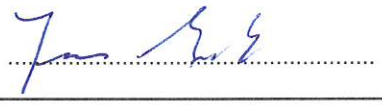
EMC TEST REPORT

Title 47 CFR Part 15B, ISED ICES-003 Issue 7

Report Reference No	G0M-2106-9857-EF0215B-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	A2LA - Registration number: 1983.01 (ISED) ISED wireless device testing laboratory: CN 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 Standard(s)	Title 47 CFR Part 15 Subpart B ISED ICES-003 Issue 7 ANSI C63.4:2014+A1:2017
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	battery pack 4871 AR-C
Model(s)	AR 3000 L
Additional Model(s)	None
Brand Name(s)	Andreas Stihl AG & Co. KG
Hardware Version(s)	HW 03.10: User Interface HW 03.12: Mainelektronik (BMS)
Software Version(s)	SW 00.17: User Interface SW 00.11: Mainelektronik (BMS)
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	
required by standard but not appl. to test object	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Date of receipt of test item	2021-07-15	
Report:		
Compiled by	Matthias Handrik	
Tested by (+ signature) (Responsible for Test)	Matthias Handrik	
Approved by (+ signature) (Deputy Head of Lab)	Jens Marquardt	
Date of Issue	2021-09-30	
Total number of pages	47	
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:		

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
T_{NOM}	Nominal operating temperature
V_{NOM}	Nominal supply voltage

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2021-09-30	Initial Release	-

REPORT INDEX

1 Equipment (Test Item) Under Test

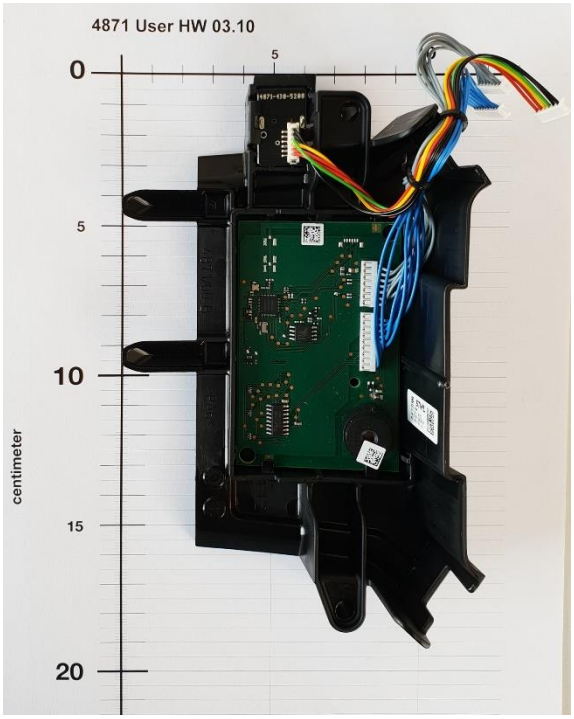
Description	battery pack 4871 AR-C	
Intended Use	Backpackable lithium-ion battery with 1.522 Wh battery energy for long run times. USB port, Bluetooth® interface for connection with STIHL connected.	
Model	AR 3000 L	
Additional Model(s)	None	
Brand Name(s)	Andreas Stihl AG & Co. KG	
Serial Number(s)	190360578	
Hardware Version(s)	HW 03.10: User Interface HW 03.12: Mainelektronik (BMS)	
Software Version(s)	SW 00.17: User Interface SW 00.11: Mainelektronik (BMS)	
EUT Dimensions [cm]	36.0 x 28.0 x 12.0	
FCC-ID	2ALP8AR1	
IC	23431-AR1	
Class	Class B	
Equipment type	Table top	
Highest internal frequency [MHz]	32 MHz CPU clock / 2480 MHz Bluetooth	
Radio Module	Type	Bluetooth Low Energy module
	Model	Unspecified
	Manufacturer	Unspecified
	FCC-ID	Unspecified
	IC	Unspecified
Supply Voltage	V_{NOM}	36 VDC
AC/DC-Adaptor	Model	Stihl AL 300
	Vendor	Andreas Stihl AG & Co. KG
	Input	120V AC / 60Hz
	Output	25.6-36V DC
Manufacturer	ANDREAS STIHL AG & Co. KG Andreas-Stihl-Straße 4 71336 Waiblingen GERMANY	

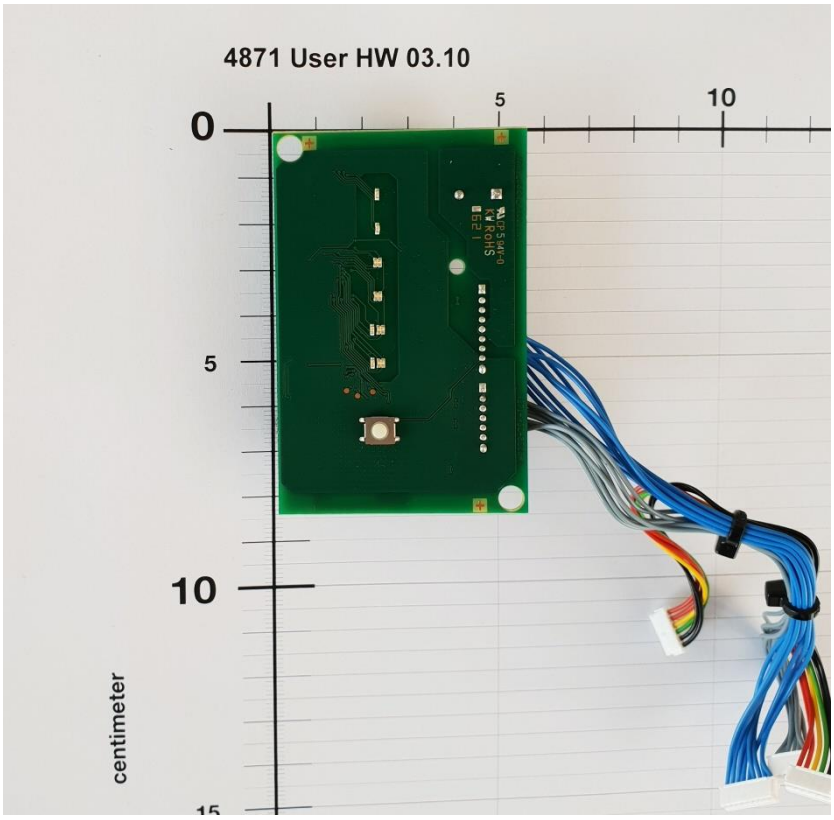
1.1 Equipment Ports

Name	Type	Attributes		Comment
Power	AC	Count: Cable length [m]: Direction: Service only: Shielded:	1 2 IO No No	Charger
Power	DC	Count: Cable length [m]: Direction: Service only: Shielded:	1 0 IO No No	-
USB	DC	Count: Cable length [m]: Direction: Service only: Shielded:	1 5 IO No No	Only Charging port

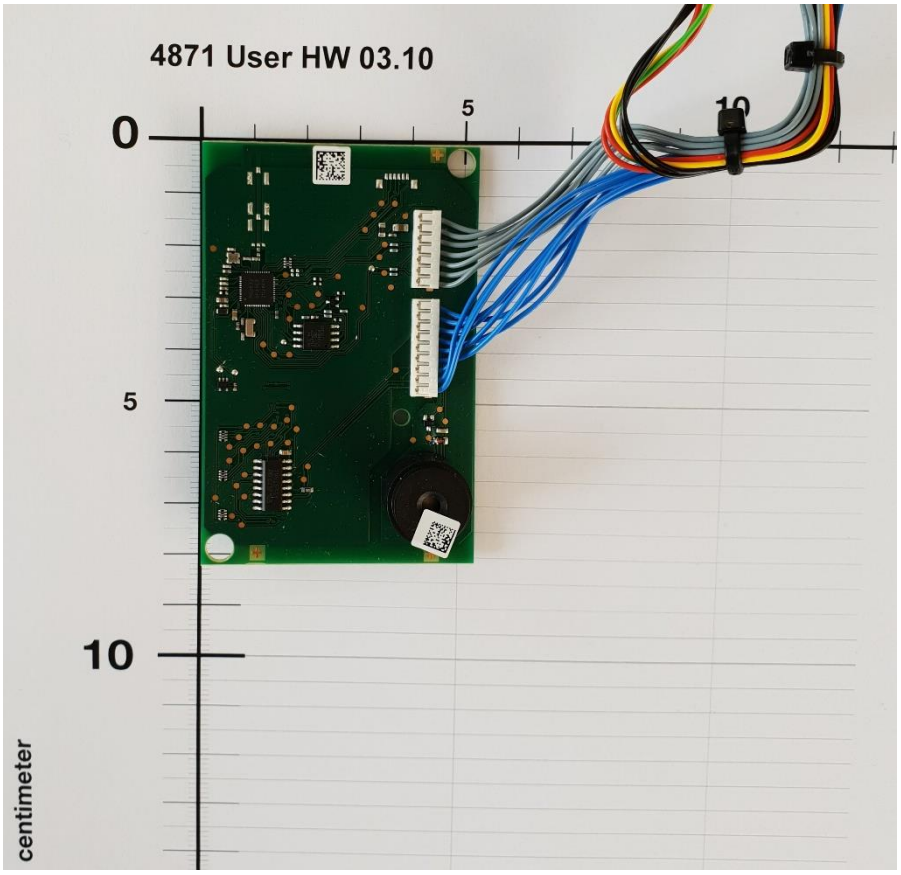
Description:	
AC	AC mains power input/output port
DC	DC power input/output port
BAT	DC power input port connected to external battery
IO	Input/Output port
TP	Telecommunication port
NE	Non-electrical port

1.2 Equipment Photos – Internal (provide by customer)

pic_AR2000_3000L_User_Electronic_2021_09_21


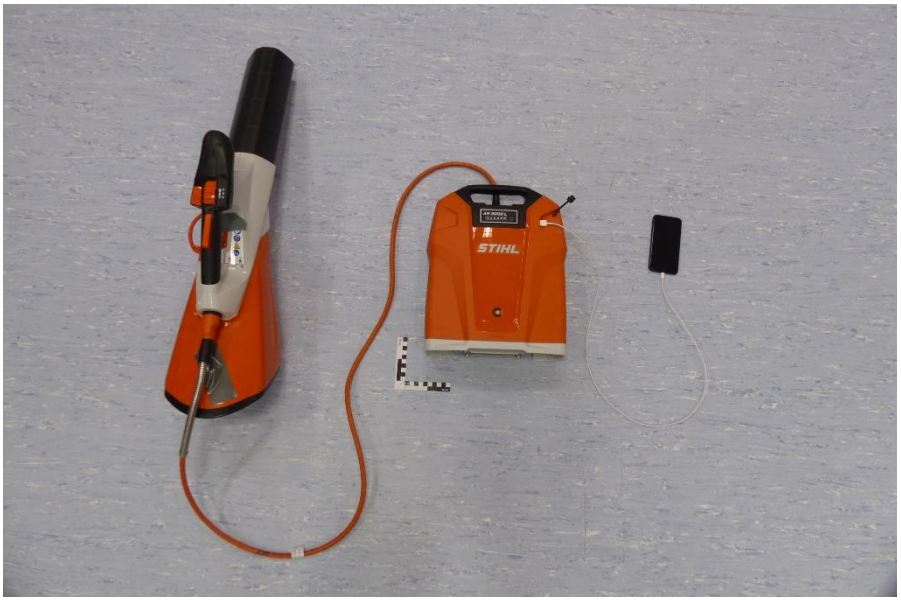
pic_AR2000_3000L_User_Electronic_Bot_2021_09_21


pic_AR2000_3000L_User_Electronic_Top_2021_09_21



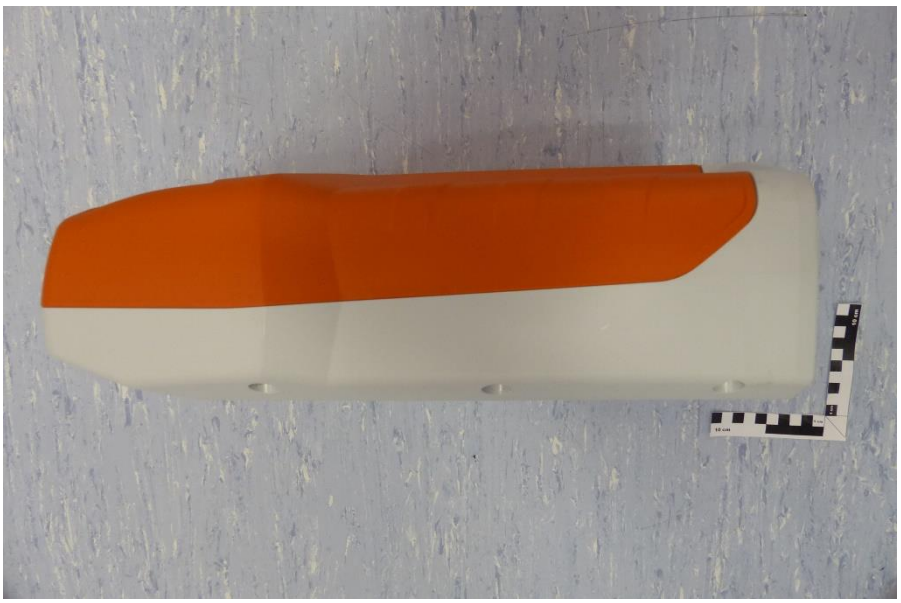
1.3 Equipment Photos - External

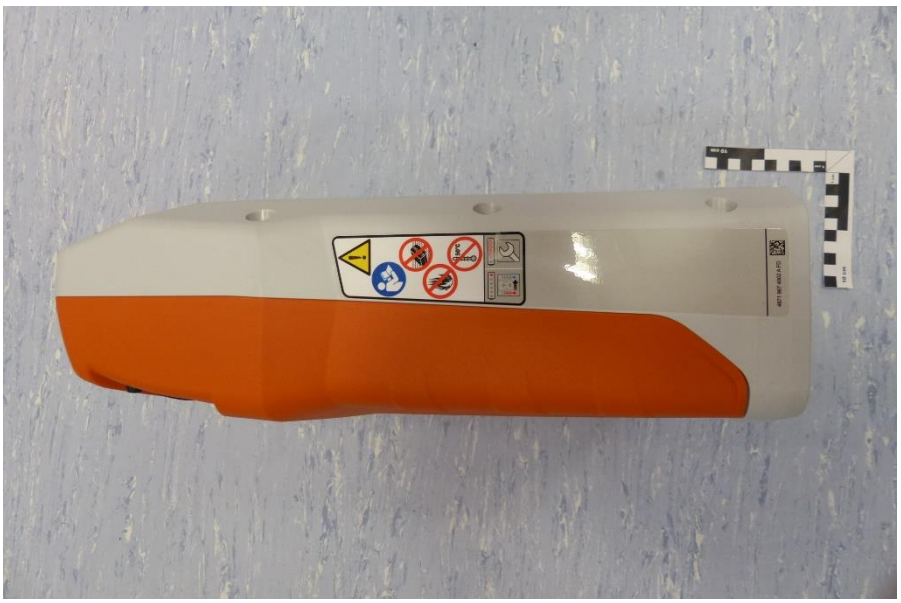
EUT + Auxiliary Equipment for EUT Configuration 1



EUT + Auxiliary Equipment for EUT Configuration 2

EUT FRONT


EUT LEFT


EUT RIGHT


EUT BACK


EUT TOP

EUT BOTTOM

EUT USB Port


EUT Label I


EUT Label II


Charger


Charger Label


1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
CBL	Connection cable for power transmission for accumulators AR L	STIHL	-	1.8m
CBL	USB	-	-	-
AE	iPhone	Apple	iPhone SE / MX9R2ZD/A	-
AE	Leaf blower	STIHL	BGA 200	-
AE	Adapter AP for power transmission from devices with battery bay	STIHL	-	-
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
MON	Monitoring Equipment			
CBL	Connecting Cable			
Comment:				

1.5 Operational Modes

Mode #	Description
1	EUT powered Leaf blower and charge iPhone. Leaf blower operates continuous with low blower level. Bluetooth Low Energy Connection between EUT and iPhone. Status information from EUT were transmitted via Bluetooth Low Energy to iPhone
2	Charging. Bluetooth Low Energy Connection between EUT and iPhone. Status information from EUT were transmitted via Bluetooth Low Energy to iPhone
Comment:	

1.6 EUT Configuration

Configuration #	Description
1	EUT assembled with connection cable to leaf blower. iPhone connected with USB wire, to EUT USB-Port, for charging
2	EUT assembled with connection cable and Adapter AP. Adapter AP is placed in charger. iPhone connected with USB wire, to EUT USB-Port, for charging
Comment:	

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 analyser in dBµV. Any external preamplifiers used are taken into account through internal analyser 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 analyser. 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 Analyser (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

Title 47 CFR Part 15B, ISED ICES-003 Issue 7				
Reference	**Requirement**	**Reference Method**	**Result**	**Remarks**
Emission				
FCC 15.109 ICES-003, 3.2.2	Radiated emissions	ANSI C63.4:2014 +A1:2017	PASS	-
FCC 15.107 ICES-003, 3.2.1	AC power line conducted emissions	ANSI C63.4:2014 +A1:2017	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

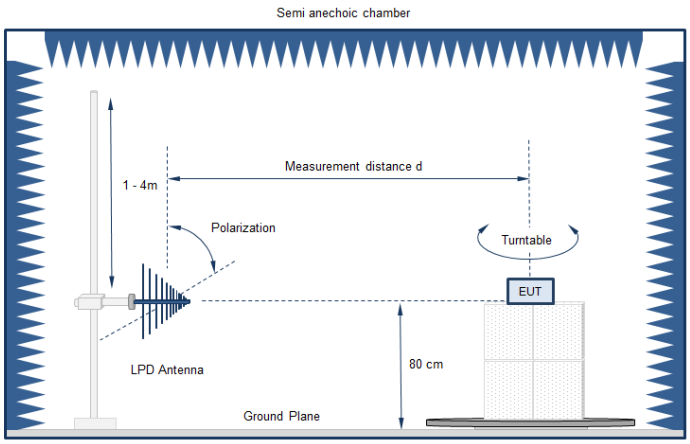
2.1 Test Conditions and Results - Radiated emissions acc. to ANSI C63.4

2.1.1 Information

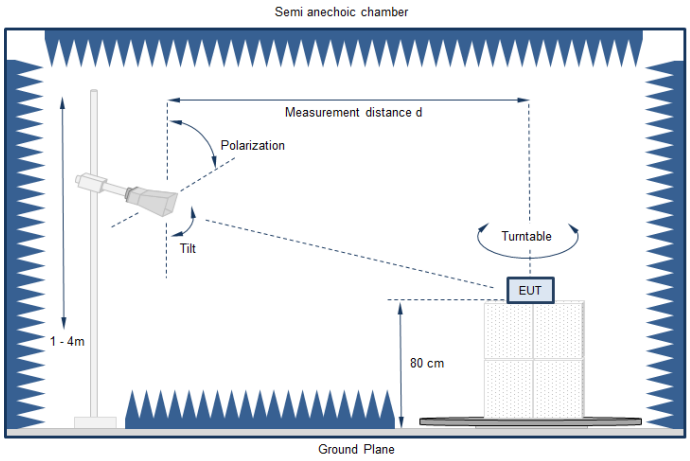
Test Information	
Reference	FCC 15.109, ICES-003, 3.2.2
Reference method	ANSI C63.4:2014+A1:2017 Section 8
Equipment class	Class B
Equipment type	Table top
Highest internal frequency [MHz]	2480
Measurement range	30 MHz to 12400 MHz
Temperature [°C]	21 ±3
Humidity [%]	48 ±3
Operator	Matthias Handrik
Date	2021-08-30 - 2021-09-03

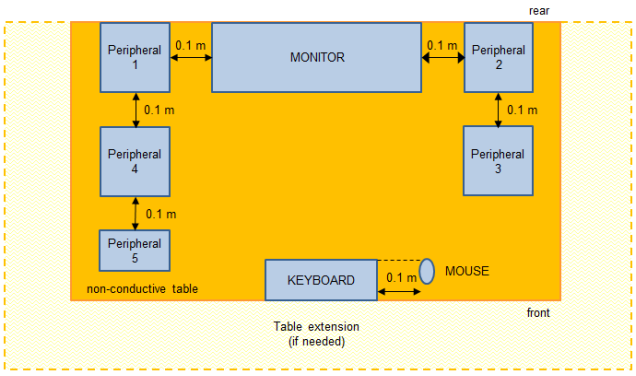
2.1.2 Setup

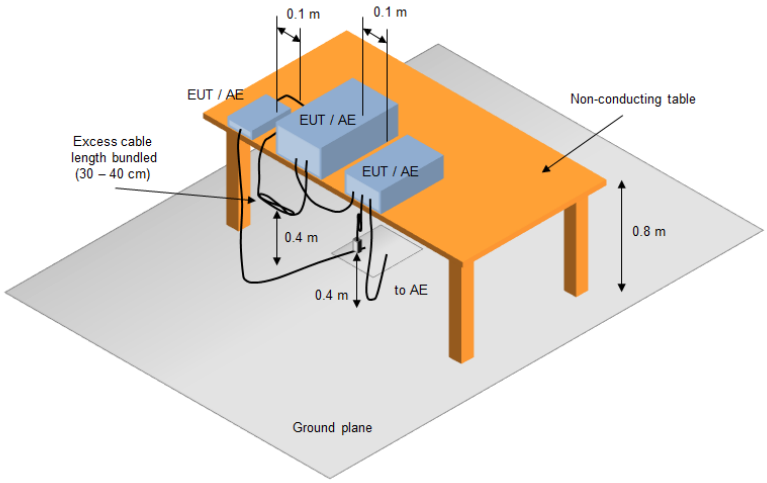
Measurement up to 1 GHz



Measurement above 1 GHz



Equipment placement - Table top


Test Setup


2.1.3 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
Anechoic chamber (NSA)	Frankonia	AC1	EF00062	2021-02	2024-02
Anechoic chamber (SVSWR)	Frankonia	AC 1	EF01011	2019-06	2022-06
Programmable AC Source	Chroma ATE Inc.	61604	EF01068	2021-07	2022-07
EMI Test Receiver	Keysight	N9038A-526/WXP	EF01070	2021-07	2022-07
Biconical Antenna	R&S	HK 116	EF00030	2021-05	2024-05
LPD Antenna	R&S	HL 223	EF00187	2019-05	2022-05
Horn Antenna	Schwarzbeck	BBHA9120D	EF00018	2019-10	2022-10
Climatic Sensor	Embedded Data Systems, LLC.	2800100000254 17E	EF01054	2021-03	2022-03

2.1.4 Procedure

Exploratory measurement
1. The EUT was placed on a non-conductive table at a height of 0.8m. 2. The EUT and support equipment, if needed, were set up to simulate typical usage. 3. Cables, of type and length specified by the manufacturer, were connected to at least one port of each type and were terminated by a device or simulating load of actual usage. 4. The antenna was placed at a distance of 3 or 10 m. 5. The received signal was monitored at the measurement receiver. 6. This procedure has to be performed in both antenna polarizations, horizontal and vertical. 7. The arrangement of the equipment with the maximum emission level is shown on the setup picture at item 2.1.2

Final measurement
1. The EUT was placed on a 0.8 m non-conductive table at a 3 m distance from the receive antenna. The antenna output was connected to the measurement receiver. 2. A biconical antenna was used for the frequency range 30 – 200 MHz, a logarithmic periodical antenna was used for the frequency range from 200 – 1000 MHz. Above one 1 GHz a Double Ridged Broadband Horn antenna was used. The antenna was placed on an adjustable height antenna mast. 3. The EUT and cable arrangement were based on the exploratory measurement results. 4. Emissions were maximized at each frequency by rotating the EUT and adjusting the receive antenna height and polarization. The maximum values were recorded. 5. The test data of the worst-case conditions were recorded and shown on the next pages.

2.1.5 Limits

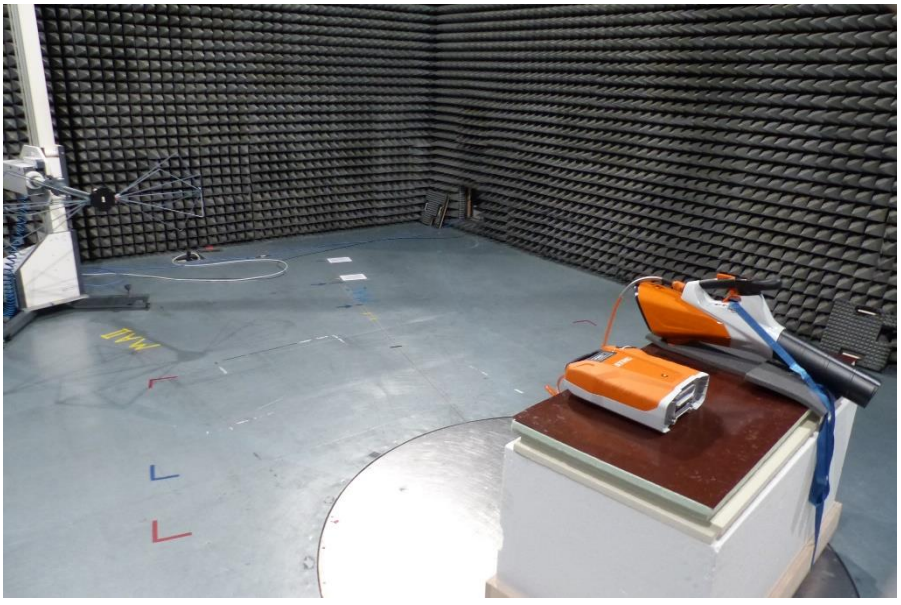
Class B @ 3 m		
Frequency [MHz]	Detector	Limit [dBµV/m]
30 - 88	Quasi-peak	40
88 - 216	Quasi-peak	43.5
216 - 960	Quasi-peak	46
960 - 1000	Quasi-peak	54
> 1000	Peak Average	74 54

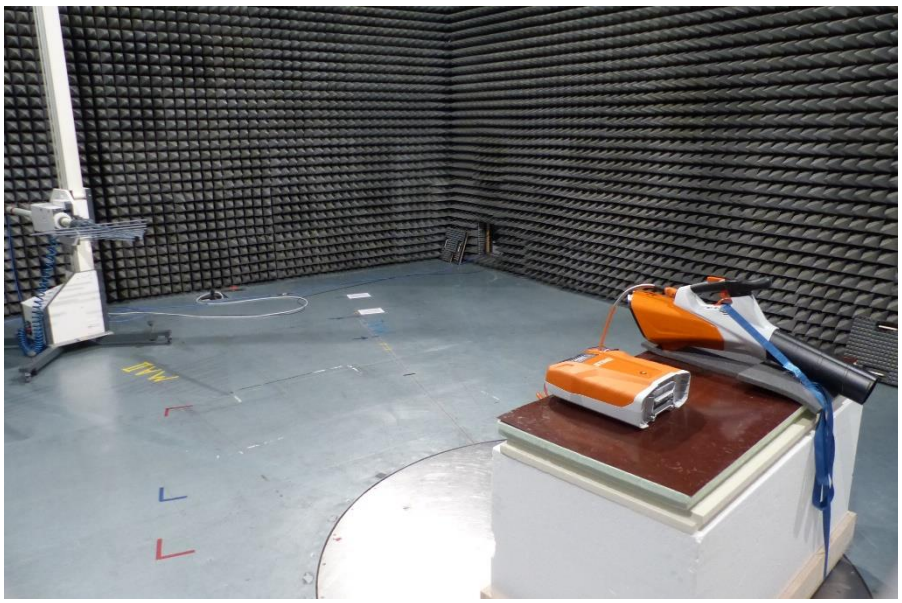
2.1.6 Results

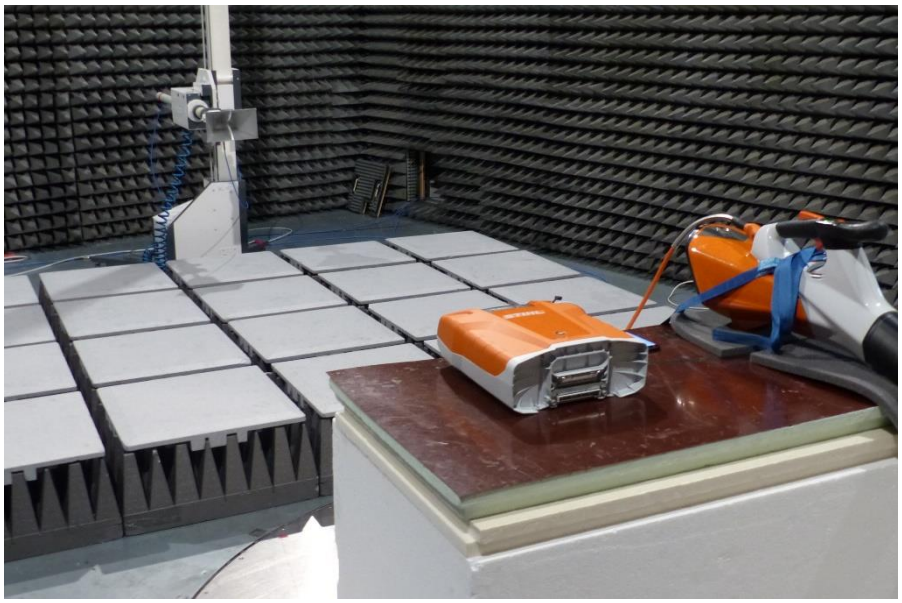
Test Results			
Operational mode	EUT Configuration	Verdict	Remark
1	1	PASS	-
2	2	PASS	-

2.1.7 Setup Photos

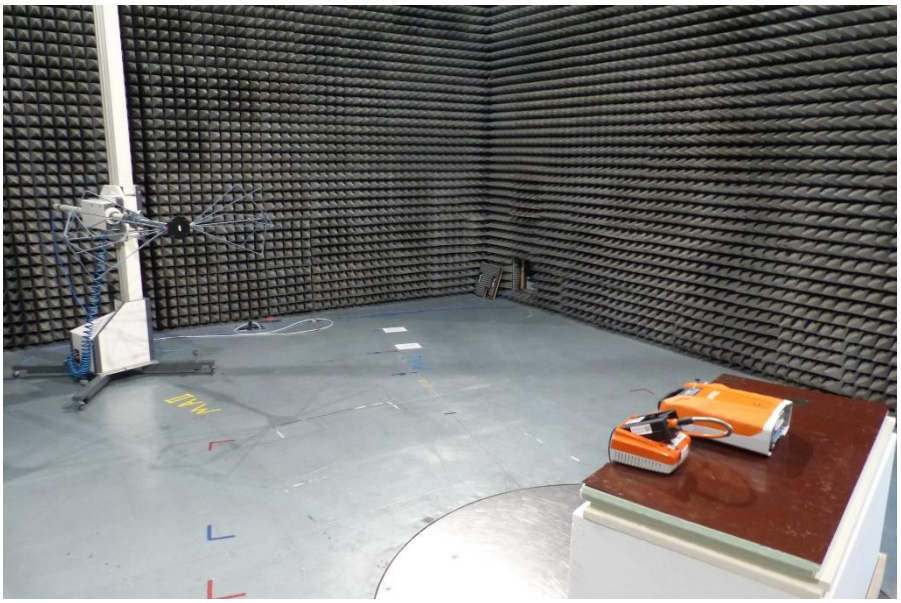
Test setup EUT Configuration 1

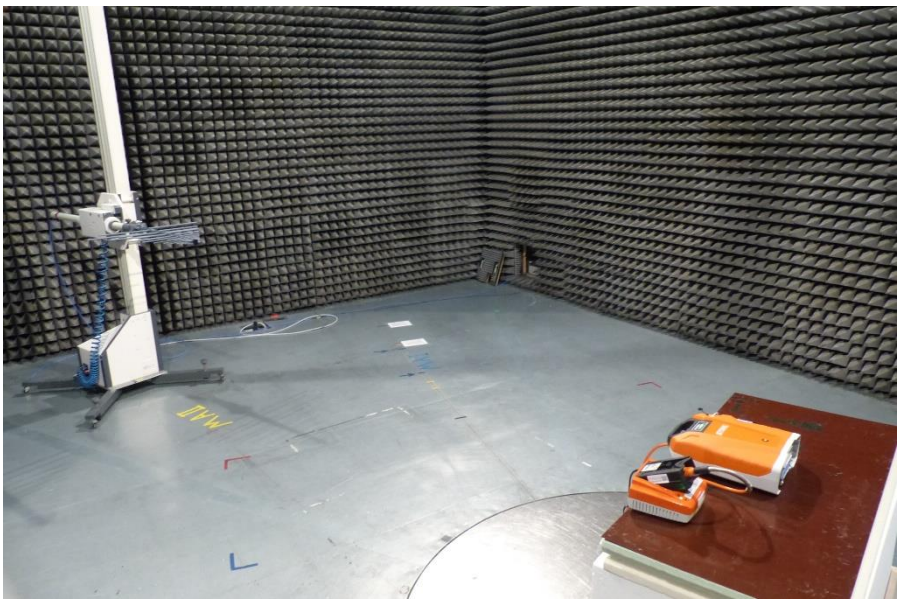

Test setup EUT Configuration 1: 30-200MHz


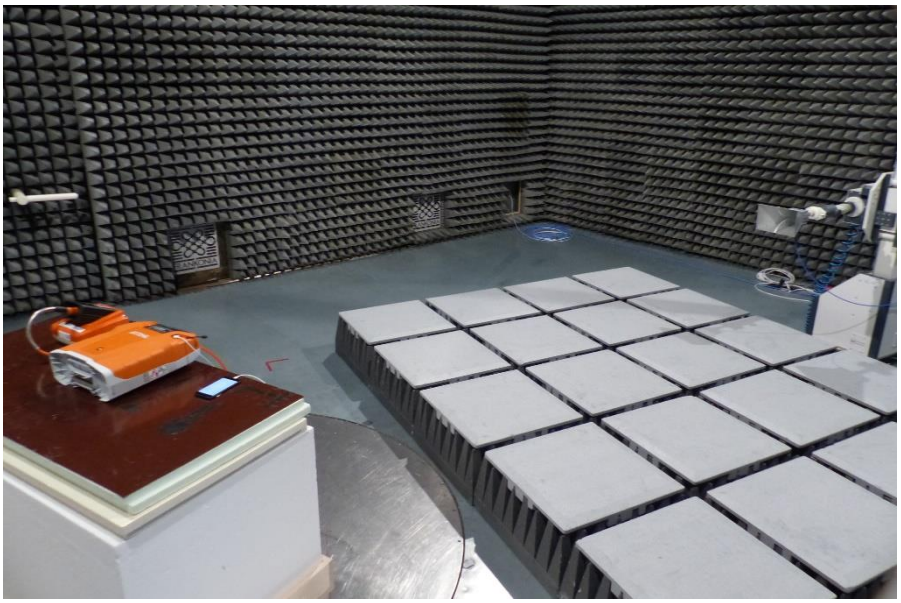
Test setup EUT Configuration 1: 200-1000MHz


Test setup EUT Configuration 1: 1-13GHz


Test setup EUT Configuration 2


Test setup EUT Configuration 2 30-200MHz


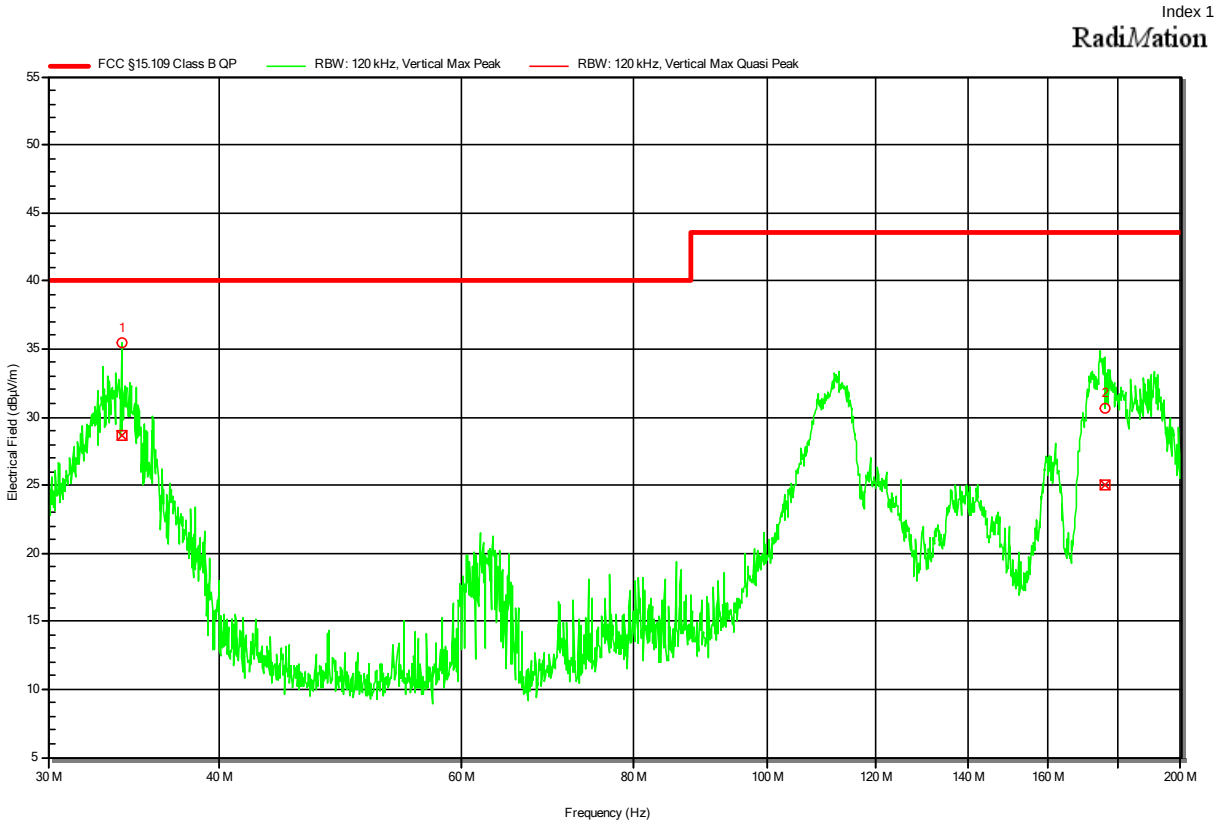
Test setup EUT Configuration 2: 200-1000MHz


Test setup EUT Configuration 2: 1-13GHz


2.1.8 Records

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-08-30
Operating Conditions:	ambient temperature: 22 °Celsius power input: 36V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement Distance:	3m
Operational Mode & EUT Configuration:	1 1
Note 1:	



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	33.918 MHz	28.61 dBµV/m	40 dBµV/m	-11.39 dB	Pass	-126 degrees	1 m
2	176.081 MHz	25.04 dBµV/m	43.52 dBµV/m	-18.48 dB	Pass	-189 degrees	1 m

Radiated emissions
according to FCC part 15B

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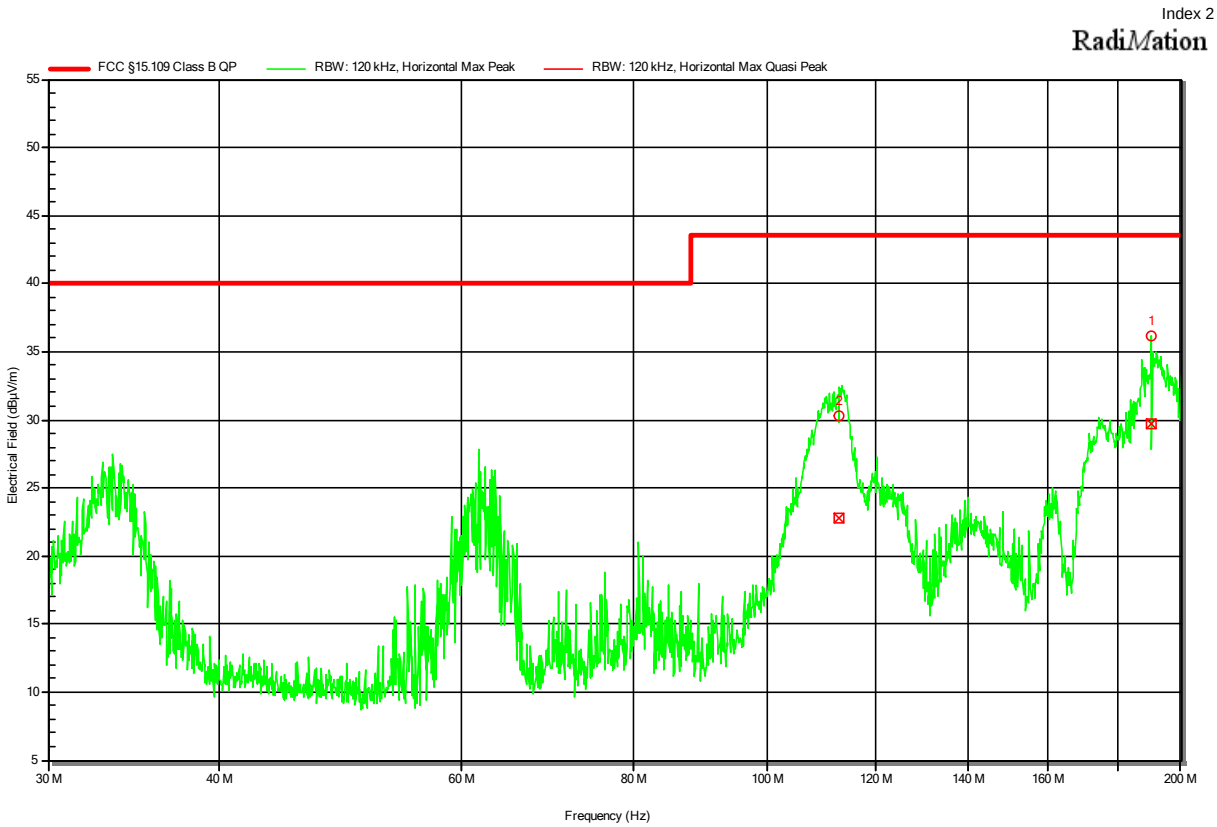
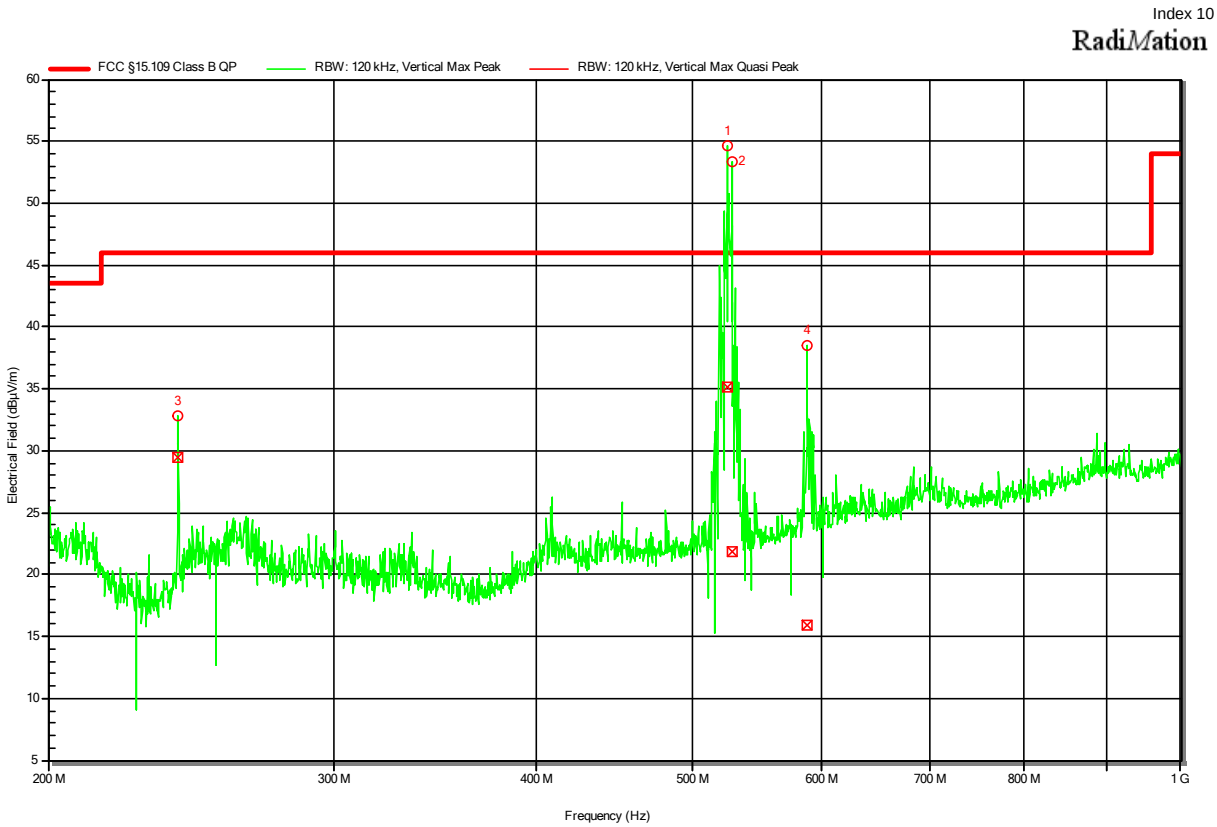
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-08-30
Operating Conditions:	ambient temperature: 22 °Celsius power input: 36V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement Distance:	3m
Operational Mode & EUT Configuration:	1 1
Note 1:	



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	190.599 MHz	29.71 dBµV/m	43.52 dBµV/m	-13.81 dB	Pass	-126 degrees	1.25 m
2	112.713 MHz	22.73 dBµV/m	43.52 dBµV/m	-20.79 dB	Pass	-126 degrees	2.1 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-09-01
Operating Conditions:	ambient temperature: 21 °Celsius power input: 36V DC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement Distance:	3m
Operational Mode & EUT Configuration:	1 1
Note 1:	



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	525.683 MHz	35.21 dBµV/m	46.02 dBµV/m	-10.81 dB	Pass	198 degrees	1.9 m
2	528.46 MHz	21.79 dBµV/m	46.02 dBµV/m	-24.23 dB	Pass	153 degrees	1.1 m
3	240.505 MHz	29.45 dBµV/m	46.02 dBµV/m	-16.57 dB	Pass	171 degrees	1 m
4	588.203 MHz	15.88 dBµV/m	46.02 dBµV/m	-30.14 dB	Pass	-117 degrees	1.2 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
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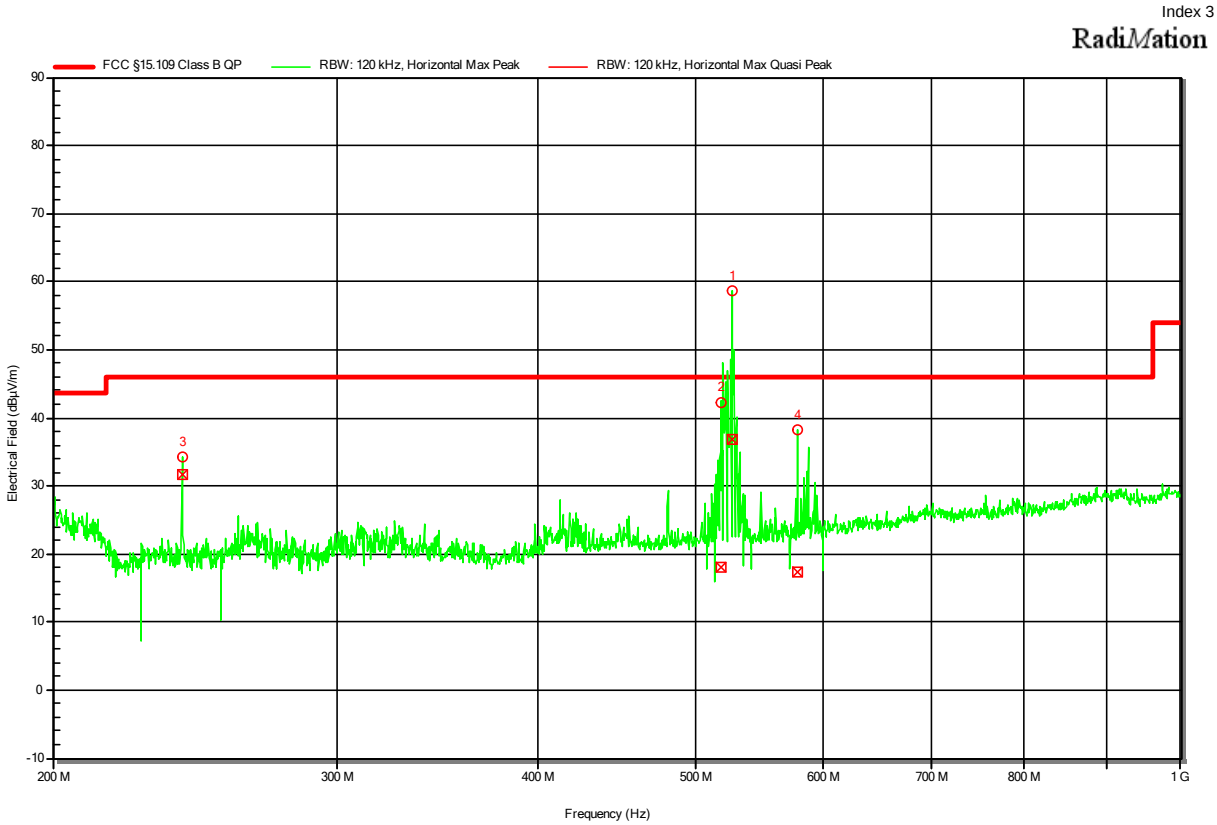
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-08-30
Operating Conditions:	ambient temperature: 22 °Celsius power input: 36V DC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement Distance:	3m
Operational Mode & EUT Configuration:	1 1
Note 1:	



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	527.148 MHz	36.89 dBµV/m	46.02 dBµV/m	-9.13 dB	Pass	-135 degrees	3.75 m
2	518.438 MHz	18.1 dBµV/m	46.02 dBµV/m	-27.92 dB	Pass	-99 degrees	1 m
3	240.501 MHz	31.75 dBµV/m	46.02 dBµV/m	-14.27 dB	Pass	-126 degrees	1.8 m
4	578.72 MHz	17.24 dBµV/m	46.02 dBµV/m	-28.78 dB	Pass	126 degrees	1.75 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-09-03
Operating Conditions:	ambient temperature: 21 °Celsius power input: 36V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement Distance:	3m
Operational Mode & EUT Configuration:	1 1
Note 1:	2.4 GHz Notchfilter

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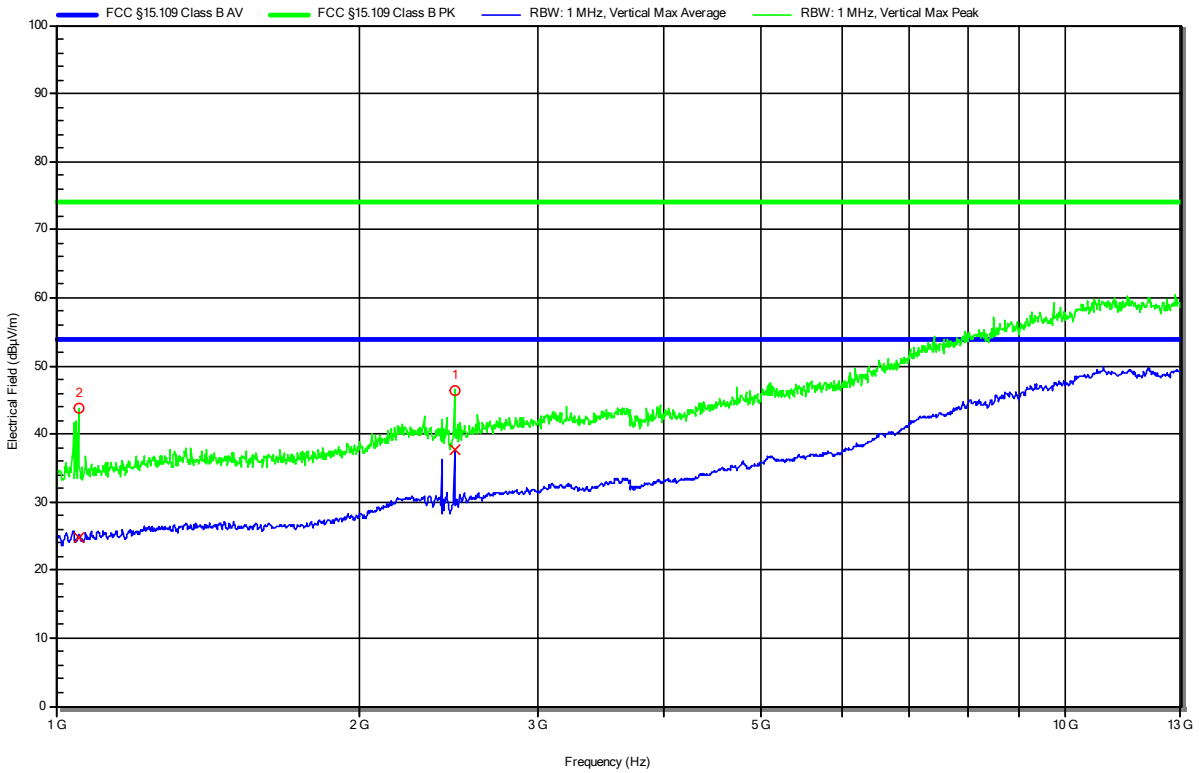
RadiMation



Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.481 GHz	Bluetooth Low Energy carrier					
2	1.053 GHz	43.84 dBµV/m	73.98 dBµV/m	-30.14 dB	Pass	0 degrees	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	2.481 GHz	Bluetooth Low Energy carrier					
2	1.053 GHz	24.76 dBµV/m	53.98 dBµV/m	-29.22 dB	Pass	0 degrees	1 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-09-03
Operating Conditions:	ambient temperature: 21 °Celsius power input: 36V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement Distance:	3m
Operational Mode & EUT Configuration:	1 1
Note 1:	2.4 GHz Notchfilter

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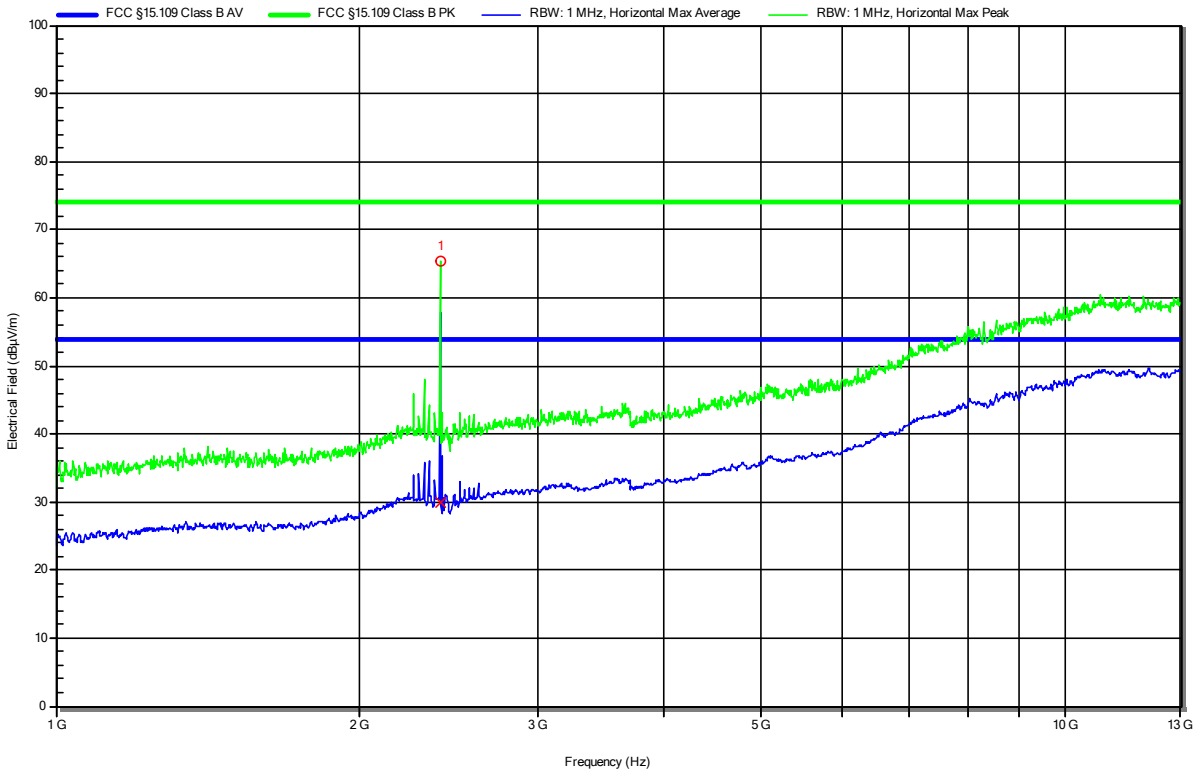
RadiMation



Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.402 GHz	Bluetooth Low Energy carrier					

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-09-01
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120V AC / 60Hz
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement Distance:	3m
Operational Mode &	2
EUT Configuration:	2
Note 1:	

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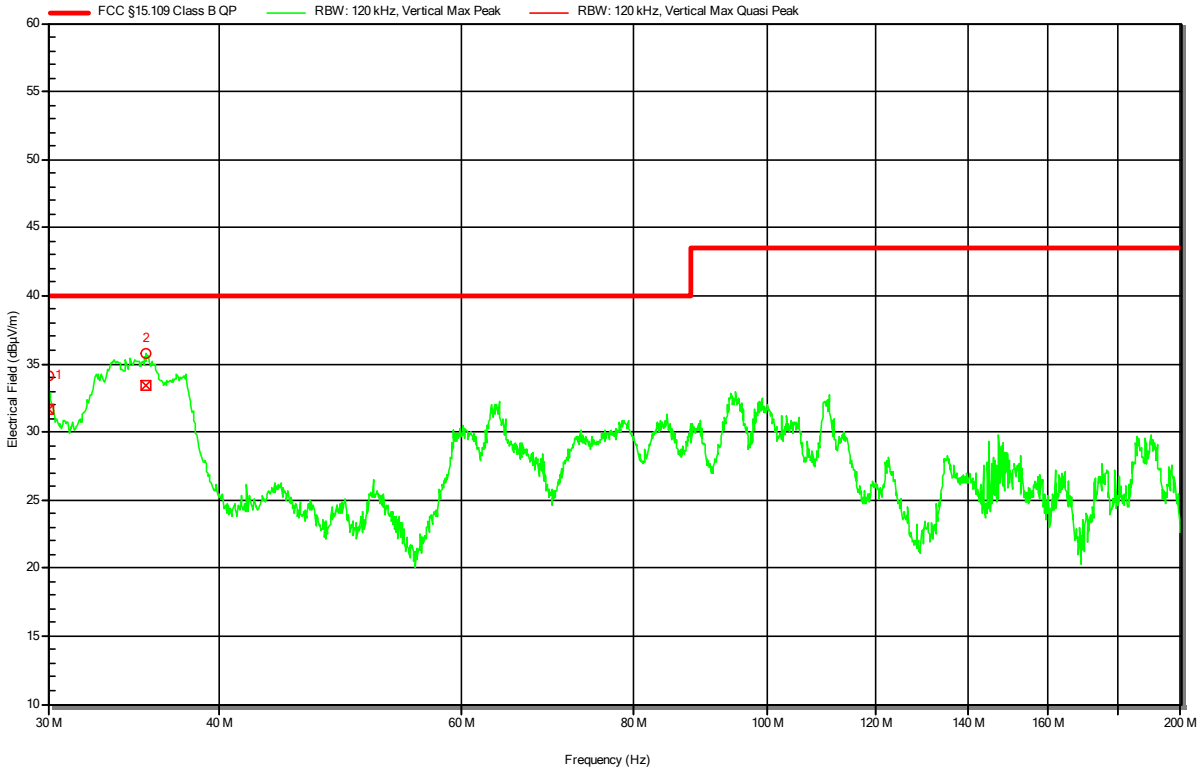
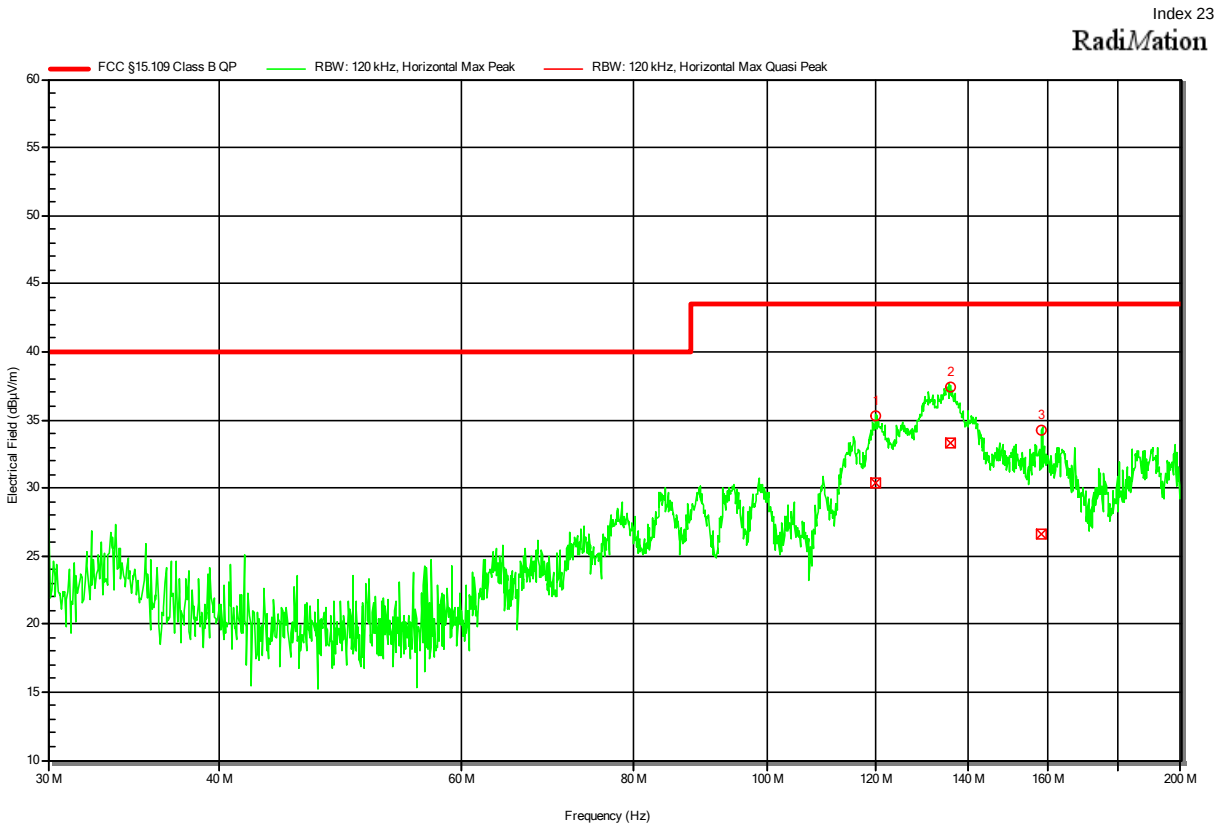
RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	30 MHz	31.62 dBµV/m	40 dBµV/m	-8.38 dB	Pass	-180 degrees	1 m
2	35.332 MHz	33.39 dBµV/m	40 dBµV/m	-6.61 dB	Pass	-180 degrees	1 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-09-01
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120V AC / 60Hz
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement Distance:	3m
Operational Mode &	2
EUT Configuration:	2
Note 1:	



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	120.11 MHz	30.42 dBµV/m	43.52 dBµV/m	-13.1 dB	Pass	120 degrees	2.23 m
2	135.897 MHz	33.35 dBµV/m	43.52 dBµV/m	-10.17 dB	Pass	120 degrees	2.23 m
3	158.5 MHz	26.58 dBµV/m	43.52 dBµV/m	-16.94 dB	Pass	120 degrees	2.23 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-09-01
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120V AC / 60Hz
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement Distance:	3m
Operational Mode & EUT Configuration:	2 2
Note 1:	

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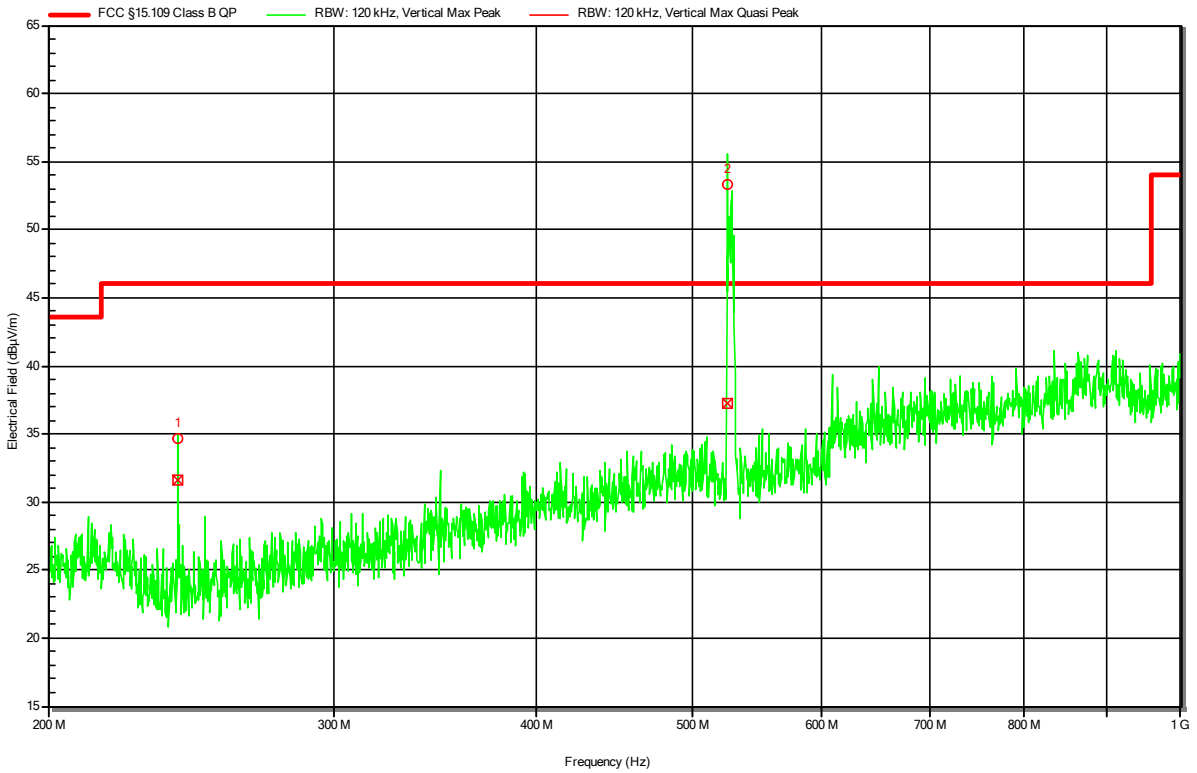
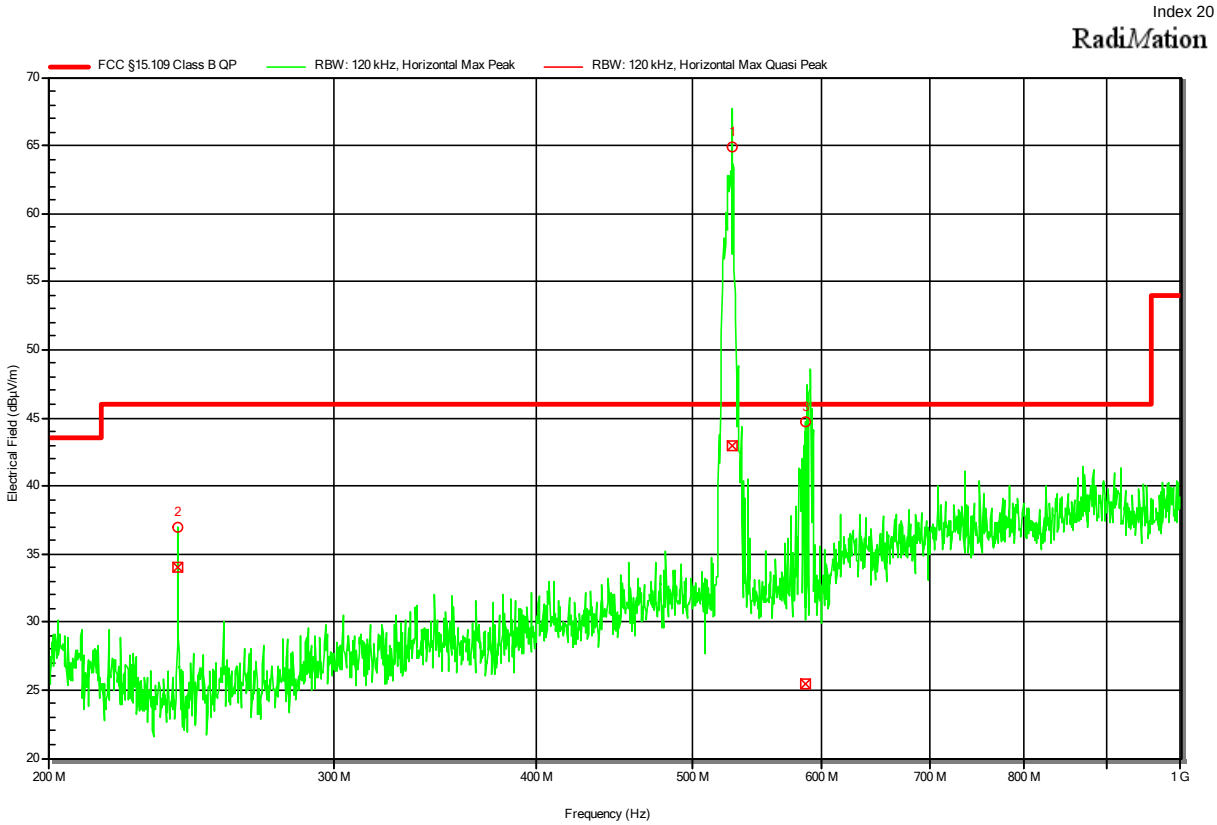


Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	240.51 MHz	31.64 dBµV/m	46.02 dBµV/m	-14.38 dB	Pass	180 degrees	1 m
2	524.765 MHz	37.2 dBµV/m	46.02 dBµV/m	-8.82 dB	Pass	180 degrees	1 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-09-01
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120V AC / 60Hz
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement Distance:	3m
Operational Mode & EUT Configuration:	2 2
Note 1:	



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	528.474 MHz	42.98 dBµV/m	46.02 dBµV/m	-3.04 dB	Pass	-125 degrees	1.30 m
2	240.552 MHz	33.97 dBµV/m	46.02 dBµV/m	-12.05 dB	Pass	-125 degrees	1.30 m
3	587.252 MHz	25.4 dBµV/m	46.02 dBµV/m	-20.62 dB	Pass	-1250 degrees	1.30 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-09-03
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120V AC / 60Hz
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement Distance:	3m
Operational Mode & EUT Configuration:	2 2
Note 1:	2.4 GHz Notchfilter

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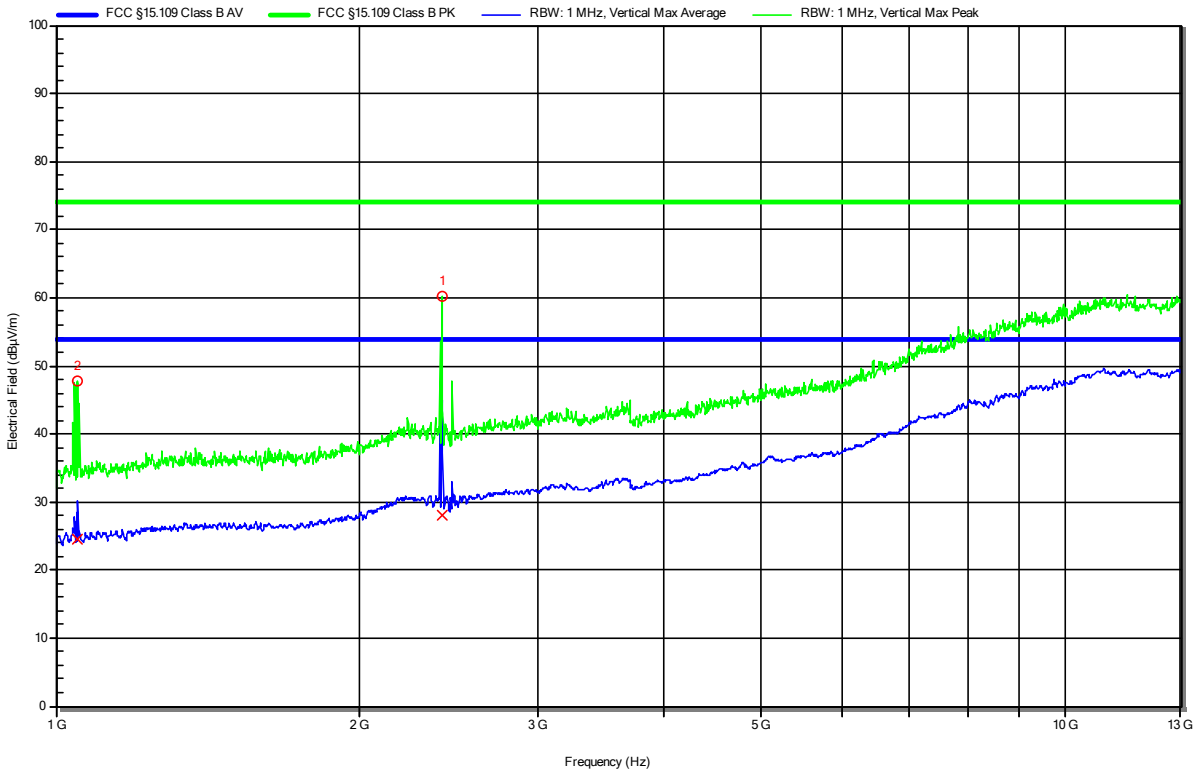
RadiMation



Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.409 GHz	Bluetooth Low Energy carrier					
2	1.052 GHz	47.81 dBµV/m	73.98 dBµV/m	-26.17 dB	Pass	0 degrees	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	2.409 GHz	Bluetooth Low Energy carrier					
2	1.052 GHz	24.46 dBµV/m	53.98 dBµV/m	-29.52 dB	Pass	0 degrees	1 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-09-03
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120V AC / 60Hz
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement Distance:	3m
Operational Mode & EUT Configuration:	2 2
Note 1:	2.4 GHz Notchfilter

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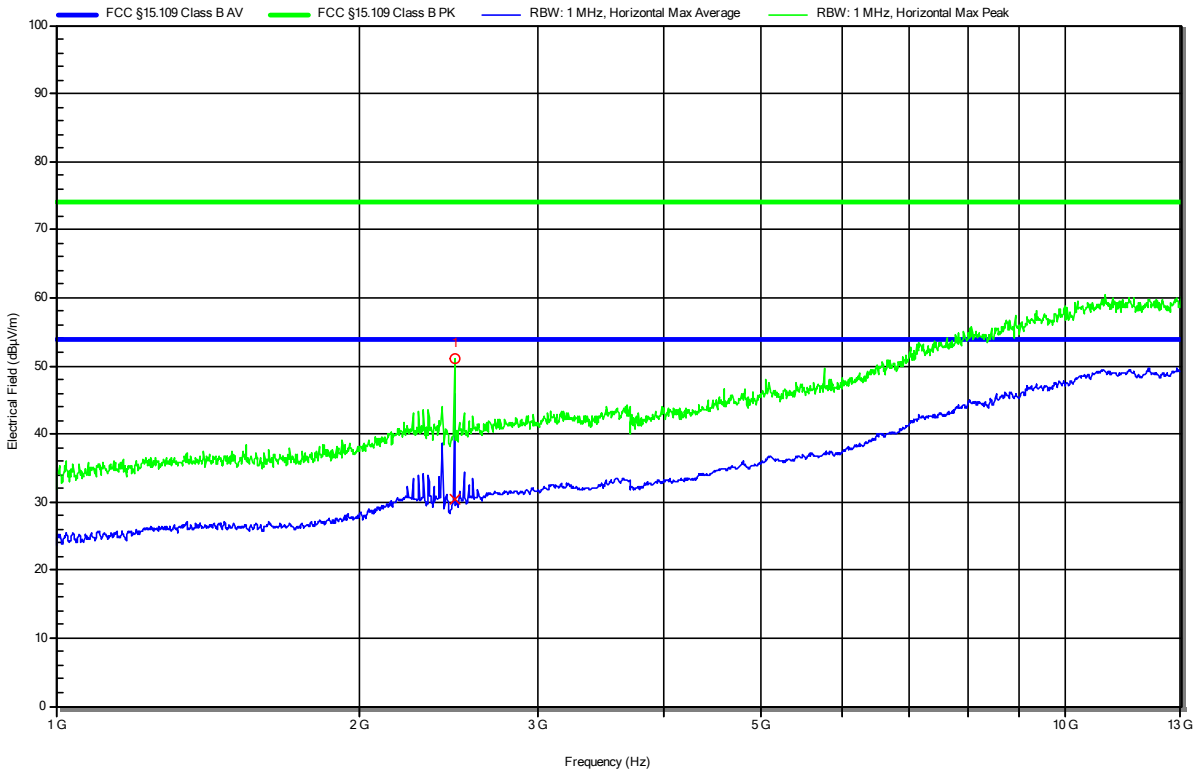
RadiMation



Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.48 GHz	Bluetooth Low Energy carrier					

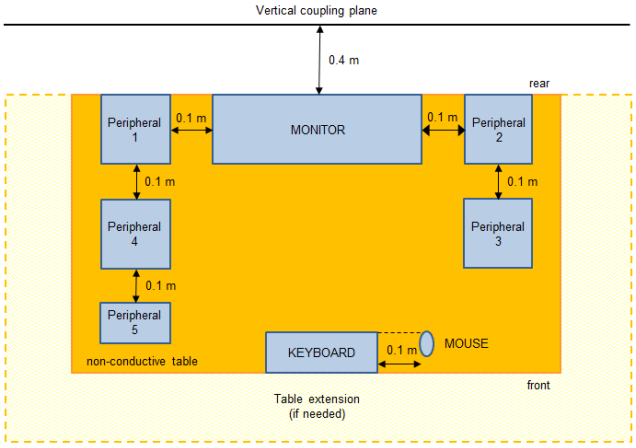
2.2 Test Conditions and Results - Conducted emissions acc. to ANSI C63.4

2.2.1 Information

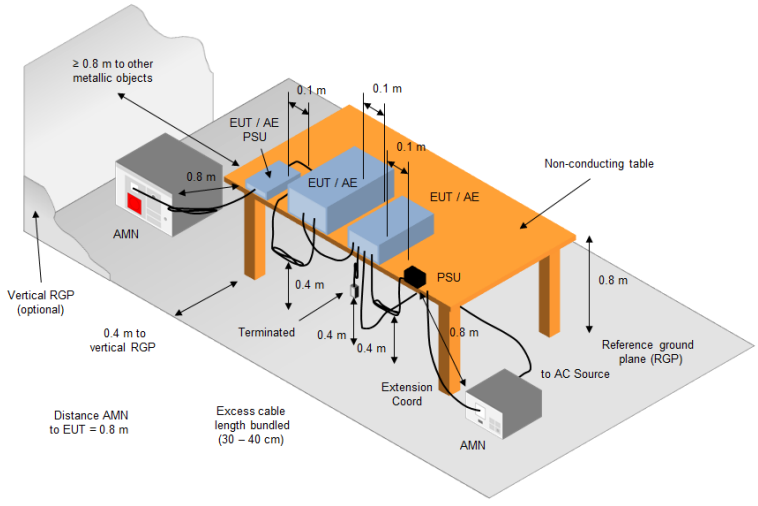
Test Information	
Reference	FCC 15.107, ICES-003, 3.2.1
Reference method	ANSI C63.4:2014+A1:2017 Section 12
Measurement range	150 kHz to 30 MHz
Equipment class	Class B
Equipment type	Table top
Temperature [°C]	22 ±3
Humidity [%]	52 ±3
Operator	Matthias Handrik
Date	2021-08-31

2.2.2 Setup

Equipment placement



Test Setup



2.2.3 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
AMN	Schwarzbeck	NSLK 8127	EF01592	2021-07	2022-07
AC & DC Power Supply	Chroma ATE Inc.	61604	EF01380	2021-07	2022-07
AMN	R&S	ESH3-Z5	EF00036	2021-08	2023-08
Pulse Limiter	R&S	ESH3-Z2	EF01063	2021-07	2022-07
EMI Test Receiver	R&S	ESR 7	EF00943	2021-08	2022-08
Climatic Sensor	Embedded Data Systems, LLC.	2800100000254 17E	EF01054	2021-03	2022-03

2.2.4 Procedure

Exploratory measurement
1. The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
2. The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
3. The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
4. The LISN measurement port was connected to a measurement receiver
5. I/O cables were bundled not longer than 0.4 m
6. Measurement was performed in the frequency range 0.15 – 30MHz on each current-carrying conductor
7. To maximize the emissions the cable positions were manipulated
8. The worst configuration of EUT and cables is shown on a test setup picture at item 2.2.2

Final measurement
1. The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
2. The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
3. The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
4. The LISN measurement port was connected to a measurement receiver
5. The EUT and cable arrangement were based on the exploratory measurement results
6. The test data of the worst-case conditions were recorded and shown on the next pages

2.2.5 Limits

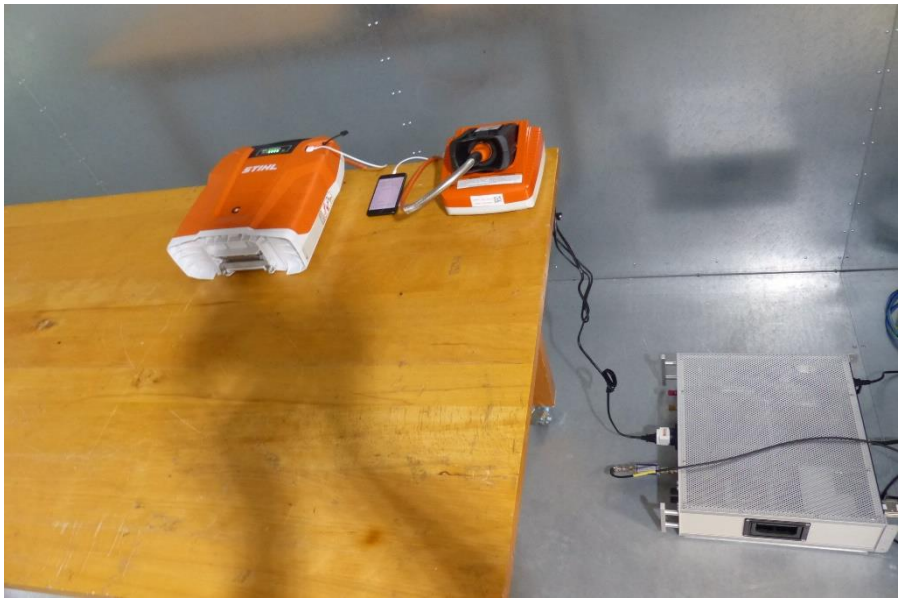
Class B		
Frequency [MHz]	Quasi-peak Limit [dBµV]	Average Limit [dBµV]
0.15 - 0.5	66 - 56 *	56 - 46 *
0.5 - 5	56	46
5 - 30	60	50
* Decreases with the logarithm of the frequency		

2.2.6 Results

AC power line conducted emissions					
Port	Coupling	Operational mode	EUT Configuration	Verdict	Remark
Power	AMN	2	2	PASS	-

2.2.7 Setup Photos

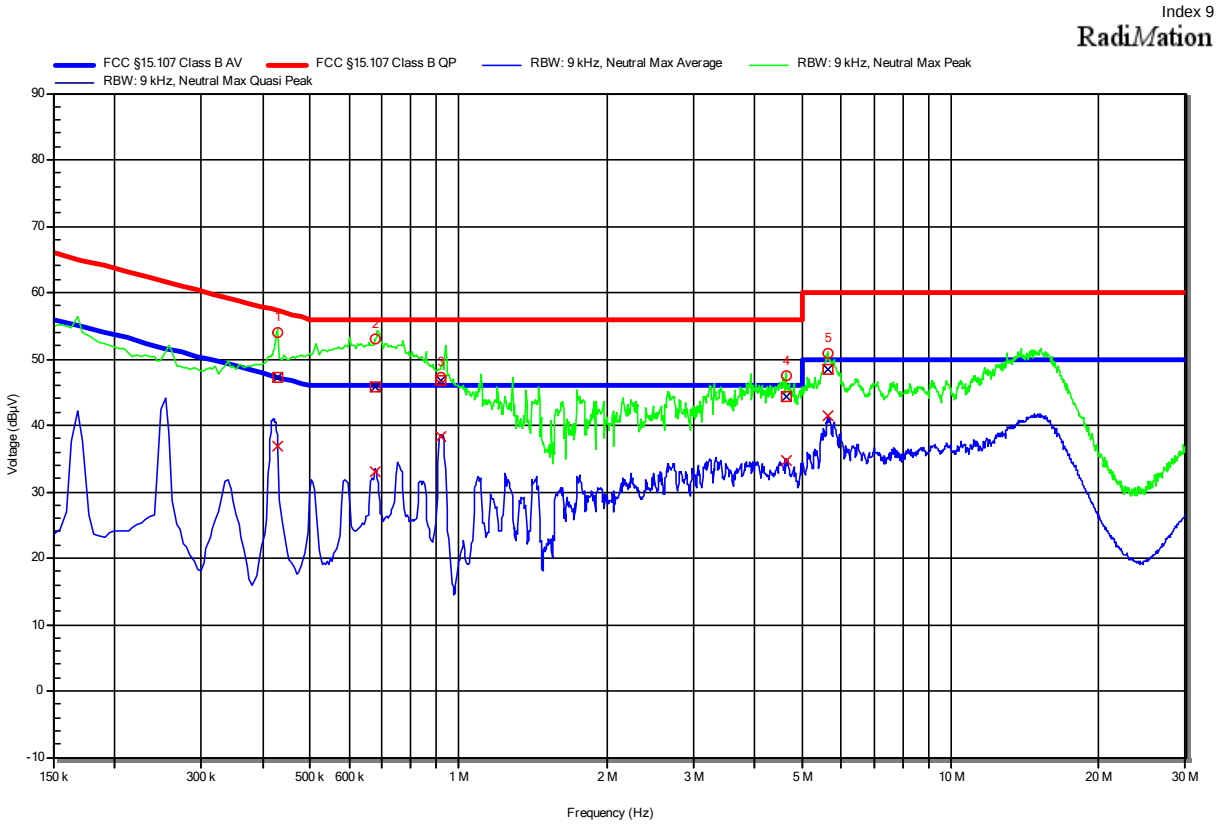
Test setup



2.2.8 Records

Conducted emissions at the mains power port
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-08-31
Operating Conditions:	ambient temperature: 22 °Celsius power input: 120V AC / 60Hz
LISN:	Schwarzbeck NSLK 8127 RC N
Operational Mode & EUT Configuration:	2 2
Applied to Port:	AC-Mains
Note 1:	



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	428.55 kHz	47.15 dBµV	57.28 dBµV	-10.13 dB	Pass	Neutral
2	676.5 kHz	45.74 dBµV	56 dBµV	-10.26 dB	Pass	Neutral
3	924 kHz	46.67 dBµV	56 dBµV	-9.33 dB	Pass	Neutral
4	4.622 MHz	44.41 dBµV	56 dBµV	-11.59 dB	Pass	Neutral
5	5.618 MHz	48.53 dBµV	60 dBµV	-11.47 dB	Pass	Neutral

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	428.55 kHz	36.81 dBµV	47.28 dBµV	-10.47 dB	Pass	Neutral
2	676.5 kHz	33.07 dBµV	46 dBµV	-12.93 dB	Pass	Neutral
3	924 kHz	38.31 dBµV	46 dBµV	-7.69 dB	Pass	Neutral
4	4.622 MHz	34.6 dBµV	46 dBµV	-11.4 dB	Pass	Neutral
5	5.618 MHz	41.35 dBµV	50 dBµV	-8.65 dB	Pass	Neutral

Conducted emissions at the mains power port
according to FCC part 15B

Project Number:	G0M-2106-9857
Applicant:	ANDREAS STIHL AG & Co. KG
Model Description:	battery pack 4871 AR-C
Model:	AR 3000 L
Test Sample ID:	35703
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Date:	2021-08-31
Operating Conditions:	ambient temperature: 22 °Celsius power input: 120V AC / 60Hz
LISN:	Schwarzbeck NSLK 8127 RC L
Operational Mode & EUT Configuration:	2 2
Applied to Port:	AC-Mains
Note 1:	

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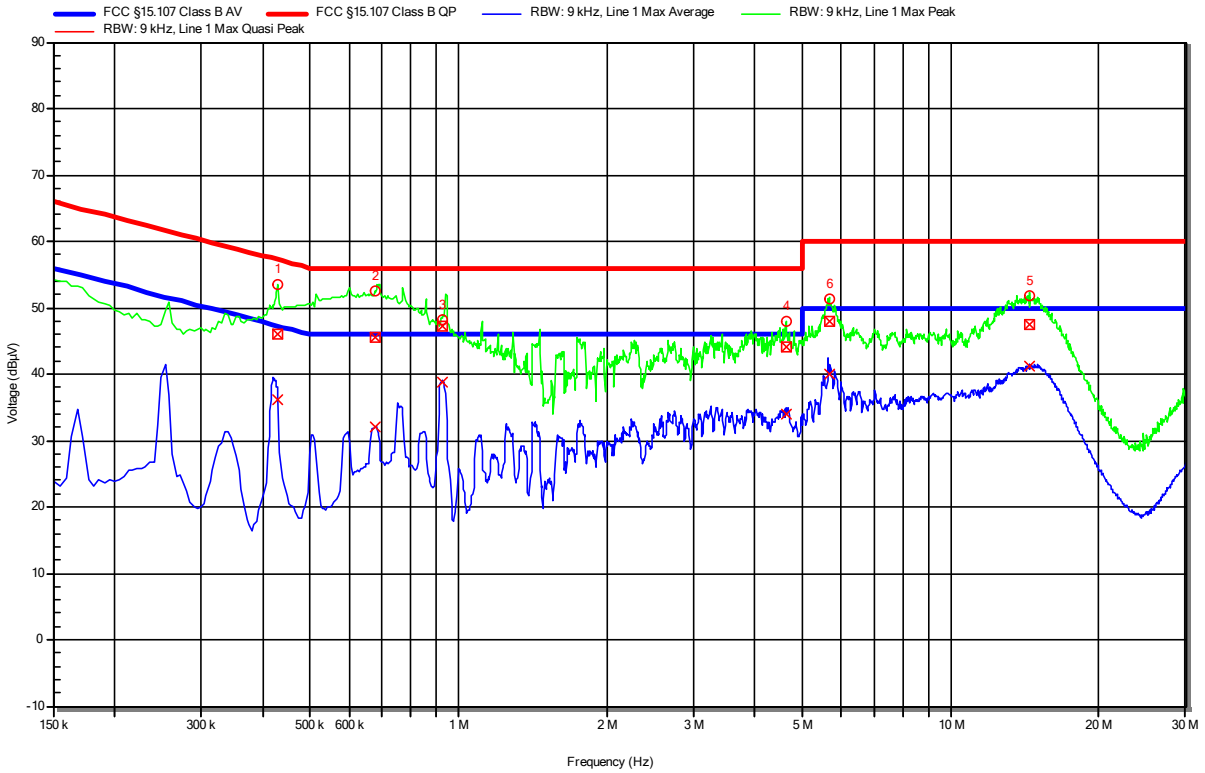

Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	429 kHz	46.02 dBµV	57.27 dBµV	-11.25 dB	Pass	Line 1
2	676.5 kHz	45.44 dBµV	56 dBµV	-10.56 dB	Pass	Line 1
3	928.5 kHz	47.26 dBµV	56 dBµV	-8.74 dB	Pass	Line 1
4	4.632 MHz	44.2 dBµV	56 dBµV	-11.8 dB	Pass	Line 1
5	14.451 MHz	47.38 dBµV	60 dBµV	-12.62 dB	Pass	Line 1
6	5.658 MHz	47.86 dBµV	60 dBµV	-12.14 dB	Pass	Line 1

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	429 kHz	36.06 dBµV	47.27 dBµV	-11.21 dB	Pass	Line 1
2	676.5 kHz	32.05 dBµV	46 dBµV	-13.95 dB	Pass	Line 1
3	928.5 kHz	38.83 dBµV	46 dBµV	-7.17 dB	Pass	Line 1
4	4.632 MHz	33.95 dBµV	46 dBµV	-12.05 dB	Pass	Line 1
5	14.451 MHz	41.21 dBµV	50 dBµV	-8.79 dB	Pass	Line 1
6	5.658 MHz	40.09 dBµV	50 dBµV	-9.91 dB	Pass	Line 1

3 Measurement Uncertainty

All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2.

Test Name	Measurement Uncertainty
Conducted emissions at the mains power port	150kHz to 30MHz, 3.35dB
Radiated Emission	30MHz to 200MHz @ 3m, 5.1dB 200MHz to 1GHz @ 3m, 5.3dB >1GHz to 18GHz @3m, 5.95dB