




<b>FCC TEST REPORT</b> <b>FCC 47 CFR Part 15D</b> <b>Unlicensed Personal Communication Service Devices</b> <b>Industry Canada RSS-213</b> <b>2GHz License-exempt Personal Communications Service Devices (LE-PCS)</b>	
<b>Report Reference No.</b> .....	G0M-1211-2381-TFC15D-V02
<b>Testing Laboratory</b> .....	Eurofins Product Service GmbH
Address .....	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation .....	 <p>A2LA Accredited Testing Laboratory, Certificate No.: 1983.01            FCC Filed Test Laboratory, Reg.-No.: 96970            IC OATS Filing assigned code: 3470A</p>
<b>Applicant's name</b> .....	Spectralink Corporation
Address .....	6001 Great America Center CA95002 San Jose USA
<b>Test specification:</b>	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
<b>Equipment under test (EUT):</b>	
Product description	DECT application module
Model No.	KT4587
Hardware version	001
Firmware / Software version	001
	FCC-ID: PXA-PK4587                      IC: 2128A-PK4587
<b>Test result</b>	<b>Passed</b>

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Test Report No.: G0M-1211-2381-TFC15D-V02

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 Storkower Str. 38c, D-15526 Reichenwalde, Germany

<b>Possible test case verdicts:</b>	
- not applicable .....	N/A
- test object does meet the requirement.....	PASS
- test object does not meet the requirement.....	FAIL
<b>Testing:</b>	
Date of receipt of test item .....	2012-11-05
Date (s) of performance of tests .....	2012-11-05 – 2012-11-13
Compiled by .....	Christian Weber
Tested by (+ signature)..... (Testing Manager)	Wilfried Treffke  .....
Approved by (+ signature)..... (Test Lab Manager)	Jens Zimmermann  .....
Date of issue.....	2013-01-10
Total number of pages.....	127
<b>General remarks:</b>	
<p><b>The test results presented in this report relate only to the object tested.</b></p> <p><b>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.</b></p>	
<p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p>	
<b>Additional comments:</b>	

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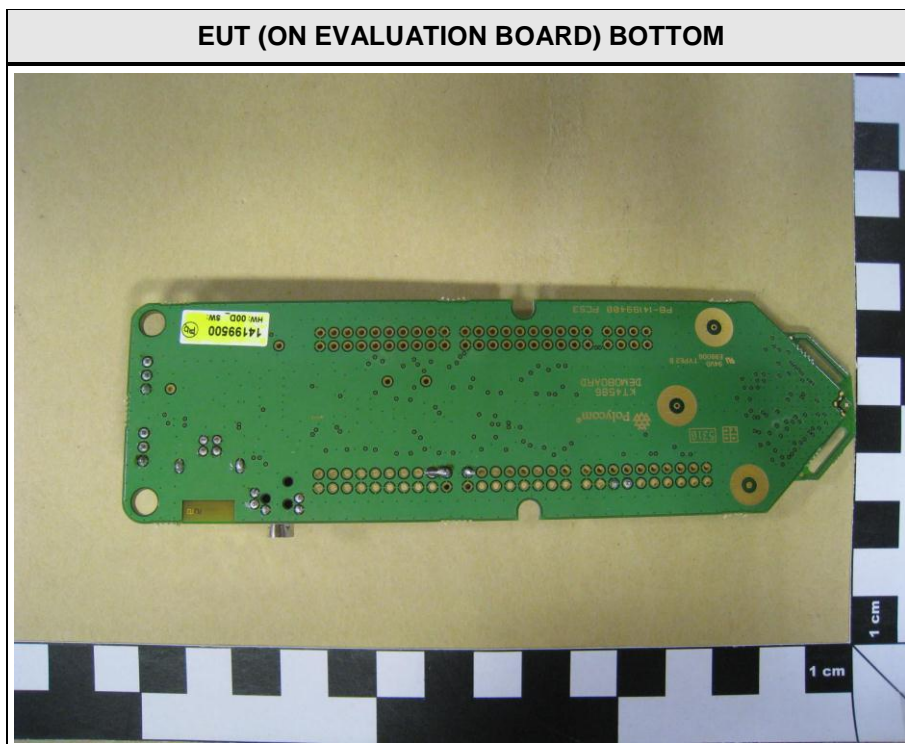
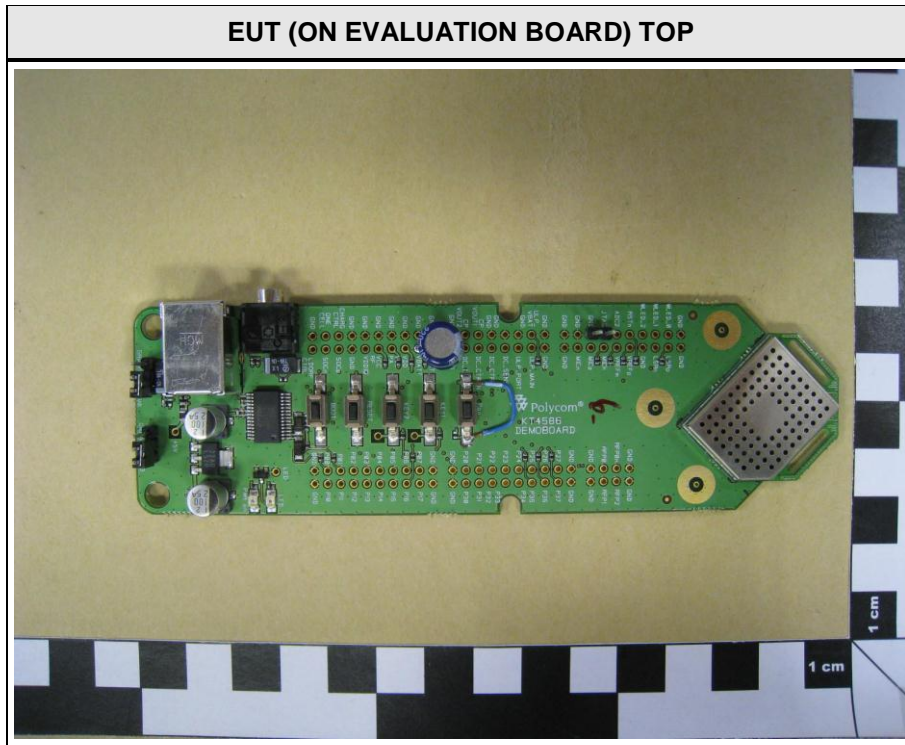
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## 1 Equipment (Test item) Description

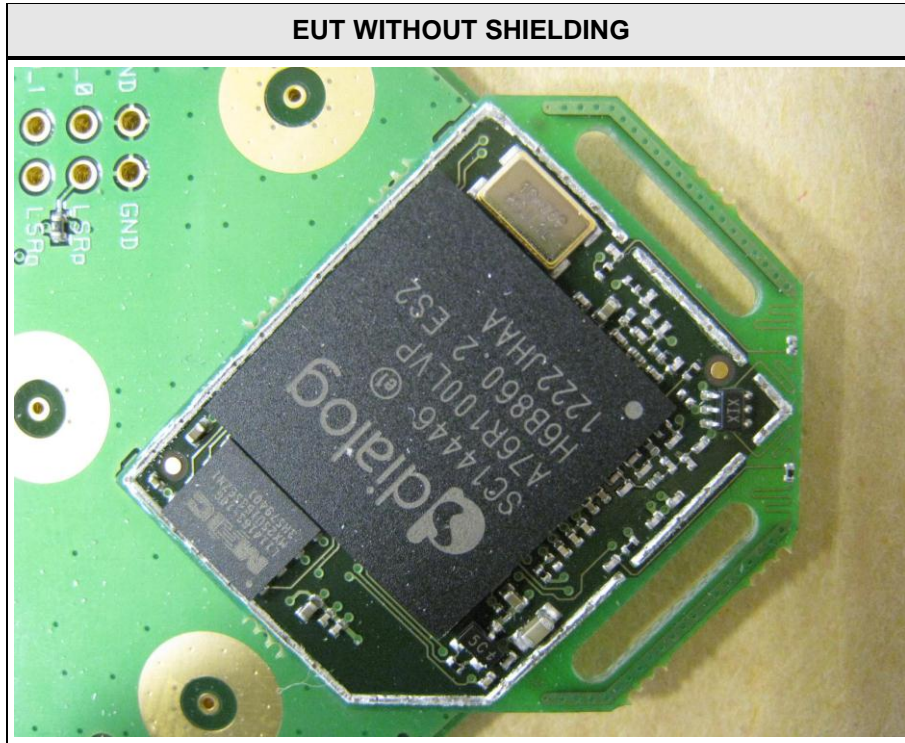
<b>Description</b>	DECT application module	
<b>Model</b>	KT4587	
<b>Serial number</b>	-	
<b>Hardware version</b>	001	
<b>Software / Firmware version</b>	001	
<b>FCC-ID</b>	PXA-PK4587	
<b>IC</b>	2128A-PK4587	
<b>Equipment type</b>	Radio Module	
<b>Radio type</b>	DECT Fixed Part	
<b>Number of Radios</b>	1 transceivers is built into the device	
<b>Radio technology</b>	DECT 6.0	
<b>Operating frequency range</b>	1921.536 - 1928.448MHz	
<b>Assigned frequency band</b>	1920 - 1930MHz	
<b>Number of RF channels</b>	5	
<b>Supported slots</b>	even and odd	
<b>Number of time slots</b>	12 x Tx + 12 x RX = 24	
<b>Channels</b>	F <sub>0</sub>	Ch:0 / 1928.448MHz
	F <sub>1</sub>	Ch:1 / 1926.720MHz
	F <sub>2</sub>	Ch:2 / 1924.992MHz
	F <sub>3</sub>	Ch:3 / 1923.264MHz
	F <sub>4</sub>	Ch:4 / 1921.536MHz
<b>Main test frequencies</b>	F <sub>LOW</sub>	Ch:4 / 1921.536MHz
	F <sub>MID</sub>	Ch:2 / 1924.992MHz
	F <sub>HIGH</sub>	Ch:0 / 1928.448MHz
<b>Modulations</b>	GFSK	
<b>Emission designator</b>	F7D	
<b>Nominal emission bandwidth</b>	1.42 MHz	
<b>Nominal receive bandwidth</b>	864 MHz	
<b>Channel spacing</b>	1728kHz	
<b>Spectrum access</b>	Listen before transmit	
<b>Nominal lower threshold</b>	N/A	
<b>Nominal upper threshold</b>	-60 dBm	
<b>Number of antennas</b>	2 per transceiver	

<b>Antenna 1</b>	Type	integrated
	Model	printed inverted f antenna
	Manufacturer	see Manufacturer
	Gain	0 dBi
<b>Antenna 2</b>	Type	integrated
	Model	printed inverted f antenna
	Manufacturer	see Manufacturer
	Gain	0 dBi
<b>Monitoring antenna</b>	2	
<b>Manufacturer</b>	Spectralink Europe ApS Langmarksvej 34 8700 Horsens Denmark	
<b>Power supply</b>	V <sub>NOM</sub>	3.325 VDC
	V <sub>MIN</sub>	3.2 VDC
	V <sub>MAX</sub>	3.45 VDC
<b>AC/DC-Adaptor</b>	Model	N/A
	Vendor	N/A
	Input	N/A
	Output	N/A
<b>Temperature</b>	T <sub>NOM</sub>	20°C
	T <sub>MIN</sub>	-20°C
	T <sub>MAX</sub>	85°C

1.1 Photos - Equipment external

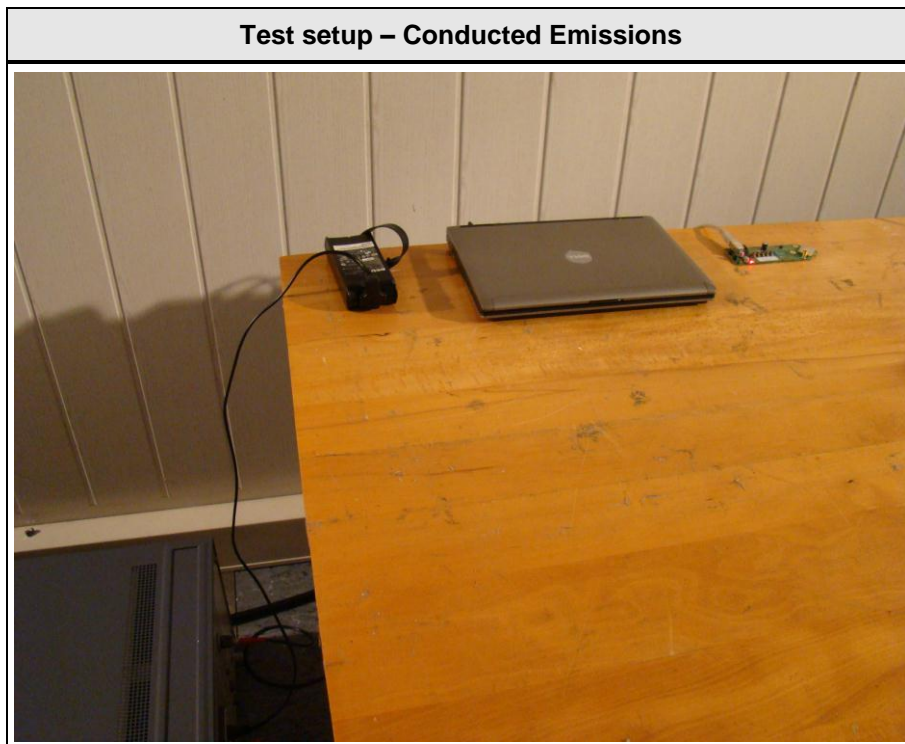
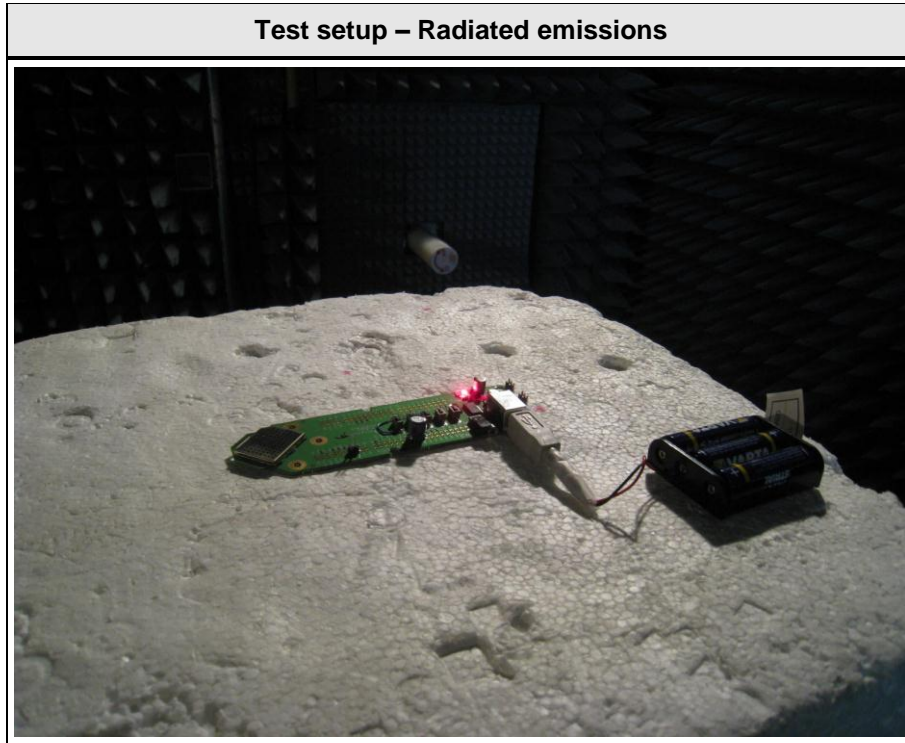


1.2 Photos - Equipment internal





1.3 Photos – Test setup



**1.4 Supporting Equipment Used During Testing**

Product Type*	Device	Manufacturer	Model No.	Comments
None				
<p><b>*Note:</b> Use the following abbreviations:</p> <p style="padding-left: 40px;">AE : Auxiliary/Associated Equipment, or</p> <p style="padding-left: 40px;">SIM : Simulator (Not Subjected to Test)</p> <p style="padding-left: 40px;">CABL : Connecting cables</p>				

**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:	EUT connected to and powered via evaluation board. Active data connection between EUT and companion device. AC connection evaluation board.
	Radio conditions:	Mode = Transmit mode Modulation = GFSK Duty cycle = 1/24 Power level = Maximum

**1.6 Test Equipment Used During Testing**

<b>Conducted</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2011-12	2012-12
Signal Generator	R&S	SMP 02	EF00165	2011-03	2013-03
Signal Generator	R&S	SMIQ 03B	EF00153	2012-09	2014-09
Signal Generator	R&S	SMIQ 03	EF00316	2011-03	2013-03
Signal Generator	R&S	SMT 03	EF00164	2011-01	2013-01
Step Attenuator	R&S	RSP	EF00129	2011-09	2013-09
RF Distribution	DATUM Inc.	6502	EF00310	System calibration	System calibration
Frequency Standard	EFRATOM Elektronik GmbH	MFS	EF00407	2012-02	2012-02
Power Meter	R&S	NRVD	EF00139	2012-06	2013-06
Diode Power Sensor	R&S	NRV-Z1	EF00314	2011-04	2013-04

<b>Radiated spurious emissions</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 1	EF00062	-	-
Fully-anechoic chamber	Frankonia	AC 2	EF00199	-	-
Spectrum Analyzer	R&S	FSIQ26	EF00242	2012-05	2013-05
Biconical Antenna	R&S	HK 116	EF00012	2010-01	2013-01
LPD Antenna	R&S	HL 223	EF00187	2011-02	2014-02
LPD Antenna	R&S	HL 025	EF00327	2010-02	2013-02

<b>AC powerline conducted emissions</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2012-10	2014-10
AMN	R&S	ESH3-Z5	EF00036	2012-11	2014-11
EMI Test Receiver	R&S	ESCS 30	EF00295	2012-08	2013-08

## 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 dB $\mu$ V. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

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

Net:

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

Limit:

This is the FCC Class B radiated emission limit (in units of dB $\mu$ V/m). The FCC limits are given in units of  $\mu$ V/m. The following formula is used to convert the units of  $\mu$ V/m to dB $\mu$ V/m:

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

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

$$\begin{array}{rclcl} \text{Reading} & + & \text{AF} & = & \text{Net Reading} & : & \text{Net reading - FCC limit} & = & \text{Margin} \\ 21.5 \text{ dB}\mu\text{V} & + & 26 \text{ dB} & = & 47.5 \text{ dB}\mu\text{V/m} & : & 47.5 \text{ dB}\mu\text{V/m} - 57.0 \text{ dB}\mu\text{V/m} & = & -9.5 \text{ dB} \end{array}$$

## 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	Frequency stability	ANSI C63.17 6.2	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	

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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)(4) IC RSS-213 4.3.4(b)(4)	System Acknowledgement	ANSI C63.17 8.1 / 8.2	PASS	
FCC 15.323(c)(6) IC RSS-213 4.3.4(b)(6)	Random waiting	ANSI C63.17 8.1.3	PASS	
FCC 15.323(c)(3) IC RSS-213 4.3.4(b)(3)	Maximum transmit period	ANSI C63.17 8.2.2	N/A	
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 system LBT	ANSI C63.17 8.3	N/A	
FCC 15.323(c)(11) IC RSS-213 4.3.4(b)(11)	Co-located device LBT	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 and TDMA repetition stability	ANSI C63.17 6.2.2	PASS	
<b>Remarks:</b>				

### 3 Test Conditions and Results

#### 3.1 Test Conditions and Results – Coordination with fixed microwave service

<b>Coordination with fixed microwave service acc. to FCC 47 CFR 15D</b>	
EUT requirement rule parts and clause	Reference
	FCC 15.307
Test according to measurement reference	Reference Method
	Customer declaration
<b>Requirements</b>	
<p>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.</p> <p>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.</p>	
<b>Result</b>	
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**

<b>Cross reference to subpart B acc. to FCC 47 CFR 15D</b>		<b>Verdict: N/A</b>
EUT requirement rule parts and clause	Reference	
	FCC 15.309(b)	
Test according to measurement reference	Reference Method	
	Declaration	
<b>Requirements</b>		
<p>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.</p>		
<b>Result</b>		
The EUT does not contain any digital circuitry not directly associated with the radio transmitter		

**3.3 Test Conditions and Results – AC power line conducted emissions**

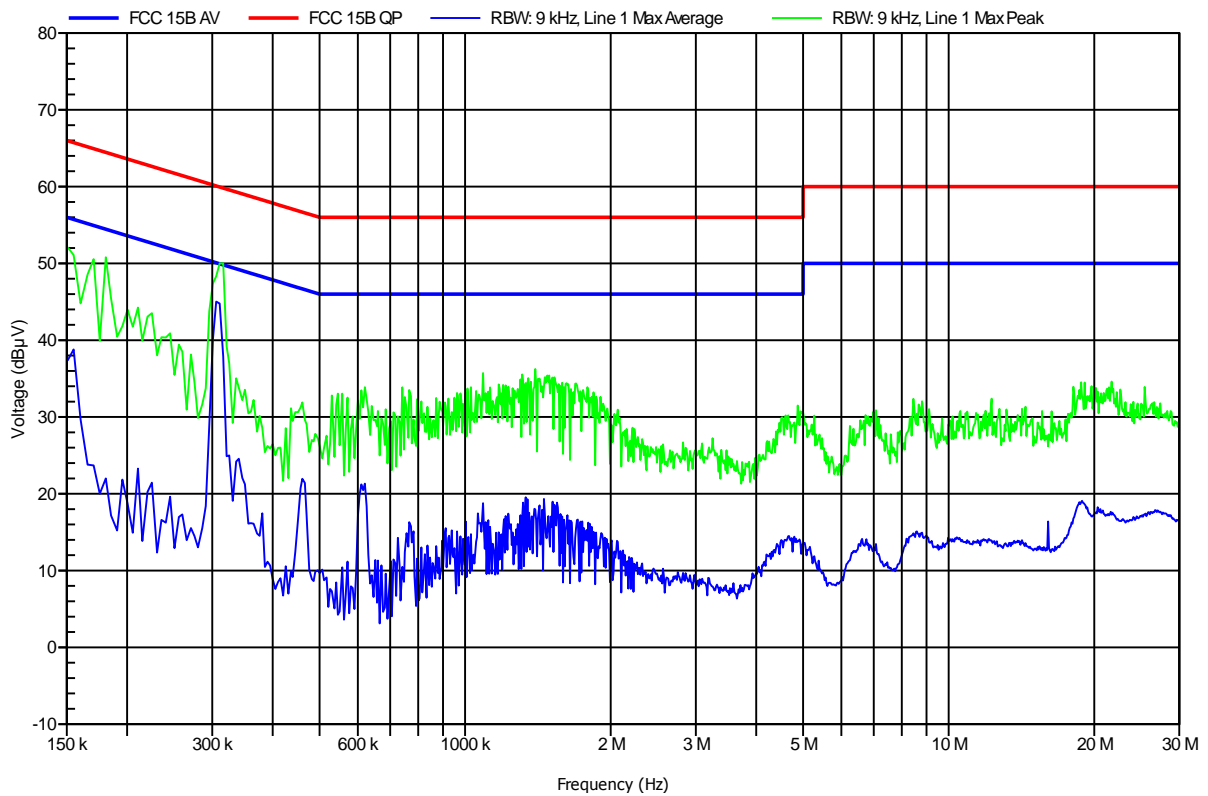
<b>Conducted emissions acc. to FCC 47 CFR 15D / IC RSS-213</b>		<b>Verdict: PASS</b>		
EUT requirement rule parts and clause	Reference			
	FCC 15.315 / FCC 15.207 / IC RSS-213 6.3, 4.2			
Test according referenced standards	Reference Method			
	ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15MHz to 30MHz			
Points of Application	Application Interface			
AC Mains	LISN			
EUT test mode	AC-Powerline			
<b>Limits and results</b>				
Frequency [MHz]	Quasi-Peak [dB $\mu$ V]	Result	Average [dB $\mu$ V]	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**

Order number: G0M-1211-2381

Manufacturer:	Spectralink Corp
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handriki
Test Conditions:	Tnom: 22°C, Unom: USB
LISN:	ESH2-Z5 L
Mode:	active; DECT link
Test Date:	2012-11-07

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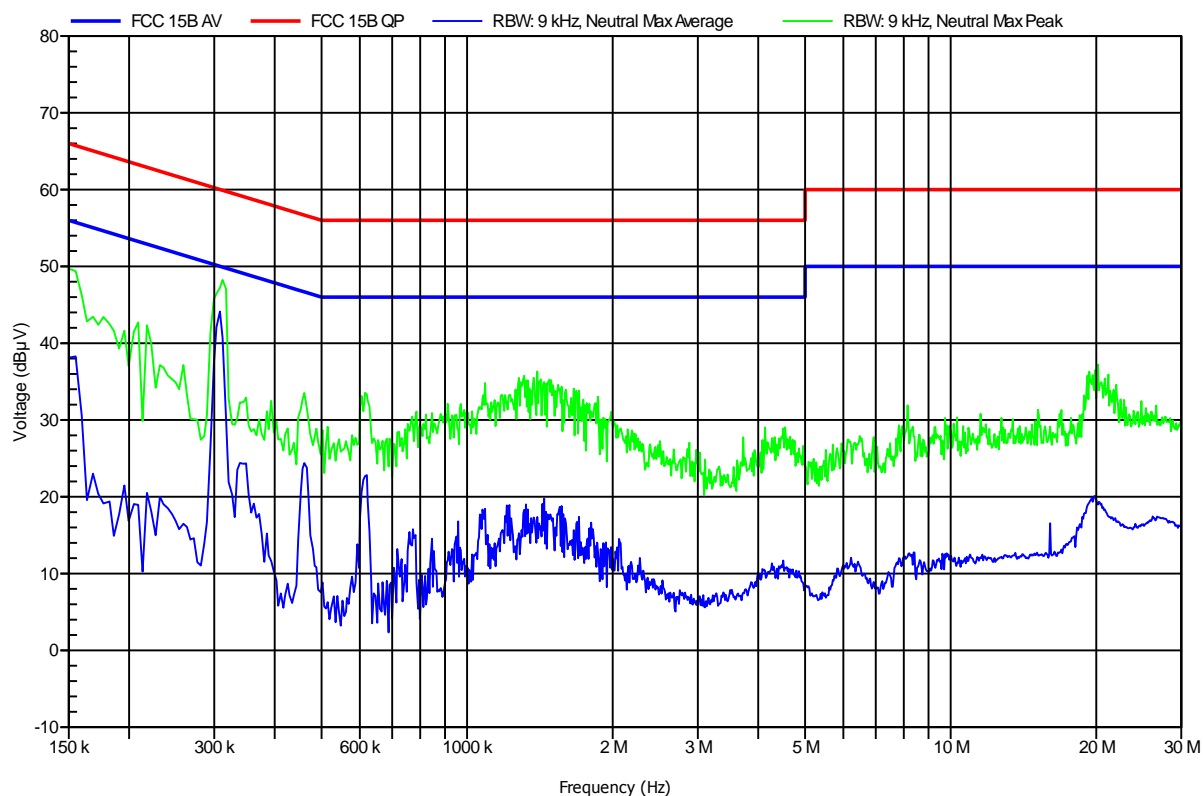
 Eurofins Product Service GmbH  
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

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

Order number: G0M-1211-2381

Manufacturer: Spectralink Corp  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Handriki  
 Test Conditions: Tnom: 22°C, Unom: USB  
 LISN: ESH2-Z5 L  
 Mode: active; DECT link  
 Test Date: 2012-11-07

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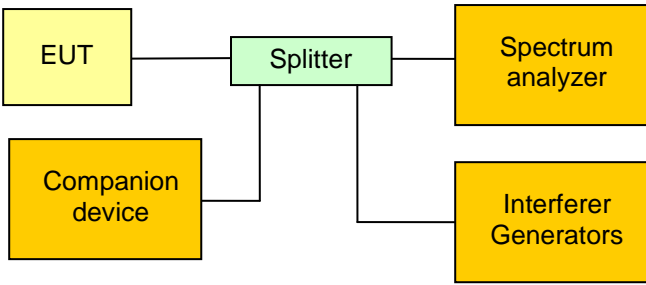
**3.4 Test Conditions and Results – Antenna requirement**

<b>Antenna requirement acc. to FCC 47 CFR 15D / IC RSS-213</b>			<b>Verdict: PASS</b>
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		
<b>Requirements</b>			
<p>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.</p> <p>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</p>			
<b>Results</b>			
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**

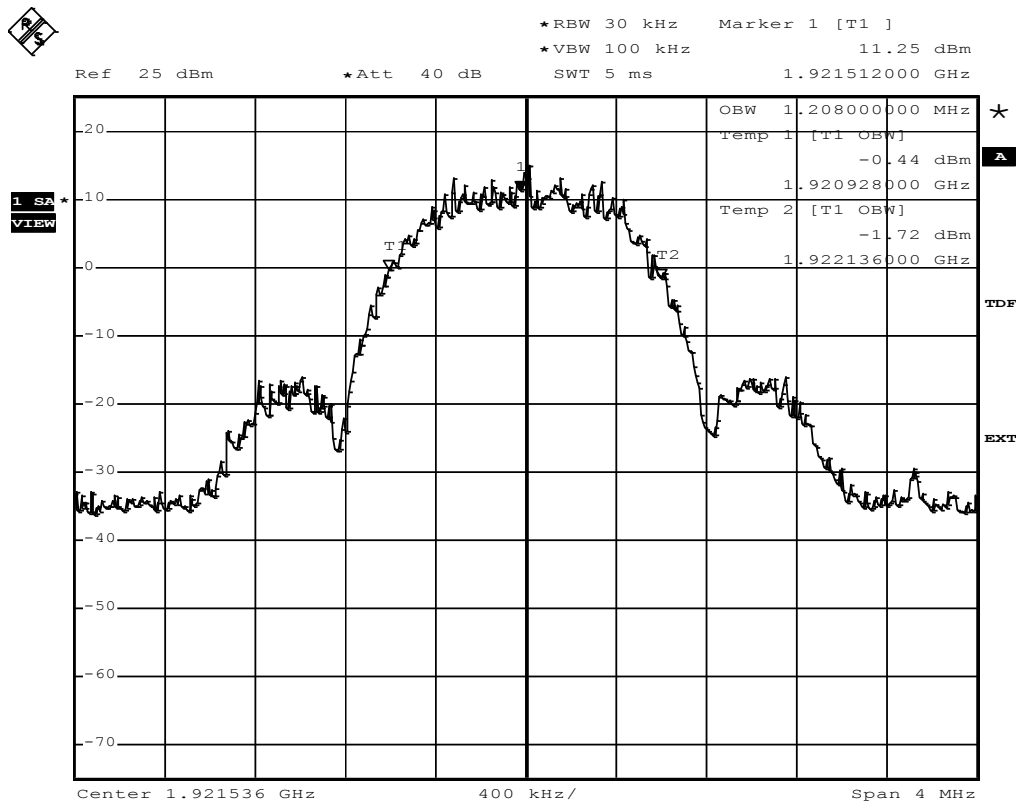
<b>Antenna requirement acc. to FCC 47 CFR 15D / IC RSS-213</b>		<b>Verdict: PASS</b>
EUT requirement rule parts and clause	Reference	
	FCC 15.319(b) / IC RSS-213 6.1	
Test according to measurement reference	Reference Method	
	Declaration	
<b>Requirements</b>		
All transmissions must use only digital modulation techniques.		
<b>Results</b>		
<p>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.</p> <p>The operating modes are MC/TDMA/TDD (Multi carrier / Time Division Multiple Access / Time Division Duplex) using Digital GFSK modulation.</p> <p>For further details see operational description provided by manufacturer.</p>		

### 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 <sub>LOW</sub> / F <sub>MID</sub> / F <sub>HIGH</sub>			
EUT test mode	TDMA			
Limits				
0.05MHz ≤ Occupied Bandwidth < 2.5MHz				
Test setup				
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]         </pre>				
Test procedure				
<ol style="list-style-type: none"> <li>1. EUT is restricted to test channel with the interferes</li> <li>2. Span set to at least twice the emission spectrum</li> <li>3. Resolution bandwidth set to 1% of span</li> <li>4. Occupied Bandwidth (99%) measurement with spectrum analyzer built in measurement function</li> </ol>				
Test results				
Channel	Center frequency [MHz]	Lower edge [MHz]	Upper edge [MHz]	Occupied Bandwidth [MHz]
F <sub>LOW</sub>	1921.536	1920.928	1922.136	01.210
F <sub>MID</sub>	1924.992	1924.384	1925.592	01.210
F <sub>HIGH</sub>	1928.448	1927.840	1929.056	01.220
Comments:				

**Occupied Bandwidth - F<sub>Low</sub>**
**RSS Gen  
Occupied Bandwidth**

EUT	DECT application module
Model	KT4587
Approval Holder	Spectralink Corp.
Temperature / Voltage	23°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: 1.208 MHz

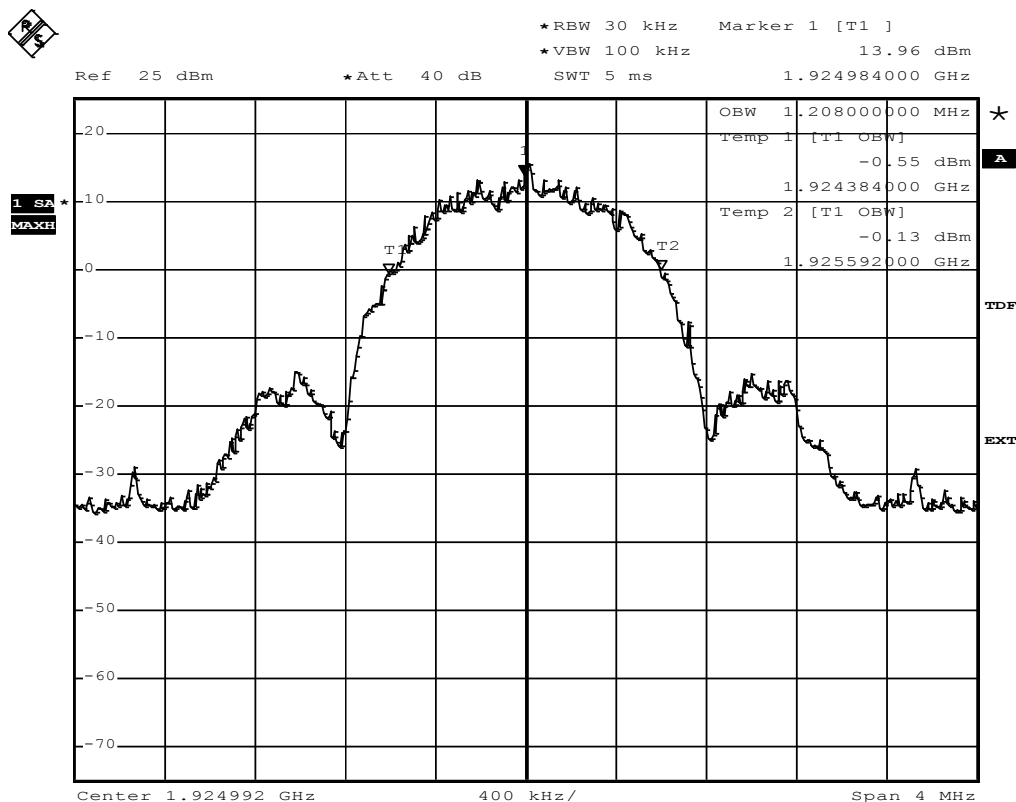


Comment: \_  
 Date: 9.NOV.2012 11:01:10



**Occupied Bandwidth – F<sub>MID</sub>**
**RSS Gen  
Occupied Bandwidth**

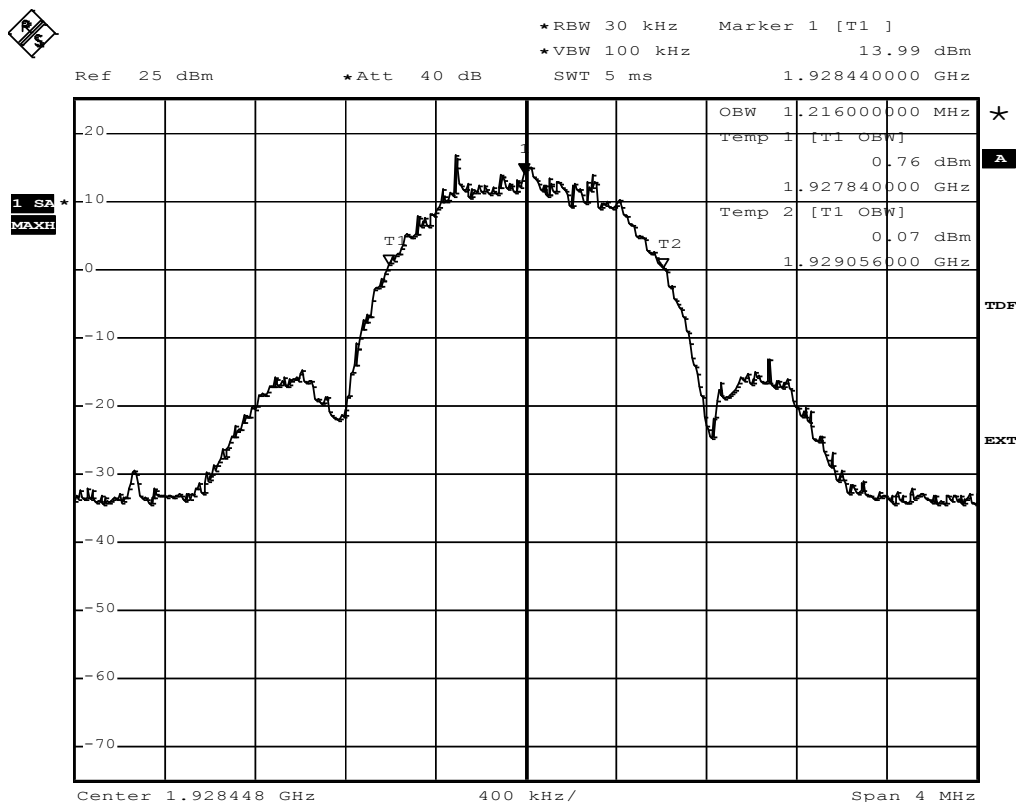
EUT	DECT application module
Model	KT4587
Approval Holder	Spectralink Corp.
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. W. Treffke
Test Specification	Occupied Bandwidth
Comment 1	Channel.: 2
Comment 2	A spectrum analyzer with an integrated 99% power BW function is used
Comment 3	OBW: 1.208 MHz



Comment: \_  
 Date: 9.NOV.2012 11:15:40

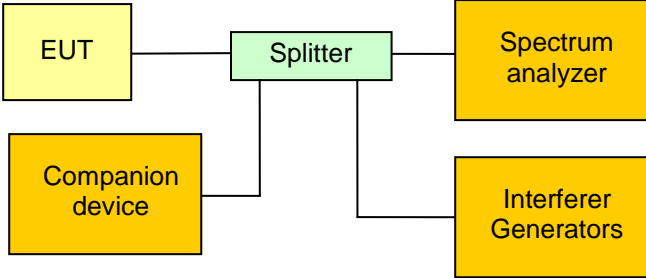
**Occupied Bandwidth – F<sub>HIGH</sub>**
**RSS Gen  
Occupied Bandwidth**

EUT	DECT application module
Model	KT4587
Approval Holder	Spectralink Corp.
Temperature / Voltage	23°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: 1.216 MHz



Comment: \_  
 Date: 9.NOV.2012 11:07:21

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					
0.05MHz ≤ Emission Bandwidth < 2.5MHz					
Test setup					
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]         </pre>					
Test procedure					
<ol style="list-style-type: none"> <li>1. EUT set to test mode</li> <li>2. Span set to at least twice the emission spectrum</li> <li>3. Resolution bandwidth set to 1% of emission bandwidth and detector is set to peak with max hold</li> <li>4. The emission bandwidth is determined by the two -26dB points left and right of the maximum emission level</li> <li>5. (The emission bandwidth is determined by the two -12dB points left and right of the maximum emission level)</li> <li>6. (The emission bandwidth is determined by the two -6dB points left and right of the maximum emission level)</li> </ol>					
Test result					
Channel	Center frequency [MHz]	Mode	Lower edge [MHz]	Upper edge [MHz]	Bandwidth [MHz]
$F_{LOW}$	1921.536	-26 dB	1920.796	1922.278	01.482
$F_{HIGH}$	1928.448	-26 dB	1927.720	1929.170	01.450
$F_{LOW}$	1921.536	-12 dB	1920.992	1922.148	01.156
$F_{HIGH}$	1928.448	-12 dB	1927.914	1928.984	01.070
$F_{LOW}$	1921.536	-6 dB	1921.118	1921.974	00.856
$F_{HIGH}$	1928.448	-6 dB	1928.124	1928.778	00.654
Comments:					

**Emission Bandwidth – F<sub>Low</sub>**
**FCC Part 15.303 Emission bandwidth**
**Test procedure ANSI 63.17**
**UPCS**

EUT	DECT application module
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Emission bandwidth
Measured Bandwidth	Emission Bandwidth = 1.48MHz
Max. Permitted Power	Limit = 2.5 MHz

**Test result**                      **Verdict = PASS**


Emission Bandwidth

\*RBW 10 kHz    Delta 2 [T1 ]

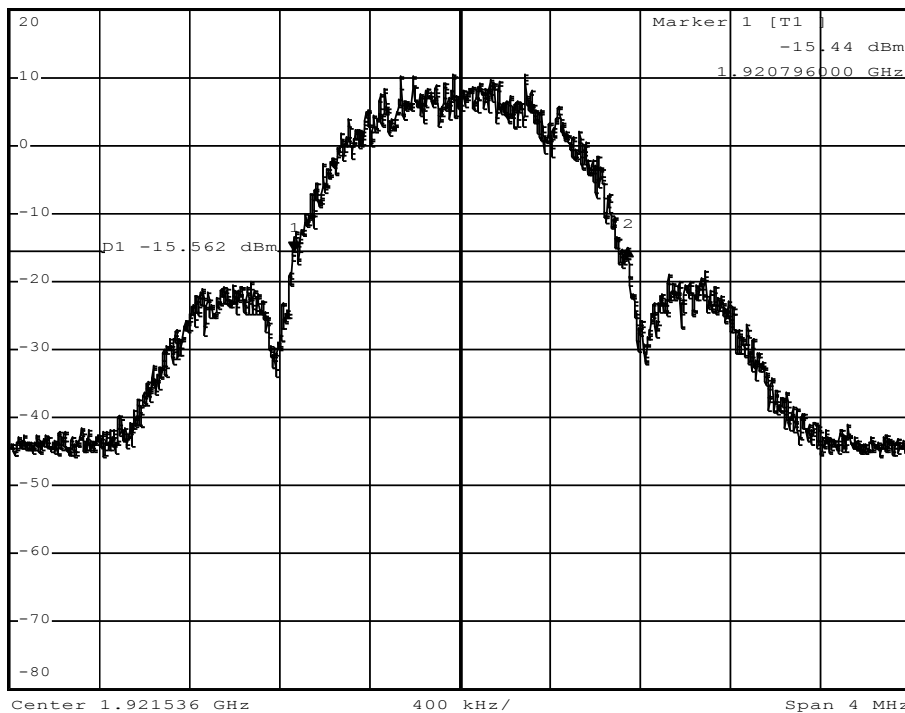
\*VBW 30 kHz                      0.36 dB

Ref 20 dBm

\*Att 30 dB

SWT 40 ms

1.482000000 MHz

**1 PK**  
**MAX**


Comment: Ansi C63.17-2006 6.1.3

Date: 8.NOV.2012 09:11:03

**Emission Bandwidth – F<sub>HIGH</sub>**
**FCC Part 15.303 Emission bandwidth**  
**Test procedure ANSI 63.17**  
**UPCS**

EUT	DECT application module
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Emission bandwidth
Measured Bandwidth	Emission Bandwidth = 1.45MHz
Max. Permitted Power	Limit = 2.5 MHz

**Test result**                      **Verdict = PASS**


Emission Bandwidth

\*RBW 10 kHz    Delta 2 [T1 ]

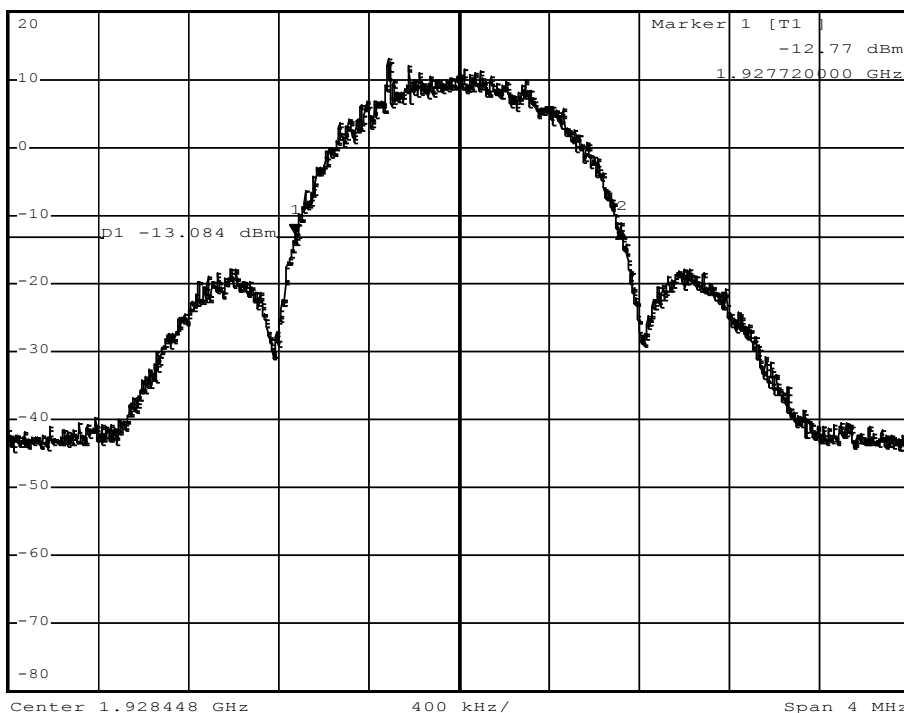
\*VBW 30 kHz                      0.67 dB

Ref 20 dBm

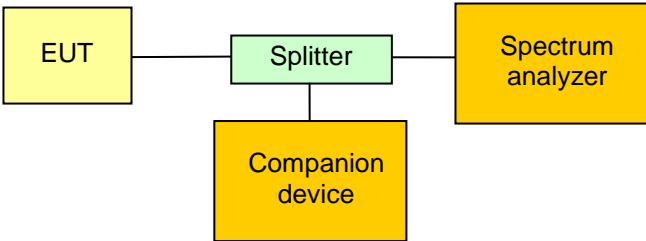
\*Att 30 dB

SWT 40 ms

1.450000000 MHz


 Comment: Ansi C63.17-2006 6.1.3  
 Date: 8.NOV.2012 09:36:31

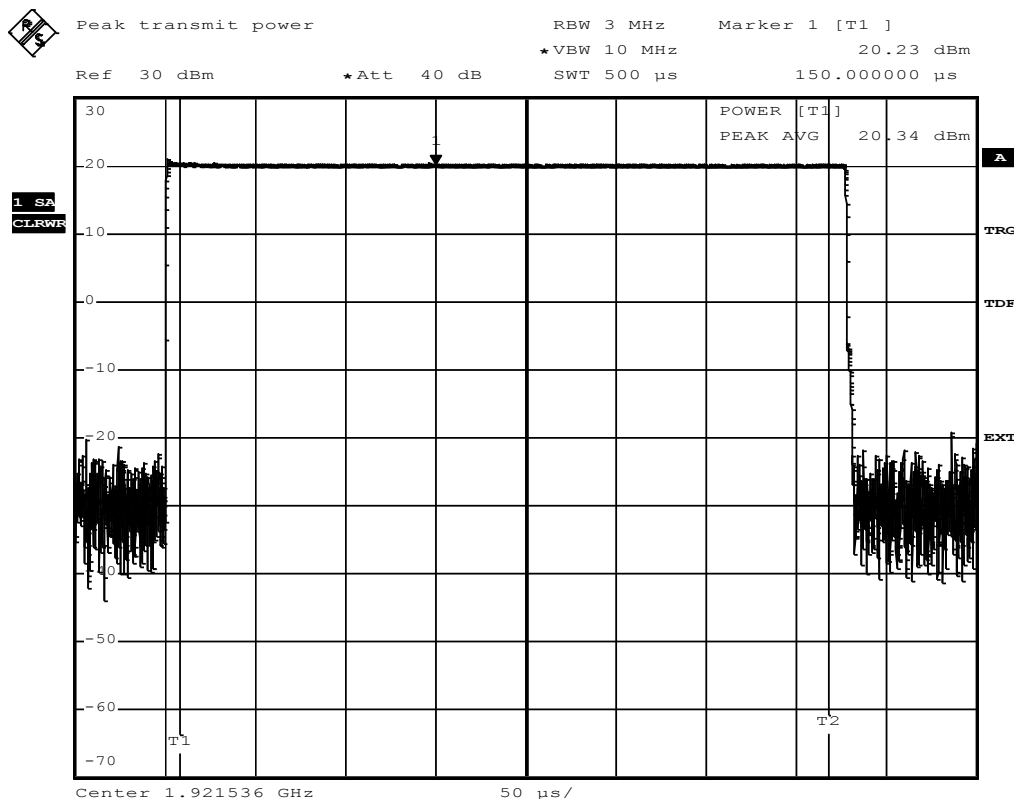
**3.8 Test Conditions and Results – Peak transmit power**

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 <sub>LOW</sub> / F <sub>HIGH</sub>					
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.						
$P_{EUT} [dBm] \leq P_{limit} \text{ where } P_{limit} = \begin{cases} P_{max} - (G_A - g), & \text{when } G_A > 3 \text{ dBi} \\ P_{max}, & G_A < 3 \text{ dBi} \end{cases}$						
$P_{max} [dBm] = 5 \log(\text{Emission/Occupied Bandwidth [Hz]}) - 10 \text{ dBm}$						
Test setup						
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Splitter --- SA[Spectrum analyzer]     Splitter --- CD[Companion device]           </pre>						
Test procedure						
<ol style="list-style-type: none"> <li>1. EUT set to test mode</li> <li>2. The RBW is set to be larger than the emission bandwidth and VBW ≥ RBW</li> <li>3. Transmission burst is measured in zero span and peak detector</li> <li>4. The maximum level in the burst is recorded as peak transmit power</li> </ol>						
Test results - FCC						
Channel	Frequency [MHz]	Peak Power [dbm]	Emission Bandwidth [Hz]	Excess gain [dB]	Limit [dbm]	Margin [dB]
F <sub>LOW</sub>	1921.536	20.34	1482000	0	20.85	-00.51
F <sub>HIGH</sub>	1928.448	20.34	1450000	0	20.81	-00.47

<b>Test results - IC</b>						
Channel	Frequency [MHz]	Peak Power [dbm]	Occupied Bandwidth [Hz]	Excess gain [dB]	Limit [dbm]	Margin [dB]
F <sub>LOW</sub>	1921.536	20.34	1210000	0	20.41	-00.07
F <sub>HIGH</sub>	1928.448	20.34	1220000	0	20.43	-00.09
Comments:						

**Peak Power – F<sub>LOW</sub>**
**FCC Part 15.319 Peak Transmit Power limit  
 Testprocedure ANSI 63.17  
 UPCS**

EUT	DECT application module
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Peak transmit power
Supply	
Measured Bandwidth	1.482MHz
Max. Permitted Power	20.85 dBm
Measured Power	20.34 dBm
Test result	Verdict = PASS

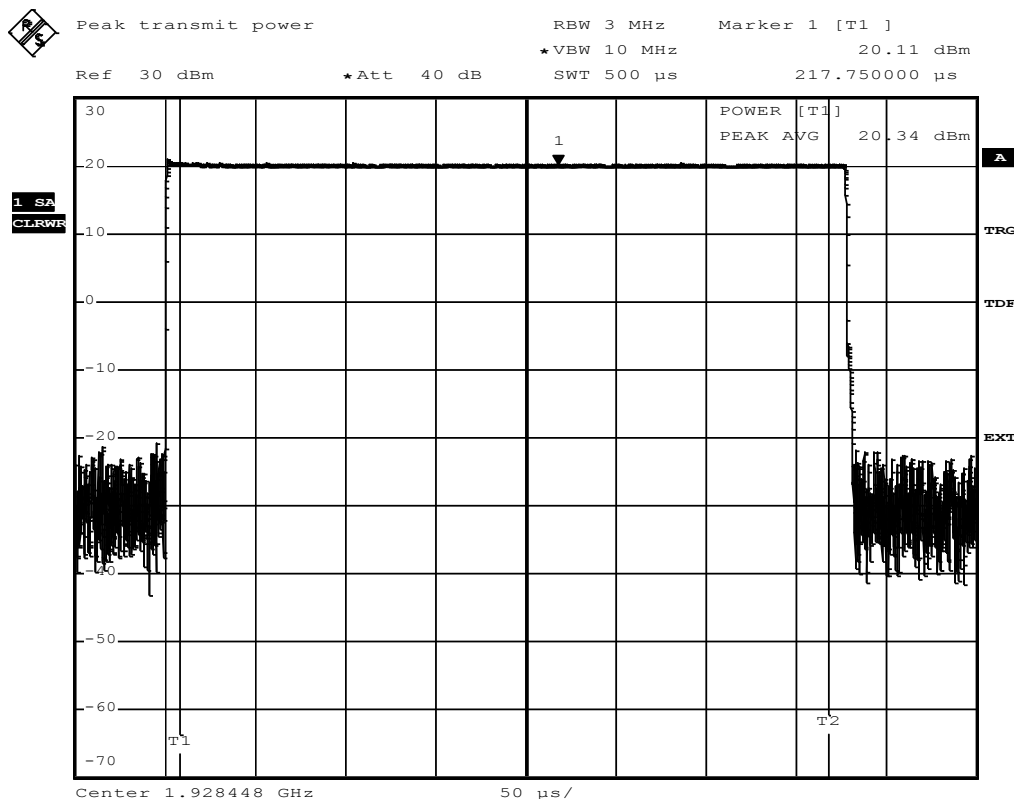


Comment: Ansi C63.17-2006 6.1.2  
 Date: 8.NOV.2012 09:25:08



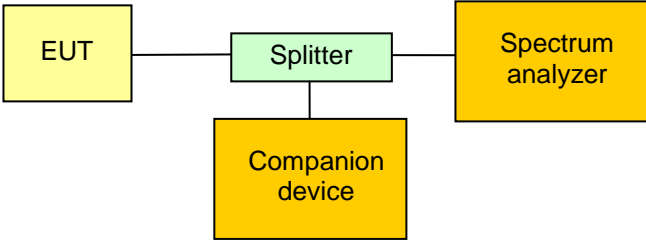
**Peak Power – F<sub>HIGH</sub>**
**FCC Part 15.319 Peak Transmit Power limit  
 Testprocedure ANSI 63.17  
 UPCS**

EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Peak transmit power
Supply	
Measured Bandwidth	1.45MHz
Max. Permitted Power	20.8 dBm
Measured Power	20.34 dBm
Test result	Verdict = PASS



Comment: Ansi C63.17-2006 6.1.2  
 Date: 8.NOV.2012 09:44:22

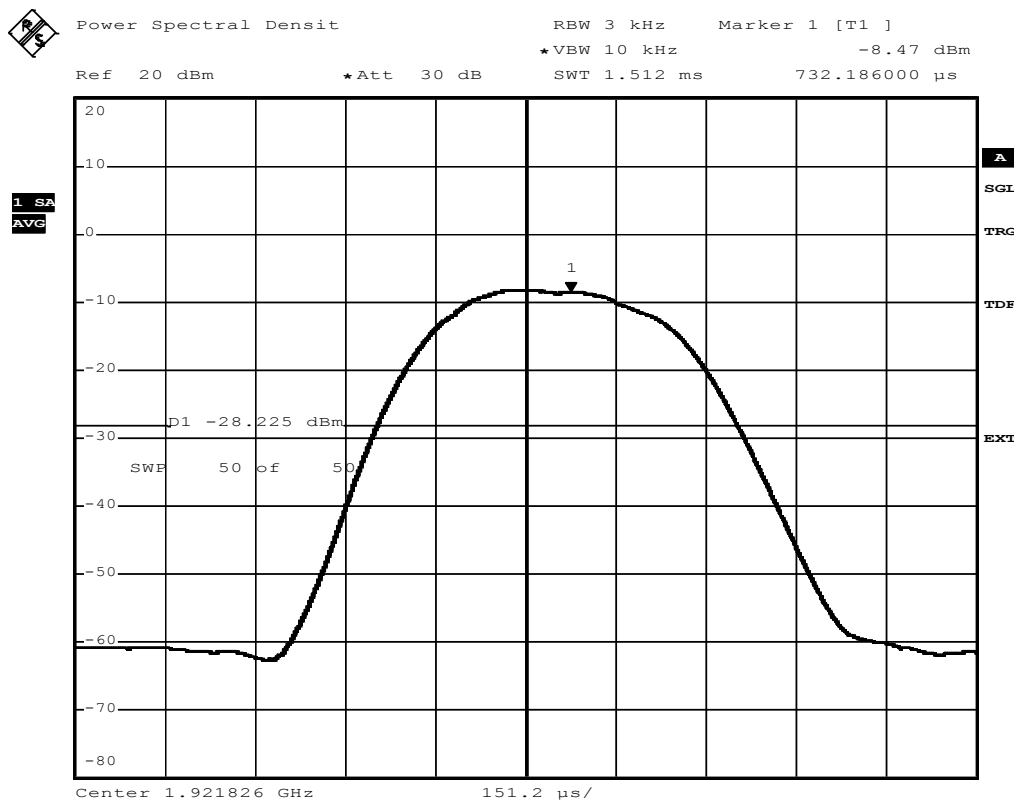
**3.9 Test Conditions and Results – Power spectral density**

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			
Antenna excess gain	0 dB			
<b>Limits</b>				
$\leq 3 \text{ mW (4.77 dBm) / 3 kHz}$				
<b>Test setup</b>				
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Splitter --- SA[Spectrum analyzer]     Splitter --- CD[Companion device]             </pre>				
<b>Test procedure</b>				
<ol style="list-style-type: none"> <li>1. EUT set to test mode</li> <li>2. The RBW is set to 3 kHz and VBW <math>\geq 3 \times</math> RBW</li> <li>3. The center frequency is set to the maximum of the emission envelope and the span is set to zero</li> <li>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</li> </ol>				
<b>Test results</b>				
Channel	Frequency [MHz]	Peak Density [dbm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
$F_{LOW}$	1921.536	-9.0890	4.77	-13.86
$F_{HIGH}$	1928.448	-7.3563	4.77	-12.13
Comments:				

**Power Spectral Density – F<sub>Low</sub>**
**FCC Part 15.319 Power spectral density  
 Test procedure ANSI 63.17  
 UPCS**

EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Power spectral density
Peak Frequency in MHz	1921.826000 MHz
Total pulse energy in mW	0.000047 mW
Wideband pulse duration in ms	0.377988 ms
PSD in mW	0.1233 mW
PSD in dBm	-9.0890 dBm

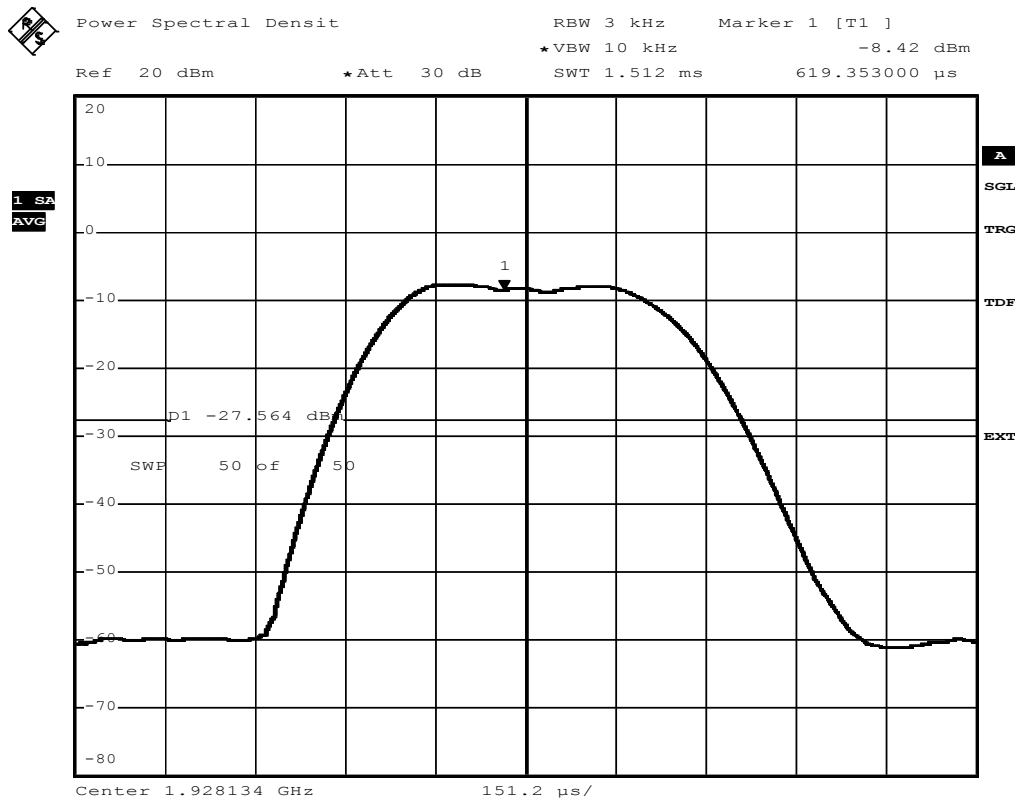
Pass criteria: PSD is less than 3mW      Verdict = PASS


 Comment: Ansi C63.17-2006 6.1.5  
 Date: 8.NOV.2012 09:21:19

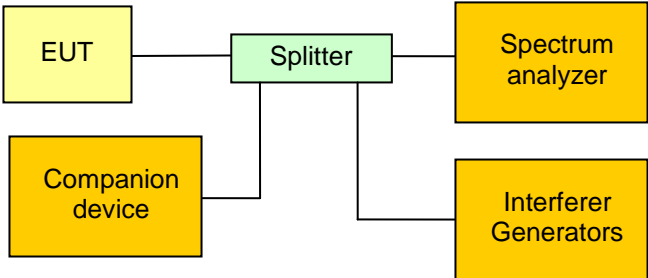
**Power Spectral Density – F<sub>HIGH</sub>**
**FCC Part 15.319 Power spectral density  
 Test procedure ANSI 63.17  
 UPCS**

EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Power spectral density
Peak Frequency in MHz	1928.134000 MHz
Total pulse energy in mW	0.000069 mW
Wideband pulse duration in ms	0.377988 ms
PSD in mW	0.1838 mW
PSD in dBm	-7.3563 dBm

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

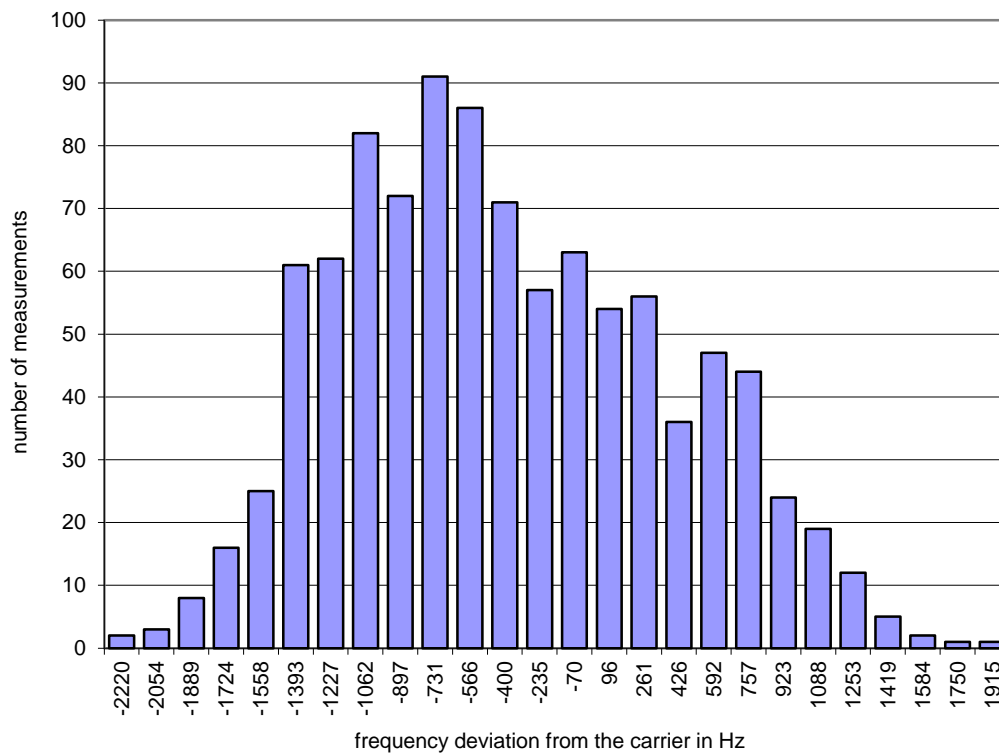

 Comment: Ansi C63.17-2006 6.1.5  
 Date: 8.NOV.2012 09:40:53

**3.10 Test Conditions and Results – Frequency stability**

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			
Tested frequencies	F <sub>MID</sub>			
EUT test mode	TDMA			
<b>Limits</b>				
± 10 ppm / hour				
<b>Test setup</b>				
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Splitter --- Companion[Companion device]     Splitter --- Interferer[Interferer Generators]     Splitter --- Analyzer[Spectrum analyzer]             </pre>				
<b>Test procedure</b>				
<ol style="list-style-type: none"> <li>1. With interferer signals the EUT is forced to center channel and communication to companion device is established.</li> <li>2. The demodulated carrier EUT signal is captured over time</li> <li>3. The mean frequency is determined under all supply voltage and temperature conditions</li> </ol>				
<b>Test results</b>				
Voltage	Temperature	Maximum Frequency deviation [ppm]	Limit [ppm]	Margin [ppm]
3.325 VDC	20°C	1.20	±10.0	-08.80
3.2 VDC	20°C	1.16	±10.0	-08.84
3.45 VDC	20°C	1.15	±10.0	-08.85
3.325 VDC	-20°C	1.17	±10.0	-08.83
3.325 VDC	85°C	-1.21	±10.0	-08.79
Comments:				

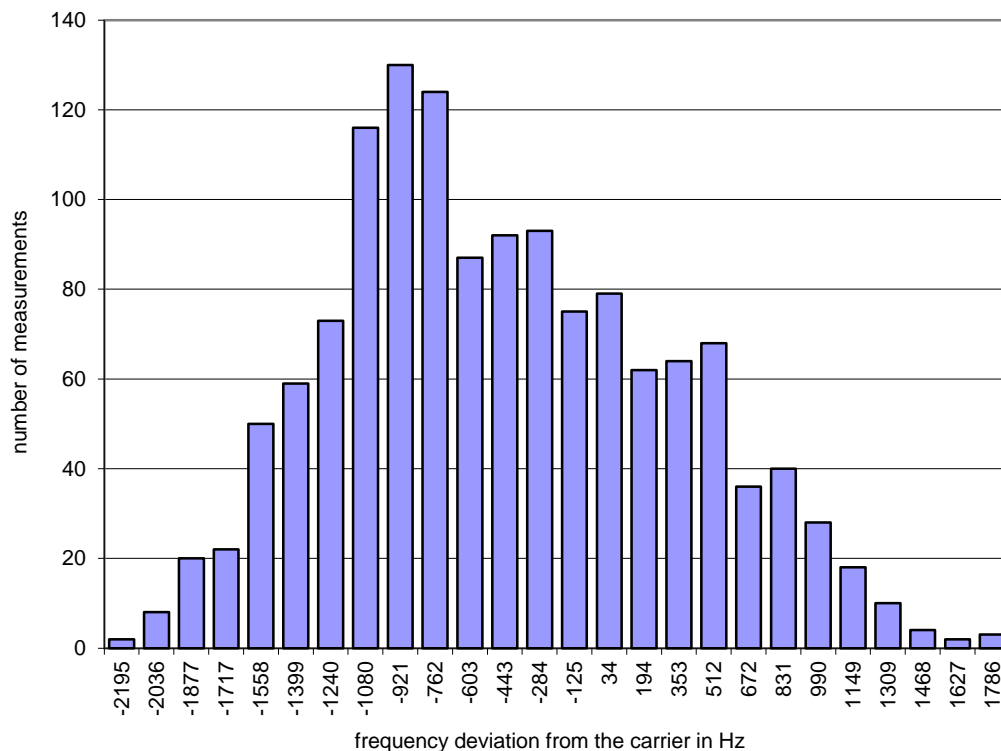
**Carrier stability – Frequency stability – T<sub>NOM</sub> V<sub>NOM</sub>**
**FCC Part 15.323 Frequency Stability  
Test procedure ANSI 63.17**

EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	20 °C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frequency stability
Power supply	Vnom
Frequency of carrier	1924.992999 MHz
Measured mean	1924.992999 MHz
Stability (supply temp)	0.0 ppm reference
Result	Verdict = PASS
Stability over time	fmax : 1.20 ppm fmin : 0.95 ppm
Result	Verdict = PASS

**Histogram**


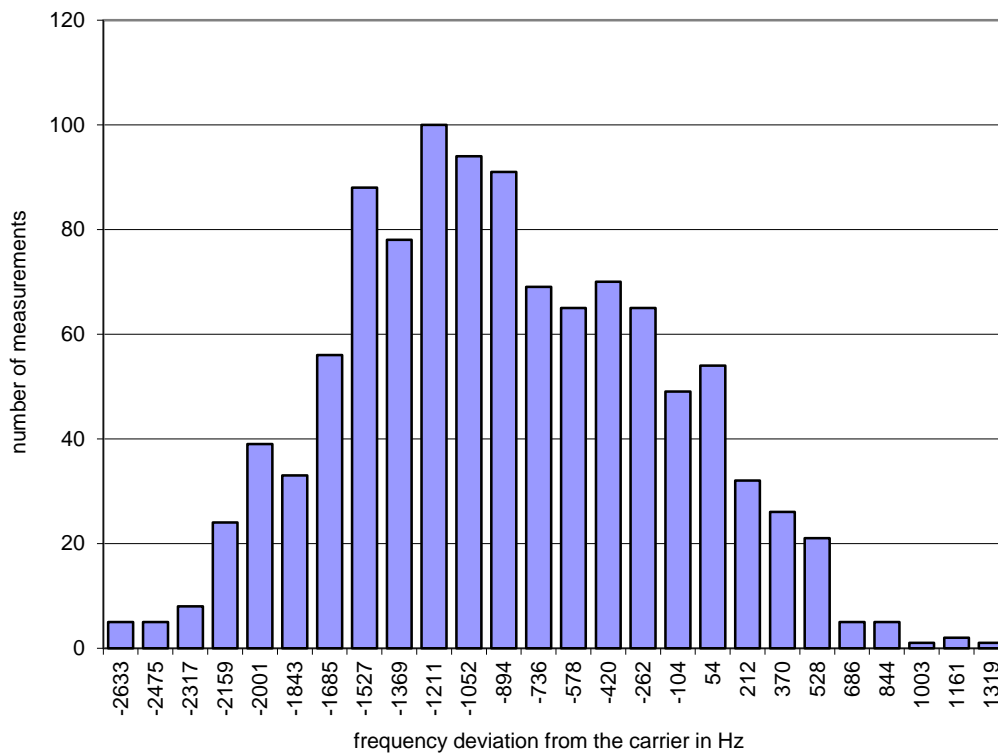
**Carrier stability – Frequency stability – T<sub>NOM</sub> V<sub>MIN</sub>**
**FCC Part 15.323 Frequency Stability  
Test procedure ANSI 63.17**

EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	20 °C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frequency stability
Power supply	Vmin
Frequency of carrier	1924.992999 MHz
Measured mean	1924.992553 MHz
Stability (supply temp)	0.23 ppm
Result	Verdict = PASS
Stability over time	fmax : 1.16 ppm fmin : 0.91 ppm
Result	Verdict = PASS

**Histogram**


**Carrier stability – Frequency stability – T<sub>NOM</sub> V<sub>MAX</sub>**
**FCC Part 15.323 Frequency Stability  
Test procedure ANSI 63.17**

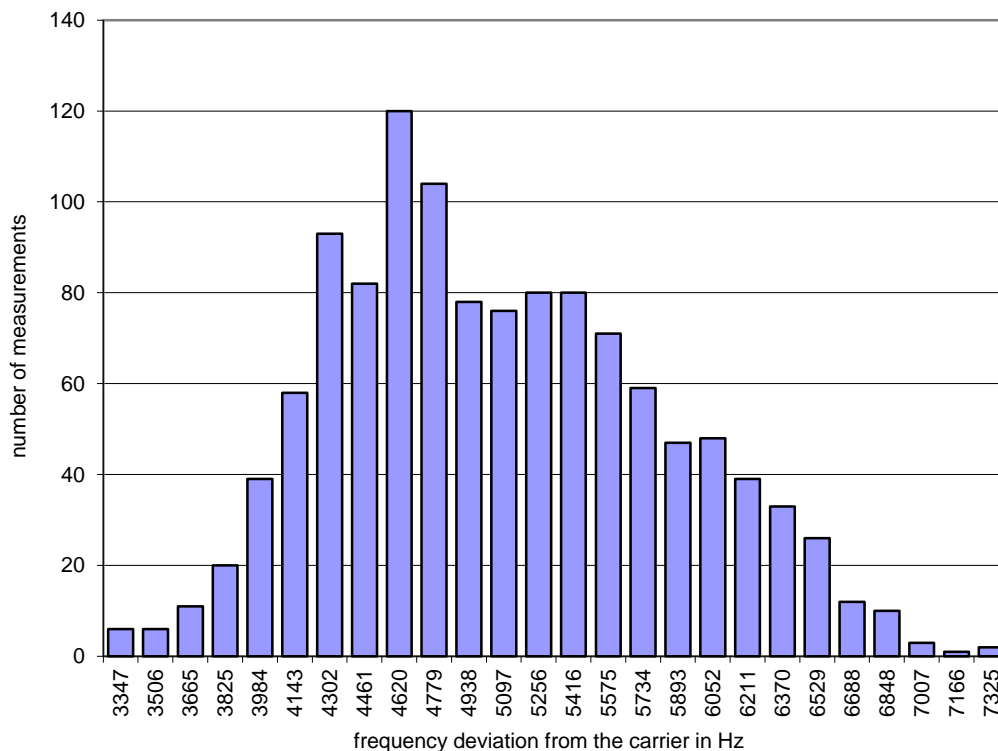
EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	20 °C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frequency stability
Power supply	Vmax
Frequency of carrier	1924.992999 MHz
Measured mean	1924.992106 MHz
Stability (supply temp)	0.46 ppm
Result	Verdict = PASS
Stability over time	fmax : 1.15 ppm fmin : 0.90 ppm
Result	Verdict = PASS

**Histogram**




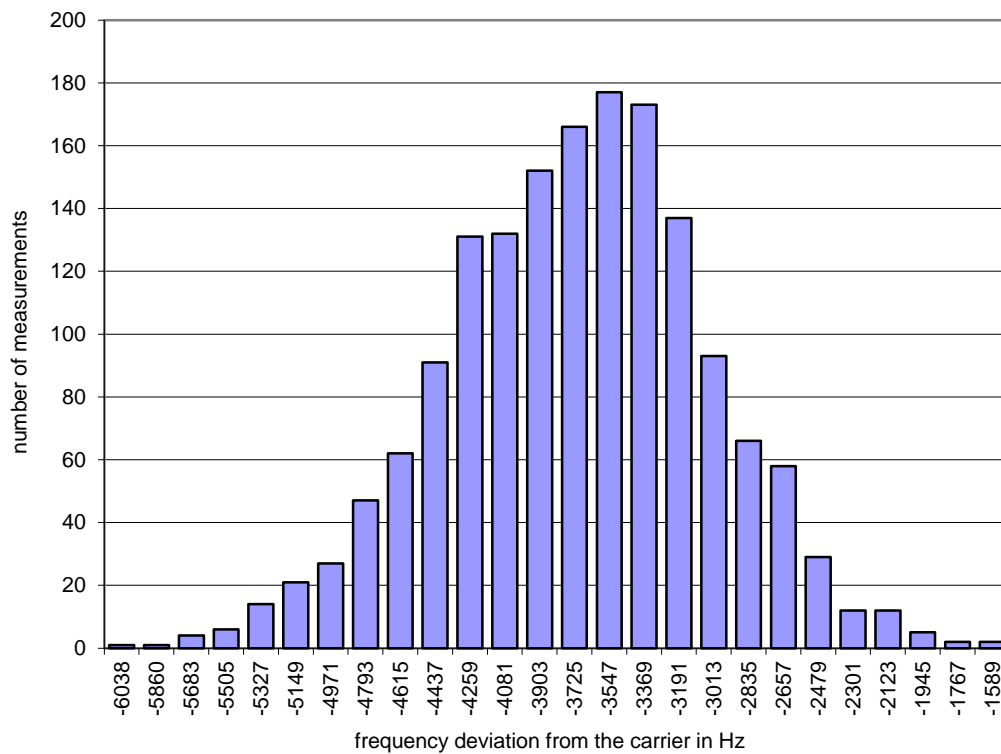
**Carrier stability – Frequency stability – T<sub>MAX</sub> V<sub>NOM</sub>**
**FCC Part 15.323 Frequency Stability  
Test procedure ANSI 63.17**

EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	85 °C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frequency stability
Power supply	Vnom
Frequency of carrier	1924.992999 MHz
Measured mean	1924.998078 MHz
Stability (supply temp)	-2.64 ppm
Result	Verdict = PASS
Stability over time	fmax : 1.17 ppm fmin : 0.90 ppm
Result	Verdict = PASS

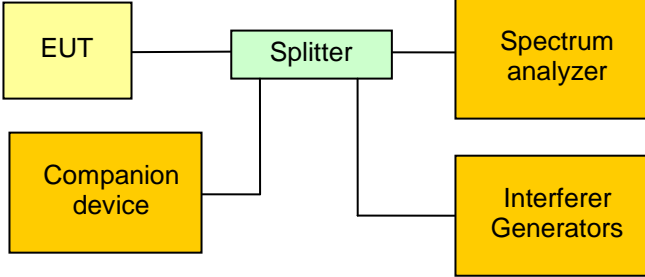
**Histogram**


**Carrier stability – Frequency stability – T<sub>MIN</sub> V<sub>NOM</sub>**
**FCC Part 15.323 Frequency Stability  
Testprocedure ANSI 63.17**

EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	-20 °C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frequency stability
Power supply	Vnom
Frequency of carrier	1924.992999 MHz
Measured mean	1924.989286 MHz
Stability (supply temp)	1.93 ppm
Result	Verdict = PASS
Stability over time	fmax : 1.10 ppm fmin : 1.21 ppm
Result	Verdict = PASS

**Histogram**


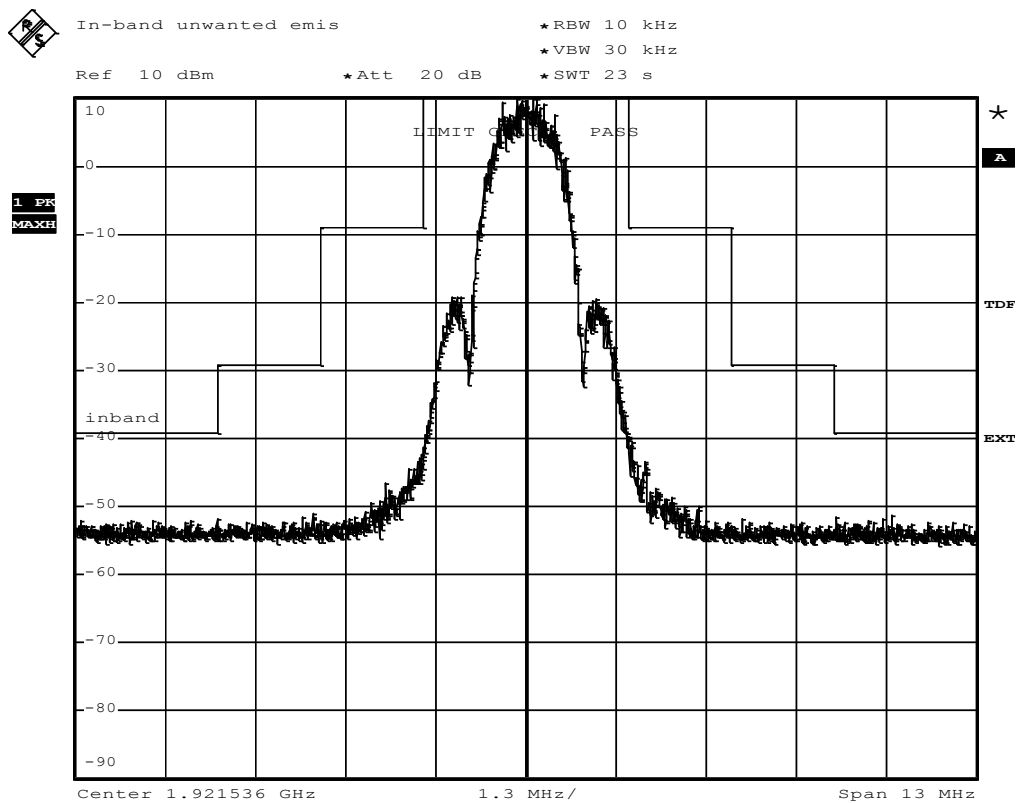
3.11 Test Conditions and Results – Transmitter in-band unwanted emissions

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		
 <pre>                     graph LR                         EUT[EUT] --- Splitter[Splitter]                         Companion[Companion device] --- Splitter                         Splitter --- SA[Spectrum analyzer]                         Splitter --- IG[Interferer Generators]                     </pre>		
Test procedure		
<ol style="list-style-type: none"> <li>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</li> <li>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</li> <li>3. With peak detector and max hold the emission spectrum is recorded over the corresponding frequency range</li> </ol>		

Test results		
Channel	Frequency [MHz]	Verdict
F <sub>LOW</sub>	1921.536	PASS
F <sub>HIGH</sub>	1928.448	PASS
Comments:		

**Transmitter in-band unwanted emissions – F<sub>Low</sub>**
**FCC Part 15.323 In-band unwanted emission**  
**Testprocedure ANSI 63.17**  
**UPCS**

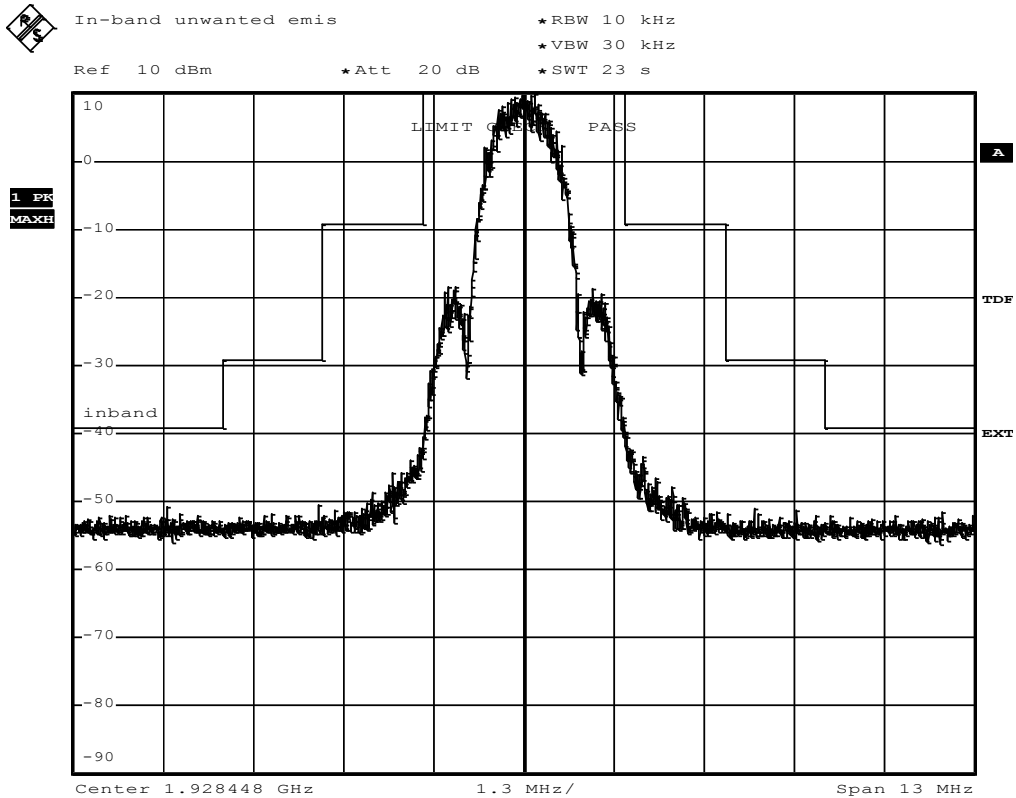
EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	In-band unwanted emission
	1.482MHz



Comment: Ansi C63.17-2006 6.1.6.1  
 Date: 8.NOV.2012 09:28:17

**Transmitter in-band unwanted emissions – F<sub>HIGH</sub>**
**FCC Part 15.323 In-band unwanted emission  
 Testprocedure ANSI 63.17  
 UPCS**

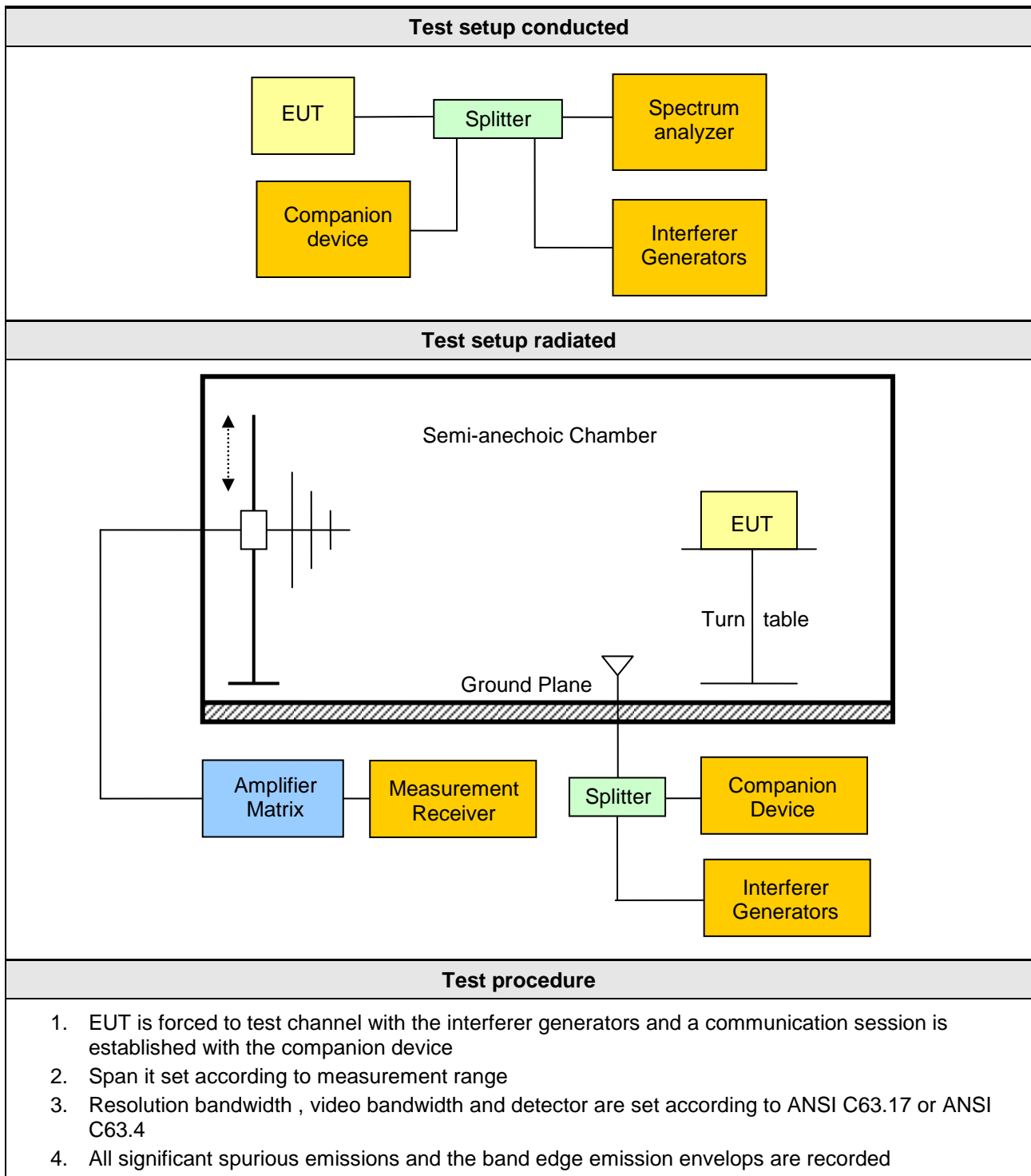
EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	In-band unwanted emission 1.45MHz



Comment: Ansi C63.17-2006 6.1.6.1  
 Date: 8.NOV.2012 09:48:00

**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 – 10 <sup>th</sup> 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 $\mu$ V/m (40 dB $\mu$ V/m)	3
88 – 216	Quasi-Peak	150 $\mu$ V/m (43.5 dB $\mu$ V/m)	3
216 – 960	Quasi-Peak	200 $\mu$ V/m (46 dB $\mu$ V/m)	3
960 – 1000	Quasi-Peak	500 $\mu$ V/m (54 dB $\mu$ V/m)	3
1000 – 1917.5	Average	500 $\mu$ V/m (54 dB $\mu$ V/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 $\mu$ V/m (54 dB $\mu$ V/m)	3
<p>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)).</p> <p>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.</p> <p>* Measurement is performed with conducted measurement setup</p>			



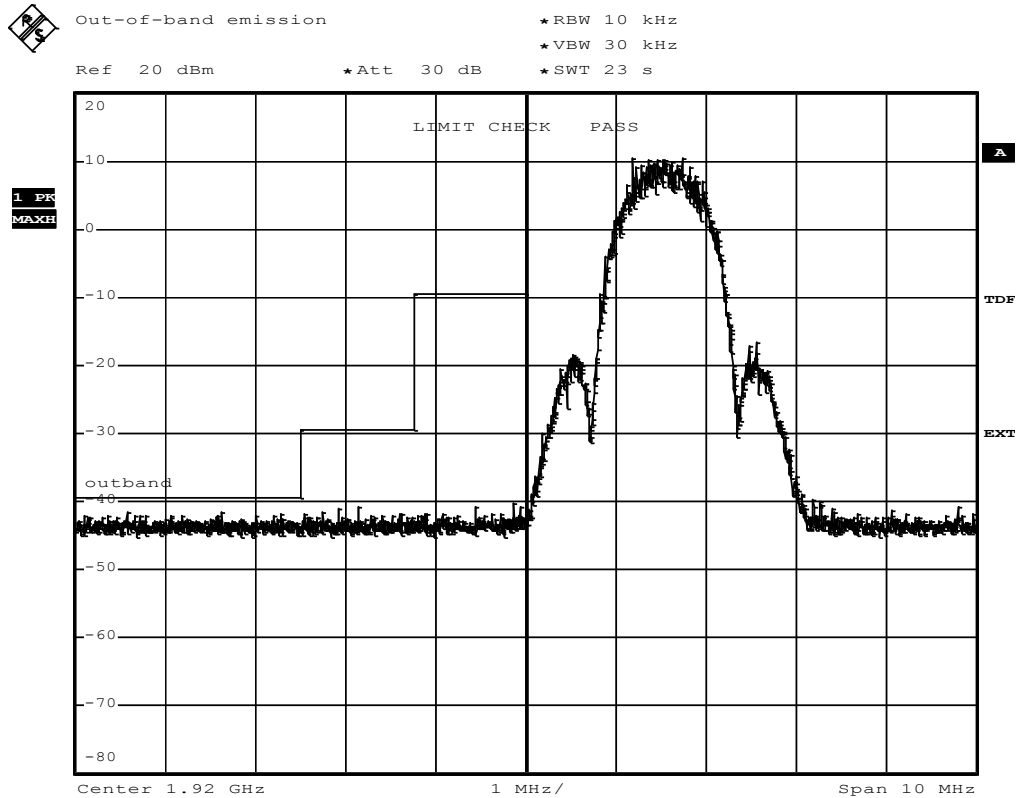


Test results									
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dB $\mu$ V/m]	Det.	Pol.	Limit [dB $\mu$ V/m]	Limit dist. [m]*	Margin [dB]
0	1928.448	Antenna 1	899.2	30.29	pk	ver	46.00	3	-15.71
0	1928.448	Antenna 1	3856	55.80	pk	hor	73.90	3	-18.10
4	1921.536	Antenna 1	5760	51.85	pk	hor	73.90	3	-22.05
0	1928.448	Antenna 2	3857.6	57.46	pk	hor	73.90	3	-16.44
0	1928.448	Antenna 2	3857.6	32.87	avg	hor	53.90	3	-21.03
0	1928.448	Antenna 2	5787	50.04	pk	hor	73.90	3	-23.86
0	1928.448	Antenna 2	5787	24.49	avg	hor	53.90	3	-29.41
4	1921.536	Antenna 2	3842	53.65	pk	hor	73.90	3	-20.25
4	1921.536	Antenna 2	3842	31.59	avg	hor	53.90	3	-22.31

Comments: \* Physical distance between EUT and measurement antenna.

**Transmitter out-of-band emissions – Band edge F<sub>Low</sub>**
**FCC Part 15.323 Out-of-band emission  
 Testprocedure ANSI 63.17  
 UPCS**

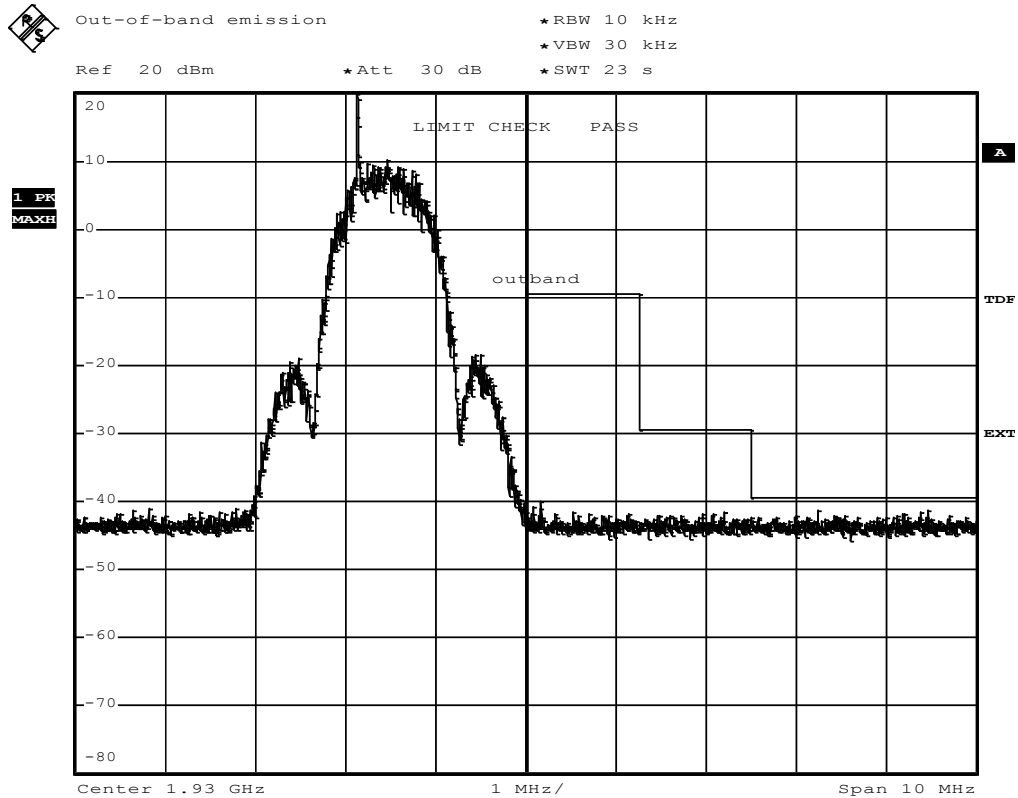
EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Out-of-band emission measurement on the lowest carrier Carrier=1921.536MHz



Comment: Ansi C63.17-2006 6.1.6.2  
 Date: 8.NOV.2012 09:31:05

**Transmitter out-of-band emissions – Band edge F<sub>HIGH</sub>**
**FCC Part 15.323 Out-of-band emission  
 Testprocedure ANSI 63.17  
 UPCS**

EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Out-of-band emission measurement on the highest carrier Carrier=1928.448MHz



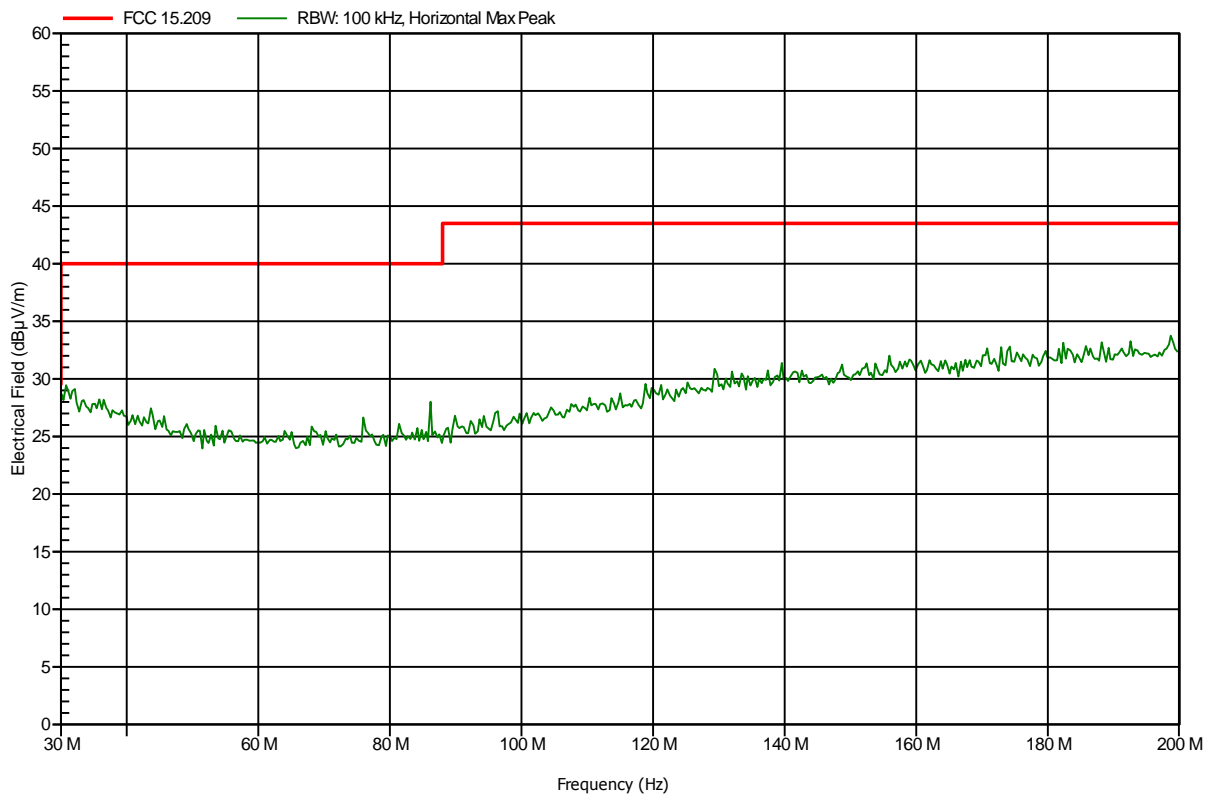
Comment: Ansi C63.17-2006 6.1.6.2  
 Date: 8.NOV.2012 09:50:34

**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; ch.0, ant.1
Test Date:	2012-11-12
Note:	worst case

Index 1

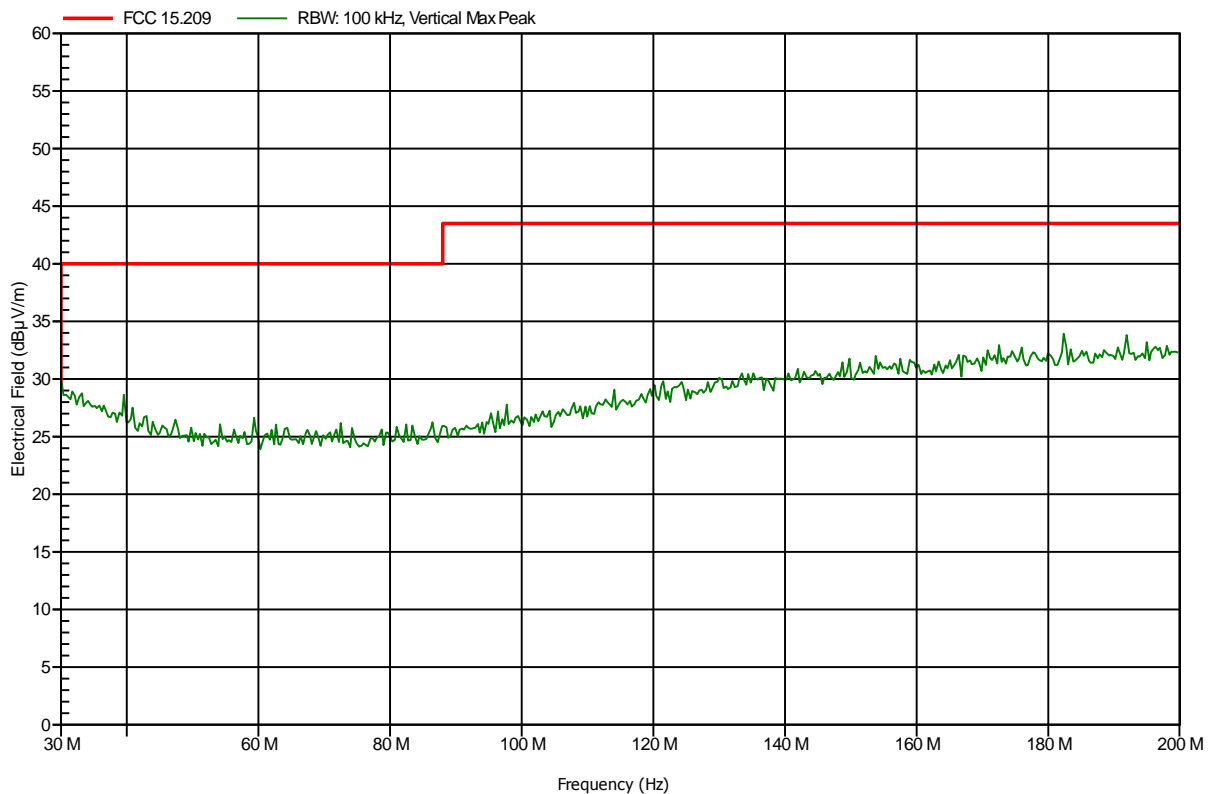


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; ch.0, ant.1
Test Date:	2012-11-12
Note:	worst case

Index 2

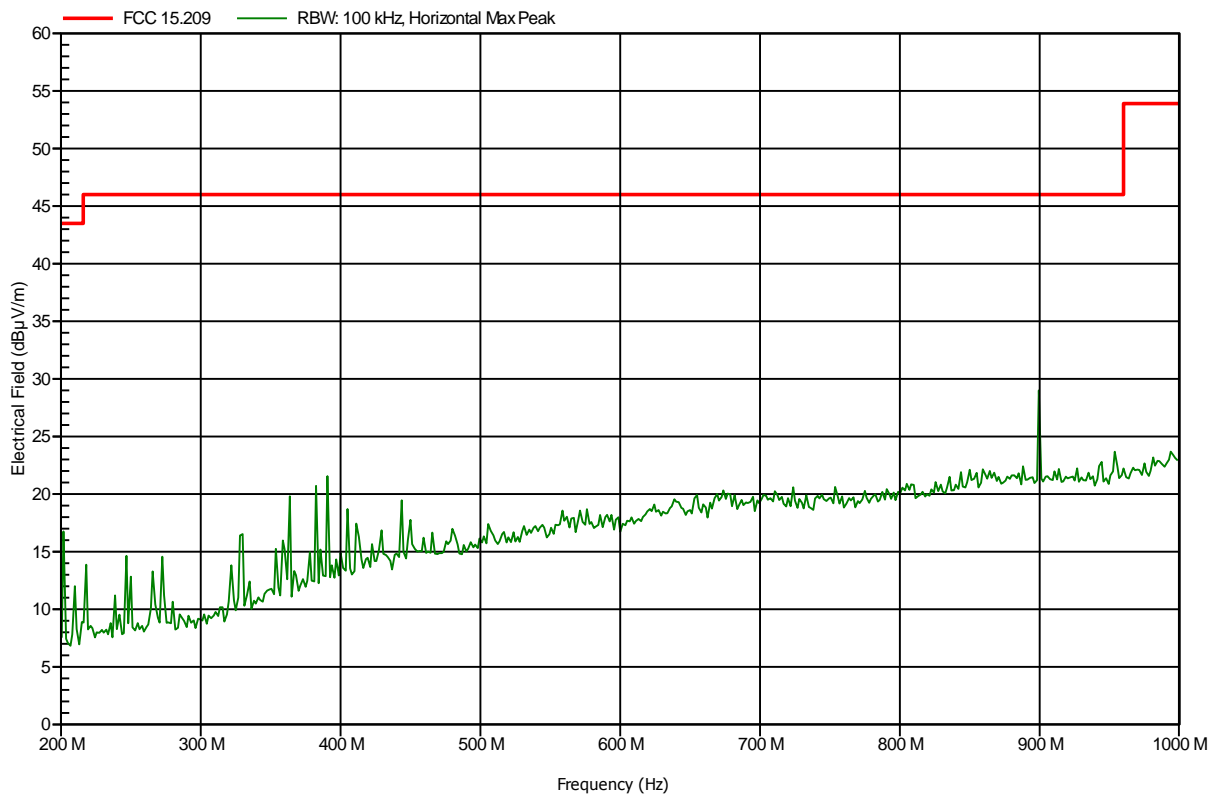


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; ch.0; ant.1
Test Date:	2012-11-12
Note:	worst case

Index 5

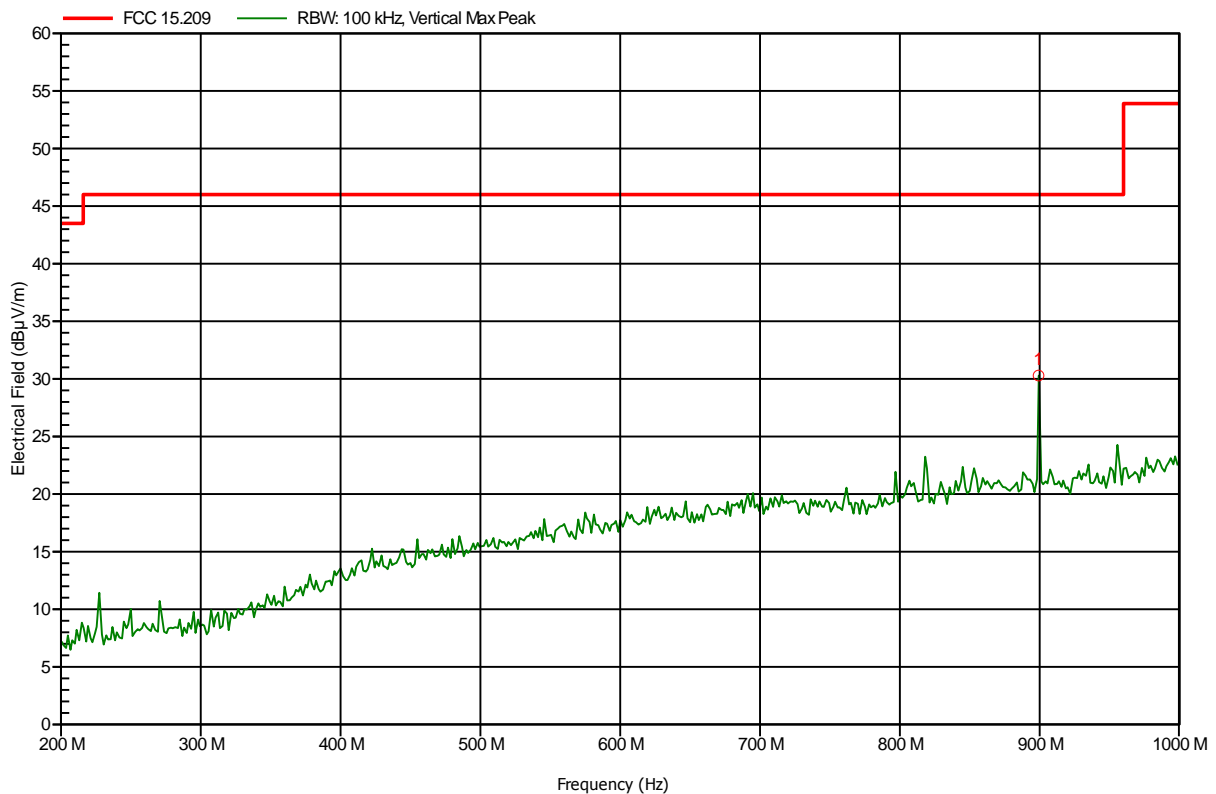


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer: Spectralink Corp.  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 23°C, Vnom: 3.3 V DC  
 Antenna: Rohde & Schwarz HL 223, Vertical  
 Measurement distance: 3 m  
 Mode: TX; ch.0, ant.1  
 Test Date: 2012-11-12  
 Note: worst case

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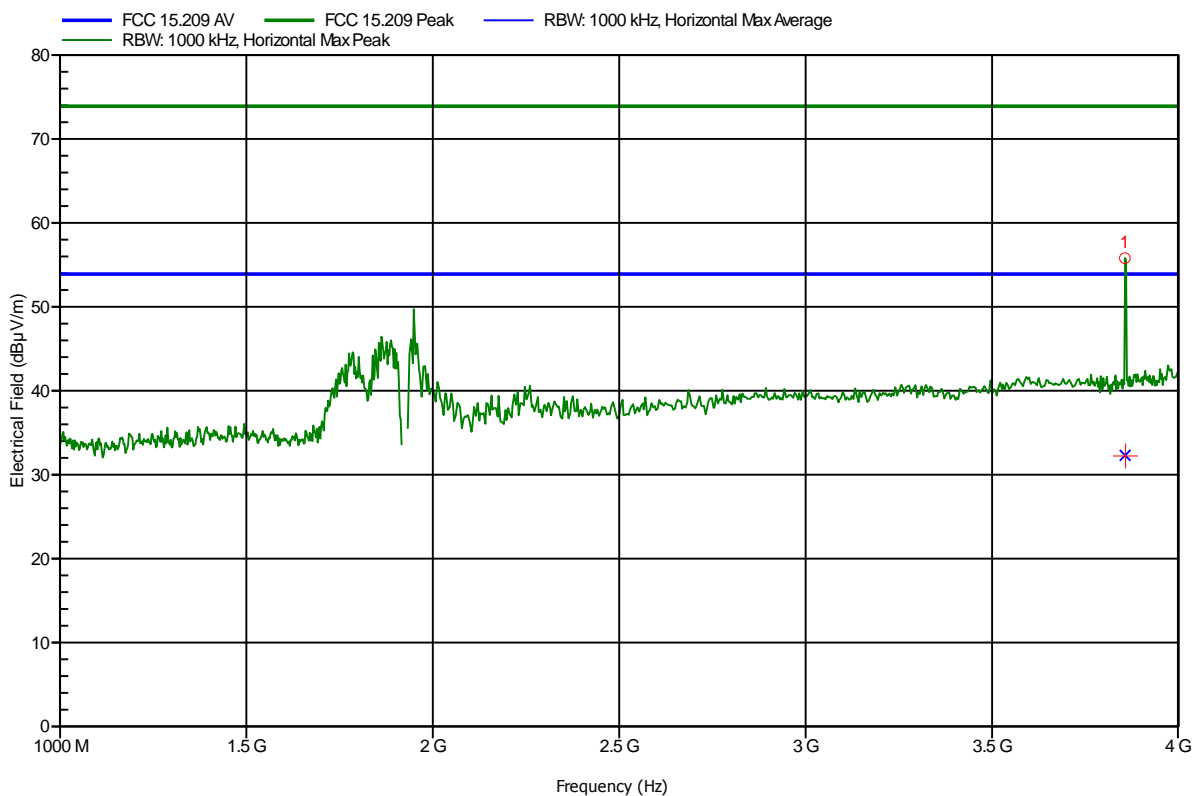
Frequency	Peak	Peak Limit	Peak Difference	Status
899.2 MHz	30.29 dBuV/m	46 dBuV/m	-15.71 dB	Pass

**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer: Spectralink Corp.  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 23°C, Vnom: 3.3 V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; ch.0; ant.1  
 Test Date: 2012-11-12  
 Note: with notch-filter

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Frequency	Peak	Peak Limit	Peak Difference	Status
3.856 GHz	55.8 dBµV/m	73.9 dBµV/m	-18.1 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
3.856 GHz	32.9 dBµV/m	53.9 dBµV/m	-21.0 dB	Pass

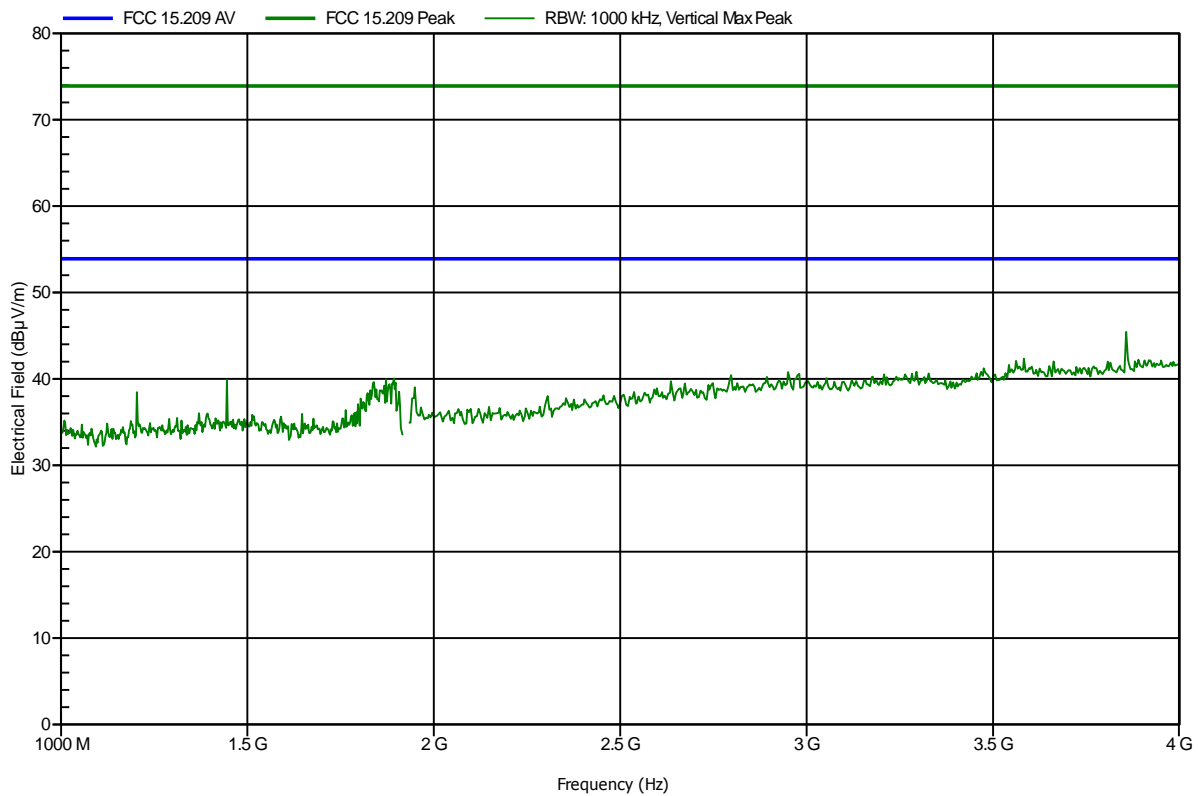


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; ch.0; ant.1
Test Date:	2012-11-12
Note:	with notch-filter

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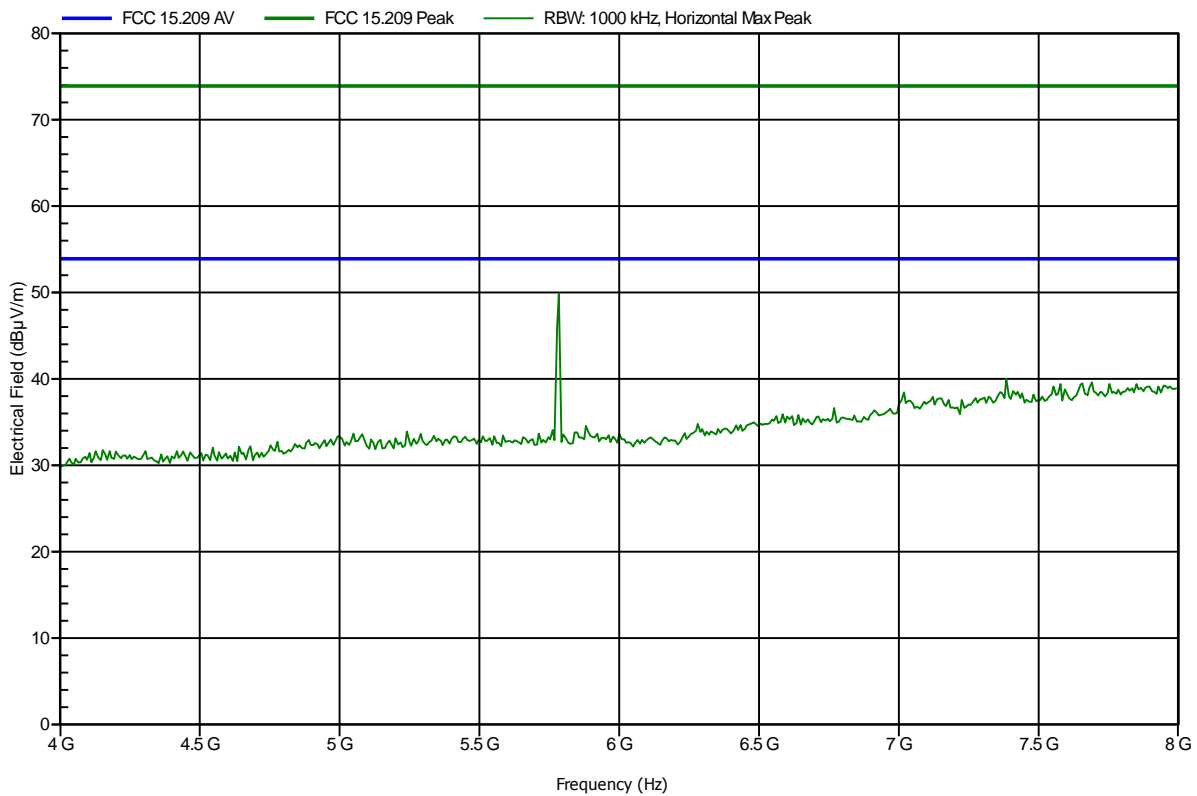


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.0; ant.1
Test Date:	2012-11-12
Note:	

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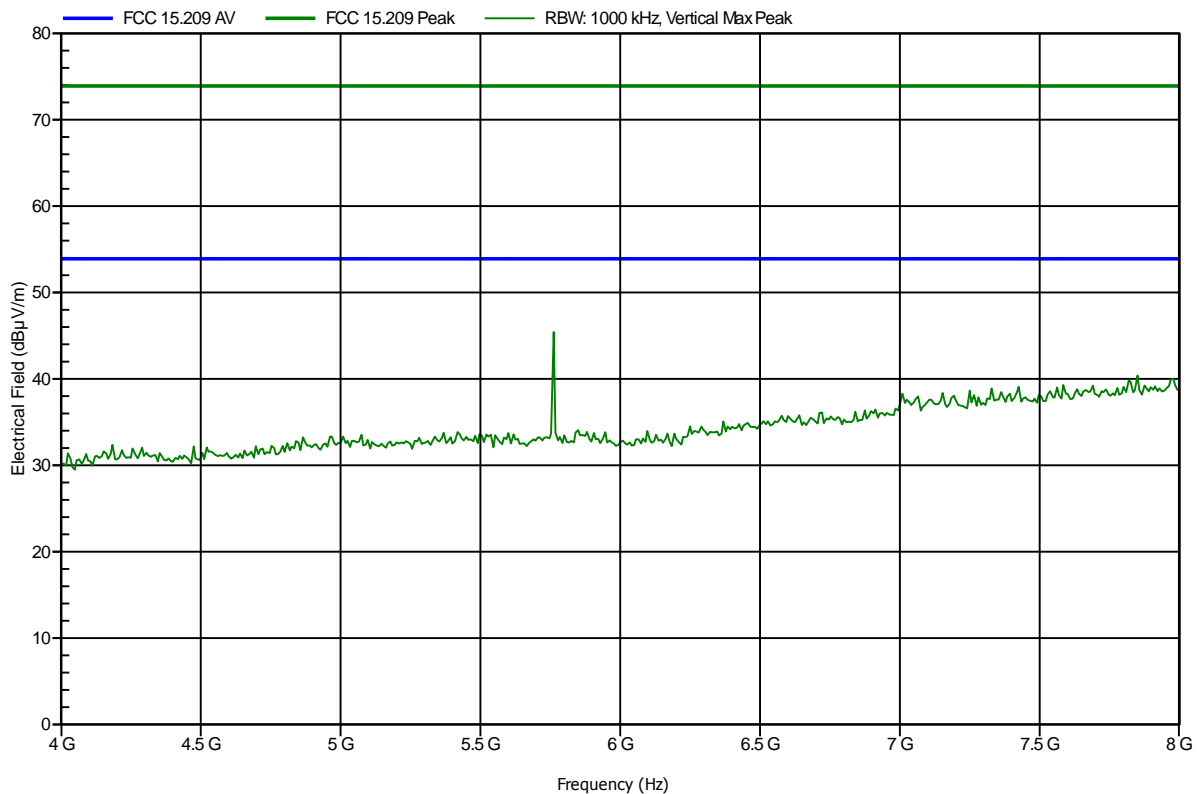


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.0; ant.1
Test Date:	2012-11-12
Note:	

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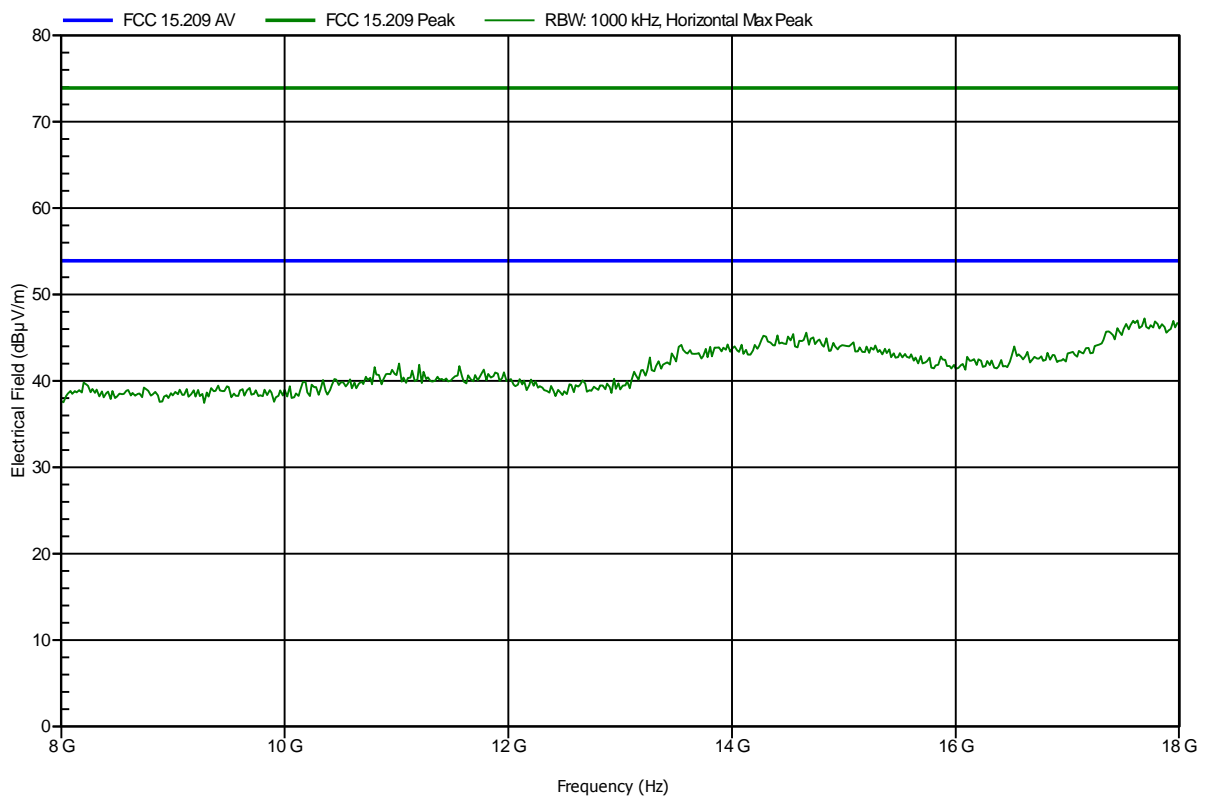


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.0; ant.1
Test Date:	2012-11-12
Note:	

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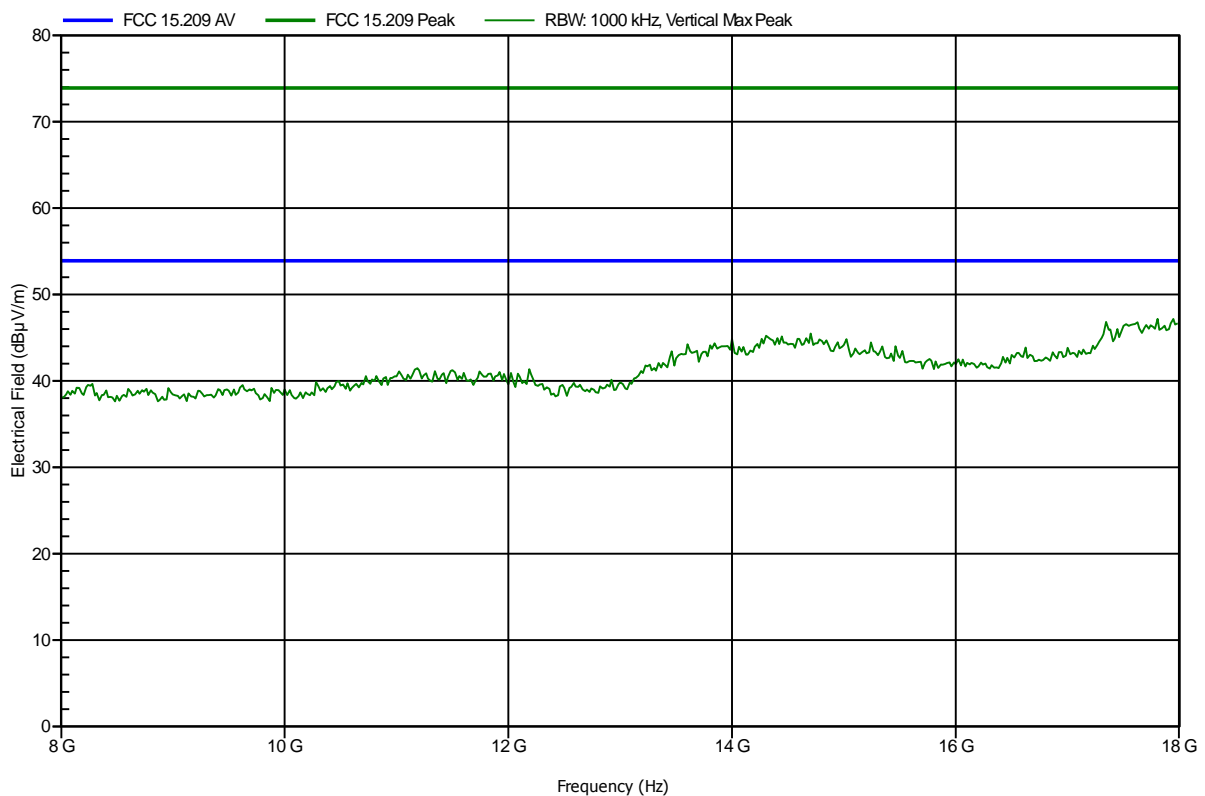


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.0; ant.1
Test Date:	2012-11-12
Note:	

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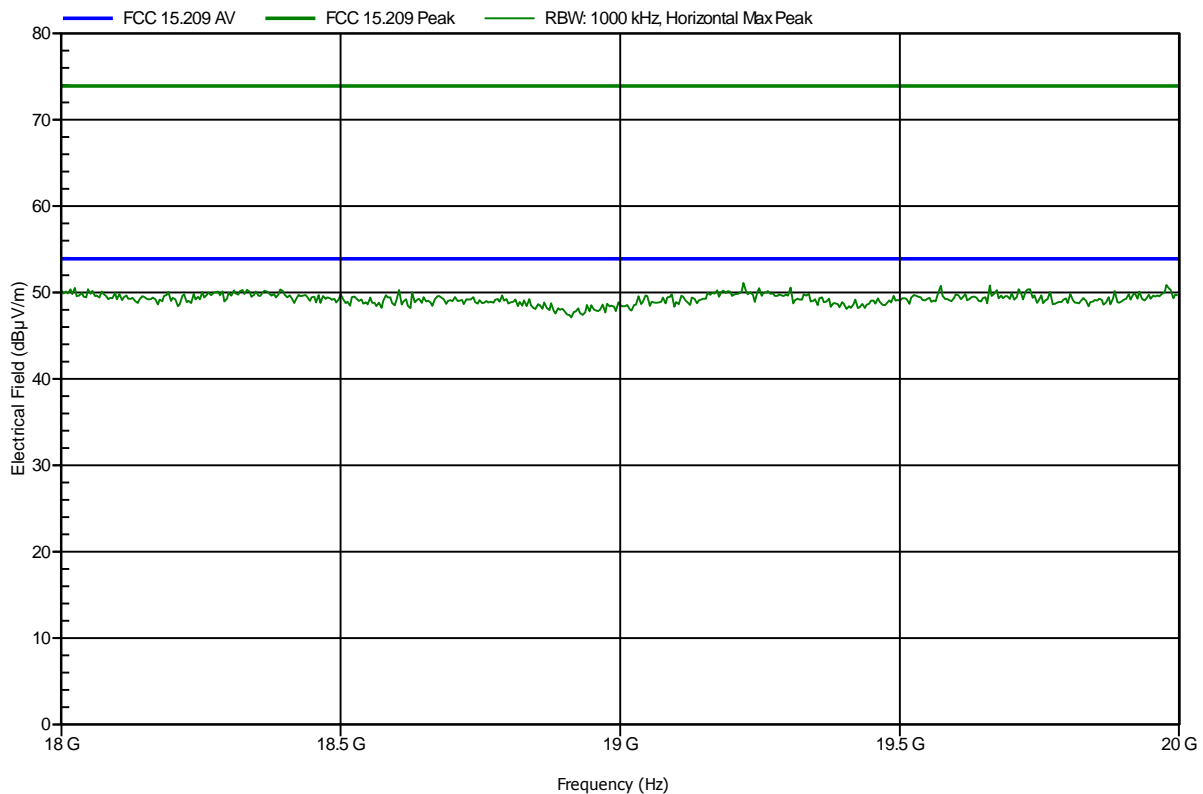


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.0; ant.1
Test Date:	2012-11-12
Note:	

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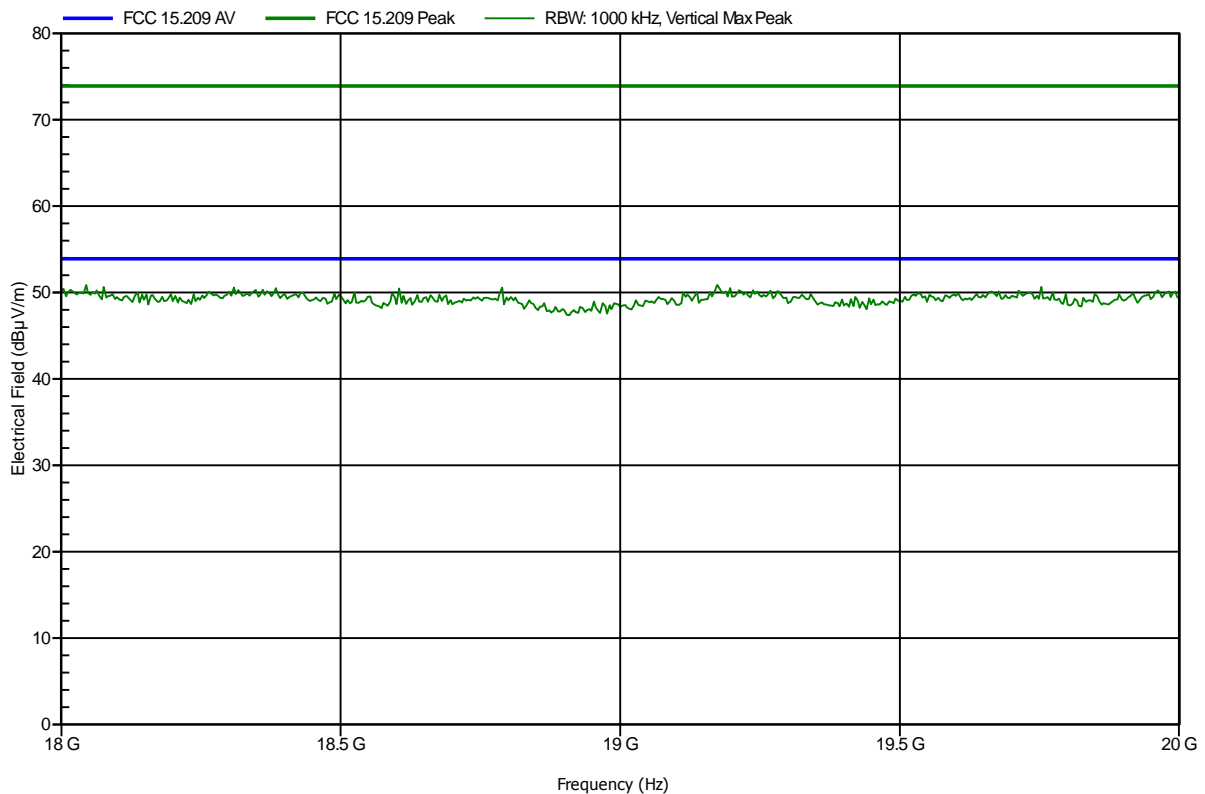


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.0; ant.1
Test Date:	2012-11-12
Note:	

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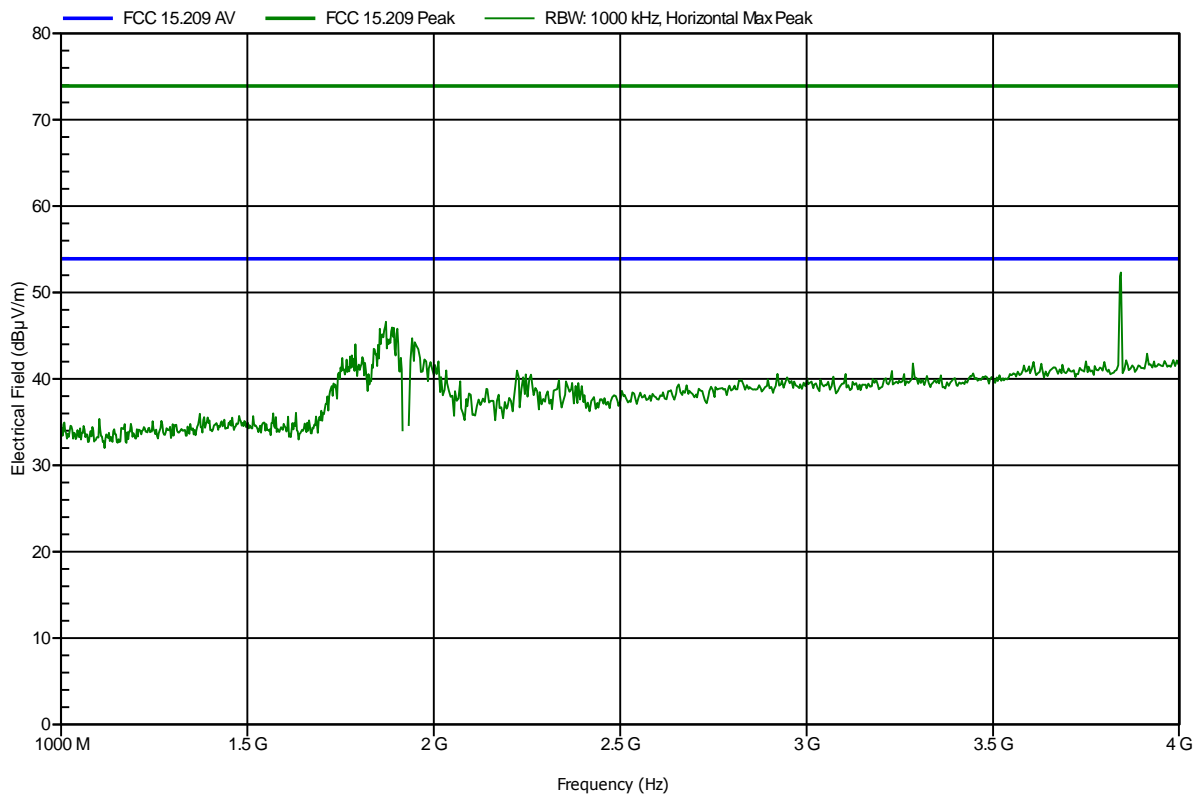


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.4; ant.1
Test Date:	2012-11-12
Note:	with notch-filter

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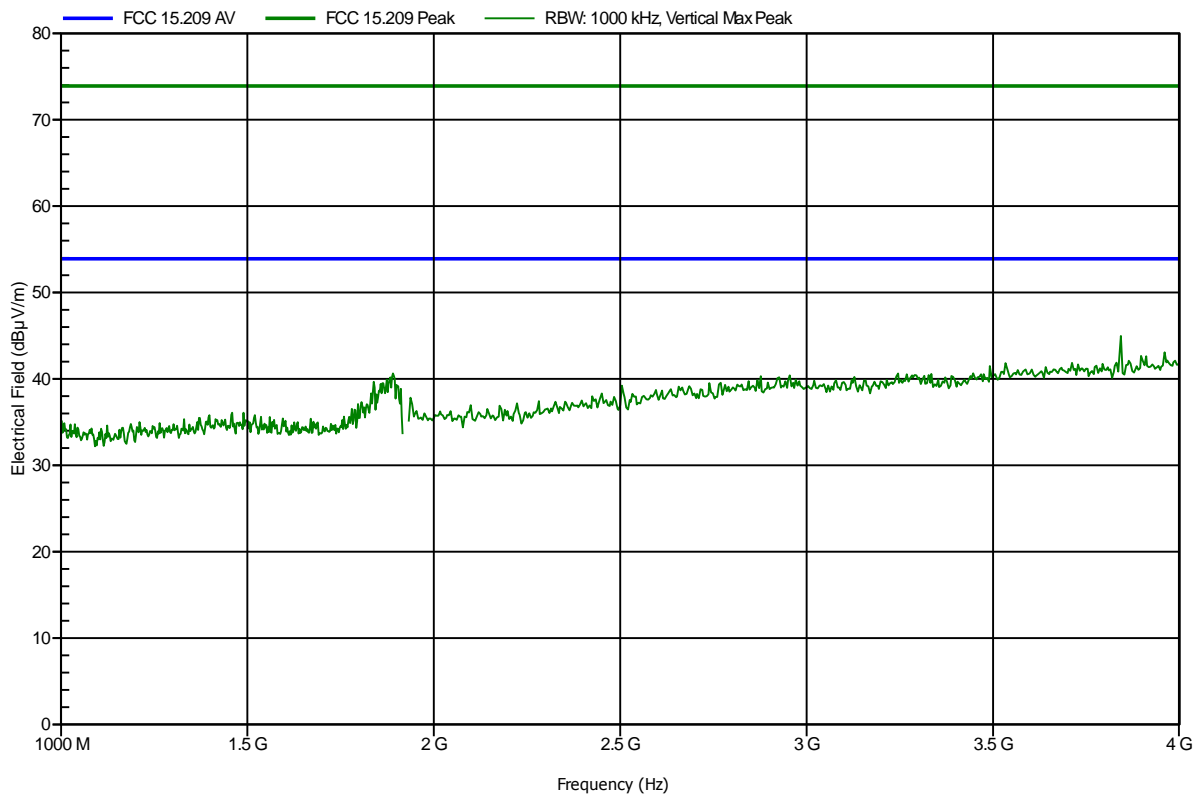


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.4; ant.1
Test Date:	2012-11-12
Note:	with notch-filter

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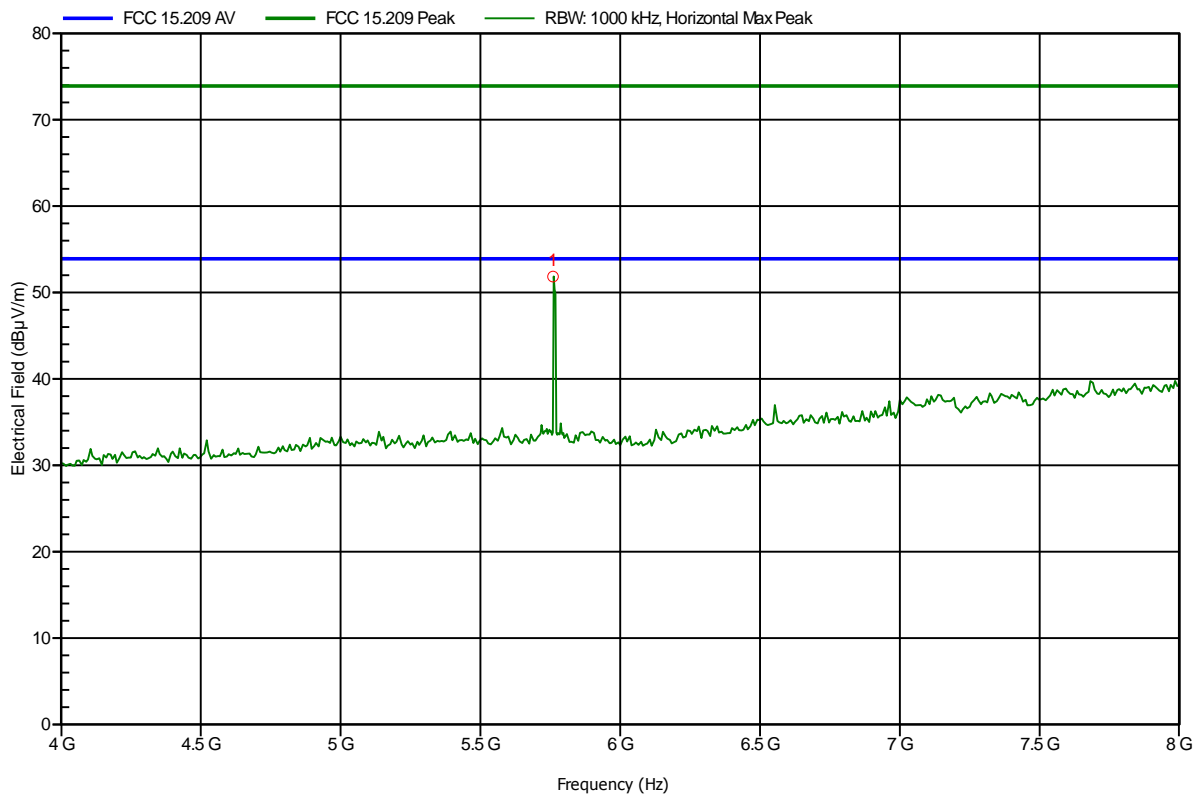


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer: Spectralink Corp.  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 23°C, Vnom: 3.3 V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 1 m corrected to 3m  
 Mode: TX; ch.4; ant.1  
 Test Date: 2012-11-12  
 Note:

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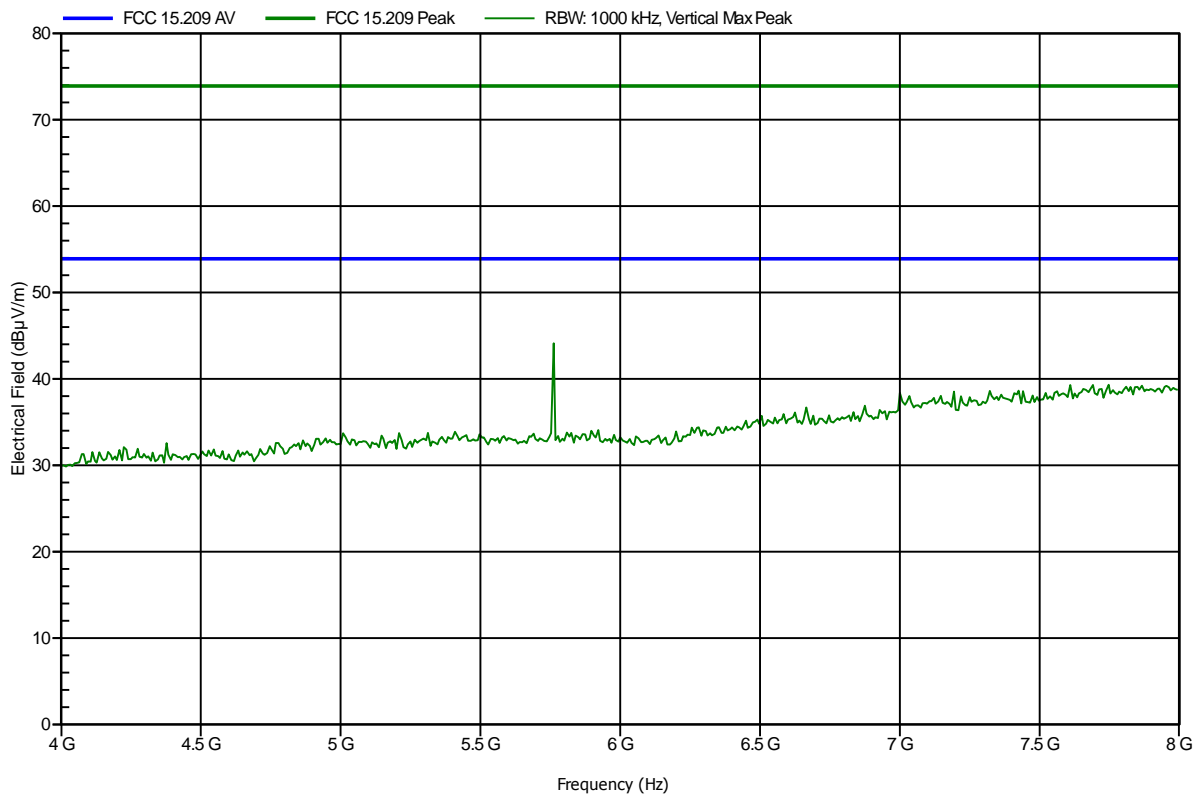
Frequency	Peak	Peak Limit	Peak Difference	Status
5.76 GHz	51.85 dBµV/m	73.9 dBµV/m	-22.05 dB	Pass

**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.4; ant.1
Test Date:	2012-11-12
Note:	

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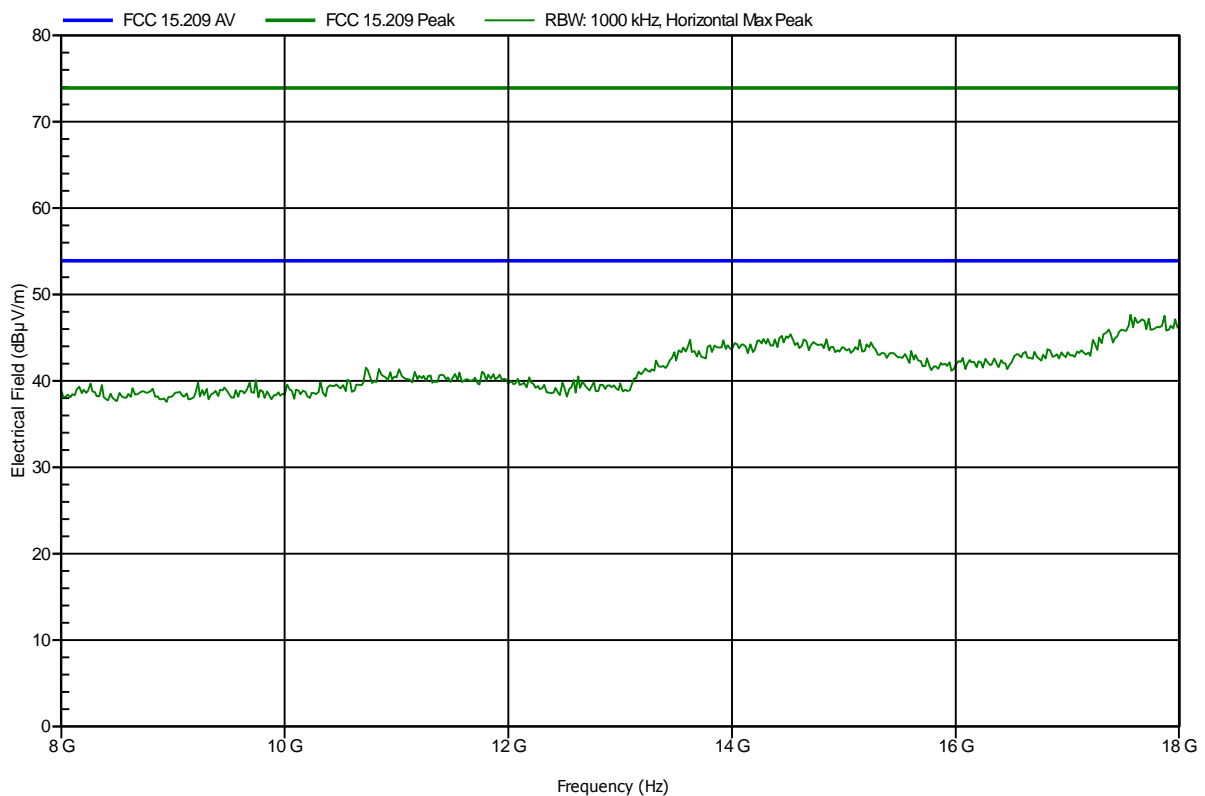


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.4; ant.1
Test Date:	2012-11-12
Note:	

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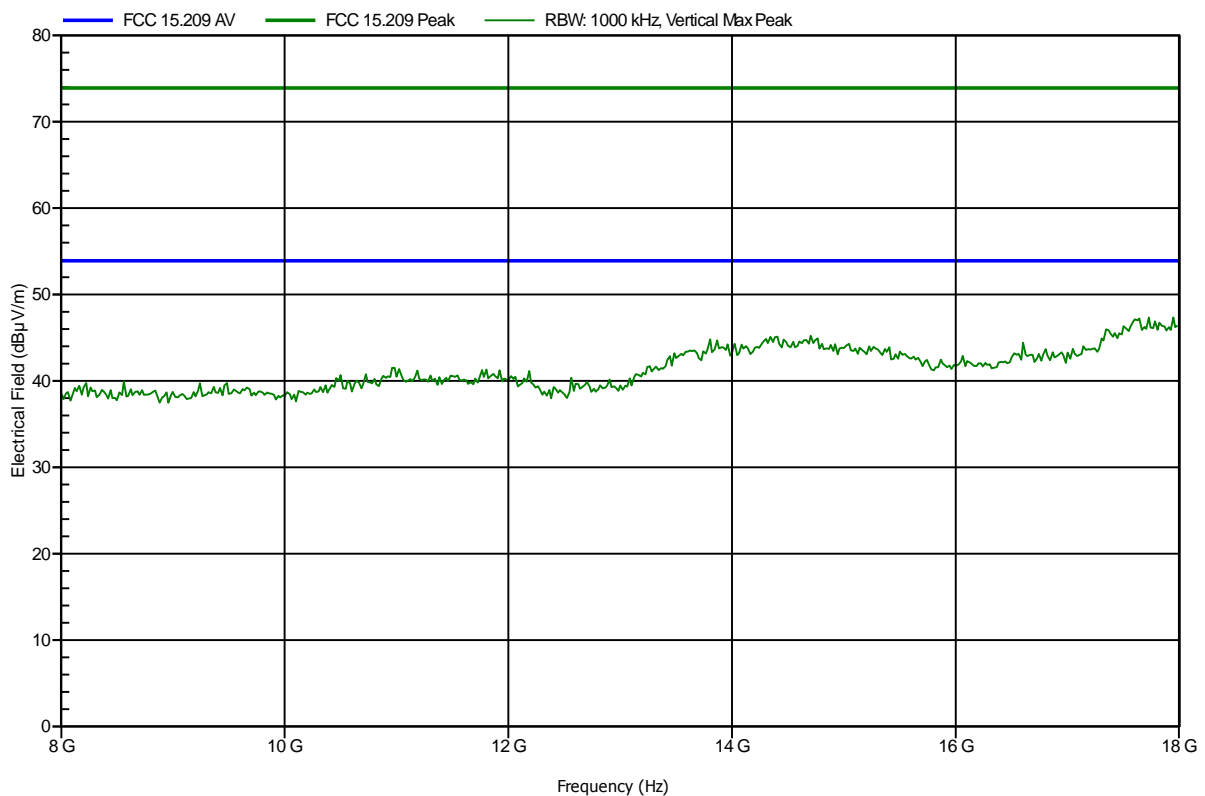


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.4; ant.1
Test Date:	2012-11-12
Note:	

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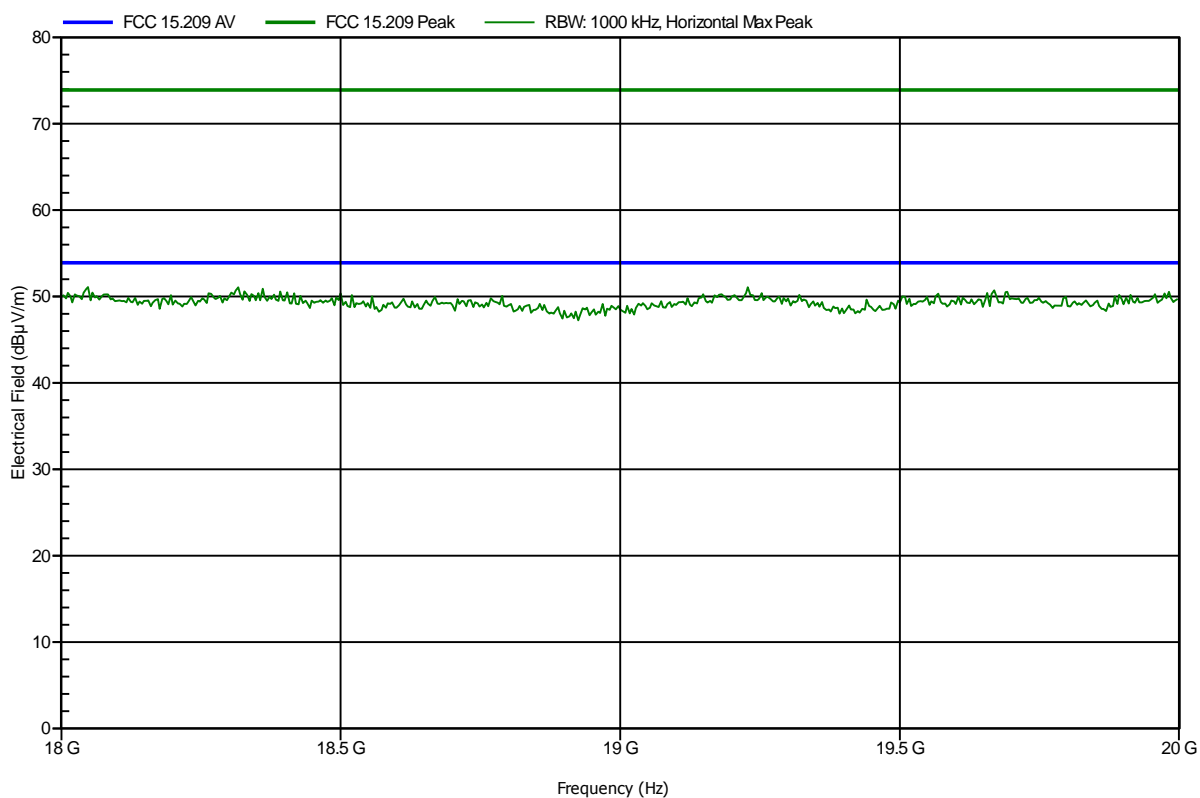


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.4; ant.1
Test Date:	2012-11-12
Note:	

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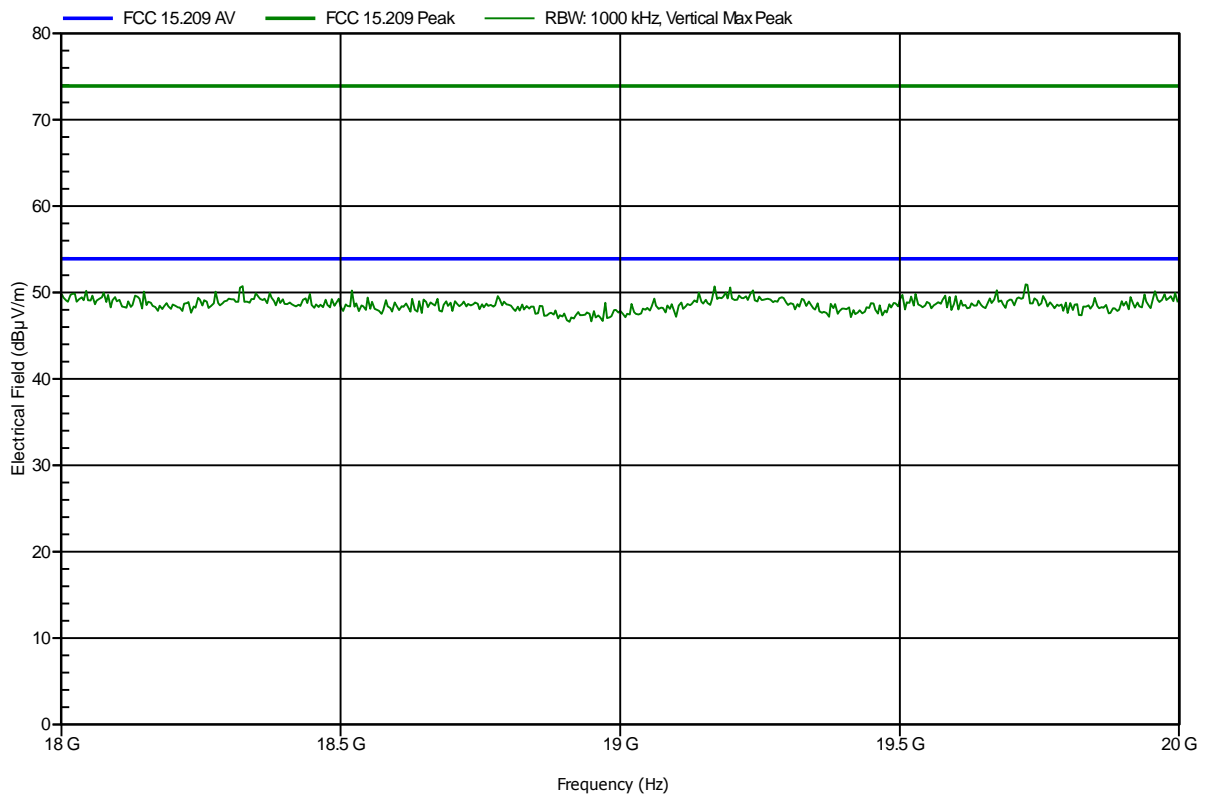


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m corrected to 3m
Mode:	TX; ch.4; ant.1
Test Date:	2012-11-12
Note:	

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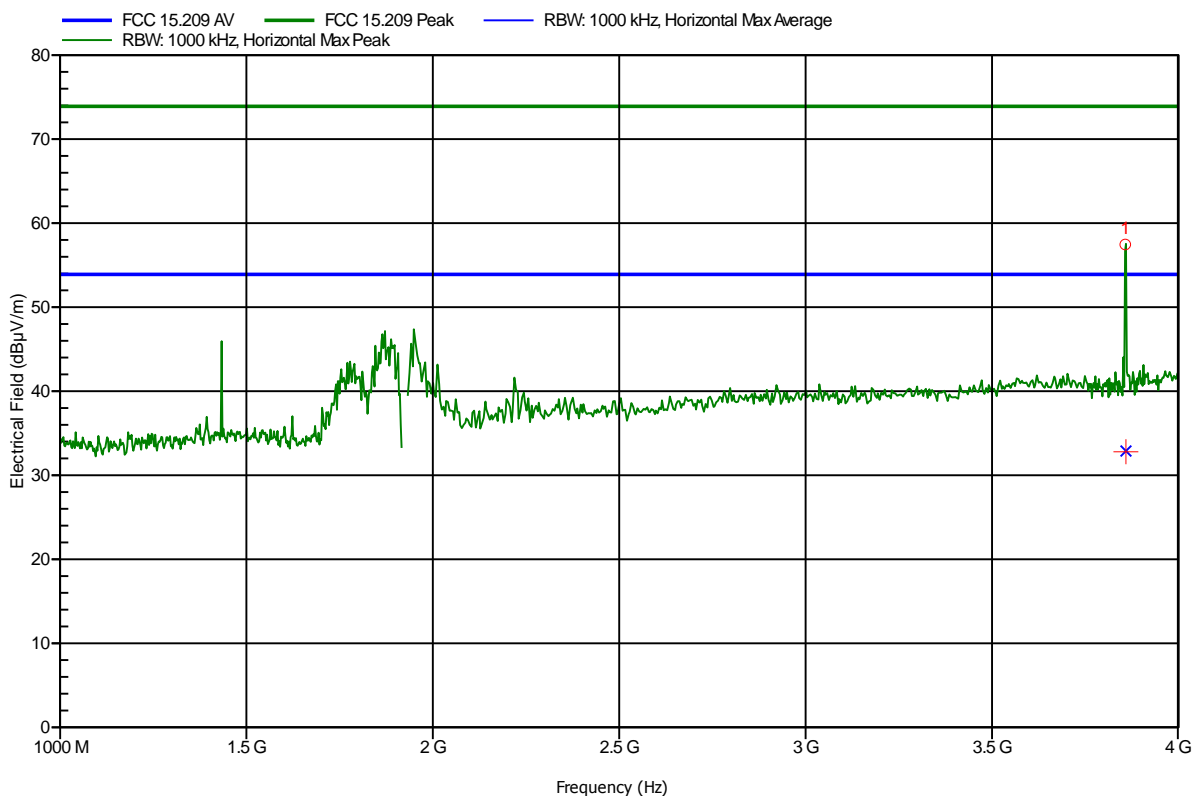


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer: Spectralink Corp.  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 23°C, Vnom: 3.3 V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; ch.0; ant.2  
 Test Date: 2012-11-12  
 Note: with notch-filter

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Frequency	Peak	Peak Limit	Peak Difference	Status
3.8576 GHz	57.46 dBµV/m	73.9 dBµV/m	-16.44 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
3.8576 GHz	32.87 dBµV/m	53.9 dBµV/m	-21.03 dB	Pass

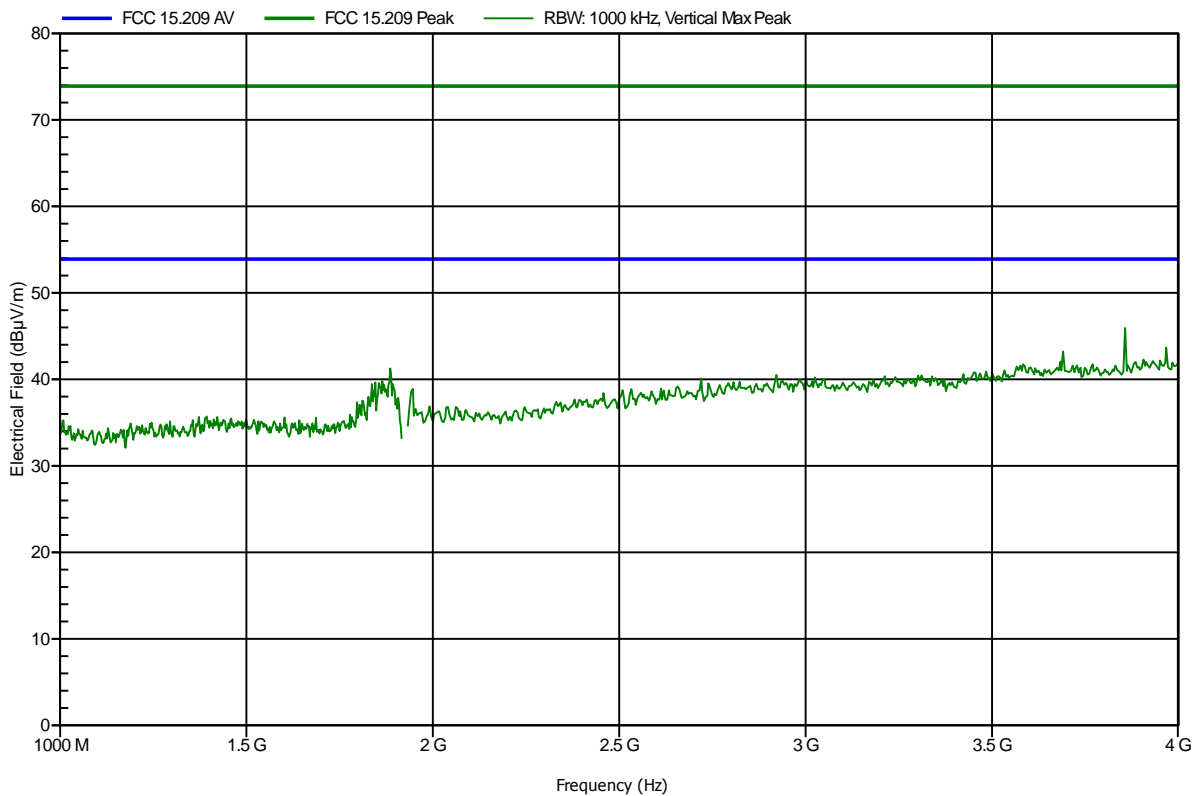


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; ch.0; ant.2
Test Date:	2012-11-12
Note:	with notch-filter

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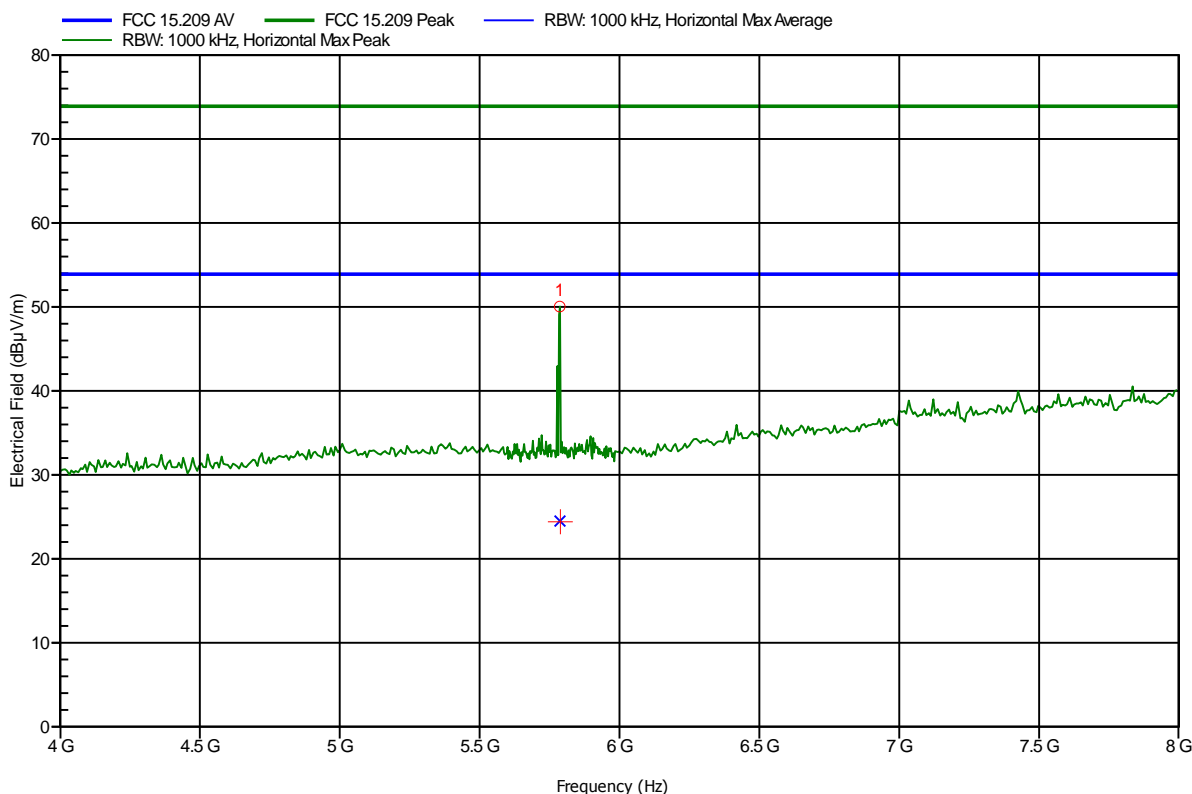


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer: Spectralink Corp.  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 23°C, Vnom: 3.3 V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 1 m corrected to 3 m  
 Mode: TX; ch.0; ant.2  
 Test Date: 2012-11-12  
 Note:

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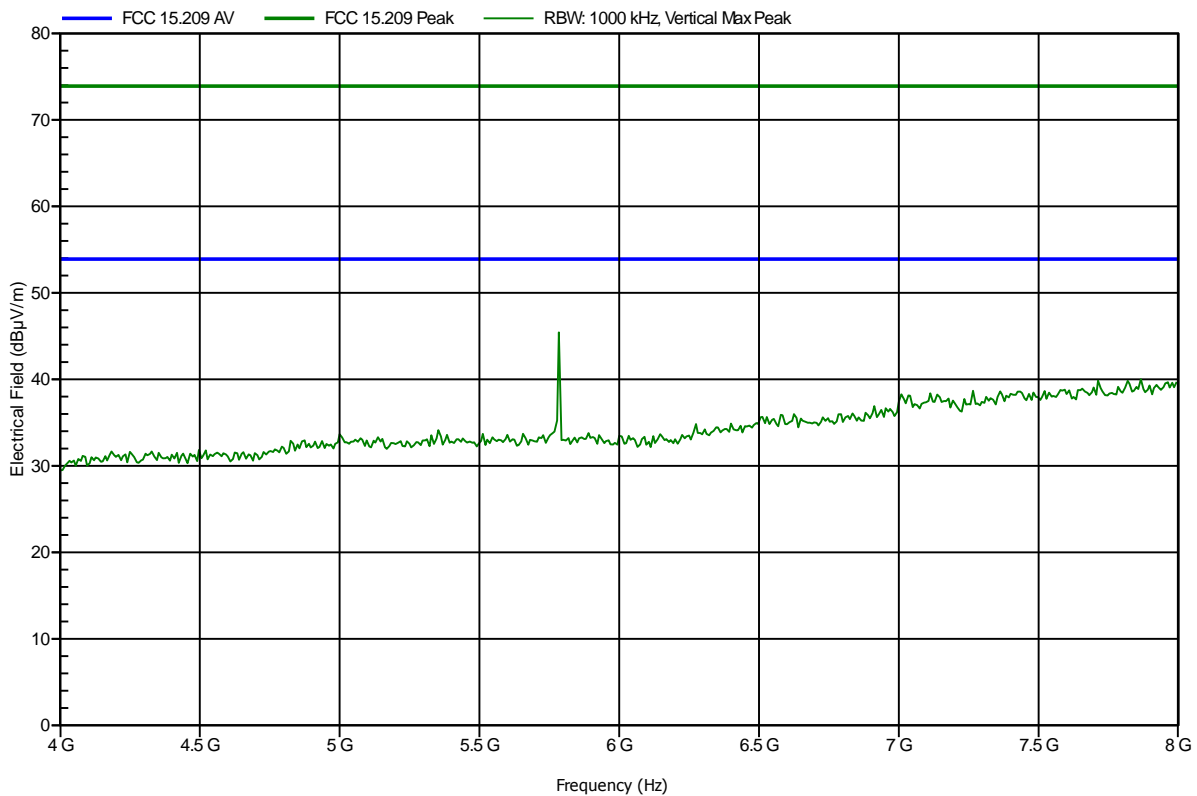
Frequency	Peak	Peak Limit	Peak Difference	Status
5.787 GHz	50.04 dBµV/m	73.9 dBµV/m	-23.86 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
5.787 GHz	24.49 dBµV/m	53.9 dBµV/m	-29.41 dB	Pass

**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.0; ant.2
Test Date:	2012-11-12
Note:	

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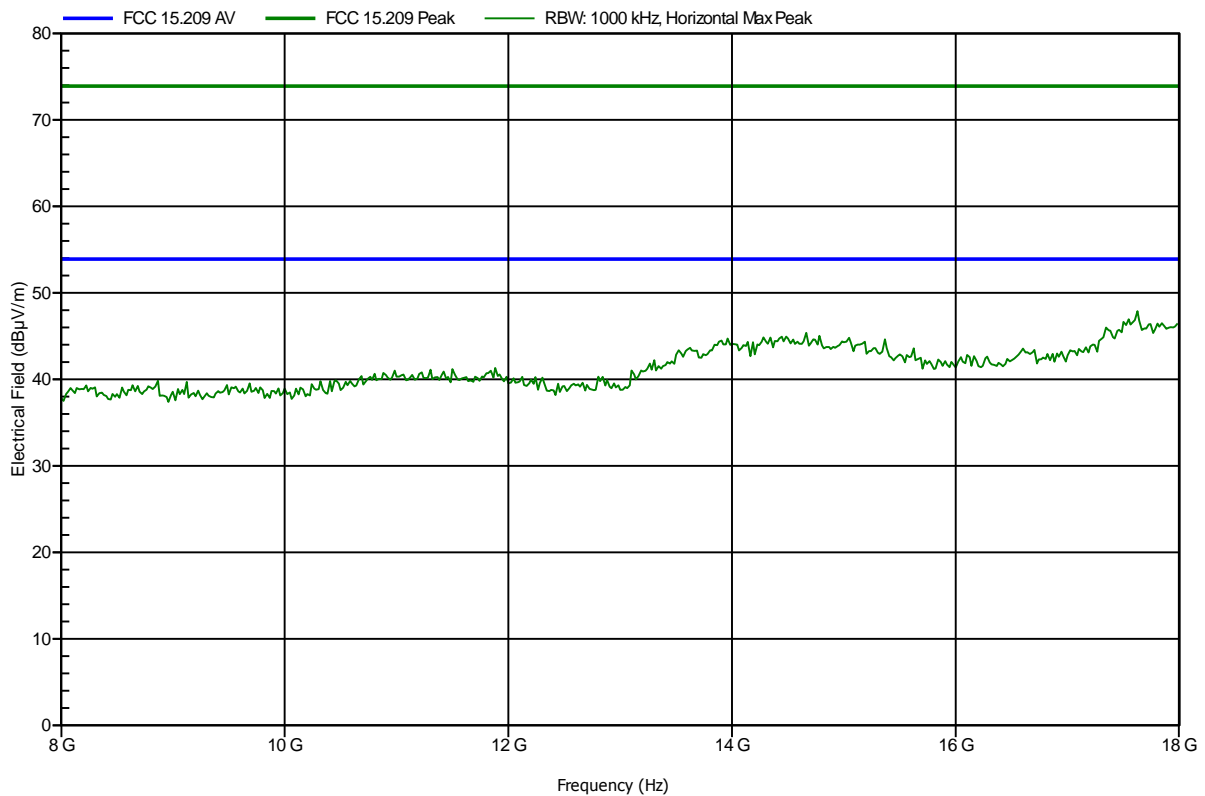


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.0; ant.2
Test Date:	2012-11-12
Note:	

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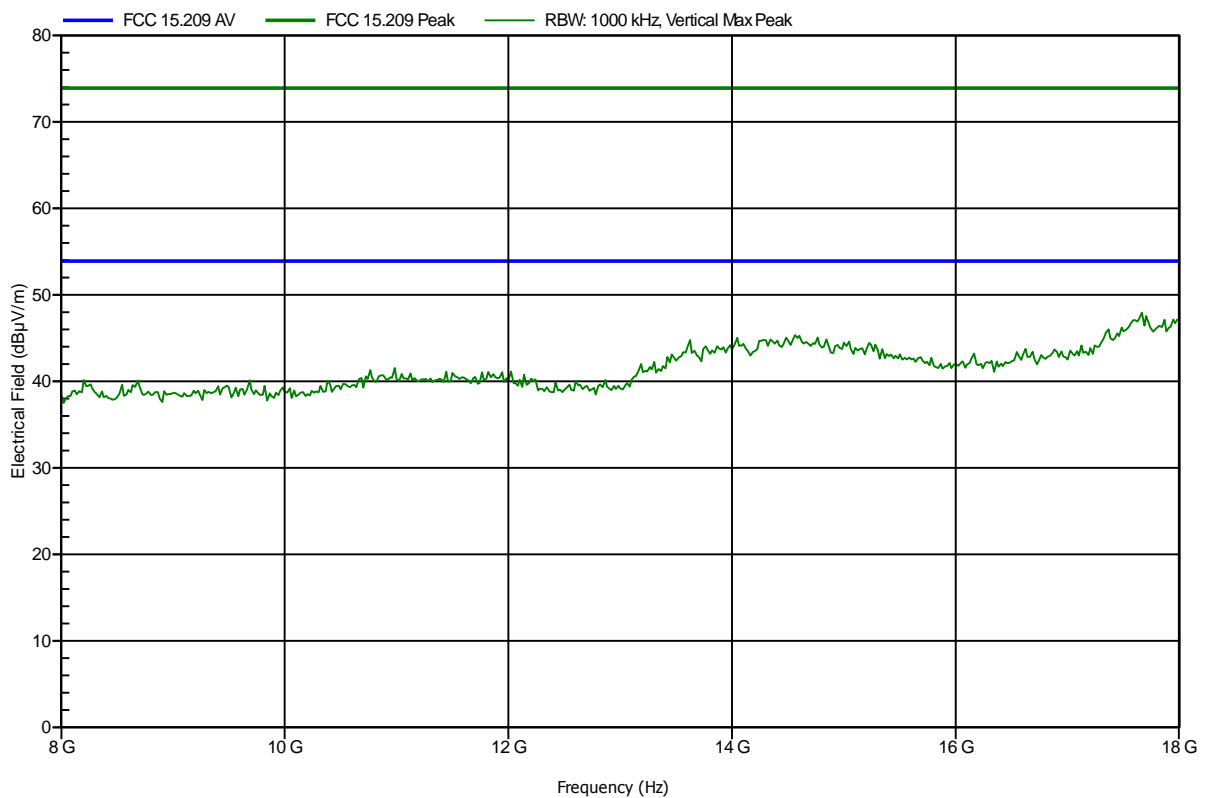


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.0; ant.2
Test Date:	2012-11-12
Note:	

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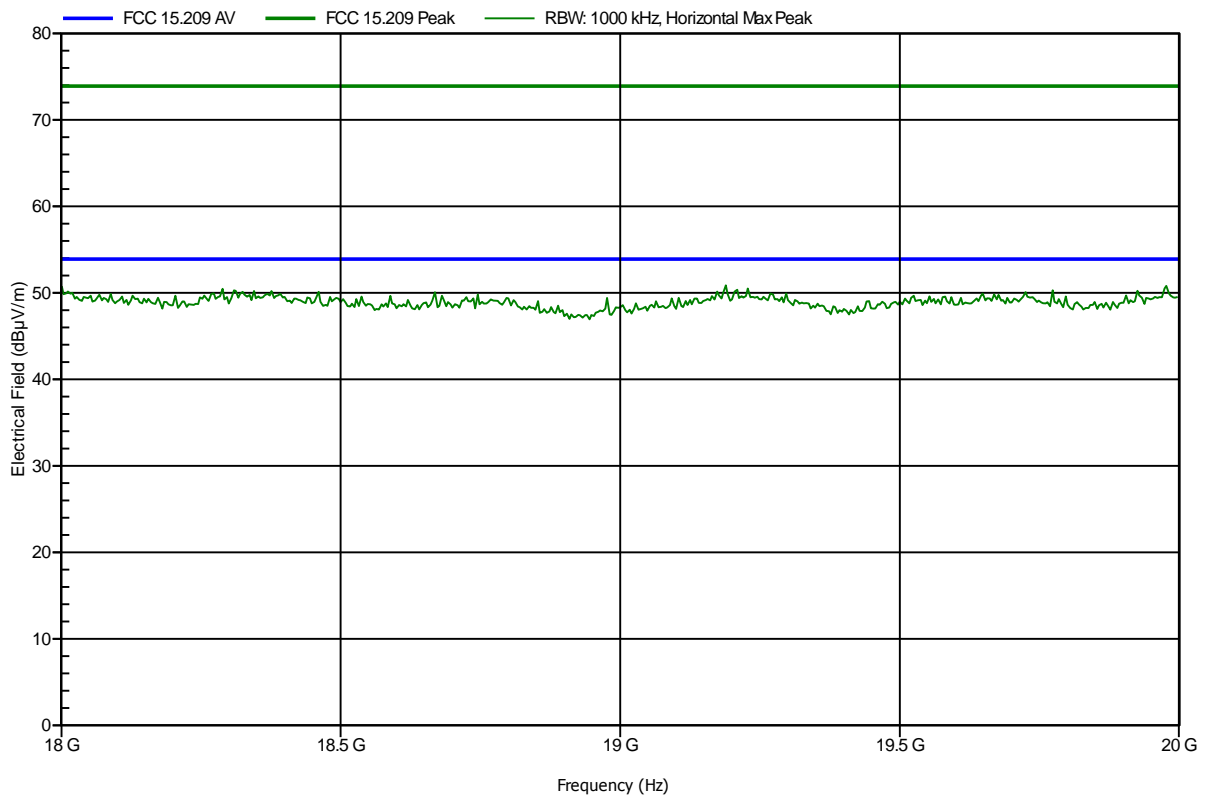


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.0; ant.2
Test Date:	2012-11-12
Note:	

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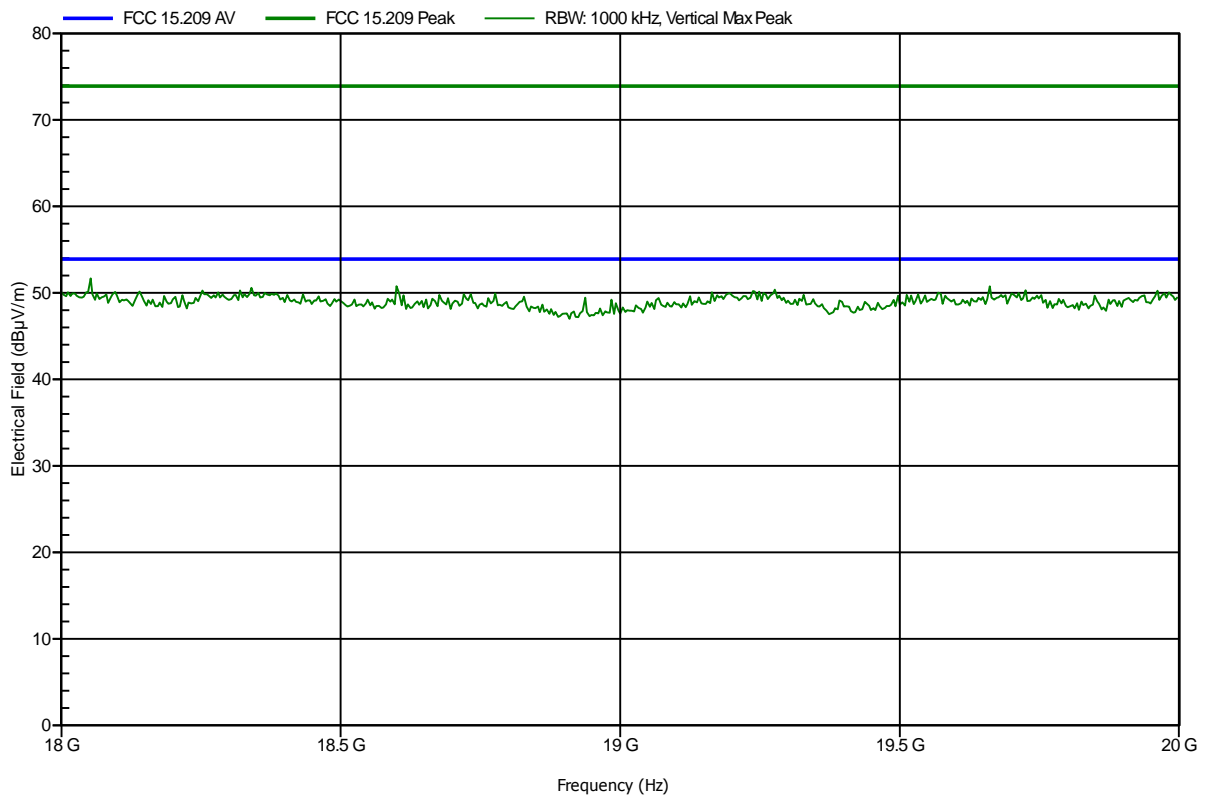


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.0; ant.2
Test Date:	2012-11-12
Note:	

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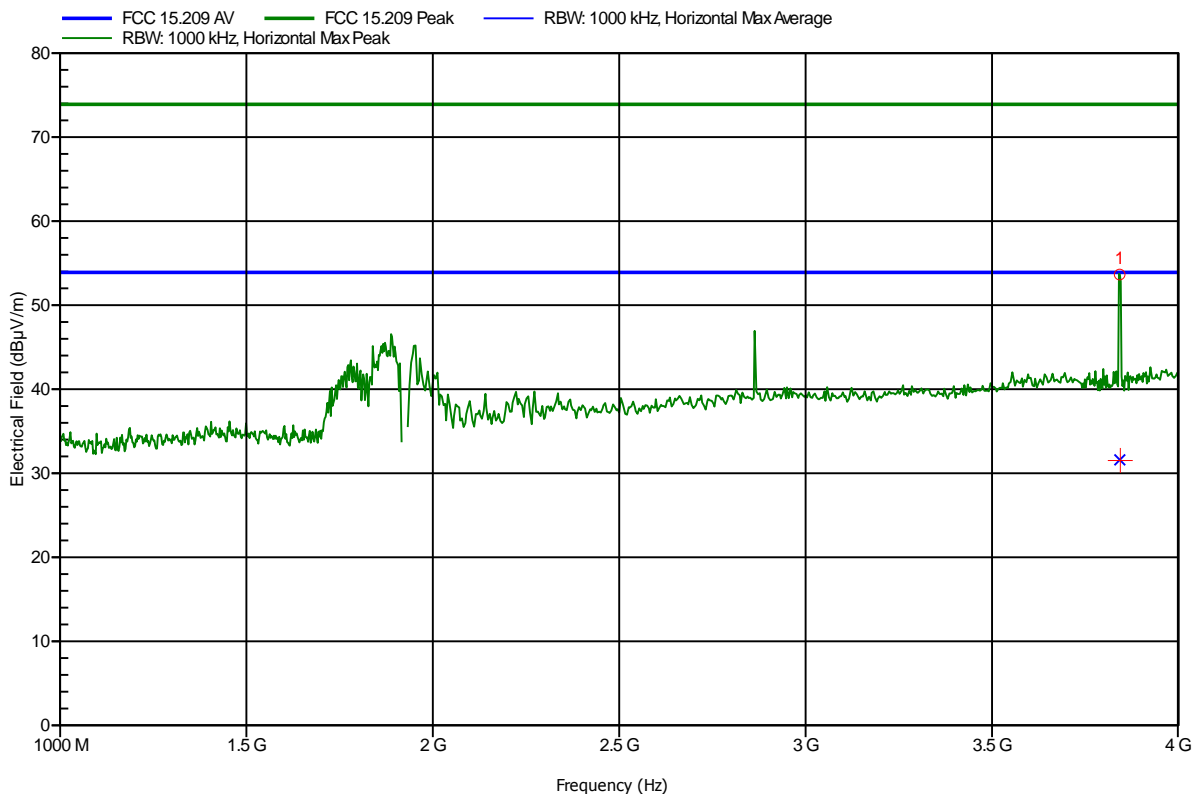


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer: Spectralink Corp.  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 23°C, Vnom: 3.3 V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; ch.4; ant.2  
 Test Date: 2012-11-12  
 Note: with notch-filter

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Frequency	Peak	Peak Limit	Peak Difference	Status
3.842 GHz	53.65 dBµV/m	73.9 dBµV/m	-20.25 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
3.842 GHz	31.59 dBµV/m	53.9 dBµV/m	-22.31 dB	Pass

Test Report No.: G0M-1211-2381-TFC15D-V02

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

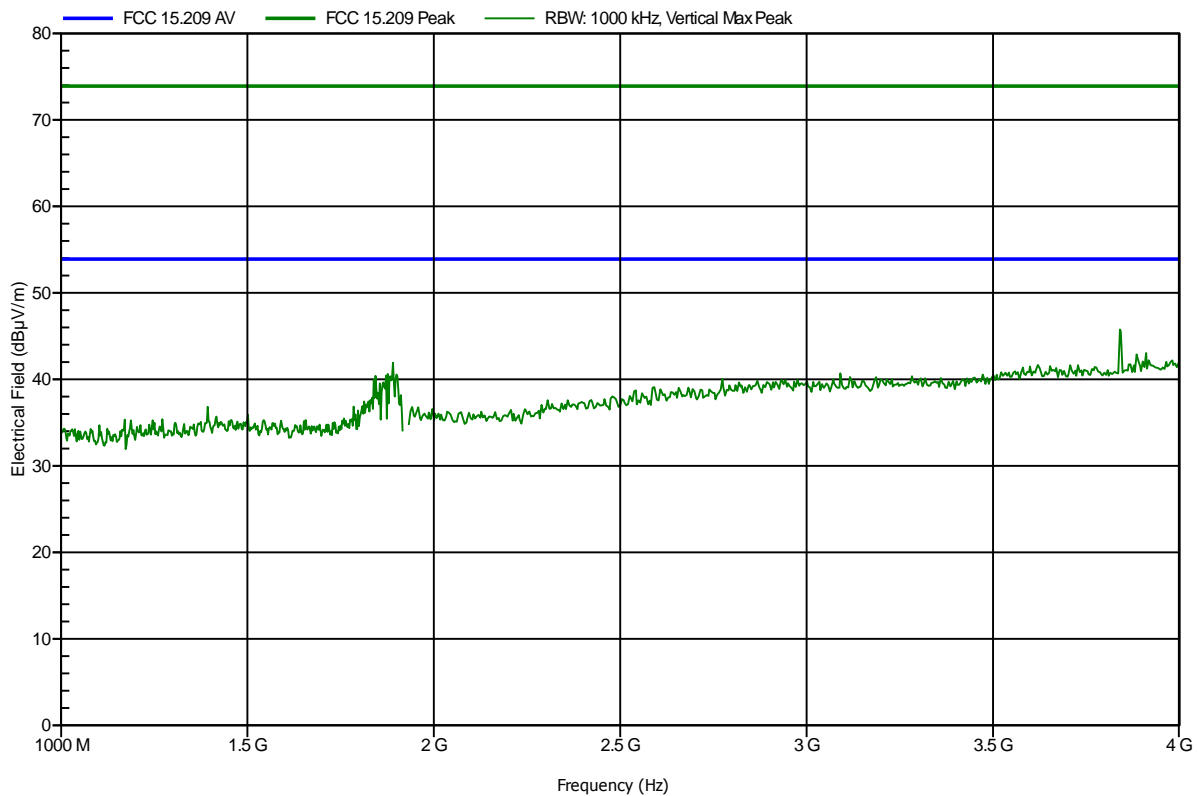


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; ch.4; ant.2
Test Date:	2012-11-12
Note:	with notch-filter

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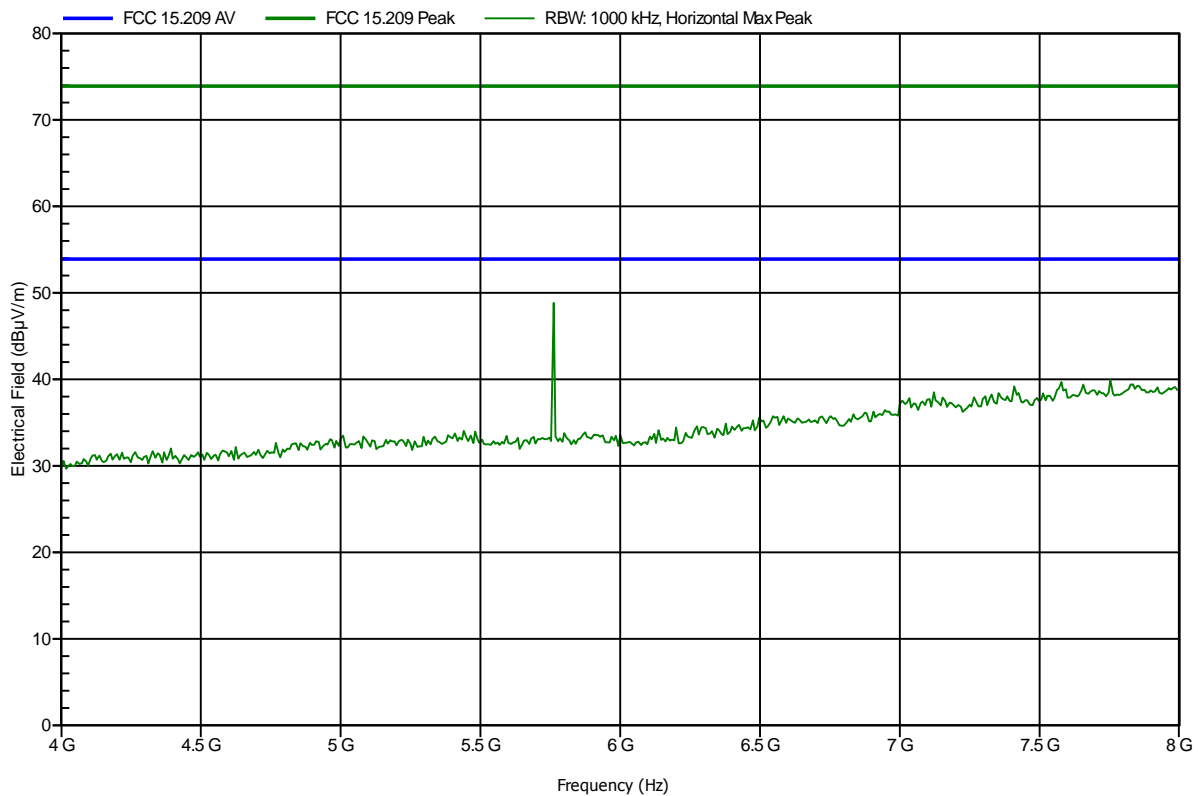


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.4; ant.2
Test Date:	2012-11-12
Note:	

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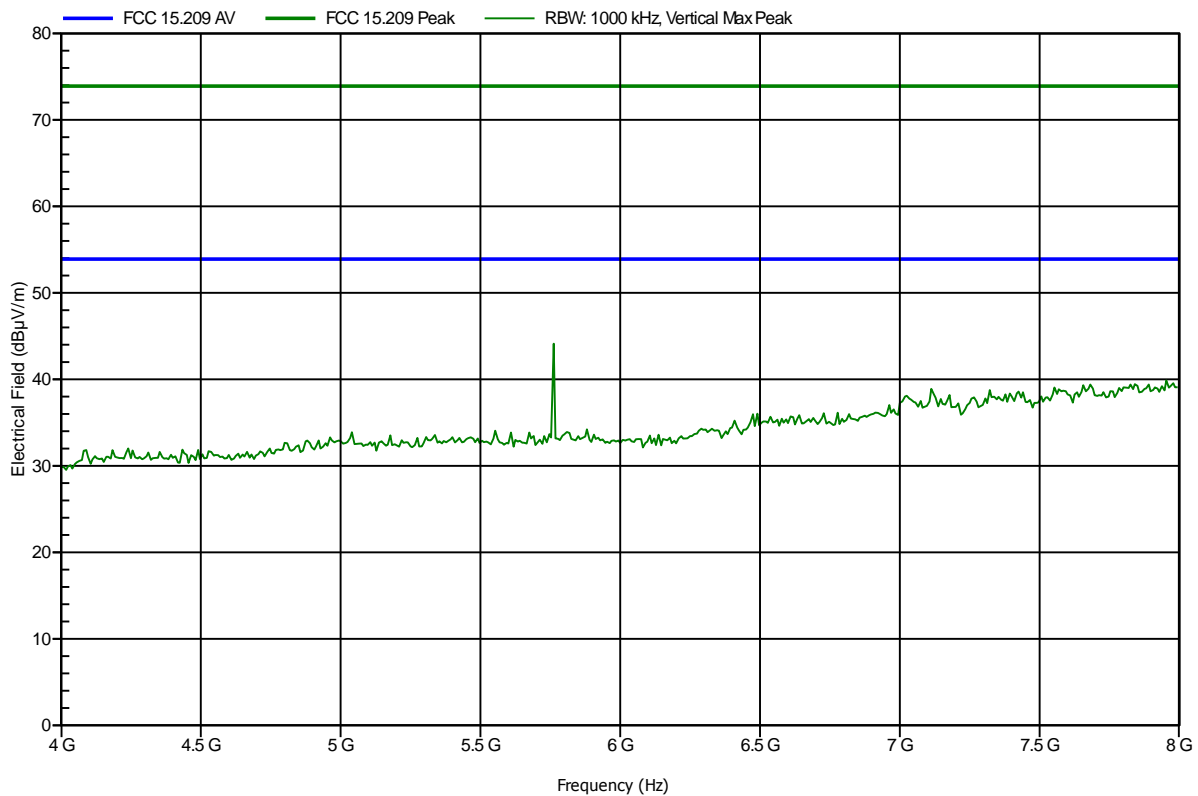


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.4; ant.2
Test Date:	2012-11-12
Note:	

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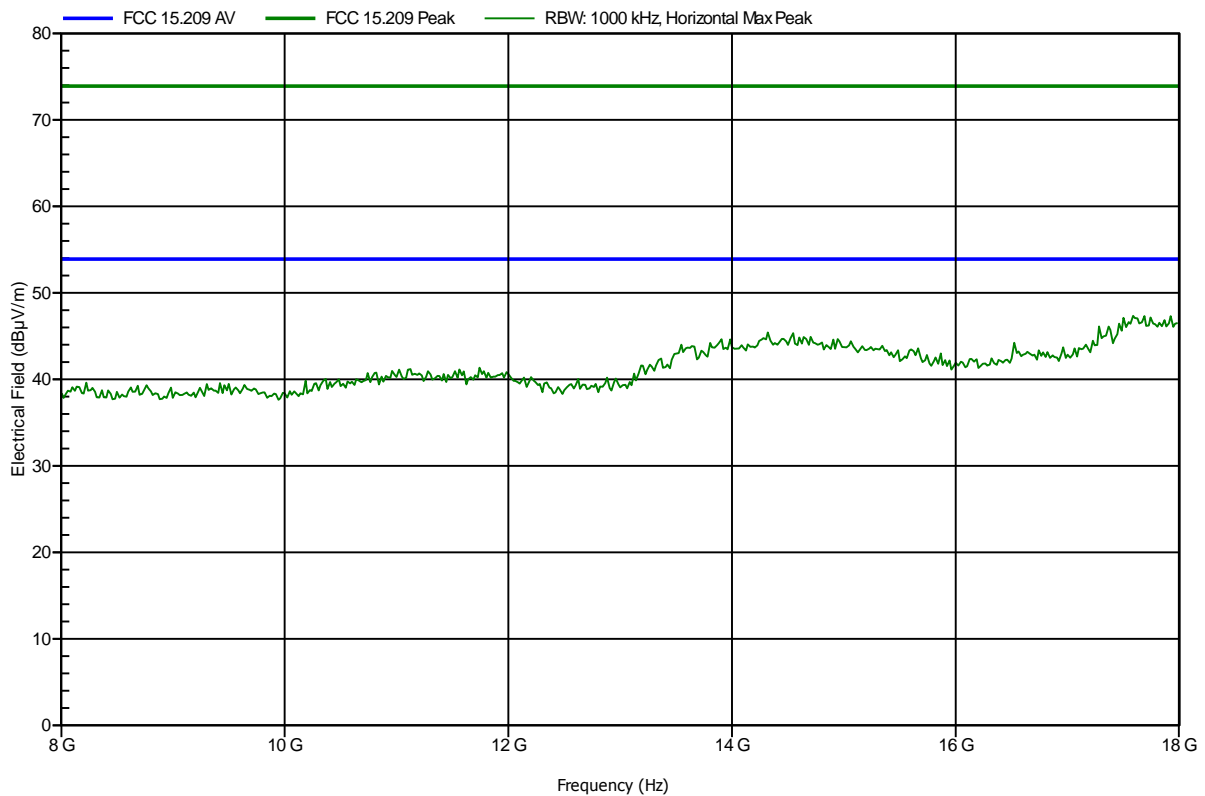


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.4; ant.2
Test Date:	2012-11-12
Note:	

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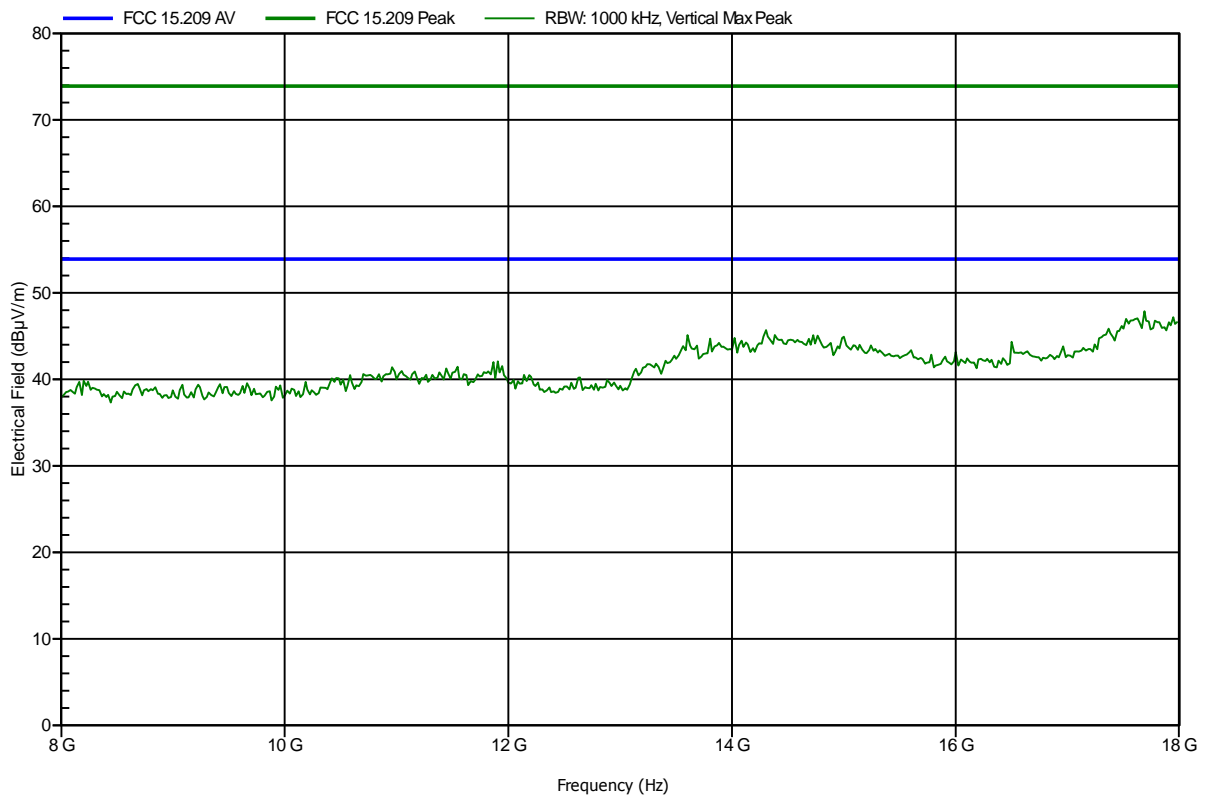


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.4; ant.2
Test Date:	2012-11-12
Note:	

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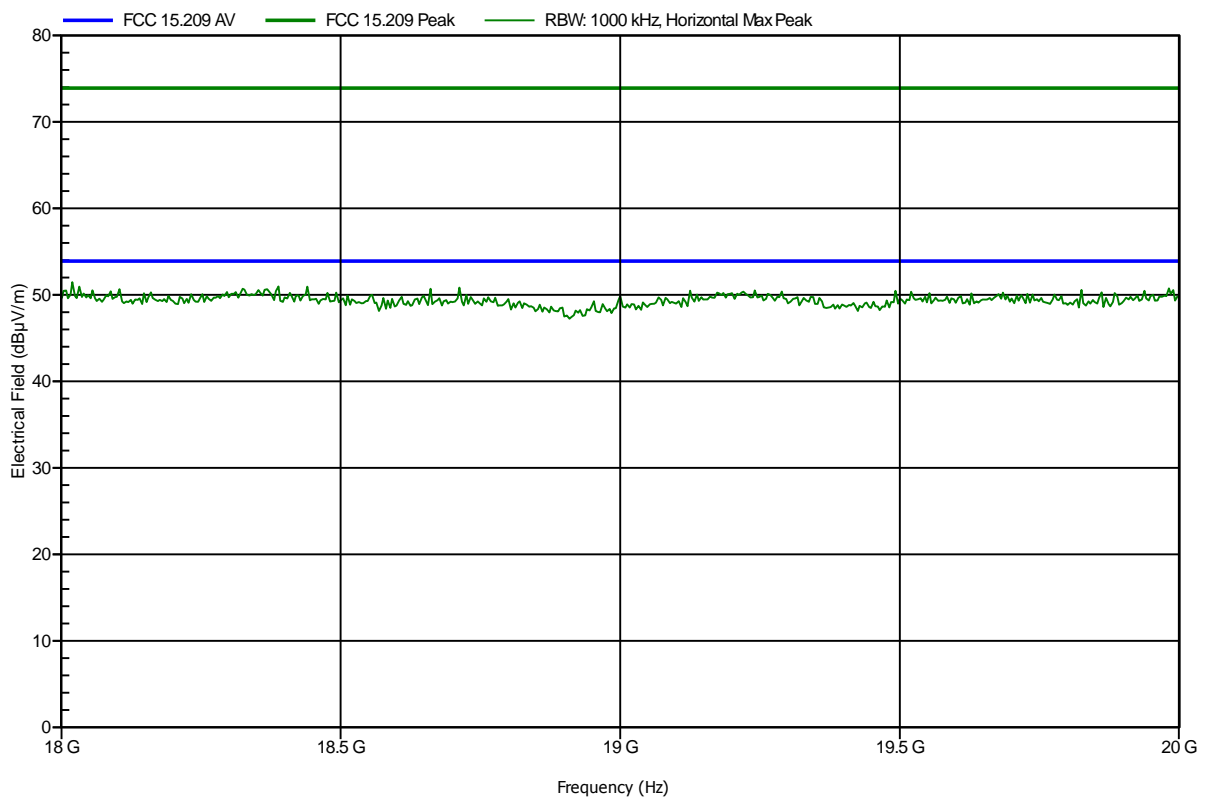


**Spurious emissions according to FCC 15.209**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.4; ant.2
Test Date:	2012-11-12
Note:	

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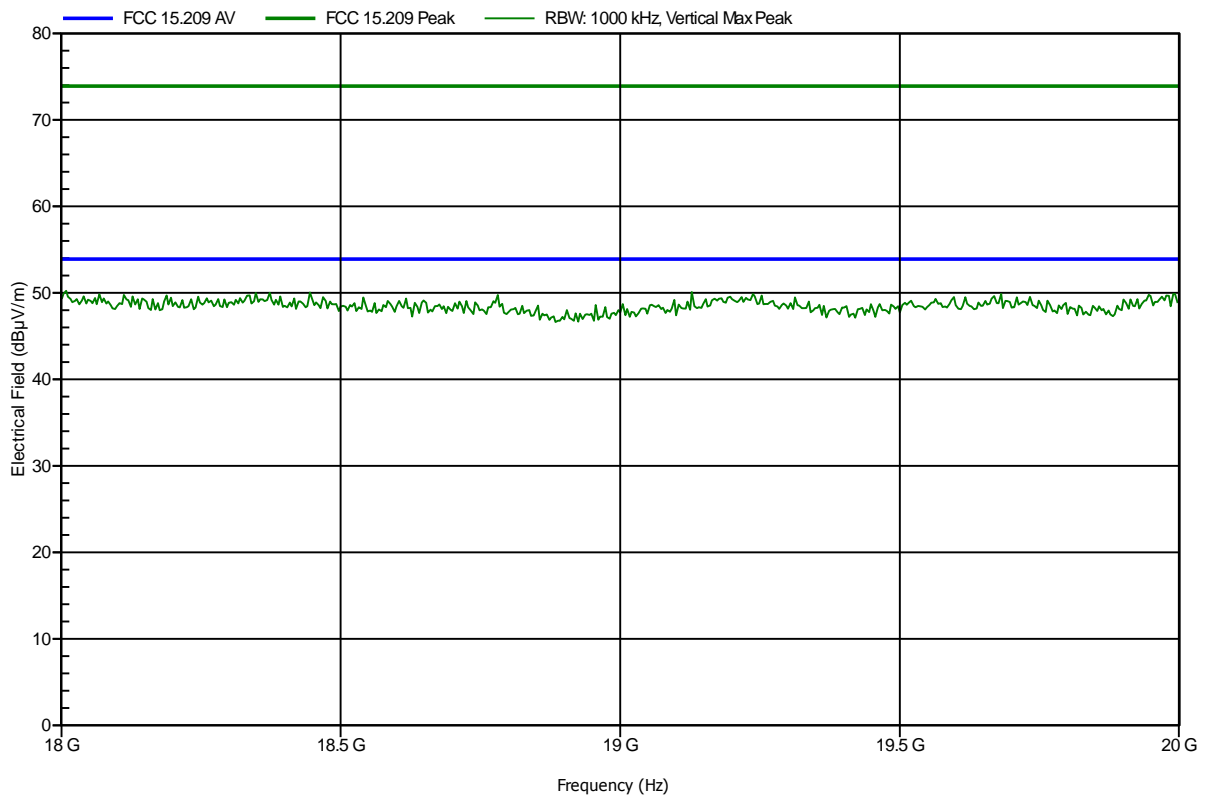


**Spurious emissions according to FCC 15.209**

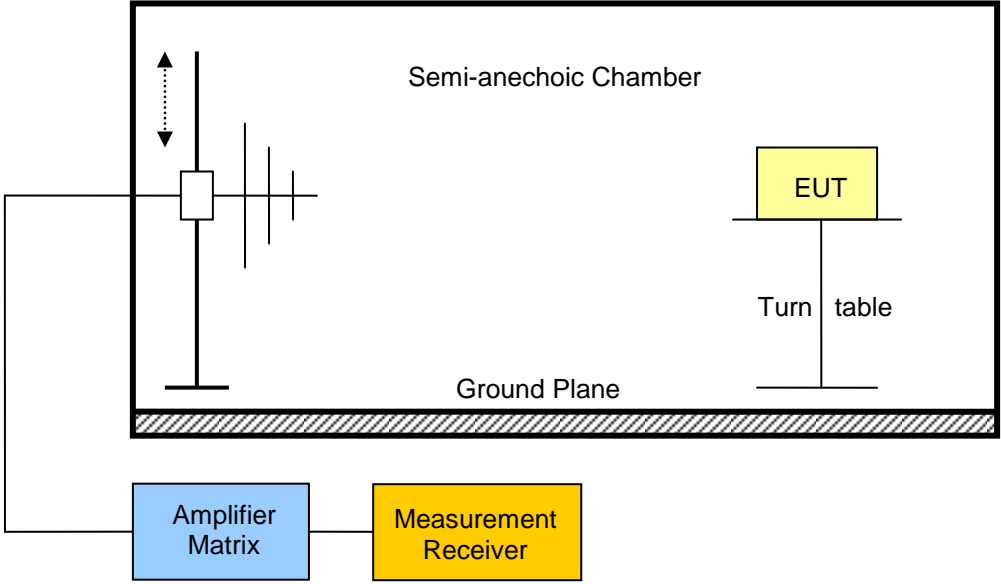
Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 23°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m corrected to 3 m
Mode:	TX; ch.4; ant.2
Test Date:	2012-11-12
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 – 3 <sup>th</sup> Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [ $\mu$ V/m]	Limit [dB $\mu$ V/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 [dB $\mu$ V/m]	Emission Level [ $\mu$ V/m]	Pol.	Det.	Limit [ $\mu$ V/m]	Margin [ $\mu$ V/m]
Scan	All	249.6	14.21	05.13	hor	pk	200.00	-194.87
Scan	All	956.8	25.36	18.54	ver	pk	200.00	-181.46
Scan	All	7720	50.37	329.99	ver	pk	500.00	-170.01

**Comments:**

\* Physical distance between EUT and measurement antenna.

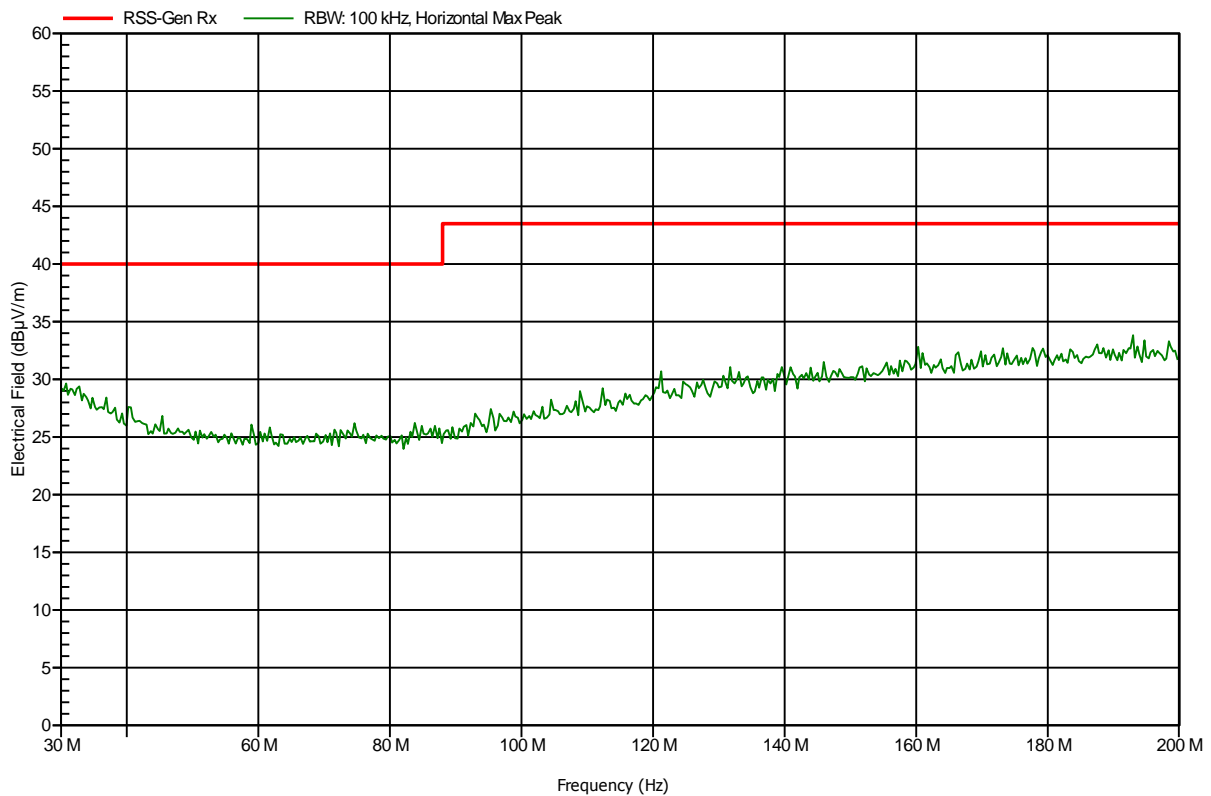
\*\* Emission level corresponds to ambient noise floor

**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; scan mode, ant.1 & 2; worst case
Test Date:	2012-11-13
Note:	

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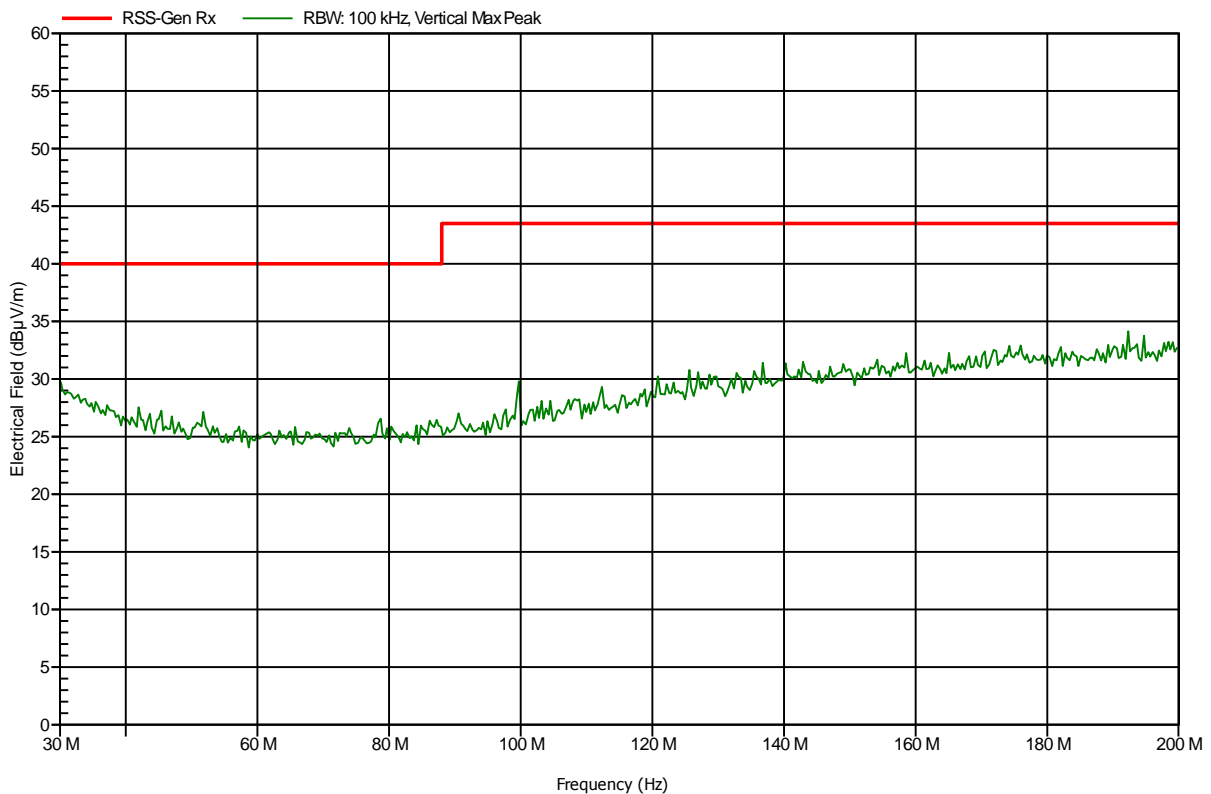


**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3 V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; scan mode, ant.1 & 2; worst case
Test Date:	2012-11-13
Note:	

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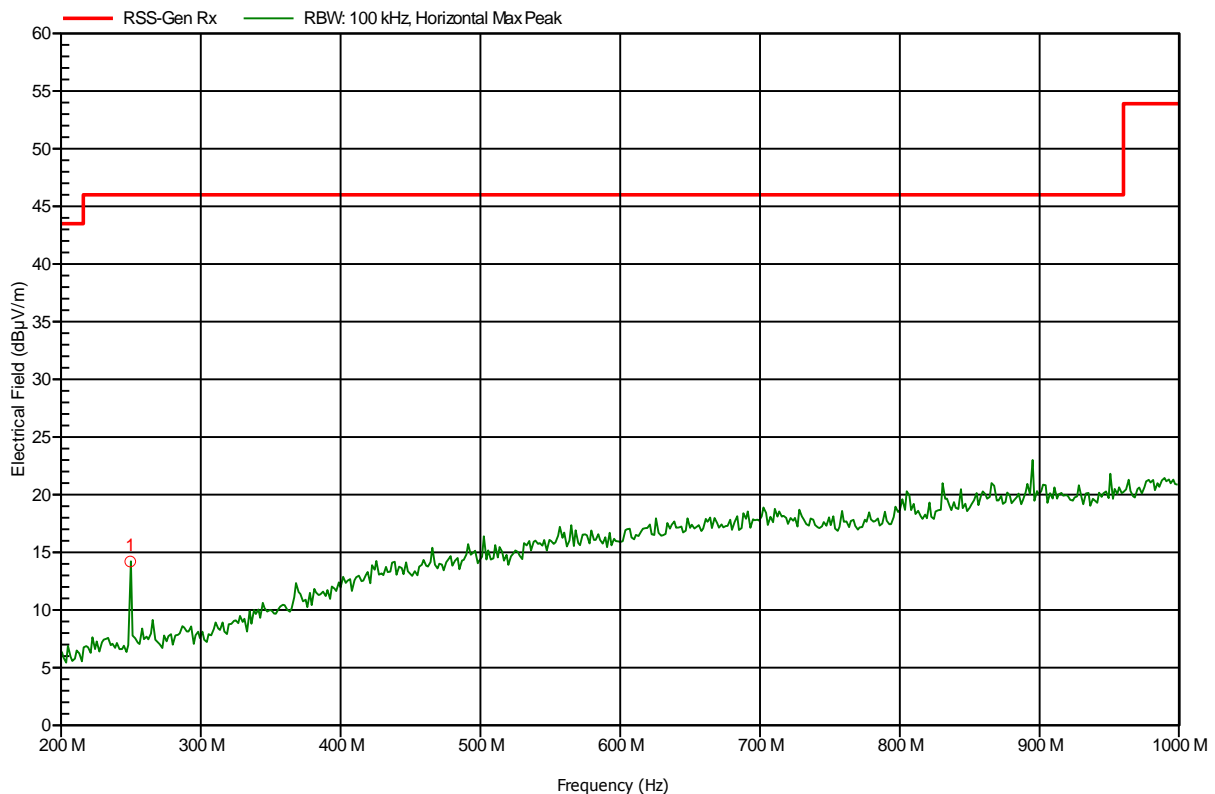


**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2381

Manufacturer: Spectralink Corp.  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC  
 Antenna: Rohde & Schwarz HL 223, Horizontal  
 Measurement distance: 3 m  
 Mode: RX; scan mode, ant.1 & 2; worst case  
 Test Date: 2012-11-13  
 Note:

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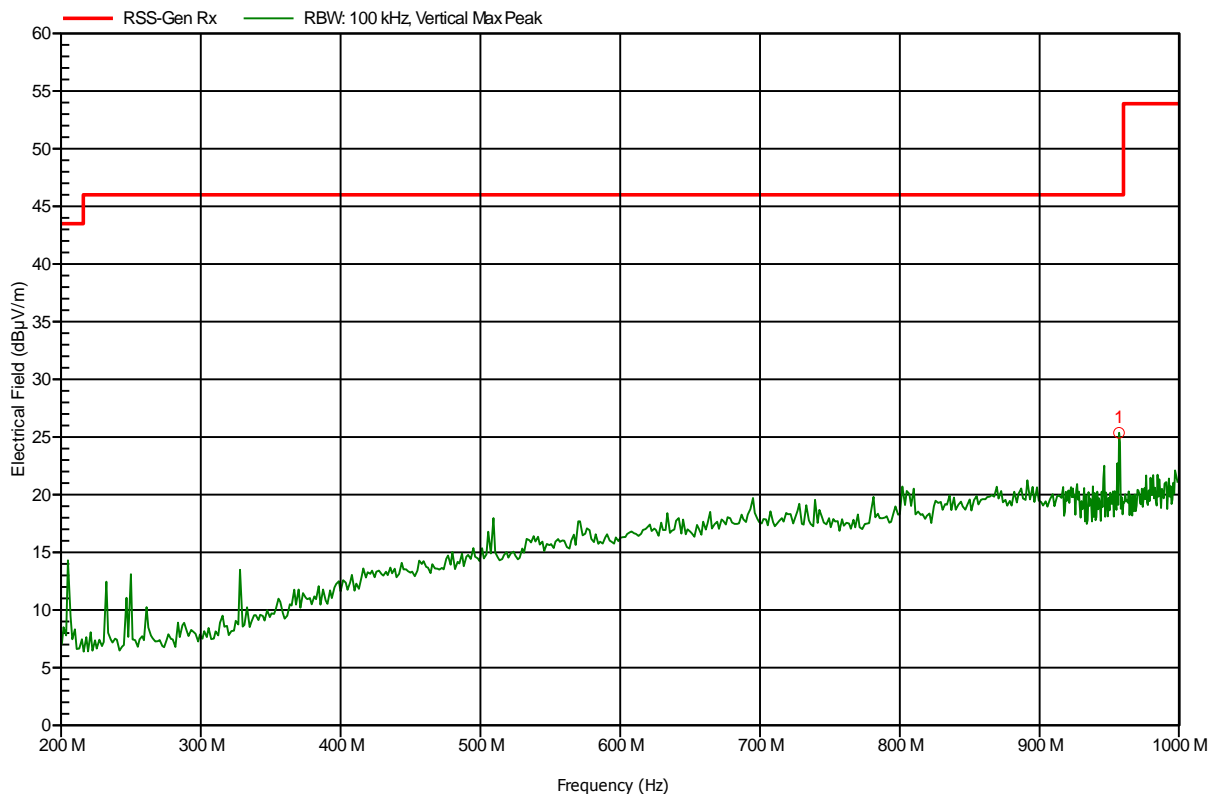
Frequency	Peak	Peak Limit	Peak Difference	Status
249.6 MHz	14.21 dBµV/m	46 dBµV/m	-31.79 dB	Pass

**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2381

Manufacturer: Spectralink Corp.  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC  
 Antenna: Rohde & Schwarz HL 223, Vertical  
 Measurement distance: 3 m  
 Mode: RX; scan mode, ant.1 & 2; worst case  
 Test Date: 2012-11-13  
 Note:

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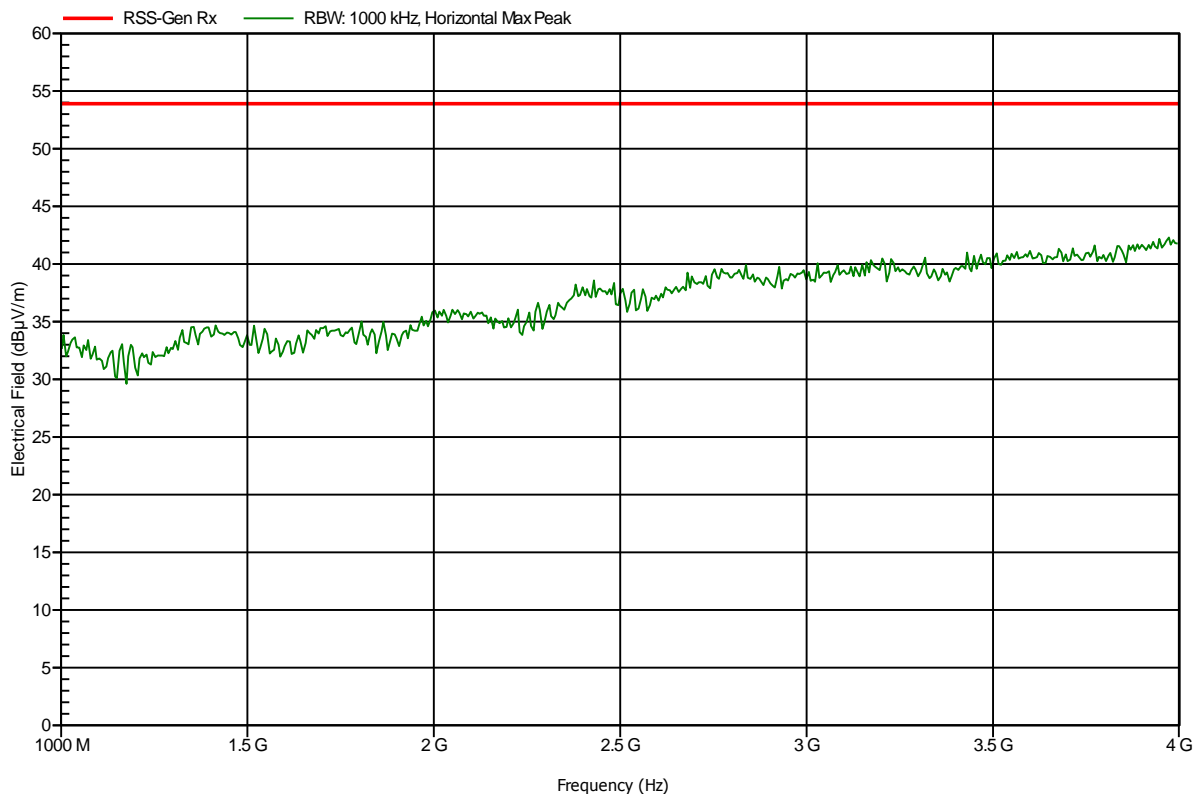
Frequency	Peak	Peak Limit	Peak Difference	Status
956.8 MHz	25.36 dBµV/m	46 dBµV/m	-20.64 dB	Pass

**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; scan mode, ant.1 & 2; worst case
Test Date:	2012-11-13
Note:	

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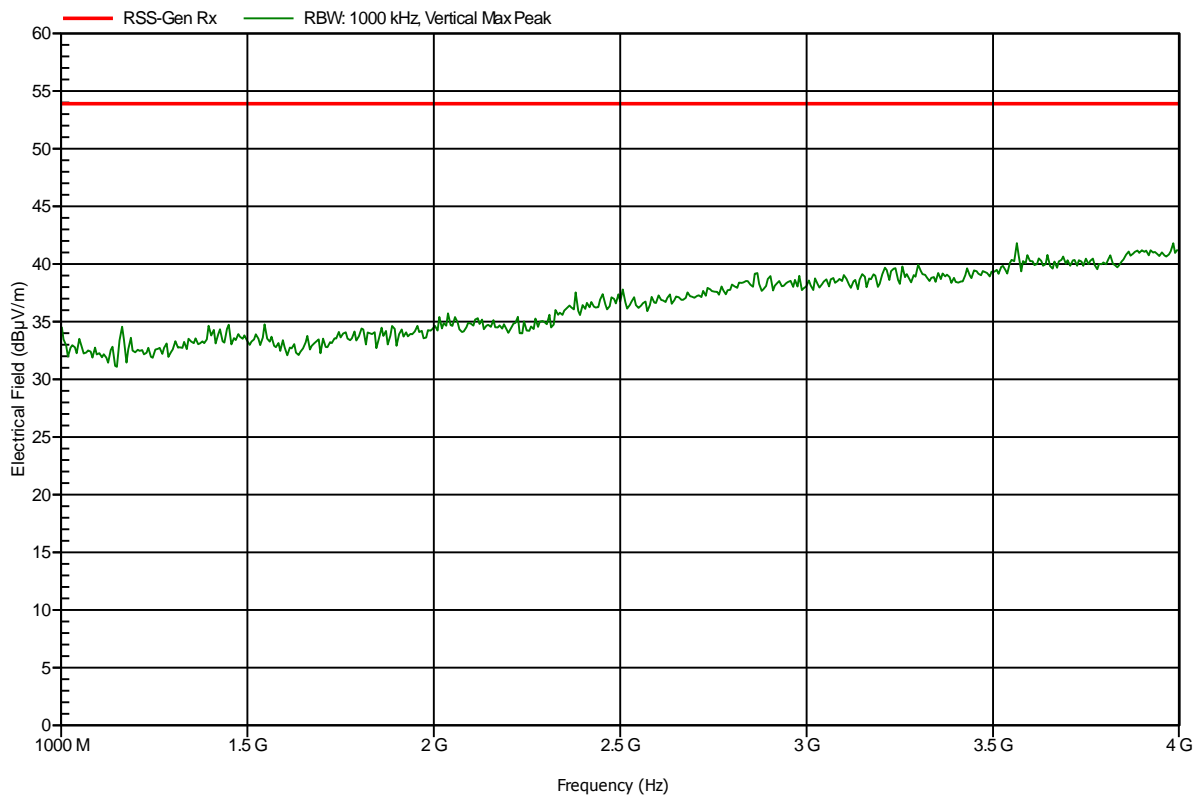


**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; scan mode, ant.1 & 2; worst case
Test Date:	2012-11-13
Note:	

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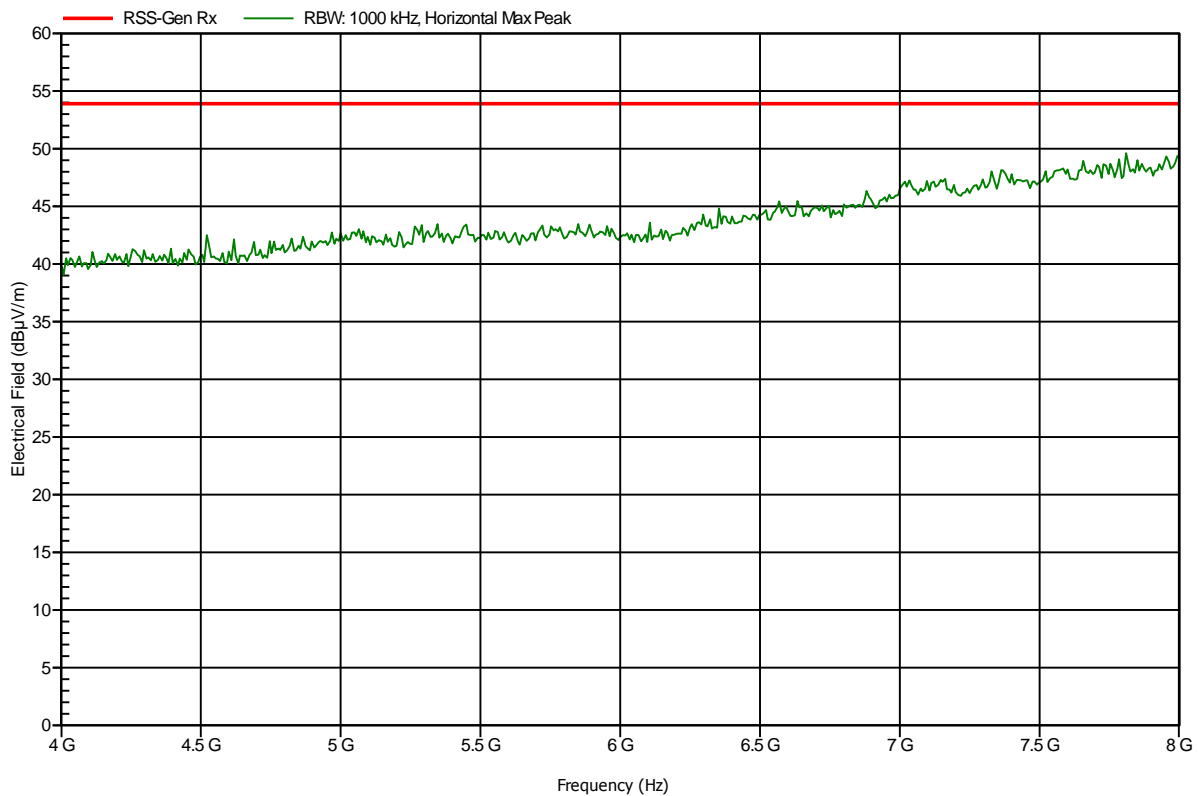


**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2381

Manufacturer:	Spectralink Corp.
EUT Name:	DECT application module
Model:	KT4587
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; scan mode, ant.1 & 2; worst case
Test Date:	2012-11-13
Note:	

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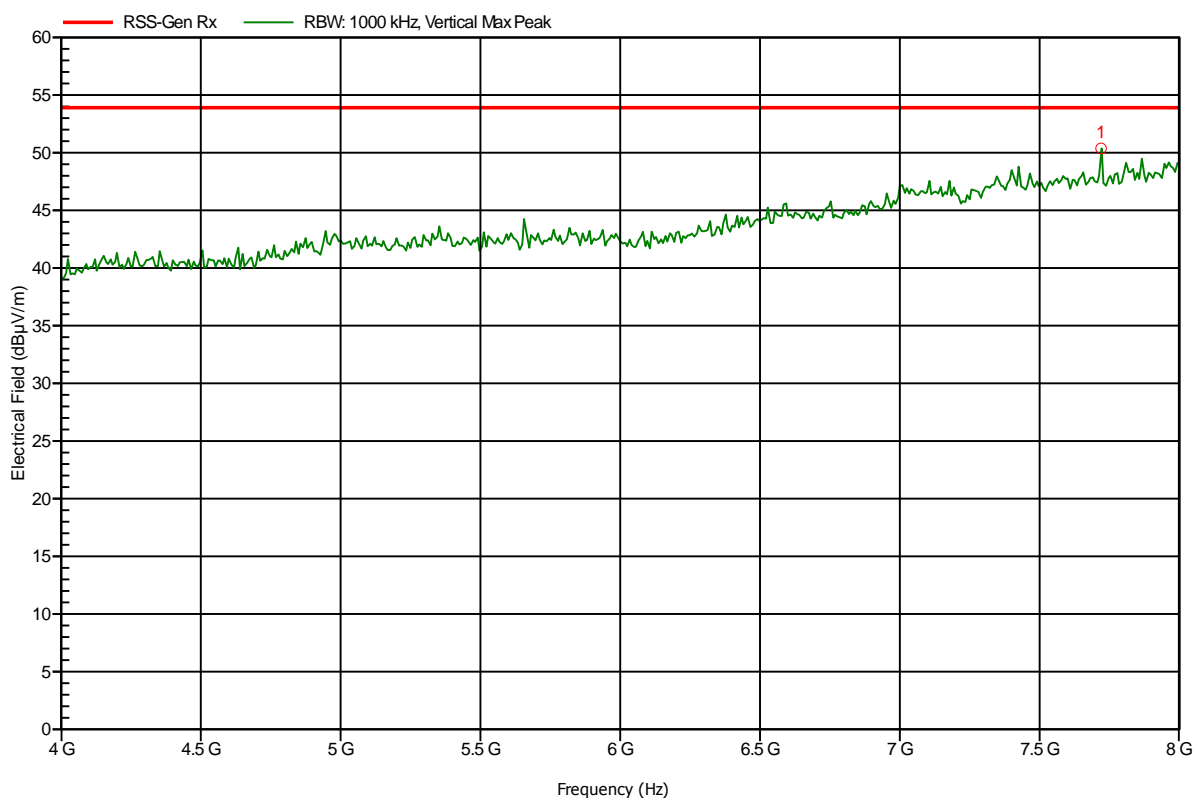


**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2381

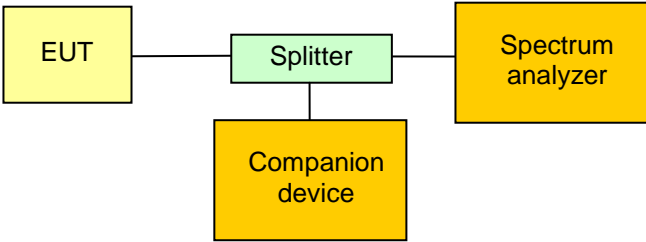
Manufacturer: Spectralink Corp.  
 EUT Name: DECT application module  
 Model: KT4587  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3 V DC  
 Antenna: Schwarzbeck BBHA 9120D, Vertical  
 Measurement distance: 3 m  
 Mode: RX; scan mode, ant.1 & 2; worst case  
 Test Date: 2012-11-13  
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Status
7.72 GHz	50.37 dBµV/m	53.9 dBµV/m	-3.53 dB	Pass

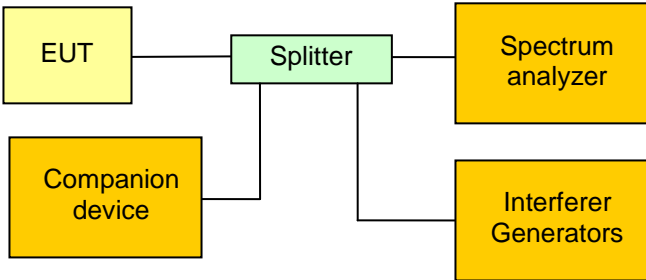
3.14 Test Conditions and Results – Automatic discontinuation of Transmission

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		
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Splitter --- Companion[Companion device]     Splitter --- SA[Spectrum analyzer]             </pre>		
Test procedure		
<p>The following situations were simulated to test the reaction of the EUT:</p> <ul style="list-style-type: none"> <li>• EUT power removed</li> <li>• EUT switched –off</li> <li>• Companion device switched off</li> <li>• Hook-on by companion device</li> <li>• Hook-on by EUT</li> <li>• Power removed from companion device</li> </ul> <p>The reaction of the EUT is recorded by the following results:</p> <p>A – Connection breakdown, cease of all transmissions</p> <p>B – Connection breakdown, EUT transmits control and signalling information</p> <p>C – Connection breakdown, Companion device transmits control and signalling information</p> <p>N/A – Not applicable (the EUT or companion device does not have an on/off switch or cannot perform hook on</p>		
Result		
Test	Reaction	Verdict
Power removed : EUT	A	PASS
Power removed : Companion device	C	PASS
Switch –off : EUT	N/A	PASS
Switch –off : Companion device	C	PASS
Hook-on : EUT	C	PASS
Hook-on : Companion device	C	PASS

**3.15 Test Conditions and Results – Radiofrequency radiation exposure**

<b>Radiofrequency radiation exposure acc. to FCC 47 CFR 15D / IC RSS-213</b>		<b>Verdict: PASS</b>
EUT requirement rule parts and clause	Reference	
	FCC 15.319(c)(i) / IC RSS-Gen 5.6	
<b>Requirements</b>		
<p>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.</p> <p>IC : Category I and Category II equipment shall comply with the applicable requirements of RSS-102.</p>		
<b>Result</b>		
	Reference	Verdict
	see dedicated report : G0M-1211-2381-TFC091M-V02 issued by Eurofins Product Service GmbH	PASS

3.16 Test Conditions and Results – Monitoring threshold

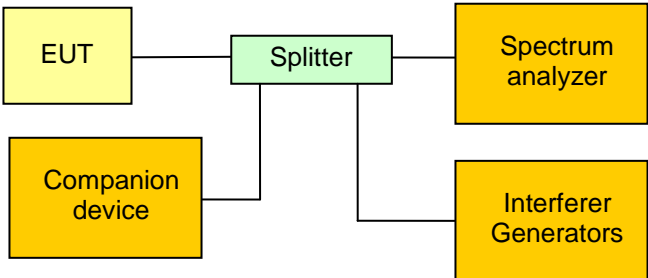
Monitoring threshold acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: PASS
EUT requirement rule parts and clause	Reference FCC 15.323(c)(2),(5),(9) / IC RSS-213 4.3.4(b)(2),(5),(9)	
Test according referenced standards	Reference Method ANSI C63.17 7.3.4	
Number of duplex channels used	5 carrier with 12 duplex timeslots = 60 duplex channels	
Requirements		
<p>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.</p> <p>Devices that have a power output lower than the maximum 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.</p> <p>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.</p> $T_U [dBm] = -174 + 10 \cdot \log_{10}(\text{Bandwidth [Hz]}) + M_U + P_{max} [dBm] + P_{EUT} [dBm]$ $T_L [dBm] = -174 + 10 \cdot \log_{10}(\text{Bandwidth [Hz]}) + M_L + P_{max} [dBm] + P_{EUT} [dBm]$ <p>With <math>M_U = 50</math> dB and <math>M_L = 30</math> dB, <math>P_{max}</math> as given under “Peak transmit power” and bandwidth as emission or occupied bandwidth.</p>		
Test setup		
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]     </pre>		
Test procedure – Lower threshold for EUTs that do not implement LIC procedure		
<ol style="list-style-type: none"> <li>1. An interferer level of <math>T_L + U_M + 10</math> dB is applied to all carrier frequencies</li> <li>2. It is verified that the EUT does not transmit on any carrier frequency</li> <li>3. The interferer level is decreased in 1 dB steps until the EUT starts to transmit on a channel</li> </ol>		
Test procedure – Upper threshold for EUTs that implement LIC procedure		
<ol style="list-style-type: none"> <li>1. An interferer level of <math>T_U + U_M + 10</math> dB is applied to all carrier frequencies</li> <li>2. It is verified that the EUT does not transmit on any carrier frequency</li> <li>3. The interferer level is decreased in 1 dB steps until the EUT starts to transmit on a channel</li> </ol>		

<b>Test results - FCC</b>						
Threshold	Emission Bandwidth [Hz]	Noise Excess Level [dB]	Output power [dBm]	Power Limit [dBm]	Power Threshold Limit [dBm]	Threshold Level [dBm]
Upper	1482000	50	20.34	20.85	-62.27	-61.00
Lower	N/A	N/A	N/A	N/A	N/A	N/A
<b>Test results - IC</b>						
Threshold	Occupied Bandwidth [Hz]	Noise Excess Level [dB]	Output power [dBm]	Power Limit [dBm]	Power Threshold Limit [dBm]	Threshold Level [dBm]
Upper	1210000	50	20.34	20.41	-63.59	-61.00
Lower	N/A	N/A	N/A	N/A	N/A	N/A
Comments:						

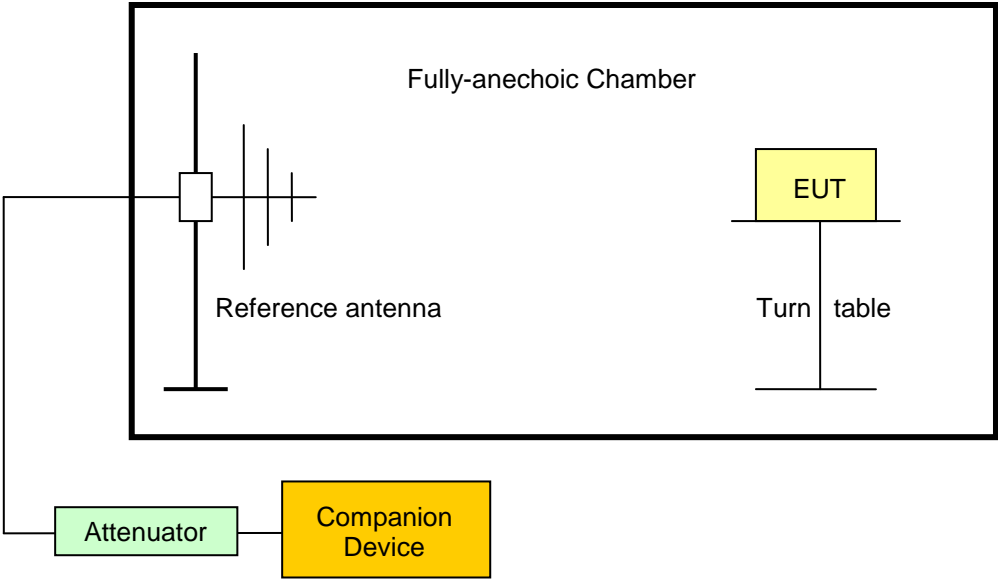
**3.17 Test Conditions and Results – LIC confirmation**

<b>LIC confirmation acc. to FCC 47 CFR 15D / IC RSS-213</b>		<b>Verdict: PASS</b>
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	
<b>Requirements</b>		
<p>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.</p>		
<b>Test result</b>		
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			
<p>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.</p> <p>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.</p>			
Test setup			
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]             </pre>			
Test procedure			
<ol style="list-style-type: none"> <li>1. The EUT is forced to two carrier frequencies <math>f_1</math> and <math>f_2</math> only by the use of interferer generators with power levels higher than the upper threshold <math>T_U</math> plus the measurement uncertainty <math>U_M</math> of 6 dB</li> <li>2. Additional interferer signals are applied to the channels <math>f_1</math> and <math>f_2</math> according to the result table below</li> <li>3. A communication session with the companion device is initiated</li> <li>4. Transmission on the least interfered channel is verified</li> <li>5. The communication session is terminated</li> <li>6. The communications session is established another 4 times</li> </ol>			
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)		
 <p>The diagram shows a Fully-anechoic Chamber containing a Reference antenna and an EUT (Equipment Under Test) on a Turn table. The Reference antenna is connected to an Attenuator and a Companion Device. The EUT is positioned to receive radiation from the Reference antenna.</p>		
Test procedure (collocated monitoring antenna of different type)		
<ol style="list-style-type: none"> <li>1. The reference antenna is orientated for horizontal polarization</li> <li>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</li> <li>3. A signal with threshold power level is applied to the reference antenna</li> <li>4. It is observed whether or not an connection can be established</li> <li>5. The polarization of the reference antenna is changed to vertical polarization</li> <li>6. It is observed whether or not an connection can be established</li> </ol>		



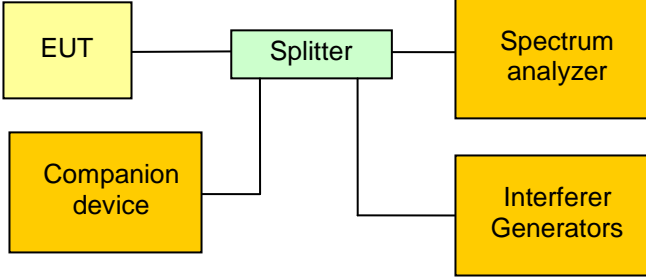
**Test procedure (arbitrarily placed monitoring antenna)**

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

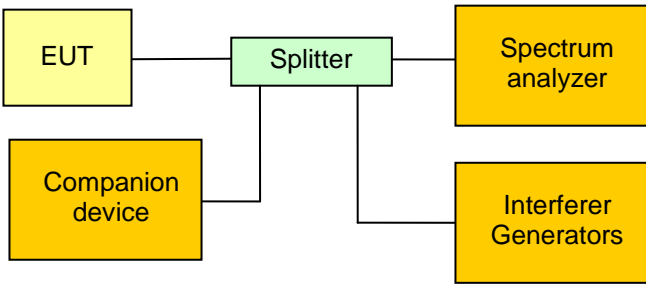
**Results**

Connection status	Verdict
N/A (monitoring antenna identical to transmitting antenna)	PASS

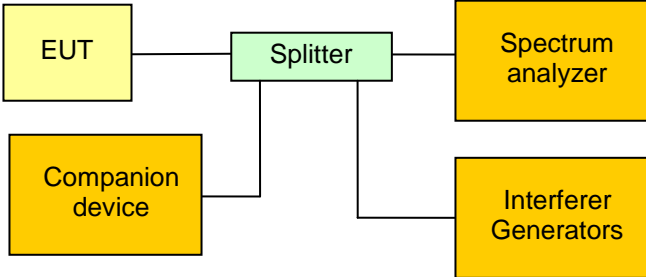
3.20 Test Conditions and Results – Monitoring time

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			
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]         </pre>			
Test procedure			
<ol style="list-style-type: none"> <li>1. The EUT is forced to two carrier frequencies <math>f_1</math> and <math>f_2</math> only by the use of interferer generators with power levels higher than the upper threshold <math>T_U</math> plus the measurement uncertainty <math>U_M</math> of 6 dB</li> <li>2. The interferer level on channel frequency <math>f_1</math> is also set to <math>T_U + U_M</math> and channel <math>f_2</math> has no interferer</li> <li>3. A communication session is initiated on <math>f_2</math> and transmission on <math>f_2</math> is verified</li> <li>4. An interferer level of <math>T_U + U_M</math> is applied to <math>f_2</math> and the interferer on channel <math>f_1</math> is removed 20ms after the interferer on <math>f_2</math> is applied</li> <li>5. Transmission on <math>f_1</math> and <math>f_2</math> is monitored with the spectrum analyzer and it is verified that the EUT does not transmit on <math>f_2</math>.</li> </ol>			
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

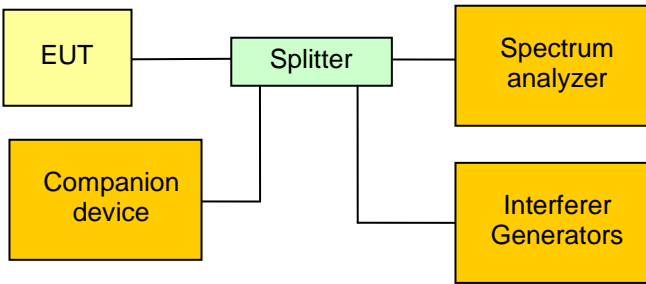
Monitoring bandwidth acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: PASS	
EUT requirement rule parts and clause	Reference		
	FCC 15.323(c)(7) / IC RSS-213 4.3.4(b)(7)		
Test according referenced standards	Reference Method		
	ANSI C63.17 7.4		
Requirements			
The monitoring system bandwidth must be equal to or greater than the emission bandwidth of the intended transmission.			
Test setup			
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]             </pre>			
Test procedure			
<ol style="list-style-type: none"> <li>Using interferer signals, operation is restricted to channels <math>f_1</math></li> <li>An communication session is established without interference on <math>f_1</math></li> <li>An interference signal is set to <math>f_1 + 30\%</math> of the emission/occupied bandwidth with a level of 10 dB + <math>U_M</math> above <math>T_U</math> or <math>T_L</math> as appropriate. The bandwidth of the interferer is set to be greater than 0.05 MHz.</li> <li>It is verified that the EUT does not transmit</li> <li>The interferer is set to <math>f_1 - 30\%</math> of the emission/occupied bandwidth</li> <li>It is verified that the EUT does not transmit</li> </ol>			
Test results			
Interferer Frequency	Interferer Level	Transmission status	Verdict
$F_{LOW} + 30\% \cdot BW$	$T_U + U_M + 10\text{ dB}$	None	PASS
$F_{LOW} - 30\% \cdot BW$	$T_U + U_M + 10\text{ dB}$	None	PASS
$F_{HIGH} + 30\% \cdot BW$	$T_U + U_M + 10\text{ dB}$	None	PASS
$F_{HIGH} - 30\% \cdot BW$	$T_U + U_M + 10\text{ dB}$	None	PASS
Comments:			

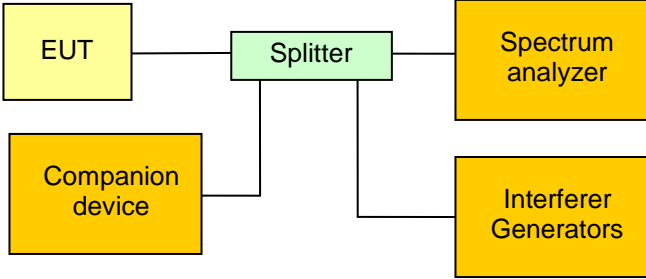
## 3.22 Test Conditions and Results – Monitoring reaction time

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 $50 \times \text{SQRT}(1.25/\text{emission(occupied) bandwidth in MHz})$ 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 $35 \times \text{SQRT}(1.25/\text{emission(occupied) bandwidth in MHz})$ microseconds but shall not be required to be less than 35 microseconds.		
Test setup		
 <pre>                     graph LR                         EUT[EUT] --- Splitter[Splitter]                         Companion[Companion device] --- Splitter                         Splitter --- SA[Spectrum analyzer]                         Splitter --- IG[Interferer Generators]                 </pre>		
Test procedure		
<ol style="list-style-type: none"> <li>Using interferer signals operation is restricted to channel <math>f_1</math></li> <li>A time-synchronized, pulsed interference is applied to <math>f_1</math> with a power level of <math>T_U + U_M</math> or <math>T_L + U_M</math> as appropriate</li> <li>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</li> <li>The level of the interferer pulses is also set to <math>T_U + U_M</math> or <math>T_L + U_M</math> as appropriate</li> <li>The pulse width is set to the largest of 50 <math>\mu\text{s}</math> and <math>50 \cdot \sqrt{1.25/\text{Bandwidth}[\text{MHz}]}</math> <math>\mu\text{s}</math></li> <li>It is observed whether or not a connection can be established to the companion device</li> <li>The level of the interferer pulses is set to 6 dB above <math>T_U + U_M</math> or <math>T_L + U_M</math> as appropriate</li> <li>The pulse width is set to the largest of 35 <math>\mu\text{s}</math> and <math>35 \cdot \sqrt{1.25/\text{Bandwidth}[\text{MHz}]}</math> <math>\mu\text{s}</math></li> <li>It is observed whether or not a connection can be established to the companion device</li> </ol>		

Test results - FCC					
Channel	Emission bandwidth [MHz]	Pulse width from Bandwidth [ $\mu$ s]	Pulse width for test [ $\mu$ s]	Connection possible	Verdict
F <sub>LOW</sub>	01.482	$50 \cdot \sqrt{1.25/B[MHz]} = 45.91$	50.0	No	PASS
F <sub>LOW</sub>	01.482	$35 \cdot \sqrt{1.25/B[MHz]} = 32.14$	35.0	No	PASS
F <sub>HIGH</sub>	01.450	$50 \cdot \sqrt{1.25/B[MHz]} = 46.42$	50.0	No	PASS
F <sub>HIGH</sub>	01.450	$35 \cdot \sqrt{1.25/B[MHz]} = 32.49$	35.0	No	PASS
Test results - IC					
Channel	Emission bandwidth [MHz]	Pulse width from Bandwidth [ $\mu$ s]	Pulse width for test [ $\mu$ s]	Connection possible	Verdict
F <sub>LOW</sub>	01.210	$50 \cdot \sqrt{1.25/B[MHz]} = 50.82$	50.82	No	PASS
F <sub>LOW</sub>	01.210	$35 \cdot \sqrt{1.25/B[MHz]} = 35.57$	35.57	No	PASS
F <sub>HIGH</sub>	01.220	$50 \cdot \sqrt{1.25/B[MHz]} = 50.61$	50.61	No	PASS
F <sub>HIGH</sub>	01.220	$35 \cdot \sqrt{1.25/B[MHz]} = 35.43$	35.43	No	PASS
Comments:					

### 3.23 Test Conditions and Results – System acknowledgement

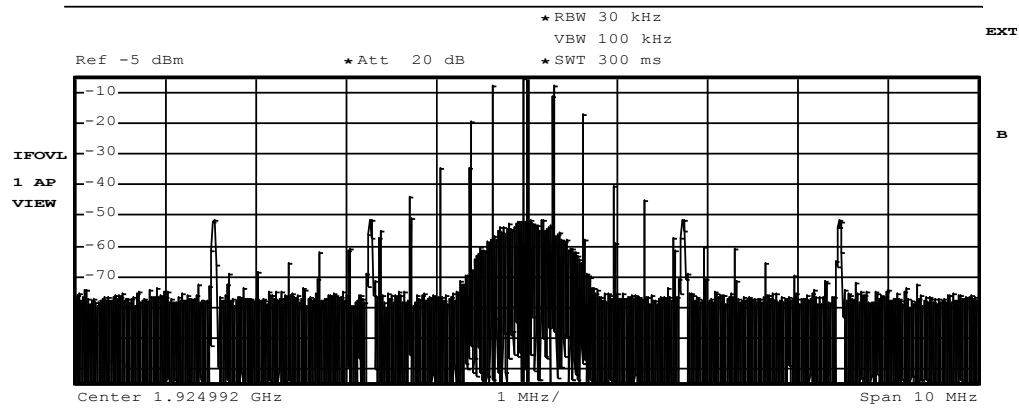
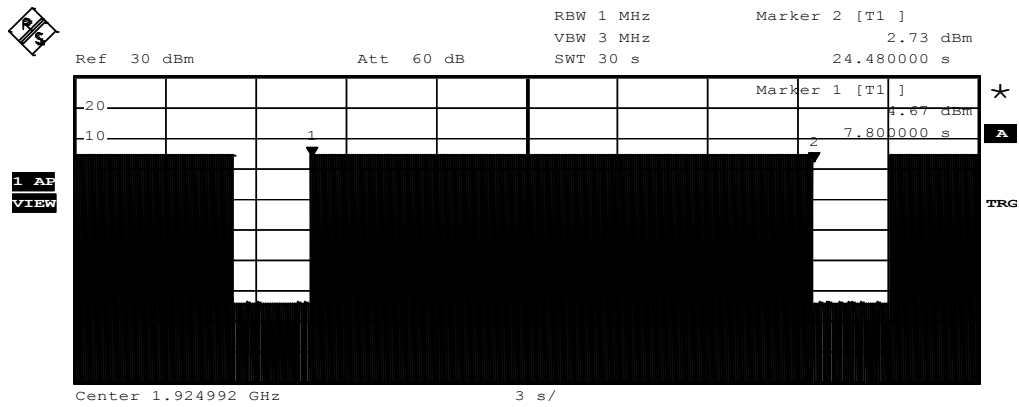
System acknowledgement acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: PASS
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(4) / IC RSS-213 4.3.4(b)(4)	
Test according referenced standards	Reference Method	
	ANSI C63.17 8.1.1 (Part B) / 8.2.1 (Part A)	
EUT can initiate a communication session	No	
Requirements		
<p>Part A: 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.</p> <p>Periodic acknowledgements must be received at least every 30 seconds or transmission must cease.</p> <p>Part B: Channels used exclusively for control and signaling information may transmit continuously for 30 seconds without receiving an acknowledgement, at which time the access criteria must be repeated.</p>		
Test setup – System acknowledgement (Part A)		
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]     CD[Companion device] --- Splitter     </pre>		
Test procedure - System acknowledgement (Part A)		
<ol style="list-style-type: none"> <li>1. (Applies to EUTs that can initiate a communication session (e.g. portable parts)) The acknowledgement timeslots are blocked by interferer signals</li> <li>2. An attempt to establish communication session is started from the EUT</li> <li>3. The emissions from the EUT are monitored to verify that the EUT does not transmit for more than 1s</li> <li>4. Next the acknowledgements are unblocked and another communication session is established between the EUT and the companion device</li> <li>5. It is verified that the communication session is successful</li> <li>6. (Applies to all EUTs) With all acknowledges unblocked, an communication session is initiated between the EUT and the companion device</li> <li>7. The acknowledgements were blocked and the time the EUT continues to transmit is recorded</li> </ol>		

<b>Test setup – Access criteria test interval (Part B)</b>		
		
<b>Test procedure - Access criteria test interval (Part B)</b>		
<ol style="list-style-type: none"> <li>1. Using interferer signals operation is restricted to one channel <math>f_1</math> and timeslot</li> <li>2. The EUT is active and transmission on channel/timeslot is verified</li> <li>3. The transmissions on the channel/timeslot are recorded to get the total transmission time on the channel and timeslot until the transmission stops and the access criteria procedure begins</li> <li>4. The transmission time measurement is repeated five times</li> <li>5. It is verified that each transmission does not last longer than 30 s</li> </ol>		
<b>Test results – System acknowledgement (Part A)</b>		
Maximum initial transmission [s]	Transmission time limit [s]	Verdict
N/A	1	N/A
Maximum transmission time [s]	Transmission time limit [s]	Verdict
22.4	30	PASS
<b>Test results – Access criteria test interval (Part B)</b>		
Maximum transmission time [s]	Transmission time limit [s]	Verdict
24.5	30	PASS
Comments:		

**System acknowledgments – Access criteria test interval (Part B)**

**ANSI C63.17 - Access criteria test interval  
UPCS1900**

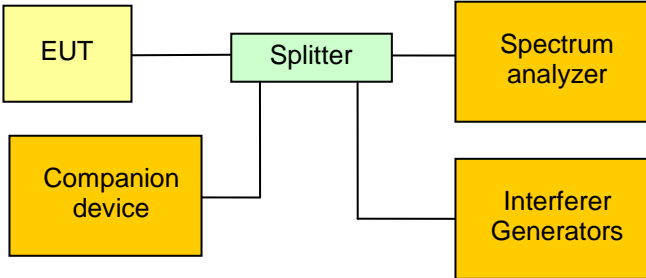
EUT	DECT application module
Model	KT4587
Approval Holder	Spectralink Corp.
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. W. Treffke
Test Specification	ANSI C63.17 - Access criteria test interval
Comment 1	The interval between access criteria tests
Comment 2	Measurement result: 24.5s
Comment 3	Verdict: PASS



Comment: Ansi C63.17-1998 6.1.6.2  
 Date: 9.NOV.2012 09:07:03



**3.24 Test Conditions and Results – Random waiting**

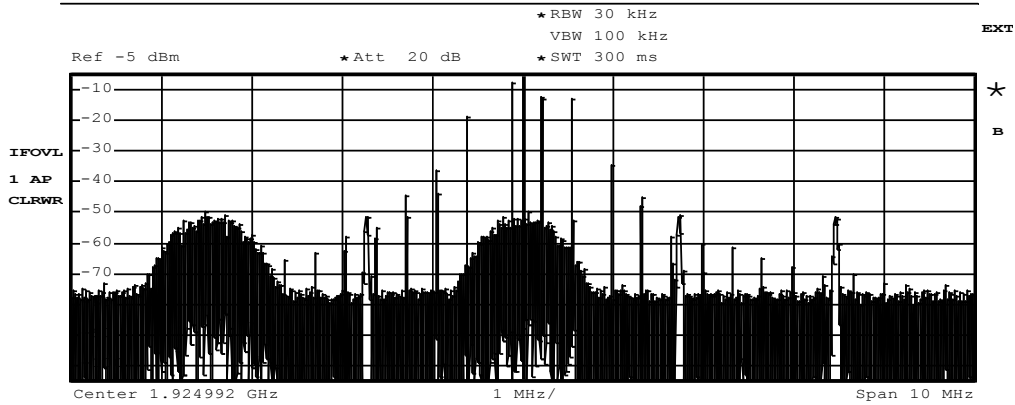
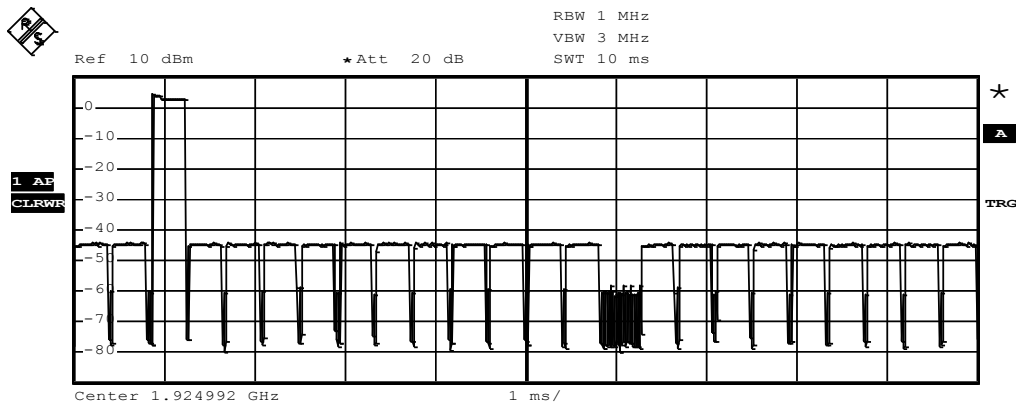
<b>Random waiting acc. to FCC 47 CFR 15D / IC RSS-213</b>		<b>Verdict: PASS</b>
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(6) / IC RSS-213 4.3.4(b)(6)	
Test according referenced standards	Reference Method	
	ANSI C63.17 8.1.2 / 8.1.3	
Random waiting option implemented	No	
<b>Requirements</b>		
<p>If the selected combined time and spectrum windows are unavailable, the device may either monitor and select different windows or seek to use the same windows after waiting an amount of time, randomly chosen from a uniform random distribution between 10 and 150 milliseconds, commencing from the time when the channel becomes available.</p>		
<b>Test setup</b>		
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]         </pre>		
<b>Test procedure – Random waiting option not implemented</b>		
<ol style="list-style-type: none"> <li>Using interferer signals operation is restricted to channels <math>f_1</math> and <math>f_2</math> in a single timeslot only</li> <li>The EUT is active and transmission on one of the two channels and timeslots is verified</li> <li>An interferer is introduced on the channel and timeslot used by the EUT with a level of <math>T_U + U_M</math> or <math>T_L + U_M</math> as appropriate.</li> <li>It is verified that the EUT next transmits on the other open channel/timeslot.</li> </ol>		
<b>Test procedure – Random waiting option implemented</b>		
<ol style="list-style-type: none"> <li>Using interferer signals operation is restricted to one channel <math>f_1</math> and timeslot</li> <li>The EUT is active and transmission on channel/timeslot is verified</li> <li>An interferer with level <math>T_U + U_M</math> or <math>T_L + U_M</math> as appropriate is applied to channel <math>f_1</math></li> <li>It is verified that the EUT stops transmitting within the next 30s</li> <li>The interferer is switched off and the time between the end of the interference and the beginning of the next transmission is measured</li> <li>The procedure is repeated 100 times</li> <li>For each of the time intervals it is verified that it is greater than 10ms and lower than 150ms</li> </ol>		

<b>Test results – Random waiting option not implemented</b>				
Initial channel / timeslot	Interferer Level	Final channel / timeslot		Verdict
$f_1$ / Slot 2	0	$f_1$ / Slot 2		PASS
$f_1$ / Slot 2	$T_U + U_M$	$f_1$ / Slot 4		PASS
<b>Test results – Random waiting option implemented</b>				
Minimum waiting time [ms]	Lower limit [ms]	Maximum waiting time [ms]	Upper limit [ms]	Verdict
N/A	10	N/A	150	PASS
Comments:				

Random waiting - Random waiting option not implemented – Initial condition

ANSI C63.17 - Access criteria functional test  
UPCS1900

EUT	DECT application module
Model	KT4587
Approval Holder	Spectralink Corp.
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. W. Treffke
Test Specification	ANSI C63.17 - Access criteria functional test
Comment 1	initial condition
Comment 2	Connection at channel 2 (1924,992 MHz), in time slot 2 (840 μs)

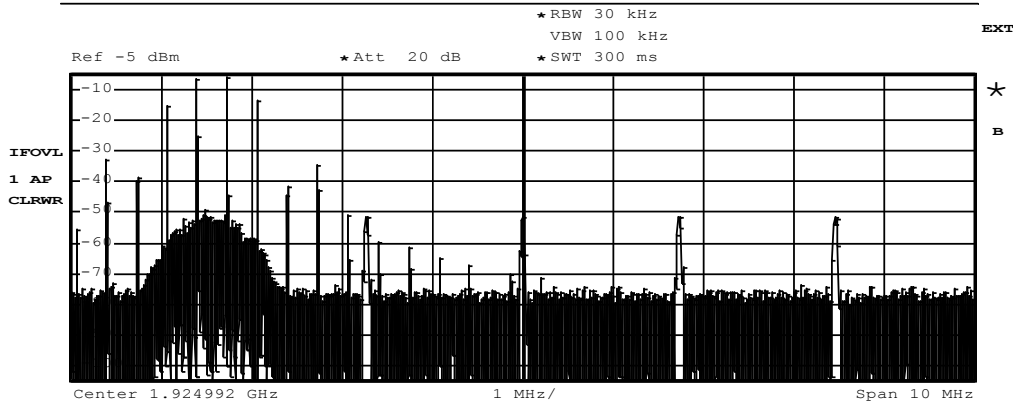
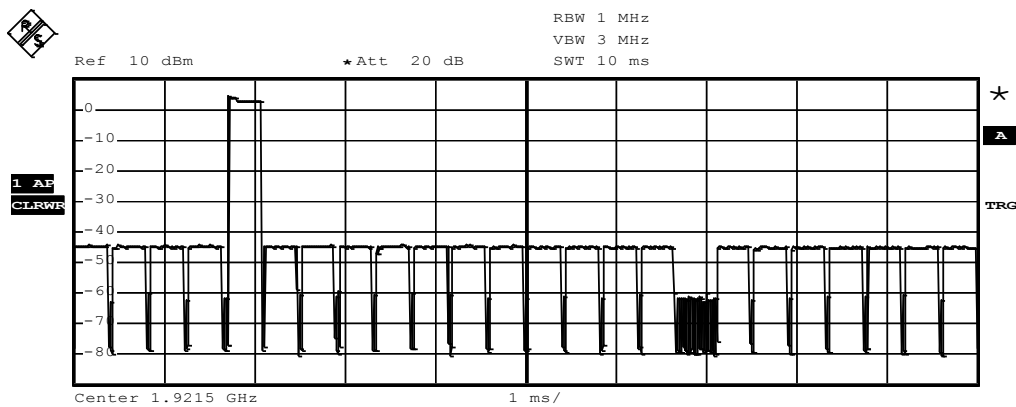


Comment: Ansi C63.17-1998 6.1.6.2  
 Date: 9.NOV.2012 09:19:55

Random waiting - Random waiting option not implemented – Final condition

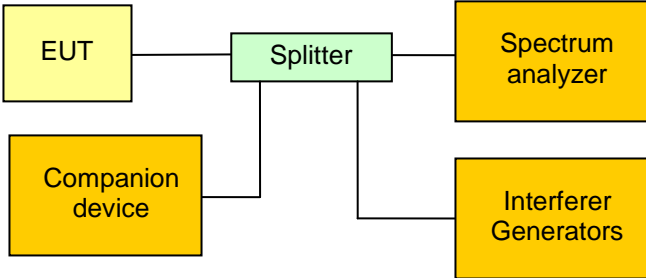
ANSI C63.17 - Access criteria functional test  
UPCS1900

EUT	DECT application module
Model	KT4587
Approval Holder	Spectralink Corp.
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. W. Treffke
Test Specification	ANSI C63.17 - Access criteria functional test
Comment 1	CW interference on ch 2 (initial traffic channel)
Comment 2	after the next pause
Comment 3	New connection at channel 4 (1921,536 MHz), in time slot 4



Comment: Ansi C63.17-1998 6.1.6.2  
 Date: 9.NOV.2012 09:25:28

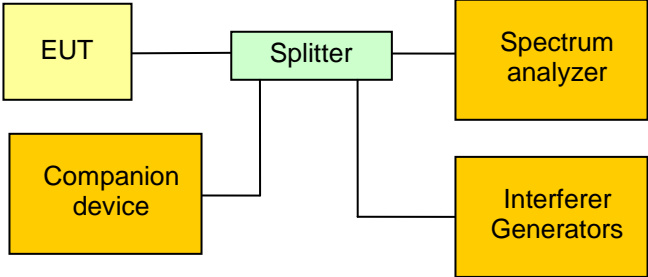
**3.25 Test Conditions and Results – Maximum transmit period**

<b>Maximum transmit period acc. to FCC 47 CFR 15D / IC RSS-213</b>		<b>Verdict: N/A</b>
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	
<b>Requirements</b>		
<p>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.</p> <p>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.</p>		
<b>Test setup</b>		
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]         </pre>		
<b>Test procedure</b>		
<ol style="list-style-type: none"> <li>1. A communication session is established between the EUT and the companion device.</li> <li>2. With the beginning of the communication session a counter is started</li> <li>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</li> <li>4. As soon as the communication session switches to a different channel the time measurement is stopped</li> </ol>		
<b>Test results</b>		
Total transmission time [s]	Transmission time limit	Verdict
N/A	8 hours	N/A
<b>Comments:</b> 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.		

**3.26 Test Conditions and Results – Maximum spectral occupancy**

<b>Maximum spectral occupancy acc. to FCC 47 CFR 15D / IC RSS-213</b>		<b>Verdict: PASS</b>
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	
<b>Requirements</b>		
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.		
<b>Test result</b>		
Evaluation		Verdict
According to the technical documentation the total number of time and spectrum windows is: $5 \times 12 = 60$ 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		<b>PASS</b>
Comments:		

### 3.27 Test Conditions and Results – Duplex system LBT

Duplex system LBT acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: N/A
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	
EUT implements upper threshold	Yes	
EUT is initiating device	No	
Requirements		
<p>An initiating device may attempt to establish a duplex connection by monitoring both its intended transmit and receive time and spectrum windows.</p> <p>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.</p> <p>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.</p>		
Test setup		
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]         </pre>		
Test procedure (EUT does not implement upper threshold)		
<ol style="list-style-type: none"> <li>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 <math>T_L + U_M</math></li> <li>2. By the use of interference signals the EUT is restricted to channel <math>f_1</math></li> <li>3. An interference of level <math>T_L + U_M</math> 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 <math>T_L</math></li> <li>4. An interference of level <math>T_L + U_M</math> is applied per carrier on the enabled carriers on all its transmit time/spectrum windows</li> <li>5. It is verified that the interference levels at the companion device are at least 10 dB below <math>T_L</math> for all time/spectrum windows</li> <li>6. An attempt is made to establish a connection</li> <li>7. Next an interference at <math>T_L + U_M</math> is applied to all enabled carriers on all its time/spectrum windows except one, which has interference at least 10 dB below <math>T_L</math></li> <li>8. An interference of level <math>T_L + U_M</math> is applied per carrier on the enabled carriers on all its receive time/spectrum windows</li> <li>9. It is verified that the interference levels at the companion device are at least 10 dB below <math>T_L</math> for all time/spectrum windows</li> <li>10. An attempt is made to establish a connection</li> </ol>		

**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  $T_L + U_M + 7\text{dB}$  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  $T_L + U_M + 7\text{dB}$  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
$T_L + U_M$	$T_L + U_M + 7\text{dB}$	Receive	N/A
$T_L + U_M + 7\text{dB}$	$T_L + U_M$	Transmit	N/A
$T_L + U_M$	$T_L + U_M$	None	N/A

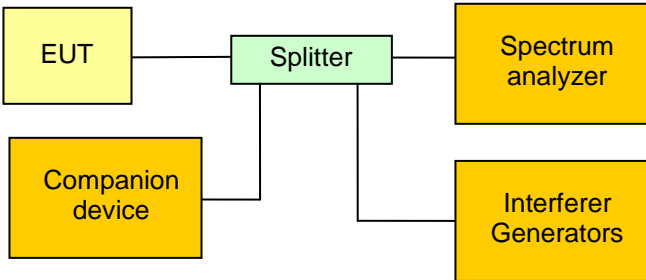
Comments:

Test Report No.: G0M-1211-2381-TFC15D-V02

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



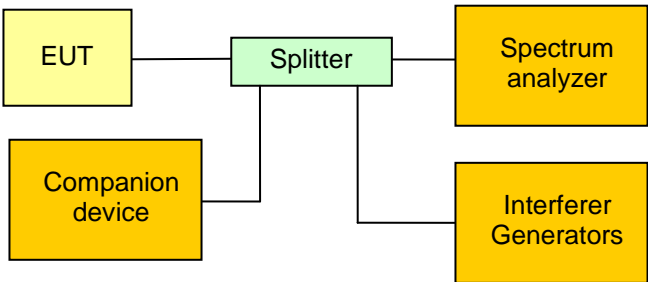
### 3.28 Test Conditions and Results – Co-located device LBT

Co-located device LBT acc. to FCC 47 CFR 15D / IC RSS-213		Verdict: N/A
EUT requirement rule parts and clause	Reference	
	FCC 15.323(c)(11) / IC RSS-213 4.3.4(b)(11)	
Test according referenced standards	Reference Method	
	ANSI C63.17 8.4	
EUT utilizes alternative this provisions	No	
EUT is initiating device	No	
Requirements		
<p>An initiating device that is prevented from monitoring during its intended transmit window due to monitoring system blocking from the transmissions of a co-located (within one meter) transmitter of the same system, may monitor the portions of the time and spectrum windows in which they intend to receive over a period of at least 10 milliseconds.</p> <p>The monitored time and spectrum window must total at least 50 percent of the 10 millisecond frame interval and the monitored spectrum must be within 1.25 MHz of the center frequency of channel(s) already occupied by that device or co-located co-operating devices.</p> <p>If the access criteria is met for the intended receive time and spectrum window under the above conditions, then transmission in the intended transmit window by the initiating device may commence.</p>		
Test setup		
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]             </pre>		
Test procedure		
<ol style="list-style-type: none"> <li>1. 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 <math>T_L</math></li> <li>2. By the use of interference signals the EUT is restricted to channel <math>f_1</math></li> <li>3. An interference of level <math>T_L + U_M</math> is applied per carrier on the enabled carriers on all its transmit time/spectrum windows with the same physical layer parameters as the EUT but with a different system identifier</li> <li>4. It is verified that the interference levels at the companion device are at least 10 dB below <math>T_L</math> for all time/spectrum windows</li> <li>5. No interference is applied to the receive time/spectrum windows</li> <li>6. An attempt is made to establish a connection and it is verified that no connection is possible</li> </ol>		
Test results		
Connection possible		Verdict
N/A		N/A
Comments:		

**3.29 Test Conditions and Results – Fair access**

<b>Fair access acc. to FCC 47 CFR 15D / IC RSS-213</b>		<b>Verdict: PASS</b>
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	
<b>Requirements</b>		
The provisions of FCC 47 CFR 15.323(c)(10), IC RSS-213(b)(10) or FCC 47 CFR 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.		
<b>Declaration</b>		
The manufacturer declares that is device does not work in a mode which denies fair access to spectrum for other participants		

3.30 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		
<p>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.</p> <p>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.</p>		
Test setup		
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- Interferer[Interferer Generators]     Splitter --- Analyzer[Spectrum analyzer]             </pre>		
Test procedure		
<ol style="list-style-type: none"> <li>1. With a spectrum analyzer the frame periods are measured over time</li> <li>2. 100 000 frames are measured</li> <li>3. The the peak-to-peak, mean and standard deviation values are computed</li> </ol>		
Test results – Frame period		
Mean value [ms]	Divider X (10ms/X)	Verdict
9.999877 = 10.00 – 0.000123	1	PASS
Test results – Jitter		
Maximum difference between frames [µs]	Limit [µs]	Verdict
0.054	25 – 0.000123 = 24.999877	PASS
Comments:		

**Frame period and Jitter**

**FCC Part 15.323 Frame Period and jitter**

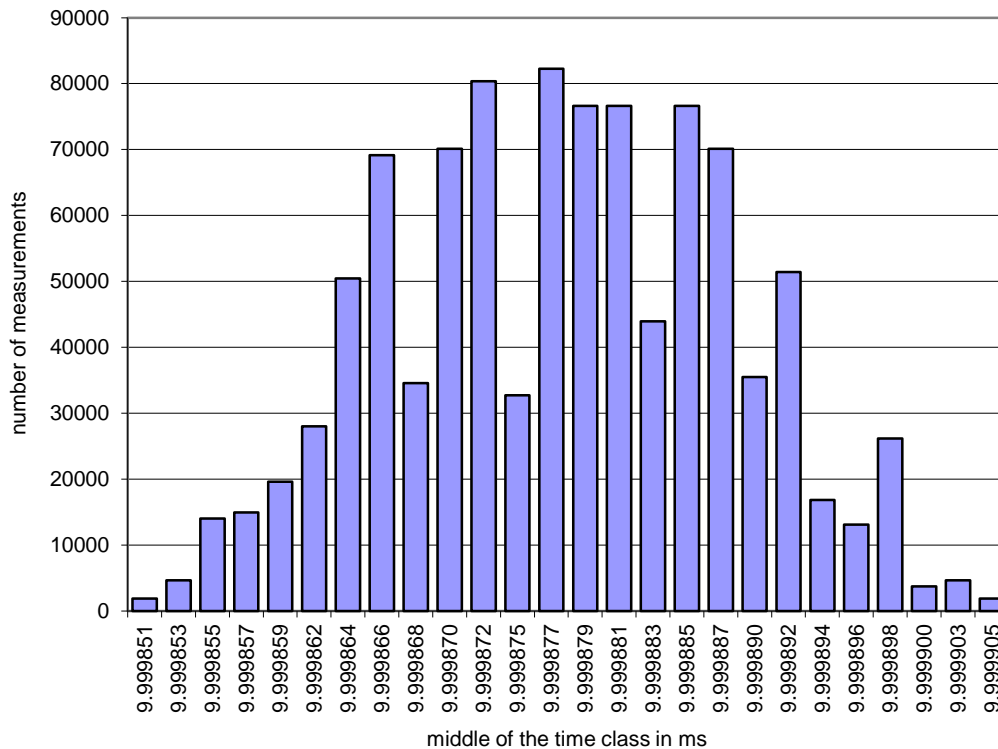
Test procedure ANSI 63.17

UPCS

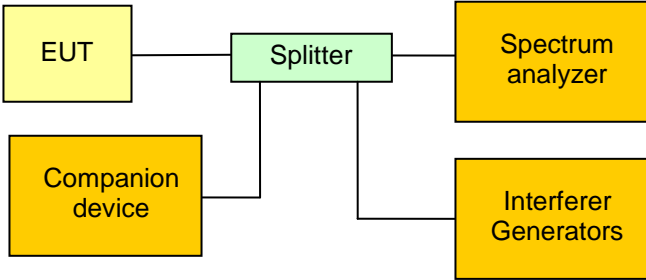
EUT	DECT application module
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frame Period and jitter

Width of the time class	0,002161 $\mu$ s
Mean	9,999877 ms
Deviation	0,000011
Max-Min	0,054017 $\mu$ s
Test result	Verdict = PASS

**Histogram**



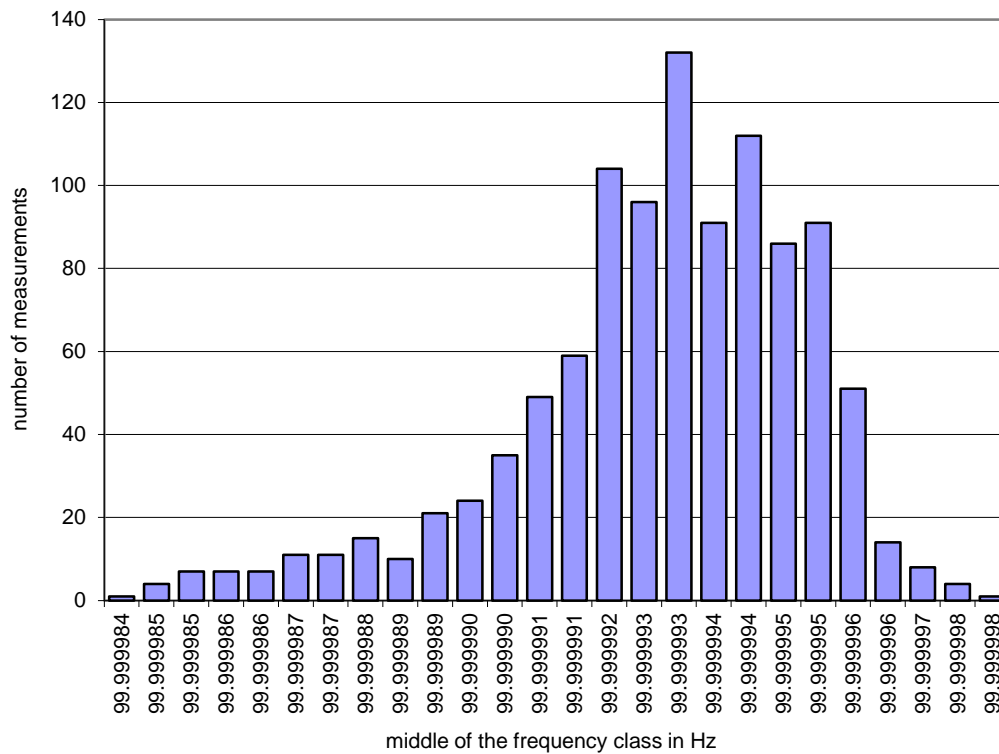
3.31 Test Conditions and Results – Frame and TDMA repetition stability

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			
<p>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).</p> <p>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.</p>			
Test setup			
 <pre> graph LR     EUT[EUT] --- Splitter[Splitter]     Companion[Companion device] --- Splitter     Splitter --- SA[Spectrum analyzer]     Splitter --- IG[Interferer Generators]             </pre>			
Test procedure			
<ol style="list-style-type: none"> <li>1. With a spectrum analyzer the frame repetition periods are measured over time</li> <li>2. 1 000 frame repetitions are measured</li> <li>3. The mean and standard deviation values are computed</li> </ol>			
Test results			
Access scheme	Error [ppm]	Limit [ppm]	Verdict
Time Division Access	N/A	50	N/A
Time Division Multiple Access	0.071934	10	PASS
Comments:			

**Frame and TDMA repetition stability**
**FCC Part 15.323 Frame repetition**
**Test procedure ANSI 63.17**
**UPCS**

EUT	DECT application modul
Model	KT4587
Applicant	Spectralink Corp.
Temperature	23°C
Test Site / Operator	Eurofins Product Service GmbH
Test Specification	Frame repetition

Width of the frequency class	0,000001 Hz
Mean	99,999993 Hz
Deviation	0,000002
Stability in ppm	0,071934 ppm
Test result	Verdict = PASS

**Histogram**


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## Version History

Version	Issue Date	Remarks	Revised by
01	2012-12-21	Initial Release	
02	2013-01-11	Replaced document: G0M-1211-2381-TFC15D-V01 Replaced by: G0M-1211-2381-TFC15D-V02  Reason: <ul style="list-style-type: none"><li>• Page 1 &amp; 5: FCC-ID corrected</li></ul>	C. Weber

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