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EMC TEST REPORT

FCC 47 CFR Part 15B
Industry Canada RSS-Gen

Electromagnetic compatibility - Unintentional radiators

Report Reference No. ..... :	G0M-1412-4399-EF0115B-V01
Testing Laboratory ..... :	Eurofins Product Service GmbH
Address ..... :	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation ..... :	A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
Applicant's name ..... :	LogicMark, LLC
Address ..... :	10106 Bluegrass Parkway 40299 Louisville USA
Test specification:	
Standard..... :	47 CFR Part 15 Subpart B RSS-Gen, Issue 3, 2010-12 ANSI C63.4:2009
Equipment under test (EUT):	
Product description	CaretakerSentry
Model No.	40914
Additional Models	None
Hardware version	None
Firmware / Software version	2.3
Contains	FCC-ID: TYD-CS40914 IC: 8471A-CS40914
Test result	**Passed**

Possible test case verdicts:	
- not applicable to test object ..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)

Testing:

Date of receipt of test item ..... :	2015-01-09
Date (s) of performance of tests ..... :	2015-01-09
Compiled by ..... :	Marcus Klein
Tested by (+ signature)..... :	Jens Marquardt
Approved by (+ signature) ..... :	Marcus Klein
Date of issue ..... :	2015-01-12
Total number of pages ..... :	29

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

Additional comments:

Version History

Version	Issue Date	Remarks	Revised by
V01	2015-01-12	Initial Release	

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

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1 Equipment (Test item) Description

Description	CaretakerSentry	
Model	40914	
Additional Models	None	
Serial number	None	
Hardware version	None	
Software / Firmware version	2.3	
Contains FCC-ID	TYD-CS40914	
Contains IC	8471A-CS40914	
Power supply	120 VAC	
AC/DC-Adaptor	Model : ZDC075080US Manufacturer : E-Tek Input : 100-240 VAC / 50-60Hz Output : 7.5 VDC / 0.8 A	
Radio module	Type	internal DECT Module
Manufacturer	LogicMark, LLC 10106 Bluegrass Parkway 40299 Louisville USA	
Highest emission frequency	124.416 MHz	
Device classification	Class B	
Equipment type	Tabletop	
Number of tested samples	1	

1.1 Photos – Equipment external

Base Station Top

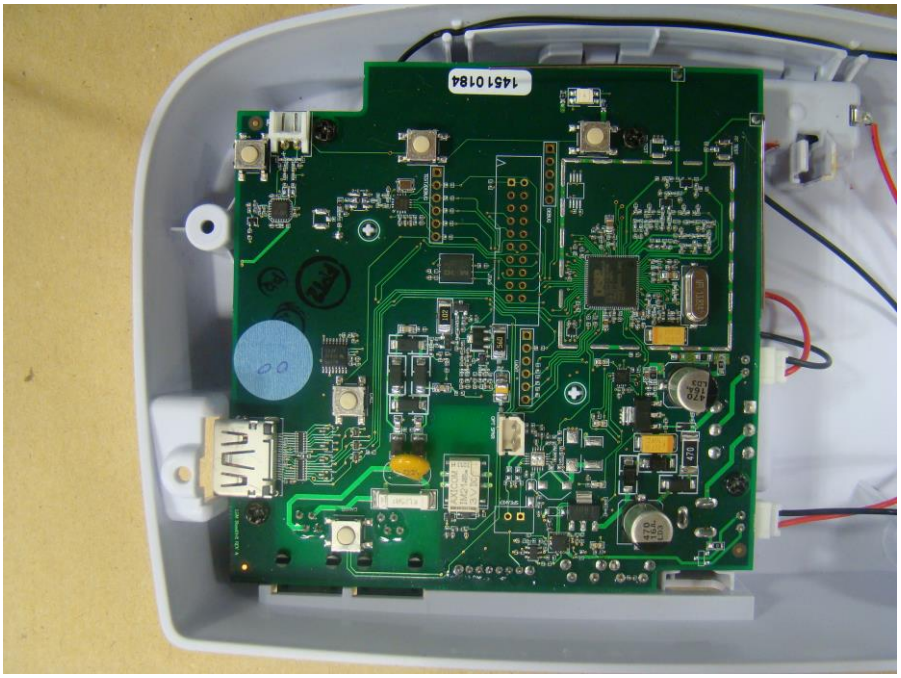
Base Station Bottom

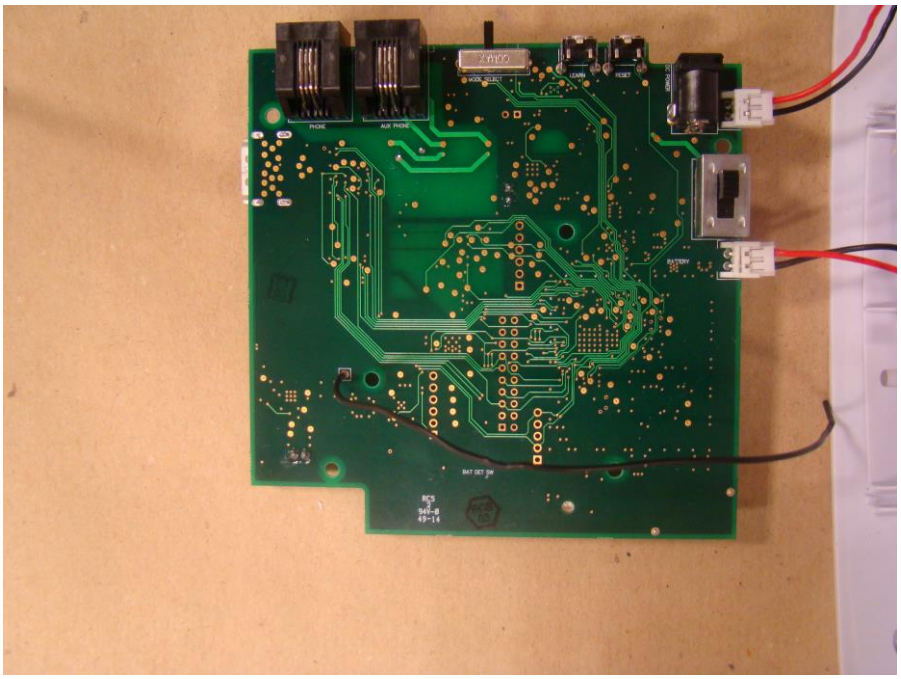
Pendant Top

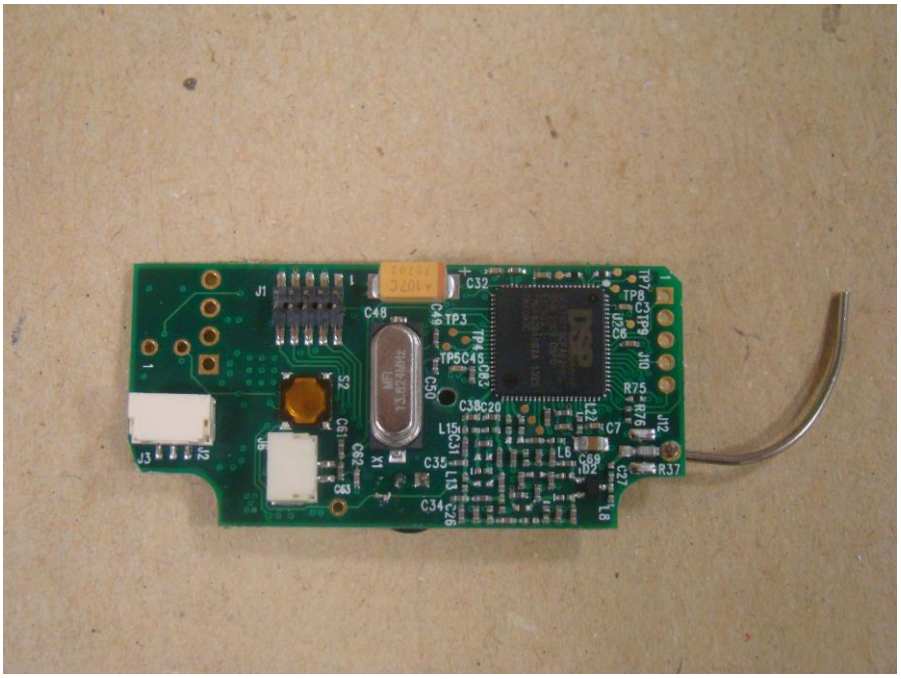

Pendant Bottom


Power Supply


1.2 Photos – Equipment internal

Base Station PCB Top


Base Station PCB Bottom


Pendant PCB Top


Pendant PCB Bottom


1.3 Photos – Test setup

Test Setup : Radiated Emissions


Test Setup : Conducted Emissions


1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
EUT	Base Station	LogicMark	40914	-
EUT	Pendant	LogicMark	DECT 6.0 2-Way	-
EUT	Power Supply	E-Tek	ZDC075080US	-
AE	Travel Universal	-	-	-

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

AE : Auxiliary/Associated Equipment, or

SIM : Simulator (Not Subjected to Test)

CABL : Connecting cables

1.5 Input / Output Ports

Port #	Name	Type*	Max. Cable Length	Cable Shielded	Comments
1	AC Mains	AC	>3m	No	-
2	Line In	TP	>3m	No	-
3	House Phone	TP	>3m	No	-
4	Accessory	I/O	>3m	No	Service only

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

AC : AC power port

DC : DC power port

N/E : Non electrical

I/O : Signal input or output port

TP : Telecommunication port

1.6 Operating Modes and Configurations

Mode #	Description
1	Charging via AC/DC Adapter.
2	DECT link between Pendant and Base Station, phone connection to PSTN simulator, Charging via AC/DC Adapter

Configuration #	EUT Configuration
1	EUT equipped with rechargeable Batteries and connected to AC/DC Adapter.
2	EUT equipped with rechargeable Batteries and connected to AC/DC Adapter. DECT link between Pendant and Base Station established. Line In connected to PSTN Simulator.

1.7 Test Equipment Used During Testing

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

Radiated emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD-Antenne	R&S	HL 223	EF00187	2014-03	2017-03
Horn antenna	Schwarzbeck	BBHA 9120D	EF00018	2013-09	2016-09
EMI Test Receiver	R&S	ESU26	EF00887	2014-01	2015-01

Conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2014-11	2016-11
AMN	R&S	ESH3-Z5	EF00036	2014-12	2016-12
EMI Test Receiver	R&S	ESCS 30	EF00295	2014-10	2015-10

1.8 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

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

Reading on Analyzer (dBµV) + A.F. (dB) = Net field strength (dBµV/m)

Net:

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

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

Limit (dBµV/m) = 20*log (µV/m)

Margin:

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

Example only:

Reading	+	AF	=	Net Reading	:	Net reading - FCC limit	= Margin
21.5 dBµV	+	26 dB	=	47.5 dBµV/m	:	47.5 dBµV/m - 57.0 dBµV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 15B, Industry Canada RSS-Gen				
Product Specific Standard	**Requirement – Test**	**Reference Method**	**Result**	**Remarks**
47 CFR 15.109 RSS-Gen 4.9 & 4.10	Radiated emissions	ANSI C 63.4	PASS	-
47 CFR 15.107 RSS-Gen 7.2.4	AC power line conducted emissions	ANSI C63.4	PASS	-
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – Radiated emissions

Radiated emissions acc. FCC 47 CFR 15.109 / IC RSS-Gen		**Verdict: PASS**
Laboratory Parameters:	Required prior to the test	During the test
Ambient Temperature	15 to 35 °C	23°C
Relative Humidity	30 to 60 %	41%
Test according referenced standards	Reference Method	
	ANSI C63.4	
Sample is tested with respect to the requirements of the equipment class	Equipment class	
	Class B	
Test frequency range determined from highest emission frequency	Highest emission frequency	
	124.416 MHz	
Fully configured sample scanned over the following frequency range	Frequency range	
	30 MHz to 2 GHz	
Operating mode and configuration	2 / 1	

Limits and results Class B

Frequency [MHz]	Quasi-Peak [dBµV/m]	Result	Average [dBµV/m]	Result	Peak [dBµV/m]	Result
30 – 88	40	PASS	-		-	-
88 – 216	43.5	PASS	-		-	-
216 – 960	46	PASS	-		-	-
960 – 1000	54	PASS	-		-	-
> 1000	-	-	54	PASS	74	PASS

Comments:

Test Procedure:

The test site is in accordance with ANSI C63-4:2009 requirements and is listed by FCC.
The measurement procedure is as follows:

1) The EUT was placed on a 0.8 m non conductive table at a 3 m distance from the receive antenna (ANSI C63.4: 2009 item 6.2)
2) The antenna output was connected to the measurement receiver
3) A biconical antenna was used for the frequency range 30 – 200 MHz, a logarithmic periodical antenna was used for the frequency range from 200 – 1000 MHz. Above one 1 GHz a Double Ridged Broadband Horn antenna was used. The antenna was placed on an adjustable height antenna mast
4) Emissions were maximized at each frequency by rotating the EUT and adjusting the receive antenna height and polarization. The maximum values were recorded.

Spurious emissions under normal conditions according to FCC 15B

Project number: G0M-1412-4399

Manufacturer:	LogicMark, LLC
EUT Name:	CaretakerSentry
Model:	40911
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Marquardt
Test Conditions:	Tnom: 23°C, Unom: 120 VAC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	Dect + PSTN link, Charging
Test Date:	2015-01-09
Note:	

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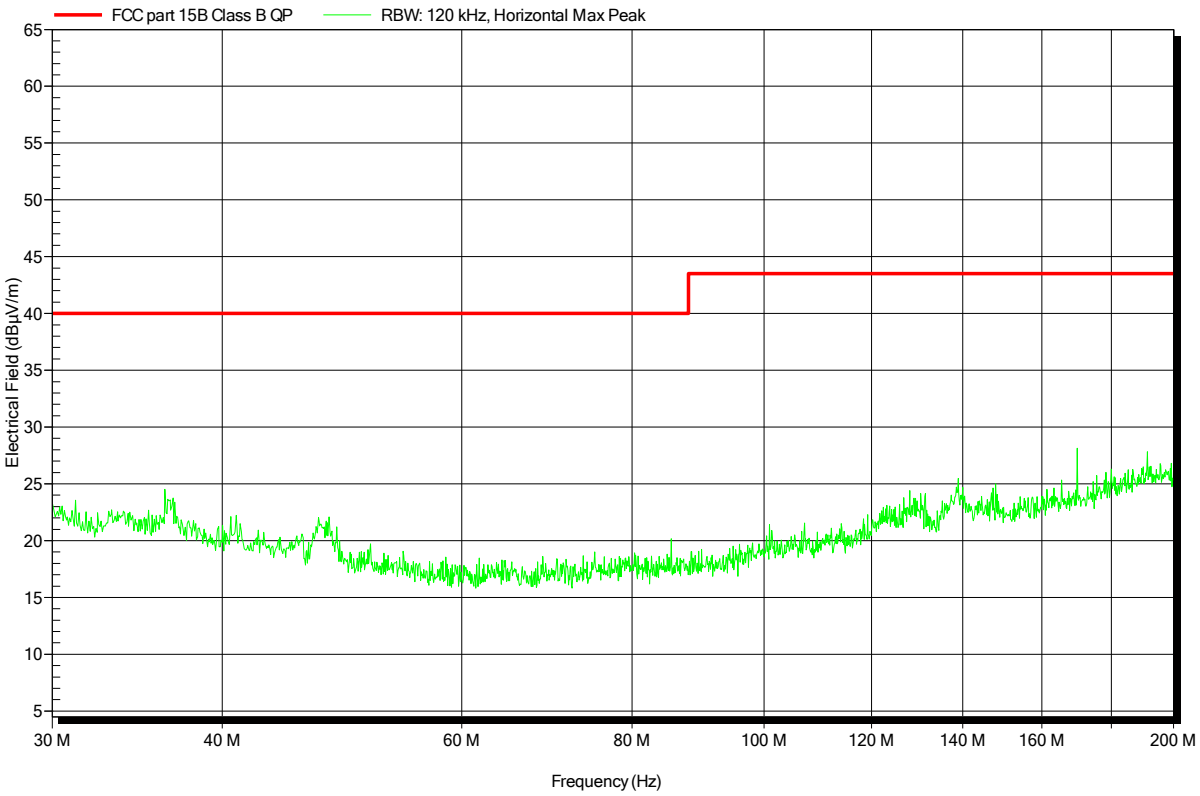
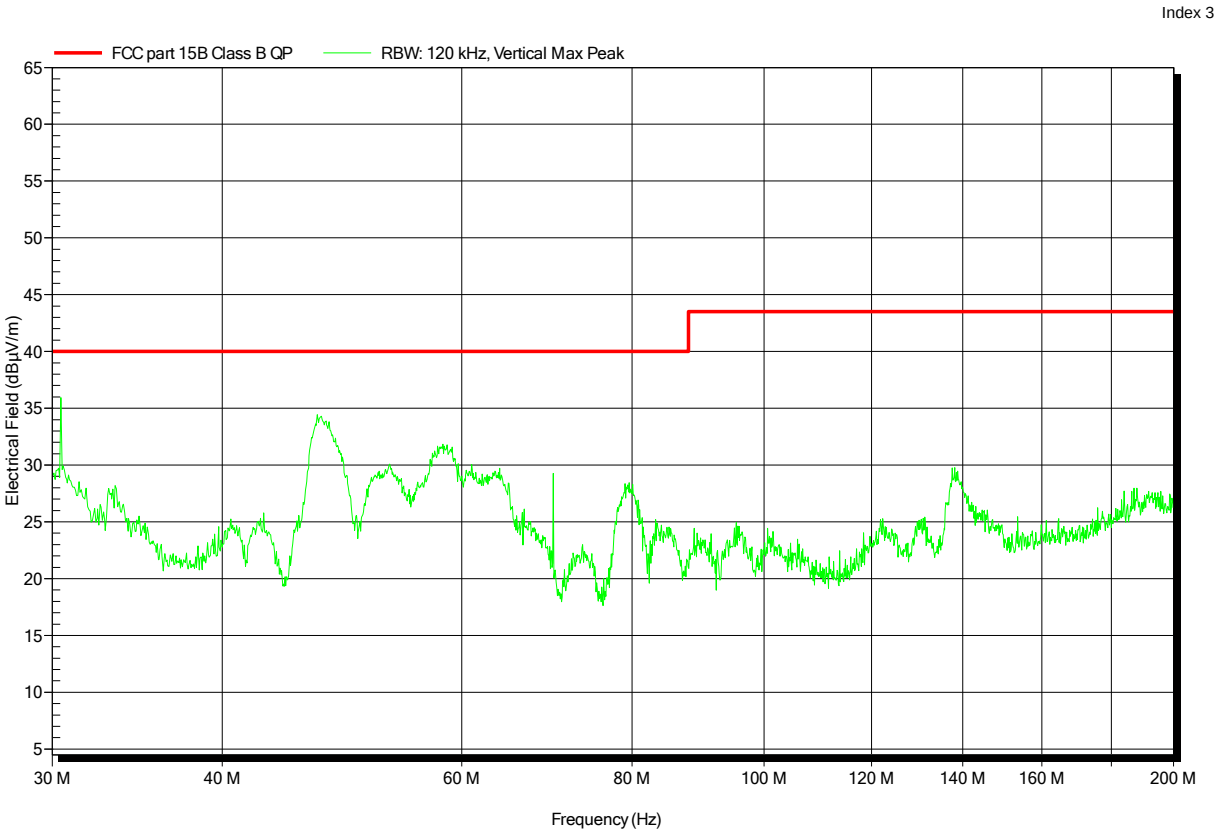


Spurious emissions under normal conditions according to FCC 15B

Project number: G0M-1412-4399

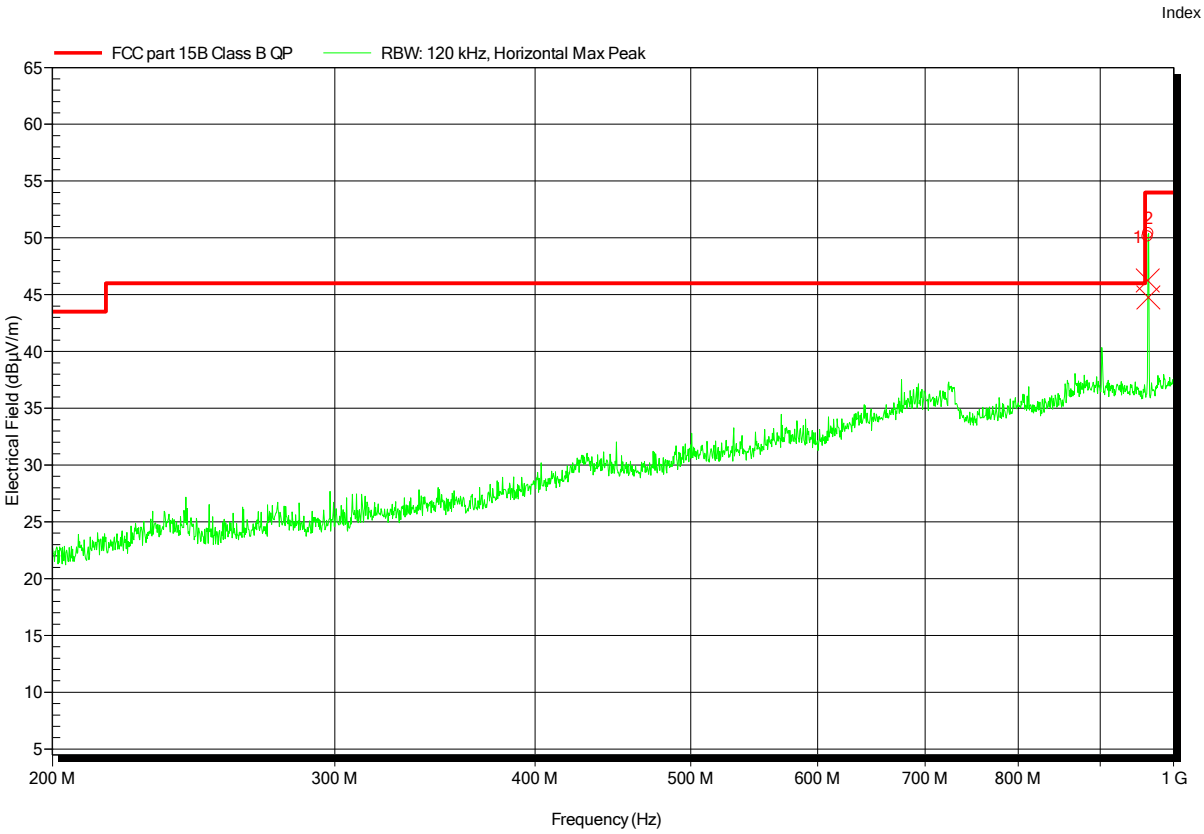
Manufacturer:	LogicMark, LLC
EUT Name:	CaretakerSentry
Model:	40914
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Marquardt
Test Conditions:	Tnom: 23°C, Unom: 120 VAC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	Dect + PSTN link, Charging
Test Date:	2015-01-09
Note:	



Spurious emissions under normal conditions according to FCC 15B

Project number: G0M-1412-4399

Manufacturer:	LogicMark, LLC
EUT Name:	CaretakerSentry
Model:	40914
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Marquardt
Test Conditions:	Tnom: 23°C, Unom: 120 VAC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m
Mode:	Dect + PSTN link, Charging
Test Date:	2015-01-09
Note:	



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
963,356 MHz	46,25 dBµV/m	54 dBµV/m	-7,75 dB	Pass
964,22 MHz	44,76 dBµV/m	54 dBµV/m	-9,24 dB	Pass

Spurious emissions under normal conditions according to FCC 15B

Project number: G0M-1412-4399

Manufacturer:	LogicMark, LLC
EUT Name:	CaretakerSentry
Model:	40914
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Marquardt
Test Conditions:	Tnom: 23°C, Unom: 120 VAC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3m
Mode:	Dect + PSTN link, Charging
Test Date:	2015-01-09
Note:	

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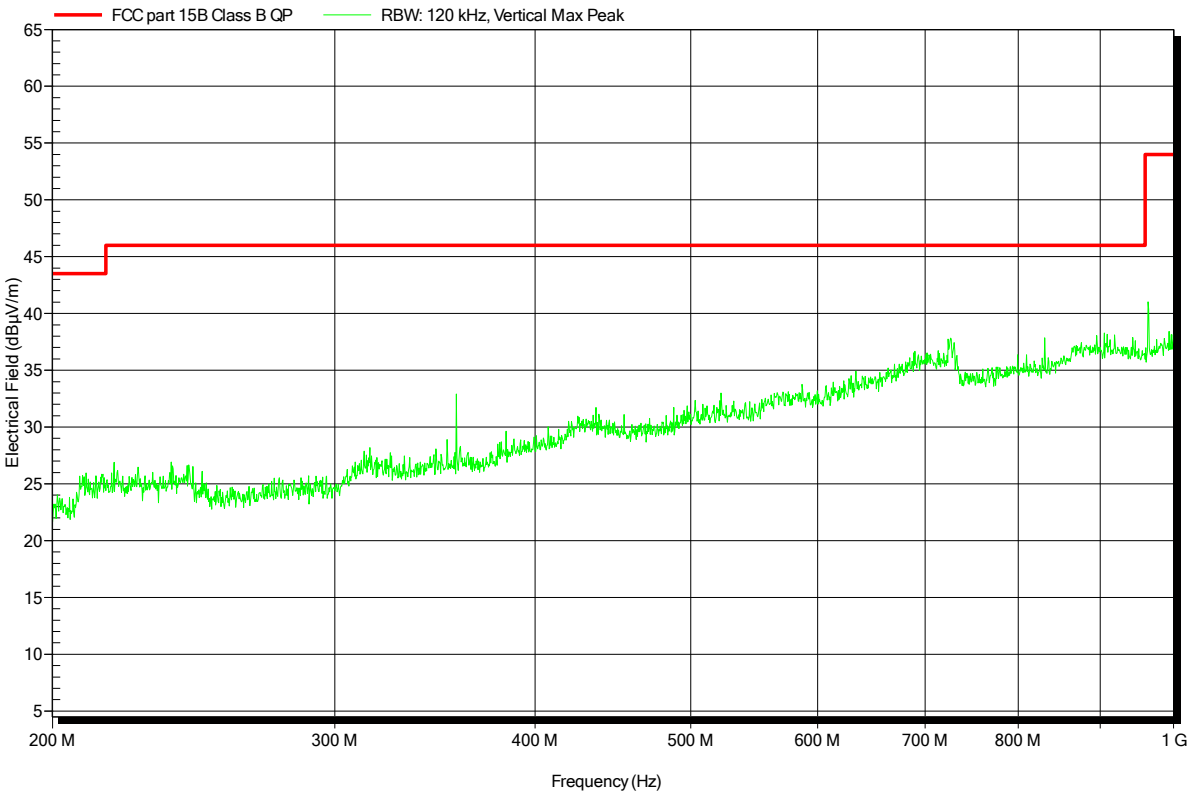

Spurious emissions under normal conditions according to FCC 15B

Project number: G0M-1412-4399

Manufacturer:	LogicMark, LLC
EUT Name:	CaretakerSentry
Model:	40914
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Marquardt
Test Conditions:	Tnom: 23°C, Unom: 120 VAC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3m
Mode:	Dect + PSTN link, Charging
Test Date:	2015-01-09
Note:	

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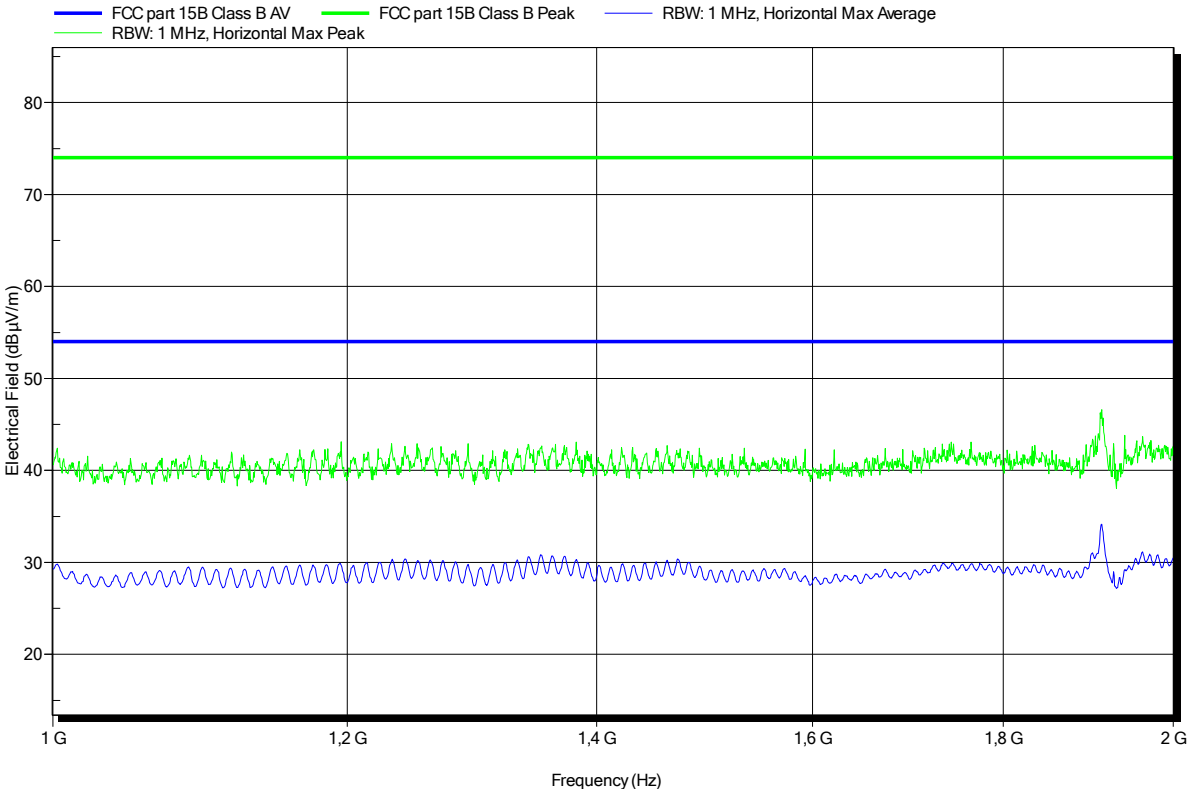

Spurious emissions under normal conditions according to FCC 15B

Project number: G0M-1412-4399

Manufacturer:	LogicMark, LLC
EUT Name:	CaretakerSentry
Model:	40914
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Marquardt
Test Conditions:	Tnom: 23°C, Unom: 120 VAC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3m
Mode:	Dect + PSTN link, Charging
Test Date:	2015-01-09
Note:	

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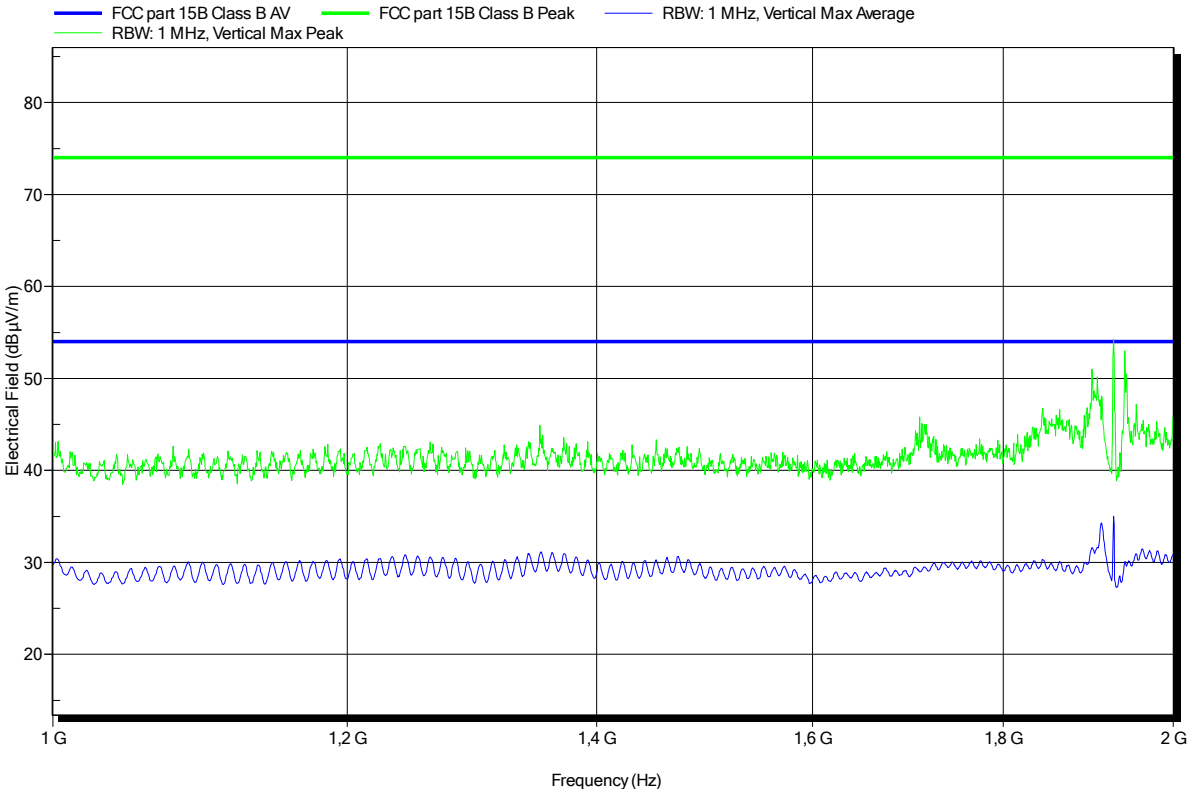


3.2 Test Conditions and Results – AC power line conducted emissions

Conducted emissions acc. FCC 47 CFR 15.107 / IC RSS-Gen				**Verdict: PASS**
Laboratory Parameters:	Required prior to the test	During the test		
Ambient Temperature	15 to 35 °C	23°C		
Relative Humidity	30 to 60 %	41%		
Test according referenced standards	Reference Method			
	ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15 MHz to 30 MHz			
Sample is tested with respect to the requirements of the equipment class	Equipment class			
	Class B			
Points of Application	Application Interface			
AC Mains	LISN			
Operating mode and configuration	1 / 1			
Limits and results Class B				
Frequency [MHz]	Quasi-Peak [dBµV]	Result	Average [dBµV]	Result
0.15 to 5	66 to 56*	PASS	56 to 46*	PASS
0.5 to 5	56	PASS	46	PASS
5 to 30	60	PASS	50	PASS
Comments: * Limit decreases linearly with the logarithm of the frequency.				

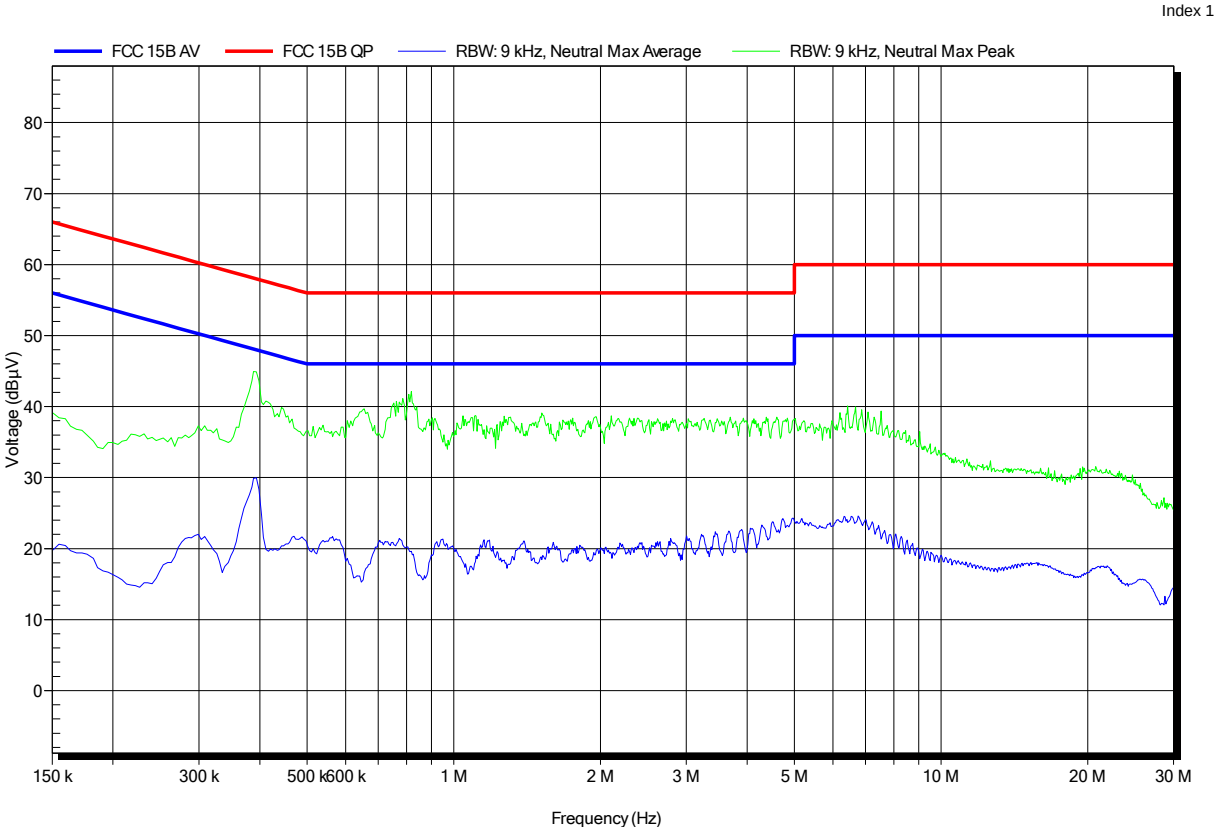
Test Procedure:

1) The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2009 item 7.3.1)
2) The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
3) The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
4) The LISN measurement port was connected to a measurement receiver
5) I/O cables were bundled not longer than 0.4 m
6) Measurement was performed in the frequency range 0.15 – 30MHz on each current-carrying conductor

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

Project number: G0M-1412-4399

Manufacturer:	LogicMark, LLC
EUT Name:	CaretakerSentry
Model:	40914
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 120 VAC
LISN:	ESH2-Z5 N
Mode:	Charging
Test Date:	2015-01-09
Note:	



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

Project number: G0M-1412-4399

Manufacturer:	LogicMark, LLC
EUT Name:	CaretakerSentry
Model:	40914
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 120 VAC
LISN:	ESH2-Z5 L
Mode:	Charging
Test Date:	2015-01-09
Note: