RADIO REPORT

FCC 47 CFR Part 15C
ISED Canada RSS-247

Digital transmission systems operating within the 2400 – 2483.5 MHz band

Report Reference No	G0M-1901-8009-TFC247BL-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Test Firm Designation Number: DE0008 ISED Testing Laboratory site: 3470A-2
Applicant	Piavita AG
Address	Ringbahnstrasse 18 12099 Berlin GERMANY
Test Specification	According to FCC/ISED rules
Standard	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, 2018-04
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Basestation stationary
Model(s)	B02S01
Additional Model(s)	None
Brand Name(s)	PiaVita
Hardware Version(s)	Version 02
Software Version(s)	B02I05F00
FCC-ID	2ASL2-PB9
IC	N/A
Test Result	**PASSED**

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
not applicable to EUT	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 - 23 °C	
Test Lab Humidity	32 – 38 %	
Date of receipt of test item	2019-02-19	
Report:		
Compiled by	Wilfried Treffke	
Tested by (+ signature) (Responsible for Test)	Wilfried Treffke	W. Treff .....
Approved by (+ signature) (Head of Lab)	Christian Weber	C. Weber .....
Date of Issue	2019-03-05	
Total number of pages	94	
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 History			
Version	Issue Date	Remarks	Revised By
01	2019-03-05	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V_{NOM}	Nominal supply voltage

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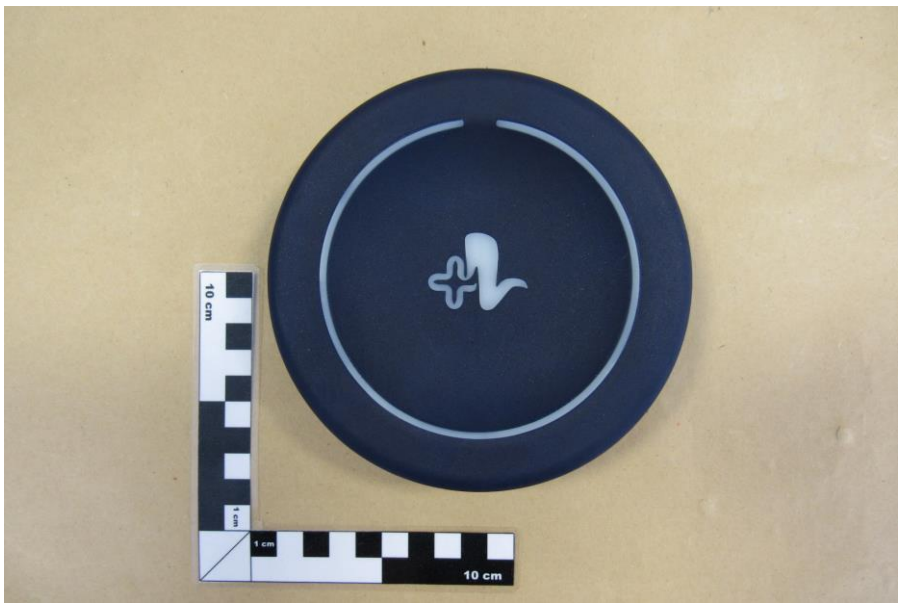
1 Equipment (Test Item) Under Test

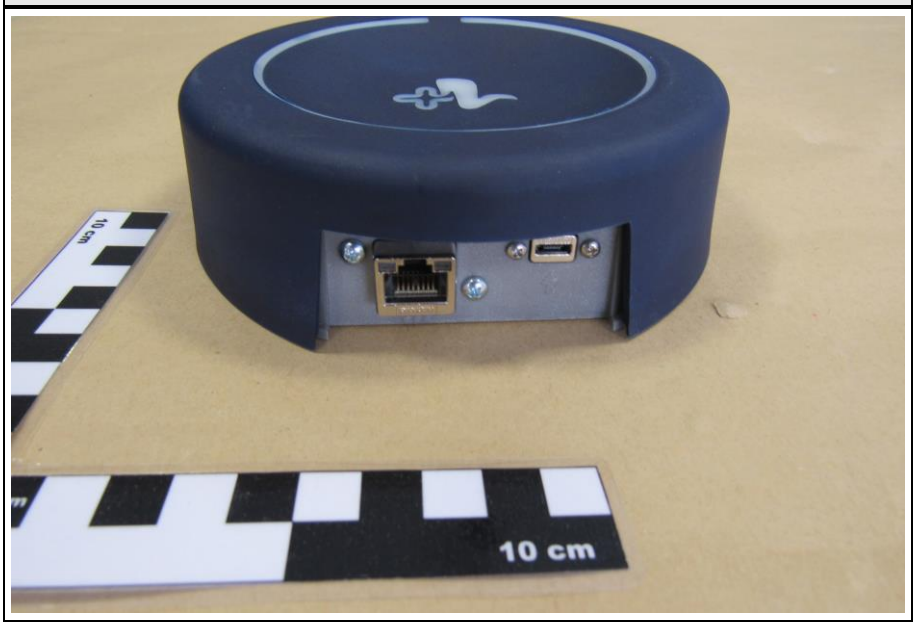
Description	Basestation stationary	
Model	B02S01	
Additional Model(s)	None	
Brand Name(s)	PiaVita	
Serial Number(s)	None	
Hardware Version(s)	Version 02	
Software Version(s)	B02I05F00	
PMN	N/A	
HVIN	N/A	
FVIN	N/A	
HMN	N/A	
FCC-ID	2ASL2-PB9	
IC	N/A	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400 - 2483.5 MHz	
Radio technology	Bluetooth LE	
Modulation	GFSK	
Number of antenna ports	1	
Antenna	Type	Integrated
	Model	FXP70.07.0053A
	Manufacturer	Taoglas
	Gain	5.0 dBi (manufacturer declaration)
Supply Voltage	V_{NOM}	5.0 VDC (USB AC/DC adaptor)
Operating Temperature	T_{NOM}	25 °C
AC/DC-Adaptor	Model	K103-0502100US
	Vendor	Piavet Veterinary Care System
	Input	100 - 240 VAC; 50 – 60 Hz
	Output	5V DC 2000mA micro-USB
Manufacturer	Piavita AG Ringbahnstrasse 18 12099 Berlin GERMANY	

1.1 Photos – Equipment External

EUT Overview

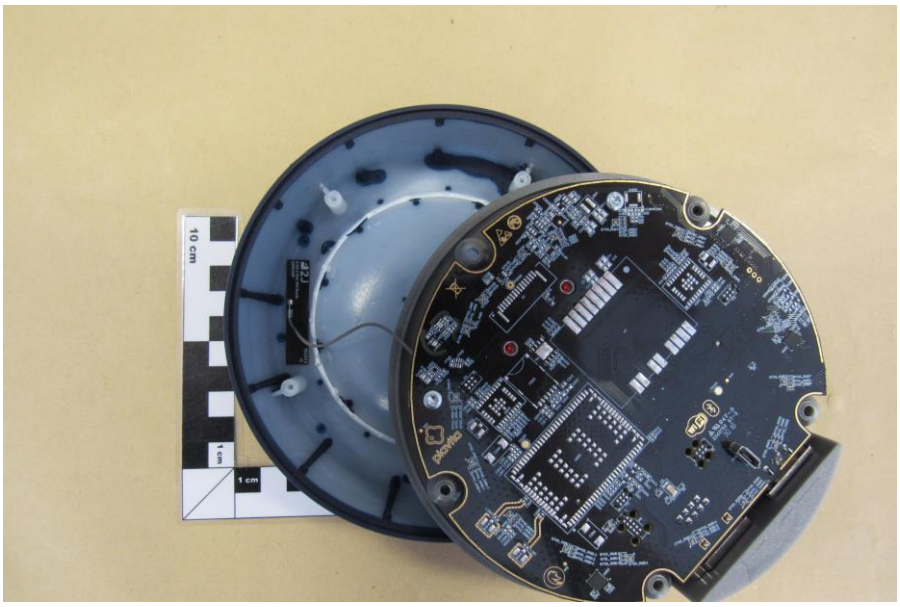
EUT Top View


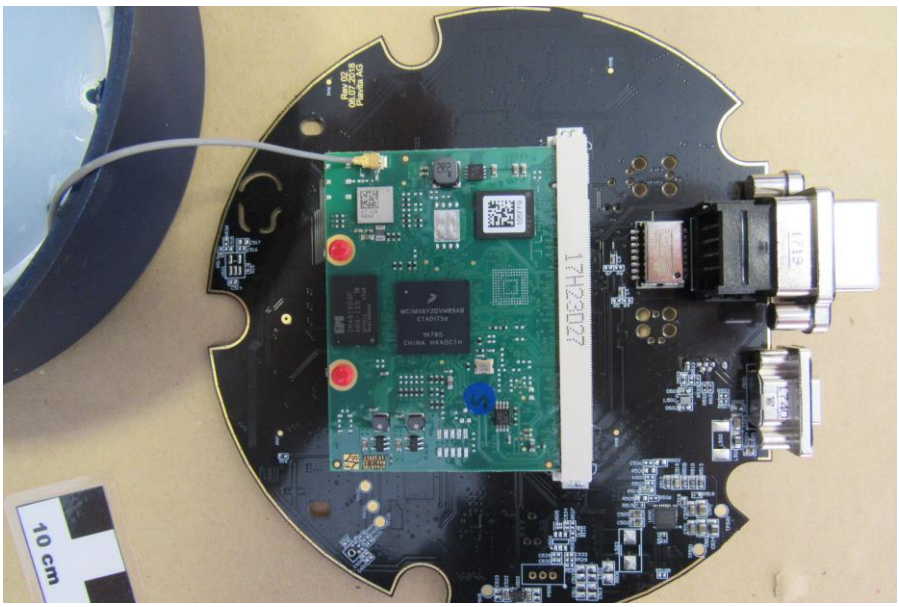
EUT Connector View



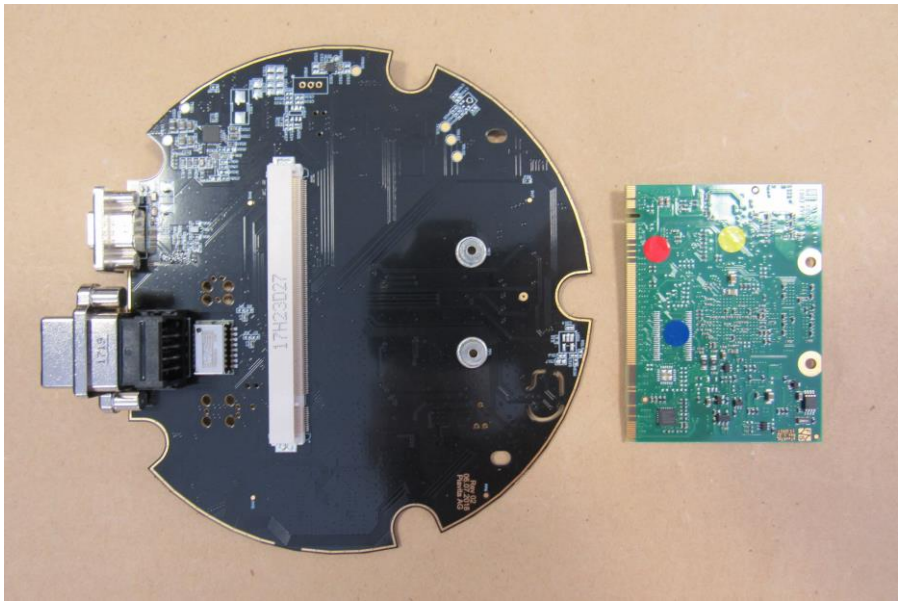
USB AC/DC-Adaptor

1.2 Photos – Equipment Internal

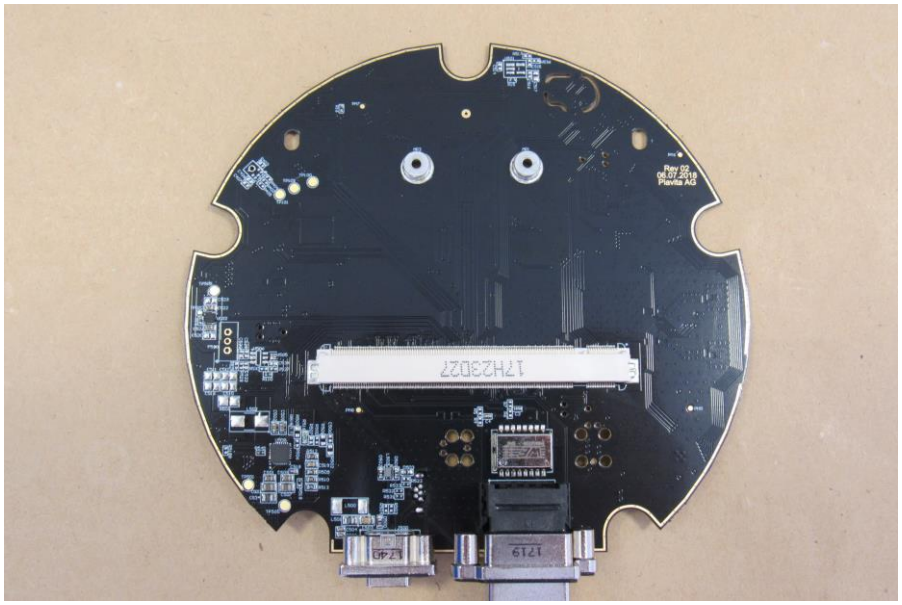
Main PCB and Antenna View


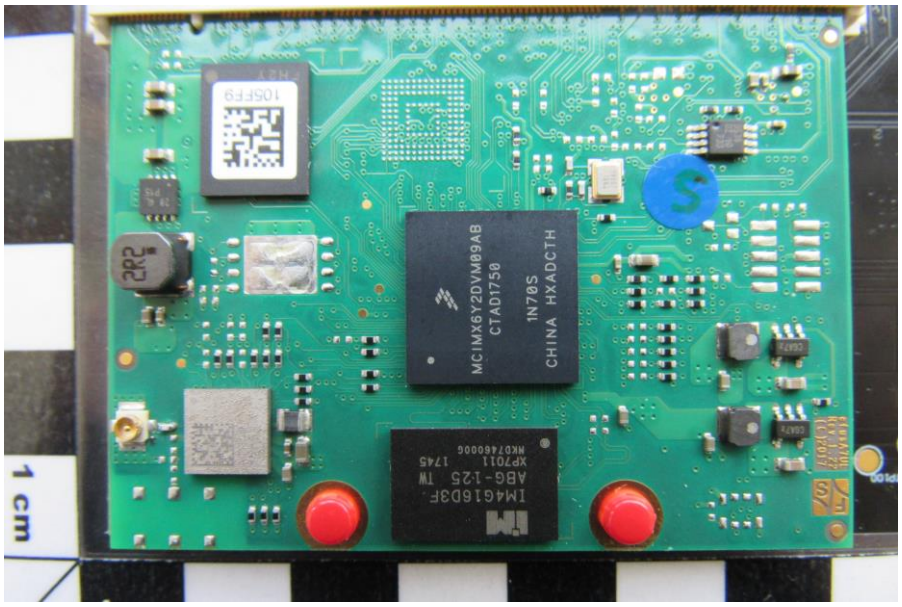
Main PCB with RF-PCB Top View


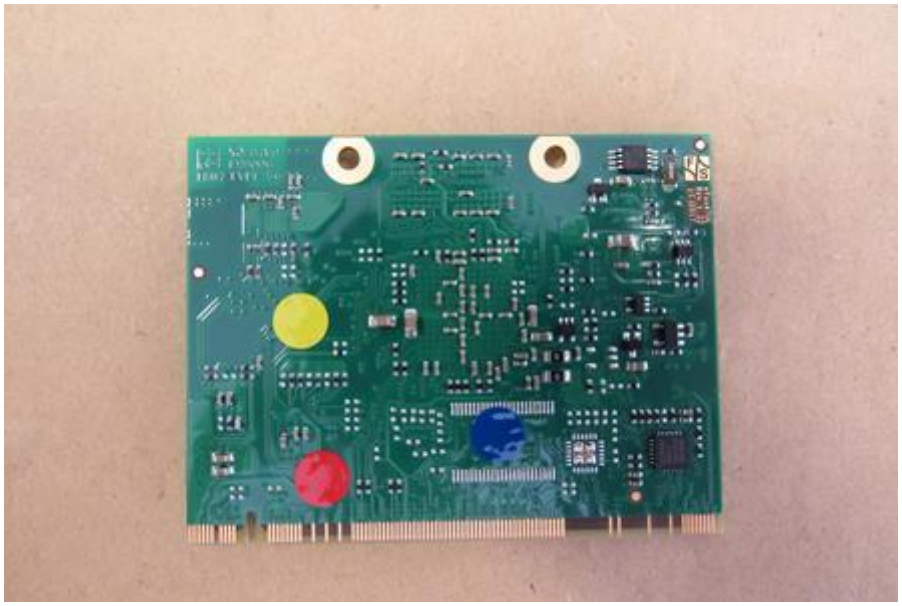
Main PCB with RF-PCB Bottom View



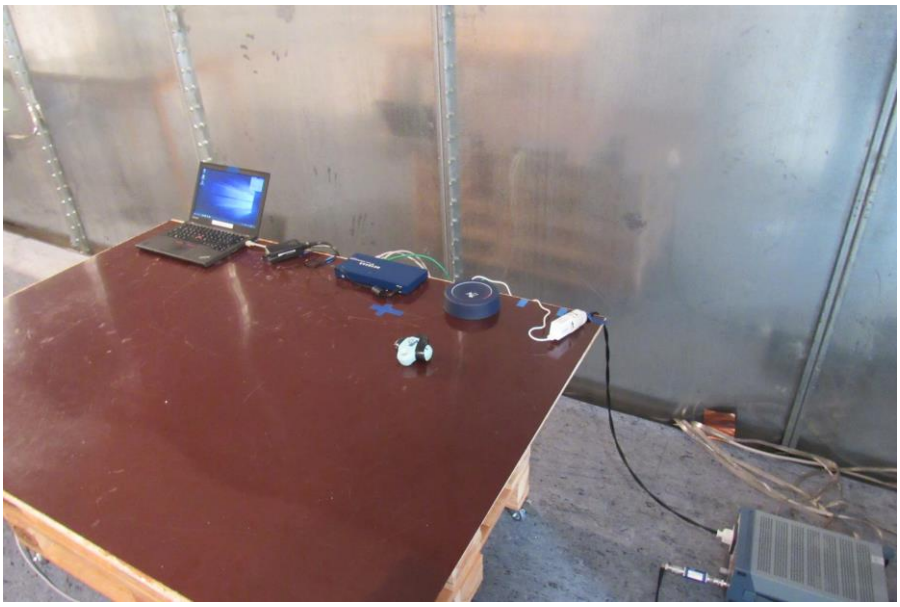
Main PCB Top View

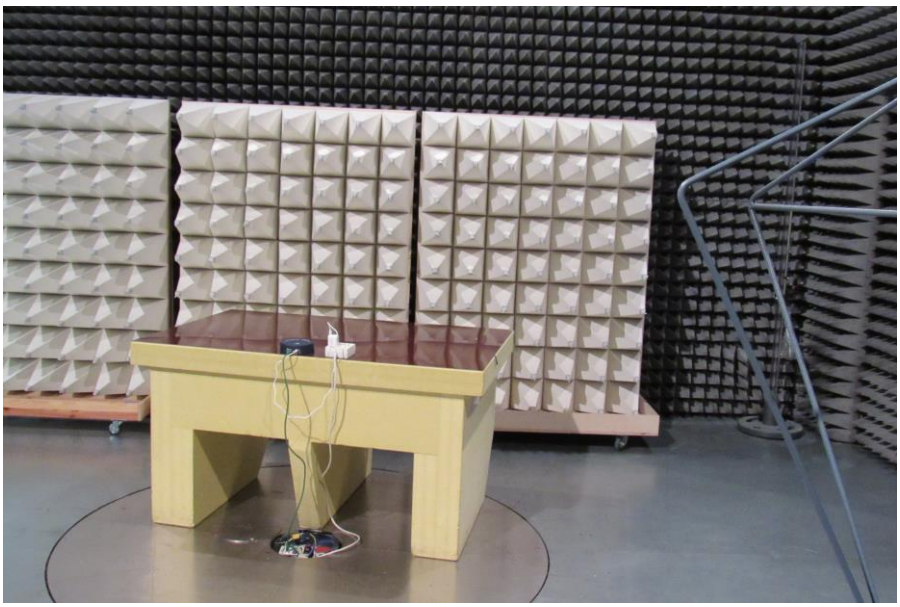


RF-PCB Top View


RF-PCB Bottom View


1.3 Photos – Test Setup

Conducted Setup


Radiated Setup


1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE	Laptop	HP	ProBook 6560b	-
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
Comment:				

1.5 Test Modes

Mode	Description
GFSK	Mode = Transmit Modulation = GFSK Spreading = None Duty cycle = 64%
Receive	Mode = Receive
Comment:	

1.6 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx / Rx	0	2402
F2	Tx / Rx	19	2440
F3	Tx / Rx	39	2480

1.7 Sample emission level calculation

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

Reading:

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

A.F.:

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

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

2 Result Summary

FCC 47 CFR Part 15C, ISED RSS-247				
Product Standard Reference	**Requirement**	**Reference Method**	**Result**	**Remarks**
ISED RSS-Gen, Issue 5 (section 6.6)	Occupied Bandwidth	ANSI C63.10-2013	N/R	Informational only
FCC § 15.247(a)(2) ISED RSS-247, Issue 2 (section 5.2)	6 dB Bandwidth	ANSI C63.10-2013	N/T	
FCC § 15.247(b)(1) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	PASS	
FCC § 15.247(e) ISED RSS-247, Issue 2 (section 5.2)	Power spectral density	ANSI C63.10-2013	PASS	
FCC § 15.207 ISED RSS-247, Issue 2 (section 3.1)	AC power line conducted emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Band edge compliance	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) FCC § 15.209 ISED RSS-Gen, Issue 5 (section 6.13)	Transmitter radiated spurious emissions	ANSI C63.10-2013	PASS	
ISED RSS-247, Issue 2 (section 3.1)	Receiver radiated spurious emissions	ANSI C63.10-2013	PASS	
Comment:				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - Occupied bandwidth

3.1.1 Information

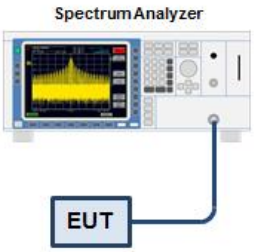
Test Information	
Reference	ISED RSS-Gen, Issue 5 (section 6.6)
Measurement Method	ANSI C63.10 6.9.3
Operator	Wilfried Treffke
Date	2019-02-28

3.1.2 Limits

Limits
None (Informational only)

3.1.3 Setup

Test Setup



3.1.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01407	2018-12	2019-12

3.1.5 Procedure

Test Procedure

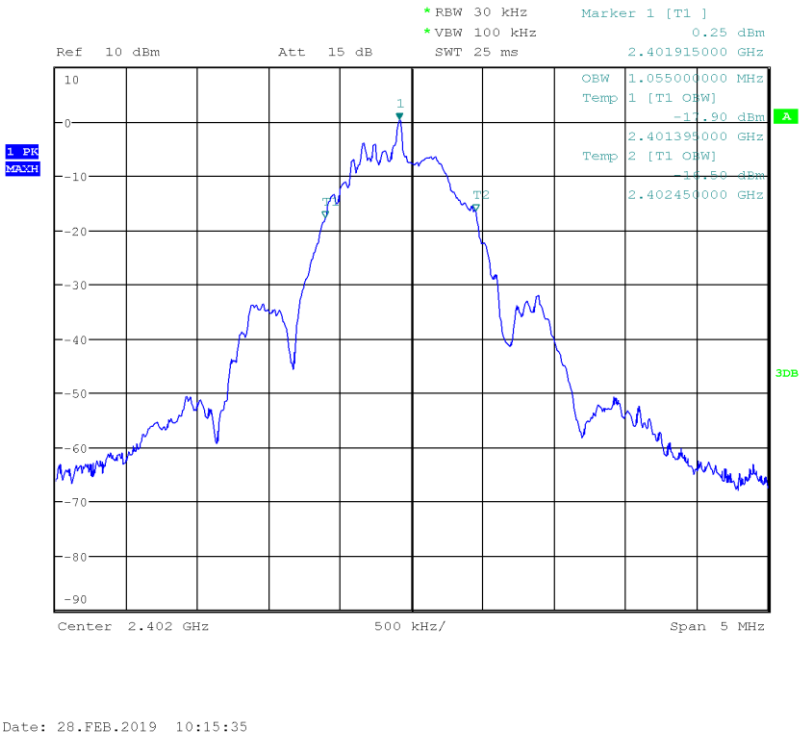
1. EUT transmitter is activated in test mode under normal conditions
2. The spectrum analyzer is set to peak detection and maximum hold with a span twice the emission spectrum
3. The resolution bandwidth is set to the range of 1 % to 5 % of the occupied bandwidth
4. The occupied bandwidth is measured with the build-in analyzer function

3.1.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
GFSK	2402	1.055
GFSK	2440	1.055
GFSK	2480	1.055

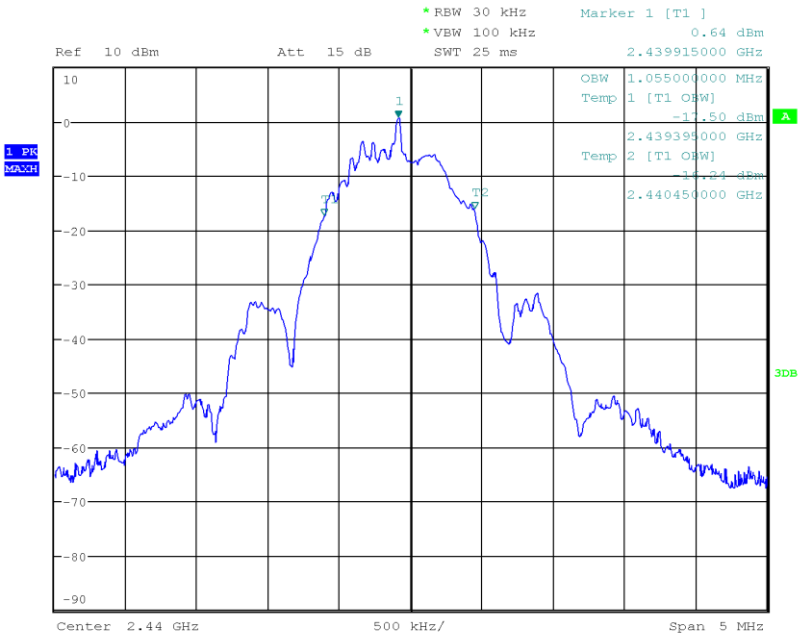
Occupied Bandwidth

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	GFSK, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Occupied Bandwidth [MHz]:	1.055



Occupied Bandwidth

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	GFSK, Channel: 19, 2440 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Occupied Bandwidth [MHz]:	1.055



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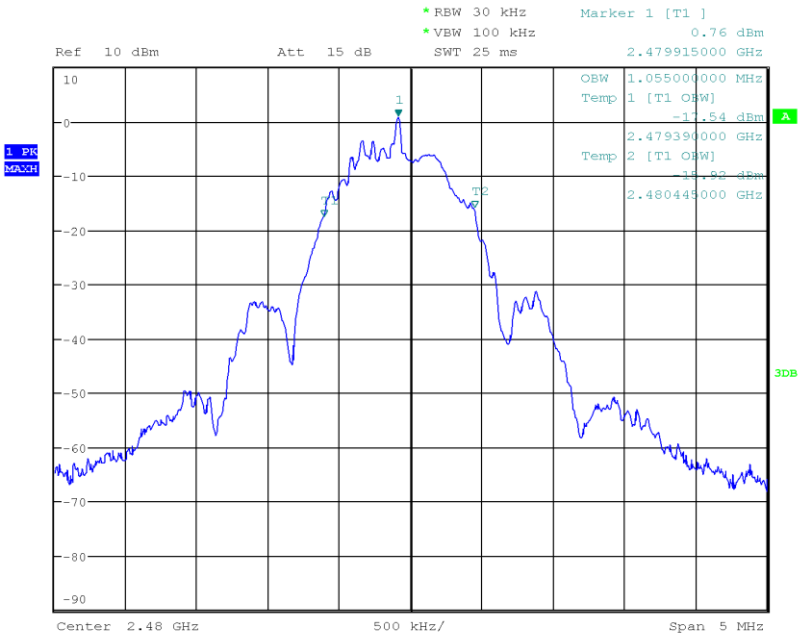
Occupied Bandwidth

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	GFSK, Channel: 39, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Occupied Bandwidth [MHz]:	1.055



Date: 28.FEB.2019 10:12:46

3.2 Test Conditions and Results - 6 dB bandwidth

3.2.1 Information

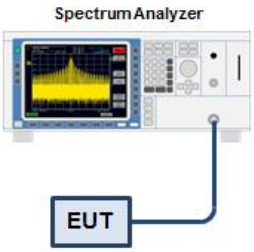
Test Information	
Reference	FCC § 15.247(a)(2); ISED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.8
Operator	Wilfried Treffke
Date	2019-02-28

3.2.2 Limits

Limits
≥ 500kHz

3.2.3 Setup

Test Setup



3.2.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01407	2018-12	2019-12

3.2.5 Procedure

Test Procedure

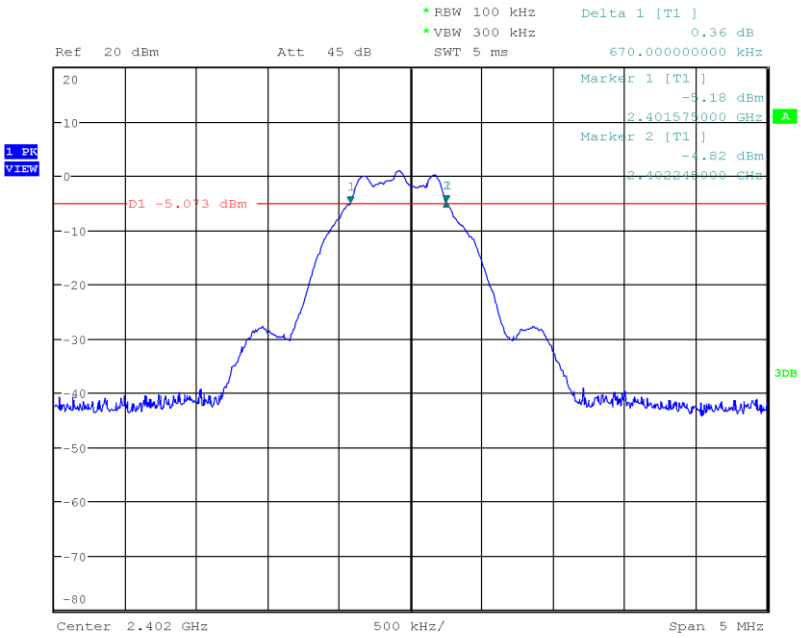
1. EUT set to test mode
2. Span set to at least twice the emission spectrum
3. Detector set to peak and max hold and RBW is set to 100 kHz
4. Envelope peak value of emission spectrum is selected
5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak
6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak
7. 6 dB Bandwidth is determined by marker frequency separation

3.2.6 Results

Test Results				
Mode	Frequency [MHz]	Bandwidth [kHz]	Limit [kHz]	Verdict
GFSK	2402	670	500	PASS
GFSK	2440	670	500	PASS
GFSK	2480	660	500	PASS

DTS (6 dB) Bandwidth

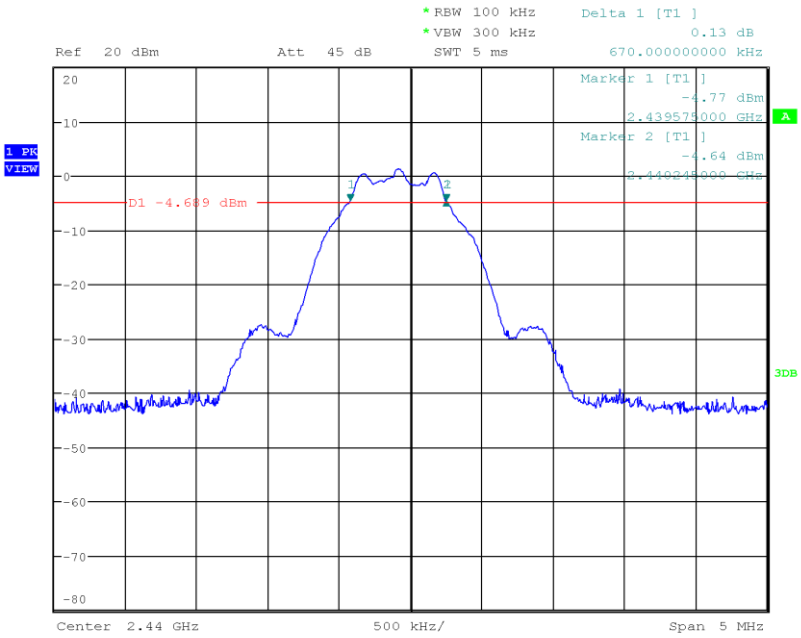
Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.8.1 Option 1
Operational Mode:	GFSK, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Lower Frequency [MHz]:	2401.575
Upper Frequency [MHz]:	2402.245
6 dB Bandwidth [kHz]:	670



Date: 28.FEB.2019 10:00:47

DTS (6 dB) Bandwidth

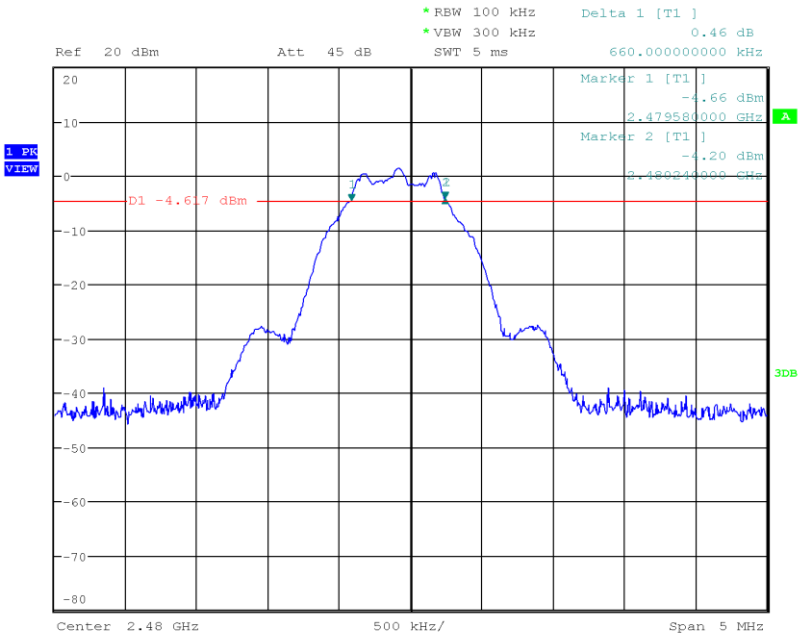
Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.8.1 Option 1
Operational Mode:	GFSK, Channel: 19, 2440 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Lower Frequency [MHz]:	2439.575
Upper Frequency [MHz]:	2440.245
6 dB Bandwidth [kHz]:	670



Date: 28.FEB.2019 10:04:30

DTS (6 dB) Bandwidth

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.8.1 Option 1
Operational Mode:	GFSK, Channel: 39, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Lower Frequency [MHz]:	2479.580
Upper Frequency [MHz]:	2480.240
6 dB Bandwidth [kHz]:	660



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3.3 Test Conditions and Results - Maximum peak conducted output power

3.3.1 Information

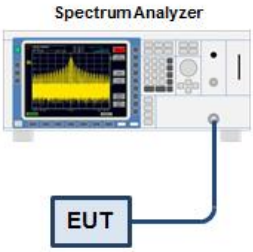
Test Information	
Reference	FCC § 15.247(b)(1); ISED RSS-247, Issue 2 (section 5.4)
Measurement Method	ANSI C63.10 11.9.1
Operator	Wilfried Treffke
Date	2019-02-28

3.3.2 Limits

Limits
1 W (30 dBm)
The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.3 Setup

Test Setup



3.3.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01407	2018-12	2019-12

3.3.5 Procedure

Test Procedure

1. EUT set to test hopping mode (Communication tester is used if needed)
2. Analyzer resolution bandwidth is set ≥ DTS bandwidth
3. Detector set to peak and max hold
4. Sweep time is set to auto
5. After the trace has stabilized a marker is set to peak of envelope

3.3.6 Results

Test Results				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2402	2.035	0.0016	1.0	PASS
2440	2.409	0.0017	1.0	PASS
2480	2.511	0.0018	1.0	PASS

3.4 Test Conditions and Results - Power spectral density

3.4.1 Information

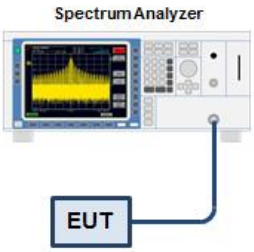
Test Information	
Reference	FCC § 15.247(e); ISED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.10.2, 14.3.2
Operator	Wilfried Treffke
Date	2019-02-28

3.4.2 Limits

Limits
8 dBm / 3 kHz

3.4.3 Setup

Test Setup



3.4.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01407	2018-12	2019-12

3.4.5 Procedure

Test Procedure

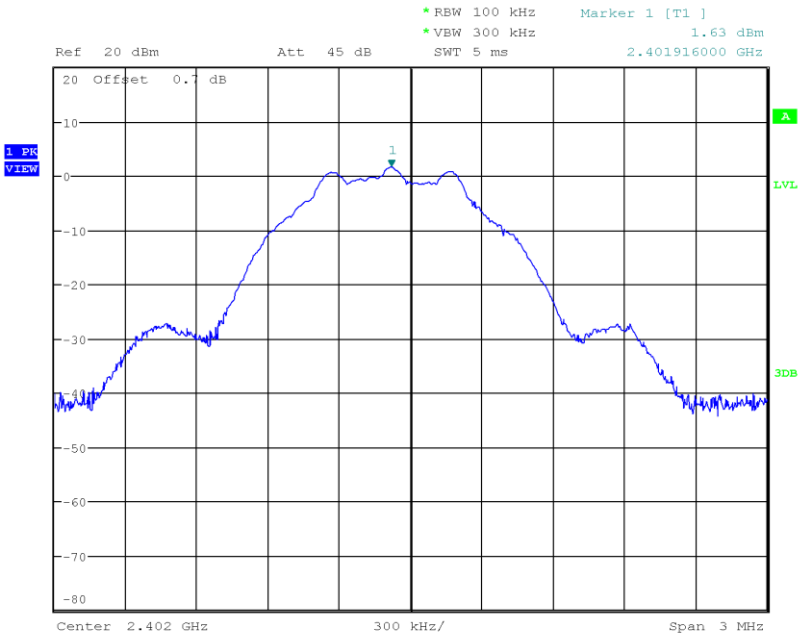
1. EUT set to test mode
2. The analyzer is set to DTS channel center frequency with a span of 1.5 times the DTS bandwidth
3. The RBW is set to 100 kHz with VBW ≥ RBW and the detector is set to peak with max hold
4. After the trace has stabilized a marker is set to the envelope maximum
5. If the power spectral density is above the limit the RBW is reduced (not lower than 3 kHz) and the measurement is repeated
6. If the EUT has more than one transmit chain the procedure is repeated for each transmit chain

3.4.6 Results

Test Results			
Channel [MHz]	PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
2402	1.627	8.0	PASS
2440	2.009	8.0	PASS
2480	2.119	8.0	PASS
RBW = 100 kHz			

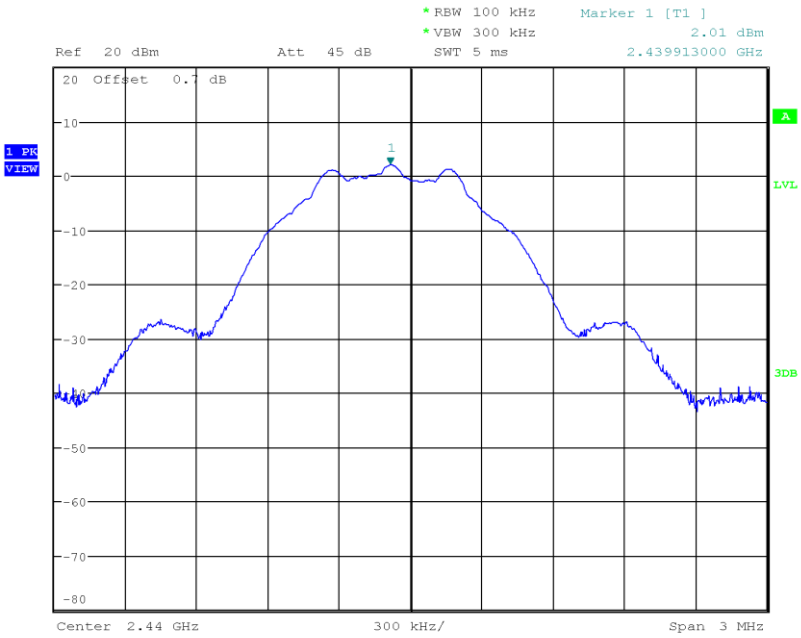
Peak Power Spectral Density

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.10.2
Operational Mode:	GFSK, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Peak Frequency [MHz]:	2401.916
Spectral Density [dBm/RBW]:	1.627
Resolution Bandwidth [kHz]:	100 kHz



Peak Power Spectral Density

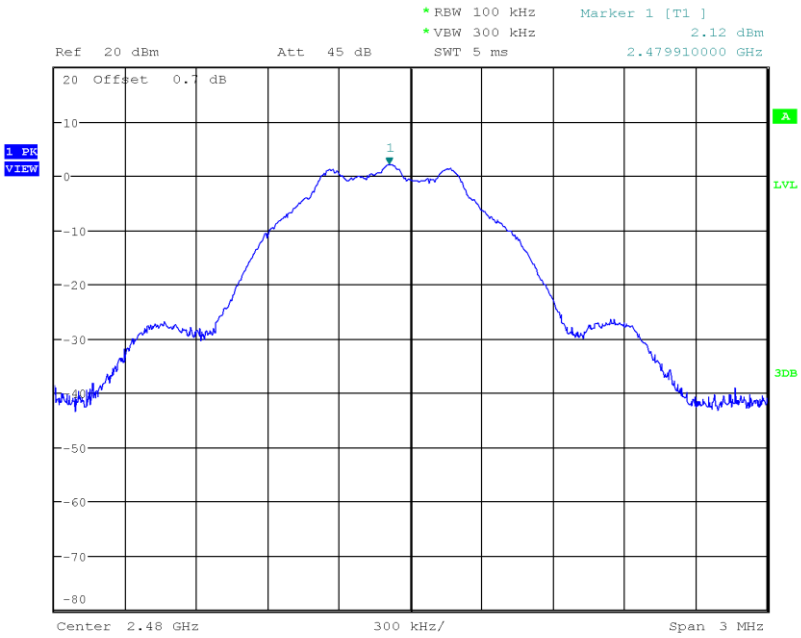
Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.10.2
Operational Mode:	GFSK, Channel: 19, 2440 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Peak Frequency [MHz]:	2439.913
Spectral Density [dBm/RBW]:	2.009
Resolution Bandwidth [kHz]:	100 kHz



Date: 28.FEB.2019 10:26:17

Peak Power Spectral Density

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.10.2
Operational Mode:	GFSK, Channel: 39, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Peak Frequency [MHz]:	2479.910
Spectral Density [dBm/RBW]:	2.119
Resolution Bandwidth [kHz]:	100 kHz



Date: 28.FEB.2019 10:24:46

3.5 Test Conditions and Results - AC powerline conducted emissions

3.5.1 Information

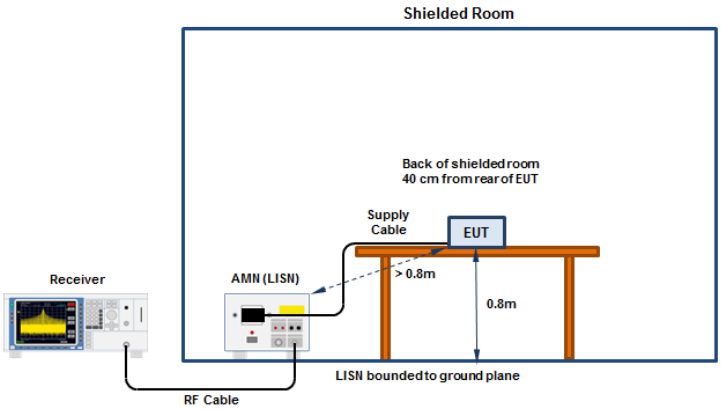
Test Information	
Reference	FCC § 15.207; ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.2
Operator	Wilfried Treffke
Date	2019-03-01

3.5.2 Limits

Limits		
Frequency [MHz]	Quasi-Peak [dBµV]	Average [dBµV]
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50
* Limit decreases linearly with the logarithm of the frequency		

3.5.3 Setup

Test Setup



3.5.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2016.1.10

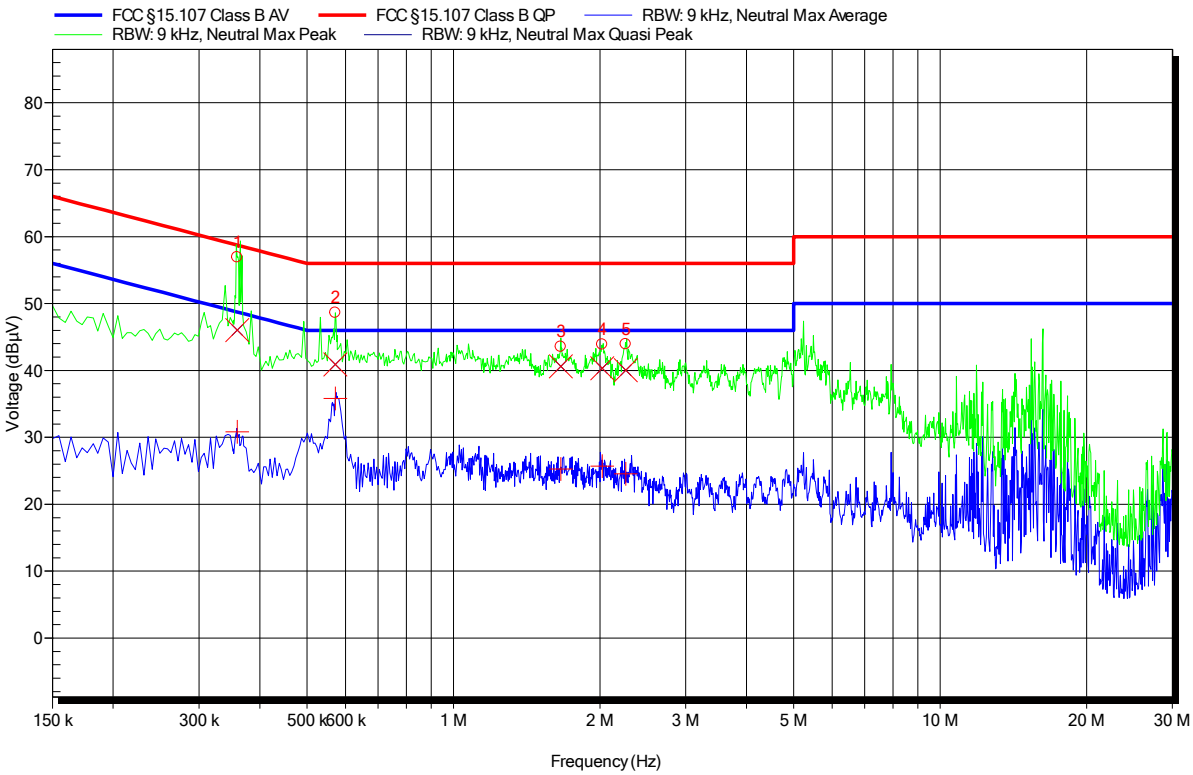
Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Receiver	R&S	ESU 26	EF00241	2017-07	2019-07
LISN	R&S	ESH3-Z5	EF00036	2017-01	2019-07

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

Project number: G0M-1901-8009

Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 22°C, Unom: 120V AC
LISN:	ESH3-Z5 (N)
Mode:	BLE; Tx
Test Date:	2019-03-01
Note:	

Index 1



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	359.7 kHz	46 dBµV	58.74 dBµV	-12.73 dB	Pass
2	571.65 kHz	40.91 dBµV	56 dBµV	-15.09 dB	Pass
3	1.662 MHz	40.63 dBµV	56 dBµV	-15.37 dB	Pass
4	2.022 MHz	40.33 dBµV	56 dBµV	-15.67 dB	Pass
5	2.26 MHz	40.05 dBµV	56 dBµV	-15.95 dB	Pass

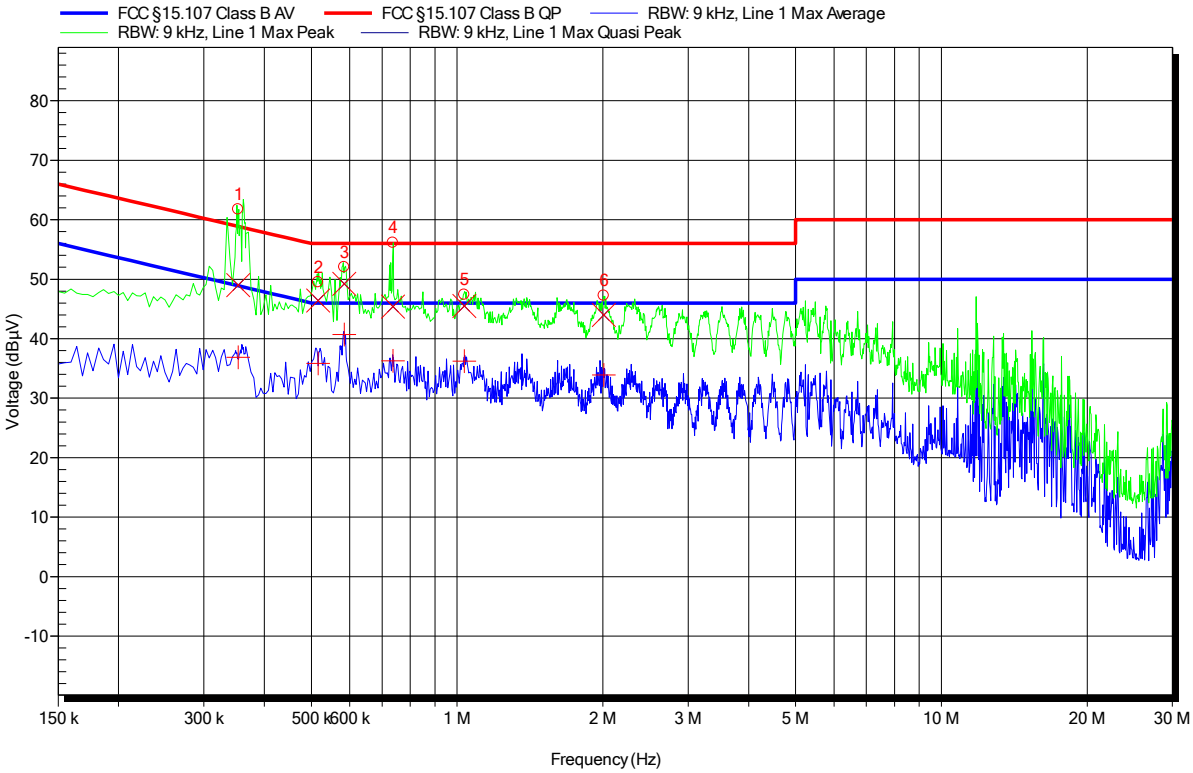
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	359.7 kHz	30.85 dBµV	48.74 dBµV	-17.89 dB	Pass
2	571.65 kHz	35.81 dBµV	46 dBµV	-10.19 dB	Pass
3	1.662 MHz	25.24 dBµV	46 dBµV	-20.76 dB	Pass
4	2.022 MHz	25.69 dBµV	46 dBµV	-20.31 dB	Pass
5	2.26 MHz	24.56 dBµV	46 dBµV	-21.44 dB	Pass

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

Project number: G0M-1901-8009

Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 22°C, Unom: 120V AC
LISN:	ESH3-Z5 (L)
Mode:	BLE; Tx
Test Date:	2019-03-01
Note:	

Index 2



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	353.4 kHz	49.03 dBµV	58.88 dBµV	-9.85 dB	Pass
2	516.3 kHz	46.44 dBµV	56 dBµV	-9.56 dB	Pass
3	585.15 kHz	49.2 dBµV	56 dBµV	-6.8 dB	Pass
4	736.8 kHz	45.37 dBµV	56 dBµV	-10.63 dB	Pass
5	1.035 MHz	45.52 dBµV	56 dBµV	-10.48 dB	Pass
6	2.008 MHz	43.97 dBµV	56 dBµV	-12.03 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	353.4 kHz	36.85 dBµV	48.88 dBµV	-12.04 dB	Pass
2	516.3 kHz	35.83 dBµV	46 dBµV	-10.17 dB	Pass
3	585.15 kHz	40.69 dBµV	46 dBµV	-5.31 dB	Pass
4	736.8 kHz	36.28 dBµV	46 dBµV	-9.72 dB	Pass
5	1.035 MHz	36.23 dBµV	46 dBµV	-9.77 dB	Pass
6	2.008 MHz	33.89 dBµV	46 dBµV	-12.11 dB	Pass

3.6 Test Conditions and Results - Band-edge compliance

3.6.1 Information

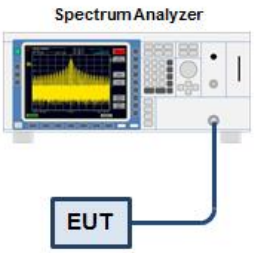
Test Information	
Reference	FCC § 15.247(d); ISED RSS-247, Issue 2 (section 5.5)
Measurement Method	ANSI C63.10 11.13
Operator	Wilfried Treffke
Date	2019-02-28

3.6.2 Limits

Limits	
Power Measurement	Out-of-band attenuation [dB]
Peak	20
RMS	30

3.6.3 Setup

Test Setup



3.6.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01407	2018-12	2019-12

3.6.5 Procedure

Test Procedure

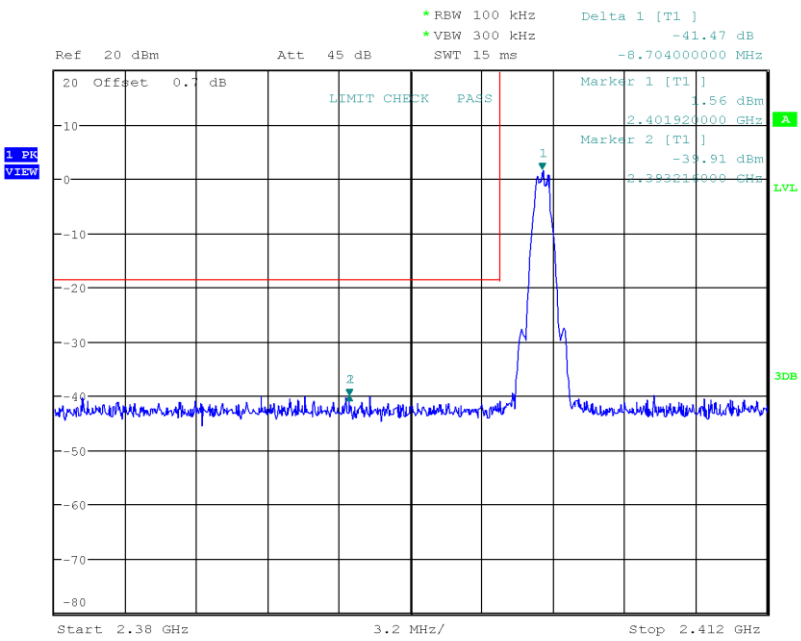
1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
4. Markers are set to peak emission levels within frequency band and outside frequency band
5. Band edge attenuation is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

3.6.6 Results

Test Results				
Mode	Channel [MHz]	Out-of-band Attenuation [dB]	Limit [dB]	Verdict
GFSK	2402	-41.47	-20	PASS
GFSK	2480	-41.3	-20	PASS

Band-edge Compliance

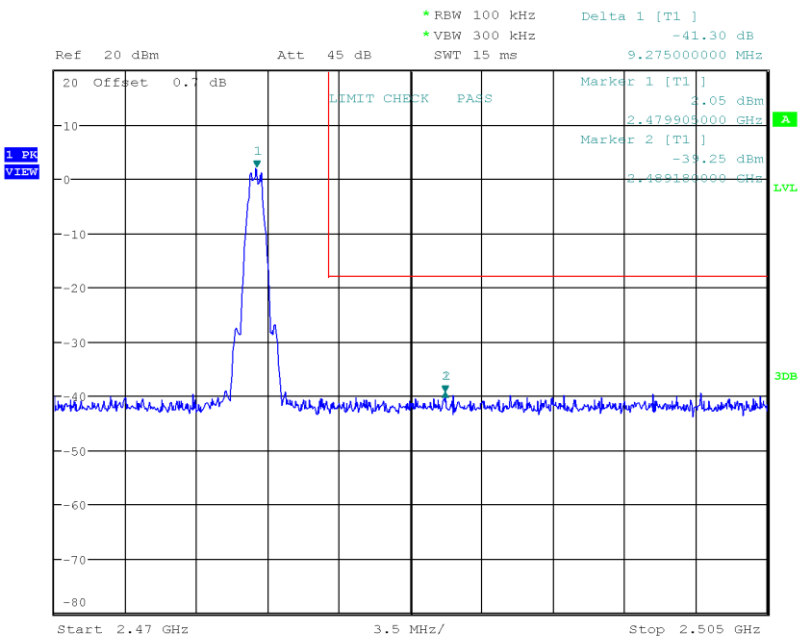
Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Band-edge	Lower
In-band Frequency [MHz]:	2401.92
Max. in-band Level [dBm/100 kHz]:	1.559
Out-of-band Frequency [MHz]:	2393.216
Max. out-of-band Level [dBm/100 kHz]:	-39.915
Attenuation [dB]:	-41.47



Date: 28.FEB.2019 10:30:28

Band-edge Compliance

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Band-edge	Upper
In-band Frequency [MHz]:	2479.905
Max. in-band Level [dBm/100 kHz]:	2.054
Out-of-band Frequency [MHz]:	2489.18
Max. out-of-band Level [dBm/100 kHz]:	-39.249
Attenuation [dB]:	-41.3



Date: 28.FEB.2019 10:32:05

3.7 Test Conditions and Results - Conducted spurious emissions

3.7.1 Information

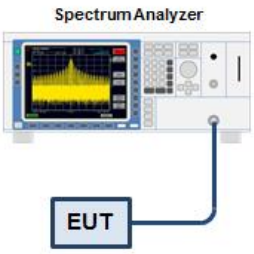
Test Information	
Reference	FCC § 15.247(d); ISED RSS-247, Issue 2 (section 5.5)
Measurement Method	ANSI C63.10 11.11
Operator	Wilfried Treffke
Date	2019-02-28

3.7.2 Limits

Limits	
Power Measurement	Out-of-band attenuation [dB]
Peak	20
RMS	30

3.7.3 Setup

Test Setup



3.7.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01407	2018-12	2019-12

3.7.5 Procedure

Test Procedure

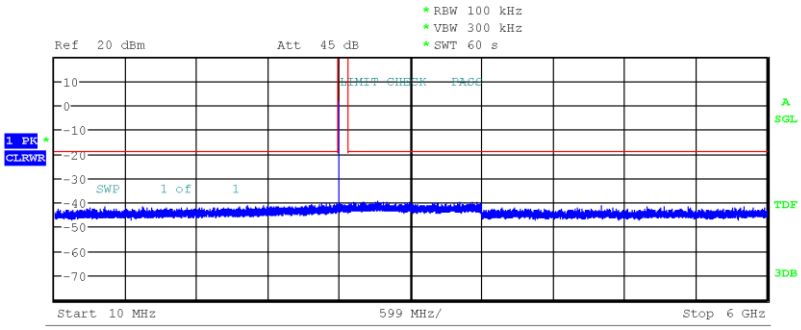
1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
4. Markers are set to peak emission levels within frequency band and outside frequency band
5. Band edge attenuation is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

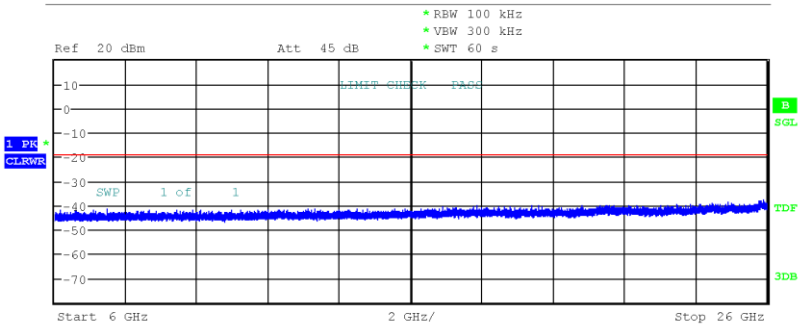
3.7.6 Results

Test Results		
Mode	Channel [MHz]	Verdict
GFSK	2402	PASS
GFSK	2440	PASS
GFSK	2480	PASS

Conducted Spurious Emissions

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.11
Operational Mode:	GFSK, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Max. in-band Frequency [MHz]:	2401.9
Max. in-band Level [dBm/100 kHz]:	1.4
Out-of-band Limit [dBm/100 kHz]:	-18.6

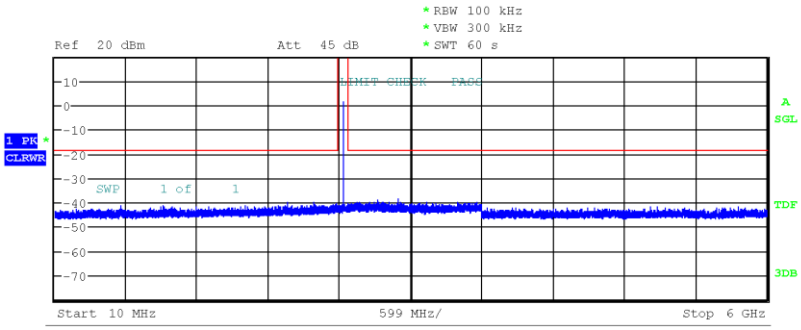


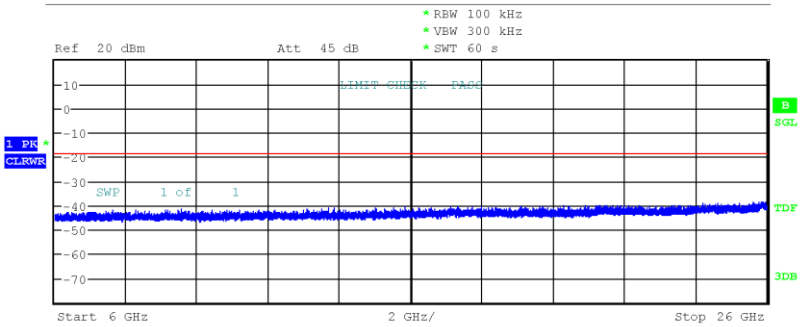


Date: 28.FEB.2019 10:45:29

Conducted Spurious Emissions

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.11
Operational Mode:	GFSK, Channel: 19, 2440 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Max. in-band Frequency [MHz]:	2439.9
Max. in-band Level [dBm/100 kHz]:	1.8
Out-of-band Limit [dBm/100 kHz]:	-18.2

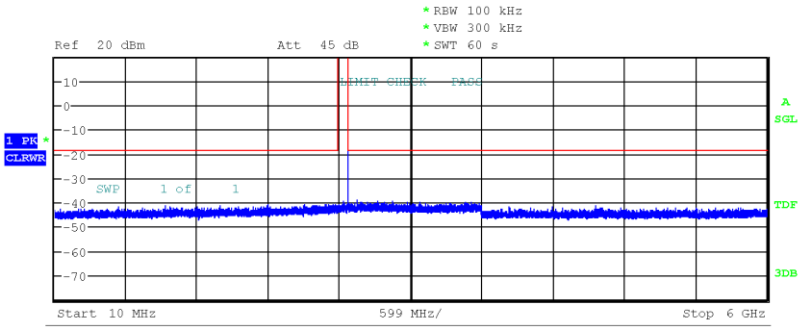


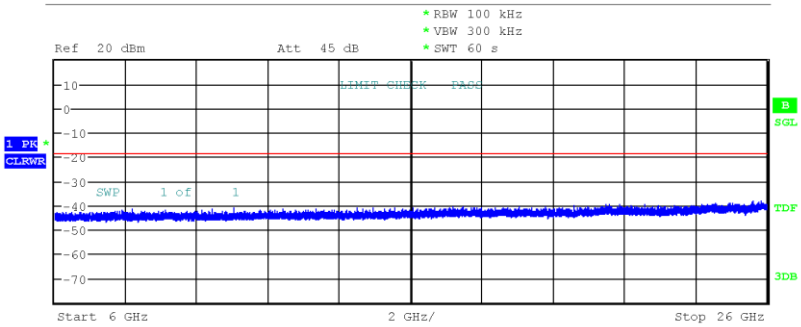


Date: 28.FEB.2019 10:41:45

Conducted Spurious Emissions

Project Number:	G0M-1901-8009
Applicant:	Piavita AG
Model Description:	Basestation
Model:	B02S01
Test Sample ID:	22958
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.11
Operational Mode:	GFSK, Channel: 39, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-02-28
Max. in-band Frequency [MHz]:	2479.9
Max. in-band Level [dBm/100 kHz]:	1.9
Out-of-band Limit [dBm/100 kHz]:	-18.1





Date: 28.FEB.2019 10:36:31

3.8 Test Conditions and Results - Transmitter radiated emissions

3.8.1 Information

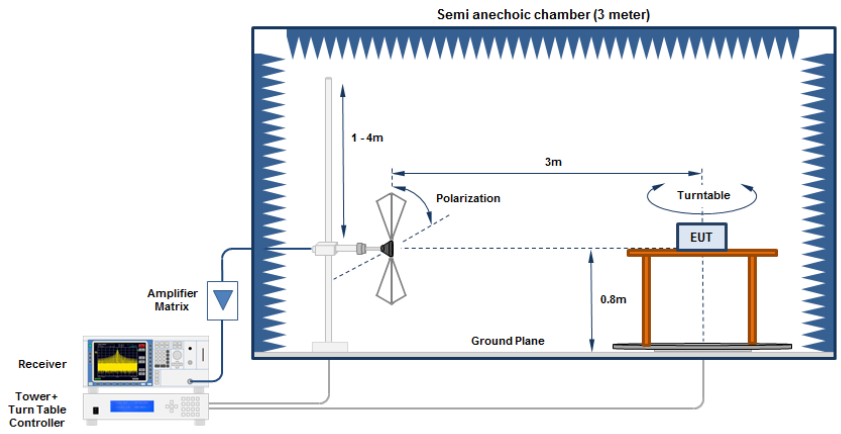
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISED RSS-Gen, Issue 5 (section 6.13)
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Wilfried Treffke
Date	2019-03-01

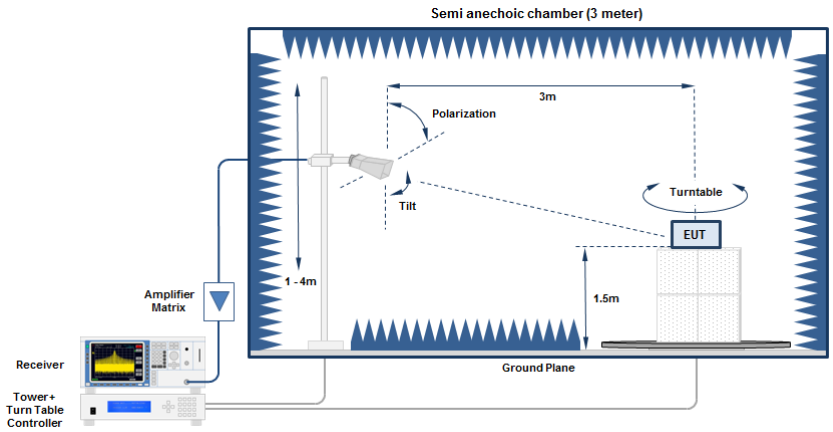
3.8.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [µV/m]	Measurement distance [m]
0.009 - 0.09	Average	2400/F[kHz]	300
0.09 - 0.110	Quasi-Peak	2400/F[kHz]	300
0.110 - 0.490	Average	2400/F[kHz]	300
0.490 - 1.705	Quasi-Peak	24000/F[kHz]	30
1.705 - 30.0	Quasi-Peak	30	30
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.8.3 Setup

Test Setup 30 - 1000 MHz



Test Setup > 1 GHz


3.8.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2015.2.4

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	R&S	ESU 26	EF00887	2018-08	2019-08
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2018-08	2019-08
Antenna	R&S	VULB 9162	EF00978	2016-11	2019-11
Antenna	R&S	HK 116	EF00030	2016-04	2019-04
Antenna	R&S	HL 223	EF00212	2016-04	2019-04

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	R&S	ESU 26	EF00887	2018-08	2019-08
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2018-08	2019-08
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2016-09	2019-09
Antenna	Amplifier Research	AT4560	EF00302	2018-04	2019-04

3.8.5 Procedure

Test Procedure < 30 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The EUT is rotated through 360° 4. The emissions are measured with peak detector and max hold 5. All significant emissions are measured again using the corresponding final detector

Test Procedure 30 - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

3.8.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2402	37.615	31.66	qpk	ver	40.00	-08.34
2402	249.92	28.74	pk	hor	46.00	-17.26
2402	1187.2	37.89	pk	hor	74.00	-36.11
2402	1499.5	38.89	pk	ver	74.00	-35.11
2402	2389.6	50.43	pk	hor	74.00	-23.57
2402	2389.6	38.26	RMS	hor	54.00	-15.74
2402	2757.7	39.14	pk	hor	74.00	-34.86
2440	1499.5	38.93	pk	hor	74.00	-35.07
2440	1528.6	39.20	pk	ver	74.00	-34.80
2440	7319	54.00	pk	hor	74.00	-20.00
2440	7319	51.72	RMS	hor	54.00	-02.28
2440	7319	50.54	pk	ver	74.00	-23.46
2440	7319	48.02	RMS	ver	54.00	-05.98
2480	7439	54.10	pk	ver	74.00	-19.90
2480	7439	51.67	RMS	ver	54.00	-02.33
2480	7441	50.78	pk	hor	74.00	-23.22
2480	7441	46.79	RMS	hor	54.00	-07.21

3.9 Test Conditions and Results - Receiver radiated emissions

3.9.1 Information

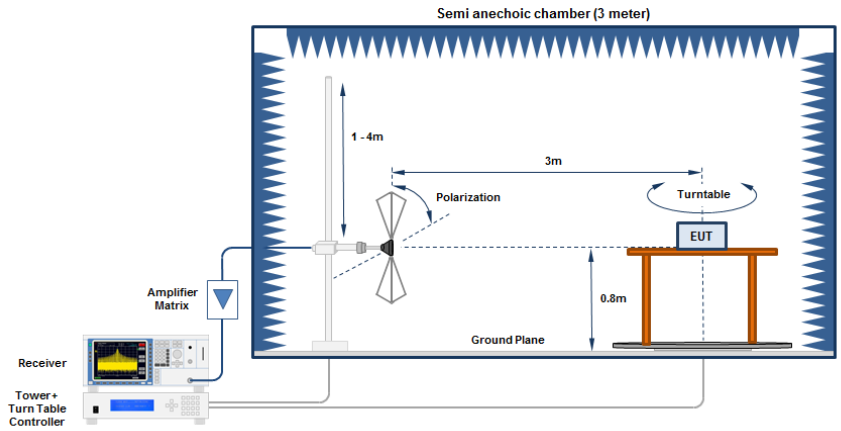
Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.5, 6.6, 11.12
Operator	Wilfried Treffke
Date	2019-03-01

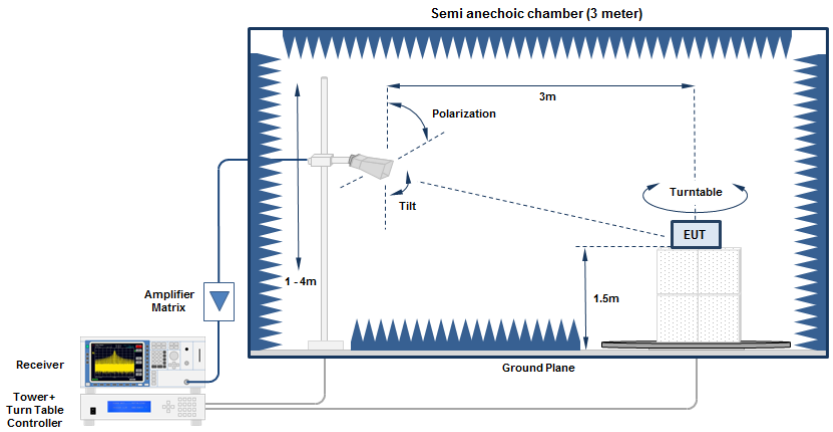
3.9.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [dBµV/m]	Measurement distance [m]
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.9.3 Setup

Test Setup 30 - 1000 MHz



Test Setup > 1 GHz


3.9.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2015.2.4

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	R&S	ESU 26	EF00887	2018-08	2019-08
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2018-08	2019-08
Antenna	R&S	VULB 9162	EF00978	2016-11	2019-11
Antenna	R&S	HK 116	EF00030	2016-04	2019-04
Antenna	R&S	HL 223	EF00212	2016-04	2019-04

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	R&S	ESU 26	EF00887	2018-08	2019-08
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2018-08	2019-08
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2016-09	2019-09
Antenna	Amplifier Research	AT4560	EF00302	2018-04	2019-04

3.9.5 Procedure

Test Procedure 30 - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

3.9.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2440	32.818	33.87	qpk	ver	40.00	-06.13
2440	54.109	31.86	qpk	ver	40.00	-08.14
2440	449.982	40.41	qpk	hor	46.00	-05.59
2440	449.984	40.91	qpk	ver	46.00	-05.09
2440	569.92	33.69	pk	ver	46.00	-12.31
2440	628.8	37.52	pk	ver	46.00	-08.48
2440	629.973	38.63	qpk	hor	46.00	-07.37
2440	688.96	37.18	pk	ver	46.00	-08.82
2440	1175	51.32	pk	hor	53.98	-02.66
2440	1175	27.04	avg	hor	53.98	-26.94
2440	1408	47.81	pk	ver	53.98	-06.17
2440	1971	48.41	pk	hor	53.98	-05.57
2440	1971	26.26	avg	hor	53.98	-27.72
2440	1974	46.10	pk	ver	53.98	-07.88
2440	2358	42.77	pk	ver	53.98	-11.21
2440	2739	51.51	pk	hor	53.98	-02.47
2440	2739	30.77	avg	hor	53.98	-23.21
2440	2771	46.94	pk	ver	53.98	-07.04

ANNEX A Transmitter spurious emissions

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

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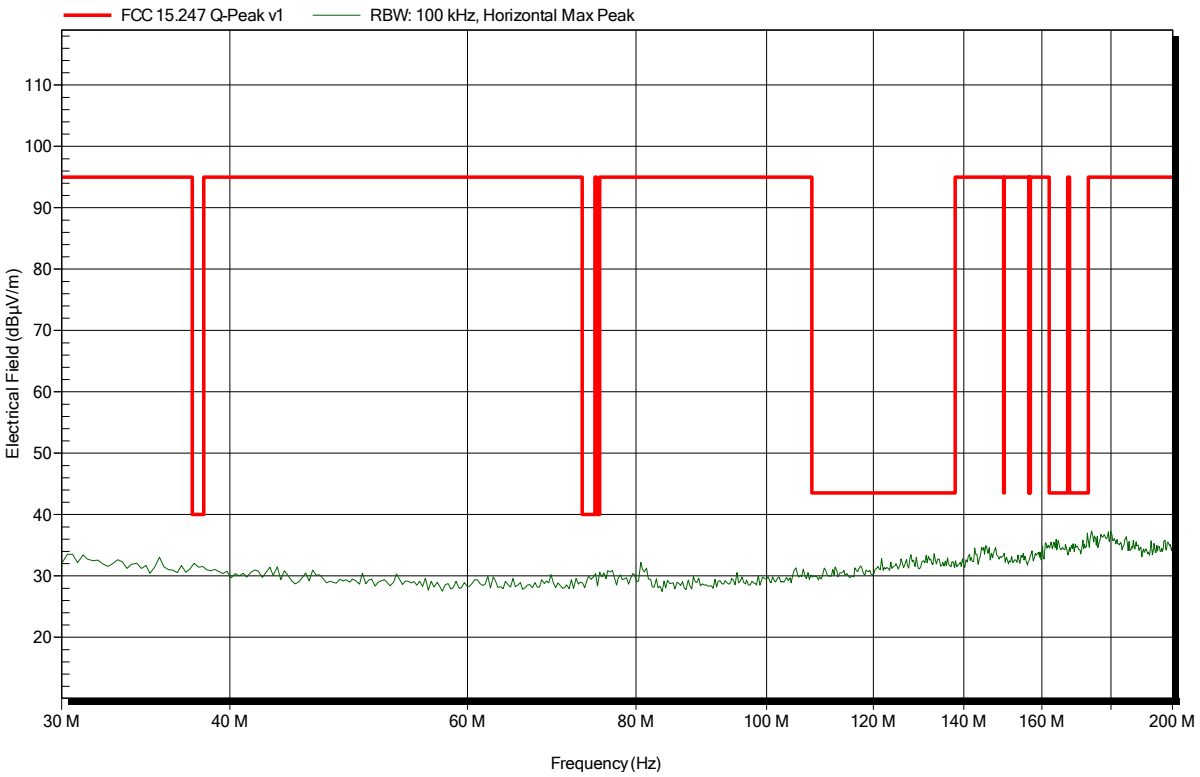

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

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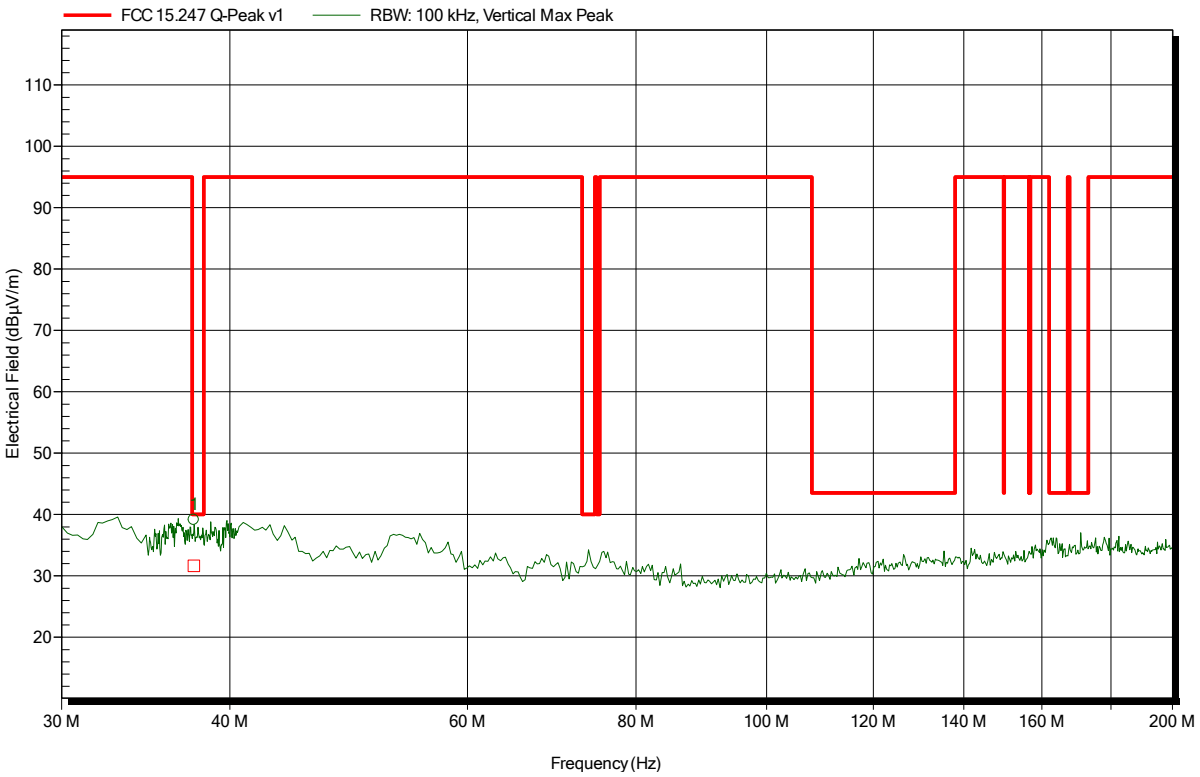

Frequency	Peak	Peak Limit	Peak Difference	Status
37.615 MHz	39.15 dBµV/m	40 dBµV/m	-0.85 dB	Pass

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
37.615 MHz	31.66 dBµV/m	40 dBµV/m	-8.34 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

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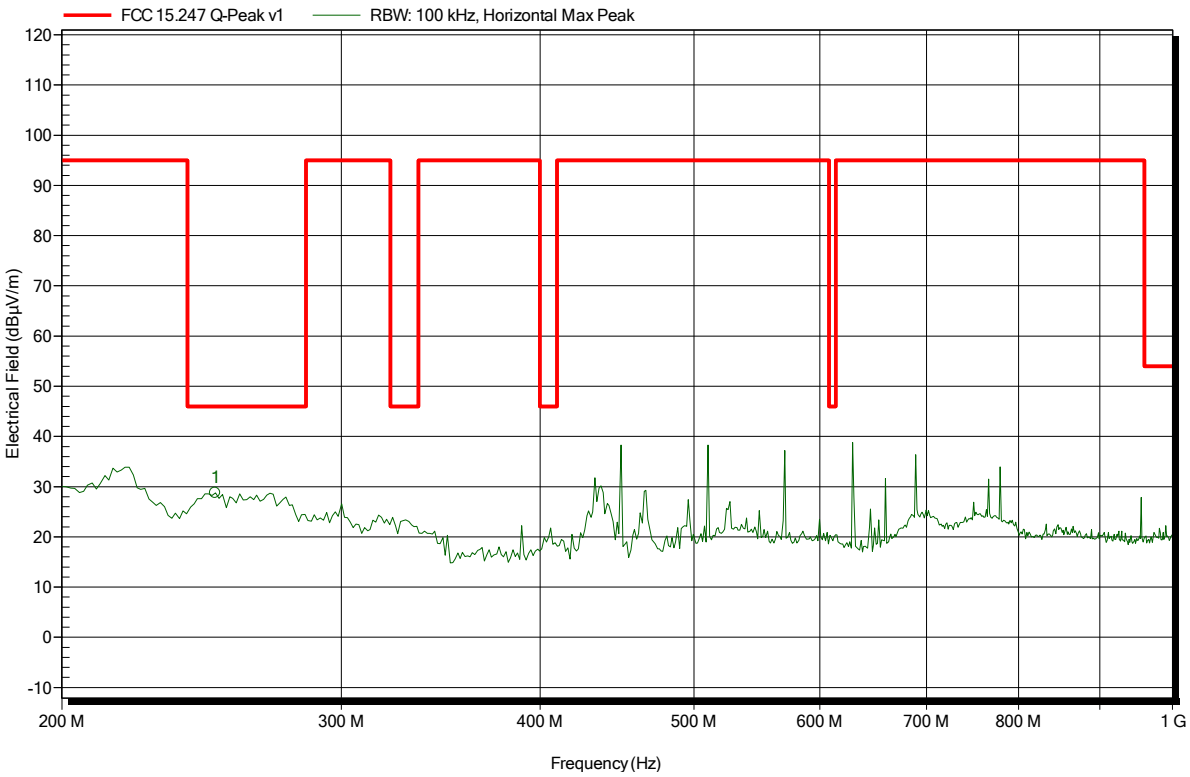

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
249.92 MHz	28.74 dBµV/m	46 dBµV/m	-17.26 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

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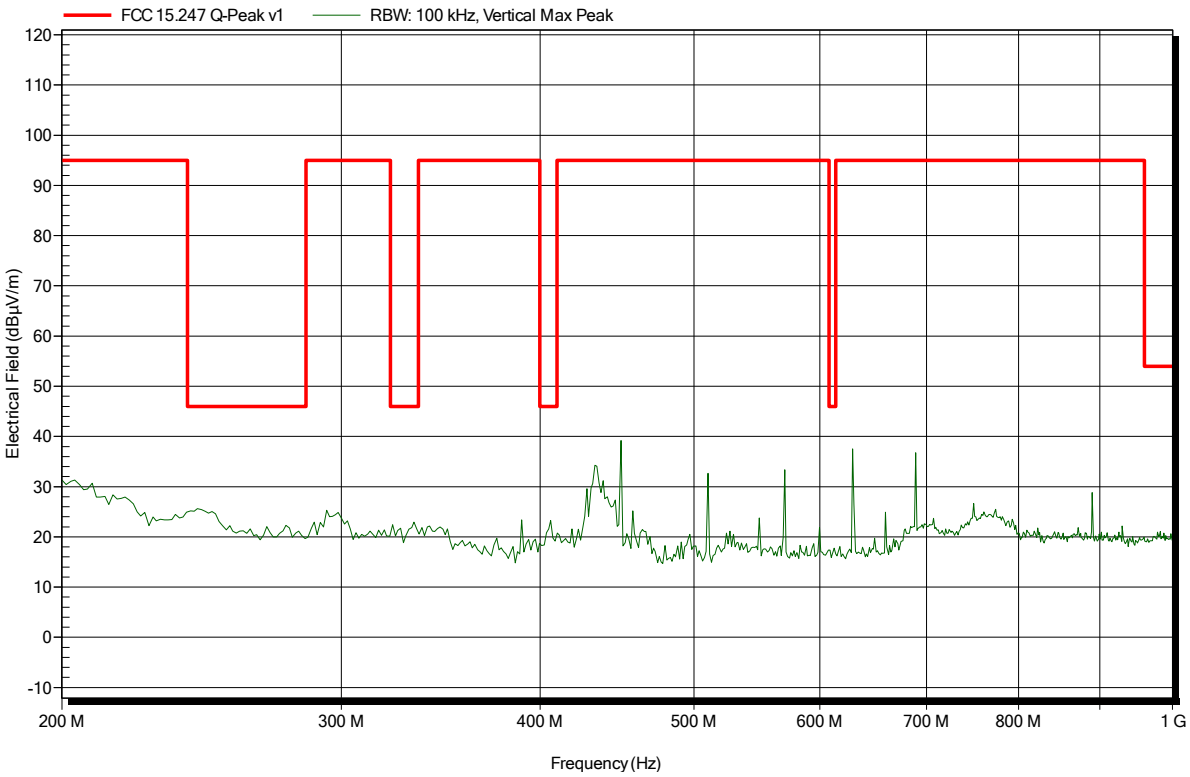
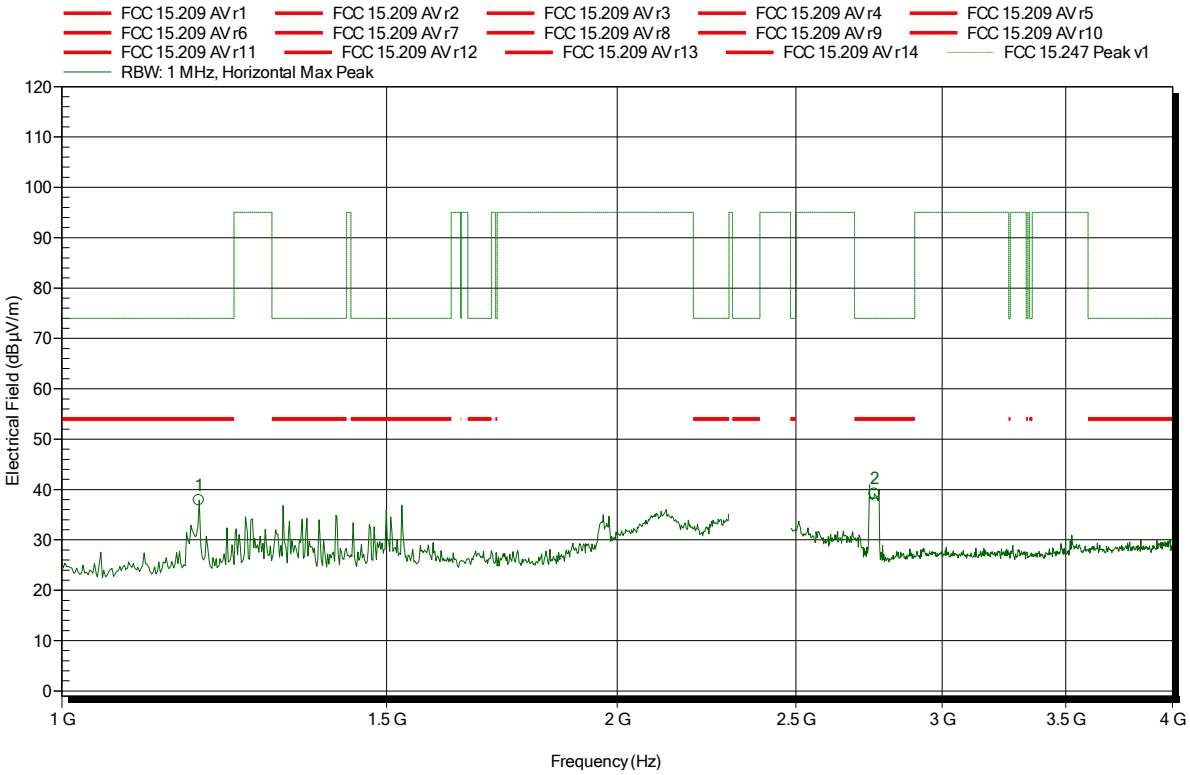


Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

Index 1



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.1872 GHz	37.89 dBµV/m	74 dBµV/m	-36.11 dB	Pass
2.7577 GHz	39.14 dBµV/m	74 dBµV/m	-34.86 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

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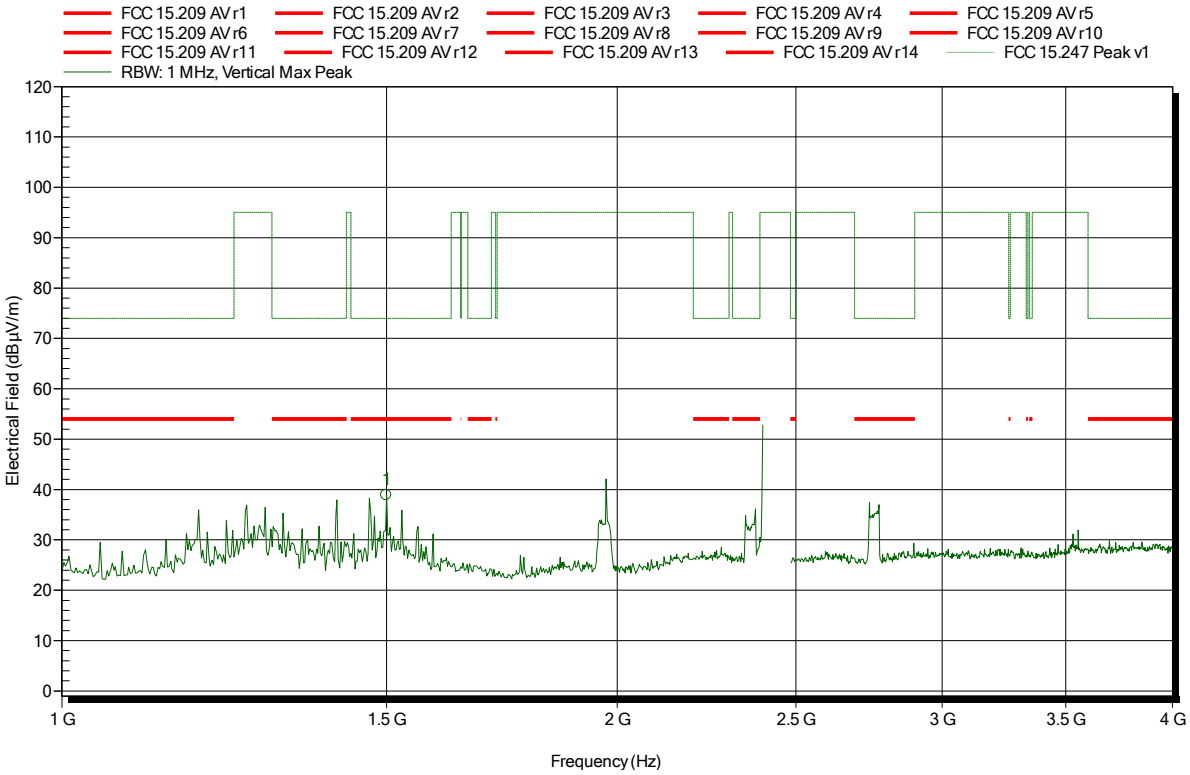
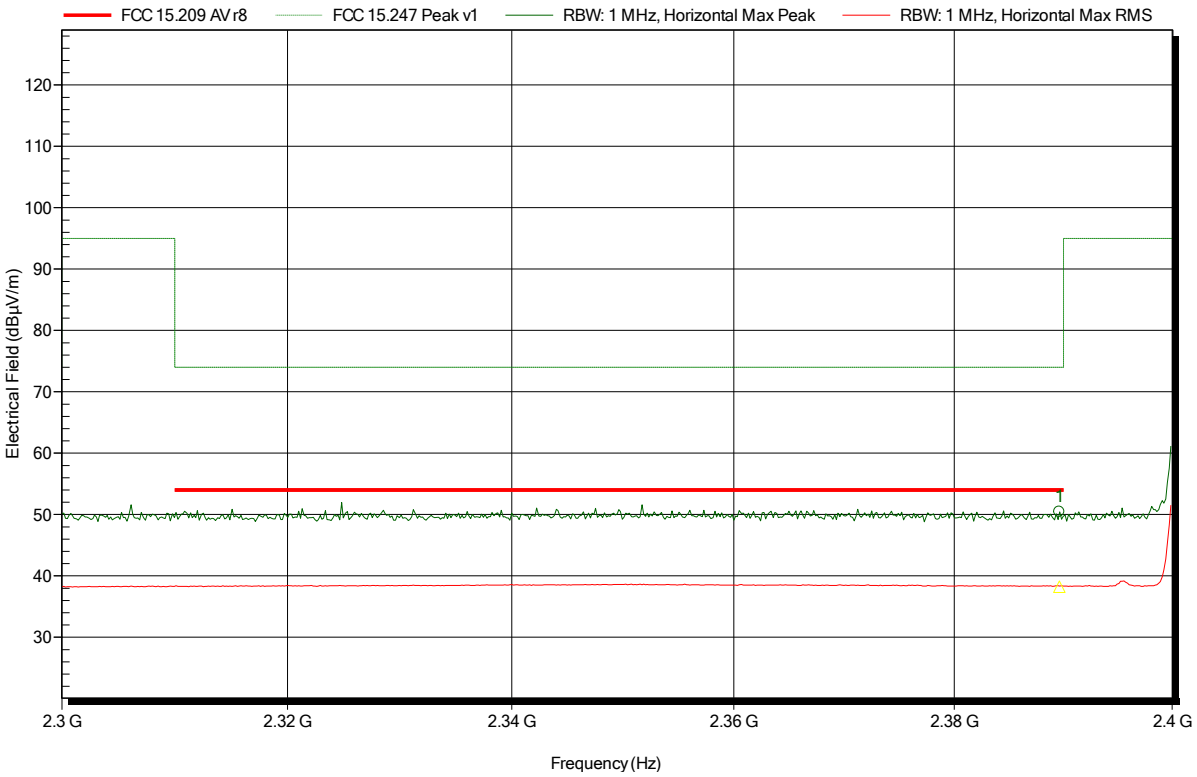


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.4995 GHz	38.89 dBµV/m	74 dBµV/m	-35.11 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	lower bandedge

Index 2



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3896 GHz	50.43 dBµV/m	74 dBµV/m	-23.57 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.3896 GHz	38.26 dBµV/m	54 dBµV/m	-15.74 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	lower bandedge

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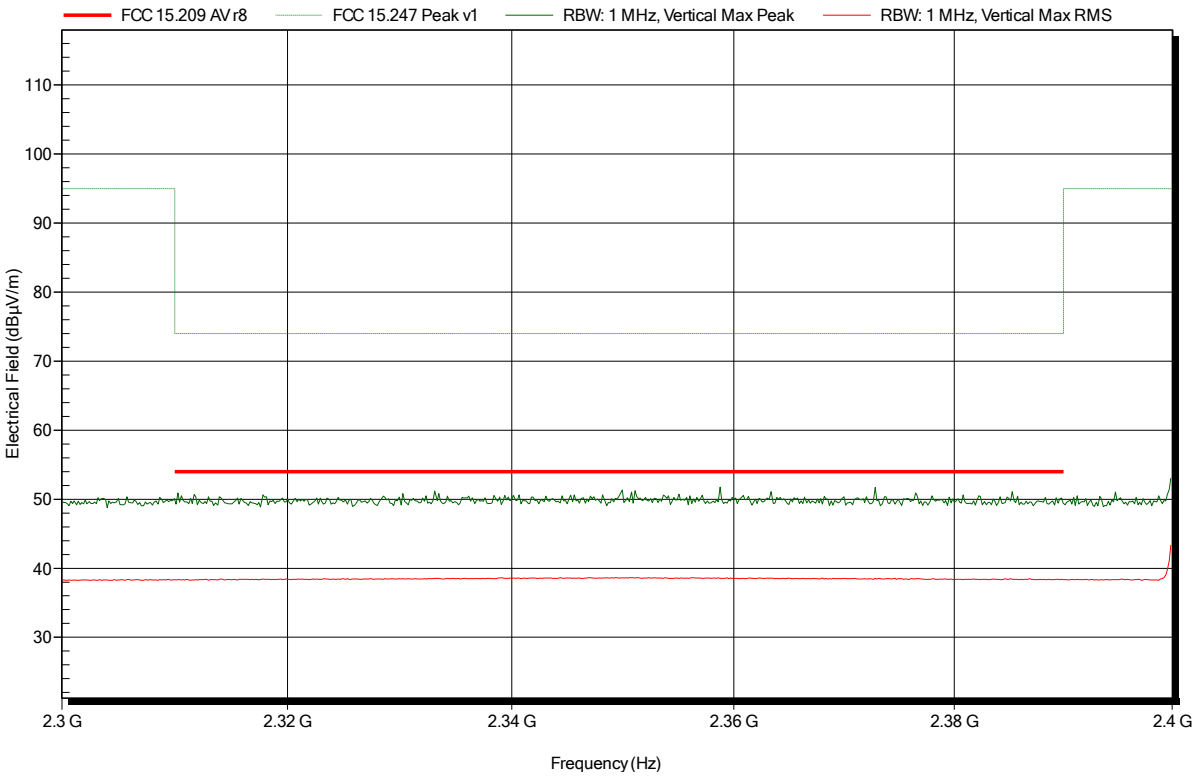
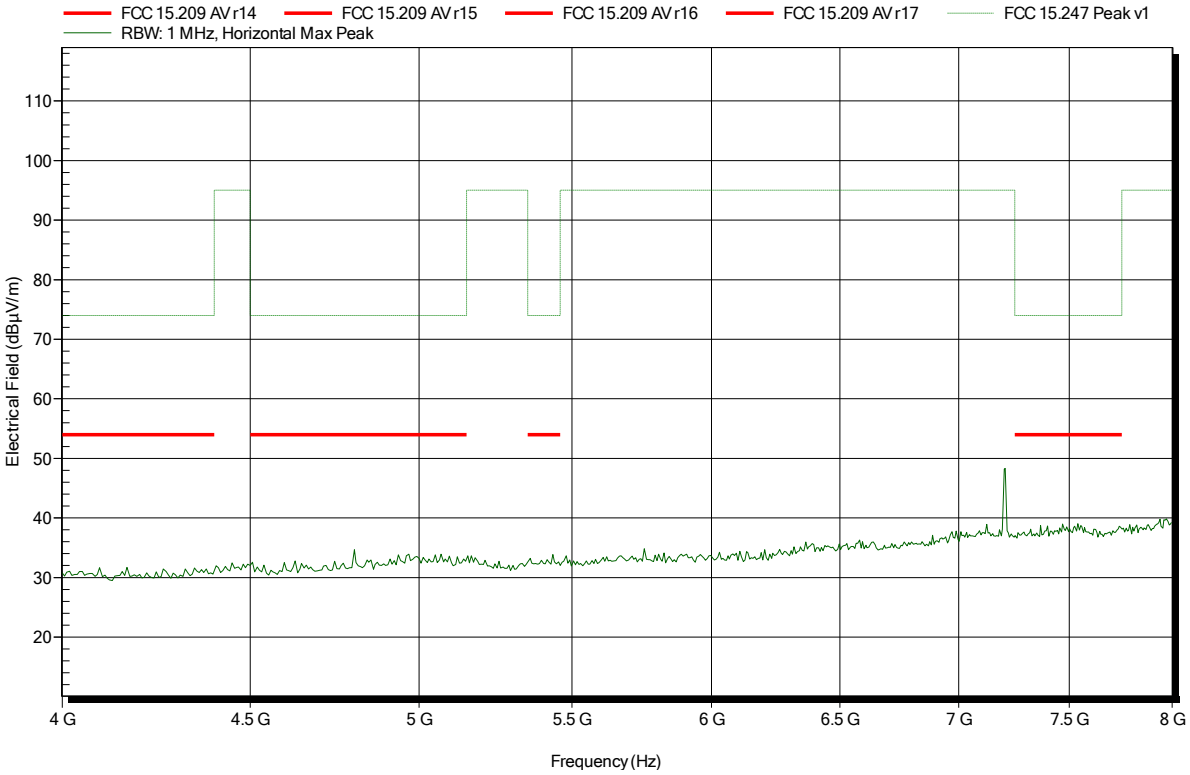


Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

Index 3



Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

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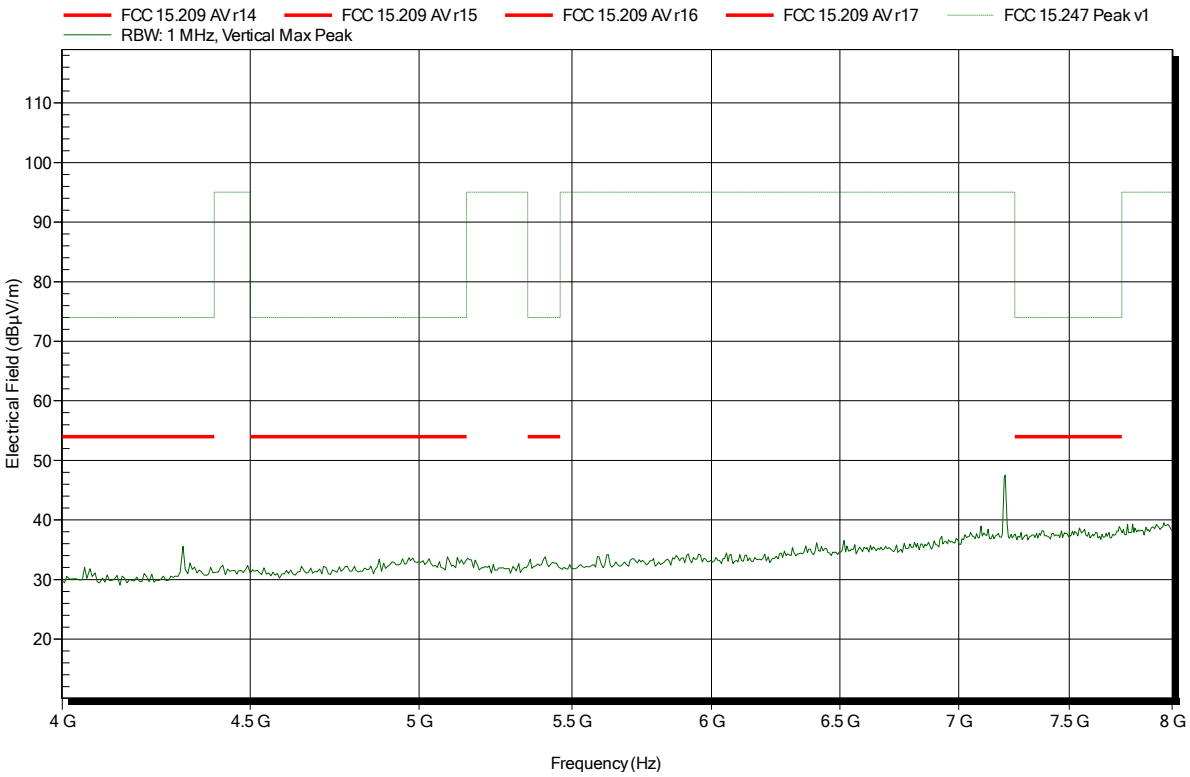
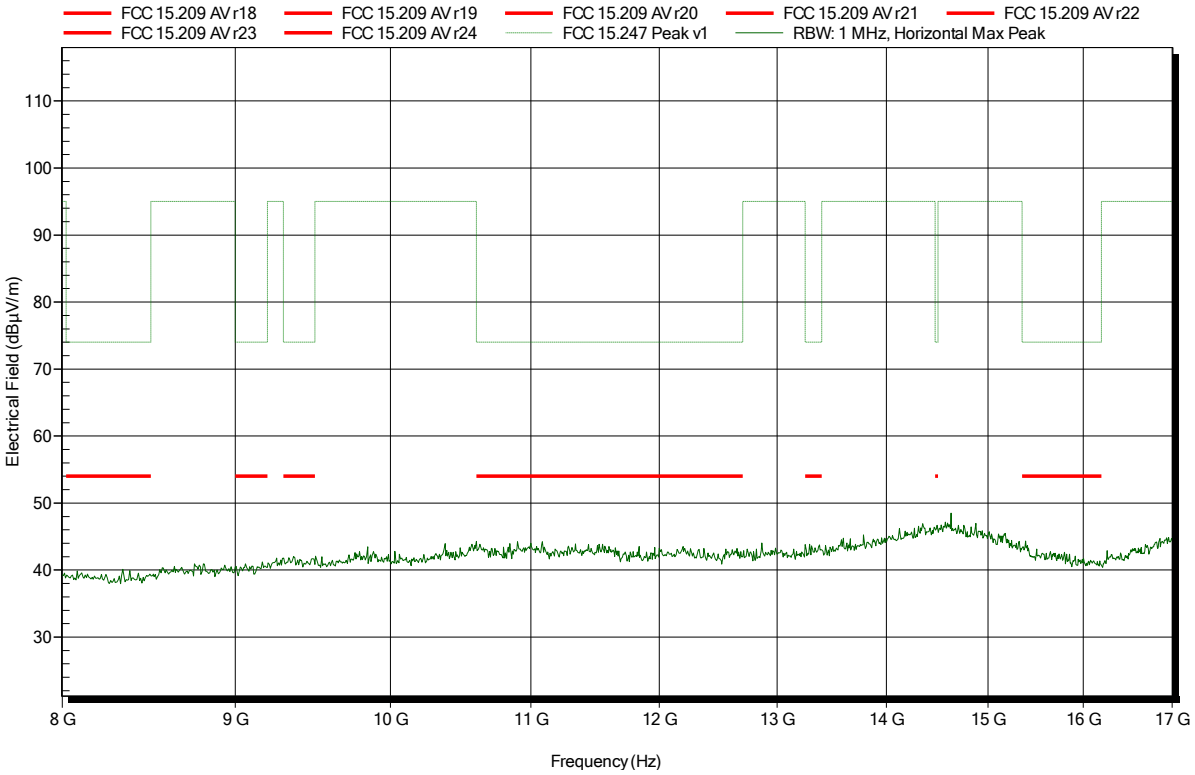


Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

Index 4



Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

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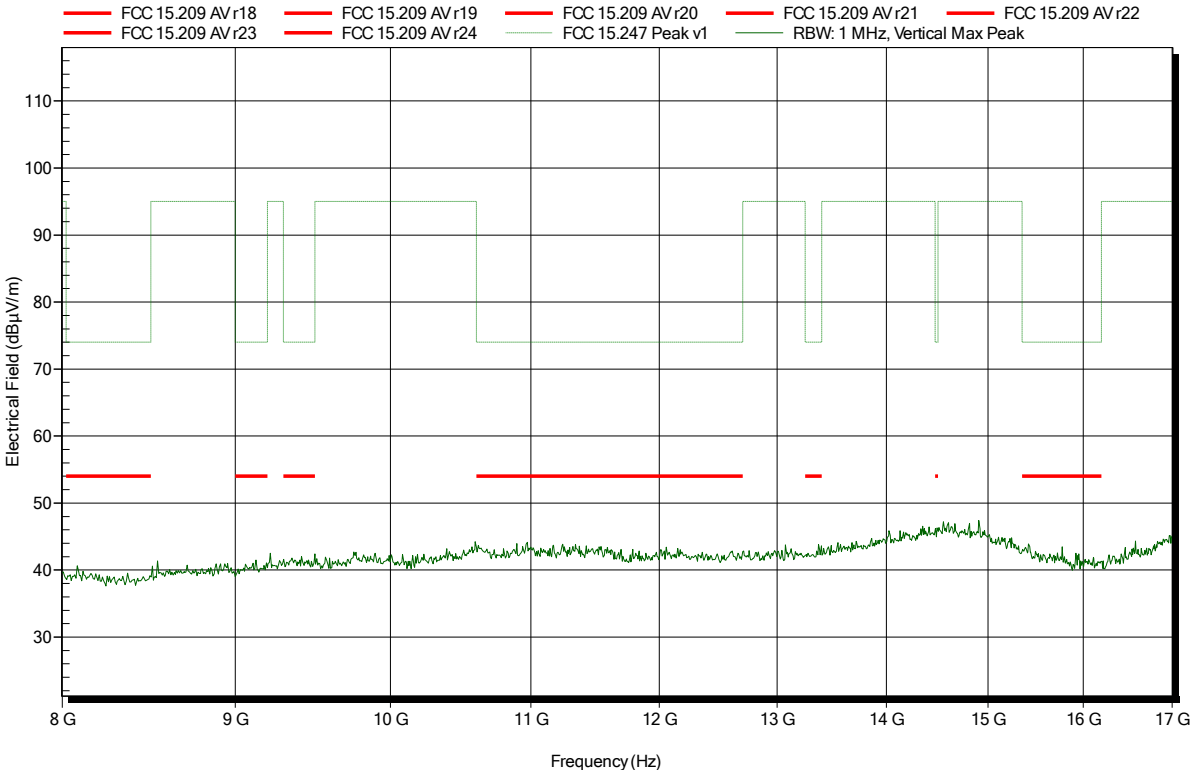
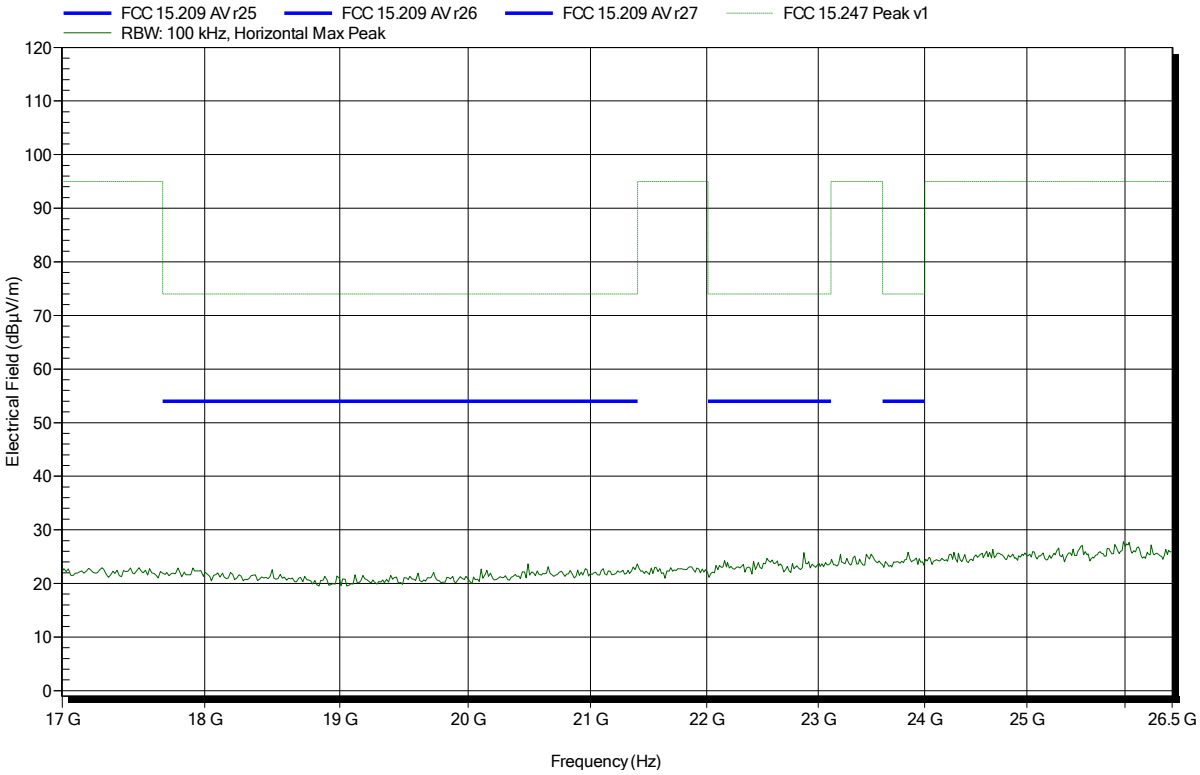


Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Amplifier Research AT4560, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

Index 5



Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Amplifier Research AT4560, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2402 MHz
Test Date:	2019-03-01
Note:	

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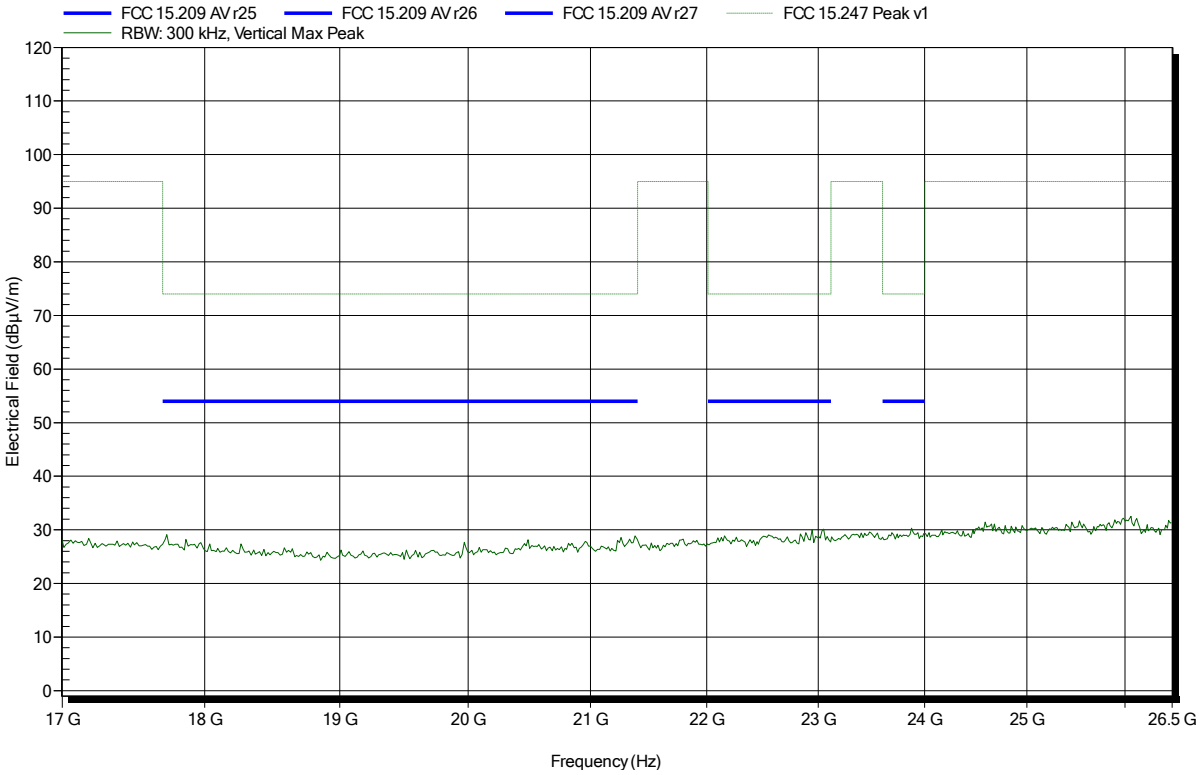

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2440 MHz
Test Date:	2019-03-01
Note:	

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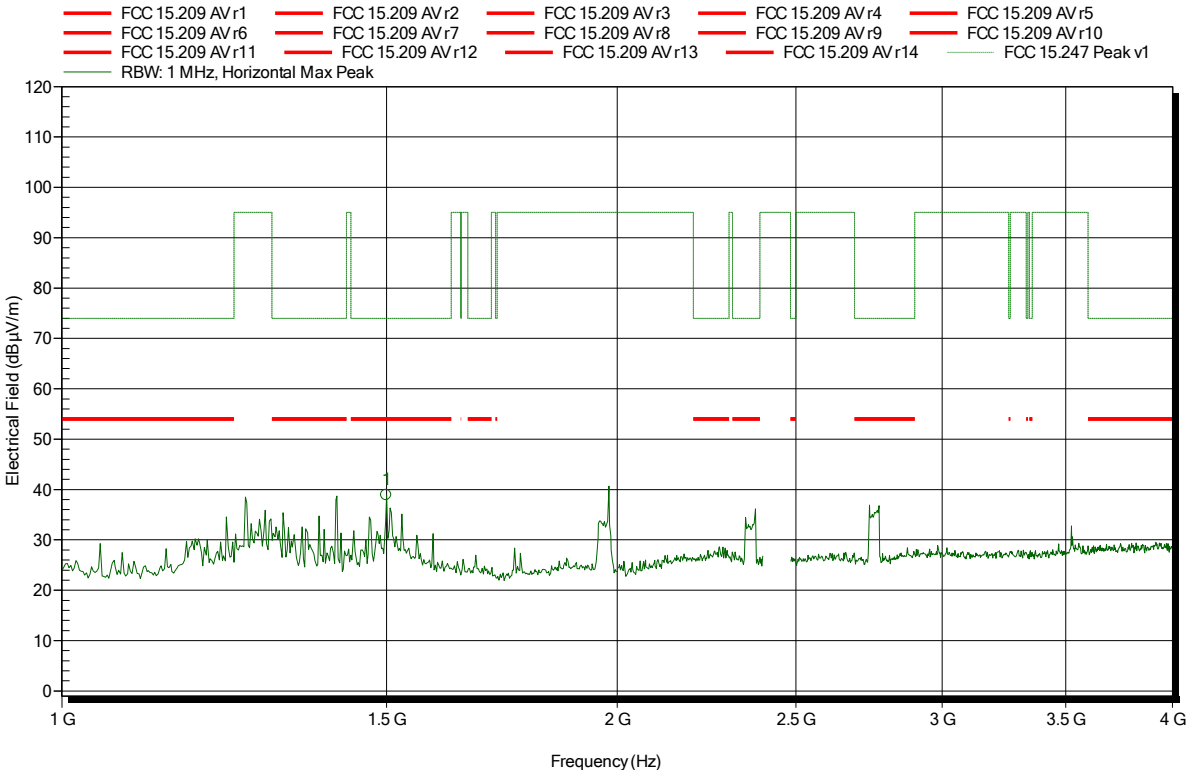

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.4995 GHz	38.93 dBµV/m	74 dBµV/m	-35.07 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2440 MHz
Test Date:	2019-03-01
Note:	

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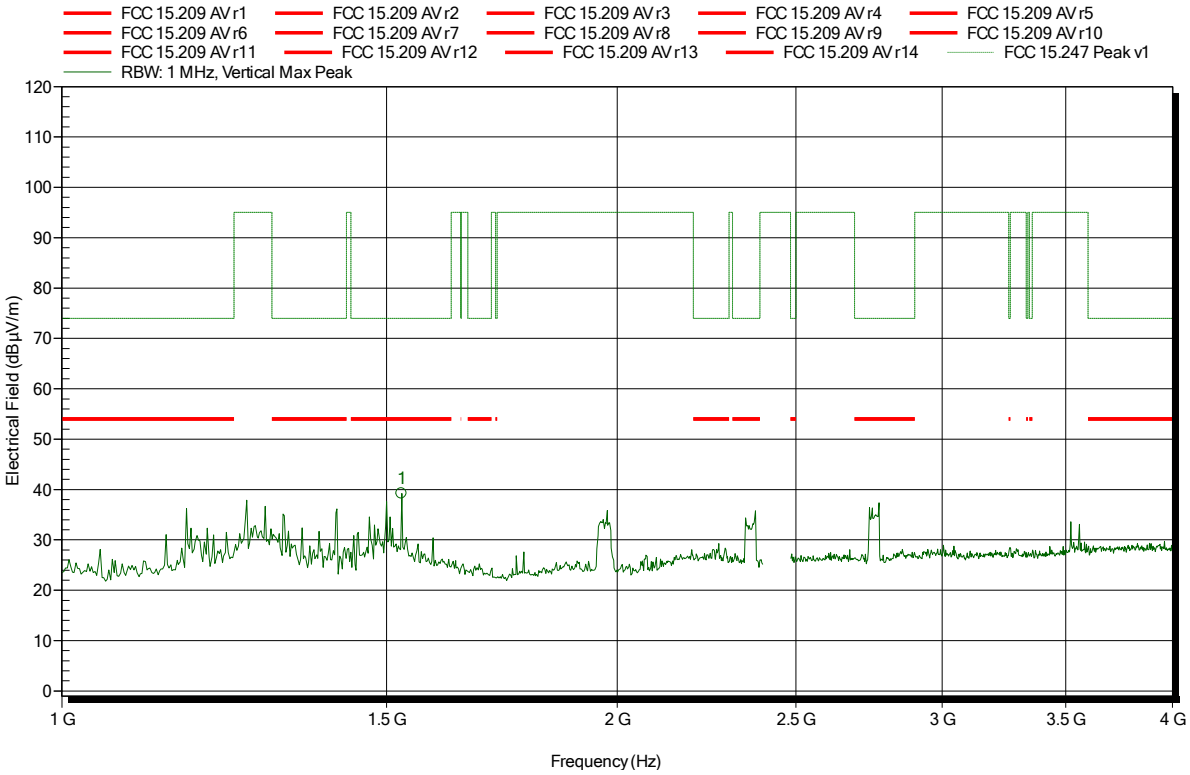

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.5286 GHz	39.2 dBµV/m	74 dBµV/m	-34.8 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2440 MHz
Test Date:	2019-03-01
Note:	

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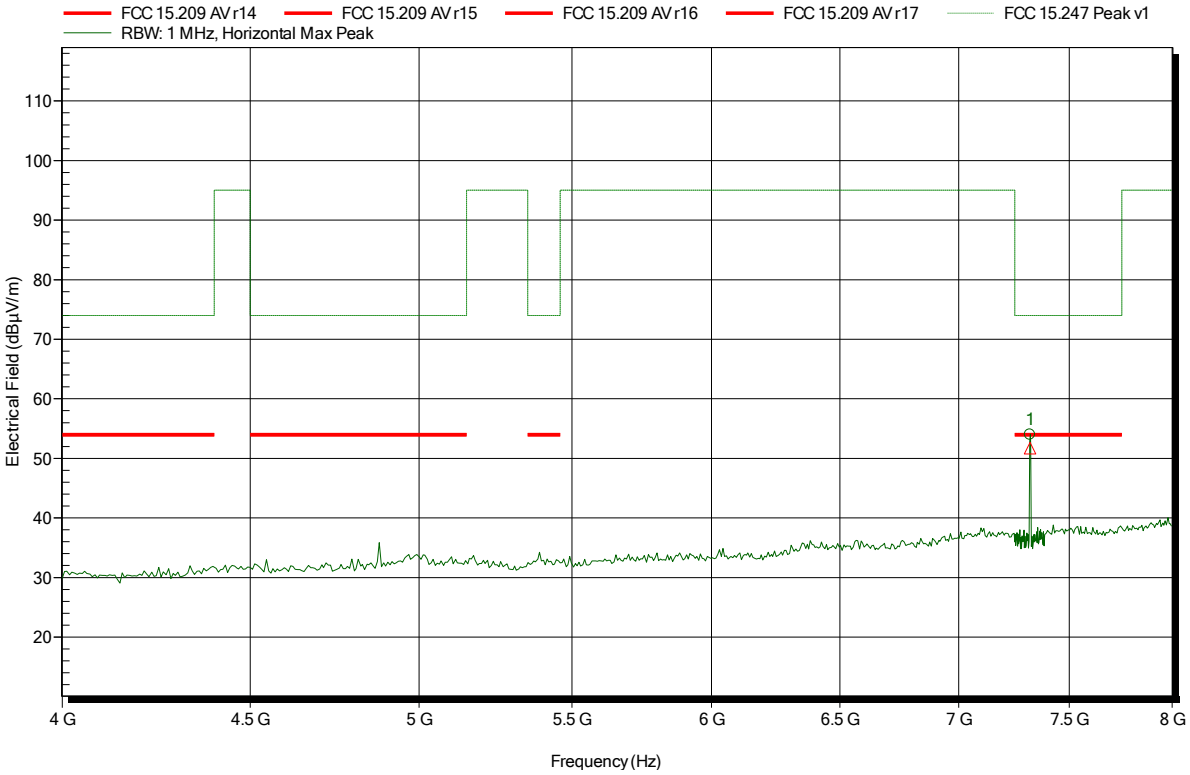

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.319 GHz	54 dBµV/m	74 dBµV/m	-20 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
7.319 GHz	51.72 dBµV/m	54 dBµV/m	-2.28 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2440 MHz
Test Date:	2019-03-01
Note:	

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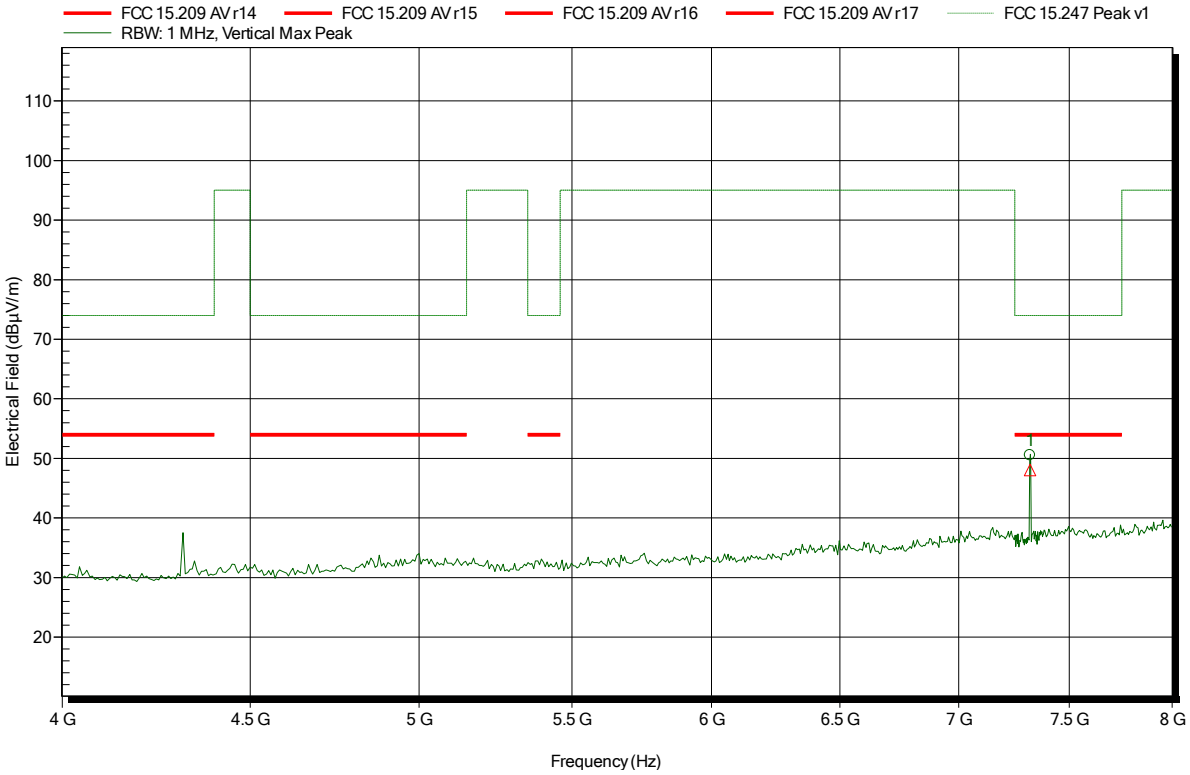

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.319 GHz	50.54 dBµV/m	74 dBµV/m	-23.46 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
7.319 GHz	48.02 dBµV/m	54 dBµV/m	-5.98 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2440 MHz
Test Date:	2019-03-01
Note:	

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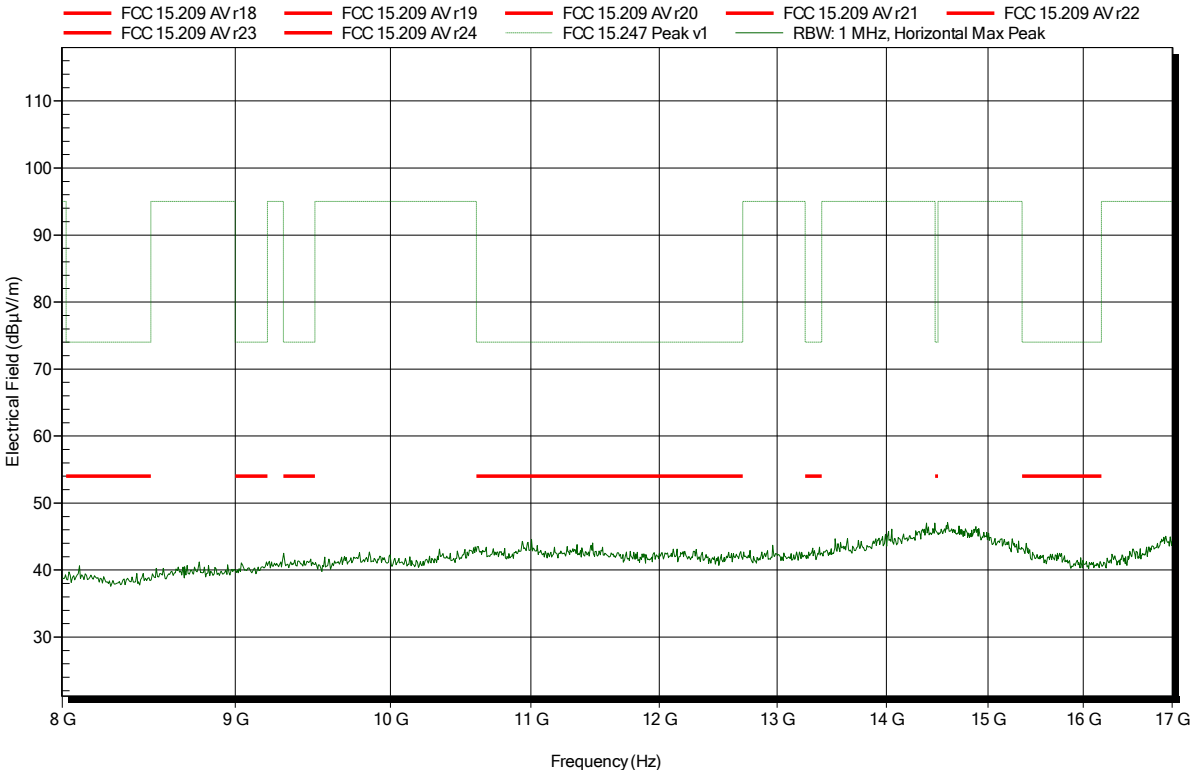

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2440 MHz
Test Date:	2019-03-01
Note:	

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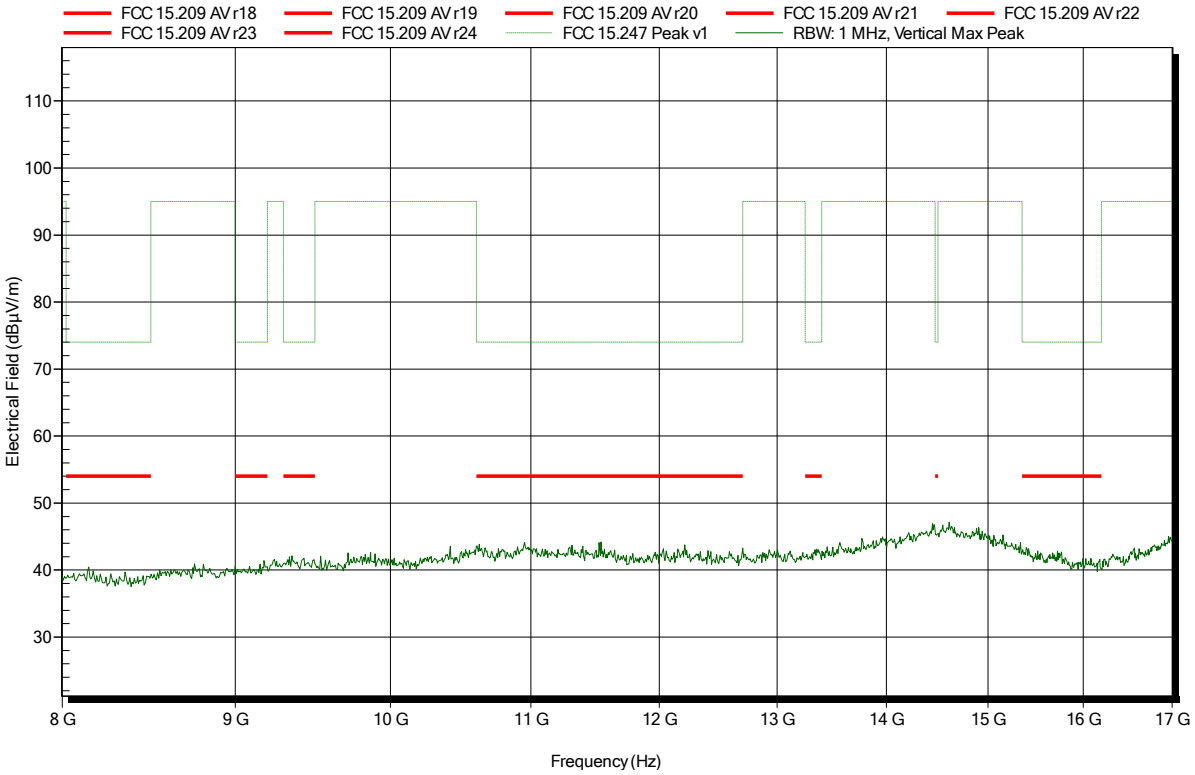

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Amplifier Research AT4560, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2440 MHz
Test Date:	2019-03-01
Note:	

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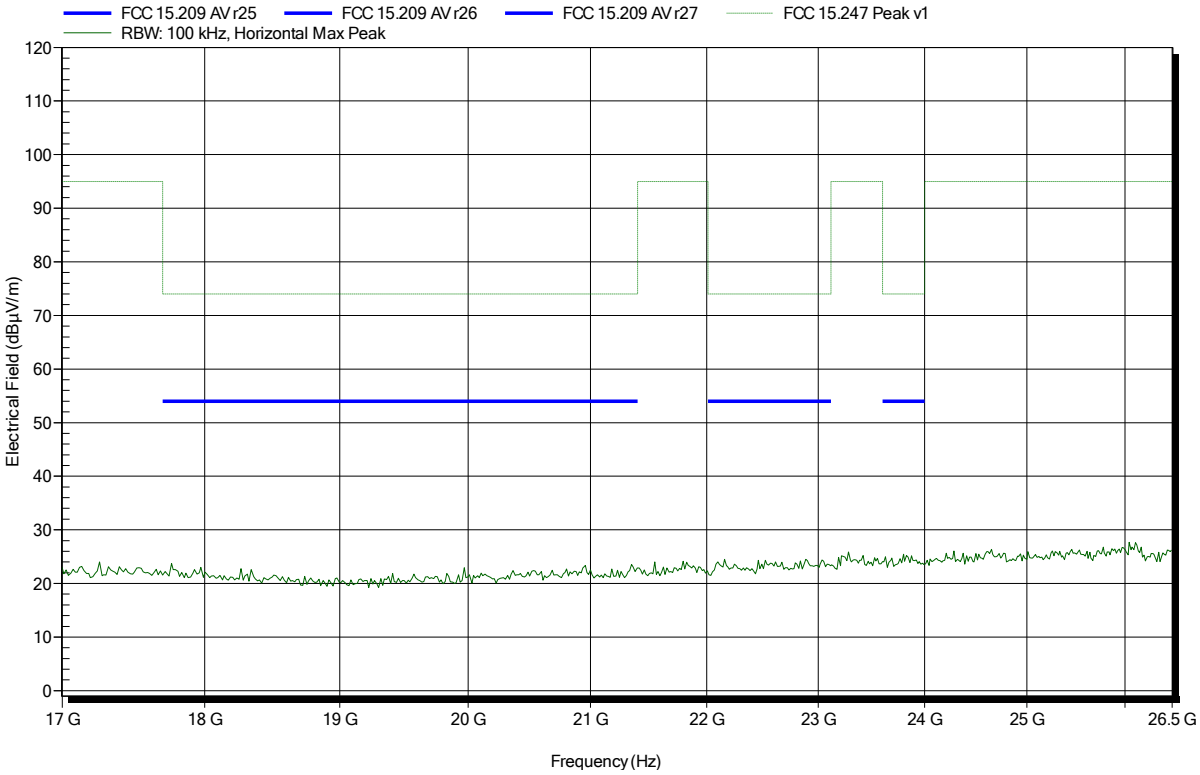

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Amplifier Research AT4560, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2440 MHz
Test Date:	2019-03-01
Note:	

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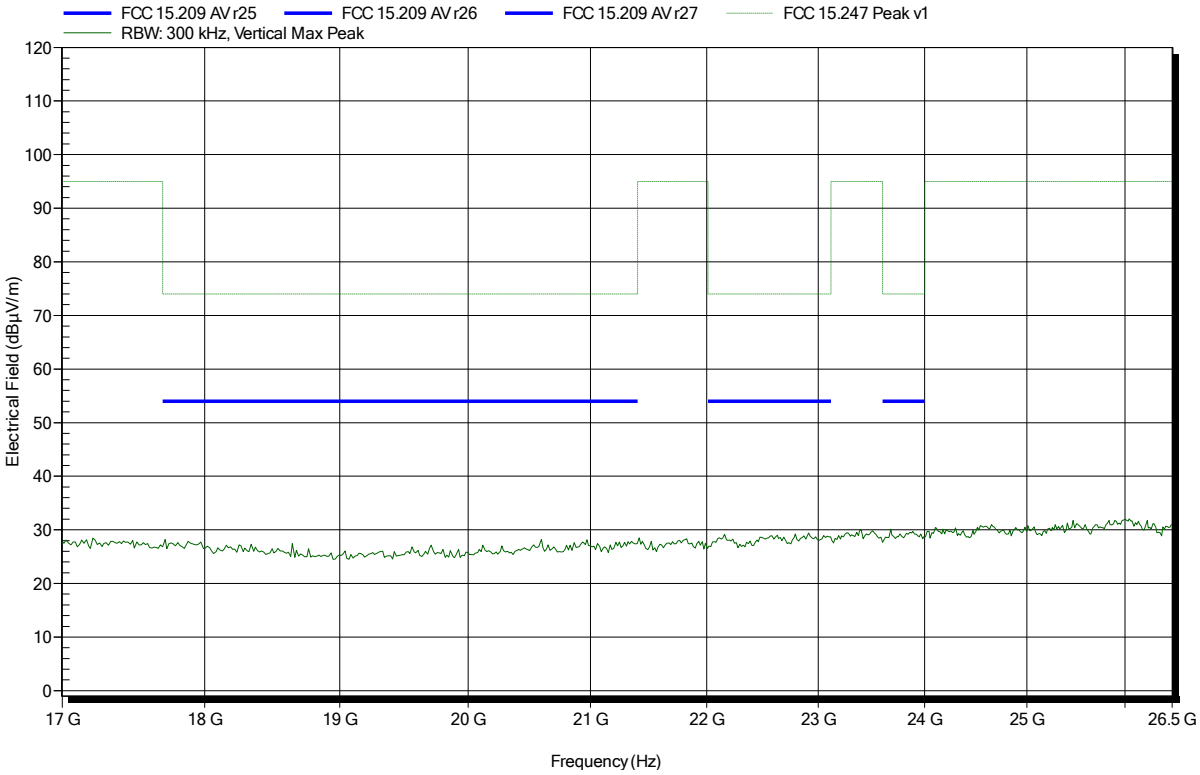

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	

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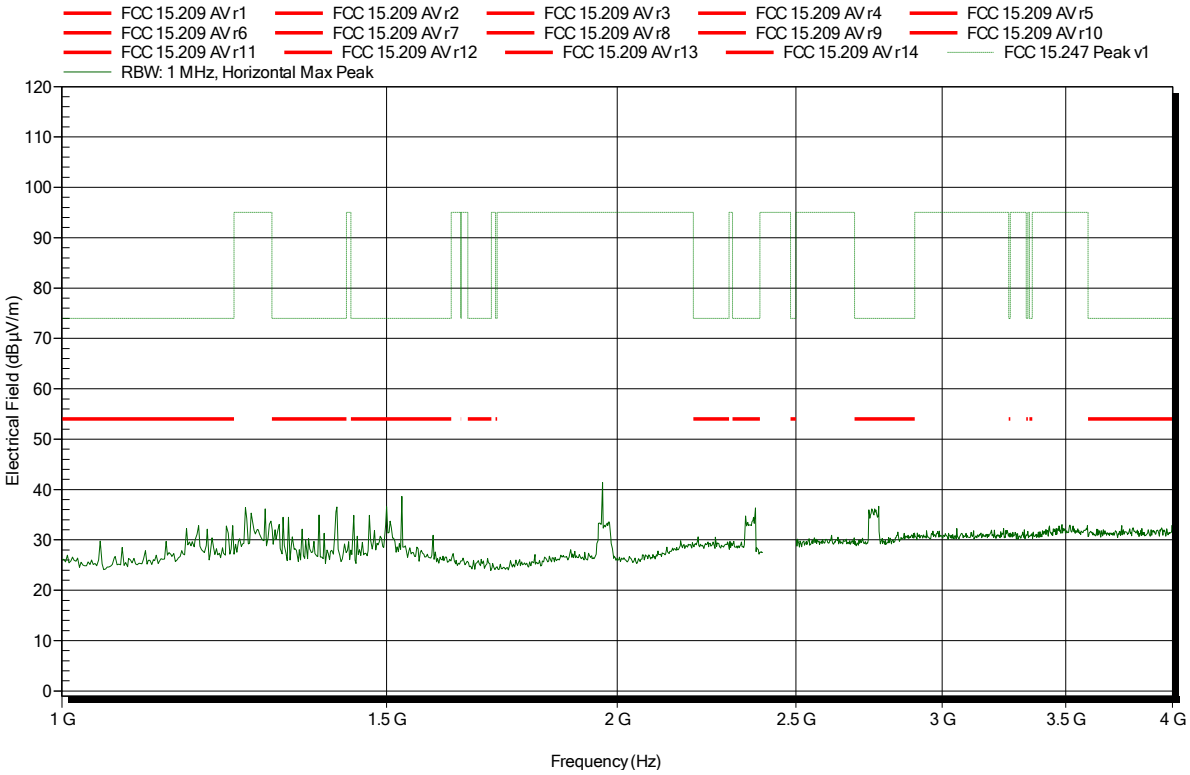

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	

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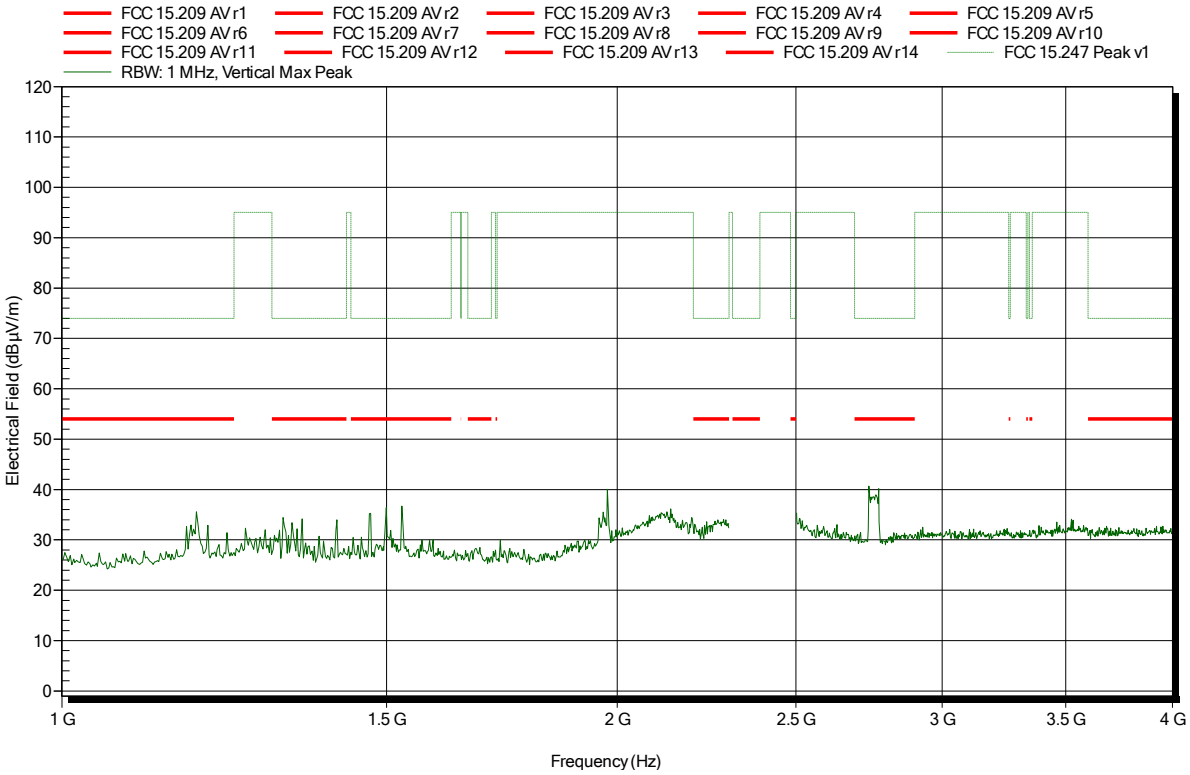

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	upper bandedge

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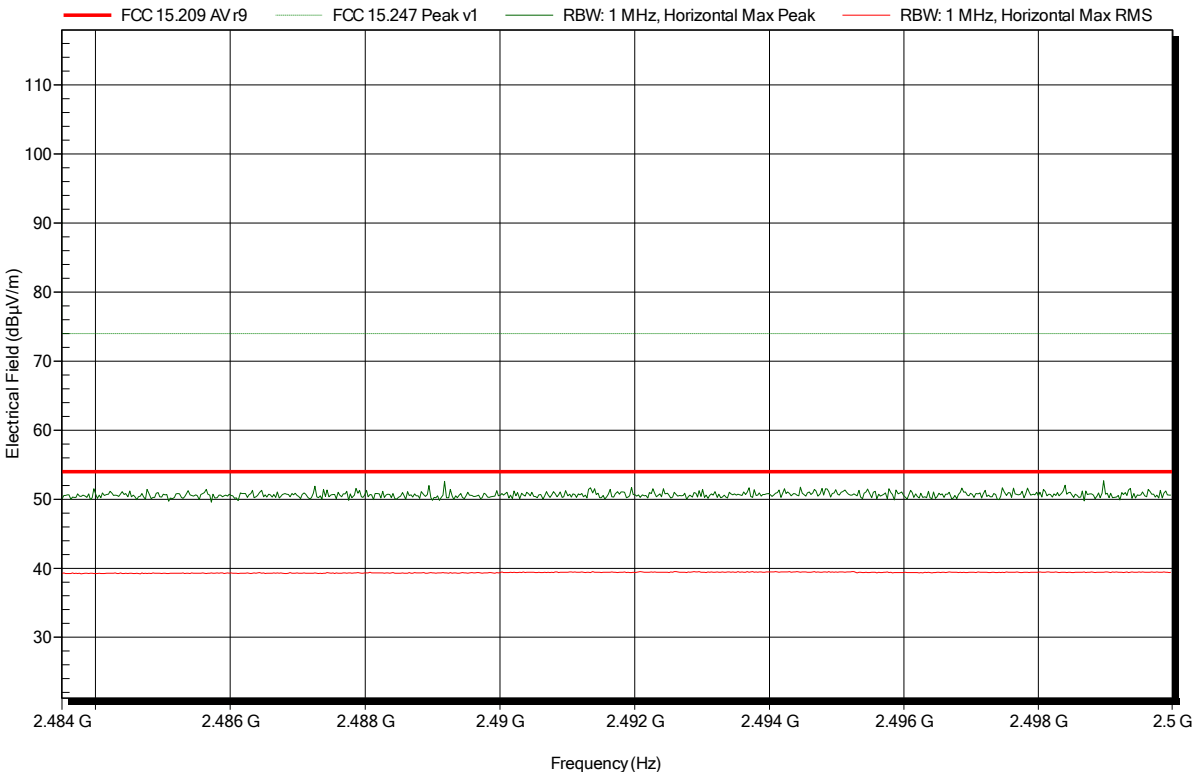

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	upper bandedge

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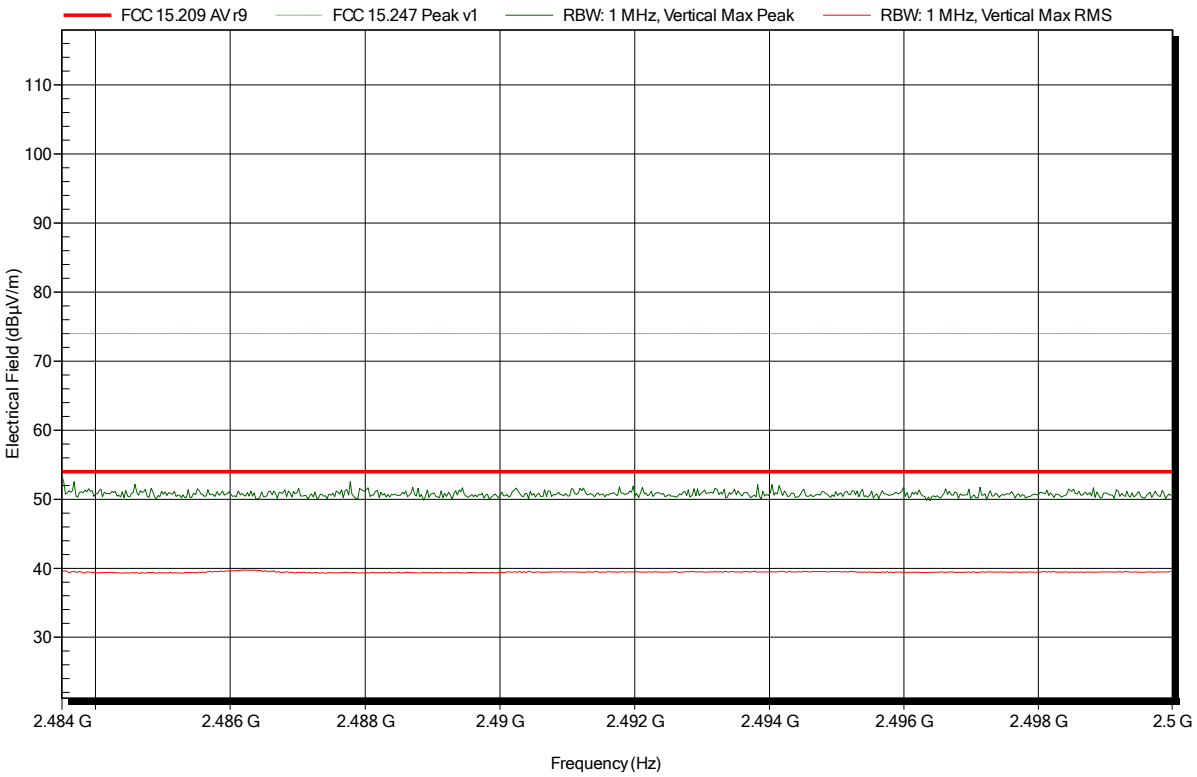

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	

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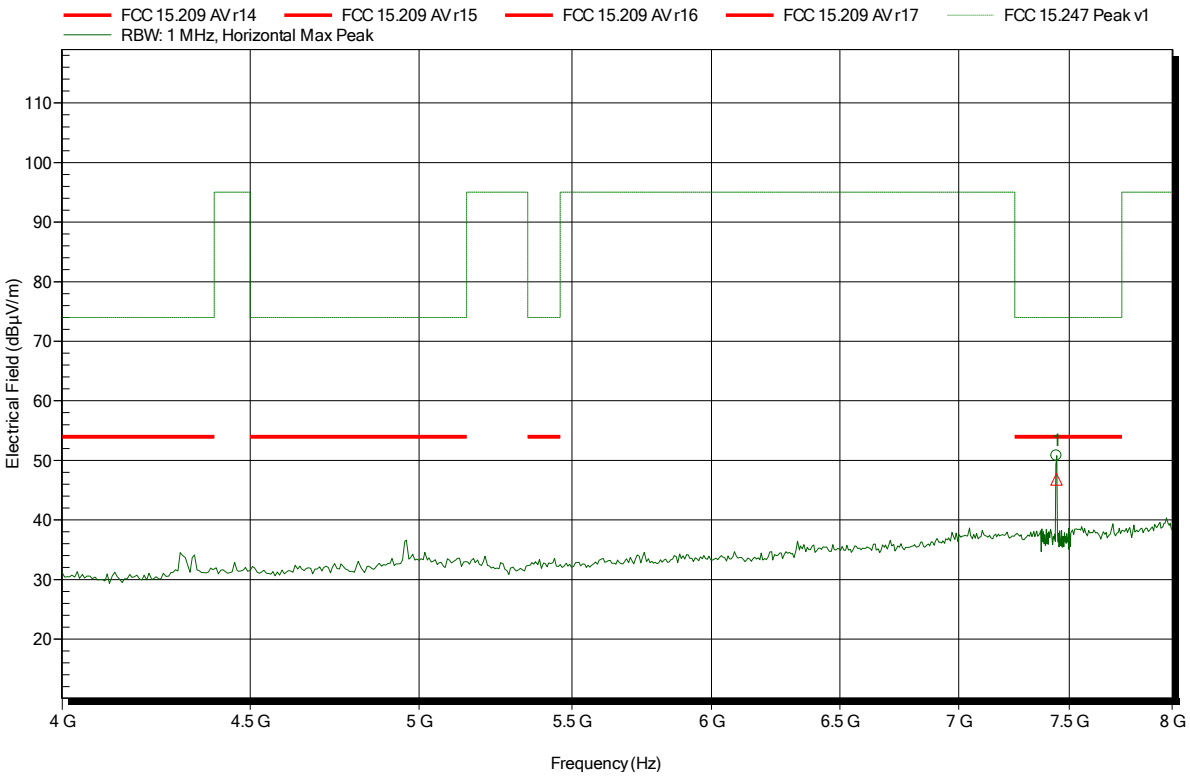

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.441 GHz	50.78 dBµV/m	74 dBµV/m	-23.22 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
7.441 GHz	46.79 dBµV/m	54 dBµV/m	-7.21 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	

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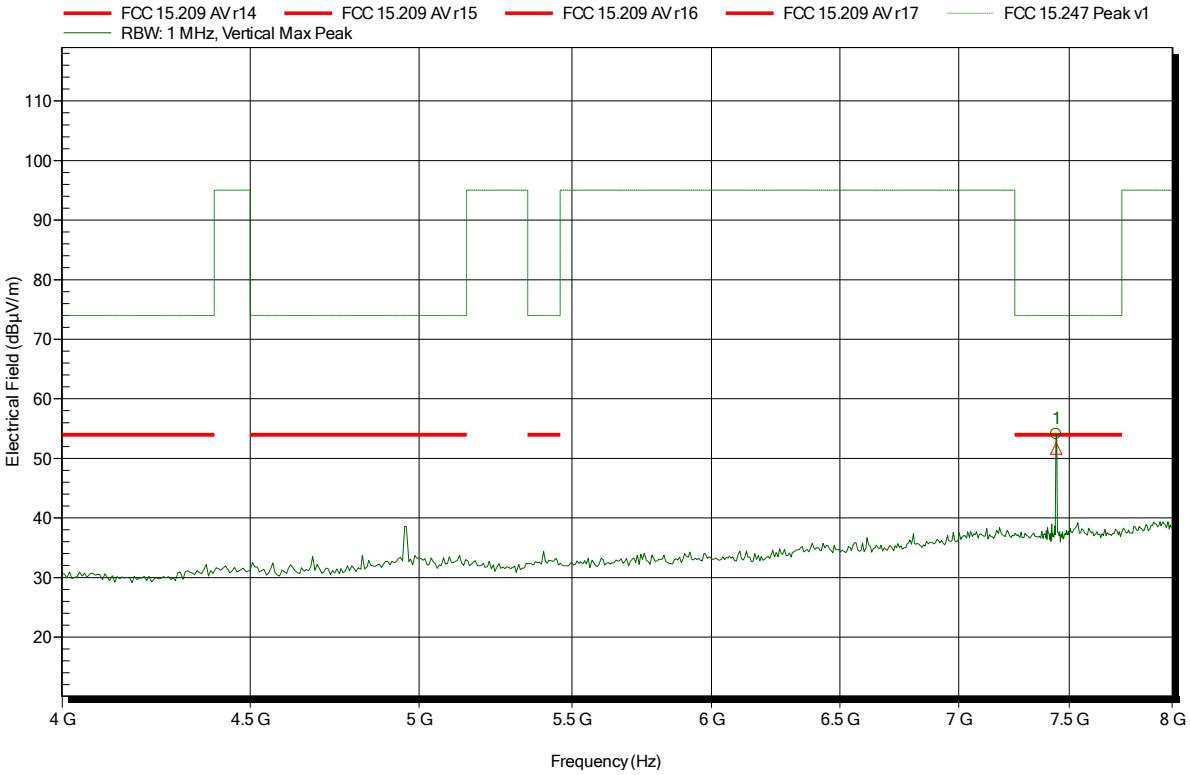

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.439 GHz	54.1 dBµV/m	74 dBµV/m	-19.9 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
7.439 GHz	51.67 dBµV/m	54 dBµV/m	-2.33 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	

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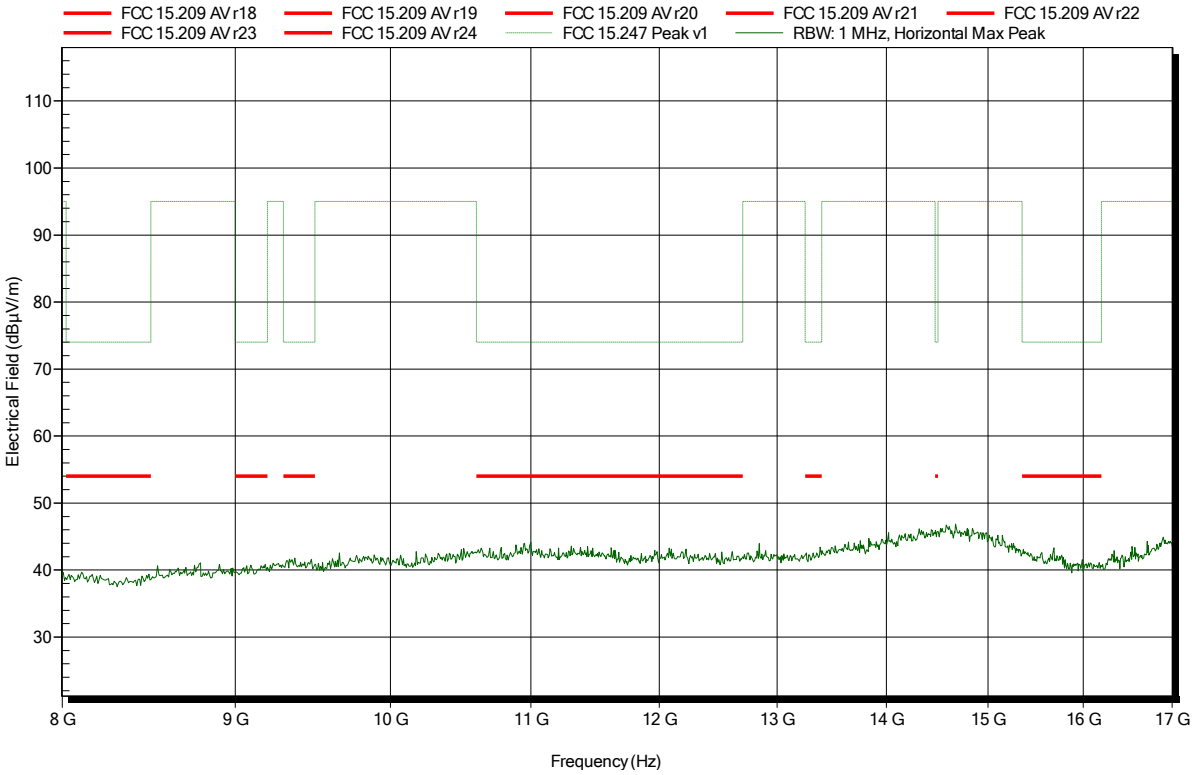

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	

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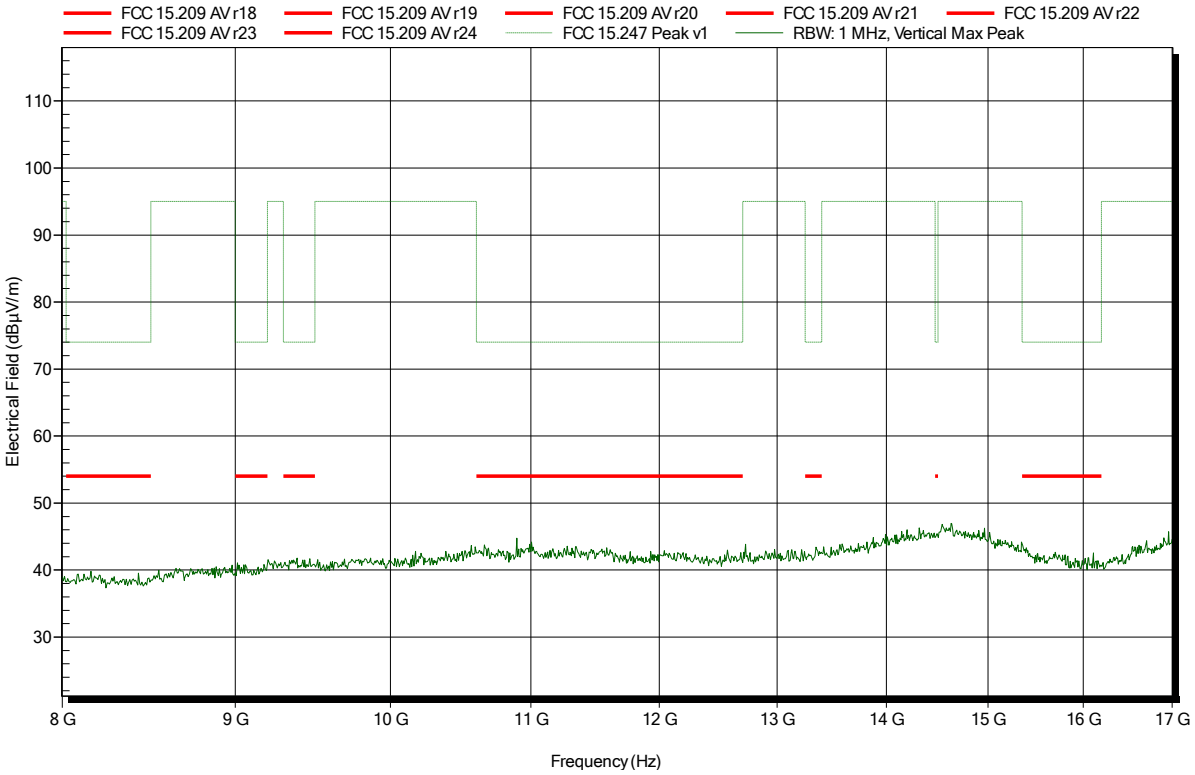

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Amplifier Research AT4560, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	

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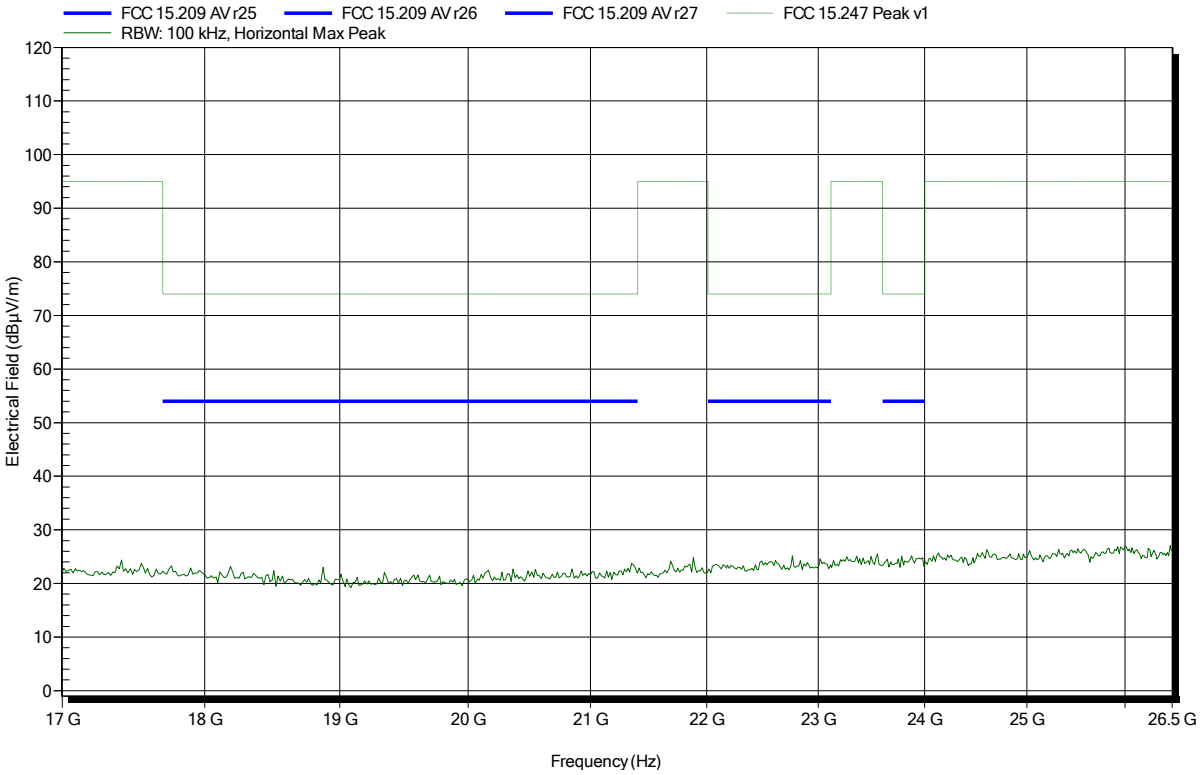

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Amplifier Research AT4560, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BLE; GFSK; 2480 MHz
Test Date:	2019-03-01
Note:	

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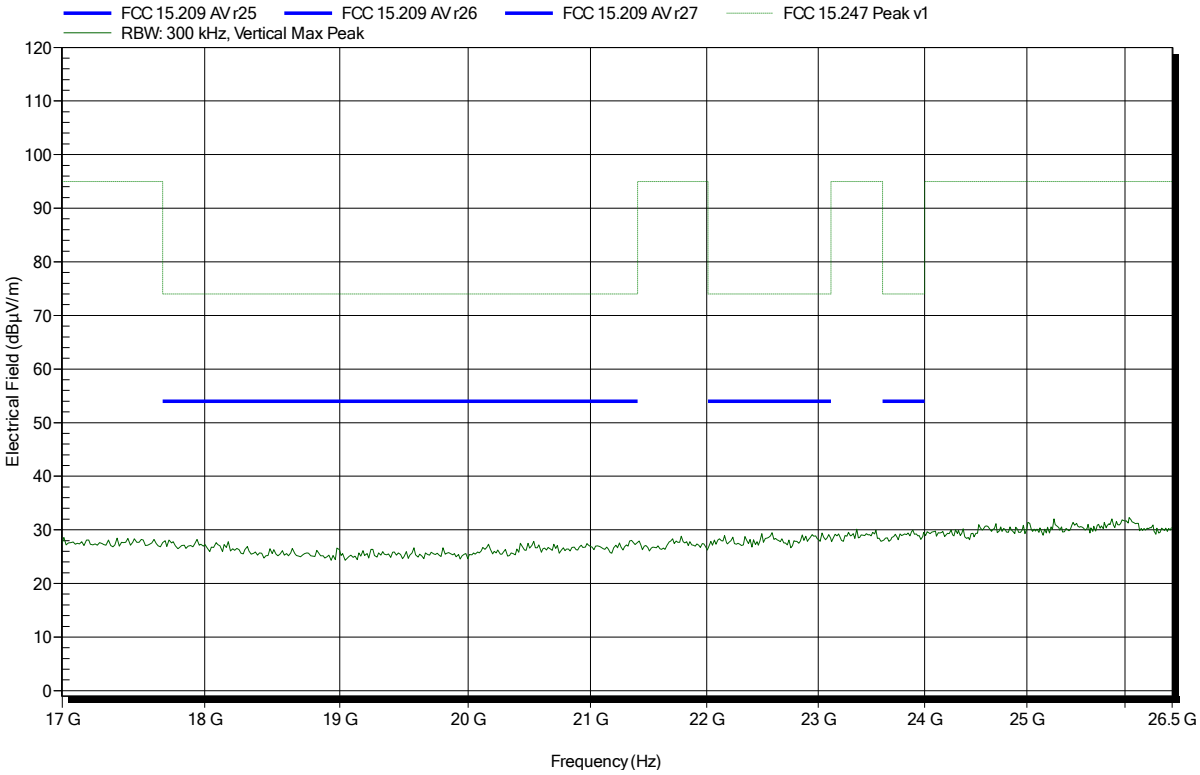

ANNEX B Receiver spurious emissions

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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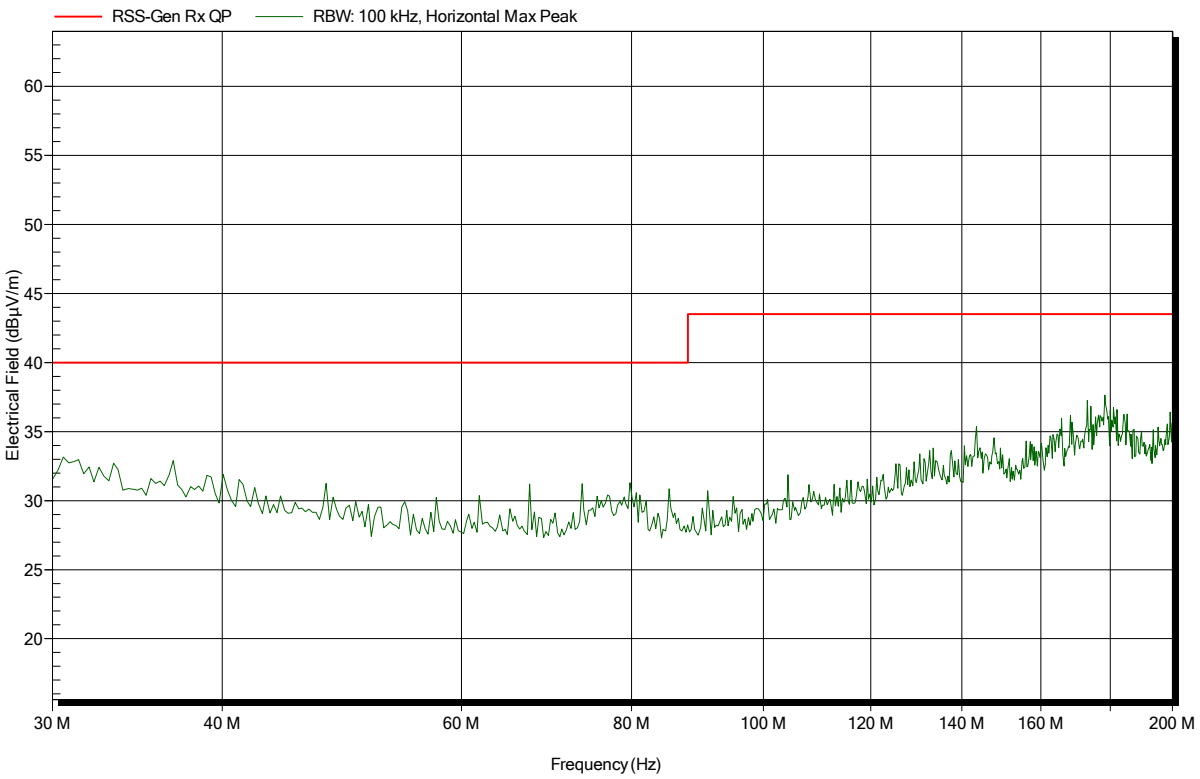

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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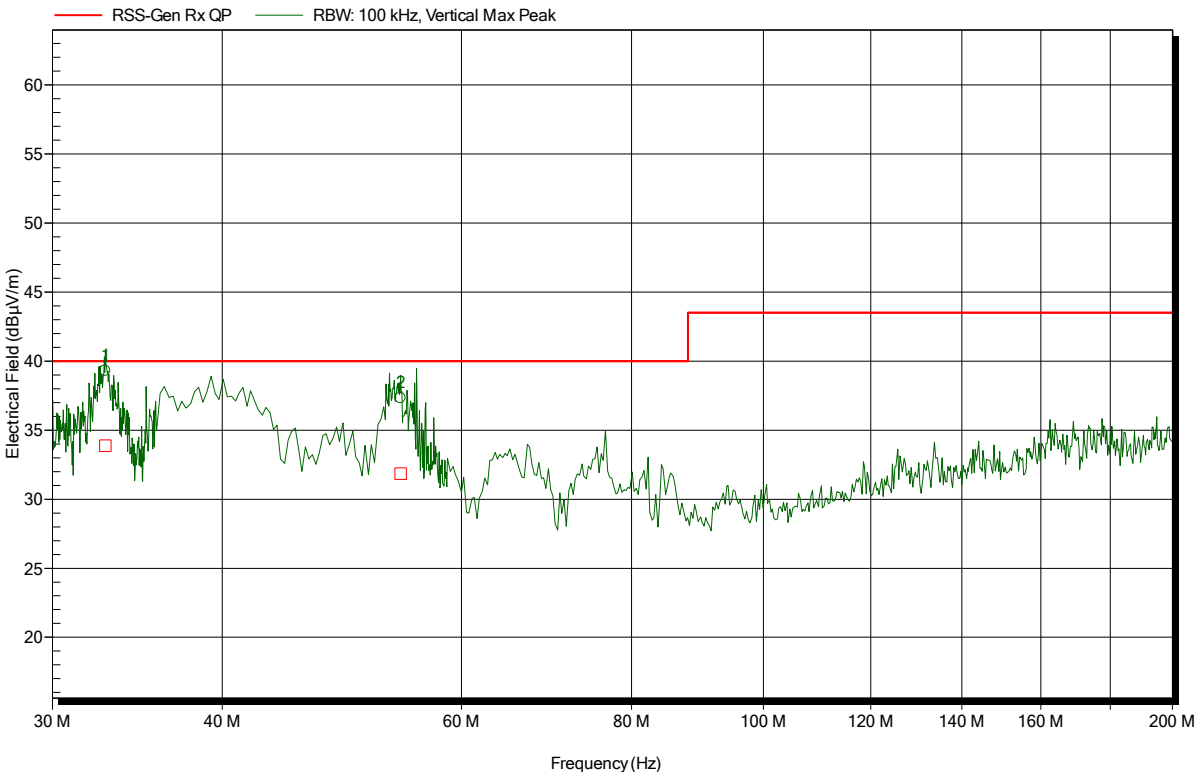

Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
32.818 MHz	39.31 dBµV/m	40 dBµV/m	-0.69 dB	Pass	291 Degree	1.2 m
54.109 MHz	37.32 dBµV/m	40 dBµV/m	-2.68 dB	Pass	137 Degree	1.2 m

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
32.818 MHz	33.87 dBµV/m	40 dBµV/m	-6.13 dB	Pass	291 Degree	1.2 m
54.109 MHz	31.86 dBµV/m	40 dBµV/m	-8.14 dB	Pass	137 Degree	1.2 m

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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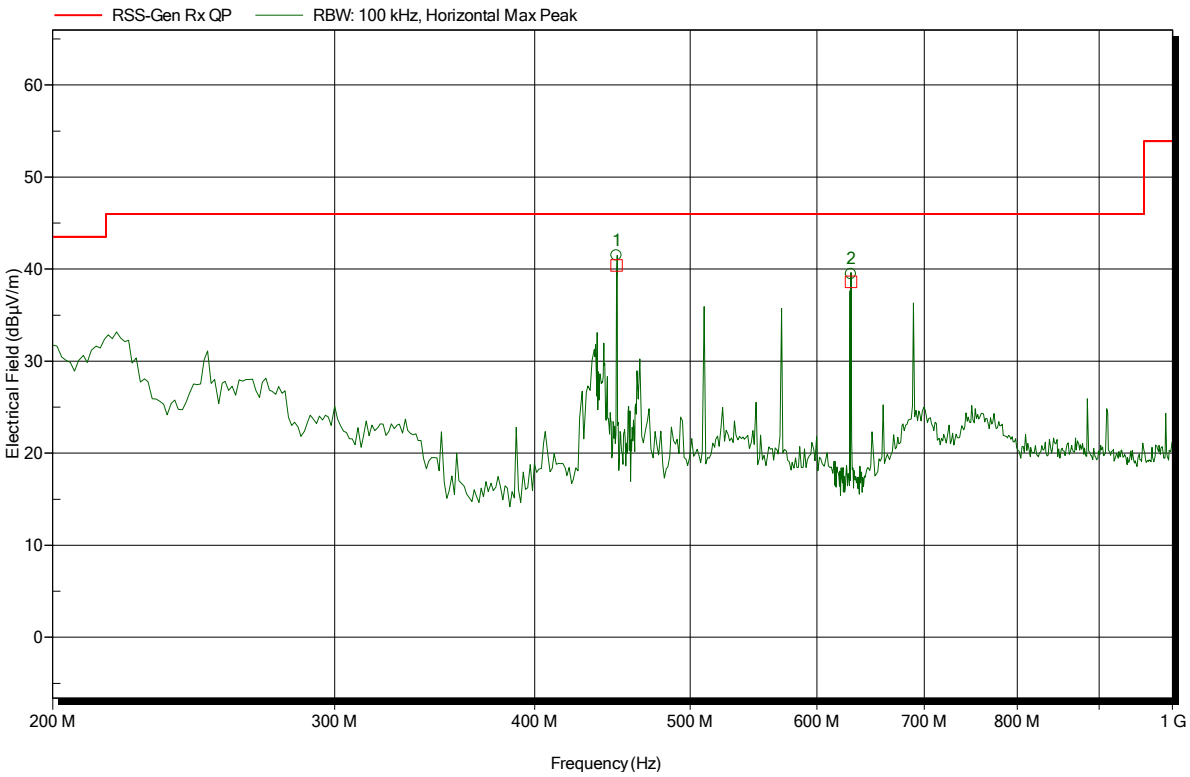

Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
449.982 MHz	41.47 dBµV/m	46 dBµV/m	-4.53 dB	Pass	114 Degree	1.2 m
629.973 MHz	39.44 dBµV/m	46 dBµV/m	-6.56 dB	Pass	101 Degree	1.2 m

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
449.982 MHz	40.41 dBµV/m	46 dBµV/m	-5.59 dB	Pass	114 Degree	1.2 m
629.973 MHz	38.63 dBµV/m	46 dBµV/m	-7.37 dB	Pass	101 Degree	1.2 m

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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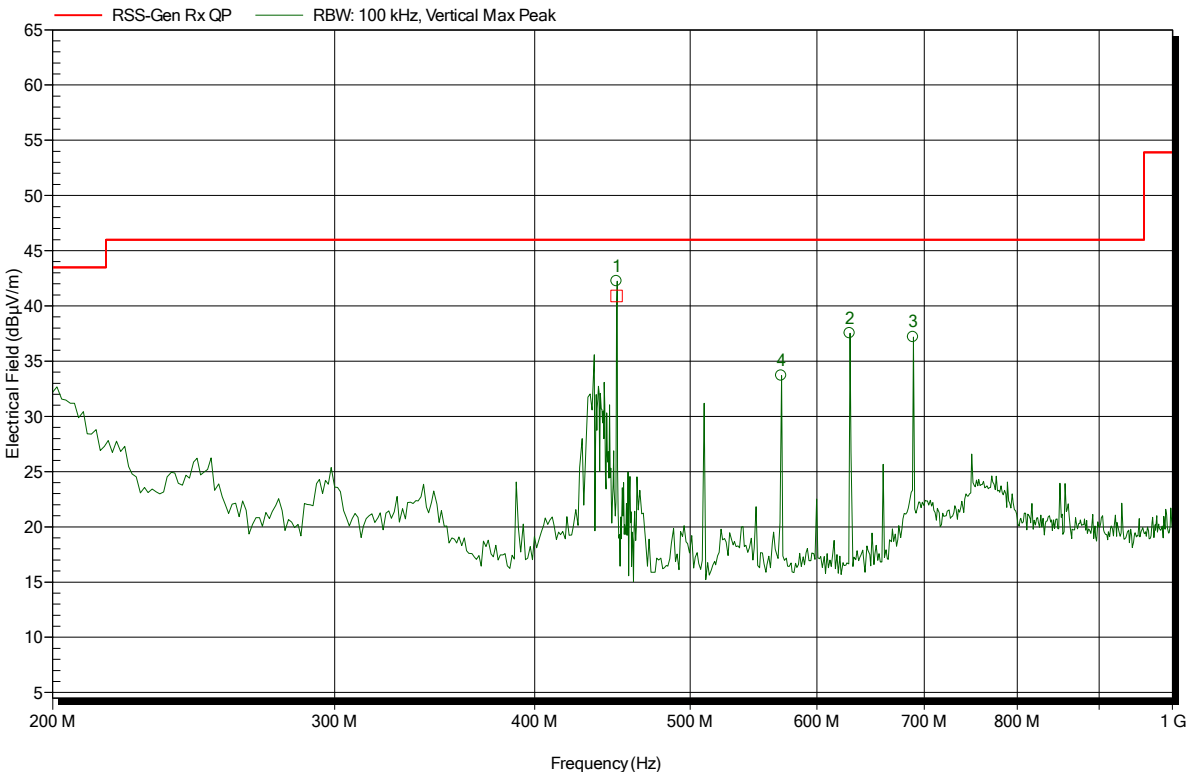

Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
449.984 MHz	42.25 dBµV/m	46 dBµV/m	-3.75 dB	Pass	104 Degree	1.2 m
569.92 MHz	33.69 dBµV/m	46 dBµV/m	-12.31 dB	Pass	180 Degree	1.2 m
628.8 MHz	37.52 dBµV/m	46 dBµV/m	-8.48 dB	Pass	180 Degree	1.2 m
688.96 MHz	37.18 dBµV/m	46 dBµV/m	-8.82 dB	Pass	180 Degree	1.2 m

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
449.984 MHz	40.91 dBµV/m	46 dBµV/m	-5.09 dB	Pass	104 Degree	1.2 m

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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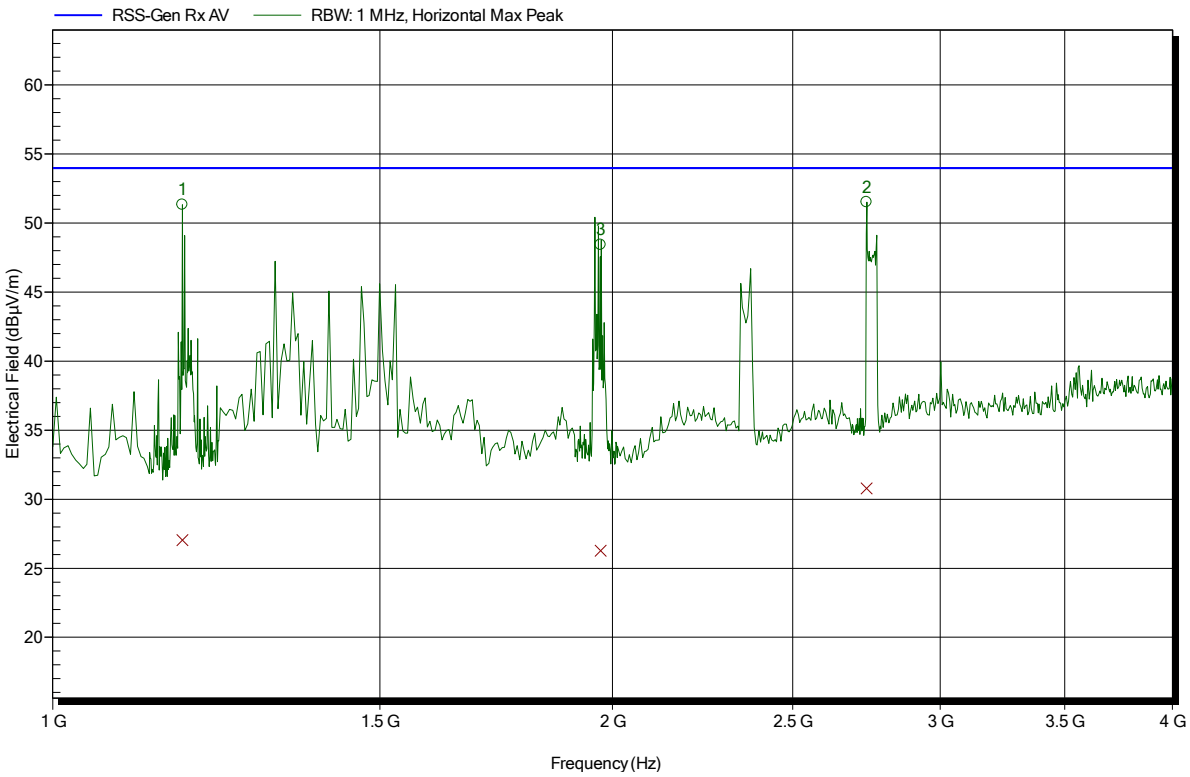

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.175 GHz	51.32 dBµV/m	53.98 dBµV/m	-2.66 dB	Pass
1.971 GHz	48.41 dBµV/m	53.98 dBµV/m	-5.57 dB	Pass
2.739 GHz	51.51 dBµV/m	53.98 dBµV/m	-2.47 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
1.175 GHz	27.04 dBµV/m	53.98 dBµV/m	-26.94 dB	Pass
1.971 GHz	26.26 dBµV/m	53.98 dBµV/m	-27.72 dB	Pass
2.739 GHz	30.77 dBµV/m	53.98 dBµV/m	-23.21 dB	Pass

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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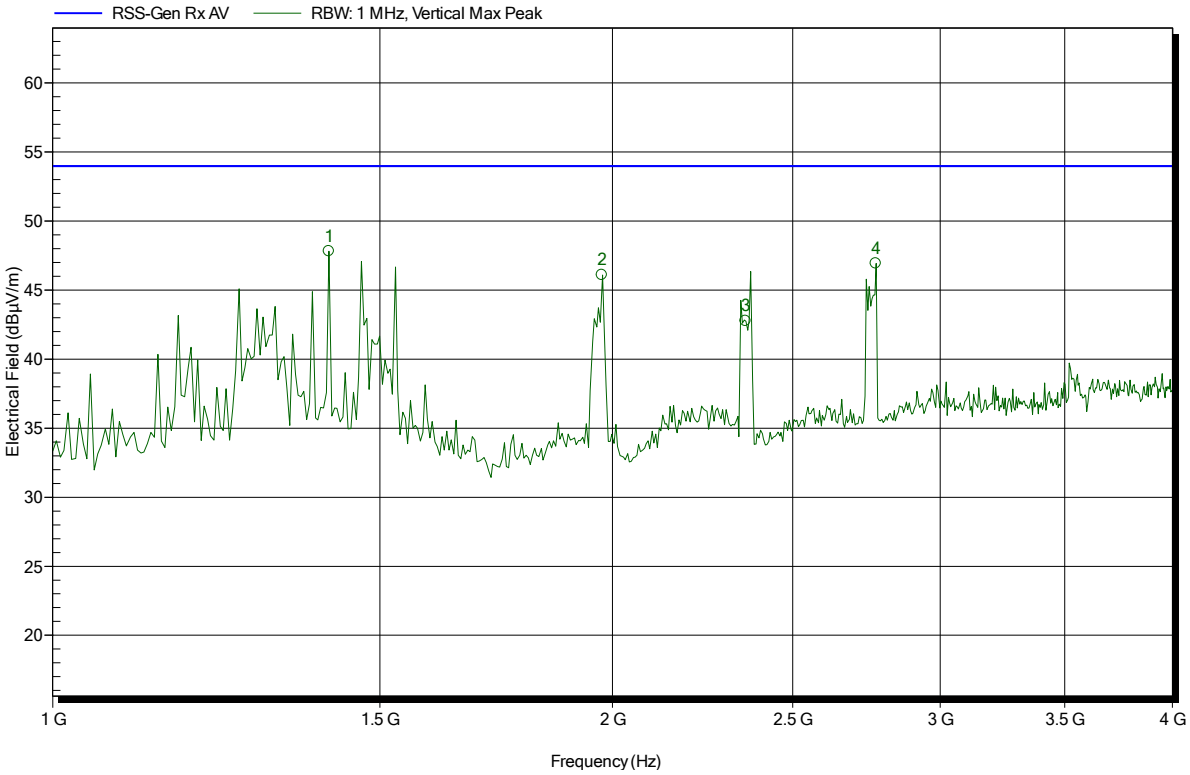

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.408 GHz	47.81 dBµV/m	53.98 dBµV/m	-6.17 dB	Pass
1.974 GHz	46.1 dBµV/m	53.98 dBµV/m	-7.88 dB	Pass
2.358 GHz	42.77 dBµV/m	53.98 dBµV/m	-11.21 dB	Pass
2.771 GHz	46.94 dBµV/m	53.98 dBµV/m	-7.04 dB	Pass

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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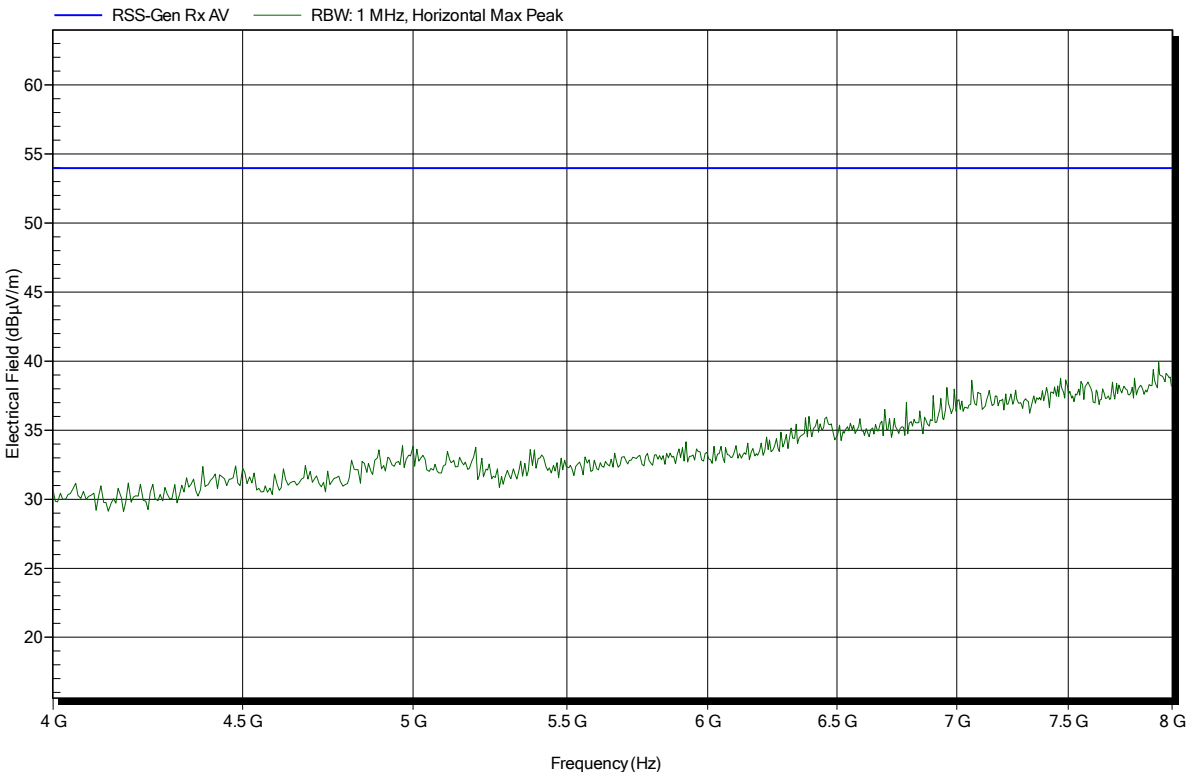

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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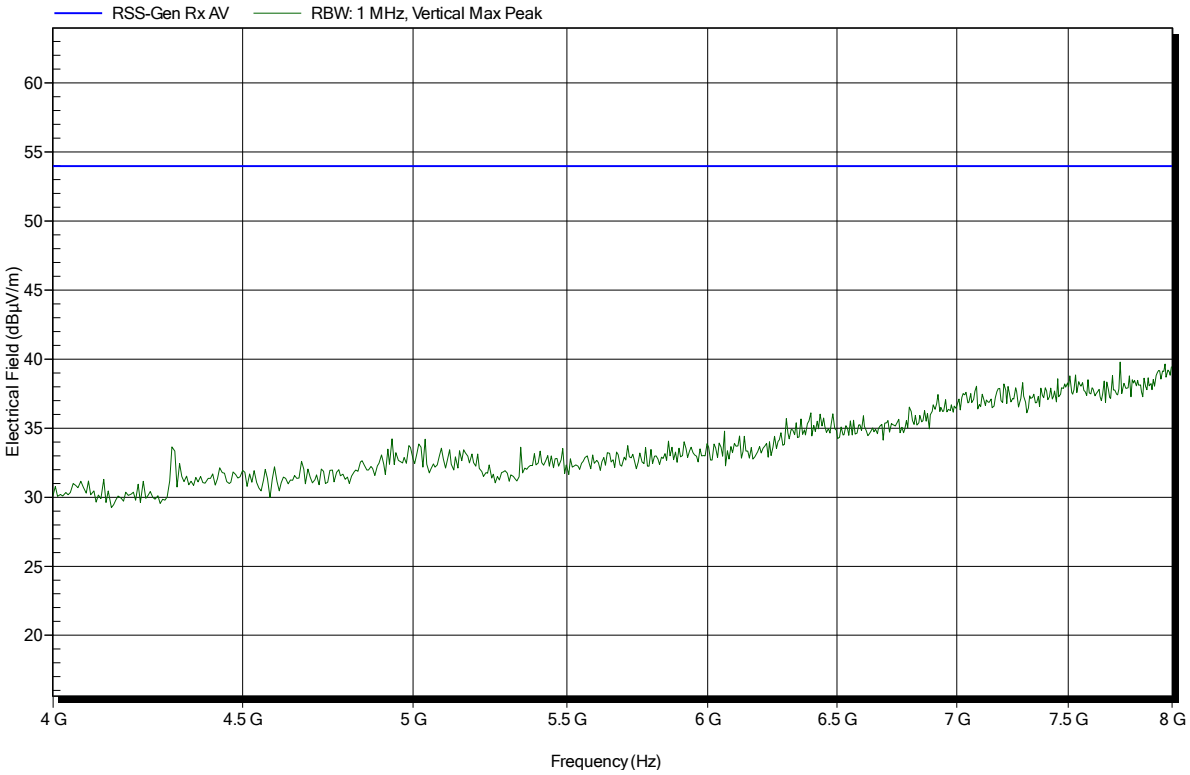

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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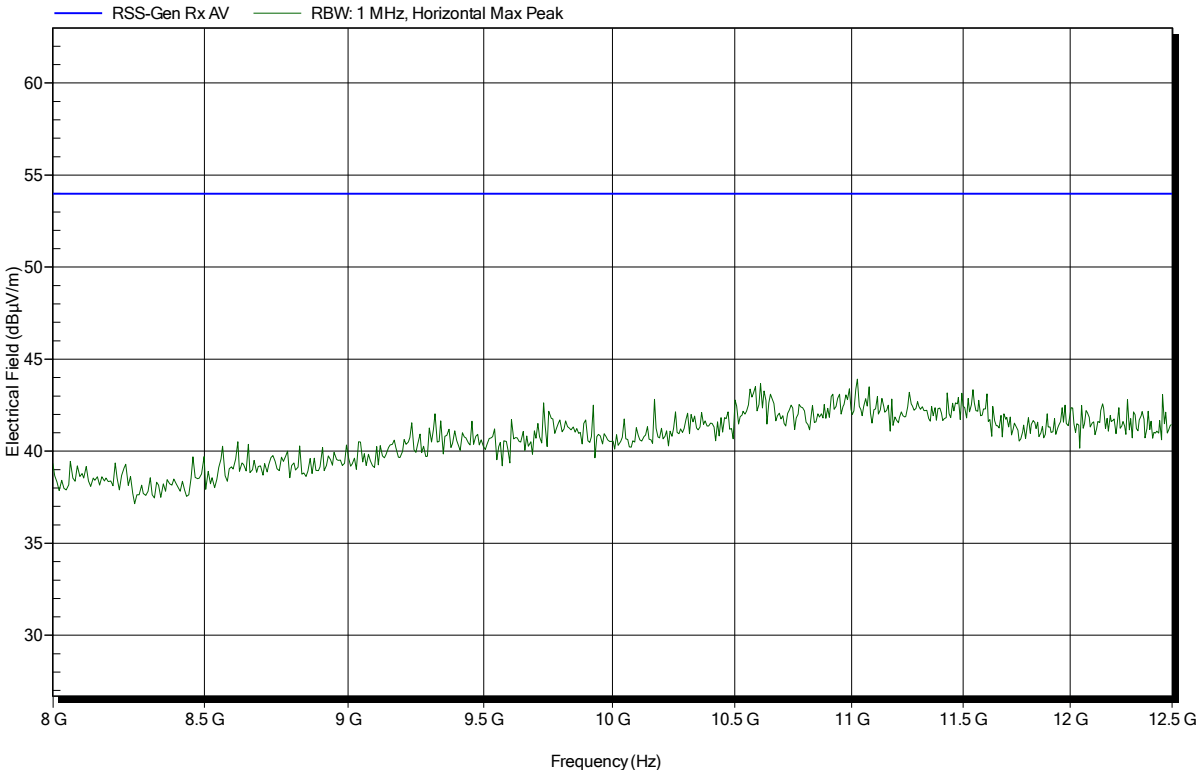
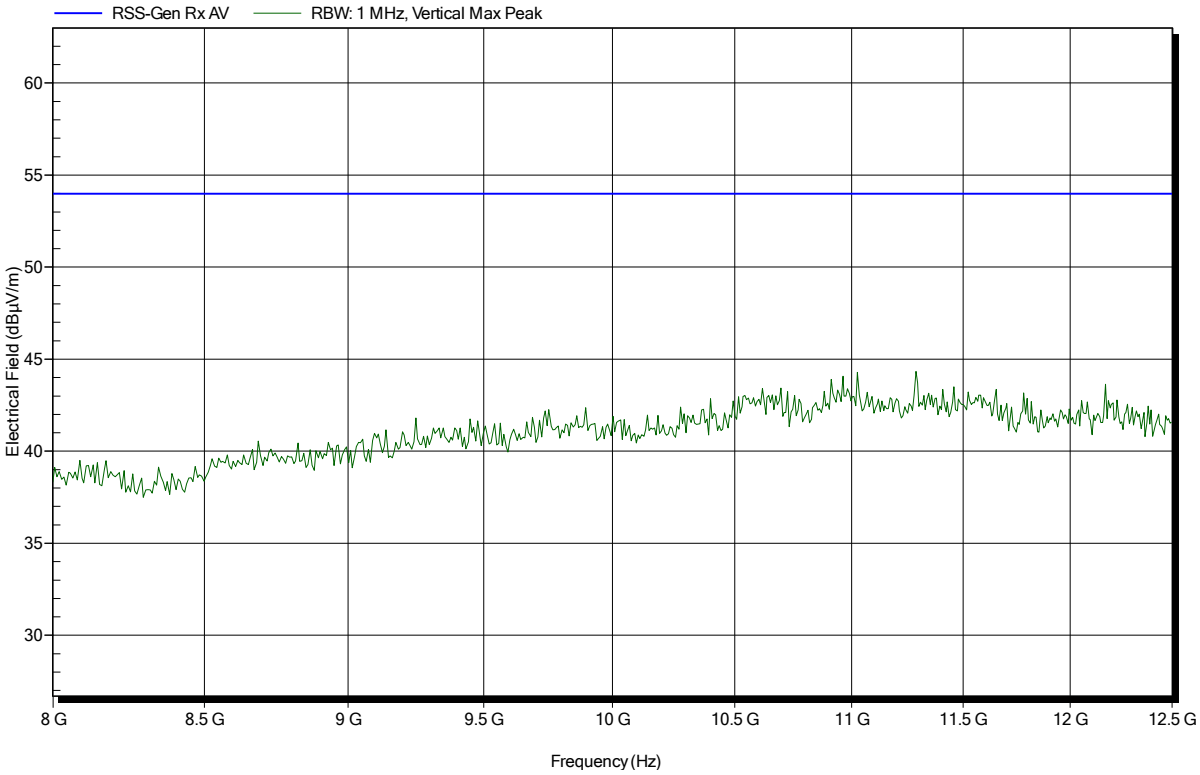


Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1901-8009
Applicant:	Piavita AG
EUT Name:	Basestation
Model:	B02S01
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom: 22°C, Vnom: 5.0 VDC (USB AC/DC adaptor)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	RX; BLE; 2440 MHz
Test Date:	2019-03-01
Note:	

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