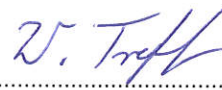


RADIO REPORT FCC 47 CFR Part 15/18 Wireless Power Transfer Devices	
Report Reference No	G0M-1902-8075-TFC106WP-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	 A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Test Firm Designation Number: DE0008 ISED Testing Laboratory site: 3470A-2
Applicant	Piavita AG
Address	Technoparkstrasse 1 8005 Zurich SWITZERLAND
Test Specification	According to FCC/ISED rules
Standard	47 CFR Part 15/18 FCC MP-5:1986 ANSI C63.10:2013
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Equine vital signs wireless monitoring device
Model(s)	Piavita Measuring device
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	V04
Software Version(s)	2
FCC-ID	2ASL2-PD9
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	2019-03-11	
Report:		
Compiled by	Wilfried Treffke	
Tested by (+ signature) (Responsible for Test)	Wilfried Treffke	
Approved by (+ signature) (Deputy Head of Lab)	Toralf Jahn	
Date of Issue	2019-03-25	
Total number of pages	23	
General Remarks:		
The test results presented in this report relate only to the object tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		
The EUT is a wireless power receiver. The communication with the transmitter (not EUT) follows the Qi standard and is done by passive backscattering (changing the receiver coil loading).		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2019-03-25	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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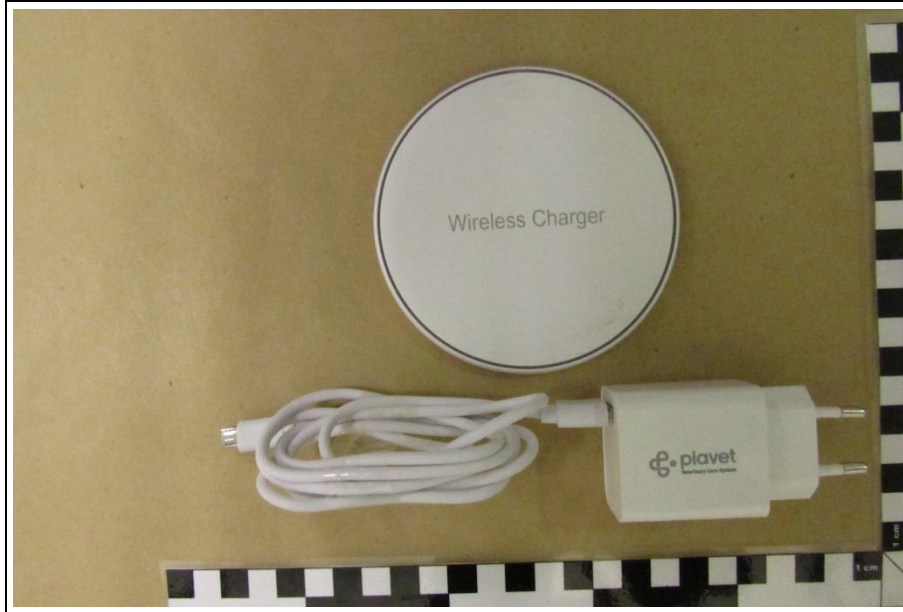
1 Equipment (Test Item) Under Test

Description	Equine vital signs wireless monitoring device	
Model	Piavita Measuring device	
Additional Model(s)	None	
Brand Name(s)	None	
Serial Number(s)	None	
Hardware Version(s)	V04	
Software Version(s)	2	
FCC-ID	2ASL2-PD9	
WPT Source Subassembly	No	
WPT Client Subassembly	Yes	
Wireless Module	No	
Radio technology	Wireless Power Transfer	
Modulation	ASK	
Highest internal frequency [MHz]	32	
Antenna	Type	Integrated
	Model	760308103205
	Manufacturer	Wuerth Elektronik
	Gain	Unspecified
Supply Voltage	V _{NOM}	3.7 VDC (lithium polymer)
Operating Temperature	T _{NOM}	25 °C
AC/DC-Adaptor	Model	K103-0502100US
	Vendor	Merryking
	Input	100-240V
	Output	5 VDC
Manufacturer	Piavita AG Technoparkstrasse 1 8005 Zurich SWITZERLAND	

1.1 Photos – Equipment External



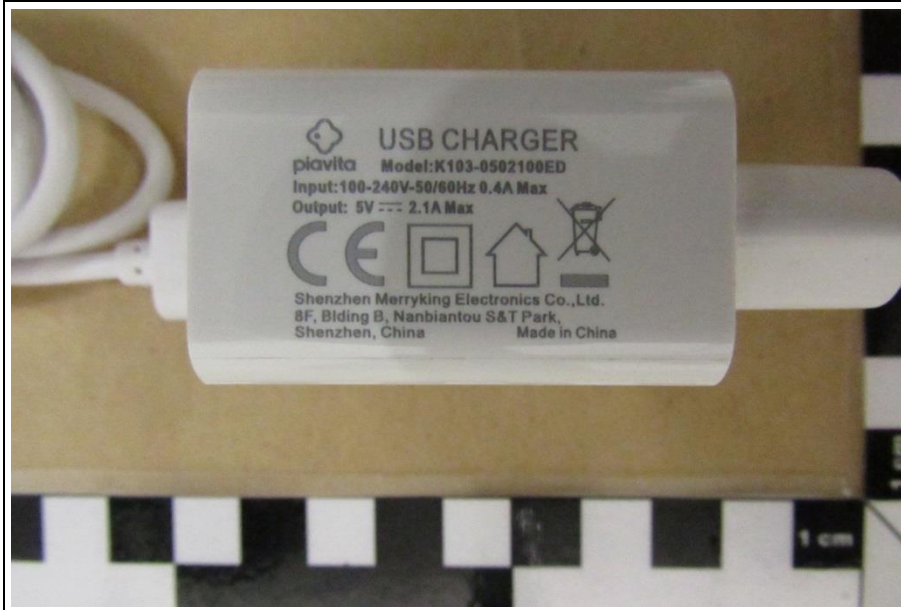
AE: Piavet Wireless Charger Top



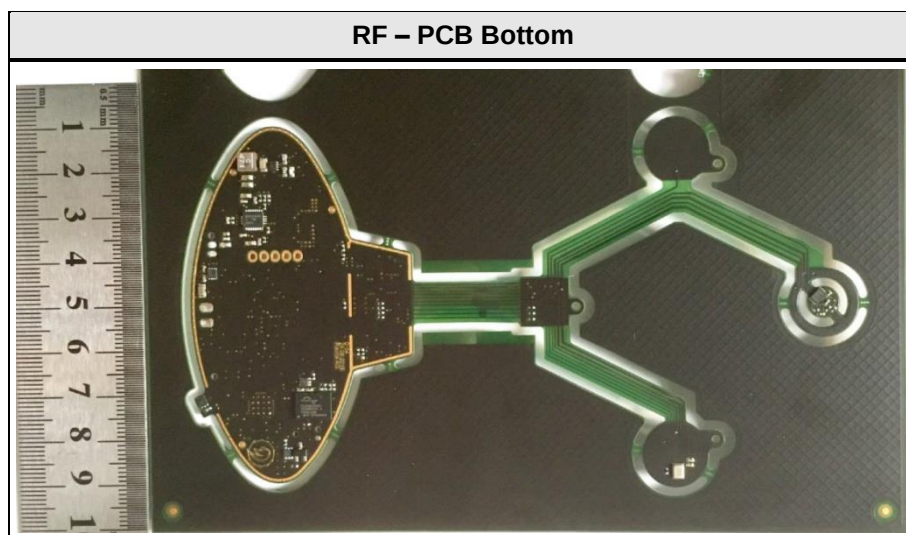
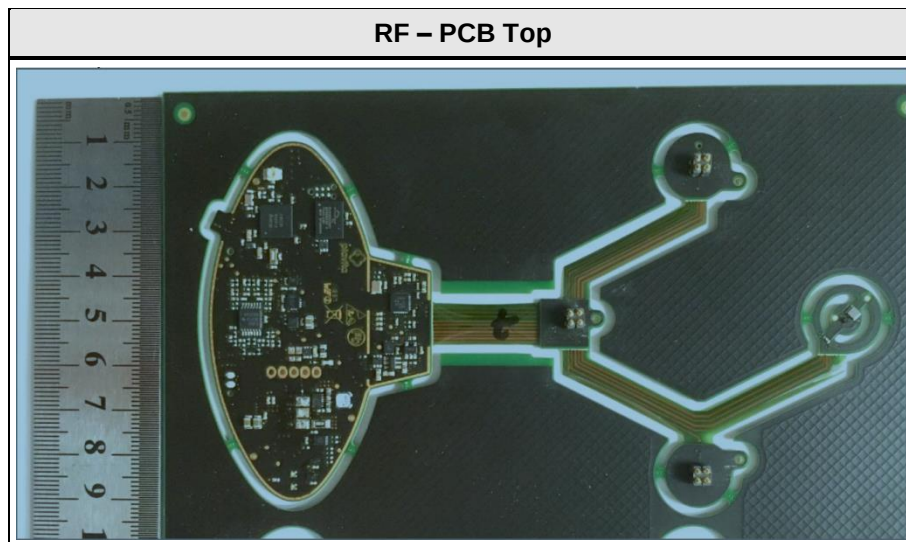
AE: Piavet Wireless Charger Bottom



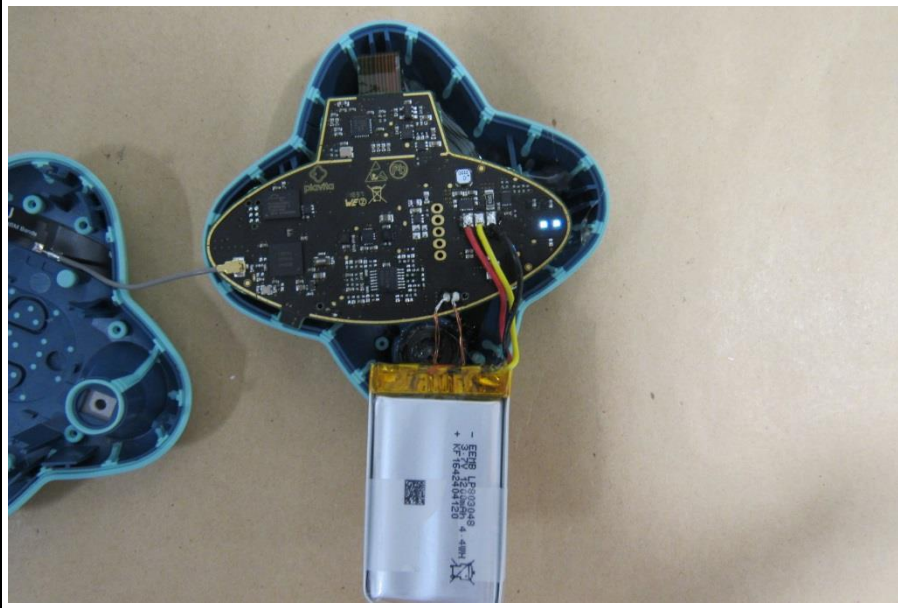
AE: USB Charger Label



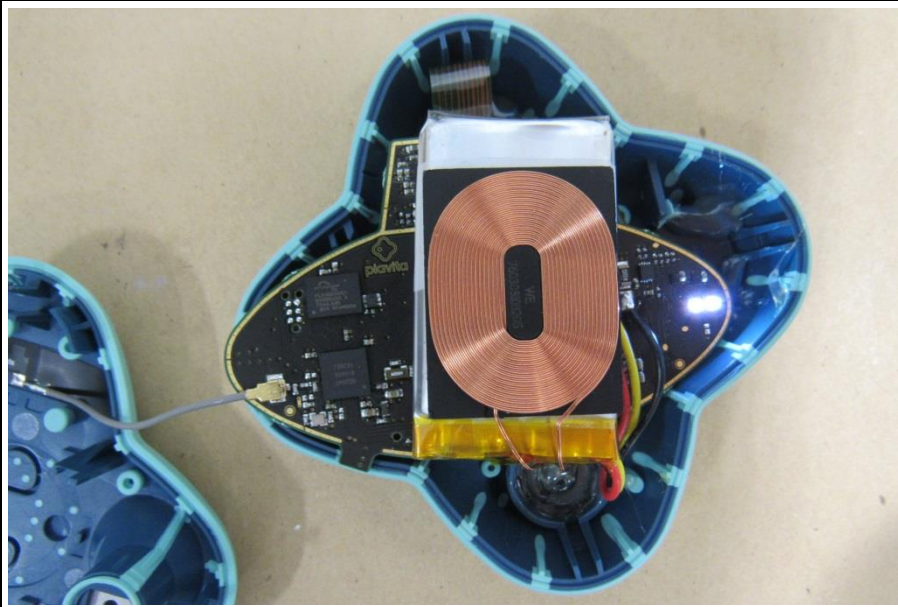
1.2 Photos – Equipment Internal



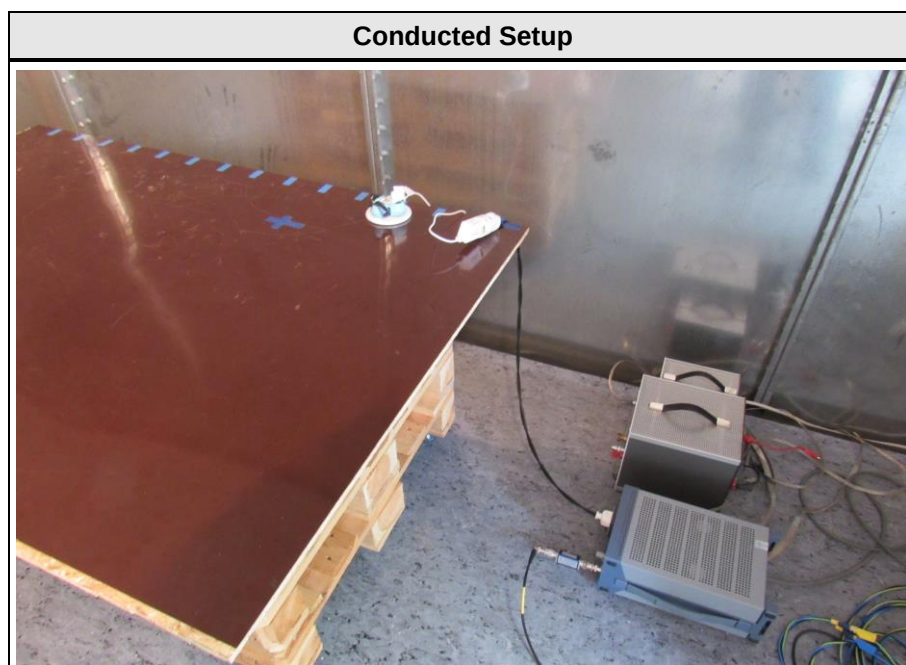
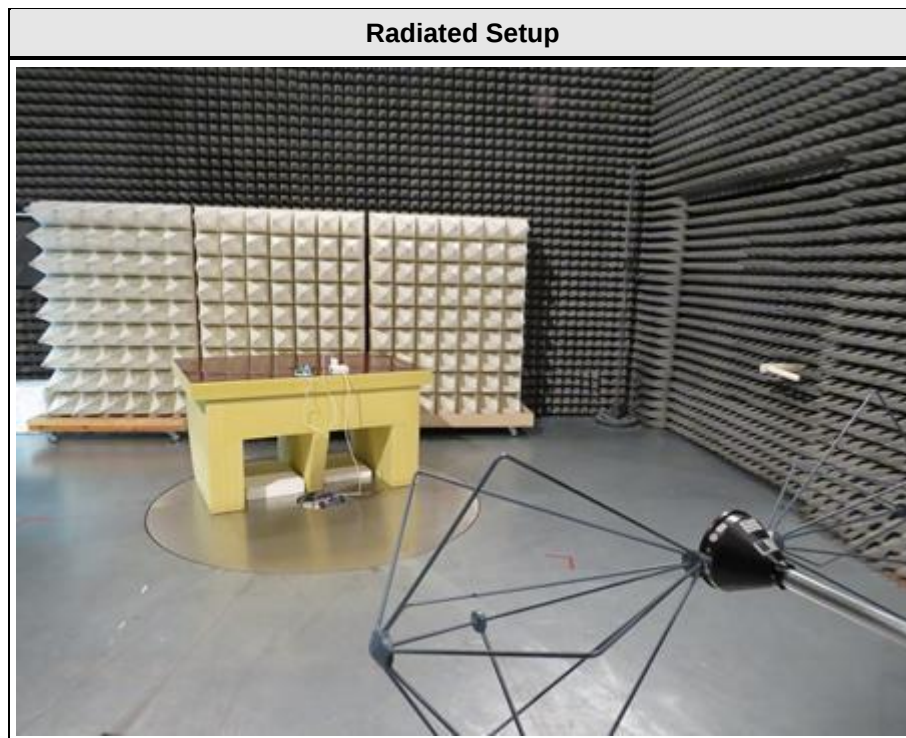
Battery Charging Top View



Battery Charging Bottom View



1.3 Photos – Test Setup



1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE	Charger	Piavita	GY-68	Piavet Wireless Charger
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
Comment:				

1.5 Test Modes

Mode	Description
WPT	Mode = Wireless power transfer from source to client assembly Modulation = ASK Duty cycle = 100 %
Comment:	

1.6 Test Frequencies

Designator	Mode	Channel	Frequency [kHz]
F1	WPT	0	110 to 205

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:

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

Net:

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

Limit:

This is the FCC Class B radiated emission limit (in units of 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:

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

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:

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 KDB 680106 D01, 47 CFR Part 15/18				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
FCC KDB 680106 FCC 18.305	ISM field strength emissions	MP-5:1986	PASS	
FCC KDB 680106 FCC 18.307	ISM conducted emissions	MP-5:1986	PASS	
FCC KDB 680106 FCC 15.209	Wireless field strength emissions	ANSI C63.10:2013	N/A	
FCC KDB 680106 FCC 15.207	Wireless conducted emissions	ANSI C63.10:2013	N/A	
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

3.1.5 Procedure

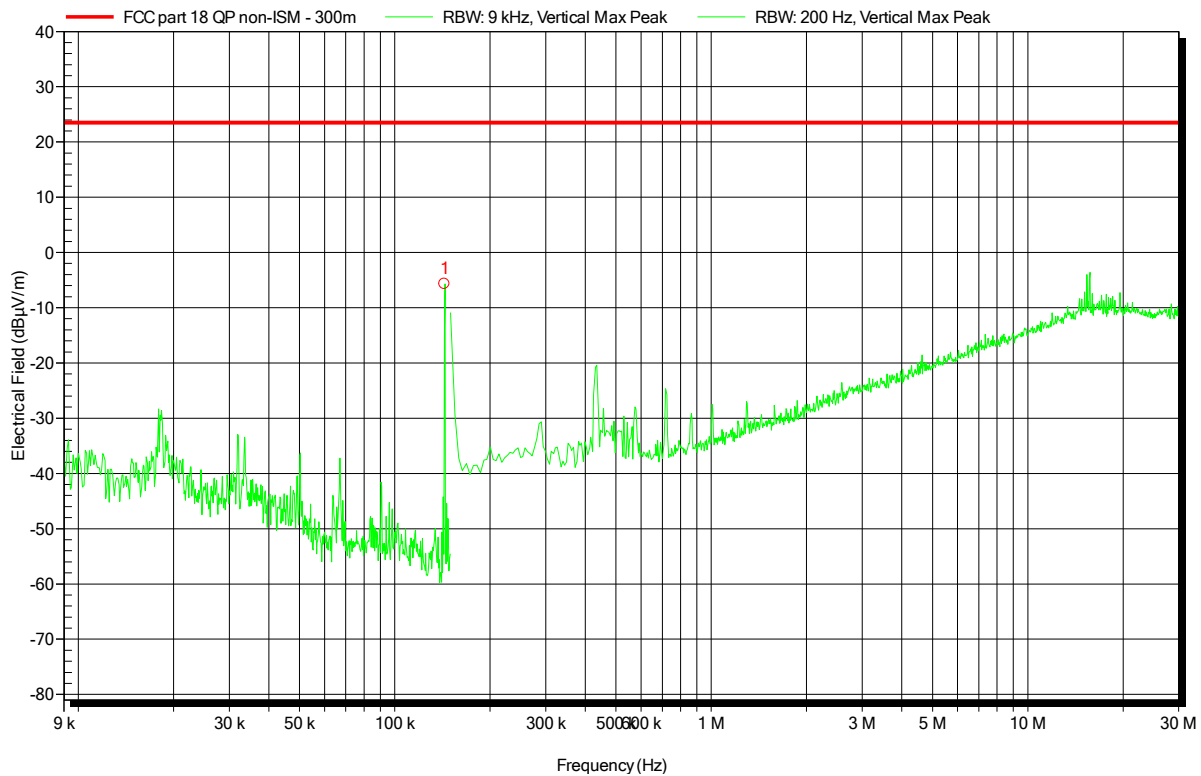
Test Procedure	
1.	EUT set to test mode
2.	Span it set according to measurement range
3.	Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz
4.	Below 30MHz an extrapolation according ANSI 63.10; 6.4.4.2 is used.
5.	Markers are set to maximum emission levels

Radiated emissions under normal conditions according to FCC Part 18

Project number: GOM-1902-8075

Applicant: Piavita AG
EUT Name: Equine vital signs wireless monitoring device
Model: Piavita Measuring device
Test Site: Eurofins Product Service GmbH
Operator: Mr. Handrik
Test Conditions: Tnom: 25°C, Unom: 3.7 VDC lithium polymer battery
Antenna: Rohde & Schwarz HFH 2-Z2, Vertical
Measurement distance: 3m converted to 300m
Mode: charging
Test Date: 2019-03-19
Note:

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Peak Number	Frequency	Angle	Height
1	143.6 kHz	0 Degree	1 m

3.2 Test Conditions and Results - ISM conducted emissions

3.2.1 Information

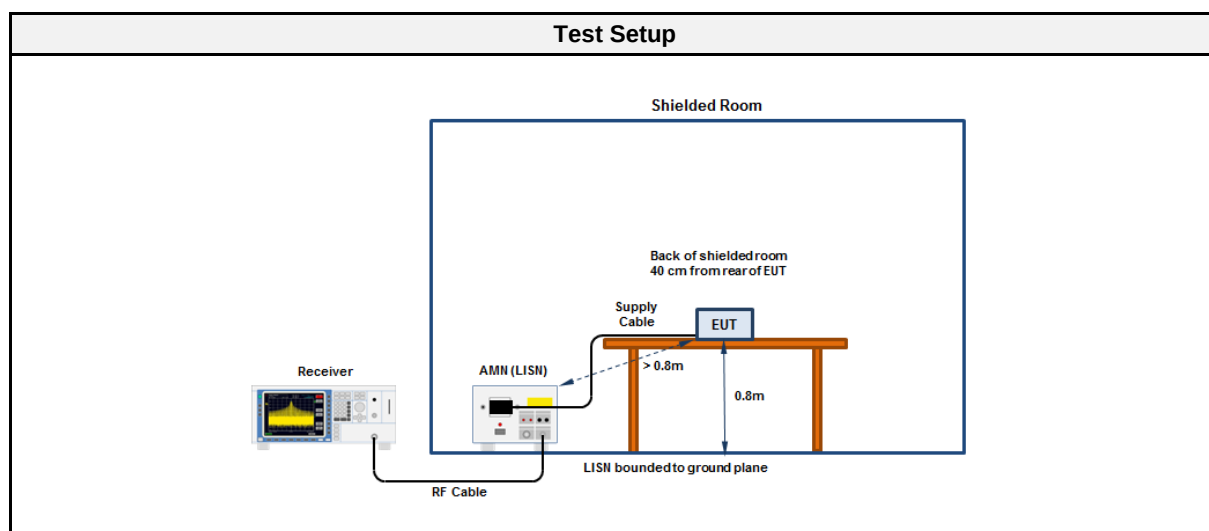
Test Information	
Product Standard Reference	FCC KDB 680106, FCC Part 18
Measurement Method	FCC MP-5
Operator	Matthias Handrik
Date	2019-03-19

3.2.2 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

3.2.3 Setup



3.2.4 Equipment

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

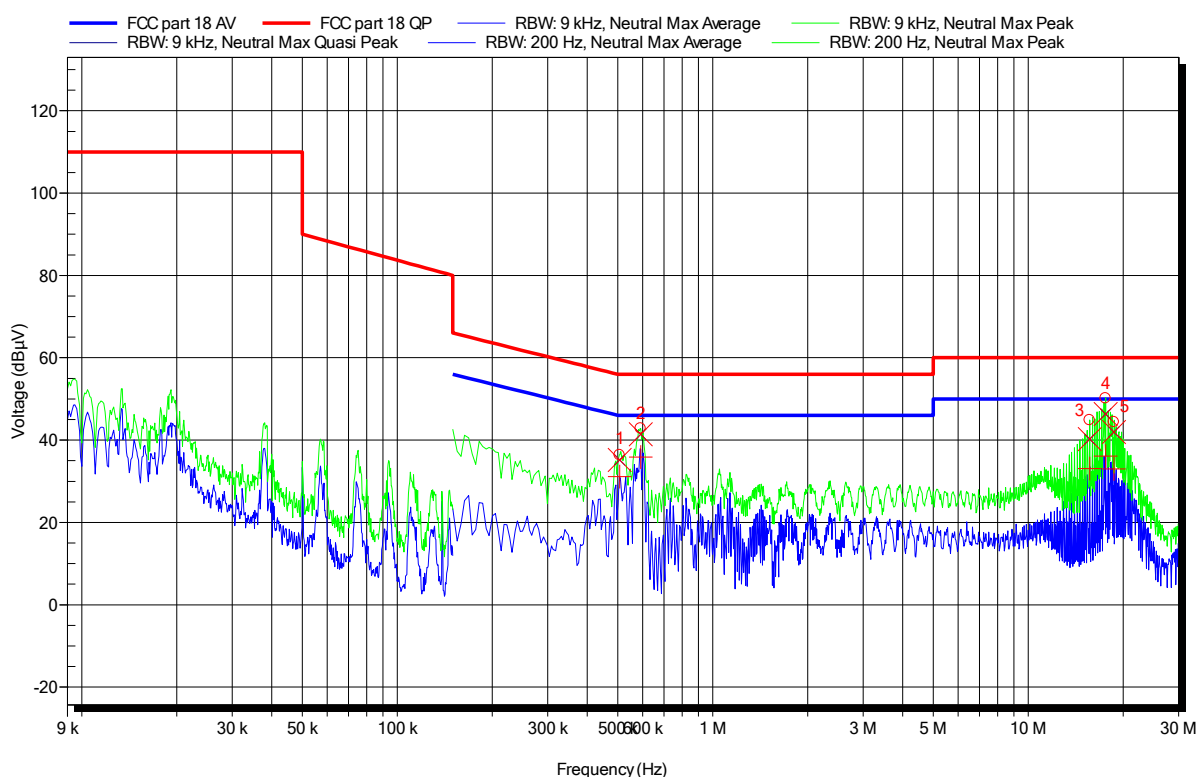
Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Receiver	R&S	ESR7	EF00943	2018-07	2019-07
LISN	R&S	ESH3-Z5	EF00036	2017-01	2019-07

EMI voltage test in the ac-mains according to FCC Part 18

Project number: GOM-1902-8075

Applicant: Piavita AG
 EUT Name: Equine vital signs wireless monitoring device
 Model: Piavita Measuring device
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Conditions: Tnom: 25°C, Unom: 3.7 VDC lithium polymer battery
 LISN: ESH3-Z5 (N)
 Mode: charging
 Test Date: 2019-03-19
 Note:

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Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	506.85 kHz	35.22 dBµV	56 dBµV	-20.78 dB	Pass
2	591 kHz	41.45 dBµV	56 dBµV	-14.55 dB	Pass
3	15.662 MHz	40.28 dBµV	60 dBµV	-19.72 dB	Pass
4	17.601 MHz	46.35 dBµV	60 dBµV	-13.65 dB	Pass
5	18.709 MHz	41.94 dBµV	60 dBµV	-18.06 dB	Pass

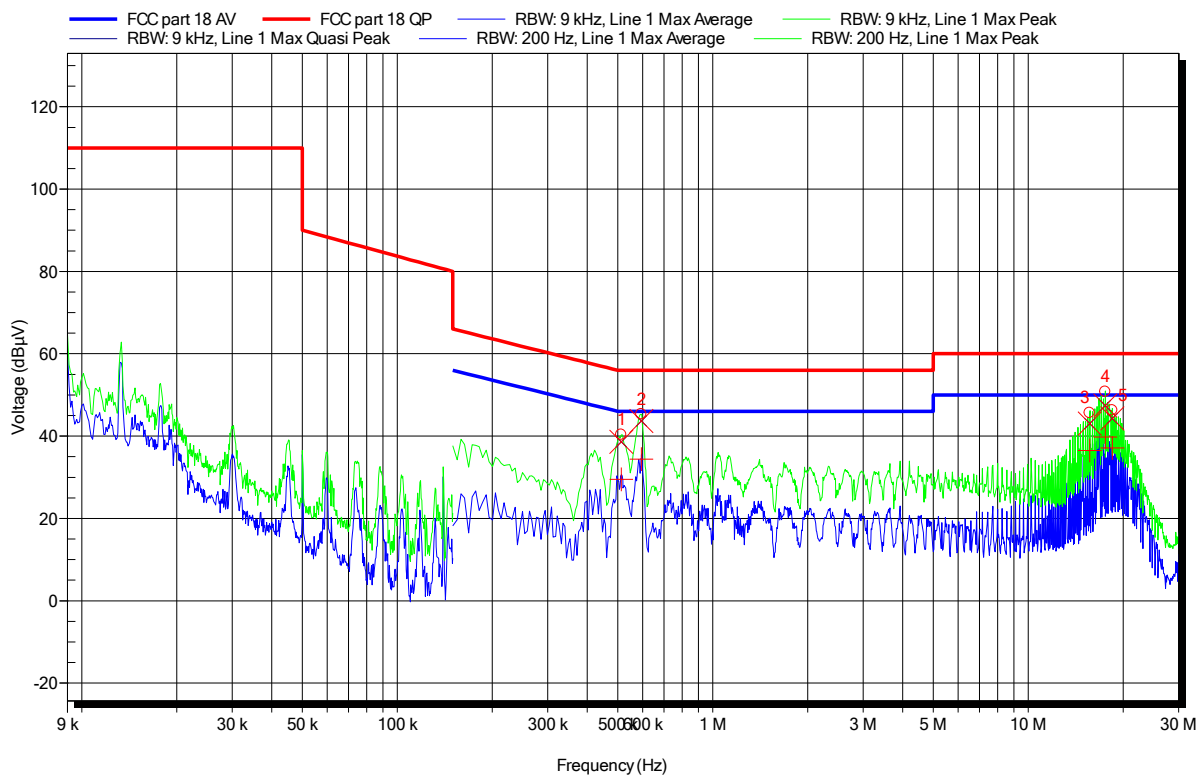
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	506.85 kHz	31.12 dBµV	46 dBµV	-14.88 dB	Pass
2	591 kHz	35.92 dBµV	46 dBµV	-10.08 dB	Pass
3	15.662 MHz	33.11 dBµV	50 dBµV	-16.89 dB	Pass
4	17.601 MHz	36.14 dBµV	50 dBµV	-13.86 dB	Pass
5	18.709 MHz	33.03 dBµV	50 dBµV	-16.97 dB	Pass

EMI voltage test in the ac-mains according to FCC Part 18

Project number: G0M-1902-8075

Applicant: Piavita AG
 EUT Name: Equine vital signs wireless monitoring device
 Model: Piavita Measuring device
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Conditions: Tnom: 25°C, Unom: 3.7 VDC lithium polymer battery
 LISN: ESH3-Z5 (L)
 Mode: charging
 Test Date: 2019-03-19
 Note:

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Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	513.15 kHz	38.61 dBμV	56 dBμV	-17.39 dB	Pass
2	593.7 kHz	43.66 dBμV	56 dBμV	-12.34 dB	Pass
3	15.67 MHz	43.09 dBμV	60 dBμV	-16.91 dB	Pass
4	17.536 MHz	47.41 dBμV	60 dBμV	-12.59 dB	Pass
5	18.463 MHz	44.32 dBμV	60 dBμV	-15.68 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	513.15 kHz	29.52 dBμV	46 dBμV	-16.48 dB	Pass
2	593.7 kHz	34.43 dBμV	46 dBμV	-11.57 dB	Pass
3	15.67 MHz	36.5 dBμV	50 dBμV	-13.5 dB	Pass
4	17.536 MHz	39.81 dBμV	50 dBμV	-10.19 dB	Pass
5	18.463 MHz	37.16 dBμV	50 dBμV	-12.84 dB	Pass