

Report on the FCC Testing of the
 Monica Healthcare Ltd
 Interface unit. Model: Novii System Interface Unit
 POD. Model: Novii System Pod
 In accordance with FCC 47 CFR Part 15B



Product Service

Choose certainty.
 Add value.

Prepared for: Monica Healthcare Ltd
 Interchange 25 business Park
 Unit 8
 Bostocks lane
 Nottingham
 NG10 5QG
 United Kingdom

FCC ID:
 Novii Interface-YOM-6961-MON, Novii Pod-YOM-6960-MON

COMMERCIAL-IN-CONFIDENCE

Date: December 2017
 Document Number: 75941097-01 | Issue: 01

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Clare Wright	13 December 2017	
Authorised Signatory	Matthew Russell	13 December 2017	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15B. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Paul Joynson	13 December 2017	
Testing	Graeme Lawler	13 December 2017	

FCC Accreditation
 90987 Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B: 2016.



DISCLAIMER AND COPYRIGHT

This non-binding report has been prepared by TÜV SÜD Product Service with all reasonable skill and care. The document is confidential to the potential Client and TÜV SÜD Product Service. No part of this document may be reproduced without the prior written approval of TÜV SÜD Product Service. © 2017 TÜV SÜD Product Service.

ACCREDITATION

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation. Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

TÜV SÜD Product Service
 is a trading name of TÜV SÜD Ltd
 Registered in Scotland at East Kilbride,
 Glasgow G75 0QF, United Kingdom
 Registered number: SC215164

TÜV SÜD Ltd is a
 TÜV SÜD Group Company

Phone: +44 (0) 1489 558100
 Fax: +44 (0) 1489 558101
www.tuv-sud.co.uk

TÜV SÜD Product Service
 Octagon House
 Concorde Way
 Fareham
 Hampshire PO15 5RL
 United Kingdom



Contents

1	Report Summary	2
1.1	Report Modification Record.....	2
1.2	Introduction.....	2
1.3	Brief Summary of Results	3
1.4	Declaration of Build Status.....	4
1.5	Product Information.....	6
1.6	Deviations from the Standard.....	6
1.7	EUT Modification Record	6
1.8	Test Location.....	7
2	Test Details	8
2.1	Radiated Emissions.....	8
2.2	AC Power Line Conducted Emissions	13
3	Measurement Uncertainty	17



1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	13 December 2017

Table 1

1.2 Introduction

Applicant	Monica Healthcare Ltd
Manufacturer	Monica Healthcare Ltd
Model Number(s)	Novii System Interface Unit (107-PT-001)
Serial Number(s)	Novii System Pod (107-PT-003) Interface: TA1772 Pod: AA5233
Hardware Version(s)	Interface: Rev L Pod: Rev H
Software Version(s)	Interface: V2.71 Pod: V2.54
Number of Samples Tested	1 System
Test Specification/Issue/Date	FCC 47 CFR Part 15B: 2016
Order Number	Issue 2 501559
Date	30-November-2017
Date of Receipt of EUT	03-December-2017 and 05-December-2017
Start of Test	03-December-2017
Finish of Test	05-December-2017
Name of Engineer(s)	Paul Joynson and Graeme Lawler
Related Document(s)	ANSI C63.4 (2014)



Product Service

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15B is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: Interface + Pod – Standby				
2.1	15.109	Radiated Emissions	Pass	ANSI C63.4
2.2	15.107	AC Power Line Conducted Emissions	Pass	ANSI C63.4

Table 2



1.4 Declaration of Build Status

Novii System Interface

MAIN EUT	
MANUFACTURING DESCRIPTION	Novii System Interface Unit for the Novii Wireless Patch System
MANUFACTURER	Monica Healthcare Ltd
MODEL NAME/NUMBER	Novii System Interface Unit
PART NUMBER	107-PT-001
SERIAL NUMBER	TA1763 (TA1764, TA1762, TA1759, TA1752)
HARDWARE VERSION	Rev L
SOFTWARE VERSION	Rev 2.71
PSU VOLTAGE/FREQUENCY/CURRENT	100-240V / 50-60Hz / 2.5A
HIGHEST INTERNALLY GENERATED / USED FREQUENCY	26 MHz
FCC ID (if applicable)	YOM-6961-MON
INDUSTRY CANADA ID (if applicable)	
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The Novii System Interface Unit is part of the Novii Wireless Patch System: a Maternal/Fetal monitor that records Fetal heart rate, Maternal Heart Rate and Uterine Contractions from a pregnant subject.
COUNTRY OF ORIGIN	United Kingdom
RF CHARACTERISTICS (if applicable)	
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	2402 to 2480 (Bluetooth) and 0.110 to 0.205 (Qi charger)
RECEIVER FREQUENCY OPERATING RANGE (MHz)	2402 to 2480 (Bluetooth) and 0.110 to 0.205 (Qi charger)
INTERMEDIATE FREQUENCIES	2440 MHz (Bluetooth) and 0.157 MHz (Qi charger)
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	1M00F1D
MODULATION TYPES: (i.e. GMSK, QPSK)	V2.1 + EDR (GFSK. Bluetooth) and frequency modulation (Qi charger)
OUTPUT POWER (W or dBm)	10 dBm (Bluetooth), 37dBm (Qi charger)
SEPARATE BATTERY/POWER SUPPLY (if applicable)	
MANUFACTURING DESCRIPTION	Novii Interface Unit Power Supply
MANUFACTURER	XP Power
TYPE	AC/DC power supply
PART NUMBER	ACM18US05
PSU VOLTAGE/FREQUENCY/CURRENT	100-240V / 50-60Hz / 2.5A
COUNTRY OF ORIGIN	China
MODULES (if applicable)	
MANUFACTURING DESCRIPTION	
MANUFACTURER	
TYPE	
POWER	
FCC ID	
INDUSTRY CANADA ID	
EMISSION DESIGNATOR	
DHSS/FHSS/COMBINED OR OTHER	
COUNTRY OF ORIGIN	
ANCILLARIES (if applicable)	
MANUFACTURING DESCRIPTION	Novii System Pod
MANUFACTURER	Monica Healthcare Ltd
TYPE	Novii Pod
PART NUMBER	107-PT-003
SERIAL NUMBER	AA5426, AA5431
COUNTRY OF ORIGIN	United Kingdom



Novii System Pod

MAIN EUT			
MANUFACTURING DESCRIPTION	Novii System Pod for the Novii Wireless Patch System		
MANUFACTURER	Monica Healthcare Ltd		
MODEL NAME/NUMBER	Novii System Pod		
PART NUMBER	107-PT-003		
SERIAL NUMBER	AA5426, AA5431 (AA5425, AA5235, AA5266, AA5233)		
HARDWARE VERSION	Rev H		
SOFTWARE VERSION	Rev 2.54		
PSU VOLTAGE/FREQUENCY/CURRENT	Qi wireless charging (from Novii System Interface Unit)		
HIGHEST INTERNALLY GENERATED / USED FREQUENCY	26MHz		
FCC ID (if applicable)	YOM-6960-MON		
INDUSTRY CANADA ID (if applicable)			
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The Novii System Pod is part of the Novii Wireless Patch System: a Maternal/Fetal monitor that records Fetal heart rate, Maternal Heart Rate and Uterine Contractions from a pregnant subject.		
COUNTRY OF ORIGIN	United Kingdom		
RF CHARACTERISTICS (if applicable)			
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	2402 to 2480 (Bluetooth) and 0.110 to 0.205 (Qi charger)		
RECEIVER FREQUENCY OPERATING RANGE (MHz)	2402 to 2480 (Bluetooth) and 0.110 to 0.205 (Qi charger)		
INTERMEDIATE FREQUENCIES	2440 MHz (Bluetooth) and 0.157 MHz (Qi charger)		
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	1M00F1D		
MODULATION TYPES: (i.e. GMSK, QPSK)	V2.1 + EDR (GFSK. Bluetooth) and frequency modulation (Qi charger)		
OUTPUT POWER (W or dBm)	10 dBm (Bluetooth)		
SEPARATE BATTERY/POWER SUPPLY (if applicable)			
MANUFACTURING DESCRIPTION	Novii System Interface Unit		
MANUFACTURER	Monica Healthcare Ltd		
TYPE	Qi wireless charger		
PART NUMBER	107-PT-001		
PSU VOLTAGE/FREQUENCY/CURRENT	On receiver: 5V DC / 380mA		
COUNTRY OF ORIGIN	United Kingdom		
MODULES (if applicable)			
MANUFACTURING DESCRIPTION			
MANUFACTURER			
TYPE			
POWER			
FCC ID			
INDUSTRY CANADA ID			
EMISSION DESIGNATOR			
DHSS/FHSS/COMBINED OR OTHER			
COUNTRY OF ORIGIN			
ANCILLARIES (if applicable)			
MANUFACTURING DESCRIPTION	Novii System Interface Unit	Novii System Patch	
MANUFACTURER	Monica Healthcare Ltd	Monica Healthcare Ltd	
TYPE	Novii Interface	Novii Patch	
PART NUMBER	107-PT-001	107-PT-004	
SERIAL NUMBER	TA1763 (TA1764, TA1762, TA1759, TA1752)	N/A (disposable)	
COUNTRY OF ORIGIN	United Kingdom	USA	



1.5 Product Information

1.5.1 Technical Description

The Monica Novii POD is an intrapartum Maternal/Fetal Monitor that non-invasively measures and displays fetal heart rate (FHR), uterine activity (UA) and maternal heart rate (MHR).

The Novii POD acquires and displays the FHR tracing from abdominal surface electrodes that pick up the fetal ECG (fECG) signal. Using the same surface electrodes, the POD also acquires and displays the UA tracing from the uterine electromyography (EMG) signal and the MHR tracing from the maternal ECG signal (mECG).

The POD is indicated for use on women who are at >36 completed weeks, in labor, with singleton pregnancies, using surface electrodes on the maternal abdomen.

The Novii Patch is an accessory to the Novii POD that connects directly to the Novii POD and contains the surface electrodes that attach to the abdomen. The Novii Interface is an accessory to the Novii POD which provides a means of interfacing the wireless output of the Novii POD to the transducer inputs of a Maternal/Fetal Monitor.

The Novii Interface enables signals collected by the Novii POD to be printed and displayed on a Maternal/Fetal Monitor and sent on to a central network, if connected.

1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme. The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Serial Number: TA1772			
0	As supplied by the customer	Not Applicable	Not Applicable
Serial Number: AA5233			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3



Product Service

1.8 Test Location

TÜV SÜD Product Service conducted the following tests at our Fareham Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: Interface + Pod – Idle		
Radiated Emissions	Paul Joynson and Graeme Lawler	UKAS
AC Power Line Conducted Emissions	Paul Joynson and Graeme Lawler	UKAS

Table 4

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom



2 Test Details

2.1 Radiated Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109

2.1.2 Equipment Under Test and Modification State

Interface, S/N: TA1772 - Modification State 0
Pod, S/N: AA5233- Modification State 0

2.1.3 Date of Test

04-December-2017 to 05-December-2017

2.1.4 Test Method

The test was performed in accordance with ANSI C63.4, clause 8.

2.1.5 Environmental Conditions

Ambient Temperature 18.1 °C
Relative Humidity 37.0 %

2.1.6 Test Results

Interface + Pod - Standby

Highest frequency generated or used within the EUT: 2.5 GHz
Upper frequency test limit: 13.5 GHz

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
83.835	19.3	39.1	-19.8	43	1.00	Vertical
84.761	24.2	39.1	-14.9	116	1.00	Vertical
85.628	17.8	39.1	-21.3	244	1.00	Vertical
493.318	34.1	46.4	-12.3	160	1.00	Vertical
618.755	29.6	46.4	-16.8	151	1.16	Vertical
690.703	38.7	46.4	-7.7	233	1.00	Horizontal
887.805	34.5	46.4	-11.9	129	1.00	Vertical

Table 5 - 30 MHz to 1 GHz

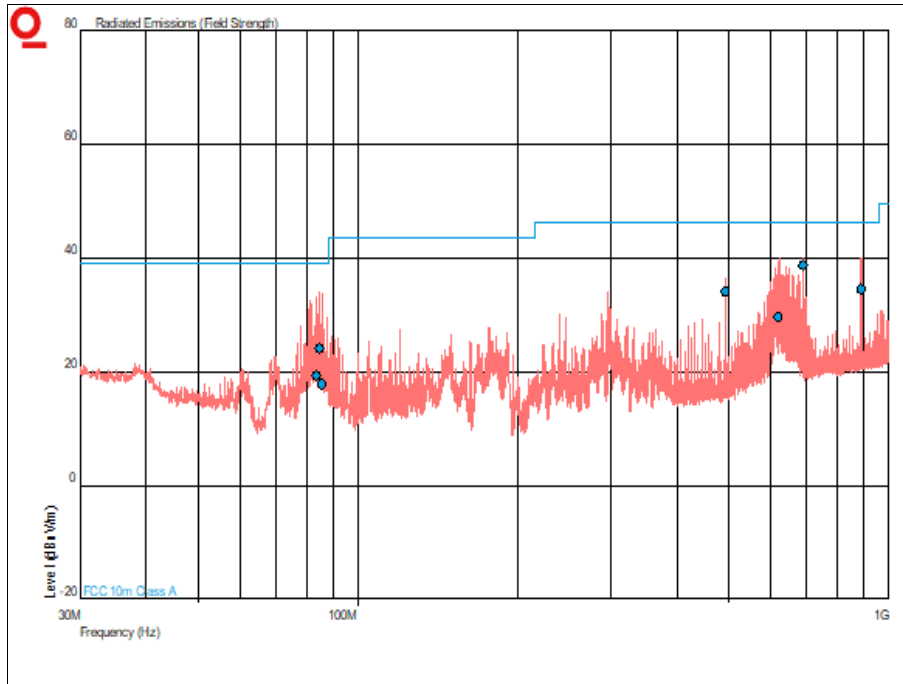


Figure 1 - 30 MHz to 1 GHz - Horizontal and Vertical



Frequency (GHz)	Result (µV/m)		Limit (µV/m)		Margin (µV/m)		Angle (°)	Height (m)	Polarisation
	Peak	Average	Peak	Average	Peak	Average			
1.085332	45.16	41.61	69.54	49.54	24.45	7.93	173	350	Vertical
1.282613	44.49	39.22	69.54	49.54	25.5	10.32	165	302	Vertical

Table 6 - 1 GHz to 13.5 GHz

No other emissions were detected within 6 dB of the limit.

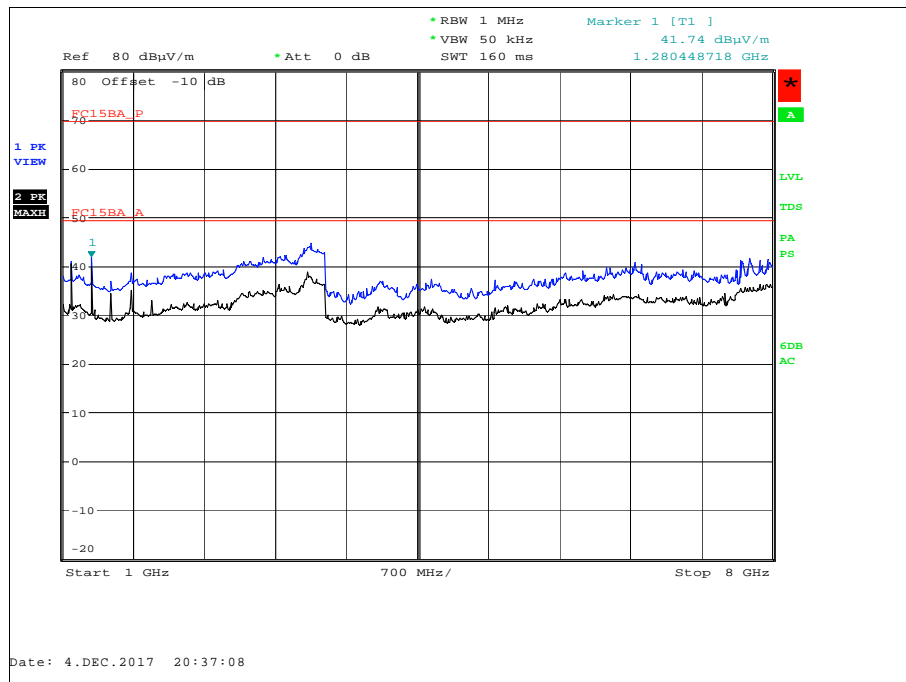


Figure 2 - 1 GHz to 8 GHz - Horizontal and Vertical

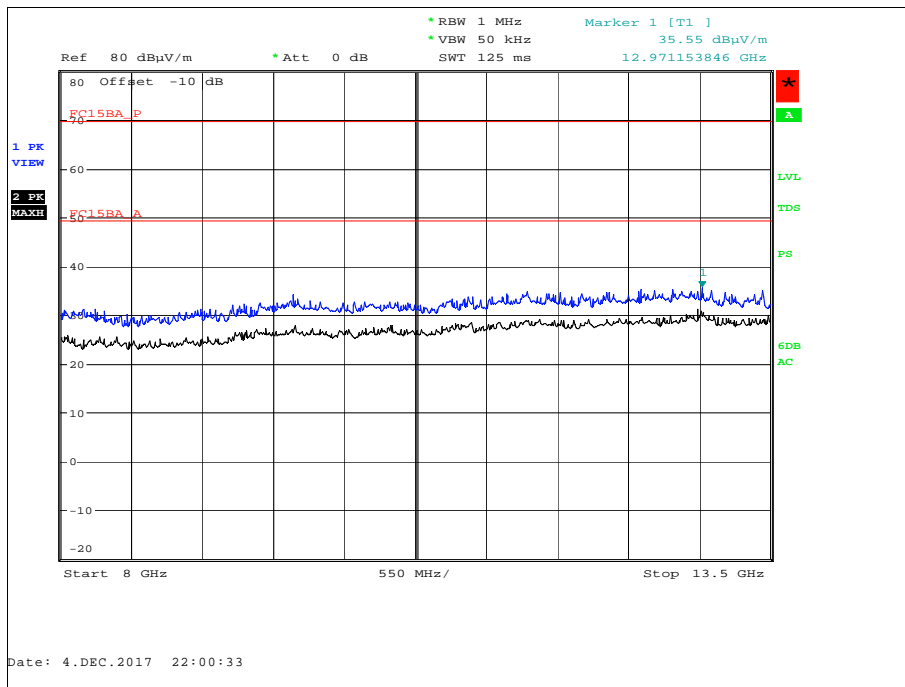


Figure 3 - 8 GHz to 13.5 GHz - Horizontal and Vertical

FCC 47 CFR Part 15, Limit Clause 15.109

Frequency of Emission (MHz)	Field Strength ($\mu\text{V}/\text{m}$)
30 to 88	90.0
88 to 216	150.0
216 to 960	210.0
Above 960	300.0

2.1.7



2.1.8 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Antenna (Bilog)	Schaffner	CBL6143	287	24	18-Apr-2018
Pre-Amplifier	Phase One	PS04-0086	1533	12	31-Jul-2018
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	24-Oct-2018
Cable (N-N, 8m)	Rhophase	NPS-2302-8000-NPS	3248	12	02-May-2018
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Nov-2018
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	22-May-2018
Cable (Rx, SMAm-SMAm 0.5m)	Scott Cables	SLSLL18-SMSM-00.50M	4528	6	03-Feb-2017
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	17-Feb-2018
Double Ridge Broadband Horn Antenna	Schwarzbeck	BBHA 9120 B	4848	12	17-Feb-2018

Table 7

TU - Traceability Unscheduled



2.2 AC Power Line Conducted Emissions

2.2.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.107

2.2.2 Equipment Under Test and Modification State

Interface, S/N: TA1772 - Modification State 0

2.2.3 Date of Test

03-December-2017 to 05-December-2017

2.2.4 Test Method

The test was performed in accordance with ANSI C63.4, clause 7.

2.2.5 Environmental Conditions

Ambient Temperature 18.1 °C
Relative Humidity 37.0 %

2.2.6 Test Results

Interface + Pod - Standby

Applied supply Voltage: 60 Hz
Applied supply frequency: 120 V AC

Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.152	48.0	79.0	-31.0	35.9	66.0	-30.1
0.288	45.6	79.0	-33.4	44.9	66.0	-21.1
0.504	43.2	73.0	-29.8	42.9	60.0	-17.1
0.790	42.8	73.0	-30.2	42.2	60.0	-17.8
0.863	43.6	73.0	-29.4	42.8	60.0	-17.2
1.152	43.5	73.0	-29.5	42.4	60.0	-17.6

Table 8 - Live Line Emissions Results

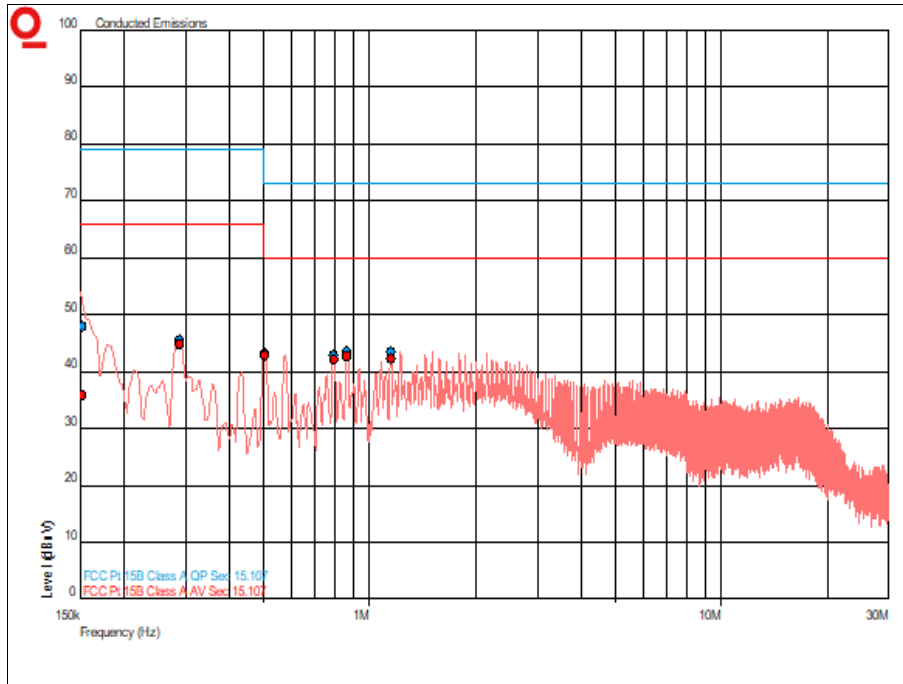


Figure 4 - Live Line - 150 kHz to 30 MHz



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.152	47.8	79.0	-31.2	36.7	66.0	-29.3
0.288	45.5	79.0	-33.5	44.8	66.0	-21.2
0.503	43.3	73.0	-29.7	42.9	60.0	-17.1
0.791	43.4	73.0	-29.6	42.7	60.0	-17.3
0.864	43.6	73.0	-29.4	42.9	60.0	-17.1
1.151	43.8	73.0	-29.2	42.7	60.0	-17.3

Table 9 - Neutral Line Emissions Results

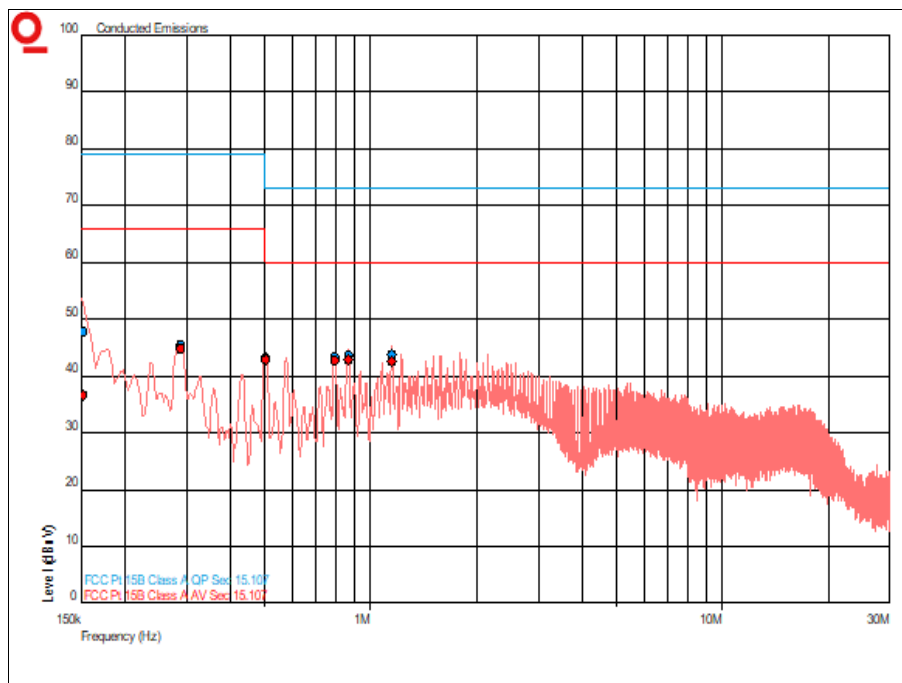


Figure 5 - Neutral Line - 150 kHz to 30 MHz

FCC 47 CFR Part 15, Limit Clause 15.107

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

Table 10

*Decreases with the logarithm of the frequency.



2.2.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Transient Limiter	Hewlett Packard	11947A	15	12	30-May-2018
LISN (1 Phase)	Chase	MN 2050	336	12	07-Apr-2018
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Hygrometer	Rotronic	HYGROPALM 1	2338	12	24-Oct-2018
Digital Multimeter	Iso-tech	IDM-101	2895	12	20-Jul-2018
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Nov-2018

Table 11



3 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
AC Power Line Conducted Emissions	150 kHz to 30 MHz, LISN, ± 3.7 dB

Table 12