

Annex 1: Measurement diagrams to PARTIAL Test Report 20-1-0183502T01a-A1

Number of pages:	17	Date of Report:	2021-Apr-01
Testing company:	CETECOM GmbH Im Teelbruch 116 45219 Essen Germany Tel. + 49 (0) 20 54 / 95 19-0 Fax: + 49 (0) 20 54 / 95 19-150	Applicant:	Husqvarna AB
Product: Model:	Main board with Bluetooth functionality Main Board Type 15		
FCC ID:	ZASHQ-BLE-1J	IC:	23307-HQBLE1J
Testing has been carried out in accordance with:	Title 47 CFR, Chapter I FCC Regulations, Subchapter A Subpart C: §15.247 (DTS) , RSS-247, Issue 2 (DTS) RSS-Gen., Issue 5 Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit"		

Table of Contents

1.1	Radiated measurements.....	3
1.2	Conducted measurements	12

1 Measurement diagrams

1.1 Radiated measurements

2.01a_BT_LE_low

Common Information

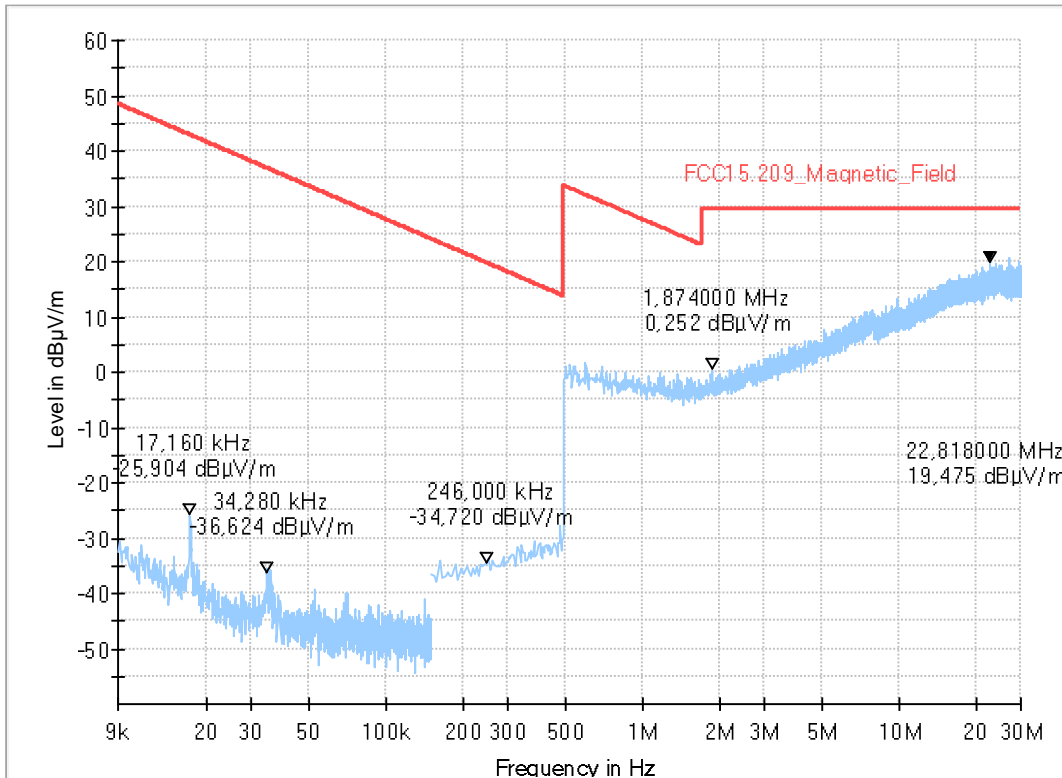
Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used Filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5

Operator:	HEL
Operating Mode:	BLE_CH Low_Position :Standing
Power during tests:	18V DC,
Environmental Conditions::	Humidity : 45%rH; Temperature: 16°C
EUT Setup:	1
Verdict:	Passed
Comment:	

EUT Information

PMT number:	20-1-01835S11_C01
Manufacturer:	Husqvarna AB

Full Spectrum



2.01b_BT_LE_low

Common Information

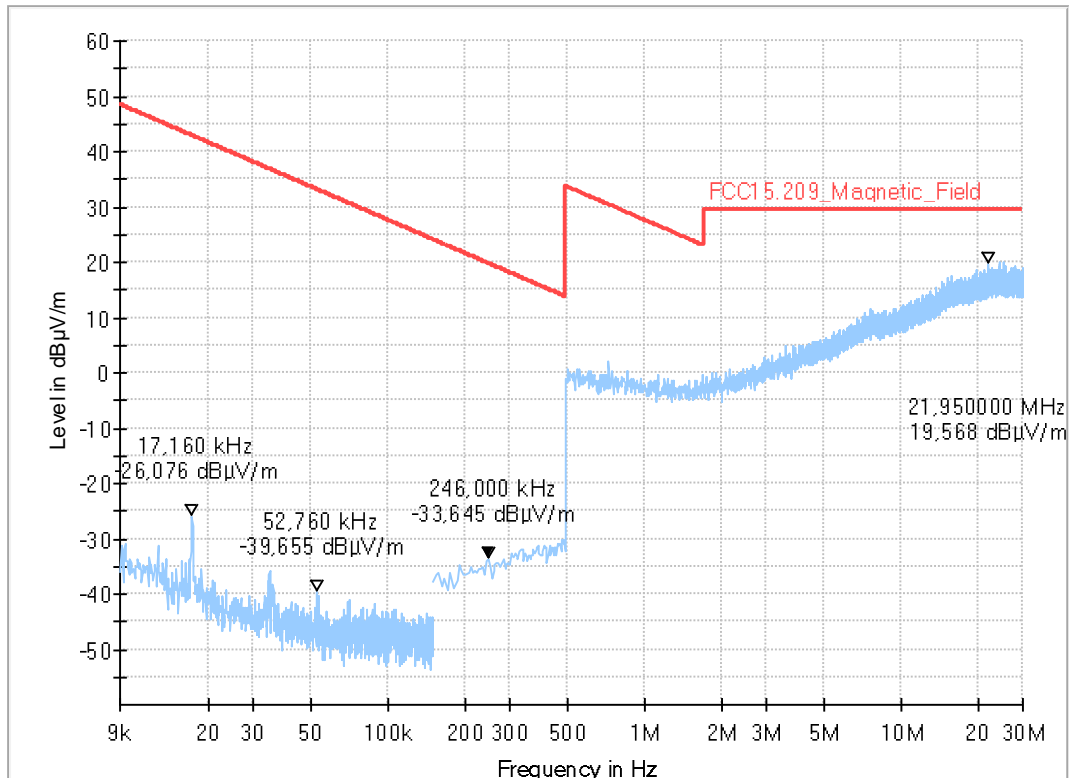
Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used Filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5

Operator:	HEL
Operating Mode:	BLE_CH:Low_Postion : laying
Power during tests:	18V DC
Environmental Conditions:	Humidity : 45%rH; Temperature: 15°C
EUT Setup:	1
Verdict:	Passed
Comment:	

EUT Information

PMT number:	20-1-01835S11_C01
Manufacturer:	Husqvarna AB

Full Spectrum



3.01a_BT_LE_low

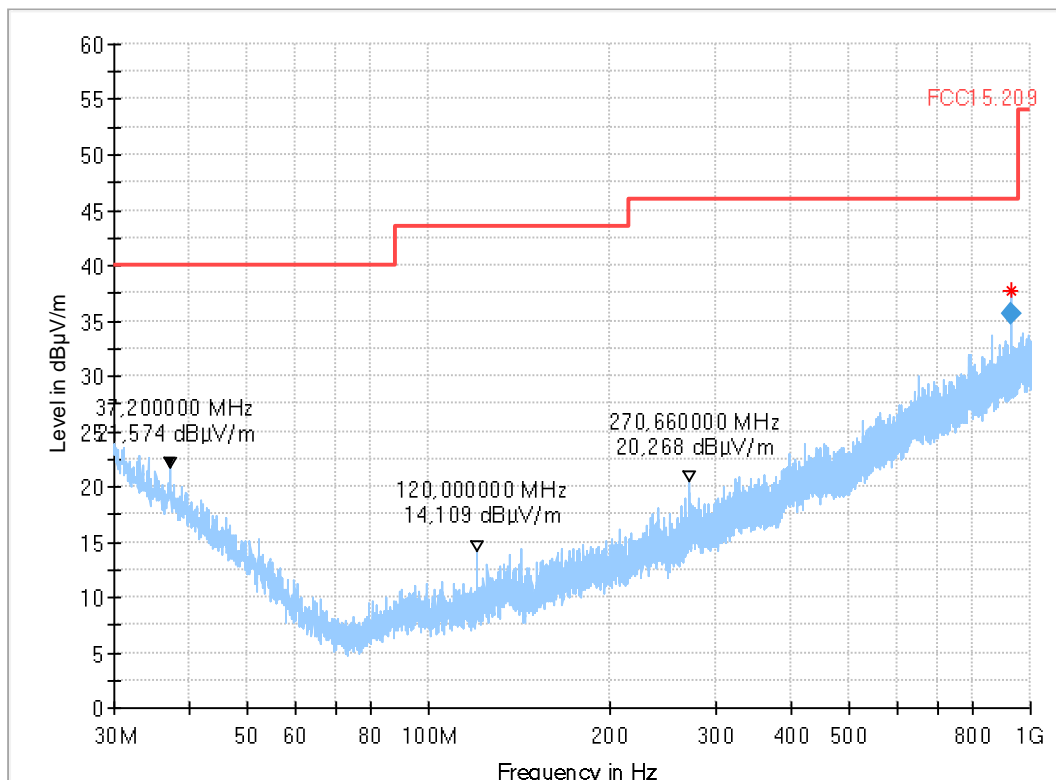
Common Information

Test Description: Radiated field strength emission in 3m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
 Antenna polarisation: horizontal/vertical
 Comment: 18V DC
 Operating Mode: BLE_CH:Low_Position : Standing
 Environmental Conditions: Humidity : 45%RH; Temperature: 17°C
 Operator: HEL
 Verdict: Passed

EUT Information

PMT number: 20-1-01835S11_C01
 Manufacturer: Husqvarna AB

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
928.416000	35.63	46.00	10.37	1000.0	120.000	120.0	V	132.0	27.0

Remark: The peak at 928 MHz is known external disturbance and does not come from EUT.

3.01b_BT_LE_low

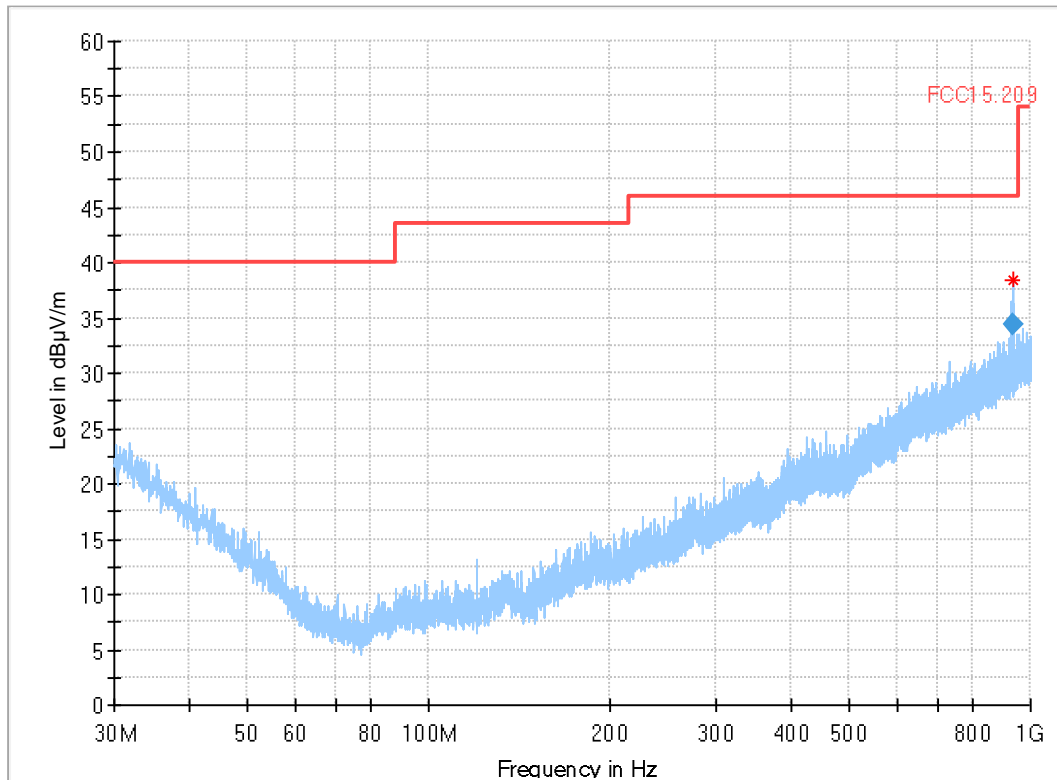
Common Information

Test Description: Radiated field strength emission in 3m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
 Antenna polarisation: horizontal/vertical
 Comment: 18V DC
 Operating Mode: BLE_CH:Low_Position : laying
 Environmental Conditions: Humidity : 45%rH; Temperature: 16°C
 Operator: HEL
 Verdict: Passed

EUT Information

PMT number: 20-1-01835S11_C01
 Manufacturer: Husqvarna AB

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
933.366000	34.42	46.00	11.58	1000.0	120.000	302.0	V	185.0	26.9

Remark: The peak at 928 MHz is known external disturbance and does not come from EUT.

4.01a_BT_LE_low

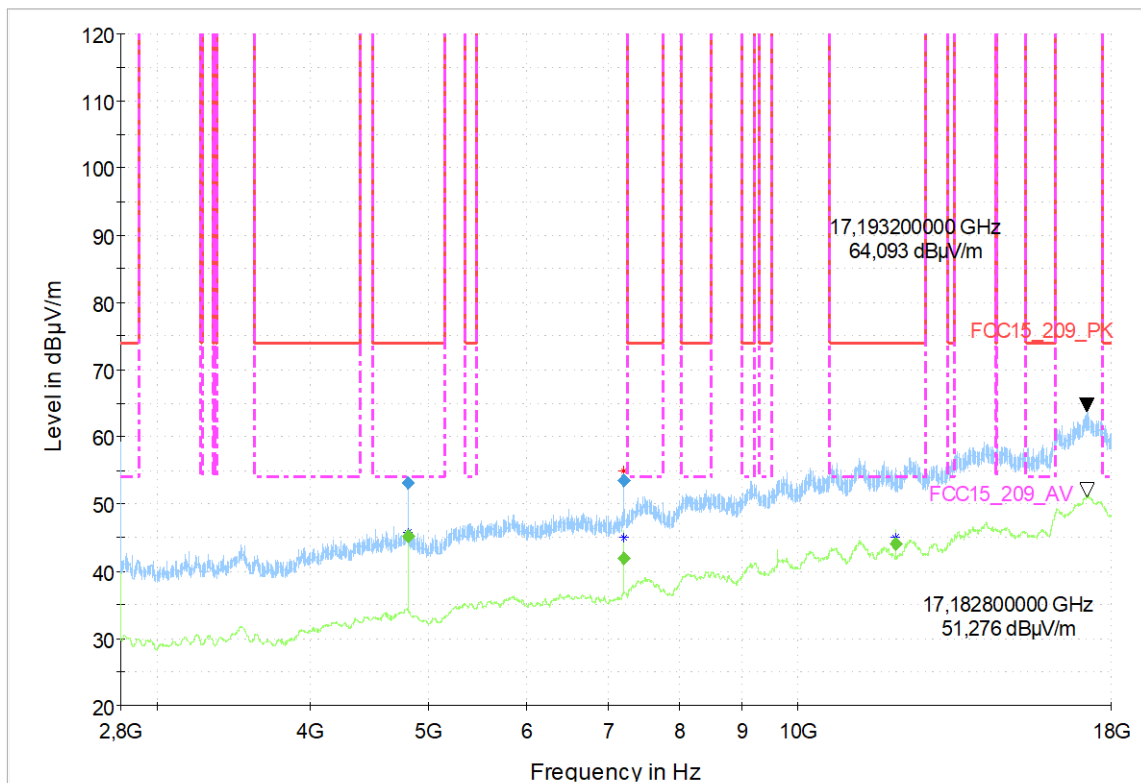
Common Information

Test Description: Radiated field strength emission in 3m distance
 Test Site: Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
 Test Standard: FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
 Antenna polarisation: horizontal/vertical

 Operating Mode: BT-LE | Channel low
 Operator: TFa
 Comment: --
 Environmental Conditions: Humidity : 40%rH; Temperature: 20°C
 Verdict: Passed

EUT Information

PMT number: 20-1-01835S11_C01
 Manufacturer: Husqvarna AB



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
4803.600000	---	45.18	54.00	8.82	100.0	1000.000	155.0	H	272.0	0.0	6
4803.600000	53.16	---	74.00	20.84	100.0	1000.000	155.0	H	267.0	0.0	6
7206.800000	---	41.88	150.00	108.12	100.0	1000.000	155.0	V	245.0	0.0	12
7206.800000	53.43	---	150.00	96.57	100.0	1000.000	155.0	V	244.0	0.0	12
12011.200000	---	44.14	54.00	9.86	100.0	1000.000	155.0	V	5.0	90.0	18

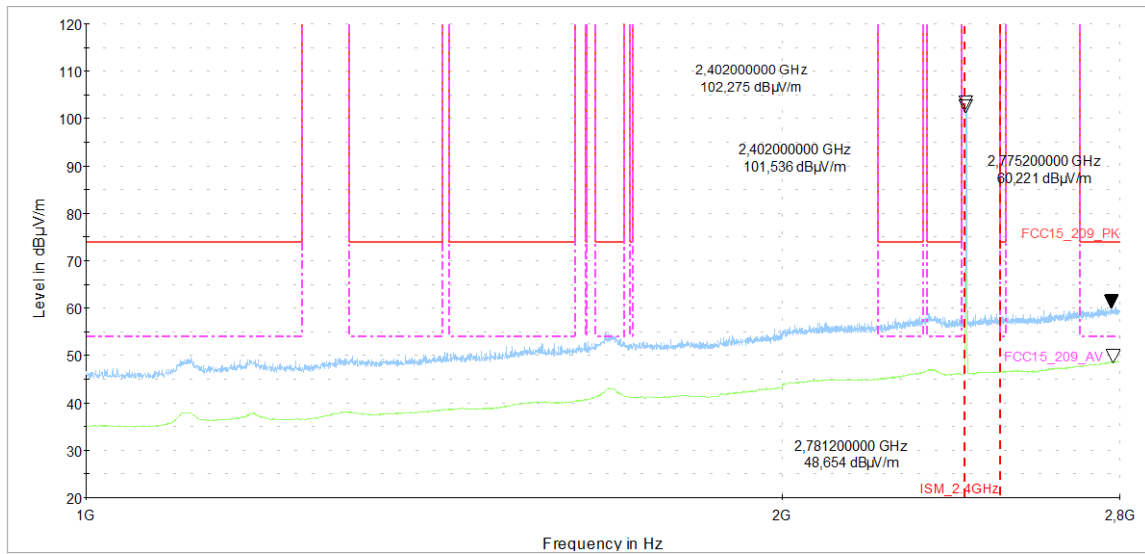
4.01b_BT_LE_low_1-2.8GHz

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE Channel low
Operator:	TFa
Comment:	Channel no. low
Comment2:	
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
Verdict:	Passed

EUT Information

PMT number:	20-1-01835S11_C01
Manufacturer:	Husqvarna AB



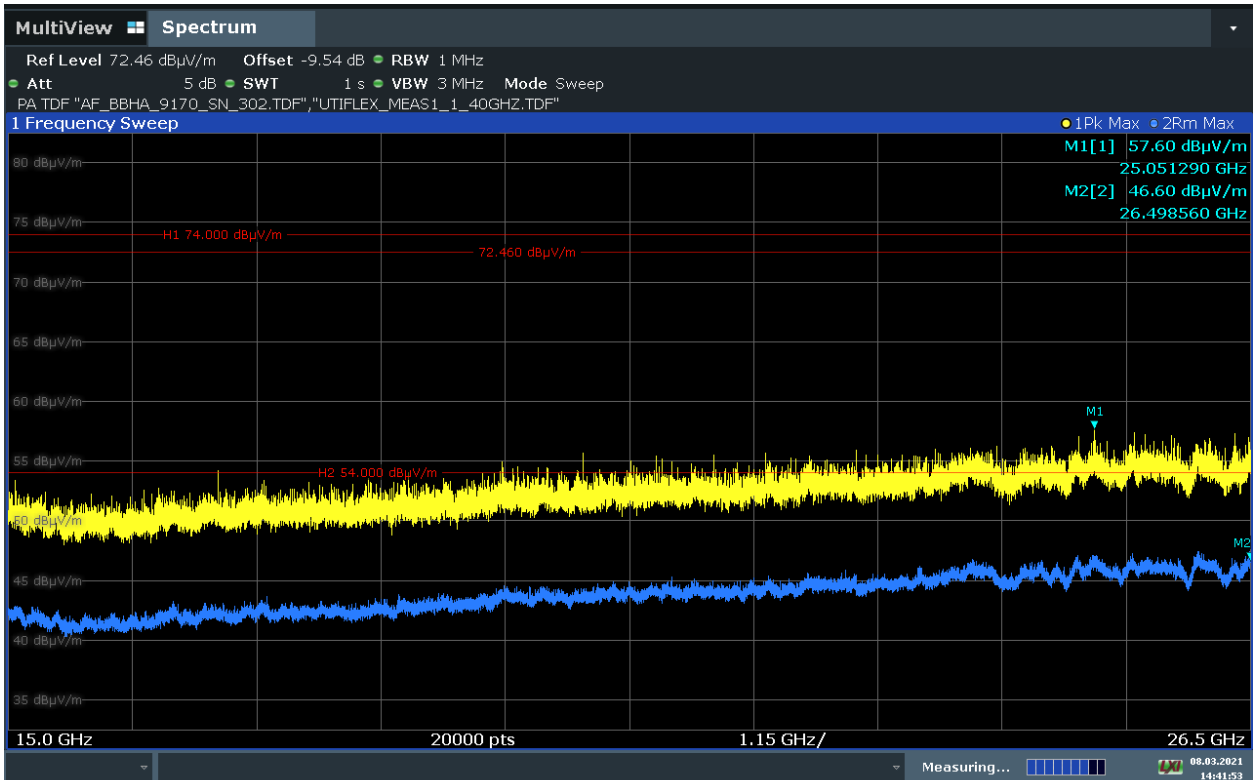
4.01b_BT_LE_low_1-2.8GHz

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1)
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE Channel low
Operator:	TFa
Comment:	Channel no. low
Comment2:	
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
Verdict:	Passed

EUT Information

PMT number:	20-1-01835S11_C01
Manufacturer:	Husqvarna AB



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9.01_BE_BT_LE_low

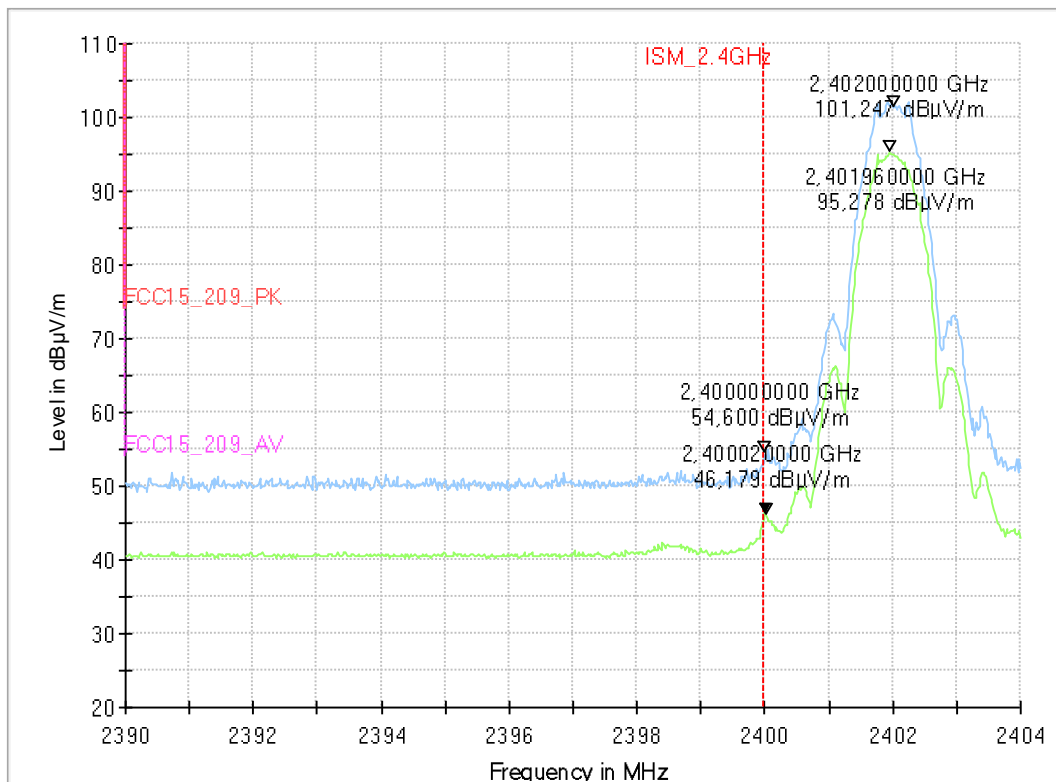
Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE Channel low
Operator:	TFa
Comment:	
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-01835S11_C01
Manufacturer:	Husqvarna AB

Full Spectrum



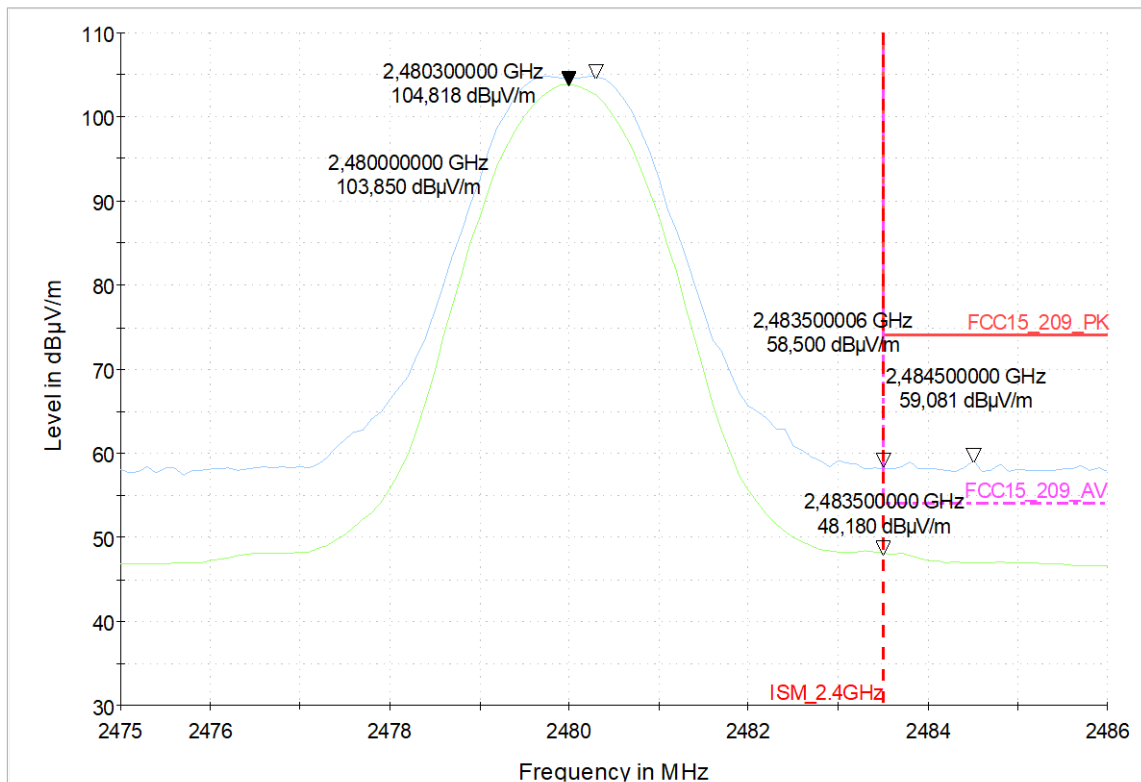
9.02_BE_BT_LE_high

Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE Channel High
Operator:	TFa
Comment:	
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-01835S11_C01
Manufacturer:	Husqvarna AB



1.2 Conducted measurements

Duty Cycle (2402 MHz; BT-LE [GFSK] (5 dBm); 1 MHz)

Result

DUT Frequency (MHz)	DutyCycle (%)	Result
2402.000000	100.000	PASS

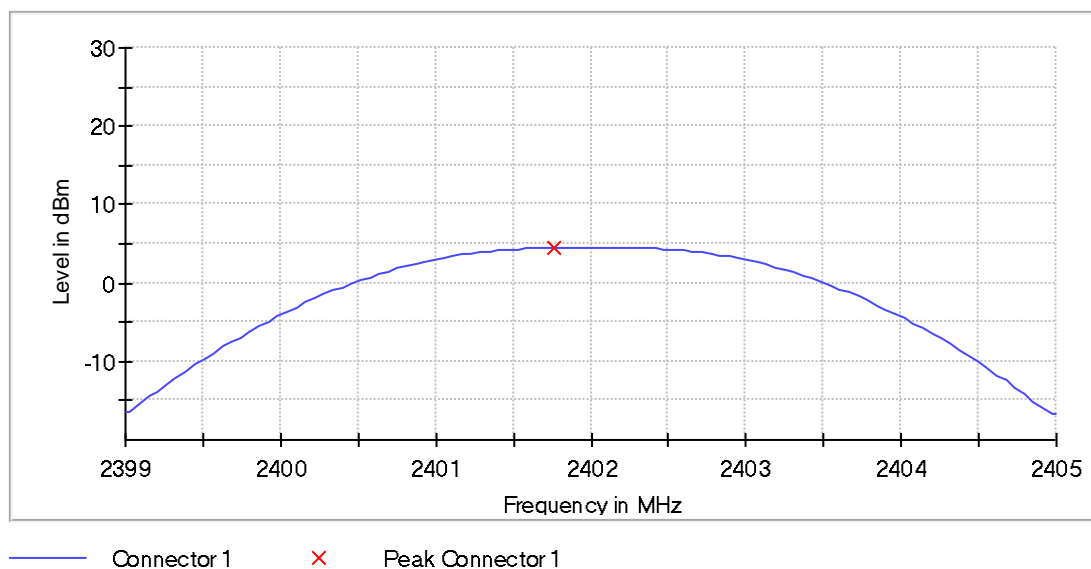
OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 μ s	1.000 μ s

Peak output power (Sweep) (2402 MHz; BT-LE [GFSK] (5 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2402.000000	4.4	30.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39900 GHz	2.39900 GHz
Stop Frequency	2.40500 GHz	2.40500 GHz
Span	6.000 MHz	6.000 MHz
RBW	2.000 MHz	>= 1.000 MHz
VBW	10.000 MHz	>= 6.000 MHz
SweepPoints	101	~ 101
SweepTime	1.000 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.05 dB	0.50 dB

Duty Cycle (2442 MHz; BT-LE [GFSK] (5 dBm); 1 MHz)

Result

DUT Frequency (MHz)	DutyCycle (%)	Result
2442.000000	100.000	PASS

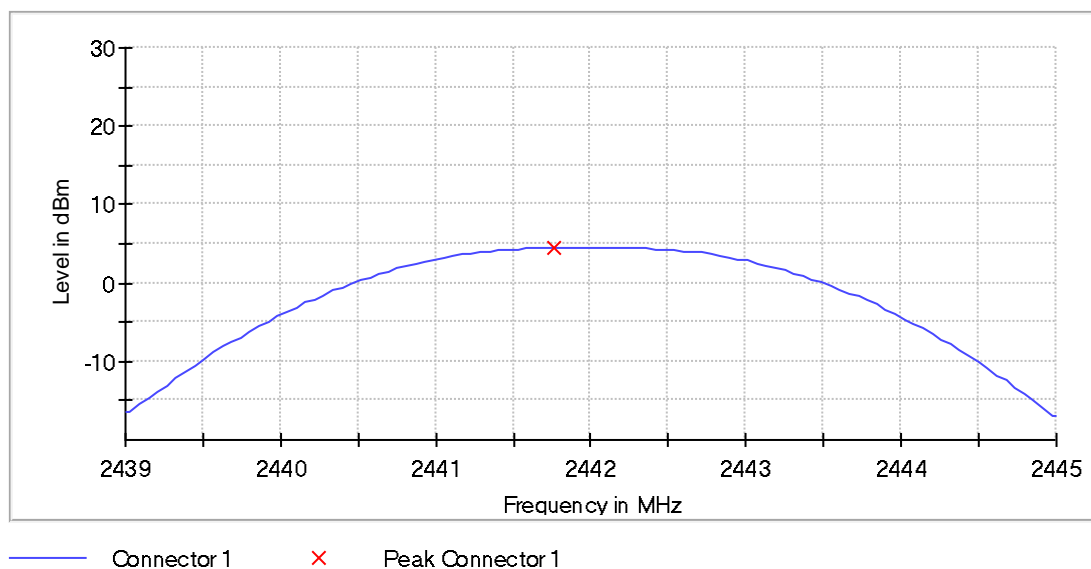
OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 μ s	1.000 μ s

Peak output power (Sweep) (2442 MHz; BT-LE [GFSK] (5 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2442.000000	4.4	30.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44500 GHz	2.44500 GHz
Span	6.000 MHz	6.000 MHz
RBW	2.000 MHz	>= 1.000 MHz
VBW	10.000 MHz	>= 6.000 MHz
SweepPoints	101	~ 101
SweepTime	1.000 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.04 dB	0.50 dB

Duty Cycle (2480 MHz; BT-LE [GFSK] (5 dBm); 1 MHz)**Result**

DUT Frequency (MHz)	DutyCycle (%)	Result
2480.000000	100.000	PASS

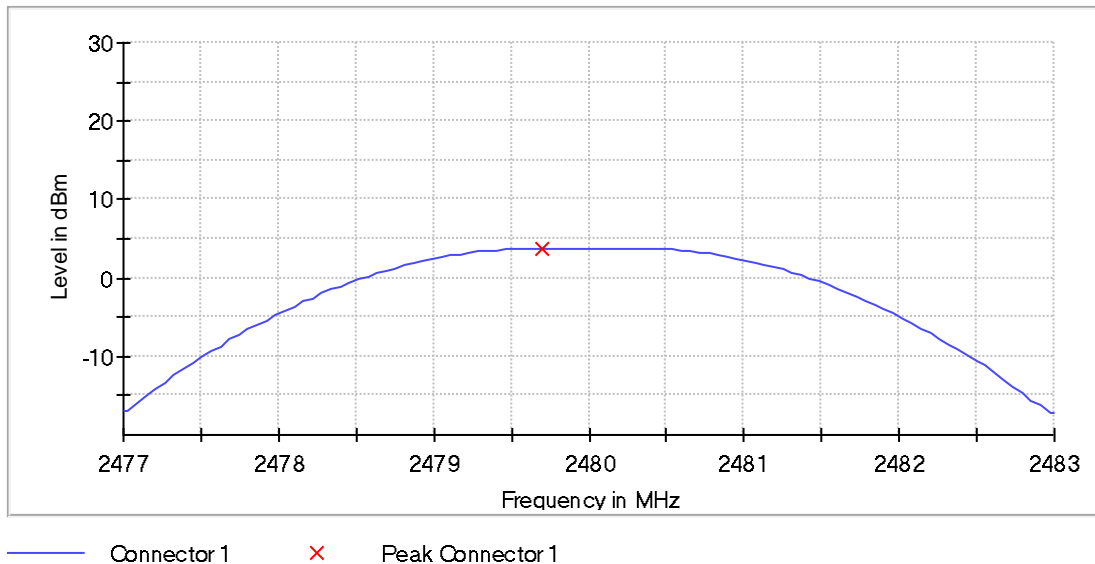
OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 μ s	1.000 μ s

Peak output power (Sweep) (2480 MHz; BT-LE [GFSK] (5 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2480.000000	3.8	30.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47700 GHz	2.47700 GHz
Stop Frequency	2.48300 GHz	2.48300 GHz
Span	6.000 MHz	6.000 MHz
RBW	2.000 MHz	>= 1.000 MHz
VBW	10.000 MHz	>= 6.000 MHz
SweepPoints	101	~ 101
SweepTime	1.000 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.10 dB	0.50 dB

End Of Annex 1