

RADIO REPORT FCC 47 CFR Part 15C ISED Canada RSS-247 Digital transmission systems operating within the 2400.0 MHz - 2483.5 MHz band	
Report Reference No	G0M-2106-9857-TFC247BL1-V01
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	ANDREAS STIHL AG & Co. KG
Address	Andreas-Stihl-Straße 4 71336 Waiblingen GERMANY
Test Specification	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, Amendment 1, 2019-03
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	battery pack 4871 AR-C
Model(s)	AR 2000 L
Additional Model(s)	None
Brand Name(s)	Andreas Stihl AG & Co. KG
Hardware Version(s)	HW 03.10
Software Version(s)	SW 00.17
FCC ID	2ALP8AR1
IC	23431-AR1
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	2021-09-28	
Report:		
Compiled by	Charline Graf	
Tested by (+ signature) (Responsible for Test)	Charline Graf	
Approved by (+ signature) (Deputy Head of Lab)	Toralf Jahn	
Date of Issue	2021-10-28	
Total number of pages	60	
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	2021-10-28	Initial Release	

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

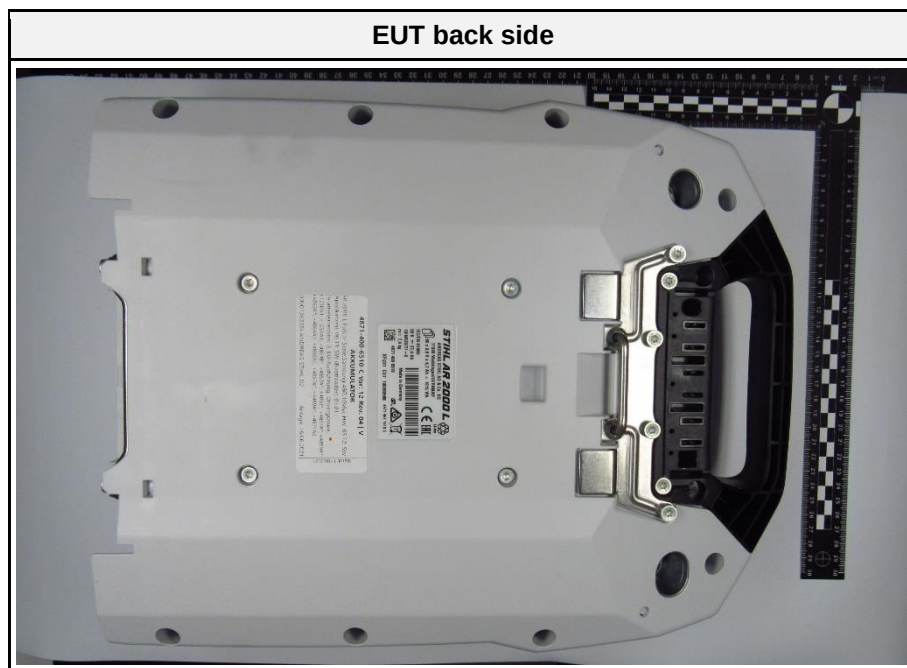
REPORT INDEX

1	Equipment (Test Item) Under Test.....	6
1.1	Photos – Equipment External	7
1.2	Photos – Equipment Internal	8
1.3	Photos – Test Setup.....	10
1.4	Support Equipment.....	21
1.5	Test Modes	22
1.6	Test Frequencies.....	23
1.7	Sample emission level calculation.....	24
2	Result Summary.....	25
3	Test Conditions and Results.....	26
3.1	Test Conditions and Results - AC powerline conducted emissions.....	26
3.2	Test Conditions and Results - Transmitter radiated emissions	28
3.3	Test Conditions and Results - Receiver radiated emissions	31
ANNEX A	Transmitter spurious emissions	33
ANNEX B	Receiver spurious emissions	57

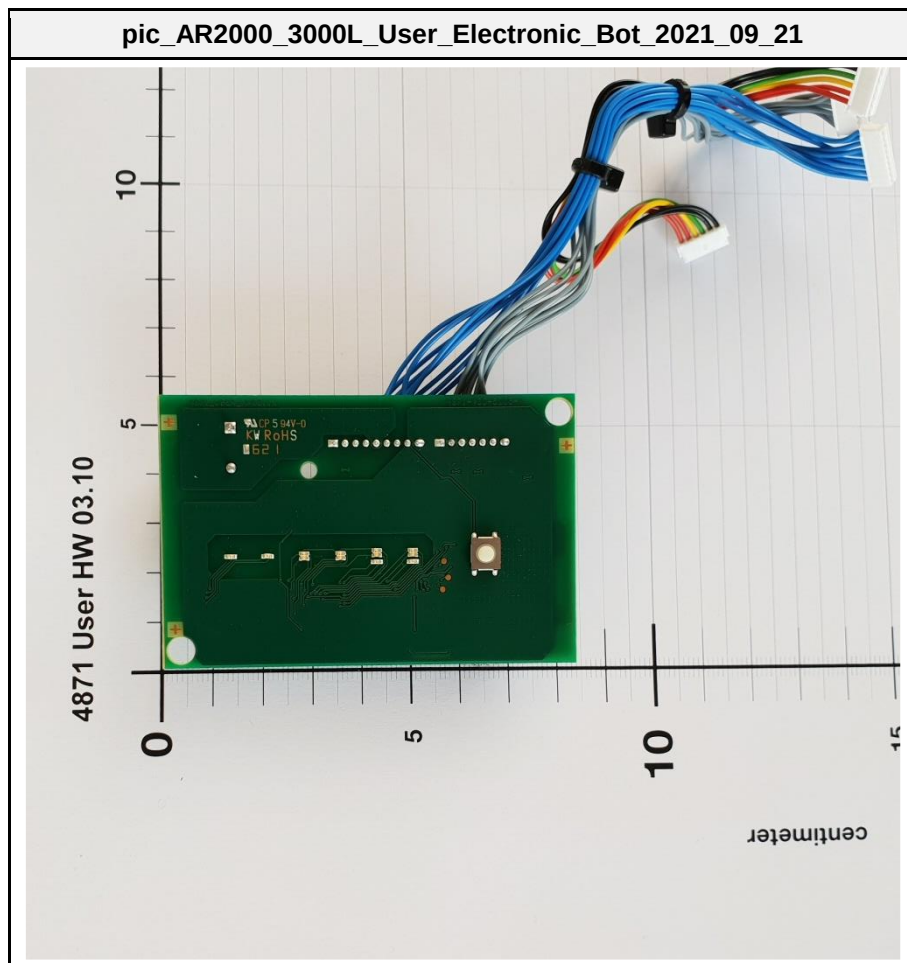
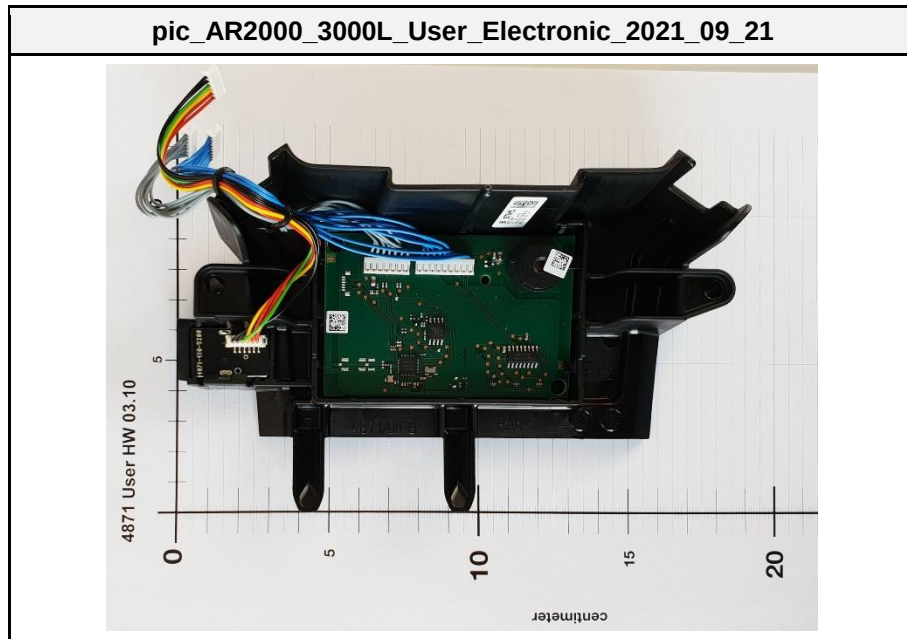
1 Equipment (Test Item) Under Test

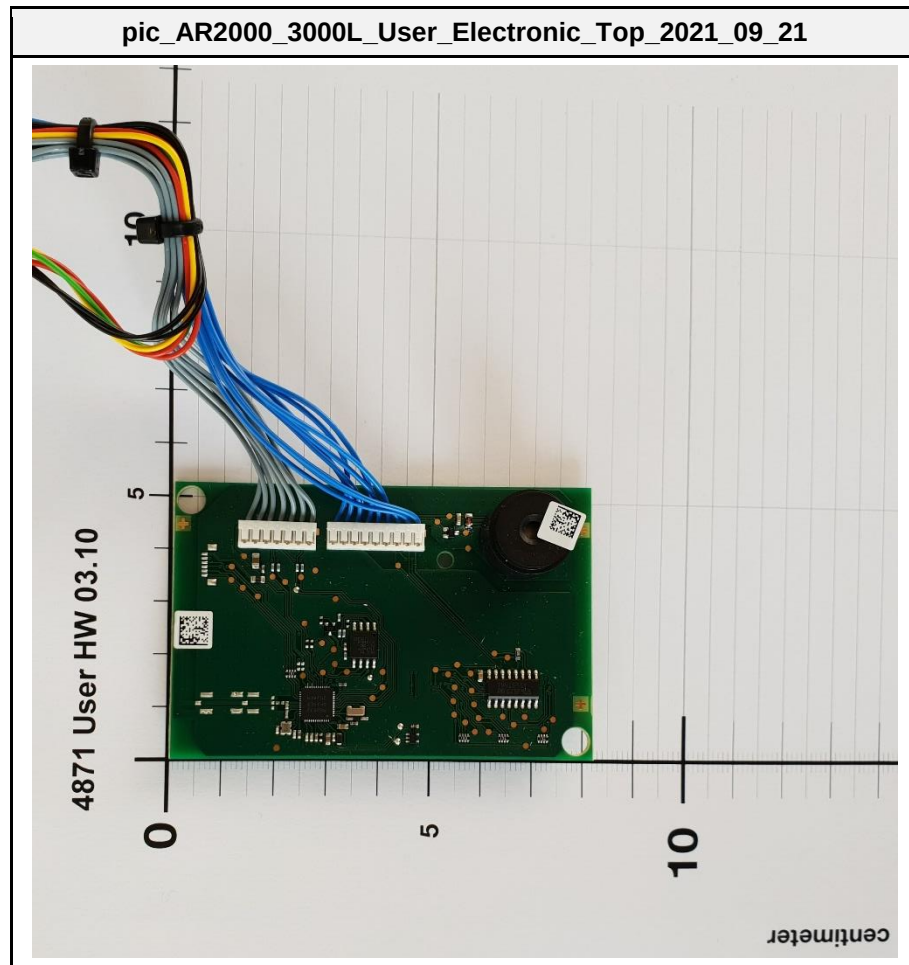
Description	battery pack 4871 AR-C	
Model	AR 2000 L	
Additional Model(s)	None	
Brand Name(s)	Andreas Stihl AG & Co. KG	
Serial Number(s)	None	
Hardware Version(s)	HW 03.10	
Software Version(s)	SW 00.17	
PMN	AR 3000 L / AR 2000 L	
HVIN	AR 3000 L / AR 2000 L	
FVIN	-	
HMN	-	
FCC ID	2ALP8AR1	
IC	23431-AR1	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400.0 MHz - 2483.5 MHz	
Radio technology	Bluetooth LE 4.1	
Bluetooth Specification	LE 1M PHY	Yes
	LE 2M PHY	No
	LE Coded PHY S=8 (125 kbit)	No
	LE Coded PHY S=2 (500 kbit)	No
	Stable Modulation Index - Transmitter	No
	Stable Modulation Index - Receiver	No
Modulation	GFSK	
Number of antenna ports	1	
Antenna	Type	Integrated antenna
	Model	Inverted F
	Manufacturer	ANDREAS STIHL AG & Co. KG
	Gain	0 dBi
Supply Voltage	V _{NOM}	36 VDC
Operating Temperature	T _{NOM}	25 °C
AC/DC-Adaptor	Model	4850
	Vendor	STIHL
	Input	220-240 V / 50 Hz
	Output	27 - 42 V
Manufacturer	ANDREAS STIHL AG & Co. KG Andreas-Stihl-Straße 4 71336 Waiblingen GERMANY	

1.1 Photos – Equipment External

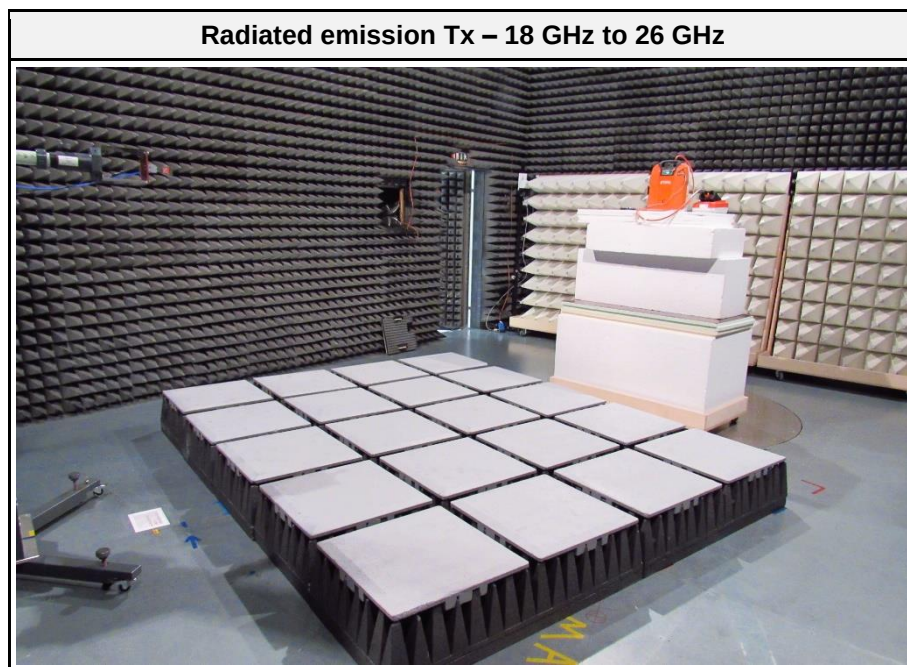
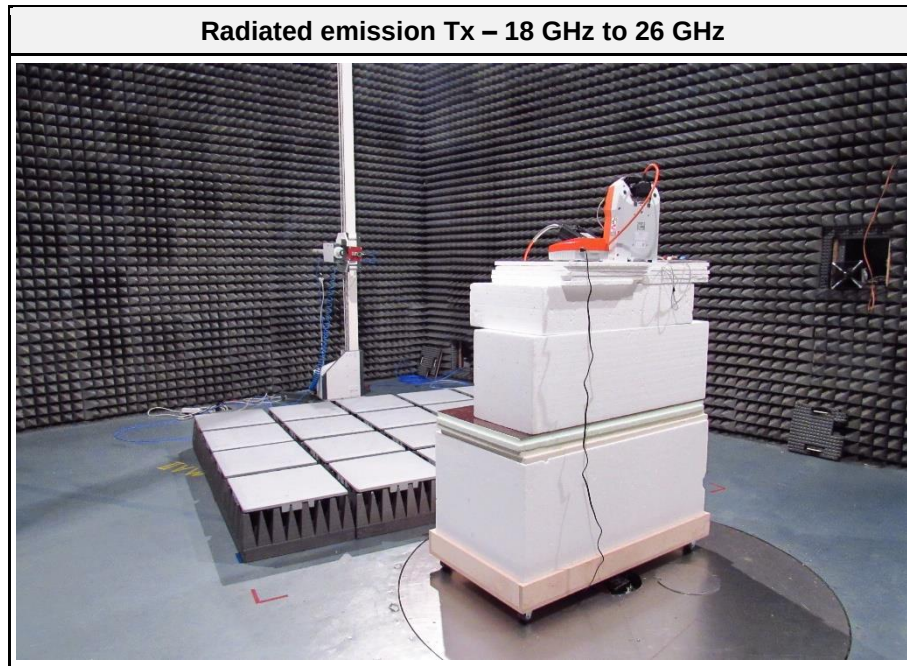


1.2 Photos – Equipment Internal

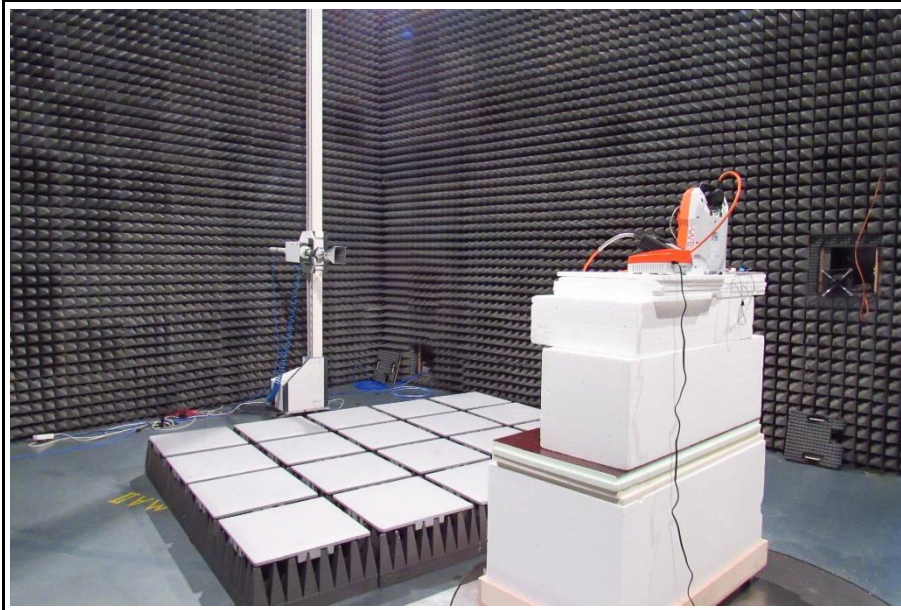




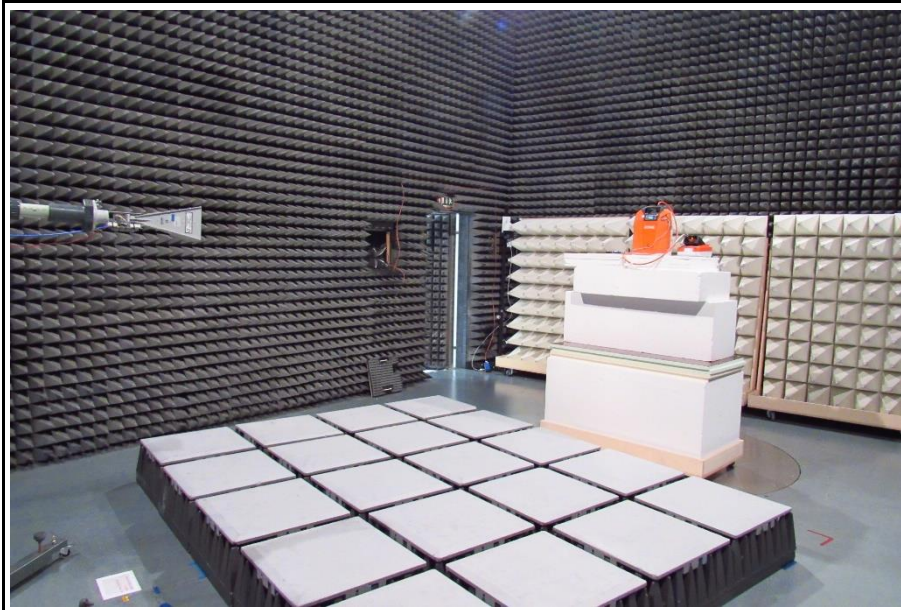
1.3 Photos – Test Setup



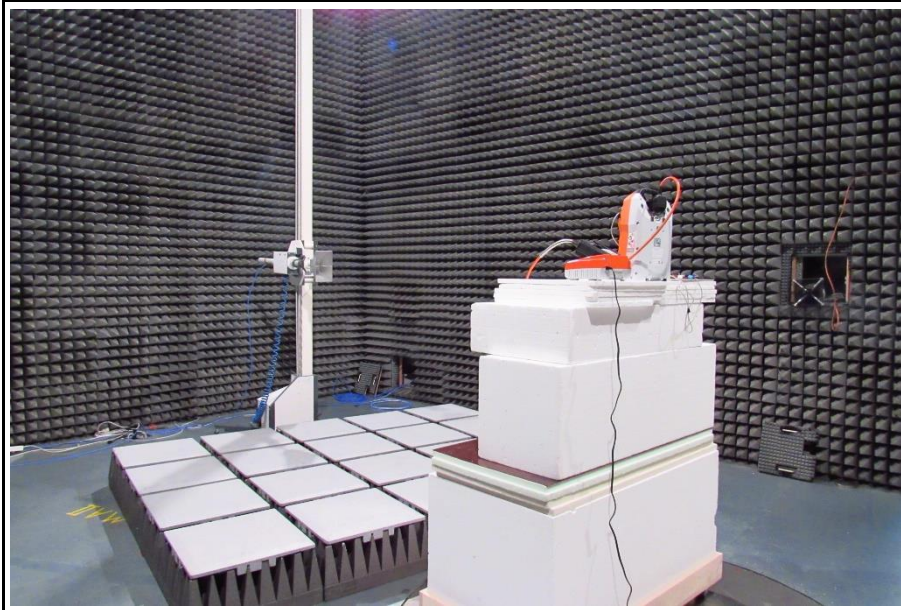
Radiated emission Tx – 6.5 GHz to 18 GHz



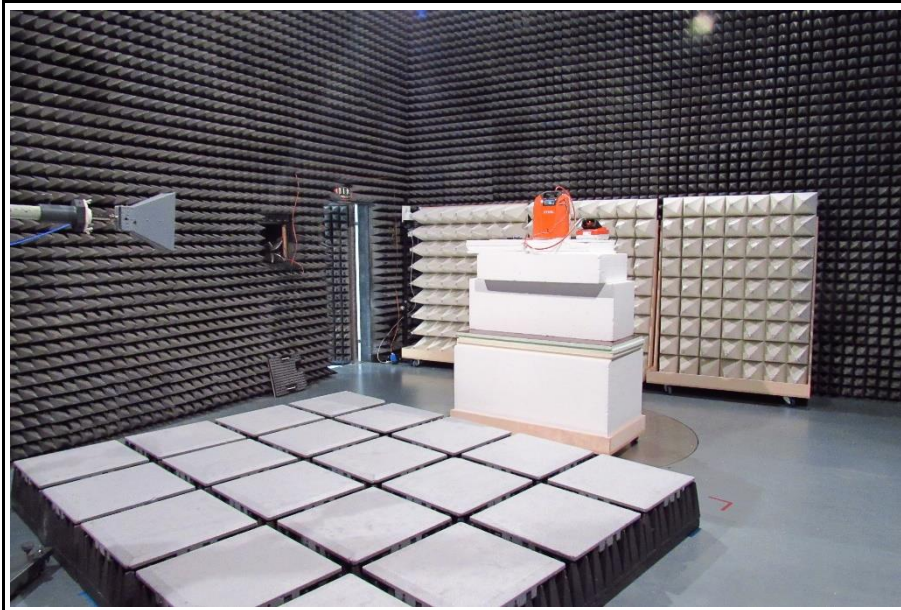
Radiated emission Tx – 6.5 GHz to 18 GHz



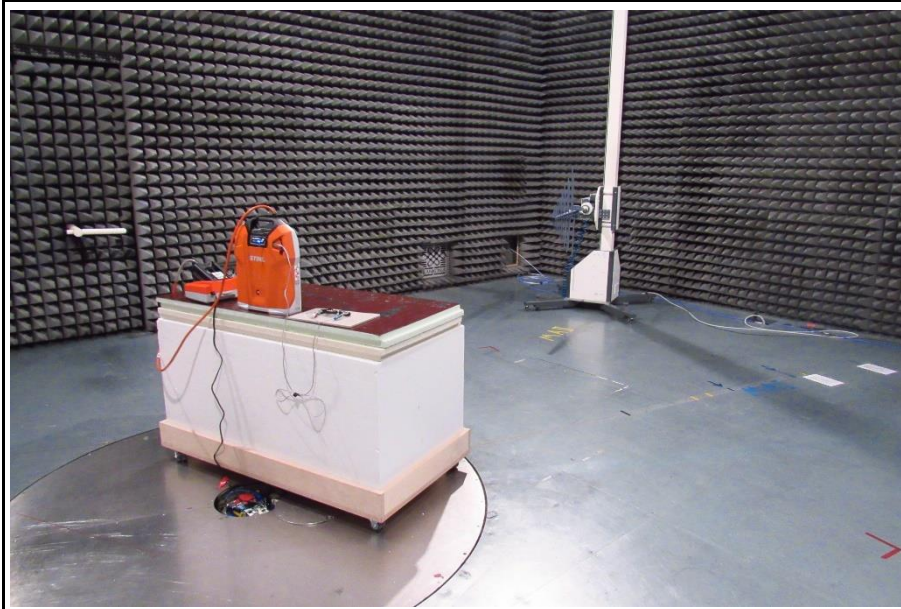
Radiated emission Tx – 1 GHz to 6.5 GHz



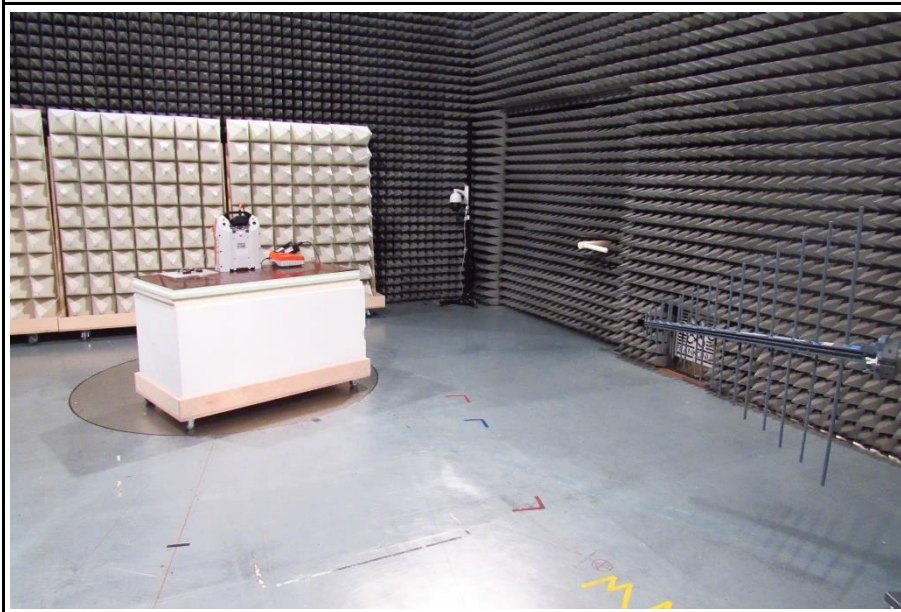
Radiated emission Tx – 1 GHz to 6.5 GHz



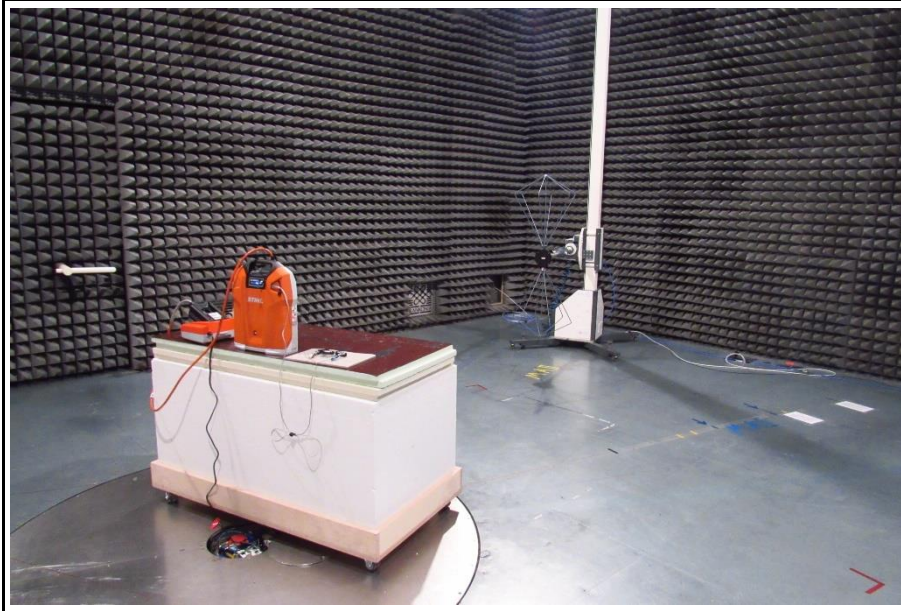
Radiated emission Tx - 200 MHz to 1 GHz



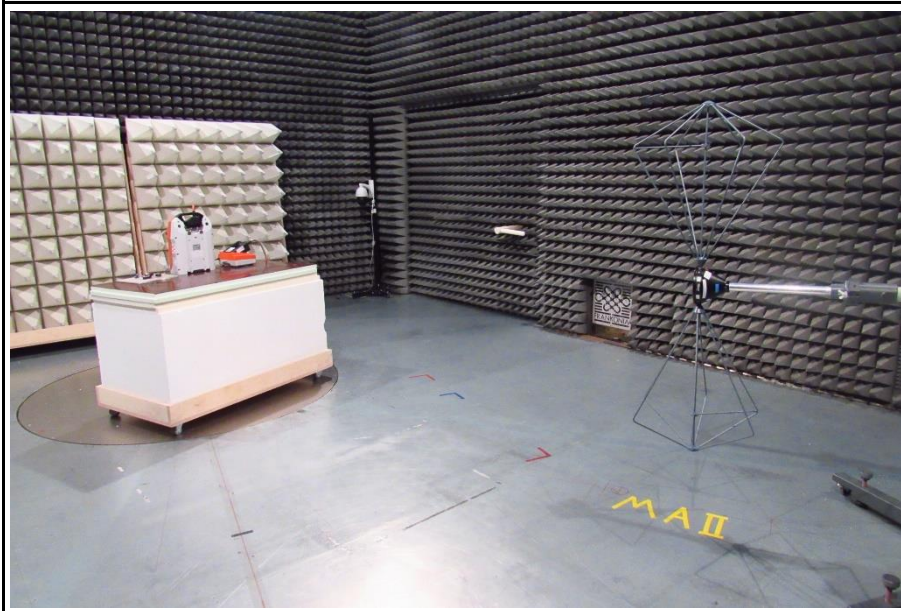
Radiated emission Tx - 200 MHz to 1 GHz



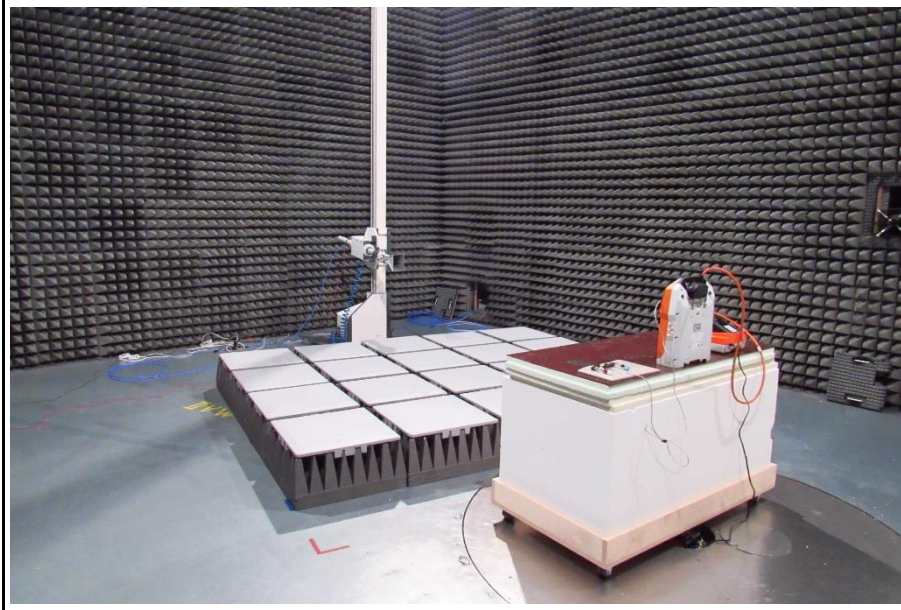
Radiated emission Tx - 30 MHz to 200 MHz



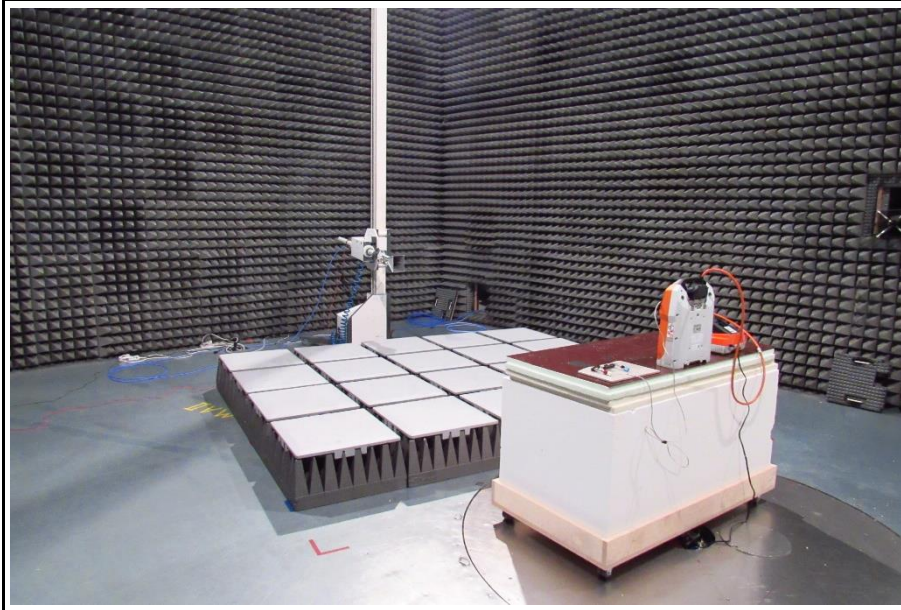
Radiated emission Tx - 30 MHz to 200 MHz



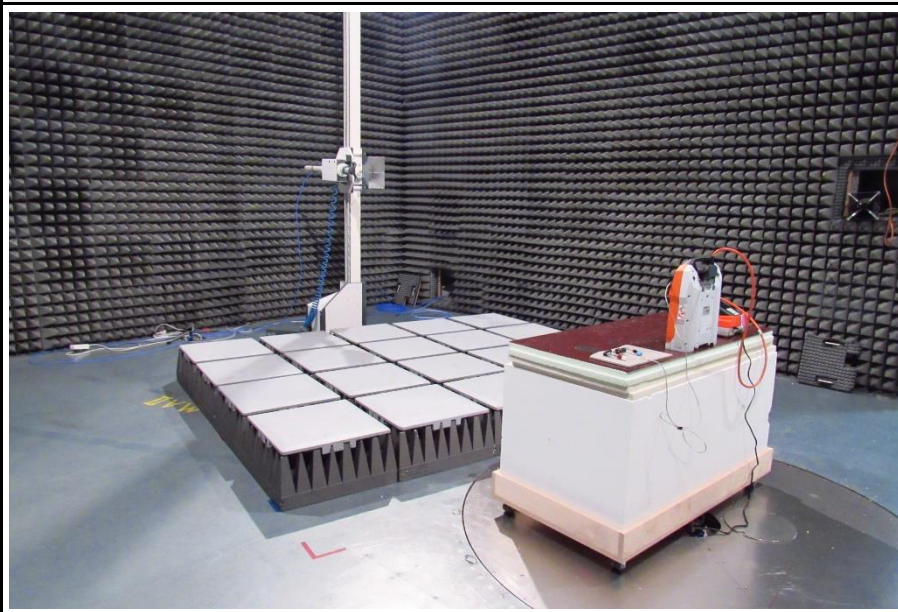
Radiated emission Rx – 6.5 GHz to 18 GHz



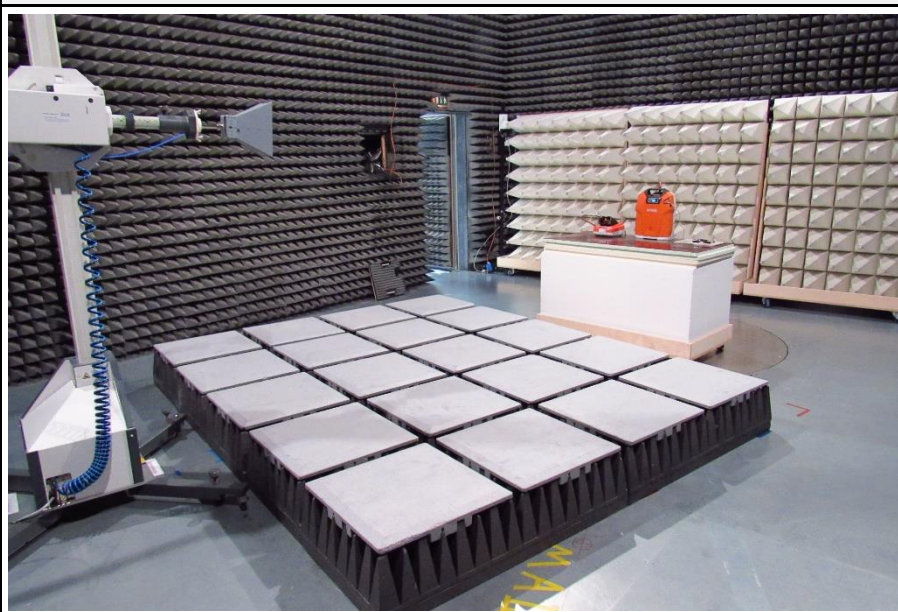
Radiated emission Rx – 6.5 GHz to 18 GHz



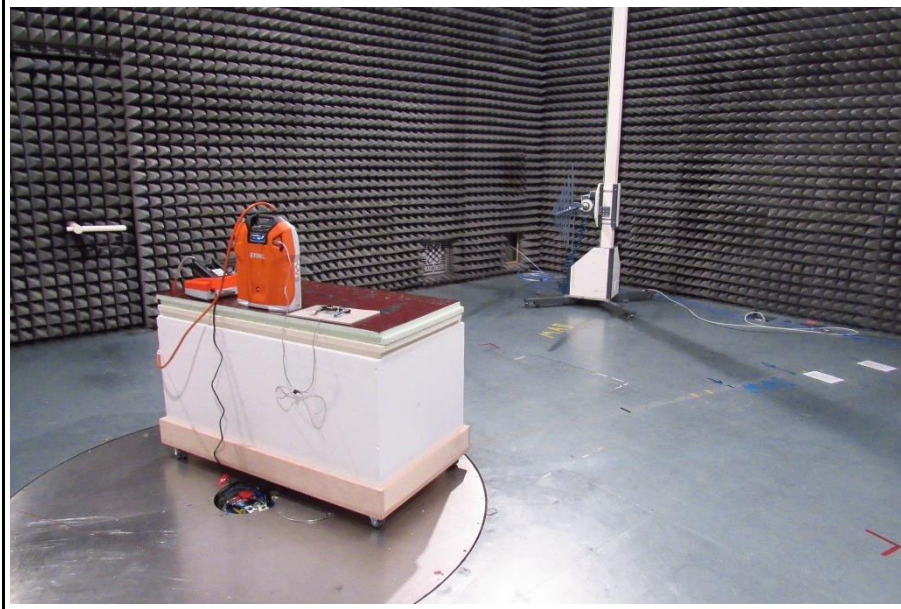
Radiated emission Rx – 1 GHz to 6.5 GHz



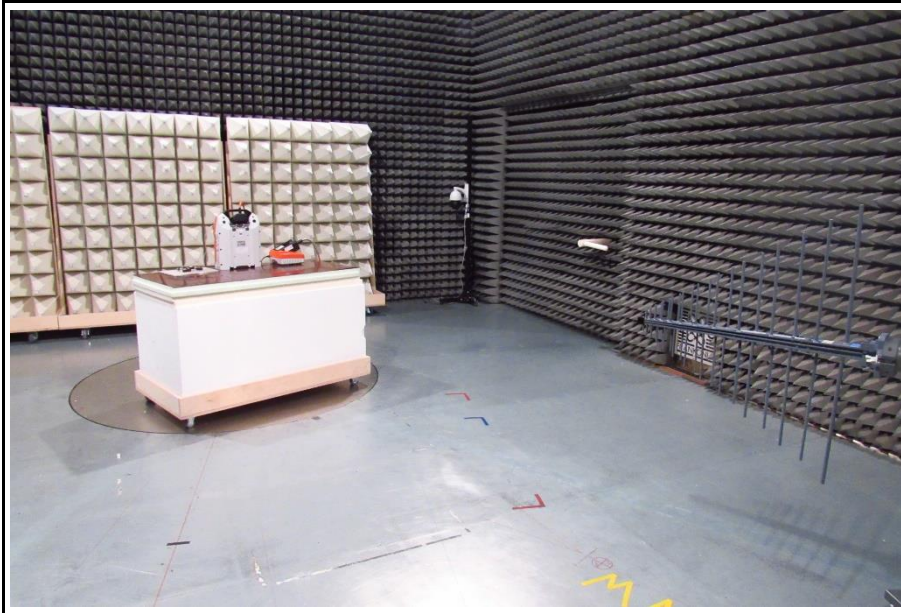
Radiated emission Rx – 1 GHz to 6.5 GHz



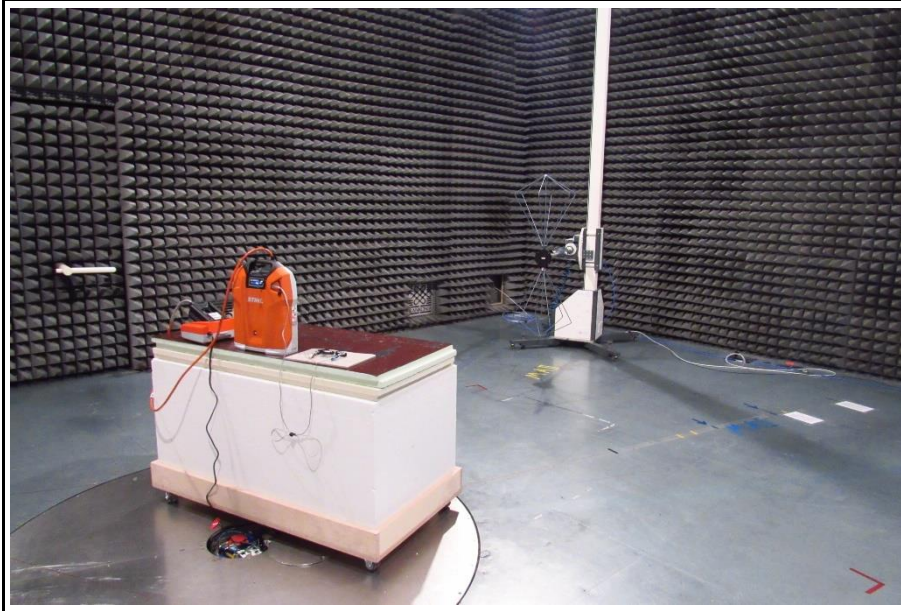
Radiated emission Rx - 200 MHz to 1 GHz



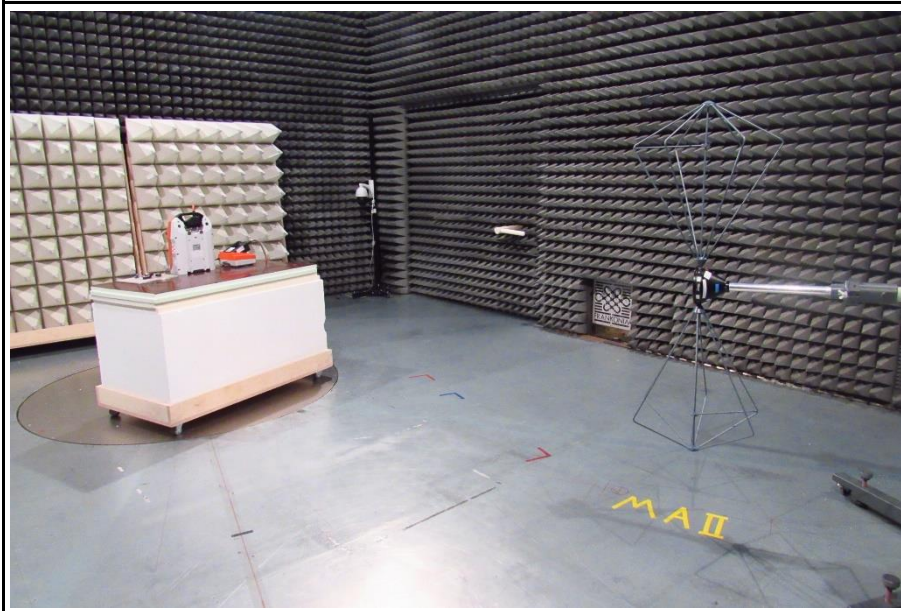
Radiated emission Rx - 200 MHz to 1 GHz



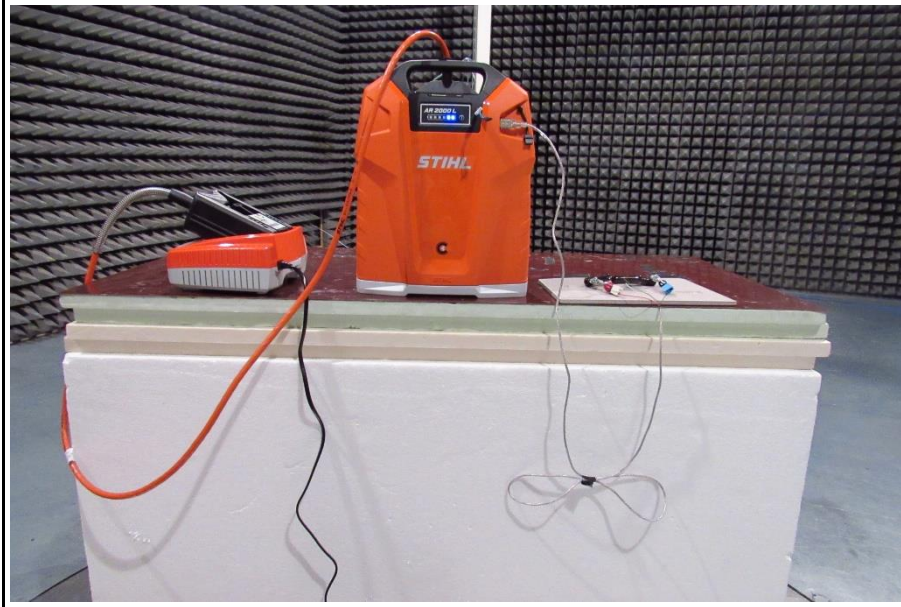
Radiated emission Rx - 30 MHz to 200 MHz



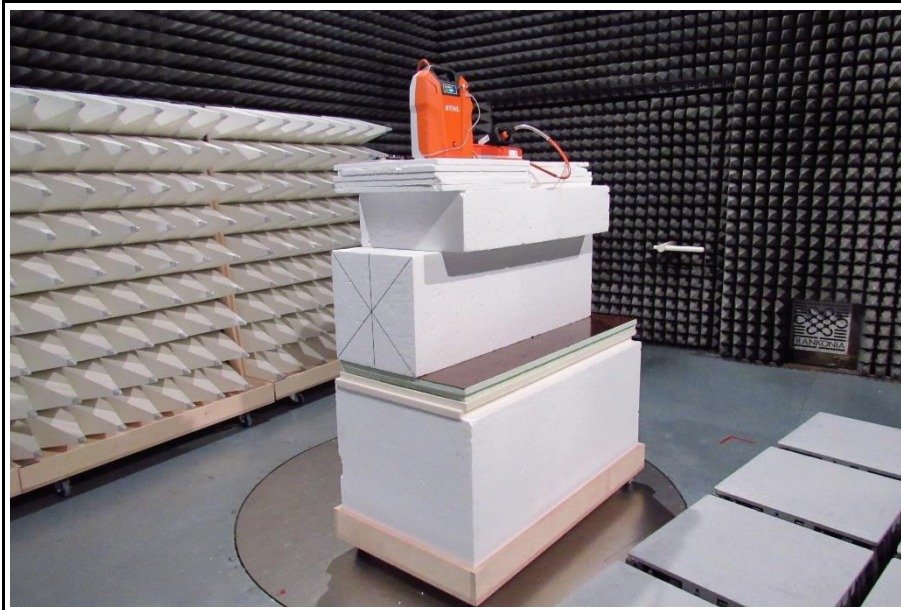
Radiated emission Rx - 30 MHz to 200 MHz



Test Set-up < 1 GHz Focus



Test Set-up > 1 GHz



Test Set-up conducted emission



1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
None.				
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.5 Test Modes

Mode	Description
1 Mbps	Mode = Transmit Modulation = GFSK Spreading = None Duty cycle = 63%
Receive	Mode = Receive
Comment:	

1.6 Test Frequencies

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

1.7 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:

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

Net:

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

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:

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

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, ISED RSS-247				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
ISED RSS-Gen, Issue 5 (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	PASS	
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 (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 C63.10-2013	PASS	
Comment:				

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 - AC powerline conducted emissions

3.1.1 Information

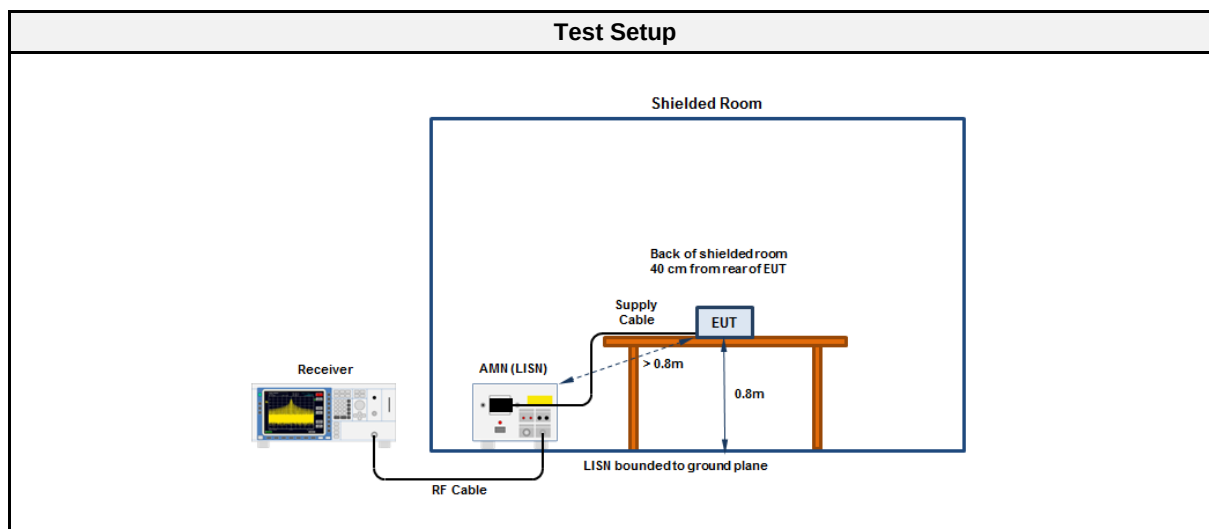
Test Information	
Reference	FCC § 15.207; ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.2
Measurement Uncertainty	± 3.82 dB
Operator	Charline Graf
Date	2021-10-11

3.1.2 Limits

Limits		
Frequency [MHz]	Quasi-Peak [dBμV]	Average [dBμV]
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50

* Limit decreases linearly with the logarithm of the frequency

3.1.3 Setup



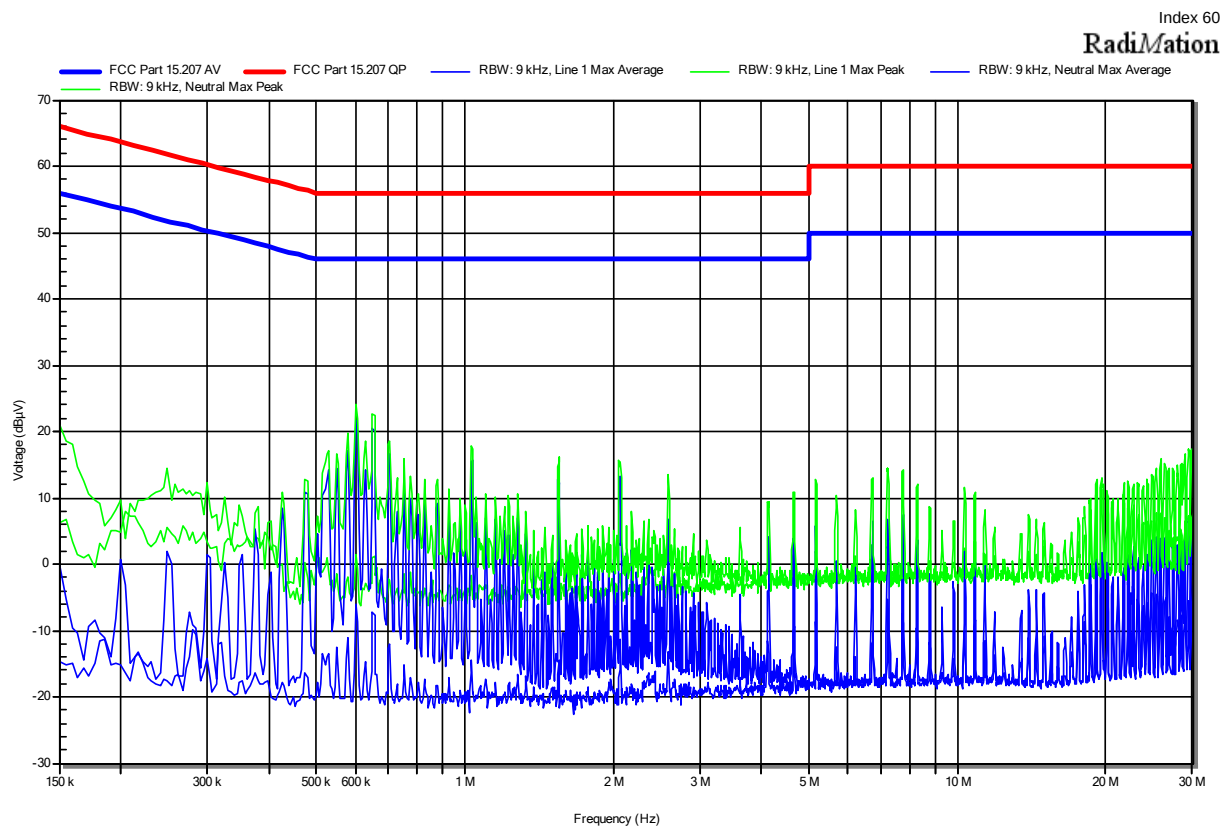
3.1.4 Equipment

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

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESR7	EF00943	2021-08	2022-08
Pulse Limiter	R&S	ESH3-Z2	EF01222	2021-07	2022-07
LISN	Schwarzbeck	NSLK 8127 RC	EF01592	2021-07	2022-07

Conducted emissions at the mains power port according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Test Date: 2021-10-11
 Operating Conditions: ambient temperature: False
 power input:
 LISN: Schwarzbeck NSLK 8127 RC N
 Operational Mode & EUT Configuration: BTLE, 2040 MHz, data length 37 Byte
 Applied to Port: mains



3.2 Test Conditions and Results - Transmitter radiated emissions

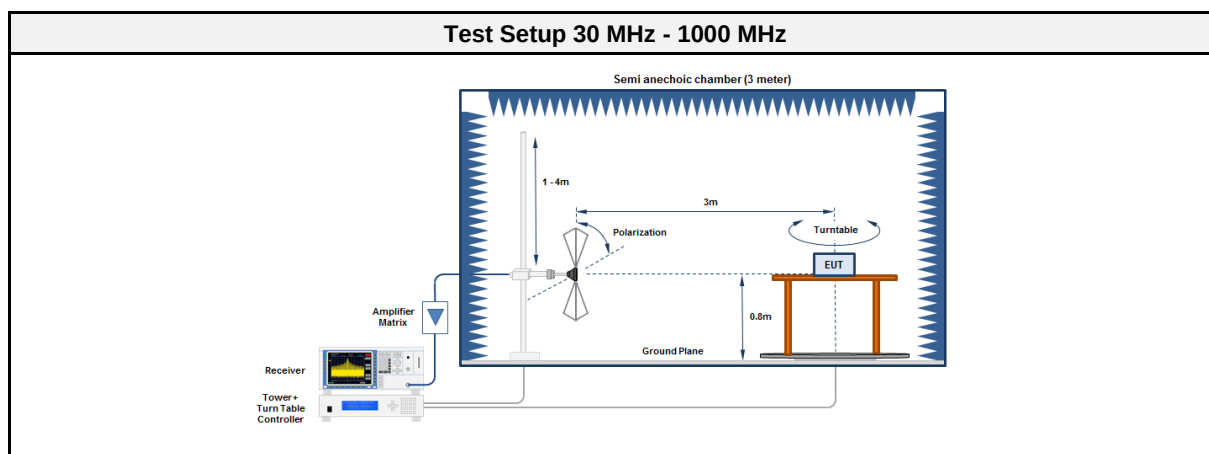
3.2.1 Information

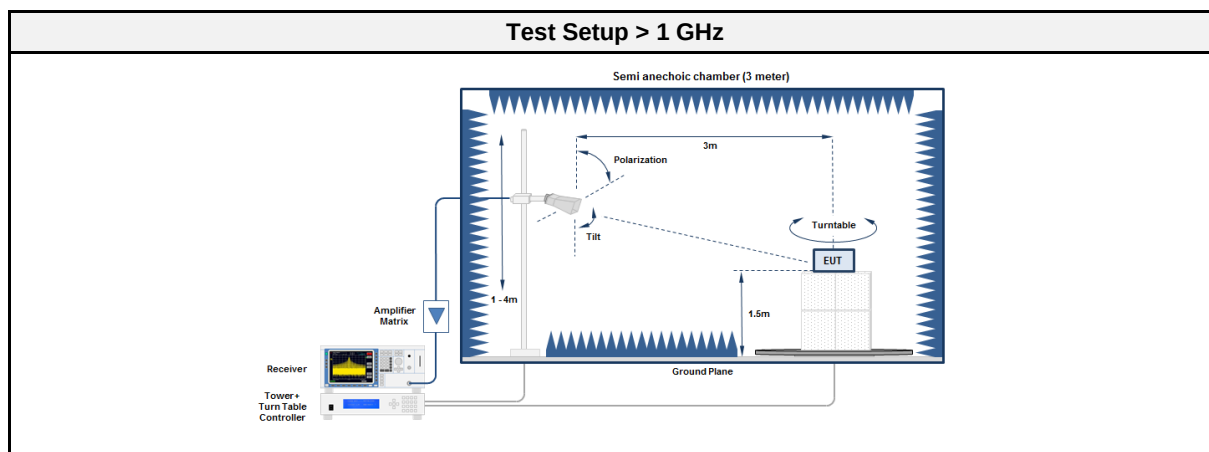
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISSED RSS-Gen, Issue 5 (section 6.13)
Measurement Uncertainty	± 5.95 dB
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Charline Graf
Date	2021-09-28

3.2.2 Limits

Limits			
Frequency range [MHz]	Detector	Field strength [$\mu\text{V/m}$]	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

3.2.3 Setup





3.2.4 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

3.2.5 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	

3.2.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2402	542.76	49.50	pk	ver	95.00	-45.45
2402	2273.6	55.74	pk	ver	74.00	-18.26
2402	2273.6	51.30	avg	ver	54.00	-02.70
2402	2274	53.23	pk	ver	74.00	-20.77
2402	2274	50.41	avg	ver	54.00	-03.59
2402	2488.8	55.30	pk	ver	74.00	-18.70
2402	2488.8	52.72	avg	ver	54.00	-01.28
2402	2488.8	54.34	pk	ver	74.00	-19.66
2402	2488.8	52.72	avg	ver	54.00	-01.28
2402	12009	43.19	pk	ver	74.00	-30.81
2402	12009	36.35	avg	ver	54.00	-17.65
2440	2289.1	50.88	pk	ver	74.00	-23.12
2440	2289.1	47.27	avg	ver	54.00	-06.73
2440	2311.9	55.62	pk	ver	74.00	-18.38
2440	2311.9	48.09	avg	ver	54.00	-05.91
2440	2312	57.80	pk	ver	74.00	-16.20
2440	2312	50.88	avg	ver	54.00	-03.12
2440	2353	58.30	pk	ver	74.00	-15.70
2440	2353	51.61	avg	ver	54.00	-02.39
2440	2353.1	53.66	pk	ver	74.00	-20.34
2440	2353.1	47.08	avg	ver	54.00	-06.92
2440	2376	56.72	pk	ver	74.00	-17.28
2440	2376	49.00	avg	ver	54.00	-05.00
2440	2376.1	51.56	pk	ver	74.00	-22.44
2440	2376.1	43.04	avg	ver	54.00	-10.96
2440	2487.9	48.99	pk	ver	74.00	-25.01
2440	2487.9	41.29	avg	ver	54.00	-12.71
2440	7319	52.26	pk	ver	74.00	-21.74
2440	7319	47.60	avg	ver	54.00	-06.40
2440	12201	44.03	pk	ver	74.00	-29.97
2440	12201	38.49	avg	ver	54.00	-15.51
2480	7439	54.07	pk	ver	74.00	-19.93
2480	7439	50.84	avg	ver	54.00	-03.16
2480	12399	41.33	pk	ver	74.00	-32.67
2480	12399	39.27	avg	ver	54.00	-14.73

3.3 Test Conditions and Results - Receiver radiated emissions

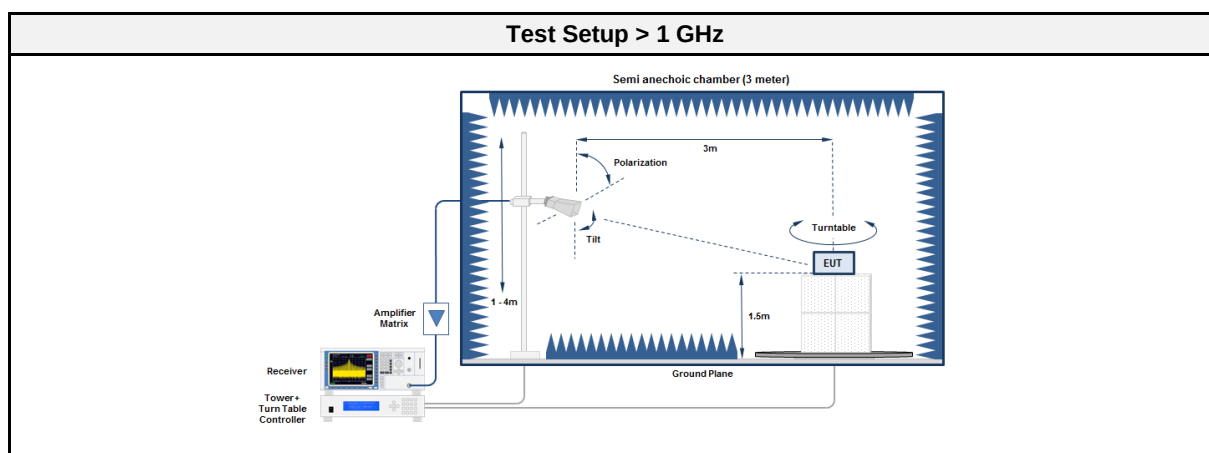
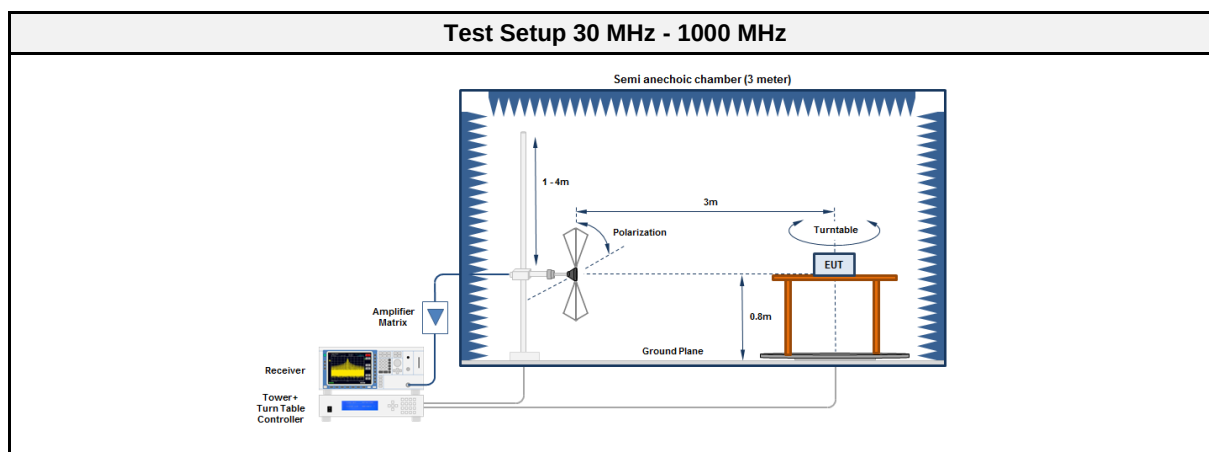
3.3.1 Information

Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Uncertainty	± 5.95 dB
Measurement Method	ANSI C63.10 6.5, 6.6, 11.12
Operator	Charline Graf
Date	2021-10-07

3.3.2 Limits

Limits			
Frequency range [MHz]	Detector	Field strength [$\mu\text{V/m}$]	Measurement distance [m]
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

3.3.3 Setup



3.3.4 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

3.3.5 Procedure

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

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

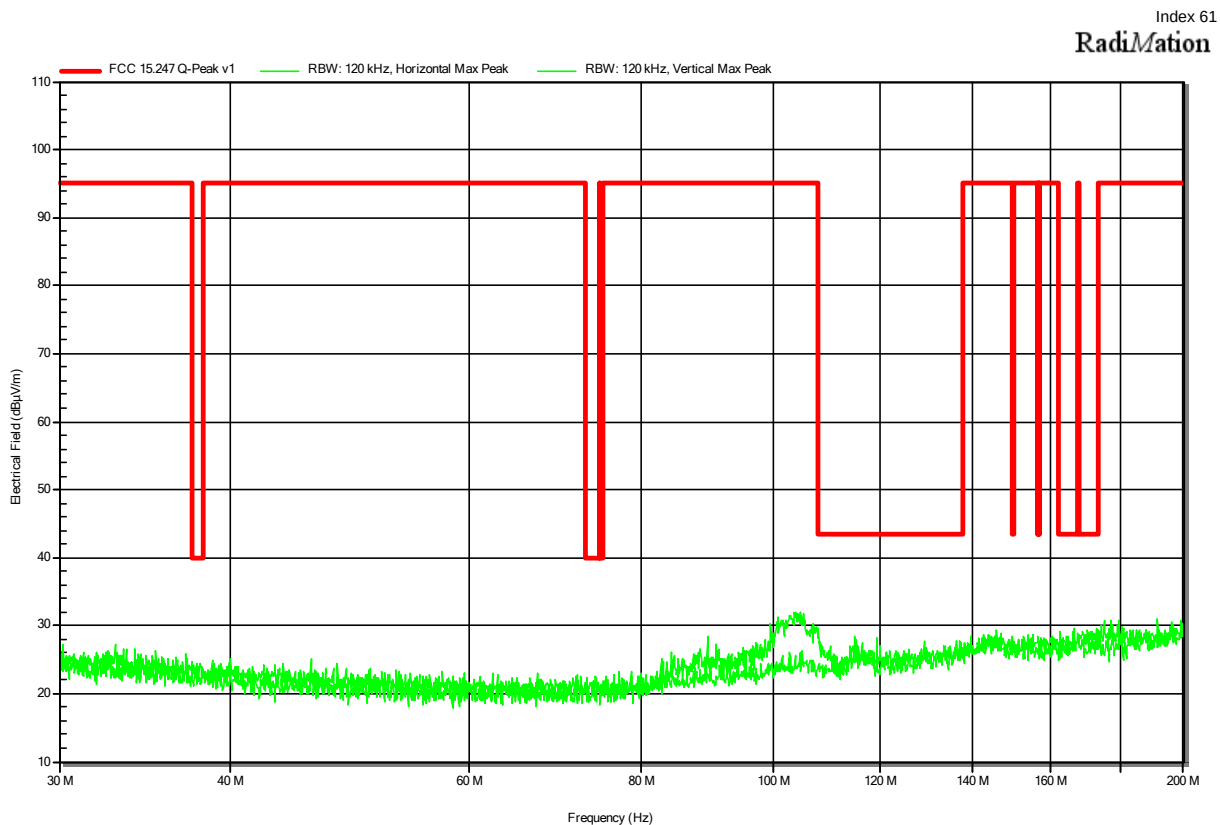
3.3.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
No significant emission detected.						

ANNEX A Transmitter spurious emissions

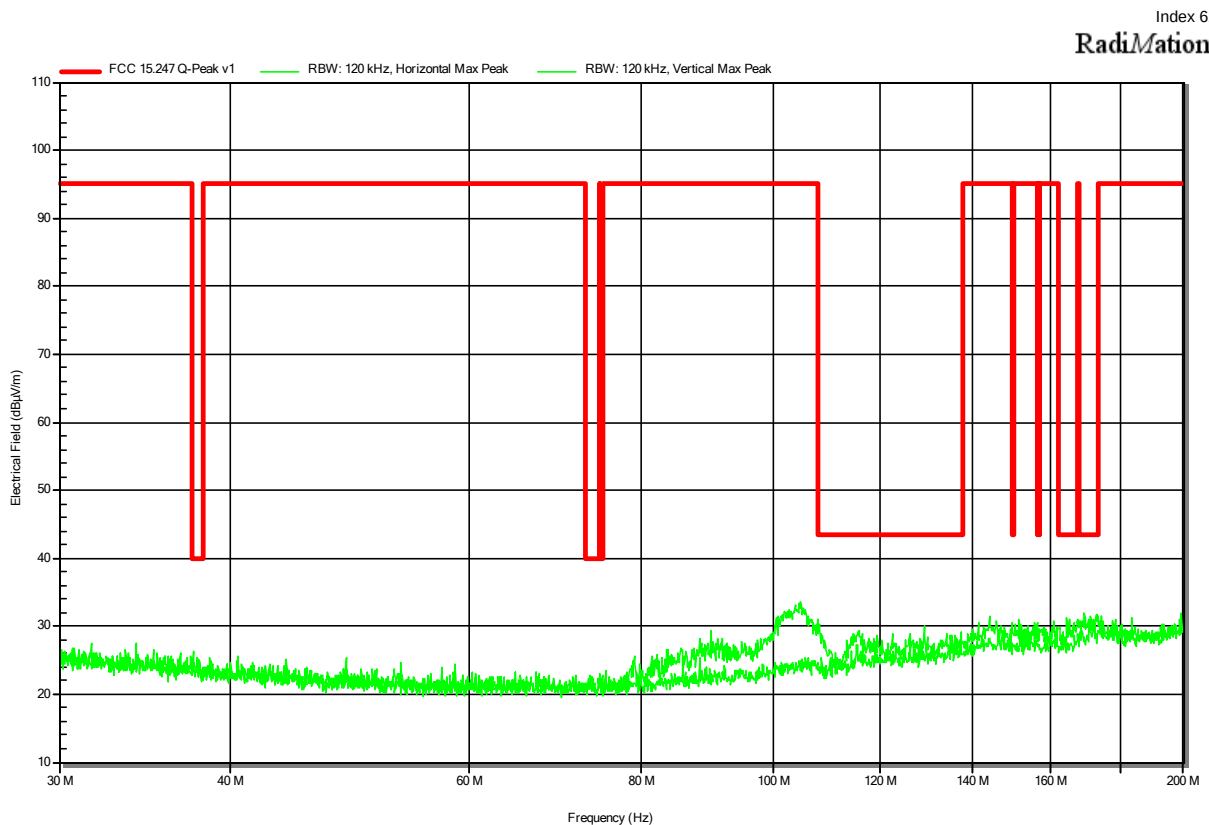
Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Rohde & Schwarz HK 116
 Measurement distance: 3 m
 Mode: Tx; 2402 MHz, data length 37 Byte
 Test Date: 2021-09-28
 Note: EUT vertical



Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Rohde & Schwarz HK 116
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-09-28
 Note: EUT vertical

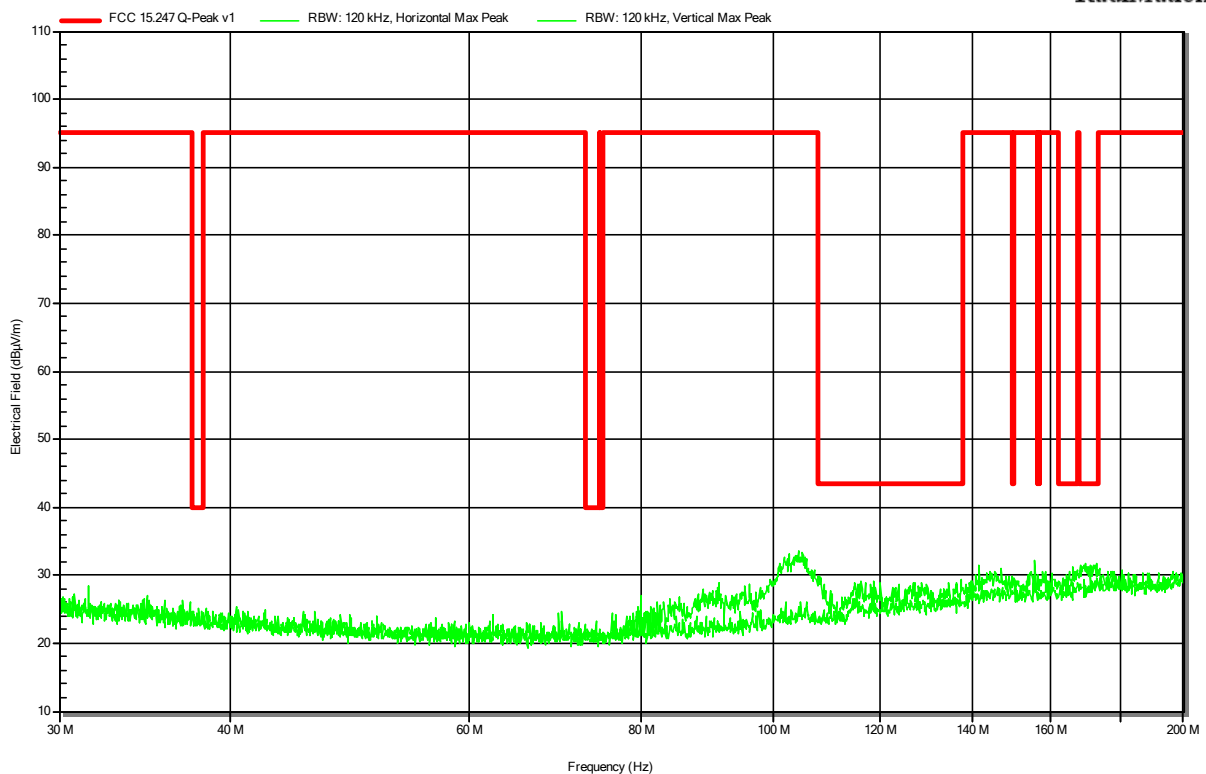


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Rohde & Schwarz HK 116
 Measurement distance: 3 m
 Mode: Tx; 2480 MHz, data length 37 Byte
 Test Date: 2021-09-28
 Note: EUT vertical

Index 63

RadiMation

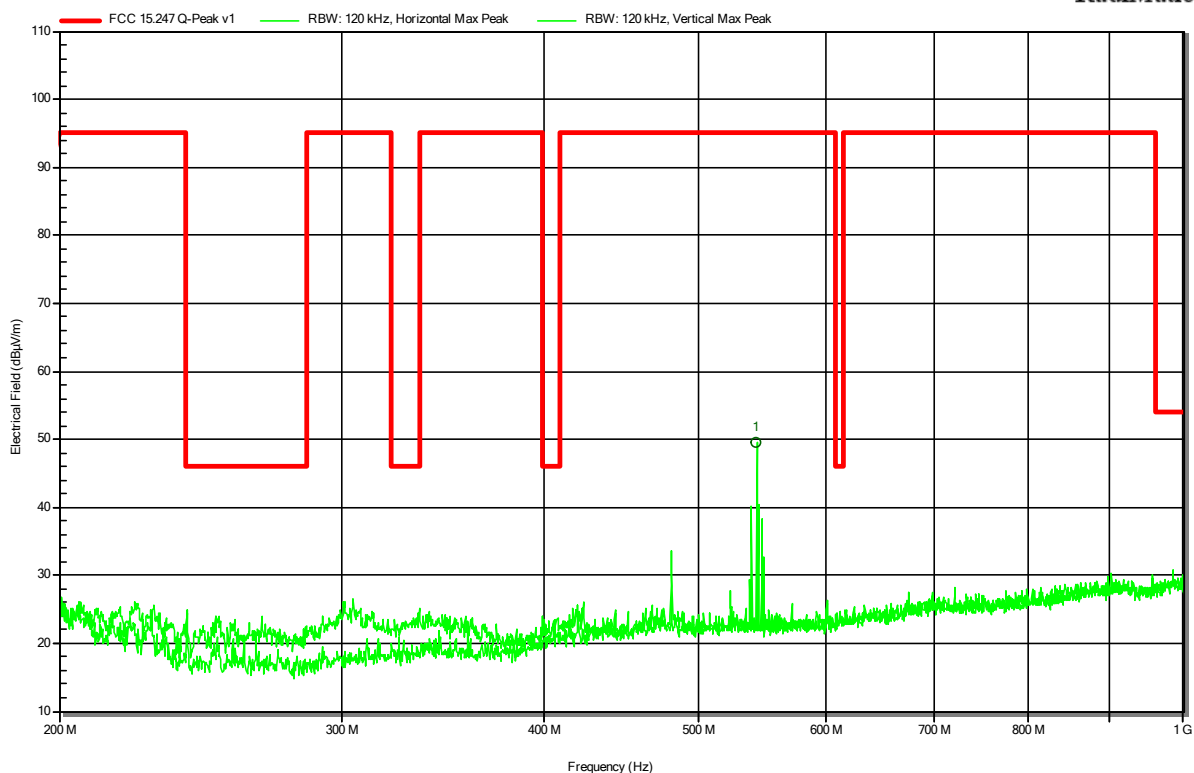


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Rohde & Schwarz HL 223
 Measurement distance: 3 m
 Mode: Tx; 2402 MHz, data length 37 Byte
 Test Date: 2021-09-28
 Note: EUT vertical

Index 64

RadiMation



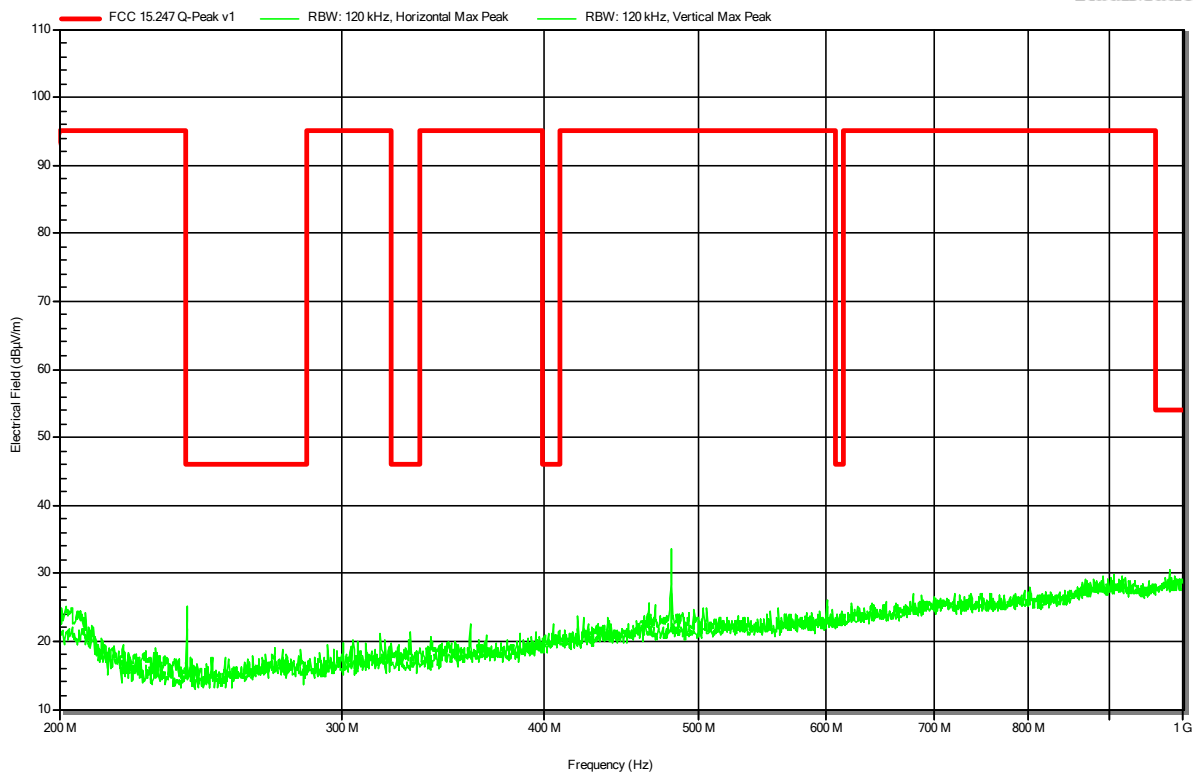
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
542.76 MHz	49.5 dBμV/m	95 dBμV/m	-45.45 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Rohde & Schwarz HL 223
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-09-28
 Note: EUT vertical

Index 65

RadiMation

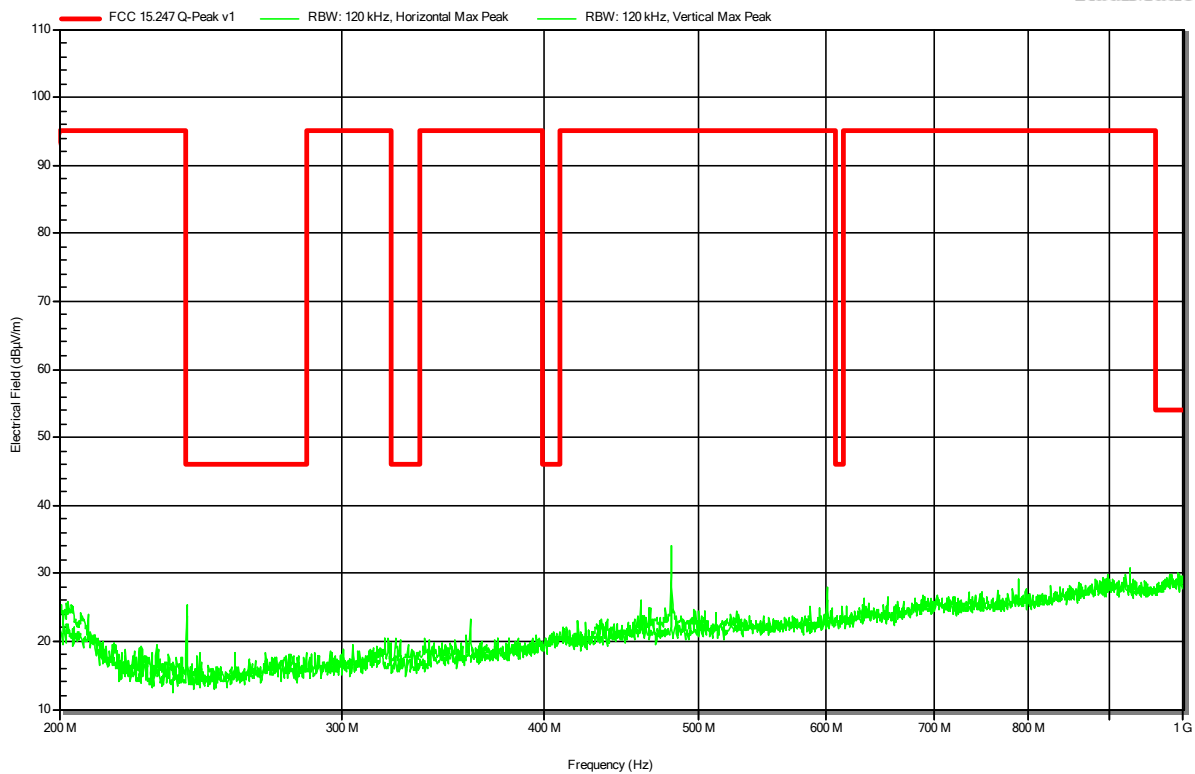


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Rohde & Schwarz HL 223
 Measurement distance: 3 m
 Mode: Tx; 2480 MHz, data length 37 Byte
 Test Date: 2021-09-28
 Note: EUT vertical

Index 67

RadiMation

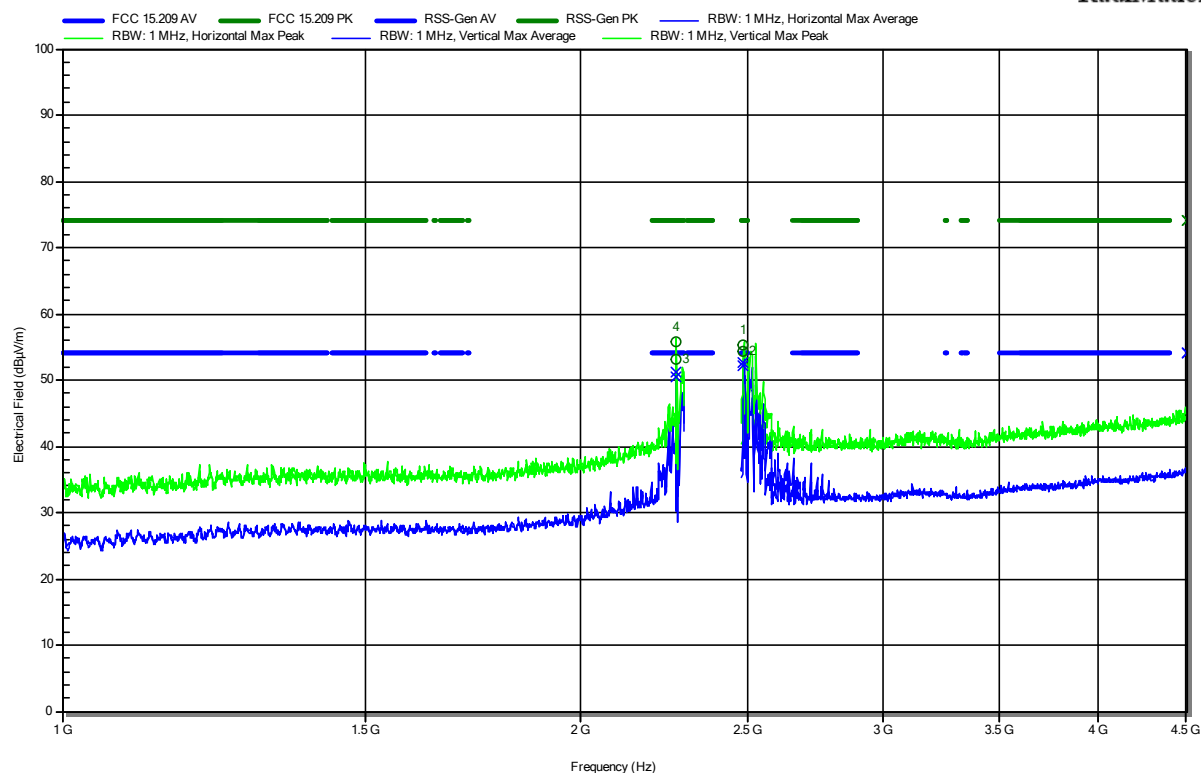


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2402 MHz, data length 37 Byte
 Test Date: 2021-09-30
 Note: EUT vertical

Index 71

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.2736 GHz	55.74 dBμV/m	74 dBμV/m	-18.26 dB	Pass	Horizontal
2.274 GHz	53.23 dBμV/m	74 dBμV/m	-20.77 dB	Pass	Vertical
2.4888 GHz	55.3 dBμV/m	74 dBμV/m	-18.7 dB	Pass	Vertical
2.4888 GHz	54.34 dBμV/m	74 dBμV/m	-19.66 dB	Pass	Horizontal

Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
2.2736 GHz	51.3 dBμV/m	54 dBμV/m	-2.7 dB	Pass	Horizontal
2.274 GHz	50.41 dBμV/m	54 dBμV/m	-3.59 dB	Pass	Vertical
2.4888 GHz	52.72 dBμV/m	54 dBμV/m	-1.28 dB	Pass	Vertical
2.4888 GHz	52.06 dBμV/m	54 dBμV/m	-1.94 dB	Pass	Horizontal

Test Report No.: G0M-2106-9857-TFC247BL1-V01

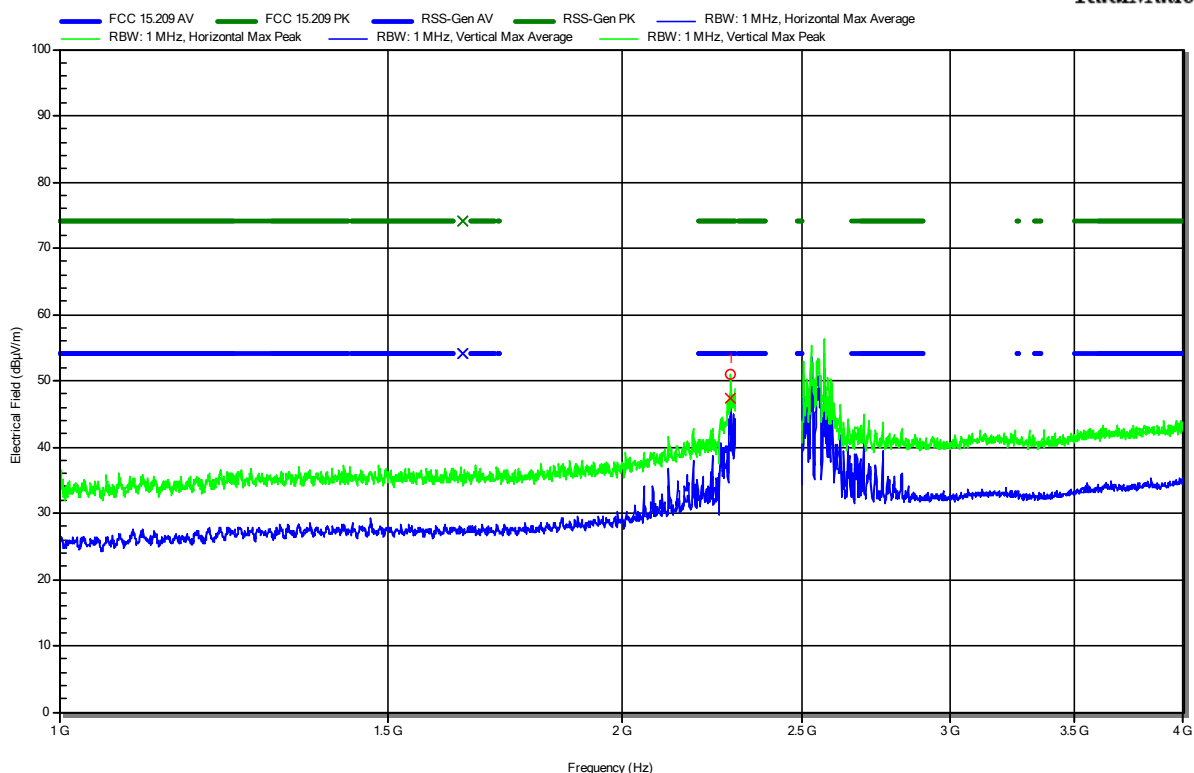
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-10-05
 Note: EUT vertical

Index 79

RadiMation



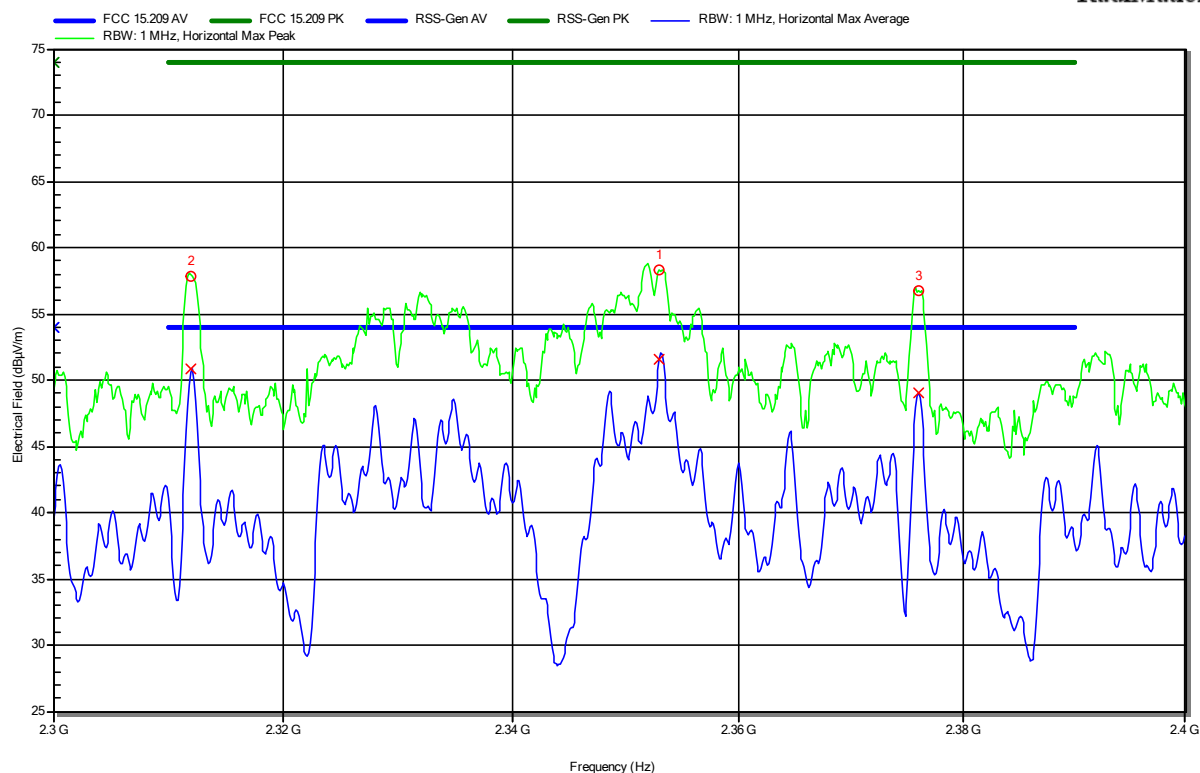
Frequency 2.2891 GHz	Peak 50.88 dBμV/m	Peak Limit 74 dBμV/m	Peak Difference -23.12 dB	Peak Status Pass	Polarization Horizontal
Frequency 2.2891 GHz	Average 47.27 dBμV/m	Average Limit 54 dBμV/m	Average Difference -6.73 dB	Average Status Pass	Polarization Horizontal

Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-10-05
 Note: EUT vertical

Index 83

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.312 GHz	57.8 dBμV/m	74 dBμV/m	-16.2 dB	Pass	Horizontal
2.353 GHz	58.3 dBμV/m	74 dBμV/m	-15.7 dB	Pass	Horizontal
2.376 GHz	56.72 dBμV/m	74 dBμV/m	-17.28 dB	Pass	Horizontal

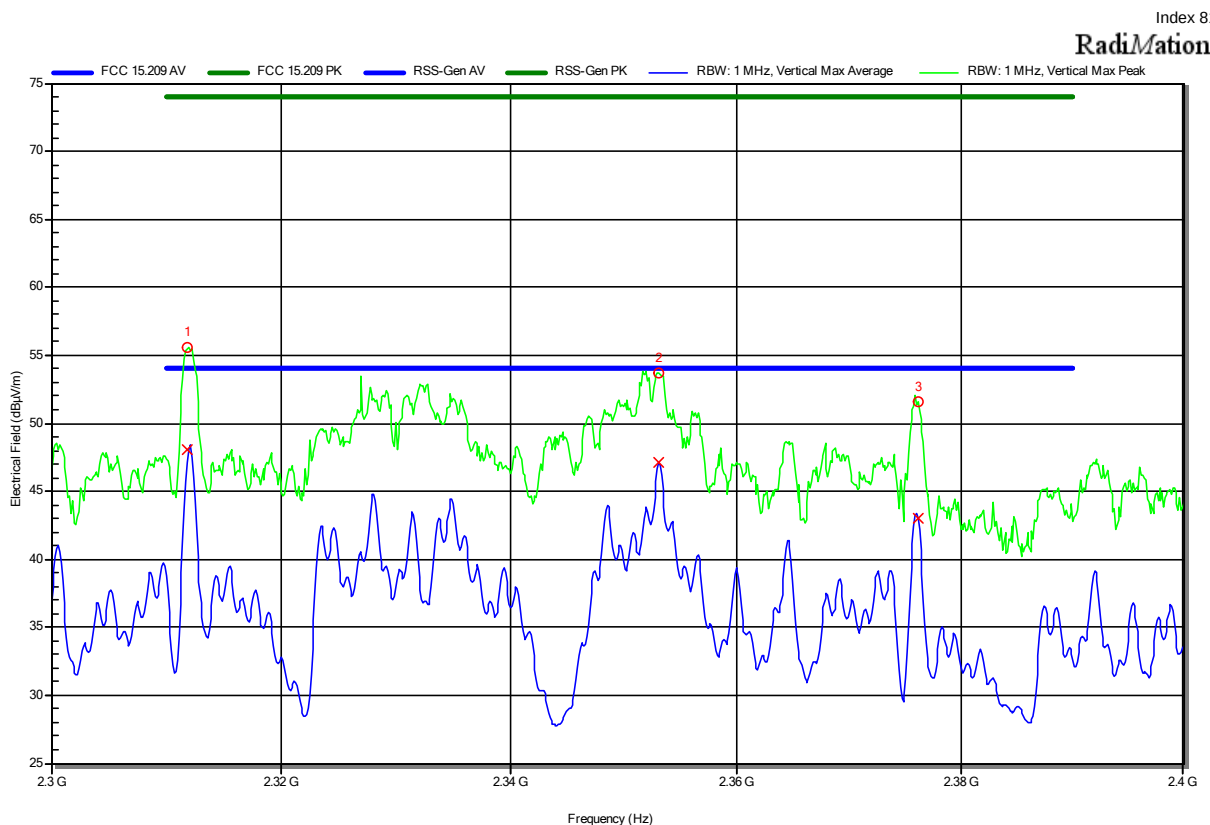
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
2.312 GHz	50.88 dBμV/m	54 dBμV/m	-3.12 dB	Pass	Horizontal
2.353 GHz	51.61 dBμV/m	54 dBμV/m	-2.39 dB	Pass	Horizontal
2.376 GHz	49 dBμV/m	54 dBμV/m	-5 dB	Pass	Horizontal

Test Report No.: G0M-2106-9857-TFC247BL1-V01

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

Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-10-05
 Note: EUT vertical



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.3119 GHz	55.62 dBµV/m	74 dBµV/m	-18.38 dB	Pass	Vertical
2.3531 GHz	53.66 dBµV/m	74 dBµV/m	-20.34 dB	Pass	Vertical
2.3761 GHz	51.56 dBµV/m	74 dBµV/m	-22.44 dB	Pass	Vertical

Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
2.3119 GHz	48.09 dBµV/m	54 dBµV/m	-5.91 dB	Pass	Vertical
2.3531 GHz	47.08 dBµV/m	54 dBµV/m	-6.92 dB	Pass	Vertical
2.3761 GHz	43.04 dBµV/m	54 dBµV/m	-10.96 dB	Pass	Vertical

Test Report No.: G0M-2106-9857-TFC247BL1-V01

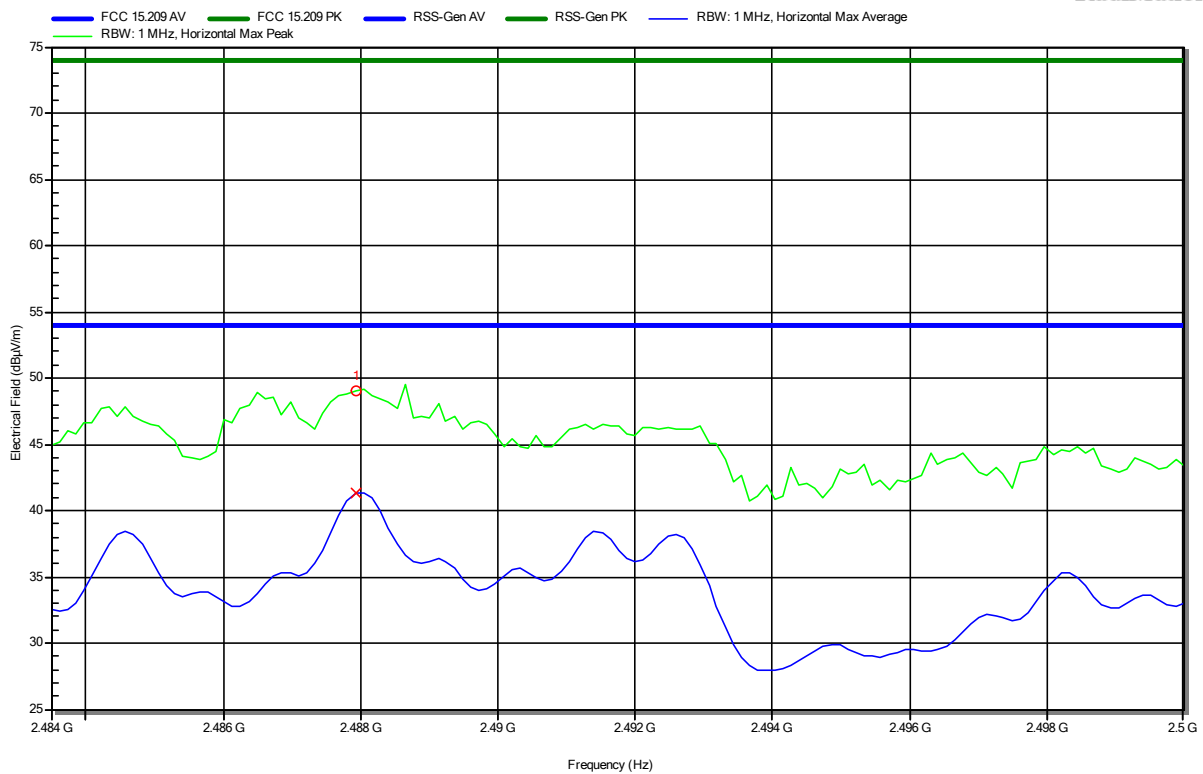
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-10-05
 Note: EUT vertical

Index 84

RadiMation



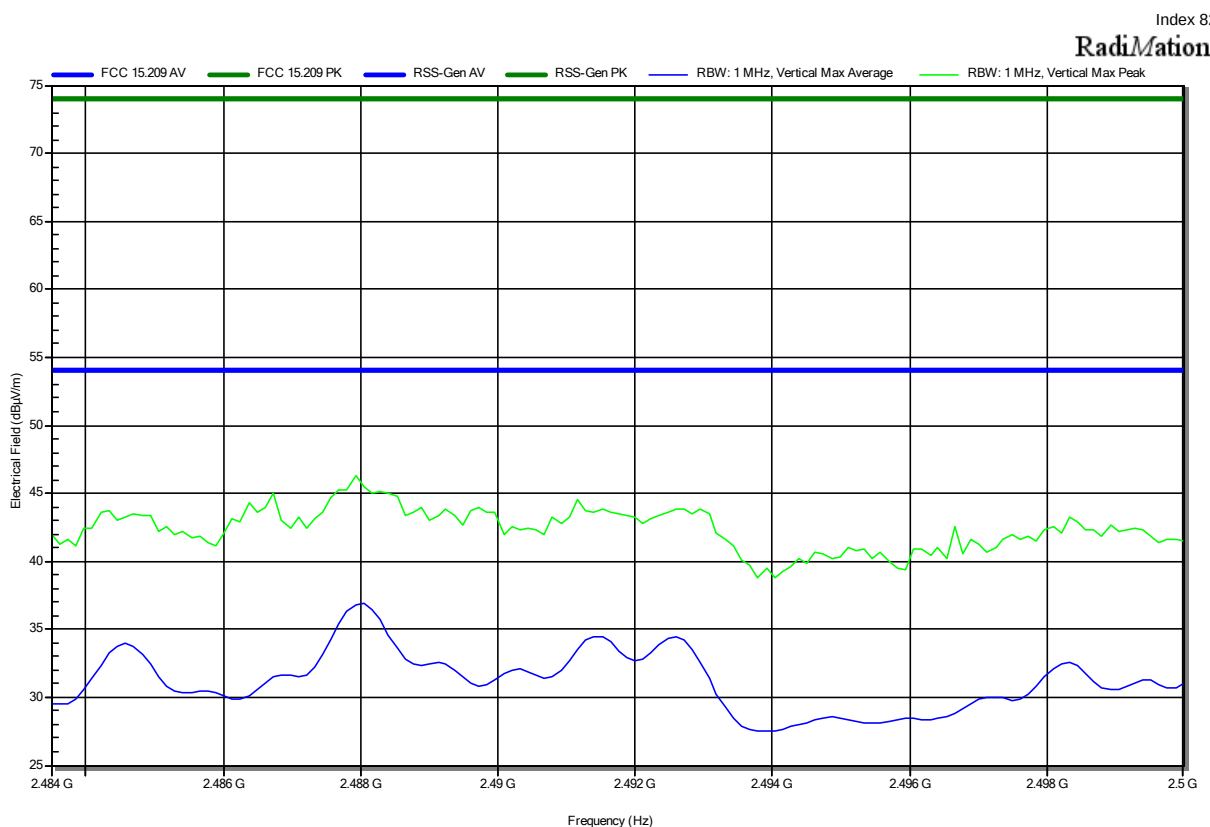
Frequency 2.4879 GHz	Peak 48.99 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -25.01 dB	Peak Status Pass	Polarization Horizontal
Frequency 2.4879 GHz	Average 41.29 dBµV/m	Average Limit 54 dBµV/m	Average Difference -12.71 dB	Average Status Pass	Polarization Horizontal

Test Report No.: G0M-2106-9857-TFC247BL1-V01

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

Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-10-05
 Note: EUT vertical

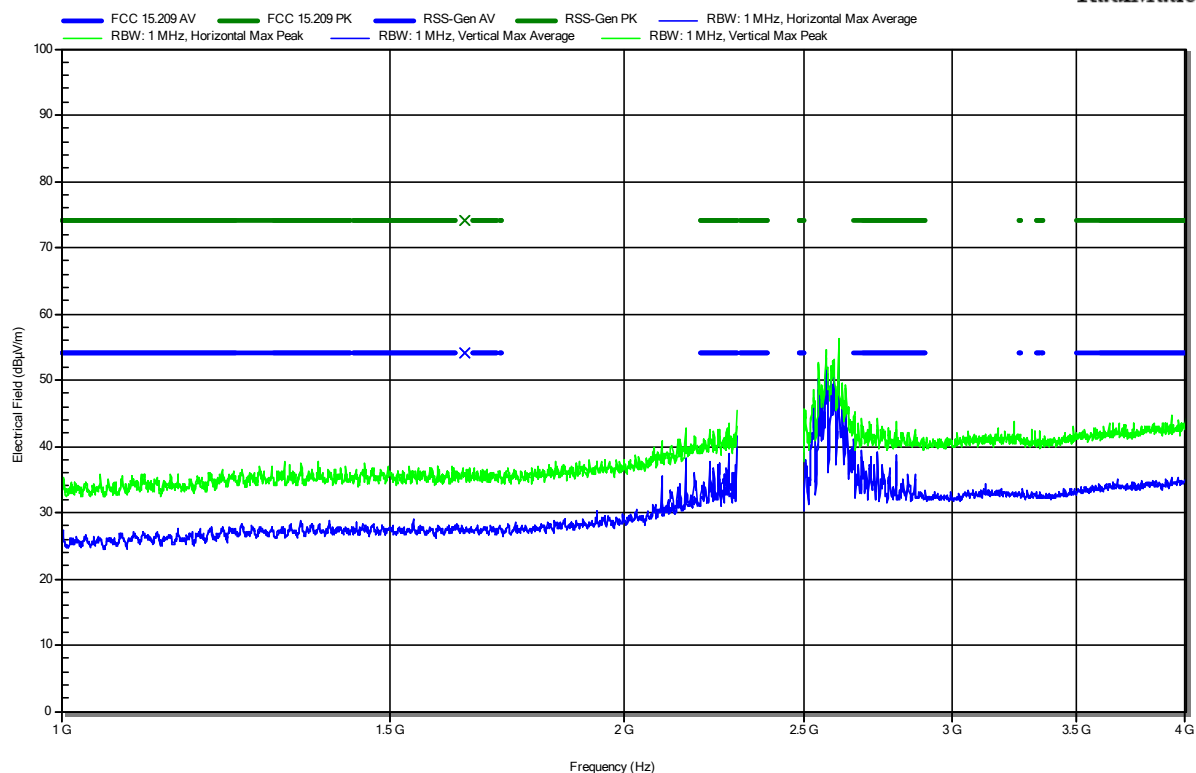


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2480 MHz, data length 37 Byte
 Test Date: 2021-10-05
 Note: EUT vertical

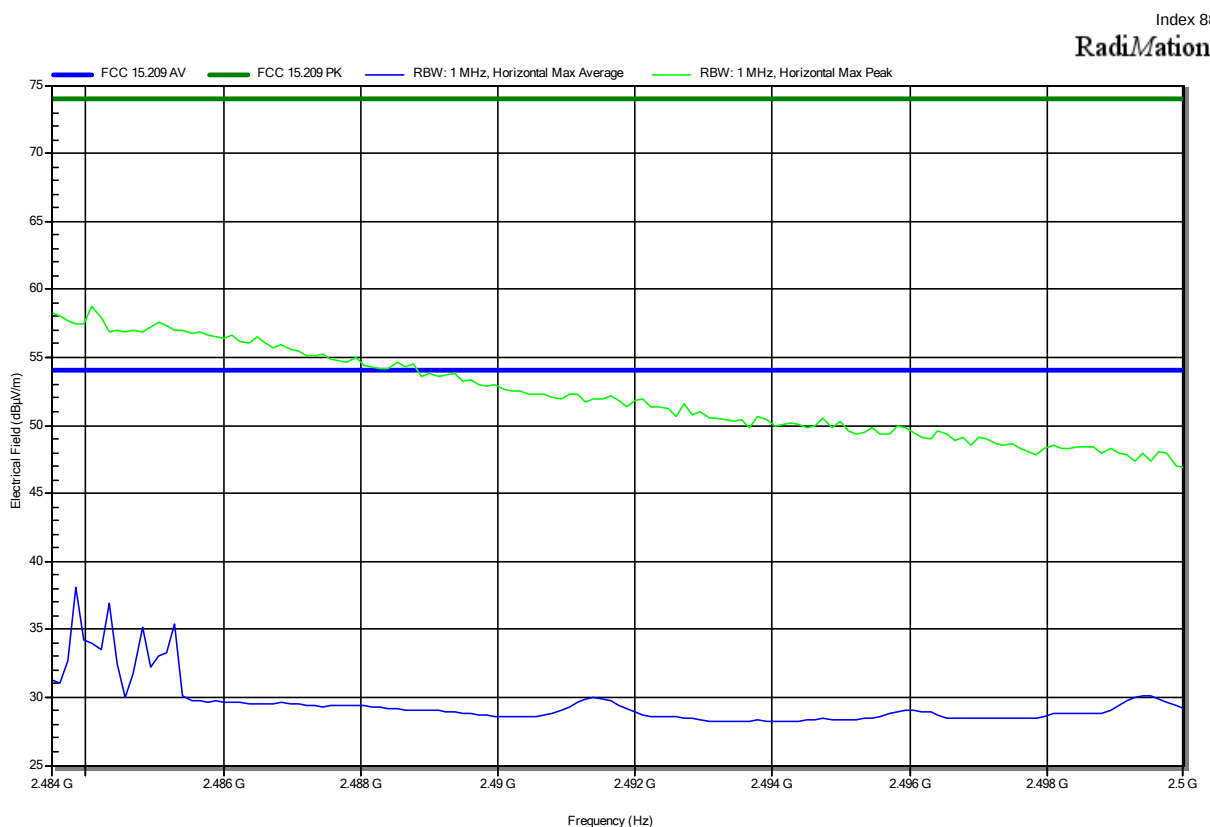
Index 86

RadiMation



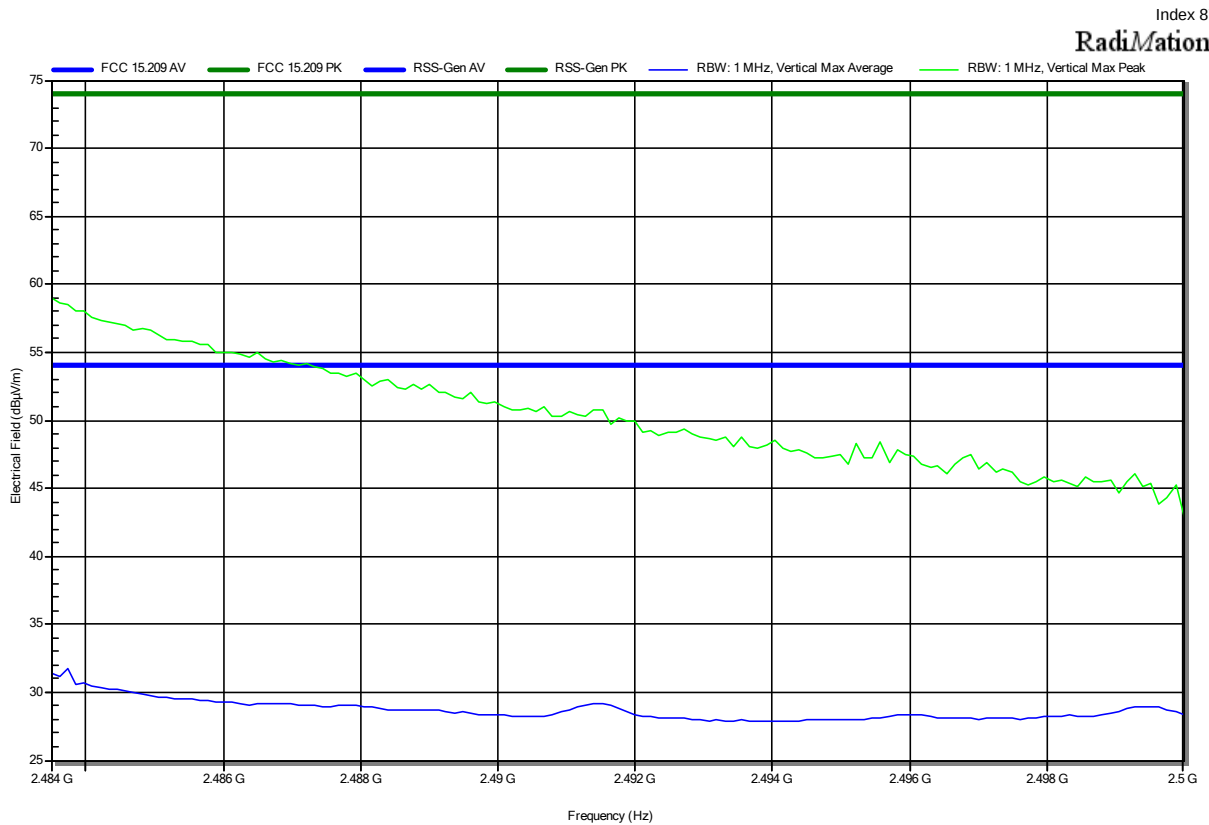
Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2480 MHz, data length 37 Byte
 Test Date: 2021-10-05
 Note: EUT vertical



Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2480 MHz, data length 37 Byte
 Test Date: 2021-10-05
 Note: EUT vertical

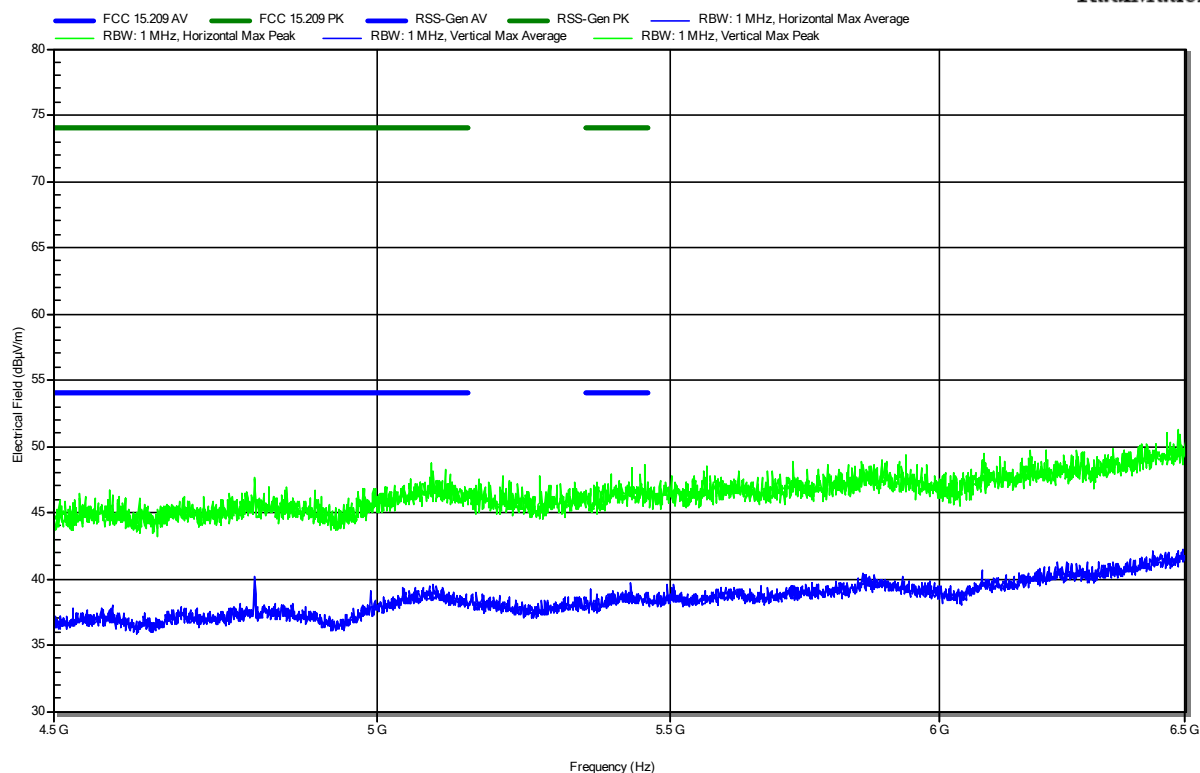


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2402 MHz, data length 37 Byte
 Test Date: 2021-10-07
 Note: EUT vertical

Index 89

RadiMation

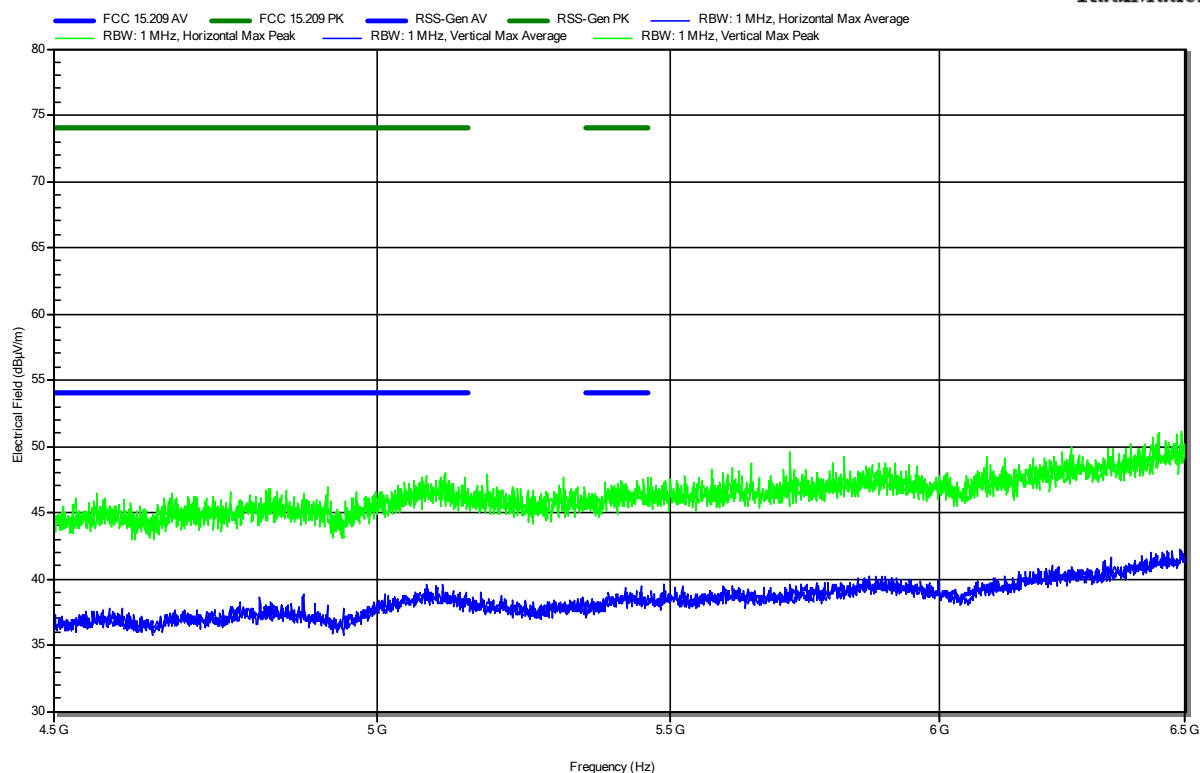


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-10-07
 Note: EUT vertical

Index 90

RadiMation

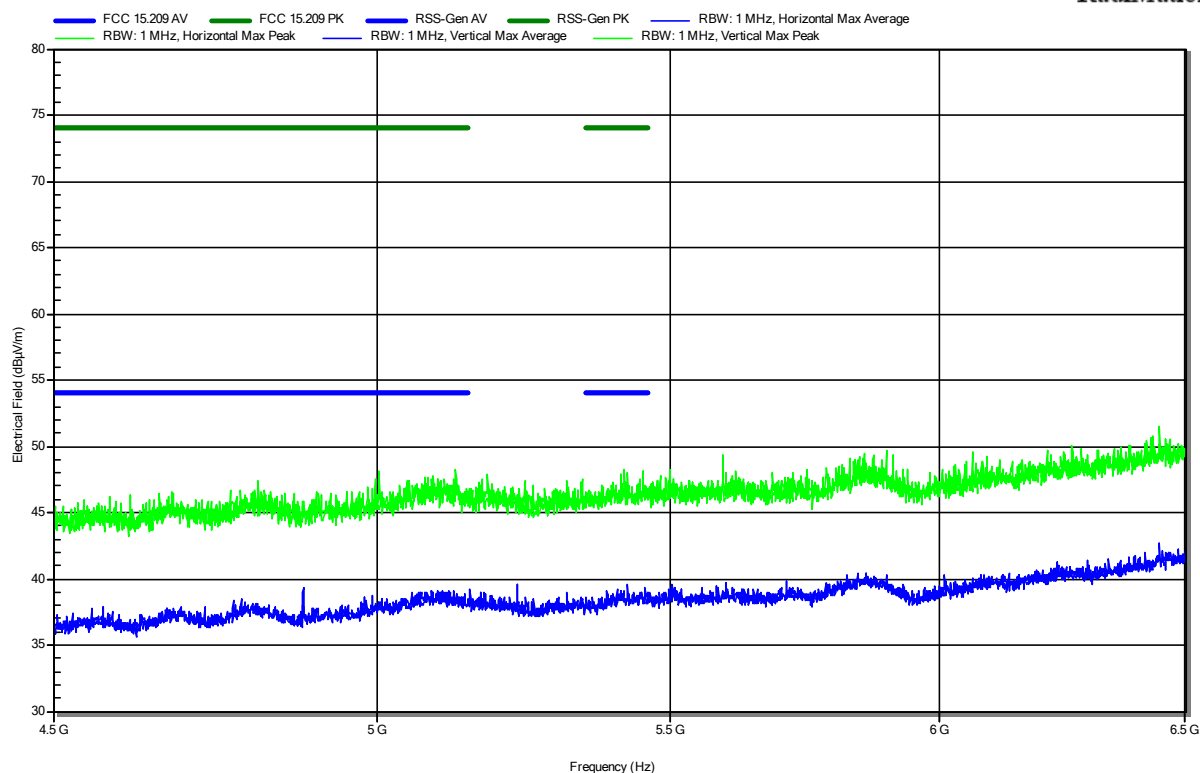


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Tx; 2480 MHz, data length 37 Byte
 Test Date: 2021-10-07
 Note: EUT vertical

Index 91

RadiMation

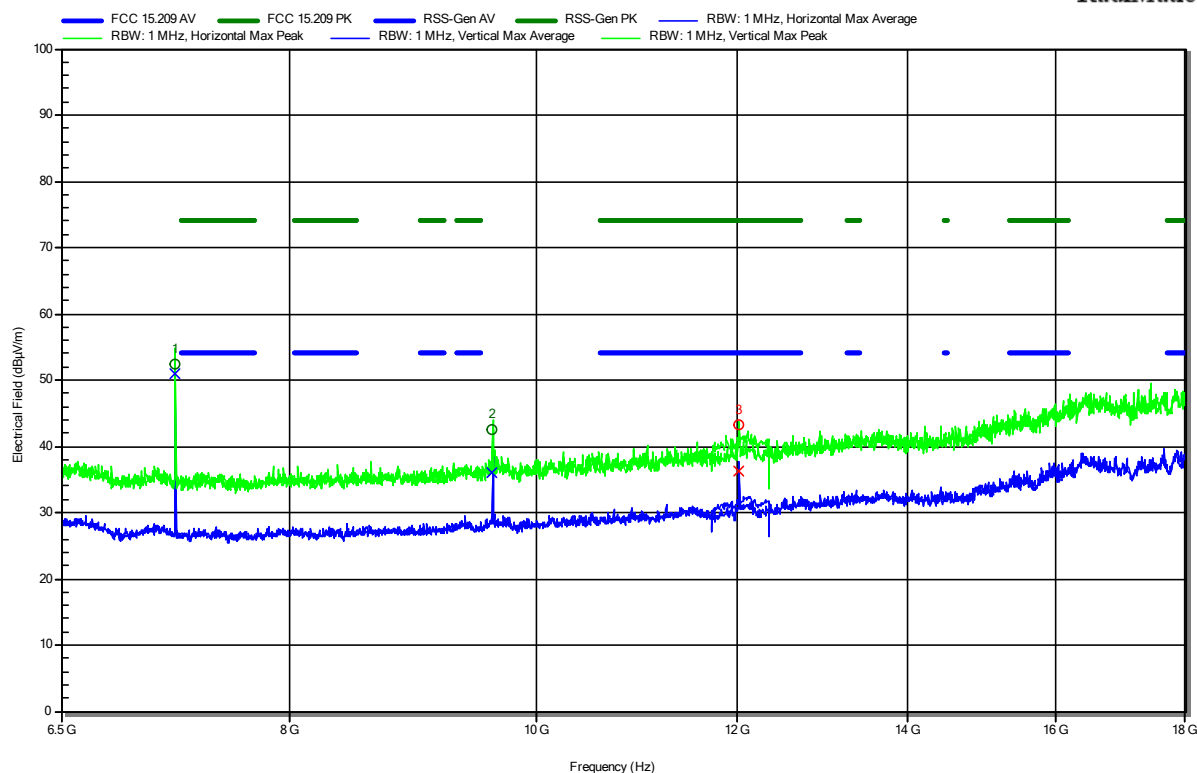


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck Schwarzbeck HWRD 650
 Measurement distance: 3 m
 Mode: Tx; 2402 MHz, data length 37 Byte
 Test Date: 2021-10-08
 Note: EUT vertical

Index 98

RadiMation



Frequency 12.009 GHz	Peak 43.19 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -30.81 dB	Peak Status Pass	Polarization Vertical
Frequency 12.009 GHz	Average 36.35 dBµV/m	Average Limit 54 dBµV/m	Average Difference -17.65 dB	Average Status Pass	Polarization Vertical

Test Report No.: G0M-2106-9857-TFC247BL1-V01

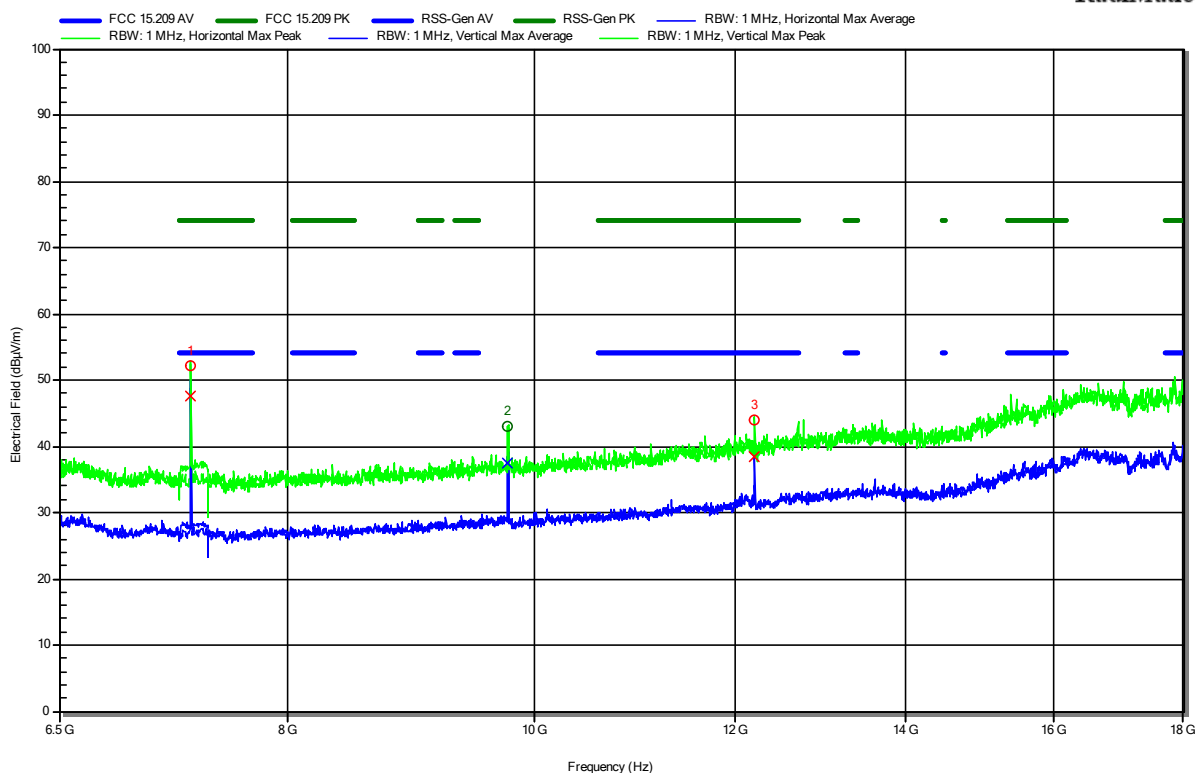
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck Schwarzbeck HWRD 650
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-10-08
 Note: EUT vertical

Index 99

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
7.319 GHz	52.26 dBμV/m	74 dBμV/m	-21.74 dB	Pass	Vertical
12.201 GHz	44.03 dBμV/m	74 dBμV/m	-29.97 dB	Pass	Horizontal

Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
7.319 GHz	47.6 dBμV/m	54 dBμV/m	-6.4 dB	Pass	Vertical
12.201 GHz	38.49 dBμV/m	54 dBμV/m	-15.51 dB	Pass	Horizontal

Test Report No.: G0M-2106-9857-TFC247BL1-V01

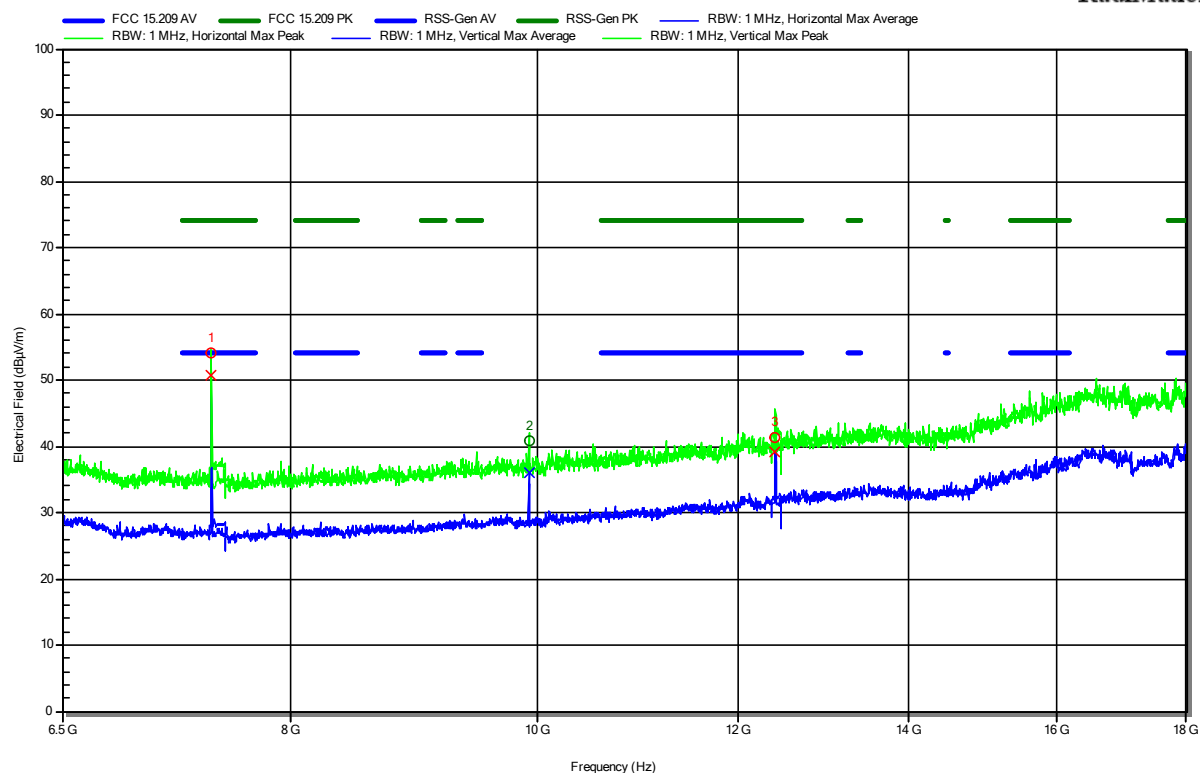
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck Schwarzbeck HWRD 650
 Measurement distance: 3 m
 Mode: Tx; 2480 MHz, data length 37 Byte
 Test Date: 2021-10-08
 Note: EUT vertical

Index 100

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
7.439 GHz	54.07 dBµV/m	74 dBµV/m	-19.93 dB	Pass	Vertical
12.399 GHz	41.33 dBµV/m	74 dBµV/m	-32.67 dB	Pass	Horizontal

Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
7.439 GHz	50.84 dBµV/m	54 dBµV/m	-3.16 dB	Pass	Vertical
12.399 GHz	39.27 dBµV/m	54 dBµV/m	-14.73 dB	Pass	Horizontal

Test Report No.: G0M-2106-9857-TFC247BL1-V01

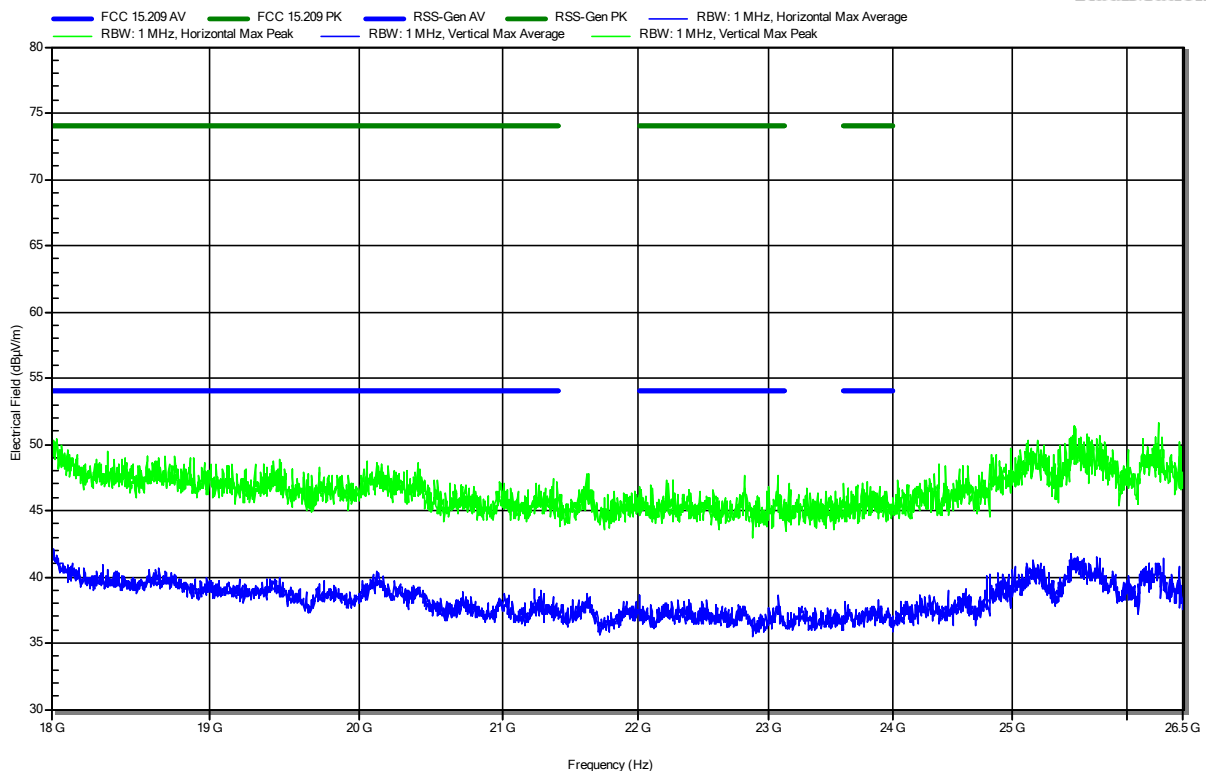
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Configurable Antenna
 Measurement distance: 3 m
 Mode: Tx; 2402 MHz, data length 37 Byte
 Test Date: 2021-10-07
 Note: EUT vertical

Index 97

RadiMation

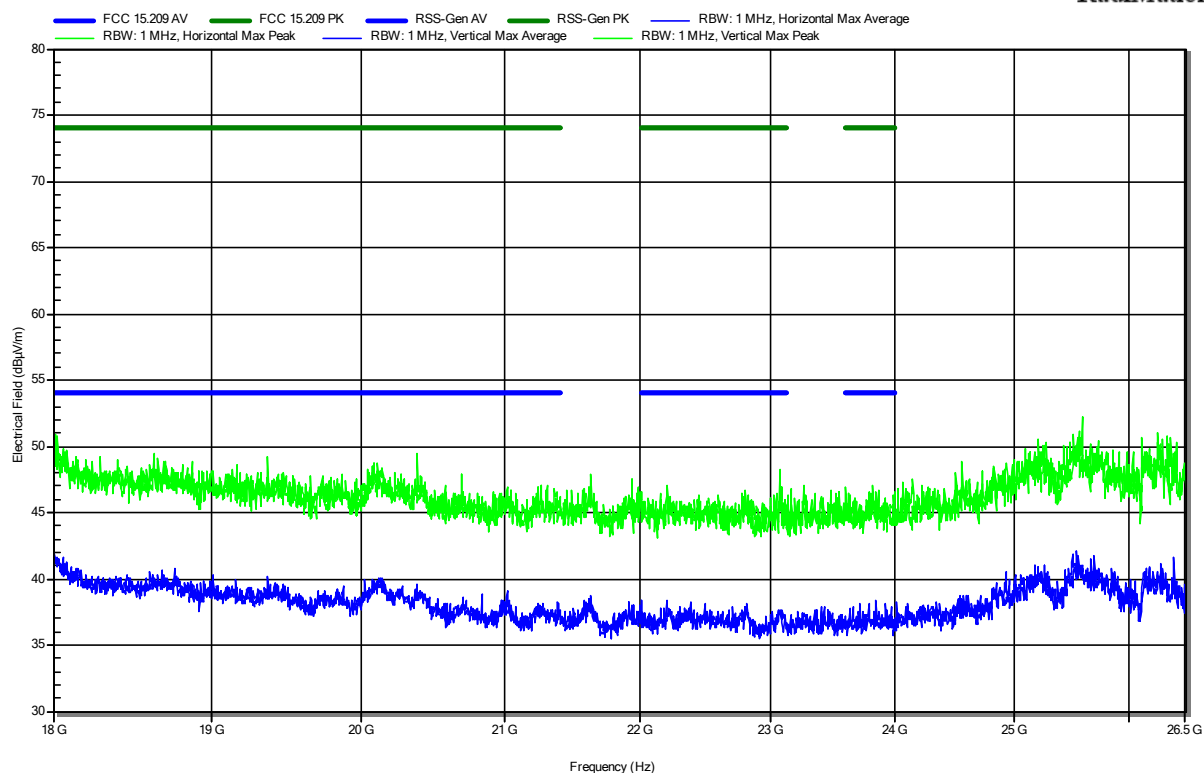


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Configurable Antenna
 Measurement distance: 3 m
 Mode: Tx; 2440 MHz, data length 37 Byte
 Test Date: 2021-10-07
 Note: EUT vertical

Index 96

RadiMation

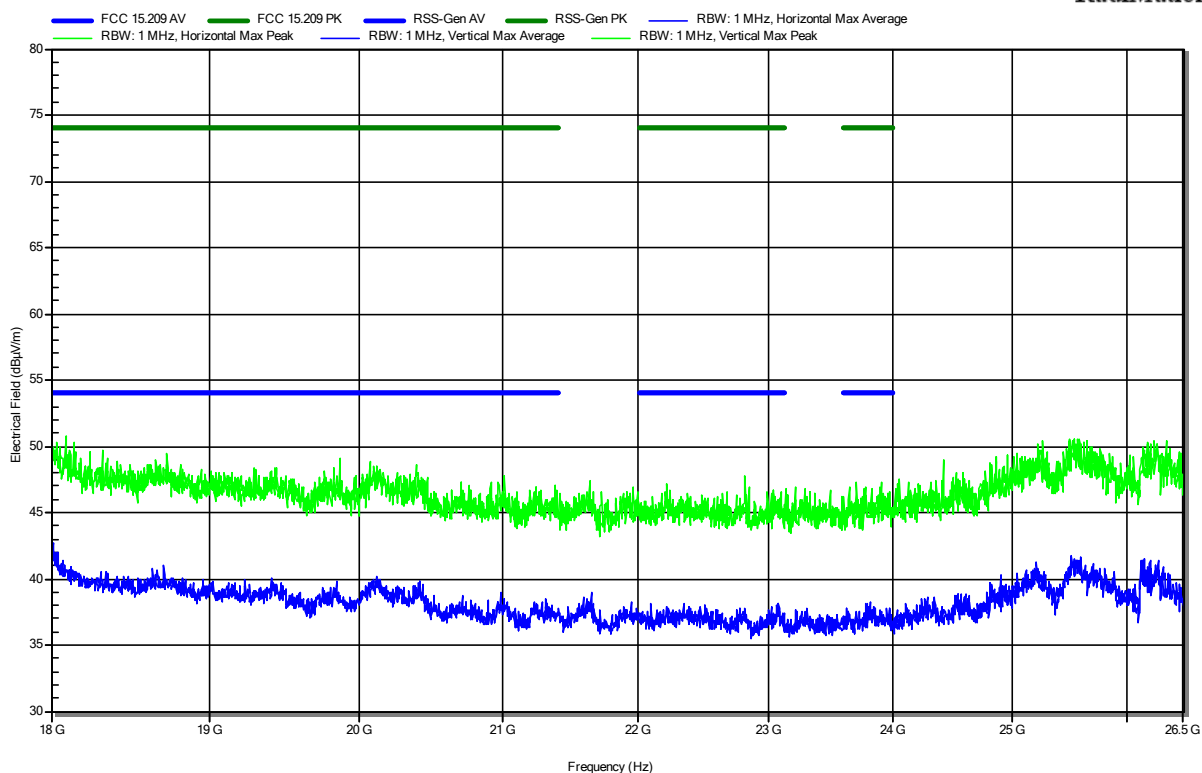


Radiated Spurious Emissions according to 47 CFR § 15.247

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Configurable Antenna
 Measurement distance: 3 m
 Mode: Tx; 2480 MHz, data length 37 Byte
 Test Date: 2021-10-07
 Note: EUT vertical

Index 95

RadiMation



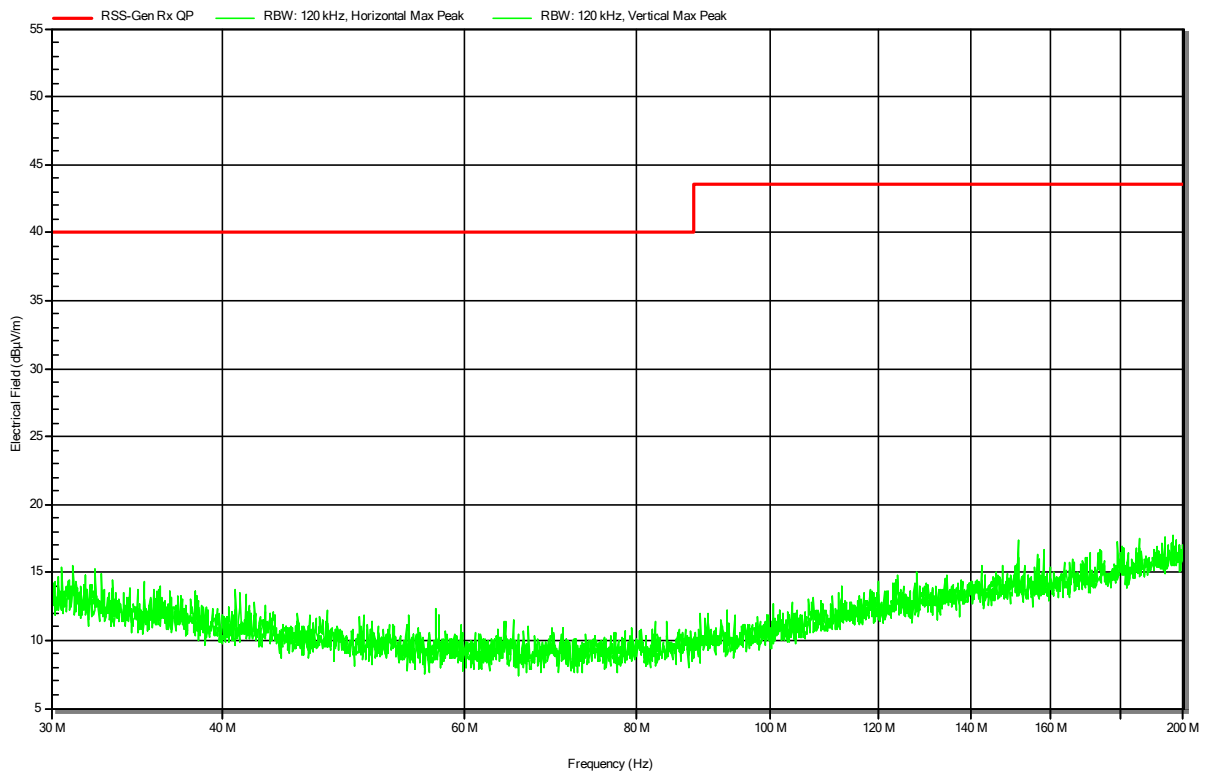
ANNEX B Receiver spurious emissions

Radiated Spurious Emissions according to RSS-Gen Issue 5

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Rohde & Schwarz HK 116
 Measurement distance: 3 m
 Mode: Rx; receive
 Test Date: 2021-10-08
 Note: EUT vertical

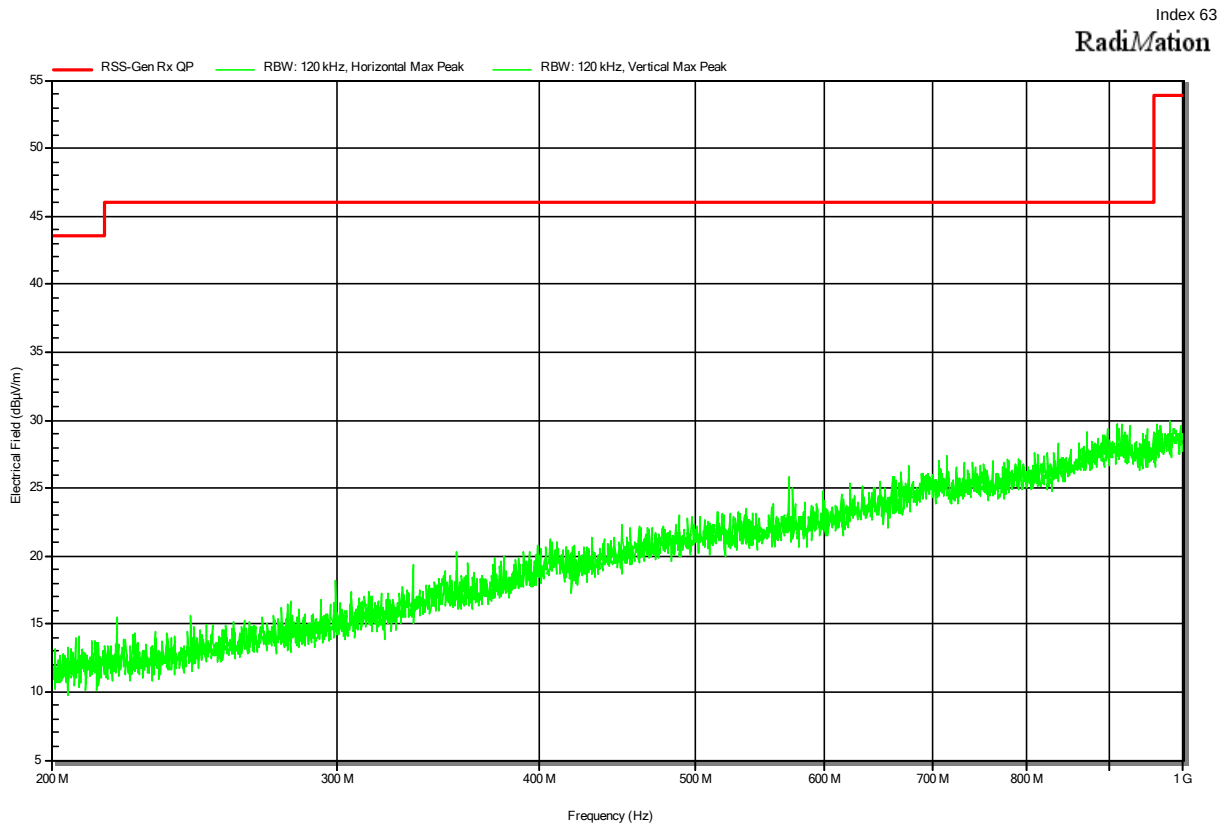
Index 64

RadiMation



Radiated Spurious Emissions according to RSS-Gen Issue 5

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Rohde & Schwarz HL 223
 Measurement distance: 3 m
 Mode: Rx; receive
 Test Date: 2021-10-08
 Note: EUT vertical

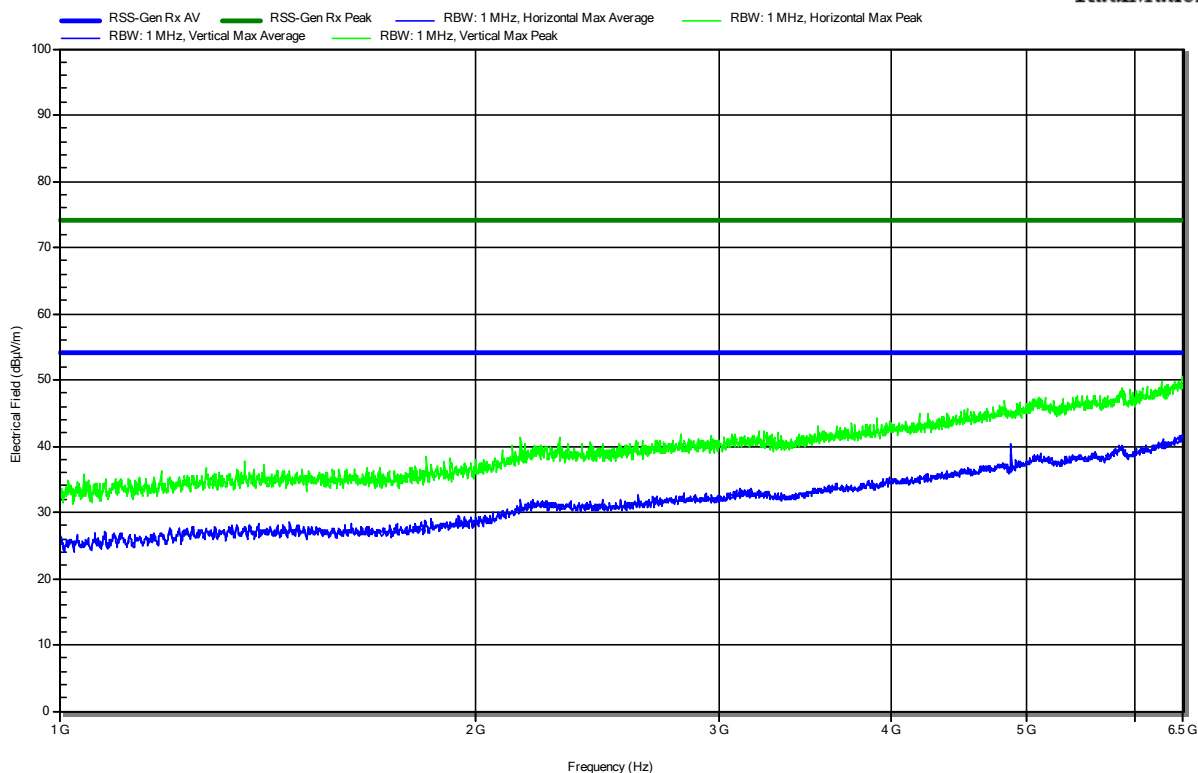


Radiated Spurious Emissions according to RSS-Gen Issue 5

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Rx; receive
 Test Date: 2021-10-07
 Note: EUT vertical

Index 61

RadiMation

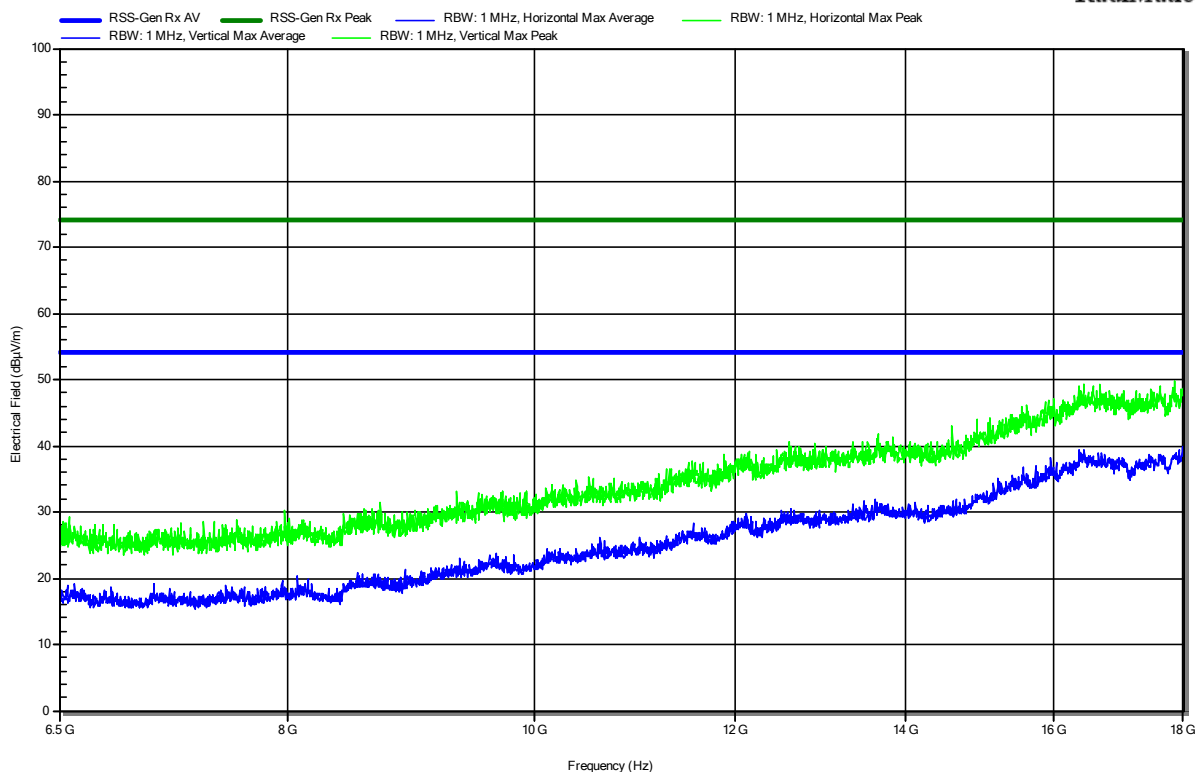


Radiated Spurious Emissions according to RSS-Gen Issue 5

Project Number: G0M-2106-9857
 Applicant: ANDREAS STIHL AG & Co. KG
 Model Description: AR 2000 L
 Model: battery pack 4871 AR-C
 Test Sample ID: 36238
 Test Site: Eurofins Product Service GmbH
 Operator: Ms. Graf
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 22 °Celsius, Vnom:
 Antenna: Schwarzbeck Schwarzbeck HWRD 650
 Measurement distance: 3 m
 Mode: Rx; receive
 Test Date: 2021-10-07
 Note: EUT vertical

Index 60

RadiMation



== = END OF TEST REPORT == =

Test Report No.: G0M-2106-9857-TFC247BL1-V01

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