eurofins | Product Service

FCC TEST REPORT

FCC 47 CFR Part 15D

Unlicensed Personal Communication Service Devices

Industry Canada RSS-213

2GHz License-exempt Personal Communications Service Devices (LE-PCS)

Report Reference No.....:	G0M-1408-4062-TFC15DFP79-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.....:	Sonetics Corporation
Address.....:	7340 SW Durham Road OR 97224 Portland USA
Test specification:	
Standard.....:	47 CFR Part 15D 47 CFR Part 15C 47 CFR Part 15B RSS-213, Issue 2, 2005-12 RSS-Gen, Issue 3, 2010-12 ANSI C63.17:2006 ANSI C63.4:2003
Equipment under test (EUT):	
Product description	Communication Headsets
Model No.	APX379
Additional Model(s)	None
Brand Name(s)	Sonetics
Hardware version	APX379 Rev A (See additional information)
Firmware / Software version	Revision A (See additional information)
	FCC-ID: V9N950325200V1 IC: 7895A-950325200
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 2014-09-22

Date (s) of performance of tests ..... 2014-09-22 – 2014-09-24

Compiled by ..... Wilfried Treffke

Tested by (+ signature)..... Wilfried Treffke ..... W. Treffke .....
(Responsible for Test)

Approved by (+ signature) ..... Christian Weber ..... C. Weber .....

Date of issue 2014-12-18

Total number of pages 135

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:

Page 1 of 2

Sonetics CORPORATION

Subject: Hardware Software/Firmware Declaration
Date: December 01, 2014
Model Number: APX379 DECT & Bluetooth Headset, Revision A

The APX379 Headset shares the same common hardware and software as represented in table A

Table A: Common and Un-common Communication Headset Ear Muff Features	300 Series Model Number		
	APX379	APX377	APX375
Convertible Design: Overhead and Underhelmet	X	X	X
Identical Materials and Headset Muff Design	X	X	X
Waterproof Design	X	X	X
Wired Aux Line In	X	X	X
Internal Sound Dosimeter	X	X	X
Stereo Listen Thru	X	X	X
Automatic Noise Gate	X	X	X
Passive Noise Reduction	X	X	X
Automatic Active Noise Reduction	X	X	X
Voice Prompts	X	X	X
Wireless Bluetooth (Line in)	X		X
Wireless DECT (2 way radio)	X	X	

Sonetics Corporation hereby declares that the above referenced model, submitted to Eurofins for FCC and IC testing, has the following firmware and hardware installed.

APX379 DECT & Bluetooth Headset Revision A	(No Headband P/N: 950-3257-00 Revision A)				
Item Reference	Part Number	Description	Qty	BOM Version Revision	Firmware Radio Related?
10	490-4006-00	Firmware, GEN-3 BOOT LOADER	1	A	No
15	490-4016-00	Firmware, APX379, DECT, BT	1	A	Yes
20	490-4009-00	Firmware, BLUETOOTH CONFIG	1	A	Yes
25	490-4012-00	Firmware, RTX1040 RADIO RTX Release Ver 7.0	1	A	Yes
35	490-4015-00	Firmware, VOICEPROMPTS, PP, ENGLISH-	1	A	No
40	490-4017-00	Firmware, APX379, CONFIGURATION	1	A	No
5	121-4030-G1	PCBA, APX379, HS, MAIN BOARD	1	G	Hardware
0	121-4031-J1	PCBA,HS-7X,BATTERY BOARD	1	J	Hardware

The above is declares accurate and true as of 12 01, 2014.
Sincerely,

Michael Heade
Quality Assurance Engineer
Regulatory & Product Compliance Engineer
Sonetics Corporation
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Version History

Version	Issue Date	Remarks	Revised by
01	2014-12-18	Initial Release	

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1 Equipment (Test item) Description

Description	Communication Headsets	
Model	APX379	
Additional Model(s)	None	
Brand Name(s)	Sonetics	
Serial number	None	
Hardware version	APX379 Rev A (See additional information)	
Software / Firmware version	Revision A (See additional information)	
FCC-ID	V9N950325200V1	
IC	7895A-950325200	
Equipment type	End Product	
Radio type	DECT Portable Part	
Number of Radios	1 transceivers is built into the device	
Radio technology	DECT 6.0	
Operating frequency range	1921.536 - 1928.448MHz	
Assigned frequency band	1920 - 1930MHz	
Number of RF channels	5	
Supported slots	even and odd	
Number of time slots	12 x Tx + 12 x RX = 24	
Channels	F_0	Ch:0 / 1928.448MHz
	F_1	Ch:1 / 1926.720MHz
	F_2	Ch:2 / 1924.992MHz
	F_3	Ch:3 / 1923.264MHz
	F_4	Ch:4 / 1921.536MHz
Main test frequencies	F_{LOW}	Ch:4 / 1921.536MHz
	F_{MID}	Ch:2 / 1924.992MHz
	F_{HIGH}	Ch:0 / 1928.448MHz
Modulations	GFSK	
Emission designator	F7D	
Nominal emission bandwidth	1.44 MHz	
Channel spacing	1728 kHz	
Spectrum access	Listen before transmit	
Nominal lower threshold	N/A	
Nominal upper threshold	-60 dBm	
Number of antennas	2 per transceiver	

Antenna 1	Type	Integrated / printed inverted f Monopole antenna
	Model	Batt PCBA
	Manufacturer	Sonetics
	Gain	0 dBi
Antenna 2	Type	Integrated / printed inverted f Monopole antenna
	Model	HS Main
	Manufacturer	Sonetics
	Gain	0 dBi
Manufacturer	Sonetics Corporation 7340 SW Durham Road OR 97224 Portland USA	
Power supply	V_{NOM}	3.7 VDC (lithium battery)
	V_{MIN}	N/R
	V_{MAX}	N/R
AC/DC-Adaptor	Model	YMC06-3U
	Vendor	Ji Ming
	Input	110 - 240 VAC 50/60 Hz
	Output	12VDC Used for charging the 3.7V cell
Temperature	T_{NOM}	25°C
	T_{MIN}	-30°C
	T_{MAX}	70°C

1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
None				

***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	
TDMA	General conditions:	EUT powered by laboratory power supply. Active connection to companion device.
	Radio conditions:	Mode = Transmit mode Modulation = GFSK Duty cycle = 1/24 Power level = Maximum
Receive	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone receive Modulation = GFSK
AC-Powerline	General conditions:	Active data connection between EUT and companion device. EUT powered by AC mains via AC/DC-Adaptor.
	Radio conditions:	Mode = Transmit mode Modulation = GFSK Duty cycle = 1/24 Power level = Maximum

1.6 Test Equipment Used During Testing

Measurement Software			
Description	Manufacturer	Name	Version
EMC Test Software	Dare Instruments	Radimation	2014.1.15

Conducted					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2014-02	2015-02
Signal Generator	R&S	SMP 02	EF00165	2013-05	2015-05
Signal Generator	R&S	SMIQ 03B	EF00153	2014-09	2016-09
Signal Generator	R&S	SMIQ 03B	EF00316	2013-06	2015-06
Signal Generator	R&S	SMIQ 03	EF00316	2013-06	2015-06
Signal Generator	R&S	SMT 03	EF00164	2013-04	2015-04
Step Attenuator	R&S	RSP	EF00155	2013-11	2015-11
Frequency Standard	EFRATOM Elektronik GmbH	MFS	EF00308	2013-05	2018-05
Power Meter	R&S	NRVD	EF00139	2014-07	2015-07
Diode Power Sensor	R&S	NRV-Z1	EF00314	2013-06	2015-06

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 1	EF00062	-	-
Spectrum Analyzer	R&S	FSIQ26	EF00242	2014-03	2015-03
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD Antenna	R&S	HL 223	EF00187	2014-03	2017-03
LPD Antenna	R&S	HL 025	EF00327	2013-02	2016-02

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2014-11	2016-11
EMI Test Receiver	R&S	ESCS 30	EF00295	2014-10	2015-10

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 15D, 15C, IC RSS-213, IC RSS-Gen				
Product Specific Standard Section	**Requirement – Test**	**Reference Method**	**Result**	**Remarks**
FCC 15.307	Coordination with fixed microwave service	declaration	N/A	
FCC 15.309(b)	Cross reference to subpart B	declaration	N/A	
FCC 15.315 FCC 15.207 IC RSS-213 6.3 IC RSS-213 4.2 IC RSS-Gen 7.2.4	AC power line conducted emissions	ANSI C63.4	PASS	
FCC 15.317 FCC 15.203 IC RSS-213 4.1(e)	Antenna requirements	visual inspection	PASS	
FCC 15.319(b) IC RSS-213 6.1	Digital modulation	ANSI C63.17 6.1.4	PASS	
IC RSS-213 6.4 RSS-Gen 4.6.1	Occupied bandwidth	RSS-Gen 4.6.1	PASS	
FCC 15.323(a)	Emission Bandwidth	ANSI C63.17 6.1.3	PASS	
FCC 15.319(c) FCC 15.319(e) IC RSS-213 6.5 IC RSS-213 4.3.1	Peak transmit power	ANSI C63.17 6.1.2	PASS	
FCC 15.319(d) IC RSS-213 6.6 IC RSS-213 4.3.2	Power spectral density	ANSI C63.17 6.1.5	PASS	
FCC 15.323(f) IC RSS-213 6.2	Carrier frequency stability	ANSI C63.17 6.2.1	PASS	
FCC 15.323(d) IC RSS-213 6.7.2	Transmitter in-band unwanted emissions	ANSI C63.17 6.1.6	PASS	
FCC 15.323(d) IC RSS-213 6.7.1	Transmitter out-of-band emissions	ANSI C63.17 6.1.6 ANSI C63.4	PASS	
IC RSS-213 6.8 IC RSS-Gen 4.10, 6	Receiver spurious emissions	ANSI C63.4	PASS	
FCC 15.319(f) IC RSS-213 4.3.4(a)	Automatic discontinuation of transmission	functional test	PASS	
FCC 15.319(i) RSS-102	Radiofrequency radiation exposure	dedicated report	PASS	
FCC 15.323(c)(2),(5),(9) IC RSS-213 4.3.4(b)(2),(5),(9)	Monitoring threshold + Monitoring threshold relaxation	ANSI C63.17 7.3.1	PASS	
FCC 15.323(c)(5) IC RSS-213 4.3.4(b)(5)	LIC confirmation	ANSI C63.17 7.3.4 / 7.3.4	PASS	
FCC 15.323(c)(5) IC RSS-213 4.3.4(b)(5)	LIC selection	ANSI C63.17 7.3.2 / 7.3.3	PASS	
FCC 15.323(c)(8) IC RSS-213 4.3.4(b)(8)	Monitoring antenna	ANSI C63.17 4	PASS	

FCC 15.323(c)(1) IC RSS-213 4.3.4(b)(1)	Monitoring time	ANSI C63.17 7.3.4	PASS	
FCC 15.323(c)(7) IC RSS-213 4.3.4(b)(7)	Monitoring bandwidth	ANSI C63.17 7.4	PASS	
FCC 15.323(c)(7) IC RSS-213 4.3.4(b)(7)	Monitoring reaction time	ANSI C63.17 7.5	PASS	
FCC 15.323(c)(6) IC RSS-213 4.3.4(b)(6)	Access criteria test interval	ANSI C63.17 8.1.1	N/A	Only FP
FCC 15.323(c)(6) IC RSS-213 4.3.4(b)(6)	Access criteria functional test	ANSI C63.17 8.1.2 / 8.1.3	N/A	Only FP
FCC 15.323(c)(4) IC RSS-213 4.3.4(b)(4)	Acknowledgements	ANSI C63.17 8.2.1	PASS	
FCC 15.323(c)(3) IC RSS-213 4.3.4(b)(3)	Maximum transmit period	ANSI C63.17 8.2.2	PASS	
FCC 15.323(c)(5) IC RSS-213 4.3.4(b)(5)	Maximum spectrum occupancy	declaration	PASS	
FCC 15.323(c)(10) IC RSS-213 4.3.4(b)(10)	Duplex connections	ANSI C63.17 8.3	PASS	Only PP
FCC 15.323(c)(11) IC RSS-213 4.3.4(b)(11)	Alternative monitoring interval	ANSI C63.17 8.4	N/A	
FCC 15.323(c)(12) IC RSS-213 4.3.4(b)(12)	Fair access	declaration	PASS	
FCC 15.323(e)(1),(4),(5) IC RSS-213 4.3.4(c)(1),(4),(5)	Frame period and Jitter	ANSI C63.17 6.2.3	PASS	
FCC 15.323(e)(2),(3) IC RSS-213 4.3.4(c)(2),(3)	Frame repetition stability	ANSI C63.17 6.2.2	PASS	
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – Coordination with fixed microwave service

Coordination with fixed microwave service acc. to FCC 47 CFR 15D	
EUT requirement rule parts and clause	Reference
	FCC 15.307
Test according to measurement reference	Reference Method
	Customer declaration
Requirements	
UTAM, Inc. is designated to coordinate and manage the transition of the 1910–1930 MHz band from the Private Operational-Fixed Microwave Service (OFS) operating under part 101 of this chapter to unlicensed PCS operations. Each application for certification of equipment operating under the provisions of this subpart must be accompanied by an affidavit from UTAM, Inc. certifying that the applicant is a participating member of UTAM, Inc. In the event a grantee fails to fulfill the obligations attendant to participation in UTAM, Inc., the Commission may invoke administrative sanctions as necessary to preclude continued marketing and installation of devices covered by the grant of certification, including but not limited to revoking certification.	
Result	
The applicant will provide the affidavit from UTAM Inc. later in the course of certification by TCB or FCB.	

3.2 Test Conditions and Results – Cross reference to subpart B

Cross reference to subpart B acc. to FCC 47 CFR 15D	**Verdict: N/A**
EUT requirement rule parts and clause	Reference
	FCC 15.309(b)
Test according to measurement reference	Reference Method
	Declaration
Requirements	
The requirements of subpart D apply only to the radio transmitter contained in the PCS device. Other aspects of the operation of a PCS device may be subject to requirements contained elsewhere in this chapter. In particular, a PCS device that includes digital circuitry not directly associated with the radio transmitter also is subject to the requirements for unintentional radiators in subpart B.	
Result	
The test results related to subpart B are given in a dedicated test report	

3.3 Test Conditions and Results – AC power line conducted emissions

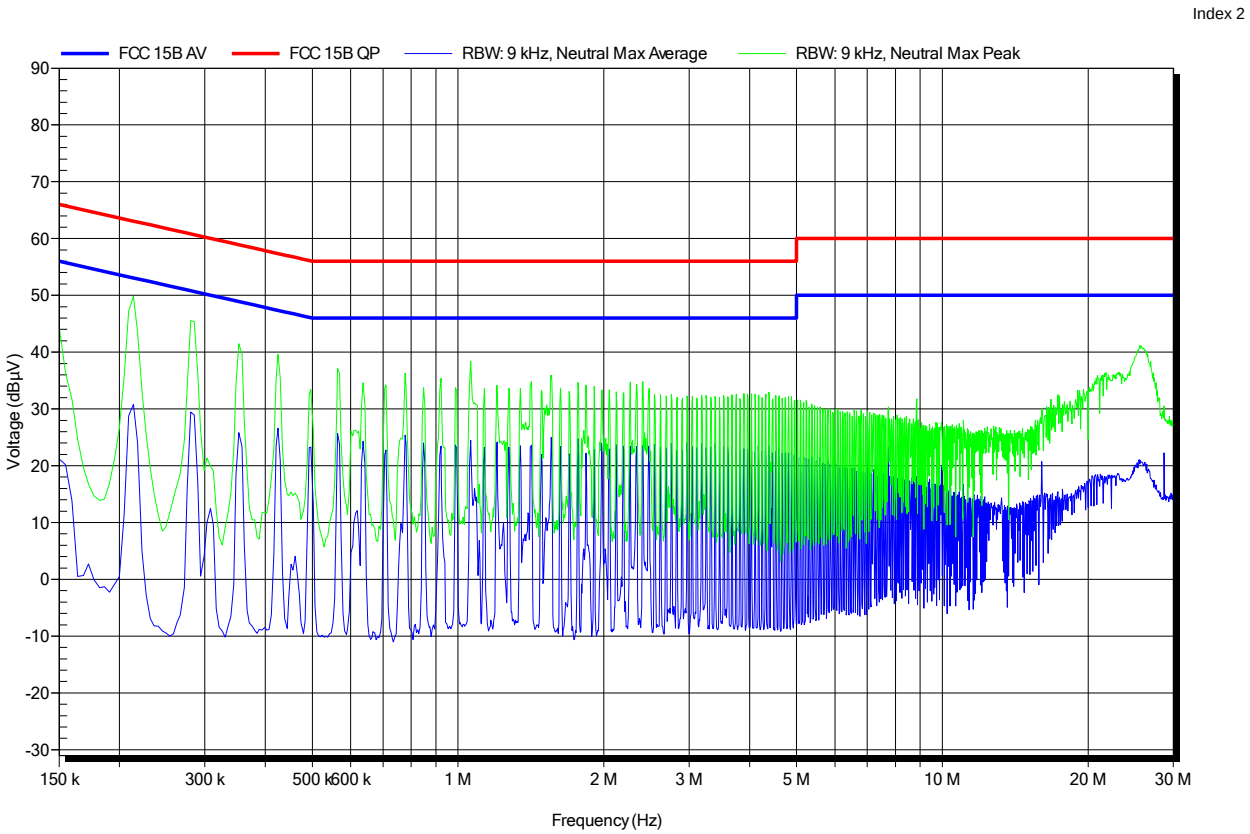
Conducted emissions acc. to FCC 47 CFR 15D / IC RSS-213				**Verdict: PASS**
EUT requirement rule parts and clause	Reference			
	FCC 15.315 / FCC 15.207 / IC RSS-213 6.3, 4.2			
Test according referenced standards	Reference Method			
	ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15MHz to 30MHz			
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-1408-4062

Manufacturer:	Sonetics Corporation
EUT Name:	Communication Headsets
Model:	APX379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Marquardt
Test Conditions:	Tnom: 23°C, Unom: 120 VAC (AC/DC adapter)
LISN:	ESH2-Z5 N
Mode:	charging
Test Date:	2014-11-18
Note:	

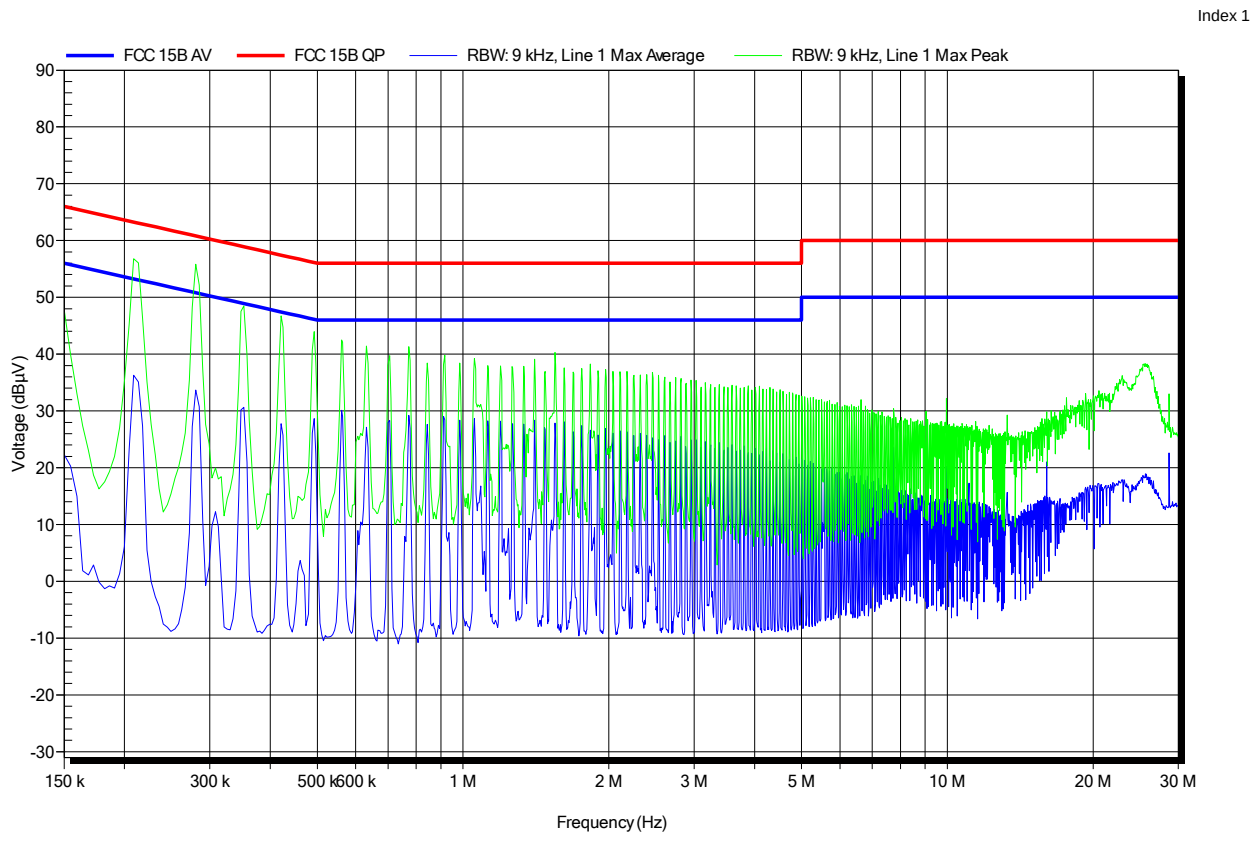


Conducted Emissions

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

Project number: G0M-1408-4062

Manufacturer:	Sonetics Corporation
EUT Name:	Communication Headsets
Model:	APX379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Marquardt
Test Conditions:	Tnom: 23°C, Unom: 120 VAC (AC/DC adapter)
LISN:	ESH2-Z5 L
Mode:	charging
Test Date:	2014-11-18
Note:	



3.4 Test Conditions and Results – Antenna requirement

Antenna requirement acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.317 / FCC 15.203 / IC RSS-213 4.1(e)
Test according to measurement reference	Reference Method
	visual inspection & declaration

Requirements

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

When an antenna conducted measurement is used to determine the RF output power of the device, the effective gain of the antenna intended for the device must be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 3 dBi (3 dB above isotropic gain) shall be added to the measured RF output power before using the power limits

Results

Antenna No.	Type	Antenna gain [dBi]	Antenna gain in excess of 3dBi
1	internal	0	0
2	internal	0	0

3.5 Test Conditions and Results – Digital modulation

Antenna requirement acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.319(b) / IC RSS-213 6.1
Test according to measurement reference	Reference Method
	Declaration
Requirements	
All transmissions must use only digital modulation techniques.	
Results	
The test sample is an isochronous digital modulated device that operates in 1920-1930 MHz band. This device bases on DECT technology described in European Standards EN 300 175-2 and EN 300 175-3, now operating in frequency channels mentioned above. The operating modes are MC/TDMA/TDD (Multi carrier / Time Division Multiple Access / Time Division Duplex) using Digital GFSK modulation. For further details see operational description provided by manufacturer.	

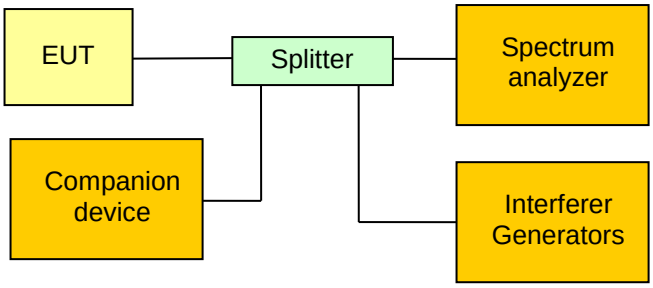
3.6 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. to IC RSS-213	**Verdict: PASS**
Test according to measurement reference	Reference Method
	IC RSS-213 4.3.2, 6.4 / IC RSS-Gen 4.6.1
Tested frequencies	F_{LOW} / F_{MID} / F_{HIGH}
EUT test mode	TDMA

Limits

0.05 MHz ≤ Occupied Bandwidth < 2.5 MHz

Test setup



Test procedure

1. EUT is restricted to test channel with the interferes
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

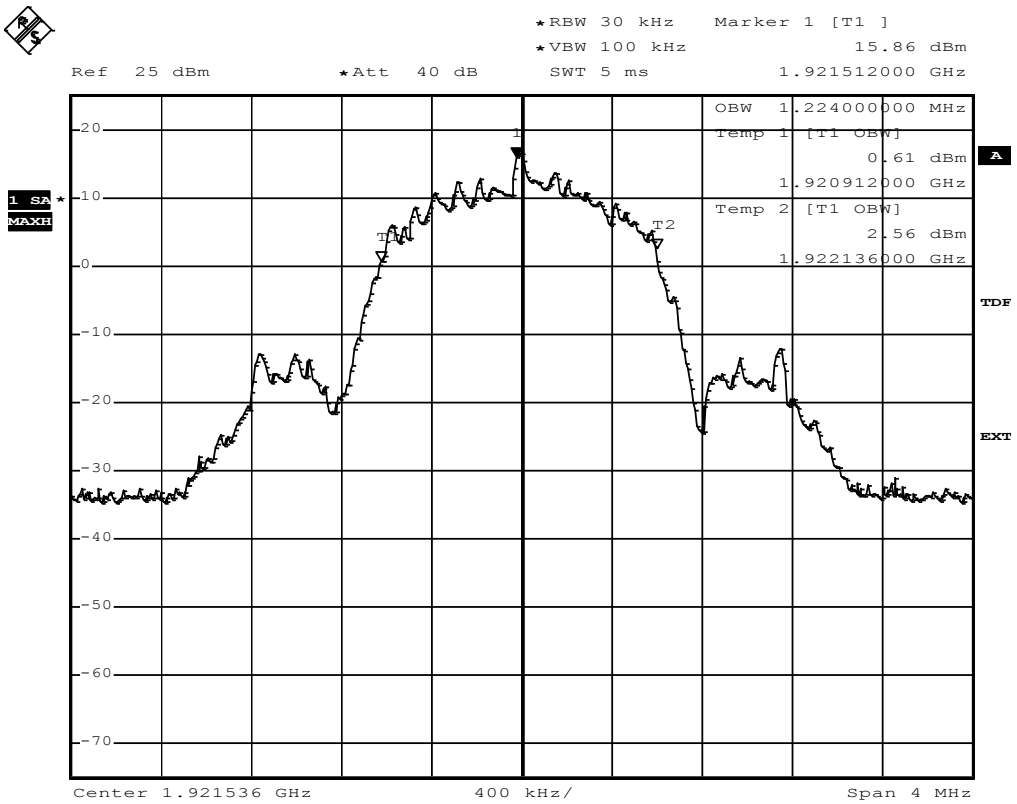
Channel	Center frequency [MHz]	Lower edge [MHz]	Upper edge [MHz]	Occupied Bandwidth [MHz]
F_{LOW}	1921.536	1920.912	1922.136	1.224
F_{MID}	1924.992	1924.376	1925.592	1.216
F_{HIGH}	1928.448	1927.824	1929.048	1.224

Comments:

Occupied Bandwidth - F_{LOW}

RSS Gen
Occupied Bandwidth

EUT	Communication Headset
Model	AXP379
Approval Holder	Sonetics Corporation
Temperature / Voltage	24°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. W. Treffke
Test Specification	Occupied Bandwidth
Comment 1	Channel.: 4
Comment 2	A spectrum analyzer with an integrated 99% power BW function is used
Comment 3	OBW: 1.224 MHz

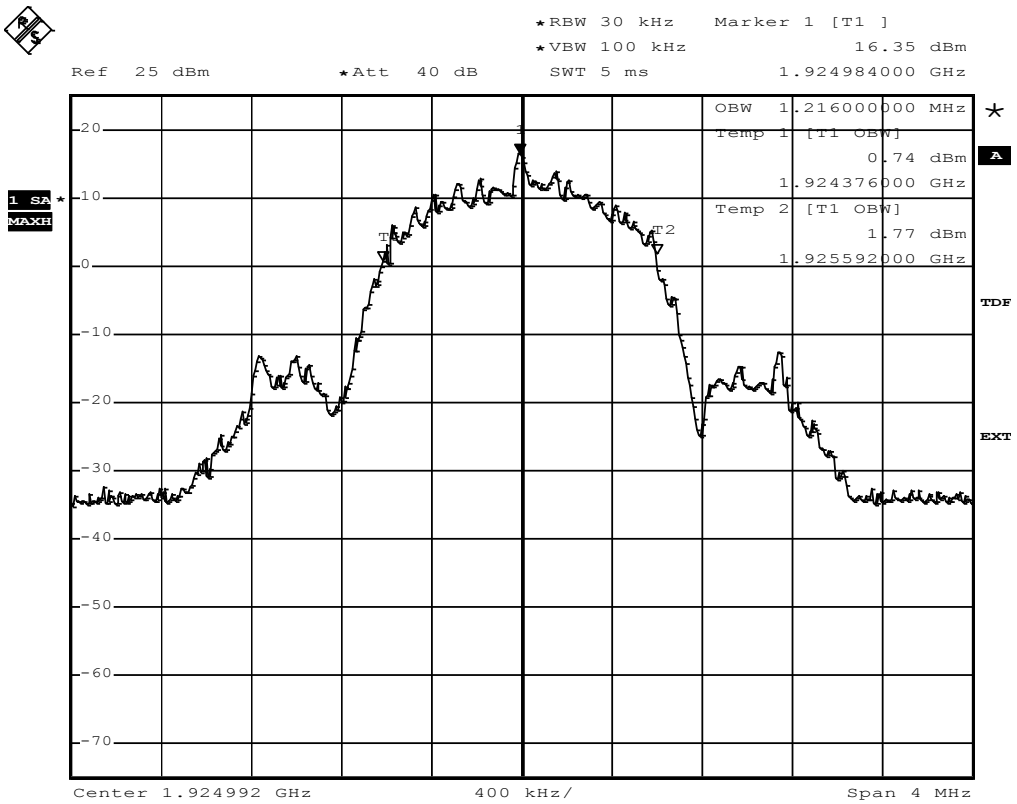


Comment: _
Date: 23.SEP.2014 12:59:33

Occupied Bandwidth – F_{MID}

RSS Gen
Occupied Bandwidth

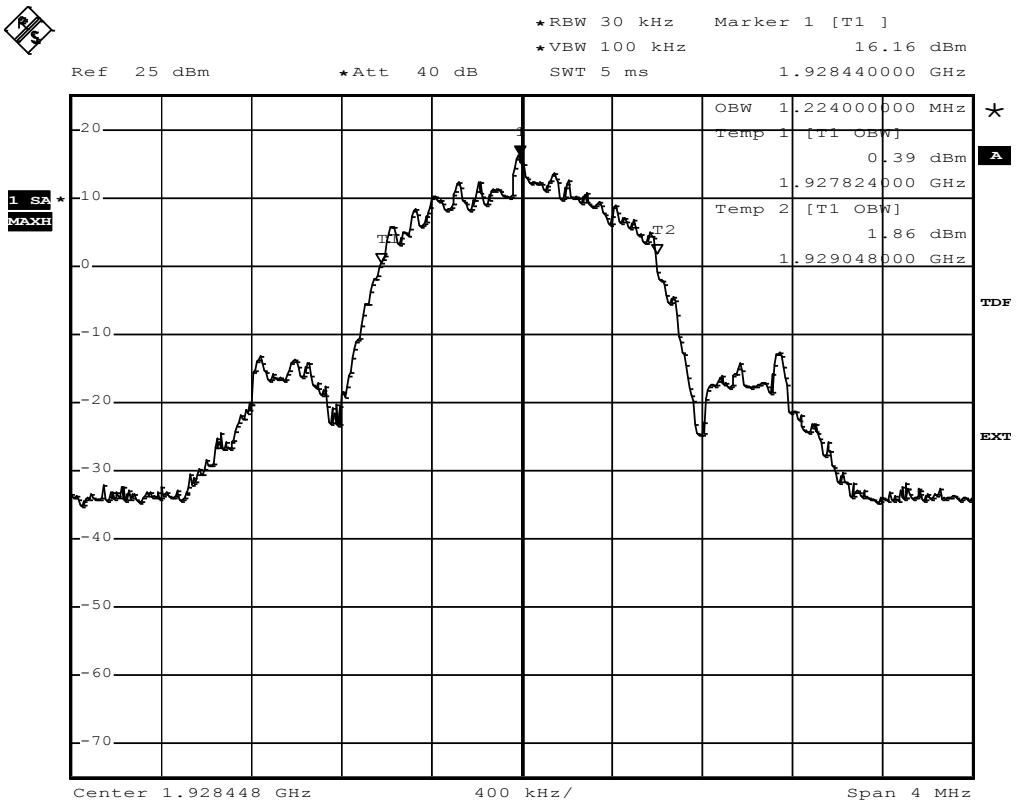
EUT	Communication Headset
Model	AXP379
Approval Holder	Sonetics Corporation
Temperature / Voltage	24°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. W. Treffke
Test Specification	Occupied Bandwidth
Comment 1	Channel.: 2
Comment 2	A spectrum analyzer with an integrated 99% power BW function is used
Comment 3	OBW: 1.216 MHz



Occupied Bandwidth – F_{HIGH}

RSS Gen
Occupied Bandwidth

EUT	Communication Headset
Model	AXP379
Approval Holder	Sonetics Corporation
Temperature / Voltage	24°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. W. Treffke
Test Specification	Occupied Bandwidth
Comment 1	Channel.: 0
Comment 2	A spectrum analyzer with an integrated 99% power BW function is used
Comment 3	OBW: 1.224 MHz



Comment: _
Date: 23.SEP.2014 13:07:20

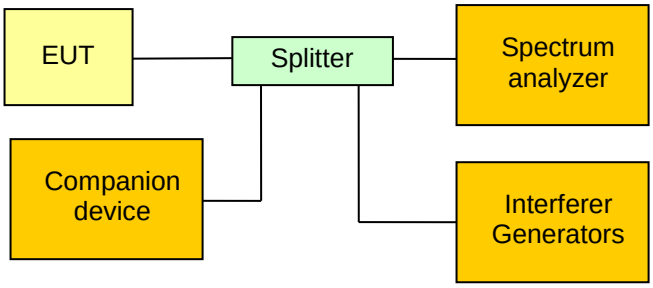
3.7 Test Conditions and Results – Emission Bandwidth

Emission Bandwidth acc. to FCC 47 CFR 15D	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(a)
Test according to measurement reference	Reference Method
	ANSI C63.17 6.1.3
Tested frequencies	F_{LOW} / F_{HIGH}
EUT test mode	TDMA

Limits

0.05 MHz ≤ Emission Bandwidth < 2.5 MHz

Test setup



Test procedure

1. EUT set to test mode
2. Span set to at least twice the emission spectrum
3. Resolution bandwidth set to 1% of emission bandwidth and detector is set to peak with max hold
4. The emission bandwidth is determined by the two -26dB points left and right of the maximum emission level
5. (The emission bandwidth is determined by the two -12dB points left and right of the maximum emission level)
6. (The emission bandwidth is determined by the two -6dB points left and right of the maximum emission level)

Test result

Channel	Center frequency [MHz]	Mode	Lower edge [MHz]	Upper edge [MHz]	Bandwidth [MHz]
F_{LOW}	1921.536	-26 dB	1920.826	1922.244	1.418
F_{HIGH}	1928.448	-26 dB	1927.716	1929.156	1.440
F_{LOW}	1921.536	-12 dB	1920.954	1922.118	1.160
F_{HIGH}	1928.448	-12 dB	1927.866	1929.028	1.160
F_{LOW}	1921.536	-6 dB	1921.134	1921.998	0.860
F_{HIGH}	1928.448	-6 dB	1928.024	1928.908	0.880

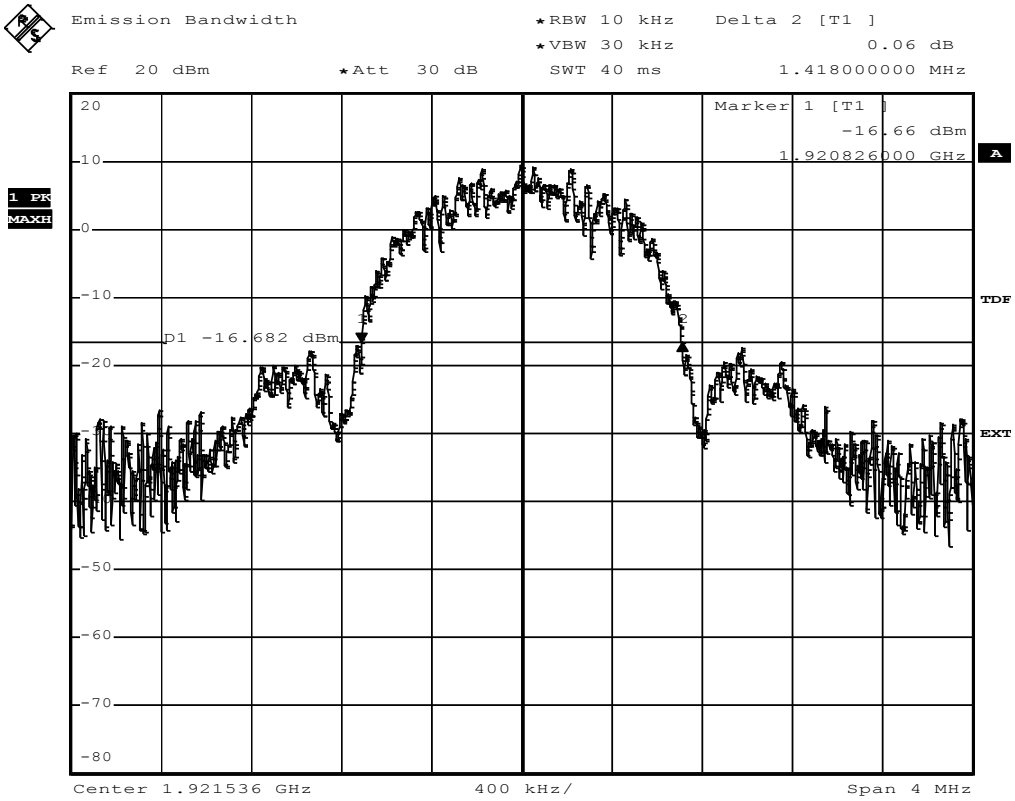
Comments:

Emission Bandwidth – F_{LOW}

FCC Part 15.303 Emission bandwidth

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Emission bandwidth
Measured Bandwidth	Emission Bandwidth = 1.42MHz
Max. Permitted Power	Limit = 2.5 MHz
Test result	Verdict = PASS



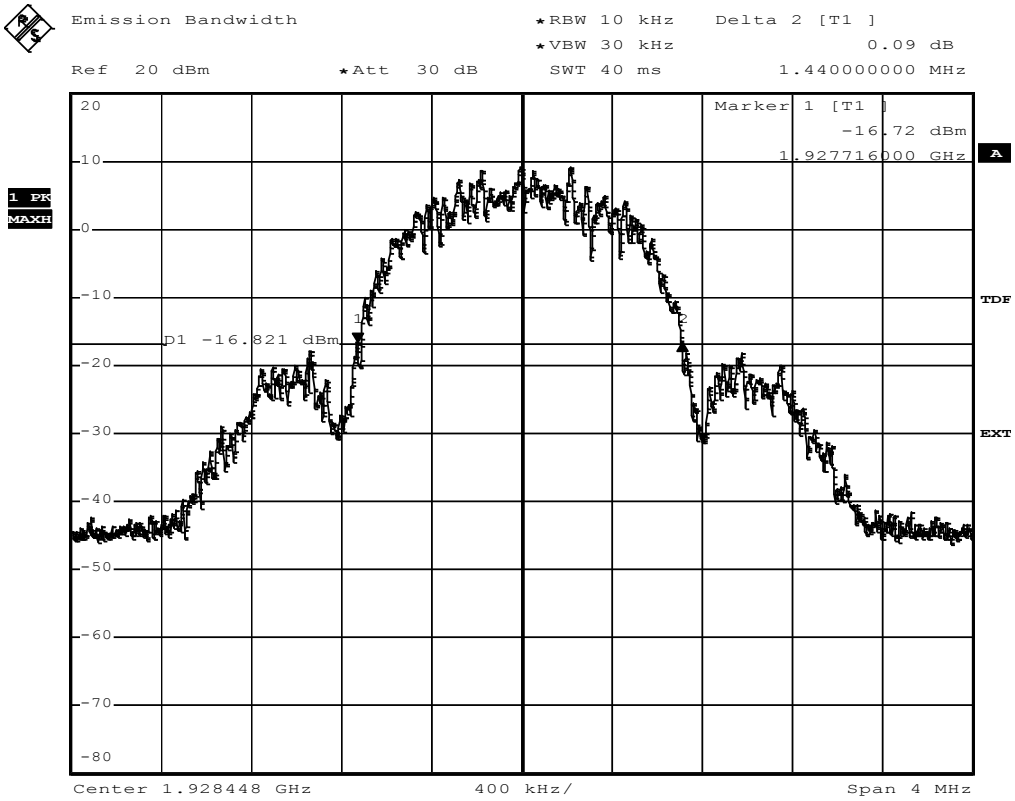
Comment: Ansi C63.17-2006 6.1.3
Date: 23.SEP.2014 11:32:07

Emission Bandwidth – F_{HIGH}

FCC Part 15.303 Emission bandwidth

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Emission bandwidth
Measured Bandwidth	Emission Bandwidth = 1.44MHz
Max. Permitted Power	Limit = 2.5 MHz
Test result	Verdict = PASS



Comment: Ansi C63.17-2006 6.1.3
Date: 23.SEP.2014 12:45:39

3.8 Test Conditions and Results – Peak transmit power

Peak transmit power acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.319(c),(e) / IC RSS-213 4.3.1, 6.5
Test according to measurement reference	Reference Method
	ANSI C63.17 6.1.2
Tested frequencies	F_{LOW} / F_{HIGH}
EUT test mode	TDMA
Antenna excess gain	0 dB

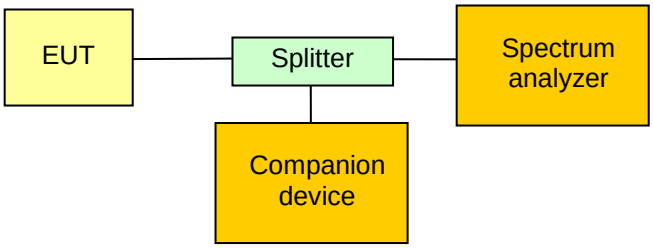
Limits

Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the emission bandwidth in hertz. The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

$$P_{EUT}[dBm] \leq P_{limit} \; where \; P_{limit} = \begin{cases} P_{max} - (G_A - g), when \; G_A > 3 \; dBi \\ P_{max}, G_A < 3 \; dBi \end{cases}$$

$$P_{max}[dBm] = 5\log(Emission/Occupied \; Bandwidth \; [Hz]) - 10 \; dBm$$

Test setup



Test procedure

1. EUT set to test mode
2. The RBW is set to be larger than the emission bandwidth and VBW ≥ RBW
3. Transmission burst is measured in zero span and peak detector
4. The maximum level in the burst is recorded as peak transmit power

Test results - FCC

Channel	Frequency [MHz]	Peak Power [dbm]	Emission Bandwidth [Hz]	Excess gain [dB]	Limit [dbm]	Margin [dB]
F_{LOW}	1921.536	20.18	1418000	0	20.76	-0.58
F_{HIGH}	1928.448	20.18	1440000	0	20.79	-0.61

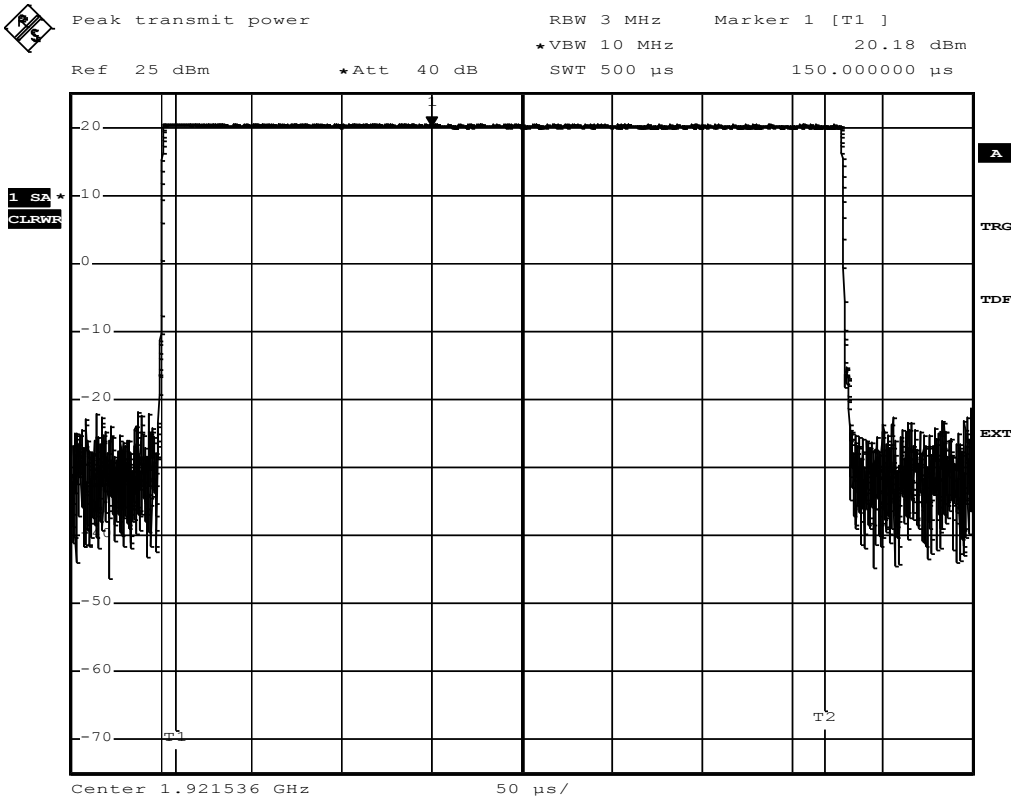
Test results - IC						
Channel	Frequency [MHz]	Peak Power [dbm]	Occupied Bandwidth [Hz]	Excess gain [dB]	Limit [dbm]	Margin [dB]
F_{LOW}	1921.536	20.18	1224000	0	20.43	-0.25
F_{HIGH}	1928.448	20.18	1224000	0	20.43	-0.25
Comments:						

Peak Power – F_{LOW}

FCC Part 15.319 Peak Transmit Power limit

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Peak transmit power
Supply	
Measured Bandwidth	1.418MHz
Max. Permitted Power	20,75 dBm
Measured Power	20,18 dBm
Test result	Verdict = PASS



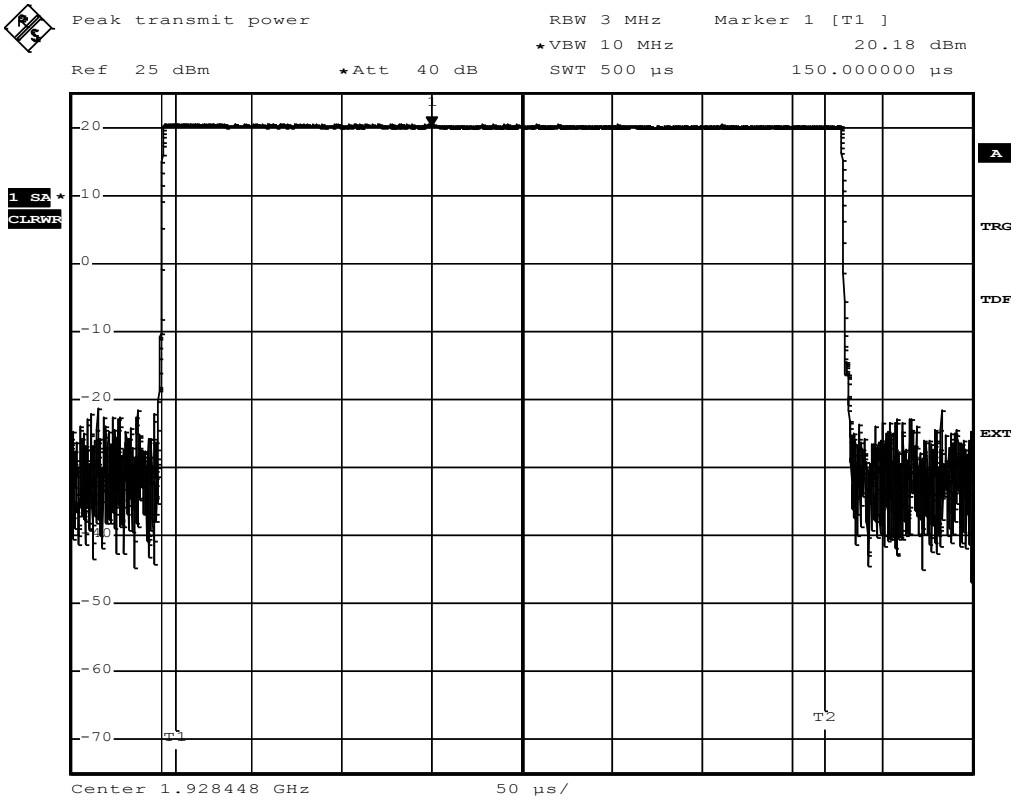
Comment: Ansi C63.17-2006 6.1.2
Date: 23.SEP.2014 11:33:55

Peak Power – F_{HIGH}

FCC Part 15.319 Peak Transmit Power limit

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Peak transmit power
Supply	
Measured Bandwidth	1.44MHz
Max. Permitted Power	20,79 dBm
Measured Power	20,18 dBm
Test result	Verdict = PASS



Comment: Ansi C63.17-2006 6.1.2
Date: 23.SEP.2014 12:50:05

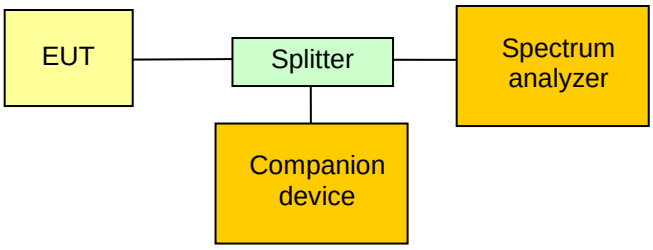
3.9 Test Conditions and Results – Power spectral density

Power spectral density acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.319(d) / IC RSS-213 4.3.2, 6.5
Test according to measurement reference	Reference Method
	ANSI C63.17 6.1.2
Tested frequencies	F_{LOW} / F_{HIGH}
EUT test mode	TDMA

Limits

≤ 3 mW (4.77 dBm) / 3 kHz

Test setup



Test procedure

1. EUT set to test mode
2. The RBW is set to 3 kHz and VBW ≥ 3 x RBW
3. The center frequency is set to the maximum of the emission envelope and the span is set to zero
4. With sample detector and a minimum of 100 sweeps the -20 dB points below the first peak are determined and the data points between the two -20 dB points are summed and normalized to get the average pulse power in a 3 kHz bandwidth

Test results

Channel	Frequency [MHz]	Peak Density [dbm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
F_{LOW}	1921.532	-4.9207	4.77	-09.69
F_{HIGH}	1928.444	-1.0525	4.77	-05.82

Comments:

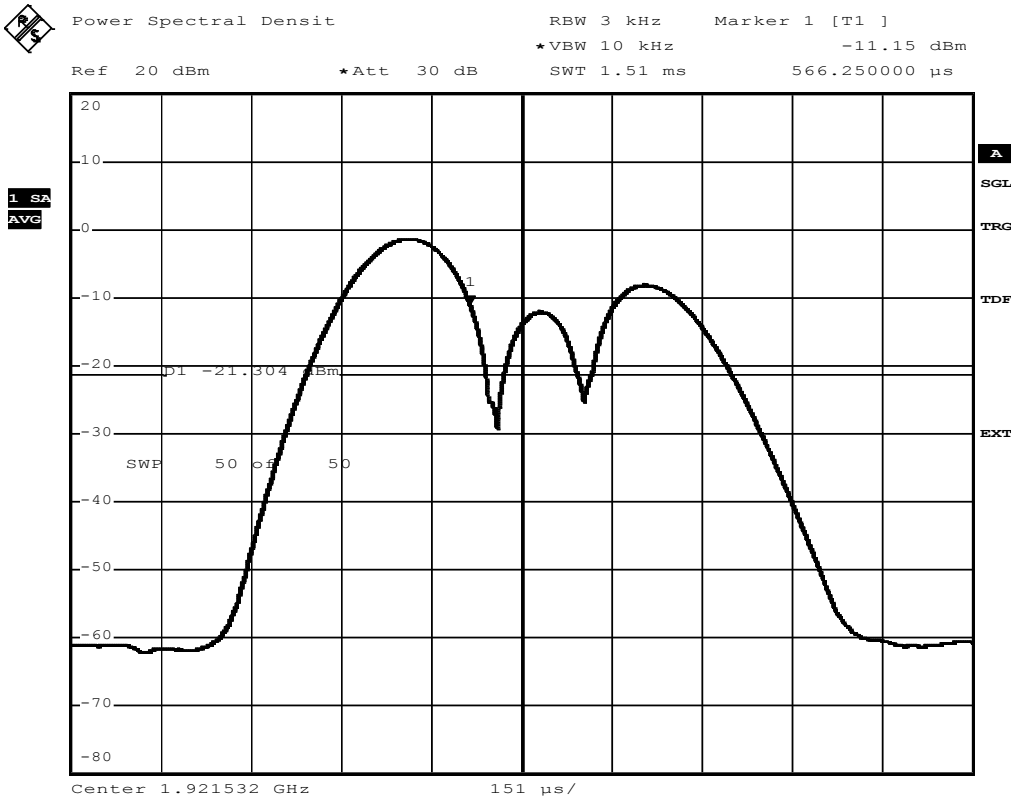
Power Spectral Density – F_{LOW}

FCC Part 15.319 Power spectral density

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Power spectral density
Peak Frequency in MHz	1921,532000 MHz
Total pulse energy in mW	0,000122 mW
Wideband pulse duration in ms	0,377438 ms
PSD in mW	0,3221 mW
PSD in dBm	-4,9207 dBm

Pass criteria: PSD is less than 3mW Verdict = PASS



Comment: Ansi C63.17-2006 6.1.5
Date: 23.SEP.2014 11:36:43

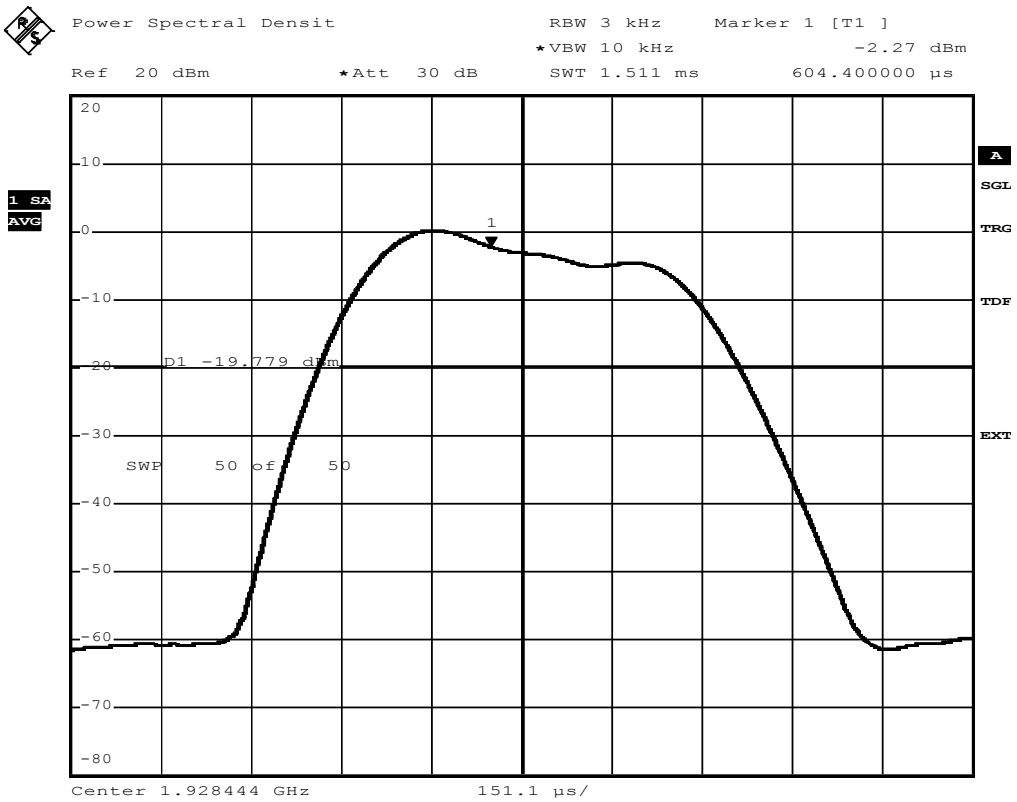
Power Spectral Density – F_{HIGH}

FCC Part 15.319 Power spectral density

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Power spectral density
Peak Frequency in MHz	1928,444000 MHz
Total pulse energy in mW	0,000296 mW
Wideband pulse duration in ms	0,377713 ms
PSD in mW	0,7848 mW
PSD in dBm	-1,0525 dBm

Pass criteria: PSD is less than 3mW Verdict = PASS



Comment: Ansi C63.17-2006 6.1.5
Date: 23.SEP.2014 12:48:08

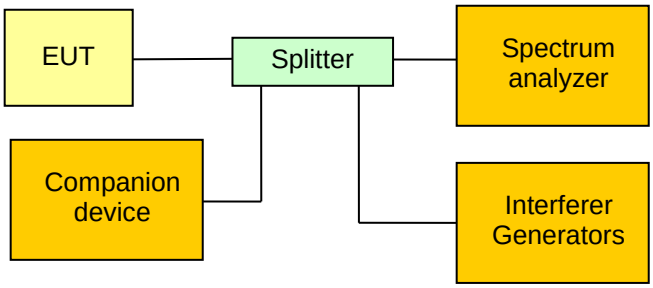
3.10 Test Conditions and Results – Carrier frequency stability

Carrier frequency stability acc. to FCC 47 CFR 15D / IC RSS-213	Verdict: PASS
EUT requirement rule parts and clause	Reference
	FCC 15.323(f) / IC RSS-213 6.2
Test according to measurement reference	Reference Method
	ANSI C63.17 6.2.1
Tested frequencies	F_{MID}
EUT test mode	TDMA

Limits

± 10 ppm / hour

Test setup



Test procedure

1. With interferer signals the EUT is forced to center channel and communication to companion device is established.
2. The demodulated carrier EUT signal is captured over time
3. The mean frequency is determined under all supply voltage and temperature conditions

Test results

Voltage	Temperature	Maximum Frequency deviation [ppm]	Limit [ppm]	Margin [ppm]
3.7 VDC	25°C	0.00 (reference)	±10.0	N/A
3.7 VDC	-30°C	0.36	±10.0	-09.64
3.7 VDC	70°C	0.21	±10.0	-09.79

Comments:

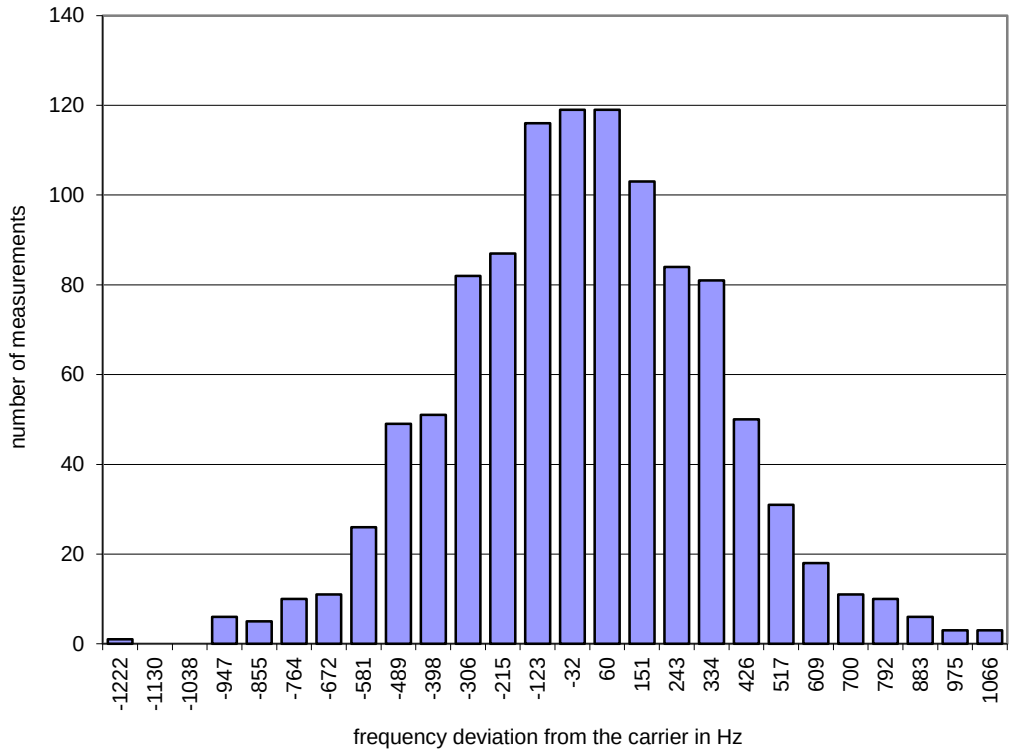
Carrier stability – Frequency stability – T_{NOM} V_{NOM}

FCC Part 15.323 Carrier Frequency Stability

Testprocedure ANSI 63.17

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	25 °C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frequency stability
Power supply	Vnom
Frequency of carrier	1924,98743 MHz
Measured mean	1924,98743 MHz
Stability (supply temp)	0,00 ppm
Result	Verdict = PASS
Stability over time	fmax : 0,56 ppm fmin : 0,63 ppm
Result	Verdict = PASS

Histogram



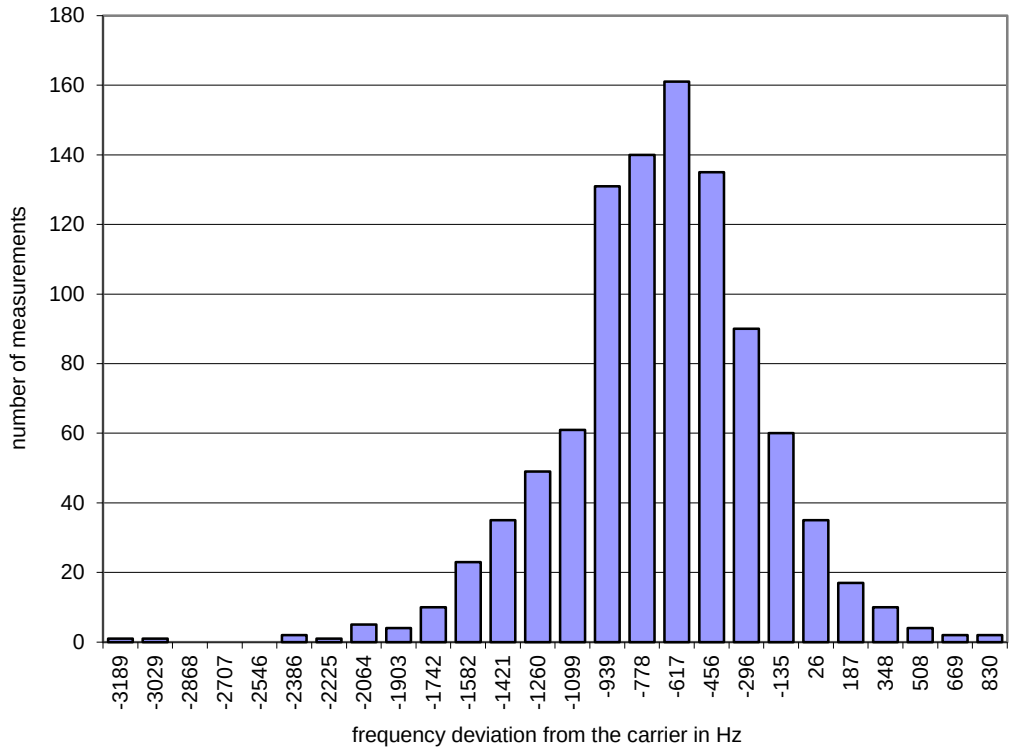
Carrier stability – Frequency stability – T_{MIN} V_{NOM}

FCC Part 15.323 Carrier Frequency Stability

Testprocedure ANSI 63.17

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	-30 °C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frequency stability
Power supply	Vnom
Frequency of carrier	1924,987440 MHz
Measured mean	1924,986745 MHz
Stability (supply temp)	0,36 ppm
Result	Verdict = PASS
Stability over time	fmax : 0,79 ppm fmin : 1,30 ppm
Result	Verdict = PASS

Histogram



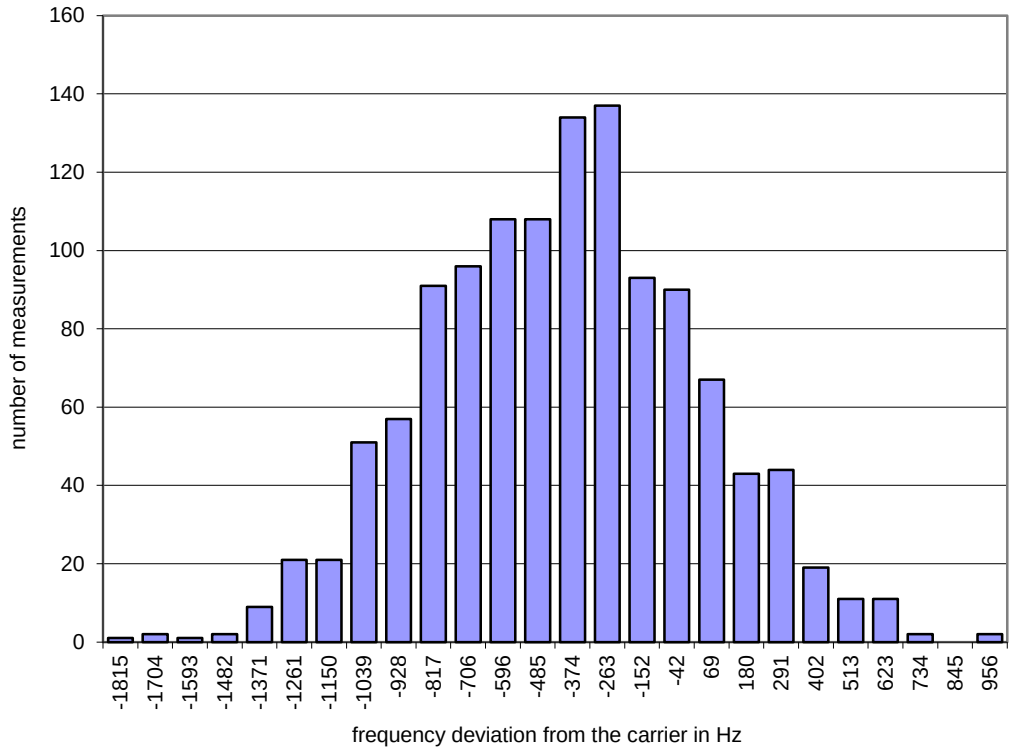
Carrier stability – Frequency stability – T_{MAX} V_{NOM}

FCC Part 15.323 Carrier Frequency Stability

Testprocedure ANSI 63.17

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	70 °C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frequency stability
Power supply	Vnom
Frequency of carrier	1924,987430 MHz
Measured mean	1924,987027 MHz
Stability (supply temp)	0,21 ppm
Result	Verdict = PASS
Stability over time	fmax : 0,71 ppm fmin : 0,73 ppm
Result	Verdict = PASS

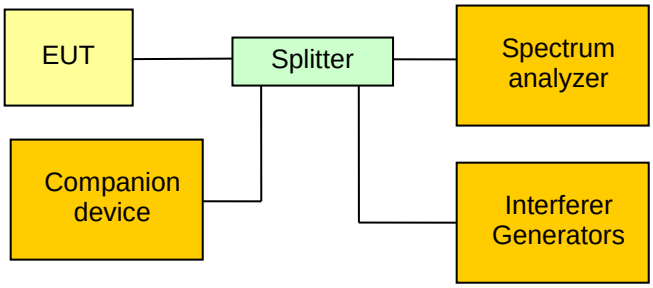
Histogram



3.11 Test Conditions and Results – Transmitter in-band unwanted emissions

Transmitter in-band unwanted emissions acc. to FCC 47 CFR 15D / IC RSS-213		**Verdict: PASS**
Test according referenced standards	Reference Method	
	FCC 15.323(d) / IC RSS-213 6.7.2	
Test according to measurement reference	Reference Method	
	ANSI C63.17 6.1.6	
Tested frequencies	F_{LOW} / F_{HIGH}	
Tested frequency range	1920 – 1930 MHz	
Limits		
Frequency range [MHz]	Detector	Limit [dBc]
1920 MHz to (F_c – 3B)	Peak	-60
(F_c – 3B) to (F_c – 2B)	Peak	-50
(F_c – 2B) to (F_c – 1B)	Peak	-30
(F_c + 1B) to (F_c + 2B)	Peak	-30
(F_c + 2B) to (F_c + 3B)	Peak	-50
(F_c + 3B) to 1930 MHz	Peak	-60
B = emission / occupied bandwidth of selected channel F_c = Center frequency of selected channel		

Test setup



Test procedure

1. With interferer signal the EUT is forced to the test channel and a communication session is established between the EUT and the companion device
2. The RBW of the spectrum analyzer is set to 1% of the emission bandwidth and the VBW is set to 3 times the RBW
3. With peak detector and max hold the emission spectrum is recorded over the corresponding frequency range

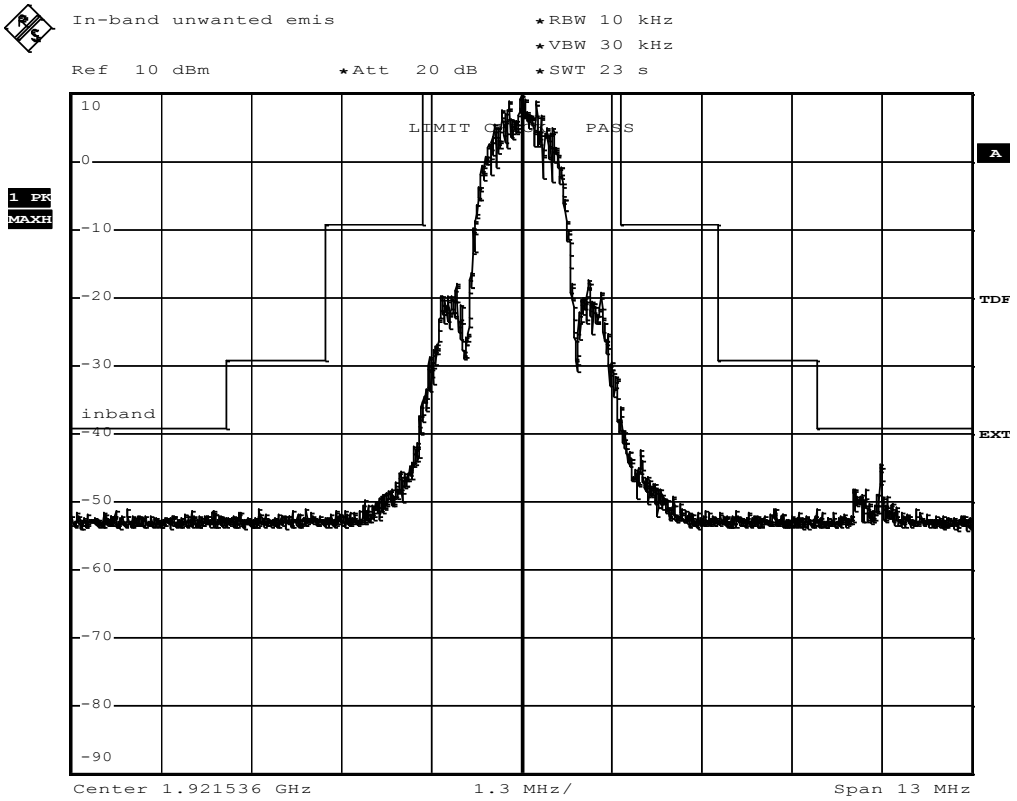
Test results		
Channel	Frequency [MHz]	Verdict
F_{LOW}	1921.536	PASS
F_{HIGH}	1928.448	PASS
Comments:		

Transmitter in-band unwanted emissions – F_{LOW}

FCC Part 15.323 In-band unwanted emission

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	In-band unwanted emission
	1.418MHz



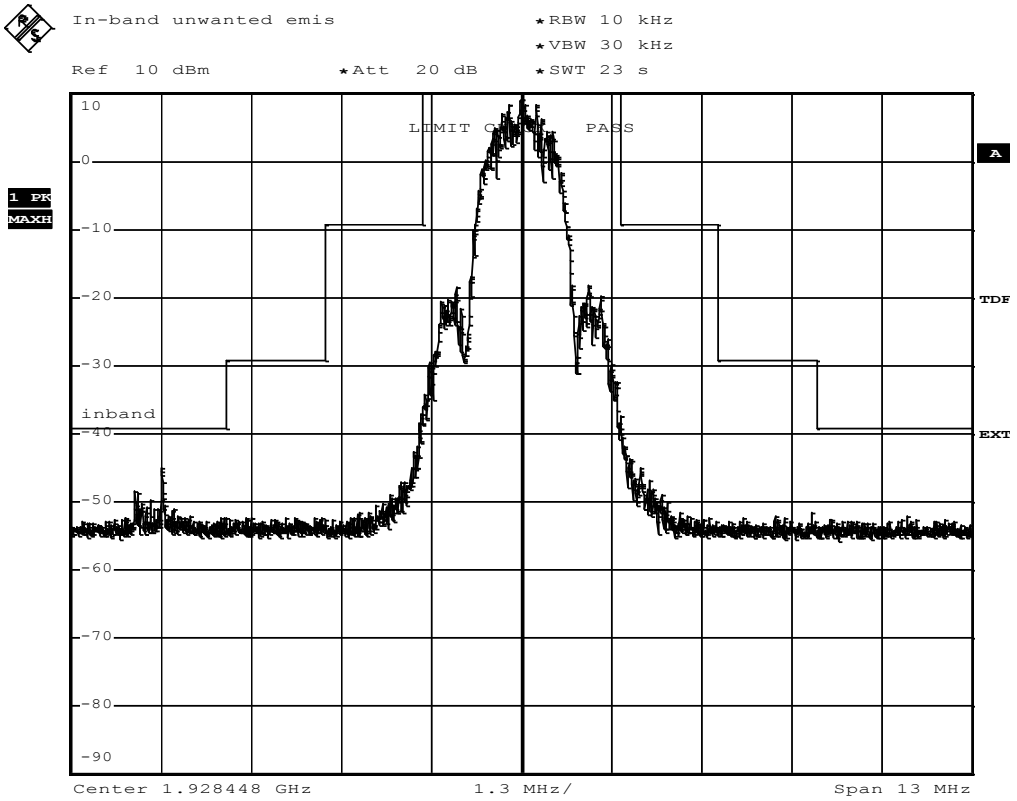
Comment: Ansi C63.17-2006 6.1.6.1
Date: 23.SEP.2014 11:56:15

Transmitter in-band unwanted emissions – F_{HIGH}

FCC Part 15.323 In-band unwanted emission

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	In-band unwanted emission
	1.418MHz



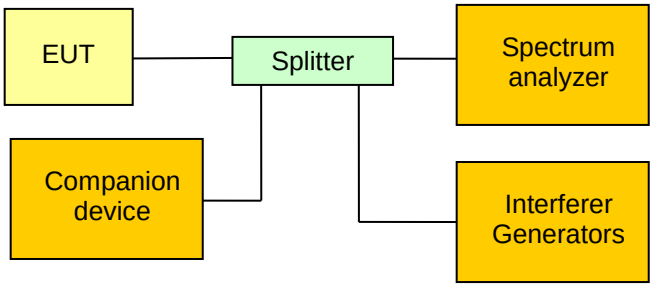
Comment: Ansi C63.17-2006 6.1.6.1
Date: 23.SEP.2014 12:43:54

3.12 Test Conditions and Results – Transmitter out-of-band emissions

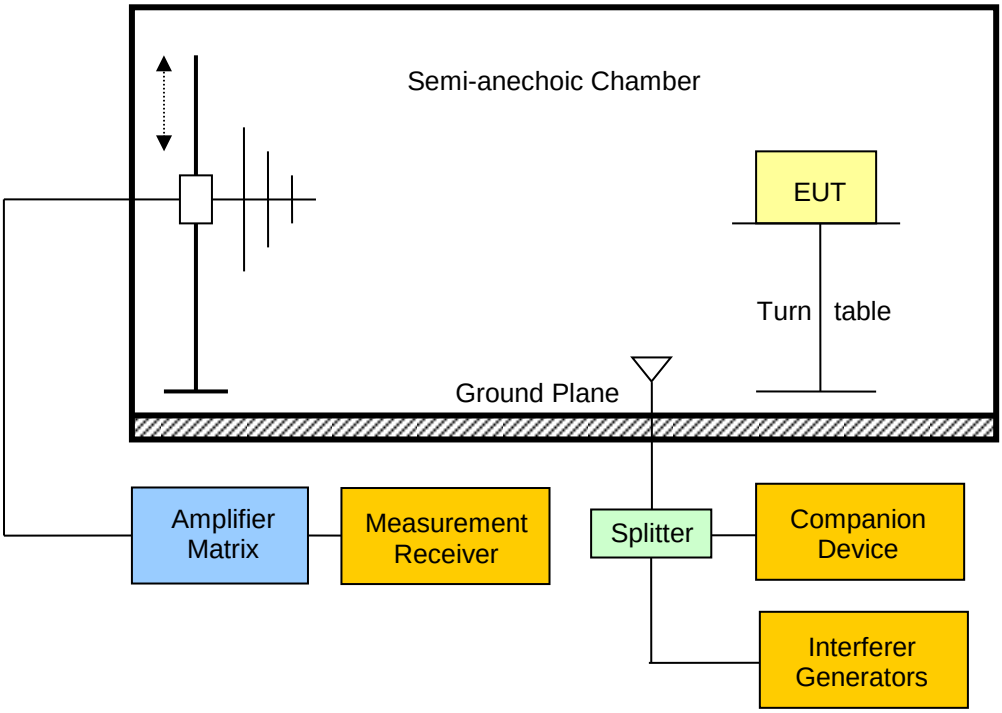
Transmitter out-of-band emissions acc. to FCC 47 CFR 15D / IC RSS-213			**Verdict: PASS**
Test according referenced standards		Reference Method	
		FCC 15.323(d) / IC RSS-213 6.7.1	
Test according to measurement reference		Reference Method	
		ANSI C63.17 6.1.6	
Tested frequencies		F_{LOW} / F_{HIGH}	
Tested frequency range		30 MHz – 10th Harmonic	
Test option		Tested according to option a), b) and d) in C63.17 6.1.6.2	
Limits			
Frequency range [MHz]	Detector	Limit	Limit Distance [m]
30 – 88	Quasi-Peak	100 µV/m (40 dBµV/m)	3
88 – 216	Quasi-Peak	150 µV/m (43.5 dBµV/m)	3
216 – 960	Quasi-Peak	200 µV/m (46 dBµV/m)	3
960 – 1000	Quasi-Peak	500 µV/m (54 dBµV/m)	3
1000 – 1917.5	Average	500 µV/m (54 dBµV/m)	3
1917.5 – 1918.75	Peak	-39.5 dBm *	N/A
1918.75 – 1920	Peak	-29.5 dBm *	N/A
1930 – 1931.25	Peak	-29.5 dBm *	N/A
1931.25 – 1932.5	Peak	-39.5 dBm *	N/A
1932.5 - 20000	Average	500 µV/m (54 dBµV/m)	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.
* Measurement is performed with conducted measurement setup

Test setup conducted



Test setup radiated



Test procedure

1. EUT is forced to test channel with the interferer generators and a communication session is established with the companion device
2. Span it set according to measurement range
3. Resolution bandwidth , video bandwidth and detector are set according to ANSI C63.17 or ANSI C63.4
4. All significant spurious emissions and the band edge emission envelops are recorded

Test results – antenna 0									
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Limit dist. [m]*	Margin [dB]
F_{HIGH}	1928.448	TX	1932.5	57.80	pk	hor	73.90	3	-16.10
F_{HIGH}	1928.448	TX	1932.5	33.17	avg	hor	53.90	3	-20.73
F_{HIGH}	1928.448	TX	1932.5	61.73	pk	ver	73.90	3	-12.17
F_{HIGH}	1928.448	TX	1932.5	29.98	avg	ver	53.90	3	-23.92
F_{HIGH}	1928.448	TX	3855.3	48.43	pk	hor	73.90	3	-25.47
F_{HIGH}	1928.448	TX	3855.3	50.52	pk	ver	73.90	3	-23.38
F_{HIGH}	1928.448	TX	5784	54.97	pk	hor	73.90	3	-18.93
F_{HIGH}	1928.448	TX	5784	51.01	pk	ver	73.90	3	-22.89
F_{HIGH}	1928.448	TX	5786	26.29	avg	hor	53.90	3	-27.61
F_{LOW}	1921.536	TX	1917.2	56.84	pk	hor	73.90	3	-17.06
F_{LOW}	1921.536	TX	1917.2	26.90	avg	hor	53.90	3	-27.00
F_{LOW}	1921.536	TX	1917.4	63.27	pk	ver	73.90	3	-10.63
F_{LOW}	1921.536	TX	1917.4	30.91	avg	ver	53.90	3	-22.99
F_{LOW}	1921.536	TX	3838.7	49.27	pk	hor	73.90	3	-24.63
F_{LOW}	1921.536	TX	3842.9	51.68	pk	ver	73.90	3	-22.22
F_{LOW}	1921.536	TX	5760	51.45	pk	hor	73.90	3	-22.45
F_{LOW}	1921.536	TX	5760	49.87	pk	ver	73.90	3	-24.03
Comments: * Physical distance between EUT and measurement antenna.									

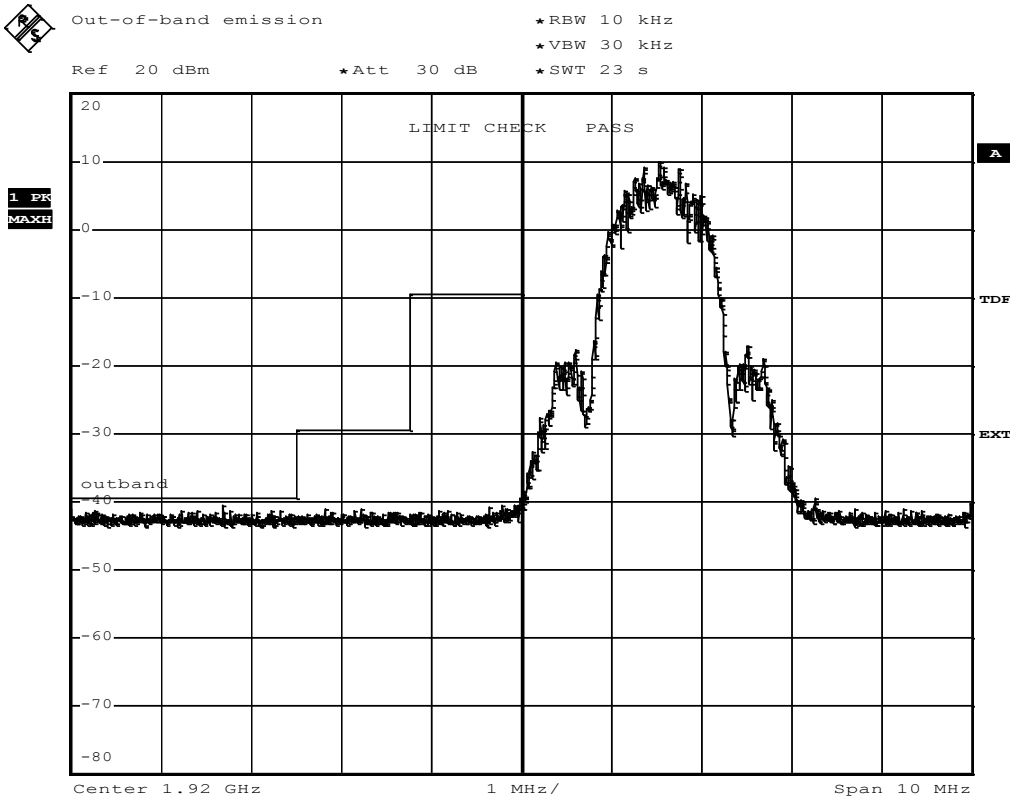
Test results – antenna 1									
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Limit dist. [m]*	Margin [dB]
F_{HIGH}	1928.448	TX	1932.5	62.94	pk	hor	73.90	3	-10.96
F_{HIGH}	1928.448	TX	1932.5	37.95	avg	hor	53.90	3	-15.95
F_{HIGH}	1928.448	TX	1932.5	60.88	pk	ver	73.90	3	-13.02
F_{HIGH}	1928.448	TX	1932.5	27.19	avg	ver	53.90	3	-26.71
F_{HIGH}	1928.448	TX	3855.3	48.23	pk	hor	73.90	3	-25.67
F_{HIGH}	1928.448	TX	3855.3	49.29	pk	ver	73.90	3	-24.61
F_{HIGH}	1928.448	TX	5784	46.01	pk	hor	73.90	3	-27.89
F_{HIGH}	1928.448	TX	5784	45.18	pk	ver	73.90	3	-28.72
F_{LOW}	1921.536	TX	1917.2	64.14	pk	hor	73.90	3	-09.76
F_{LOW}	1921.536	TX	1917.2	30.88	avg	hor	53.90	3	-23.02
F_{LOW}	1921.536	TX	1917.2	63.92	pk	ver	73.90	3	-09.98
F_{LOW}	1921.536	TX	1917.2	30.70	avg	ver	53.90	3	-23.20
F_{LOW}	1921.536	TX	3838.7	49.52	pk	ver	73.90	3	-24.38
F_{LOW}	1921.536	TX	5760	46.74	pk	hor	73.90	3	-27.16
F_{LOW}	1921.536	TX	5760	47.74	pk	ver	73.90	3	-26.16
Comments: * Physical distance between EUT and measurement antenna.									

Transmitter out-of-band emissions – Band edge F_{LOW}

FCC Part 15.323 Out-of-band emission

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Out-of-band emission
	measurement on the lowest carrier Carrier=1921.536MHz



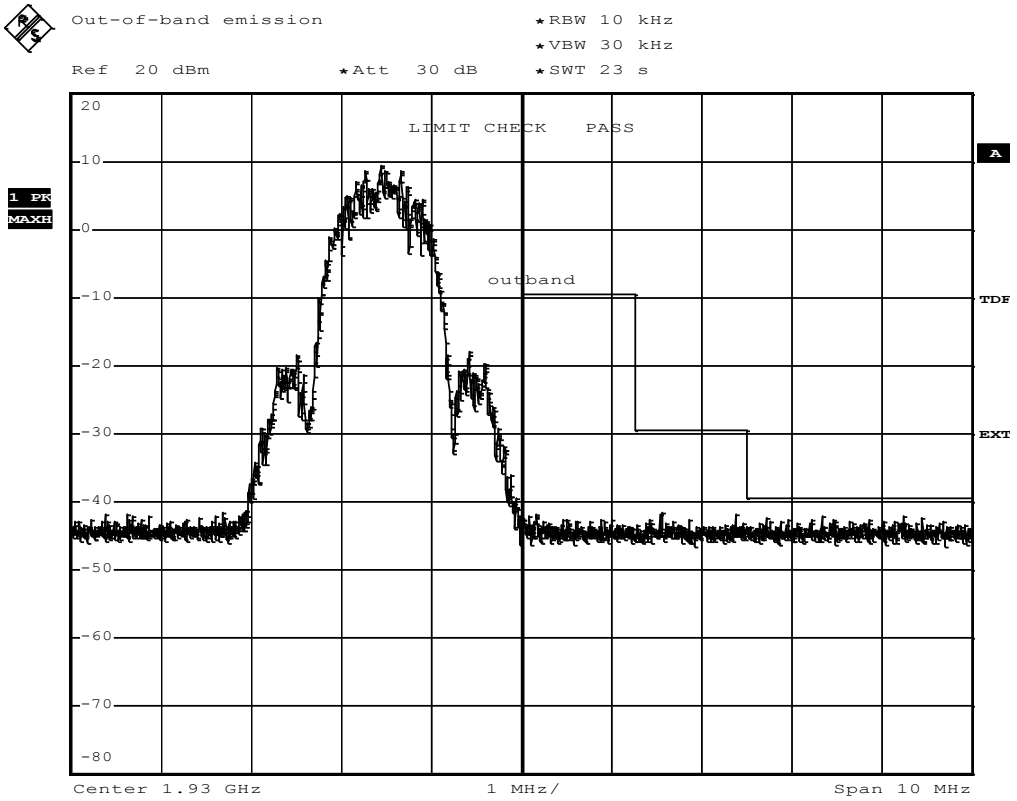
Comment: Ansi C63.17-2006 6.1.6.2
Date: 23.SEP.2014 12:36:19

Transmitter out-of-band emissions – Band edge F_{HIGH}

FCC Part 15.323 Out-of-band emission

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Out-of-band emission
	measurement on the highest carrier Carrier=1928.448MHz



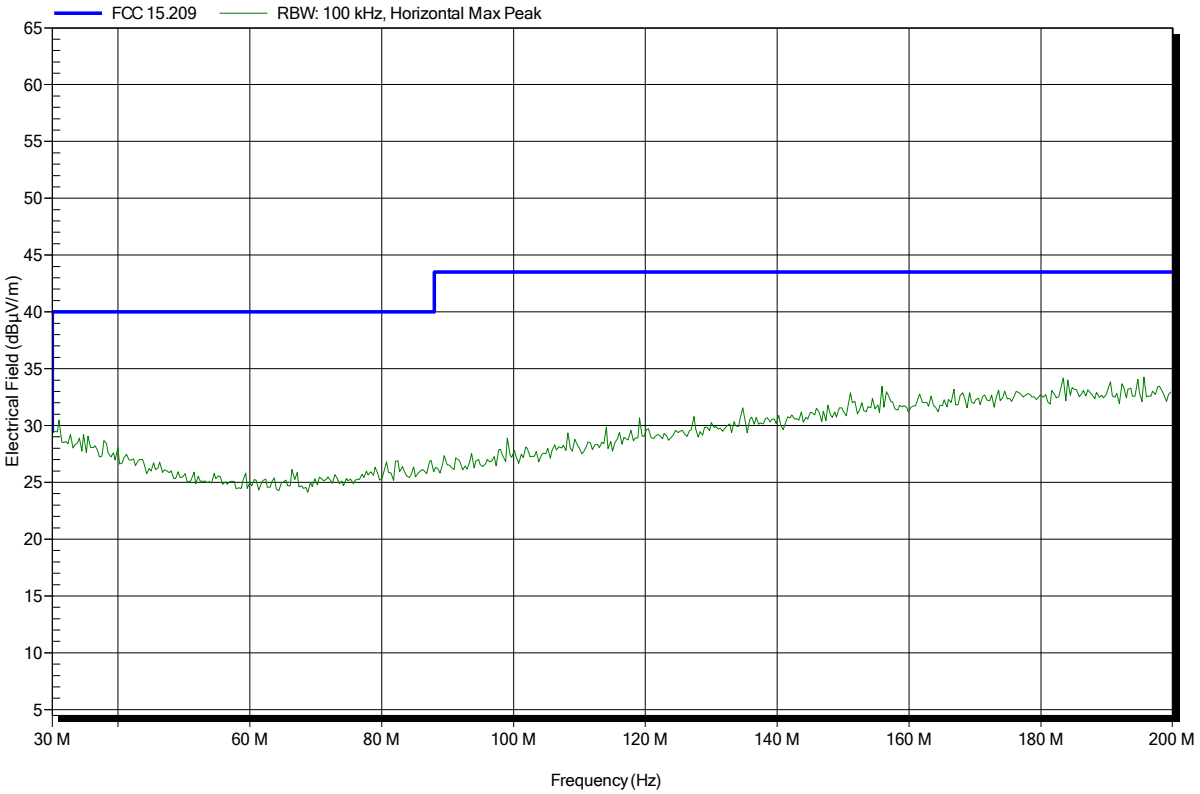
Comment: Ansi C63.17-2006 6.1.6.2
Date: 23.SEP.2014 12:41:12

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	worst case

Index 5

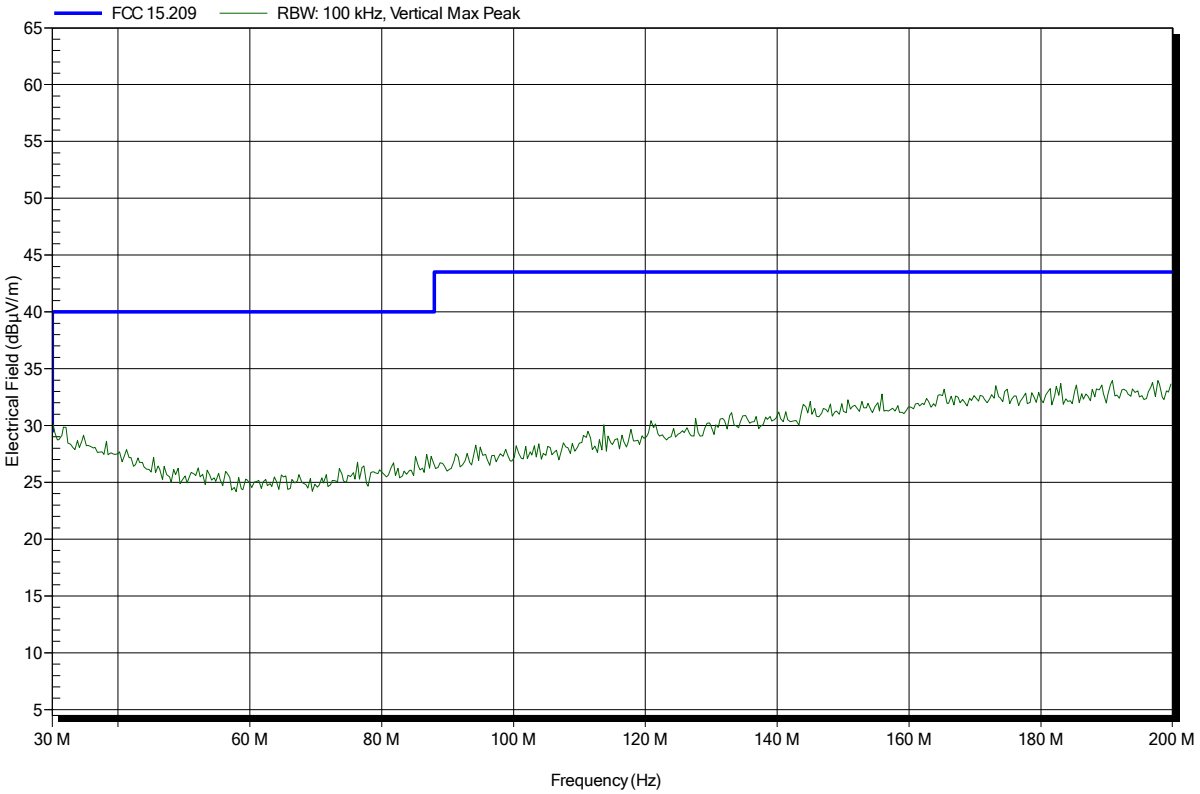


Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	worst case

Index 6

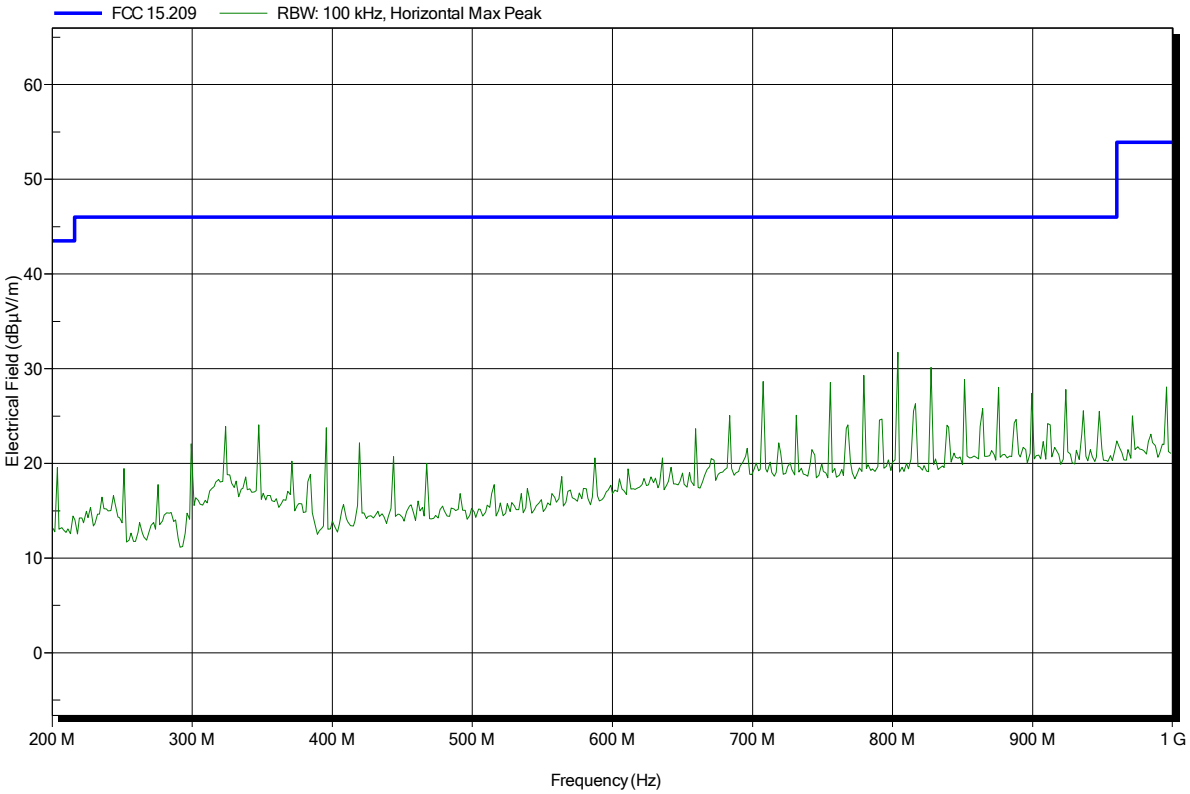


Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	worst case

Index 3

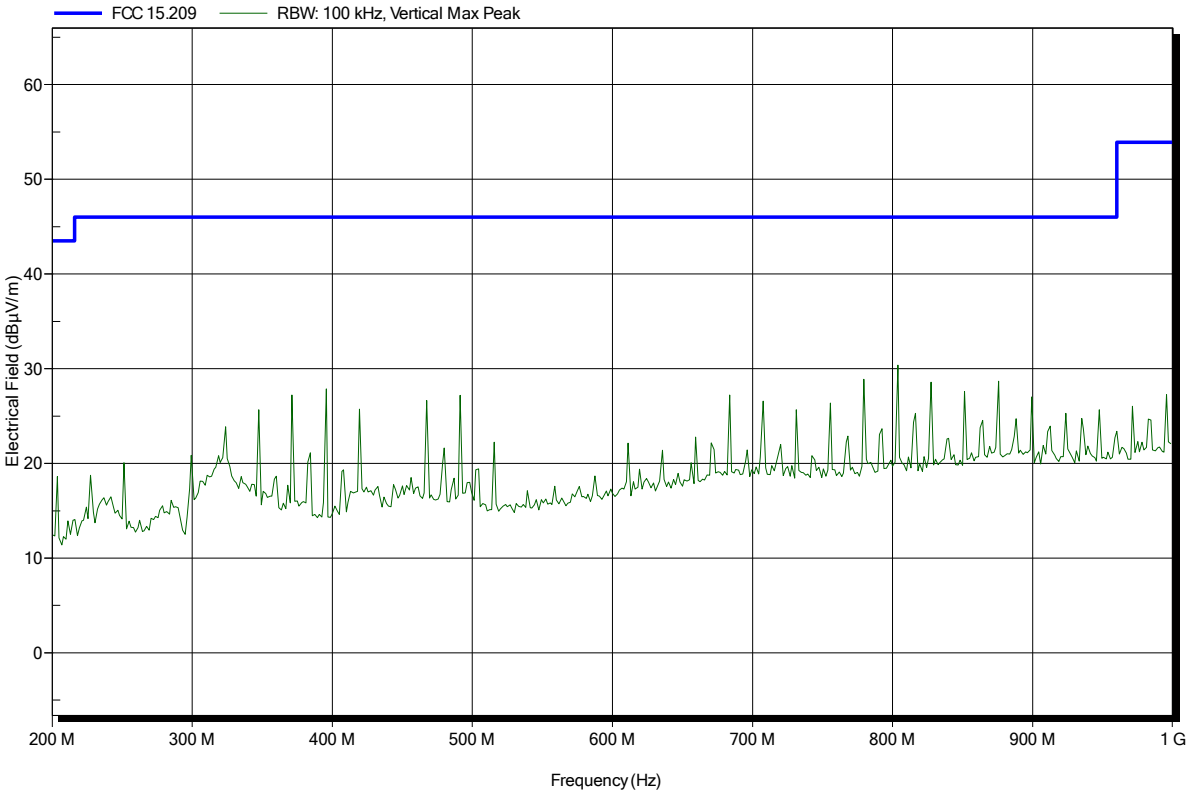


Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	worst case

Index 4

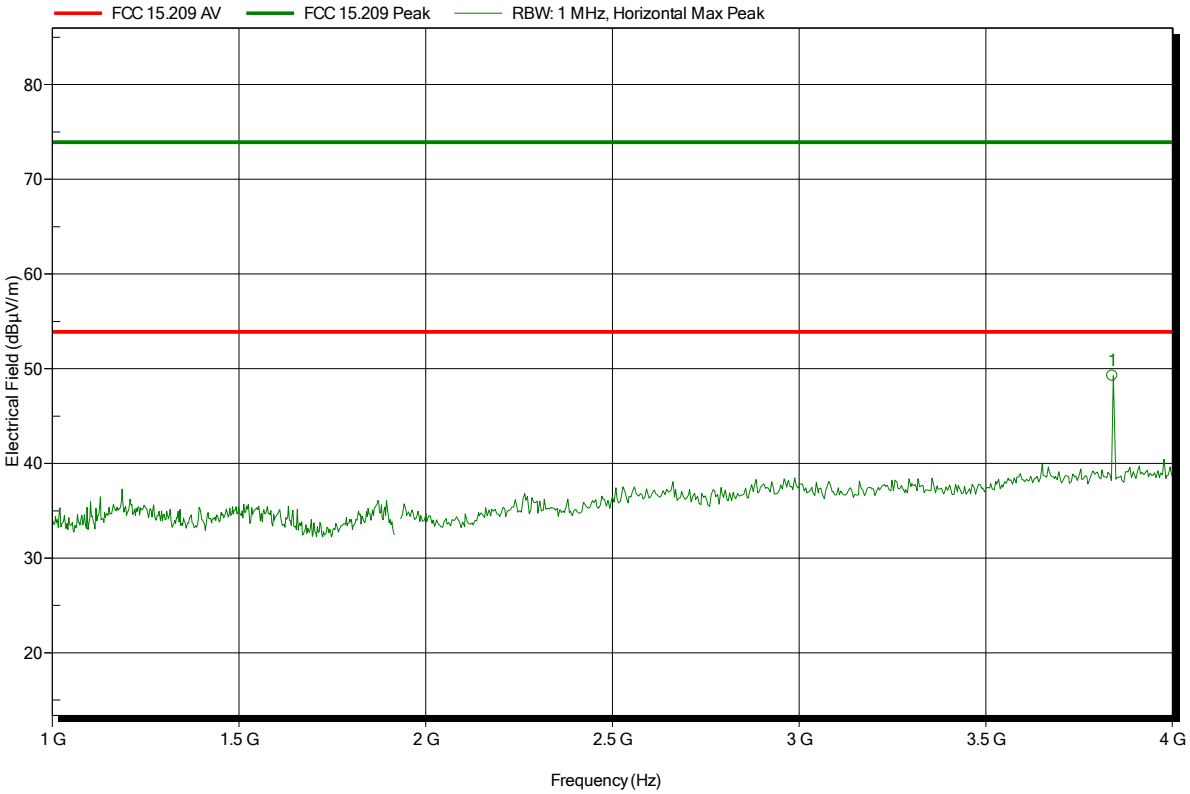


Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	with notch-filter

Index 11



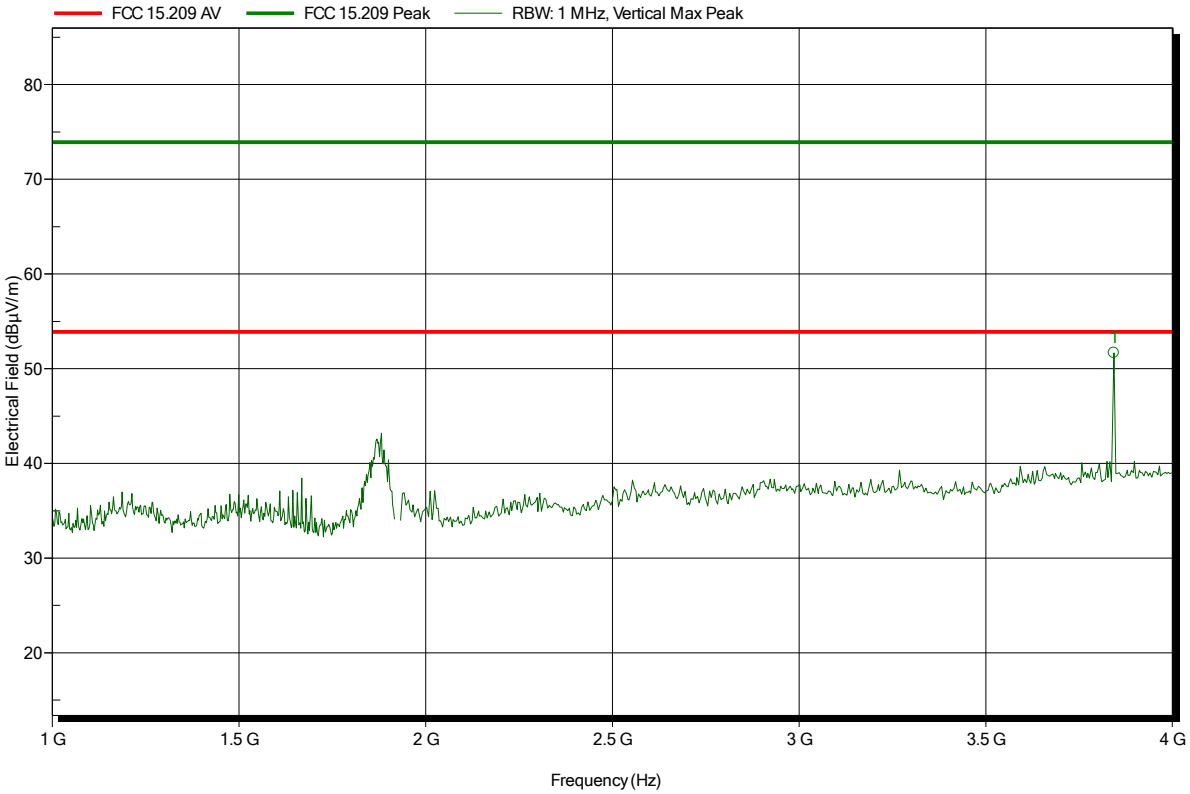
Frequency	Peak	Peak Limit	Peak Difference	Status
3.8387 GHz	49.27 dBµV/m	73.9 dBµV/m	-24.63 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	with notch-filter

Index 12



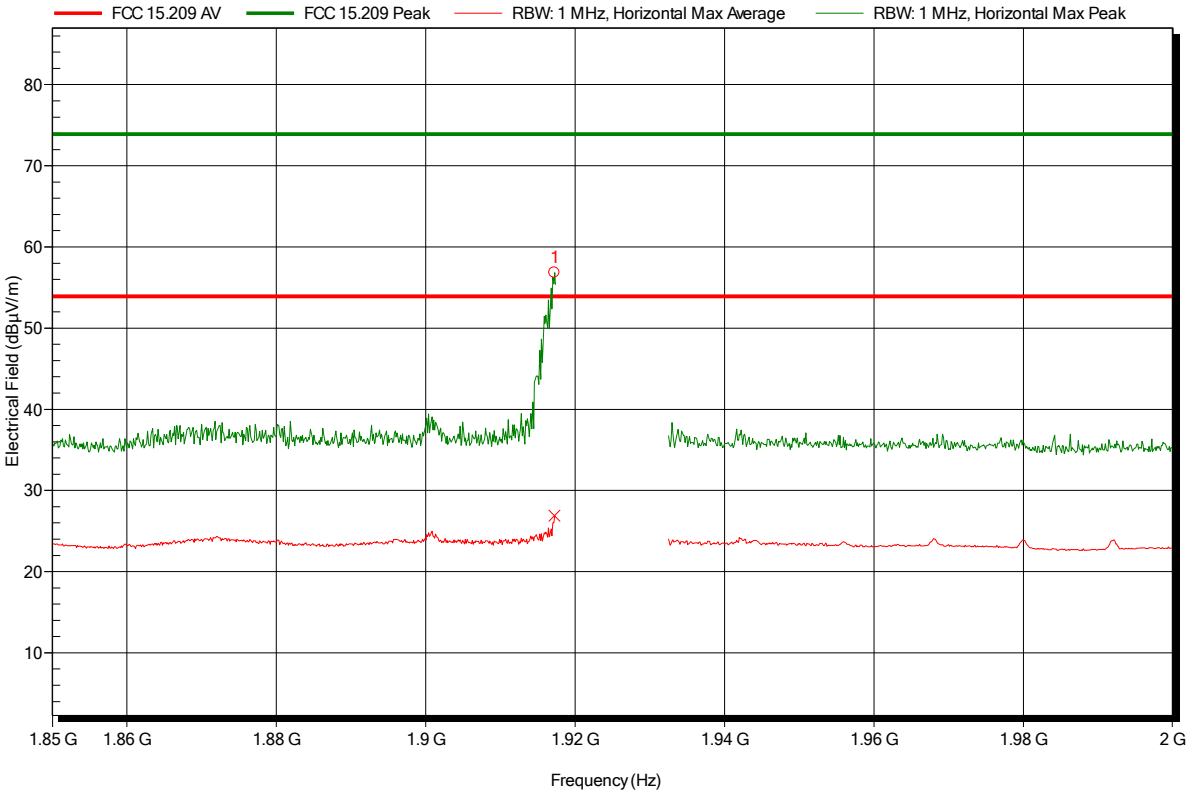
Frequency	Peak	Peak Limit	Peak Difference	Status
3.8429 GHz	51.68 dBµV/m	73.9 dBµV/m	-22.22 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	

Index 14



Frequency	Peak	Peak Limit	Peak Difference	Status
1.9172 GHz	56.84 dBµV/m	73.9 dBµV/m	-17.06 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.9172 GHz	26.9 dBµV/m	53.9 dBµV/m	-27 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	

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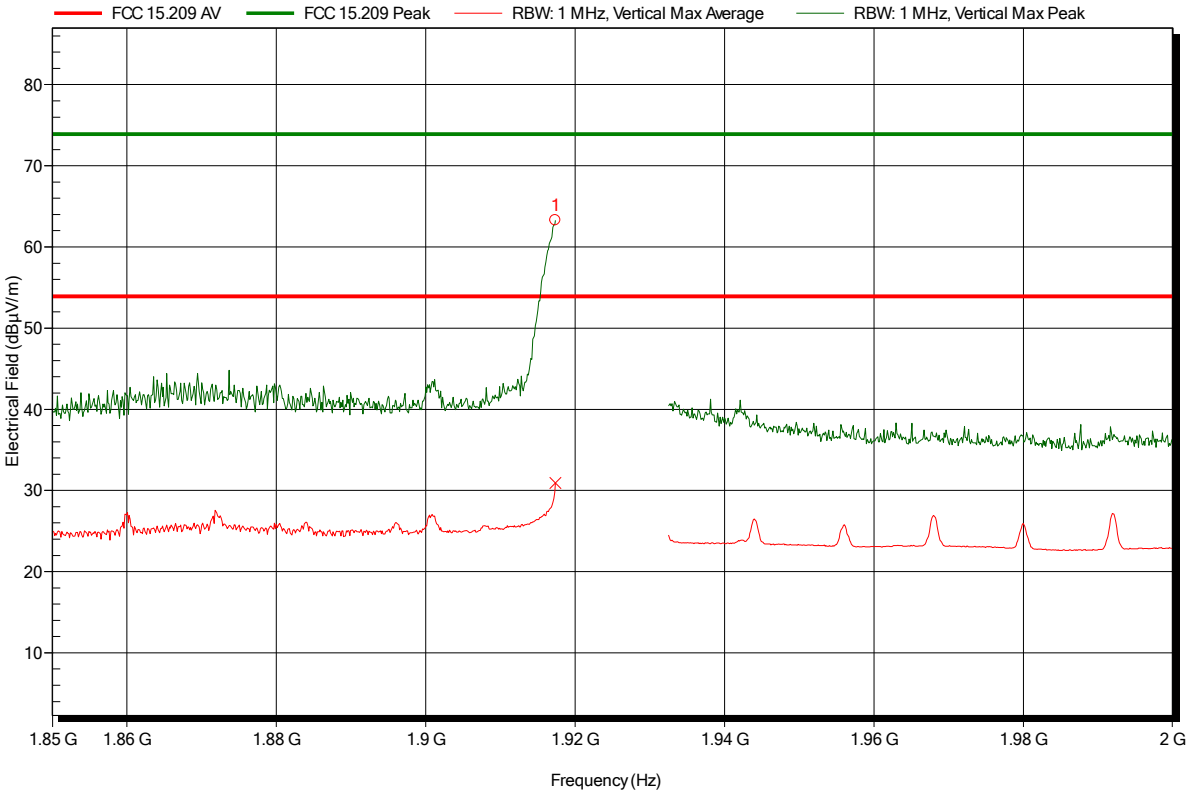

Frequency	Peak	Peak Limit	Peak Difference	Status
1.9174 GHz	63.27 dBµV/m	73.9 dBµV/m	-10.63 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.9174 GHz	30.91 dBµV/m	53.9 dBµV/m	-22.99 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	

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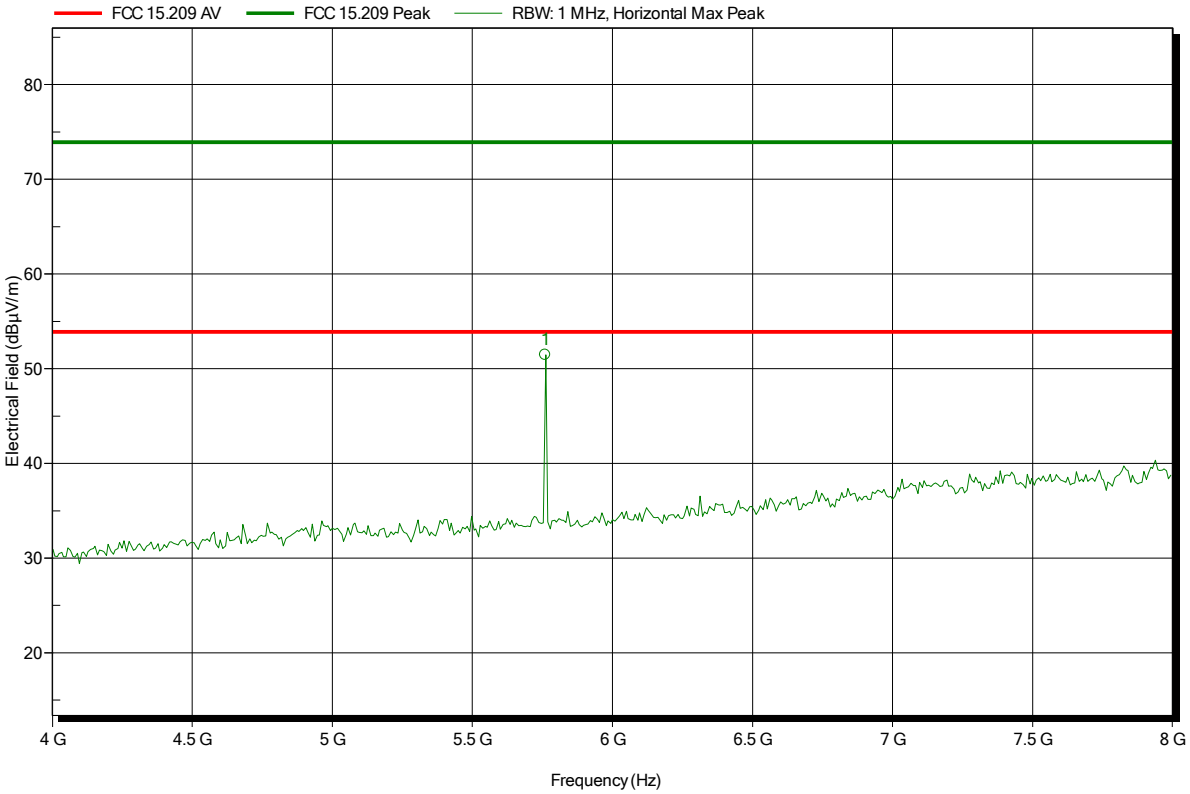

Frequency	Peak	Peak Limit	Peak Difference	Status
5.76 GHz	51.45 dBµV/m	73.9 dBµV/m	-22.45 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	

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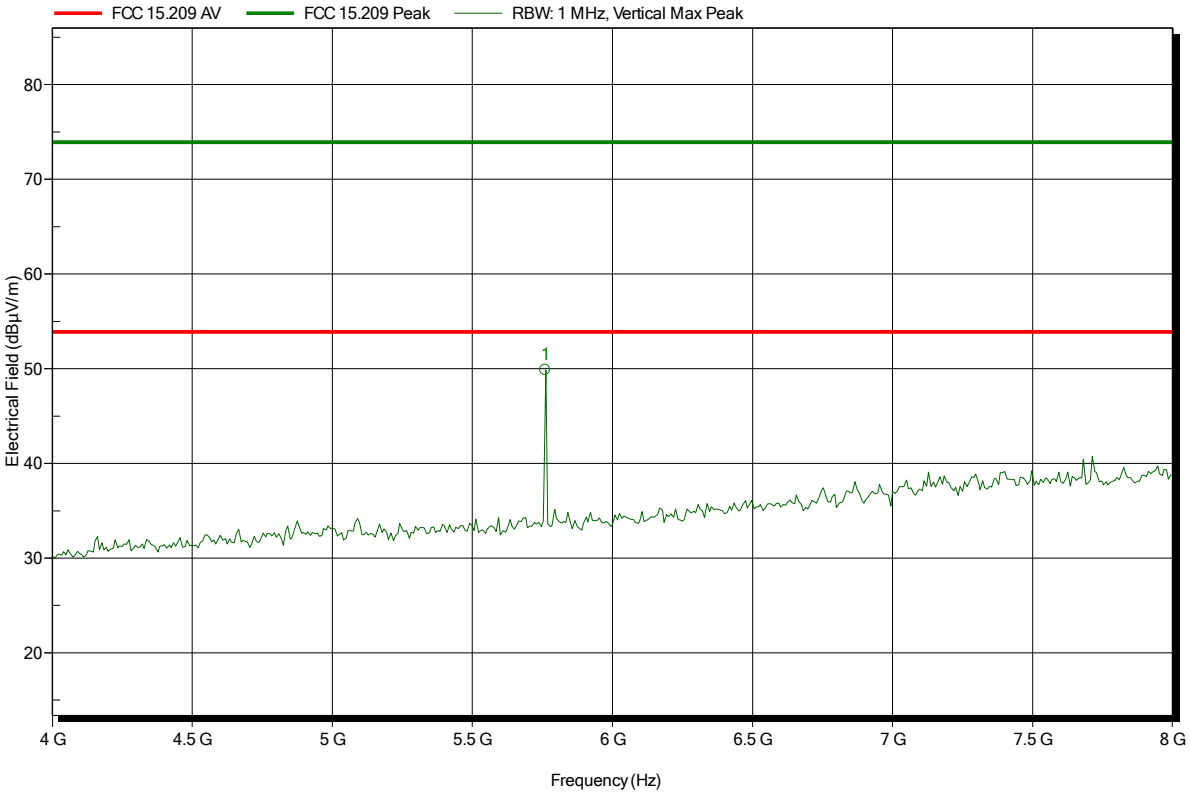

Frequency	Peak	Peak Limit	Peak Difference	Status
5.76 GHz	49.87 dBµV/m	73.9 dBµV/m	-24.03 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	

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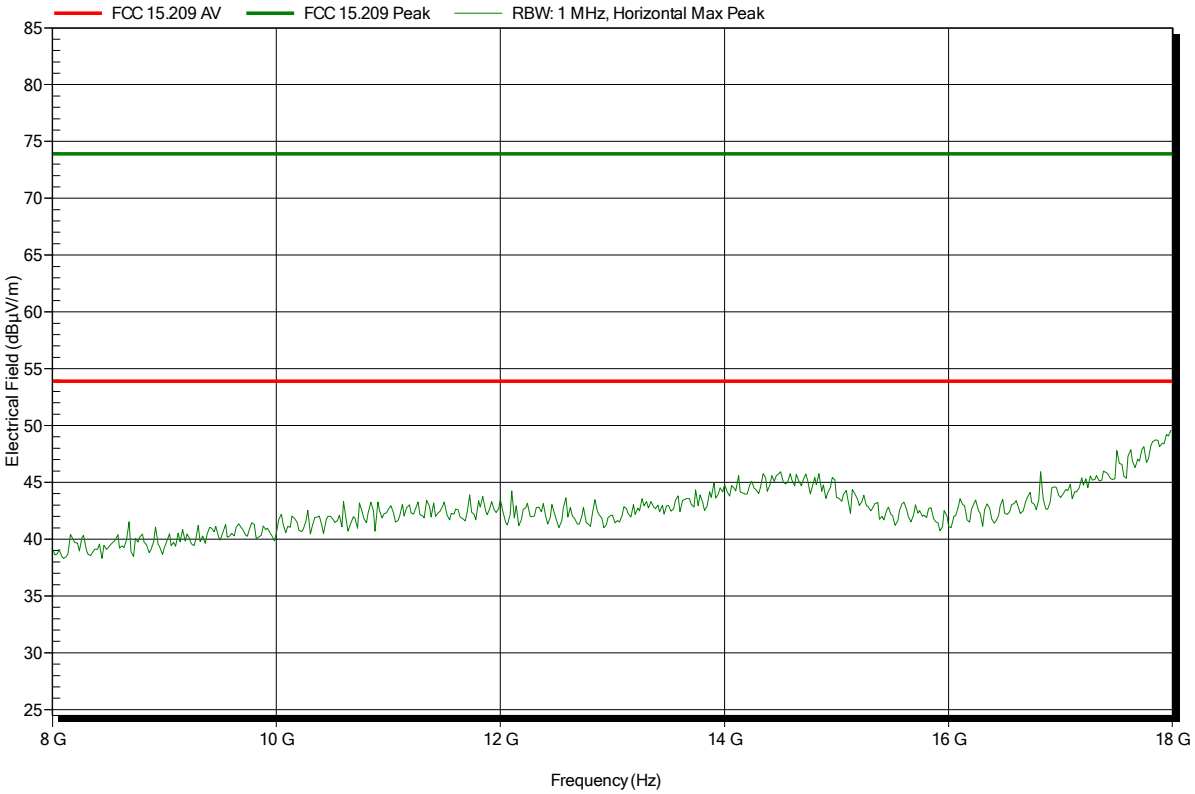

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	

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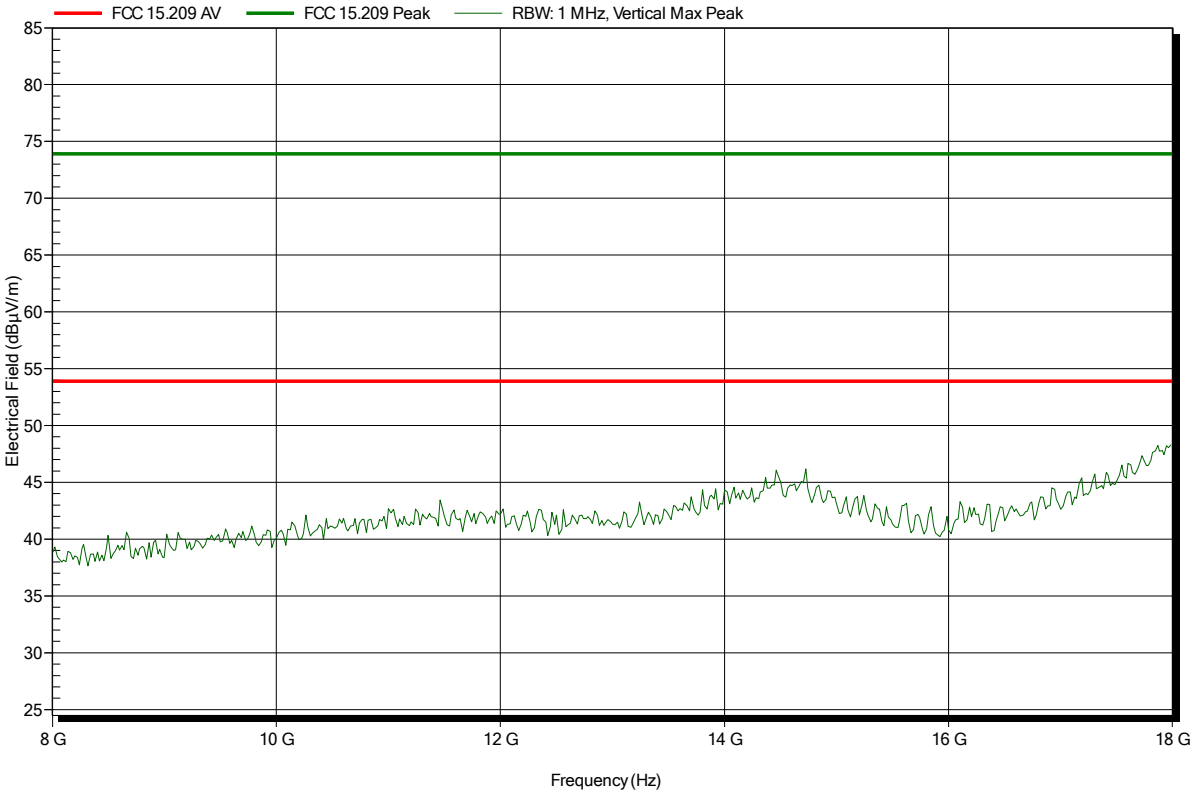

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	

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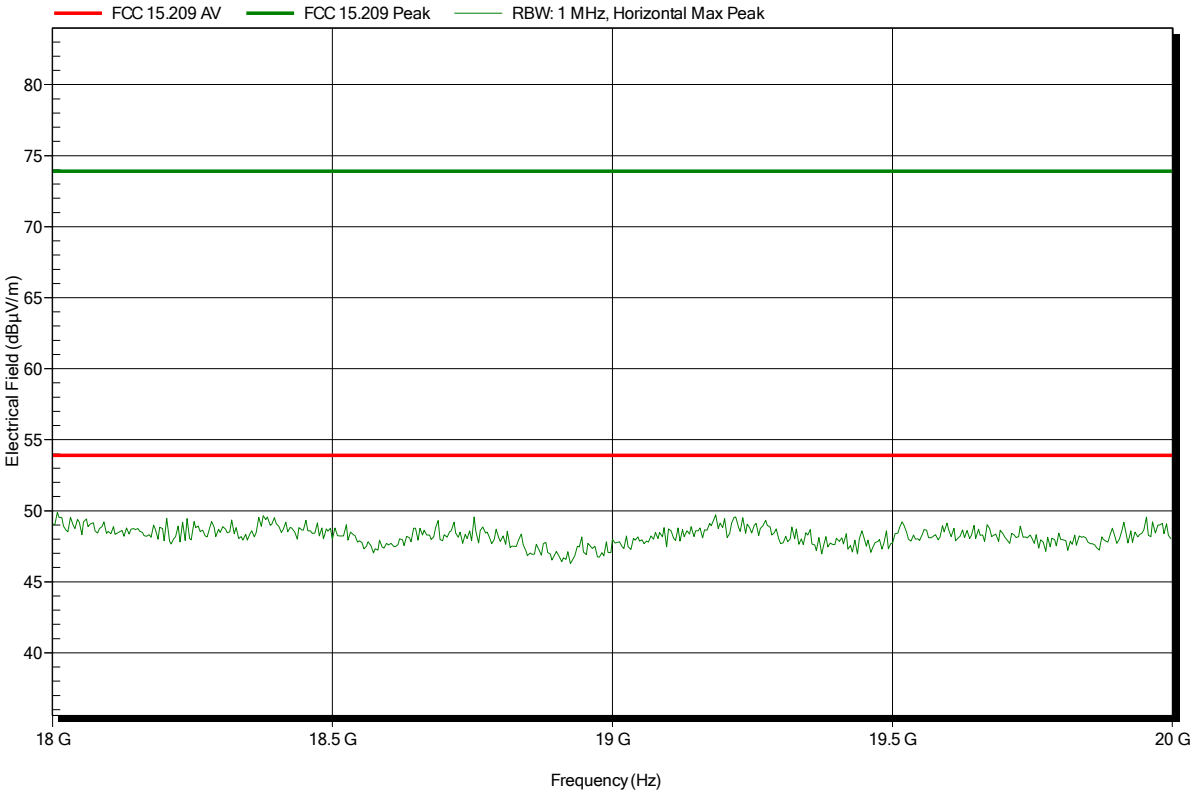

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 0
Test Date:	2014-09-29
Note:	

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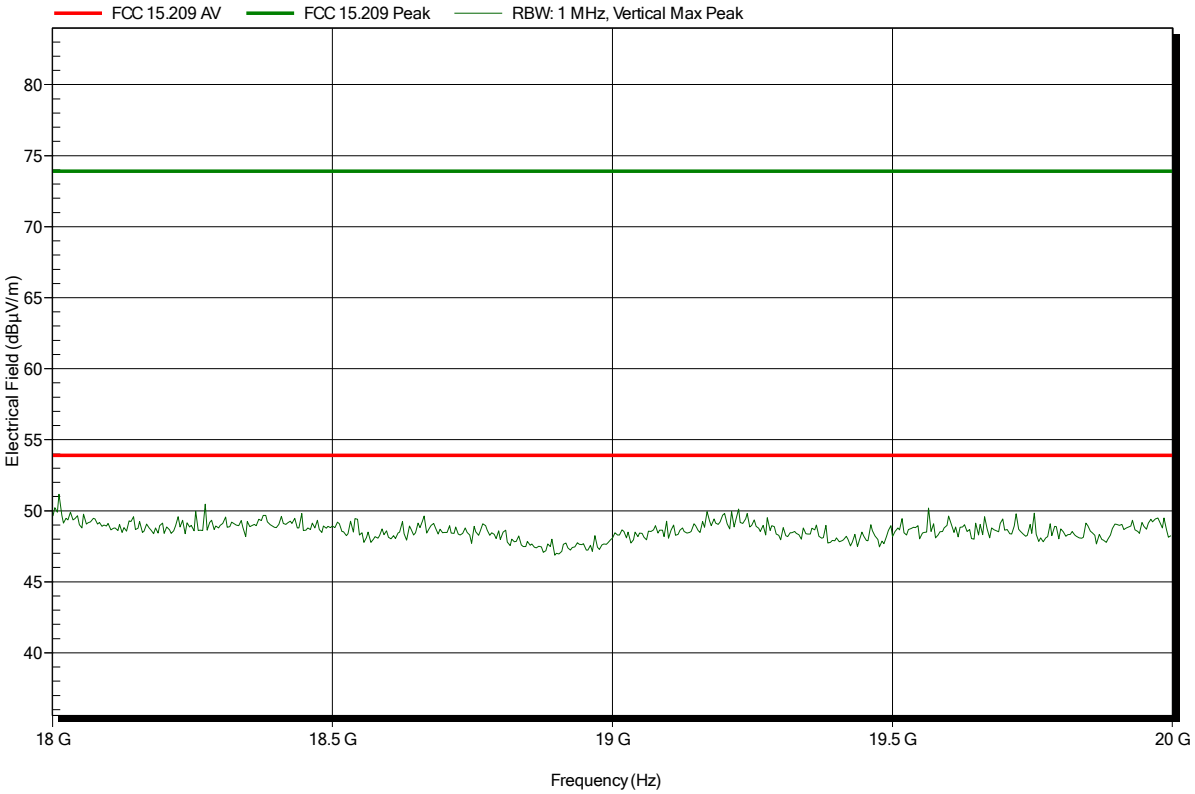

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-29
Note:	with notch-filter

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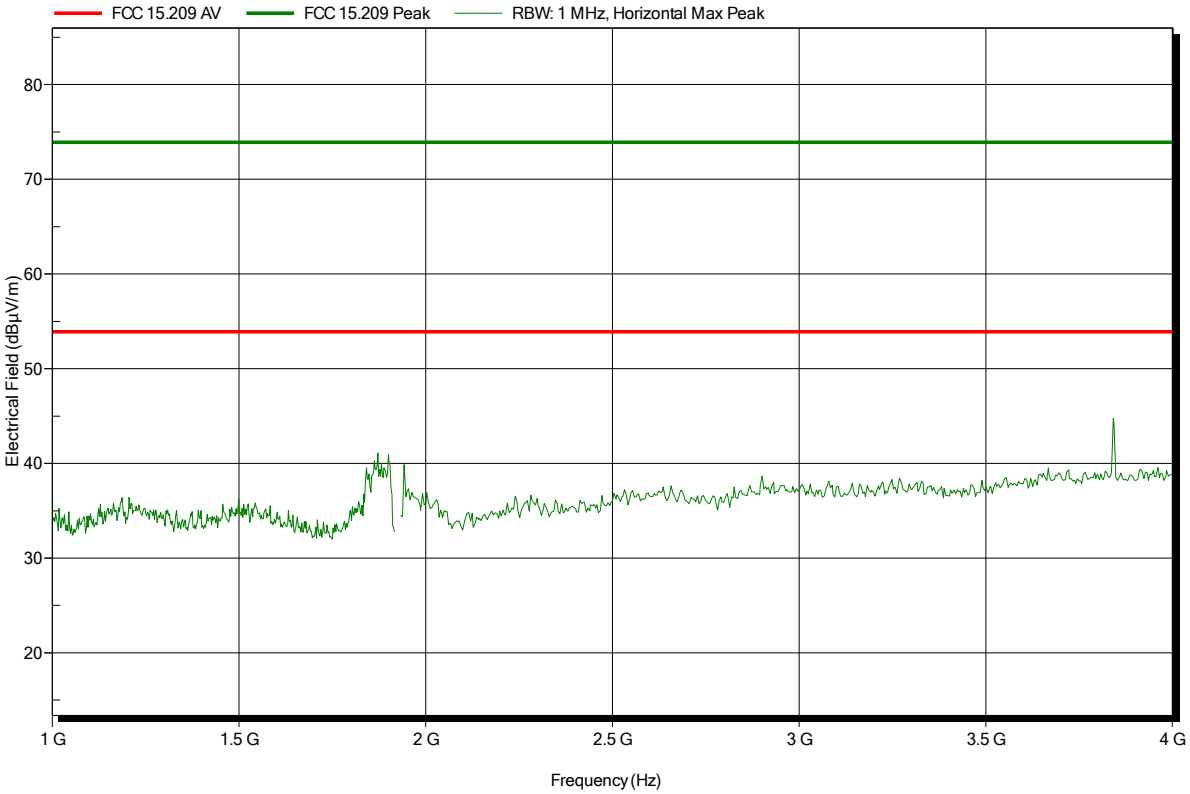

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-29
Note:	with notch-filter

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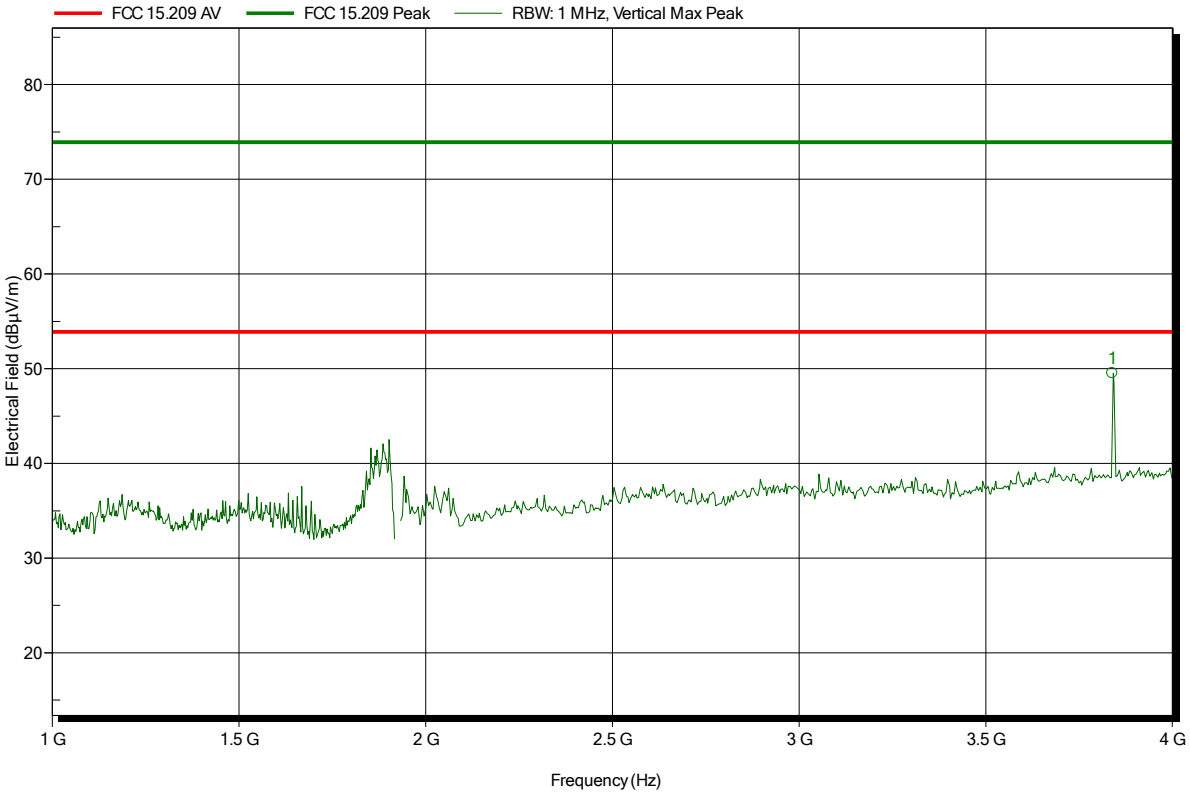

Frequency	Peak	Peak Limit	Peak Difference	Status
3.8387 GHz	49.52 dBµV/m	73.9 dBµV/m	-24.38 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-30
Note:	

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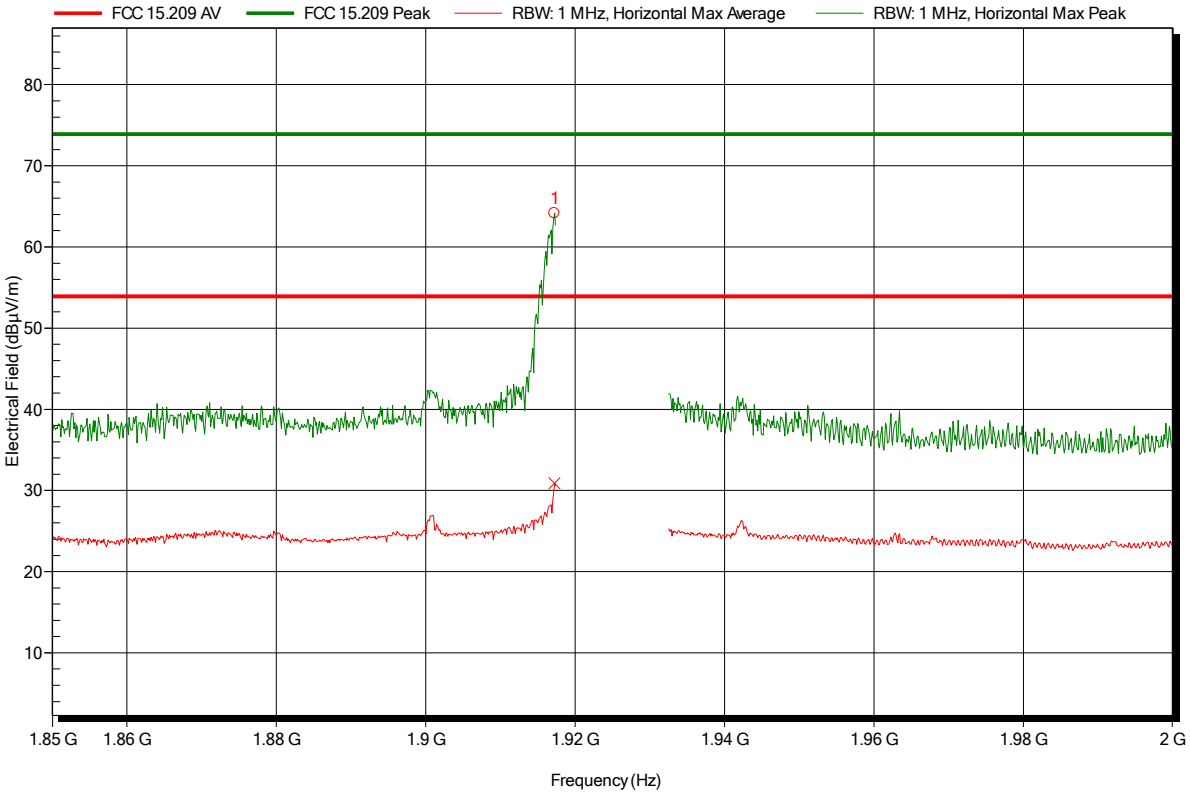

Frequency	Peak	Peak Limit	Peak Difference	Status
1.9172 GHz	64.14 dBµV/m	73.9 dBµV/m	-9.76 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.9172 GHz	30.88 dBµV/m	53.9 dBµV/m	-23.02 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-30
Note:	

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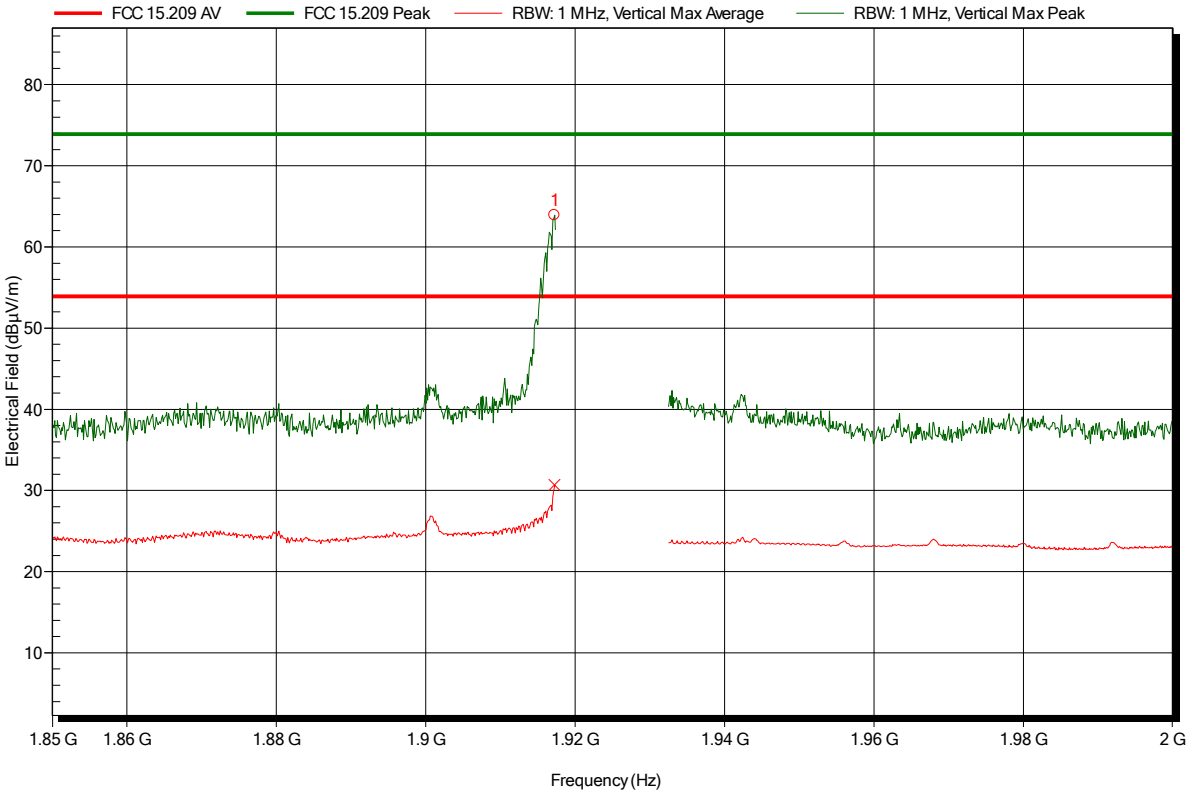

Frequency	Peak	Peak Limit	Peak Difference	Status
1.9172 GHz	63.92 dBµV/m	73.9 dBµV/m	-9.98 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.9172 GHz	30.7 dBµV/m	53.9 dBµV/m	-23.2 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-29
Note:	

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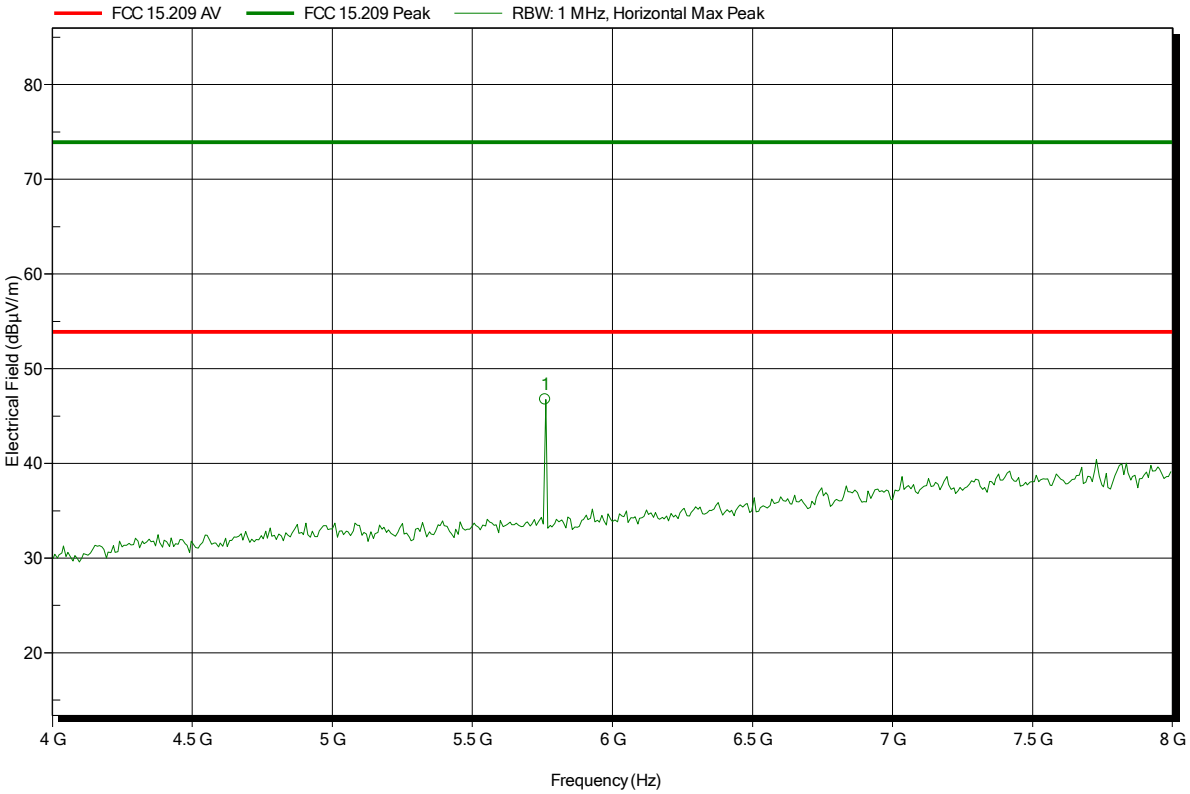

Frequency	Peak	Peak Limit	Peak Difference	Status
5.76 GHz	46.74 dBµV/m	73.9 dBµV/m	-27.16 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-29
Note:	

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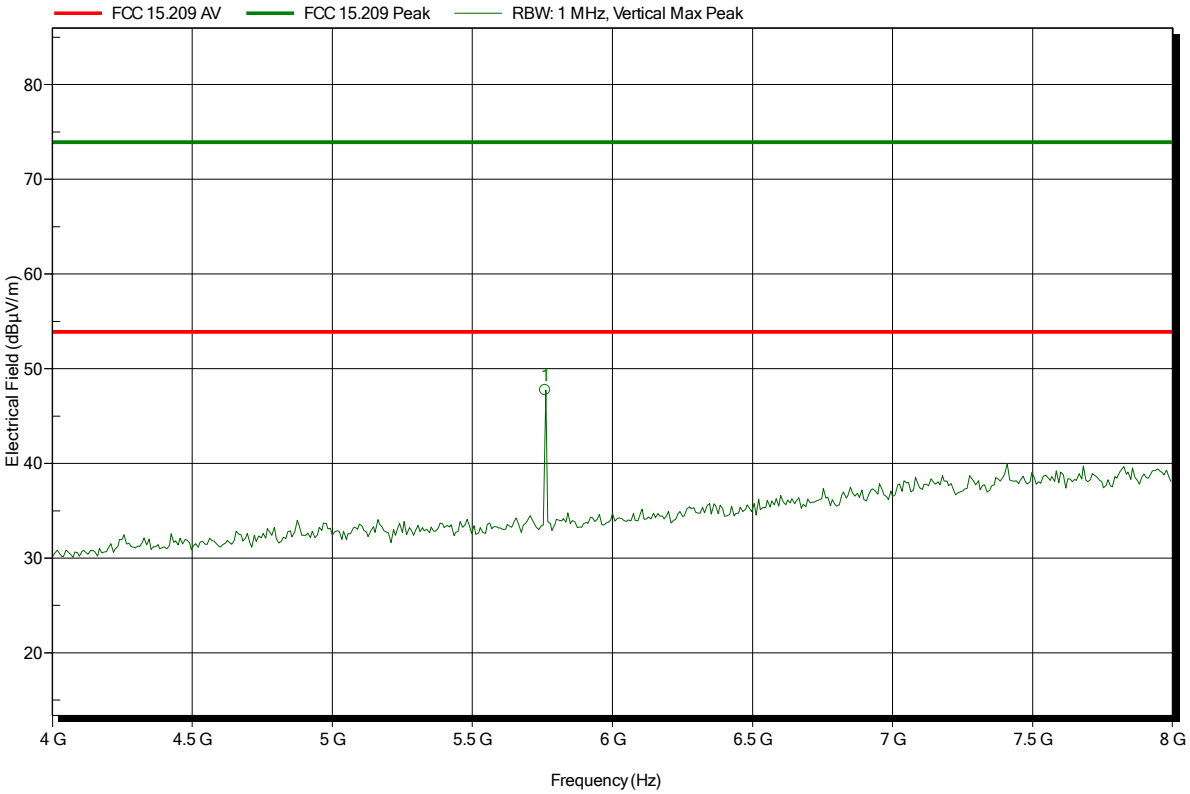

Frequency	Peak	Peak Limit	Peak Difference	Status
5.76 GHz	47.74 dBµV/m	73.9 dBµV/m	-26.16 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-29
Note:	

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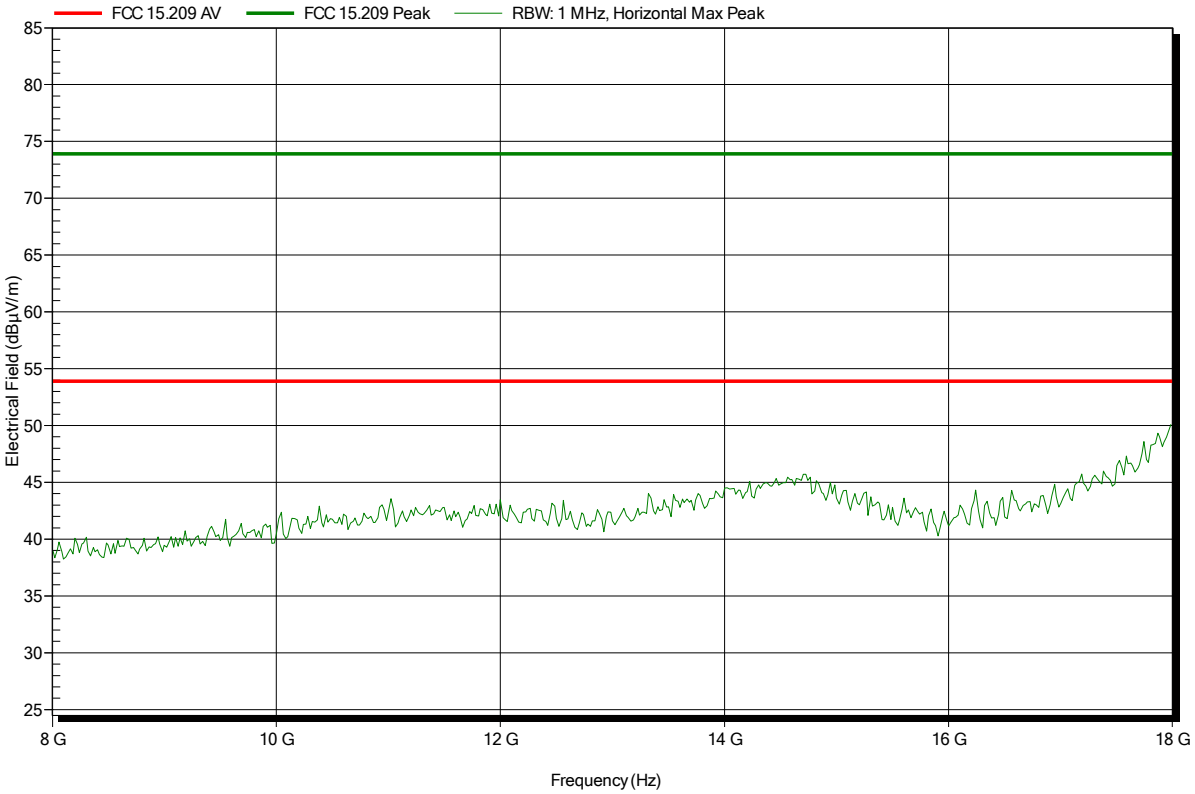

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-29
Note:	

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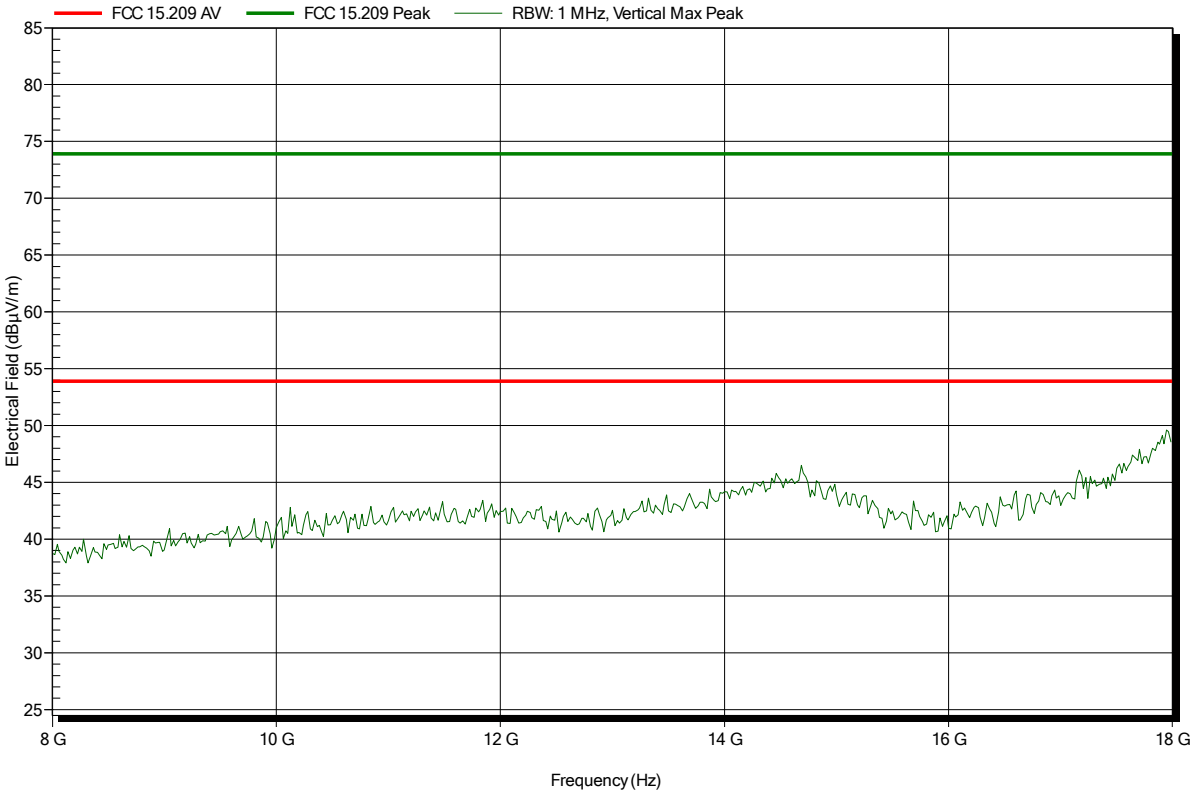

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-29
Note:	

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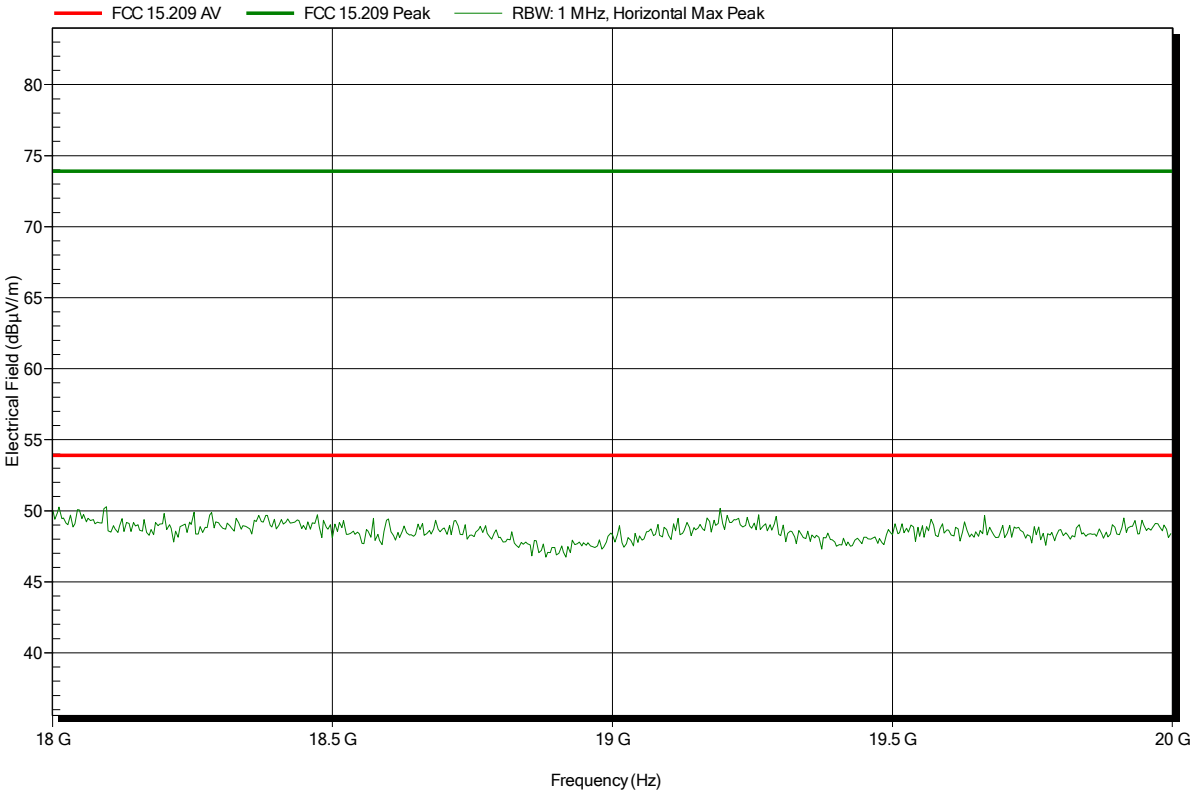

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m
Mode:	TX; channel 4; antenna 1
Test Date:	2014-09-29
Note:	

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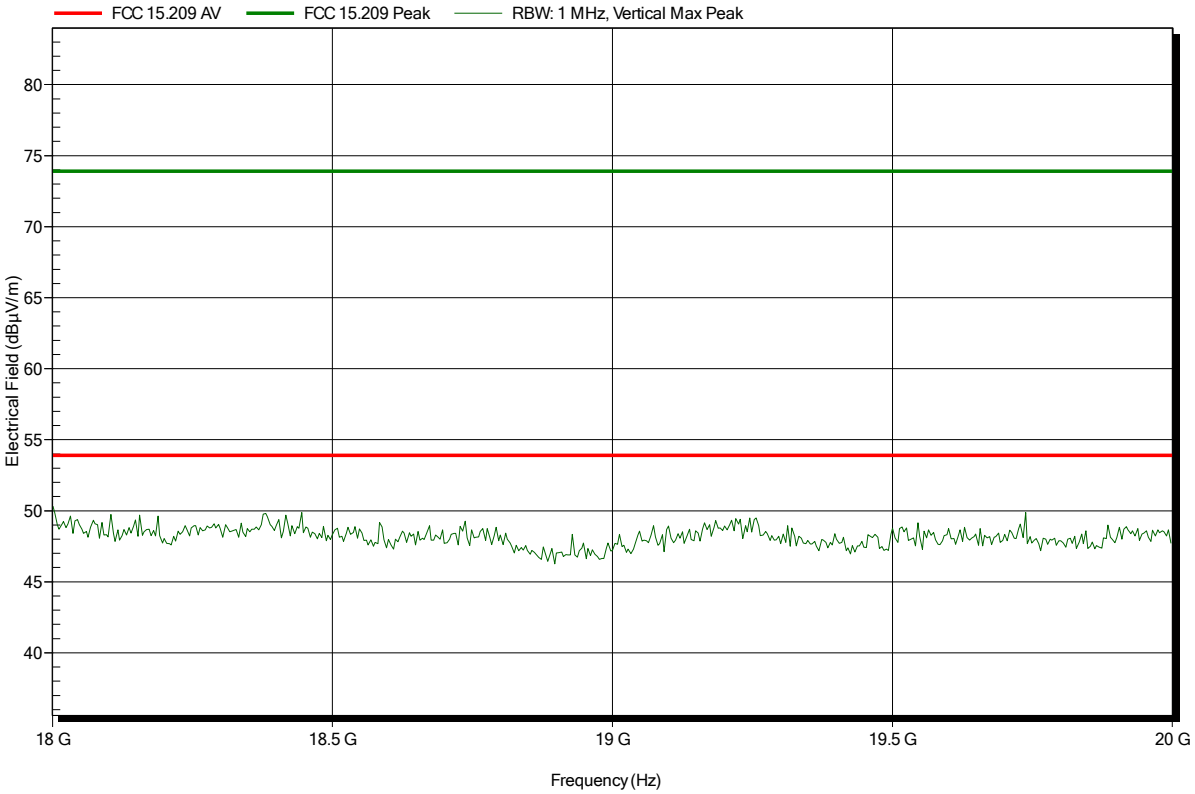

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	worst case

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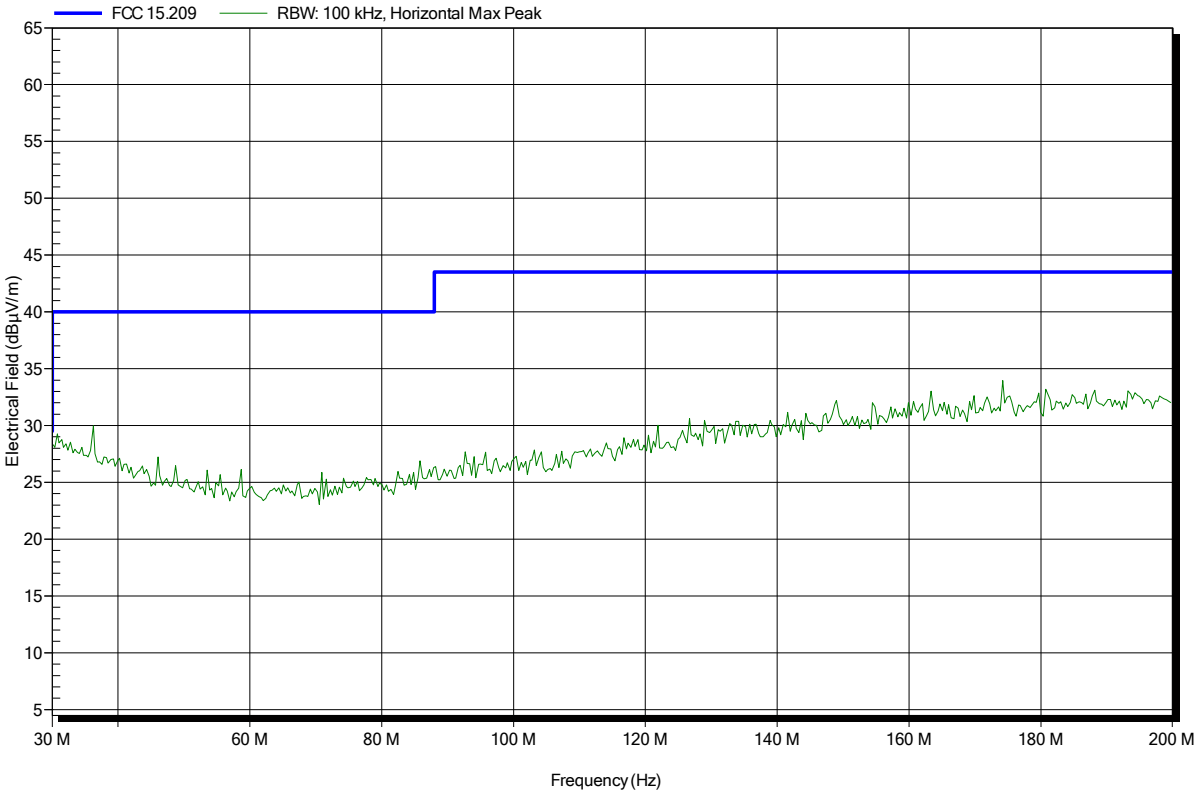

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	worst case

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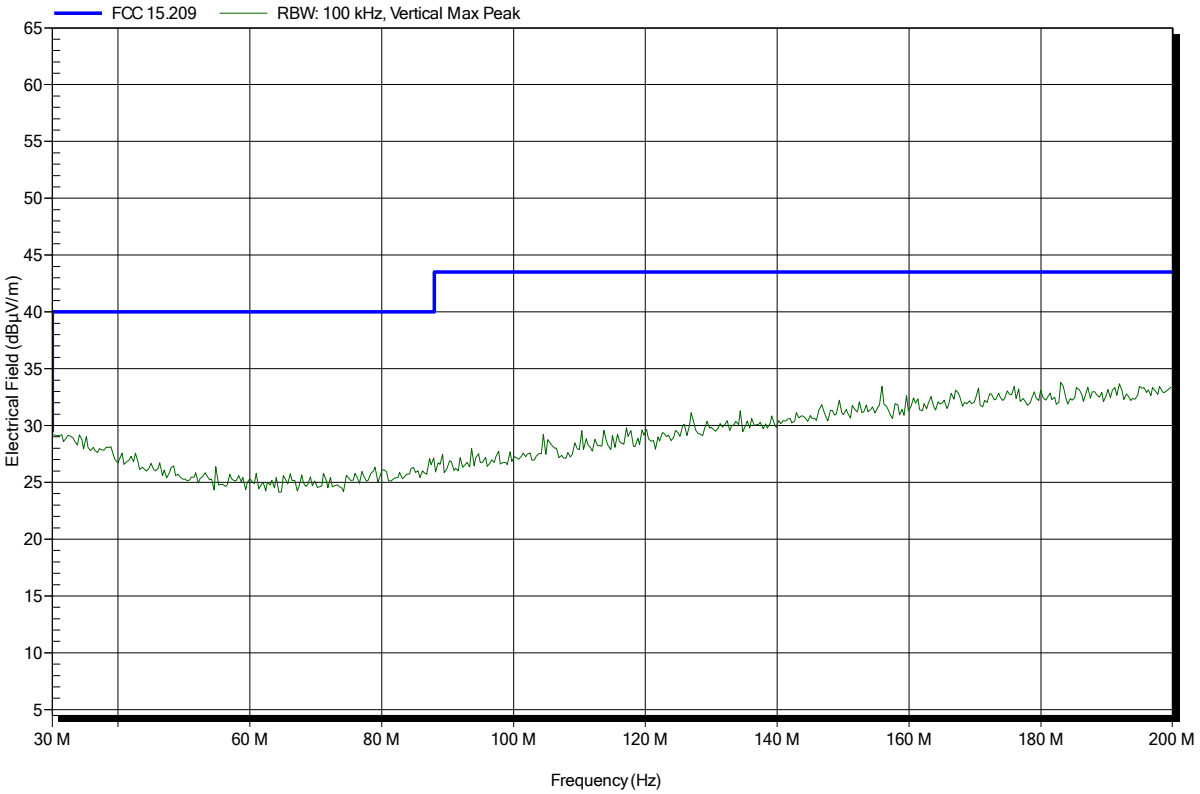

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	worst case

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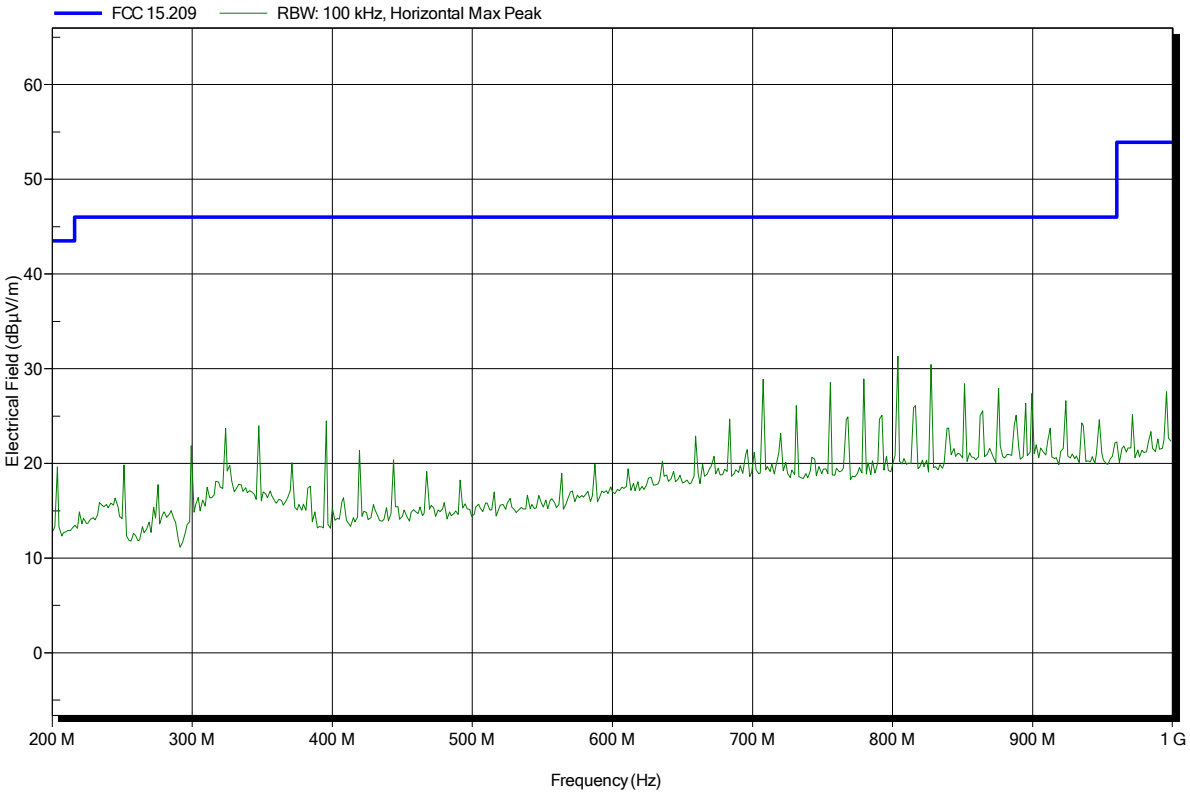

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	worst case

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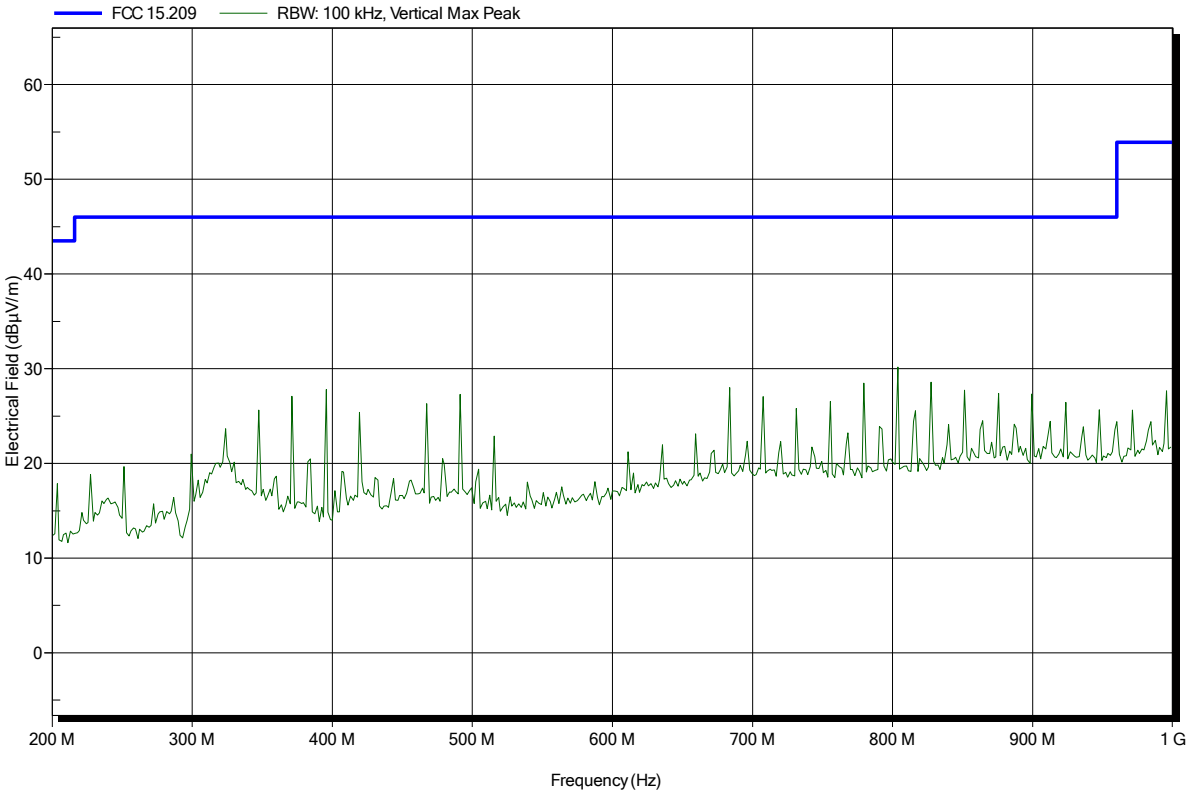

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	with notch-filter

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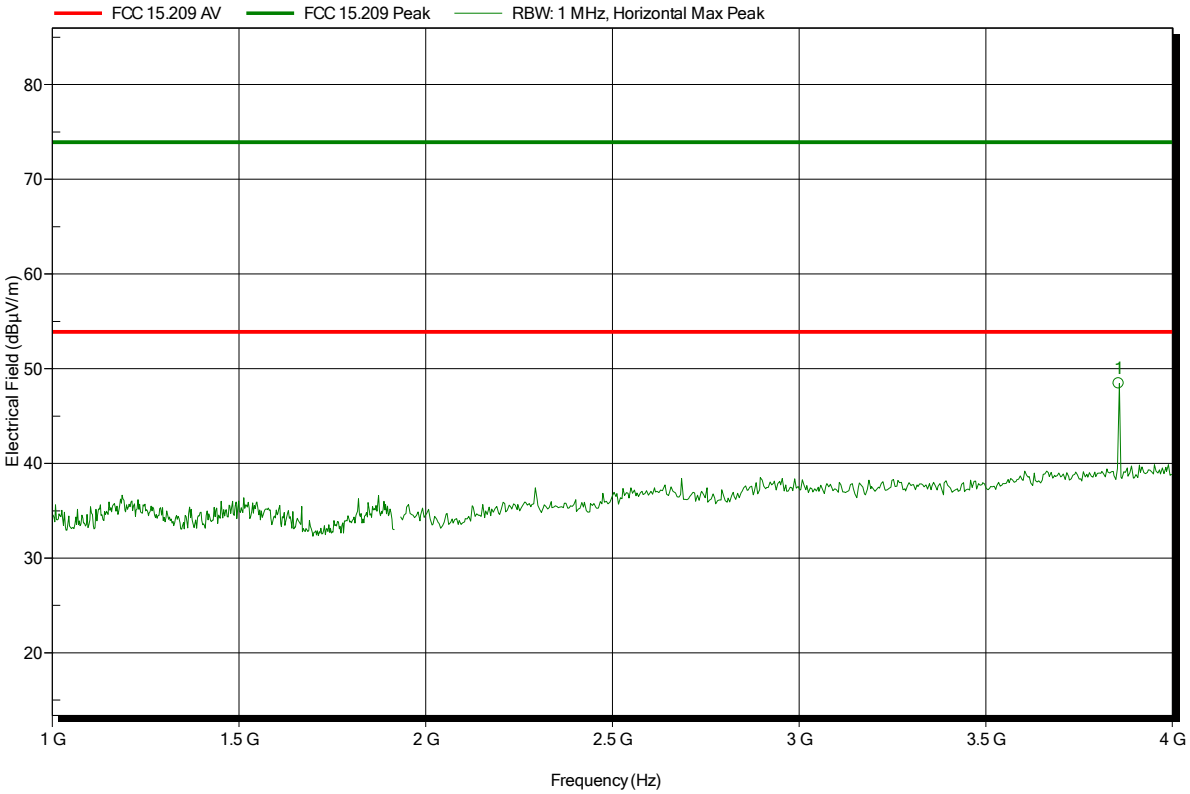

Frequency	Peak	Peak Limit	Peak Difference	Status
3.8553 GHz	48.43 dBµV/m	73.9 dBµV/m	-25.47 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	with notch-filter

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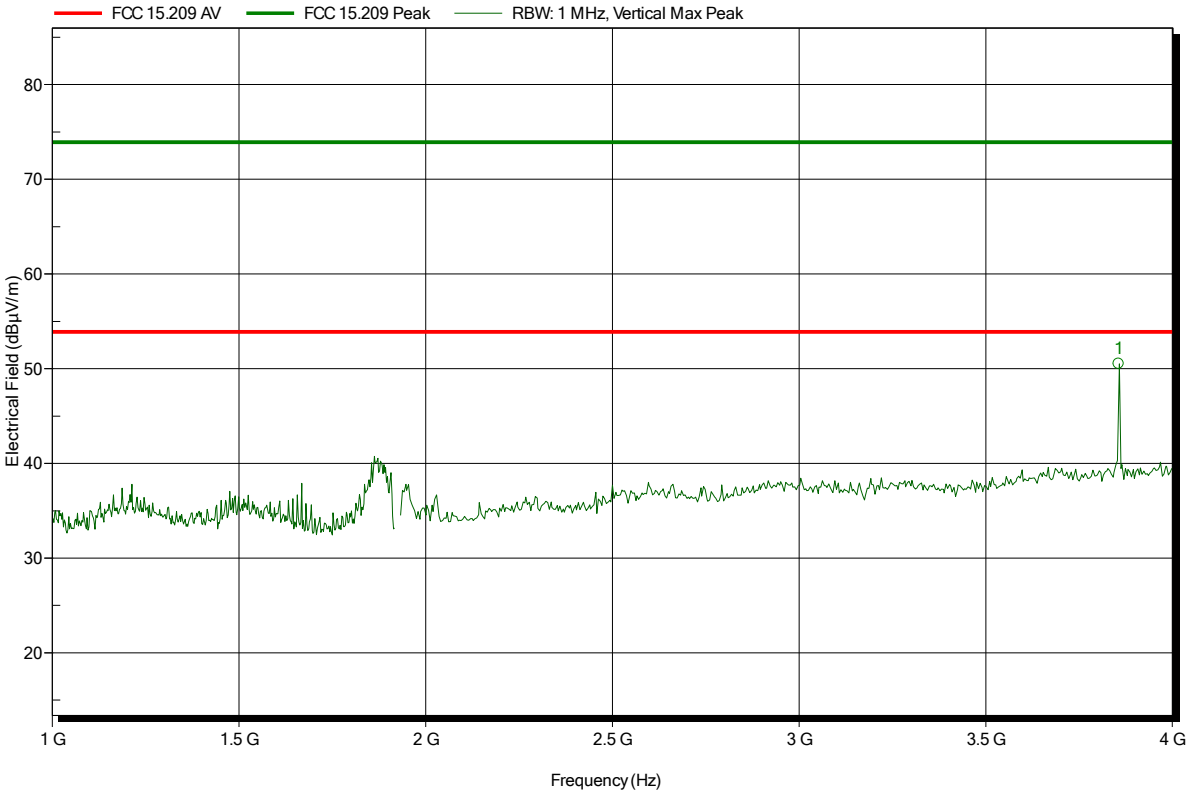

Frequency	Peak	Peak Limit	Peak Difference	Status
3.8553 GHz	50.52 dBµV/m	73.9 dBµV/m	-23.38 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	

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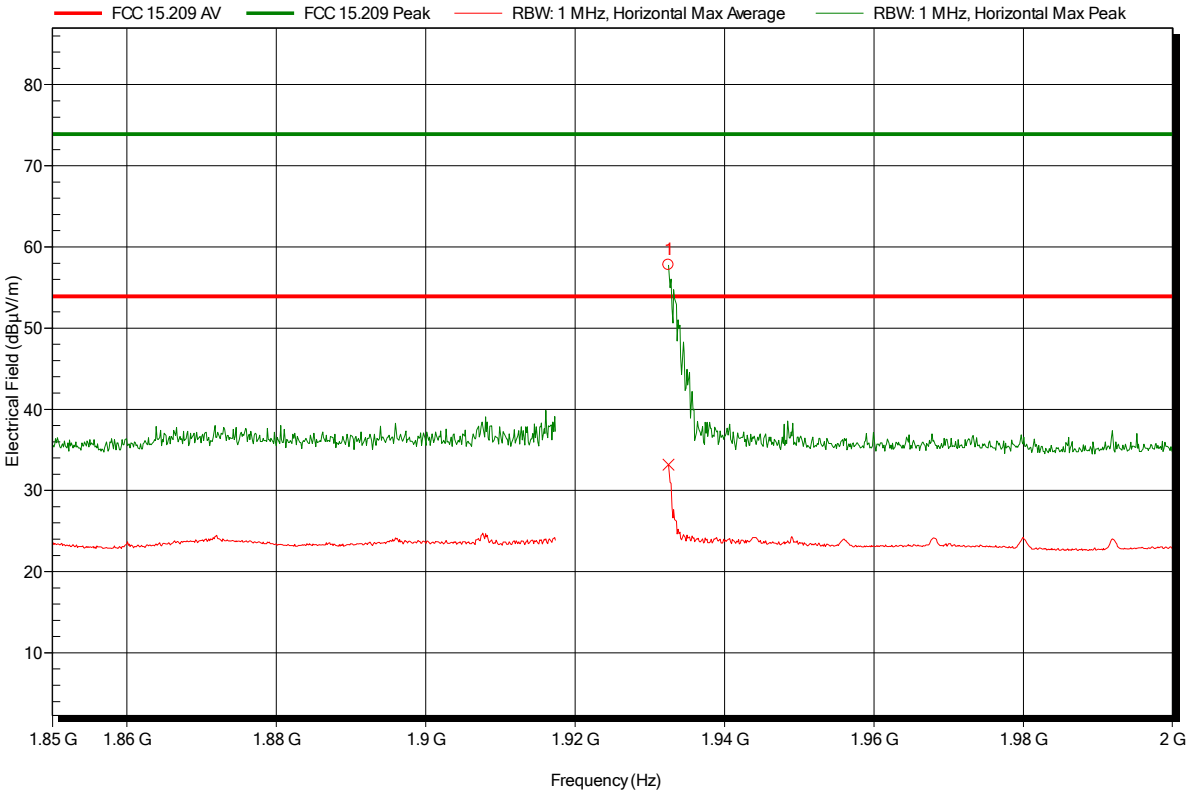

Frequency	Peak	Peak Limit	Peak Difference	Status
1.9325 GHz	57.8 dBµV/m	73.9 dBµV/m	-16.1 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.9325 GHz	33.17 dBµV/m	53.9 dBµV/m	-20.73 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	

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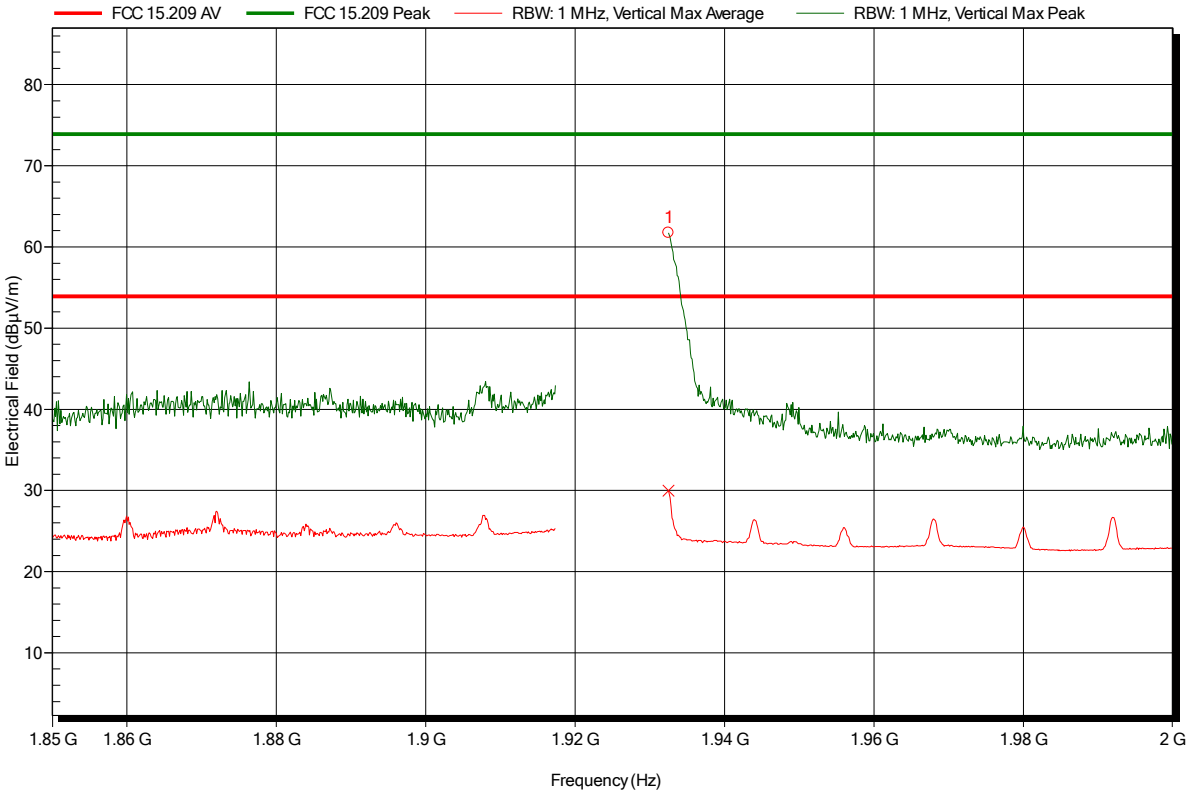

Frequency	Peak	Peak Limit	Peak Difference	Status
1.9325 GHz	61.73 dBµV/m	73.9 dBµV/m	-12.17 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.9325 GHz	29.98 dBµV/m	53.9 dBµV/m	-23.92 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	

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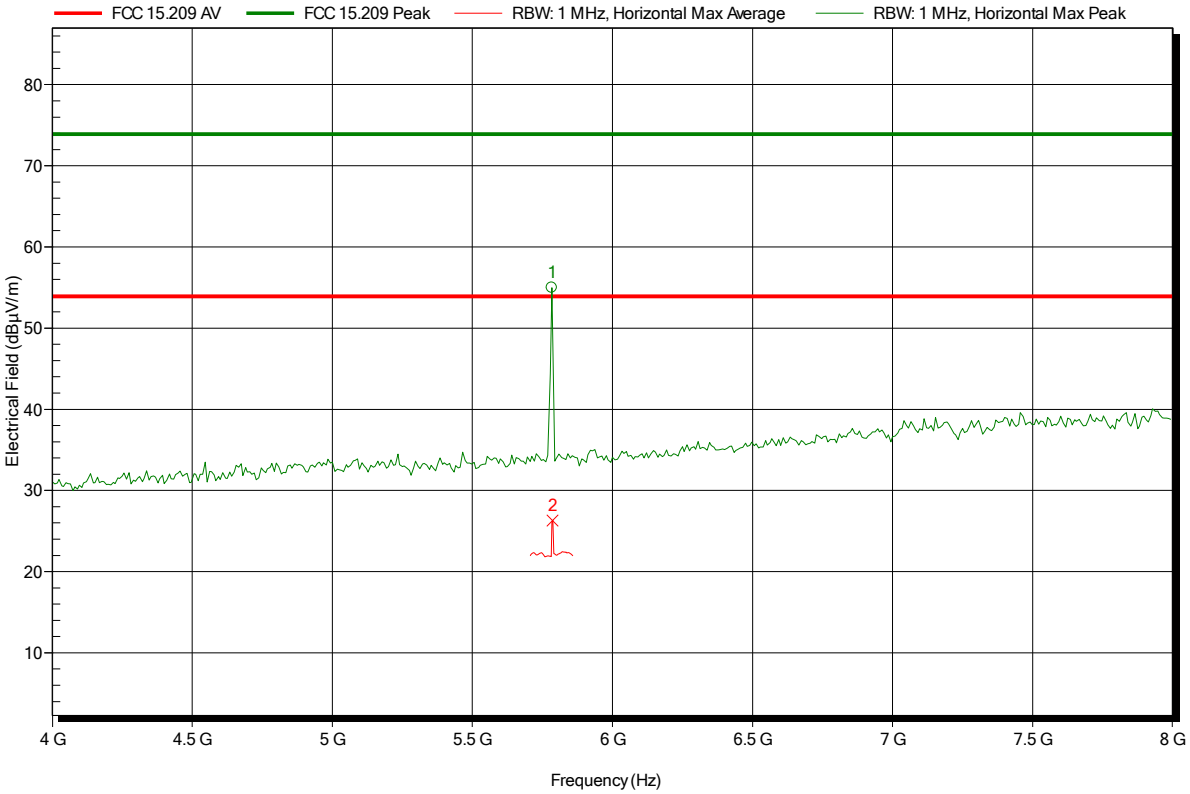

Frequency	Peak	Peak Limit	Peak Difference	Status
5.784 GHz	54.97 dBµV/m	73.9 dBµV/m	-18.93 dB	Pass
5.786 GHz				Pass

Frequency	Average	Average Limit	Average Difference	Average Status
5.784 GHz				
5.786 GHz	26.29 dBµV/m	53.9 dBµV/m	-27.61 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	

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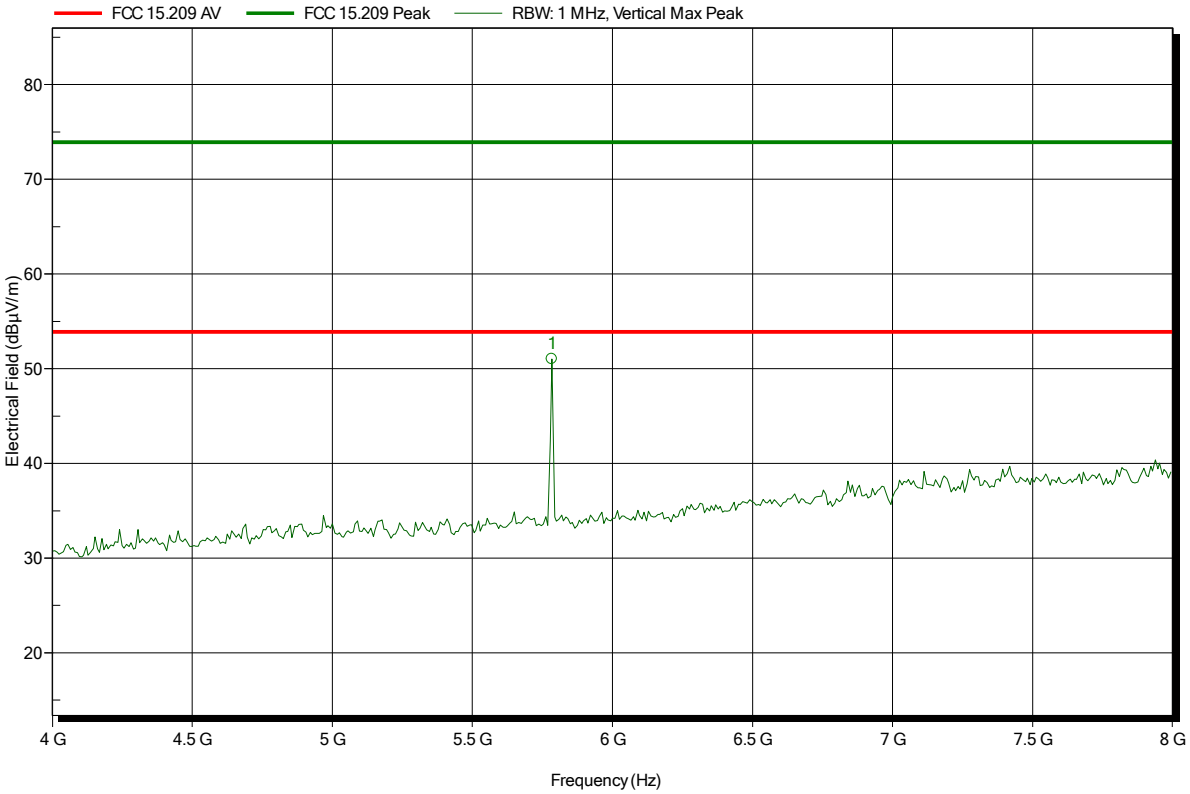

Frequency	Peak	Peak Limit	Peak Difference	Status
5.784 GHz	51.01 dBµV/m	73.9 dBµV/m	-22.89 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	

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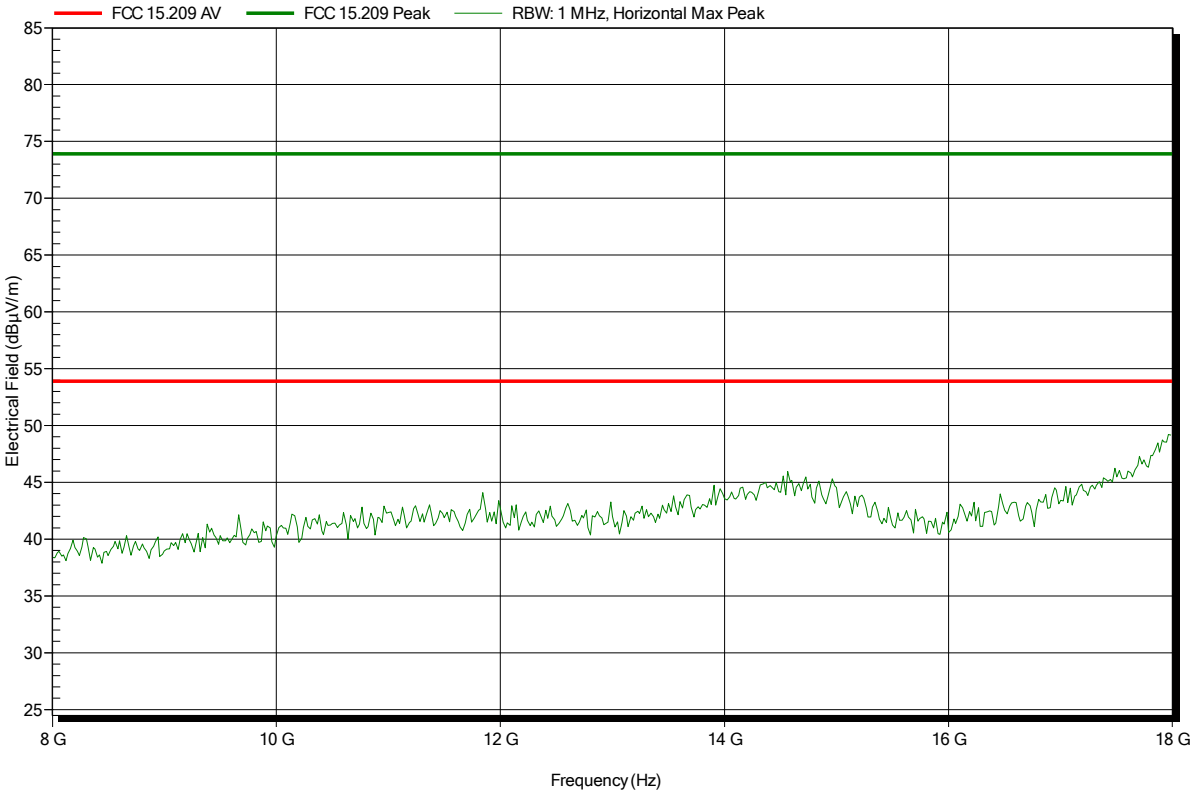

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	

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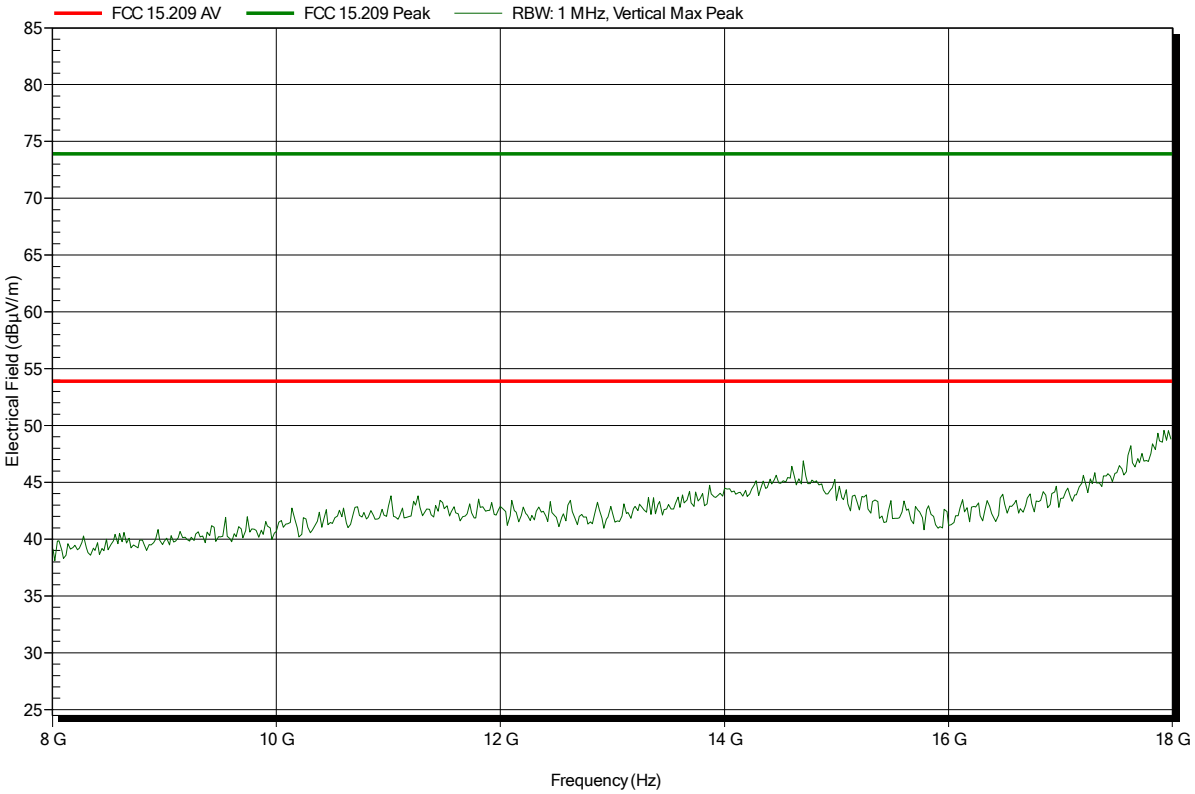

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	

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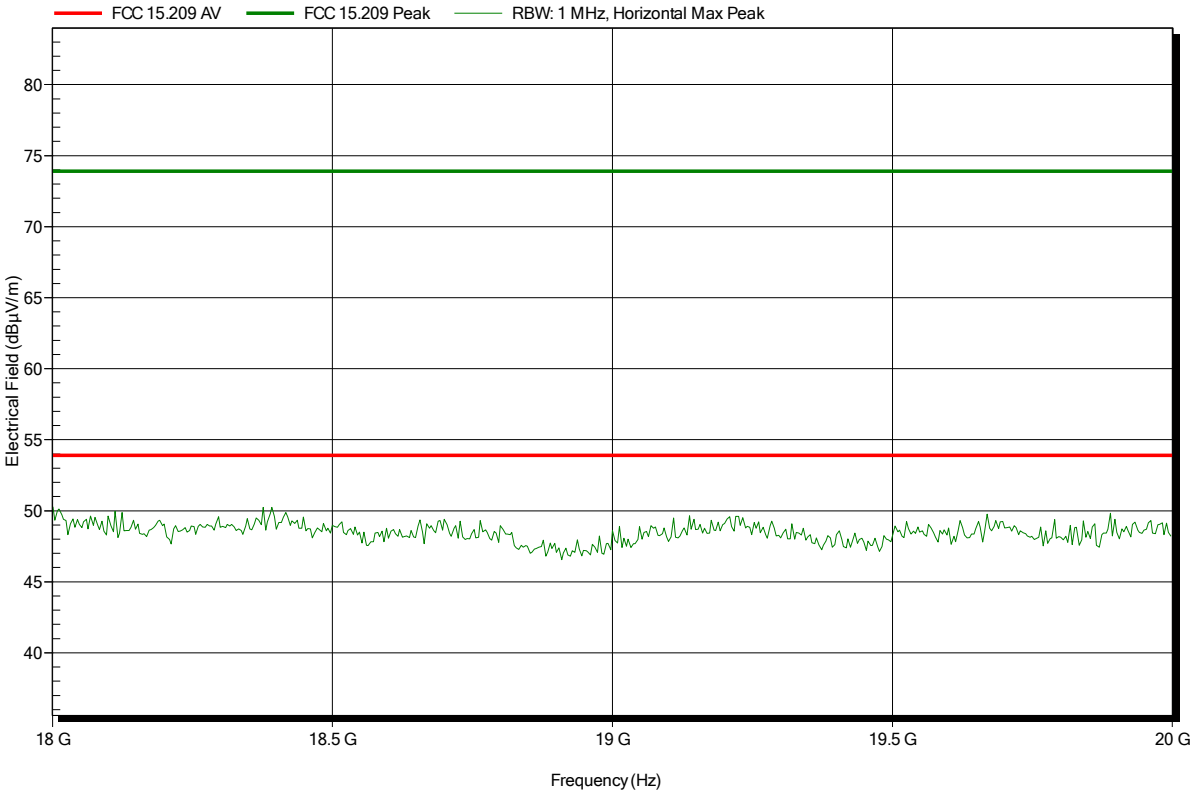

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 0
Test Date:	2014-09-29
Note:	

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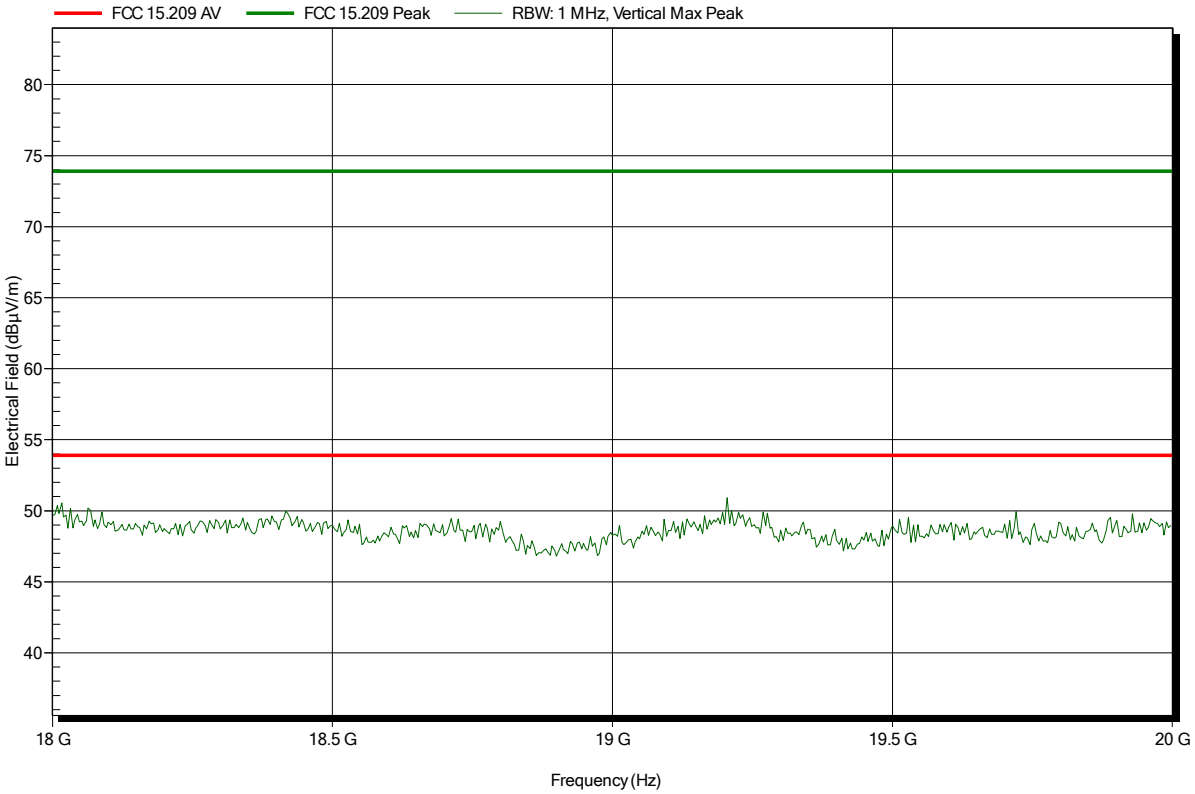

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-29
Note:	with notch-filter

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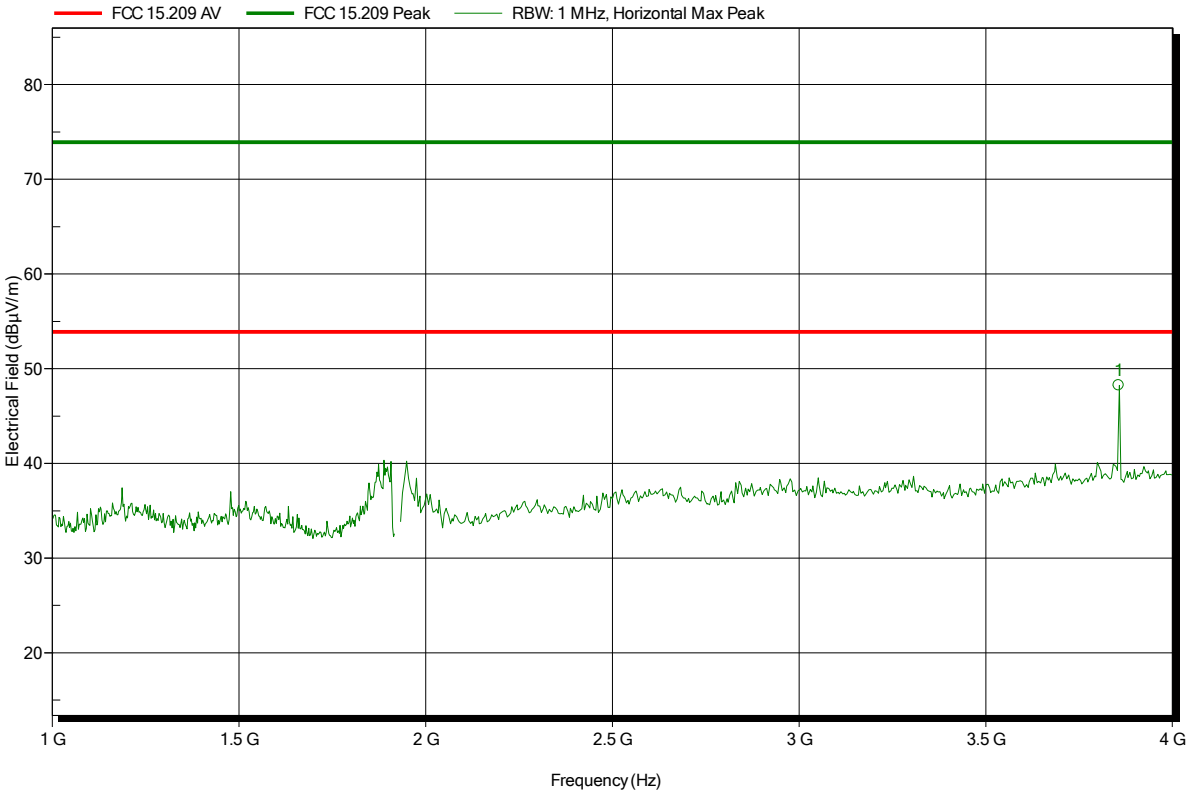

Frequency	Peak	Peak Limit	Peak Difference	Status
3.8553 GHz	48.23 dBµV/m	73.9 dBµV/m	-25.67 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-29
Note:	with notch-filter

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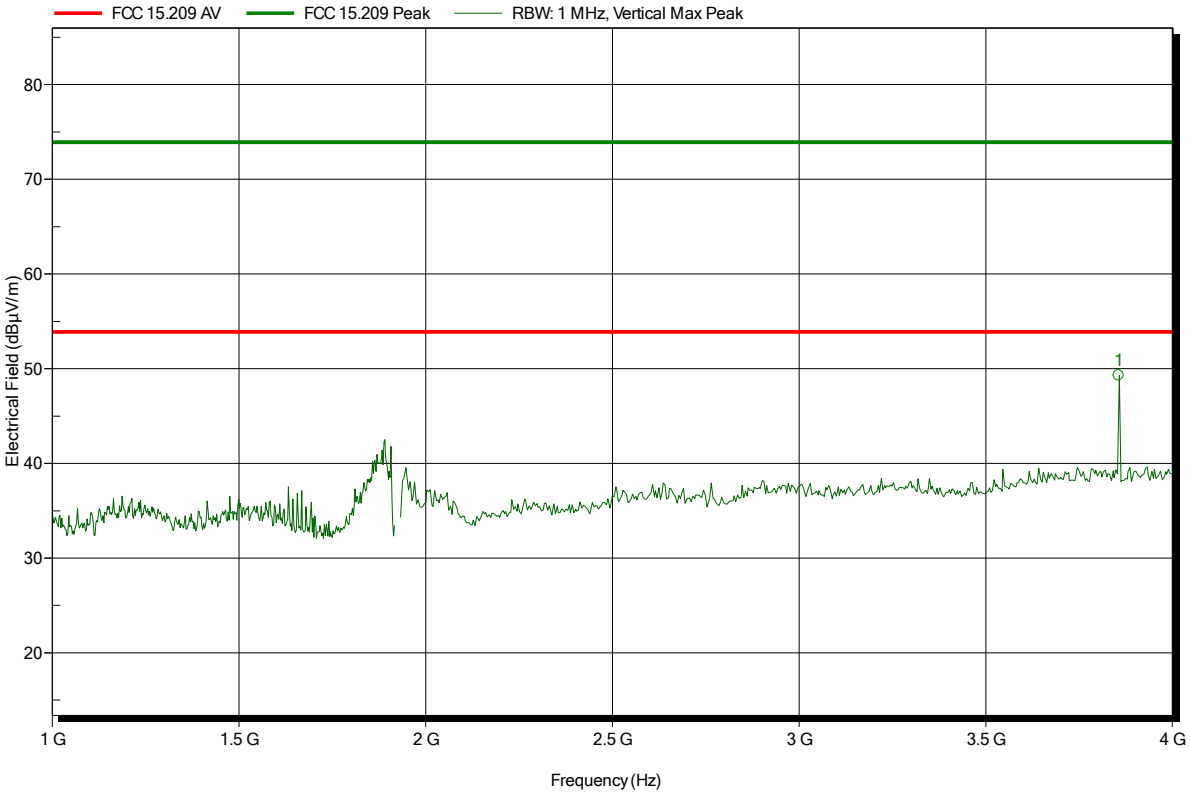

Frequency	Peak	Peak Limit	Peak Difference	Status
3.8553 GHz	49.29 dBµV/m	73.9 dBµV/m	-24.61 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-30
Note:	

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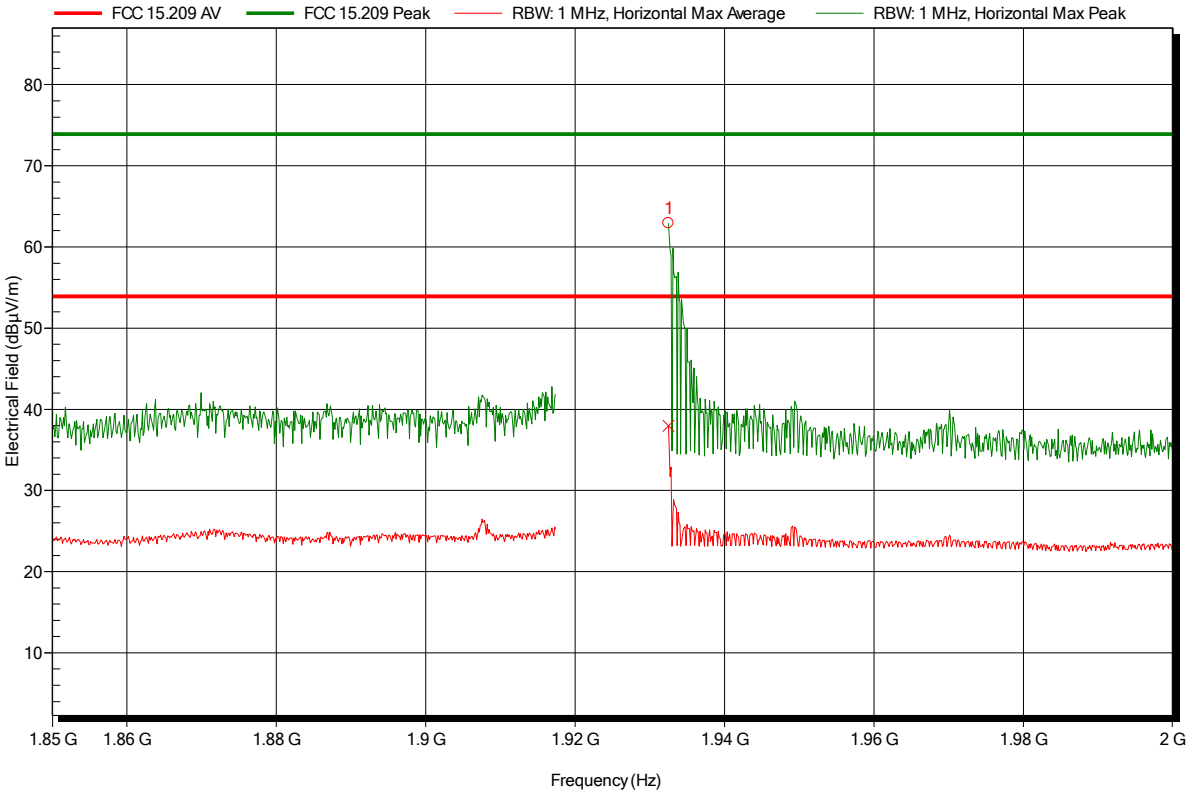

Frequency	Peak	Peak Limit	Peak Difference	Status
1.9325 GHz	62.94 dBµV/m	73.9 dBµV/m	-10.96 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.9325 GHz	37.95 dBµV/m	53.9 dBµV/m	-15.95 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-30
Note:	

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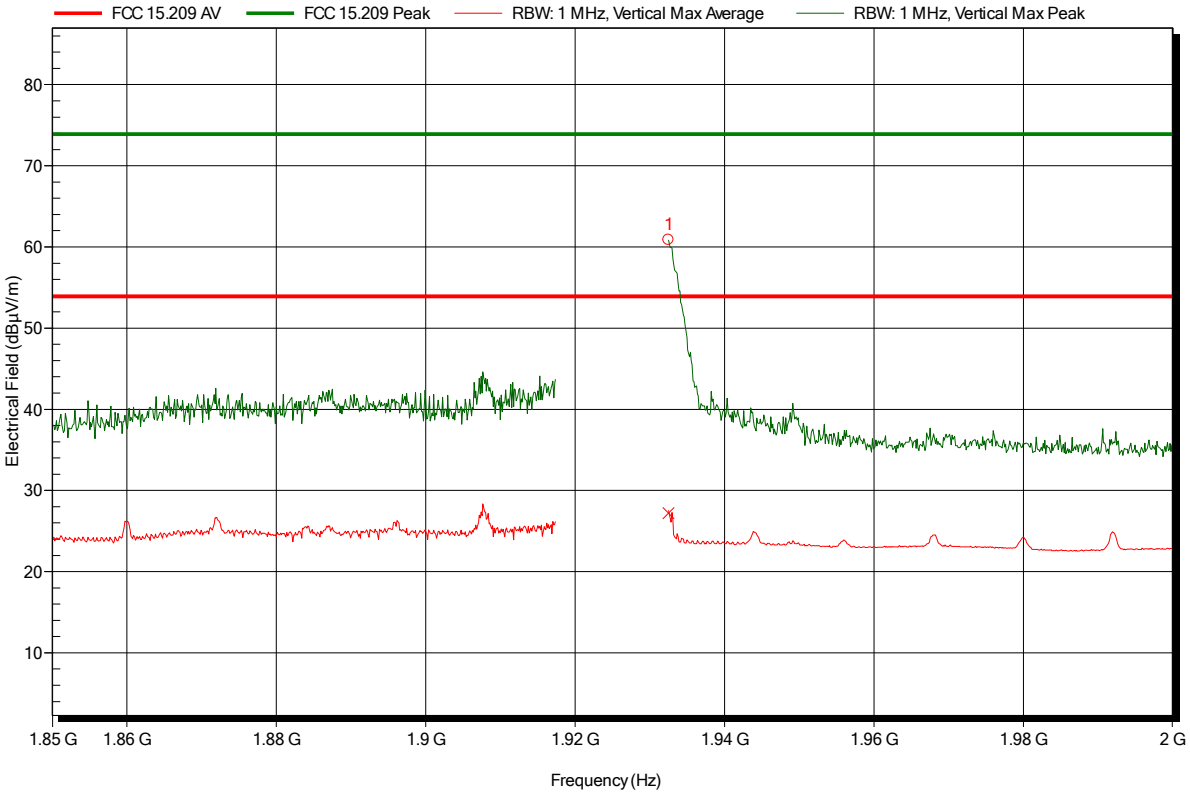

Frequency	Peak	Peak Limit	Peak Difference	Status
1.9325 GHz	60.88 dBµV/m	73.9 dBµV/m	-13.02 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.9325 GHz	27.19 dBµV/m	53.9 dBµV/m	-26.71 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-29
Note:	

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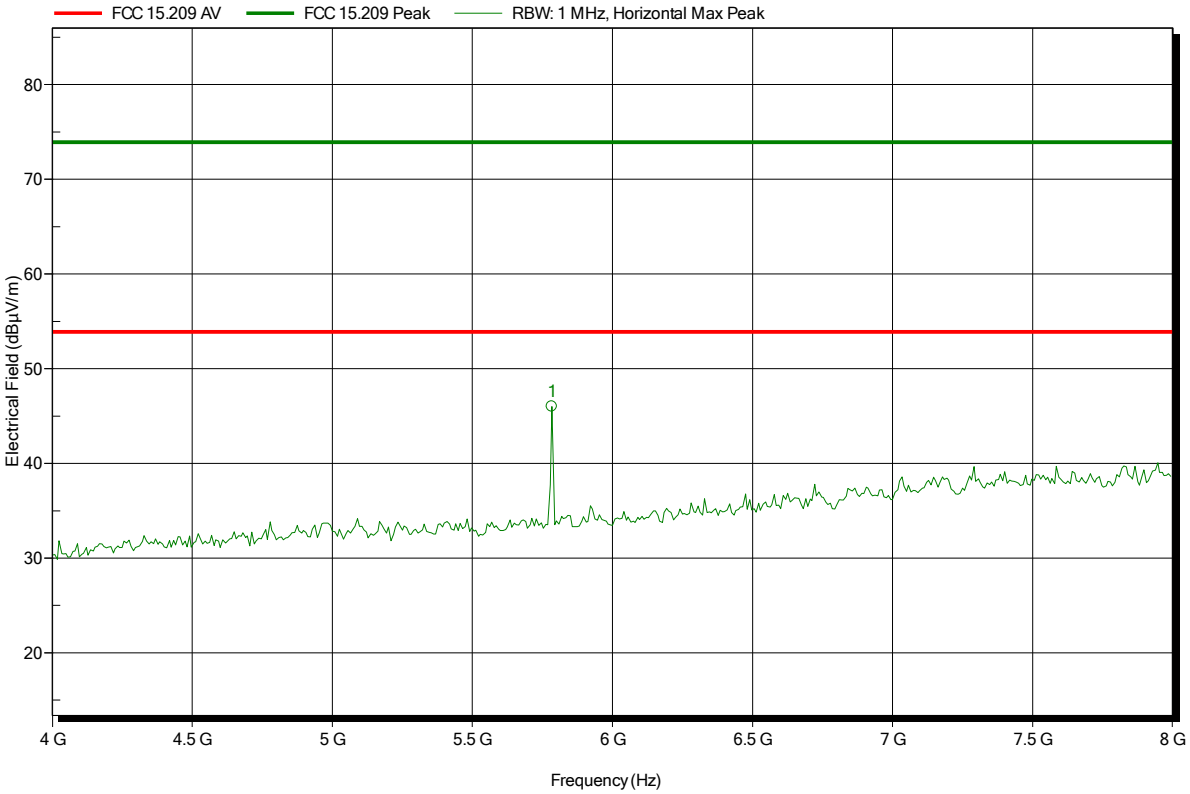

Frequency	Peak	Peak Limit	Peak Difference	Status
5.784 GHz	46.01 dBµV/m	73.9 dBµV/m	-27.89 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-29
Note:	

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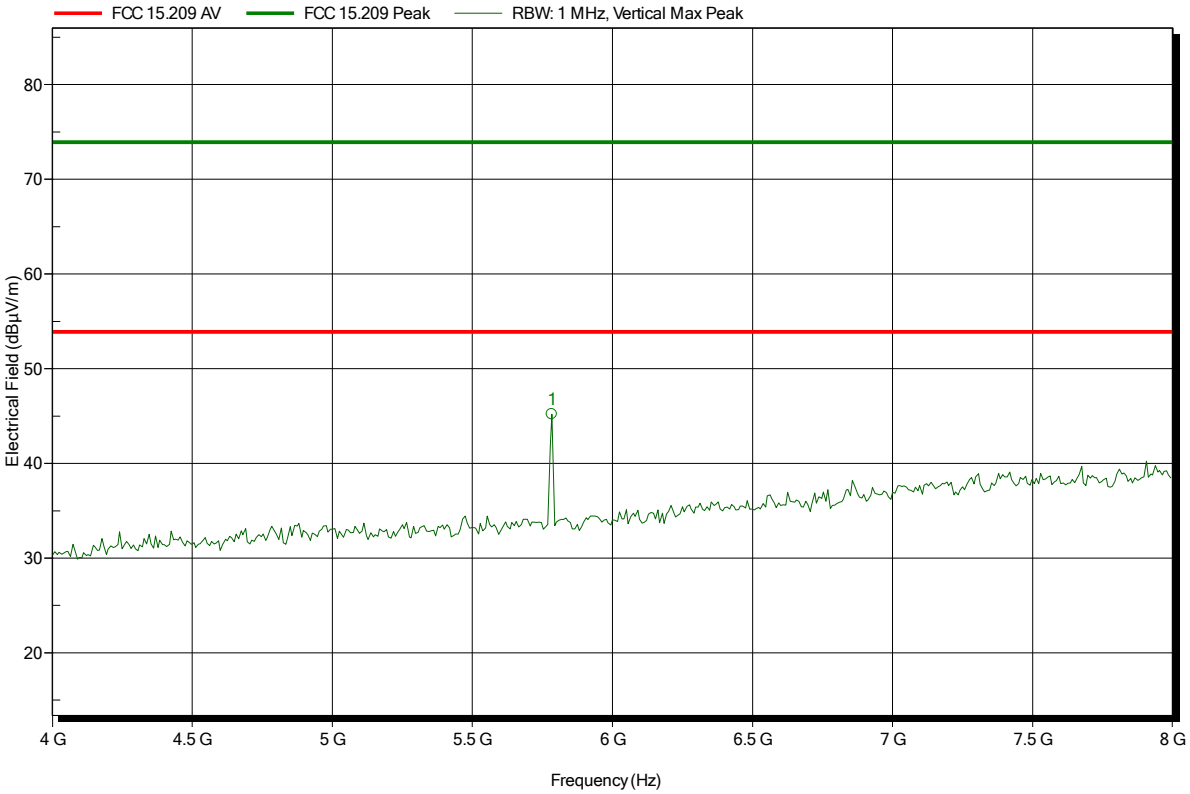

Frequency	Peak	Peak Limit	Peak Difference	Status
5.784 GHz	45.18 dBµV/m	73.9 dBµV/m	-28.72 dB	Pass

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-29
Note:	

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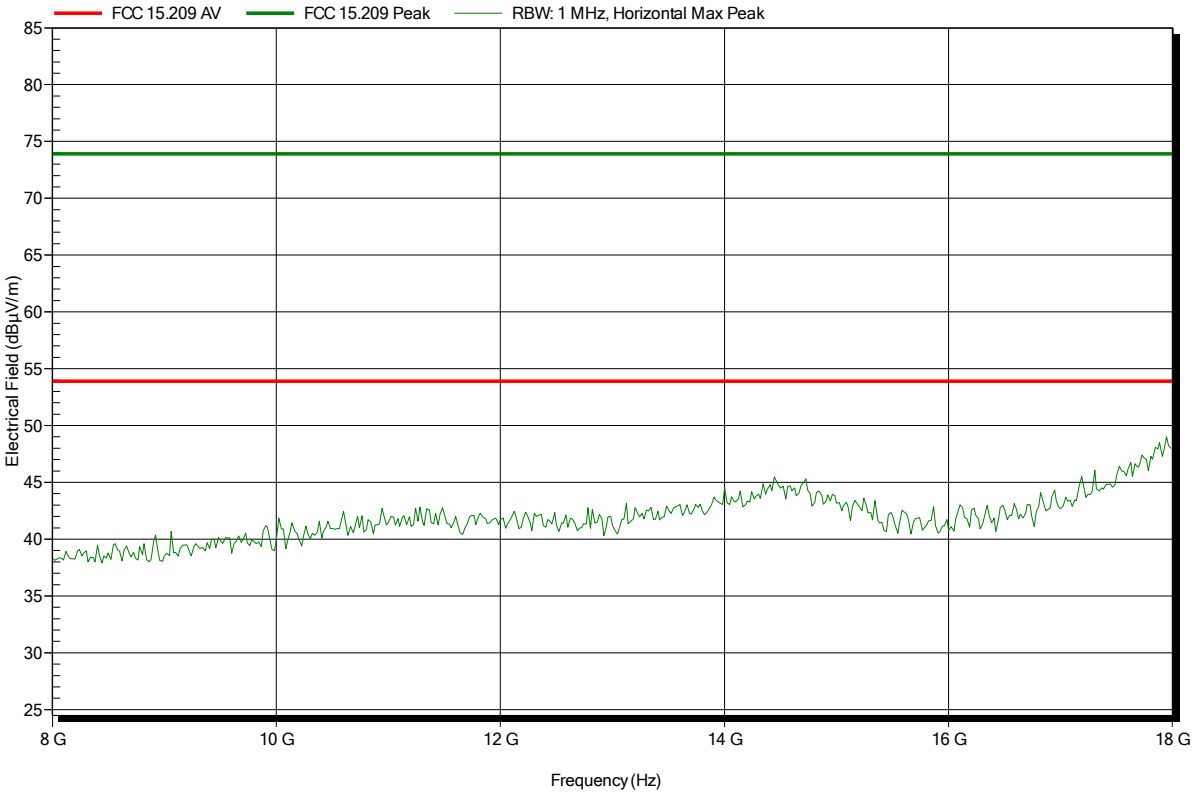

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-29
Note:	

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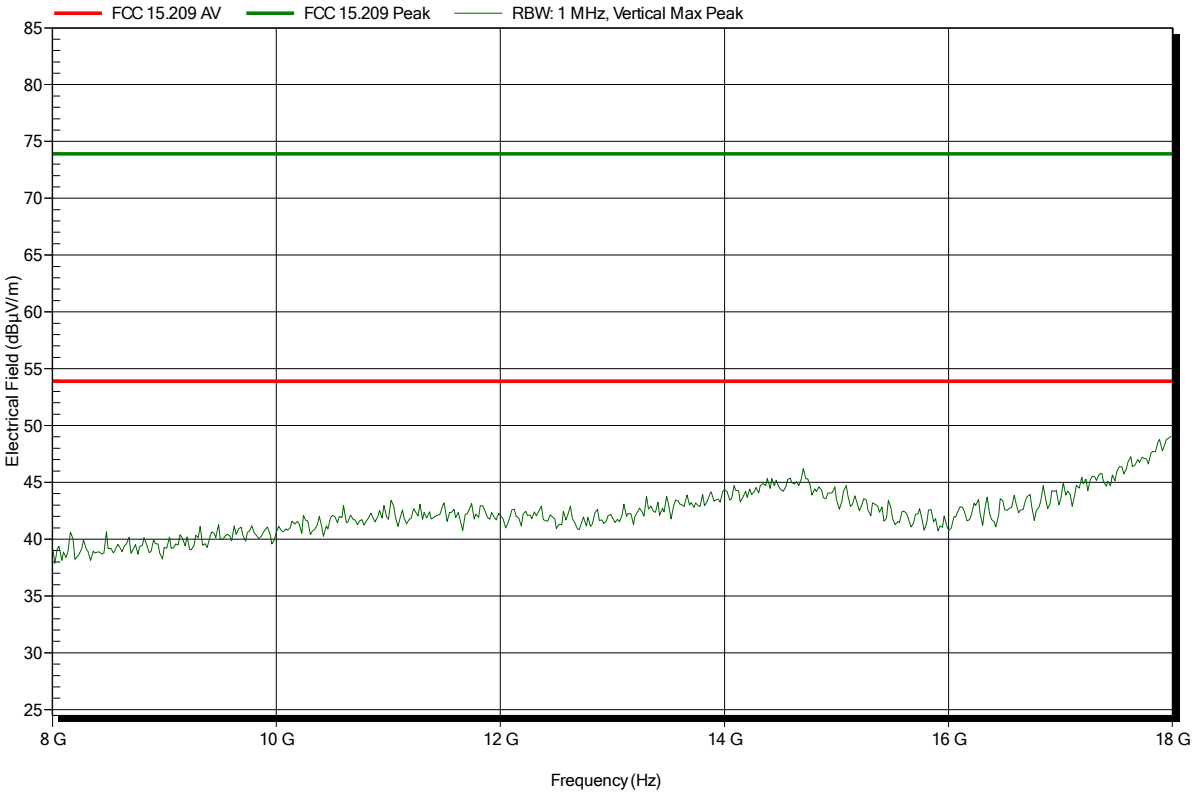

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-29
Note:	

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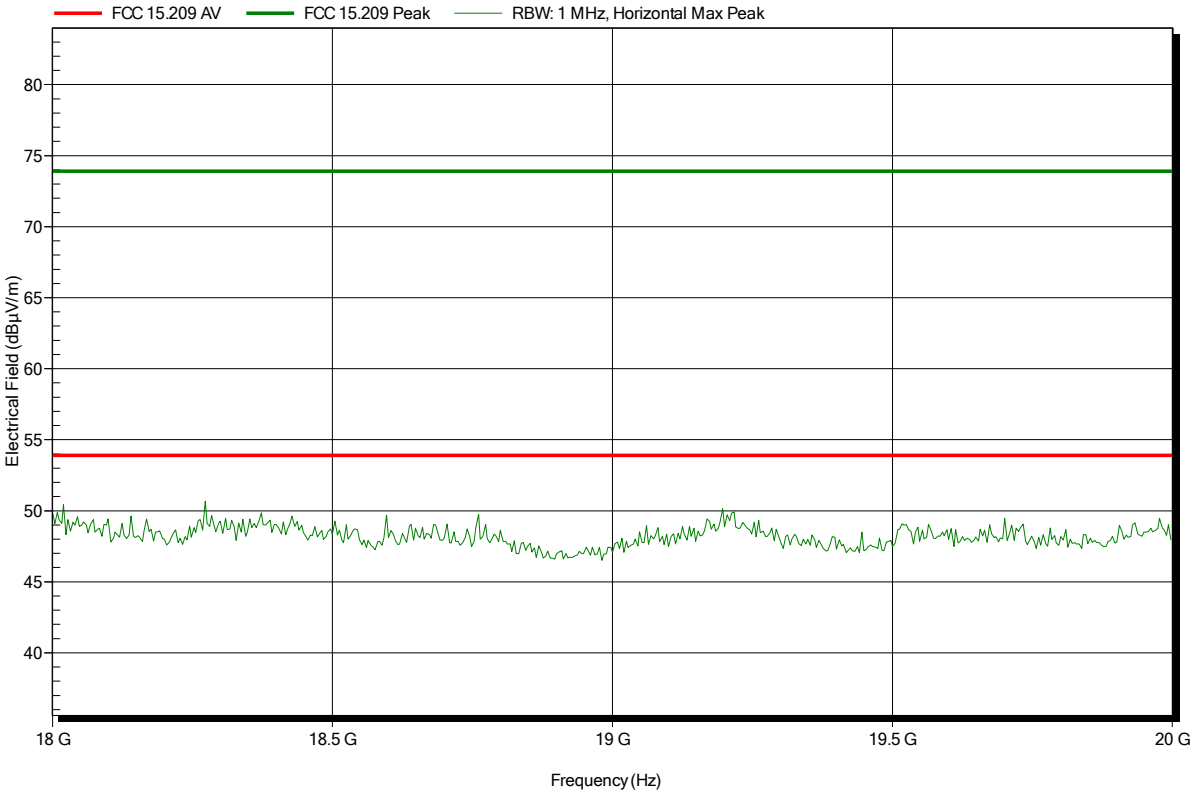

Spurious emissions according to FCC 15.209

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 vDC lithium battery
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m
Mode:	TX; channel 0; antenna 1
Test Date:	2014-09-29
Note:	

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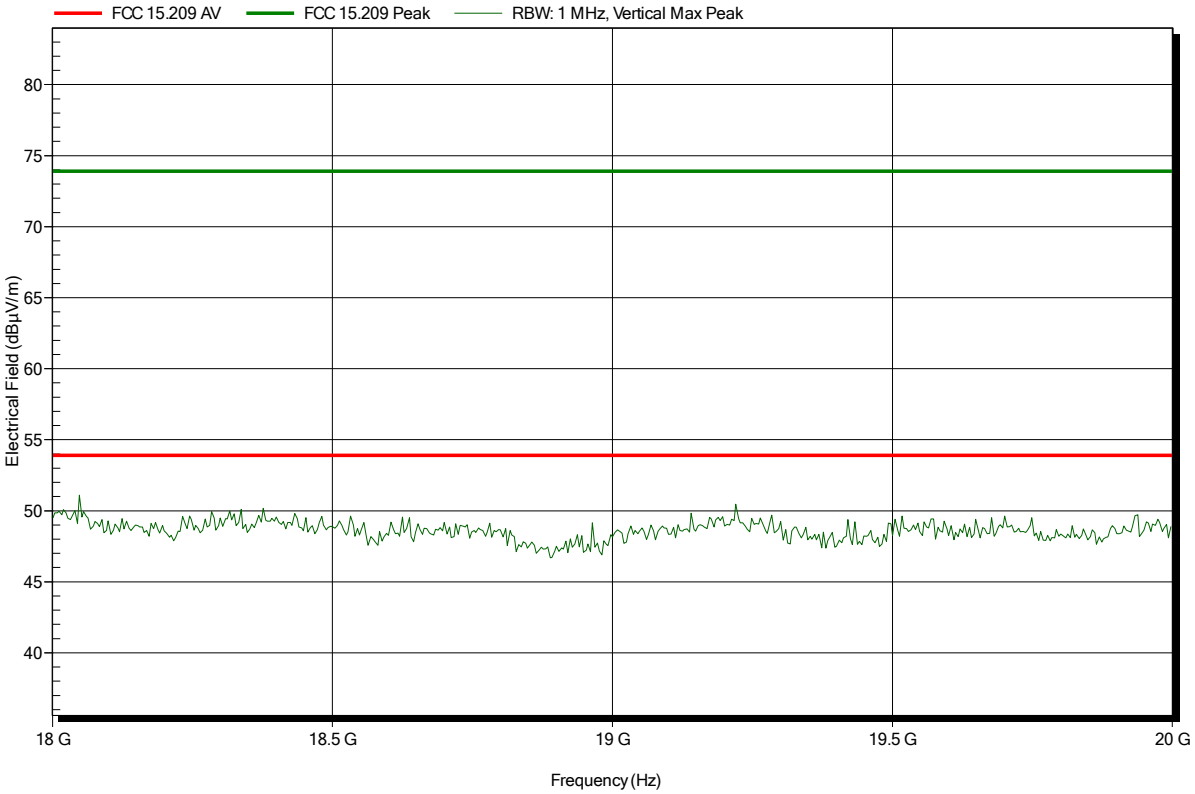


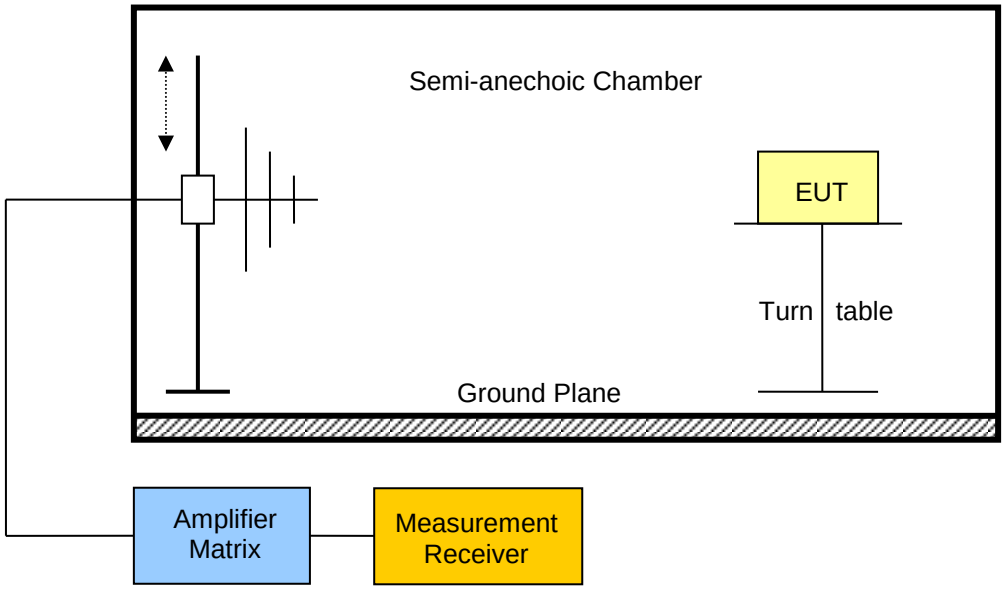
3.13 Test Conditions and Results – Receiver spurious emissions

Receiver spurious emissions acc. to IC RSS-213	**Verdict: PASS**
Test according referenced standards	Reference Method
	IC RSS-210 A8.5
Test according to measurement reference	Reference Method
	ANSI C63.4
Tested frequencies	Scan (All)
Tested frequency range	30 MHz – 3th 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]	Pol.	Det.	Limit [dBµV/m]	Margin [dB]
F_{MID}	1924.992	419.2	30.24	ver	pk	46.00	-15.76

Comments:
* Physical distance between EUT and measurement antenna.
** Emission level corresponds to ambient noise floor

Spurious emissions according to RSS-GEN

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 VDC lithium battery
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; DECT ch.2 and BT ch.39 acrive
Test Date:	2014-10-02
Note:	

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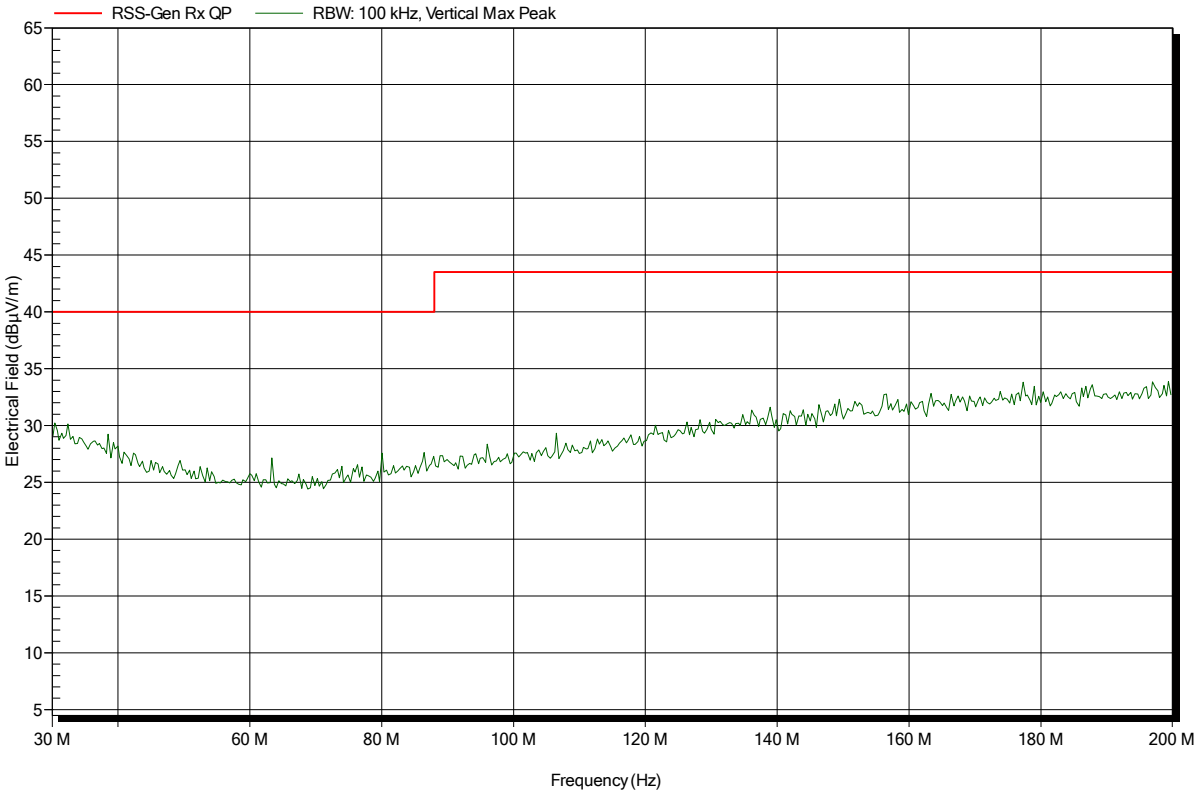

Spurious emissions according to RSS-GEN

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 VDC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	RX; DECT ch.2 and BT ch.39 acrive
Test Date:	2014-10-02
Note:	

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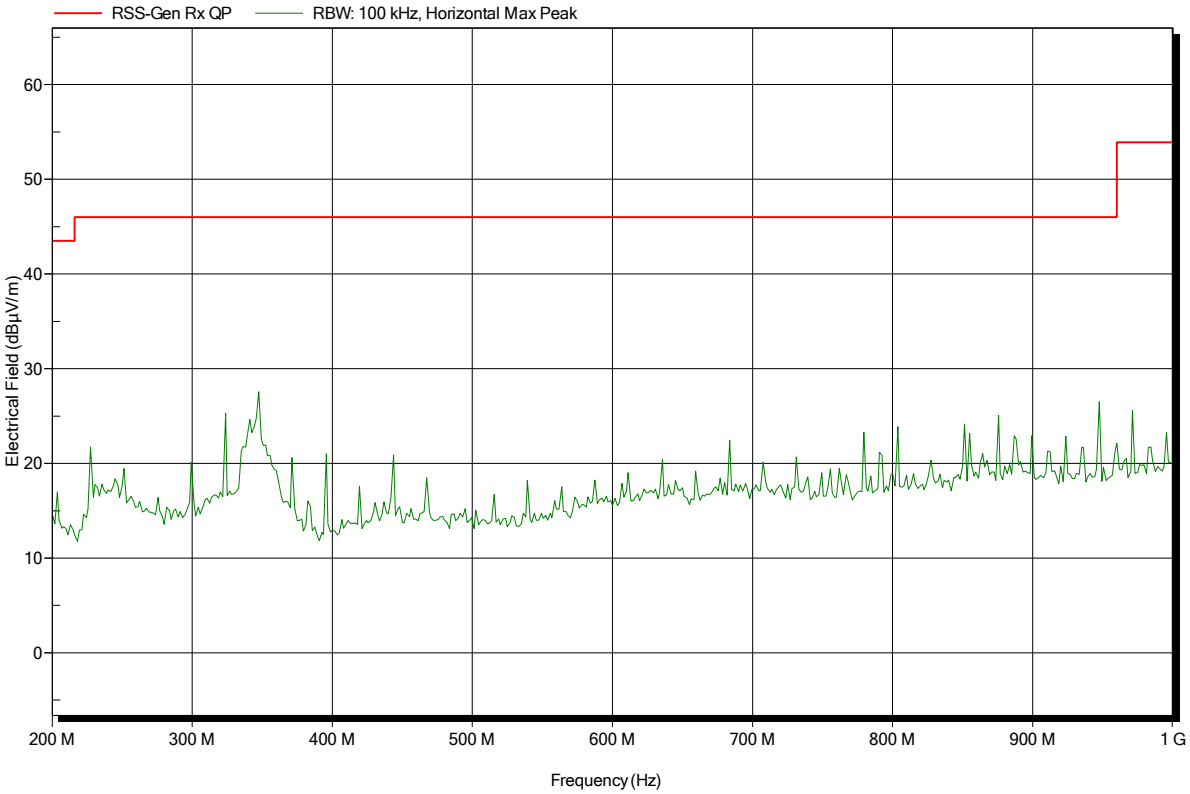

Spurious emissions according to RSS-GEN

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 VDC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	RX; DECT ch.2 and BT ch.39 acrive
Test Date:	2014-10-02
Note:	

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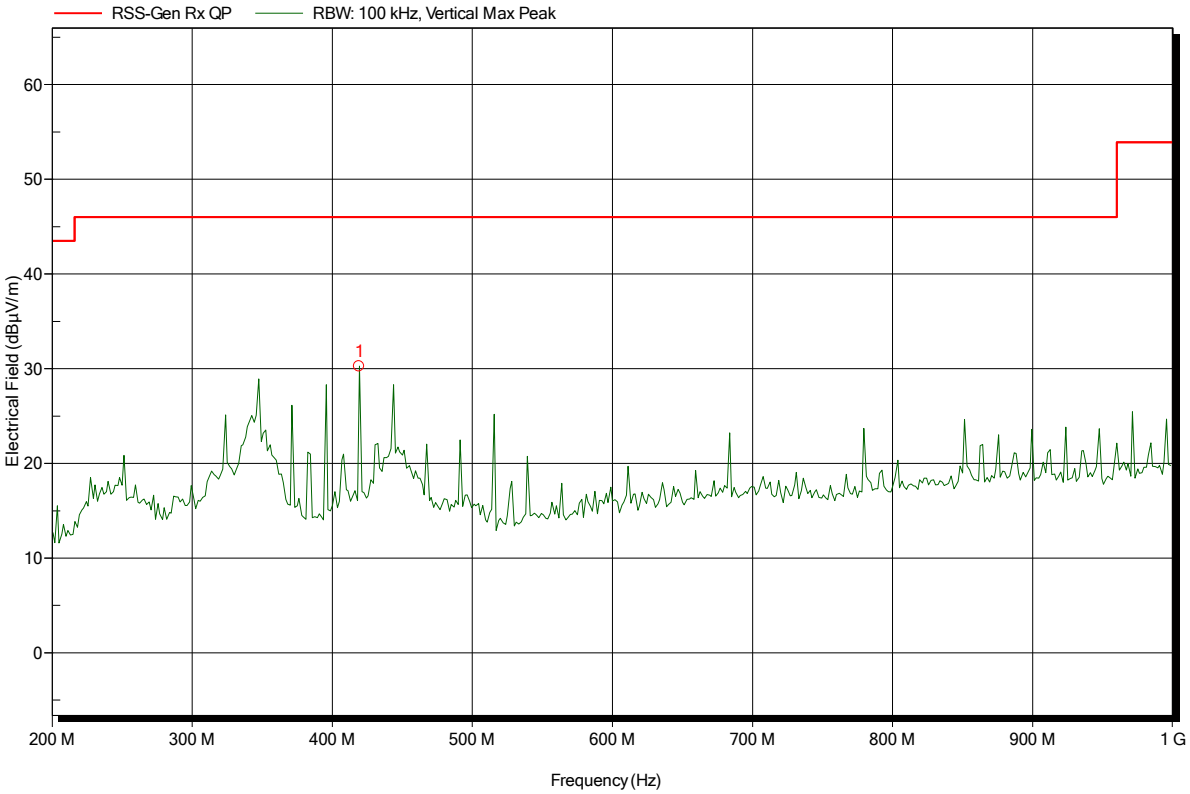

Frequency	Peak	Peak Limit	Peak Difference	Status
419.2 MHz	30.24 dBµV/m	46 dBµV/m	-15.76 dB	Pass

Spurious emissions according to RSS-GEN

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 VDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; DECT ch.2 and BT ch.39 acrive
Test Date:	2014-10-02
Note:	

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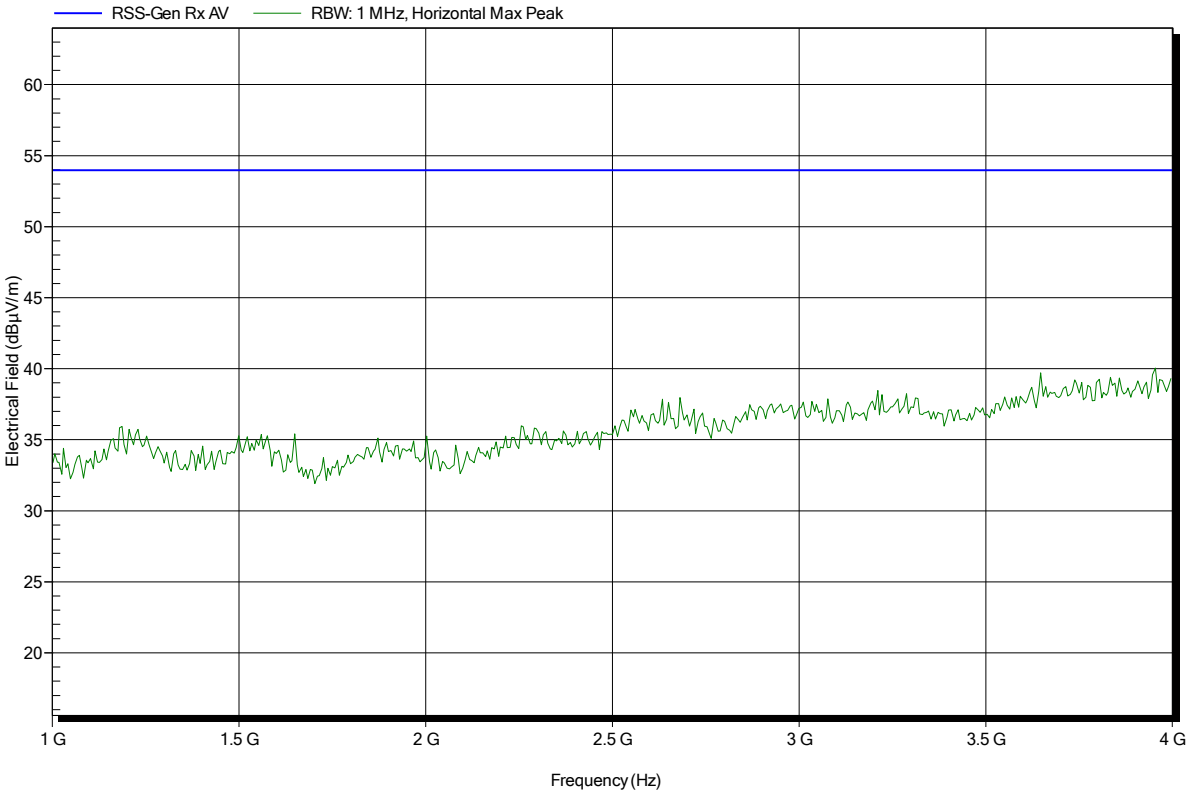

Spurious emissions according to RSS-GEN

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 VDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; DECT ch.2 and BT ch.39 acrive
Test Date:	2014-10-02
Note:	

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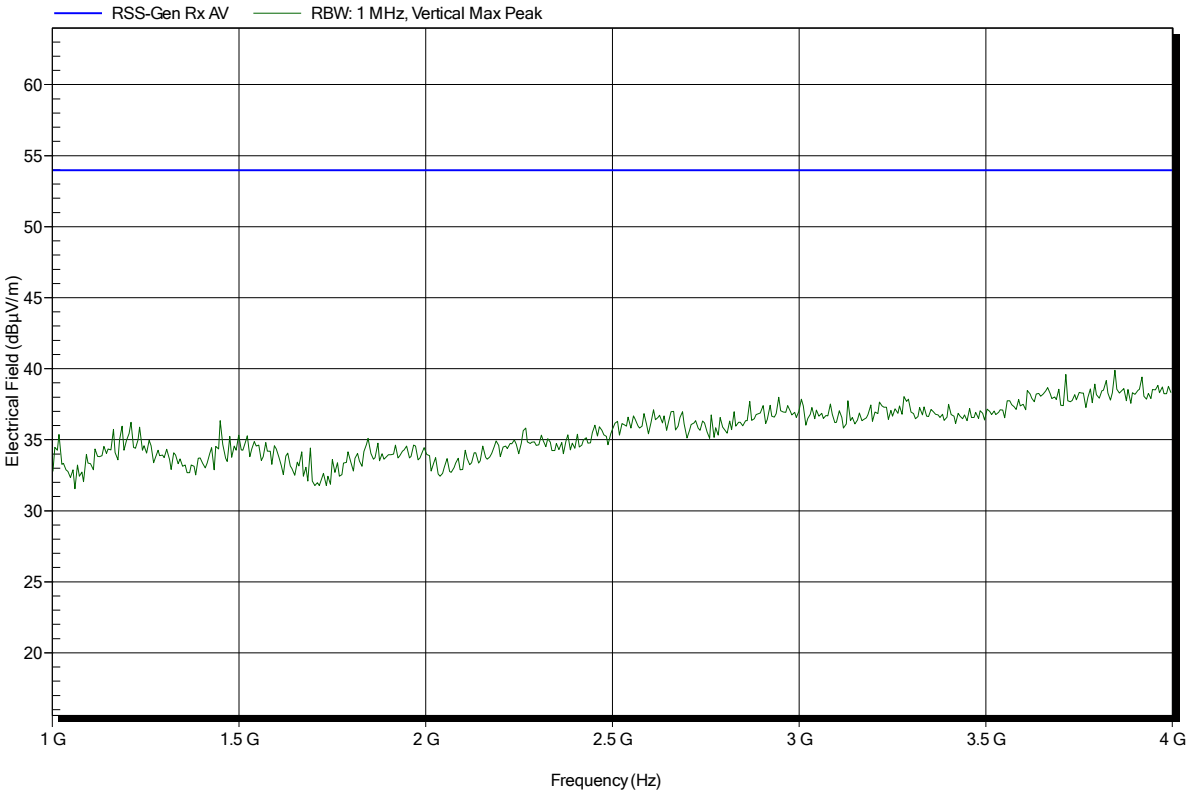

Spurious emissions according to RSS-GEN

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 VDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; DECT ch.2 and BT ch.39 acrive
Test Date:	2014-10-02
Note:	

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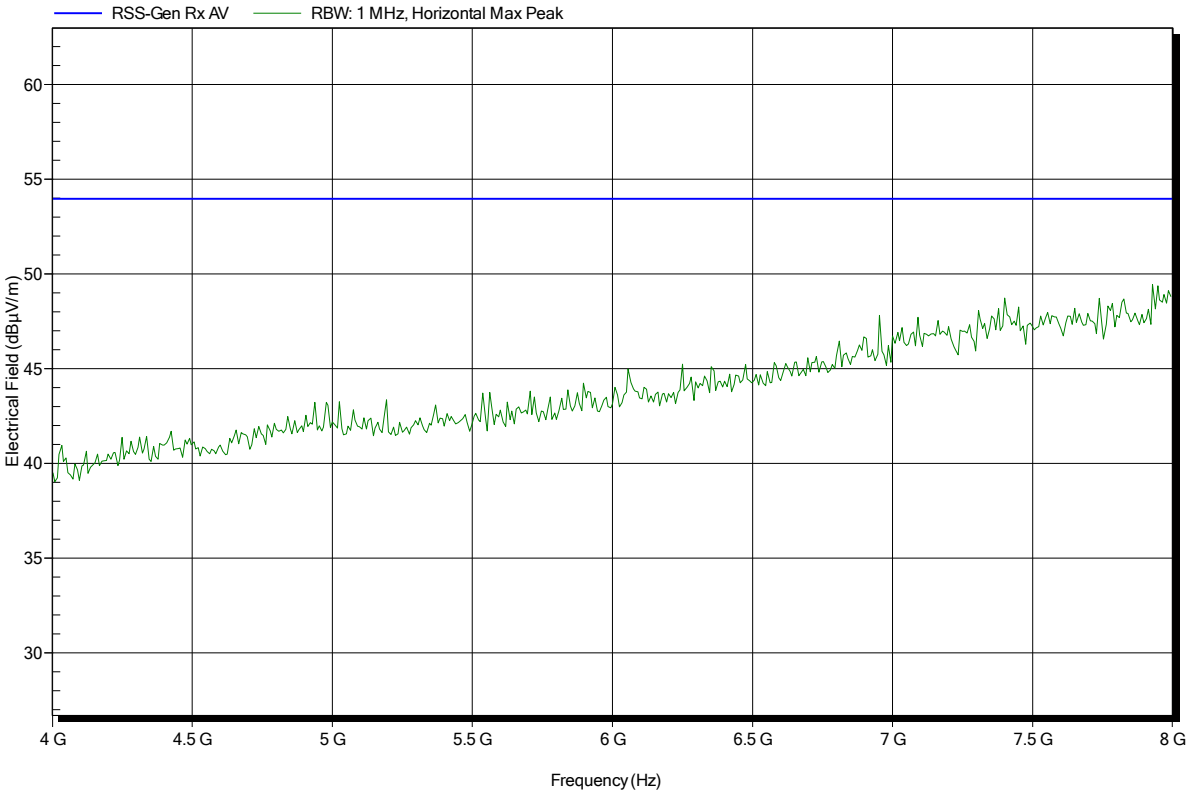

Spurious emissions according to RSS-GEN

Project number: G0M-1408-4062

Applicant:	Sonetics Corporation
EUT Name:	Communications Headset
Model:	AXP379
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 VDC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; DECT ch.2 and BT ch.39 acrive
Test Date:	2014-10-02
Note:	

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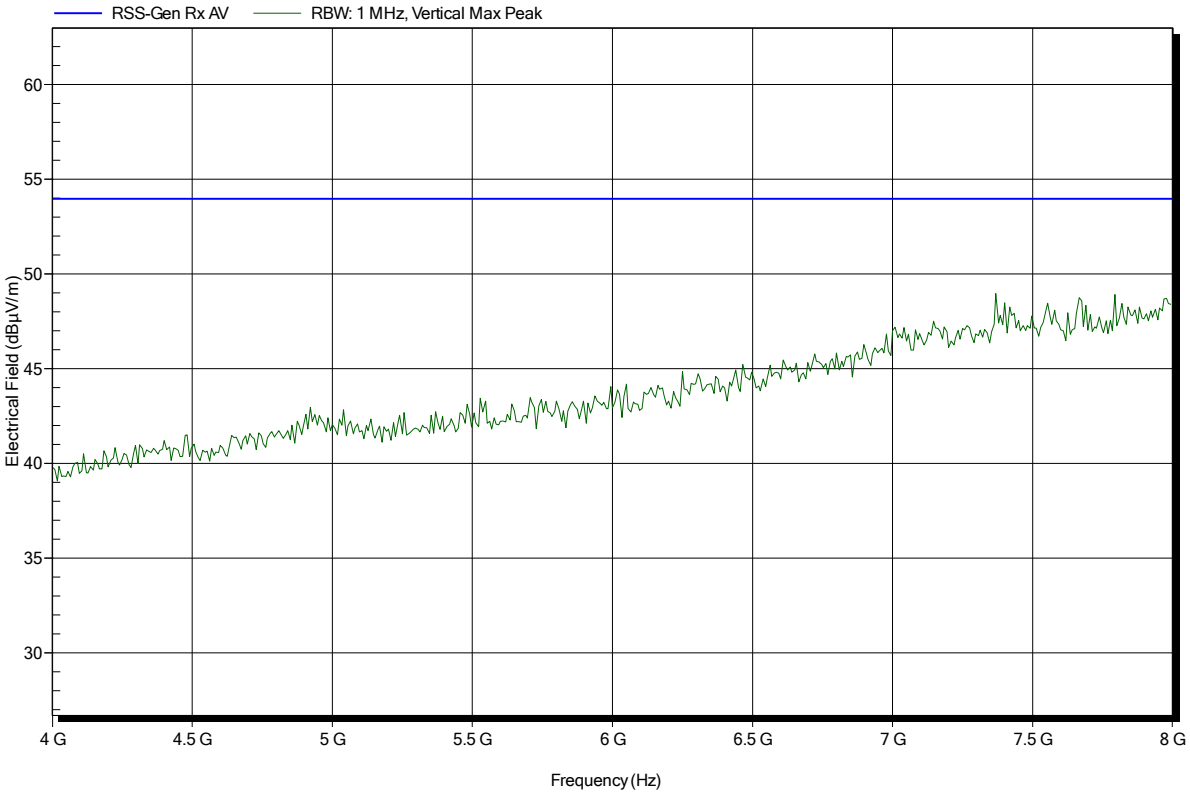


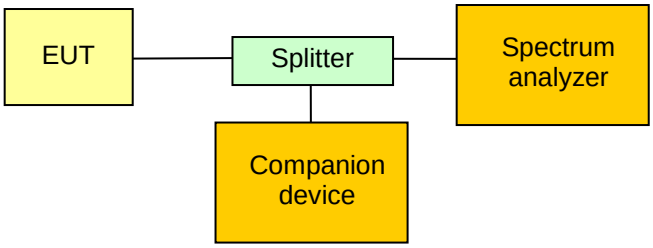
3.14 Test Conditions and Results – Automatic discontinuation of Transmission

Automatic discontinuation of transmission acc. to FCC 15D / RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.319(f) / IC RSS-213 4.3.4(a)
Test according to measurement reference	Reference Method
	Manual evaluation
EUT equipment type	Fixed part

Requirements

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. This is not intended to preclude transmission of control and signaling information or use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Test setup



Test procedure

The following situations were simulated to test the reaction of the EUT:

- EUT power removed
- EUT switched –off
- Companion device switched off
- Hook-on by companion device
- Hook-on by EUT
- Power removed from companion device

The reaction of the EUT is recorded by the following results:

A – Connection breakdown, cease of all transmissions
B – Connection breakdown, EUT transmits control and signalling information
C – Connection breakdown, Companion device transmits control and signalling information
N/A – Not applicable (the EUT or companion device does not have an on/off switch or cannot perform hook on

Result

Test	Reaction	Verdict
Power removed : EUT	A	PASS
Power removed : Companion device	A	PASS
Switch –off : EUT	A	PASS
Switch –off : Companion device	A	PASS
Hook-on : EUT	N/A	--
Hook-on : Companion device	N/A	--

3.15 Test Conditions and Results – Radiofrequency radiation exposure

Radiofrequency radiation exposure acc. to FCC 47 CFR 15D / IC RSS-213	Verdict: PASS
EUT requirement rule parts and clause	Reference
	FCC 15.319(c)(i) / IC RSS-Gen 5.6
Requirements	
FCC : Unlicensed PCS devices are subject to the radiofrequency radiation exposure requirements specified in §§ 1.1307(b), 2.1091 and 2.1093. All equipment shall be considered to operate in a "general population/uncontrolled" environment. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request. IC : Category I and Category II equipment shall comply with the applicable requirements of RSS-102.	
Result	
Reference	Verdict
see dedicated report : G0M-1408-4062-TFC093SR-V01 issued by Eurofins Product Service GmbH	PASS

3.16 Test Conditions and Results – Monitoring threshold

Monitoring threshold acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(2),(5),(9) / IC RSS-213 4.3.4(b)(2),(5),(9)
Test according referenced standards	Reference Method
	ANSI C63.17 7.3.4
Number of duplex channels used	5 carrier with 12 duplex timeslots = 60 duplex channels

Requirements

The monitoring threshold must not be more than 30 dB above the thermal noise power (KTB) of a bandwidth equivalent to the emission/occupied bandwidth of the device.

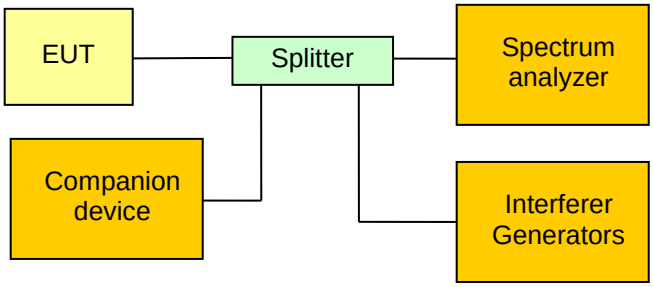
Devices that have a power output lower than the m aximum permitted under this standard may increase their detection threshold by 1 dB for each 1 dB that the transmitter power is below the maximum permitted.

IC: If access to spectrum is not available as determined by the above, and a minimum of 40 duplex system access channels are defined for the system, the time and spectrum windows with a power level below a monitoring threshold of 50 dB above the thermal noise power determined for the occupied bandwidth may be accessed.

$$T_U[dBm] = -174 + 10 \cdot \log_{10}(Bandwidth\ [Hz]) + M_U + P_{max}[dBm] - P_{EUT}[dBm]$$
$$T_L[dBm] = -174 + 10 \cdot \log_{10}(Bandwidth\ [Hz]) + M_L + P_{max}[dBm] - P_{EUT}[dBm]$$

With M_U = 50 dB and M_L = 30 dB, P_{max} as given under “Peak transmit power” and bandwidth as emission or occupied bandwidth. The power threshold limit is given by T_U+U_M (U_M = 6 dB).

Test setup



Test procedure – Lower threshold for EUTs that do not implement LIC procedure

1. An interferer level of T_L + U_M + 10 dB is applied to all carrier frequencies
2. It is verified that the EUT does not transmit on any carrier frequency
3. The interferer level is decreased in 1 dB steps until the EUT starts to transmit on a channel

Test procedure – Upper threshold for EUTs that implement LIC procedure

1. An interferer level of T_U + U_M + 10 dB is applied to all carrier frequencies
2. It is verified that the EUT does not transmit on any carrier frequency
3. The interferer level is decreased in 1 dB steps until the EUT starts to transmit on a channel

Test results - FCC						
Threshold	Emission Bandwidth [Hz]	Noise Excess Level [dB]	Output power [dBm]	Power Limit [dBm]	Power Threshold Limit [dBm]	Threshold Level [dBm]
Upper	1440000	50	20.18	20.79	-55.8	-60
Lower	N/A	N/A	N/A	N/A	N/A	N/A
Test results - IC						
Threshold	Occupied Bandwidth [Hz]	Noise Excess Level [dB]	Output power [dBm]	Power Limit [dBm]	Power Threshold Limit [dBm]	Threshold Level [dBm]
Upper	1224000	50	20.18	20.44	-56.9	-60
Lower	N/A	N/A	N/A	N/A	N/A	N/A
Comments:						

3.17 Test Conditions and Results – LIC confirmation

LIC confirmation acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: PASS
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(5) / IC RSS-213 4.3.4(b)(5)	
Test according referenced standards	Reference Method	
	ANSI C63.17 7.3.4	
Requirements		
A device utilizing the provisions of FCC 47 CFR 15.323(c)(5) / IC RSS-213(b)(5) must have monitored all access channels defined for its system within the last 10 seconds and must verify, within the 20 milliseconds (40 milliseconds for devices designed to use a 20 millisecond frame period) immediately preceding actual channel access, that the detected power of the selected time and spectrum windows is no higher than the previously detected value.		
Test result		
Evaluation		Verdict
The requirement is verified using the “Monitoring time” and “LIC Selection” test.		PASS
Comments:		

3.18 Test Conditions and Results – LIC selection

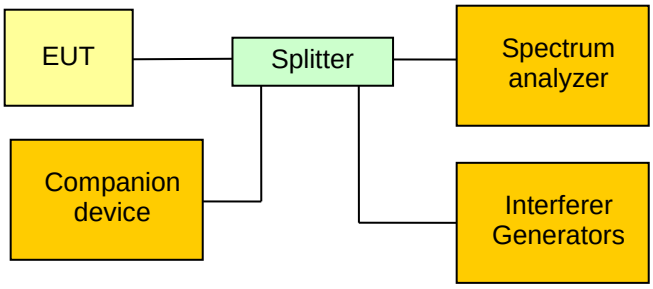
LIC selection acc. to FCC 47 CFR 15D / IC RSS-213	Verdict: PASS
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(5) / IC RSS-213 4.3.4(b)(5)
Test according referenced standards	Reference Method
	ANSI C63.17 7.3.3

Requirements

FCC: If access to spectrum is not available as determined by the above, and a minimum of 20 duplex system access channels are defined for the system, the time and spectrum windows with the lowest power level may be accessed.

IC: If access to spectrum is not available as determined by the above, and a minimum of 40 duplex system access channels are defined for the system, the time and spectrum windows with a power level below a monitoring threshold of 50 dB above the thermal noise power determined for the occupied bandwidth may be accessed.

Test setup



Test procedure

1. The EUT is forced to two carrier frequencies f_1 and f_2 only be the use of interferer generators with power levels higher than the upper threshold T_U plus the measurement uncertainty U_M of 6 dB
2. Additional interferer signals are applied to the channels f_1 and f_2 according to the result table below
3. A communication session with the companion device is initiated
4. Transmission on the least interfered channel is verified
5. The communication session is terminated
6. The communications session is established another 4 times

Test results

Interferer Level f_1	Interferer Level f_2	Communication channel	Verdict
$T_L + U_M + 7$ dB	$T_L + U_M$	f_2	PASS
$T_L + U_M$	$T_L + U_M + 7$ dB	f_1	PASS
$T_L + U_M + 1$ dB	$T_L + U_M - 6$ dB	f_2	PASS
$T_L + U_M - 6$ dB	$T_L + U_M + 1$ dB	f_1	PASS

Comments: T_L corresponds to the lower threshold power value

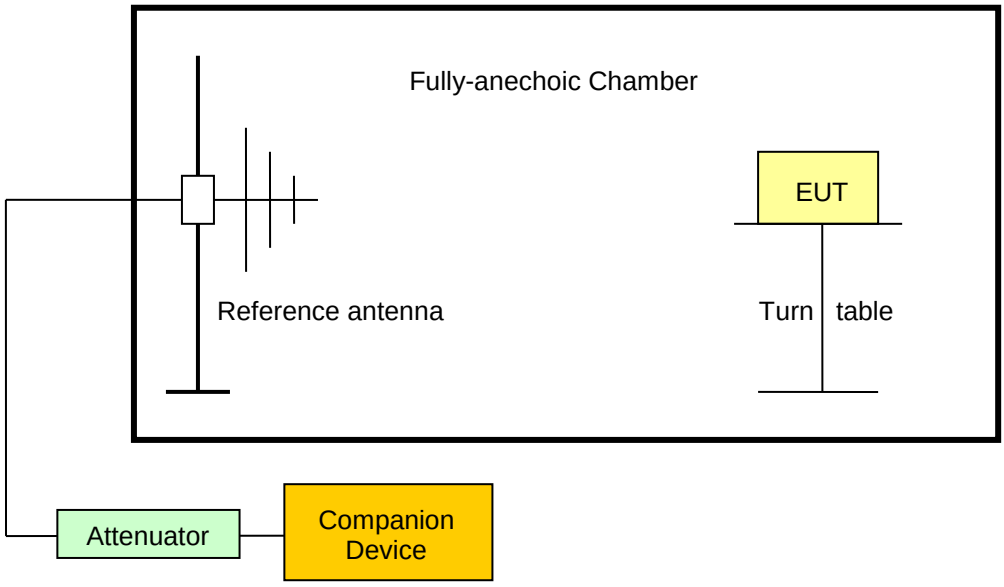
3.19 Test Conditions and Results – Monitoring antenna

Monitoring antenna acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.319(c)(8) / IC RSS-213 (b)(8)
Test according to measurement reference	Reference Method
	ANSI C63.17 4.6
Monitoring antenna	The same as transmitting antenna

Requirements

The monitoring system shall use the same antenna used for transmission, or an antenna that yields equivalent reception at that location.

Test setup radiated (monitoring and transmit antenna are not the same)



Test procedure (collocated monitoring antenna of different type)

1. The reference antenna is orientated for horizontal polarization
2. The EUT is placed so that the direction of maximum radiation of the transmitting antenna is facing the direction of the main lobe of the reference antenna
3. A signal with threshold power level is applied to the reference antenna
4. It is observed whether or not an connection can be established
5. The polarization of the reference antenna is changed to vertical polarization
6. It is observed whether or not an connection can be established

Test procedure (arbitrarily placed monitoring antenna)	
1. The reference antenna is orientated for horizontal polarization 2. The EUT is placed so that the direction of maximum radiation of the transmitting antenna is facing the direction of the main lobe of the reference antenna 3. The distance between the reference antenna and the EUT is increased by the maximum distance between the monitoring and transmitting antenna 4. The EUT is aligned in such a way that the direction of minimum sensitivity faces the reference antenna 5. A signal with threshold power level is applied to the reference antenna and the EUT is illuminated 6. It is observed whether the EUT can connect to the companion device or not 7. The polarization of the reference antenna is changed to vertical polarization 8. It is observed whether or not an connection can be established	
Results	
Connection status	Verdict
N/A (monitoring antenna identical to transmitting antenna)	PASS

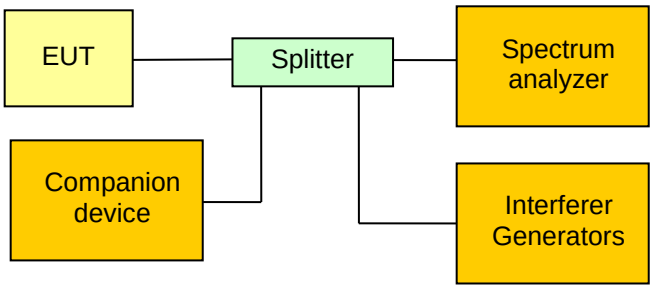
3.20 Test Conditions and Results – Monitoring time

Monitoring time acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(1) / IC RSS-213 4.3.4(b)(1)
Test according referenced standards	Reference Method
	ANSI C63.17 7.3.4

Requirements

Immediately prior to initiating transmission, devices must monitor the combined time and spectrum windows in which they intend to transmit for a period of at least 10 milliseconds for systems designed to use a 10 milliseconds or shorter frame period or at least 20 milliseconds for systems designed to use a 20 milliseconds frame period.

Test setup



Test procedure

1. The EUT is forced to two carrier frequencies f_1 and f_2 only be the use of interferer generators with power levels higher than the upper threshold T_U plus the measurement uncertainty U_M of 6 dB
2. The interferer level on channel frequency f_1 is also set to T_U+ U_M and channel f_2 has no interferer
3. A communication session is initiated on f_2 and transmission on f_2 is verified
4. An interferer level of T_U+ U_M is applied to f_2 and the interferer on channel f_1 is removed 20ms after the interferer on f_2 is applied
5. Transmission on f_1 and f_2 is monitored with the spectrum analyzer and it is verified that the EUT does not transmit on f_2.

Test results

Initial transmit channel	Interferer level	Final transmit channel	Verdict
f_2	0	f_2	PASS
f_2	$T_U + U_M$	f_1	PASS

Comments:

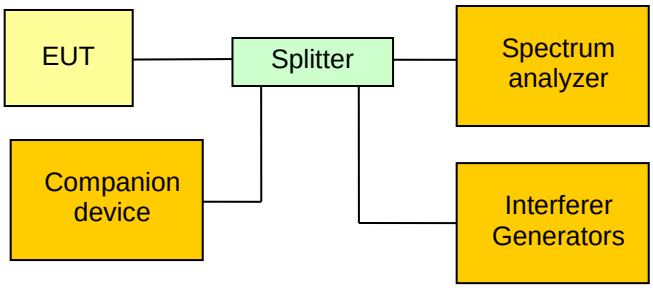
3.21 Test Conditions and Results – Monitoring bandwidth

Monitoring bandwidth acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(7) / IC RSS-213 4.3.4(b)(7)
Test according referenced standards	Reference Method
	ANSI C63.17 7.4

Requirements

The monitoring system bandwidth must be equal to or greater than the emission bandwidth of the intended transmission.

Test setup



Test procedure

1. Using interferer signals, operation is restricted to channels f_1
2. An communication session is established without interference on f_1
3. An interference signal is set to f_1 + 30% of the emission/occupied bandwidth with a level of 10 dB + U_M above T_U or T_L as appropriate. The bandwidth of the interferer is set to be greater than 0.05 MHz.
4. It is verified that the EUT does not transmit
5. The interferer is set to f_1 - 30% of the emission/occupied bandwidth
6. It is verified that the EUT does not transmit

Test results

Interferer Frequency	Interferer Level	Transmission status	Verdict
F_{LOW} + 30 % · BW	T_U + U_M + 10 dB	None	PASS
F_{LOW} - 30 % · BW	T_U + U_M + 10 dB	None	PASS
F_{HIGH} + 30 % · BW	T_U + U_M + 10 dB	None	PASS
F_{HIGH} - 30 % · BW	T_U + U_M + 10 dB	None	PASS

Comments:

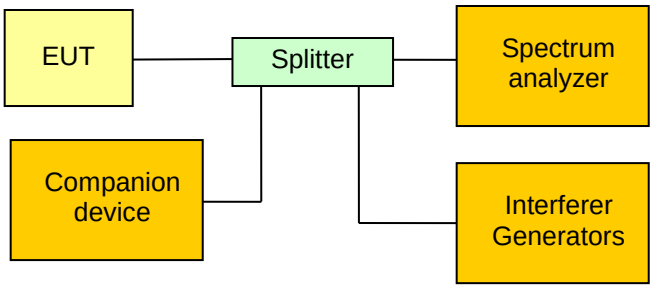
3.22 Test Conditions and Results – Monitoring reaction time

Monitoring reaction time acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(7) / IC RSS-213 4.3.4(b)(7)
Test according referenced standards	Reference Method
	ANSI C63.17 7.5

Requirements

The monitor shall have a maximum reaction time less than 50xSQRT (1.25/emission(occupied) bandwidth in MHz) microseconds for signals at the applicable threshold level but shall not be required to be less than 50 microseconds. If a signal is detected that is 6 dB or more above the applicable threshold level, the maximum reaction time shall be 35xSQRT (1.25/emission (occupied) bandwidth in MHz) microseconds but shall not be required to be less than 35 microseconds.

Test setup



Test procedure

1. Using interferer signals operation is restricted to channel f_1
2. A time-synchronized, pulsed interference is applied to f_1 with a power level of $T_U + U_M$ or $T_L + U_M$ as appropriate
3. For systems with a 10 ms frame time and N timeslots per frame, a channel interferer with N pulses in a 10 ms repetition period is applied
4. The level of the interferer pulses is also set to $T_U + U_M$ or $T_L + U_M$ as appropriate
5. The pulse width is set to the largest of 50 µs and $50 \cdot \sqrt{1.25/Bandwidh[MHz]}$ µs
6. It is observed whether or not a connection can be established to the companion device
7. The level of the interferer pulses is set to 6 dB above $T_U + U_M$ or $T_L + U_M$ as appropriate
8. The pulse width is set to the largest of 35 µs and $35 \cdot \sqrt{1.25/Bandwidh[MHz]}$ µs
9. It is observed whether or not a connection can be established to the companion device

Test results - FCC					
Channel	Emission bandwidth [MHz]	Pulse width from Bandwidth [µs]	Pulse width for test [µs]	Connection possible	Verdict
F_{LOW}	1.418	$50 \cdot \sqrt{1.25/B[MHz]}$ =	46.9	No	PASS
F_{LOW}	1.418	$35 \cdot \sqrt{1.25/B[MHz]}$ =	32.8	No	PASS
F_{HIGH}	1.440	$50 \cdot \sqrt{1.25/B[MHz]}$ =	46.6	No	PASS
F_{HIGH}	1.440	$35 \cdot \sqrt{1.25/B[MHz]}$ =	32.6	No	PASS
Test results - IC					
Channel	Emission bandwidth [MHz]	Pulse width from Bandwidth [µs]	Pulse width for test [µs]	Connection possible	Verdict
F_{LOW}	1.224	$50 \cdot \sqrt{1.25/B[MHz]}$ =	41.3	No	PASS
F_{LOW}	1.224	$35 \cdot \sqrt{1.25/B[MHz]}$ =	28.9	No	PASS
F_{HIGH}	1.224	$50 \cdot \sqrt{1.25/B[MHz]}$ =	41.3	No	PASS
F_{HIGH}	1.224	$35 \cdot \sqrt{1.25/B[MHz]}$ =	28.9	No	PASS
Comments:					

3.23 Test Conditions and Results – Acknowledgements

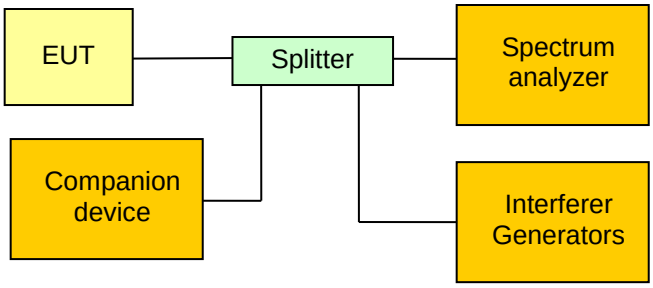
Acknowledgements acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(4) / IC RSS-213 4.3.4(b)(4)
Test according referenced standards	Reference Method
	ANSI C63.17 8.2.1
EUT can initiate a communication session	No

Requirements

Once access to specific combined time and spectrum windows is obtained, an acknowledgement from a system participant must be received by the initiating transmitter within one second or transmission must cease.

Periodic acknowledgements must be received at least every 30 seconds or transmission must cease.

Test setup



Test procedure

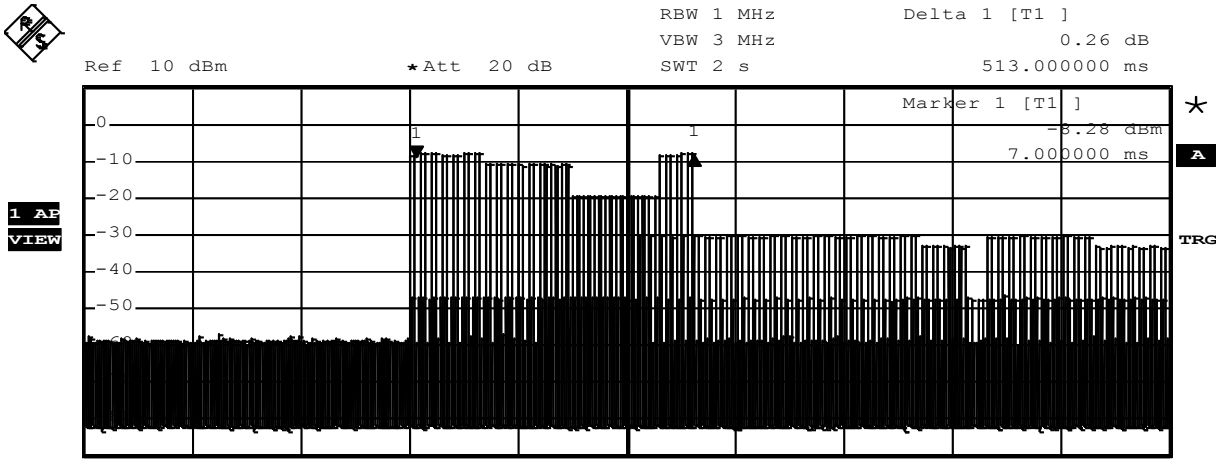
1. (Applies to EUTs that can initiate a communication session (e.g. portable parts)) The acknowledgement timeslots are blocked by interferer signals
2. An attempt to establish communication session is started from the EUT
3. The emissions from the EUT are monitored to verify that the EUT does not transmit for more than 1s
4. Next the acknowledgements are unblocked and another communication session is established between the EUT and the companion device
5. It is verified that the communication session is successful
6. (Applies to all EUTs) With all acknowledges unblocked, an communication session is initiated between the EUT and the companion device
7. The acknowledgements were blocked and the time the EUT continues to transmit is recorded

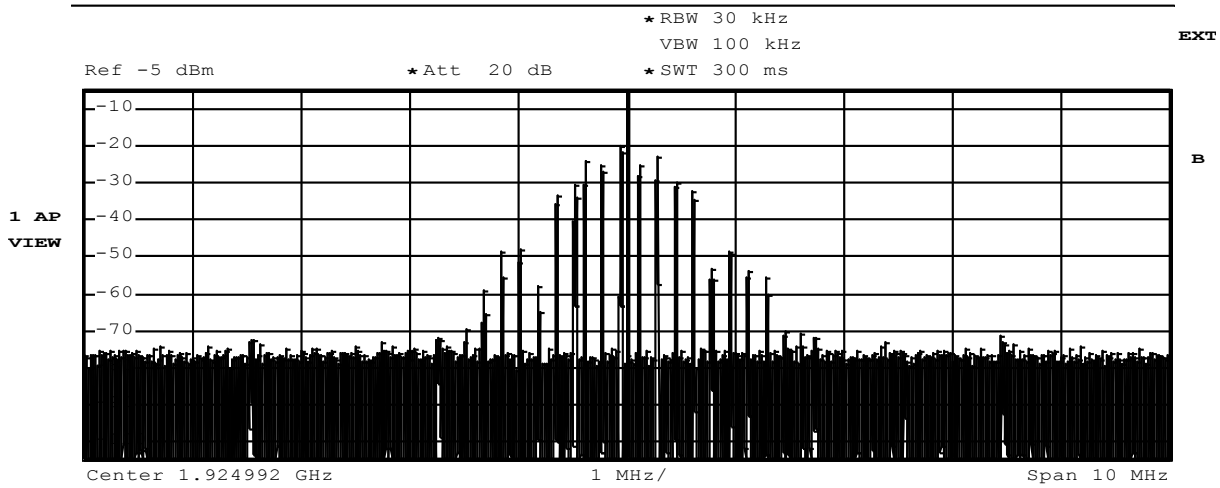
Test results		
Maximum initial transmission [s]	Transmission time limit [s]	Verdict
0.513	1	PASS
Maximum transmission time [s]	Transmission time limit [s]	Verdict
7	30	PASS
Comments:		

Acknowledgments

ANSI C63.17 - Acknowledgements
UPCS

EUT	Communication Headset
Model	AXP379
Approval Holder	Sonetics Corporation
Temperature / Voltage	24°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. W. Treffke
Test Specification	ANSI C63.17 - Acknowledgements
Comment 1	paragraph a) blocked acknowledgements from the companion device
Comment 2	by blocking the Rx time slots from the companion device
Comment 3	The EUT cease transmission on the communications channel after 513 ms, Limit: < 1second , Pass





Comment: Ansi C63.17-1998 6.1.6.2
Date: 26.SEP.2014 09:22:44

3.24 Test Conditions and Results – Maximum transmit period

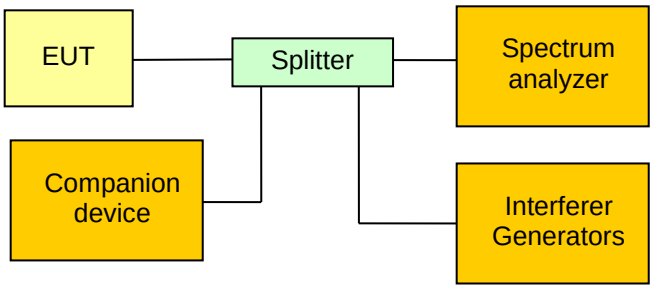
Maximum transmit period acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: N/A**
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(3) / IC RSS-213 4.3.4(b)(3)
Test according referenced standards	Reference Method
	ANSI C63.17 8.2.2

Requirements

If no signal above the threshold level is detected, transmission may commence and continue with the same emission bandwidth in the monitored time and spectrum windows without further monitoring.

However, occupation of the same combined time and spectrum windows by a device or group of cooperating devices continuously over a period of time longer than 8 hours is not permitted without repeating the access criteria.

Test setup



Test procedure

1. A communication session is established between the EUT and the companion device.
2. With the beginning of the communication session a counter is stared
3. An interferer is introduced on the communication channel to force the EUT to select a different communication channel if the communications has to be reestablished
4. As soon as the communication session switches to a different channel the time measurement is stopped

Test results

Total transmission time [h]	Transmission time limit	Verdict
3.55	8 hours	N/A

Comments:

For the DECT system the communication session is established by the portable part and the fixed part simply follows the portable part. Hence it's the responsibility of the portable part to control the maximum transmit period.

3.25 Test Conditions and Results – Maximum spectral occupancy

Maximum spectral occupancy acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(5) / IC RSS-213 4.3.4(b)(5)
Test according referenced standards	Reference Method
	Customer declaration

Requirements
No device or group of co-operating devices located within 1 meter of each other shall during any frame period occupy more than 6 MHz of aggregate bandwidth, or alternatively, more than one third of the time and spectrum windows defined by the system.

Test result	
Evaluation	Verdict
According to the technical documentation the total number of time and spectrum windows is: 5 x 12 = 60 According to customer declaration the total number of concurrent time and spectrum windows is: 12 The number of concurrent allocated time and spectrum windows is less than one third of the total time and spectrum windows of the EUT	PASS
Comments:	

3.26 Test Conditions and Results – Duplex connections

Duplex system LBT acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(10) / IC RSS-213 4.3.4(b)(10)
Test according referenced standards	Reference Method
	ANSI C63.17 8.3.2
EUT implements upper threshold	Yes
EUT is initiating device	Yes

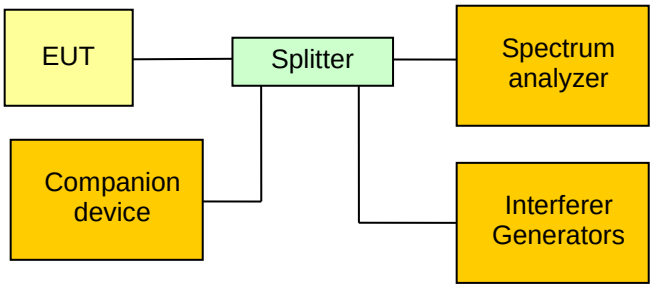
Requirements

An initiating device may attempt to establish a duplex connection by monitoring both its intended transmit and receive time and spectrum windows.

If both the intended transmit and receive time and spectrum windows meet the access criteria, then the initiating device can initiate a transmission in the intended transmit time and spectrum window.

If the power detected by the responding device can be decoded as a duplex connection signal from the initiating device, then the responding device may immediately begin transmitting on the receive time and spectrum window monitored by the initiating device.

Test setup



Test procedure (EUT does not implement upper threshold)

1. The path loss between the EUT and the companion device is adjusted such that the received signal to the EUT is at least 40 dB above $T_L + U_M$
2. By the use of interference signals the EUT is restricted to channel f_1
3. An interference of level $T_L + U_M$ is applied per carrier on the enabled carriers on all its receive time/spectrum windows except one, which has interference at least 10 dB below T_L
4. An interference of level $T_L + U_M$ is applied per carrier on the enabled carriers on all its transmit time/spectrum windows
5. It is verified that the interference levels at the companion device are at least 10 dB below T_L for all time/spectrum windows
6. An attempt is made to establish a connection
7. Next an interference at $T_L + U_M$ is applied to all enabled carriers on all it's time/spectrum windows except one, which has interference at least 10 dB below T_L
8. An interference of level $T_L + U_M$ is applied per carrier on the enabled carriers on all its receive time/spectrum windows
9. It is verified that the interference levels at the companion device are at least 10 dB below T_L for all time/spectrum windows
10. An attempt is made to establish a connection

Test procedure (EUT implements upper threshold)

1. The path loss between the EUT and the companion device is adjusted such that the received signal to the EUT is at least 40 dB above $T_L + U_M$
2. By the use of interference signals the EUT is restricted to channel f_1
3. An interference of level $T_L + U_M$ is applied per carrier on the enabled carriers on all its transmit time/spectrum windows except one, which has interference at least 10 dB below T_L
4. An interference of level $T_L + U_M$ + 7dB is applied per carrier on the enabled carriers on all its receive time/spectrum windows except one, which has interference at least 10 dB below T_L. The interference free receive time/spectrum window must not be the duplex mate of the interference-free transmit time/spectrum window
5. It is verified that the interference levels at the companion device are at least 10 dB below T_L for all time/spectrum windows
6. An attempt is made to establish a connection and it is verified that the connection is established on the interference-free receive time/spectrum window and its duplex mate
7. Next an interference of level $T_L + U_M$ + 7dB is applied per carrier on the enabled carriers on all its transmit time/spectrum windows except one, which has interference at least 10 dB below T_L
8. An interference of level $T_L + U_M$ is applied per carrier on the enabled carriers on all its receive time/spectrum windows except one, which has interference at least 10 dB below T_L. The interference free receive time/spectrum window must not be the duplex mate of the interference-free transmit time/spectrum window
9. It is verified that the interference levels at the companion device are at least 10 dB below T_L for all time/spectrum windows
10. An attempt is made to establish a connection and it is verified that the connection is established on the interference-free transmit time/spectrum window and its duplex mate
11. Next an interference of level $T_L + U_M$ is applied per carrier on the enabled carriers on all its transmit time/spectrum windows except one, which has interference at least 10 dB below T_L
12. An interference of level $T_L + U_M$ is applied per carrier on the enabled carriers on all its receive time/spectrum windows except one, which has interference at least 10 dB below T_L. The interference free receive time/spectrum window must not be the duplex mate of the interference-free transmit time/spectrum window
13. The path loss between the EUT and the companion device is adjusted such that the received signal to the EUT is at least 30 dB above T_U
14. An attempt is made to establish a connection and it is verified that no connection can be established

Test results – upper threshold not implemented

Transmit time/spectrum windows	Receive time/spectrum windows	Connection possible	Verdict
$T_L + U_M$	$T_L + U_M$	No	N/A
$T_L + U_M$	$T_L + U_M$	No	N/A

Test results – upper threshold implemented

Transmit time/spectrum windows	Receive time/spectrum windows	Connection time/spectrum window	Verdict
$T_L + U_M$	$T_L + U_M$ + 7dB	Receive	PASS
$T_L + U_M$ + 7dB	$T_L + U_M$	Transmit	PASS
$T_L + U_M$	$T_L + U_M$	None	PASS

Comments:

3.27 Test Conditions and Results – Fair access

Fair access acc. to FCC 47 CFR 15D / IC RSS-213	Verdict: PASS
EUT requirement rule parts and clause	Reference
	FCC 15.323(c)(11) / IC RSS-213 4.3.4(b)(11)
Test according to measurement reference	Reference Method
	Customer declaration
Requirements	
The provisions of FCC 47 CRF 15.323(c)(10), IC RSS-213(b)(10) or FCC 47 CRF 15.323(c)(11), IC RSS-213(b)(11) shall not be used to extend the range of spectrum occupied over space or time for the purpose of denying fair access to spectrum to other devices.	
Declaration	
The manufacturer declares that is device does not work in a mode which denies fair access to spectrum for other participants	

3.28 Test Conditions and Results – Frame period and Jitter

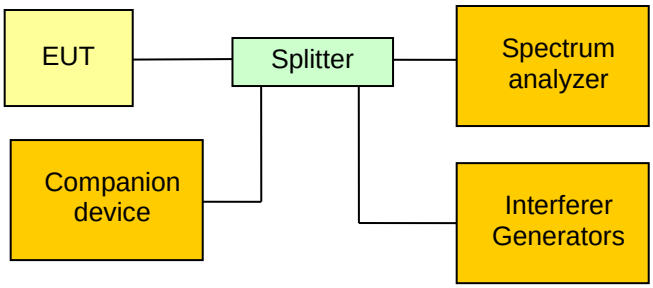
Frame period and Jitter acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(e)(1),(4) / IC RSS-213 4.3.4(c)(1),(4)
Test according referenced standards	Reference Method
	ANSI C63.17 6.2.3

Requirements

The frame period (a set of consecutive time slots in which the position of each time slot can be identified by reference to a synchronizing source) of an intentional radiator operating in this sub-band shall be 20 milliseconds/X where X is a positive whole number.

The jitter (time-related, abrupt, spurious variations in the duration of the frame interval) introduced at the two ends of such a communication link shall not exceed 25 microseconds for any two consecutive transmissions.

Test setup



Test procedure

1. With a spectrum analyzer the frame periods are measured over time
2. 100 000 frames are measured
3. The the peak-to-peak, mean and standard deviation values are computed

Test results – Frame period

Mean value [ms]	Divider X (10ms/X)	Verdict
9.999988 = 10.00 – 0.000012	1	PASS

Test results – Jitter

Maximum difference between frames [µs]	Limit [µs]	Verdict
0.069849	25 – 0.000012 = 24.999988	PASS

Comments:

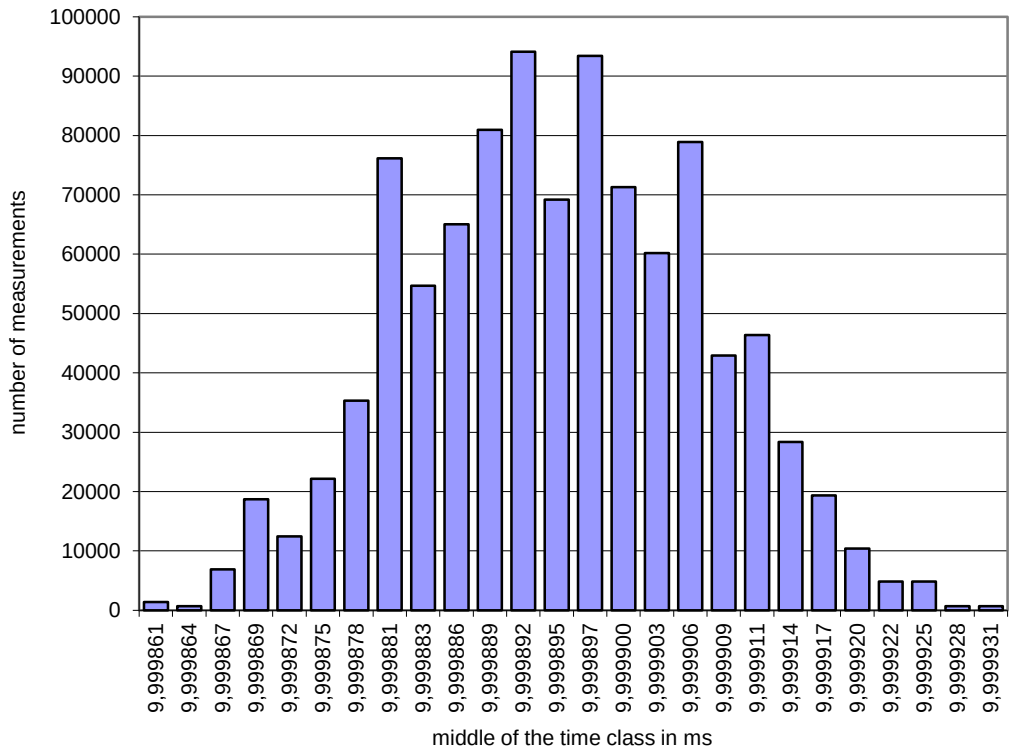
Frame period and Jitter

FCC Part 15.323 Frame Period and jitter

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frame Period and jitter
Width of the time class	0,002794 µs
Mean	9,999895 ms
Deviation	0,000012
Max-Min	0,069849 µs
Test result	Verdict = PASS

Histogram



3.29 Test Conditions and Results – Frame repetition stability

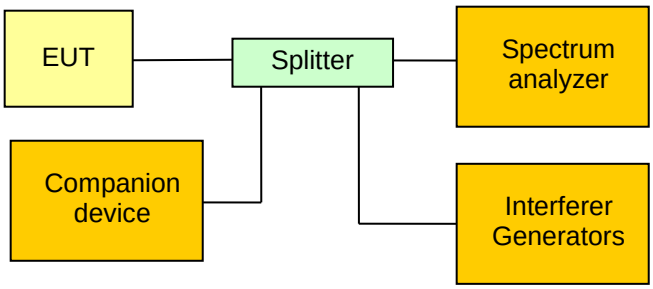
Frame repetition stability acc. to FCC 47 CFR 15D / IC RSS-213	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.323(e)(2),(3) / IC RSS-213 4.3.4(c)(2),(3)
Test according referenced standards	Reference Method
	ANSI C63.17 6.2.2
Access scheme used	Time Division Multiple Access

Requirements

Each device that implements time division for the purpose of maintaining a duplex connection on a given frequency carrier shall maintain a frame repetition rate with a frequency stability of at least 50 parts per millions (ppm).

Each device which further divides access in time in order to support multiple communication links on a given frequency carrier shall maintain a frame repetition rate with a frequency stability of at least 10 ppm.

Test setup



Test procedure

1. With a spectrum analyzer the frame repetition periods are measured over time
2. 1 000 frame repetitions are measured
3. The mean and standard deviation values are computed

Test results

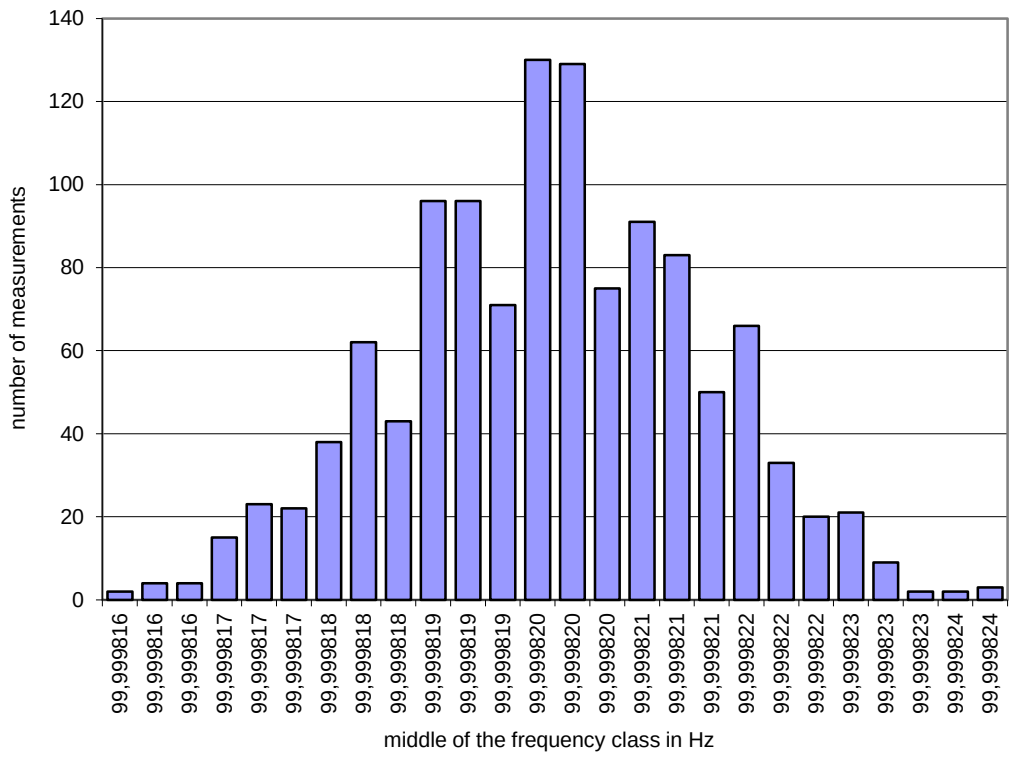
Access scheme	Error [ppm]	Limit [ppm]	Verdict
Time Division Access	N/A	50	N/A
Time Division Multiple Access	0.043350	10	PASS

Comments:

Frame repetition stability

FCC Part 15.323 Frame repetition

Testprocedure ANSI 63.17
UPCS

EUT	Communications Headset
Model	AXP379
Applicant	Sonetics Corporation
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frame repetition
Width of the frequency class	0,000000 Hz
Mean	99,999820 Hz
Deviation	0,000001
Stability in ppm	0,043350 ppm
Test result	Verdict = PASS

Histogram