FCC TEST REPORT Co-Location	
Report Reference No	G0M-2401-2381-TFCCOLOC-V02
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	Treon Oy
Address	Visiokatu 3 33720 Tampere FINLAND
Test Specification	47 CFR Part 24E
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Tracker TR4111000
Model(s)	4111000
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	05
Software Version(s)	5.3
FCC ID	2AR86-TR41
Test Result	**PASSED**

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	Sample 47844: 2024-02-22 Sample 48402: 2024-05-02 Sample 48401: 2024-05-02 Sample 50391: 2024-12-05	
Report:		
Compiled by	Godson Offorji, Md Abu Bakar Siddique	
Tested by (+ signature) (Responsible for Test)	Godson Offorji	
Tested by (+ signature) (Responsible for Test)	Md Abu Bakar Siddique	
Approved by (+ signature) (Senior Expert)	Radwan Jaafar	
Date of Issue	2024-12-13	
Total number of pages	80	
General Remarks:		
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.** This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		

Additional Comments:
EUT contains additionally GNSS and RFID hardware. This hardware is not tested and disabled.

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2024-06-27	Initial Release	--
02	2024-12-13	Replaced document: G0M-2401-2381-TFCCOLOC-V01 Replaced by: G0M-2401-2381-TFCCOLOC-V02 Reasons: • Radio Technology updated at page 6 and 7 • Radio module 1 information is updated at page 6. Worst re-evaluation is of the module and measurement according to re-evaluation was performed. • LTE Cat1, TDD 41 mode was added to EUT 1 • EUT photo added at page 16 • Comment below the test mode table is changed at page 23 • Test equipment table at page 30 - 31 is updated • Results are updated at page 32 • Plots are updated from page 46 to page 49 and page 56 to page 60	Md Abu Bakar Siddique

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	Tracker TR4111000		
Model	4111000		
Additional Model(s)	None		
Brand Name(s)	None		
Sample Identification	EUT #	Sample-IDs	Serial Number
	EUT 1	47844 48402 50391	prototype
	EUT 2	48401	prototype
Hardware Version(s)	05		
Software Version(s)	5.3		
FCC ID	2AR86-TR41		
Equipment type	End Product		
Radio type	Transceiver		
Radio technologies	WLAN 2.4 GHz; LTE Cat-1; LTE Cat-M1; NB-IoT, GSM, BLE		
Assigned frequency bands	WLAN: 2400 - 2483.5 MHz LTE/NB-IoT FDD2: UL = 1850 - 1910 MHz, DL = 1930 - 1990 MHz LTE/NB-IoT FDD4: UL = 1710 - 1755 MHz, DL = 2110 - 2155 MHz LTE/NB-IoT FDD5: UL = 824 - 849 MHz, DL = 869 - 894 MHz LTE/NB-IoT FDD7: UL = 2500 - 2570 MHz, DL = 729 - 746 MHz LTE/NB-IoT FDD12: UL = 699 - 716 MHz, DL = 2620 - 2690 MHz LTE/NB-IoT FDD13: UL = 777 - 787 MHz, DL = 746 - 756 MHz NB-IoT FDD17: UL = 704 - 716 MHz, DL = 734 - 746 MHz LTE/NB-IoT FDD25: UL = 1850 - 1915 MHz, DL = 1930 - 1995 MHz LTE/NB-IoT FDD26: UL = 814 - 849 MHz, DL = 859 - 894 MHz LTE/NB-IoT TDD41: UL/DL = 2496 - 2690 MHz LTE/NB-IoT FDD66: UL = 1710 - 1780 MHz, DL = 2110 - 2200 MHz GSM 850 : UL = 824 - 849 MHz DL = 869 – 894 MHz GSM 1900 : UL = 1850 – 1910 MHz DL = 1930 – 1990 MHz BLE: 2400 – 2483.5 MHz		
Modulations	WLAN: BPSK, QPSK, 16-QAM, 64-QAM LTE Cat-1: QPSK, 16-QAM LTE Cat-M1: QPSK, 16-QAM GSM: QPSK, PSK, QAM NB-IoT: π/4 - QPSK, π/2 - BPSK BLE: GFSK		
Number of Radio Transceiver	5		
Radio Module 1	Type	GSM / UMTS / LTE module	
	Model	EG21-GL	
	Manufacturer	Quectel	
	HW Version	Not specified	
	SW Version	Not specified	
	FCC-ID	XMR202212EG21GL	
	IC	10224A-2022EG21GL	
Radio Module 2	Type	LTE Cat M1 / NB-IoT module	
	Model	nRF9160	
	Manufacturer	Nordic Semiconductor ASA	
	HW Version	SICA-B1A	
	SW Version	1.3.5	
	FCC-ID	2ANPO00NRF9160	
	IC	24529-NRF9160	

Radio Module 3	Type	WLAN 802.11b/g/n module
	Model	LILY-W131
	Manufacturer	u-blox
	HW Version	Not specified
	SW Version	Not specified
	FCC-ID	XPYLILYW1
	IC	8595A-LILYW1
Radio 1	Type	Bluetooth Low Energy
	Manufacturer	Nordic Seminconductor
	HW Version	QIAA
	SW Version	DTM
	Radio SoC	nRF52840
	FCC ID	2AR86-TR41
	IC	24716-TR41
Radio 2	Type	Bluetooth Low Energy
	Manufacturer	Nordic Seminconductor
	HW Version	QIAA
	SW Version	DTM
	Radio SoC	nRF52840
	FCC ID	2AR86-TR41
	IC	24716-TR41
Antenna 1 (GSM / UMTS / LTE / Cat M1 / NB-IoT)	Type	Integrated Antenna
	Model	LTE Main Antenna
	Manufacturer	Treon
	Gain	4.83 dBi (Customer declaration)
Antenna 2 (GSM / UMTS / LTE)	Type	Integrated Antenna
	Model	LTE Div antenna (only Rx)
	Manufacturer	Treon
	Gain	Not specified
Antenna 3 (WLAN)	Type	Integrated Antenna
	Model	Treon OneEdge – 2.4 GHz Antenna 3
	Manufacturer	Treon Oy
	Gain	0.97 (Customer declaration)
Antenna 4 (BLE)	Type	Integrated antenna
	Model	Treon
	Manufacturer	Treon
	Gain	5.04 dBi (Customer declaration)
Antenna 5 (BLE 2)	Type	Integrated antenna
	Model	Treon
	Manufacturer	Treon
	Gain	0.91 dBi (Customer declaration)
Supply Voltage 1	V_{NOM}	6 V DC via external power supply
Supply Voltage 2	V_{NOM}	3.6 V via internal rechargeable NiMH built in batteries (3x1.2 V)
AC/DC-Adaptor	None	
Manufacturer	Treon Oy Visiokatu 3 33720 Tampere FINLAND	

1.5 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
SIM	Communication Tester	R&S	CMW500	Base Station Simulator
SIM	Communication Tester	R&S	CMW290	Base Station Simulator
AE	EMC TEST RASP	Raspberry Pi Foundation	Raspberry	Test access to CU WLAN module
AE	EMC TEST PC	Dell	Latitude 7280	Laptop for ssh connection to EMC TEST RASP
AE	USB/Power adapter for CU cable	--	Treon	--
AE	SIM	COMPRION	4FF	Used for Quectel measurement
AE	SIM	COMPRION	3FF	Used for Nordic Semiconductor nRF9160 measurement
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment: --				

1.6 Test Modes – (Applied for both EUT 1 and EUT 2)

Mode	Description
WLAN-DT (IEEE 802.11n)	Mode = Transmit Modulation = BPSK Bandwidth = 20 MHz Power Setting = 16 dBm (Software setting) Channel = 6 (2437 MHz) Data rate = 6.5 Mbit/s (MCS0) Streams = 1 Duty cycle = 100 %
BLE 1	Mode = Transmit Modulation = GFSK Bandwidth = 1 MHz Power Setting = 4.7 dBm (Software setting) Channel = 18 (2442 MHz) Data rate = 1 Mbit/s Packet type = PRBS9 Packet length = 193 Duty cycle = 87.5 %
BLE 2	Mode = Transmit Modulation = GFSK Bandwidth = 1 MHz Power Setting = 4.7 dBm (Software setting) Channel = 18 (2442 MHz) Data rate = 1 Mbit/s Packet type = PRBS9 Packet length = 193 Duty cycle = 87.5 %
Comment: Above worst case scenarios are based on average transmitter output power and were found by evaluation of the module test reports: F160785E3 issued by Phoenix TESTLAB on 2016-06-27 and 3955RER001/3955RER002 issued by Eurofins Electric & Electronics Finland Oy on 2024-06-26	

1.7 Test Modes – (EUT 1)

Mode	Description
GSM850 / GMSK	Channel = 190 Mode = Transmit Power = 3 Modulation = GMSK Number of time slots = 1 Duty cycle = 12.5 %
GSM1900 / GMSK	Channel = 512 Mode = Transmit Power = 3 Modulation = GMSK Number of time slots = 1 Duty cycle = 12.5 %
LTE FDD4 / QPSK	Channel = 19965 Mode = RMC TPC = All 1 Modulation = QPSK Bandwidth = 3 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD7 / QPSK	Channel = 21350 Mode = RMC TPC = All 1 Modulation = QPSK Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD12 / QPSK	Channel = 23060 Mode = RMC TPC = All 1 Modulation = QPSK Bandwidth = 10 MHz Number of resource blocks = 1 Resource block offset = 24 Duty cycle = 100 %
LTE FDD13 / QPSK	Channel = 23230 Mode = RMC TPC = All 1 Modulation = QPSK Bandwidth = 5 MHz Number of resource blocks = 1 Resource block offset = 24 Duty cycle = 100 %
LTE FDD26 / QPSK	Channel = 26740 Mode = RMC TPC = All 1 Modulation = QPSK Bandwidth = 10 MHz Number of resource blocks = 1 Resource block offset = 24 Duty cycle = 100 %

LTE TDD41 / QPSK	Channel = 40620 Mode = RMC TPC = All 1 Modulation = QPSK Bandwidth = 15 MHz Number of resource blocks = 1 Resource block offset = 37
Comment: The test modes for GSM850 / GMSK, GSM1900 / GMSK, LTE FDD4 / QPSK, LTE FDD12 / QPSK, LTE FDD13 / QPSK, LTE FDD26 / QPSK are based on worst case evaluation of the conducted output power from module reports GSM-HR/2019/10016E-0101, LTE HR/2019/10016E-0101 issued by SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen, Date of issue: 2019-05-22 The test modes for LTE FDD7 / QPSK, LTE TDD41 / QPSK are based on the worst case evaluation of the spurious emission results from module reports 2212RSU048-U1(V01), 2212RSU048-U2(V01), 2212RSU048-U3(V01) issued by MRT Technology (Suzhou) Co., Ltd. Shenzhen, Date of issue: 2023-03-05 The test modes for GSM850 / GMSK, GSM1900 / GMSK, LTE FDD4 / QPSK, LTE FDD12 / QPSK, LTE FDD13 / QPSK, LTE FDD26 / QPSK are based on the module reports of module EG21-G. The test modes for LTE FDD7 / QPSK, LTE TDD41 / QPSK are based on the module reports of module EG21-GL. Both modules are from same series but not identical. The test mode selection for GSM850, GSM1900, LTE FDD4, LTE FDD12, LTE FDD13, LTE FDD26 is based on customer module declaration. Evaluation of module reports for EG21-GL has shown, that spurious emission results have usually a margin between measured emission and 47 CFR § 24.238 limit of > 30 dB for low/mid/high channel. In some cases the margin is > 20 dB. In those cases the selected test frequency was still close enough to the real worst case channel regarding spurious emission. In some cases the margin is < 20 dB, affected modes (LTE FDD7 / QPSK, LTE TDD41 / QPSK) are retested.	

Mode	Description of combined test modes
1	GSM850 / WLAN-DT / BLE 1 / BLE 2
2	GSM850 / WLAN-DT / BLE 1 / BLE 2
3	LTE FDD4 / WLAN-DT / BLE 1 / BLE 2
4	LTE FDD7 / WLAN-DT / BLE 1 / BLE 2
5	LTE FDD12 / WLAN-DT / BLE 1 / BLE 2
6	LTE FDD13 / WLAN-DT / BLE 1 / BLE 2
7	LTE FDD26 / WLAN-DT / BLE 1 / BLE 2
8	LTE TDD41 / WLAN-DT / BLE 1 / BLE 2

1.8 Test Modes – (EUT 2)

Mode	Description
NB-IoT FDD5 / PMAX	Channel = 20648 TPC = Power max Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 3 Tone offset = 6 Duty cycle = 19.9 %
NB-IoT FDD12 / PMAX	Channel = 23012 TPC = Power max Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 3 Tone offset = 6 Duty cycle = 17.8 %
NB-IoT FDD13 / PMAX	Channel = 23278 TPC = Power max Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 3 Tone offset = 6 Duty cycle = 17 %
NB-IoT FDD25 / PMAX	Channel = 26688 TPC = Power max Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 3 Tone offset = 6 Duty cycle = 17 %
NB-IoT FDD26L / PMAX	Channel = 26790 TPC = Power max Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Tone offset = 11 Duty cycle = 33 %
NB-IoT FDD66 / PMAX	Channel = 132670 TPC = Power max Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 3 Tone offset = 6 Duty cycle =17 %
Comment: Above worst case scenarios are based on average transmitter output power and were found by evaluation of the module test reports: NIE: 59675RRF.002, Date of issue: 2019-06-03 and NIE: 59675RRF.004 Date of issue: 2019-05-15 by DEKRA Testing and Certification S.A.U Parque Tecnologico de Andalucia.	

Mode	Description of combined test modes
9	NB-IoT FDD5 / PMAX, WLAN-DT / BLE 1 / BLE 2
10	NB-IoT FDD12 / PMAX, WLAN-DT / BLE 1 / BLE 2
11	NB-IoT FDD13 / PMAX, WLAN-DT / BLE 1 / BLE 2
12	NB-IoT FDD25 / PMAX, WLAN-DT / BLE 1 / BLE 2
13	NB-IoT FDD26L / PMAX, WLAN-DT / BLE 1 / BLE 2
14	NB-IoT FDD66 / PMAX, WLAN-DT / BLE 1 / BLE 2

1.9 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 dBµV. 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:

Reading on Analyzer (dBµV) + A.F. (dB/m) = Net field strength (dBµV/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 dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

Field strength limit (dBµV/m) = 20 · log (µV/m)

Example only for radiated field strength:

Reading + AF	= Net Reading	:	Net reading	- Field strength limit	= Margin
+21.5 dBµV	+ 26 dB/m	:	47.5 dBµV/m	- 57.0 dBµV/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 (dBµV/m) + 20 · log(Di) - 106.95
EIRP = Net field strength (dBµV/m) + 20 · log(Di) - 104.8

P_{Watt}:

This is power in Watts

P_{dBm}:

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

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 $x + 10 \cdot \log(P_{Watt})$

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 dBµV + 26 dB/m	= 47.5 dBµV/m
Net Reading + 20 · log(Di) - 104.8	= EIRP
47.5 dBµV/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**
KDB 996369 D04 47 CFR §24.238	Transmitter radiated emissions	ANSI C63.26 KDB 971168	PASS	--
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 - Transmitter radiated emissions

3.1.1 Information

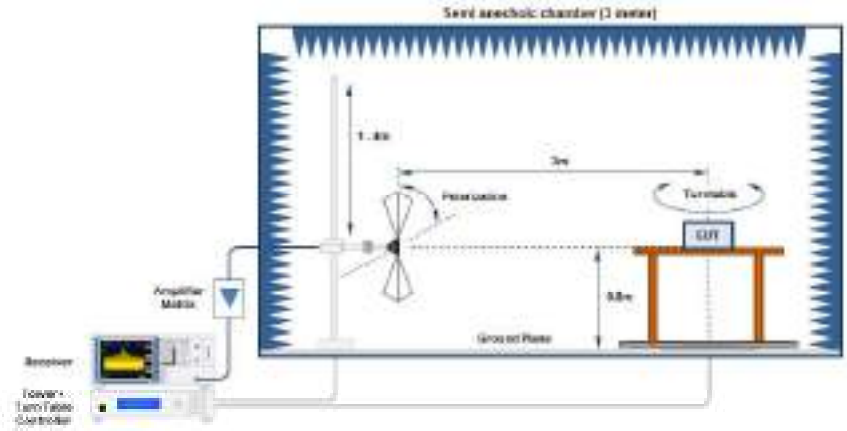
Test Information	
Reference	KDB 996369 D04, 47 CFR §24.238
Measurement Method	FCC KDB 971168 D01 Section 7 ANSI C63.26-2015 5.5
Measurement Uncertainty	± 5.95 dB
Operator	Godson Offorji + Florian Voigt + Md Abu Bakar Siddique
Date	2024-03-27 + 2024-04-03 + 2024-04-17 + 2024-05-05 + 2024-05-06 + 2024-12-09

3.1.2 Limits

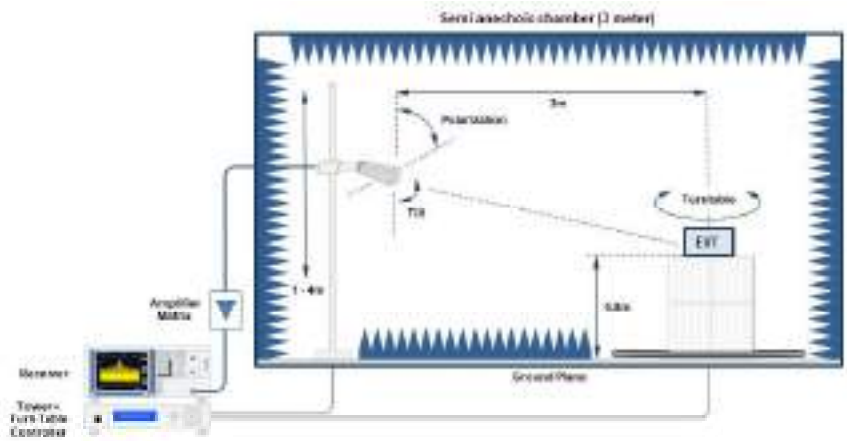
Limits FCC				
Band	Frequency range [MHz]	Bandwidth	Attenuation [dB]	Limit [dBm EIRP]
All	--	1 MHz	$43+10 \cdot Log_{10}(P[W])$	-13
Comment: Above limit/rule part is applied to all bands according to KDB 996369 D04, clause 3.1				

3.1.3 Setup

Test Setup 30 - 1000 MHz



Test Setup > 1 GHz



3.1.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8
EMC Software	Raditeq	RadiMation	2024.1.3

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2022-11	2025-11
Measurement Receiver	R&S	ESU 26	EF00887	2024-01	2025-01
Measurement Receiver	R&S	ESW 44	EF01856	2024-04	2025-04
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	EF01824	2022-10	2025-10

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF01011	2023-11	2024-11
Measurement Receiver	R&S	ESU 26	EF00887	2024-01	2025-01
Antenna	Schwarzbeck	BBHA 9120D	EF01561	2021-11	2024-11
Anechoic chamber	Frankonia	AC2	EF01616	2024-07	2025-07
Spectrum Analyzer	R&S	FSW 43	EF00896	2024-07	2025-07
Antenna	Schwarzbeck	BBHA 9120B	EF01678	2024-05	2027-05
Antenna	Schwarzbeck	HWRD 650	EF01679	2024-05	2027-05
Antenna	Amplifier Research	AT4560	EF00302	2023-09	2025-09

3.1.5 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 is 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 is 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

3.1.6 Results – Sample ID Sample ID 48402

Test Results - Combined test mode 1							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
1	1673	-35.9	pk	Ver	-13	-22.95	PASS

Test Results - Combined test mode 2							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
2	2467	-18.4	pk	hor	-13	-05.41	PASS

Test Results - Combined test mode 3							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
3	973.454	-23	pk	ver	-13	-10.04	PASS

Test Results - Combined test mode 4							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
4	965.08	-23.9	pk	ver	-13	-10.88	PASS
4	7326.467	-42.9	pk	ver	-13	-29.89	PASS
4	9766.767	-39.5	pk	ver	-13	-26.51	PASS
4	26025.7	-33.2	pk	ver	-13	-20.23	PASS

Test Results - Combined test mode 5							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
5	734.22	-20.6	pk	ver	-13	-07.55	PASS

Test Results - Combined test mode 6							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
6	750.613	-17.7	pk	ver	-13	-04.66	PASS

Test Results - Combined test mode 7							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
7	733.347	-19.5	pk	ver	-13	-06.53	PASS

Test Results - Combined test mode 8							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
8	950.53	-24.6	pk	ver	-13	-11.59	PASS
8	7326.85	-41.5	pk	ver	-13	-28.53	PASS
8	9767.15	-38.5	pk	ver	-13	-25.45	PASS
8	26006.15	-33.5	pk	ver	-13	-20.53	PASS

3.1.7 Results – Sample ID Sample ID 48401

Test Results - Combined test mode 9							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
9	9769	-41.4	pk	ver	-13	-28.45	PASS

Test Results - Combined test mode 10							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
10	1399	-27.3	pk	hor	-13	-14.27	PASS
10	9769	-40.5	pk	hor	-13	-27.49	PASS

Test Results - Combined test mode 11							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
11	9769	-42.2	pk	ver	-13	-29.22	PASS

Test Results - Combined test mode 12							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
12	1387	-32.3	pk	hor	-13	-19.32	PASS
12	9767	-40.3	pk	ver	-13	-27.30	PASS

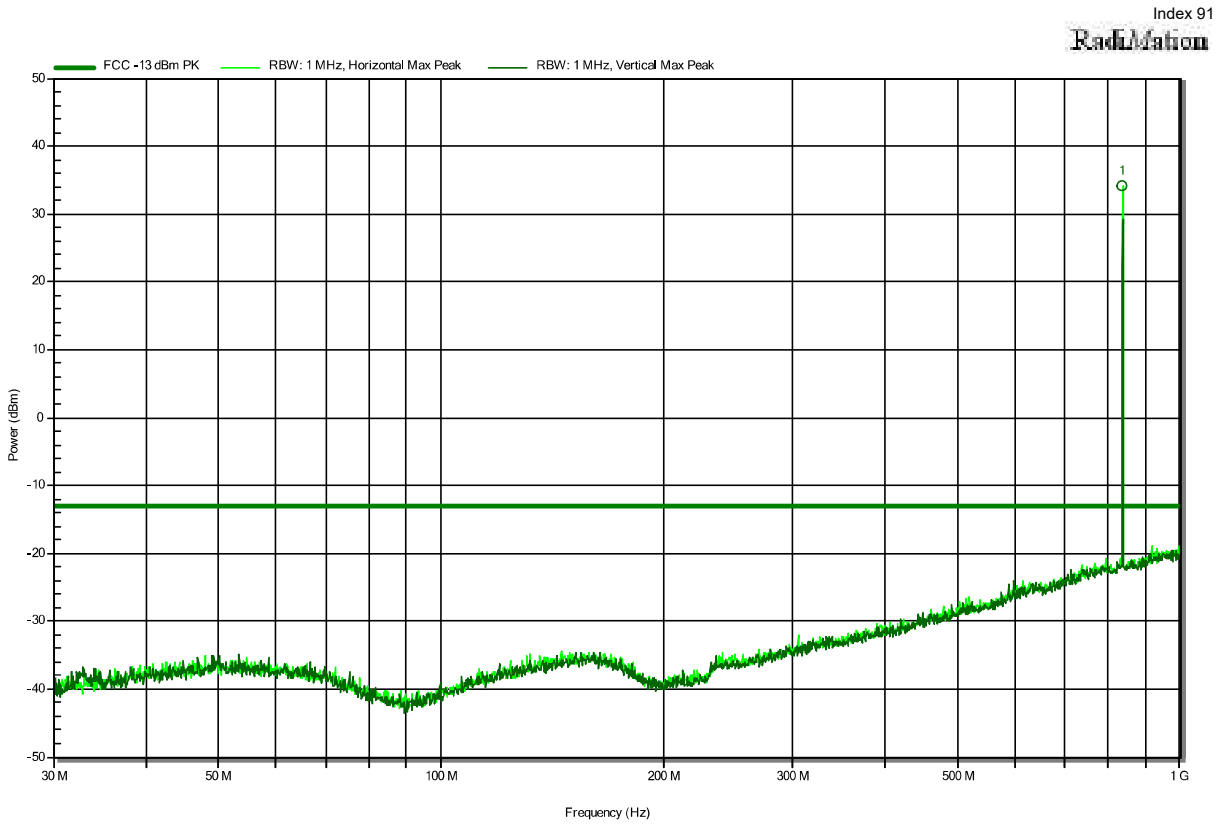
Test Results - Combined test mode 13							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
13	9769	-42	pk	ver	-13	-28.99	PASS

Test Results - Combined test mode 14							
Mode	Frequency [MHz]	Level [dBm]	Detector	Polarization	Limit [dBm]	Margin [dB]	Result
14	9767	-41.7	pk	ver	-13	-28.72	PASS

ANNEX A Transmitter radiated emissions (EUT 1)

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

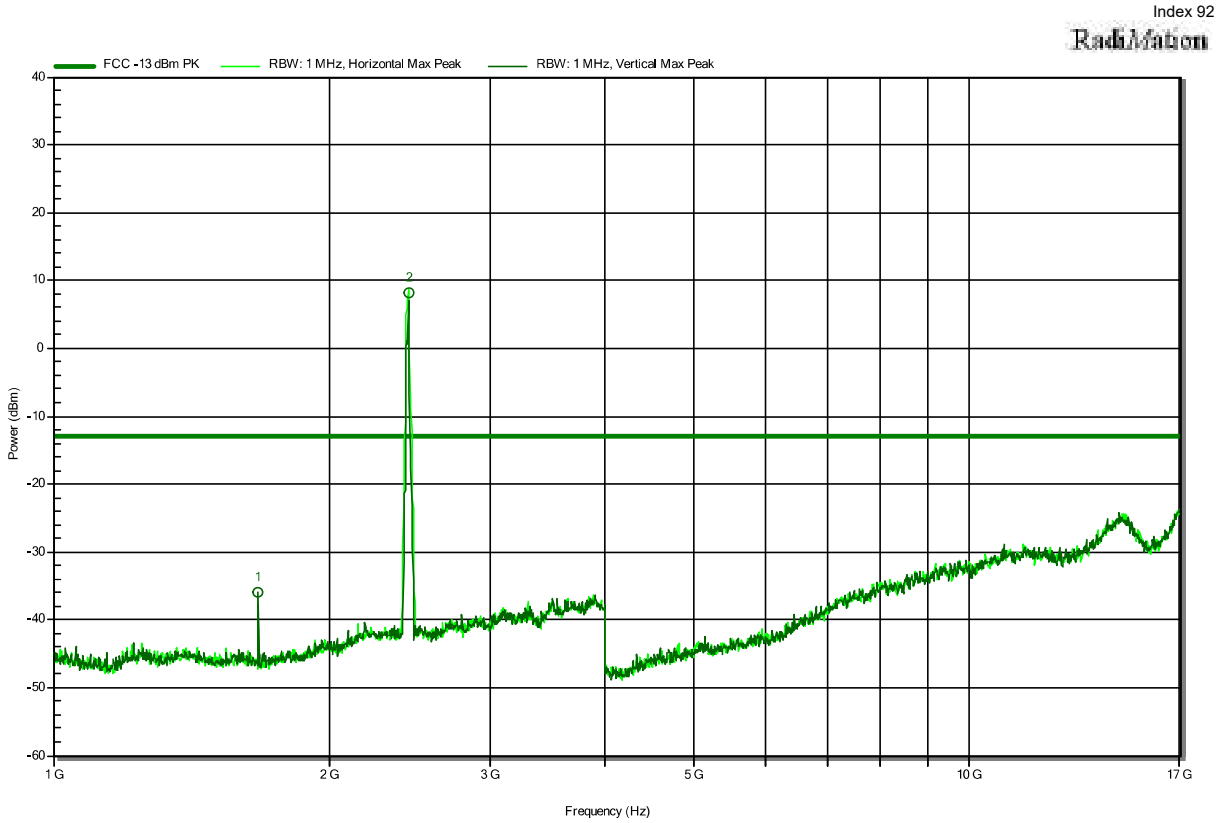
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48402
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	1; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ GSM850, Pmax, BLE1: 2442 MHz, BLE2: 2442 MHz
Test Date:	2024-05-06
Note:	Marker1 is GPRS carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
836.684 MHz	34.1 dBm	--	--	GSM Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

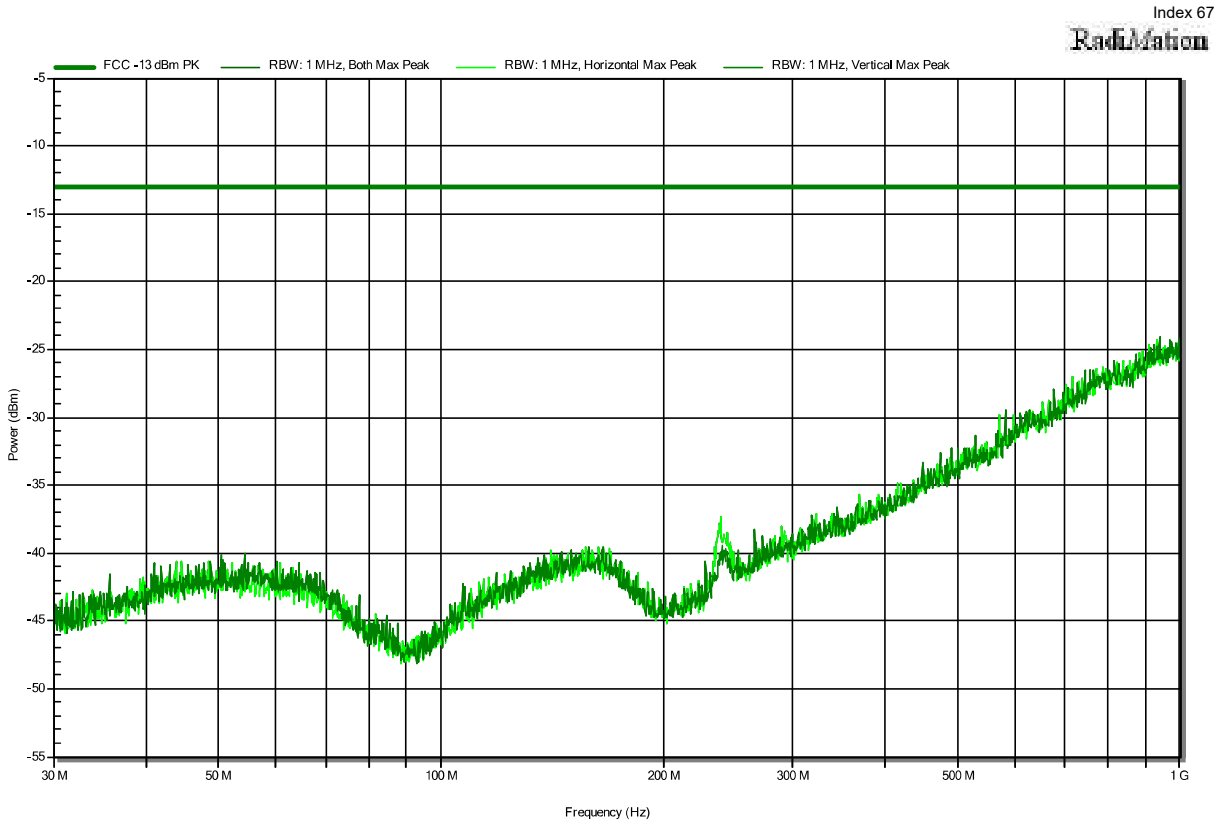
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48402
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	1; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ GSM850, Pmax, BLE1: 2442 MHz, BLE2: 2442 MHz
Test Date:	2024-05-06
Note:	Marker2 is BTLE and WLAN carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.673 GHz	-35.9 dBm	-13 dBm	-22.95 dB	Pass	Vertical
2.443 GHz	8.1 dBm	--	--	WLAN Carrier	Horizontal

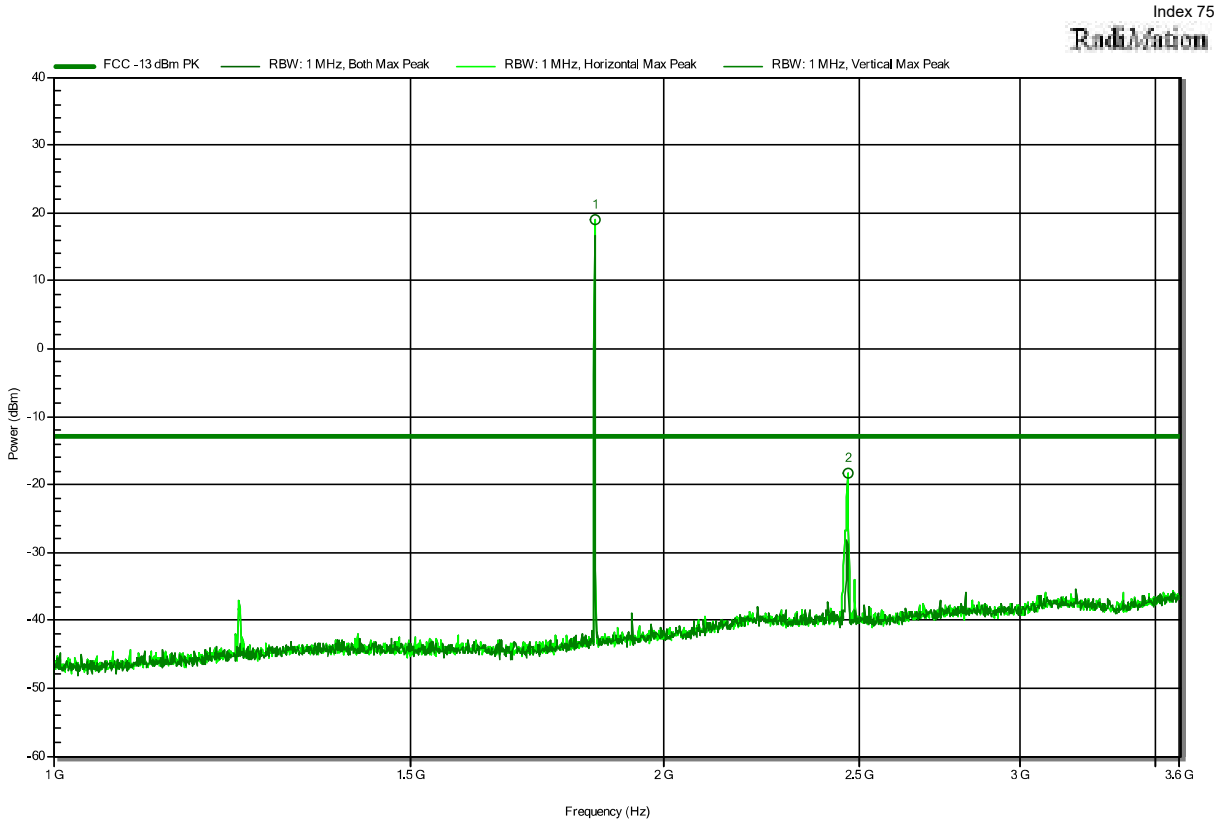
Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	2; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ GSM1900, Pmax
Test Date:	2024-04-03



Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

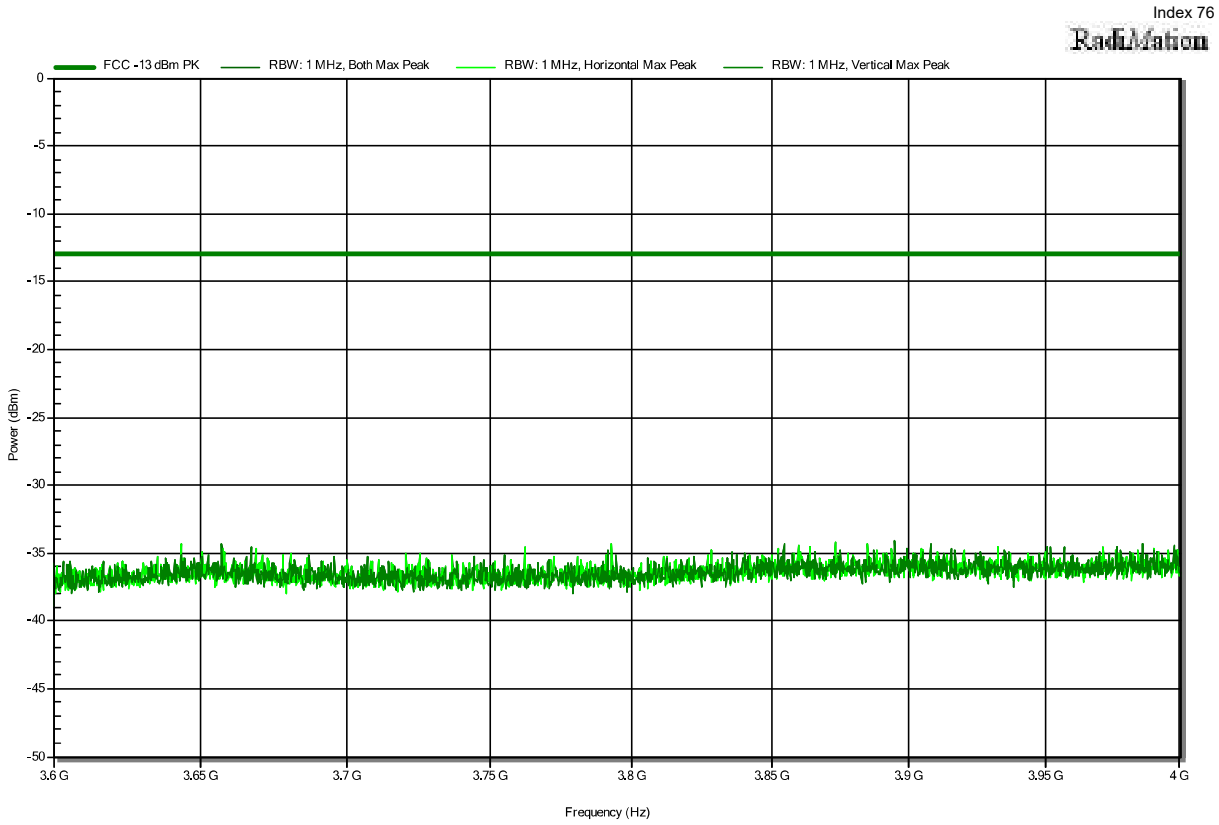
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	2; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ GSM1900, Pmax
Test Date:	2024-04-03
Note:	Marker 1 = Uplink carrier Marker 2 = WLAN



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.85 GHz	18.9 dBm	--	--	GSM Carrier	Horizontal
2.467 GHz	-18.4 dBm	--	--	WLAN Carrier	Horizontal

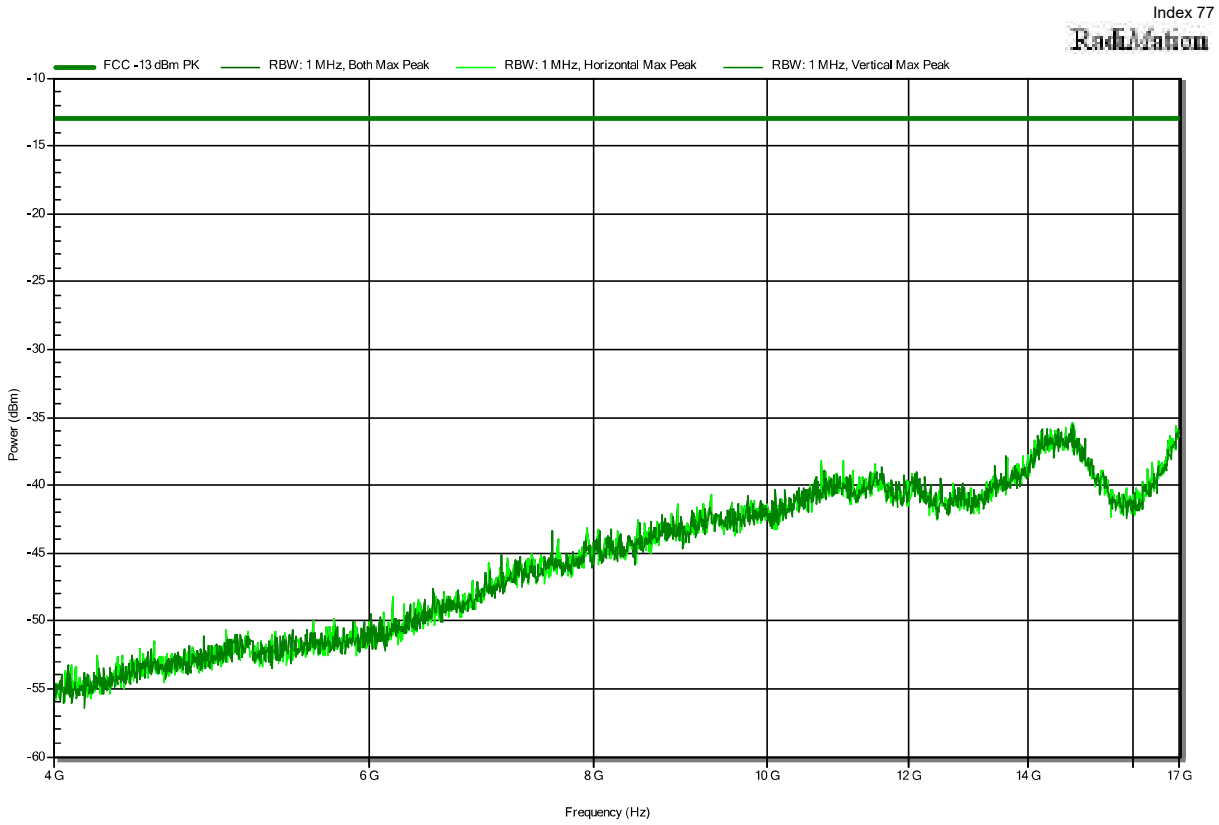
Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	2; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ GSM1900, Pmax
Test Date:	2024-04-03



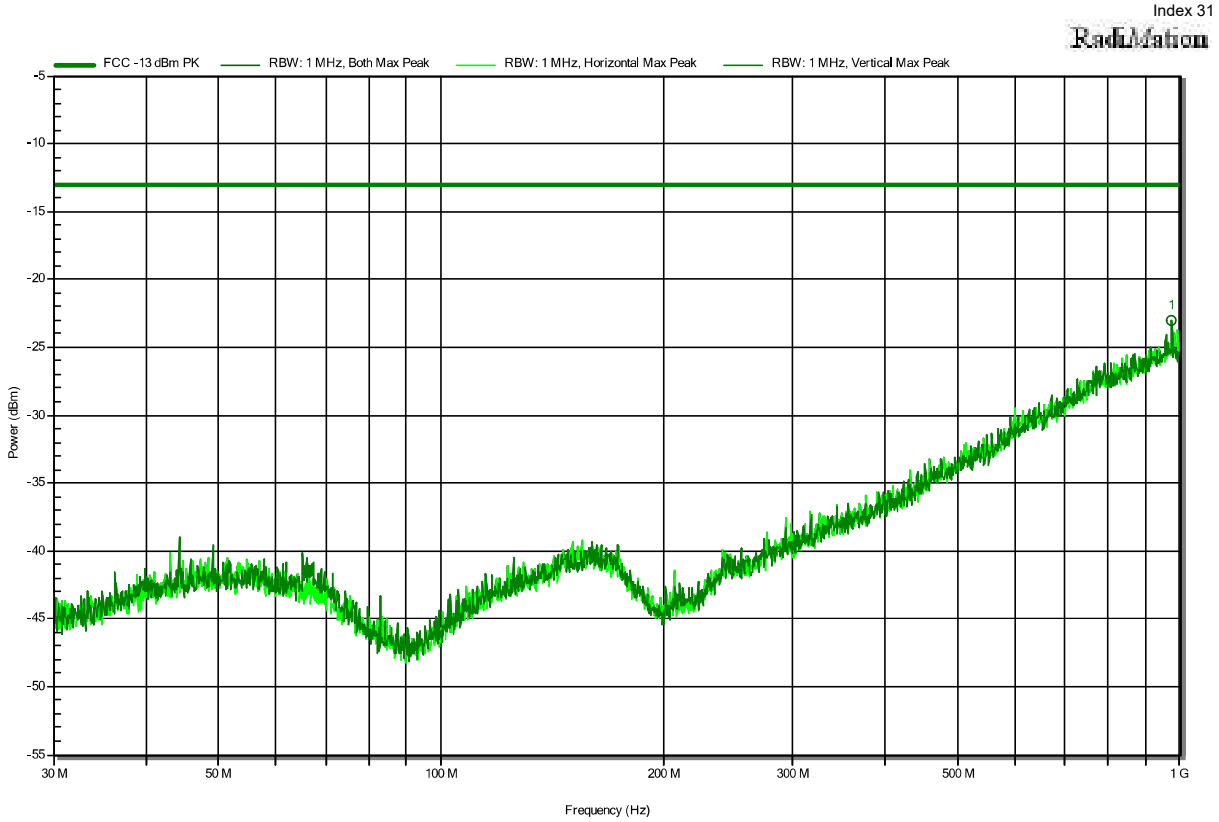
Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	2; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ GSM1900, Pmax
Test Date:	2024-04-03



Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

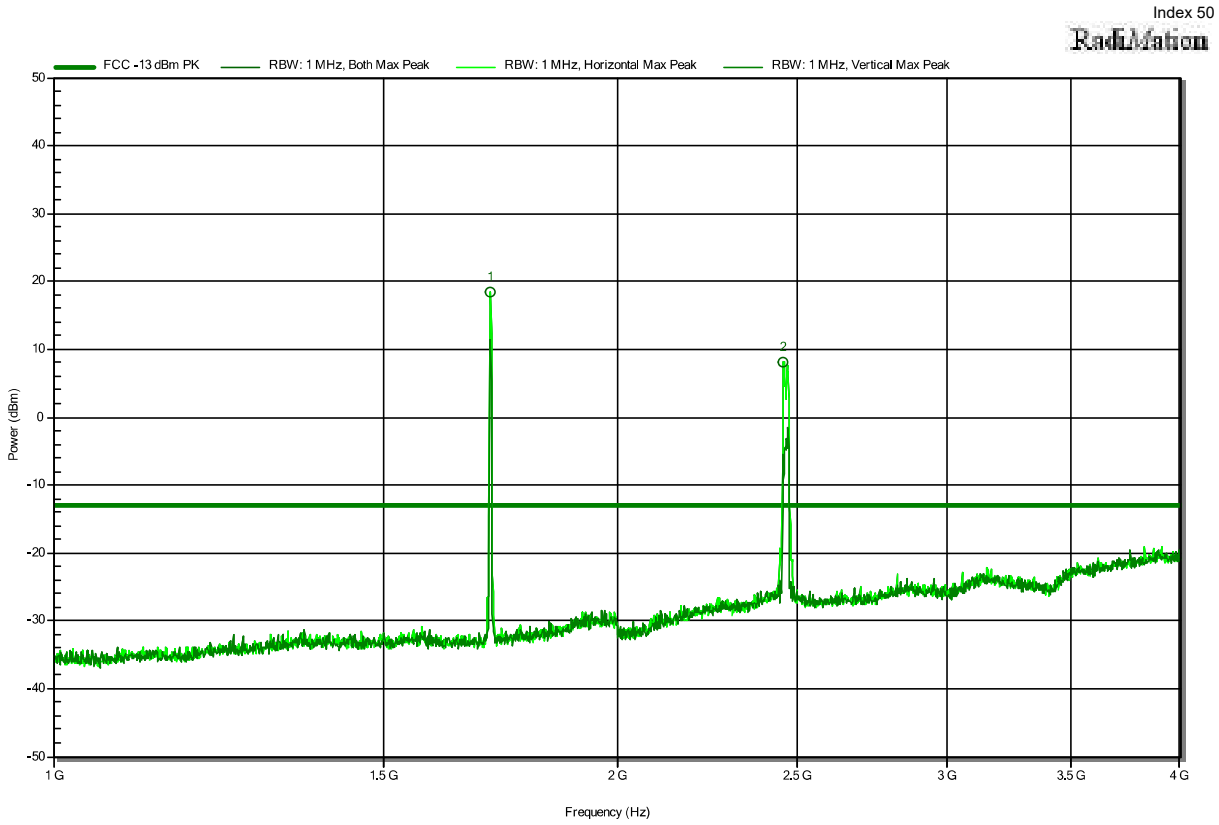
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	3; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD4, 3 MHz, CH 19965, RB1#0
Test Date:	2024-03-27



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
973.454 MHz	-23 dBm	-13 dBm	-10.04 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

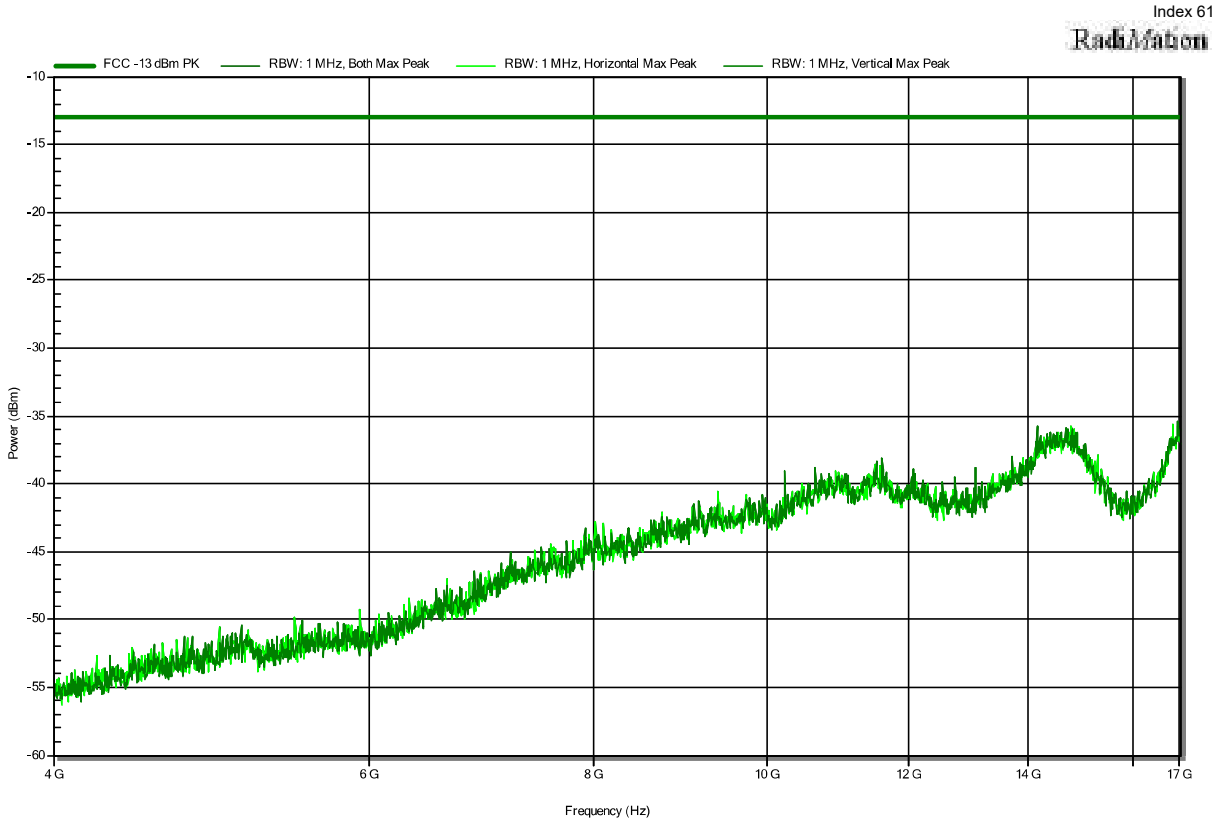
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	3; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD4, 3 MHz, CH 19965, RB1#0
Test Date:	2024-03-28
Note:	Marker 1 = LTE Uplink carrier Marker 2 = WLAN Carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.712 GHz	18.5 dBm	--	--	LTE Carrier	Horizontal
2.455 GHz	8.1 dBm	--	--	WLAN Carrier	Horizontal

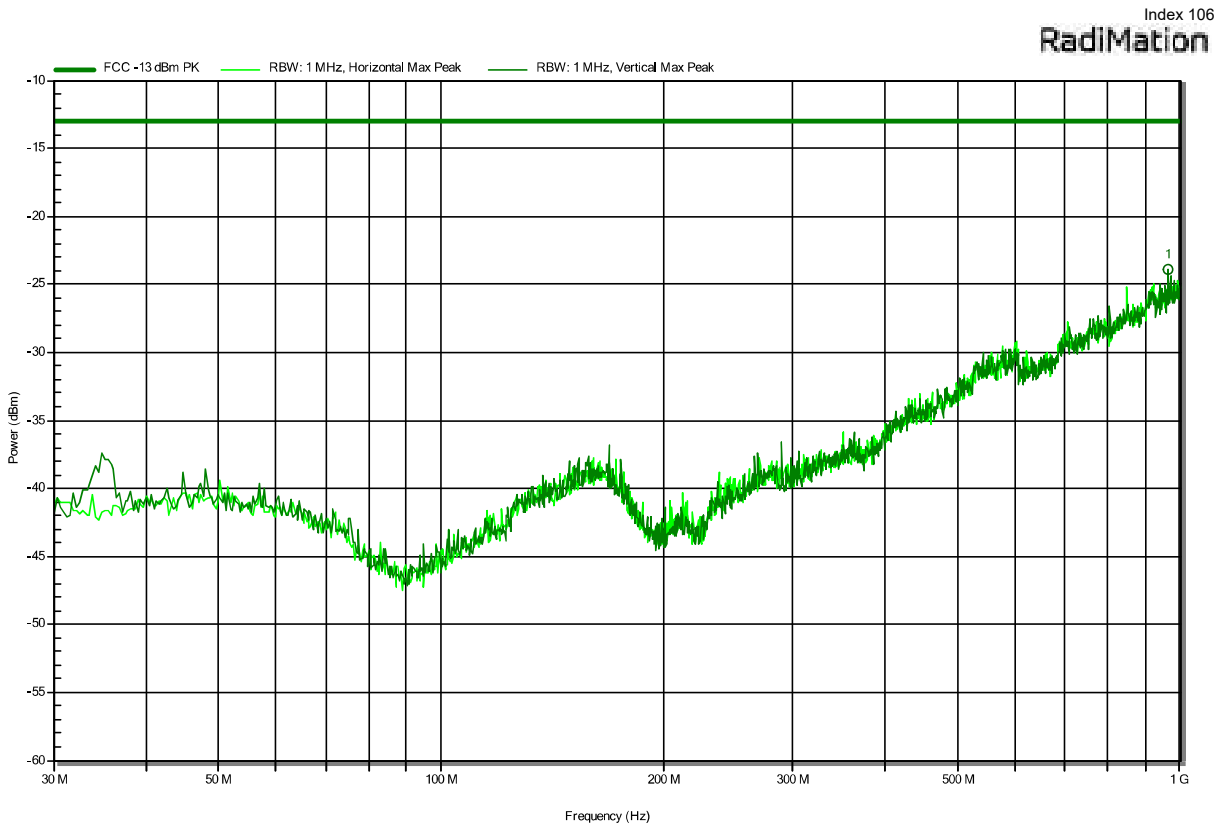
Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	3; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD4, 3 MHz, CH 19965, RB1#0
Test Date:	2024-03-28



Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

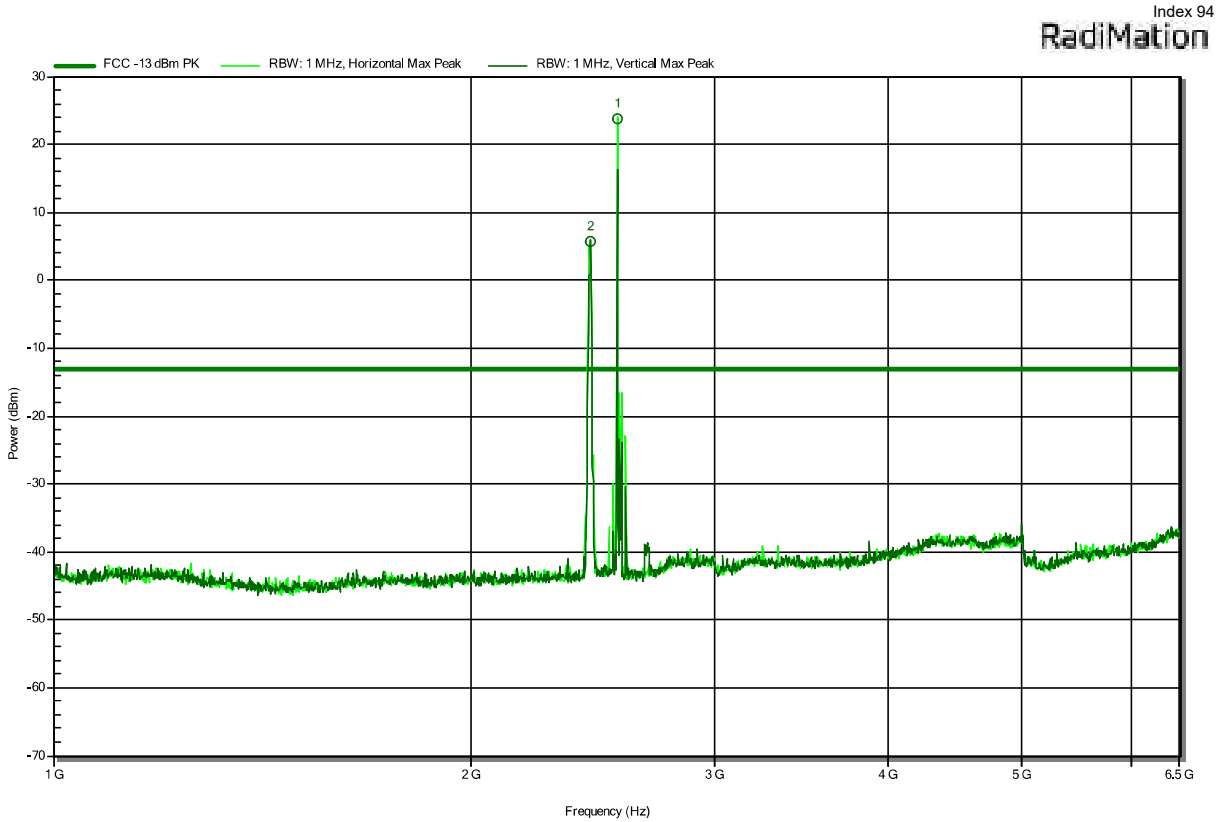
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Siddique
Measurement software:	RadiMation, version 2024.1.6
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	Tx; 4; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD7, 20 MHz, CH 21350, RB1#0
Test Date:	2024-12-09



Peak Number	Frequency (MHz)	Peak (dBm)	Peak (dBm)	Limit	Peak Difference (dB)	Peak Status	Polarization
1	965.08	-23.9	-13		-10.88	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

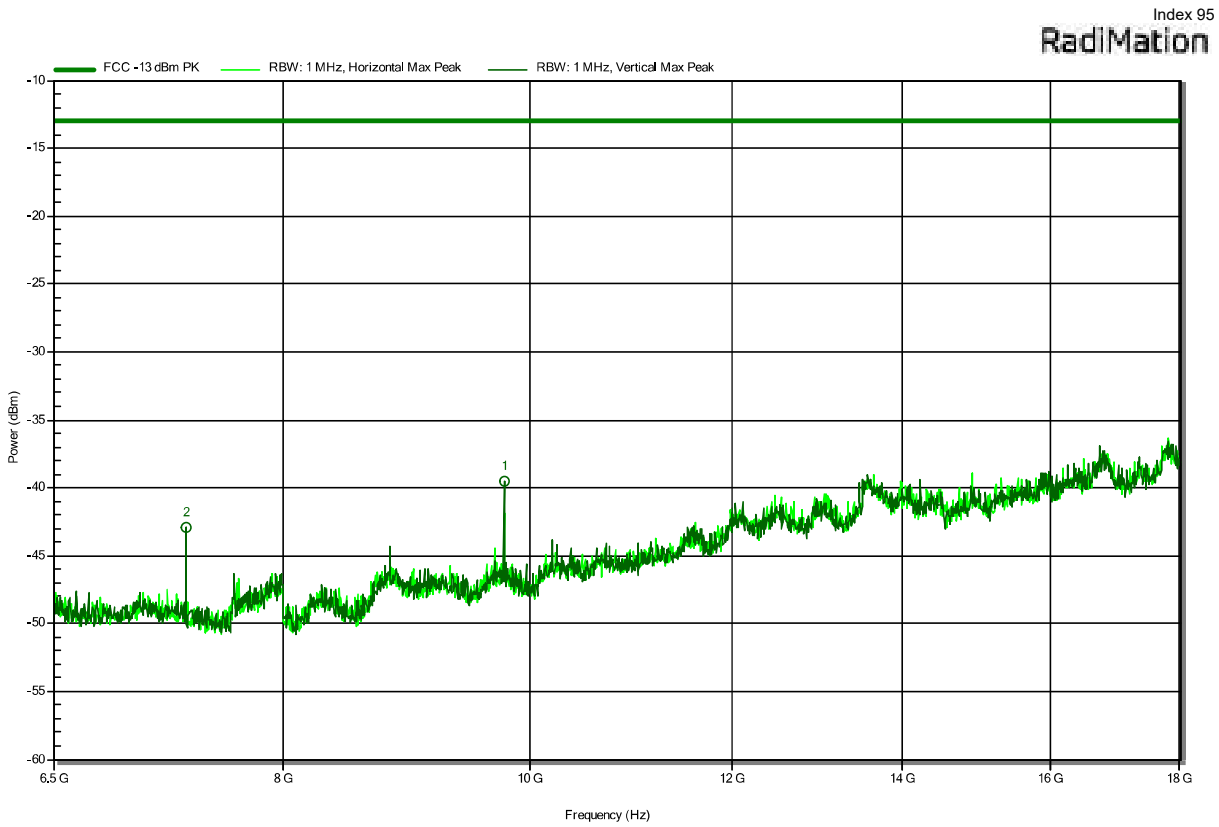
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Siddique
Measurement software:	RadiMation, version 2024.1.3
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; 4; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD7, 20 MHz, CH 21350, RB1#0
Test Date:	2024-12-09
Note:	Marker 1 = LTE Uplink carrier Marker 2 = WLAN carrier



Peak Number	Frequency (MHz)	Peak (dBm)	Peak (dBm)	Limit	Peak Difference (dB)	Peak Status	Polarization
1	2551	23.7	--		--	LTE Carrier	Horizontal
2	2441.917	5.7	--		--	WLAN	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

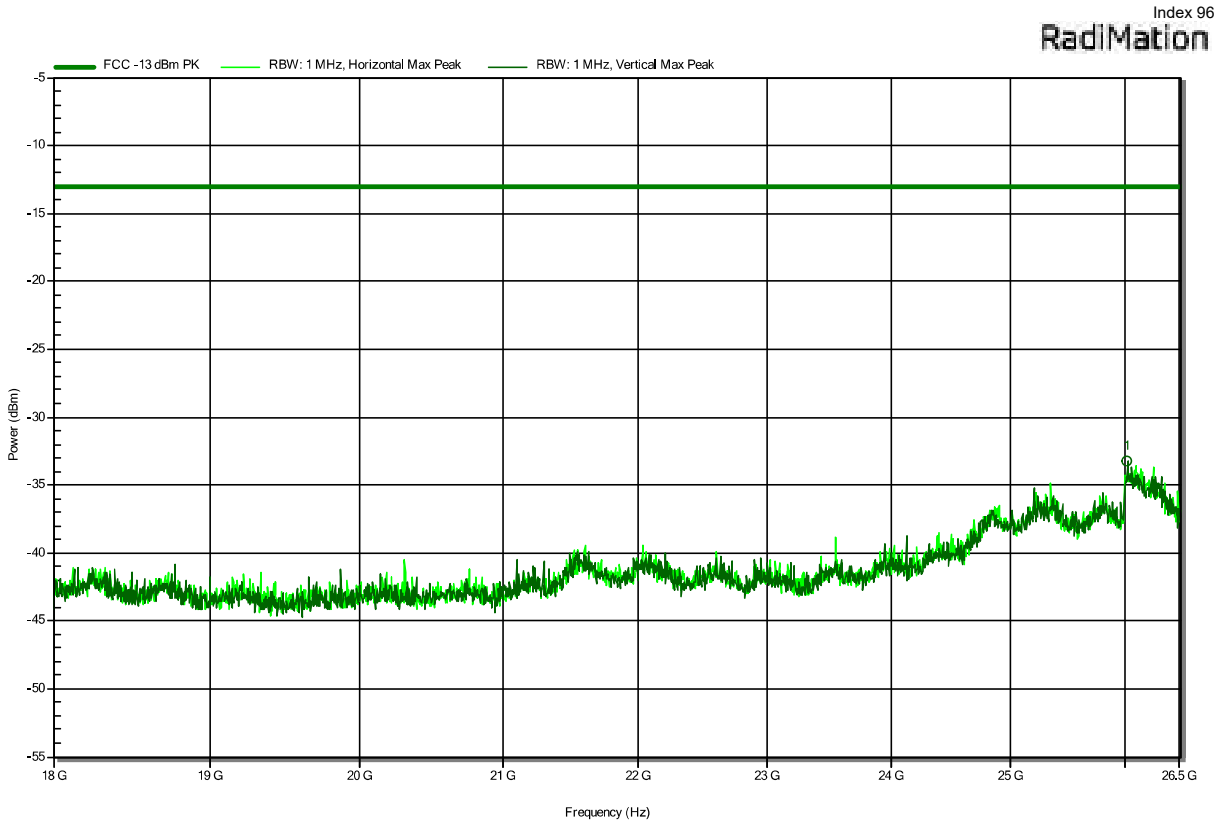
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Siddique
Measurement software:	RadiMation, version 2024.1.3
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	Tx; 4; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD7, 20 MHz, CH 21350, RB1#0
Test Date:	2024-12-09



Peak Number	Frequency (MHz)	Peak (dBm)	Peak (dBm)	Limit	Peak Difference (dB)	Peak Status	Polarization
1	9766.767	-39.5	-13		-26.51	Pass	Vertical
2	7326.467	-42.9	-13		-29.89	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

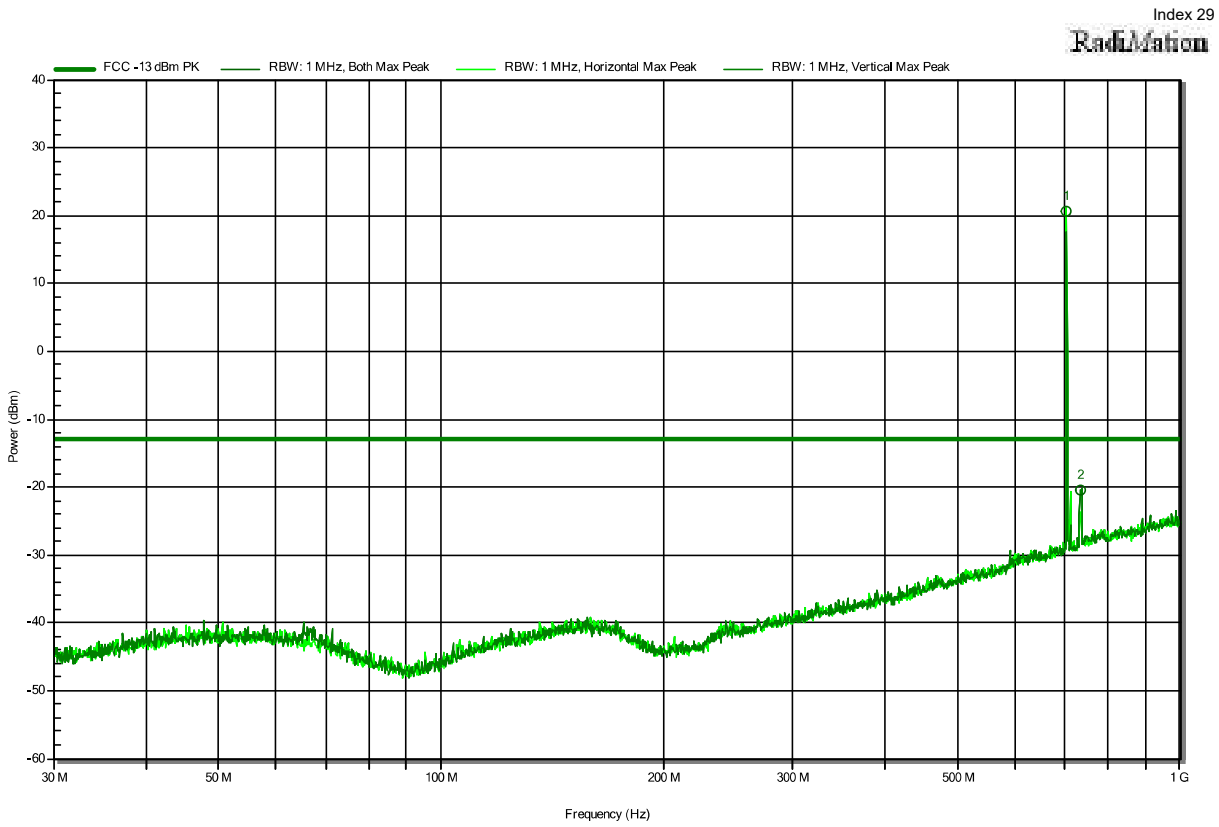
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Siddique
Measurement software:	RadiMation, version 2024.1.3
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Amplifier Research AT4560
Measurement distance:	3 m
Mode:	Tx; 4; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD7, 20 MHz, CH 21350, RB1#0
Test Date:	2024-12-09
Note:	EUT horizontal



Peak Number	Frequency (MHz)	Peak (dBm)	Peak (dBm)	Limit	Peak Difference (dB)	Peak Status	Polarization
1	26025.7	-33.2	-13		-20.23	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

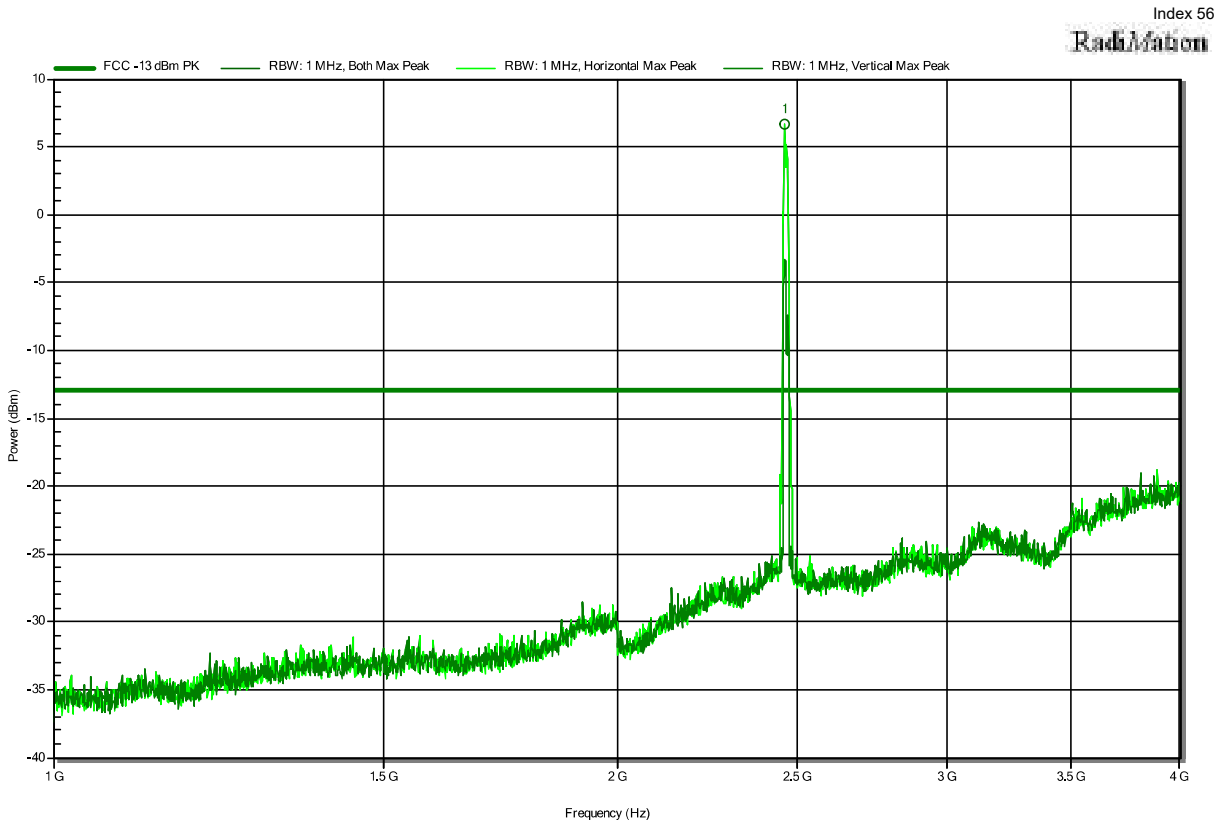
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	5; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD12, 10 MHz, CH 23060, RB1#24
Test Date:	2024-03-27
Note:	Marker 1 = LTE Uplink Carrier Marker 2 = Downlink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
701.725 MHz	20.7 dBm	--	--	LTE Uplink	Horizontal
734.22 MHz	-20.6 dBm	-13 dBm	-7.55 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

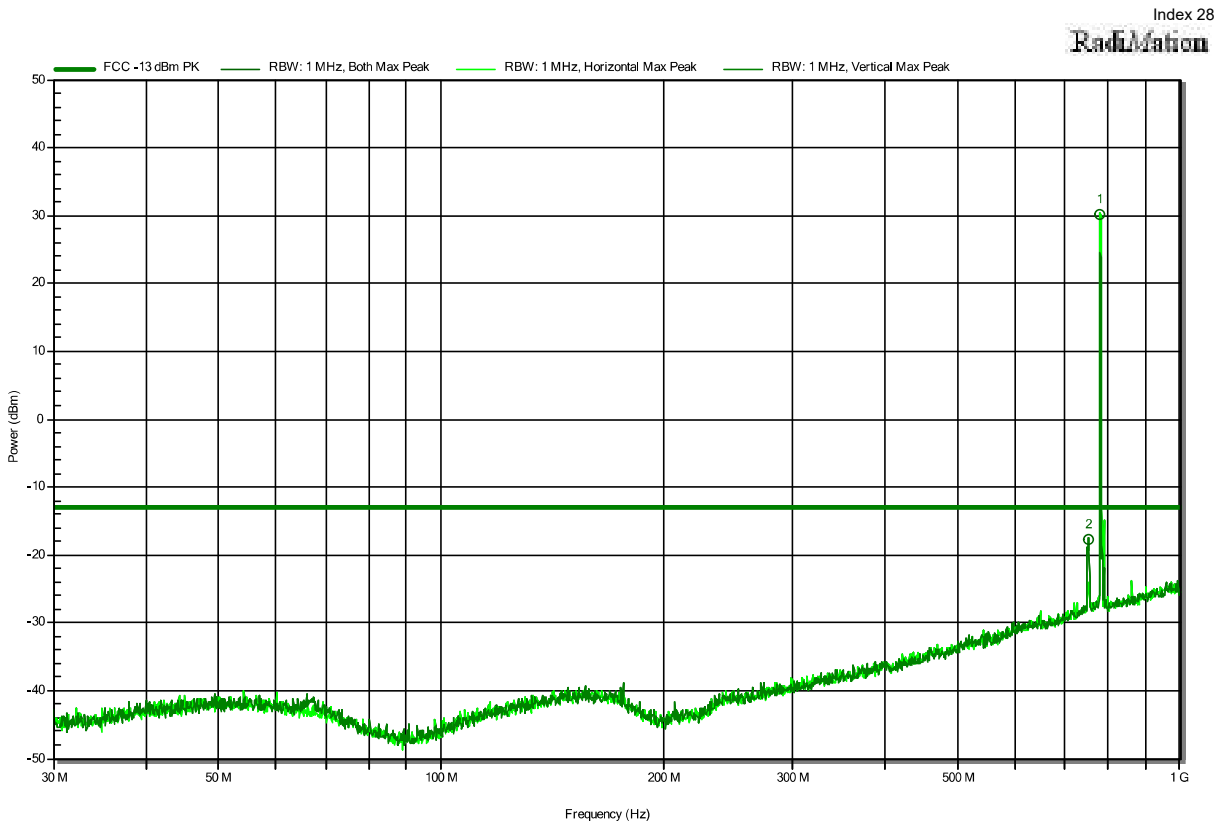
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	5; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD12, 10 MHz, CH 23060, RB1#24
Test Date:	2024-03-28
Note:	Marker 1 = WLAN Carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.457 GHz	6.6 dBm	--	--	WLAN Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

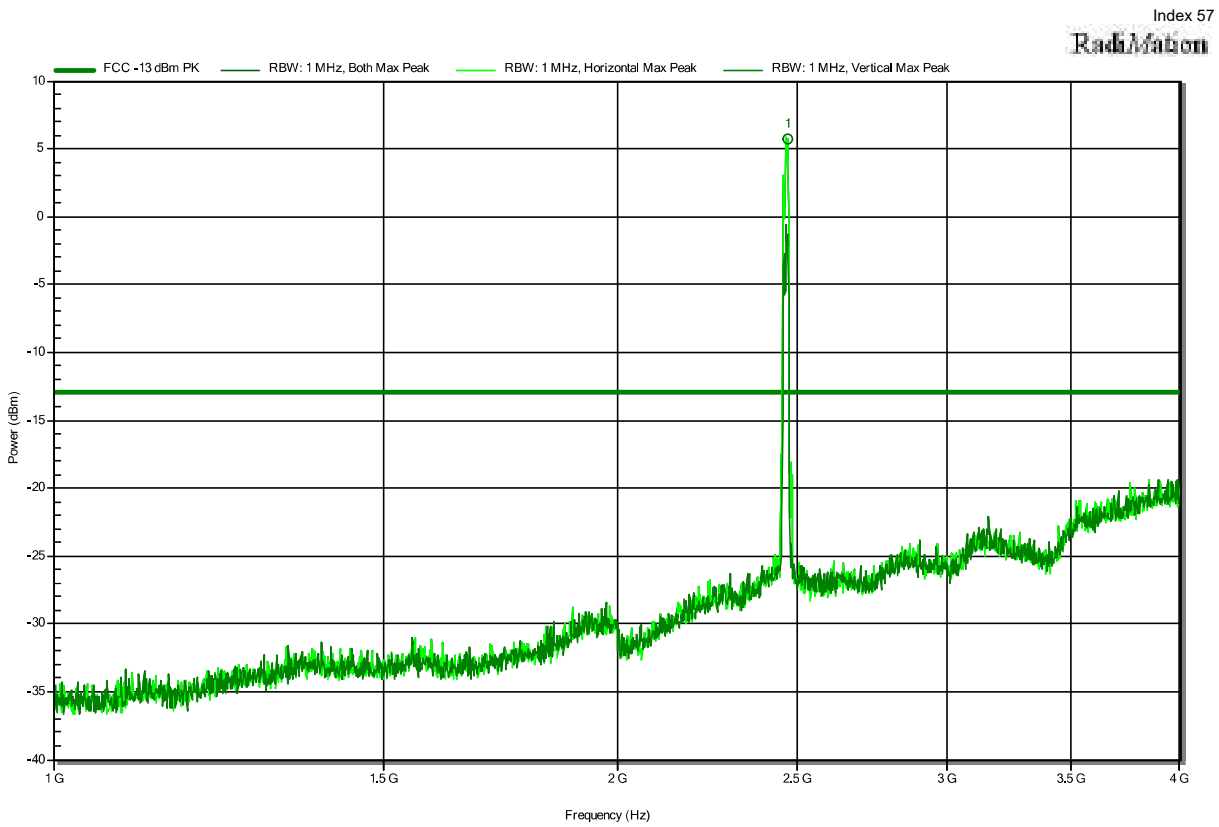
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	6; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD13, 5 MHz, CH 23230, RB1#24
Test Date:	2024-03-27
Note:	Marker 1 = LTE Uplink Carrier Marker 2 = Downlink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
750.613 MHz	-17.7 dBm	-13 dBm	-4.66 dB	Pass	Vertical
779.842 MHz	30.2 dBm	--	--	LTE Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

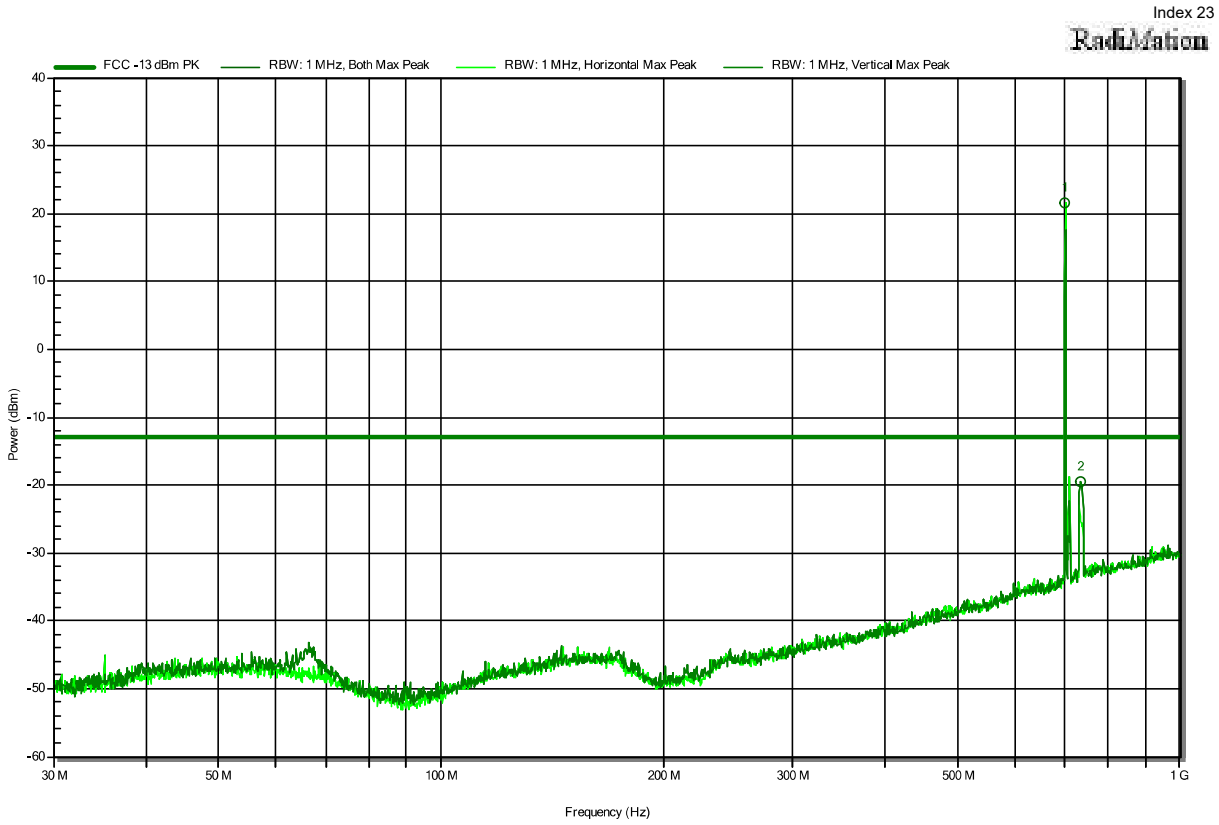
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	6; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD13, 5 MHz, CH 23230, RB1#24
Test Date:	2024-03-28
Note:	Marker 1 = WLAN



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.467 GHz	5.7 dBm	--	--	WLAN Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

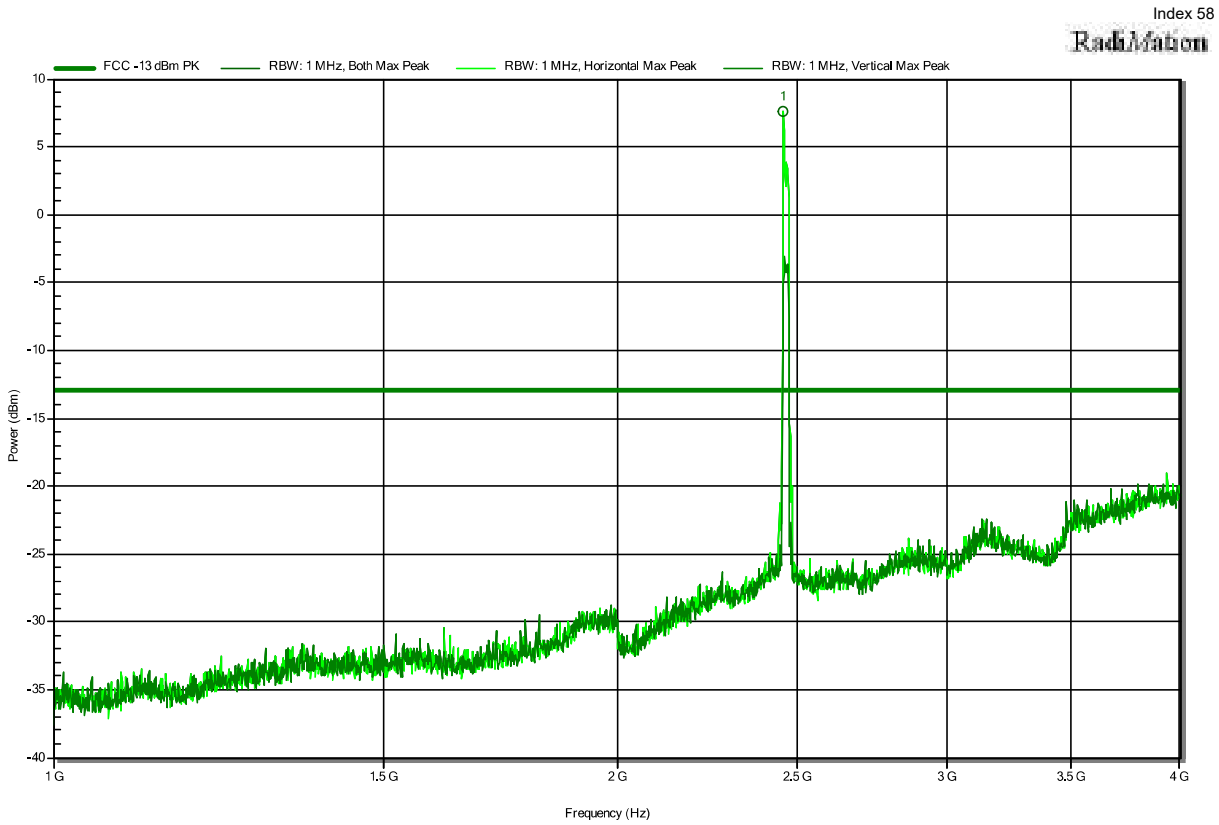
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	7; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD26, 10 MHz, CH 26740, RB1#24
Test Date:	2024-03-27
Note:	Marker 1 = LTE Uplink carrier Marker 2 = Downlink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
699.559 MHz	21.6 dBm	--	--	LTE Carrier	Horizontal
733.347 MHz	-19.5 dBm	-13 dBm	-6.53 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

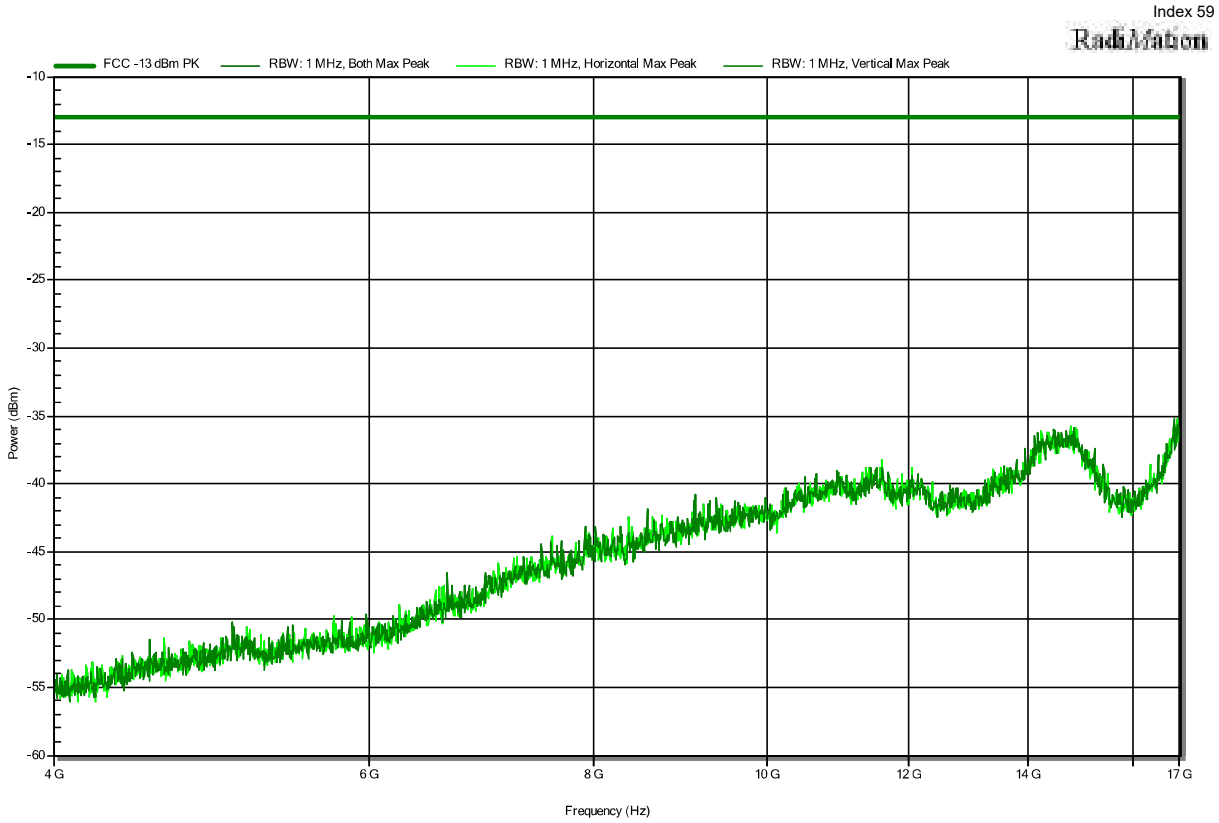
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	7; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD26, 10 MHz, CH 26740, RB1#24
Test Date:	2024-03-28
Note:	Marker 1 = WLAN



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.456 GHz	7.7 dBm	--	--	WLAN Carrier	Horizontal

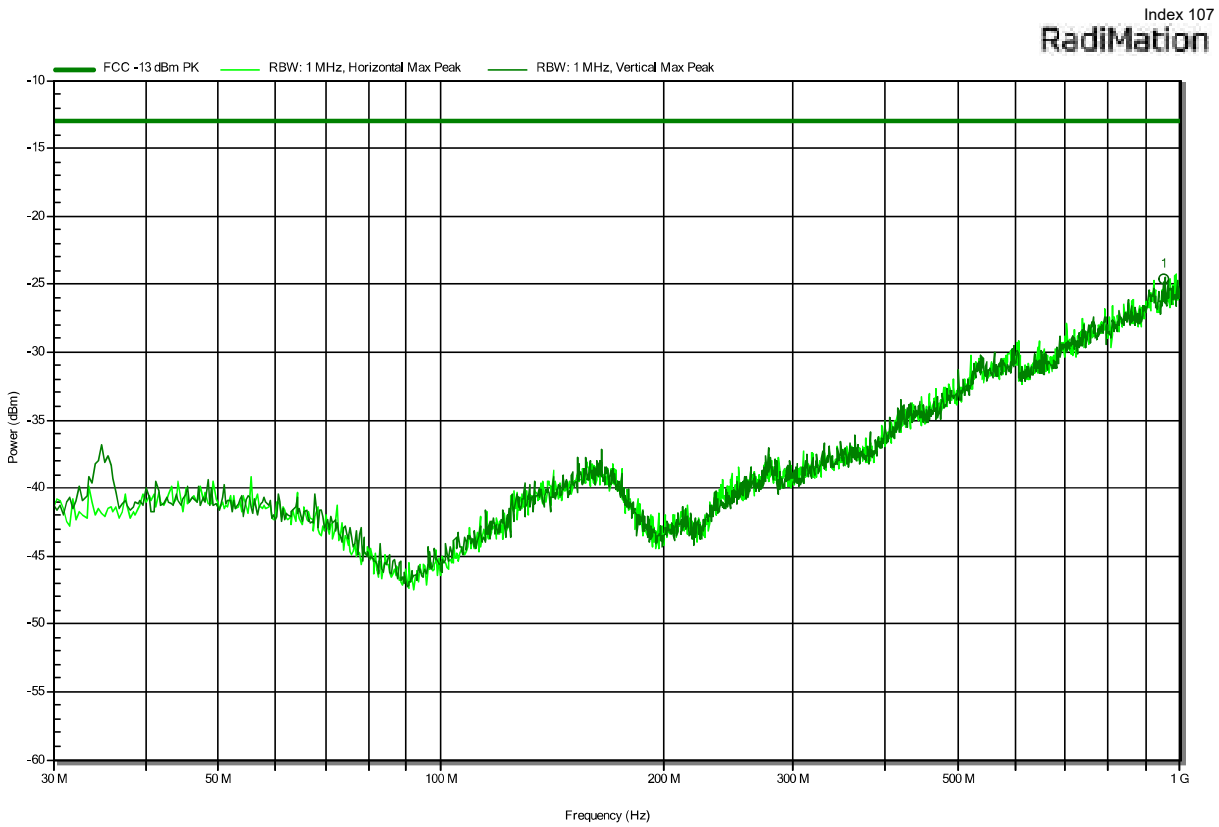
Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	7; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE FDD26, 10 MHz, CH 26740, RB1#24
Test Date:	2024-03-28



Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

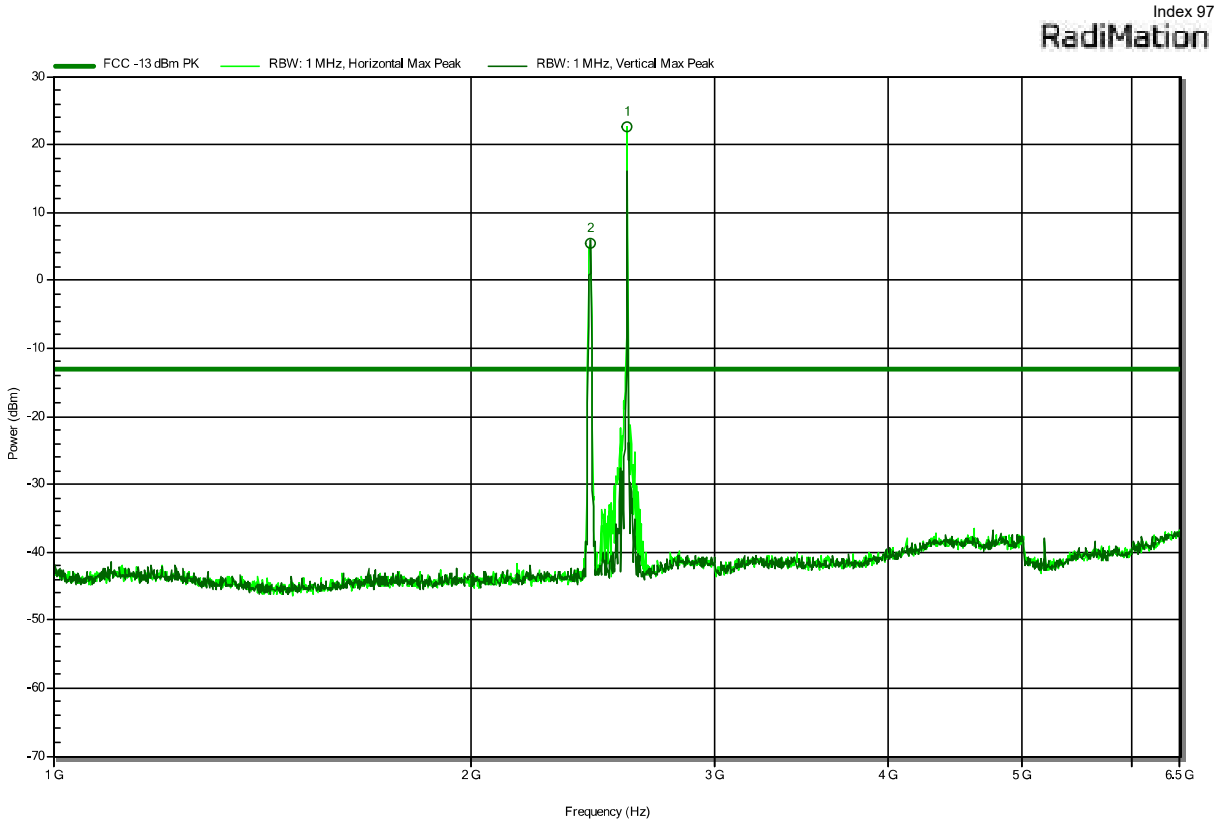
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Siddique
Measurement software:	RadiMation, version 2024.1.6
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	Tx; 8; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE TDD38/41, 15 MHz, CH 40620, RB1#37
Test Date:	2024-12-09



Peak Number	Frequency (MHz)	Peak (dBm)	Peak (dBm)	Limit	Peak Difference (dB)	Peak Status	Polarization
1	950.53	-24.6	-13		-11.59	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

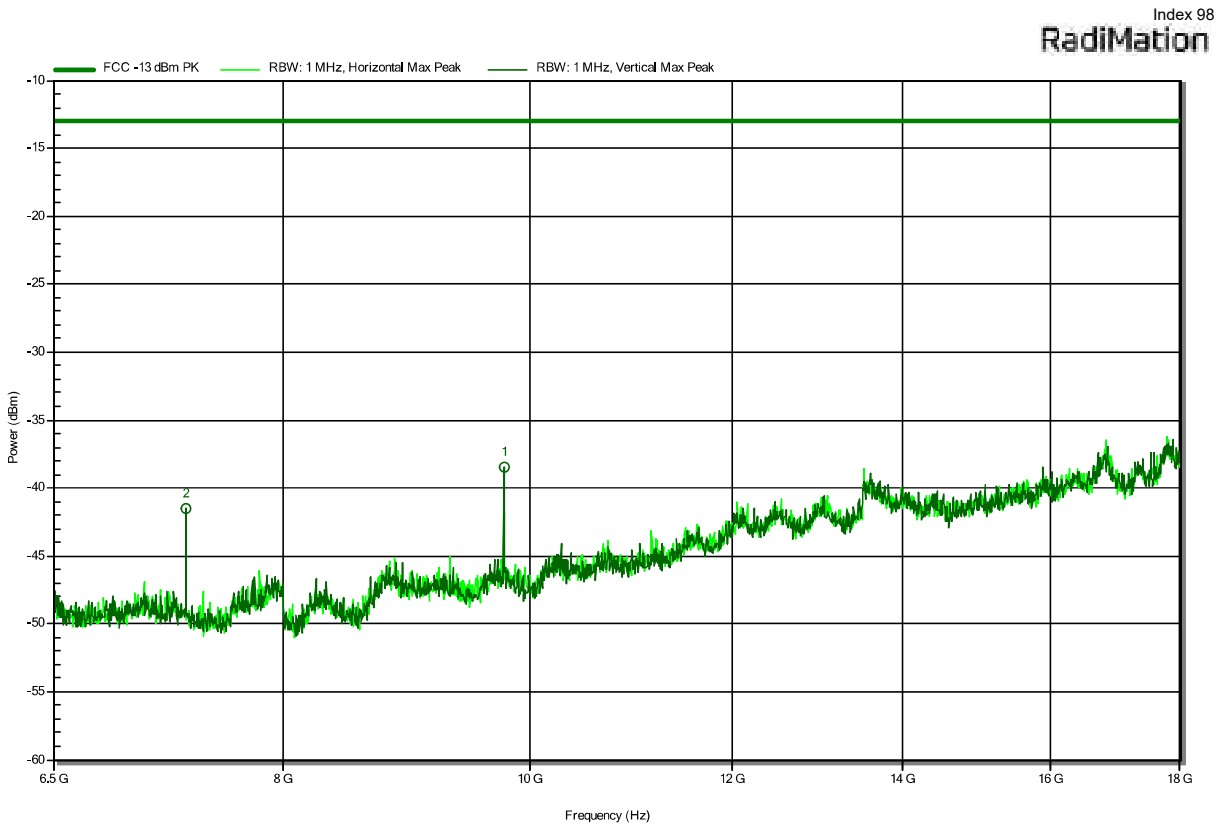
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Siddique
Measurement software:	RadiMation, version 2024.1.3
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; 8; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE TDD38/41, 15 MHz, CH 40620, RB1#37
Test Date:	2024-12-09
Note:	Marker 1 = LTE Uplink carrier Marker 2 = WLAN Carrie



Peak Number	Frequency (MHz)	Peak (dBm)	Peak (dBm)	Limit	Peak Difference (dB)	Peak Status	Polarization
1	2593.167	22.7	-13		35.67	Fail	Horizontal
2	2441.917	5.4	-13		18.43	Fail	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

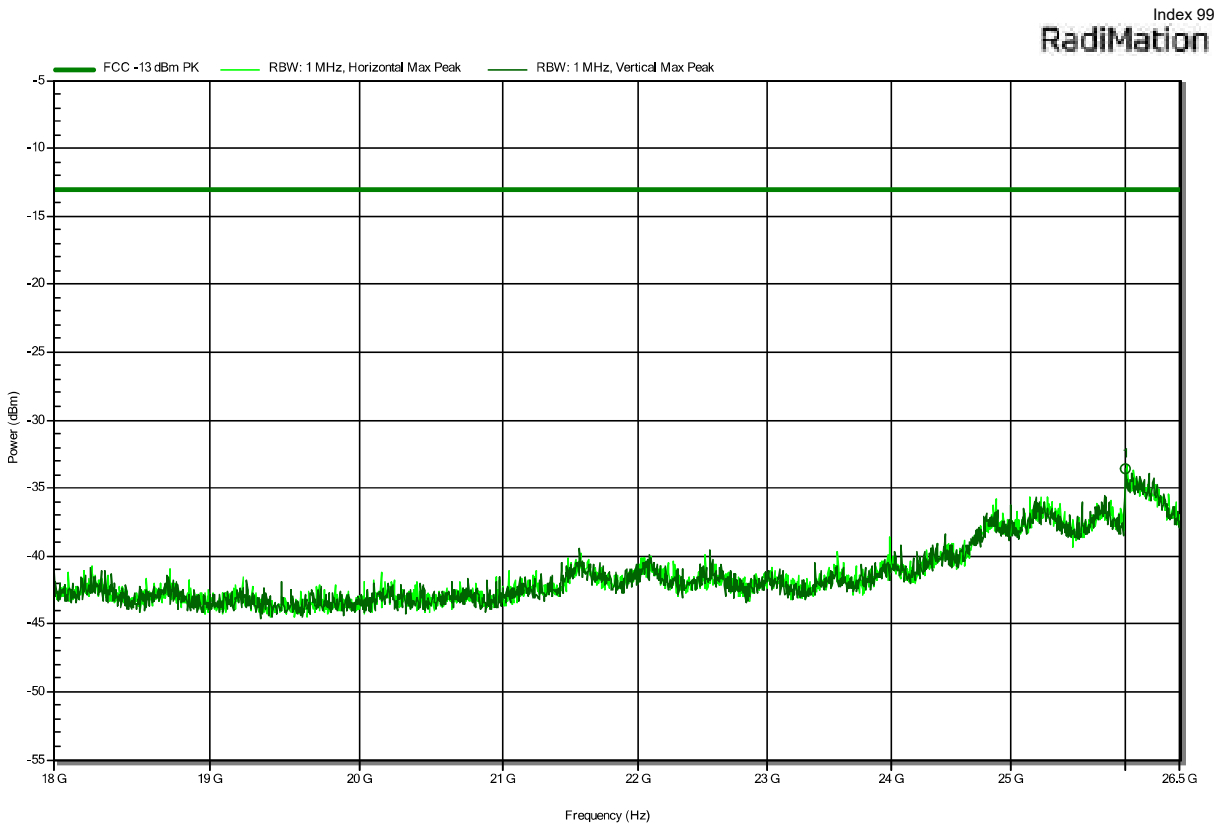
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Siddique
Measurement software:	RadiMation, version 2024.1.3
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	Tx; 8; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE TDD38/41, 15 MHz, CH 40620, RB1#37
Test Date:	2024-12-09



Peak Number	Frequency (MHz)	Peak (dBm)	Peak (dBm)	Limit	Peak Difference (dB)	Peak Status	Polarization
1	9767.15	-38.5	-13		-25.45	Pass	Vertical
2	7326.85	-41.5	-13		-28.53	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	47844
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Siddique
Measurement software:	RadiMation, version 2024.1.3
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Amplifier Research AT4560
Measurement distance:	3 m
Mode:	Tx; 8; IEEE 802.11 n, HT20, 2462 MHz, MCS 1, P=16dBm_ LTE TDD38/41, 15 MHz, CH 40620, RB1#37
Test Date:	2024-12-09

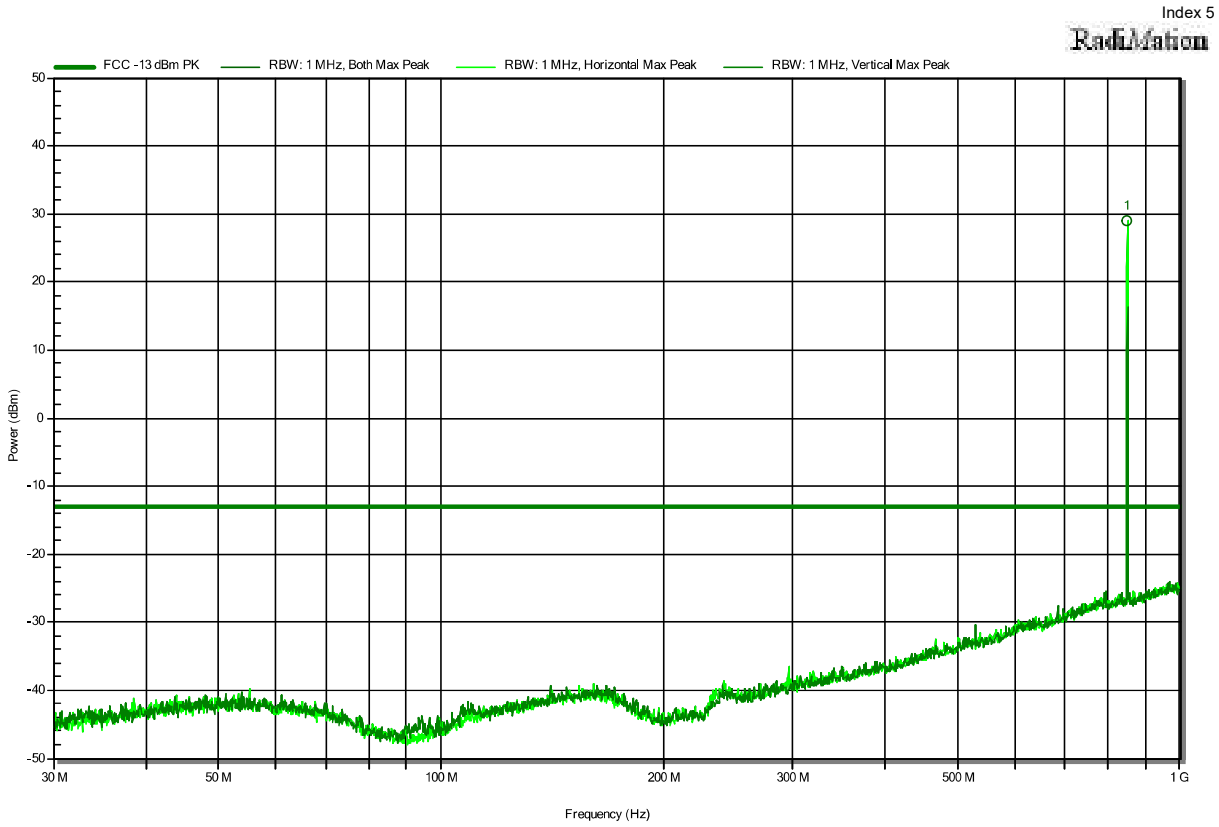


Peak Number	Frequency (MHz)	Peak (dBm)	Peak (dBm)	Limit	Peak Difference (dB)	Peak Status	Polarization
1	26006.15	-33.5	-13		-20.53	Pass	Vertical

ANNEX B Transmitter radiated emissions (EUT 2)

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

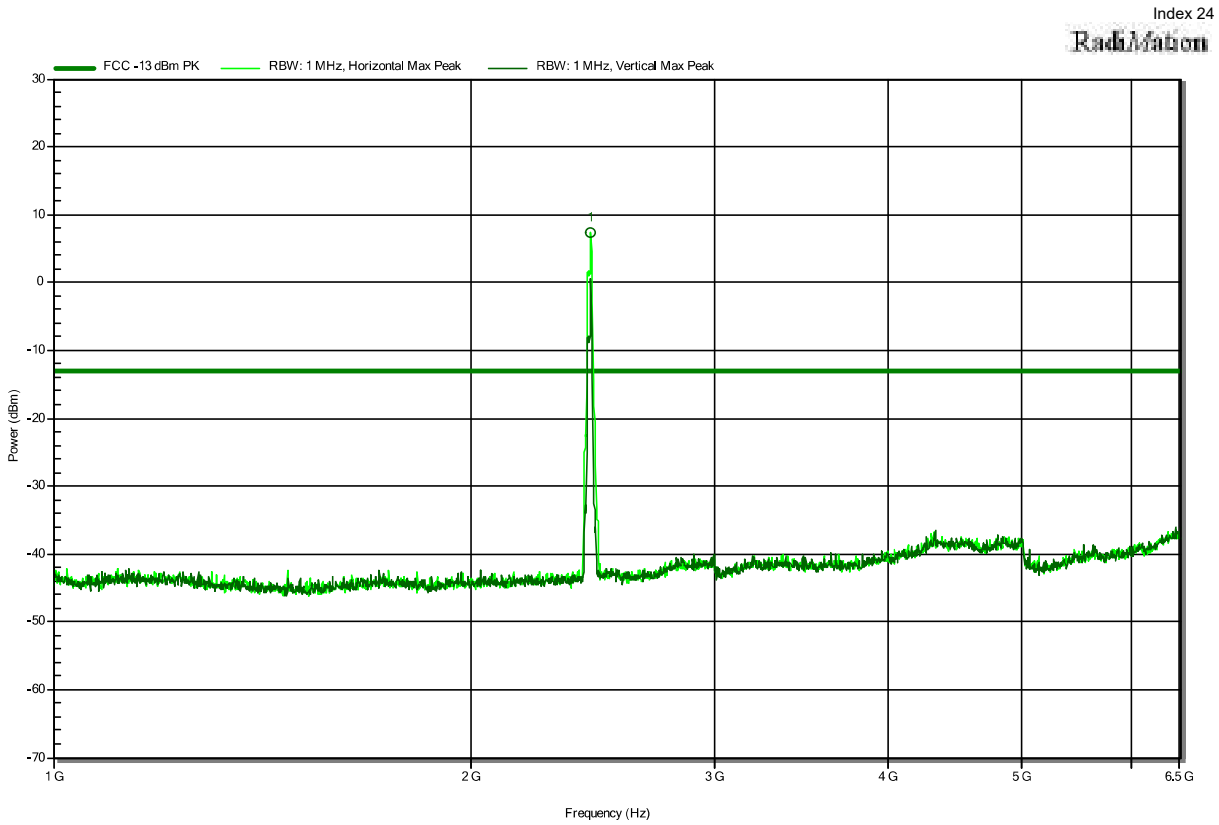
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	9; WLAN-DT (IEEE 802.11n), NB-IoT FDD5_PMAX
Test Date:	2024-04-17
Note:	Marker 1 is NB-IoT Uplink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
848.874 MHz	29.1 dBm	--	--	NB-IoT	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

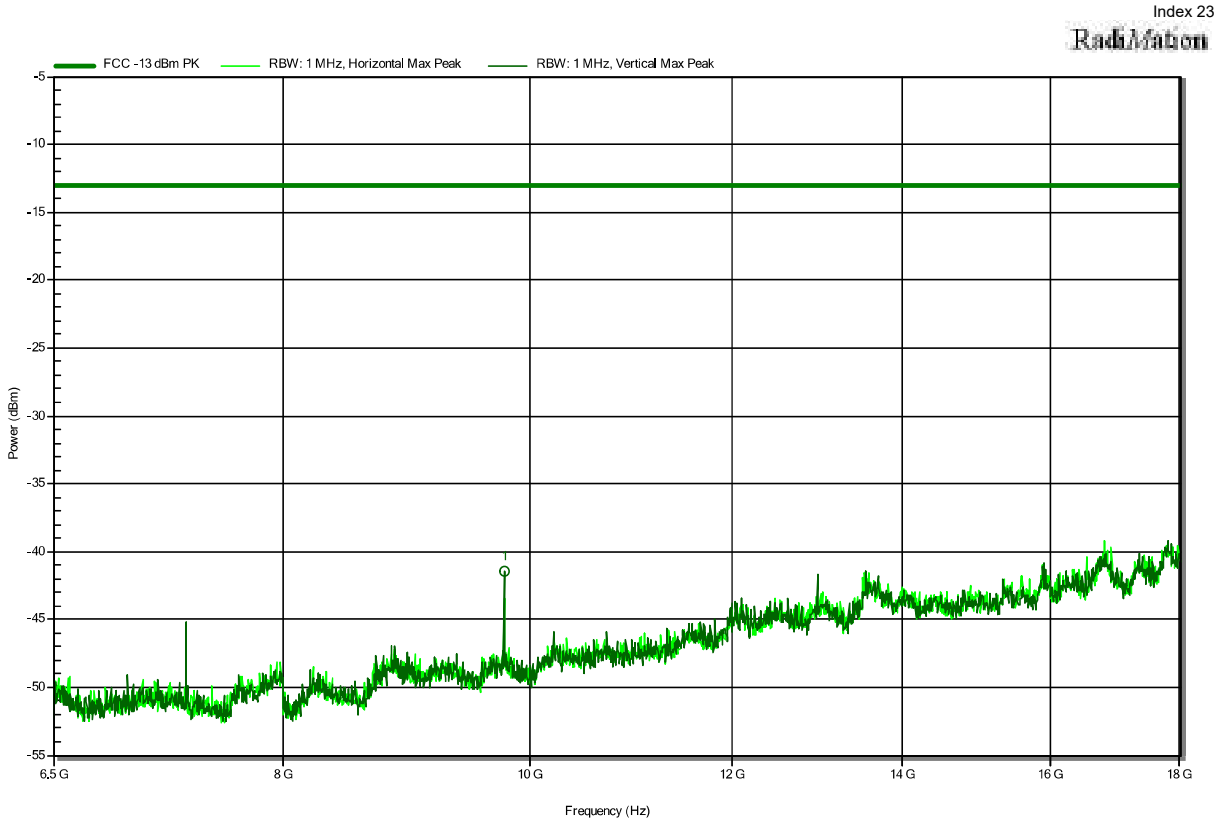
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	9; WLAN-DT (IEEE 802.11n), NB-IoT FDD5_ PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-07
Note:	Marker 1 = WLAN & BLE Carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.442 GHz	7.2 dBm	--	--	WLAN/BLE Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

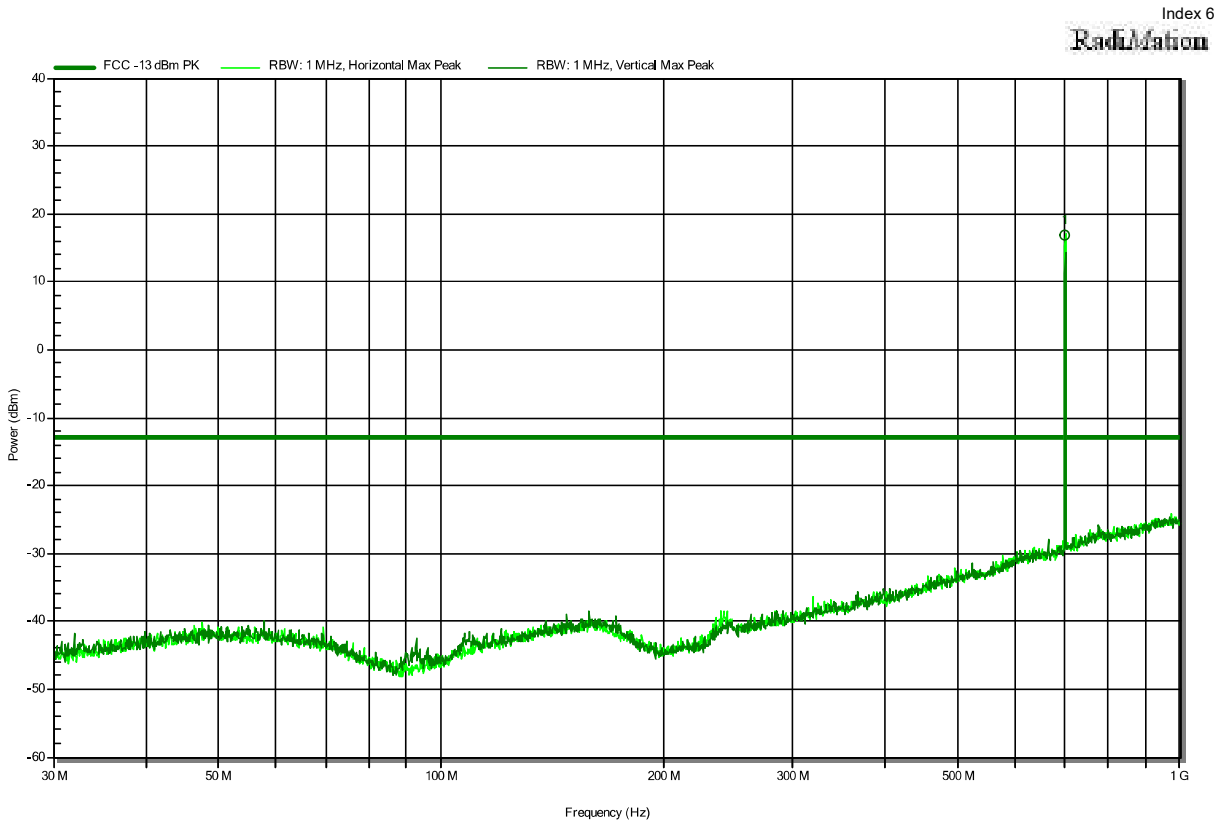
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	9; WLAN-DT (IEEE 802.11n), NB-IoT FDD5_ PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-07



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
9.769 GHz	-41.4 dBm	-13 dBm	-28.45 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

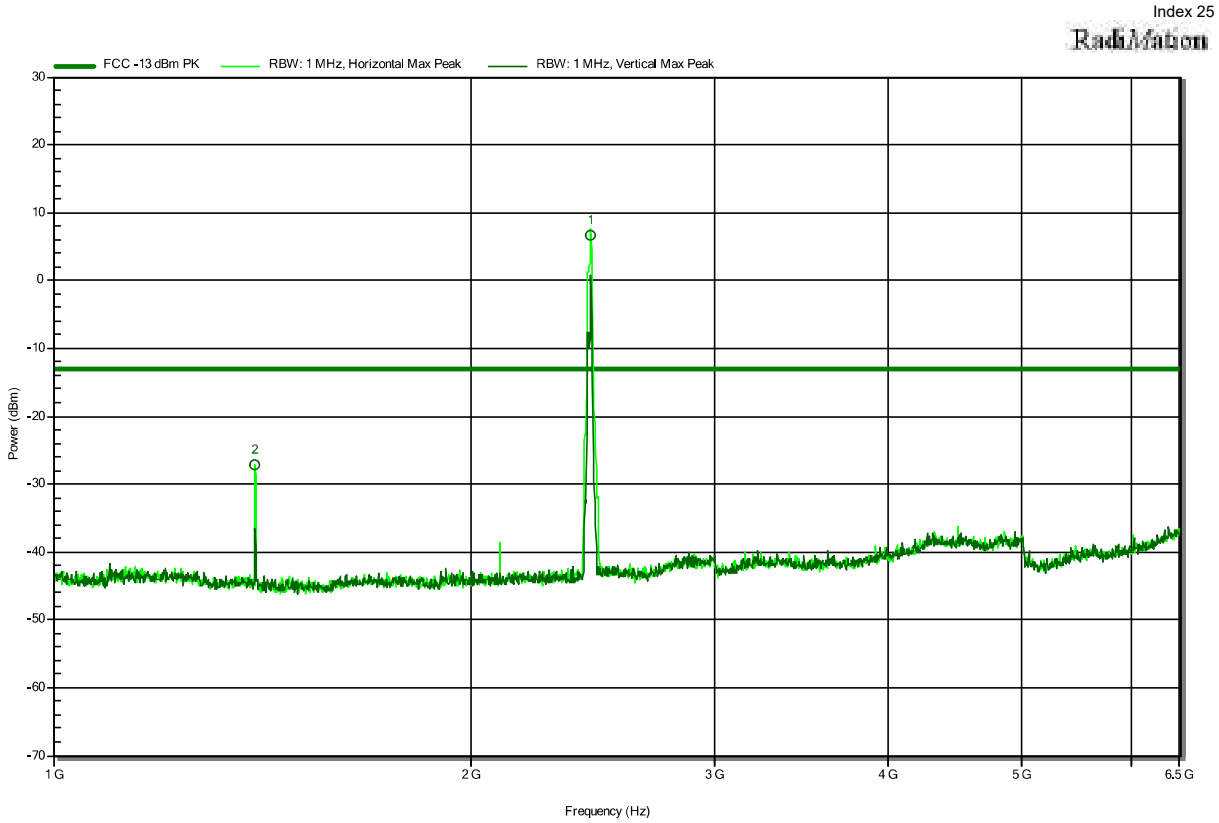
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	10; WLAN-DT (IEEE 802.11n), NB-IoT FDD12 / PMAX
Test Date:	2024-04-17
Note:	Marker 1 is NB-IoT Uplink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
699.171 MHz	16.8 dBm	--	--	NB-IoT Uplink	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

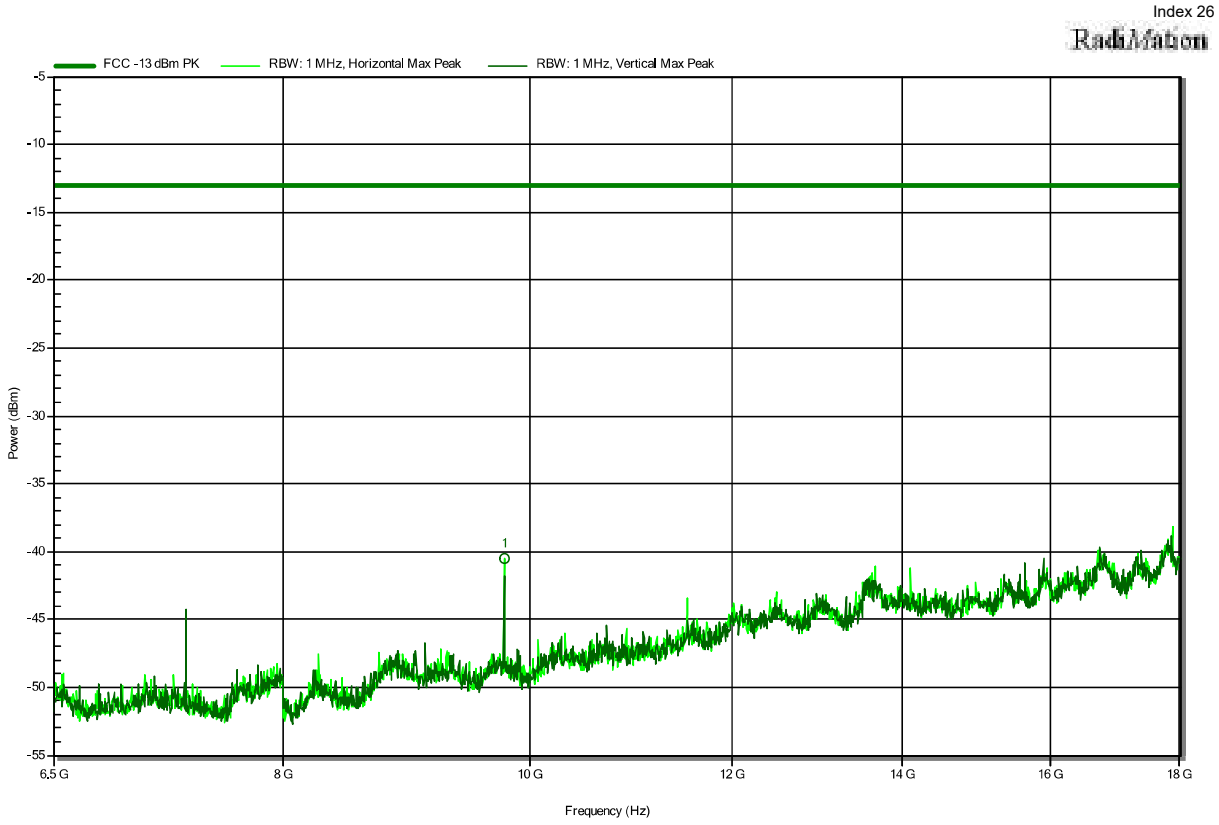
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	10; WLAN-DT (IEEE 802.11n), NB-IoT FDD12_ PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-07
Note:	Marker 1 = WLAN & BLE Carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.399 GHz	-27.3 dBm	-13 dBm	-14.27 dB	Pass	Horizontal
2.442 GHz	6.6 dBm	--	--	WLAN/BLE Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

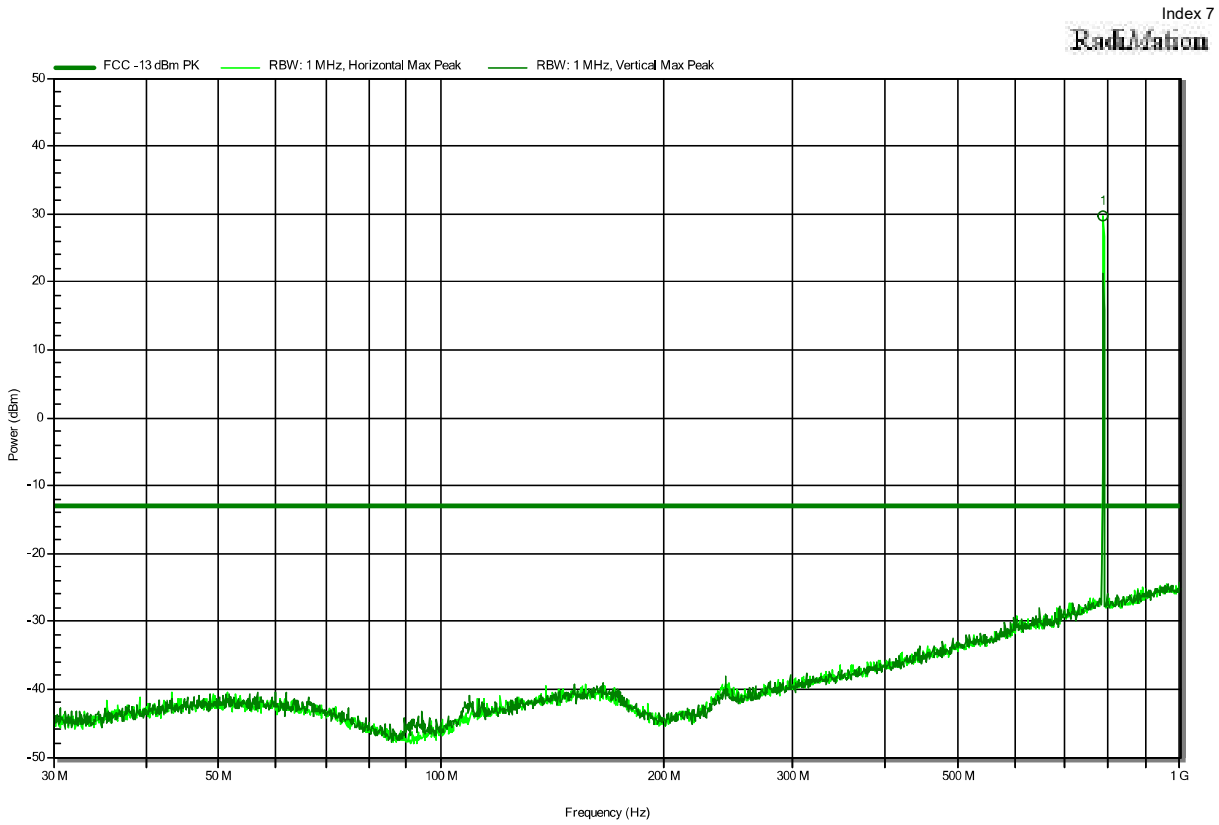
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	10; WLAN-DT (IEEE 802.11n), NB-IoT FDD12_ PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-07



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
9.769 GHz	-40.5 dBm	-13 dBm	-27.49 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

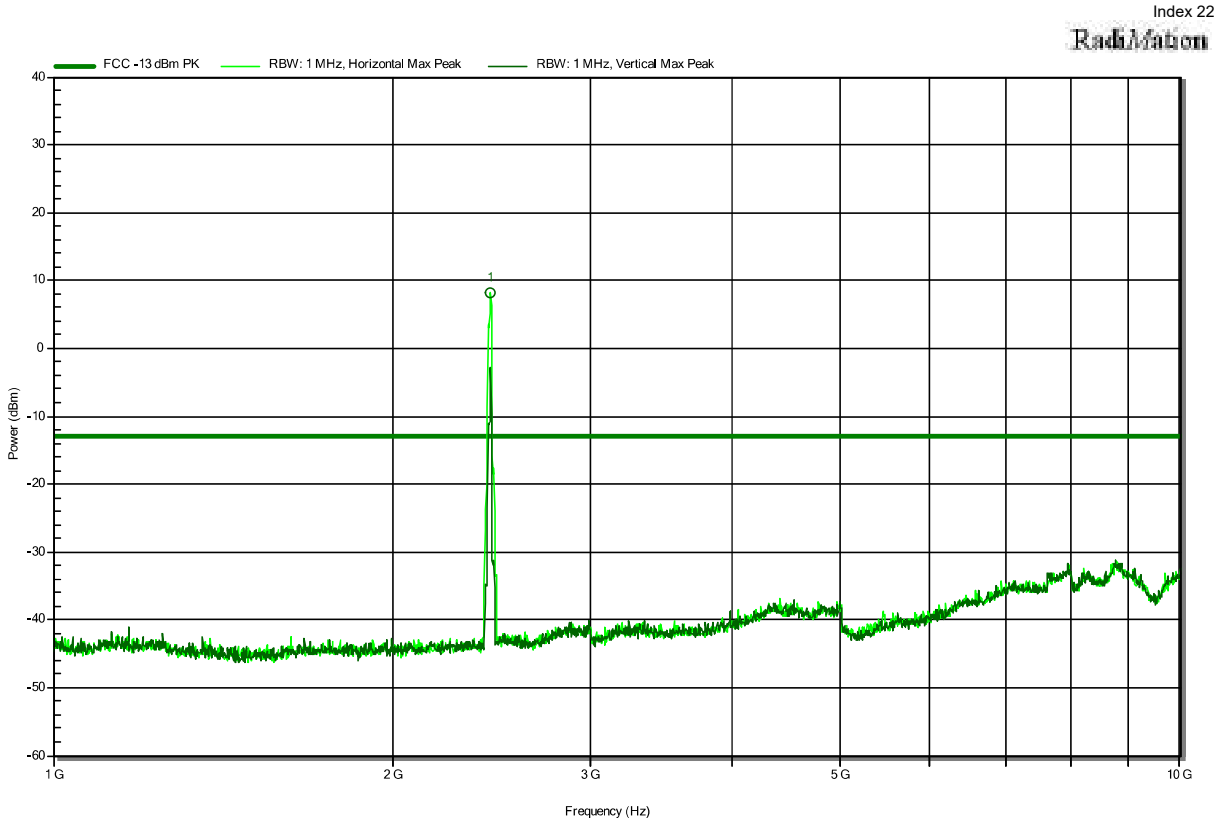
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	11; WLAN-DT (IEEE 802.11n), NB-IoT FDD13 / PMAX
Test Date:	2024-04-17
Note:	Marker1 is NB-IoT Uplink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
786.923 MHz	29.7 dBm	--		NB-IoT Uplink	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

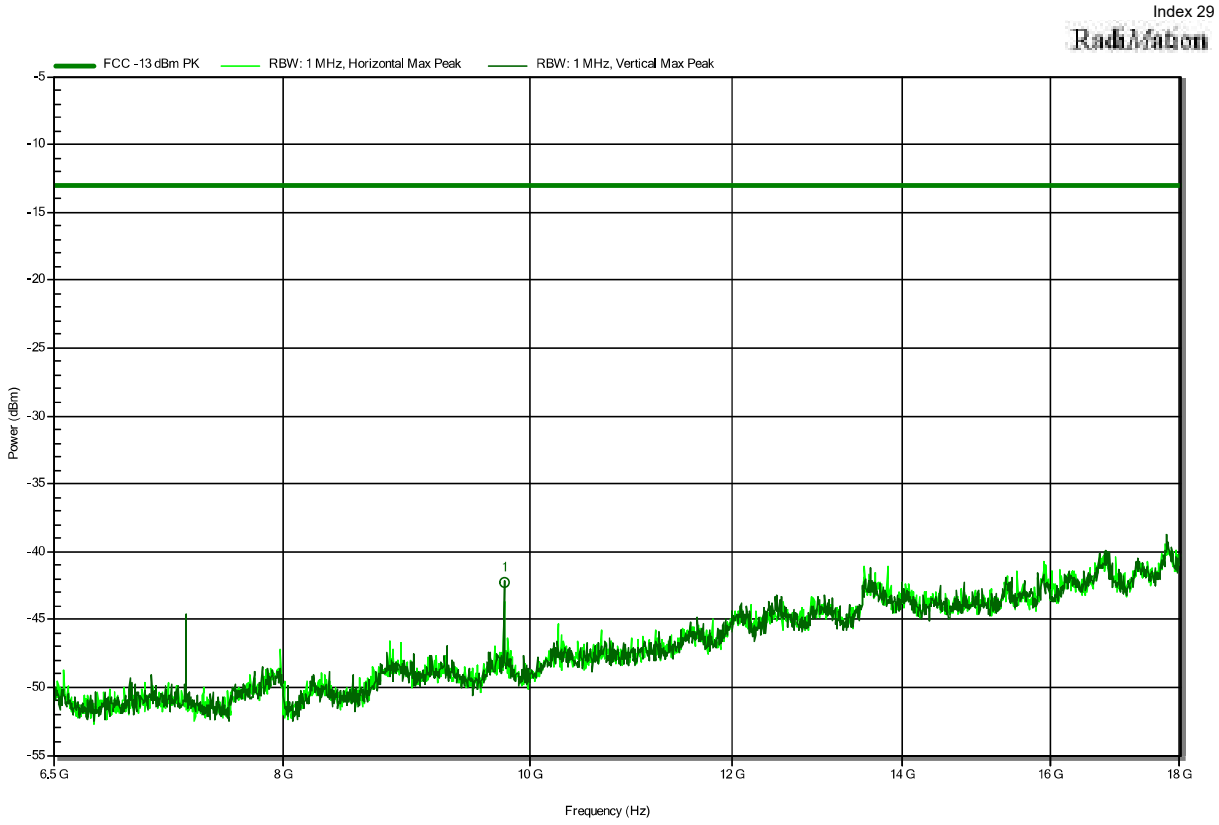
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	11; WLAN-DT (IEEE 802.11n), NB-IoT FDD13_PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-06
Note:	Marker 1 = WLAN & BLE Carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.442 GHz	8.1 dBm	--	--	WLAN/BLE Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

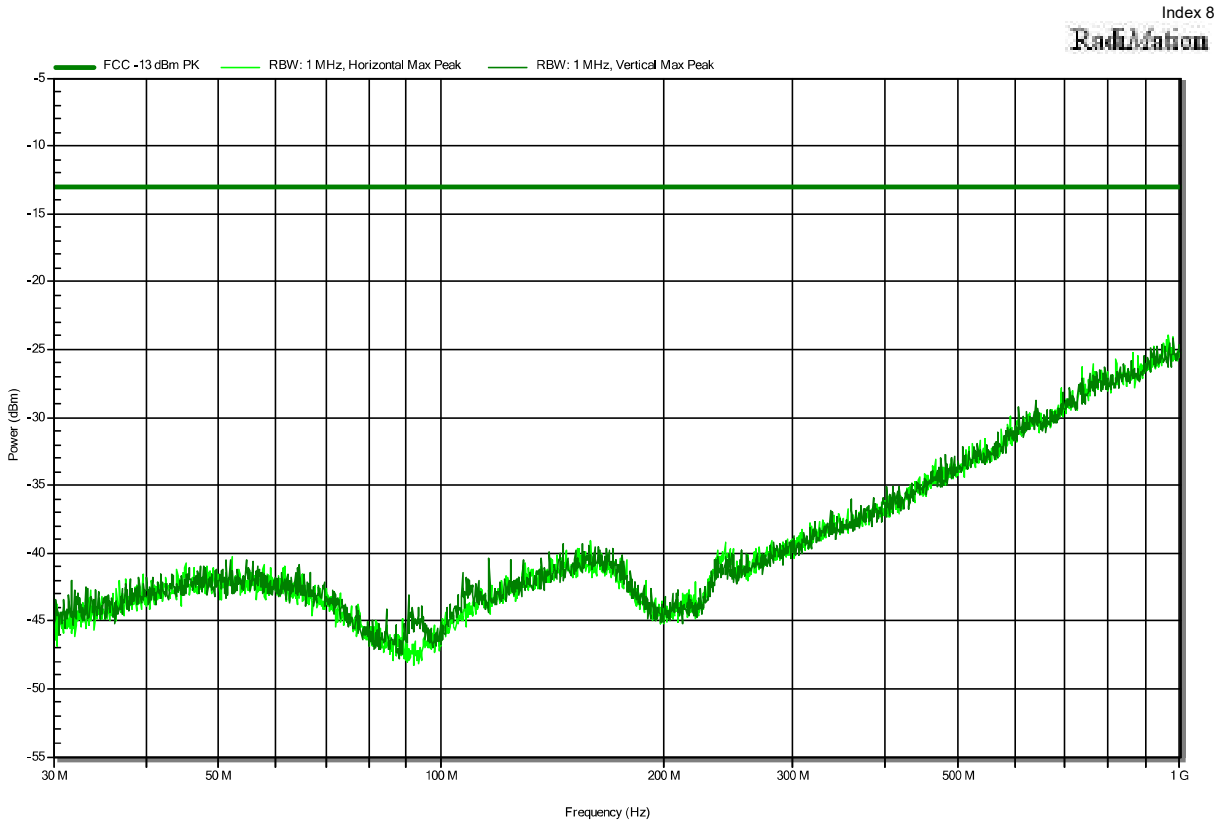
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	11; WLAN-DT (IEEE 802.11n), NB-IoT FDD13_ PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-07



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
9.769 GHz	-42.2 dBm	-13 dBm	-29.22 dB	Pass	Vertical

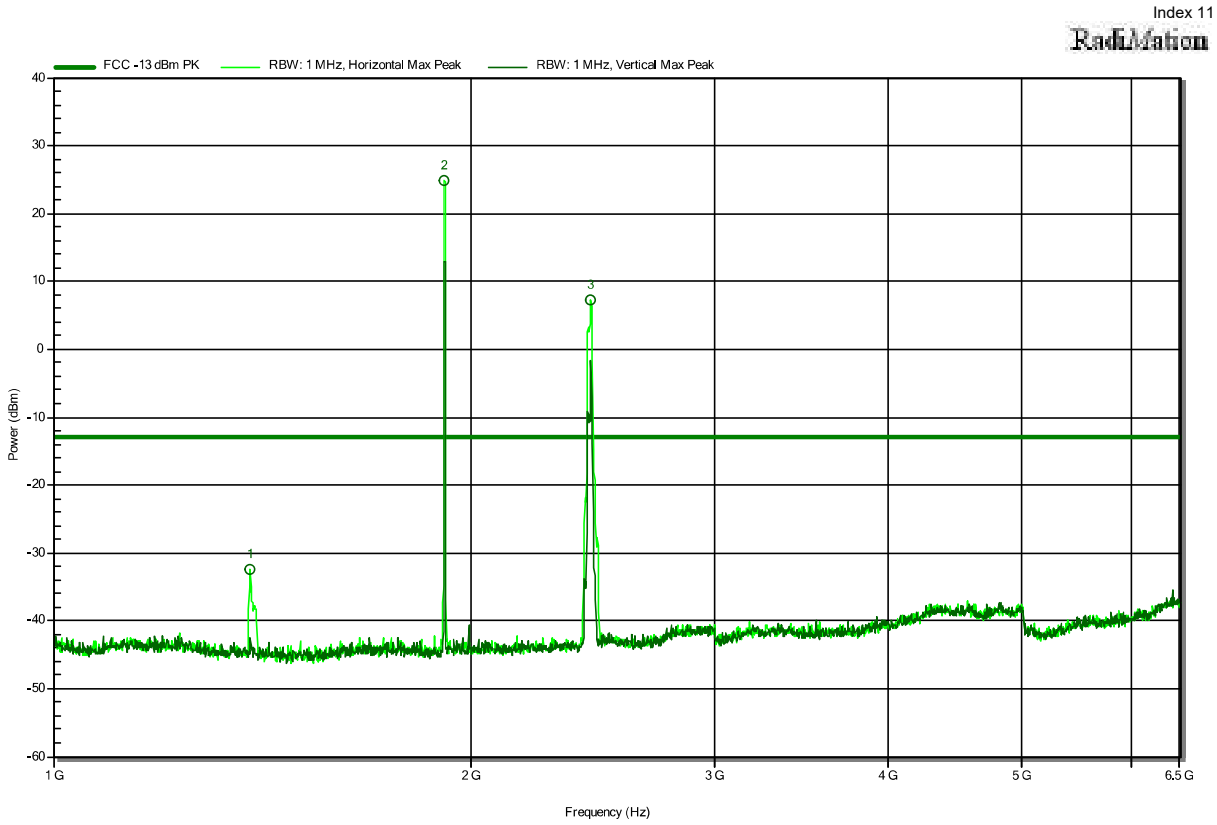
Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	12; WLAN-DT (IEEE 802.11n), NB-IoT FDD25 / PMAX
Test Date:	2024-04-17



Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

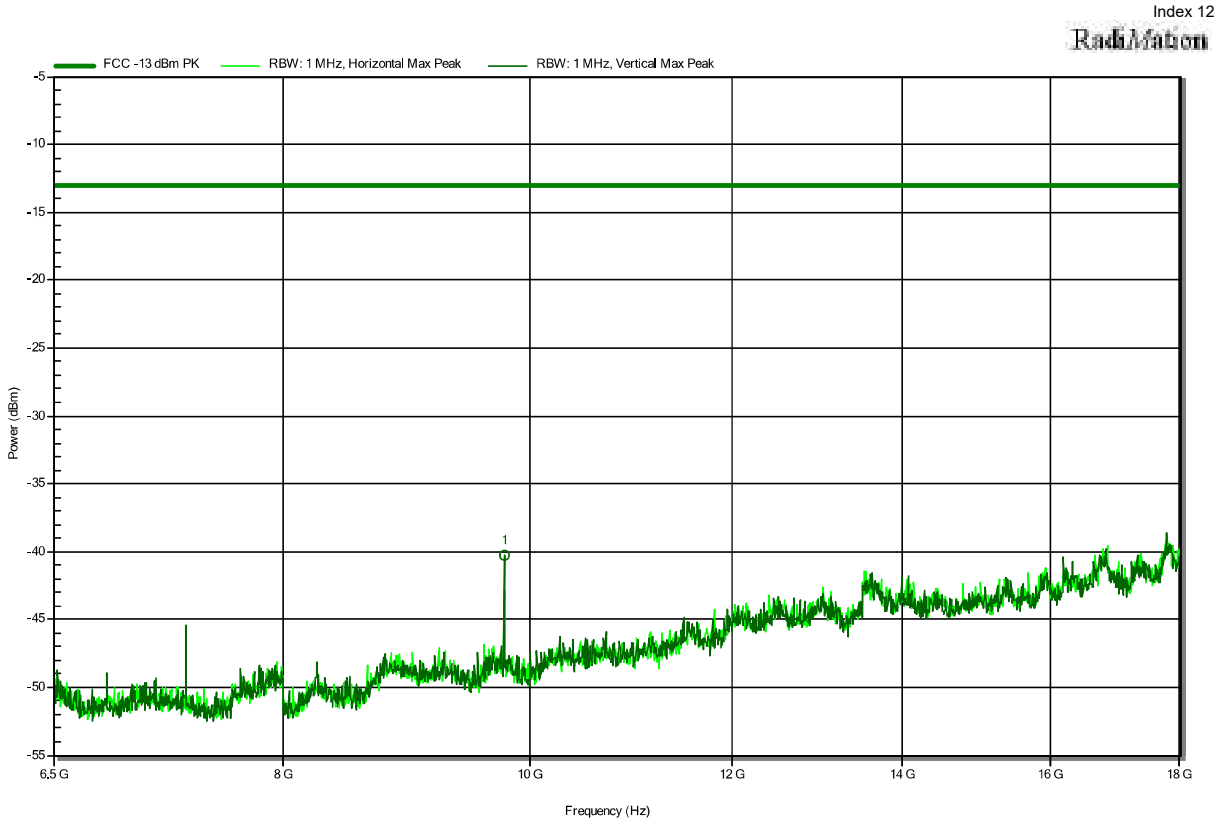
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	12; WLAN-DT (IEEE 802.11n), NB-IoT FDD25 / PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-06
Note:	Marker 2 = NB-IoT Uplink, Marker 3 = WLAN & BLE Carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.387 GHz	-32.3 dBm	-13 dBm	-19.32 dB	Pass	Horizontal
1.915 GHz	24.8 dBm	--	--	NB-IoT Uplink	Horizontal
2.442 GHz	7.3 dBm	--	--	WLAN/BLE Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

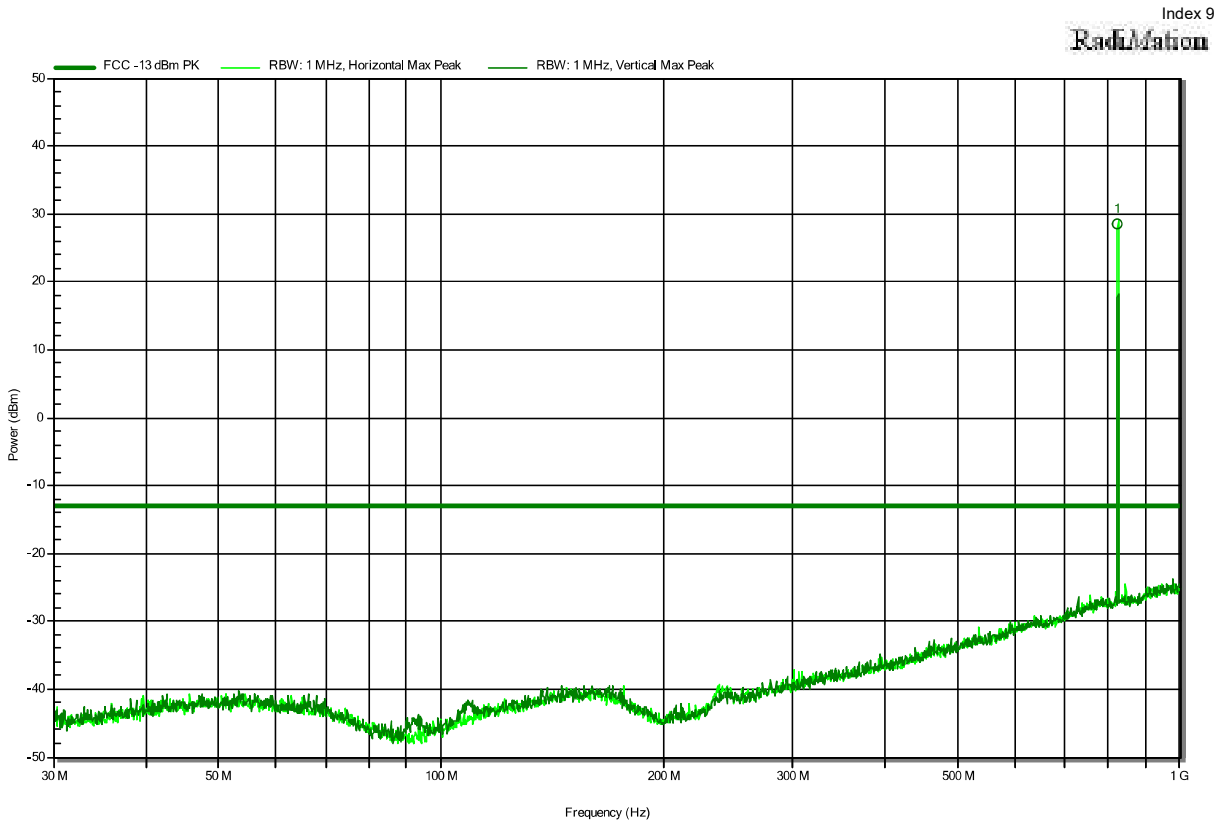
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	12; WLAN-DT (IEEE 802.11n), NB-IoT FDD25 / PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-06



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
9.767 GHz	-40.3 dBm	-13 dBm	-27.3 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

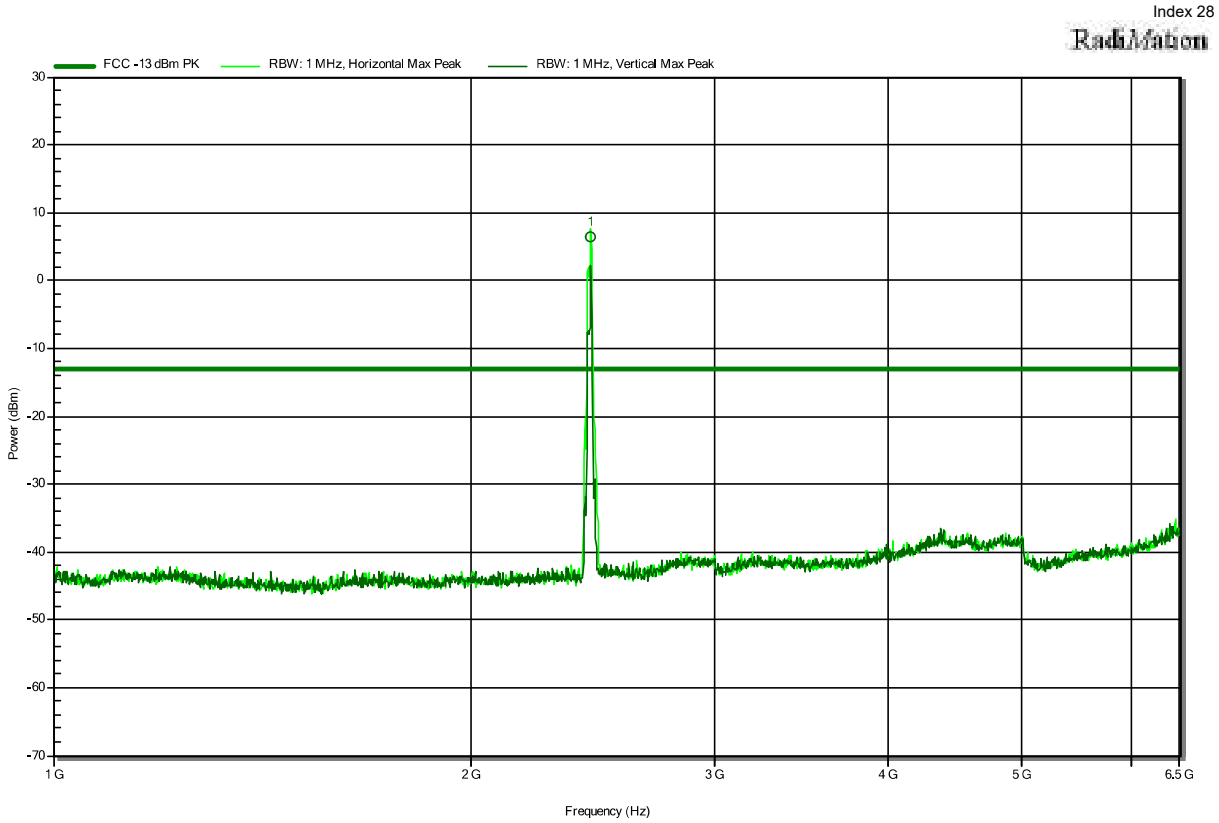
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	13; WLAN-DT (IEEE 802.11n), NB-IoT FDD26L / PMAX
Test Date:	2024-04-17
Note:	Marker 1 = NB-IoT Uplink



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
824.042 MHz	28.6 dBm	--	--	NB-IoT Uplink	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

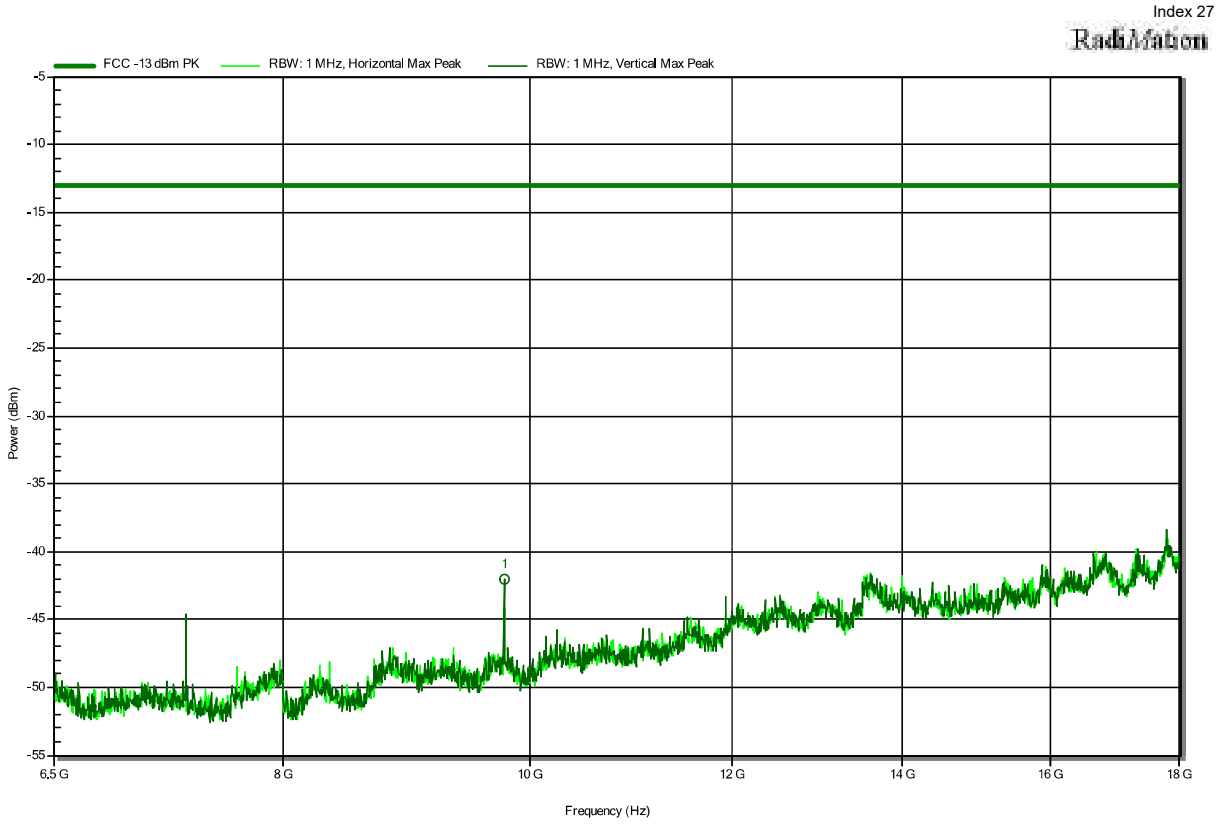
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	13; WLAN-DT (IEEE 802.11n), NB-IoT FDD26L_ PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-07
Note:	Marker 1 = WLAN & BLE Carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.442 GHz	6.5 dBm	--	--	WLAN/BLE Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

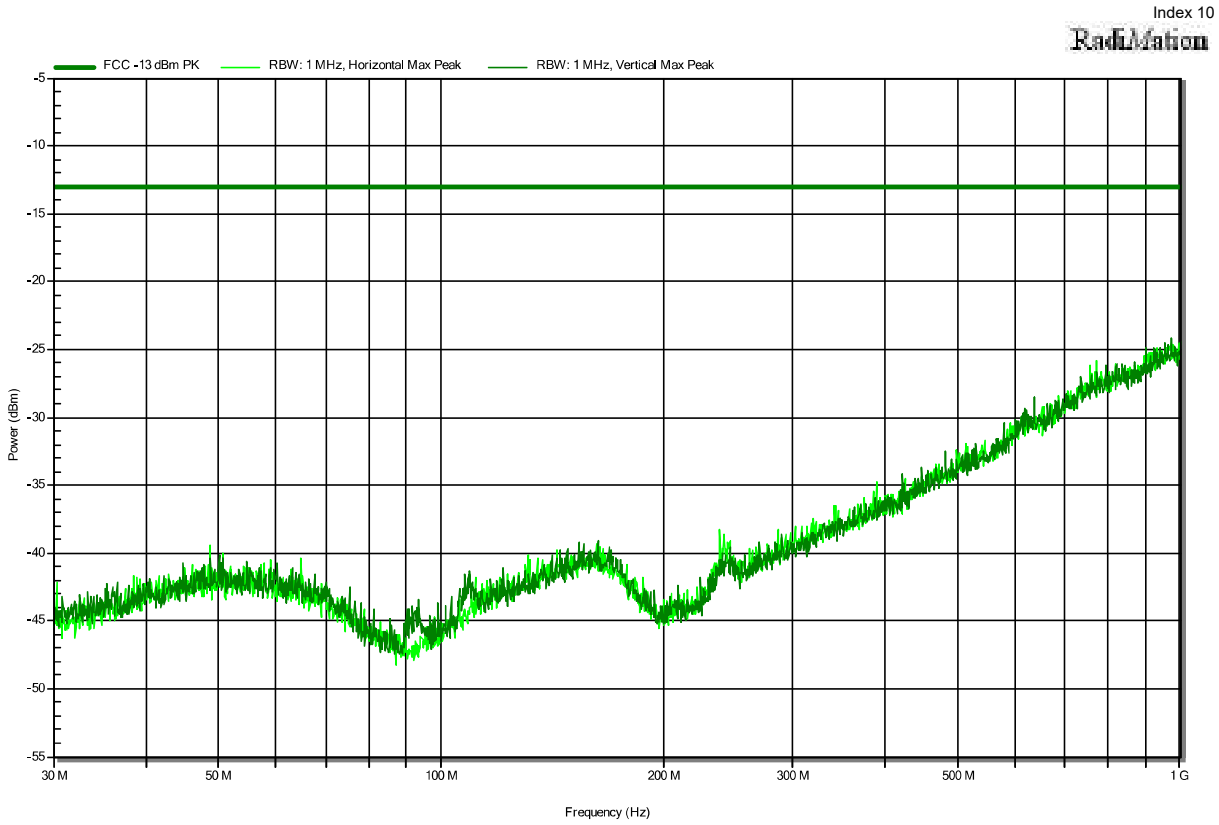
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	13; WLAN-DT (IEEE 802.11n), NB-IoT FDD26L_ PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-07



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
9.769 GHz	-42 dBm	-13 dBm	-28.99 dB	Pass	Vertical

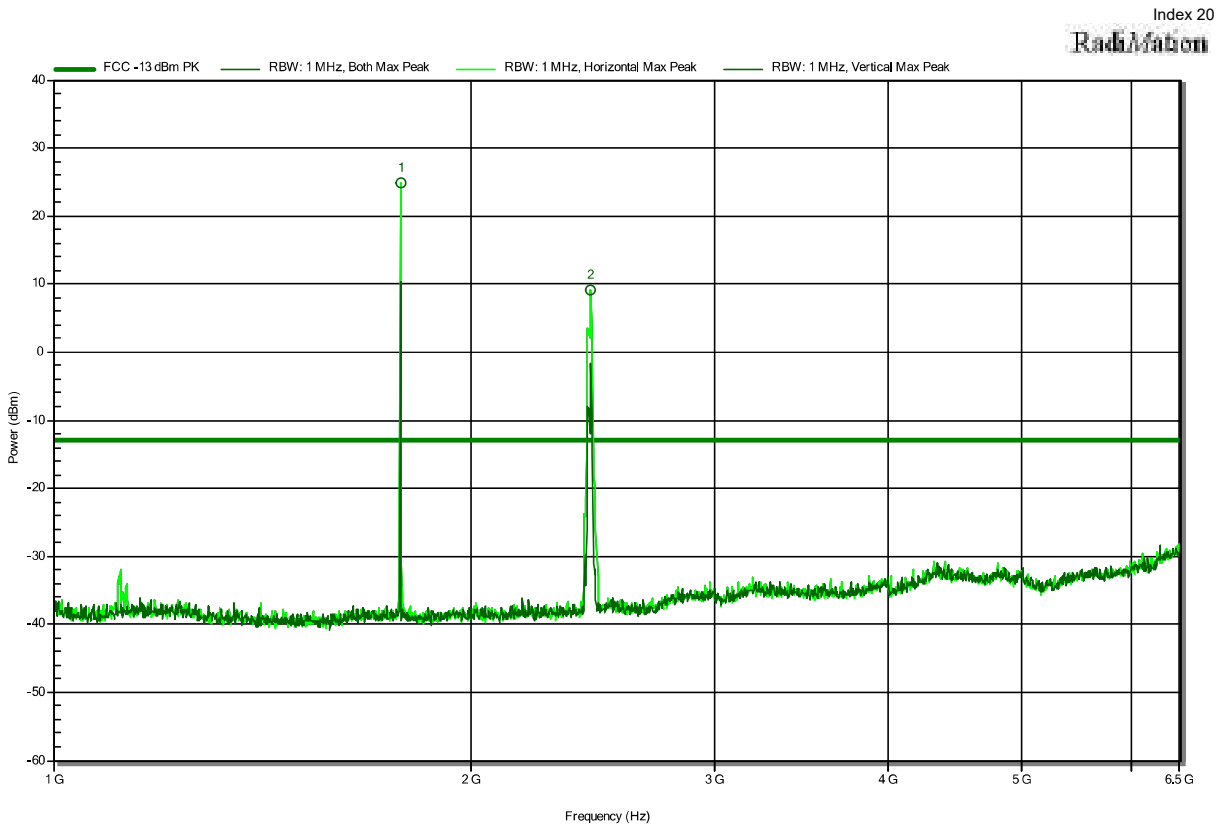
Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck VULB 9168
Measurement distance:	3 m
Mode:	14; WLAN-DT (IEEE 802.11n), NB-IoT FDD66 / PMAX
Test Date:	2024-04-17



Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

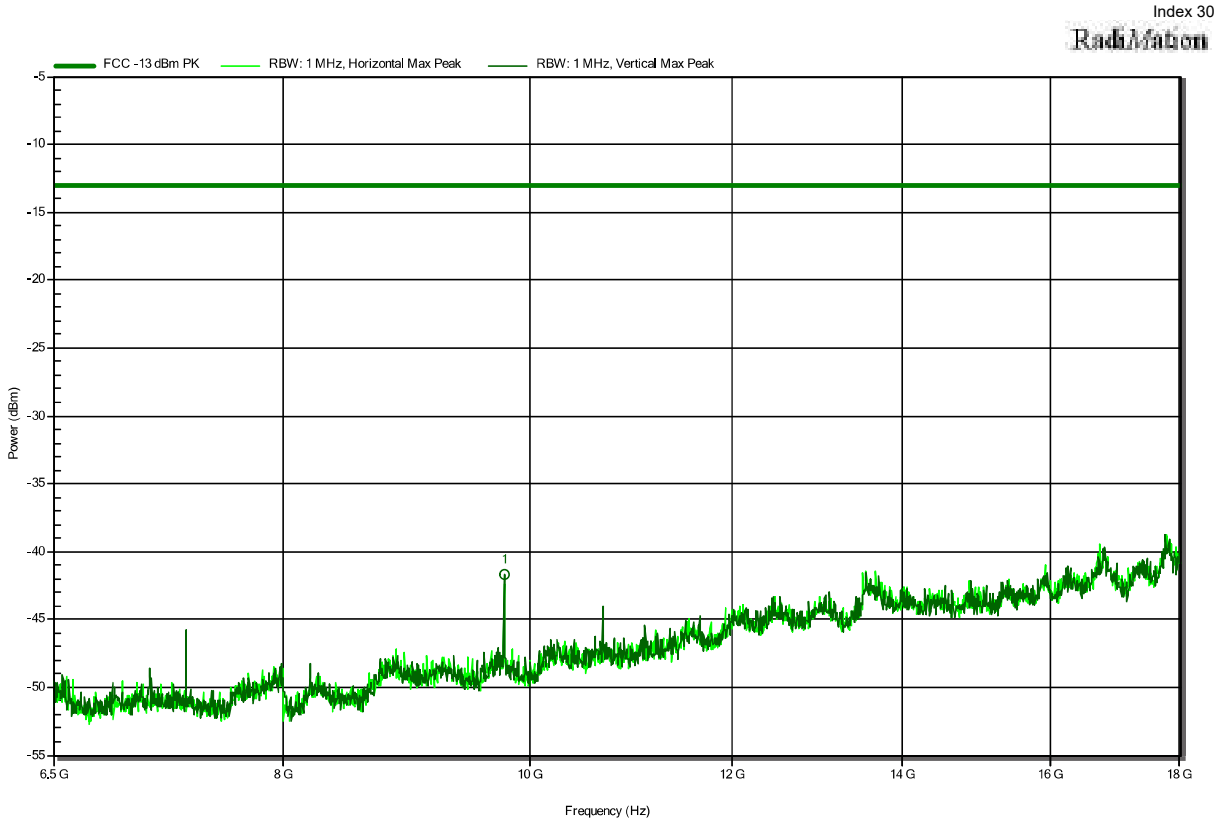
Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	14; WLAN-DT (IEEE 802.11n), NB-IoT FDD66 / PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-06
Note:	Marker 1 = NB-IoT carrier, Marker 2 = WLAN & BLE carrier



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.78 GHz	24.8 dBm	--	--	NB-IoT Carrier	Horizontal
2.442 GHz	9.1 dBm	--	--	WLAN_BLE Carrier	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

Project Number:	G0M-2401-2381
Applicant:	Eurofins Electric & Electronics Finland Oy
Model Description:	Tracker TR4111000
Model:	4111000
Test Sample ID:	48401
Test Site:	Eurofins Product Service GmbH
Operator:	Godson Offorji
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 6 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	14; WLAN-DT (IEEE 802.11n), NB-IoT FDD66_ PMAX, BLE 1_P=4.7dBm, BLE2 _ P=4dBm
Test Date:	2024-05-07



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
9.767 GHz	-41.7 dBm	-13 dBm	-28.72 dB	Pass	Vertical

== END OF TEST REPORT ==