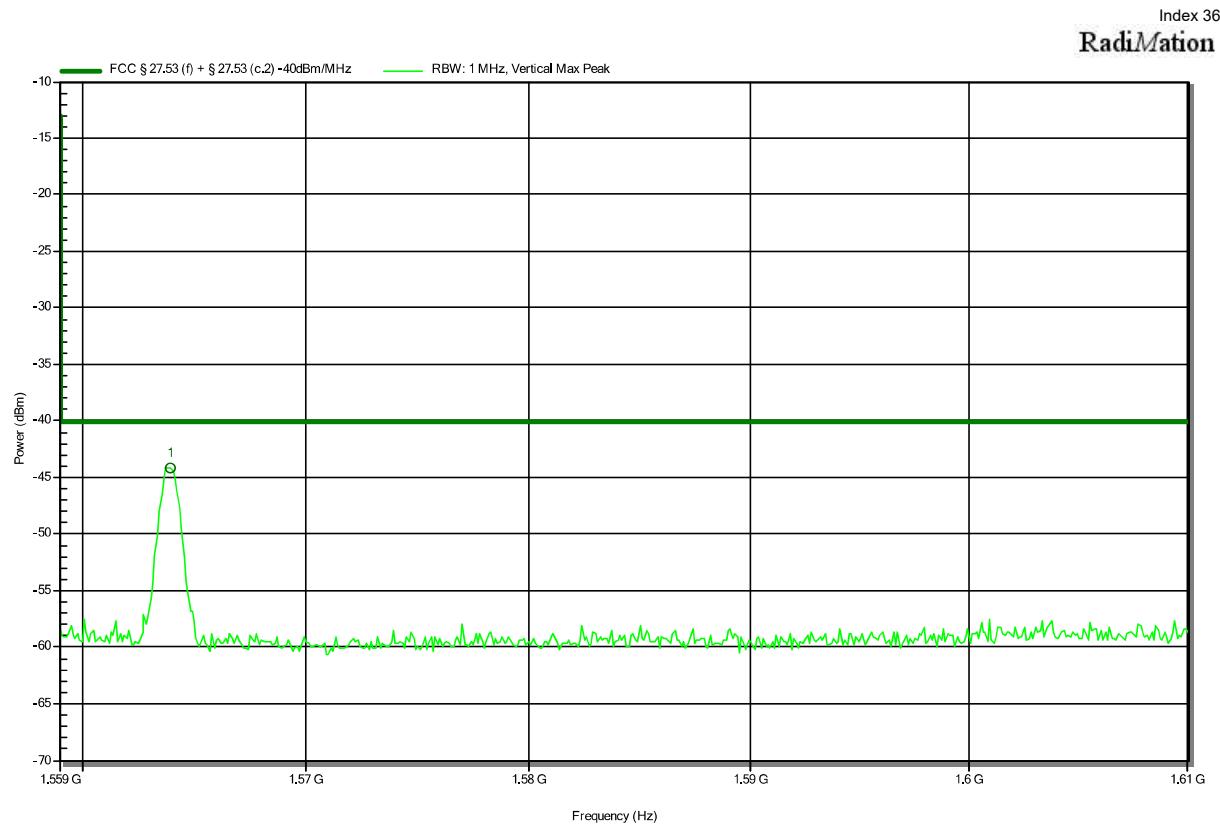
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RadiMation

Frequency
1.564 GHz Peak
-61.6 dBm Peak Limit
-50 dBm Peak Difference
-11.58 dB Peak Status
Pass Polarization
Horizontal

Radiated Spurious Emissions according to RSS-130; 47 CFR Part 27 Subpart C

Project Number: G0M-2303-1961
Applicant: Navico Inc.
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Connect 1
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: A.Ibraimov
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D
Measurement distance: 3 m
Mode: Tx; NB-IoT, FDD13, 15kHz, tone 1, offset 0, CH_23230
Test Date: 2023-08-17
Note: With antenna

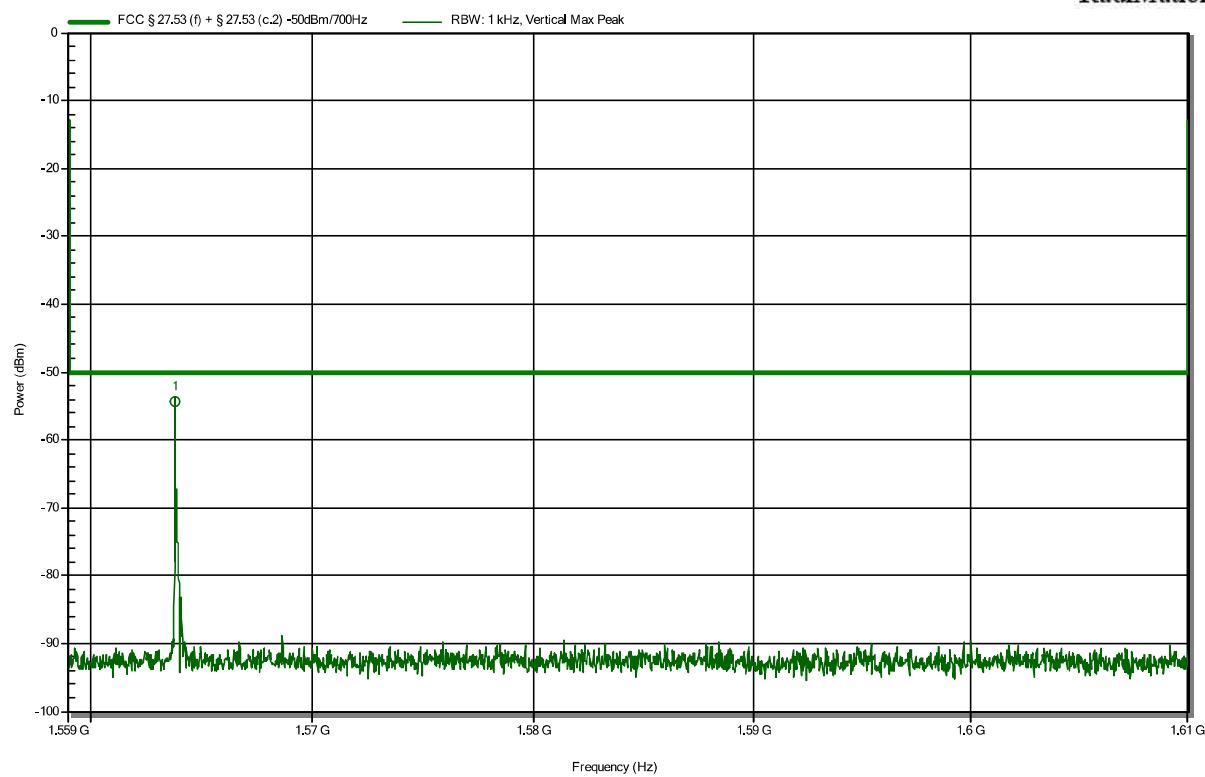


Frequency 1.564 GHz	Peak -44.1 dBm	Peak Limit -40 dBm	Peak Difference -4.11 dB	Peak Status Pass	Polarization Vertical
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Radiated Spurious Emissions according to RSS-130; 47 CFR Part 27 Subpart C

Project Number: G0M-2303-1961
Applicant: Navico Inc.
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Connect 1
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: A.Ibraimov
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D
Measurement distance: 3 m
Mode: Tx; NB-IoT, FDD13, 15kHz, tone 1, offset 0, CH_23230
Test Date: 2023-08-17
Note: With antenna

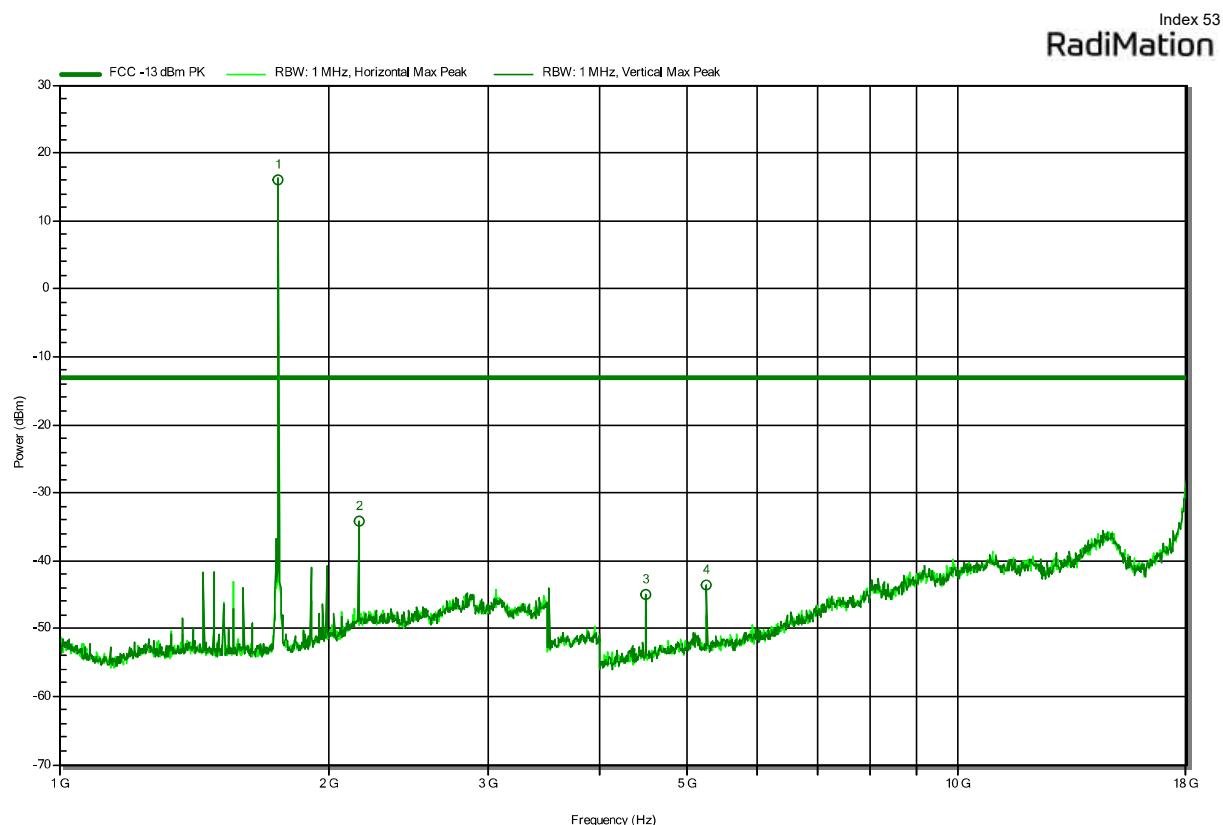
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RadiMation

Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.564 GHz	-54.3 dBm	-50 dBm	-4.28 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

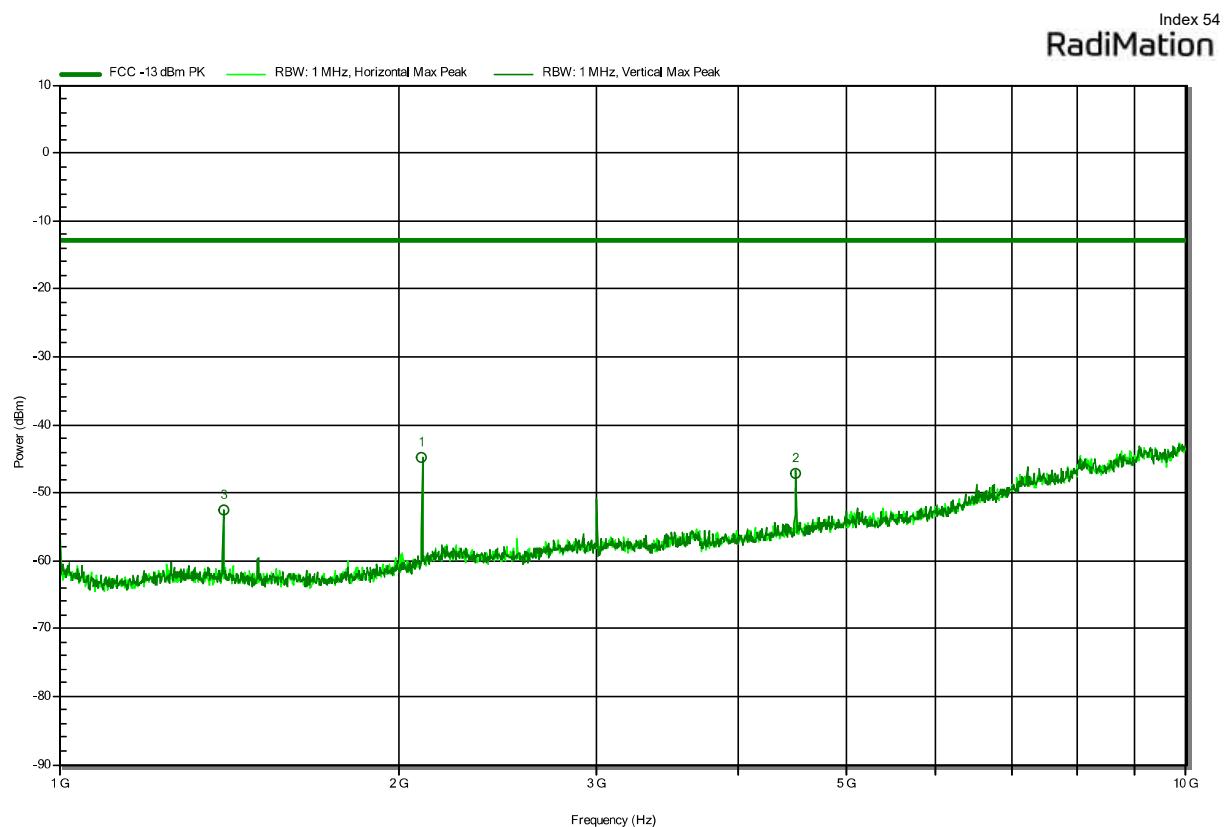
Project Number: G0M-2303-1961
 Applicant: Fell Technology AS
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Europa Gateway
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Ibraimov
 Measurement software: RadiMation, version 2024.1.6
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; NB-IoT_FDD 4_CH 20398_15 kHz_tone 1_offset 0
 Test Date: 2025-01-31



Peak Number	Frequency (MHz)	Peak (dBm)	Peak Limit (dBm)	Peak Difference (dB)	Peak Status	Polarization
1	1754.75	16.1	---	---	Uplink	Vertical
2	2154.833	-34.3	-13	-21.32	Pass	Vertical
3	4499.8	-45	-13	-31.98	Pass	Vertical
4	5264.2	-43.6	-13	-30.64	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

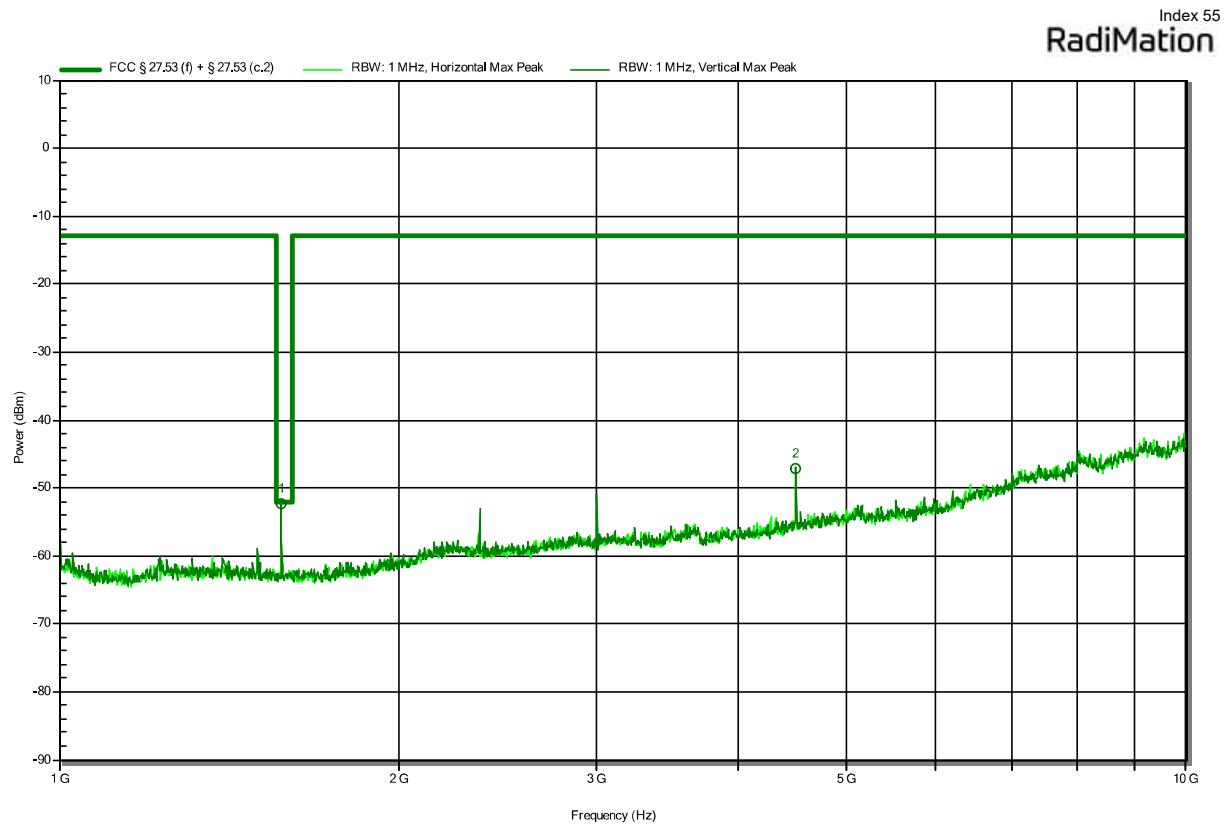
Project Number: G0M-2303-1961
 Applicant: Fell Technology AS
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Europa Gateway
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Ibraimov
 Measurement software: RadiMation, version 2024.1.6
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; NB-IoT_FDD 12_CH 23012_3.75 kHz_tone 1_offset 0
 Test Date: 2025-01-31



Peak Number	Frequency (MHz)	Peak (dBm)	Peak Limit (dBm)	Peak Difference (dB)	Peak Status	Polarization
1	2097.37	-44.8	-13	-31.81	Pass	Vertical
2	4499.89	-47.2	-13	-34.23	Pass	Vertical
3	1398.16	-52.5	-13	-39.54	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

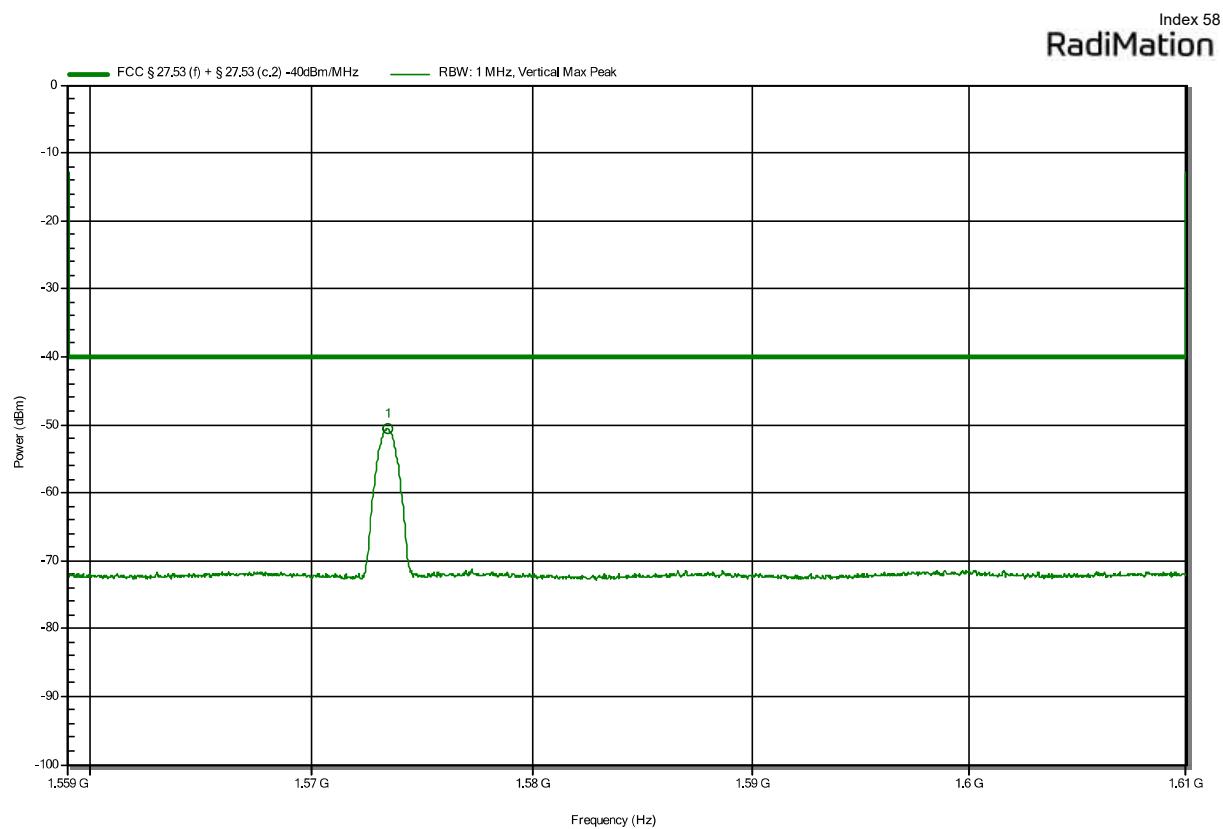
Project Number: G0M-2303-1961
 Applicant: Fell Technology AS
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Europa Gateway
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Ibraimov
 Measurement software: RadiMation, version 2024.1.6
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; NB-IoT_FDD 13_CH 23278_3.75 kHz_tone 1_offset 0
 Test Date: 2025-01-31
 Note: 1559 - 1610 MHz frequency range is measured separately



Peak Number	Frequency (MHz)	Peak (dBm)	Peak Limit (dBm)	Peak Difference (dB)	Peak Status	Polarization
1	1573.48	-52.2	--	--	Separately tested	Vertical
2	4499.89	-47.1	-13	-34.14	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

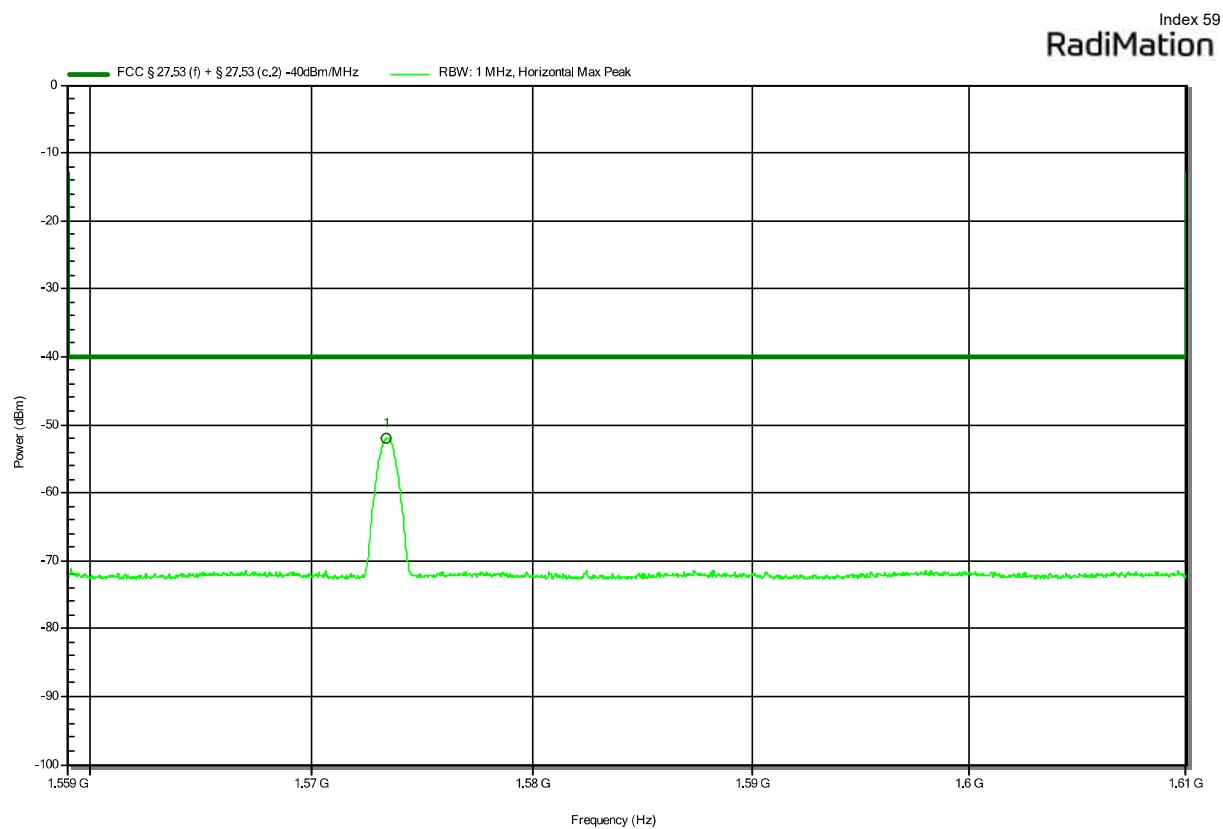
Project Number: G0M-2303-1961
 Applicant: Fell Technology AS
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Europa Gateway
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Ibraimov
 Measurement software: RadiMation, version 2024.1.6
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; NB-IoT_FDD 13_CH 23278_3.75 kHz_tone 1_offset 0
 Test Date: 2025-01-31



Peak Number	Frequency (MHz)	Peak (dBm)	Peak Limit (dBm)	Peak Difference (dB)	Peak Status	Polarization
1	1573.447	-50.6	-40	-10.62	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

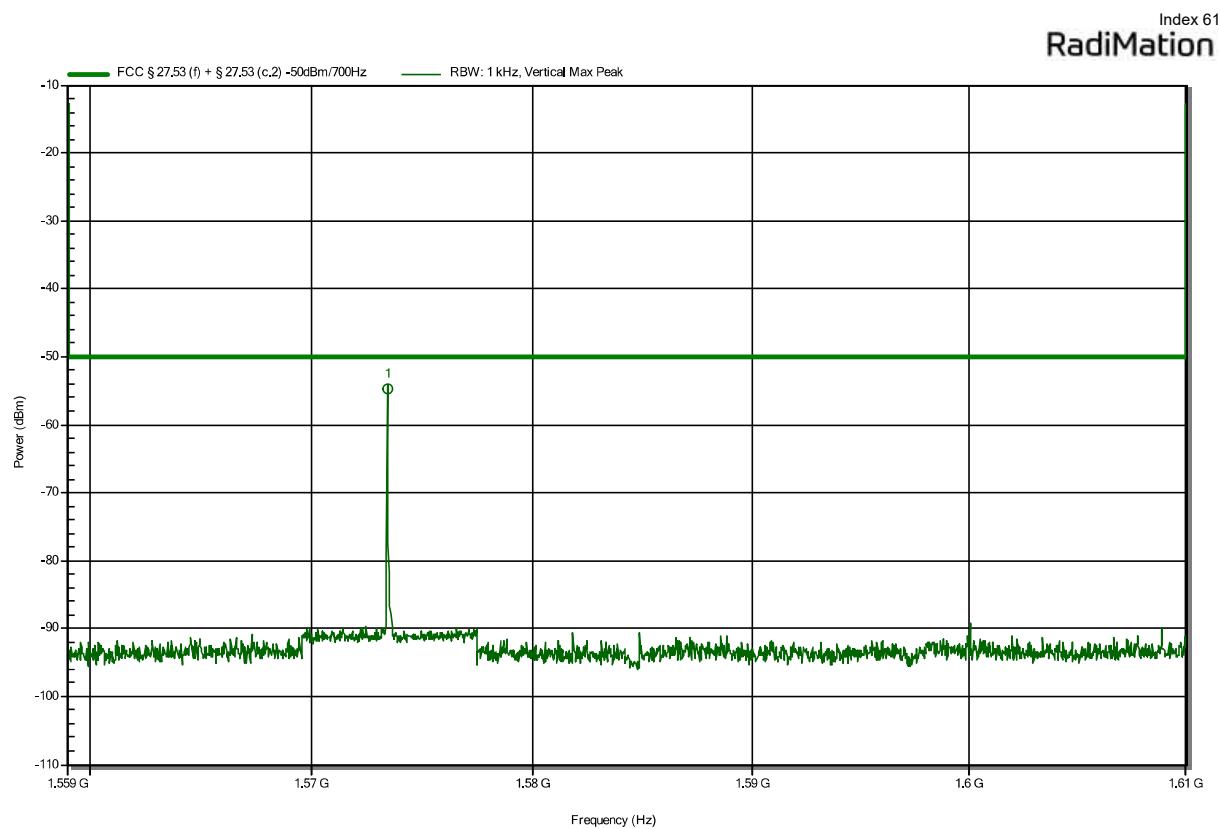
Project Number: G0M-2303-1961
Applicant: Fell Technology AS
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Europa Gateway
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: Mr. Ibraimov
Measurement software: RadiMation, version 2024.1.6
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D
Measurement distance: 3 m
Mode: Tx; NB-IoT_FDD 13_CH 23278_3.75 kHz_tone 1_offset 0
Test Date: 2025-01-31



Peak Number	Frequency (MHz)	Peak (dBm)	Peak Limit (dBm)	Peak Difference (dB)	Peak Status	Polarization
1	1573.387	-52	-40	-12	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

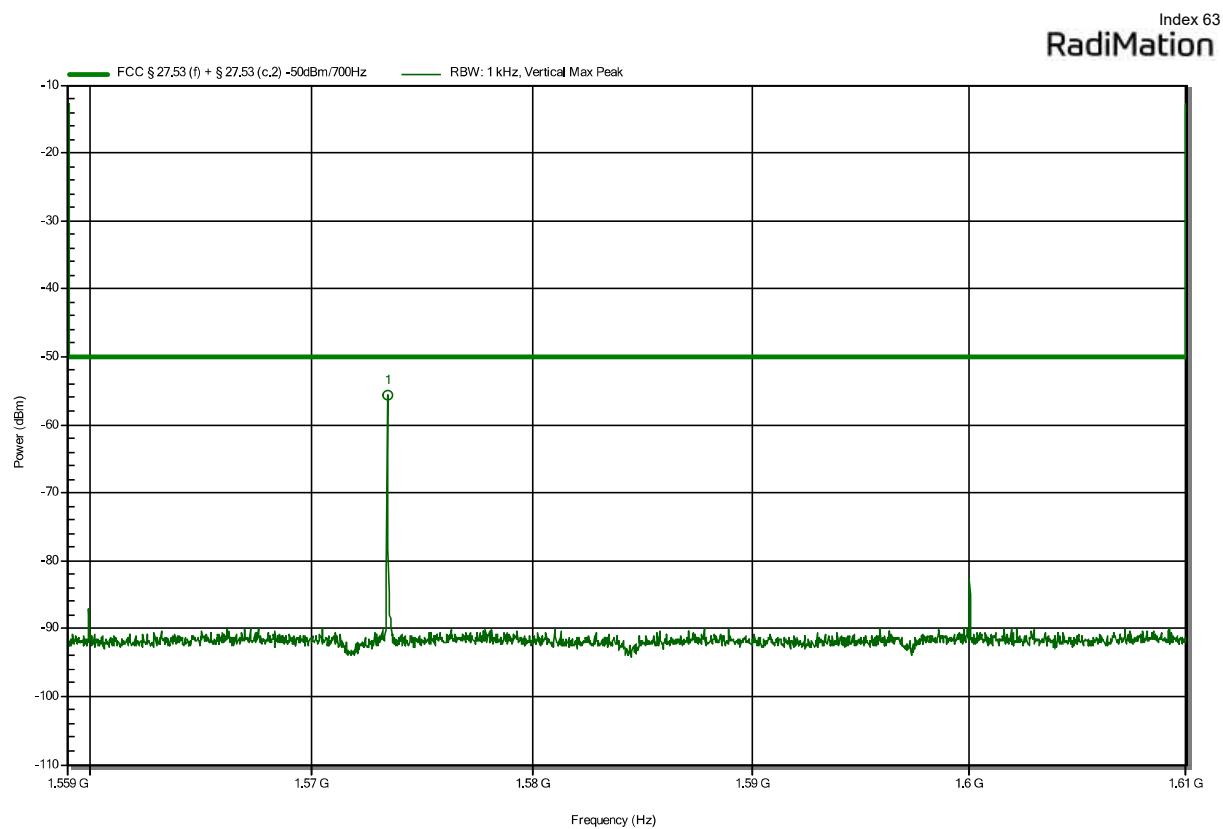
Project Number: G0M-2303-1961
Applicant: Fell Technology AS
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Europa Gateway
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: Mr. Ibraimov
Measurement software: RadiMation, version 2024.1.6
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D
Measurement distance: 3 m
Mode: Tx; NB-IoT_FDD 13_CH 23278_3.75 kHz_tone 1_offset 0
Test Date: 2025-01-31



Peak Number	Frequency (MHz)	Peak (dBm)	Peak Limit (dBm)	Peak Difference (dB)	Peak Status	Polarization
1	1573.425	-54.7	-50	-4.68	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

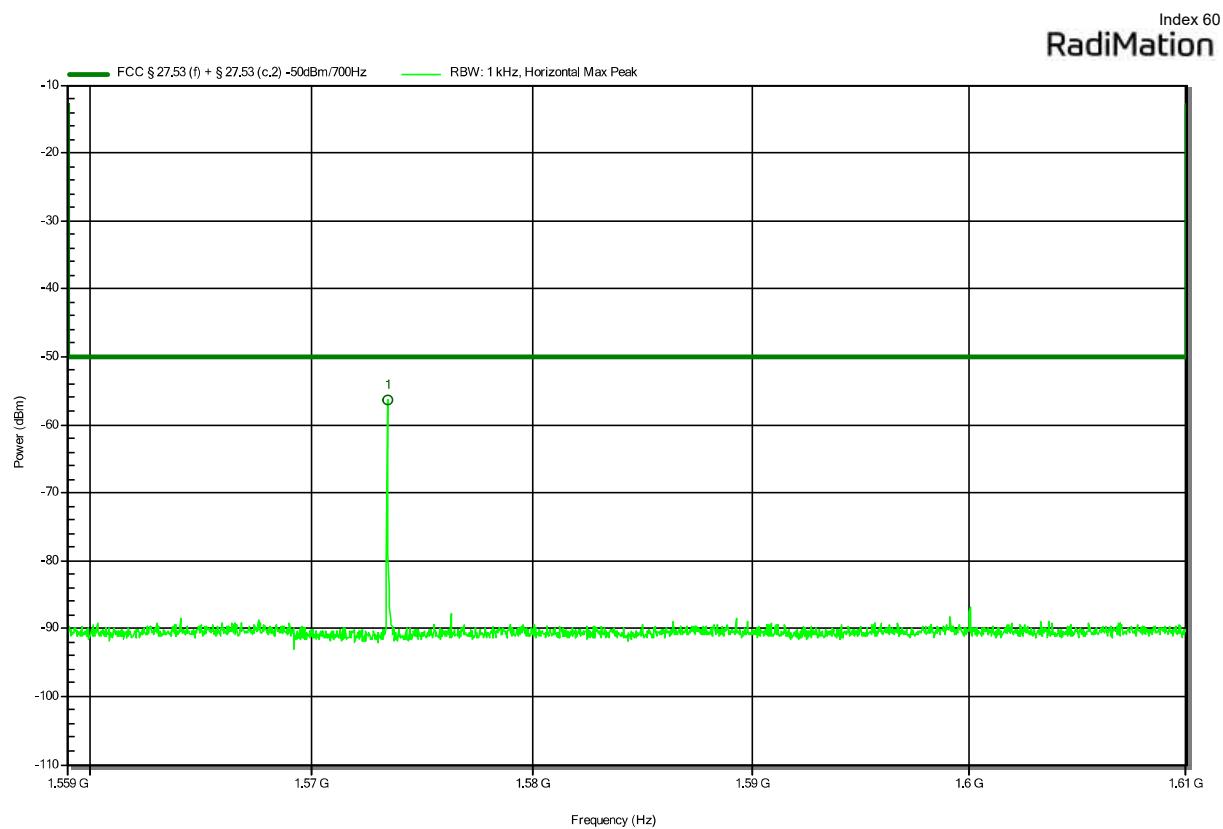
Project Number: G0M-2303-1961
Applicant: Fell Technology AS
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Europa Gateway
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: Mr. Ibraimov
Measurement software: RadiMation, version 2024.1.6
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D
Measurement distance: 3 m
Mode: Tx; NB-IoT_FDD 13_CH 23278_3.75 kHz_tone 1_offset 0
Test Date: 2025-01-31



Peak Number	Frequency (MHz)	Peak (dBm)	Peak Limit (dBm)	Peak Difference (dB)	Peak Status	Polarization
1	1573.425	-55.7	-50	-5.75	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

Project Number: G0M-2303-1961
Applicant: Fell Technology AS
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Europa Gateway
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: Mr. Ibraimov
Measurement software: RadiMation, version 2024.1.6
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D
Measurement distance: 3 m
Mode: Tx; NB-IoT_FDD 13_CH 23278_3.75 kHz_tone 1_offset 0
Test Date: 2025-01-31

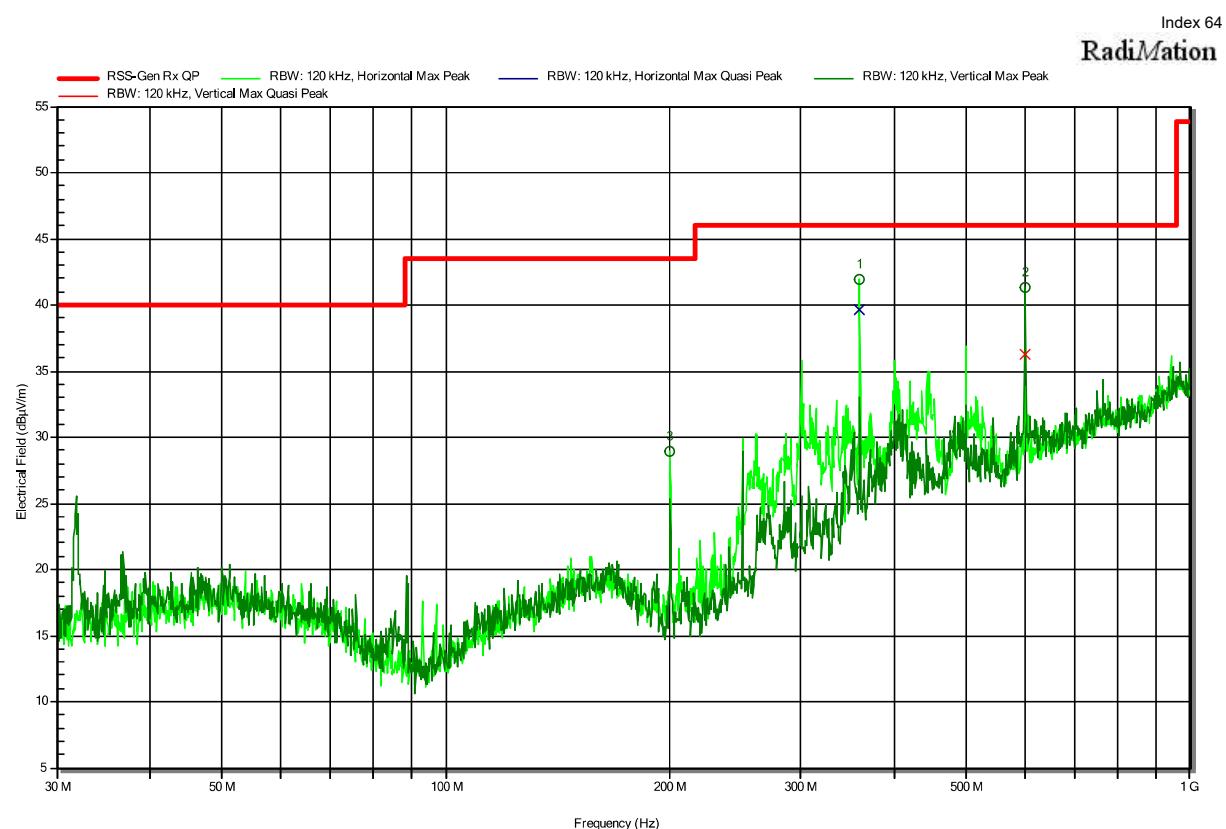


Peak Number	Frequency (MHz)	Peak (dBm)	Peak Limit (dBm)	Peak Difference (dB)	Peak Status	Polarization
1	1573.425	-56.3	-50	-6.32	Pass	Horizontal

ANNEX B Receiver radiated emissions

Radiated Spurious Emissions according to ISED RSS-139, Issue 4+A1

Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck VULB 9168
 Measurement distance: 3 m
 Mode: Rx; LTE Cat M1, FDD4, 3 MHz, CH_1965, RX
 Test Date: 2023-09-19
 Note:



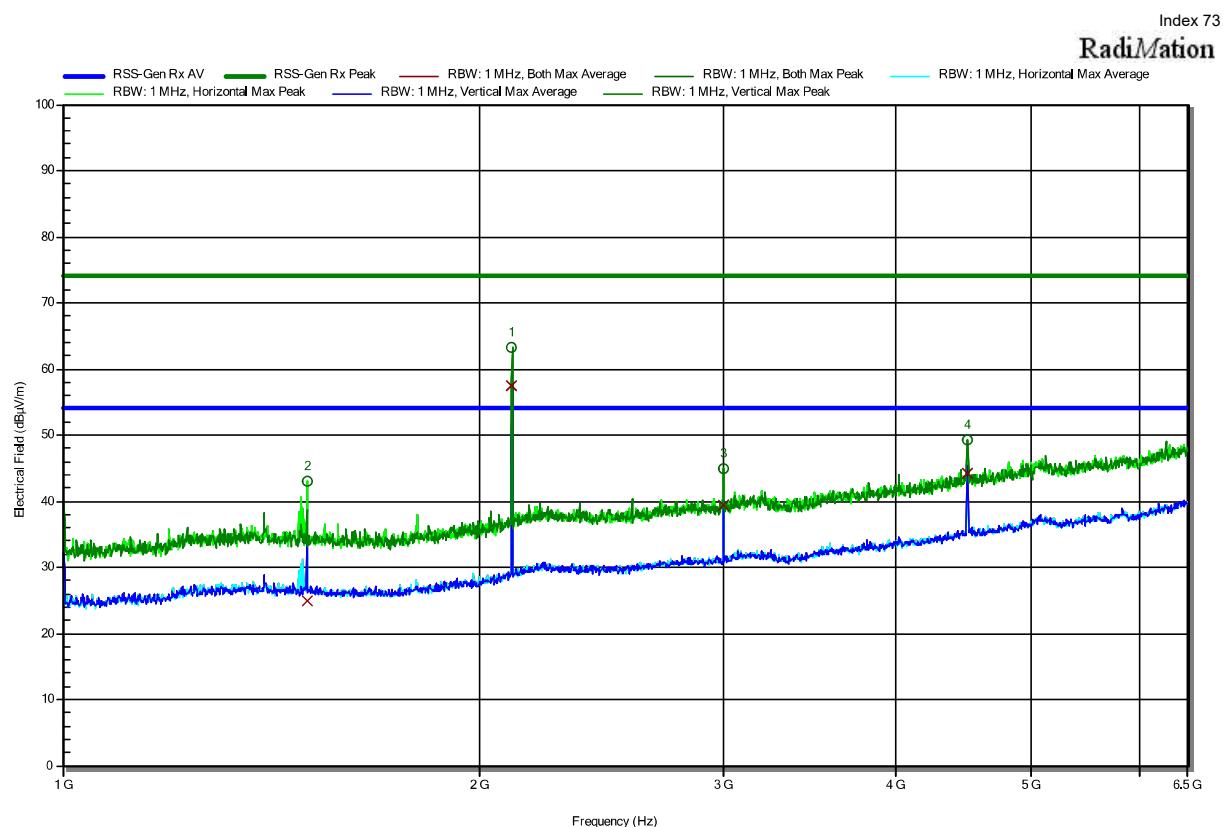
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
199.7742 MHz	28.9 dBµV/m	43.5 dBµV/m	-14.58 dB	Pass	Horizontal
Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
359.9906 MHz	39.7 dBµV/m	46 dBµV/m	-6.31 dB	Pass	Horizontal
600.7879 MHz	36.3 dBµV/m	46 dBµV/m	-9.69 dB	Pass	Vertical

Test Report No.: G0M-2303-1961-TFCMOCORSE-V07

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to ISED RSS-139, Issue 4+A1

Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Rx; LTE Cat M1, FDD4, 3 MHz, CH_1965, RX
 Test Date: 2023-09-19
 Note: Marker 1 Downlink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.501 GHz	43.08 dB μ V/m	74 dB μ V/m	-30.92 dB	Pass	Horizontal
2.111 GHz	---	---	---	Downlink	Vertical
3 GHz	44.82 dB μ V/m	74 dB μ V/m	-29.18 dB	Pass	Vertical
4.5 GHz	49.36 dB μ V/m	74 dB μ V/m	-24.64 dB	Pass	Vertical

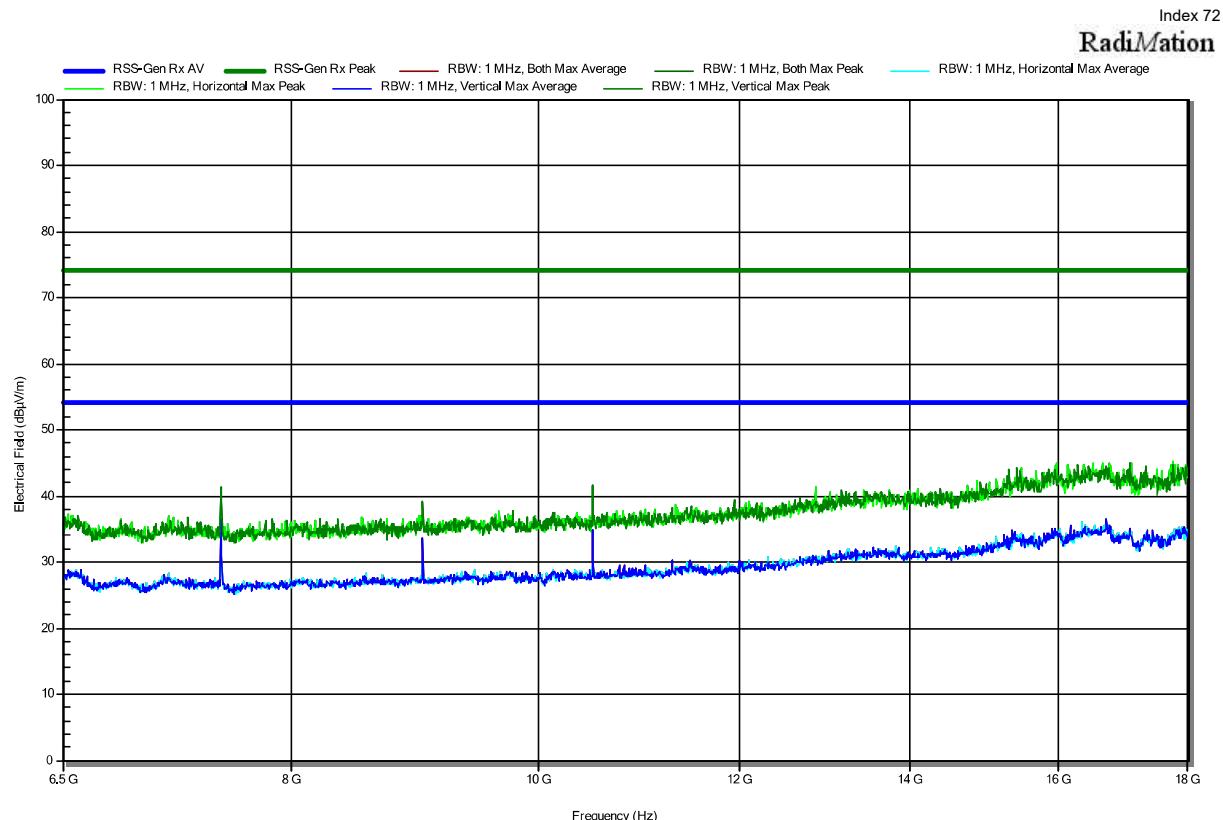
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
1.501 GHz	24.9 dB μ V/m	53.98 dB μ V/m	-29.08 dB	Pass	Horizontal
2.111 GHz	---	---	---	Downlink	Vertical
3 GHz	39.5 dB μ V/m	53.98 dB μ V/m	-14.48 dB	Pass	Vertical
4.5 GHz	44.23 dB μ V/m	53.98 dB μ V/m	-9.75 dB	Pass	Vertical

Test Report No.: G0M-2303-1961-TFCMOCORSE-V07

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

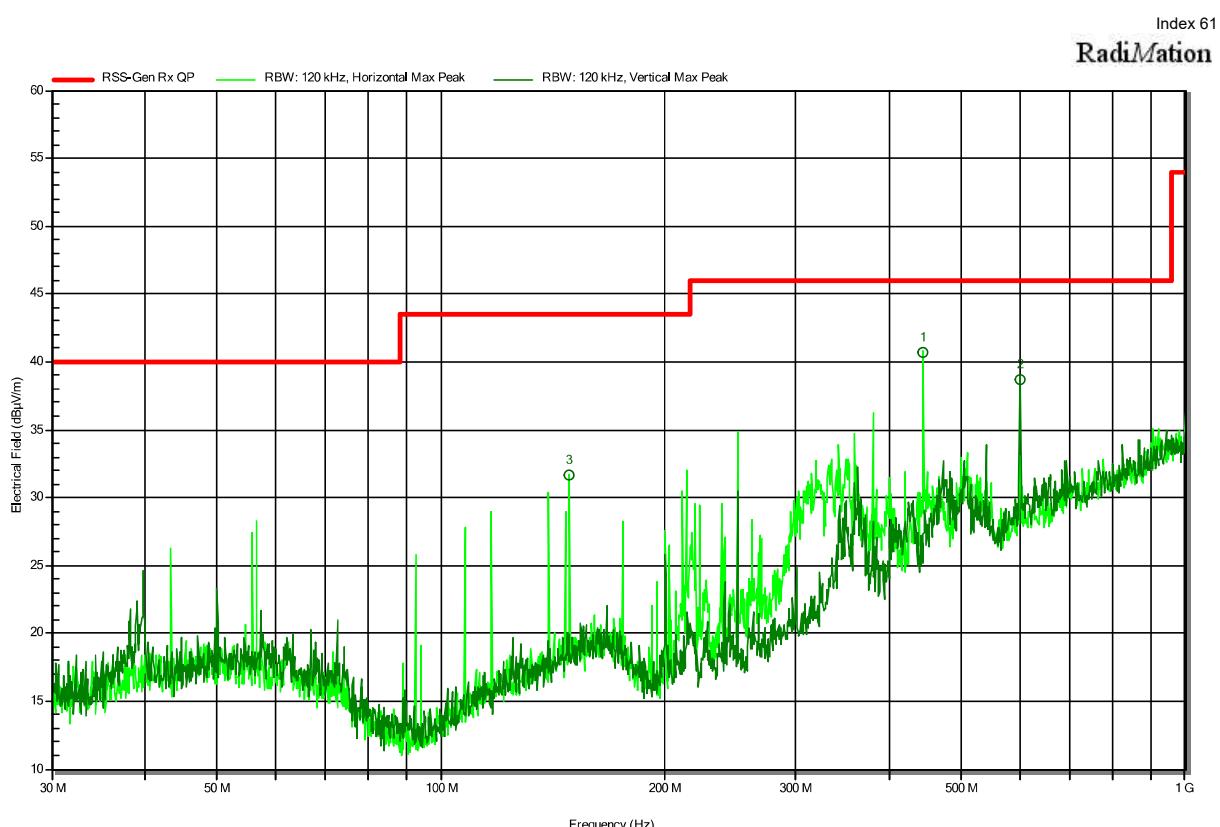
Radiated Spurious Emissions according to ISED RSS-139, Issue 4+A1

Project Number: G0M-2303-1961
Applicant: Navico Inc.
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Connect 1
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: A.Ibraimov
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck HWRD 650
Measurement distance: 3 m
Mode: Rx; LTE Cat M1, FDD4, 3 MHz, CH_1965, RX
Test Date: 2023-09-19
Note:



Radiated Spurious Emissions according to ISED RSS-133, Issue 7

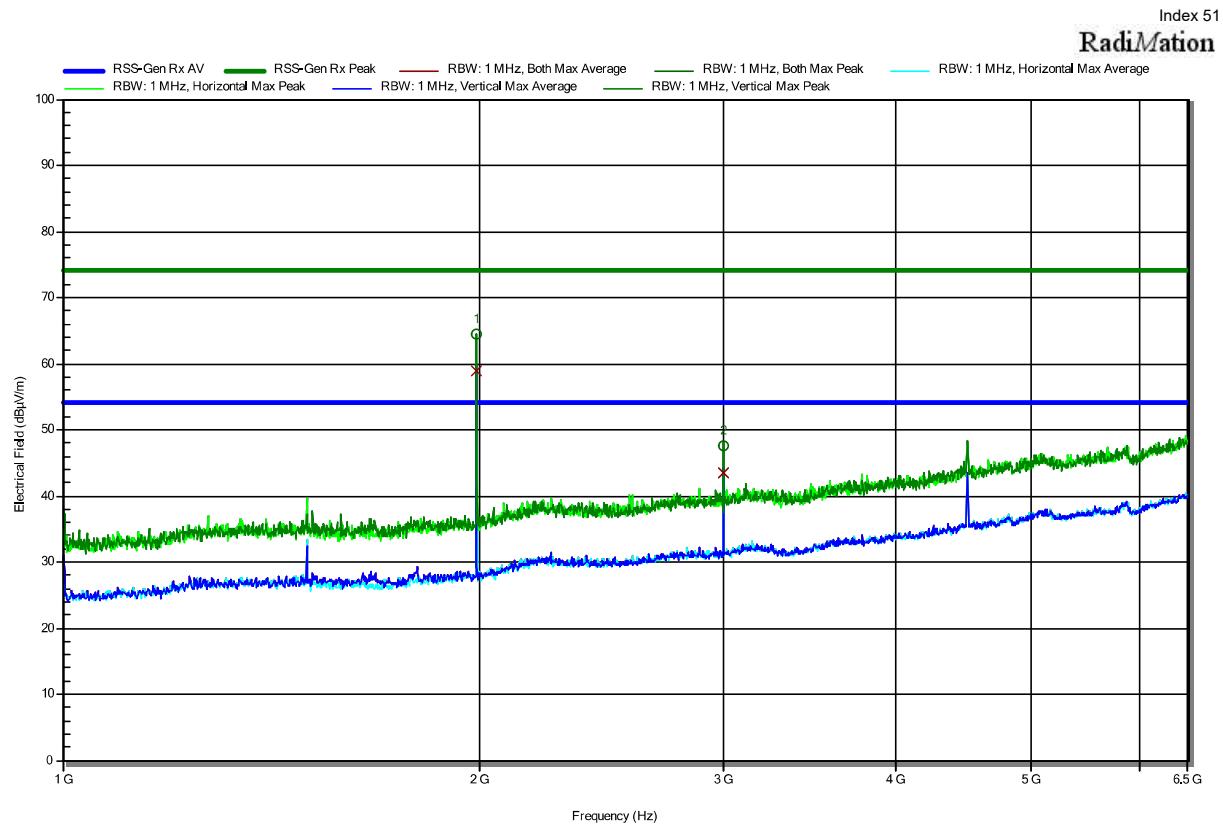
Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck VULB 9168
 Measurement distance: 3 m
 Mode: Rx; NB-IoT, FDD2, 15kHz, CH_1198, RX
 Test Date: 2023-09-18
 Note:



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
148.8007 MHz	31.6 dB μ V/m	43.5 dB μ V/m	-11.89 dB	Pass	Horizontal
444.6507 MHz	40.7 dB μ V/m	46 dB μ V/m	-5.25 dB	Pass	Horizontal
599.2688 MHz	38.7 dB μ V/m	46 dB μ V/m	-7.34 dB	Pass	Vertical

Radiated Spurious Emissions according to ISED RSS-133, Issue 7

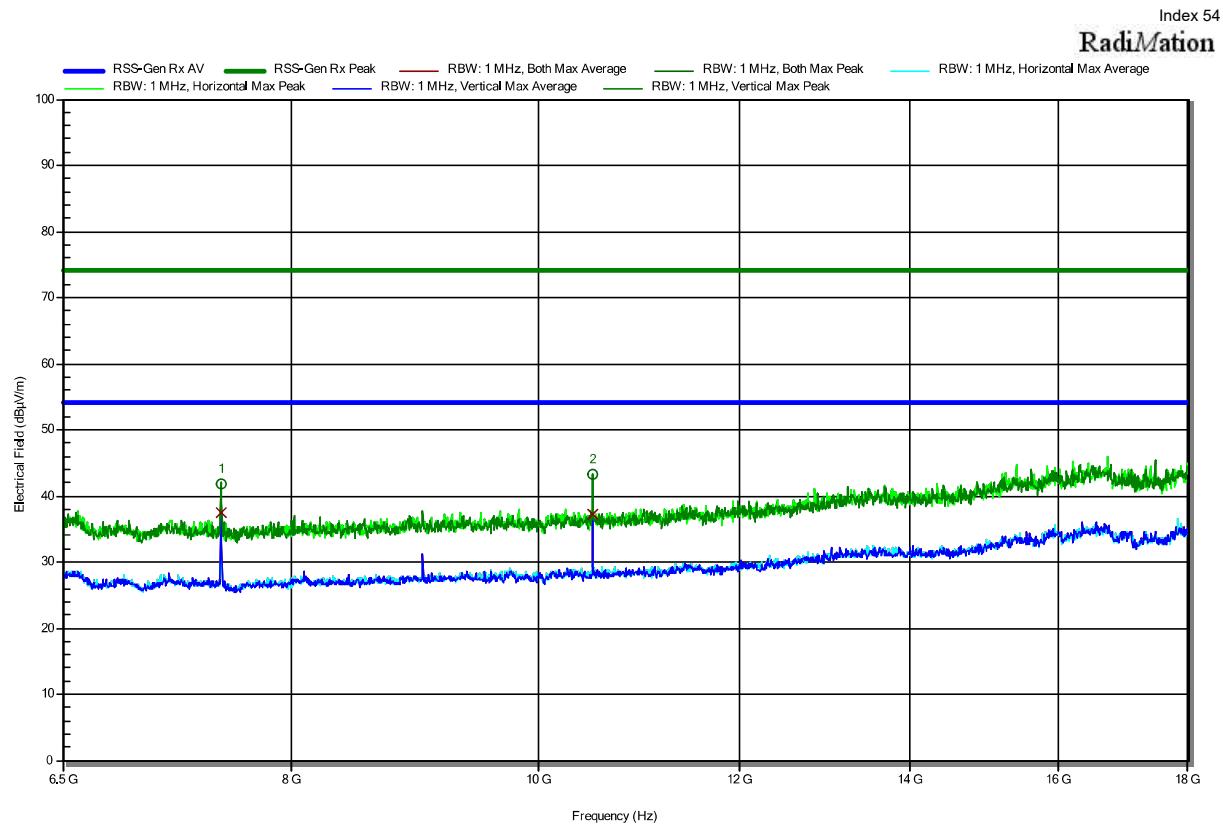
Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Rx; NB-IoT, FDD2, 15kHz, CH_1198, RX
 Test Date: 2023-08-21
 Note: Marker 1 Downlink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.99 GHz	---	---	---		
3 GHz	47.5 dBµV/m	74 dBµV/m	-26.5 dB	Pass	Vertical
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
1.99 GHz	---	---	---		
3 GHz	43.49 dBµV/m	53.98 dBµV/m	-10.49 dB	Pass	Vertical

Radiated Spurious Emissions according to ISED RSS-133, Issue 7

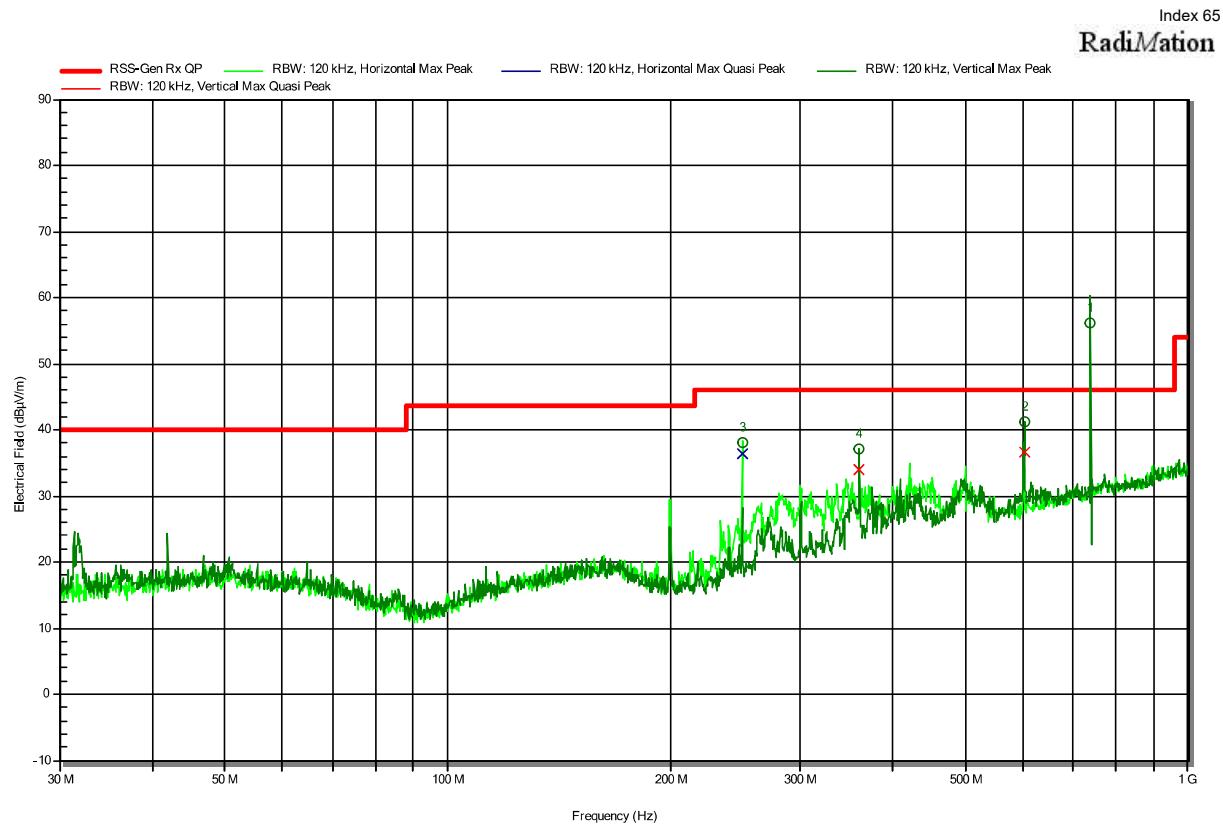
Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck HWRD 650
 Measurement distance: 3 m
 Mode: Rx; NB-IoT, FDD2, 15kHz, CH_1198, RX
 Test Date: 2023-08-21
 Note:



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
7.501 GHz	41.86 dB μ V/m	74 dB μ V/m	-32.14 dB	Pass	Vertical
10.5 GHz	43.24 dB μ V/m	74 dB μ V/m	-30.76 dB	Pass	Vertical
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
7.501 GHz	37.47 dB μ V/m	53.98 dB μ V/m	-16.51 dB	Pass	Vertical
10.5 GHz	37.16 dB μ V/m	53.98 dB μ V/m	-16.82 dB	Pass	Vertical

Radiated Spurious Emissions according to ISED RSS-130, Issue 2

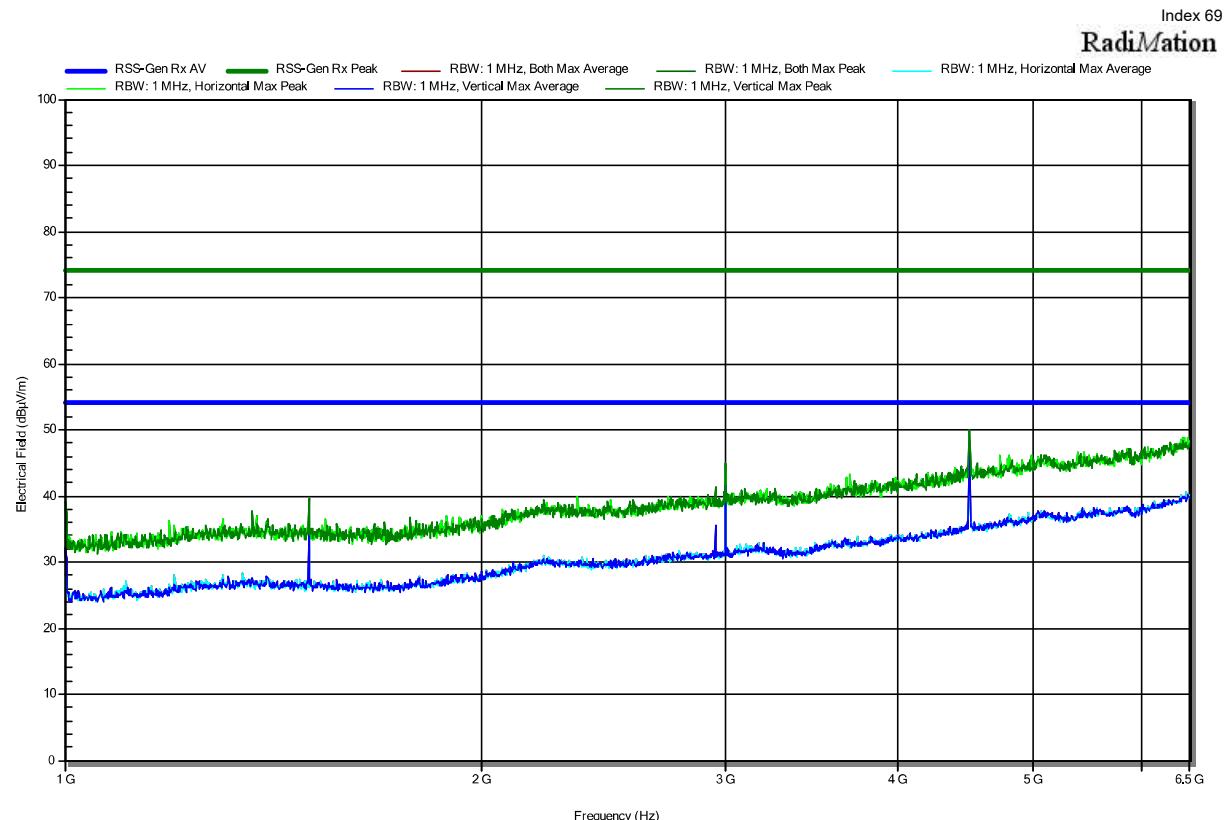
Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck VULB 9168
 Measurement distance: 3 m
 Mode: Rx; NB-IoT, FDD12, 15kHz, CH_5095, RX
 Test Date: 2023-09-19
 Note: Marker 1 Downlink



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
249.9874 MHz	36.4 dB μ V/m	46 dB μ V/m	-9.62 dB	Pass	Horizontal
359.996 MHz	33.9 dB μ V/m	46 dB μ V/m	-12.11 dB	Pass	Vertical
600.7266 MHz	36.7 dB μ V/m	46 dB μ V/m	-9.3 dB	Pass	Vertical
737.4938 MHz	---	---	---	Downlink	Vertical

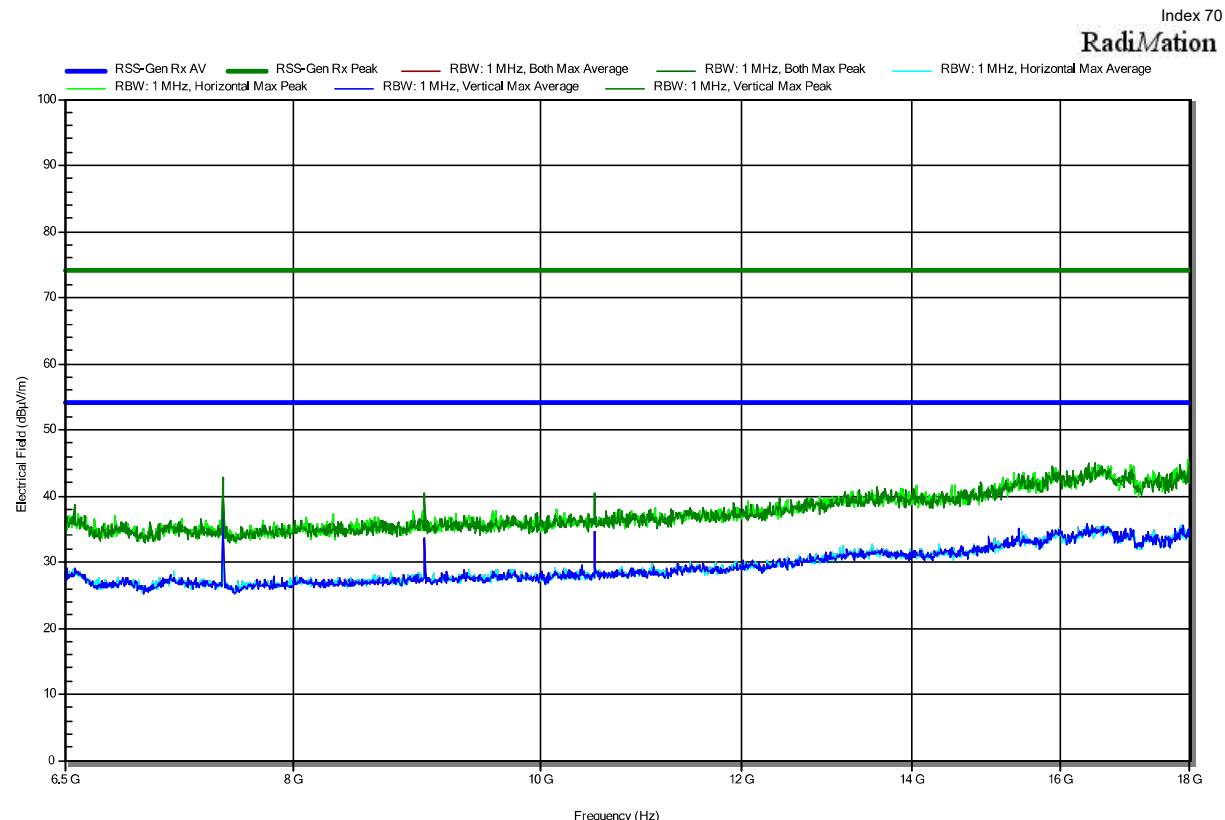
Radiated Spurious Emissions according to ISED RSS-130, Issue 2

Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Rx; NB-IoT, FDD12, 15kHz, CH_5095, RX
 Test Date: 2023-09-19
 Note:



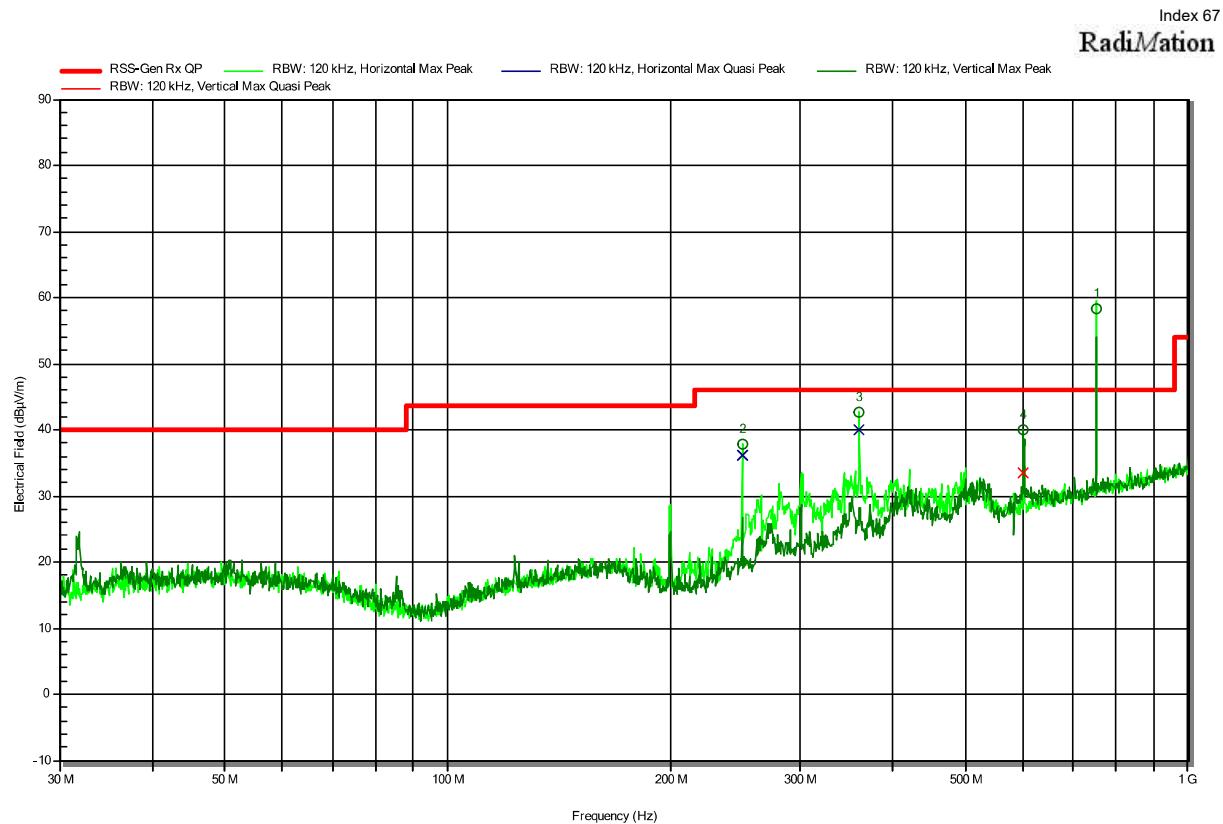
Radiated Spurious Emissions according to ISED RSS-130, Issue 2

Project Number: G0M-2303-1961
Applicant: Navico Inc.
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Connect 1
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: A.Ibraimov
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck HWRD 650
Measurement distance: 3 m
Mode: Rx; NB-IoT, FDD12, 15kHz, CH_5095, RX
Test Date: 2023-09-19
Note:



Radiated Spurious Emissions according to ISED RSS-130, Issue 2

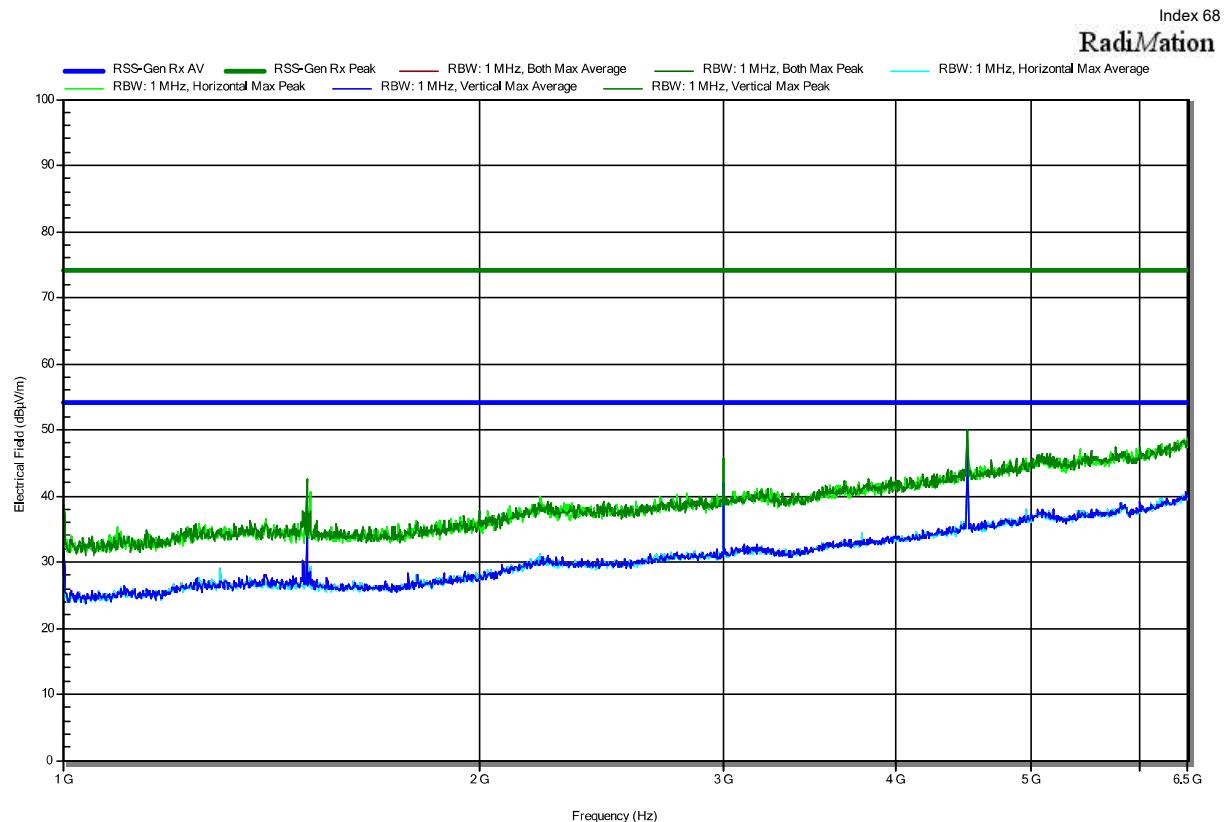
Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck VULB 9168
 Measurement distance: 3 m
 Mode: Rx; NB-IoT, FDD13, 15kHz, CH_5230, RX
 Test Date: 2023-09-19
 Note: Marker 1 Downlink



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
249.9594 MHz	36.2 dB μ V/m	46 dB μ V/m	-9.84 dB	Pass	Horizontal
359.9866 MHz	39.9 dB μ V/m	46 dB μ V/m	-6.11 dB	Pass	Horizontal
600.3183 MHz	33.5 dB μ V/m	46 dB μ V/m	-12.54 dB	Pass	Vertical
751.001 MHz	---	---	---	Downlink	Horizontal

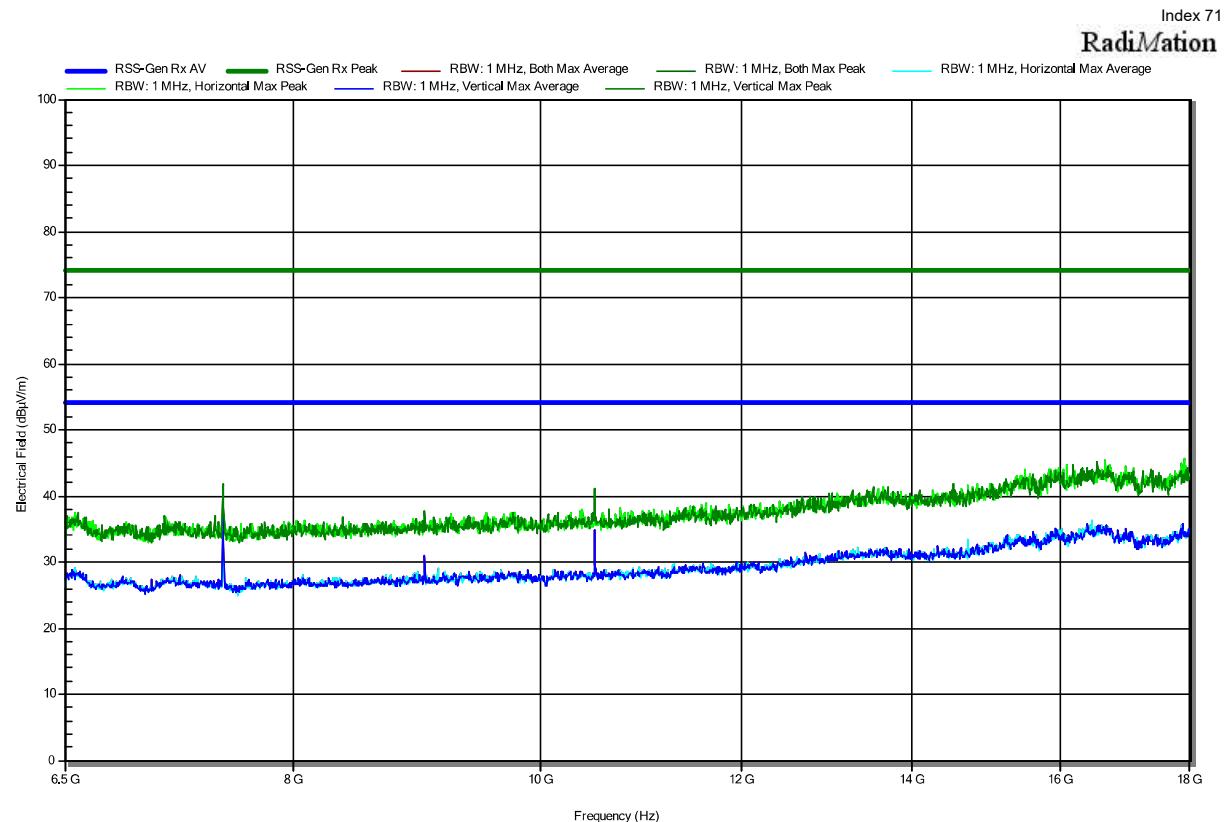
Radiated Spurious Emissions according to ISED RSS-130, Issue 2

Project Number: G0M-2303-1961
Applicant: Navico Inc.
Model Description: Marine and recreational IoT Gateway and vessel management system
Model: Connect 1
Test Sample ID: 44396
Test Site: Eurofins Product Service GmbH
Operator: A.Ibraimov
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D
Measurement distance: 3 m
Mode: Rx; NB-IoT, FDD13, 15kHz, CH_5230, RX
Test Date: 2023-09-19
Note:



Radiated Spurious Emissions according to ISED RSS-130, Issue 2

Project Number: G0M-2303-1961
 Applicant: Navico Inc.
 Model Description: Marine and recreational IoT Gateway and vessel management system
 Model: Connect 1
 Test Sample ID: 44396
 Test Site: Eurofins Product Service GmbH
 Operator: A.Ibraimov
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 13.8 VDC
 Antenna: Schwarzbeck HWRD 650
 Measurement distance: 3 m
 Mode: Rx; NB-IoT, FDD13, 15kHz, CH_5230, RX
 Test Date: 2023-09-19
 Note:



==== END OF TEST REPORT ====