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FCC TEST REPORT

FCC 47 CFR Part 15C
Industry Canada RSS-247

Frequency hopping systems operating within the 2400 – 2483.5 MHz band

Report Reference No. ..... :	G0M-1602-5411-TFC247BT-V01
Testing Laboratory ..... :	Eurofins Product Service GmbH
Address ..... :	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation ..... :	A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
Applicant's name ..... :	Hellberg Safety AB
Address ..... :	Stakebergsvägen 2 443 61 Stenkullen SWEDEN
Test specification:	
Standard..... :	47 CFR Part 15C RSS-247, Issue 1, 2015-05
Test scope…….. ..... :	complete Radio compliance test
Equipment under test (EUT):	
Product description	Hearing protector
Model No.	Secure Synergy
Additional Model(s)	None
Brand Name(s)	None
Hardware version	Rev-2
Firmware / Software version	1.01
	FCC-ID: QF9-SYNERGY IC: 5808A-SYNERGY
Test result	**Passed**

Possible test case verdicts:

- neither assessed nor tested ..... :	N/N
- required by standard but not appl. to test object ..... :	N/A
- required by standard but not tested ..... :	N/T
- not required by standard for the test object ..... :	N/R
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)

Testing:

Test Lab Temperature ..... :	20 – 23 °C	
Test Lab Humidity ..... :	32 – 38 %	
Date of receipt of test item ..... :	2016-03-17	
Date (s) of performance of tests ..... :	2016-03-18 – 2016-04-01	
Compiled by ..... :	Wilfried Treffke	
Tested by (+ signature) ..... : (Responsible for Test)	Wilfried Treffke	W. Treffke
Approved by (+ signature) ..... : (Head of Lab)	Christian Weber	C. Weber
Date of issue ..... :	2016-06-16	
Total number of pages ..... :	127	

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:

The EUT can operate with different power requirements. (230V AC and 2.4 DC battery)
The product shall not be used when charging (declared by customer).
The 2.4 DC battery power port was selected for compliance tests.

Version History

Version	Issue Date	Remarks	Revised by
01	2016-06-16	Initial Release	

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1 Equipment (Test item) Description

Description	Hearing protector	
Model	Secure Synergy	
Additional Model(s)	None	
Brand Name(s)	None	
Serial number	None	
Hardware version	Rev-2	
Software / Firmware version	1.01	
PMN	Secure Synergy	
HVIN	Secure Synergy	
FVIN	1.01	
HMN	N/A	
FCC-ID	QF9-SYNERGY	
IC	5808A-SYNERGY	
Equipment type	End product	
Radio type	Transceiver	
Radio technology	Bluetooth	
Operating frequency range	2402 - 2480 MHz	
Assigned frequency band	2400 - 2483.5 MHz	
Main test frequencies	F_{LOW}	2402 MHz
	F_{MID}	2441 MHz
	F_{HIGH}	2480 MHz
Spreading	FHSS	
Modulations	GFSK, PI/4-DQPSK, 8-PSK	
Number of channels	79 hopping channels at all	
Channel spacing	1 MHz	
Number of antennas	1	
Antenna	Type	integrated
	Model	2450AT18B100
	Manufacturer	Johannson
	Gain	0.5 from declaration
Manufacturer	Hellberg Safety AB Stakebergsvägen 2 443 61 Stenkullen SWEDEN	
Power supply	V_{NOM}	2.4 VDC
	V_{MIN}	1.8 VDC
	V_{MIN}	3.5 VDC

AC/DC-Adaptor	Model	K-T5050100E1
	Vendor	Bestgk
	Input	100-240VAC / 50-60Hz
	Output	5VDC / 1.0A

1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
SIM	Bluetooth Tester	R & S	CBT	signaling

***Note:** Use the following abbreviations:

AE : Auxiliary/Associated Equipment, or

SIM : Simulator (Not Subjected to Test)

CABL : Connecting cables

1.5 Test Modes

Mode #	Description	
DH5-Sngl	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = GFSK Packet type = DH5 Data rate = 1 Mbps Duty cycle = 77 % Power level = Maximum
2DH5-Sngl	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = π/4-DQPSK Packet type = 2DH5 Data rate = 2 Mbps Duty cycle = 77 % Power level = Maximum
3DH5-Sngl	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = 8-DPSK Packet type = 3DH5 Data rate = 3 Mbps Duty cycle = 77 % Power level = Maximum
DH5-Hop	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = GFSK Packet type = DH5 Data rate = 1 Mbps Duty cycle = 77 % Power level = Maximum

2DH5-Hop	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = π/4-DQPSK Packet type = 2DH5 Data rate = 2 Mbps Duty cycle = 77 % Power level = Maximum
3DH5-Hop	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = 8-DPSK Packet type = 3DH5 Data rate = 3 Mbps Duty cycle = 77 % Power level = Maximum
Receive	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone receive Spreading = Hopping
AC-Powerline	General conditions:	EUT powered by commercial AC/DC-Adapter
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Power level = Maximum

1.6 Test Equipment Used During Testing

Measurement Software			
Description	Manufacturer	Name	Version
EMC Test Software	Dare Instruments	Radimation	2015.2.4

20dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2016-02	2017-02

Number of hopping frequencies					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2016-02	2017-02

Time of occupancy					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2016-02	2017-02

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2016-02	2017-02

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2016-02	2017-02

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2016-02	2017-02

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 1	EF00062	-	-
Spectrum Analyzer	R&S	FSEK 30	EF00168	2016-01	2017-01
Biconical Antenna	R&S	HK 116	EF00203	2014-04	2016-04
LPD Antenna	R&S	HL 223	EF00924	2013-05	2016-05
Horn Antenna	R&S	BBHA 9120D	EF00019	2014-03	2016-03
LPD Antenna	R&S	HL 025	EF00327	2015-10	2018-10

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH3-Z5	EF00036	2014-12	2016-12
EMI Test Receiver	R&S	ESCS 30	EF00295	2015-10	2016-10

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:

Reading on Analyzer (dBµV) + A.F. (dB) = 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	=	47.5 dBµV/m	:	47.5 dBµV/m - 57.0 dBµV/m = -9.5 dB

2 Result Summary

FCC 47 CFR Part 15C, IC RSS-247				
Product Specific Standard Section	**Requirement – Test**	**Reference Method**	**Result**	**Remarks**
RSS-Gen 6.6	Occupied Bandwidth	ANSI C63.10	N/R	Informational only
FCC § 15.247(a)(1) IC RSS-247 § 5.1	20 dB Bandwidth	ANSI C63.10	PASS	
FCC § 15.247(a)(1)(iii) IC RSS-247 § 5.1	Number of hopping frequencies	ANSI C63.10	PASS	
FCC § 15.247(a)(1) IC RSS-247 § 5.1	Frequency hopping channel separation	ANSI C63.10	PASS	
FCC § 15.247(a)(1)(iii) IC RSS-247 § 5.1	Time of occupancy (Dwell time)	ANSI C63.10	PASS	
FCC § 15.247(b)(1) IC RSS-247 § 5.4	Maximum peak conducted power	ANSI C63.10	PASS	
47 CFR 15.207 IC RSS-247 § 3.1	AC power line conducted emissions	ANSI C63.4	PASS	
FCC § 15.247(d) IC RSS-247 § 5.5	Band edge compliance	ANSI C63.10	PASS	
FCC § 15.247(d) IC RSS-247 § 5.5	Conducted spurious emissions	ANSI C63.10	PASS	
FCC § 15.247(d) FCC § 15.209 IC RSS-247 § 5.5	Transmitter radiated spurious emissions	ANSI C63.10	PASS	
IC RSS-247 § 3.1	Receiver radiated spurious emissions	ANSI C63.10	PASS	
Remarks:				

3 Test Conditions and Results

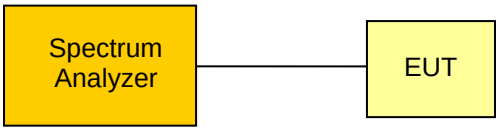
3.1 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. to IC RSS-Gen	**Verdict: PASS**
Test according to measurement reference	Reference Method
	ANSI C63.10
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}

Limits

None (Informational only)

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to at least twice the emission spectrum
3. Resolution bandwidth set to 1 % of span
4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function

Test results

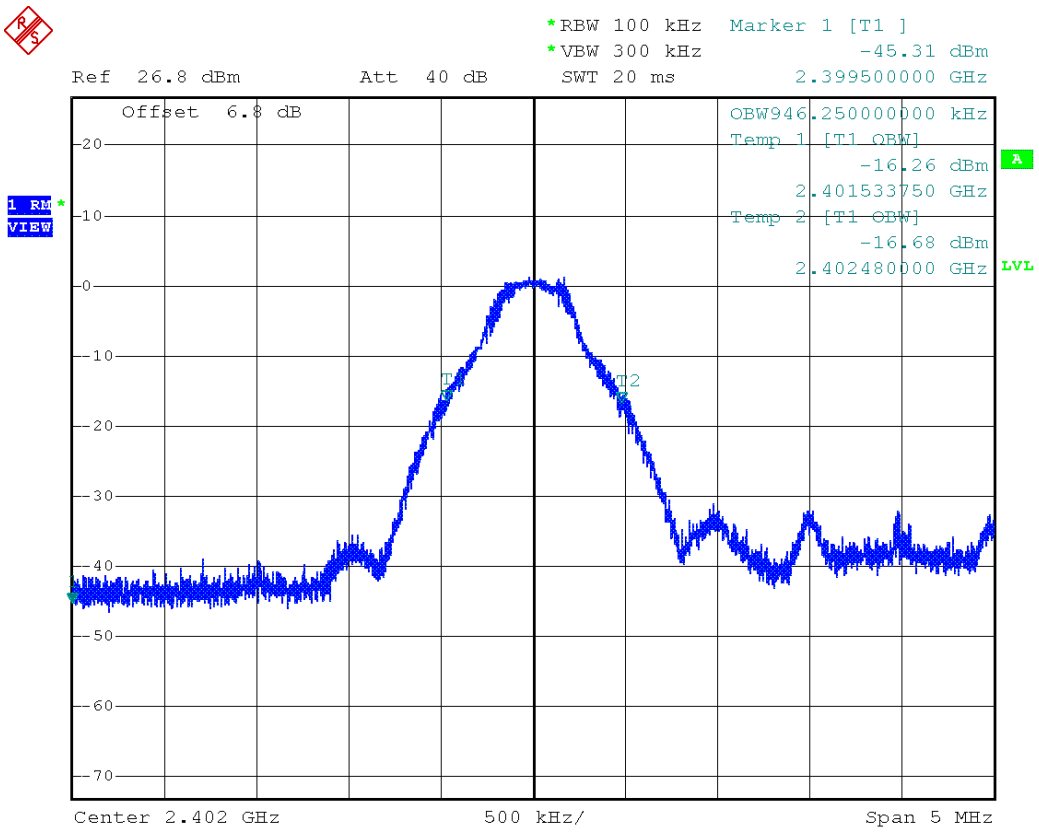
Channel	Frequency [MHz]	Mode	Occupied Bandwidth [MHz]
F_{LOW}	2402	DH5-Sngl	0.946
F_{MID}	2441	DH5-Sngl	0.953
F_{HIGH}	2480	DH5-Sngl	0.950
F_{LOW}	2402	2DH5-Sngl	1.216
F_{MID}	2441	2DH5-Sngl	1.214
F_{HIGH}	2480	2DH5-Sngl	1.216
F_{LOW}	2402	3DH5-Sngl	1.220
F_{MID}	2441	3DH5-Sngl	1.218
F_{HIGH}	2480	3DH5-Sngl	1.221

Comments:

Occupied Bandwidth – DH5-Sngl F_{LOW}

Occupied Bandwidth acc. to IC RSS-Gen

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2402 MHz; DH5
Test Date:	2016-04-01
Verdict:	NONE (INFORMATION ONLY)



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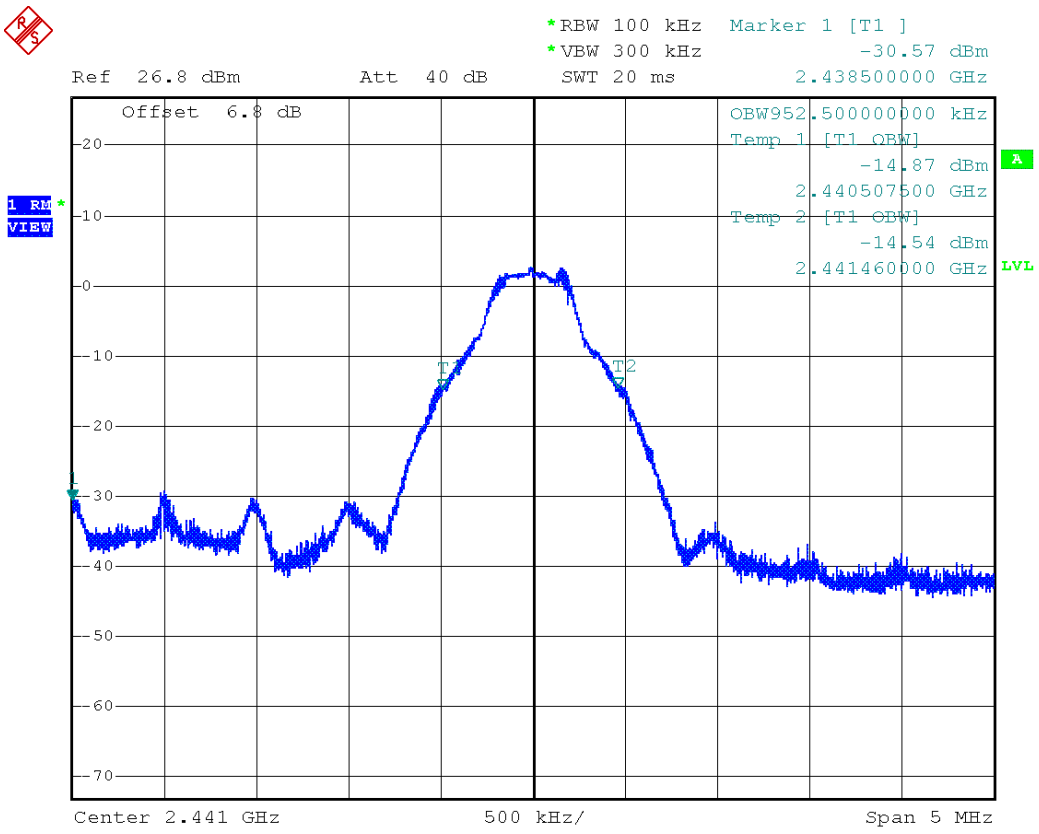
Occupied Bandwidth – DH5-Sngl F_{MID}

Occupied Bandwidth acc. to IC RSS-Gen

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2441 MHz; DH5
Test Date:	2016-04-01
Verdict:	NONE (INFORMATION ONLY)



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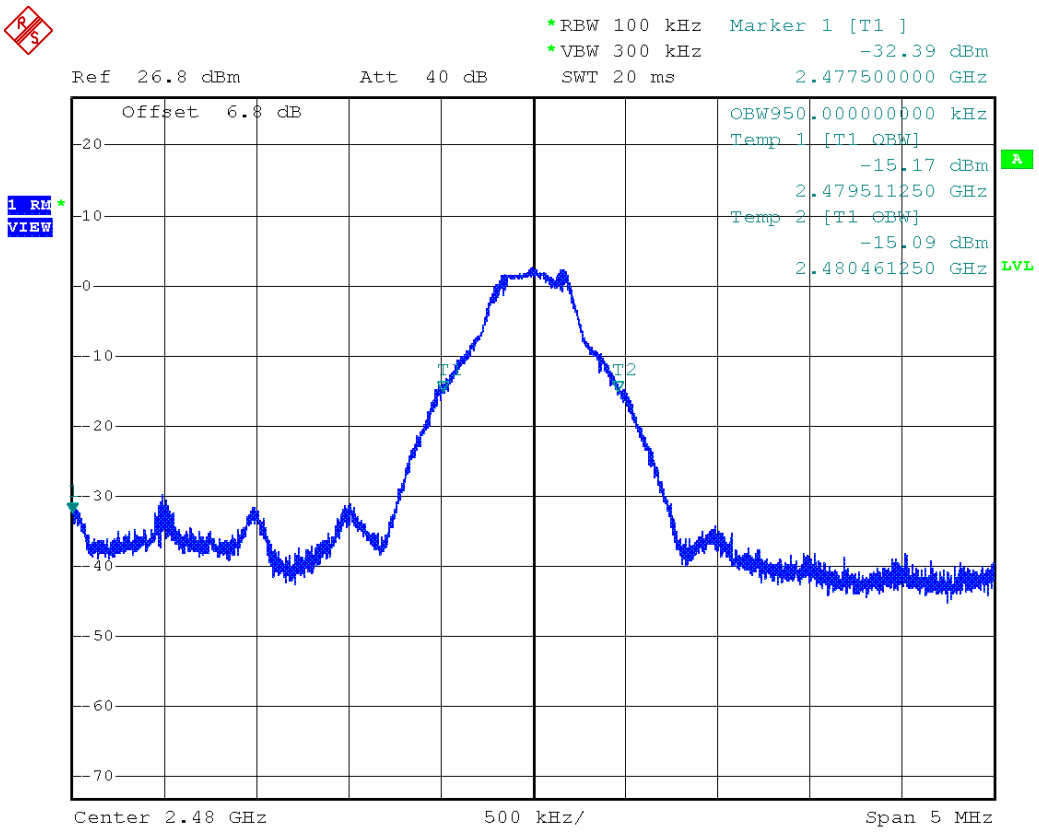
Occupied Bandwidth – DH5-Sngl F_{HIGH}

Occupied Bandwidth acc. to IC RSS-Gen

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2480 MHz; DH5
Test Date:	2016-04-01
Verdict:	NONE (INFORMATION ONLY)



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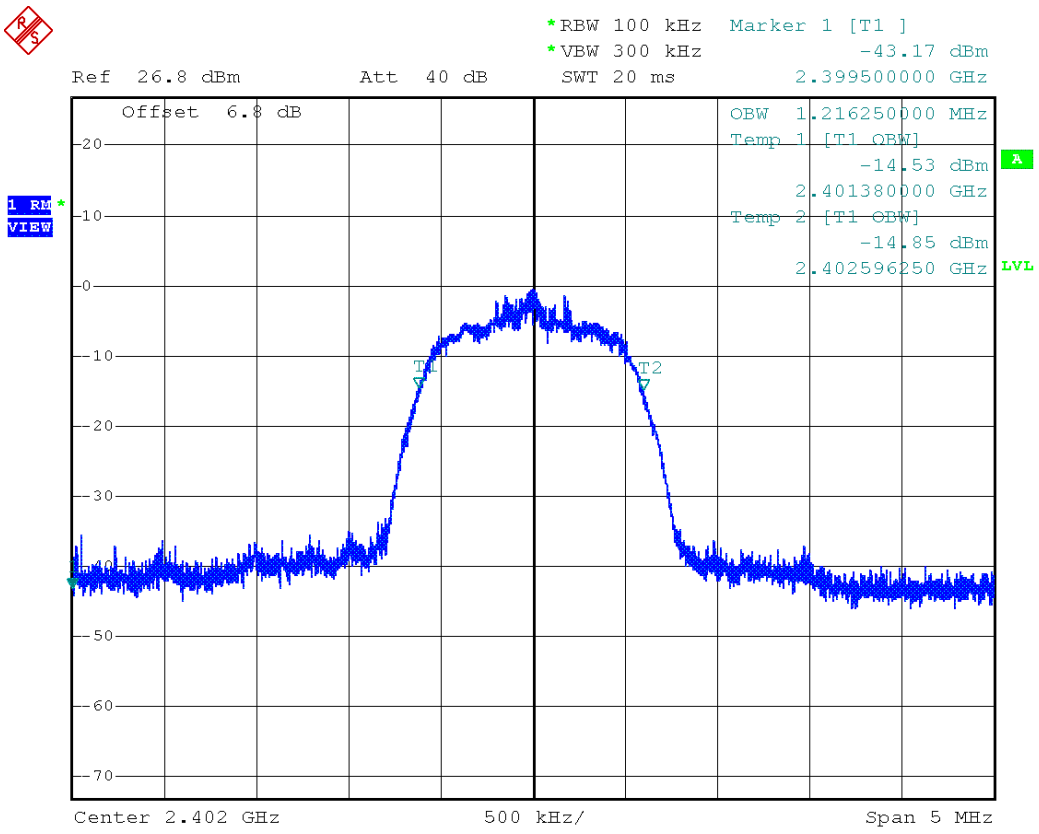
Occupied Bandwidth – 2-DH5-Sngl F_{LOW}

Occupied Bandwidth acc. to IC RSS-Gen

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2402 MHz; 2DH5
Test Date:	2016-04-01
Verdict:	NONE (INFORMATION ONLY)

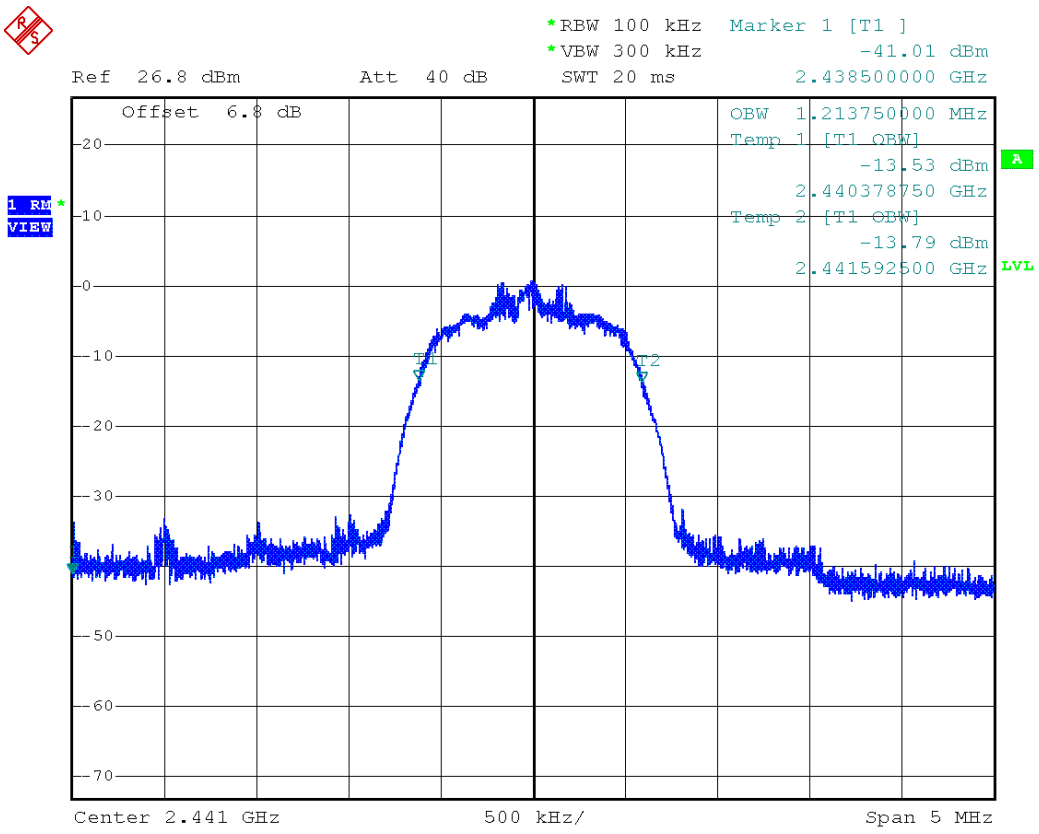


Date: 1.APR.2016 10:15:13

Occupied Bandwidth – 2-DH5-Sngl F_{MID}

Occupied Bandwidth acc. to IC RSS-Gen

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2441 MHz; 2DH5
Test Date:	2016-04-01
Verdict:	NONE (INFORMATION ONLY)

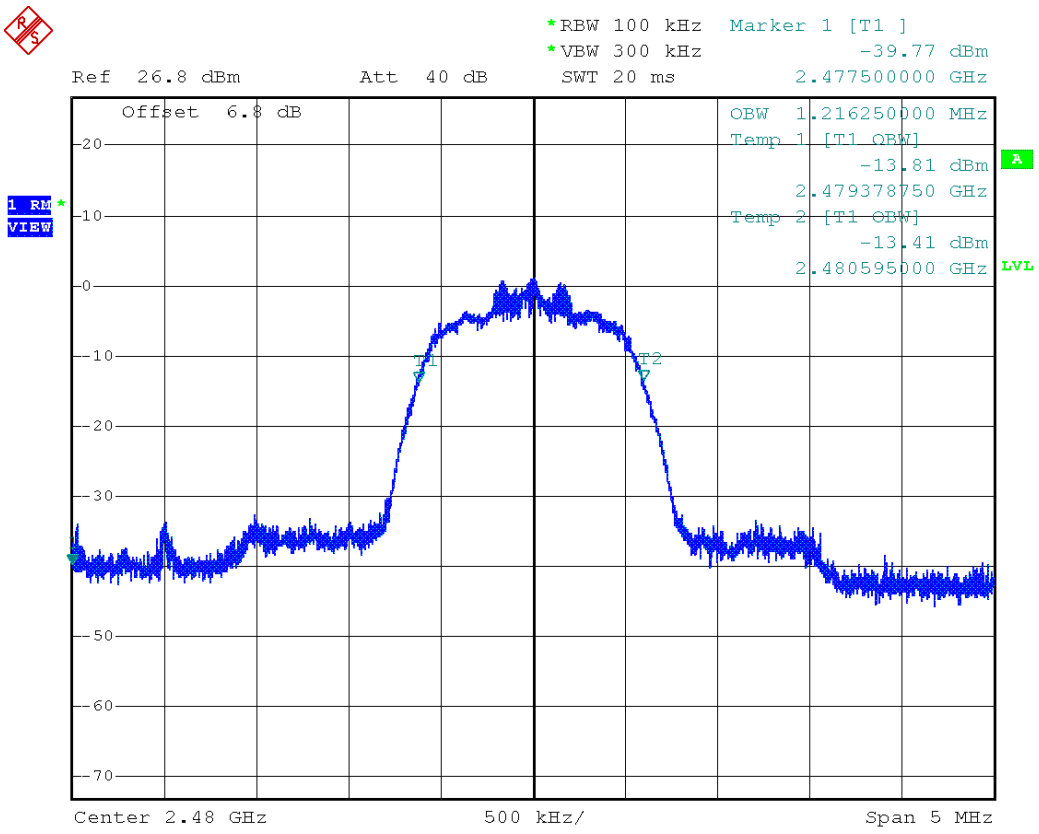


Date: 1.APR.2016 10:16:56

Occupied Bandwidth – 2-DH5-Sngl F_{HIGH}

Occupied Bandwidth acc. to IC RSS-Gen

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2480 MHz; 2DH5
Test Date:	2016-04-01
Verdict:	NONE (INFORMATION ONLY)

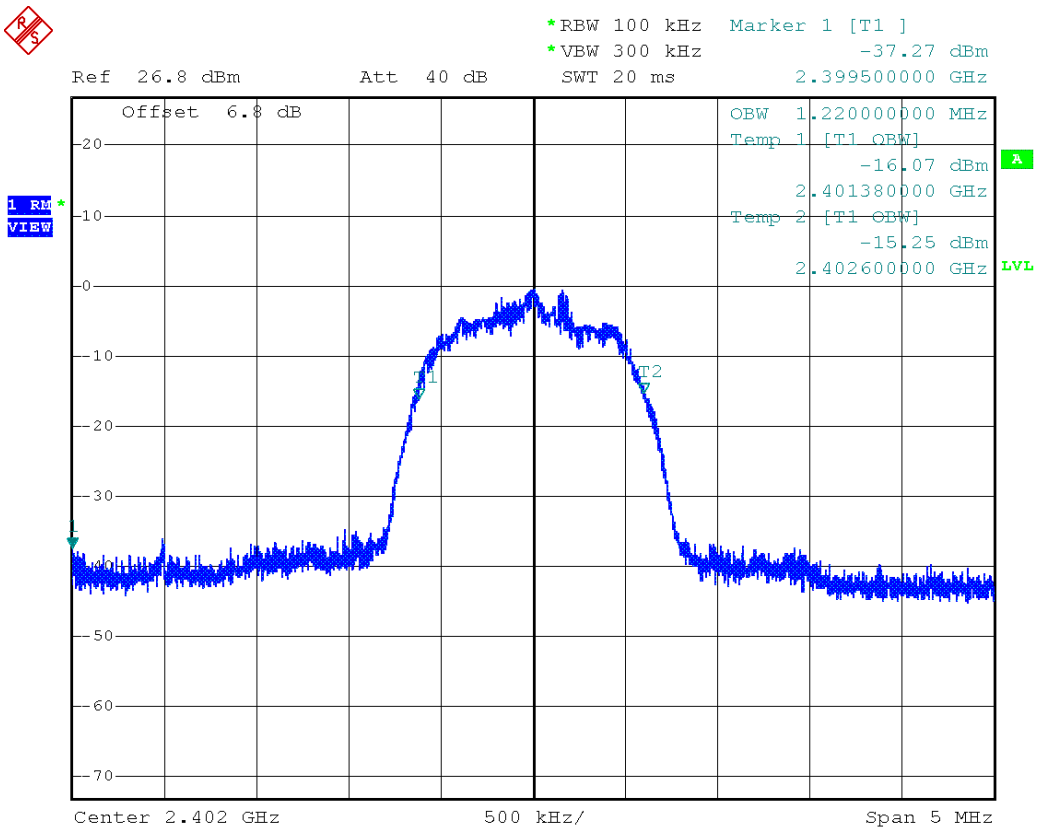


Date: 1.APR.2016 10:18:32

Occupied Bandwidth – 3-DH5-Sngl F_{LOW}

Occupied Bandwidth acc. to IC RSS-Gen

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2402 MHz; 3DH5
Test Date:	2016-04-01
Verdict:	NONE (INFORMATION ONLY)

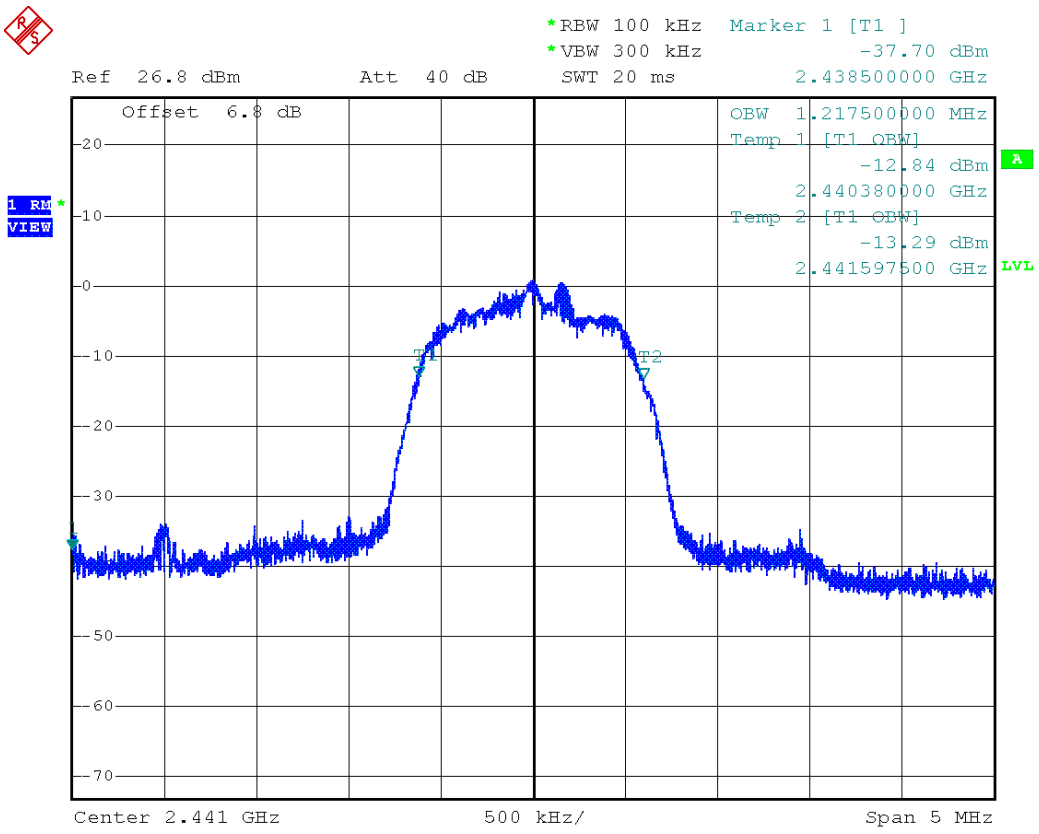


Date: 1.APR.2016 10:20:27

Occupied Bandwidth – 3-DH5-Sngl F_{MID}

Occupied Bandwidth acc. to IC RSS-Gen

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2441 MHz; 3DH5
Test Date:	2016-04-01
Verdict:	NONE (INFORMATION ONLY)



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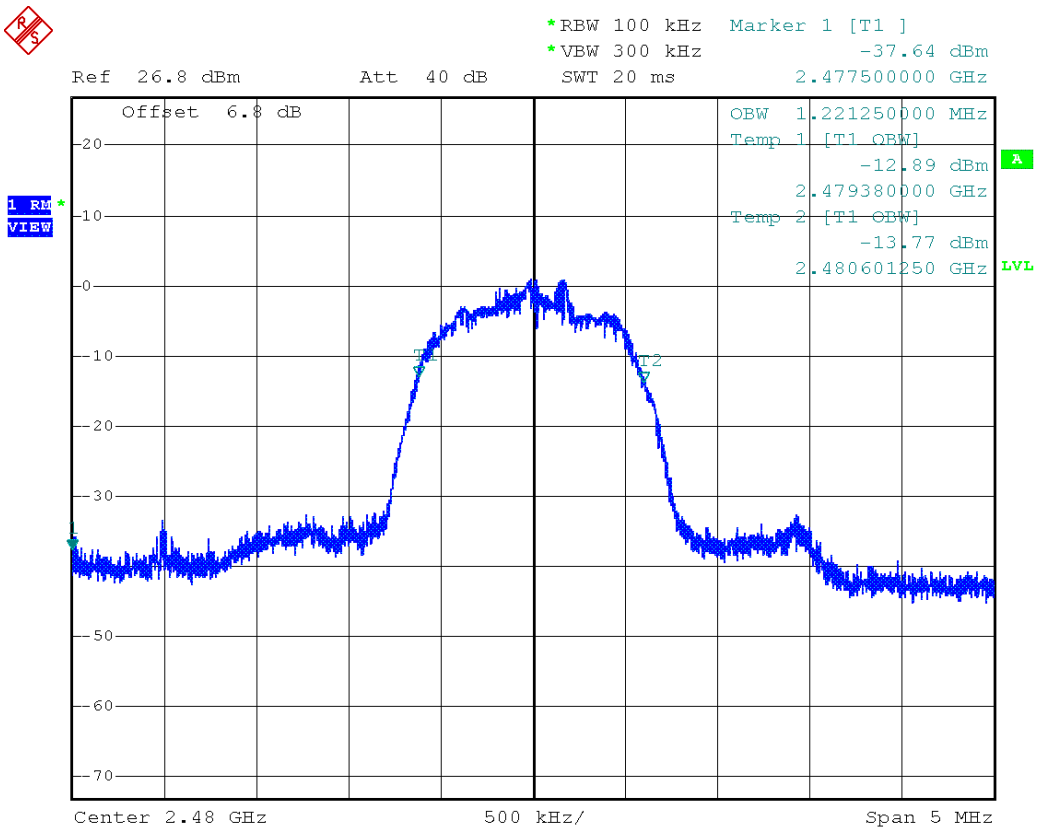
Occupied Bandwidth – 3-DH5-Sngl F_{HIGH}

Occupied Bandwidth acc. to IC RSS-Gen

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2480 MHz; 3DH5
Test Date:	2016-04-01
Verdict:	NONE (INFORMATION ONLY)



Date: 1.APR.2016 10:23:45

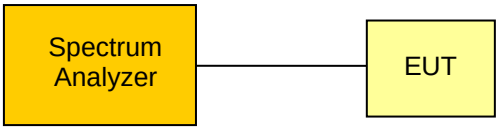
3.2 Test Conditions and Results – 20 dB Bandwidth

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247	Verdict: PASS
EUT requirement rule parts and clause	Reference
	FCC 15.247(a)(1) / IC RSS-247 5.1
Test according to measurement reference	Reference Method
	ANSI C63.10
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}

Limits

Limit	Condition
1.5 · Carrier spacing	Output power ≤ 125 mW / 21 dBm
1.0 · Carrier spacing	125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to at least twice the emission spectrum
3. Detector set to peak and max hold
4. Envelope peak value of emission spectrum is selected
5. Marker on envelope of spectrum is set to level of -20 dB to the left of the peak
6. Marker on envelope of spectrum is set to level of -20 dB to the right of the peak
7. 20dB Bandwidth is determined by marker frequency separation

Test results

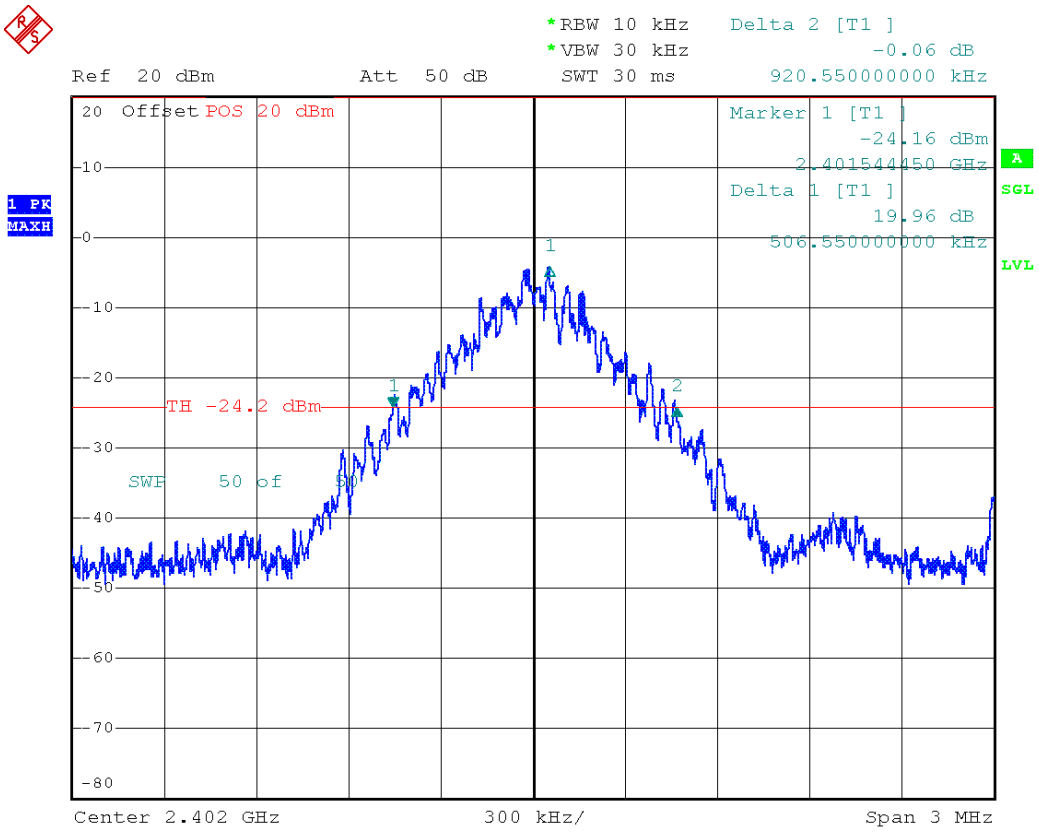
Channel	Frequency [MHz]	Mode	20 dB Bandwidth [MHz]	Limit [MHz]	Result
F_{LOW}	2402	DH5-Sngl	0.921	1.5	PASS
F_{MID}	2441	DH5-Sngl	0.922	1.5	PASS
F_{HIGH}	2480	DH5-Sngl	0.925	1.5	PASS
F_{LOW}	2402	2DH5-Sngl	1.313	1.5	PASS
F_{MID}	2441	2DH5-Sngl	1.313	1.5	PASS
F_{HIGH}	2480	2DH5-Sngl	1.313	1.5	PASS
F_{LOW}	2402	3DH5-Sngl	1.262	1.5	PASS
F_{MID}	2441	3DH5-Sngl	1.286	1.5	PASS
F_{HIGH}	2480	3DH5-Sngl	1.260	1.5	PASS

Comments:

20 dB Bandwidth – DH5-Sngl F_{LOW}

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2402 MHz; DH5
Test Date:	2016-04-01
Verdict:	PASS

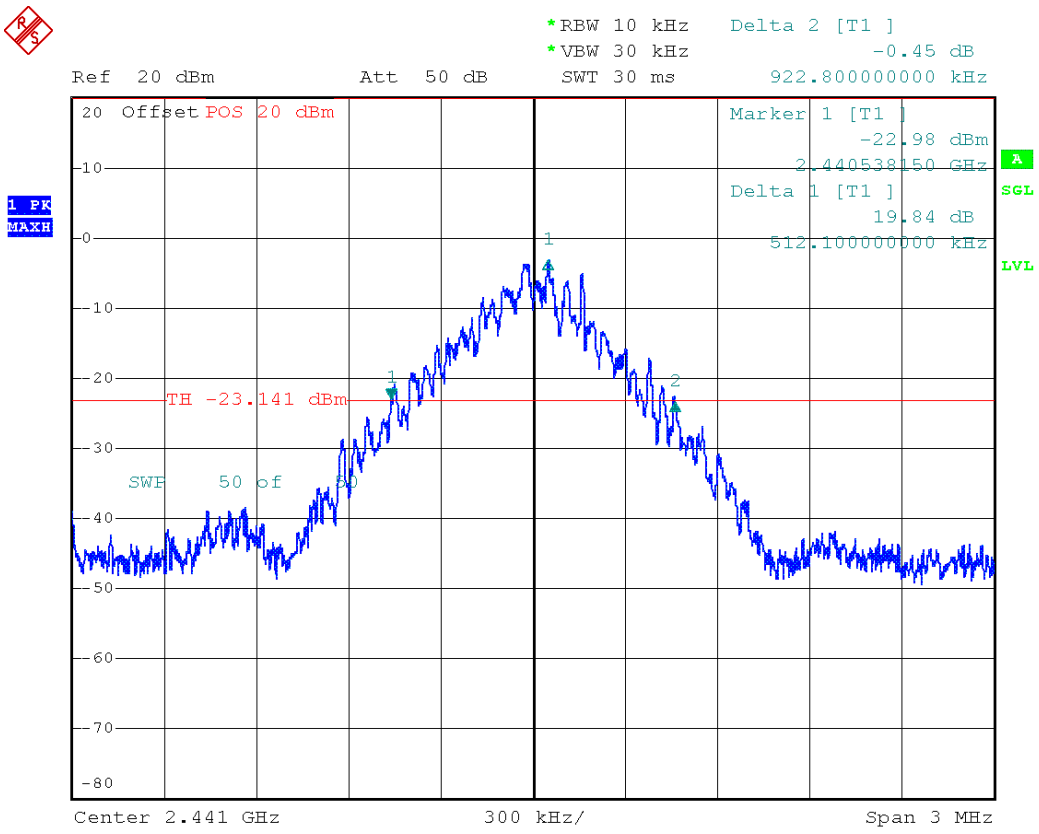


Date: 1.APR.2016 10:32:29

20 dB Bandwidth – DH5-Sngl F_{MID}

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2441 MHz; DH5
Test Date:	2016-04-01
Verdict:	PASS

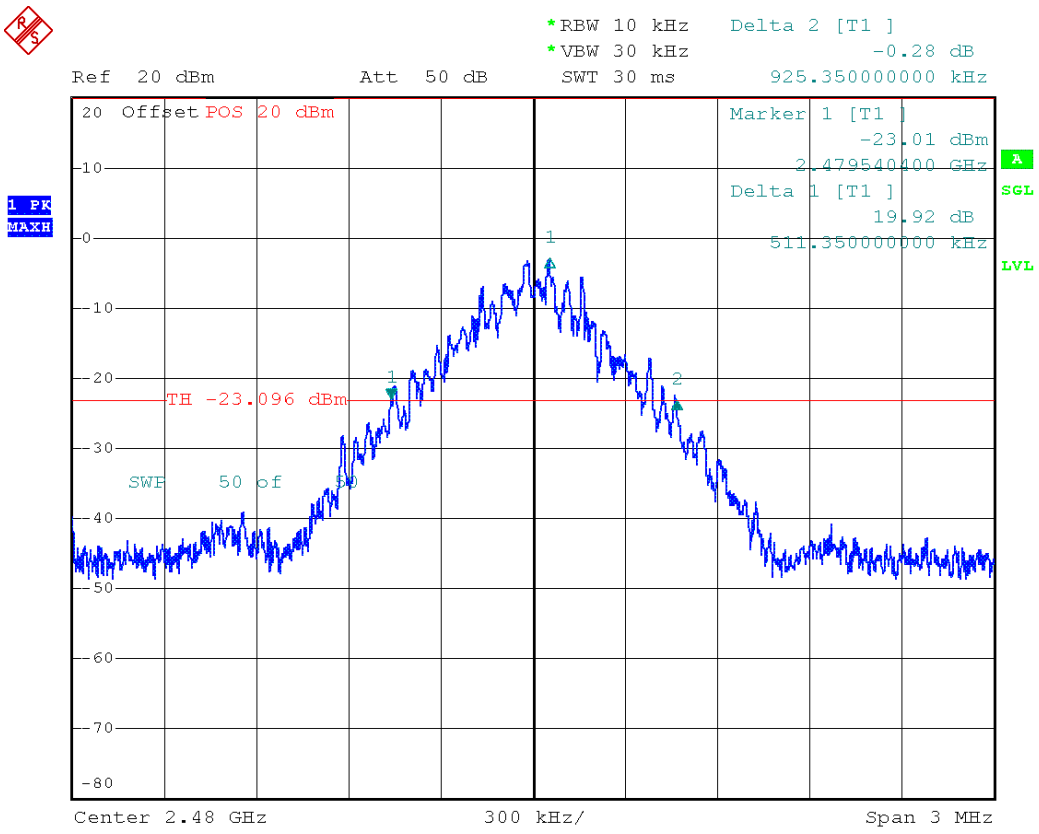


Date: 1.APR.2016 10:30:34

20 dB Bandwidth – DH5-Sngl F_{HIGH}

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2480 MHz; DH5
Test Date:	2016-04-01
Verdict:	PASS

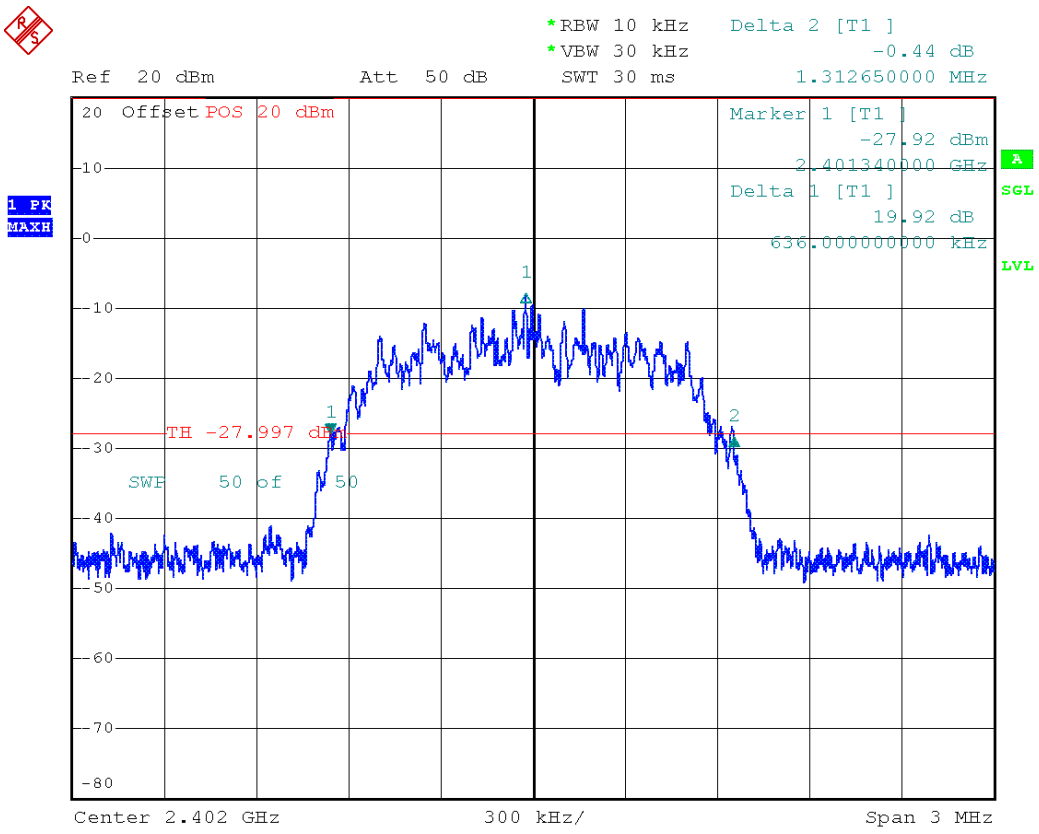


Date: 1.APR.2016 10:34:43

20 dB Bandwidth – 2-DH5-Sngl F_{LOW}

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2402 MHz; 2DH5
Test Date:	2016-04-01
Verdict:	PASS

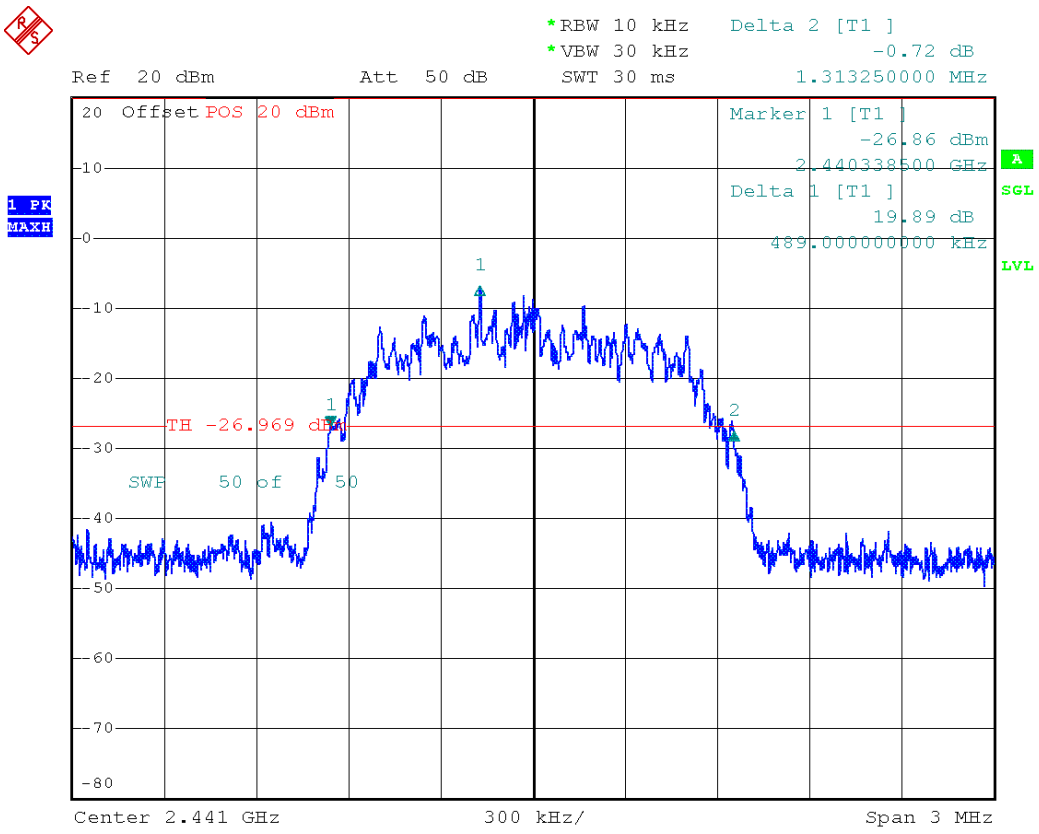


Date: 1.APR.2016 10:37:14

20 dB Bandwidth – 2-DH5-Sngl F_{MID}

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2441 MHz; 2DH5
Test Date:	2016-04-01
Verdict:	PASS

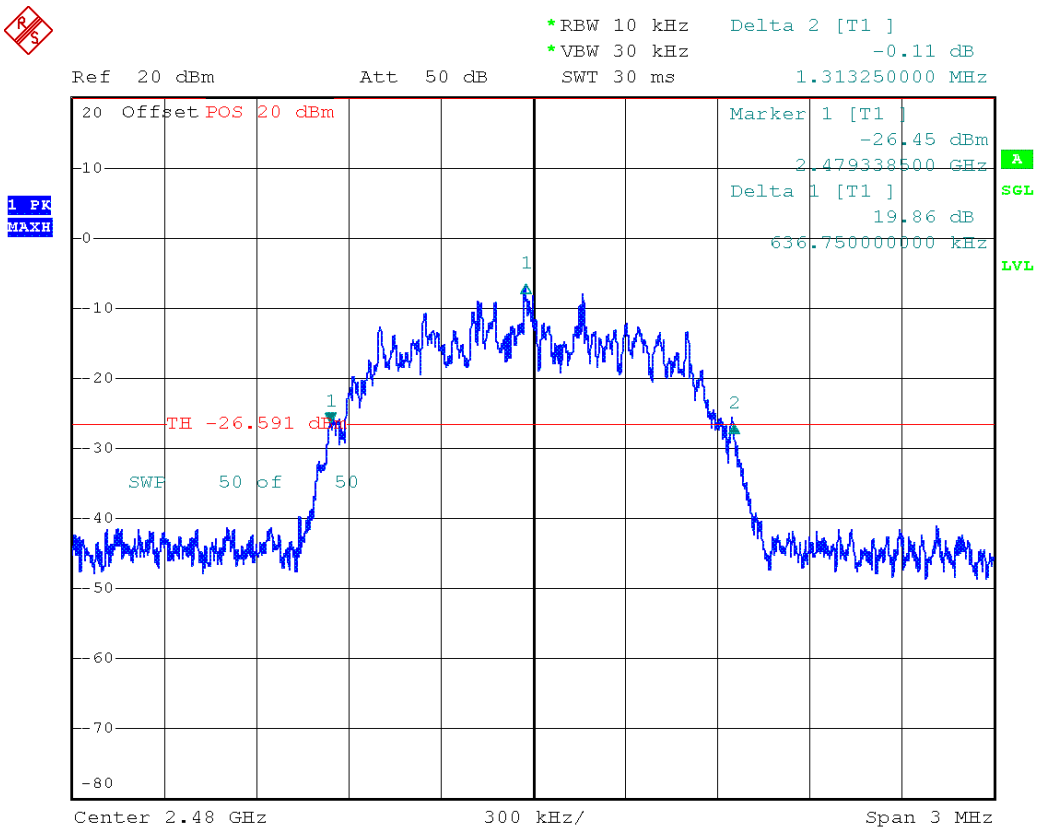


Date: 1.APR.2016 10:39:29

20 dB Bandwidth – 2-DH5-Sngl F_{HIGH}

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2480 MHz; 2DH5
Test Date:	2016-04-01
Verdict:	PASS

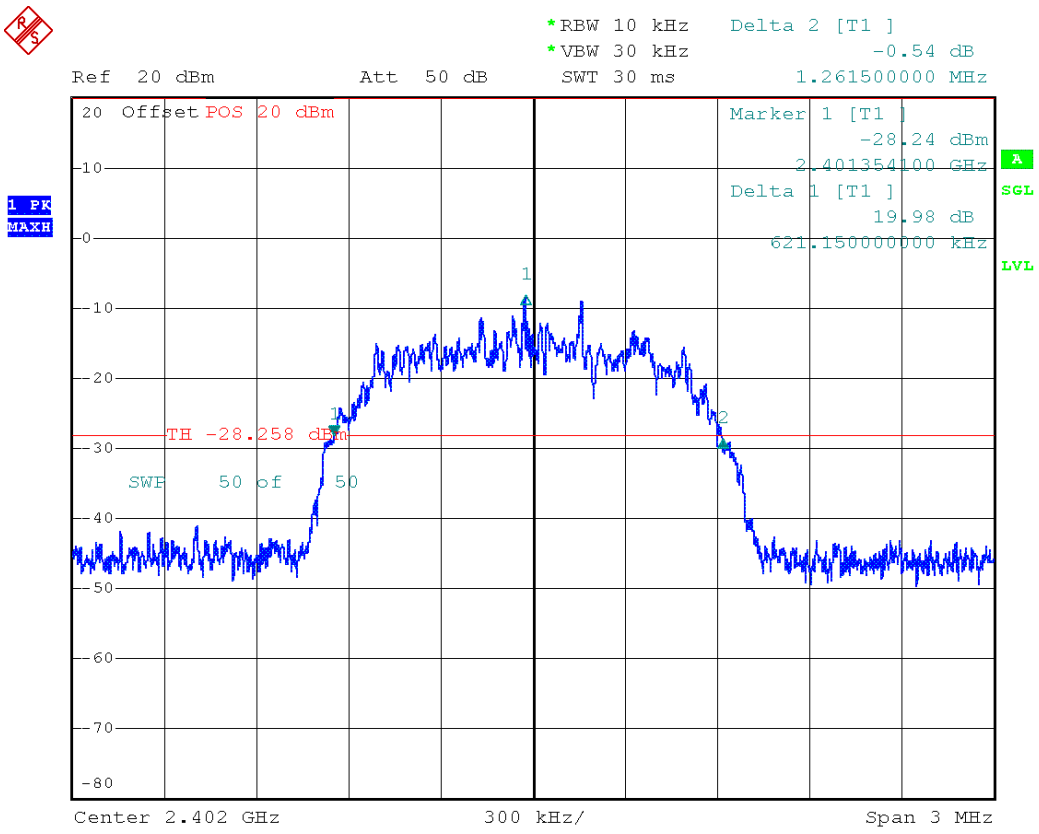


Date: 1.APR.2016 10:40:56

20 dB Bandwidth – 3-DH5-Sngl F_{LOW}

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2402 MHz; 3DH5
Test Date:	2016-04-01
Verdict:	PASS

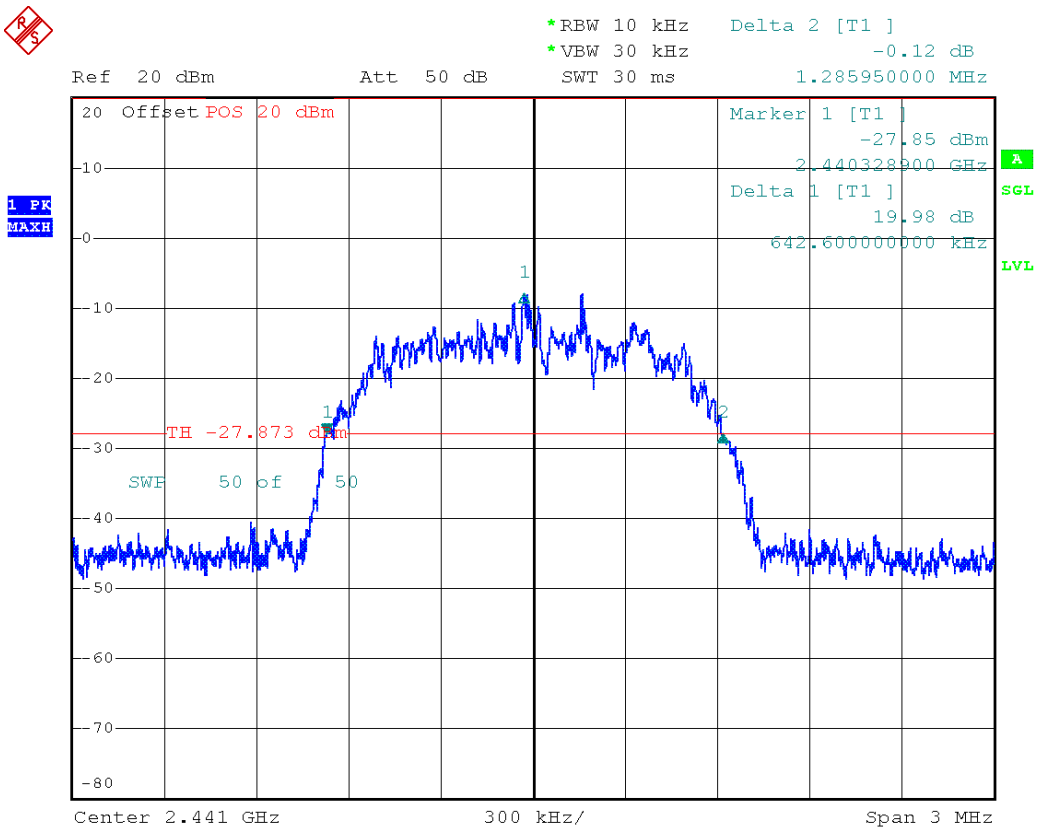


Date: 1.APR.2016 10:42:34

20 dB Bandwidth – 3-DH5-Sngl F_{MID}

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2441 MHz; 3DH5
Test Date:	2016-04-01
Verdict:	PASS

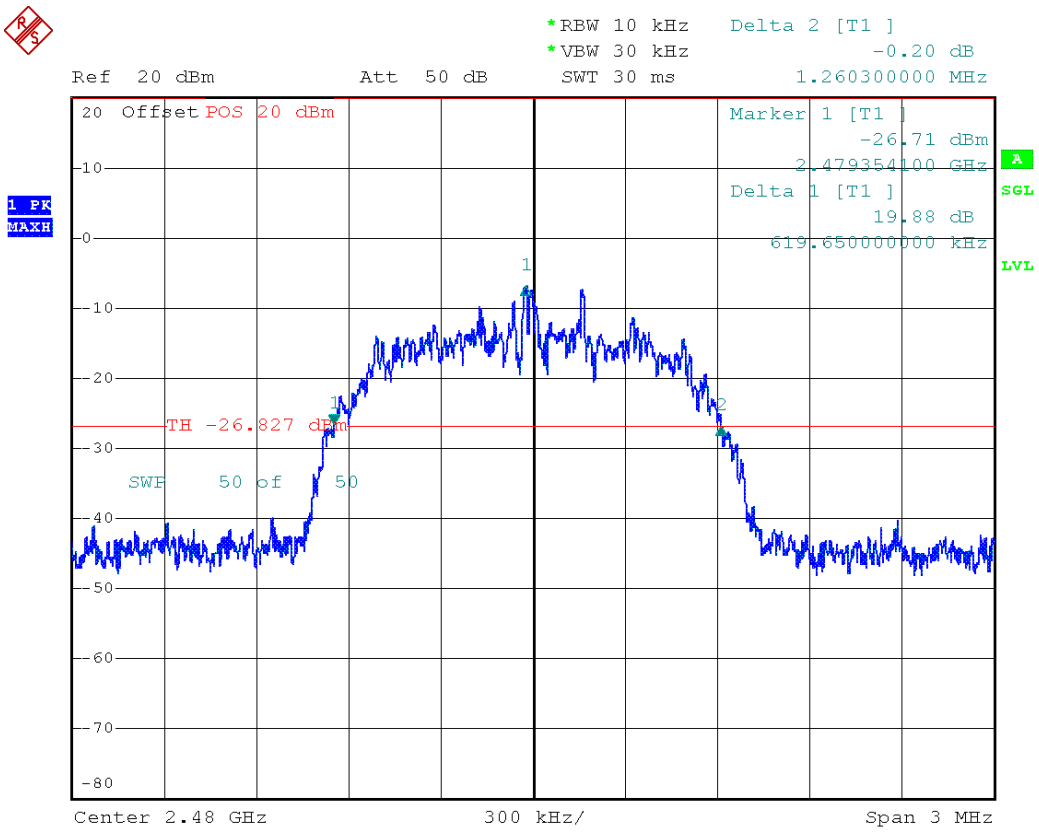


Date: 1.APR.2016 10:43:47

20 dB Bandwidth – 3-DH5-Sngl F_{HIGH}

20 dB Bandwidth acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; 2480 MHz; 3DH5
Test Date:	2016-04-01
Verdict:	PASS



Date: 1.APR.2016 10:45:04

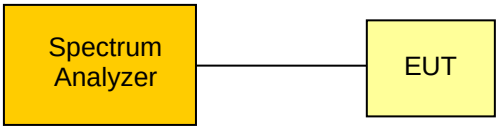
3.3 Test Conditions and Results – Number of hopping frequencies

Number of hopping frequencies acc. to FCC 15.247 / IC RSS-247	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(a)(1)(iii) / IC RSS-247 5.1
Test according to measurement reference	Reference Method
	ANSI C63.10
Test frequency range	Tested frequencies
	F_{LOW} - F_{HIGH}
EUT test mode	DH5-Hop

Limits

Limit	Condition
Number of hopping channels ≥ 15	Output power ≤ 125 mW / 21 dBm
Number of hopping channels ≥ 75	125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to measurement frequency range
3. Detector set to peak and max hold
4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra
5. The number of peaks is counted to determine number of hopping frequencies

Test results

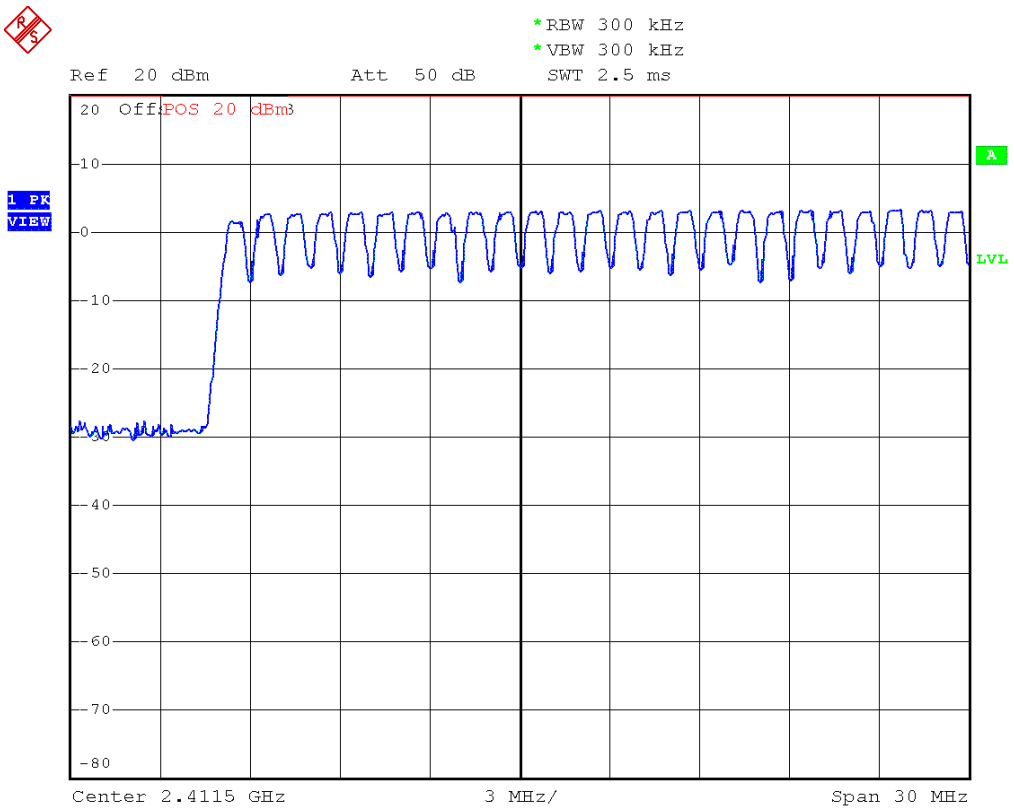
Number of hopping frequencies	Limit	Result
79	≥ 15	PASS

Comments:

Number of hopping frequencies - Range A

Number of hopping frequencies acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; DH5 Hop; Ch.0 – Ch. 24
Test Date:	2016-04-01
Verdict:	PASS

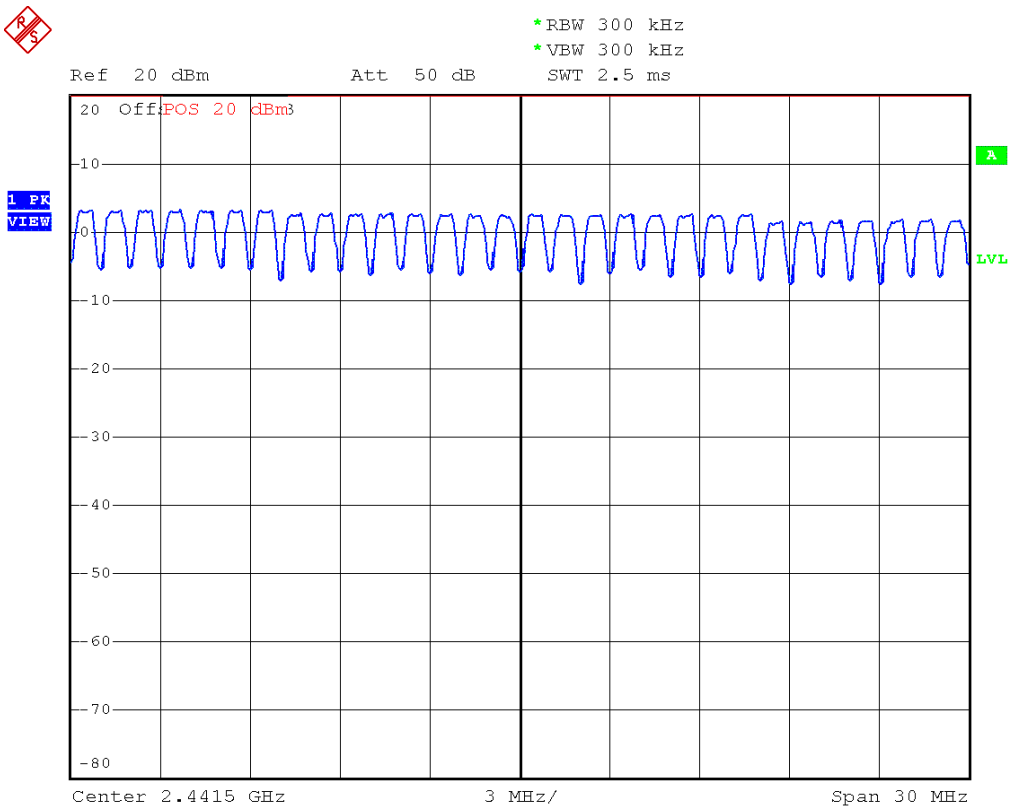


Comment: Number of hopping frequencies
Date: 1.APR.2016 10:49:44

Number of hopping frequencies - Range B

Number of hopping frequencies acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; DH5 Hop; Ch. 25 – Ch.54
Test Date:	2016-04-01
Verdict:	PASS

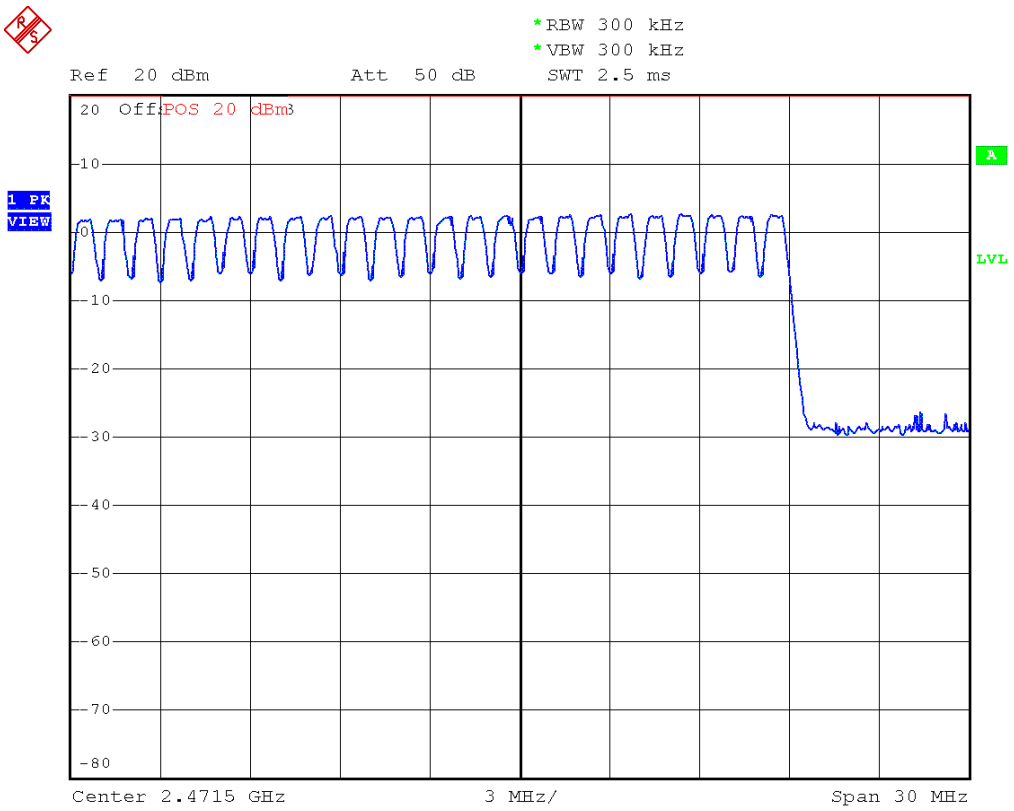


Comment: Number of hopping frequencies
Date: 1.APR.2016 10:51:59

Number of hopping frequencies - Range C

Number of hopping frequencies acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; DH5 Hop; Ch. 55 - 78
Test Date:	2016-04-01
Verdict:	PASS



Comment: Number of hopping frequencies
Date: 1.APR.2016 10:53:47

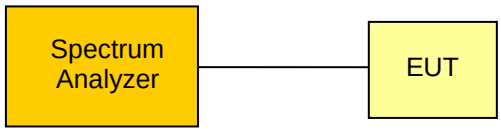
3.4 Test Conditions and Results – Frequency hopping channel separation

Frequency hopping channel separation acc. to FCC 15.247 / IC RSS-247	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(a)(1) / IC RSS-247 5.1
Test according to measurement reference	Reference Method
	ANSI C63.10
Test frequency range	Tested frequencies
	2441 & 2442 MHz
EUT test mode	DH5-Hop

Limits

Limit	Condition
≥ 25 kHz or ⅔ of 20 dB bandwidth	Output power ≤ 125 mW / 21 dBm
≥ 25 kHz or 20 dB bandwidth	125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to measurement frequency range
3. Detector set to peak and max hold
4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra
5. The two adjacent channel peaks are marked
6. Channel separation is determined from frequency separation of markers

Test results

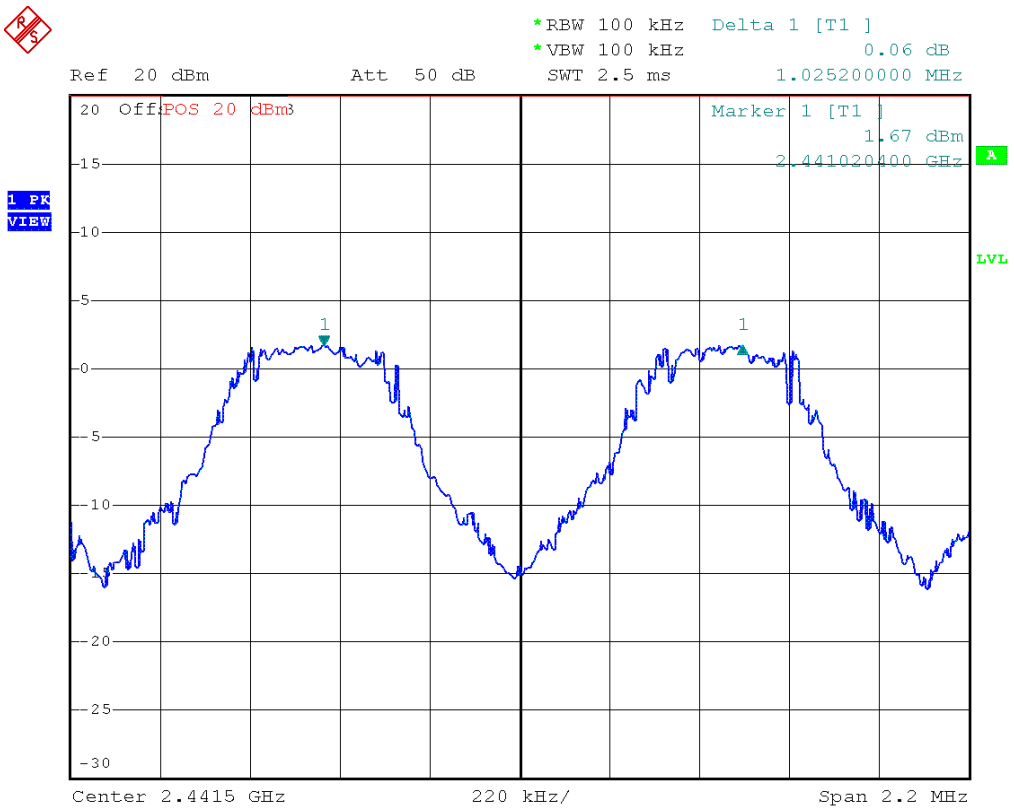
Channel separation [kHz]	Limit [kHz]	Result
1025	≥ ⅔ · 925 = 616.67	PASS

Comments:

Frequency hopping channel separation

Frequency hopping channel separation acc. to FCC 15.247 / IC RSS-247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	TX; DH5 Hop; 2441 MHz; 2442 MHz
Test Date:	2016-04-01
Verdict:	PASS



Comment: Limit: > two-thirds of the 20 dB bandwidth ; Result: Pass
Date: 1.APR.2016 11:00:21

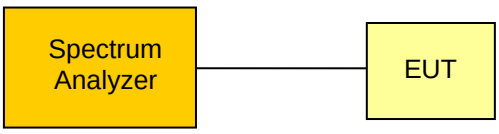
3.5 Test Conditions and Results – Time of occupancy (Dwell Time)

Time of occupancy (Dwell time) acc. to FCC 15.247 / IC RSS-247	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(a)(1)(iii) / IC RSS-247 5.1
Test according to measurement reference	Reference Method
	ANSI C63.10
Test frequency range	Tested frequencies
	2441 MHz
EUT test mode	DH5-Hop

Limits

Limit
Time of occupancy ≤ 0.4 s within 0.4 s · Number of hopping channels

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Center frequency set to test channel center frequency
3. Span set to zero span and detector to peak and max hold
4. Resolution bandwidth is set to 100kHz and sweep time to observation period
5. Time of occupancy determined from number of peaks multiplied by single hop dwell time

Test results

Observation period [s]	No. of hops	Dwell time/hop [s]	Time of occupancy [s]	Limit [s]	Result
31.6	91	0.0029	0.264	≤ 0.4	PASS

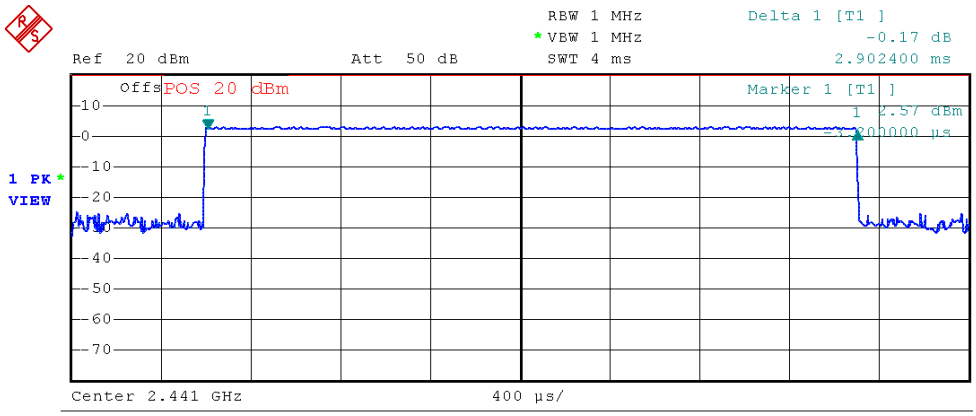
Comments:

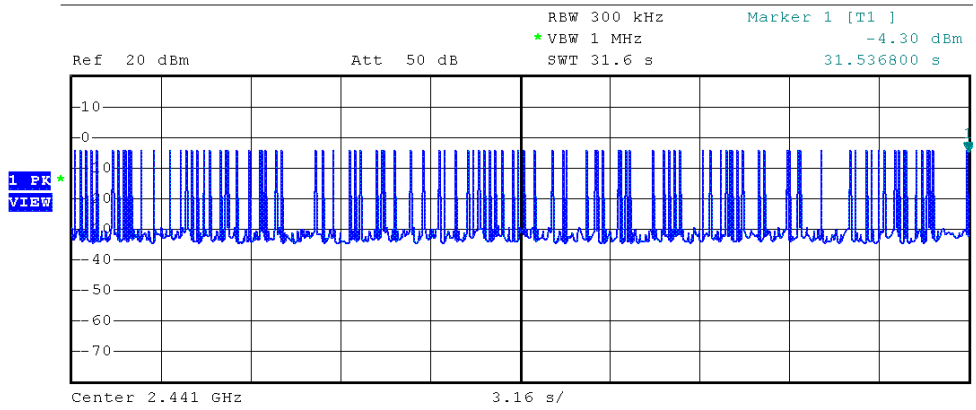
Time of occupancy

Time of Occupancy acc. to FCC 15.247

Project Number: G0M-1602-5411

Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, GFSK, channel 2441 MHz, hopping mode
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	91 events * 2.902ms; Result: 264.1ms Limit<0.4s
Note 2:	conducted measurement, (ANSI C63.10)





Comment: Burst length=2.9024 ms
Date: 1.APR.2016 11:41:17

3.6 Test Conditions and Results – Maximum peak conducted power

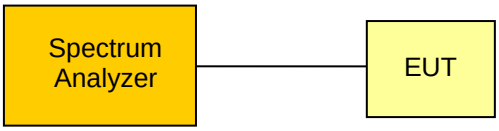
Maximum peak conducted power acc. to FCC 15.247 / IC RSS-247	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(b)(1) / IC RSS-247 5.4
Test according to measurement reference	Reference Method
	ANSI C63.10
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}
Measurement mode	Peak
Maximum antenna gain	0.5 dBi ⇒ Limit correction = 0 dB

Limits

Limit	Condition
1 W (30 dBm)	Number of hopping channels ≥ 75
0.125 W (21 dBm)	75 > Number of hopping channels ≥ 15

The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Center frequency set to test channel center frequency
3. Span set to twice the 20 dB bandwidth and detector to peak and max hold
4. Resolution bandwidth is set to 3 MHz
5. Peak conducted power is determined from peak of spectrum envelope

Test results								
Channel	Frequency [MHz]	Voltage	Mode	Peak power [dBm]	Peak power [W]	Limit [dBm]	Margin [dB]	Result
F_{LOW}	2402	2.4 VDC	DH5-Sngl	2.2	0.0017	30	-27.80	PASS
F_{MID}	2441	2.4 VDC	DH5-Sngl	3.2	0.0021	30	-26.80	PASS
F_{HIGH}	2480	2.4 VDC	DH5-Sngl	3.2	0.0021	30	-26.80	PASS
F_{LOW}	2402	2.4 VDC	2DH5-Sngl	1.15	0.0013	30	-28.85	PASS
F_{MID}	2441	2.4 VDC	2DH5-Sngl	2.07	0.0016	30	-27.93	PASS
F_{HIGH}	2480	2.4 VDC	2DH5-Sngl	2.37	0.0017	30	-27.63	PASS
F_{LOW}	2402	2.4 VDC	3DH5-Sngl	1.53	0.0014	30	-28.47	PASS
F_{MID}	2441	2.4 VDC	3DH5-Sngl	2.54	0.0018	30	-27.46	PASS
F_{HIGH}	2480	2.4 VDC	3DH5-Sngl	2.66	0.0018	30	-27.34	PASS
Comments:								

3.7 Test Conditions and Results – AC power line conducted emissions

Power line conducted emissions acc. to FCC 47 CFR 15.207 / IC RSS-Gen				**Verdict: PASS**
Test according referenced standards	Reference Method			
	ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15 MHz to 30 MHz			
Points of Application	Application Interface			
AC Mains	LISN			
EUT test mode	AC-Powerline			
Limits and results				
Frequency [MHz]	Quasi-Peak [dBµV]	Result	Average [dBµV]	Result
0.15 to 5	66 to 56*	PASS	56 to 46*	PASS
0.5 to 5	56	PASS	46	PASS
5 to 30	60	PASS	50	PASS
Comments: * Limit decreases linearly with the logarithm of the frequency.				

Conducted Emissions

EMI voltage test in the ac-mains according to FCC 15B

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	SECURE Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Laurisch
Test Conditions:	Tnom: 23°C, Unom: 120VAC
LISN:	ESH2-Z5 L
Mode:	BT connected, Batteries charging
Test Date:	2016-03-17
Note:	

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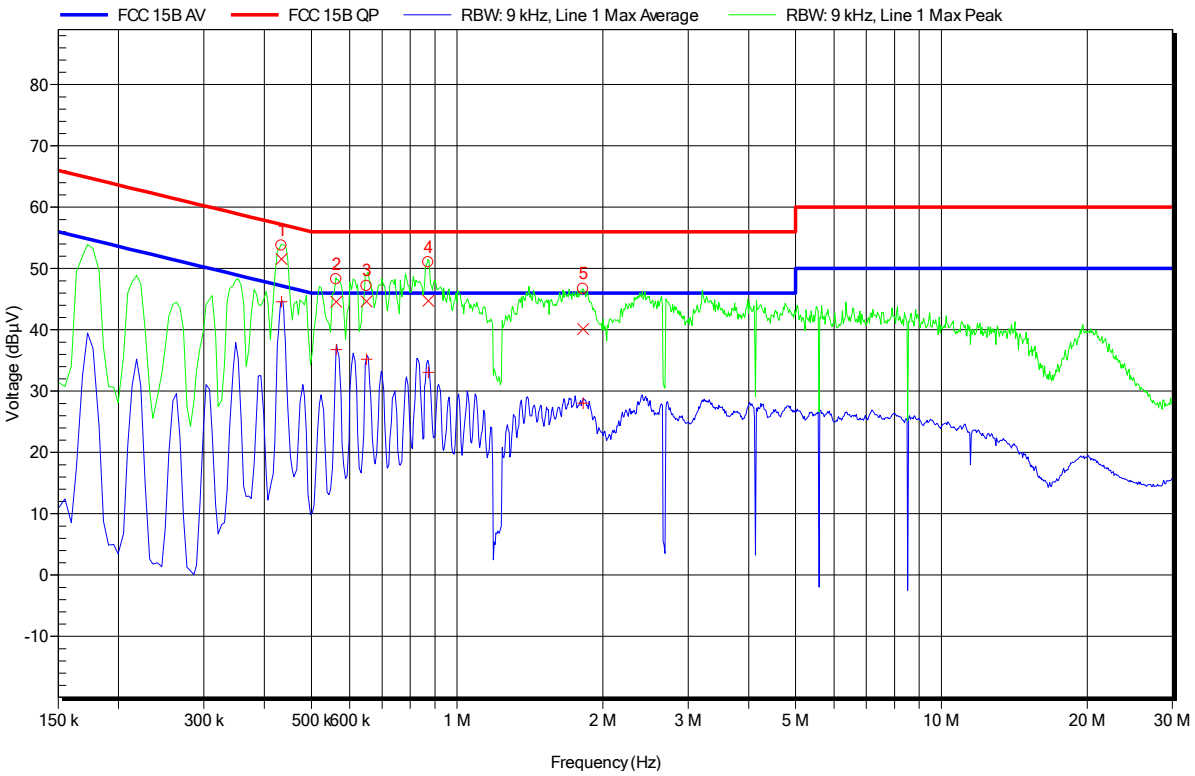

Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	433.95 kHz	51.56 dBµV	57.18 dBµV	-5.62 dB	Pass
2	563.1 kHz	44.59 dBµV	56 dBµV	-11.41 dB	Pass
3	650.4 kHz	44.64 dBµV	56 dBµV	-11.36 dB	Pass
4	872.25 kHz	44.73 dBµV	56 dBµV	-11.27 dB	Pass
5	1.82 MHz	40.14 dBµV	56 dBµV	-15.86 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	433.95 kHz	44.56 dBµV	47.18 dBµV	-2.62 dB	Pass
2	563.1 kHz	36.78 dBµV	46 dBµV	-9.22 dB	Pass
3	650.4 kHz	35.22 dBµV	46 dBµV	-10.78 dB	Pass
4	872.25 kHz	33.07 dBµV	46 dBµV	-12.93 dB	Pass
5	1.82 MHz	28.02 dBµV	46 dBµV	-17.98 dB	Pass

Conducted Emissions

EMI voltage test in the ac-mains according to FCC 15B

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	SECURE Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Laurisch
Test Conditions:	Tnom: 23°C, Unom: 120VAC
LISN:	ESH2-Z5 N
Mode:	BT connected, Batteries charging
Test Date:	2016-03-17
Note:	

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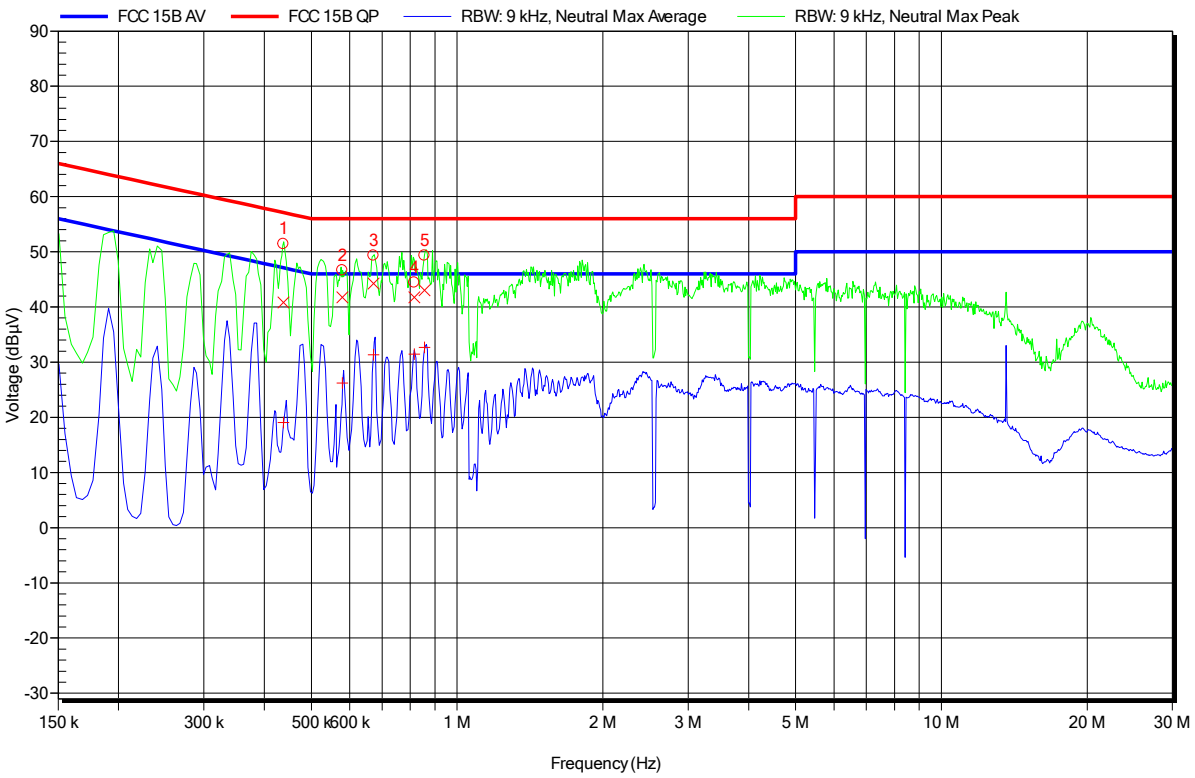


Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	438 kHz	40.79 dBµV	57.1 dBµV	-16.31 dB	Pass
2	579.3 kHz	41.73 dBµV	56 dBµV	-14.27 dB	Pass
3	672.45 kHz	44.23 dBµV	56 dBµV	-11.77 dB	Pass
4	816.45 kHz	41.72 dBµV	56 dBµV	-14.28 dB	Pass
5	856.95 kHz	43.01 dBµV	56 dBµV	-12.99 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	438 kHz	19.04 dBµV	47.1 dBµV	-28.06 dB	Pass
2	579.3 kHz	26.23 dBµV	46 dBµV	-19.77 dB	Pass
3	672.45 kHz	31.35 dBµV	46 dBµV	-14.65 dB	Pass
4	816.45 kHz	31.42 dBµV	46 dBµV	-14.58 dB	Pass
5	856.95 kHz	32.68 dBµV	46 dBµV	-13.32 dB	Pass

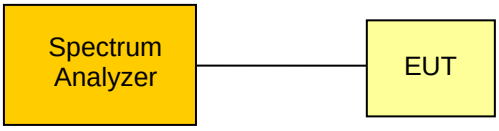
3.8 Test Conditions and Results – Band edge compliance

Band-edge compliance acc. to FCC 15.247 / IC RSS-247	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(d) / IC RSS-247 5.5
Test according to measurement reference	Reference Method
	ANSI C63.10
Test frequency range	Tested frequencies
	F_{LOW} / F_{HIGH}
Measurement mode	Peak

Limits

Limit	Condition
≤ -20 dB/100 kHz	Power measurement detector = Peak
≤ -30 dB/100 kHz	Power measurement detector = RMS

Test setup



Test procedure

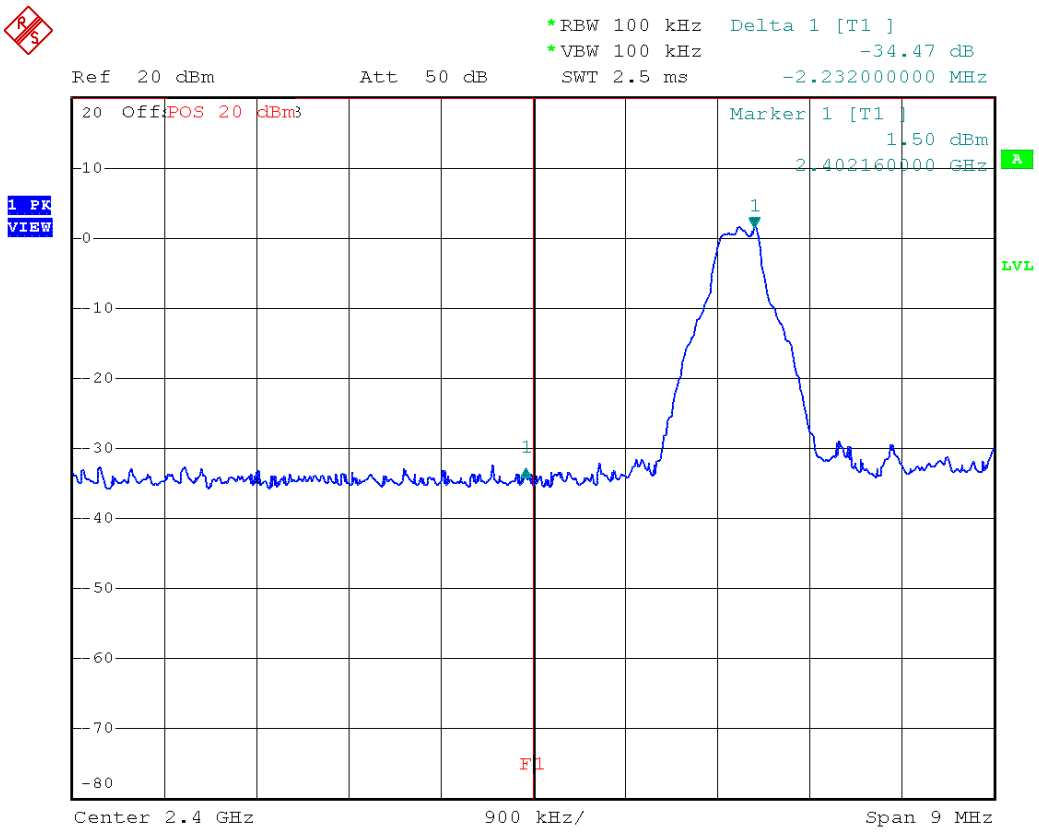
1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
4. Markers are set to peak emission levels within frequency band and outside frequency band
5. Band edge attenuation is determined from level difference

Test results						
Channel	Frequency [MHz]	Mode	Level [dBc]	Limit [dBc]	Margin [dB]	Result
F_{LOW}	2402	DH5-Sngl	-34.47	-20	-14.47	PASS
F_{HIGH}	2480	DH5-Sngl	-35.88	-20	-15.88	PASS
F_{LOW}	2402	DH5-Hop	-33.29	-20	-13.29	PASS
F_{HIGH}	2480	DH5-Hop	-34.43	-20	-14.43	PASS
F_{LOW}	2402	2DH5-Sngl	-31.77	-20	-11.77	PASS
F_{HIGH}	2480	2DH5-Sngl	-32.49	-20	-12.49	PASS
F_{LOW}	2402	2DH5-Hop	-31.97	-20	-11.97	PASS
F_{HIGH}	2480	2DH5-Hop	-33.74	-20	-13.74	PASS
F_{LOW}	2402	3DH5-Sngl	-33.41	-20	-13.41	PASS
F_{HIGH}	2480	3DH5-Sngl	-33.38	-20	-13.38	PASS
F_{LOW}	2402	3DH5-Hop	-30.62	-20	-10.62	PASS
F_{HIGH}	2480	3DH5-Hop	-32.31	-20	-12.31	PASS
Comments:						

Band-edge compliance – DH5-Sngl F_{LOW}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, DH5, 2402 MHz, single frequency
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	lower Band-edge, conducted measurement

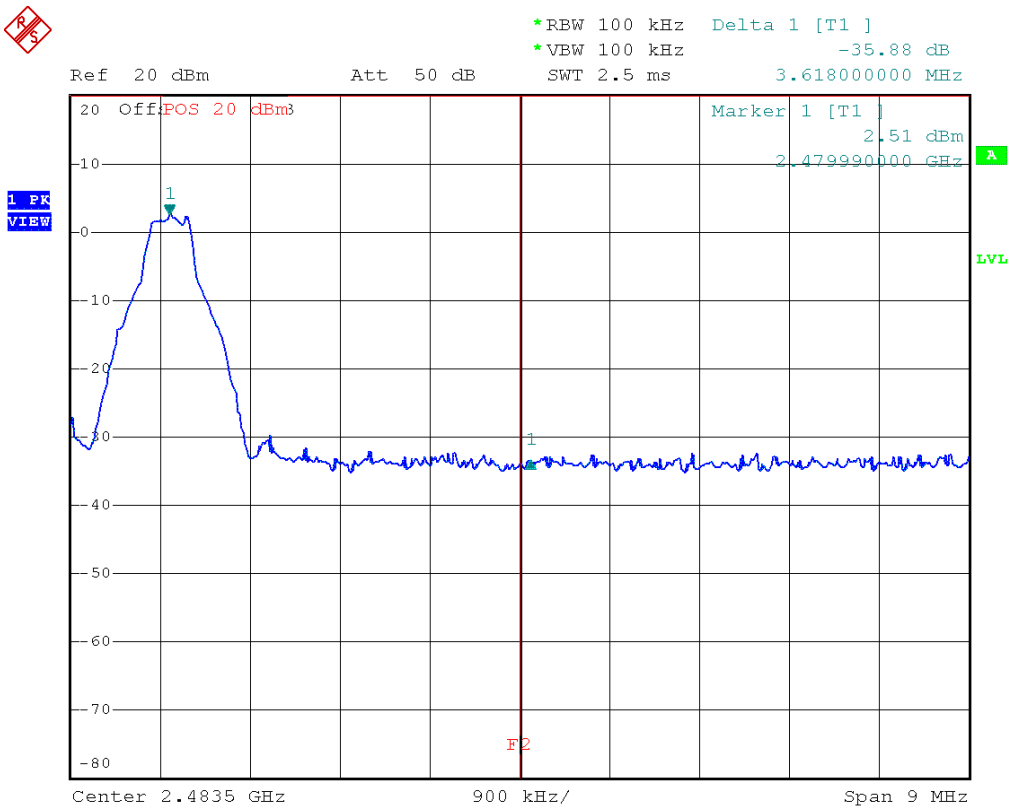


Date: 1.APR.2016 12:57:33

Band-edge compliance – DH5-Sngl F_{HIGH}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, DH5, 2480 MHz, single frequency
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	upper Band-edge, conducted measurement

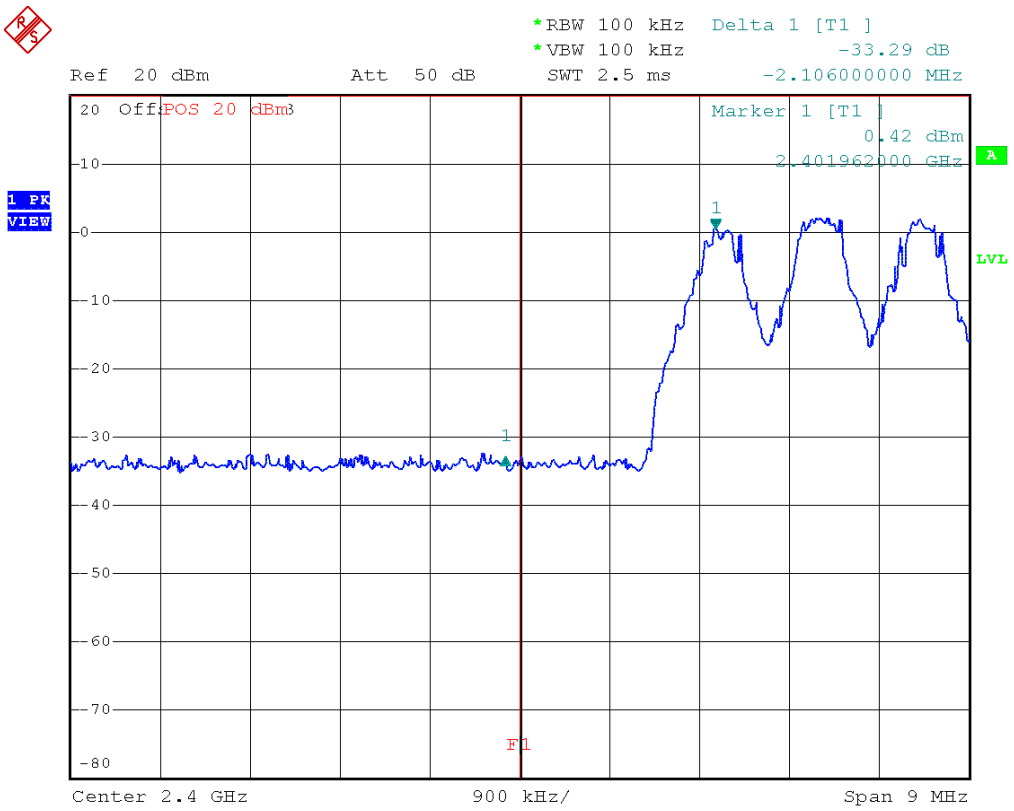


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:12:58

Band-edge compliance – DH5-Hop F_{LOW}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, DH5, hopping mode
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	lower Band-edge, conducted measurement

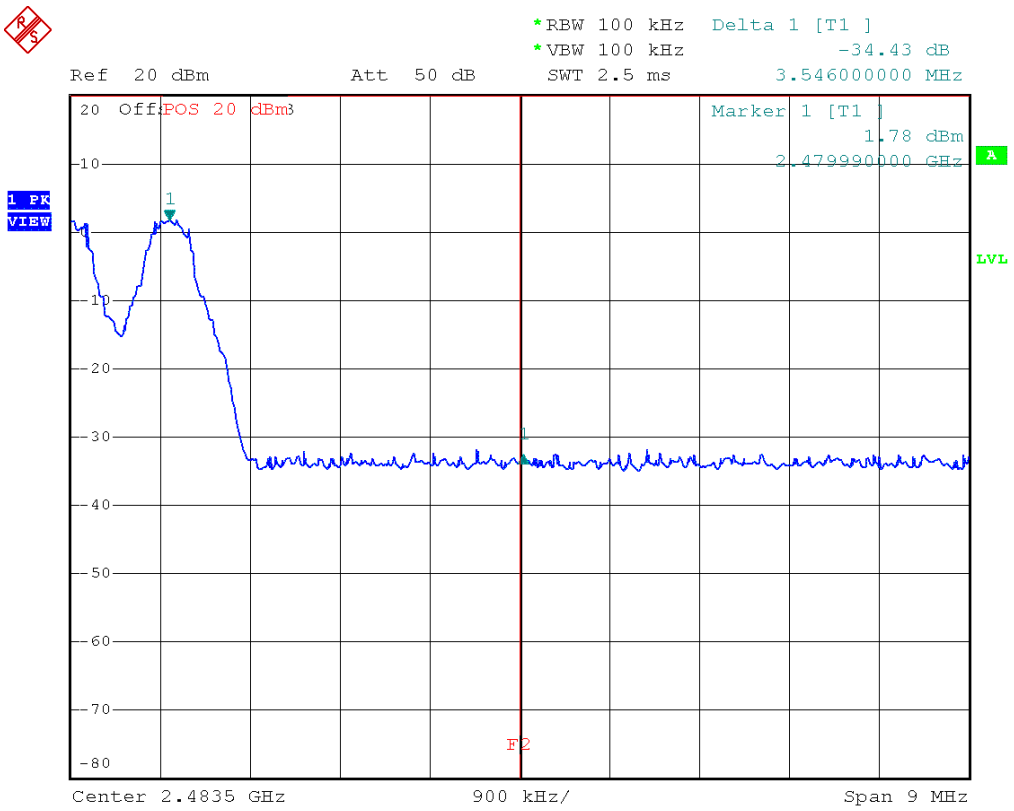


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:16:59

Band-edge compliance – DH5-Hop F_{HIGH}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, DH5, hopping mode
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	upper Band-edge, conducted measurement

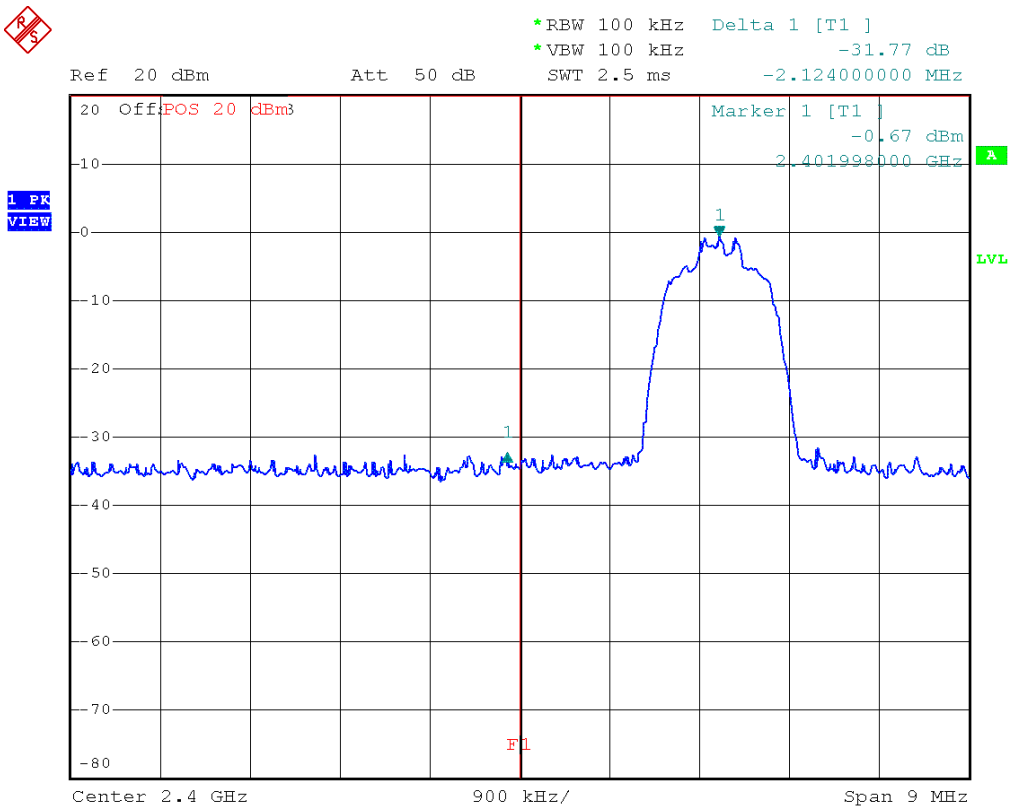


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:19:21

Band-edge compliance – 2-DH5-Sngl F_{LOW}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 2DH5, 2402 MHz, single frequency
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	lower Band-edge, conducted measurement

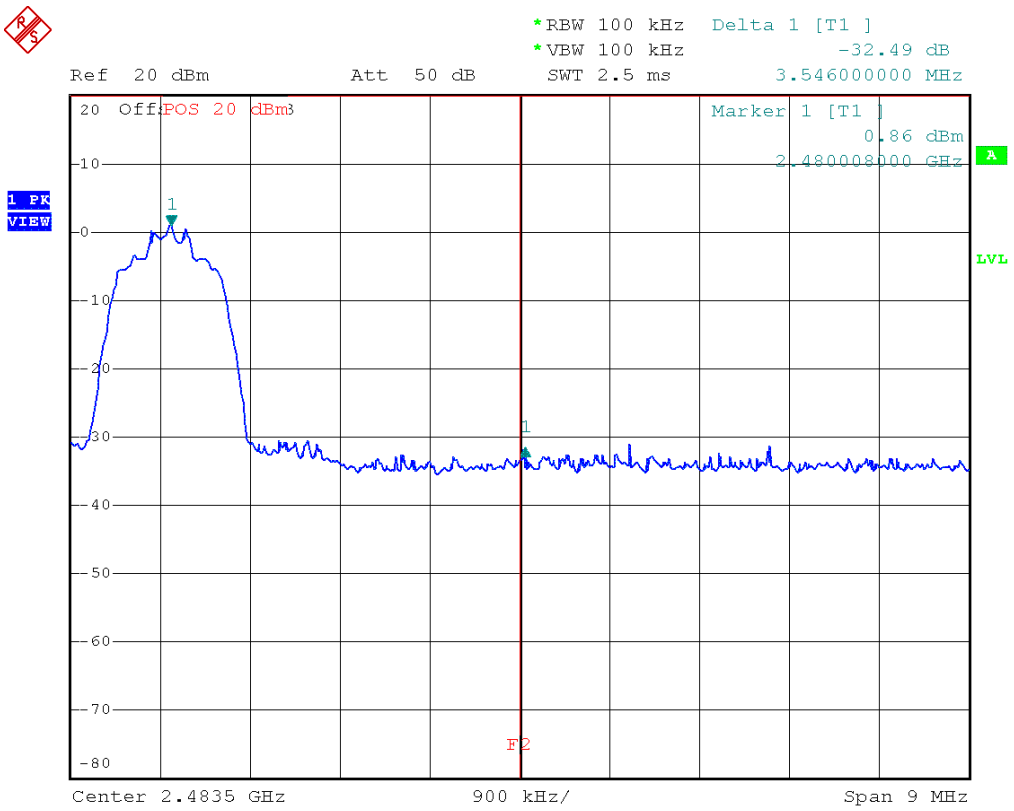


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:23:54

Band-edge compliance – 2-DH5-Sngl F_{HIGH}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 2DH5, 2480 MHz, single frequency
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	upper Band-edge, conducted measurement

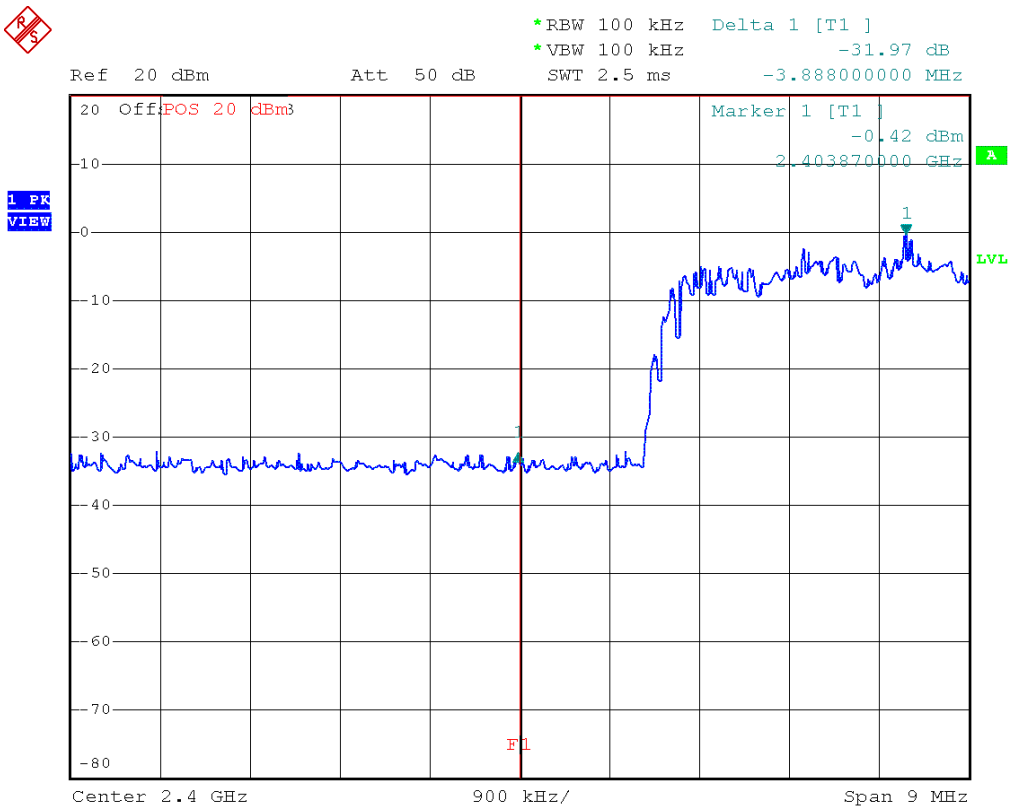


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:26:16

Band-edge compliance – 2-DH5-Hop F_{LOW}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 2DH5, hopping mode
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	lower Band-edge, conducted measurement

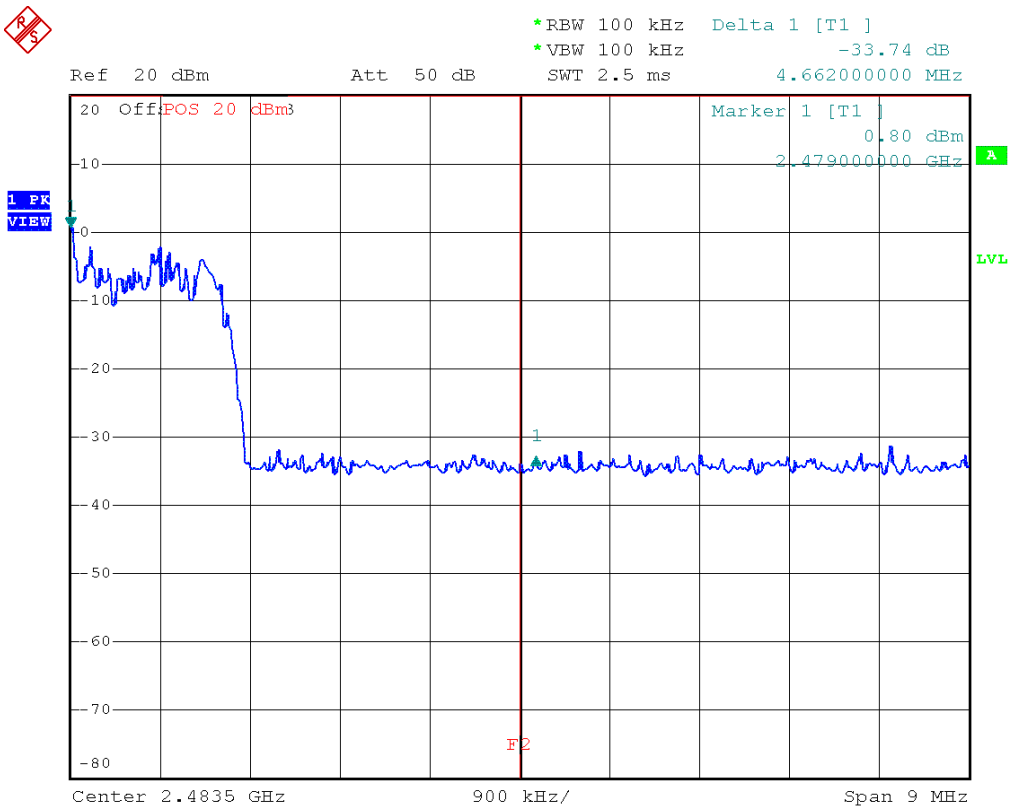


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:29:30

Band-edge compliance – 2-DH5-Hop F_{HIGH}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 2DH5, hopping mode
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	upper Band-edge, conducted measurement

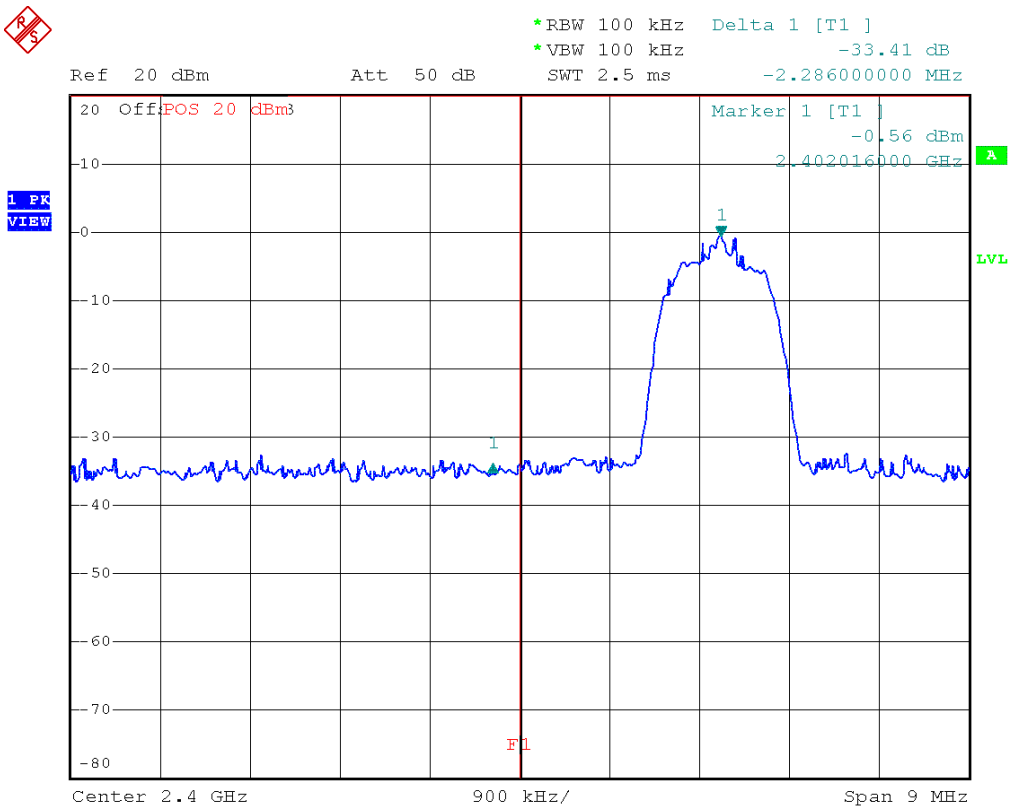


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:31:41

Band-edge compliance – 3-DH5-Sngl F_{LOW}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 3DH5, 2402 MHz, single frequency
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	lower Band-edge, conducted measurement

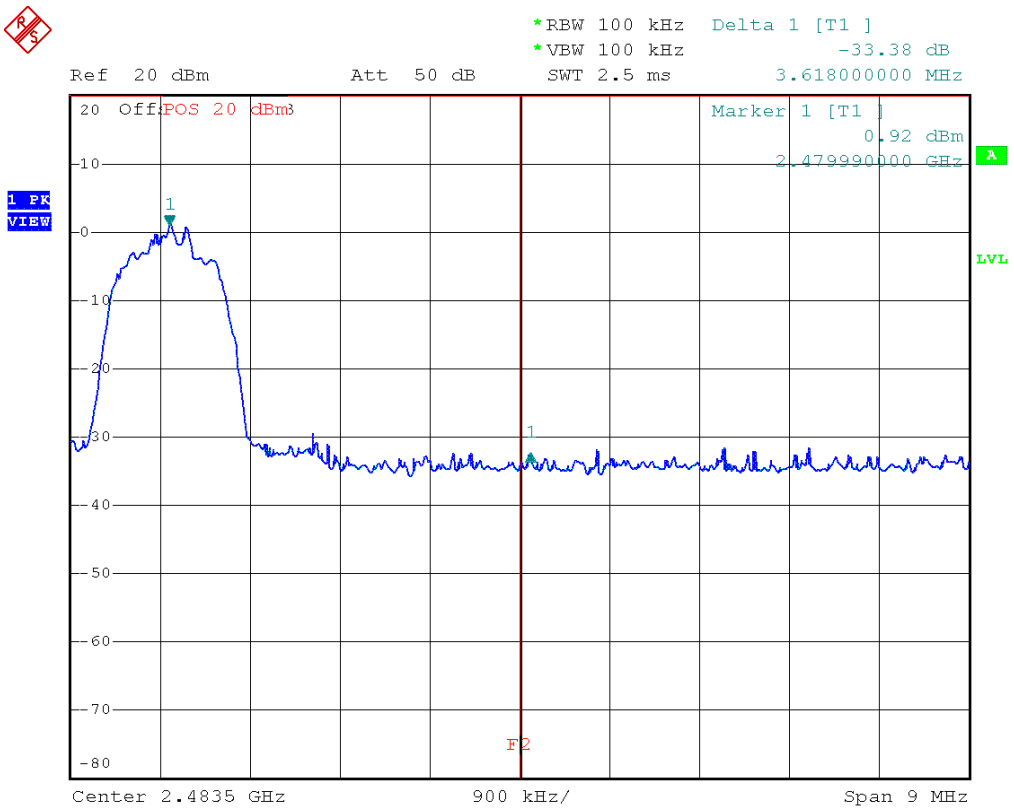


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:36:31

Band-edge compliance – 3-DH5-Sngl F_{HIGH}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 3DH5, 2480 MHz, single frequency
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	upper Band-edge, conducted measurement

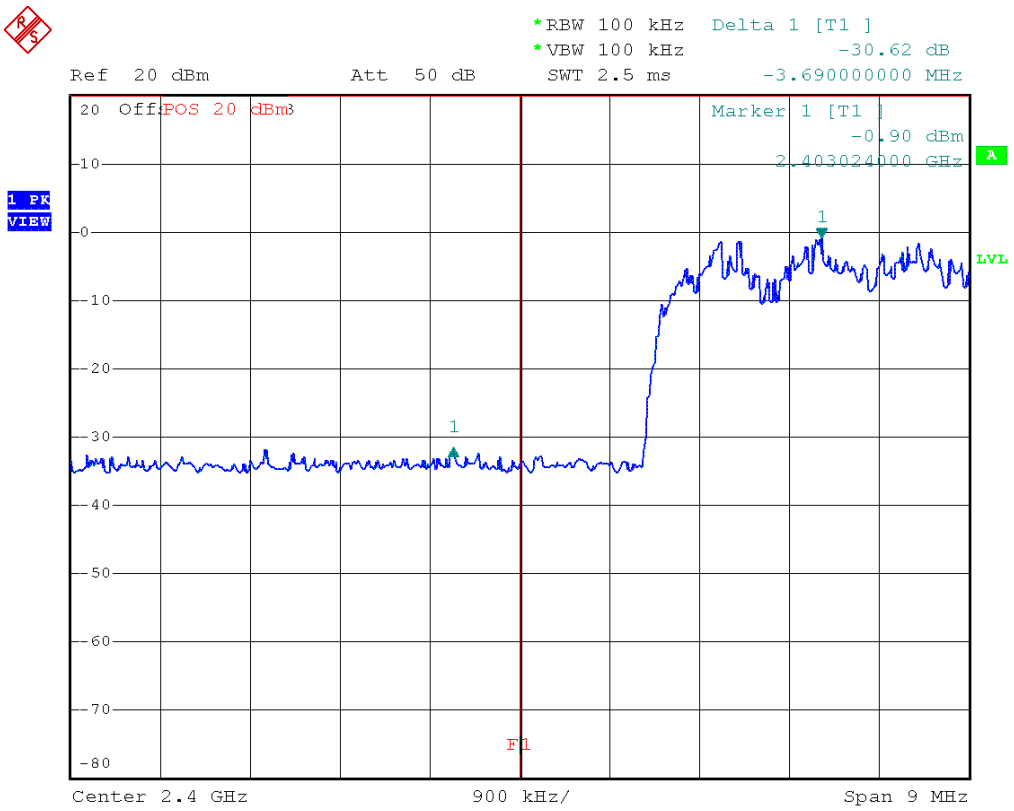


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:38:34

Band-edge compliance – 3-DH5-Hop F_{LOW}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 3DH5, hopping mode
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	lower Band-edge, conducted measurement

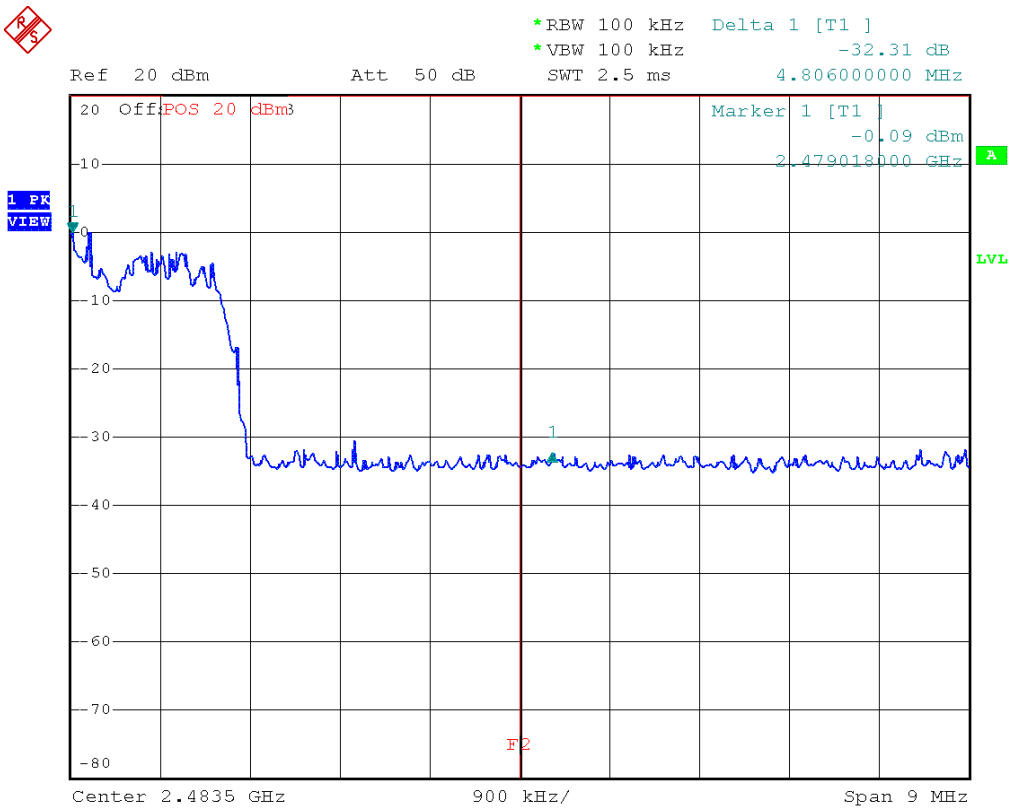


Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:41:12

Band-edge compliance – 3-DH5-Hop F_{HIGH}

Band-edge compliance acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 3DH5, hopping mode
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	-20 dB method (ANSI C63.10)
Note 2:	upper Band-edge, conducted measurement



Comment: Limit: Marker Delta value >20 dB
Date: 1.APR.2016 13:43:28

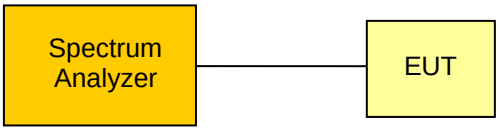
3.9 Test Conditions and Results – Conducted spurious emissions

Conducted spurious emissions acc. to FCC 15.247 / IC RSS-247	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(d) / IC RSS-247 5.5
Test according to measurement reference	Reference Method
	ANSI C63.10
Test frequency range	Tested frequencies
	10 MHz – 10th Harmonic
Measurement mode	Peak

Limits

Limit	Condition
≤ -20 dB/100 kHz	Peak power measurement detector = Peak
≤ -30 dB/100 kHz	Peak power measurement detector = RMS

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span it set according to measurement range
3. Resolution bandwidth is set to 100 kHz and detector to peak and max hold
4. Markers are set to peak emission levels within frequency band
5. Emission level is determined by second marker on emission peak
6. Attenuation is determined from level difference

Test results

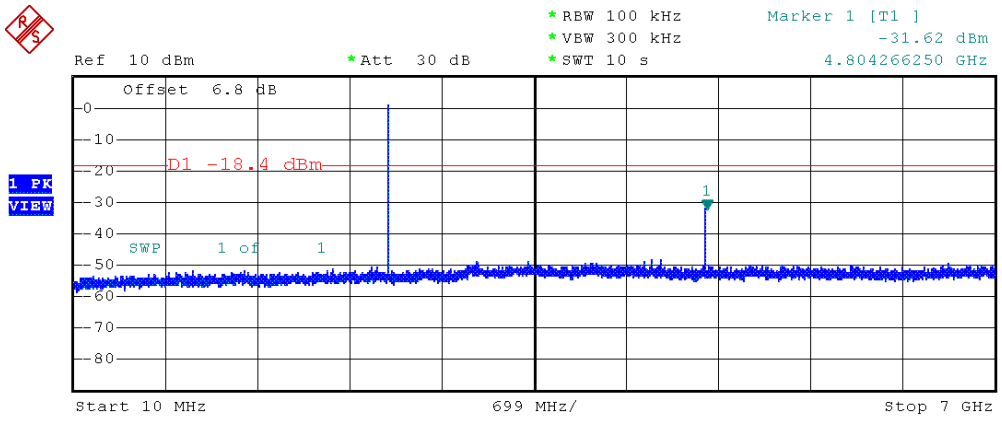
Channel	Frequency [MHz]	Mode	Emission [MHz]	Emission Level [dbm]	Peak power [dBm]	Limit [dBm]	Margin [dB]	Result
F_{LOW}	2402	DH5-Sngl	4804.27	-31.62	1.6	-18.4	-13.22	PASS
F_{MID}	2441	DH5-Sngl	4882.03	-30.84	2.5	-17.5	-13.34	PASS
F_{HIGH}	2480	DH5-Sngl	4960.67	-33.21	2.5	-17.5	-15.71	PASS
F_{LOW}	2402	2DH5-Sngl	4804.27	-39.76	-0.5	-20.5	-19.26	PASS
F_{MID}	2441	2DH5-Sngl	4882.03	-39.74	0.6	-19.4	-20.34	PASS
F_{HIGH}	2480	2DH5-Sngl	4960.67	-39.03	0.9	-19.1	-19.93	PASS
F_{LOW}	2402	3DH5-Sngl	4804.27	-39.05	-0.5	-20.5	-18.55	PASS
F_{MID}	2441	3DH5-Sngl	4882.03	-39.30	0.6	-19.4	-19.90	PASS
F_{HIGH}	2480	3DH5-Sngl	4959.79	-36.37	0.8	-19.2	-17.17	PASS

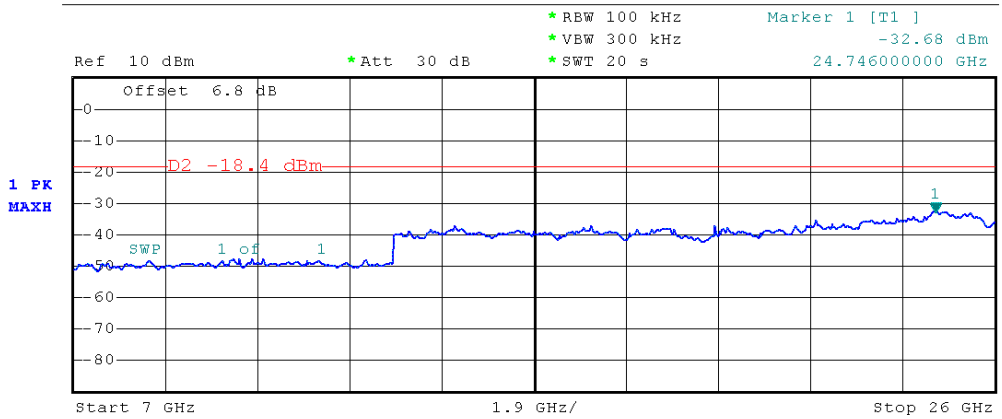
Comments:

Conducted spurious emissions – DH5-Sngl F_{LOW}

Spurious Emissions acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, DH5, 2402 MHz
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (ANSI C63.10)
Note 2:	conducted measurement



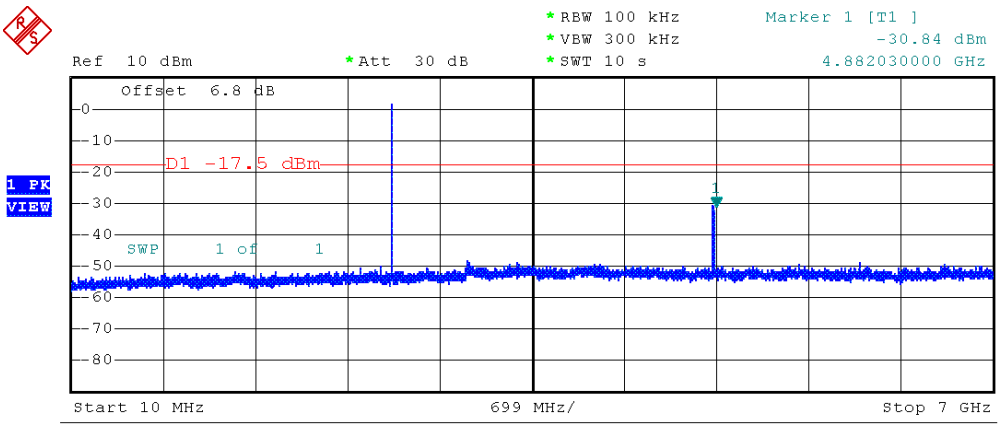


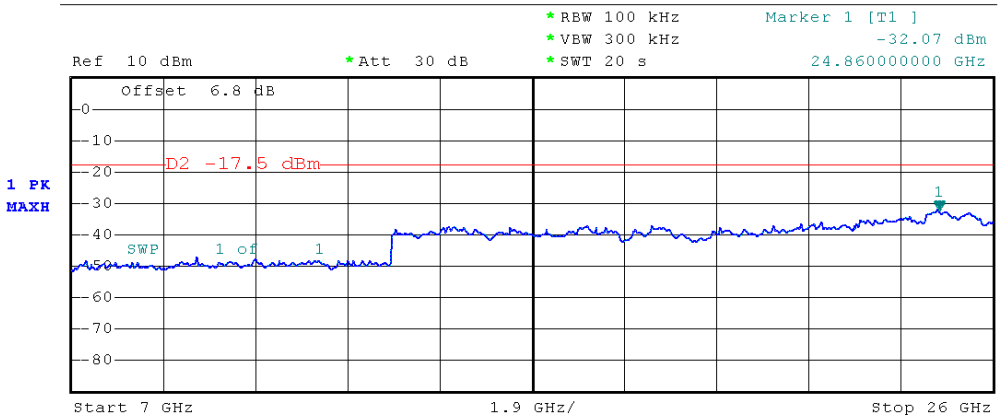
Date: 1.APR.2016 14:06:44

Conducted spurious emissions – DH5-Sngl F_{MID}

Spurious Emissions acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, DH5, 2441 MHz
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (ANSI C63.10)
Note 2:	conducted measurement



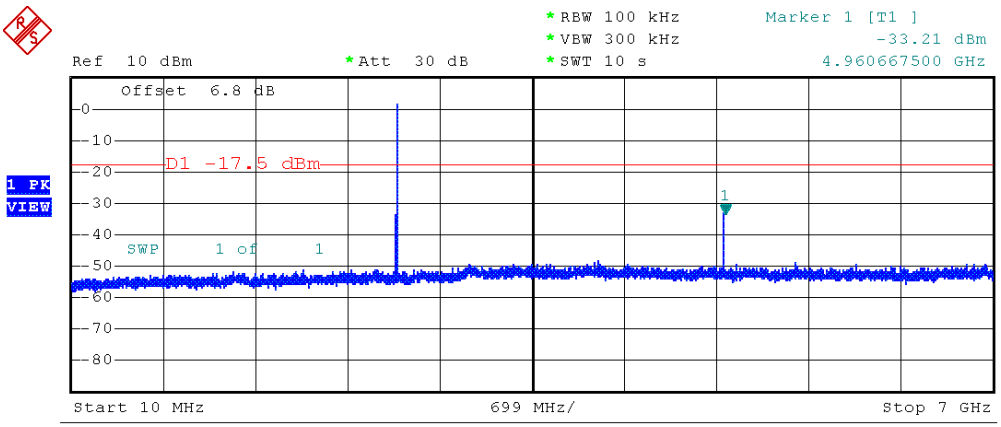


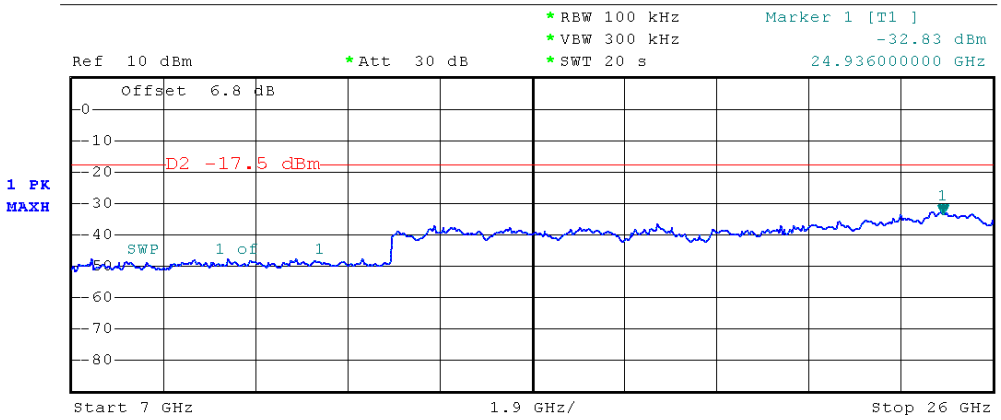
Date: 1.APR.2016 14:10:26

Conducted spurious emissions – DH5-Sngl F_{HIGH}

Spurious Emissions acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, DH5, 2480 MHz
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (ANSI C63.10)
Note 2:	conducted measurement



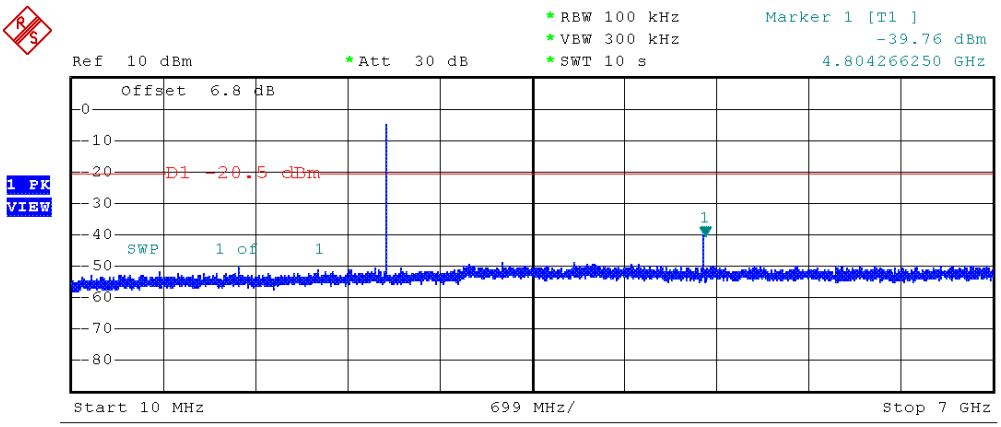


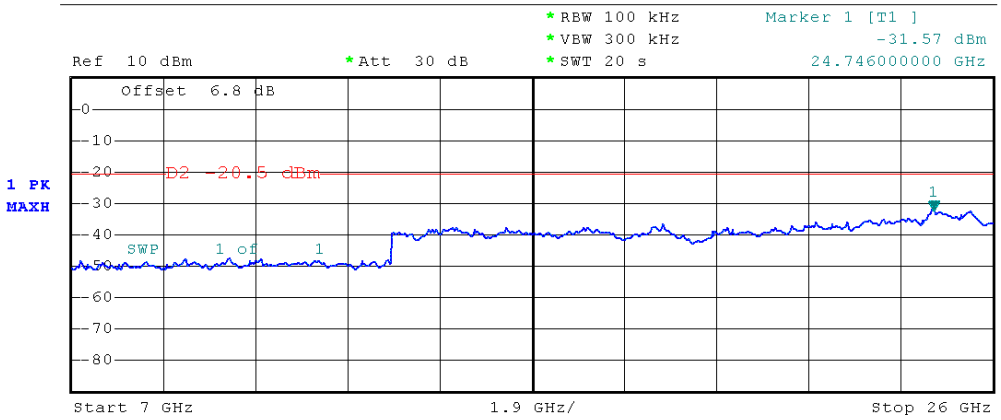
Date: 1.APR.2016 14:12:33

Conducted spurious emissions – 2-DH5-Sngl F_{LOW}

Spurious Emissions acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 2DH5, 2402 MHz
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (ANSI C63.10)
Note 2:	conducted measurement



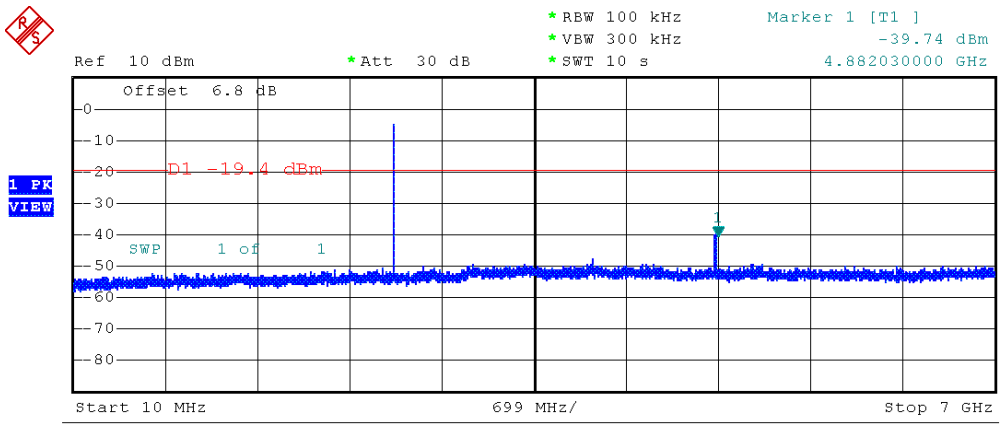


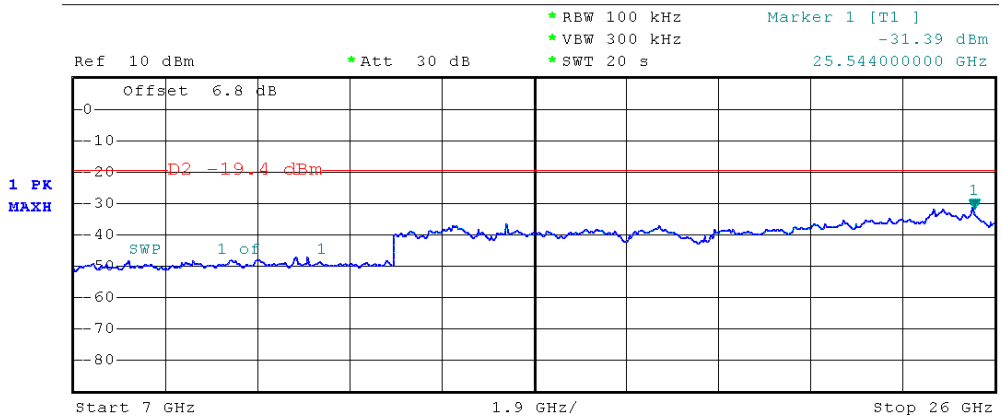
Date: 1.APR.2016 14:15:07

Conducted spurious emissions – 2-DH5-Sngl F_{MID}

Spurious Emissions acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 2DH5, 2441 MHz
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (ANSI C63.10)
Note 2:	conducted measurement



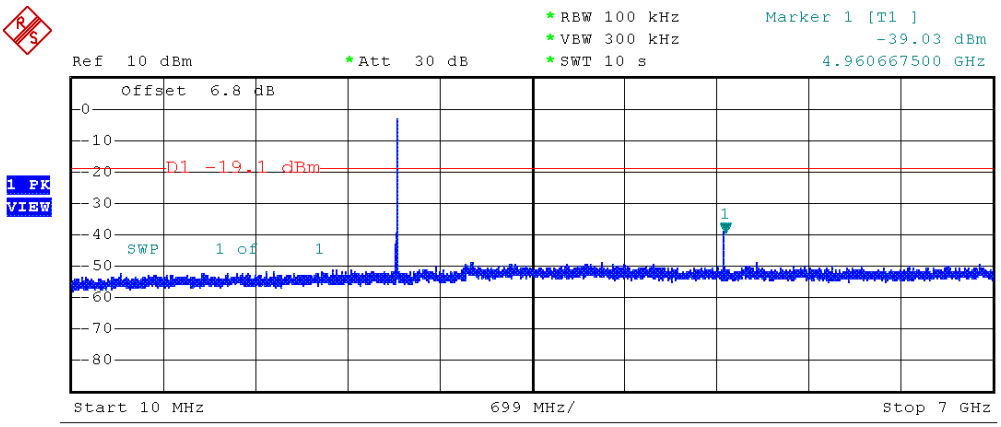


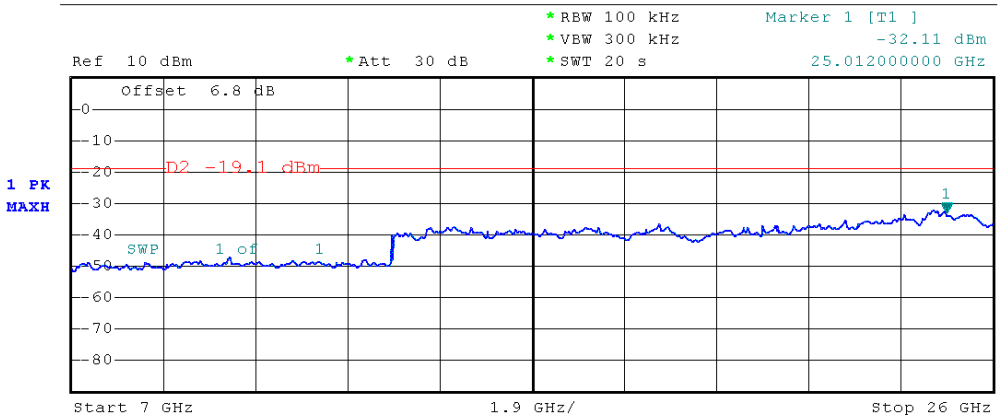
Date: 1.APR.2016 14:17:47

Conducted spurious emissions – 2-DH5-Sngl F_{HIGH}

Spurious Emissions acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 2DH5, 2480 MHz
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (ANSI C63.10)
Note 2:	conducted measurement



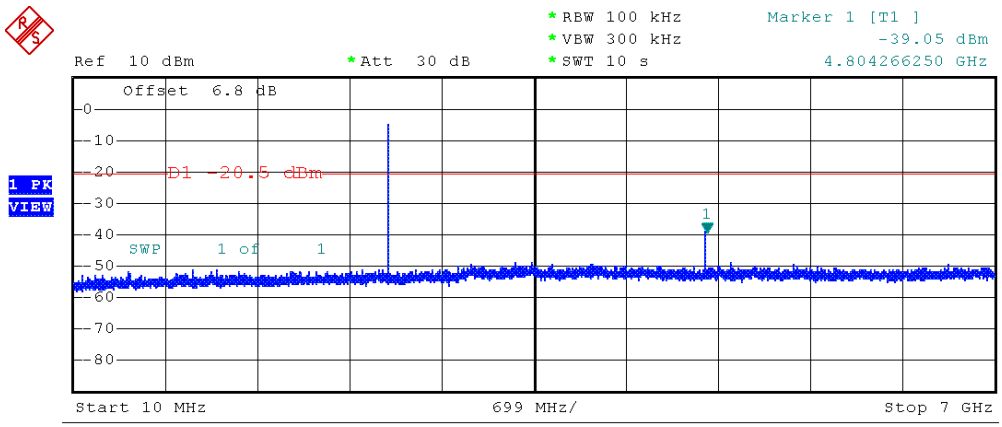


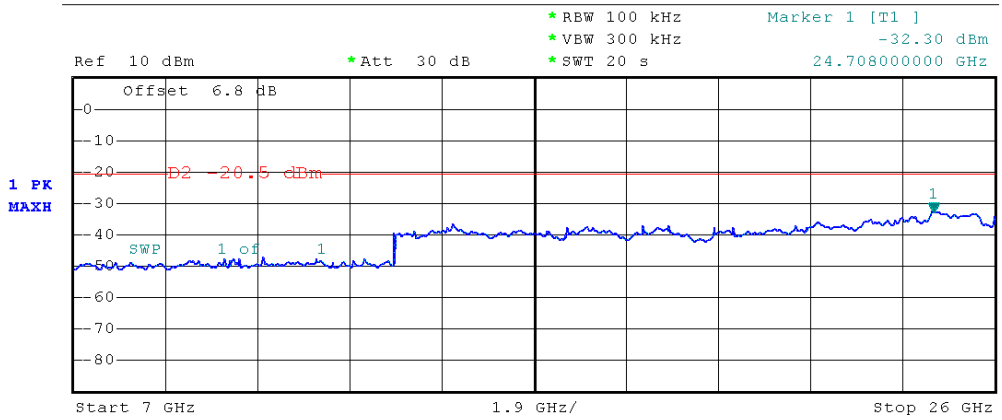
Date: 1.APR.2016 14:21:08

Conducted spurious emissions – 3-DH5-Sngl F_{LOW}

Spurious Emissions acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 3DH5, 2402 MHz
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (ANSI C63.10)
Note 2:	conducted measurement



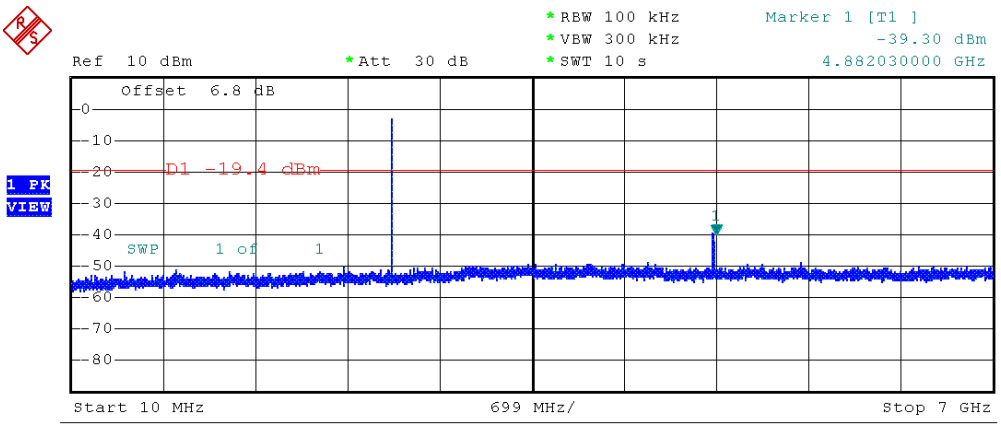


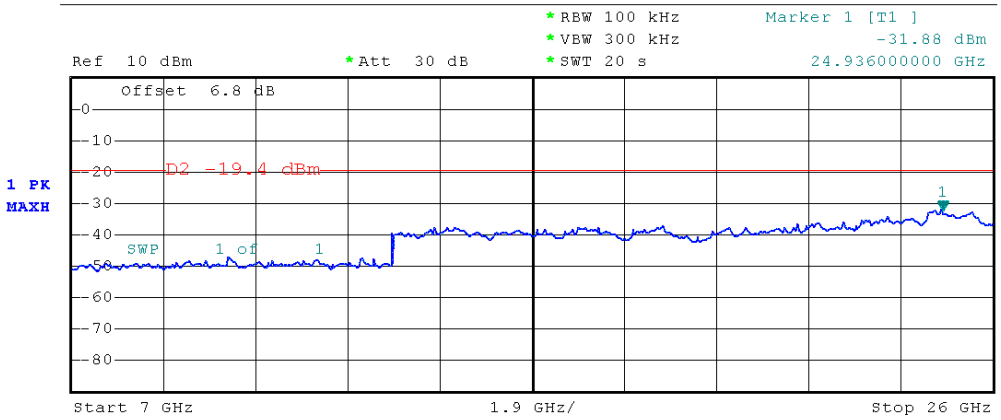
Date: 1.APR.2016 14:24:59

Conducted spurious emissions – 3-DH5-Sngl F_{MID}

Spurious Emissions acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 3DH5, 2441 MHz
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (ANSI C63.10)
Note 2:	conducted measurement



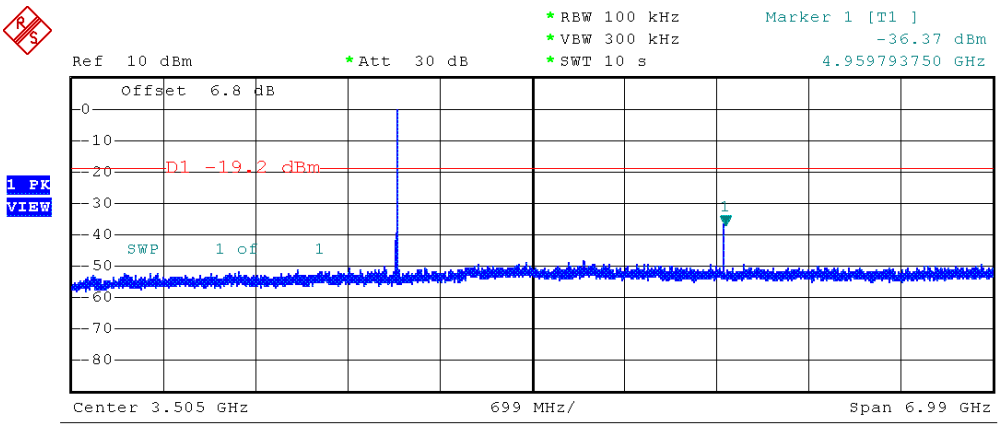


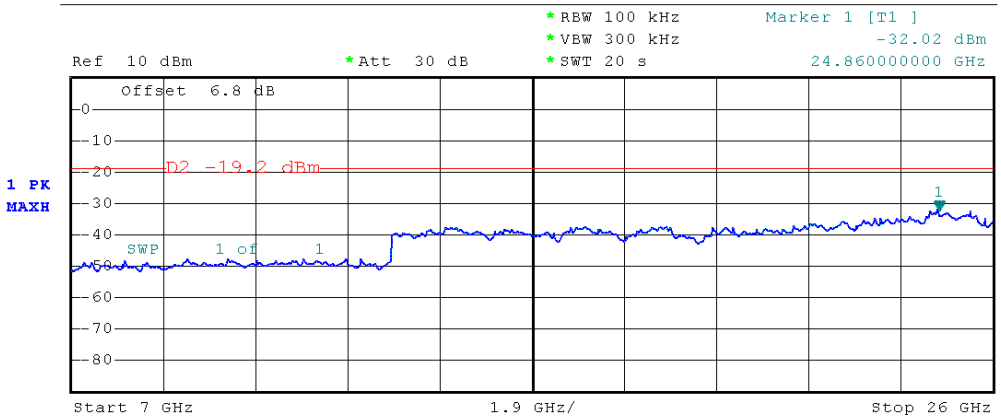
Date: 1.APR.2016 14:28:37

Conducted spurious emissions – 3-DH5-Sngl F_{HIGH}

Spurious Emissions acc. to FCC 15.247

Project Number:	G0M-1602-5411
Applicant:	Hellberg
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, 3DH5, 2480 MHz
Test Date:	2016-04-01
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (ANSI C63.10)
Note 2:	conducted measurement

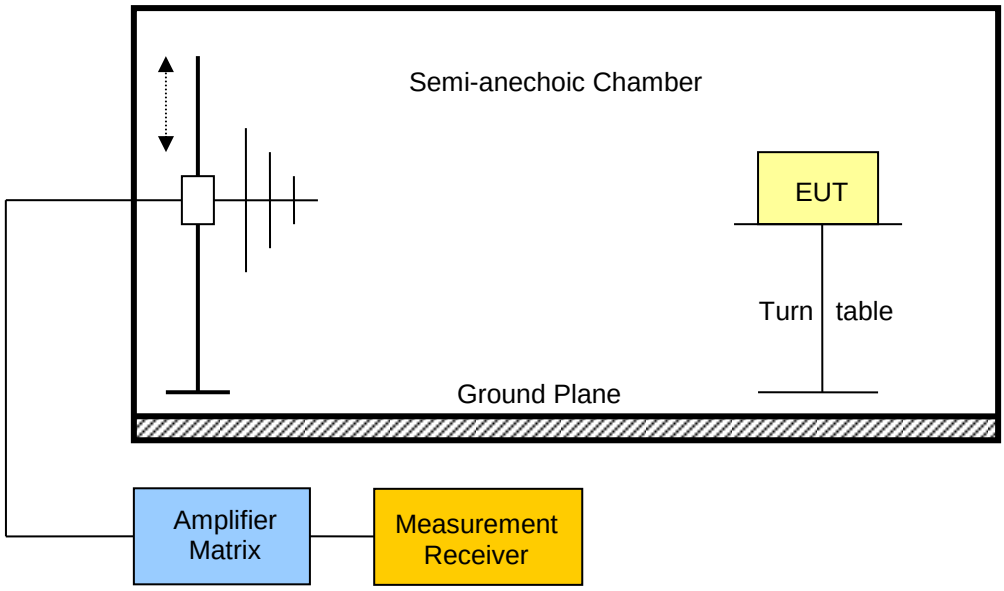




Date: 1.APR.2016 14:32:12

3.10 Test Conditions and Results – Transmitter radiated emissions

Transmitter radiated emissions acc. to FCC 47 CFR 15.247 / IC RSS-247				**Verdict: PASS**
Test according referenced standards		Reference Method		
		FCC 15.247(d) / IC RSS-247 5.5		
Test according to measurement reference		Reference Method		
		ANSI C63.10		
Test frequency range		Tested frequencies		
		30 MHz – 10th Harmonic		
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.				
Test setup				



Test procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz 4. Markers are set to peak emission levels within restricted bands

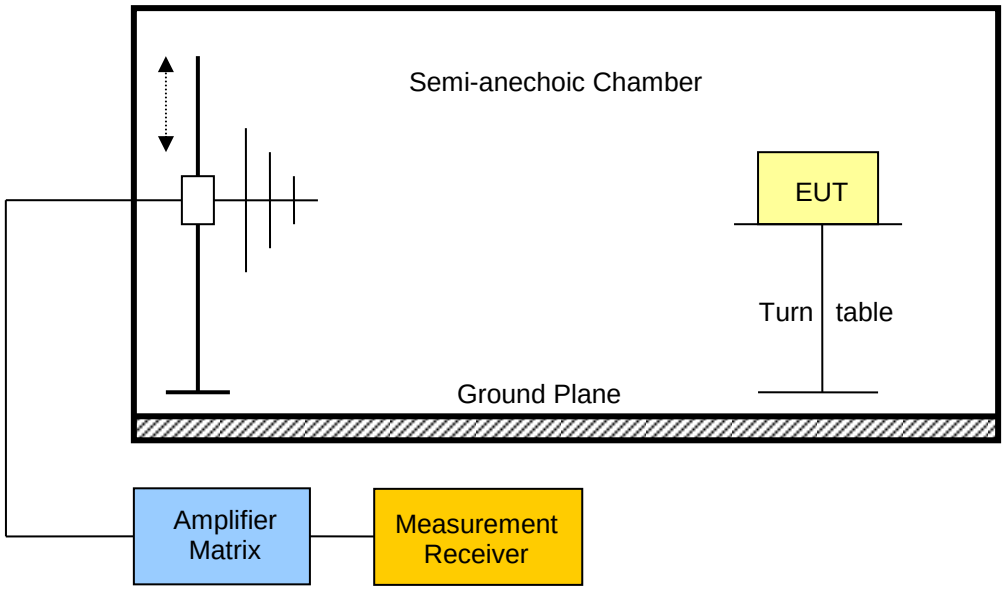
Test results – Internal Antenna

Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Margin [dB]
F_{LOW}	2402	DH5-Sngl	2400	60.74	pk	hor	95.00	-34.26
F_{MID}	2441	DH5-Sngl	4880	49.01	pk	hor	74.00	-24.99
F_{MID}	2441	DH5-Sngl	4880	46.93	pk	ver	74.00	-27.07
F_{HIGH}	2480	DH5-Sngl	4952	50.24	pk	hor	74.00	-23.76
F_{HIGH}	2480	DH5-Sngl	4960	44.95	pk	ver	74.00	-29.05

Comments:

3.11 Test Conditions and Results – Receiver radiated emissions

Receiver radiated emissions acc. to IC RSS-247				**Verdict: PASS**
Test according referenced standards	Reference Method			
	IC RSS-247 3.1			
Test according to measurement reference	Reference Method			
	ANSI C63.10			
Test frequency range	Tested frequencies			
	30 MHz – 5th Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Test setup				



Test procedure
1. EUT set to receive mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz 4. Markers are set to peak emission levels

Test results							
Channel	Frequency [MHz]	Emission [MHz]	Emission Level [dbµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dBµV/m]
0 - 78	2402 - 2480	No significant spurious emissions					
Comments:							

ANNEX A Transmitter radiated spurious emissions

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-21
Note:	

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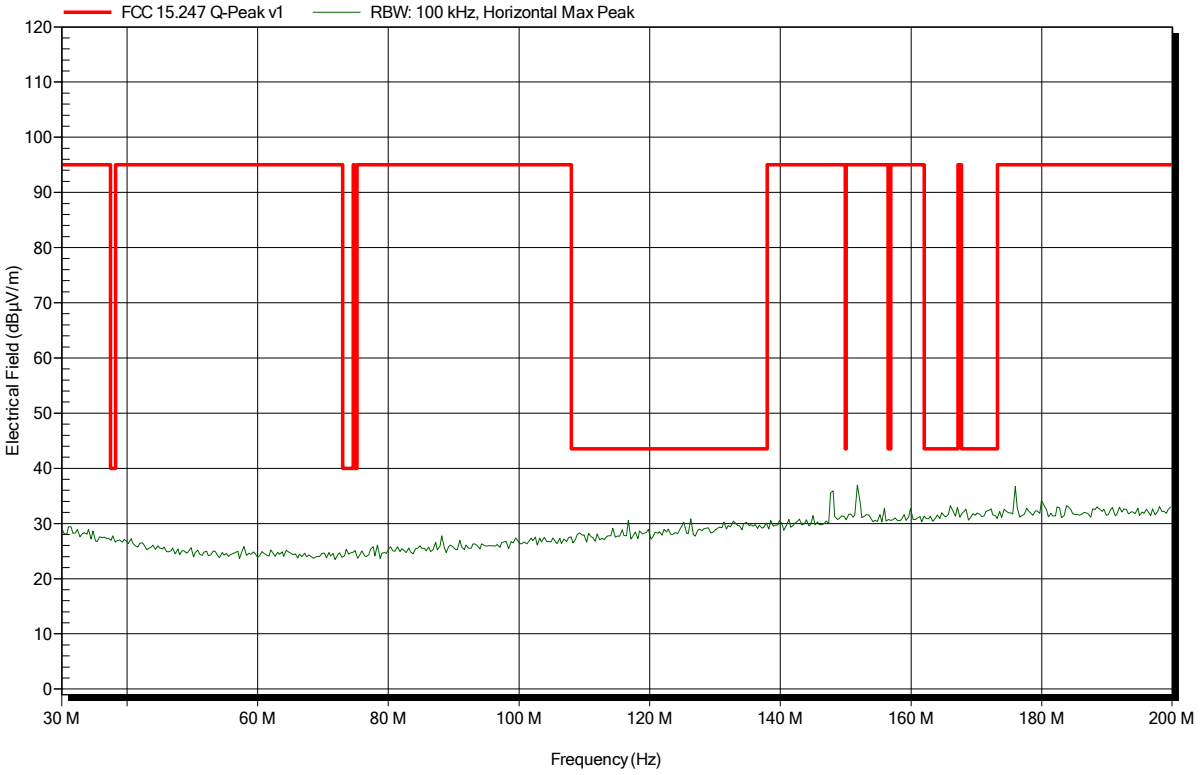

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-21
Note:	

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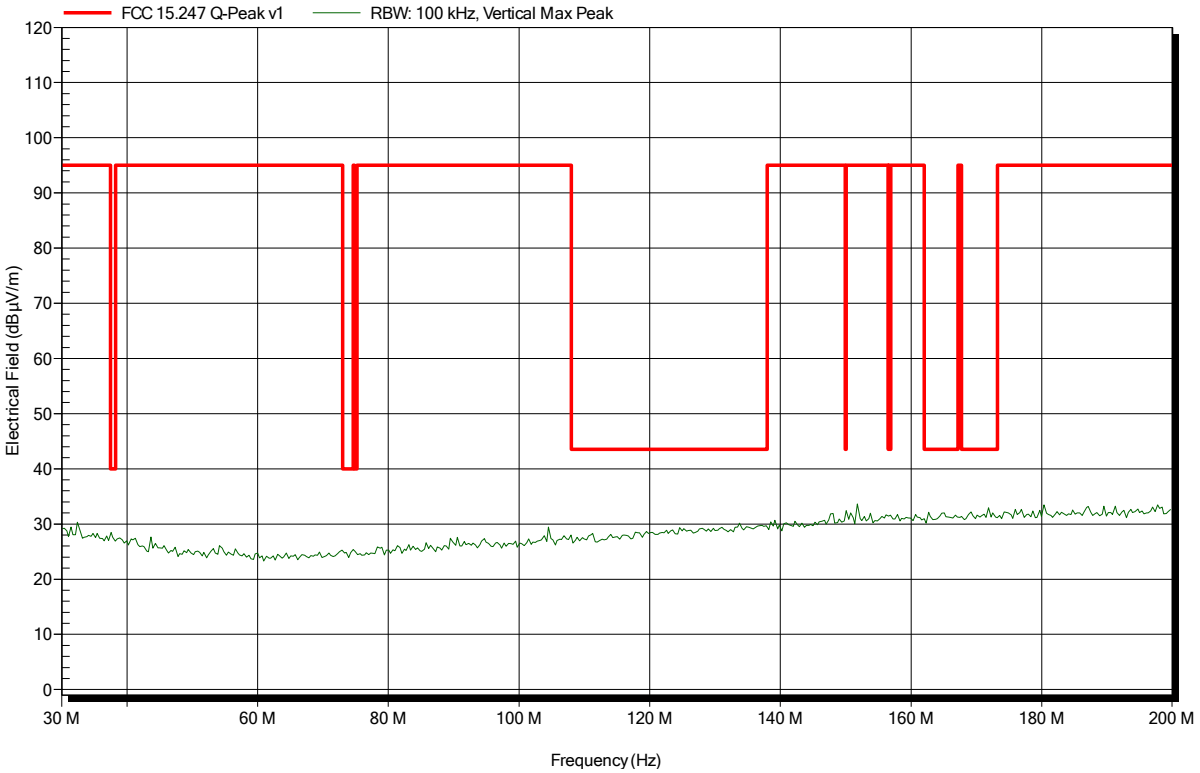

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	

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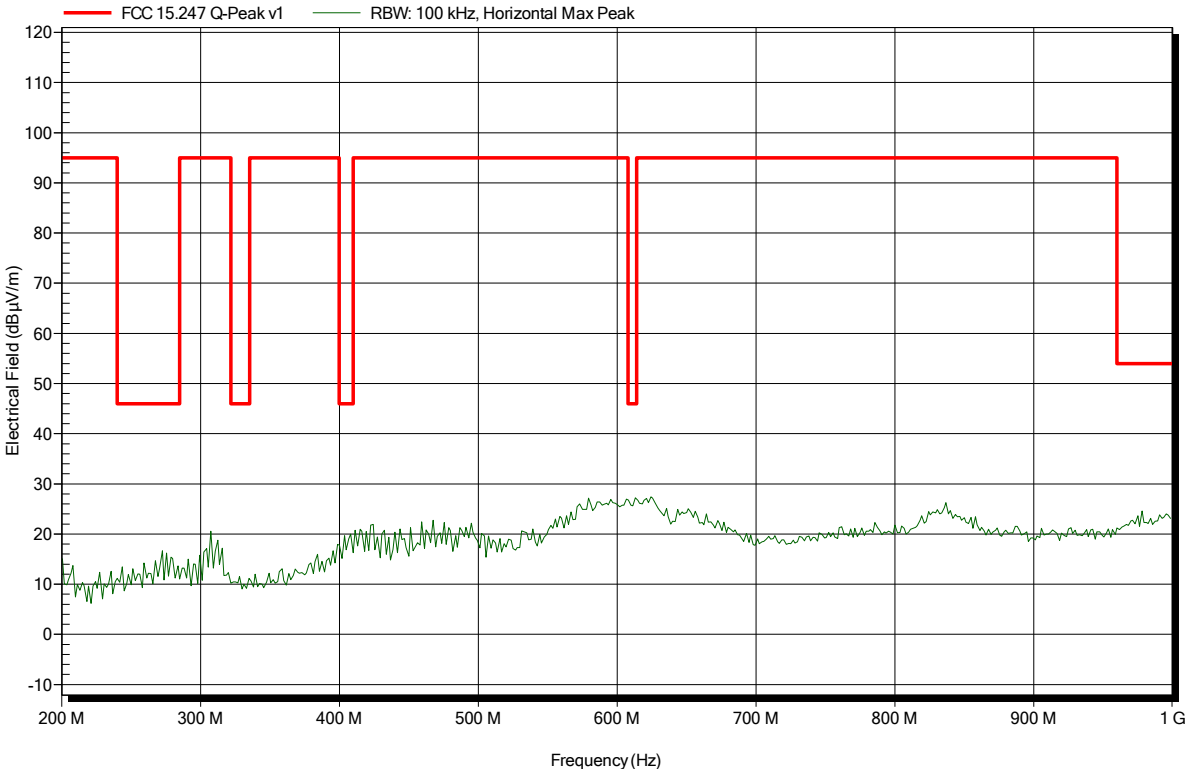

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	

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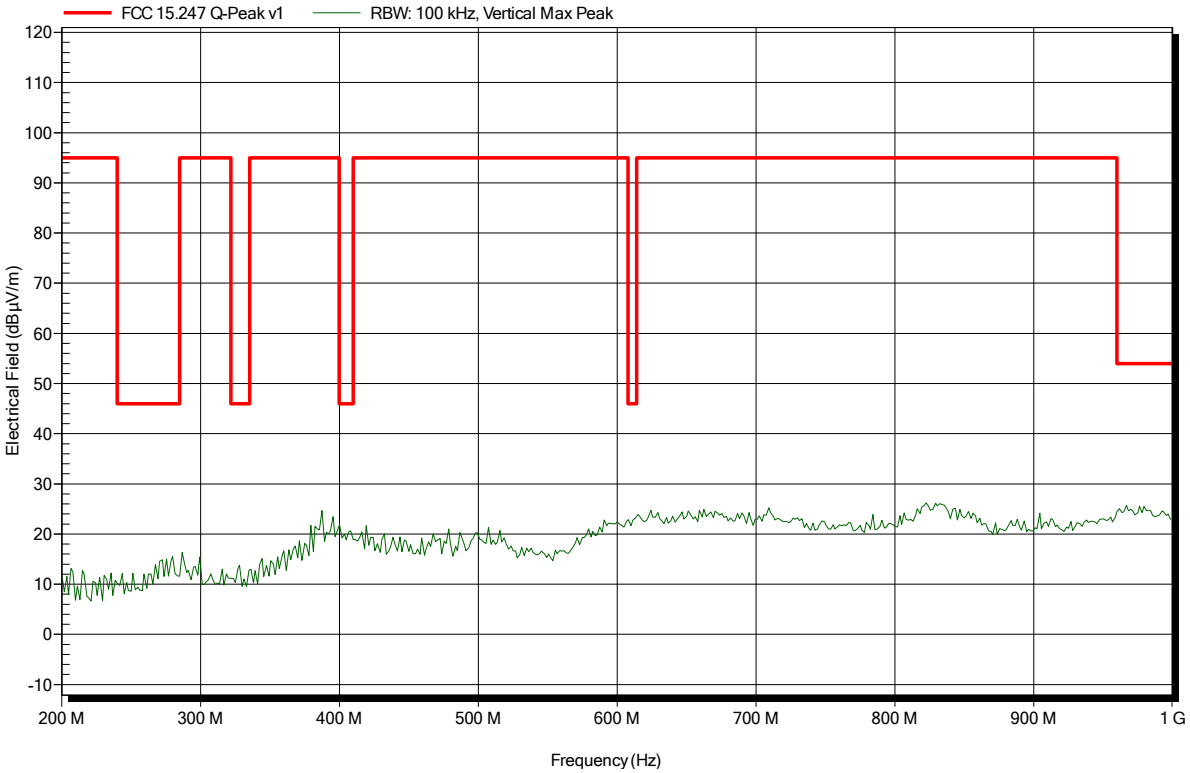

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	

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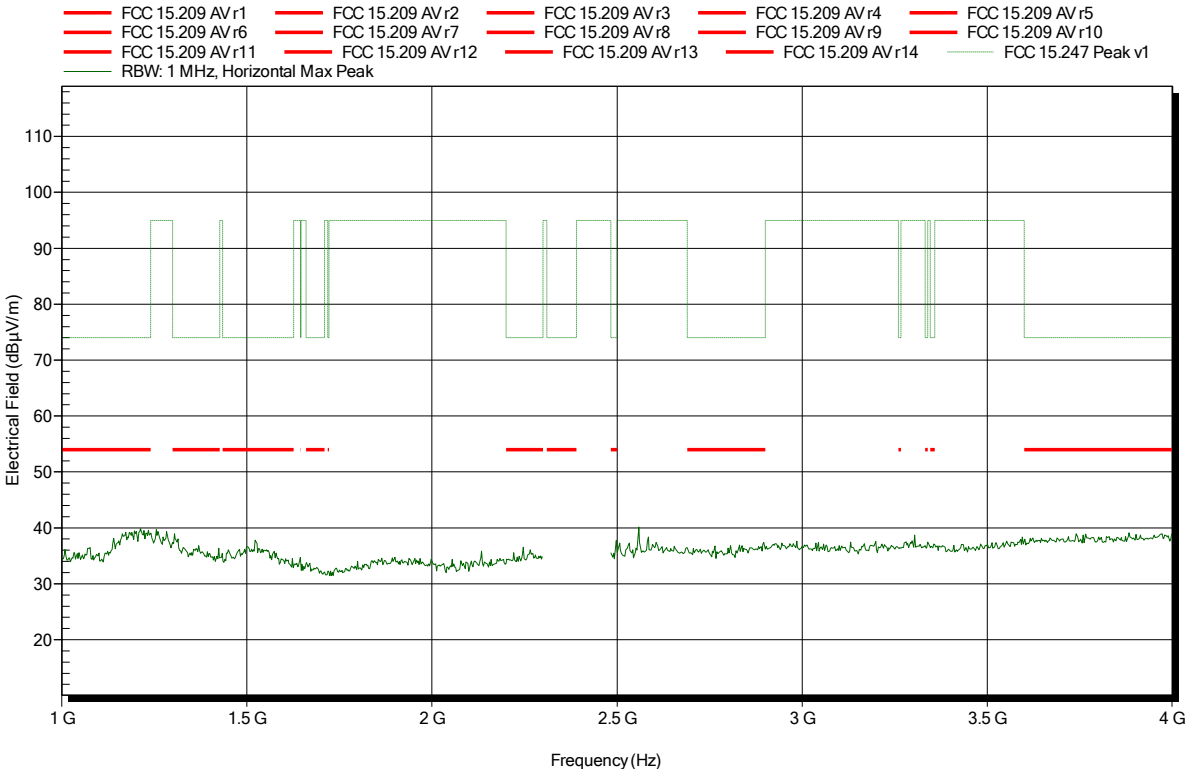

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	

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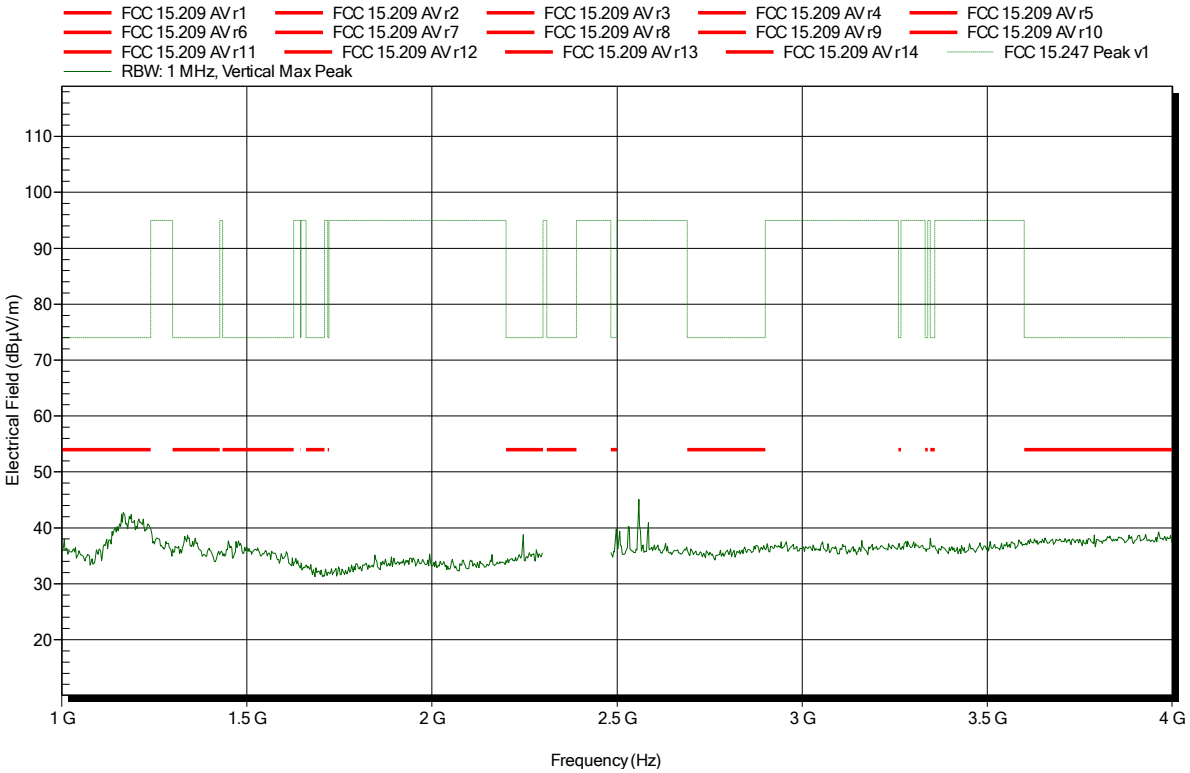

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	lower bandedge

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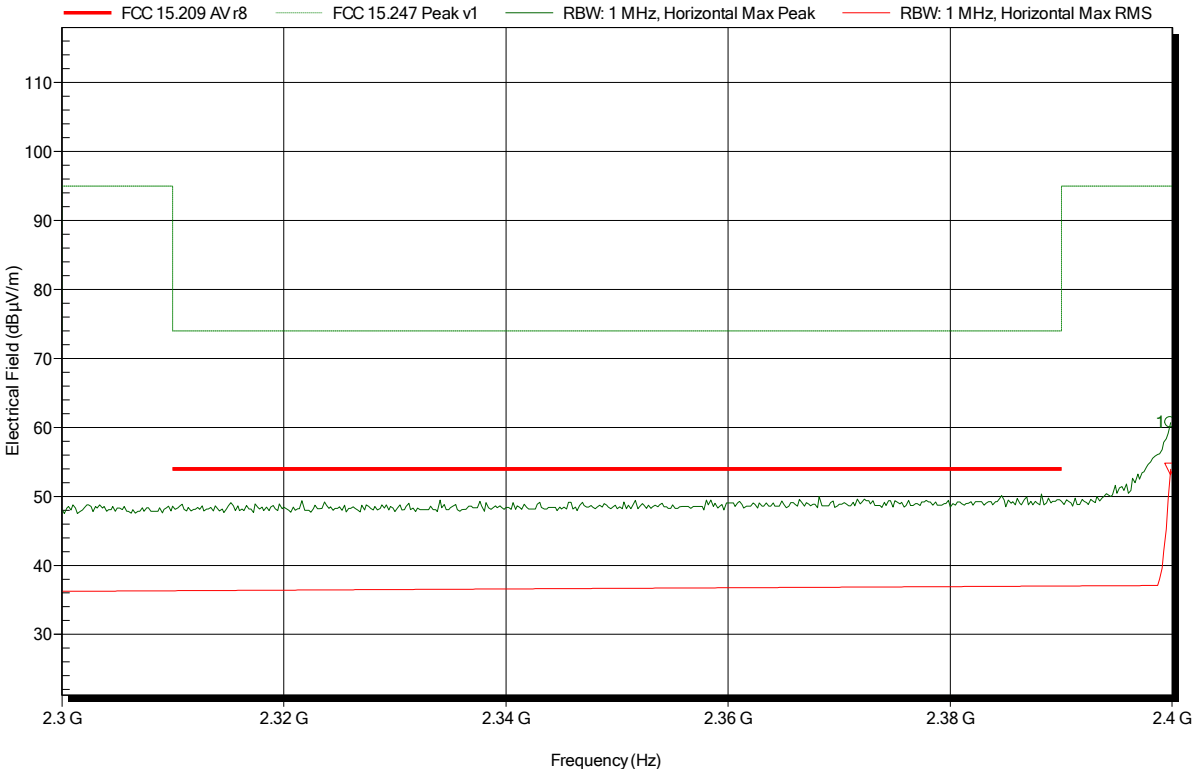

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4 GHz	60.74 dBµV/m	95 dBµV/m	-34.26 dB	Pass

Frequency	RMS
2.4 GHz	54 dBµV/m

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	lower bandedge

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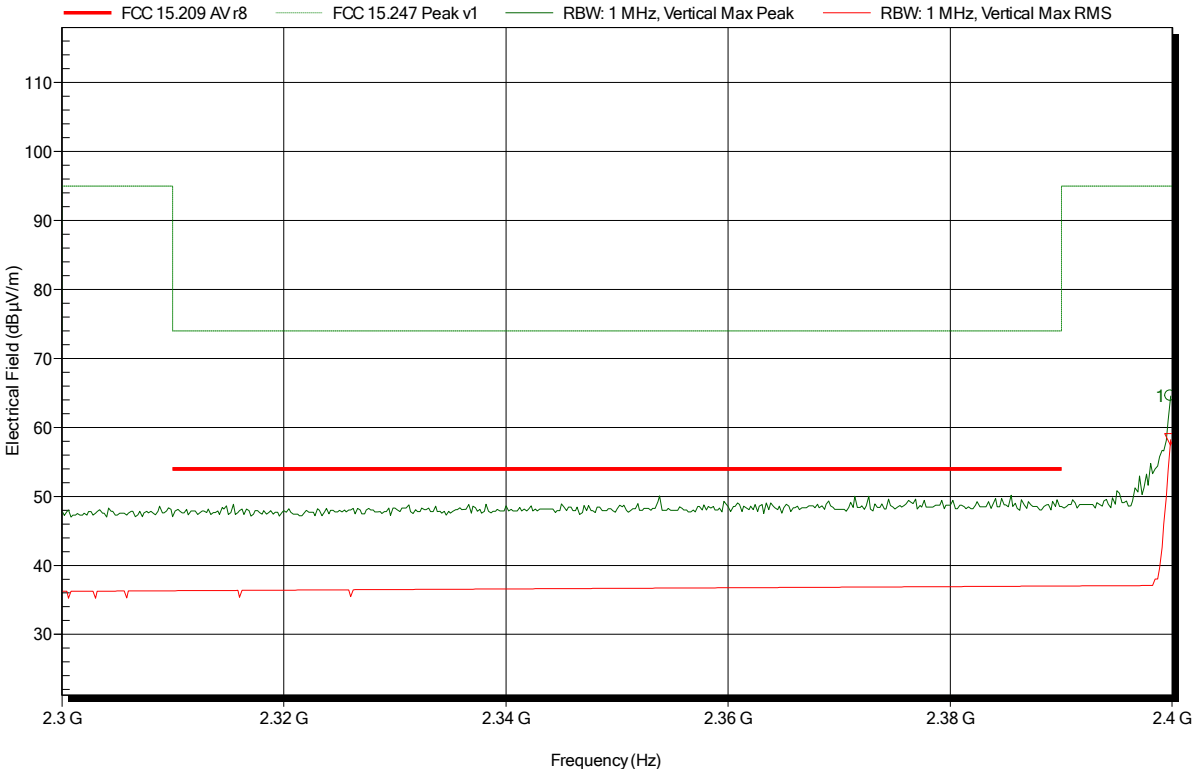

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4 GHz	64.58 dBµV/m	95 dBµV/m	-30.42 dB	Pass

Frequency	RMS
2.4 GHz	58.27 dBµV/m

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	

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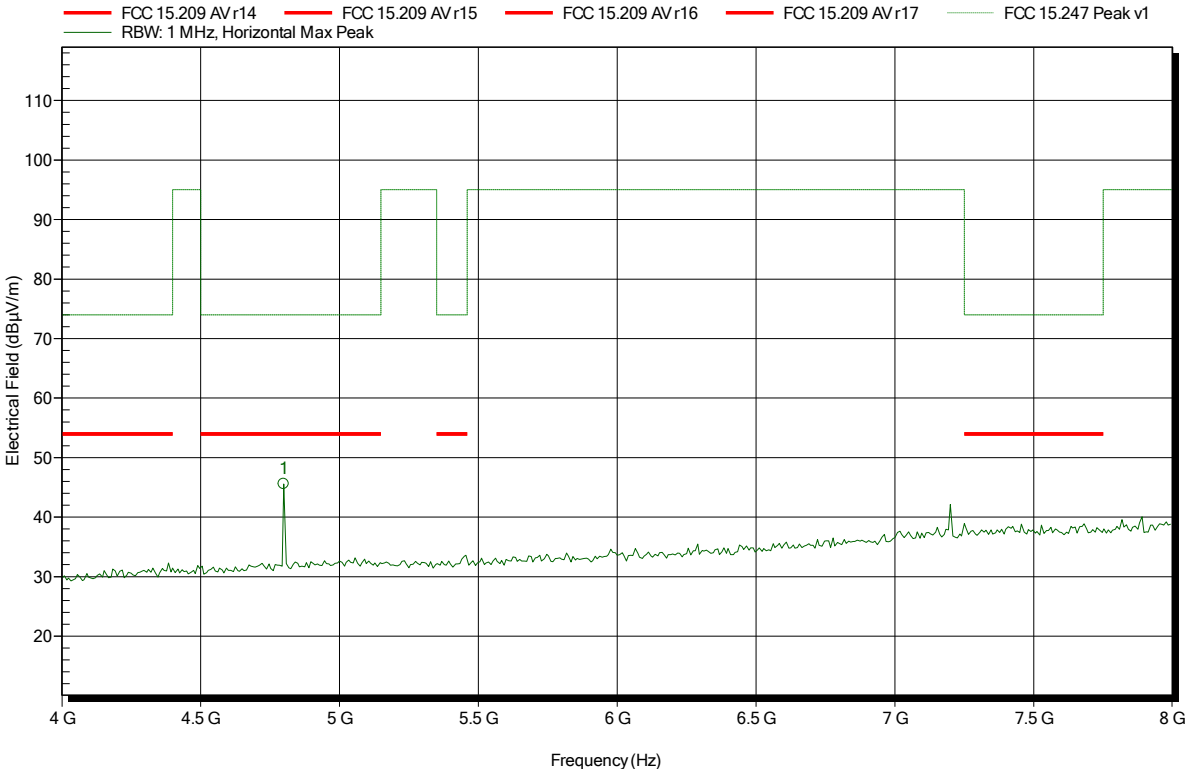

Frequency	Peak	Peak Limit	Peak Difference	Status
4.8 GHz	45.57 dBµV/m	74 dBµV/m	-28.43 dB	Pass

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	

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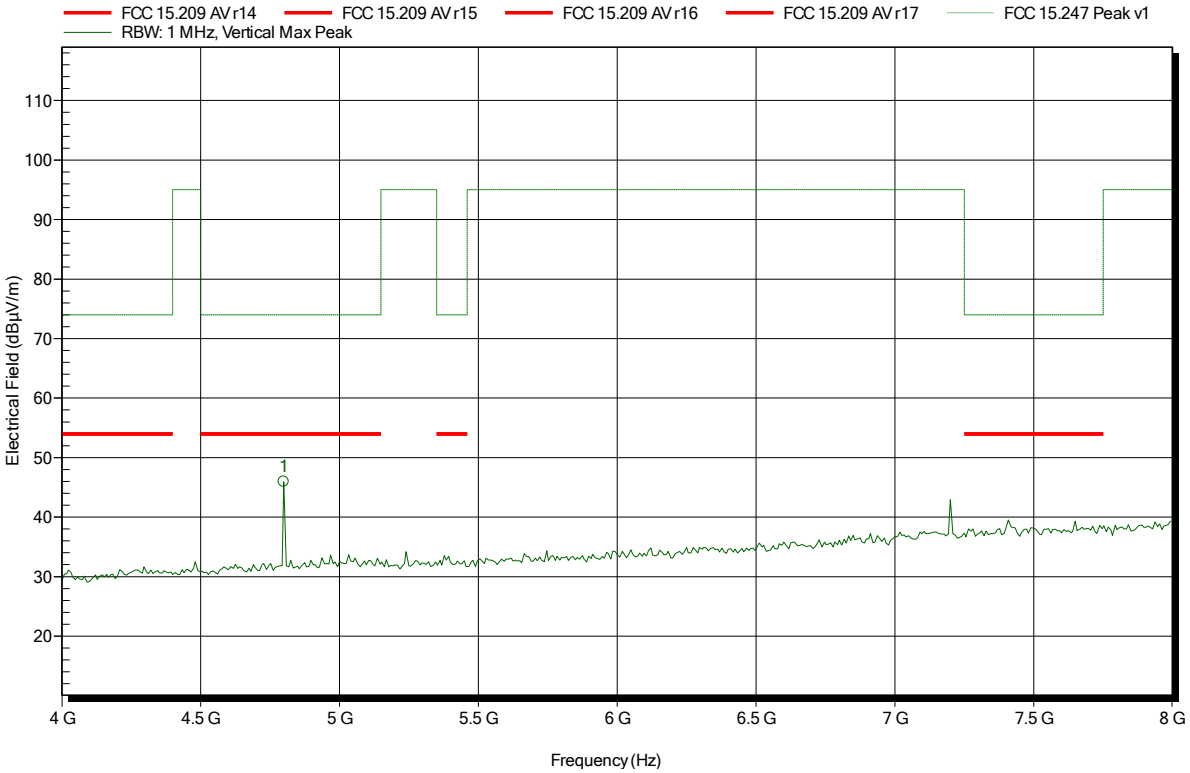

Frequency	Peak	Peak Limit	Peak Difference	Status
4.8 GHz	45.93 dBµV/m	74 dBµV/m	-28.07 dB	Pass

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	

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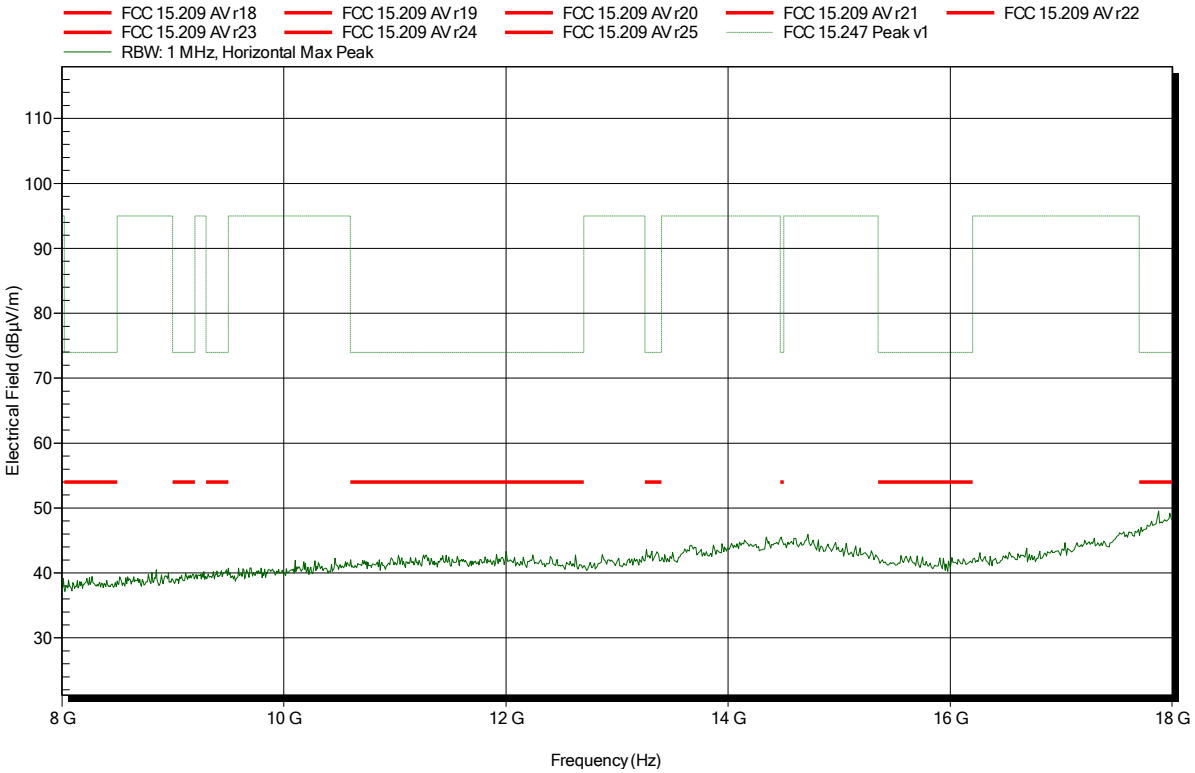

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-18
Note:	

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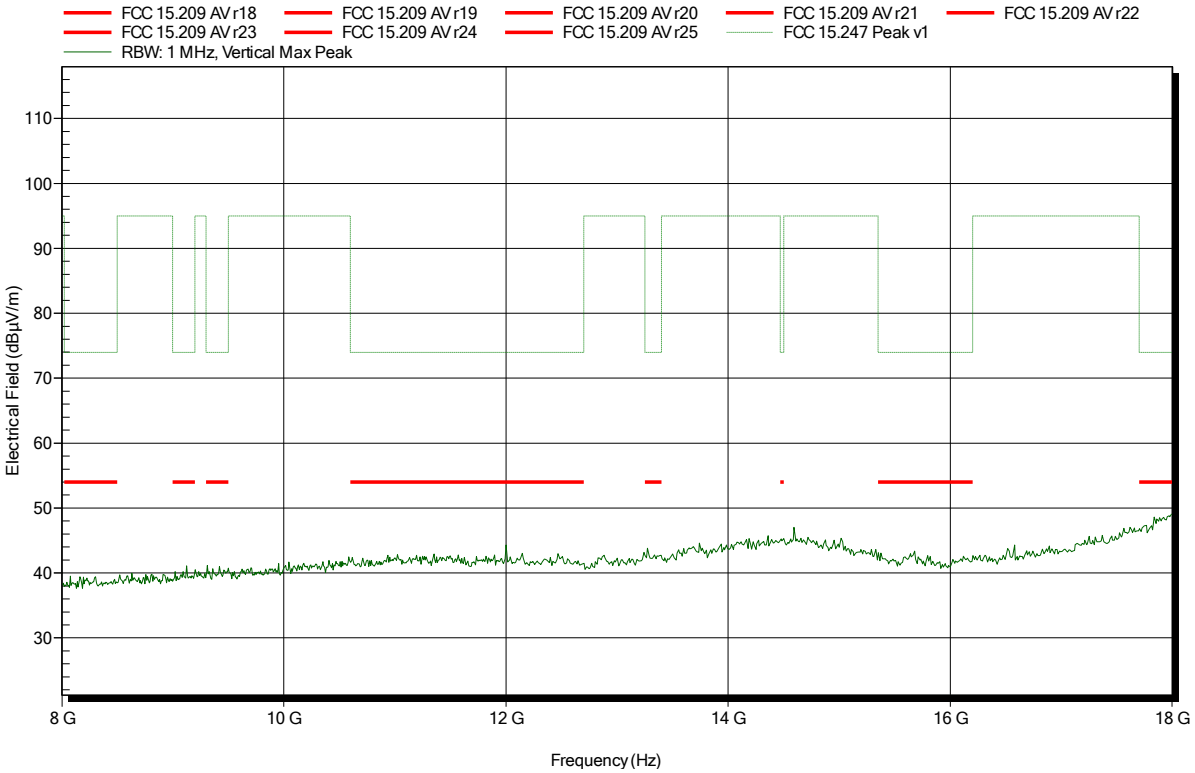

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Configurable Antenna, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-21
Note:	

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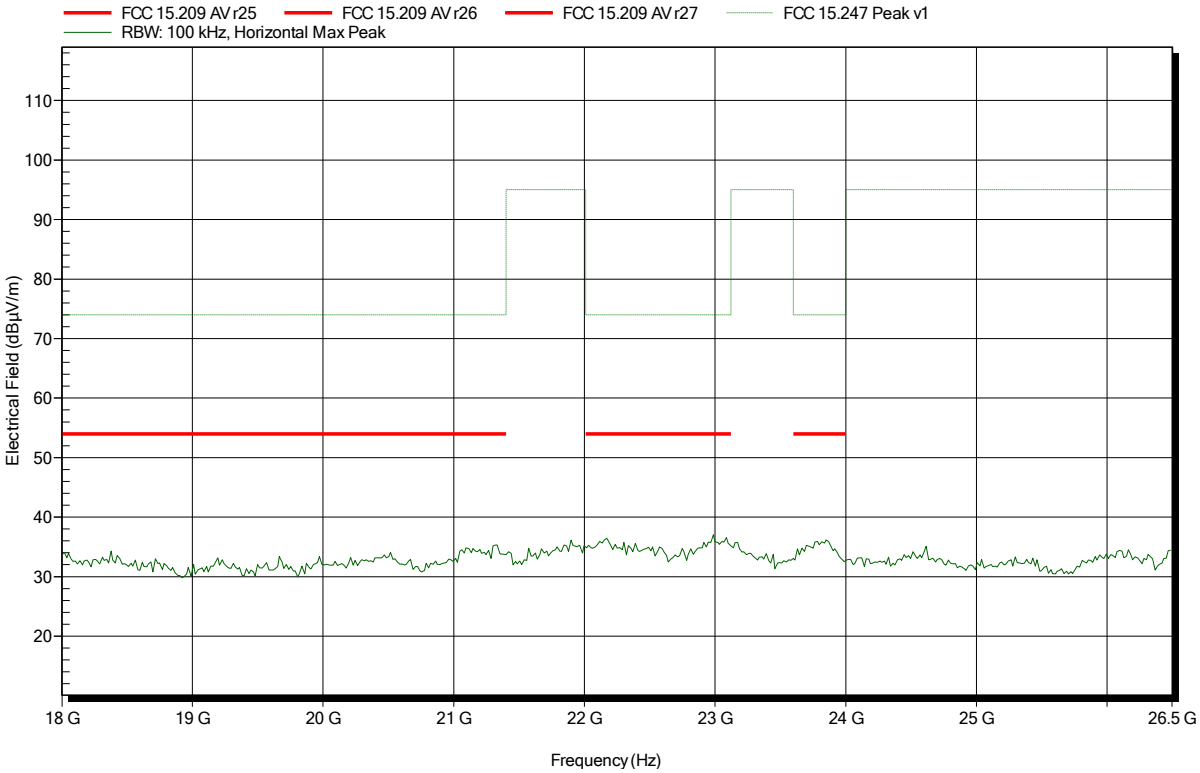

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Configurable Antenna, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.0; 2402 MHz
Test Date:	2016-03-21
Note:	

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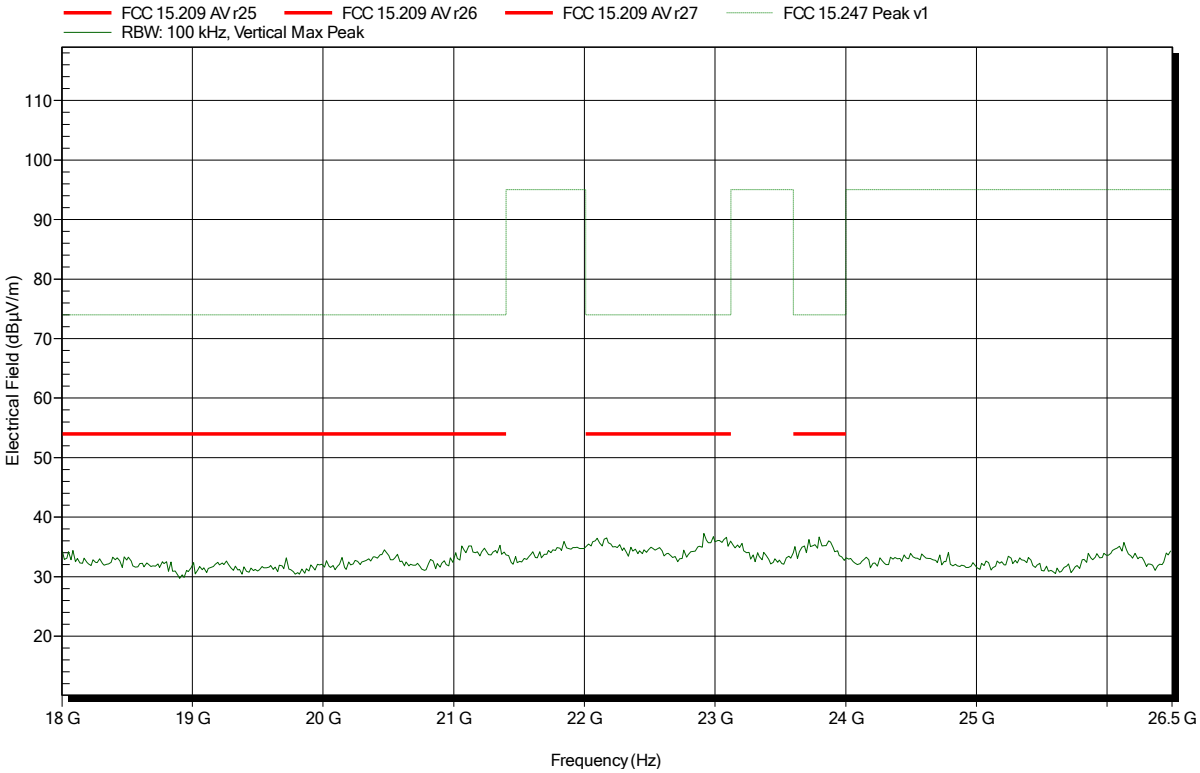

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-21
Note:	

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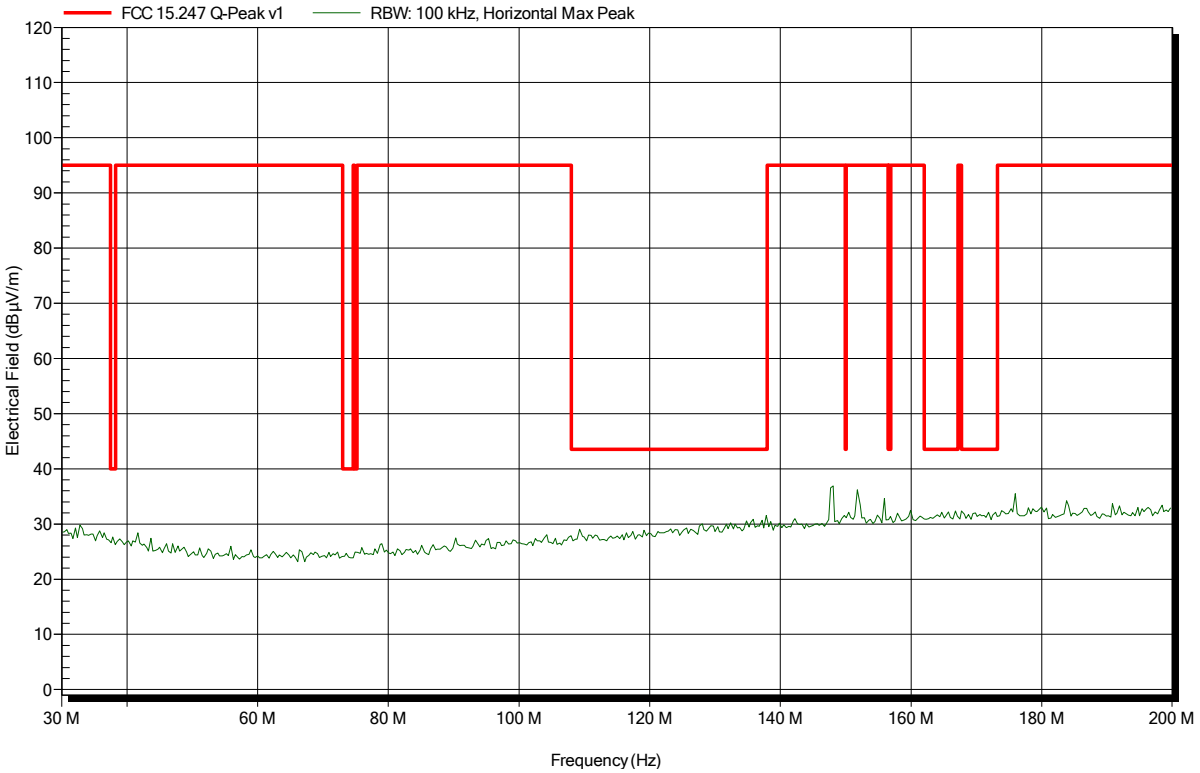

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-21
Note:	

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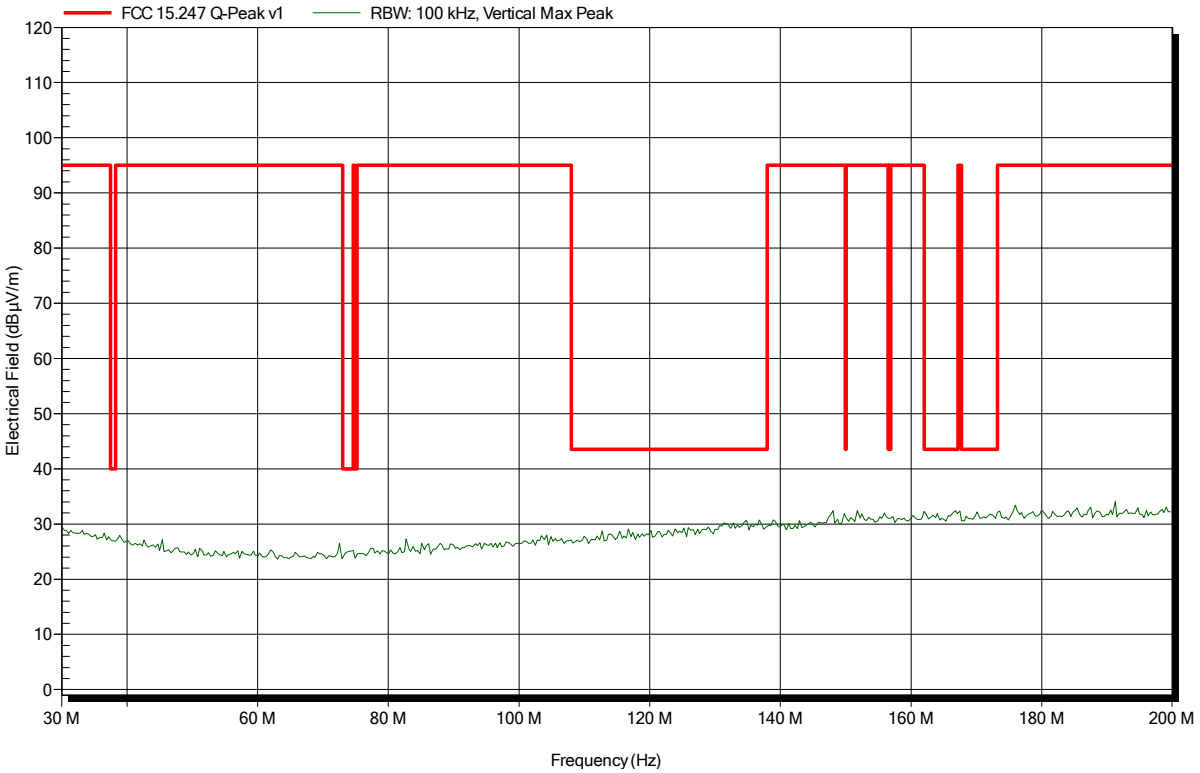

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-18
Note:	

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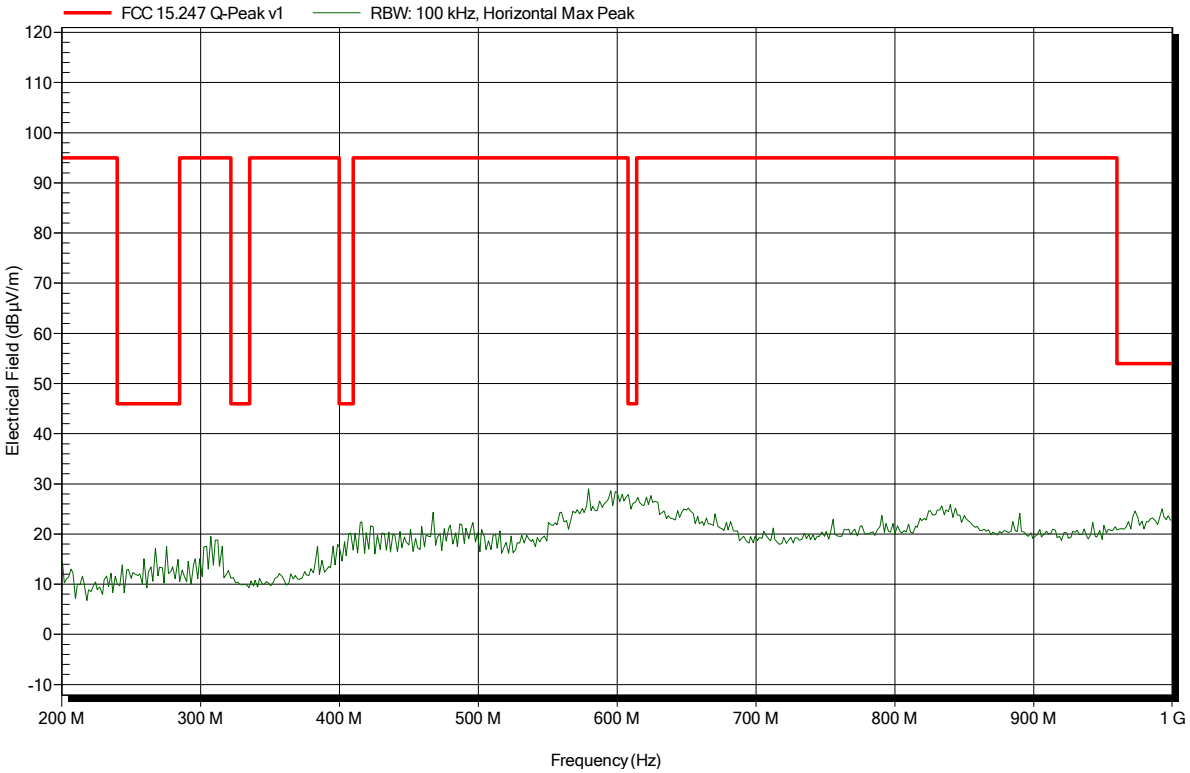

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-18
Note:	

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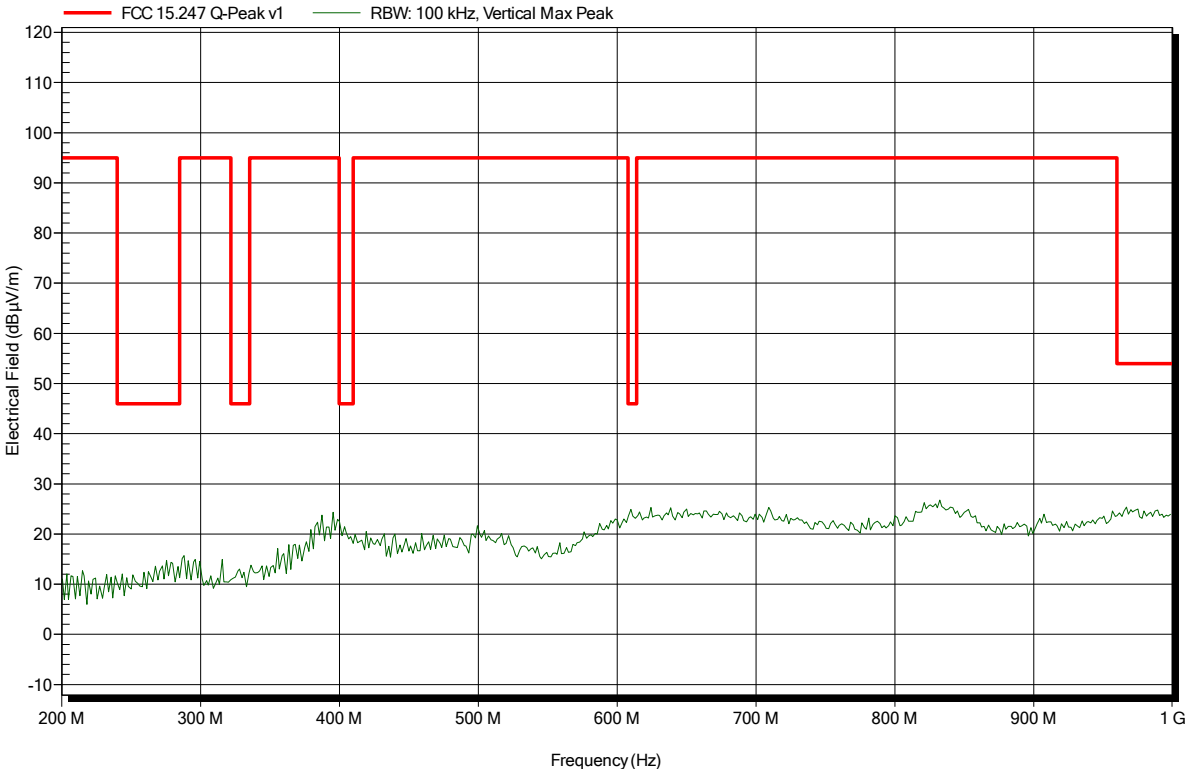

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-18
Note:	

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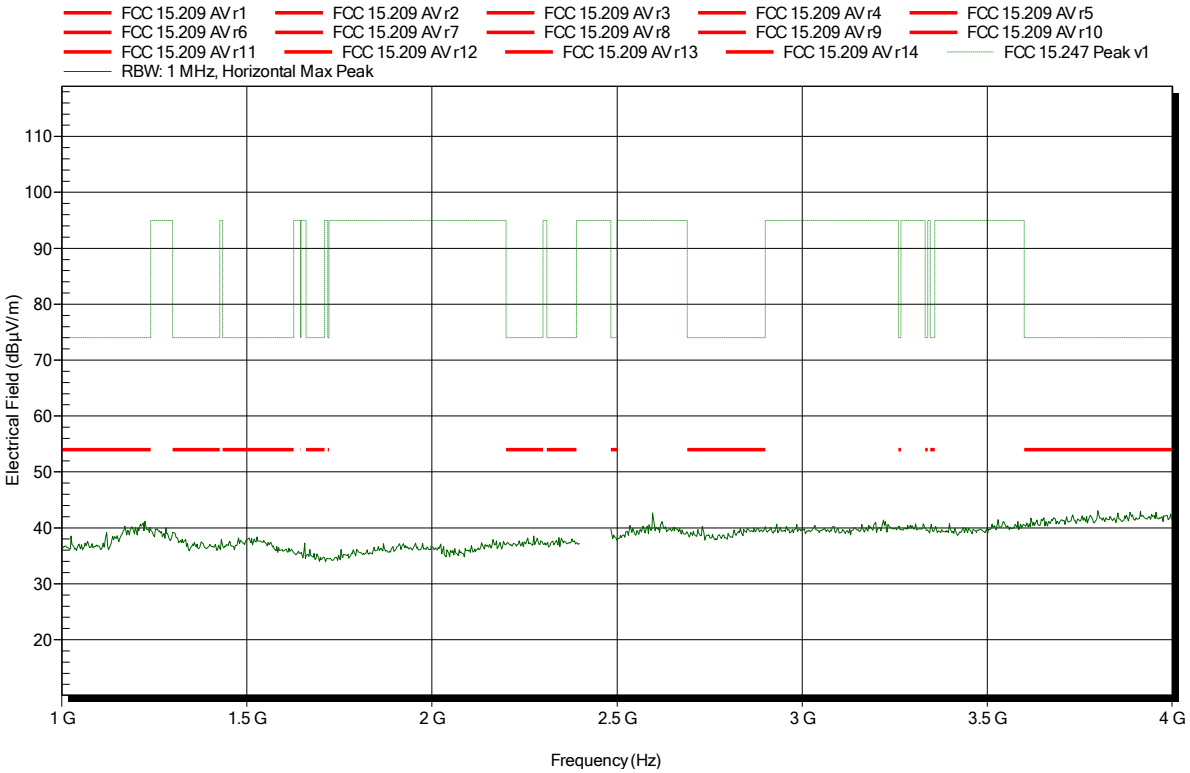

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-18
Note:	

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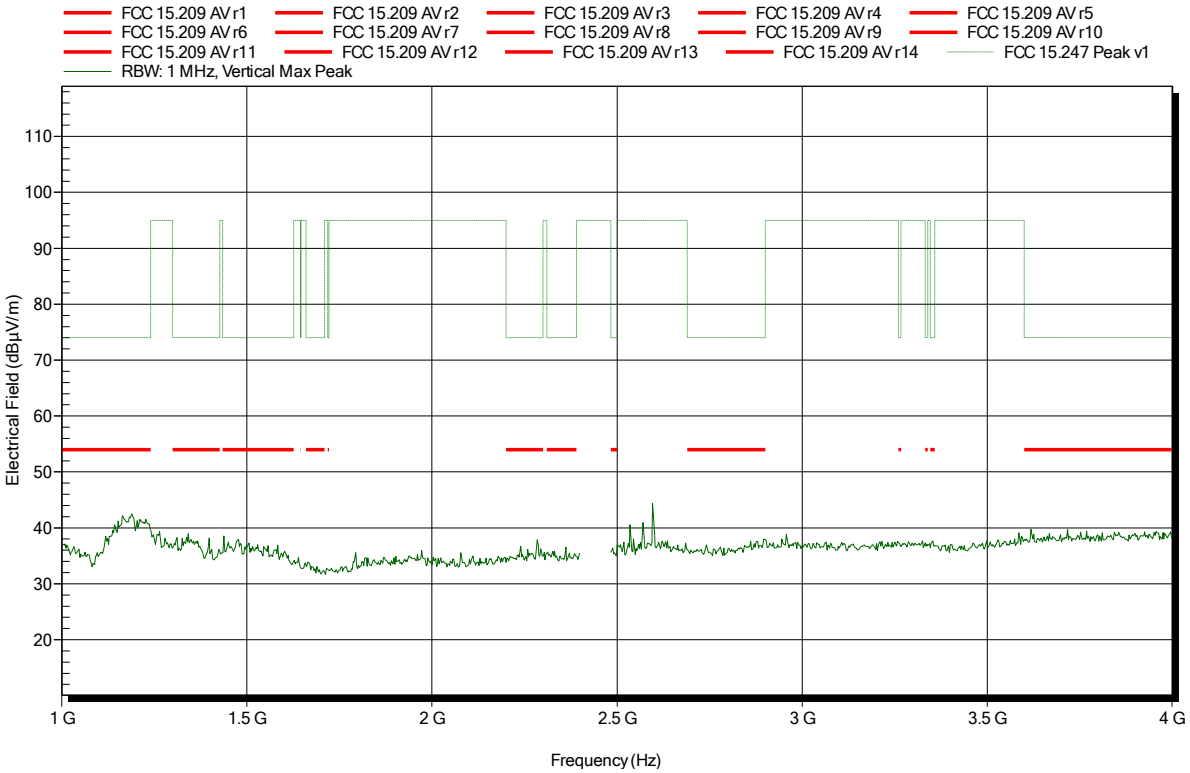

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-18
Note:	

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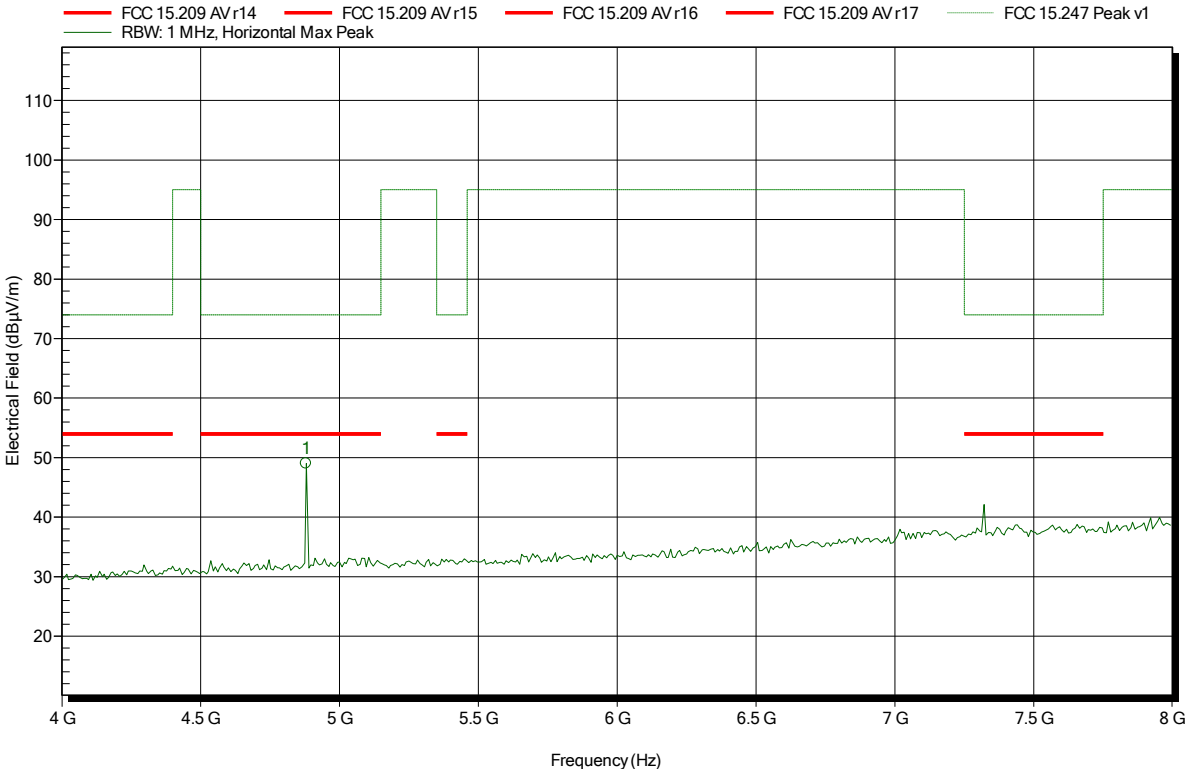

Frequency	Peak	Peak Limit	Peak Difference	Status
4.88 GHz	49.01 dBµV/m	74 dBµV/m	-24.99 dB	Pass

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-18
Note:	

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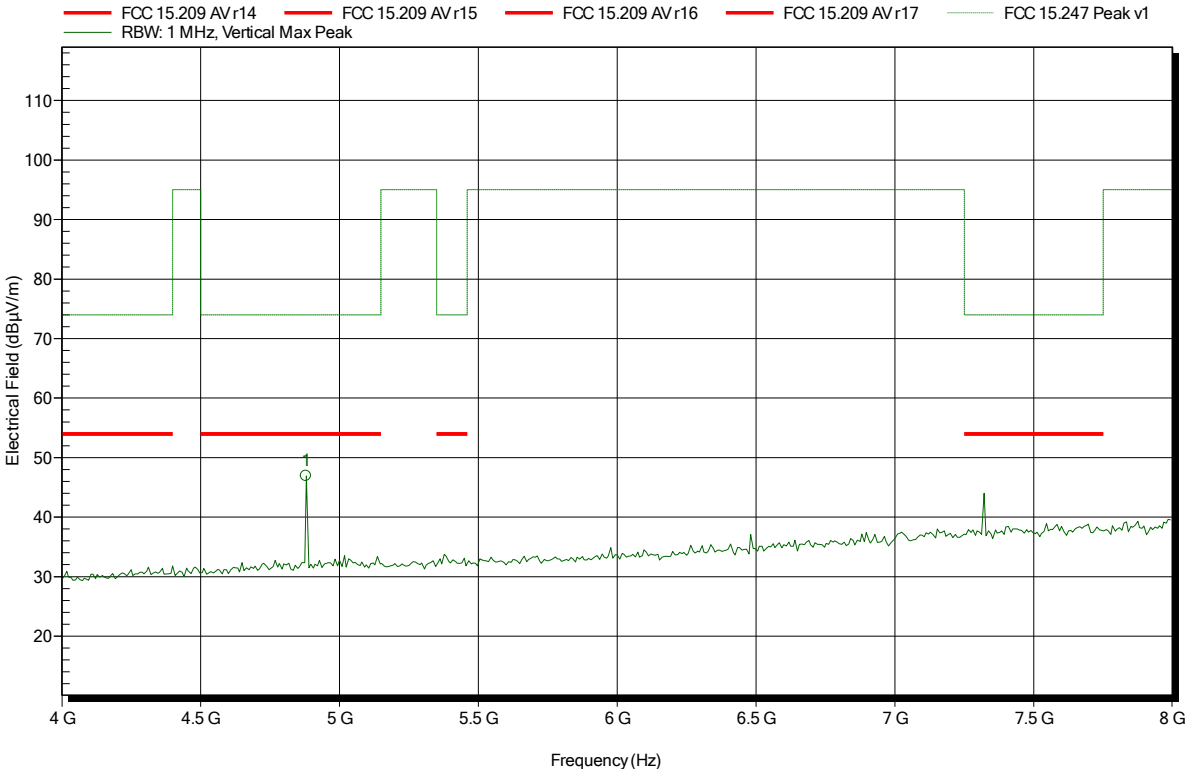

Frequency	Peak	Peak Limit	Peak Difference	Status
4.88 GHz	46.93 dBµV/m	74 dBµV/m	-27.07 dB	Pass

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-18
Note:	

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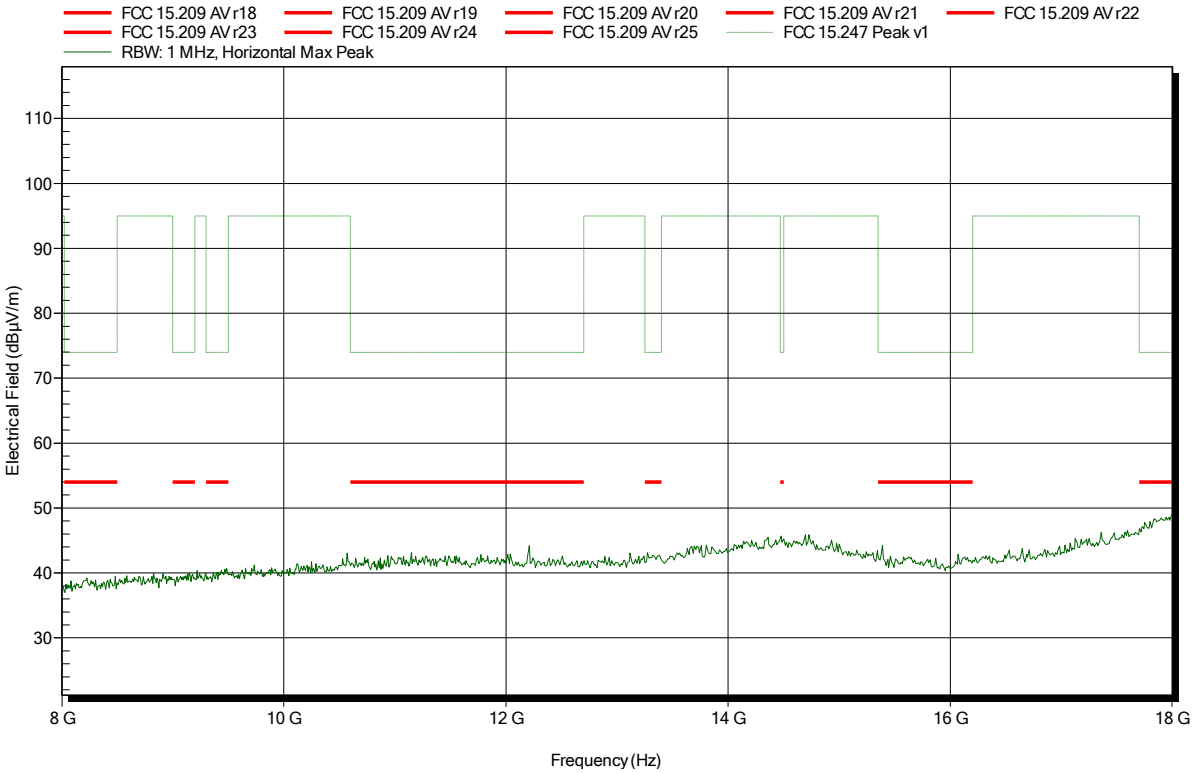

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-18
Note:	

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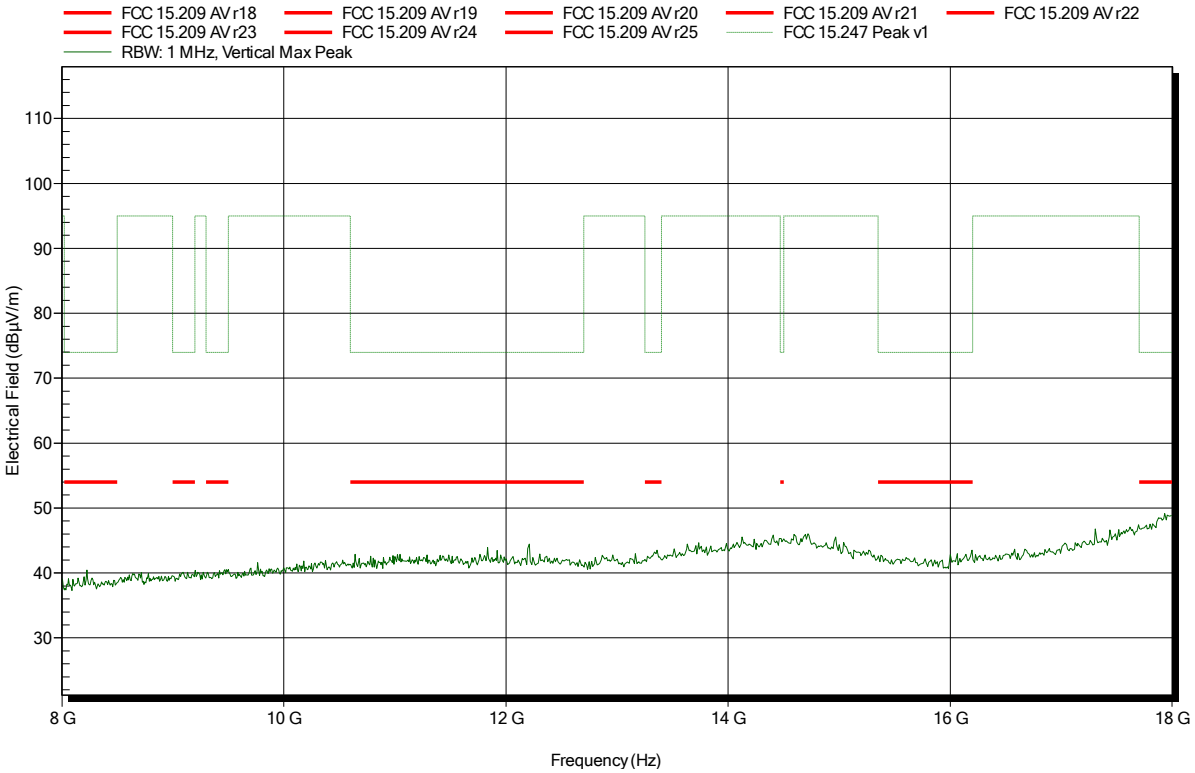

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Configurable Antenna, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-21
Note:	

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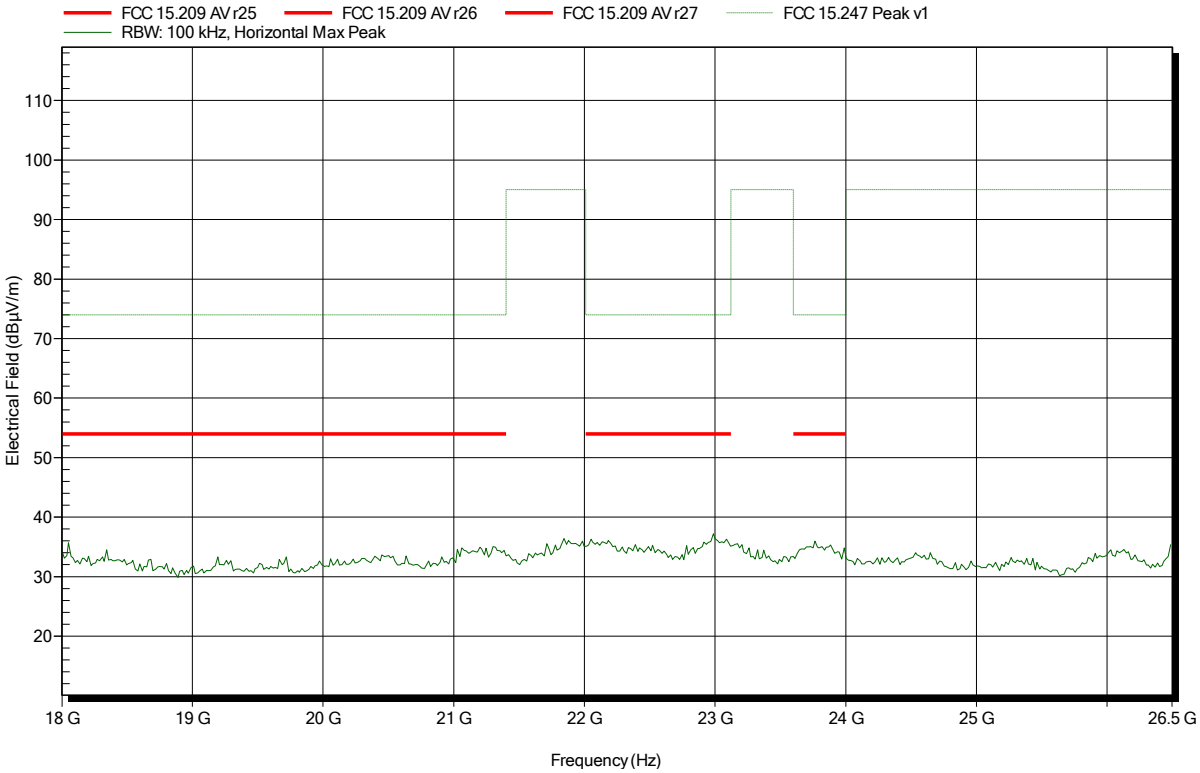

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Configurable Antenna, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.39; 2441 MHz
Test Date:	2016-03-21
Note:	

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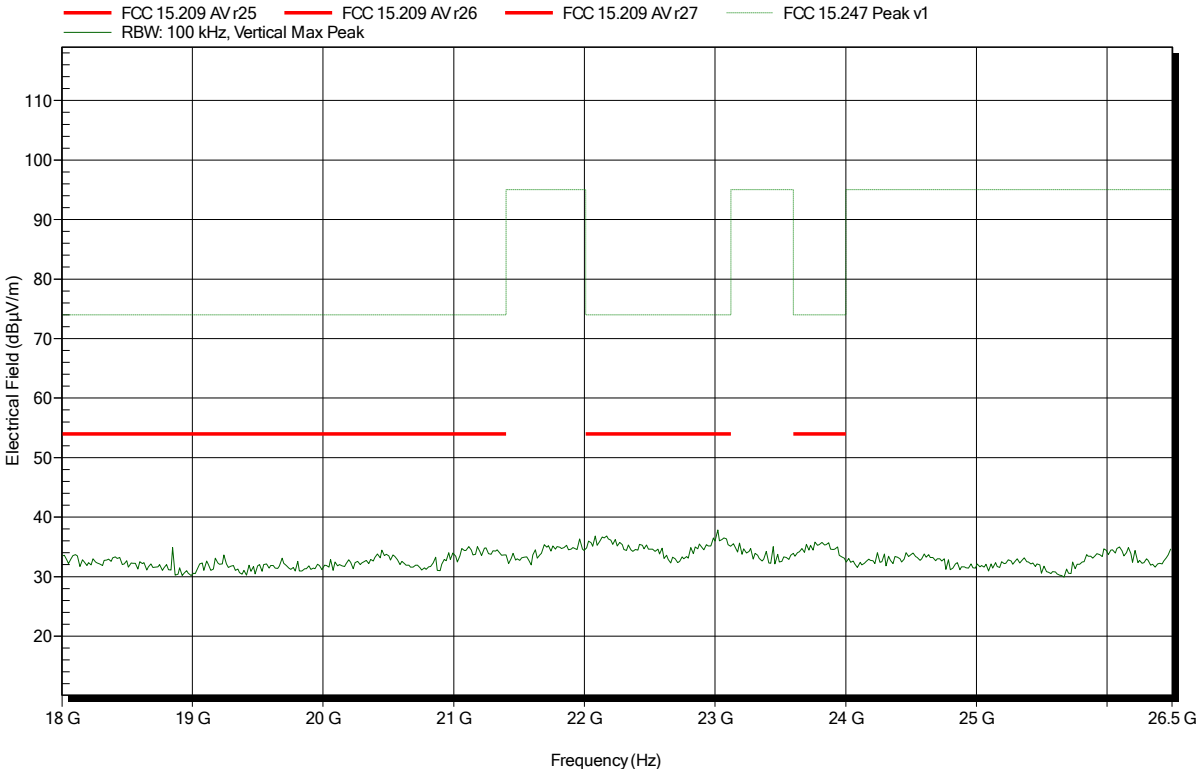

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-21
Note:	

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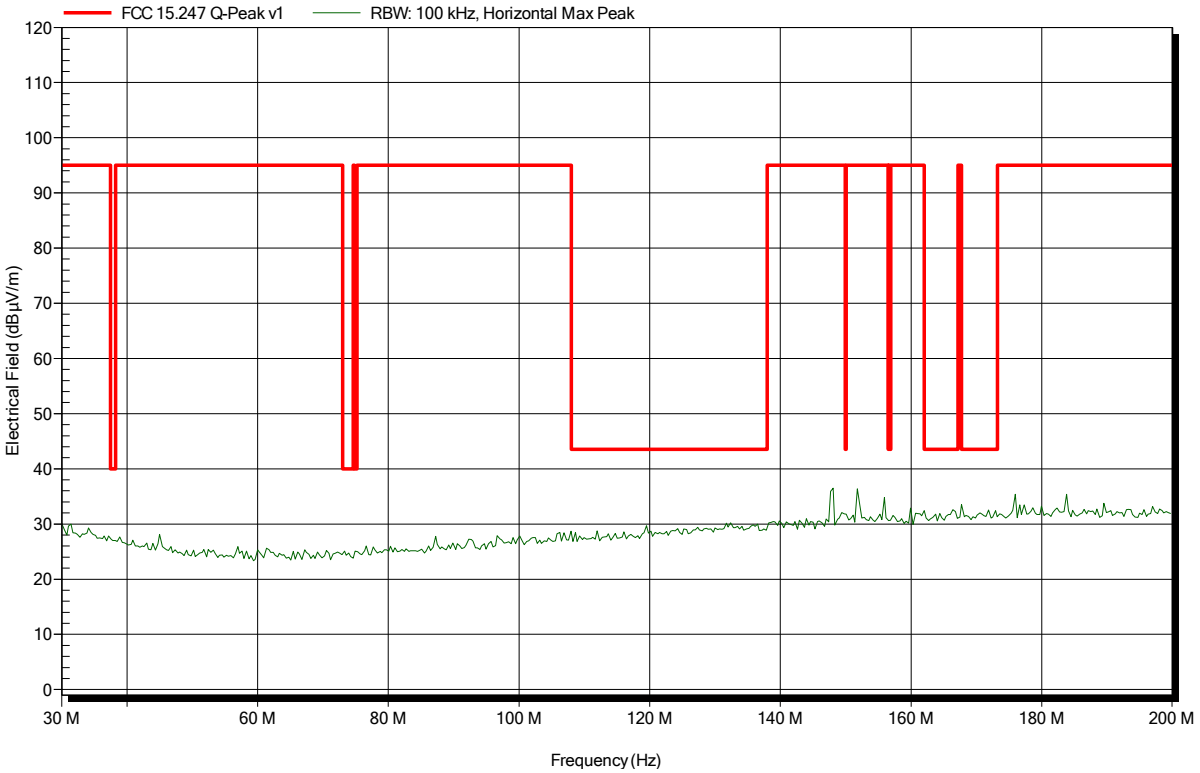

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-21
Note:	

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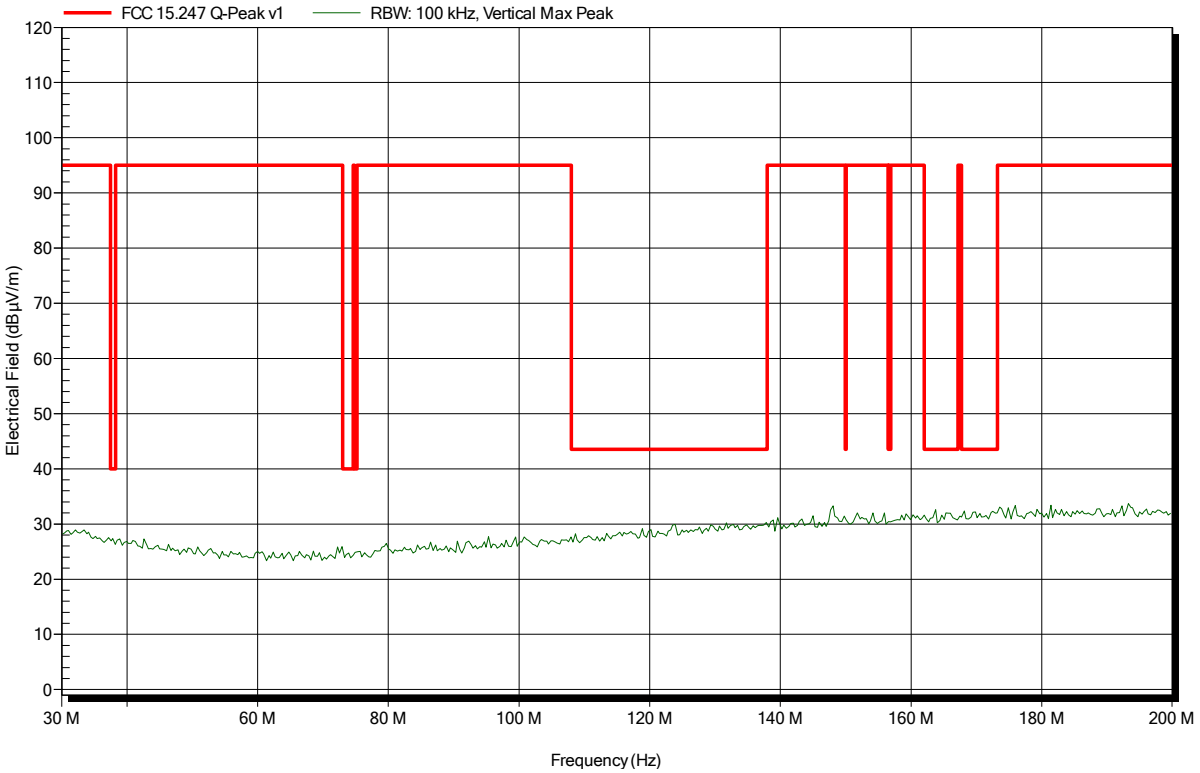

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	

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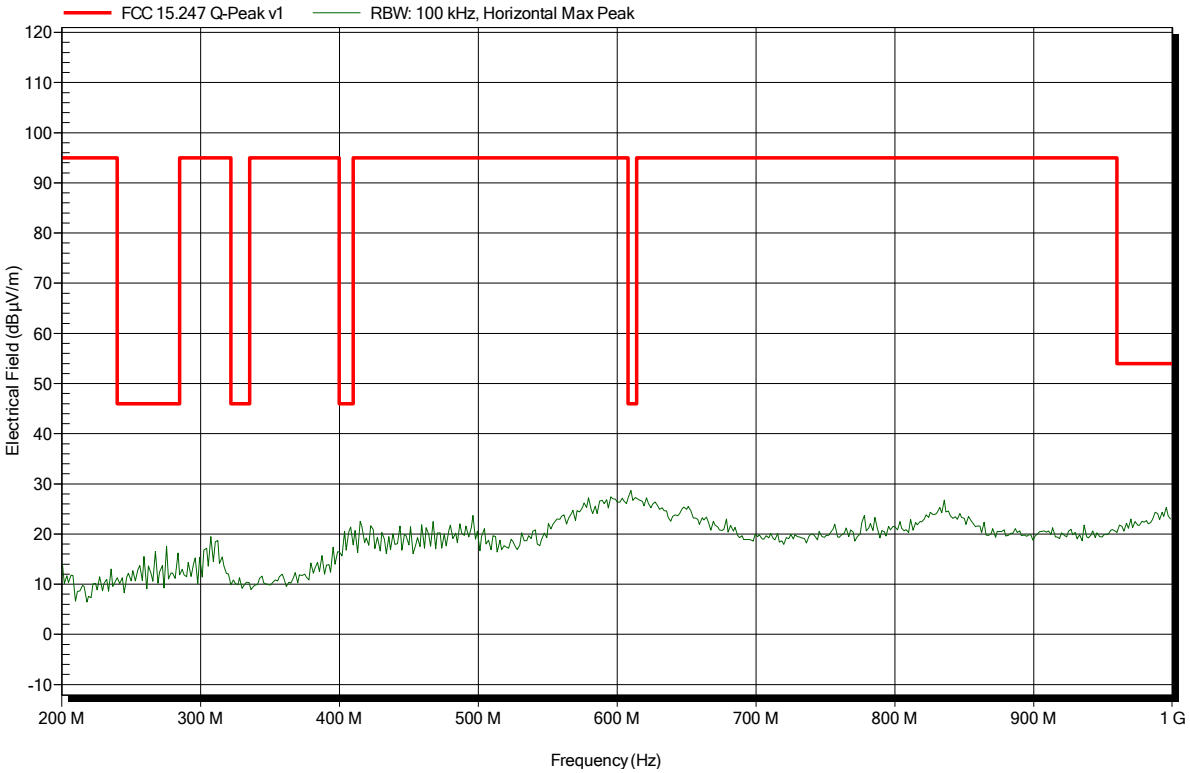

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	

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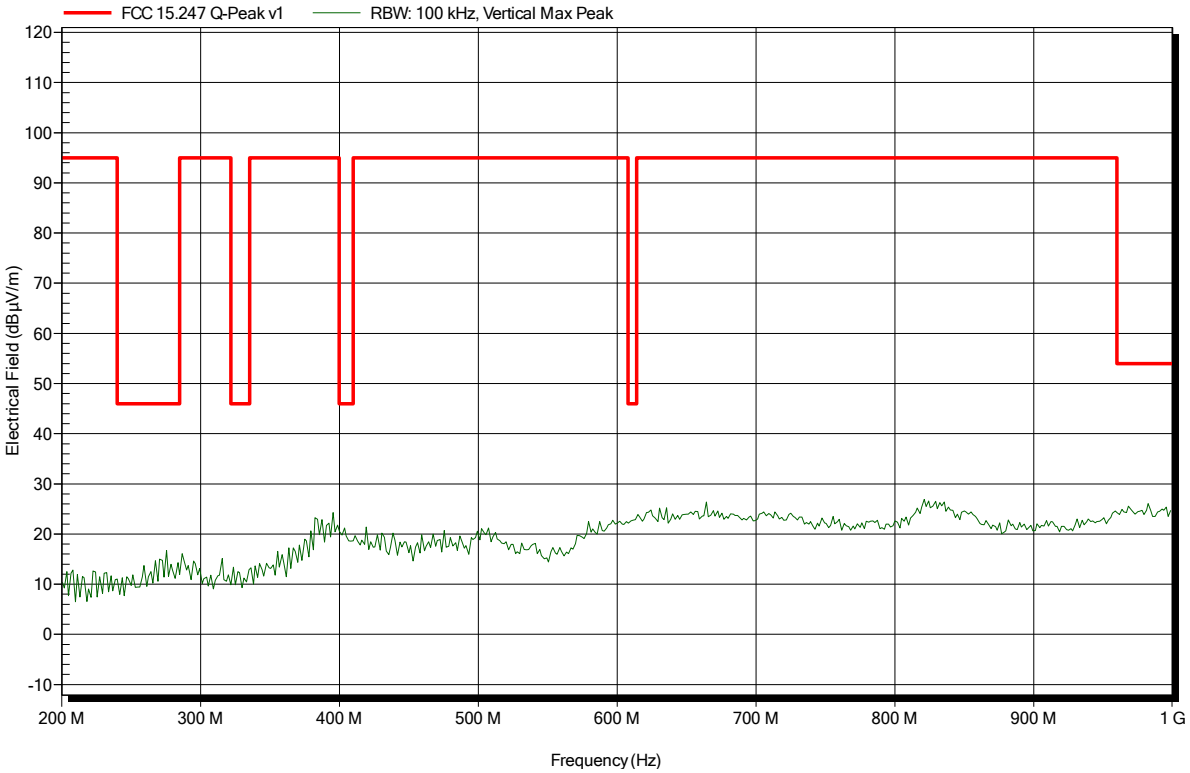

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	

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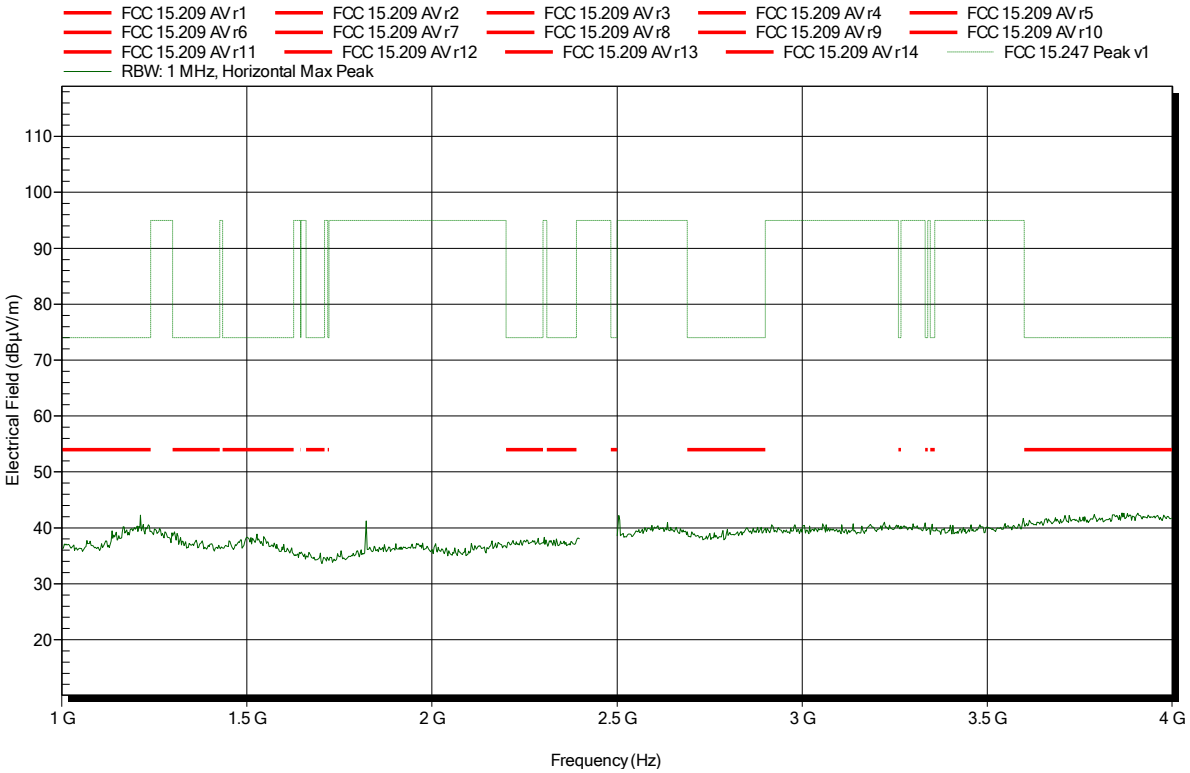

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	

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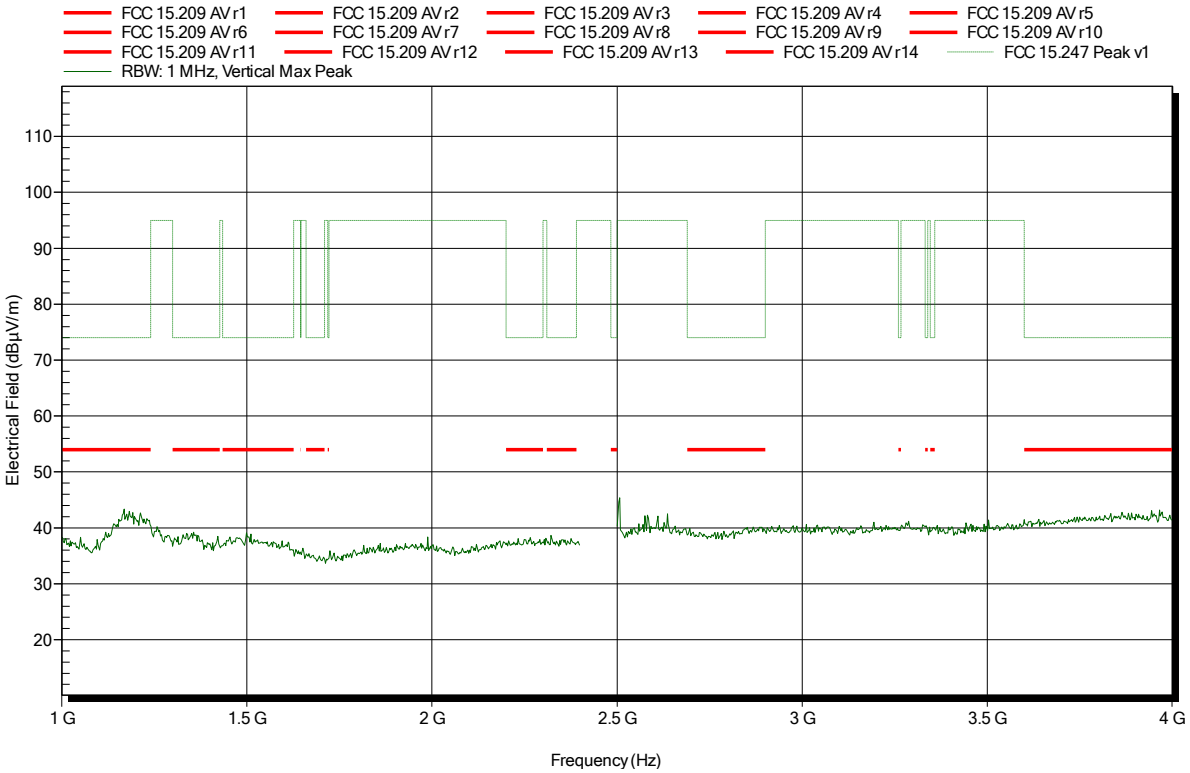

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	upper bandedge

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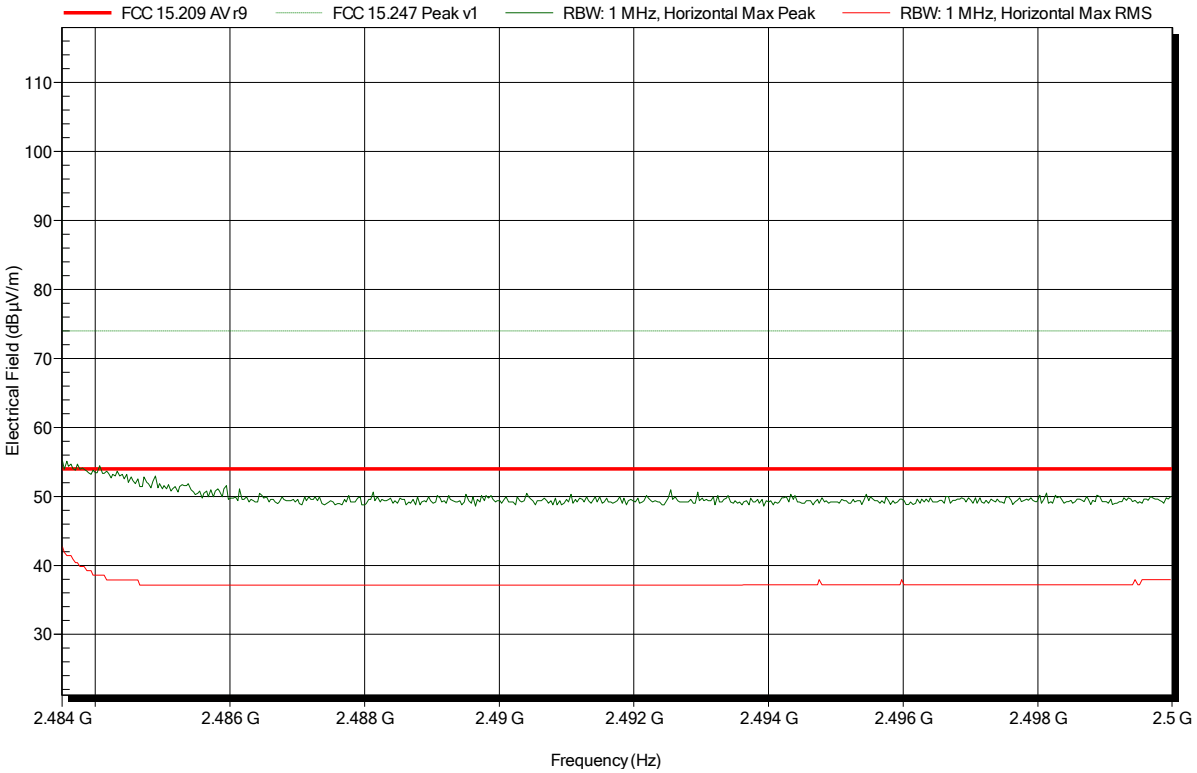
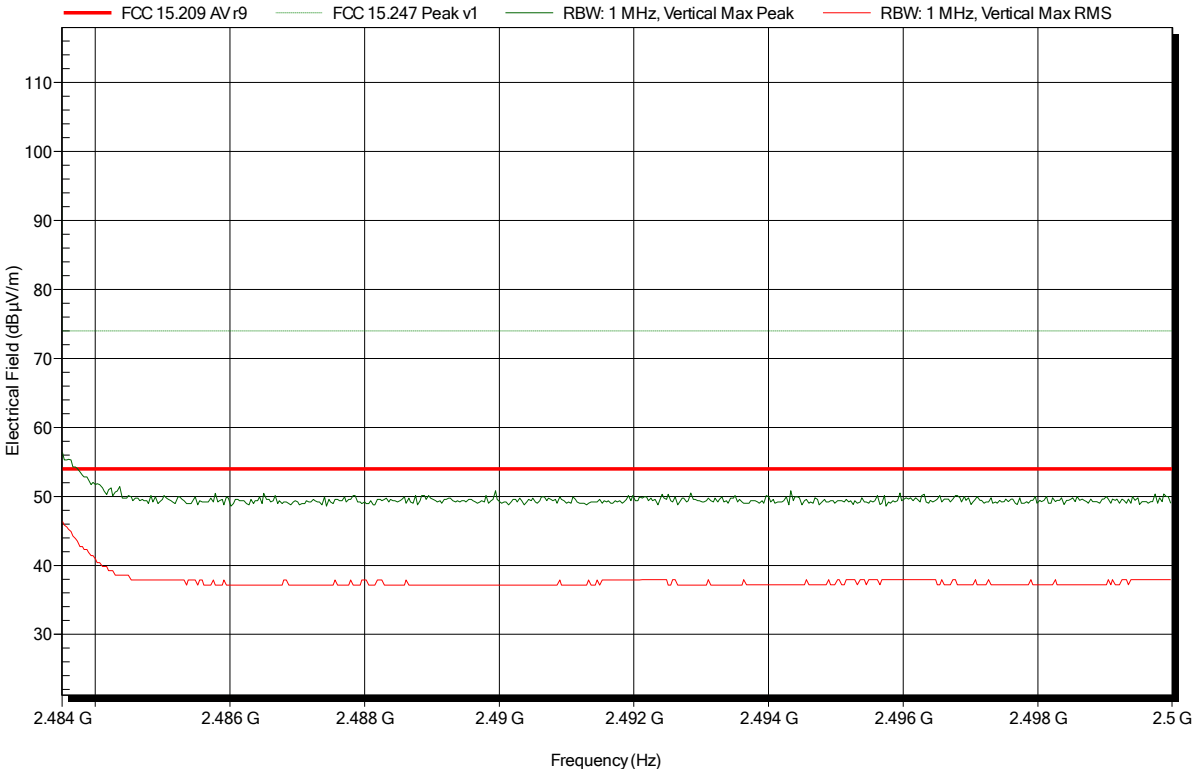


Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	upper bandedge

Index 1



Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	

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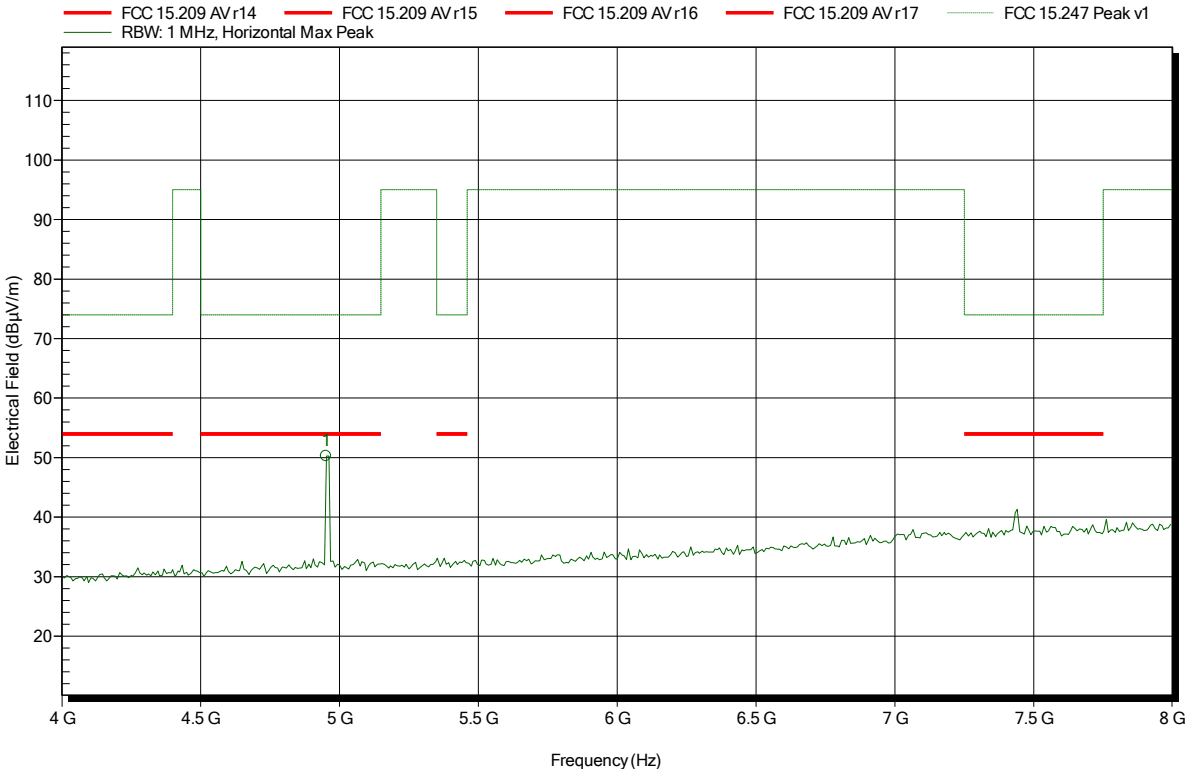


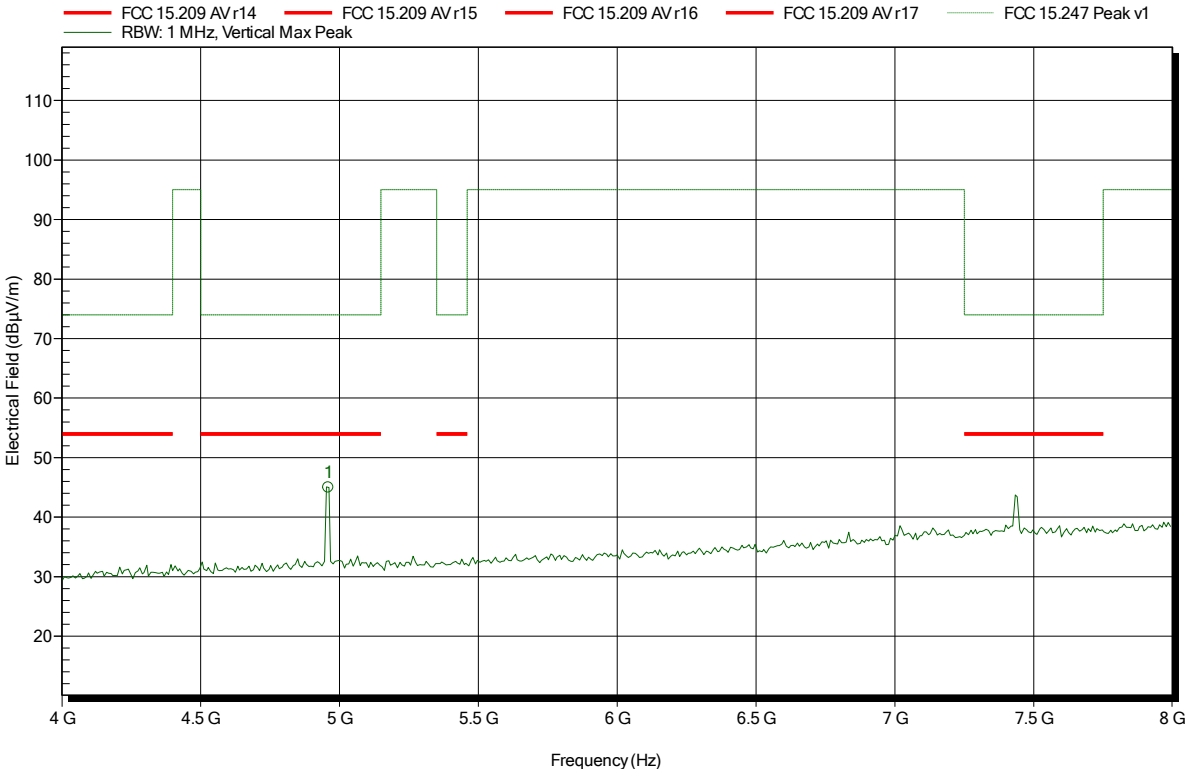
Frequency	Peak	Peak Limit	Peak Difference	Status
4.952 GHz	50.24 dBµV/m	74 dBµV/m	-23.76 dB	Pass

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	

Index 2



Frequency	Peak	Peak Limit	Peak Difference	Status
4.96 GHz	44.95 dBµV/m	74 dBµV/m	-29.05 dB	Pass

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	

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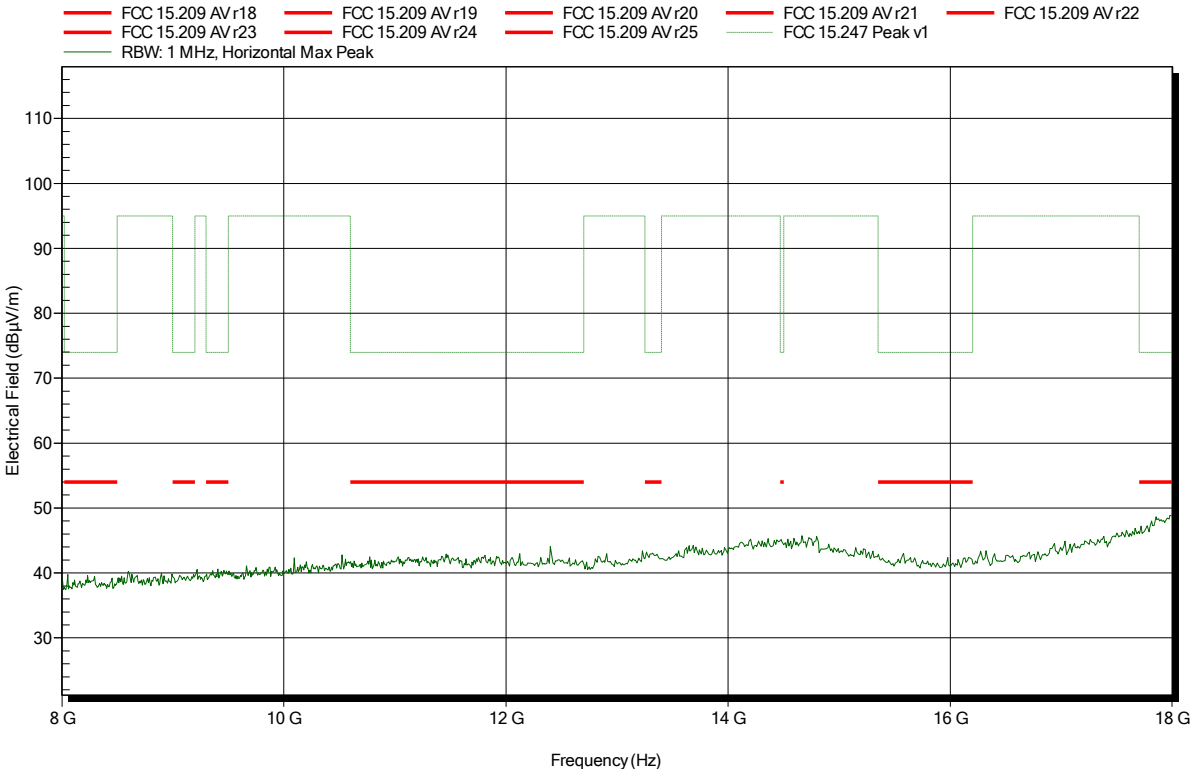
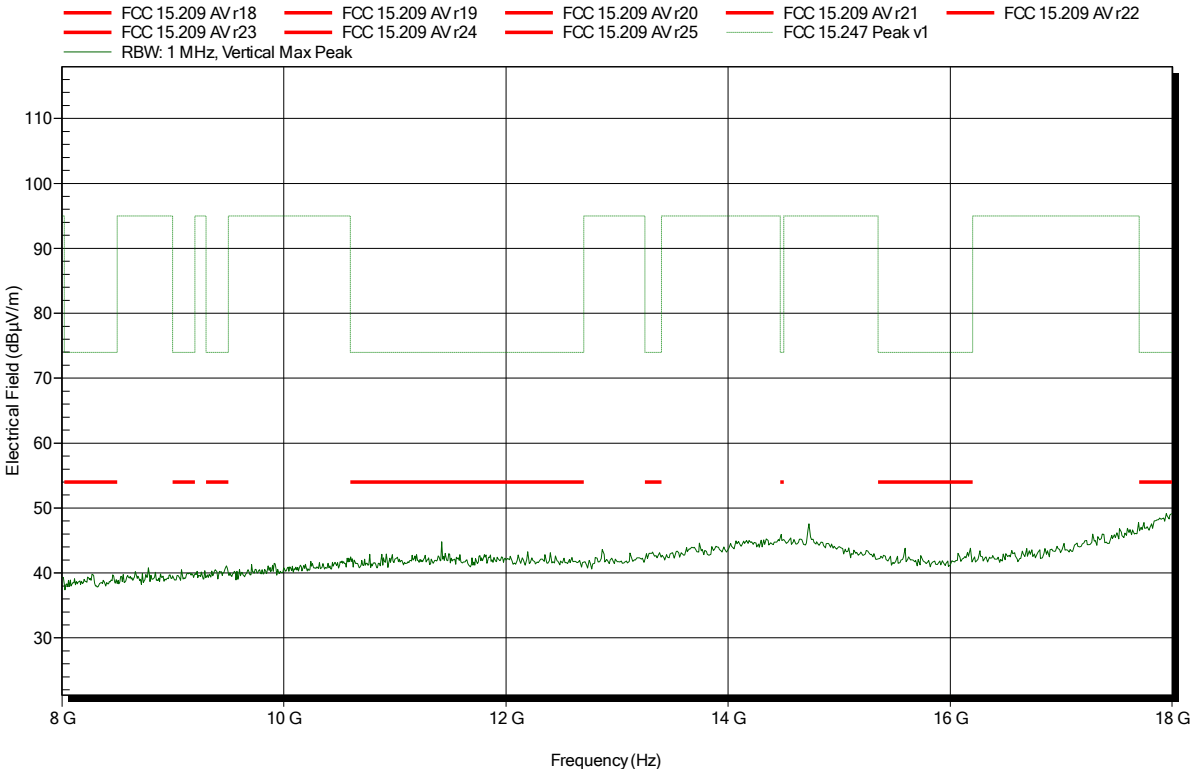


Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-18
Note:	

Index 3



Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Configurable Antenna, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-21
Note:	

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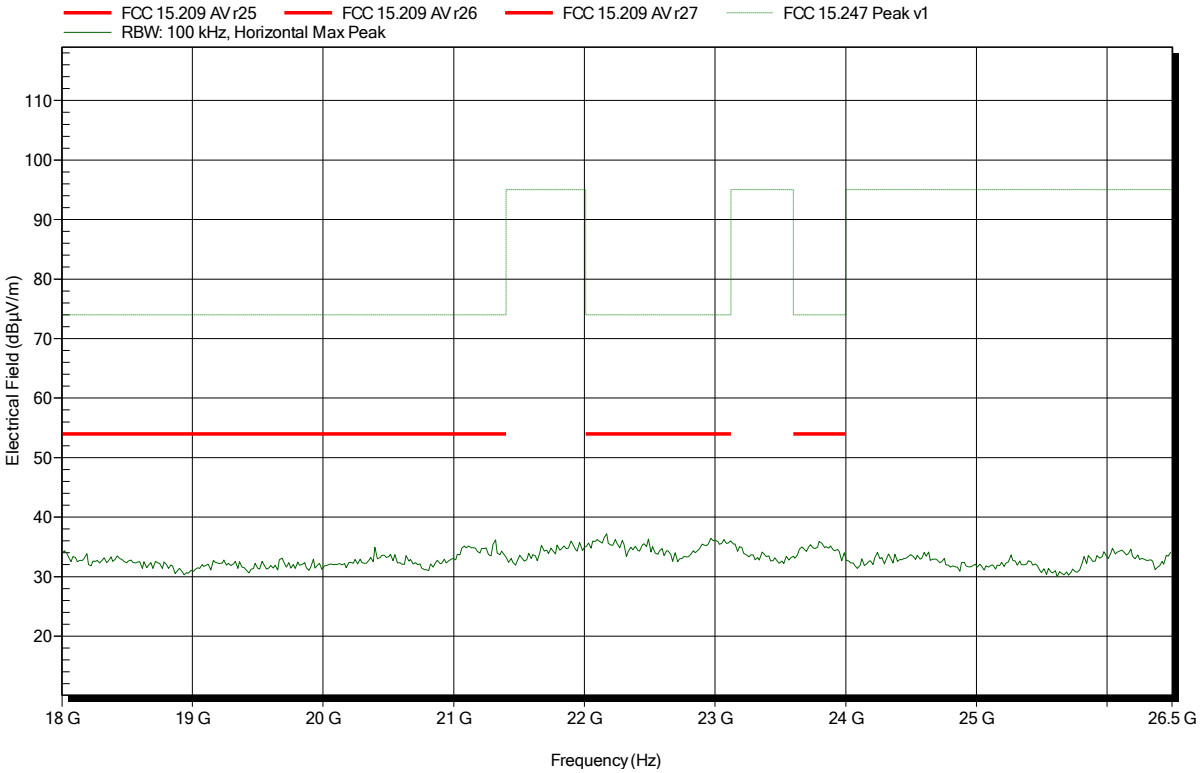

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Configurable Antenna, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT Basic; CH.78; 2480 MHz
Test Date:	2016-03-21
Note:	

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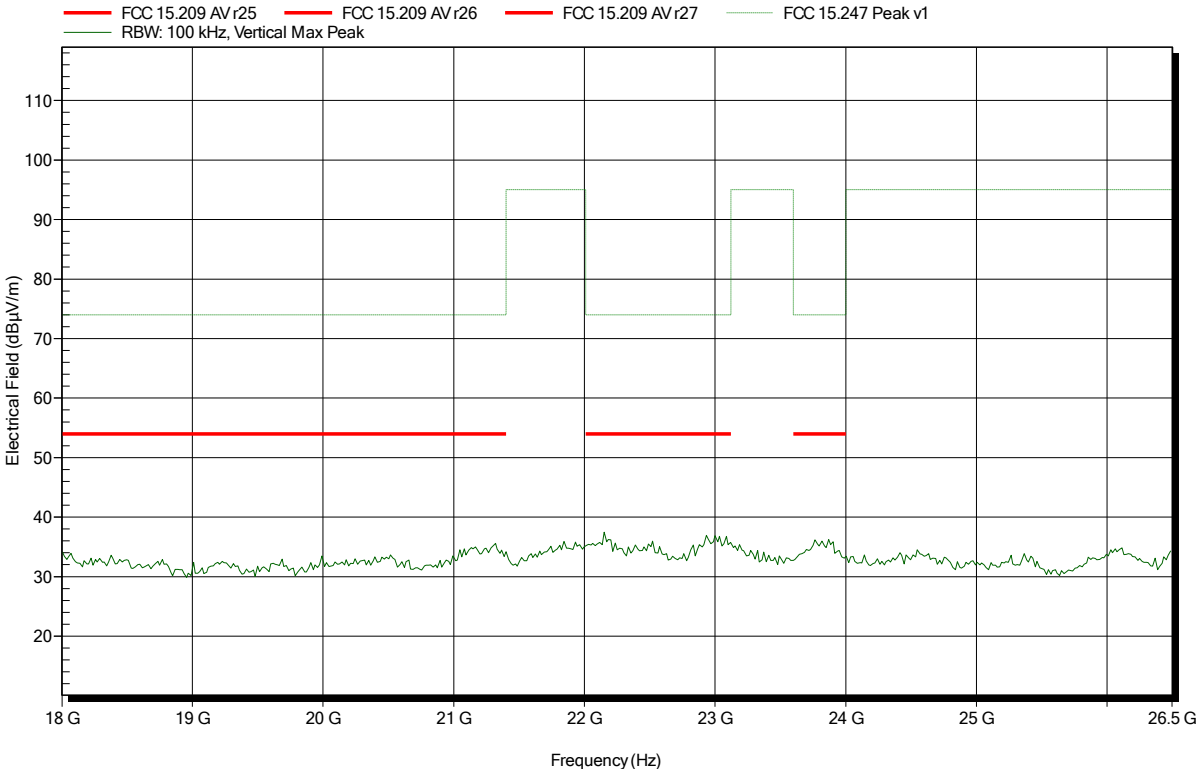

ANNEX B Receiver radiated spurious emissions

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; BT Basic; RX Scan Mode
Test Date:	2016-03-21
Note:	

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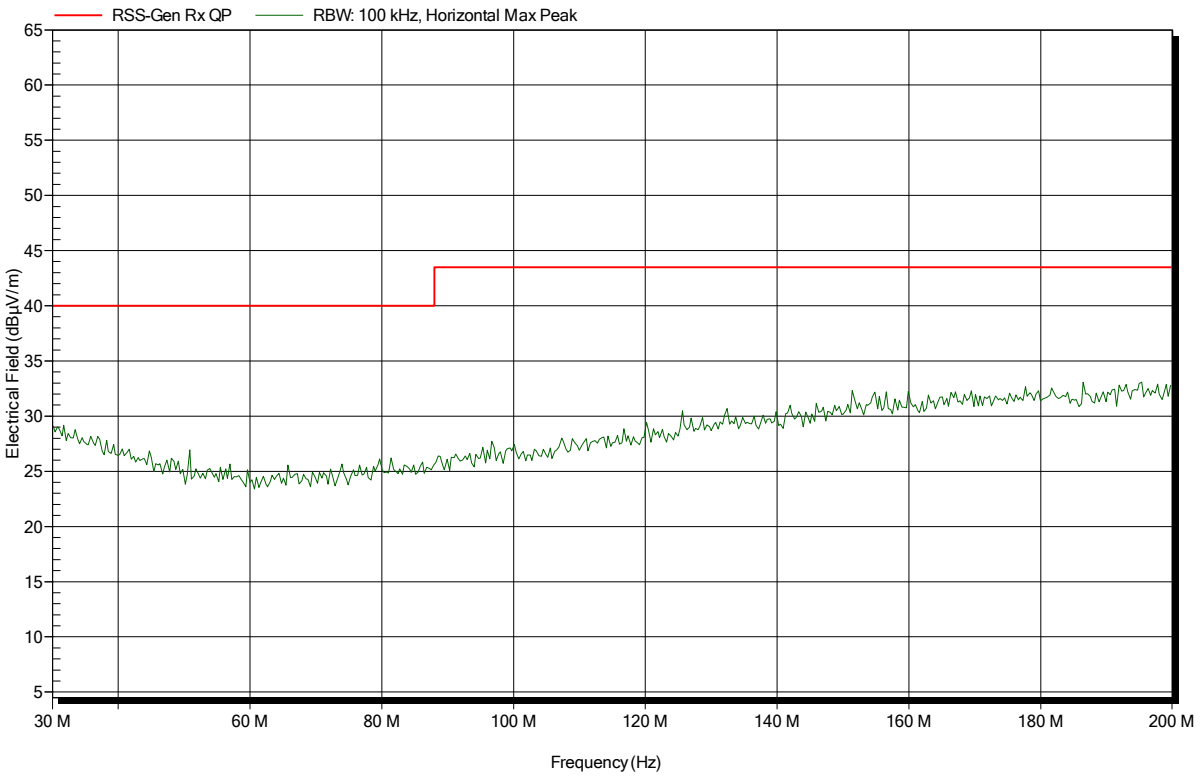

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; BT Basic; RX Scan Mode
Test Date:	2016-03-21
Note:	

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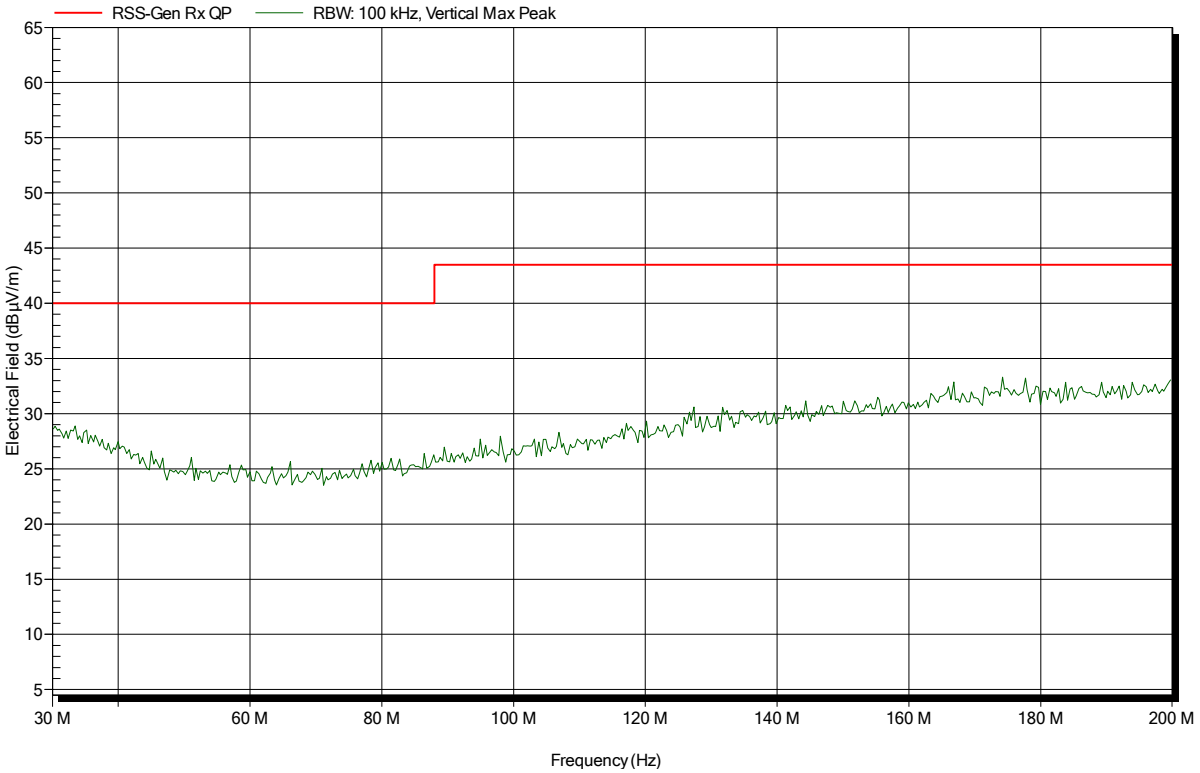

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	RX; BT Basic; RX Scan Mode
Test Date:	2016-03-21
Note:	

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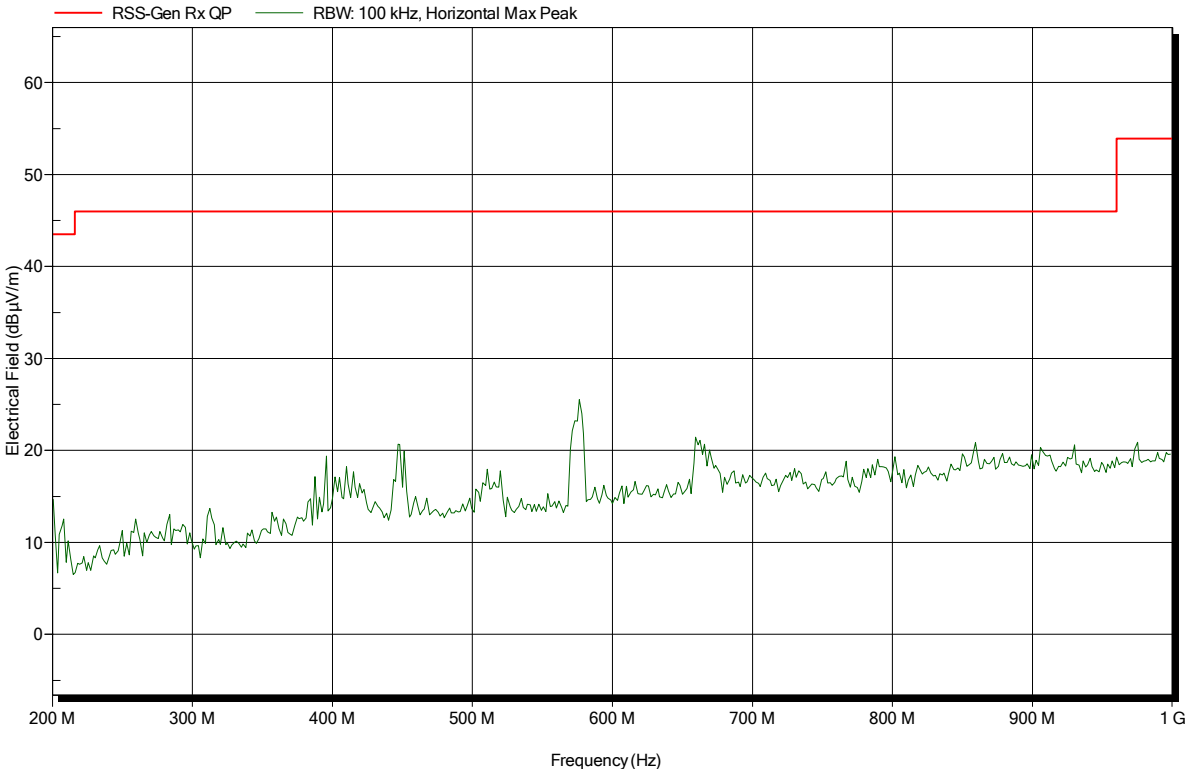

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	RX; BT Basic; RX Scan Mode
Test Date:	2016-03-21
Note:	

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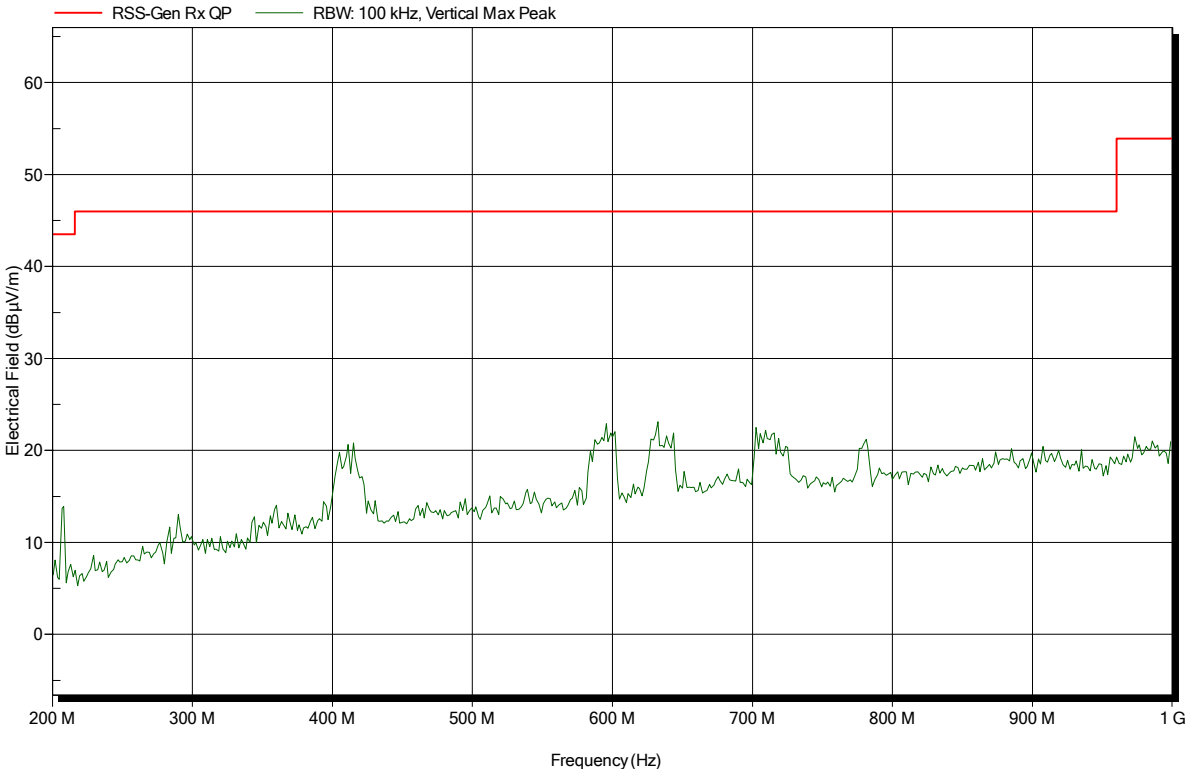

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; BT Basic; RX Scan Mode
Test Date:	2016-03-21
Note:	

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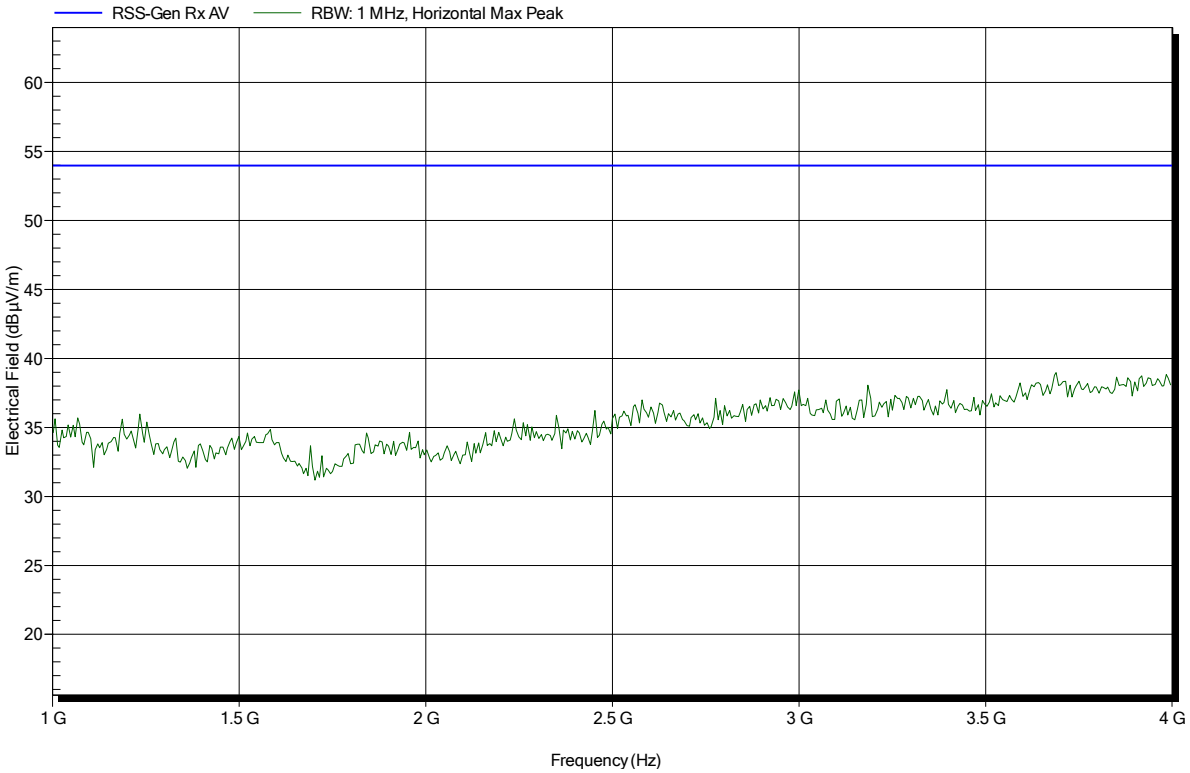

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; BT Basic; RX Scan Mode
Test Date:	2016-03-21
Note:	

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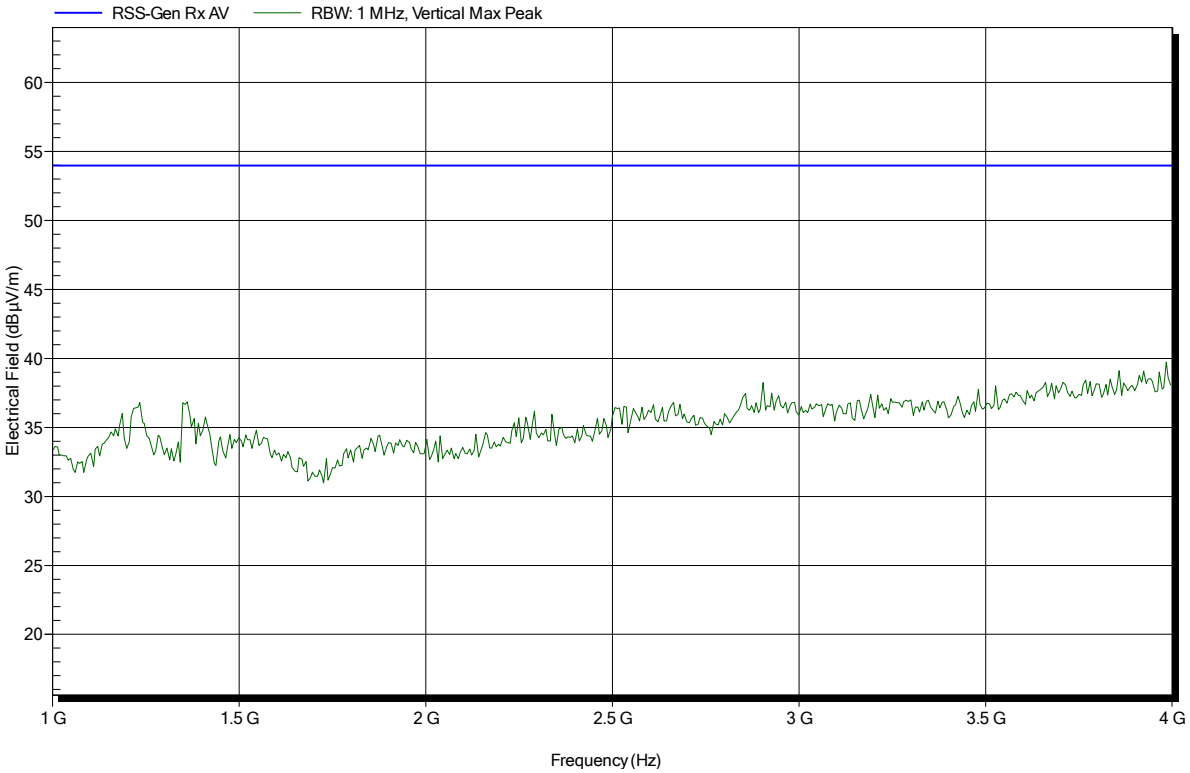

Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; BT Basic; RX Scan Mode
Test Date:	2016-03-21
Note:	

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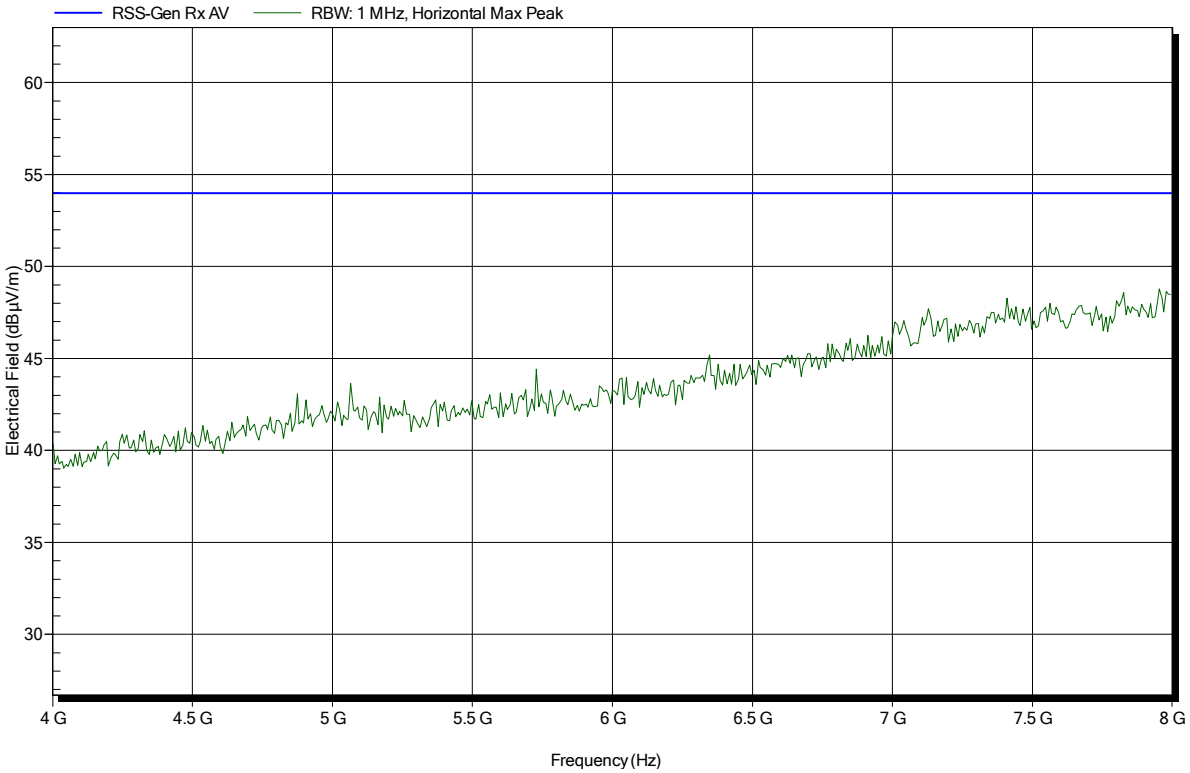
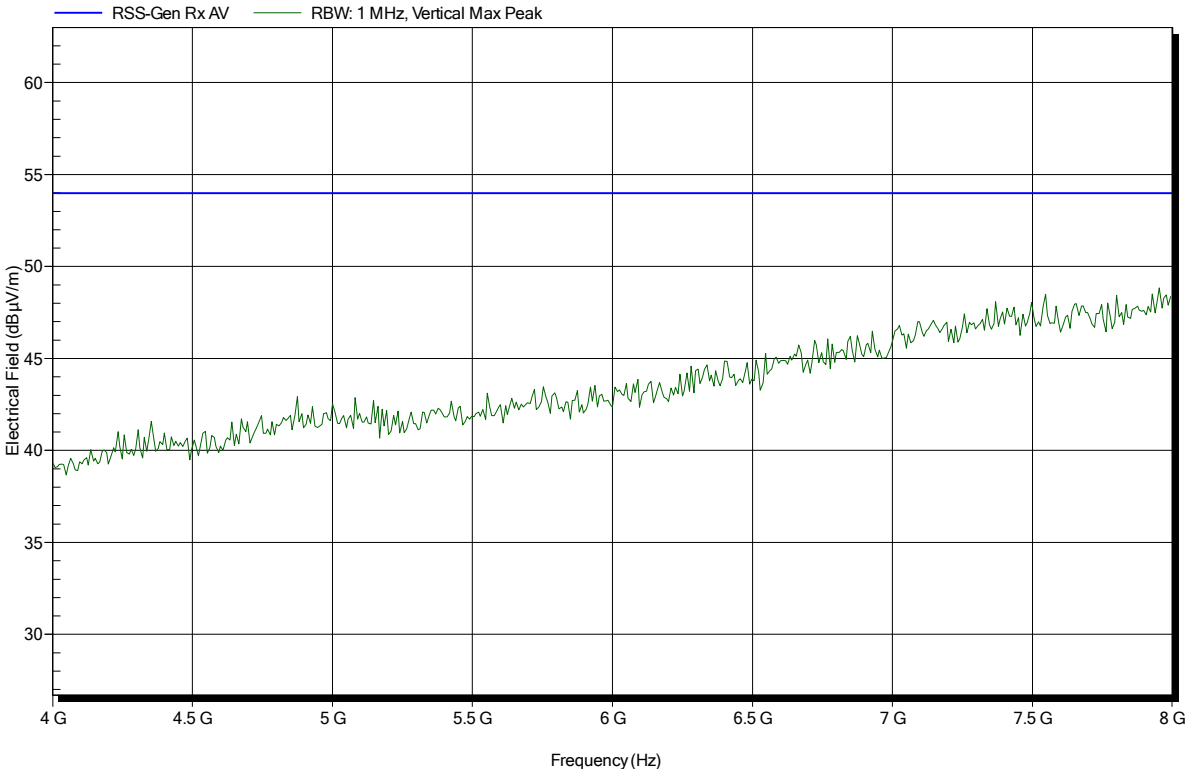


Spurious emissions according to FCC 15.247, RSS-247 Issue 1

Project number: G0M-1602-5411

Applicant:	Hellberg Safety AB
EUT Name:	Bluetooth Headset
Model:	Secure Synergy
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 2.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; BT Basic; RX Scan Mode
Test Date:	2016-03-21
Note:	

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