RADIO REPORT

FCC 47 CFR Part 15C

Digital transmission systems operating within the 2400.0 MHz - 2483.5 MHz band

Report Reference No	G0M-2112-1241-TFC247BL-V02
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	fischertechnik GmbH
Address	Klaus-Fischer-Str. 1 72178 Waldachtal Germany
Test Specification	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, Amendment 2, 2021-02
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Roboter Chassis Early Coding for Toy and Education market
Model(s)	Roboter Chassis 183268
Additional Model(s)	None
Brand Name(s)	fischertechnik
Hardware Version(s)	PL-221c
Software Version(s)	0.20
FCC ID	2AFD4-183268
IC	N/A
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 - 30 °C	
Test Lab Humidity	25 % - 55 %	
Date of receipt of test item	2022-03-04	
Report:		
Compiled by	Burkhard Pudell	
Tested by (+ signature) (Responsible for Test)	Burkhard Pudell	B. Pudell
Approved by (+ signature) (Radio Team Leader)	Dr.-Ing. Dhamia Almozani	D. Almozani
Approved by (+ signature) (Test Lab Engineer)	Wilfried Treffke	W. Treffke
Date of Issue	2022-12-12	
Total number of pages	41	
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:		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2022-10-18	Initial Release	
02	2022-12-12	Replaced document: G0M-2112-1241-TFC247BL-V01 Replaced by: G0M-2112-1241-TFC247BL -V02 Reason: Add. FCC-ID: 2AFD4-183268 and FCC-ID Radio Module SQGBL651 at page 6. Add. FCC Module Report Information to test mode/ comment at page 12.	B. Pudell

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

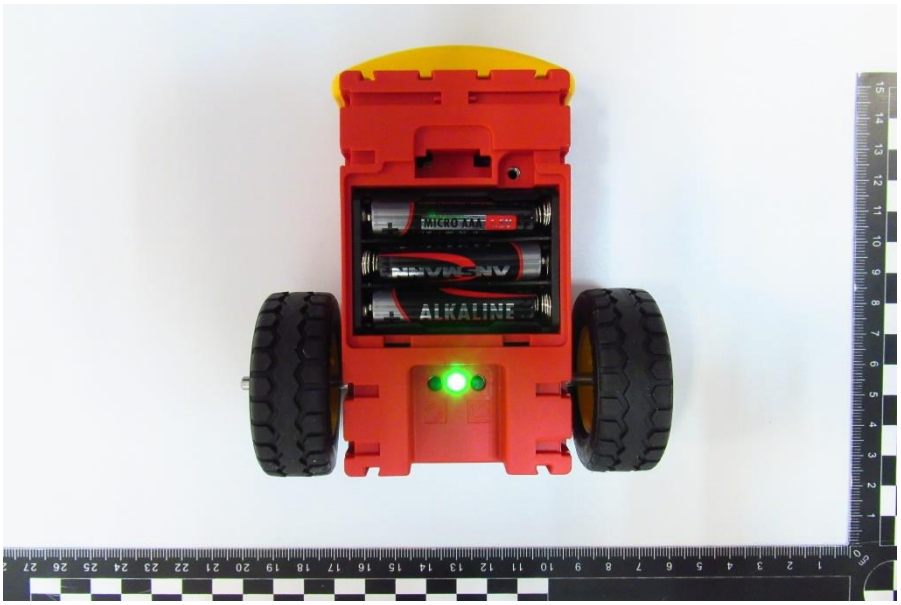
REPORT INDEX

1 Equipment (Test Item) Under Test

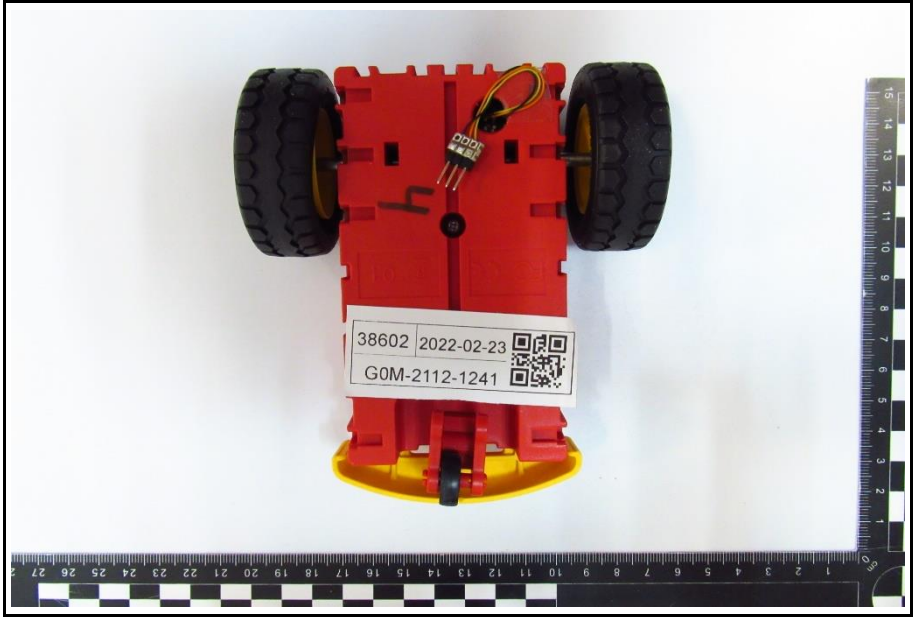
Description	Roboter Chassis Early Coding for Toy and Education market		
Model	Roboter Chassis 183268		
Additional Model(s)	None		
Brand Name(s)	fischertechnik		
Serial Number(s)	183268 (SID: 38602)		
Hardware Version(s)	PL-221c		
Software Version(s)	0.20		
PMN	none		
HVIN	none		
FVIN	none		
HMN	none		
FCC ID	2AFD4-183268		
IC	N/A		
Equipment type	End Product		
Radio type	Transceiver		
Assigned frequency bands	2400 - 2483.5 MHz		
Radio technology	Bluetooth LE 5.0		
Bluetooth Specification	LE 1M PHY		Yes
	LE 2M PHY		No
	LE Coded PHY S=2 (500 kbit)		No
	LE Coded PHY S=8 (125 kbit)		No
	Stable Modulation Index - Transmitter		No
	Stable Modulation Index - Receiver		No
Modulation	GFSK		
Number of antenna ports	1		
Radio Module	Type	WiFi/ Bluetooth module	
	Model	453-00005 / Chip: nRF52810	
	Manufacturer	Laird / Chip: Nordic Semiconductor	
	HW Version	none	
	SW Version	none	
	FCC-ID	SQGBL651	
	IC	None	
Antenna	Type	Printed PCB antenna	
	Model	Laird dipol	
	Manufacturer	Laird	
	Gain	max 2.0 dBi	
Supply Voltage	V_{NOM}	4.5 V DC (3x AAA Battery)	
Operating Temperature	T_{NOM}	20 °C	
AC/DC-Adaptor	Model	none	
	Vendor	none	
	Input	none	
	Output	none	
Manufacturer	Knobloch Elektronic- Produktions- und Vertriebs GmbH Selitstraße 10 55234 Erbes-Büdesheim GERMANY		

1.1 Photos – Equipment External

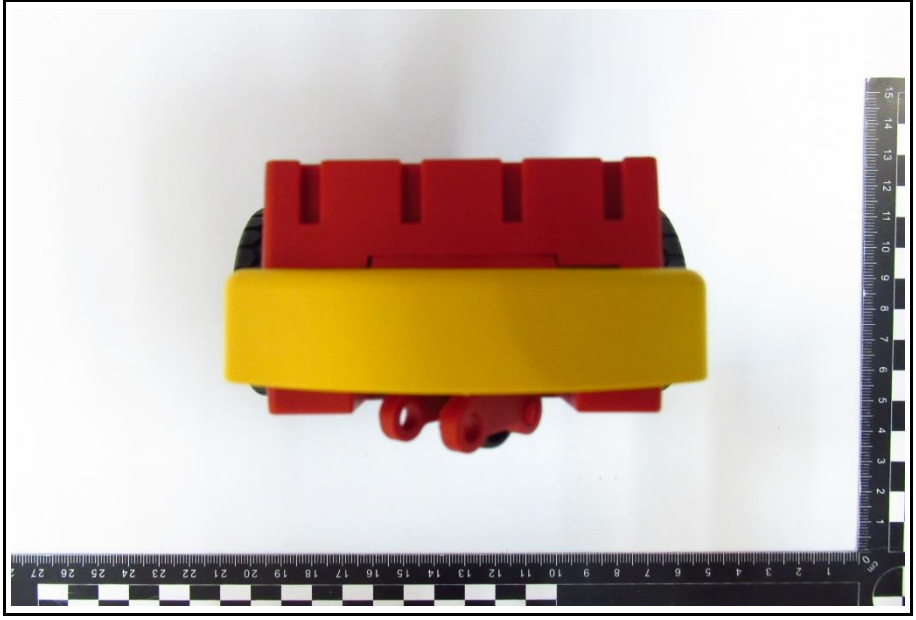
EUT TOP


EUT TOP Batterycase


EUT BOTTOM Interface



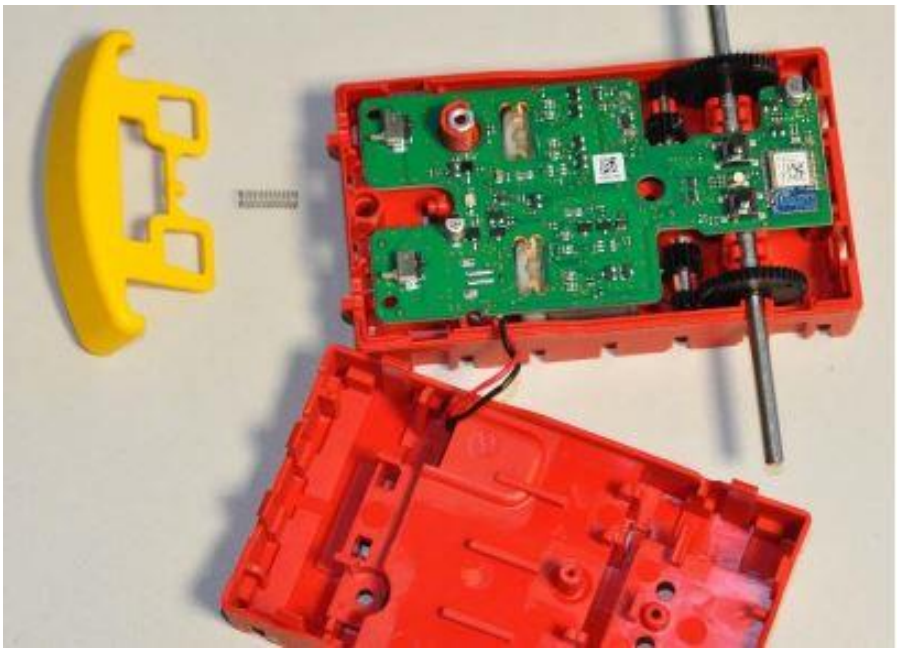
EUT FRONT

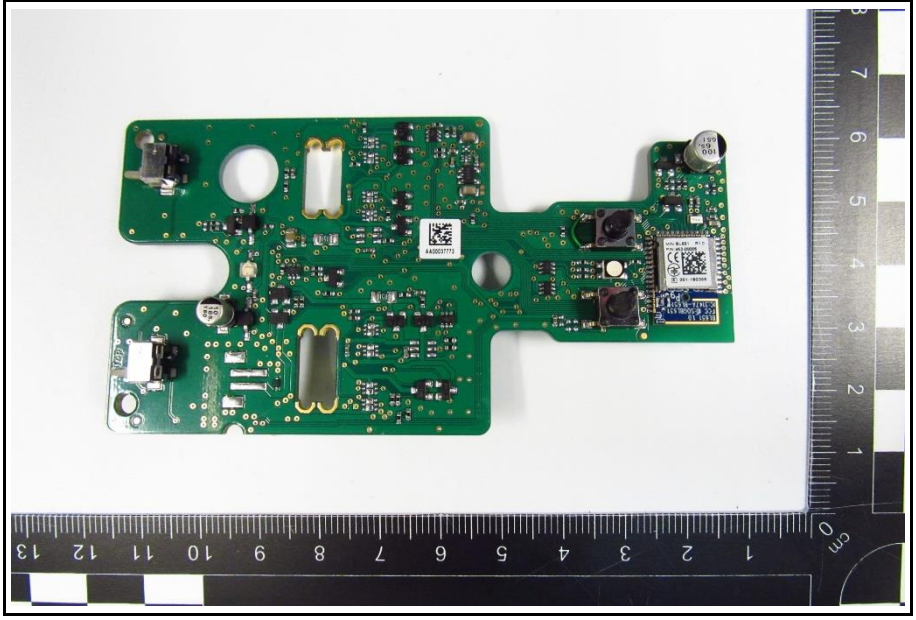


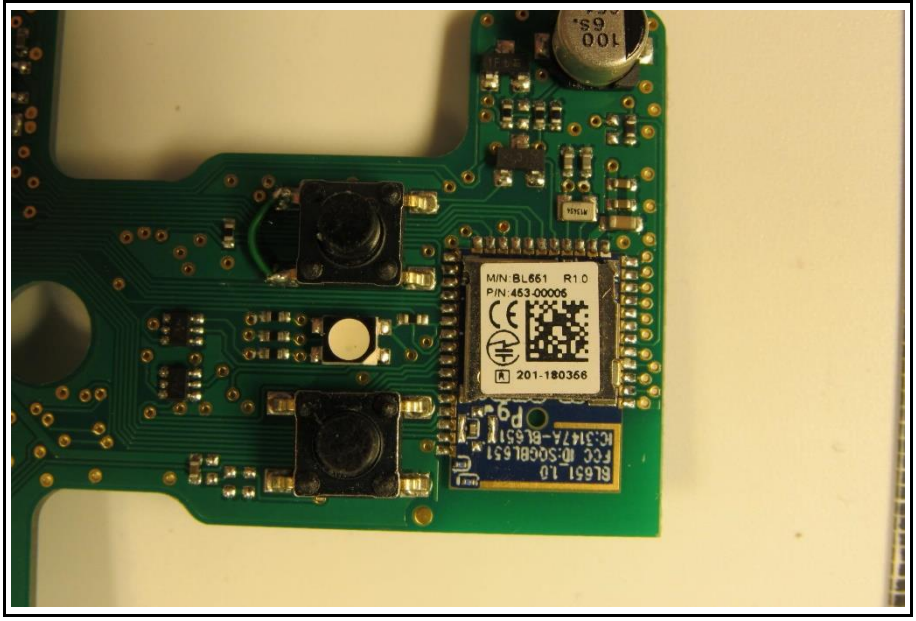
EUT BACK

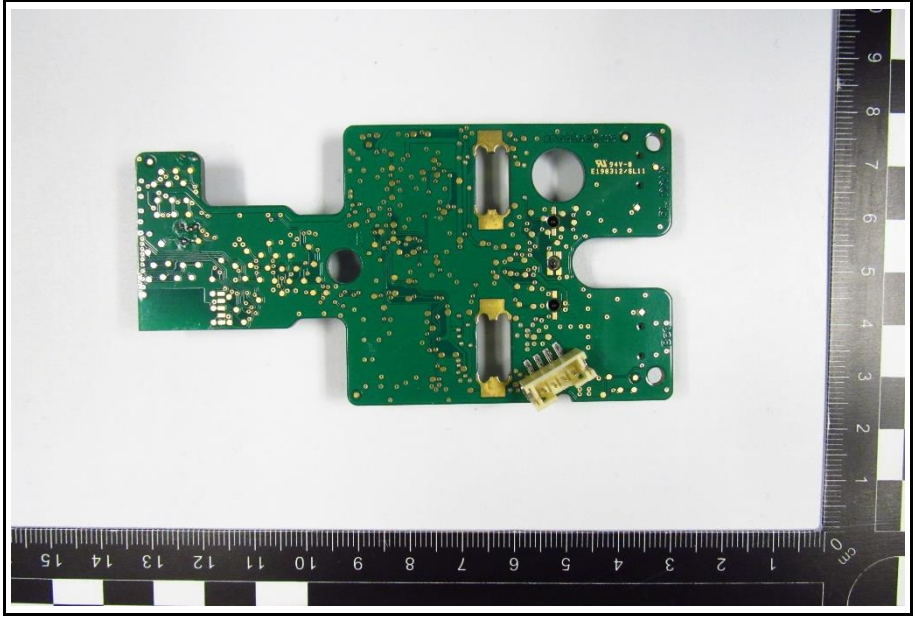

USB-Serial Cable


1.2 Photos – Equipment Internal

EUT OPENING


EUT PCB FRONT


EUT BT-Module


EUT PCB BACK


1.3 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
SIM	Laptop	Lenovo	L460	Control unit
CBL	USB Adapter	none	none	USB - Serial
SFT	Remote Control	Putty v0.76	Lenovo	Control tool
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.4 Test Modes

Mode	Description
GFSK	Mode = Transmit Modulation = GFSK Packet type = LE 1M PHY Payload = 37 byte Duty cycle = 64% Power setting = 4 dBm
Receive	Mode = Receive
Comment: The above settings were found as worst case during pre-tests. / The above settings are found as worst case during evaluation of the original modular test report FCC [FR852803AE Rev.01], issued on [2018.Jun.] by [International Certification Corp. – TAF Lab. 2732] and. Conducted peak/average output power was evaluated to determine the worst case settings.	

1.5 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx / Rx	0	2402
F2	Tx / Rx	19	2440
F3	Tx / Rx	39	2480

1.6 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).

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:

Limit (dBµV/m) = 20*log (µV/m)

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.

Example only:

Reading + AF	= Net Reading	:	Net reading - FCC limit	= Margin
+21.5 dBµV + 26 dB/m	= 47.5 dBµV/m	:	47.5 dBµV/m - 57.0 dBµV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 15C				
Product Standard Reference	**Requirement**	**Reference Method**	**Result**	**Remarks**
ISED RSS-Gen, Issue 5 A2 (section 6.7)	Occupied Bandwidth	ANSI C63.10-2013	N/R	
FCC § 15.247(a)(2) ISED RSS-247, Issue 2 (section 5.2)	6 dB Bandwidth	ANSI C63.10-2013	N/T	
FCC § 15.247(b) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	N/T	
FCC § 15.247(e) ISED RSS-247, Issue 2 (section 5.2)	Power spectral density	ANSI C63.10-2013	N/T	
FCC § 15.207 ISED RSS-247, Issue 2 (section 3.1)	AC power line conducted emissions	ANSI C63.10-2013	N/R	Battery supplied only
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Band edge compliance	ANSI C63.10-2013	N/T	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	N/T	
FCC § 15.247(d) FCC § 15.209 ISED RSS-Gen, Issue 5 A2 (section 6.13)	Transmitter radiated spurious emissions	ANSI C63.10-2013	PASS	
ISED RSS-247, Issue 2 (section 3.1)	Receiver radiated spurious emissions	ANSI C63.4-2014	N/R	
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

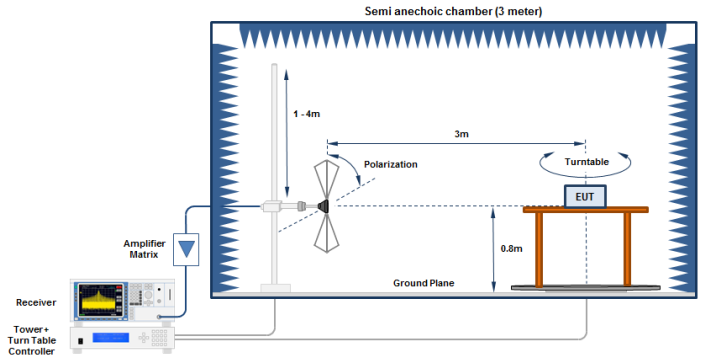
3.1.1 Information

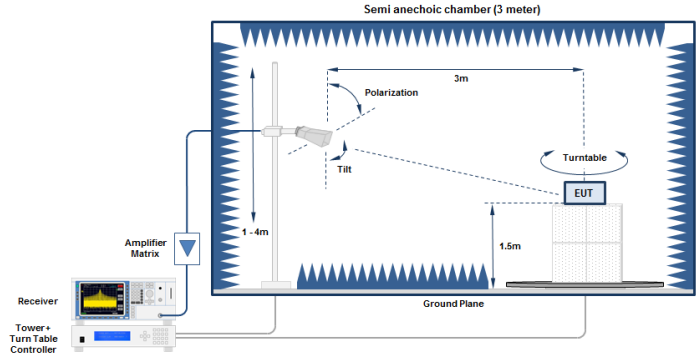
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209
Measurement Uncertainty	± 5.95 dB
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Burkhard Pudell
Date	2022-03-07

3.1.2 Limits

Limits			
Frequency range [MHz]	Detector	Field strength [µV/m]	Measurement distance [m]
0.009 - 0.09	Average	2400/F[kHz]	300
0.09 - 0.110	Quasi-Peak	2400/F[kHz]	300
0.110 - 0.490	Average	2400/F[kHz]	300
0.490 - 1.705	Quasi-Peak	24000/F[kHz]	30
1.705 - 30.0	Quasi-Peak	30	30
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.1.3 Setup

Test Setup 30 MHz - 1000 MHz


Test Setup > 1 GHz


3.1.4 Equipment

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

Test Equipment 30 MHz - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2021-07	2022-07
Antenna	R&S	HK 116	EF00030	2021-05	2024-05
Antenna	R&S	HL 223	EF00187	2019-05	2022-05

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2021-07	2022-07
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2019-10	2022-10
Antenna	Schwarzbeck	HWRD 650	EF01679	2021-03	2022-03
Antenna	Amplifier Research	AT4560	EF00302	2021-06	2023-06

3.1.5 Procedure

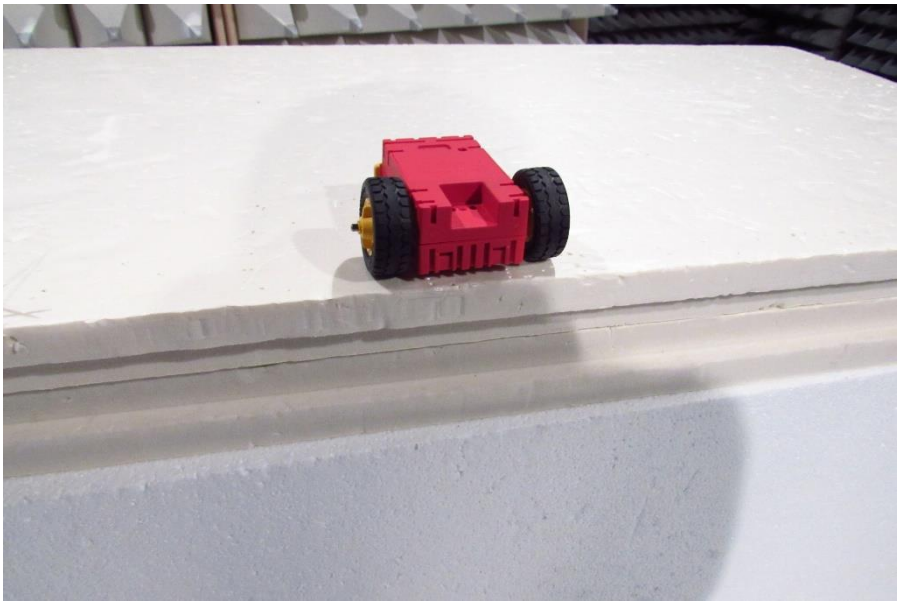
Test Procedure 30 MHz - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m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

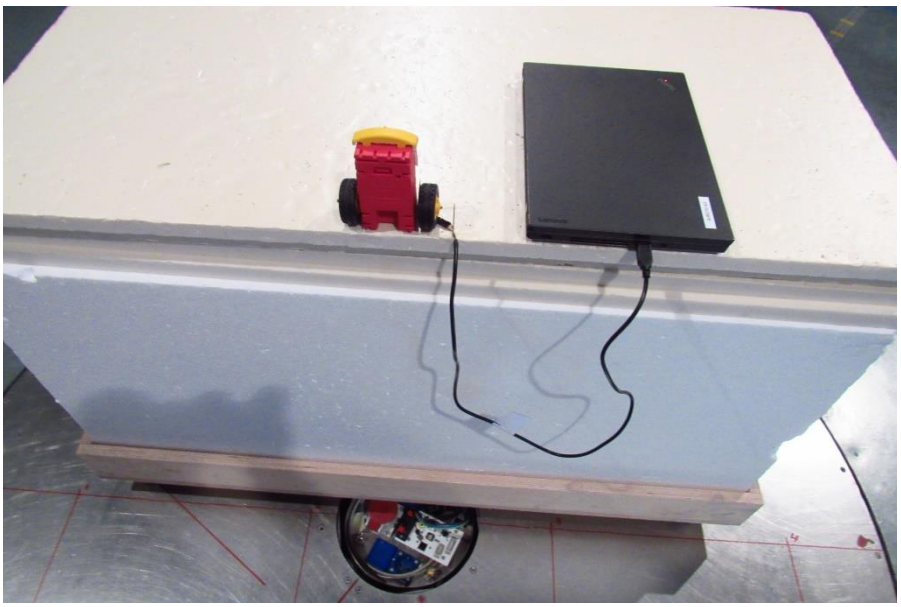
Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant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

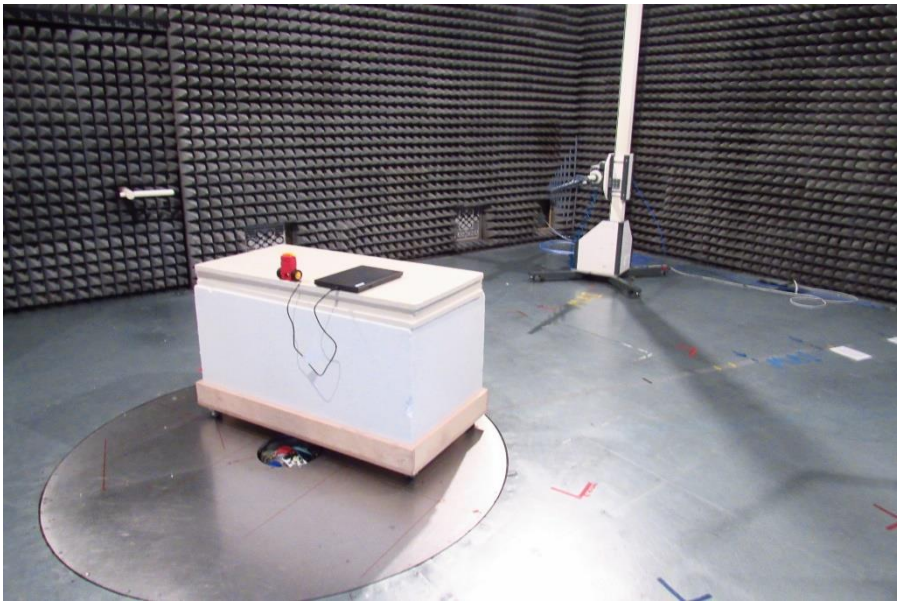
3.1.6 Results

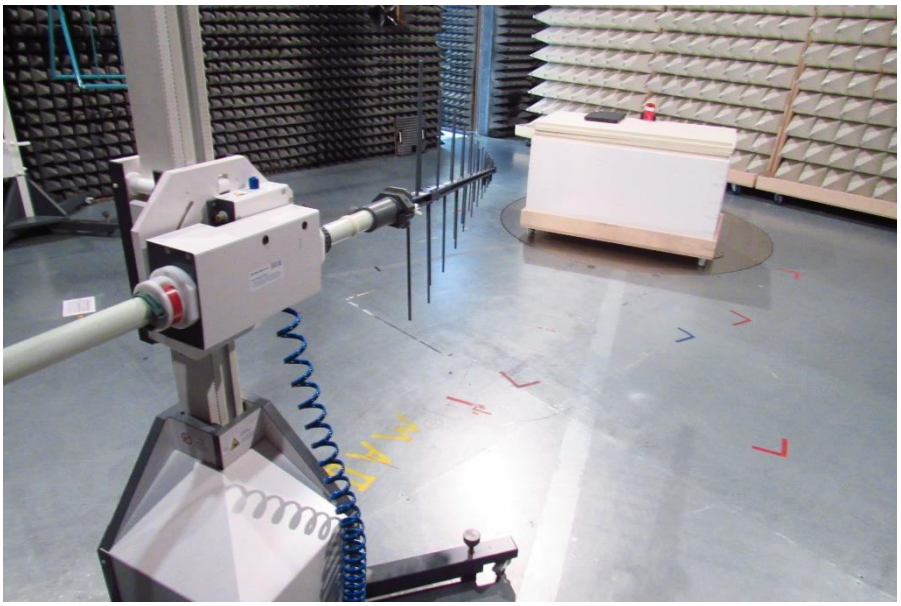
Test Results						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2402	168.0188	32.30	pk	ver	43.50	-11.24
2402	4803.3	45.89	avg	ver	54.00	-08.11
2402	4803.6	45.37	avg	ver	54.00	-08.63
2402	4803.7	50.27	avg	ver	54.00	-03.73
2440	168.0273	32.20	pk	ver	43.50	-11.31
2440	4879.6	44.72	avg	ver	54.00	-09.28
2440	4879.6	45.61	avg	ver	54.00	-08.39
2440	4880.5	46.86	avg	ver	54.00	-07.14
2480	167.9975	31.90	pk	ver	43.50	-11.61
2480	4959	42.36	avg	ver	54.00	-11.64
2480	4959	42.36	avg	ver	54.00	-11.64
2480	4960	48.14	avg	ver	54.00	-05.86

3.1.7 Setup Photos

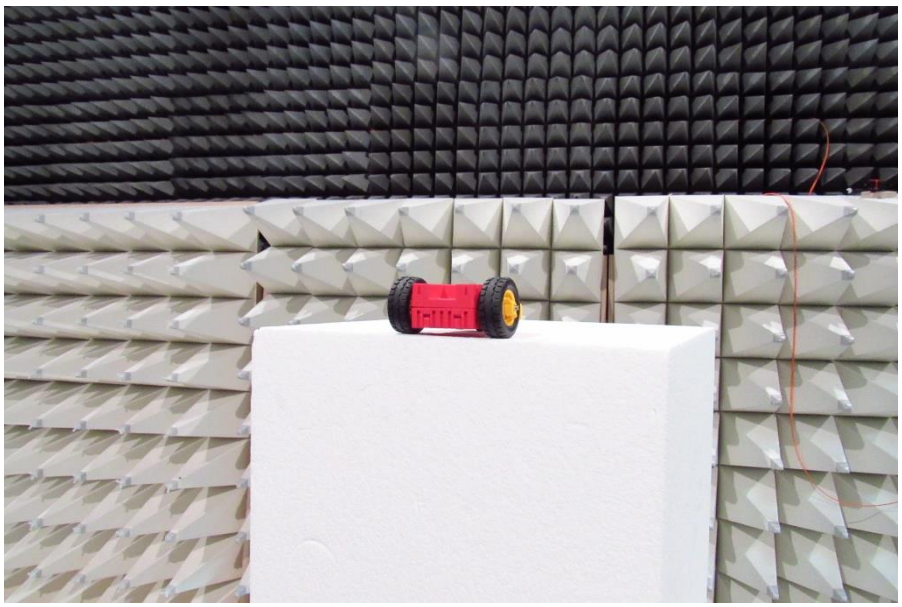
EUT Setup horizontal below 1 GHz


EUT Setup vertical below 1 GHz


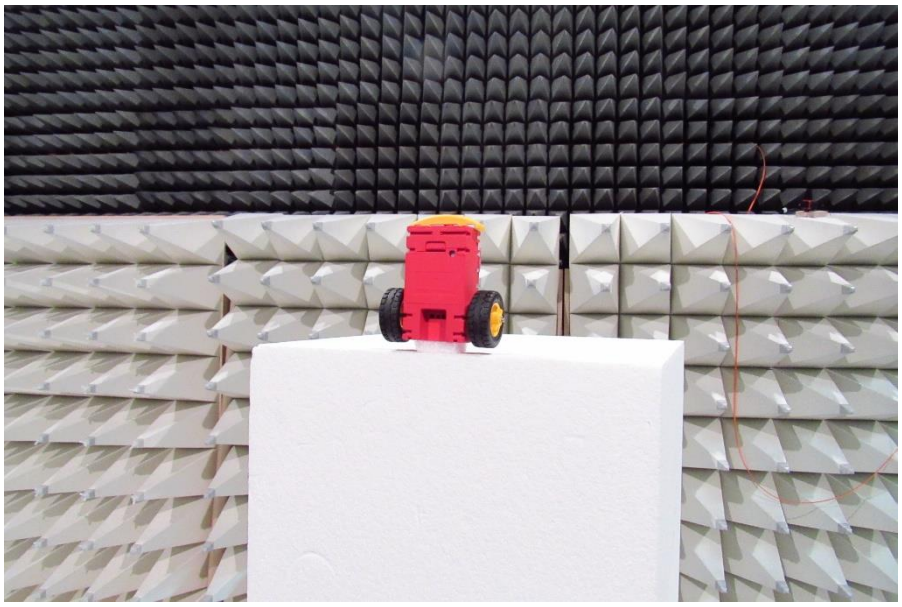
Setup for TX measurement below 1 GHz


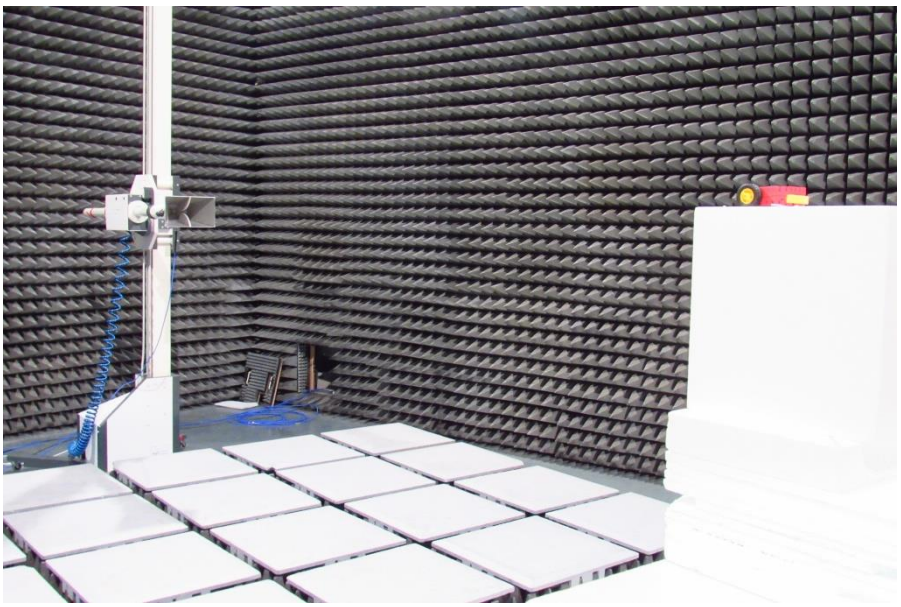
Setup for TX measurement below 1 GHz


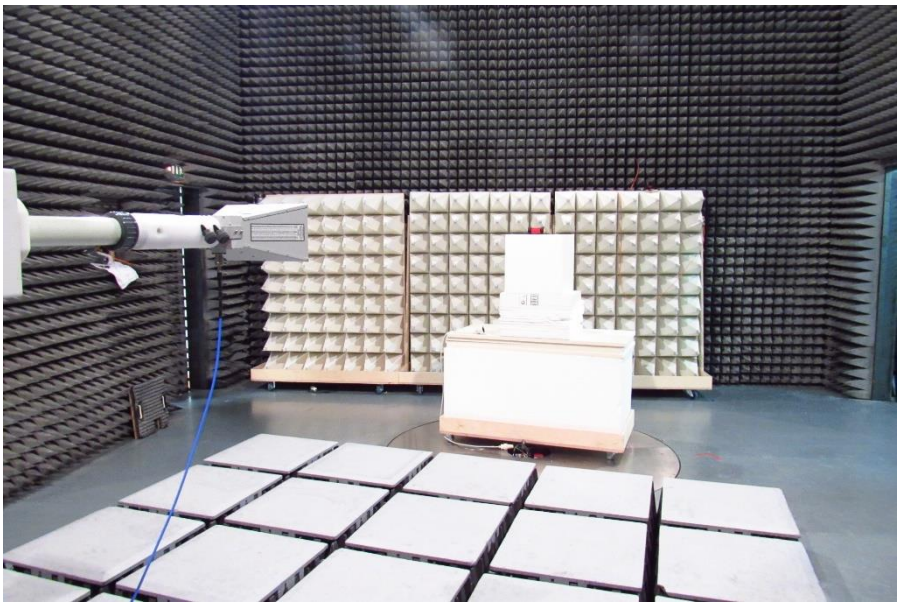
EUT Setup horizontal above 1 GHz



EUT Setup vertical above 1 GHz



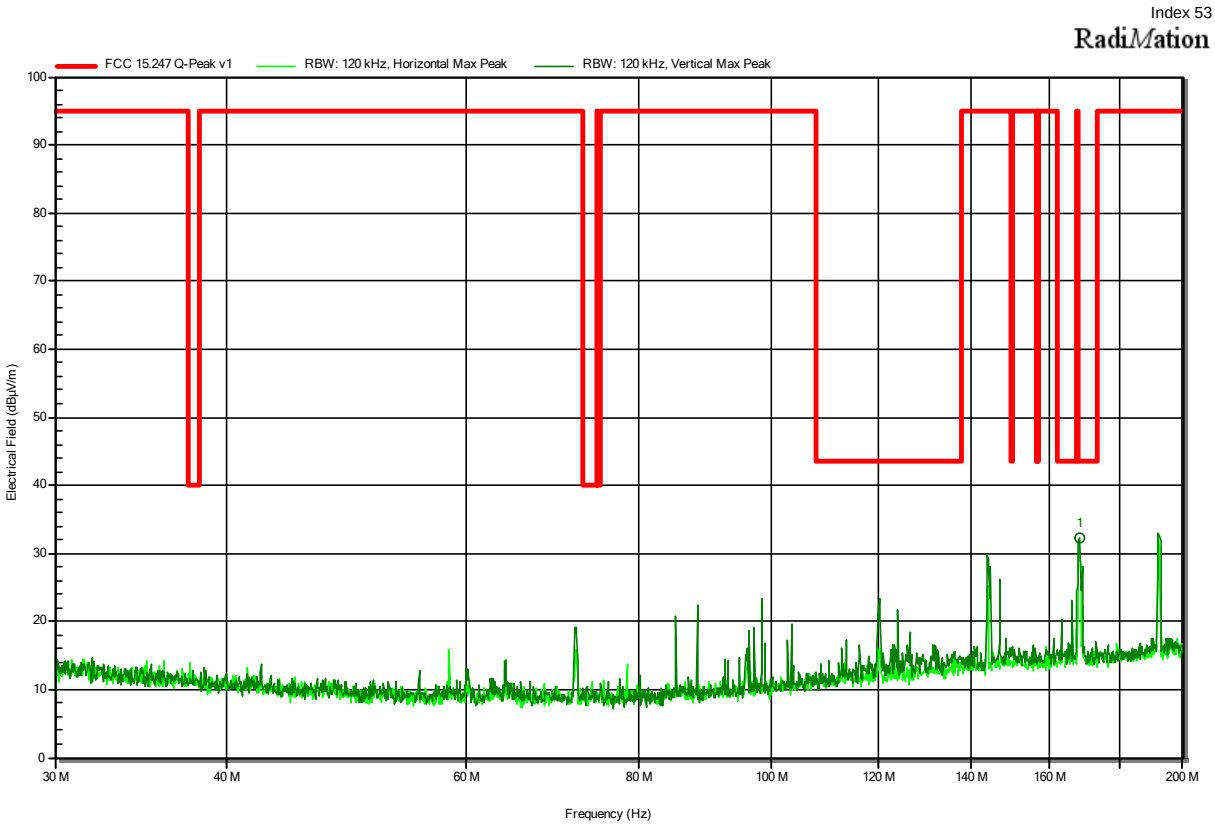
Setup for TX measurement above 1 GHz


Setup for TX measurement above 1 GHz


ANNEX A Transmitter spurious emissions

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

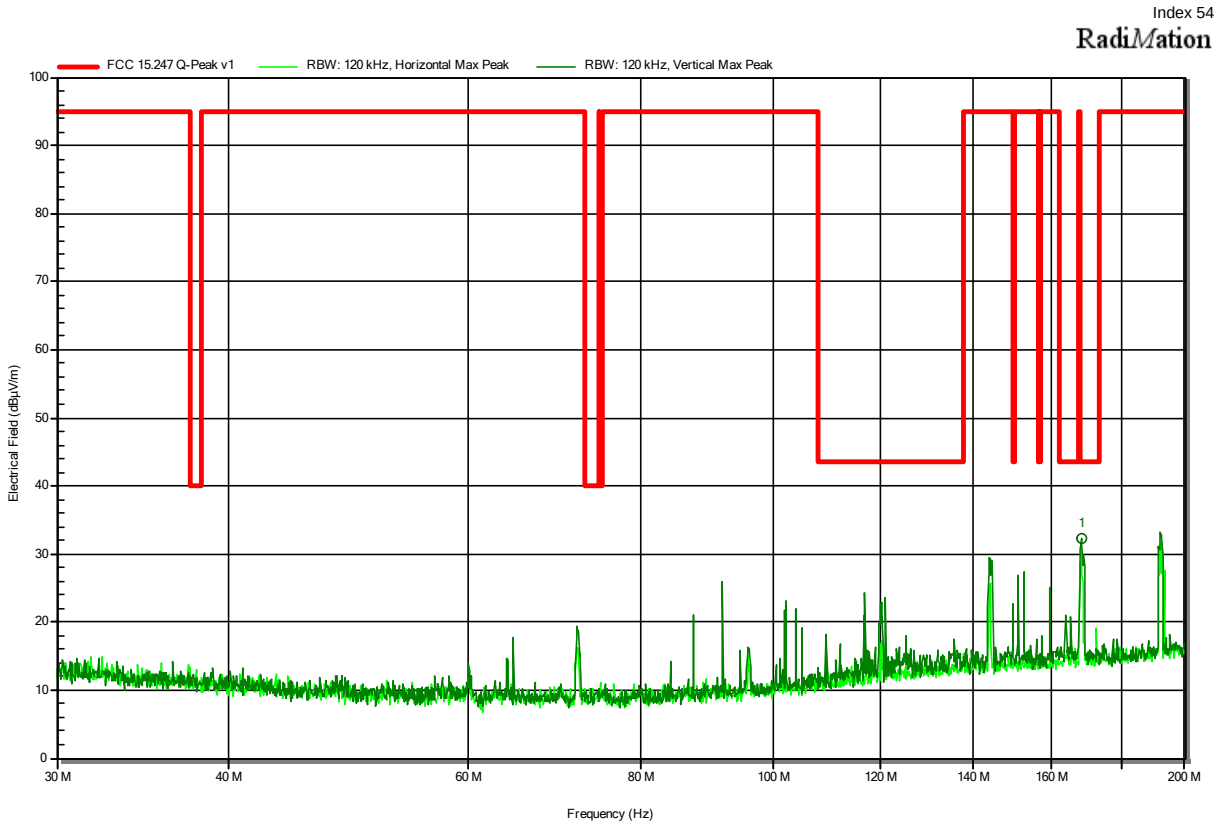
Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Qawasmeh
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Rohde & Schwarz HK 116
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 0 (2402 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
168.0188 MHz	32.3 dBµV/m	43.5 dBµV/m	-11.24 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

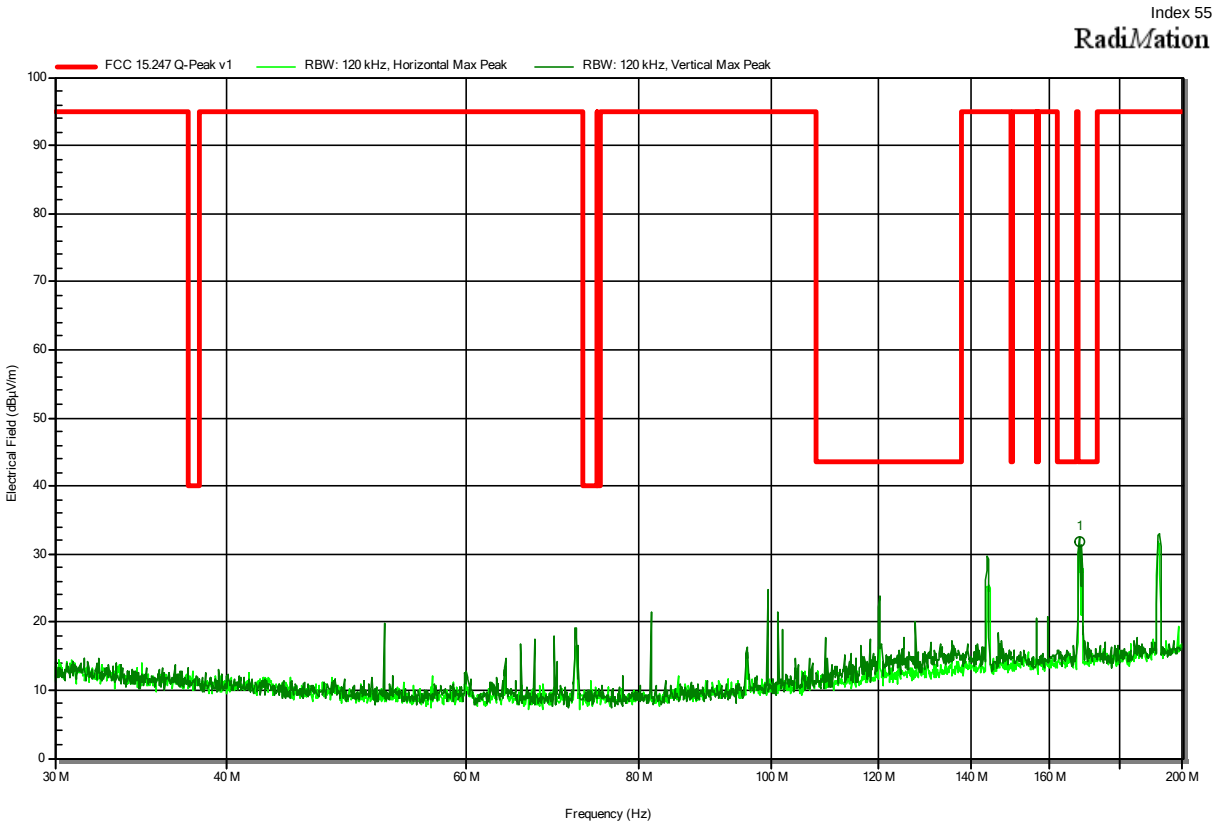
Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Qawasmeh
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Rohde & Schwarz HK 116
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 19 (2440 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
168.0273 MHz	32.2 dBµV/m	43.5 dBµV/m	-11.31 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

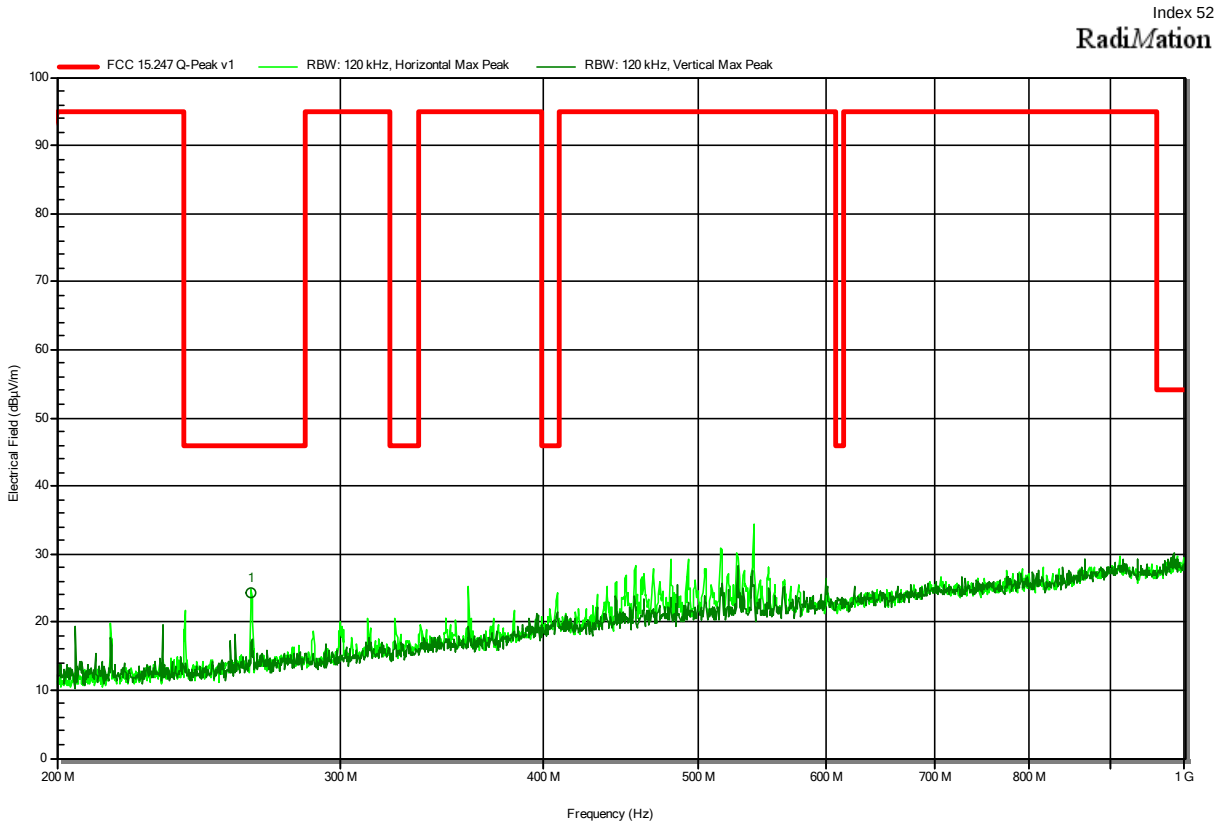
Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Qawasmeh
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Rohde & Schwarz HK 116
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 39 (2480 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
167.9975 MHz	31.9 dBµV/m	43.5 dBµV/m	-11.61 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

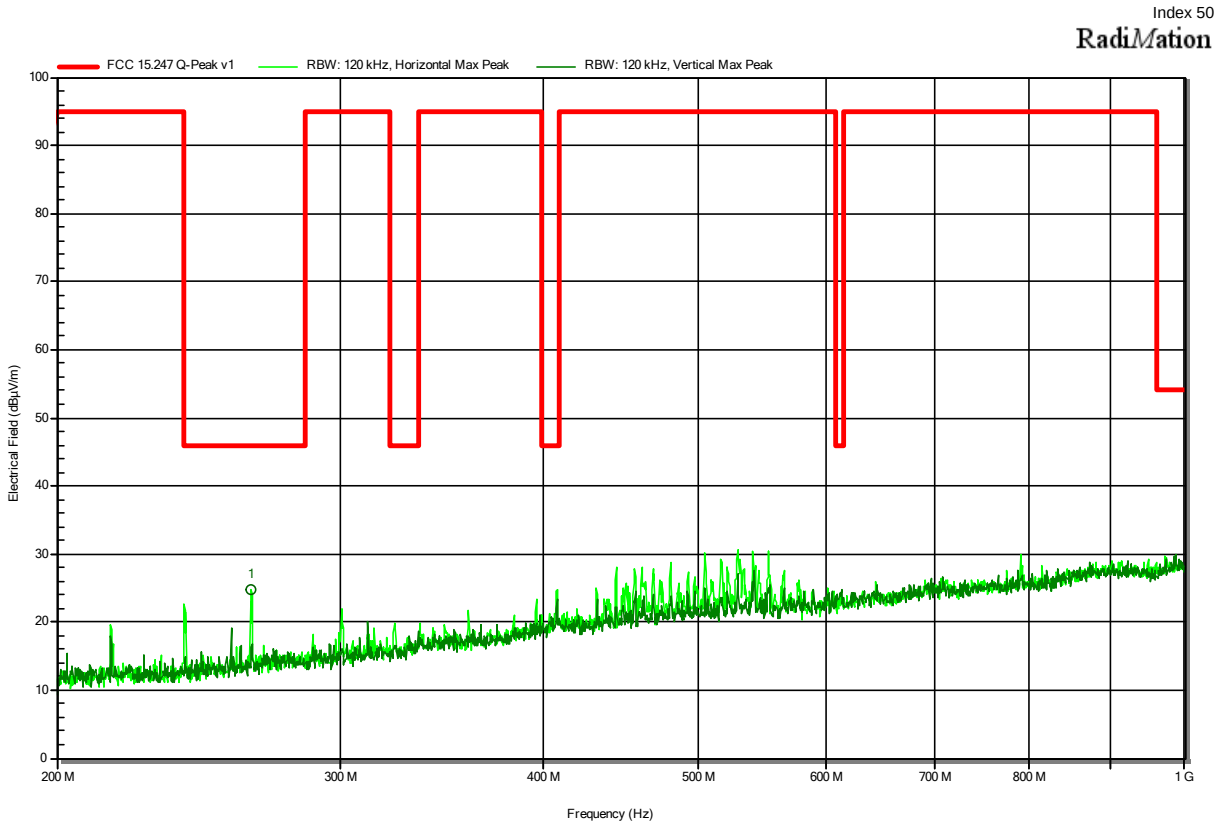
Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Qawasmeh
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Rohde & Schwarz HL 223
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 0 (2402 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
263.98 MHz	24.4 dBµV/m	46 dBµV/m	-21.63 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

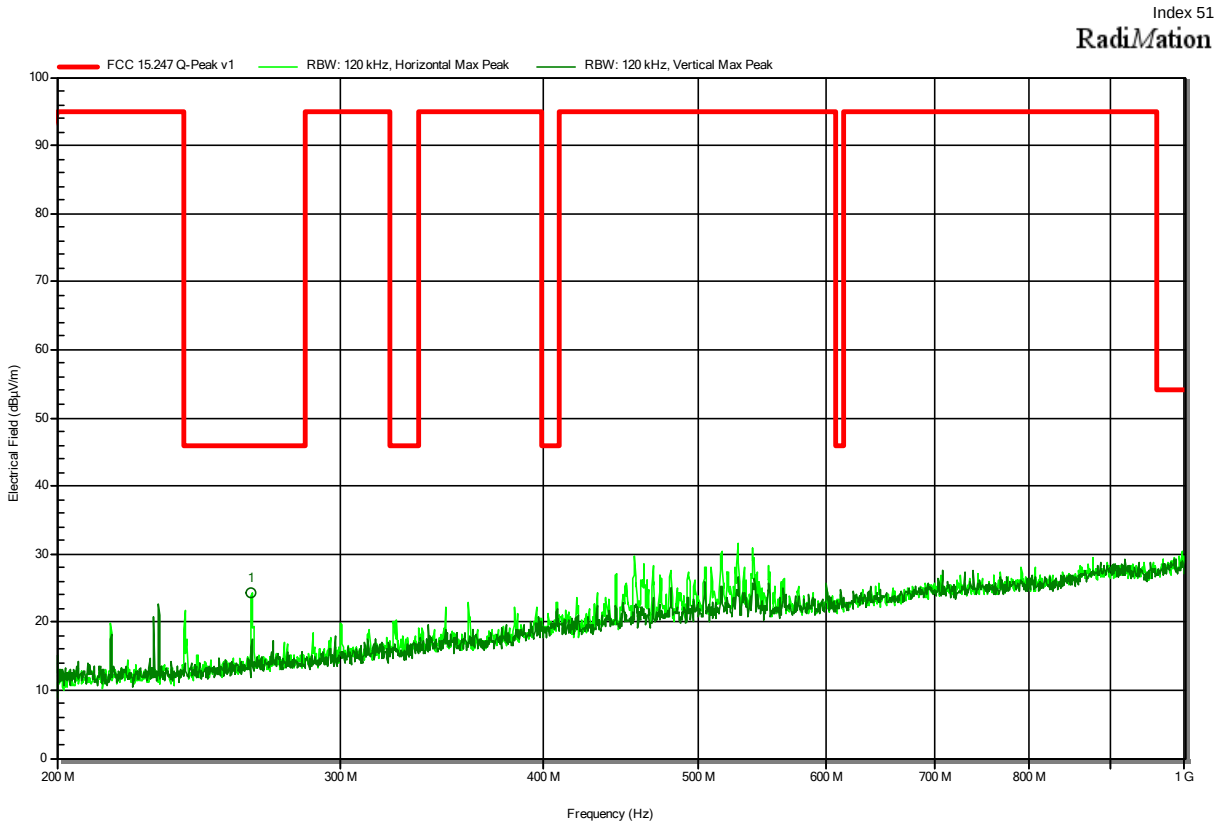
Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Qawasmeh
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Rohde & Schwarz HL 223
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 19 (2440 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
263.96 MHz	24.7 dBµV/m	46 dBµV/m	-21.32 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Qawasmeh
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Rohde & Schwarz HL 223
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 39 (2480 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



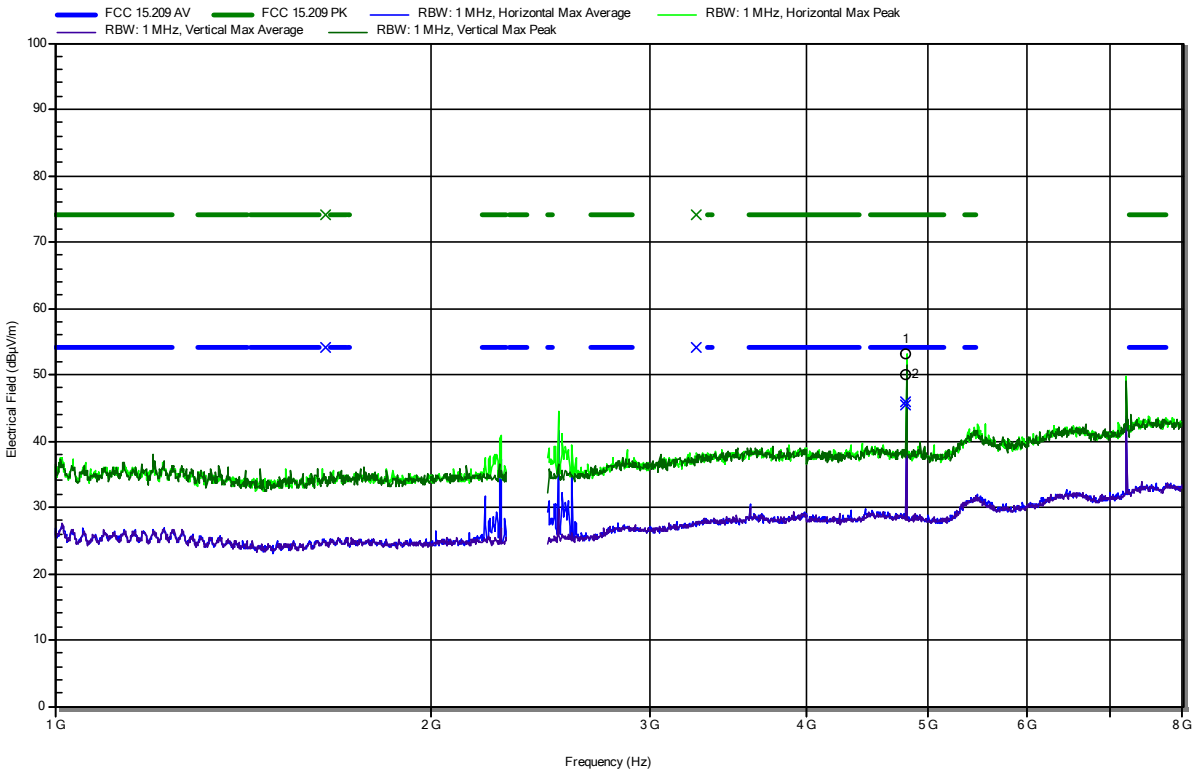
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
264.02 MHz	24.3 dBµV/m	46 dBµV/m	-21.67 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 0 (2402 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-11
Note:	EUT horizontal

Index 64

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
4.8033 GHz	53.11 dBµV/m	74 dBµV/m	-20.89 dB	Pass	Horizontal
4.8036 GHz	50.05 dBµV/m	74 dBµV/m	-23.95 dB	Pass	Vertical

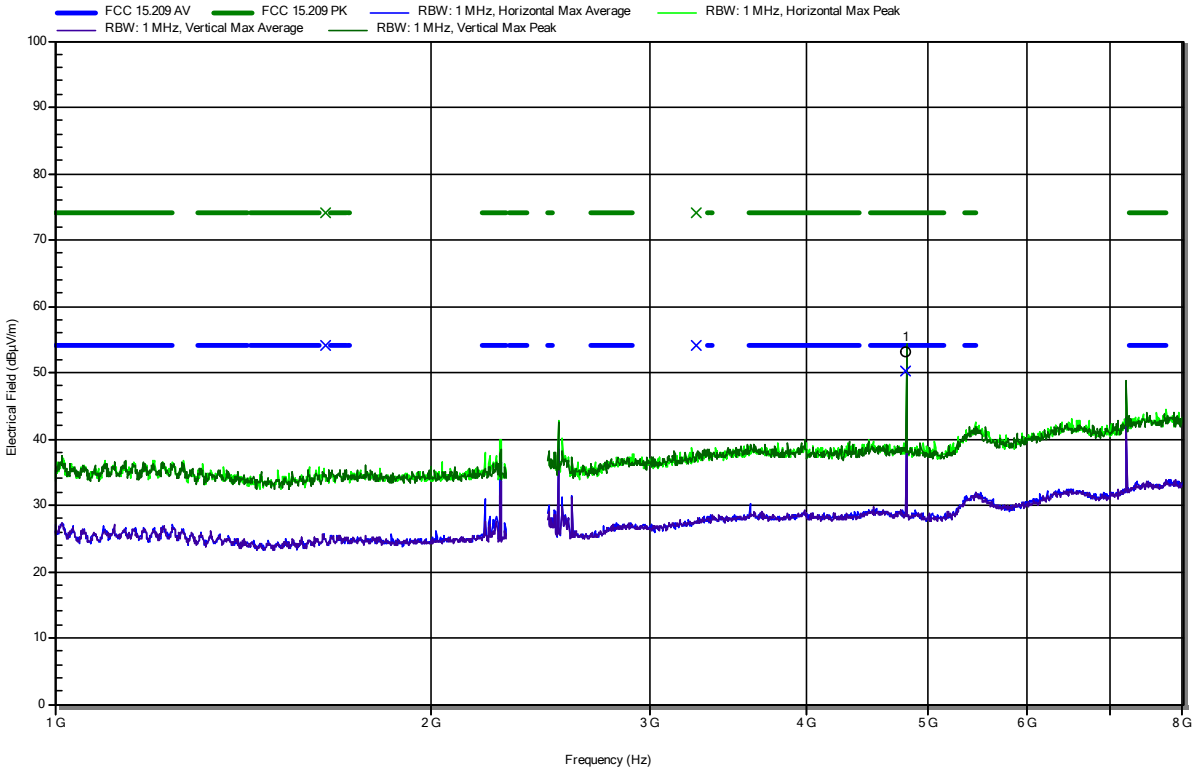
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
4.8033 GHz	45.89 dBµV/m	54 dBµV/m	-8.11 dB	Pass	Horizontal
4.8036 GHz	45.37 dBµV/m	54 dBµV/m	-8.63 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 0 (2402 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-11
Note:	EUT vertical

Index 63

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
4.8037 GHz	53.1 dBµV/m	74 dBµV/m	-20.9 dB	Pass	Vertical

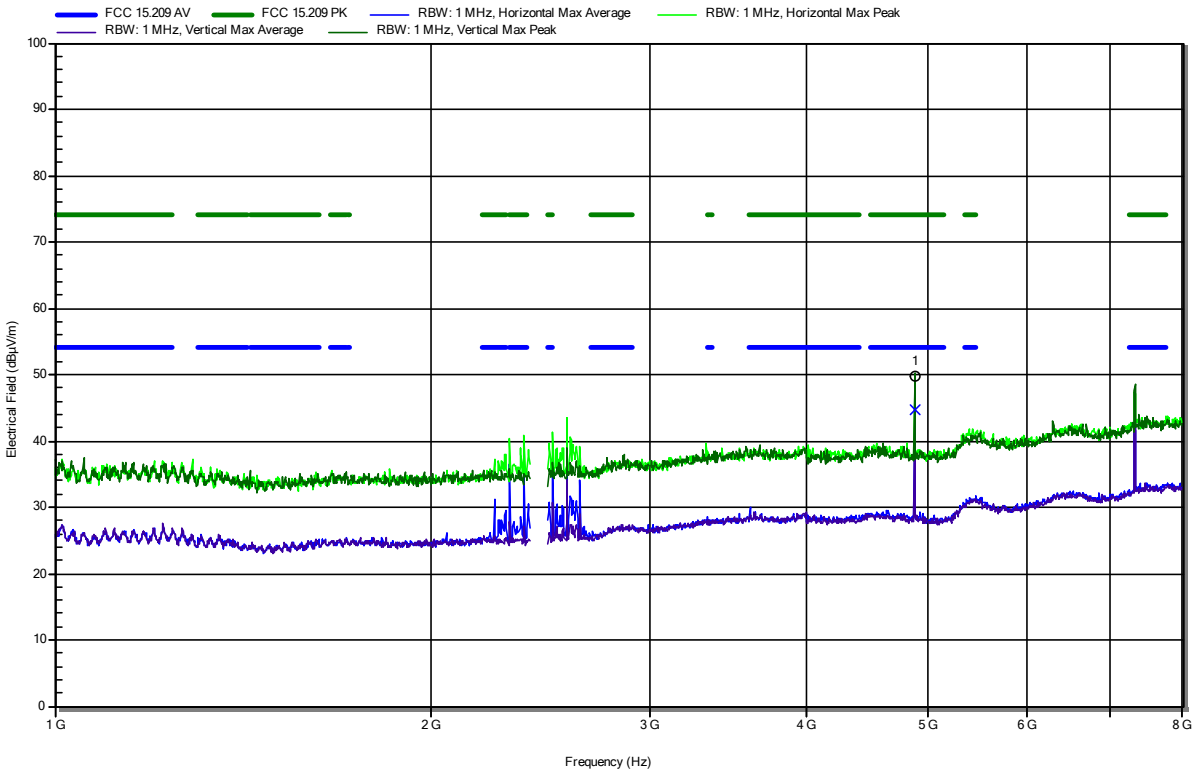
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
4.8037 GHz	50.27 dBµV/m	54 dBµV/m	-3.73 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 19 (2440 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-11
Note:	EUT horizontal

Index 69

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
4.8796 GHz	49.69 dBµV/m	74 dBµV/m	-24.31 dB	Pass	Vertical

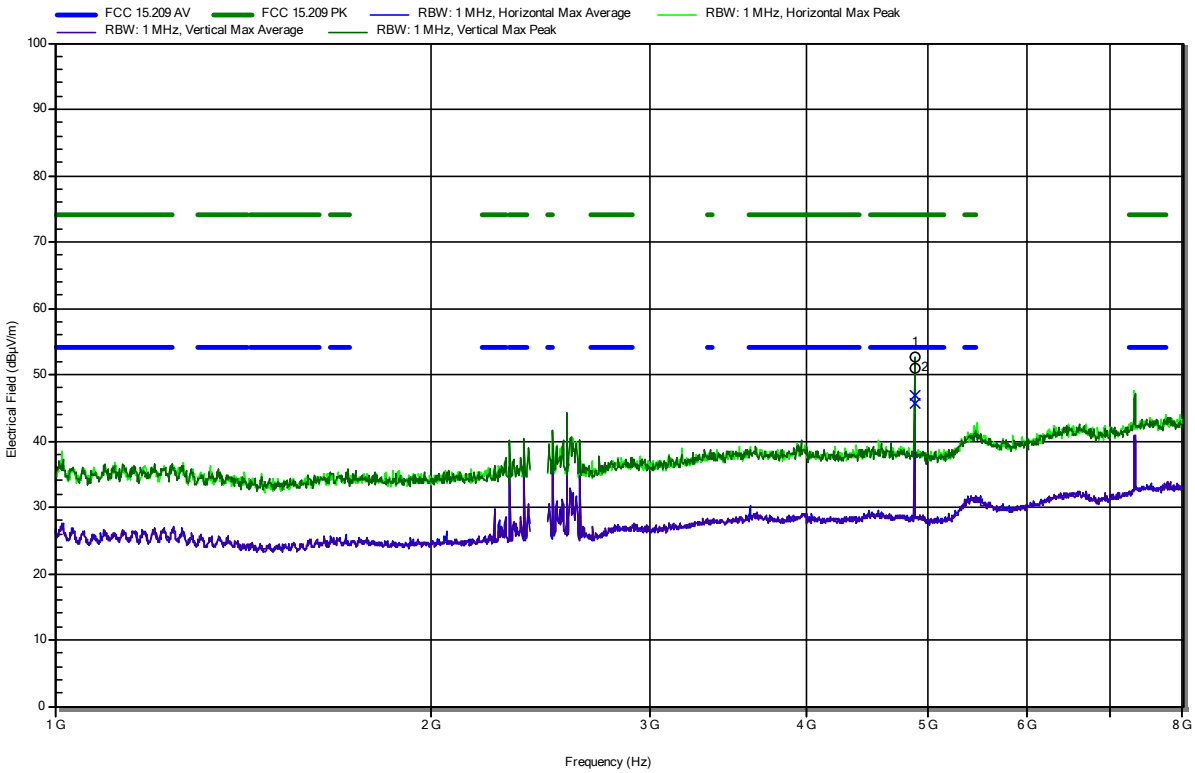
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
4.8796 GHz	44.72 dBµV/m	54 dBµV/m	-9.28 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 19 (2440 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-11
Note:	EUT vertical

Index 68

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
4.8796 GHz	52.58 dBµV/m	74 dBµV/m	-21.42 dB	Pass	Vertical
4.8805 GHz	50.92 dBµV/m	74 dBµV/m	-23.08 dB	Pass	Horizontal

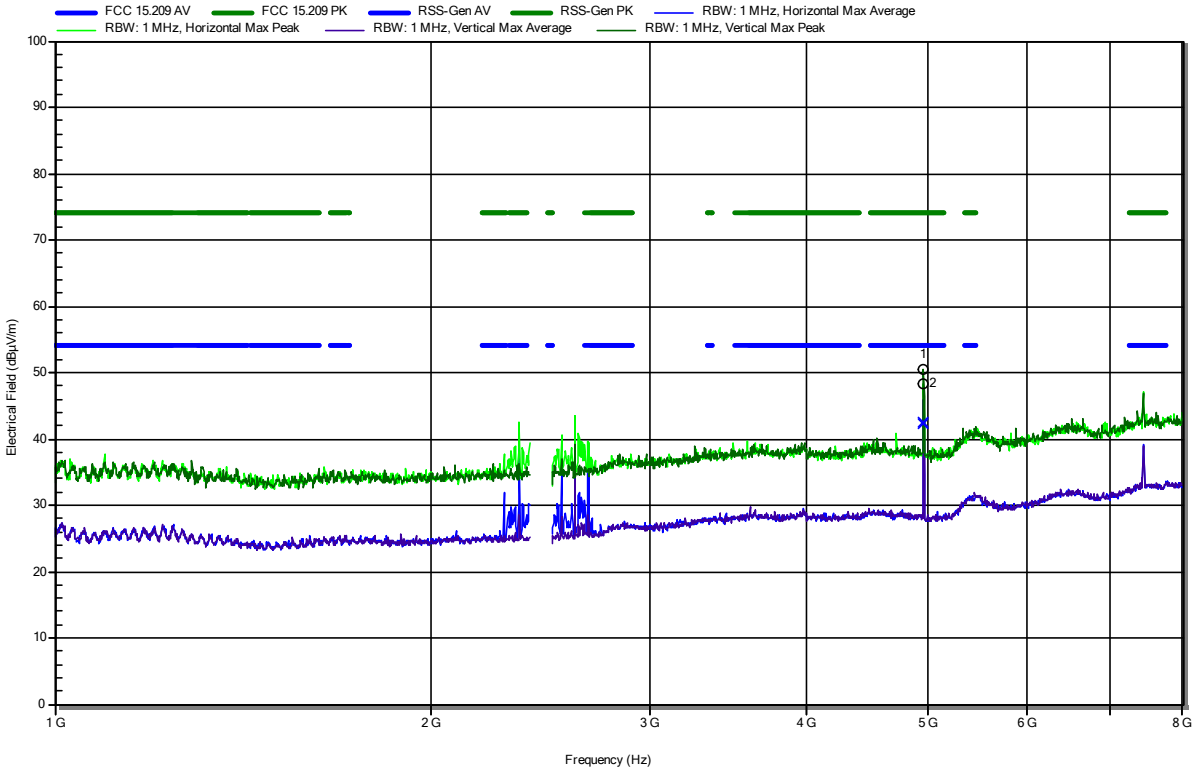
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
4.8796 GHz	45.61 dBµV/m	54 dBµV/m	-8.39 dB	Pass	Vertical
4.8805 GHz	46.86 dBµV/m	54 dBµV/m	-7.14 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 39 (2480 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-11
Note:	EUT horizontal

Index 67

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
4.959 GHz	50.41 dBµV/m	74 dBµV/m	-23.59 dB	Pass	Vertical
4.959 GHz	48.4 dBµV/m	74 dBµV/m	-25.6 dB	Pass	Horizontal

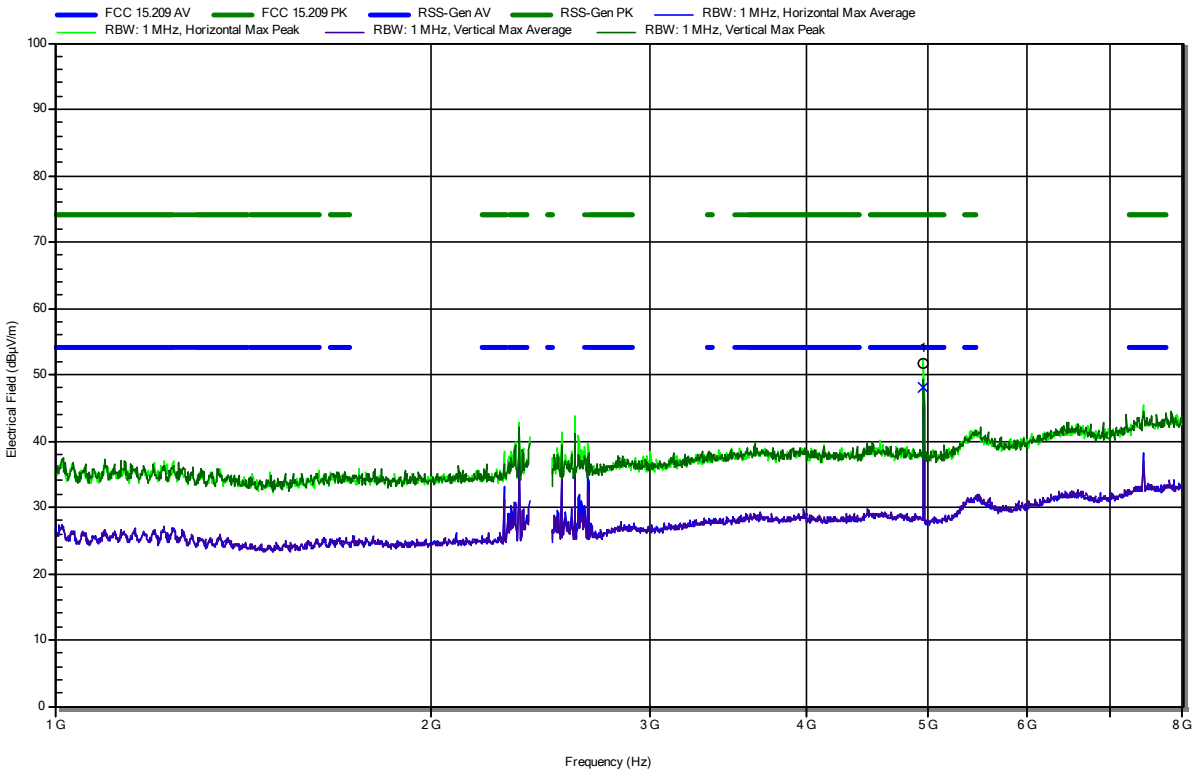
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
4.959 GHz	42.36 dBµV/m	54 dBµV/m	-11.64 dB	Pass	Vertical
4.959 GHz	42.49 dBµV/m	54 dBµV/m	-11.51 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 39 (2480 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-11
Note:	EUT vertical

Index 66

RadiMation

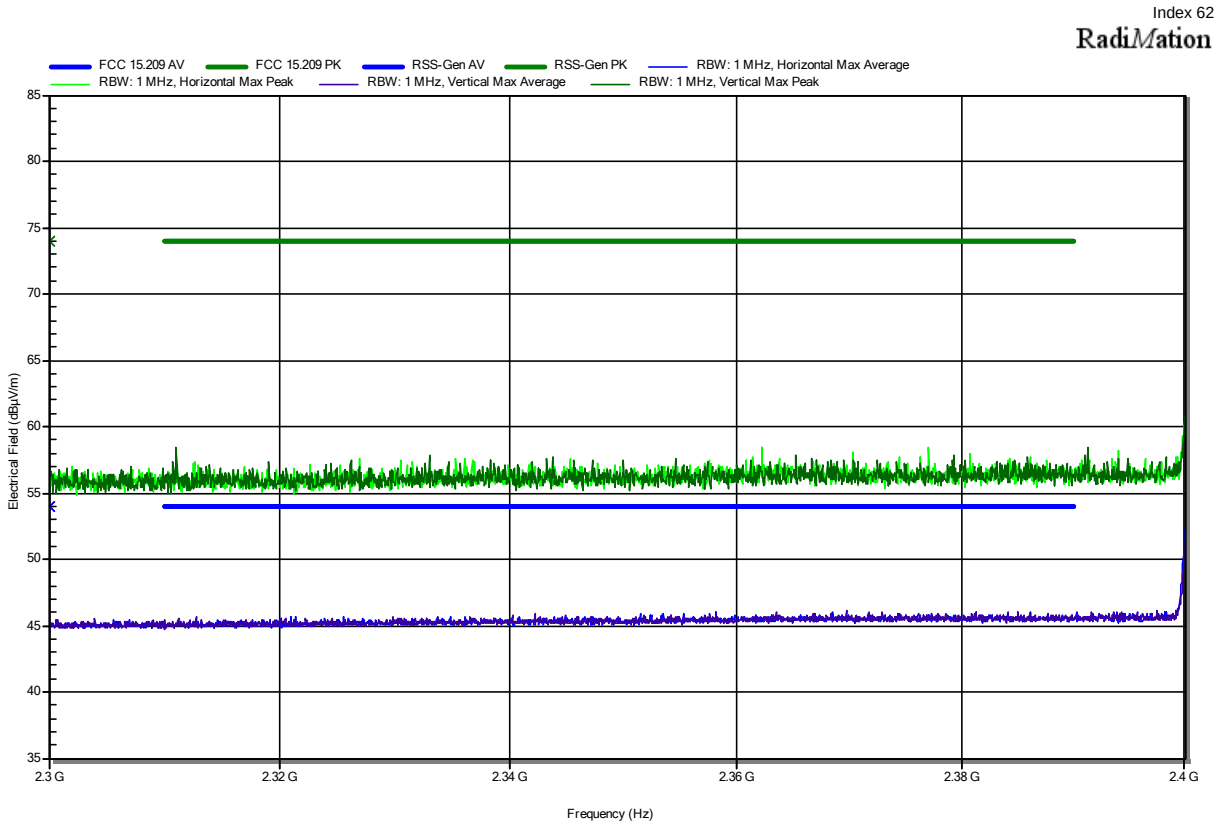


Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
4.96 GHz	51.76 dBµV/m	74 dBµV/m	-22.24 dB	Pass	Horizontal

Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
4.96 GHz	48.14 dBµV/m	54 dBµV/m	-5.86 dB	Pass	Horizontal

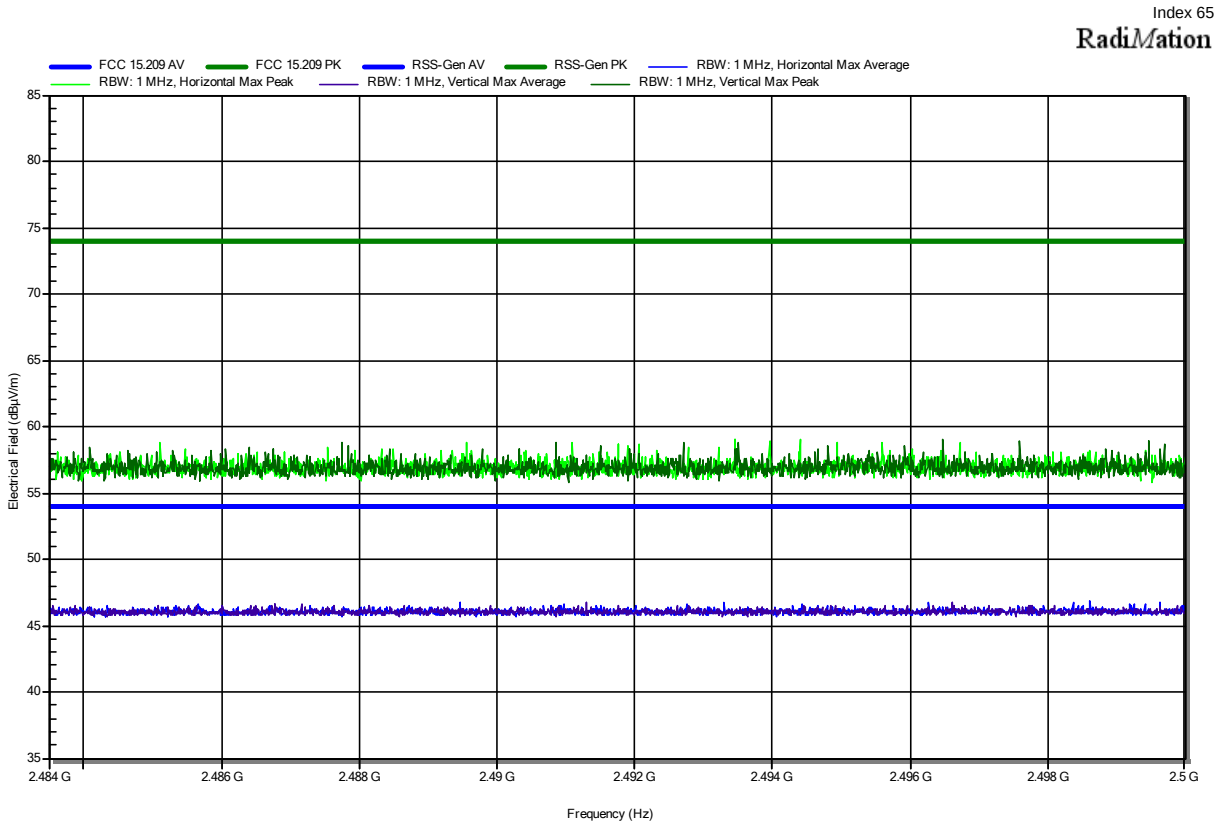
Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 0 (2402 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-11
Note:	lower bandedge EUT vertical



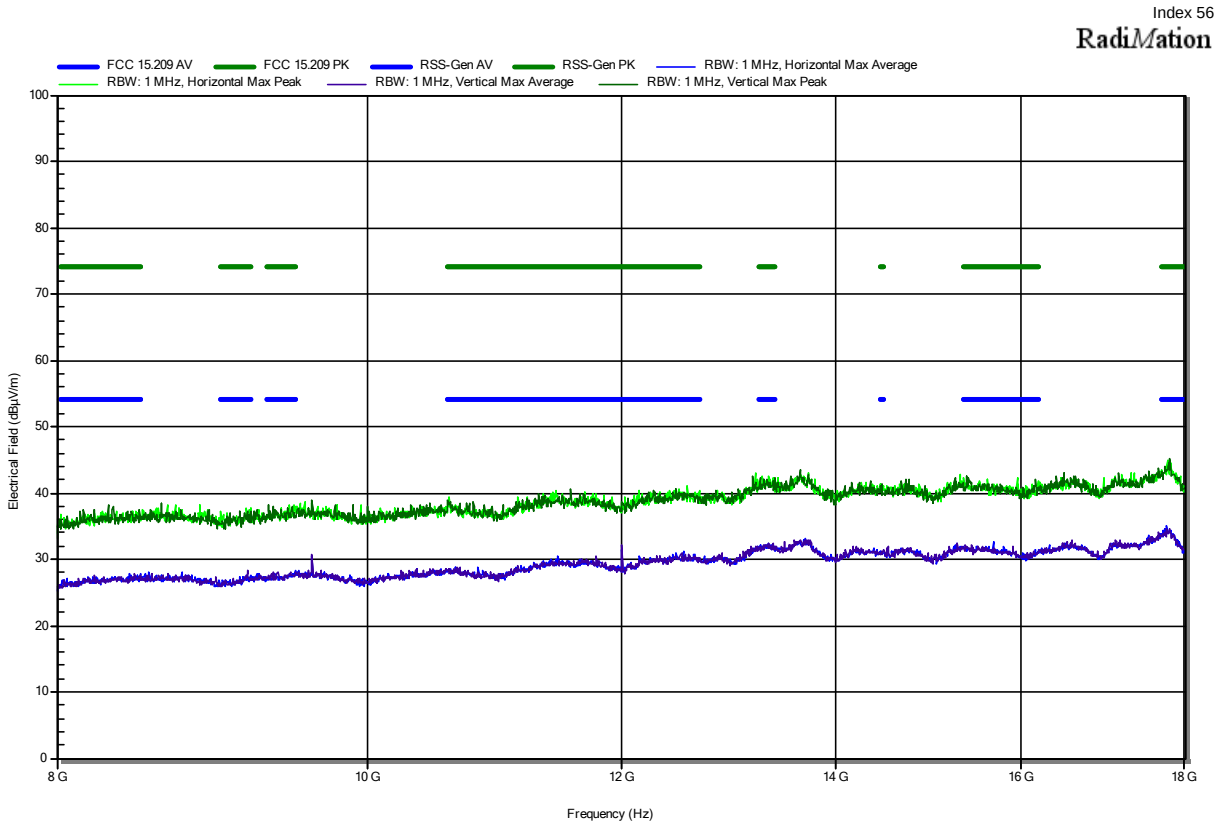
Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 39 (2480 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-11
Note:	upper bandedge EUT vertical



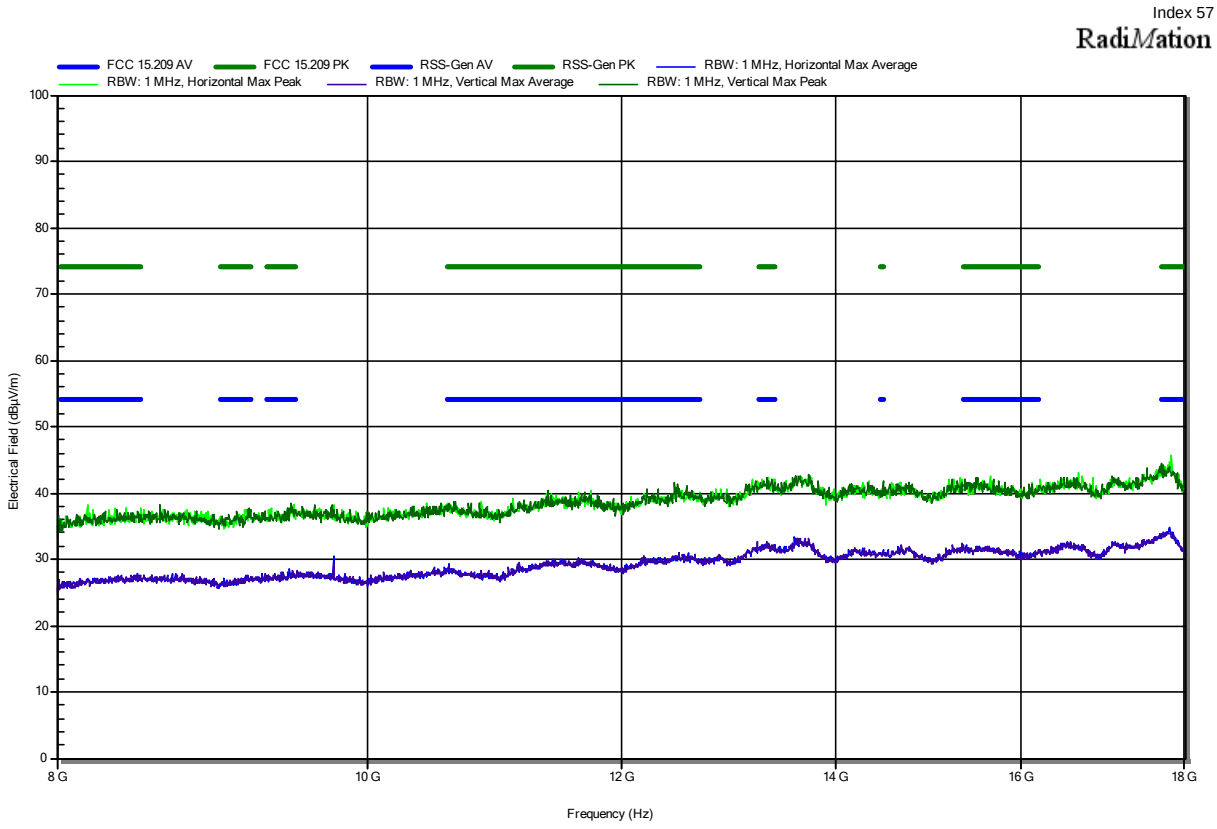
Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 0 (2402 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 19 (2440 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



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Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
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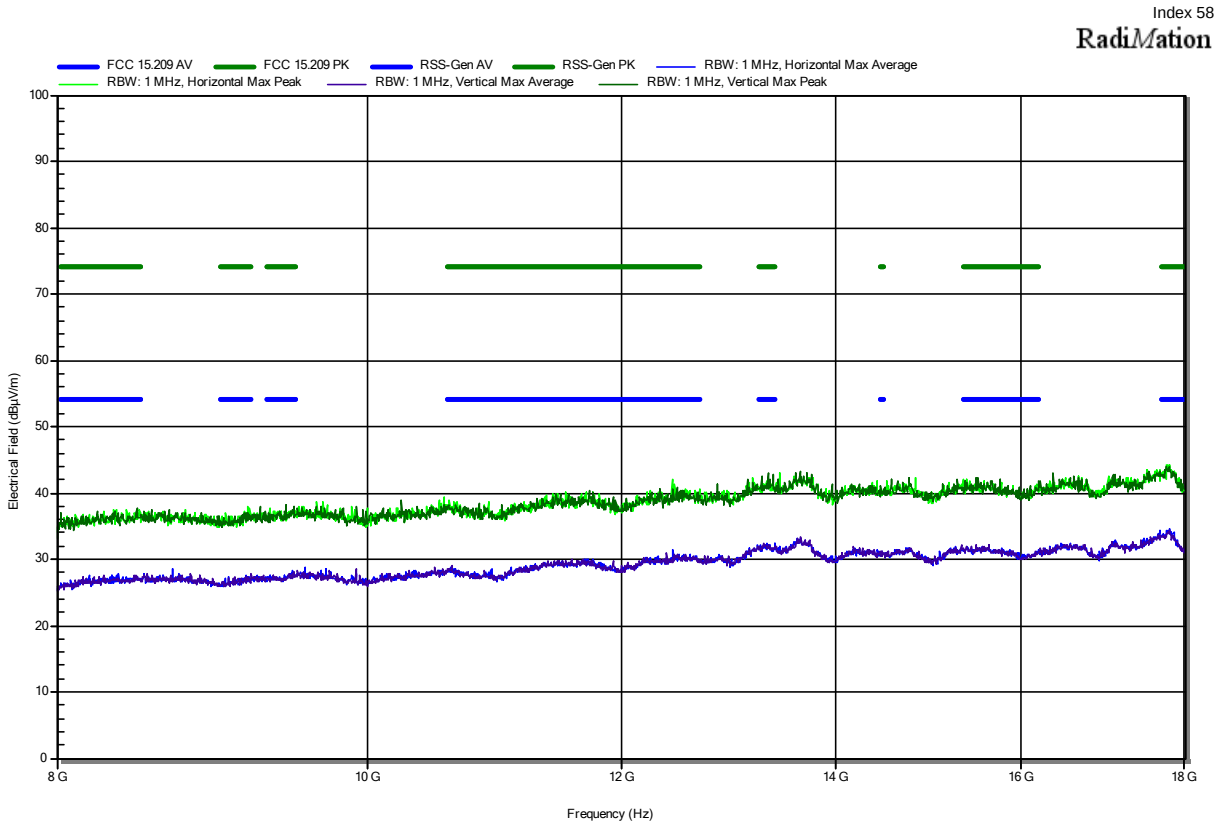
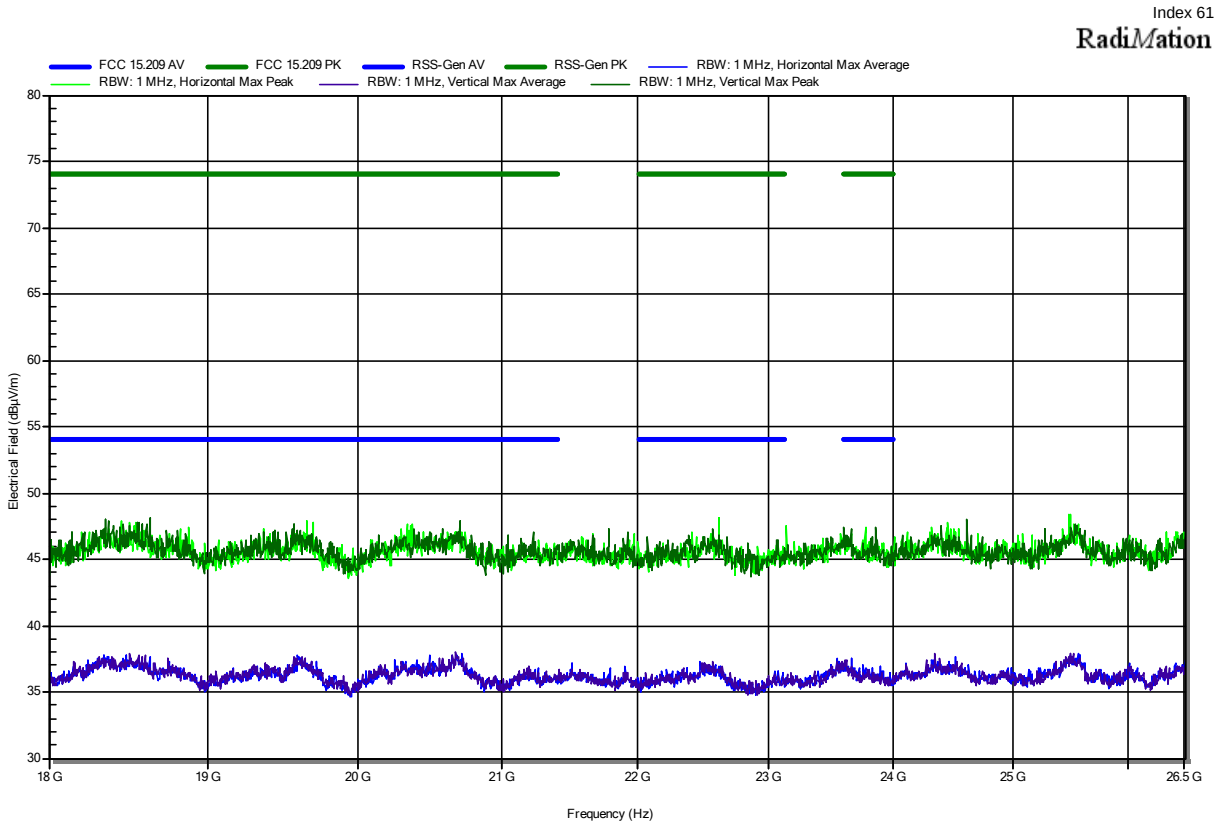
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 39 (2480 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2112-1241
Applicant:	fischertechnik GmbH
Model Description:	Roboter Chassis Early Coding for Toy and Education market
Model:	Roboter Chassis 183268
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Amplifier Research AT4560
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 0 (2402 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



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Model Description:	Roboter Chassis Early Coding for Toy and Education market
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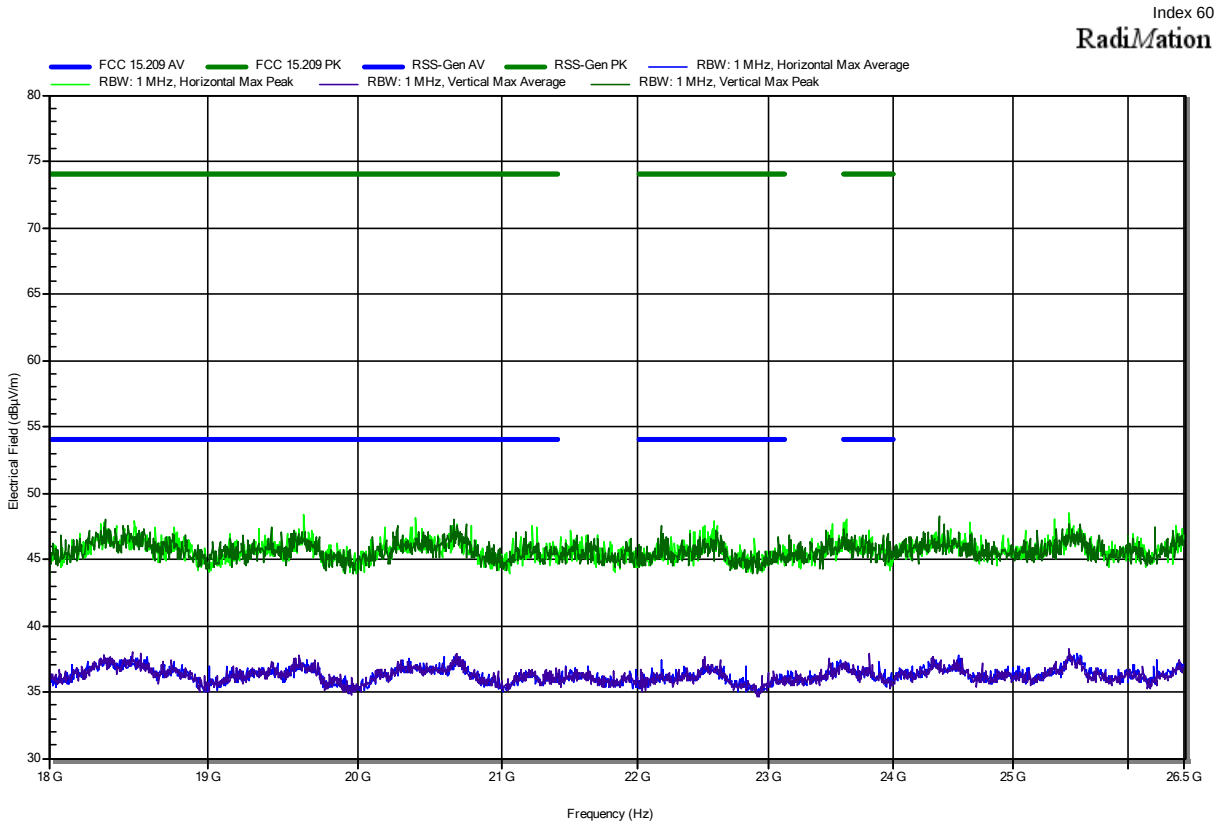
Test Sample ID:	38602 (SN:183268)
Test Site:	Eurofins Product Service GmbH
Operator:	Mrs Hoang
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Amplifier Research AT4560
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 19 (2440 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



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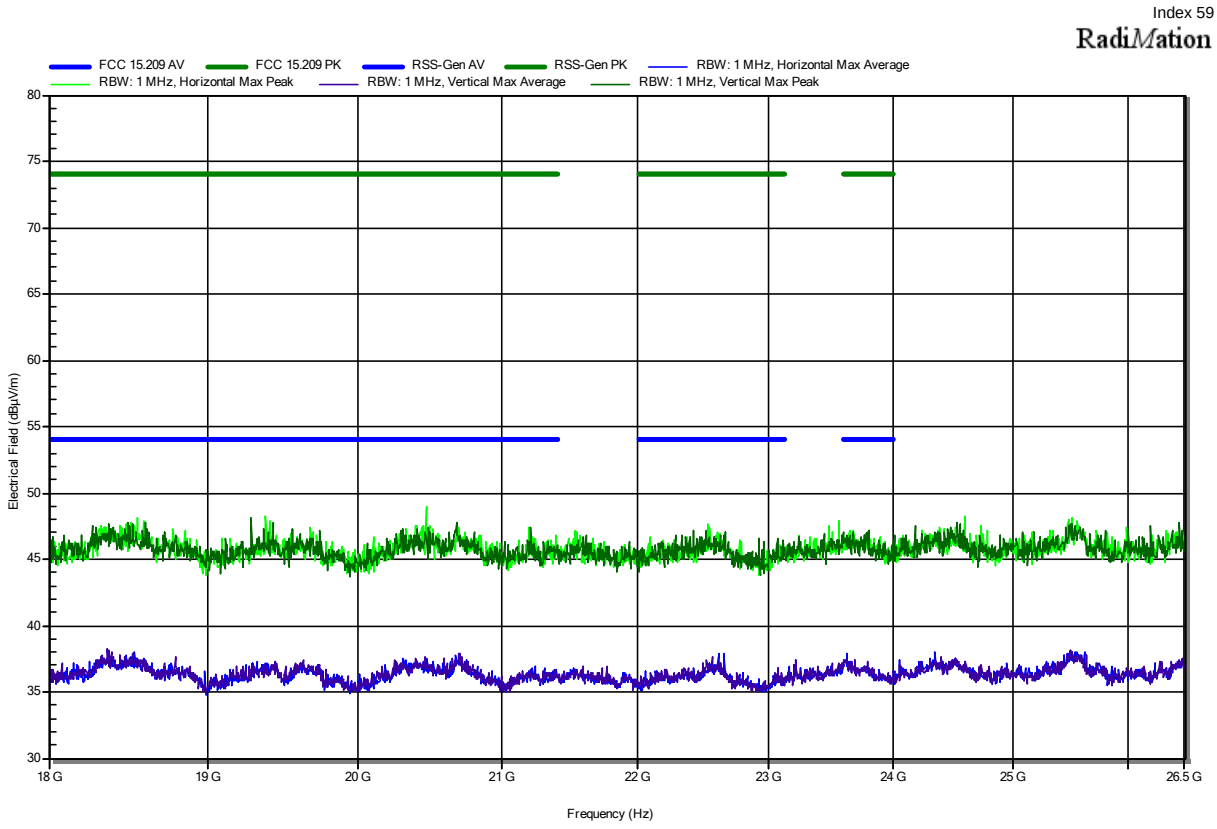
Test Conditions:	Tnom: 24 °Celsius, Vnom: 4.5 V DC (3x AA Battery)
Antenna:	Amplifier Research AT4560
Measurement distance:	3 m
Mode:	Tx; BT-LE_CH 39 (2480 MHz)_1Mbite_GFSK_37 Byte_Pmax= 4 dBm
Test Date:	2022-03-07
Note:	EUT vertical



= = = END OF TEST REPORT = = =