

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 18



Product Service

Choose certainty.
Add value.

Prepared for: Monica Healthcare Ltd
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FCC ID:
YOM-6960-MON (Novii Pod) YOM -6961-MON (Novii Interface Unit)

COMMERCIAL-IN-CONFIDENCE

Date: December 2017
Document Number: 75941097-03 | 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 18. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
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 18: 2016.



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Product Service

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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)	Interface, Pod
Serial Number(s)	S/N: TA1763 S/N: AA5425 & AA5431
Hardware Version(s)	Interface Rev L Pod V2.54
Software Version(s)	Interface V2.71 Pod Rev H
Number of Samples Tested	1 interface with 2 Pods
Test Specification/Issue/Date	FCC 47 CFR Part 18: 2016
Order Number	issue 2 501559
Date	30-November-2017
Date of Receipt of EUT	05-December-2017
Start of Test	05-December-2017
Finish of Test	05-December-2017
Name of Engineer(s)	Graeme Lawler
Related Document(s)	ANSI C63.10 (2013) ICES-001 Issue 4 (2006) CISPR 11 Fourth Edition (inc Amend.1 IEC:2004) 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 18 is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: Charging				
2.1	18.305(b)	Field Strength of Emissions	Pass	ANSI C63.10 (2013) ICES-001 Issue 4 (2006) CISPR 11 Fourth Edition (inc Amend.1 IEC:2004)
2.2	18.307	AC Power Line Conducted Emissions	Pass	ANSI C63.4 (2014)

Table 2



1.4 Application Form

EQUIPMENT DESCRIPTION	
Model Name/Number	Novii System Interface Unit / Novii System Pod
Part Number	107-PT-001 / 107-PT-003
Hardware Version	Interface Rev_L / Pod Rev_H
Software Version	Interface v2.71 / Pod v2.54
FCC ID (if applicable)	Interface: YOM-6961-MON Pod: YOM-6960-MON
Industry Canada ID (if applicable)	N/A
Technical Description (Please provide a brief description of the intended use of the equipment)	The Novii Wireless Patch System is a Maternal/Fetal monitor that records Fetal heart rate, Maternal Heart Rate and Uterine Contractions from a pregnant subject

EQUIPMENT SUPPLIED	
WPT Source	<input type="checkbox"/>
WPT Client	<input type="checkbox"/>
WPT System (Client and source designed to work exclusively together)	<input checked="" type="checkbox"/>

WPT SOURCE		
<input type="checkbox"/>	Type 1	No intelligent communication transmitted wirelessly
<input checked="" type="checkbox"/>	Type 2	Transmission is modulated including load modulation techniques where: 1. Fundamental is < 490 kHz and ; 2. All emissions are > 40 dB below RSS-GEN field strength limits.
<input type="checkbox"/>	Type 3	Neither type 1 or type 2, but uses some form of modulation to transmit intelligent communication.
Is the device intended for us in any of the following?:		
<input type="checkbox"/>	High power WPT device (e.g charging electric vehicles)	
<input type="checkbox"/>	WPT over a distance of > 10 cm	
<input checked="" type="checkbox"/>	Medical Device	
<input type="checkbox"/>	WPT source operating at a frequency > 400 MHz	
Does the device support power management transfer?		Yes
Can the source and client operate at different separation distances?		No
Minimum Distance:	5 mm	Maximum Distance: 5 mm
Does the EUT contain any other wireless modules (excluding WPT device)?		Yes
Can the device transmit secondary frequencies?		Yes Bluetooth
State Frequencies:	2402 to 2480MHz	

WPT SOURCE DESIGN	
<input type="checkbox"/>	Single fixed power transfer zone – single client
<input checked="" type="checkbox"/>	Multiple fixed power transfer zone – single client
<input type="checkbox"/>	Multiple non-fixed power transfer zone – single client
<input type="checkbox"/>	Multiple power transfer zone – multiples clients



POWER SOURCE			
<input type="checkbox"/>	AC mains	State voltage	
	AC supply frequency (Hz)		
	VAC		
	Max Current		
	Hz		
<input type="checkbox"/>	Single phase	<input type="checkbox"/>	Three phase
And / Or			
<input checked="" type="checkbox"/>	External DC supply		
	Nominal voltage	5 V	Max Current 2.5 A
	Extreme upper voltage	5.125 V	
	Extreme lower voltage	4.875 V	
Battery			
<input type="checkbox"/>	Nickel Cadmium	<input type="checkbox"/>	Lead acid (Vehicle regulated)
<input type="checkbox"/>	Alkaline	<input type="checkbox"/>	Leclanche
<input checked="" type="checkbox"/>	Lithium	<input type="checkbox"/>	Other Details:
4.2	Volts nominal.		
End point voltage as quoted by equipment manufacturer		3.7	V

FREQUENCY INFORMATION			
Frequency Range	0.11 to 0.205	MHz	
Channel Spacing (where applicable)			
Receiver Frequency Range (if different)	to	MHz	
Channel Spacing (if different)			
Test Frequencies*	Bottom	MHz	Channel Number (if applicable)
	Middle	MHz	Channel Number (if applicable)
	Top	MHz	Channel Number (if applicable)
Intermediate Frequencies		MHz	
Highest Internally Generated Frequency:		MHz	

POWER CHARACTERISTICS			
Maximum TX power	5	W	
Minimum TX power		W (if variable)	
Is transmitter intended for:			
Continuous duty	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/> No
Intermittent duty	<input type="checkbox"/>	Yes	<input type="checkbox"/> No
If intermittent state DUTY CYCLE			
Transmitter ON		seconds	
Transmitter OFF		seconds	



ANTENNA CHARACTERISTICS			
<input type="checkbox"/>	Antenna connector	State impedance	Ohm
<input type="checkbox"/>	Temporary antenna connector	State impedance	Ohm
<input type="checkbox"/>	Integral antenna Type	State impedance	dBi
<input type="checkbox"/>	External antenna Type	State impedance	dBi

MODULATION CHARACTERISTICS			
<input type="checkbox"/>	Amplitude	<input checked="" type="checkbox"/>	Frequency
<input type="checkbox"/>	Phase	<input type="checkbox"/>	Other (please provide details):
Can the transmitter operate un-modulated?			<input type="checkbox"/> Yes <input type="checkbox"/> No

CLASS OF EMISSION USED	
ITU designation or Class of Emission:	
1	
(if applicable) 2	
(if applicable) 3	
If more than three classes of emission, list separately:	

BATTERY POWER SUPPLY	
Model name/number	Identification/Part number
Manufacturer	Country of Origin

ANCILLARIES (If applicable)	
Model name/number	Identification/Part number
Manufacturer	Country of Origin

EXTREME CONDITIONS					
Extreme test voltages (Max)	5.125 / 4.2	V	Extreme test voltages (Mix)		V
Nominal DC Voltage	5/4.2	V	DC Maximum Current	2.5	A
Maximum temperature	30	°C	Minimum temperature	10	°C

I hereby declare that the information supplied is correct and complete.

Name: Simon Branson

Position held: Engineering Manager

Date: 08/12/17



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.

The Novii Interface is the WPT transmitter and was tested with the Novii POD which is a WPT client only device.

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: TA1763			
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: Charging		
Field Strength of Emissions	Graeme Lawler	UKAS
AC Power Line Conducted Emissions	Graeme Lawler	UKAS

Table 4

Office Address:

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



2 Test Details

2.1 Field Strength of Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 18, Clause 18.305(b)

2.1.2 Equipment Under Test and Modification State

Interface, S/N: TA1763 - Modification State 0
Pod, S/N: AA5425 - Modification State 0
Pod, S/N: AA5431 - Modification State 0

2.1.3 Date of Test

06-December-2017

2.1.4 Test Method

This test was performed in accordance with ANSI C63.10 clause 6.3, 6.4 and 6.5.

2.1.5 Environmental Conditions

Ambient Temperature 19.0 °C
Relative Humidity 34.0 %

2.1.6 Test Results

Charging



Figure 1 - 172.526- kHz

Frequency (kHz)	QP Level at 3m (dBμV/m)	QP Level at 3m (μV/m)	QP Limit at 3m (dBμV/m)	QP Limit at 3m (μV/m)	Angle	Height (m)	Polarity



Frequency (kHz)	QP Level at 3m (dBμV/m)	QP Level at 3m (μV/m)	QP Limit at 3m (dBμV/m)	QP Limit at 3m (μV/m)	Angle	Height (m)	Polarity
172.526	74.85	5527.13	102.5	133352.14	190	150	Face

Table 5 - Field Strength of Emissions, 9 kHz to 30 MHz

No other emissions were detected within 10 dB of the limit.

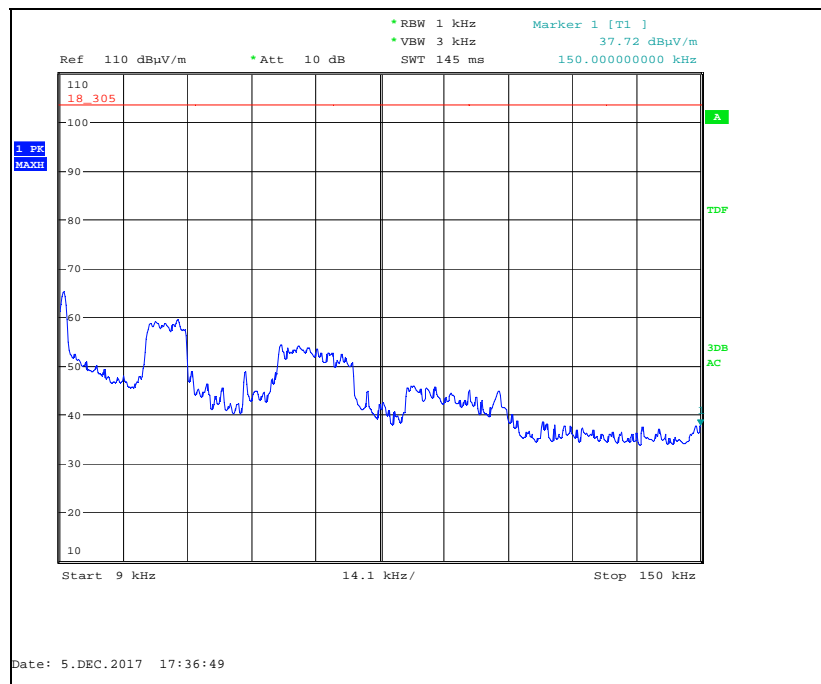


Figure 2- 9 kHz to 150 kHz

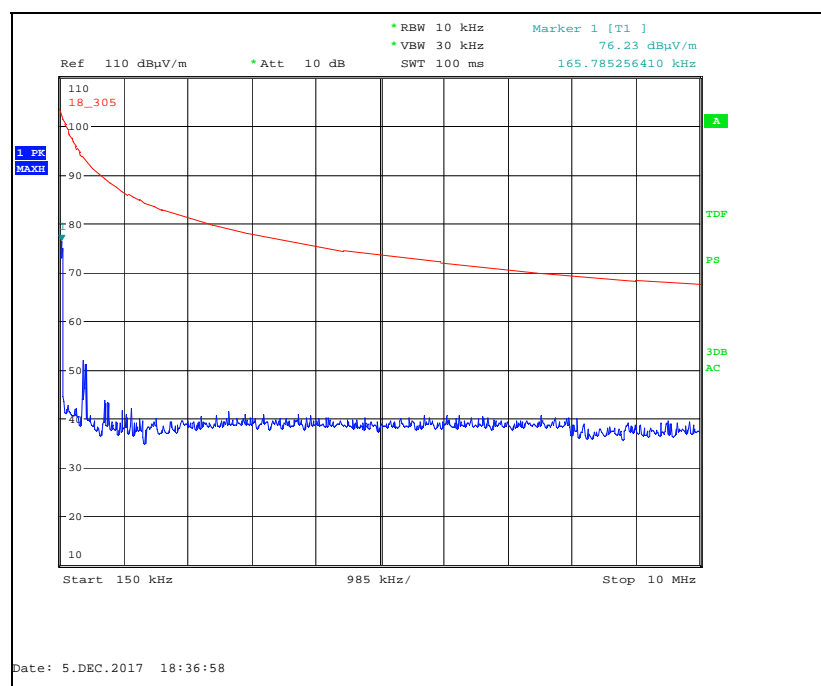


Figure 3 - 150 kHz to 10 MHz

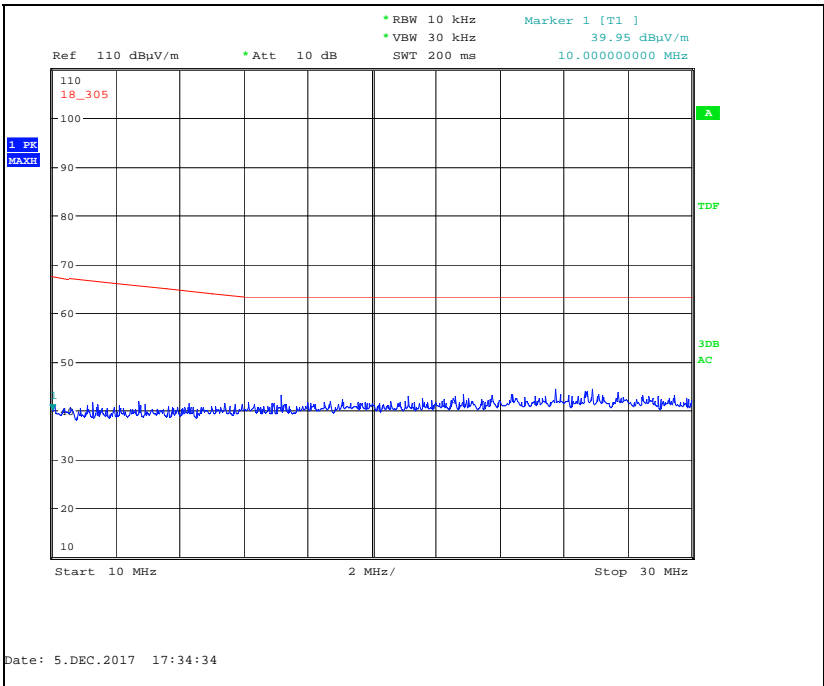


Figure 4 - 10 MHz to 30 MHz

FCC 47 CFR Part 18, Limit Clause 18.305 (b)

Equipment	Operating Frequency	RF Power generated by equipment (Watts)	Field Strength Limit (μV/m)	Distance (Meters)
Any type unless otherwise specified (miscellaneous).	Any ISM frequency	Below 500	25	300
		500 or more	$25 \times \sqrt{P/500}$	300
	Any non-ISM frequency	Below 500	15	300
		500 or more	$15 \times \sqrt{P/500}$	300

Table 6 - Limit Table



2.1.7 Test Location and Test Equipment Used

This test was carried out in Chamber 5

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Antenna (Active Loop, 9kHz-30MHz)	Rohde & Schwarz	HFH2-Z2	333	24	09-Dec-2018
Antenna (Dish/Tripod/Adaptor, 1GHz-18GHz)	Rohde & Schwarz	AC-008	334		TU
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
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Nov-2018

Table 7

TU - Traceability Unscheduled



AC Power Line Conducted Emissions

2.1.8 Specification Reference

FCC 47 CFR Part 18, Clause 18.307

2.1.9 Equipment Under Test and Modification State

Interface, S/N: TA1763 - Modification State 0

Pod, S/N: AA5425- Modification State 0

Pod, S/N: AA5431- Modification State 0

2.1.10 Date of Test

05-December-2017

2.1.11 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.2.

2.1.12 Environmental Conditions

Ambient Temperature 19.0 °C

Relative Humidity 34.0 %

2.1.13 Test Results

Charging

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)
0.150	50.1	66.0	-15.9	34.4	56.0	-21.6
0.178	42.1	64.6	-22.5	27.1	54.6	-27.5
0.195	42.2	63.8	-21.6	28.5	53.8	-25.3
0.199	40.7	63.6	-22.9	27.1	53.6	-26.6
0.218	36.0	62.9	-26.8	21.8	52.9	-31.1
10.000	18.5	60.0	-41.5	13.2	50.0	-36.8

Table 8 - Live Line Emissions Results



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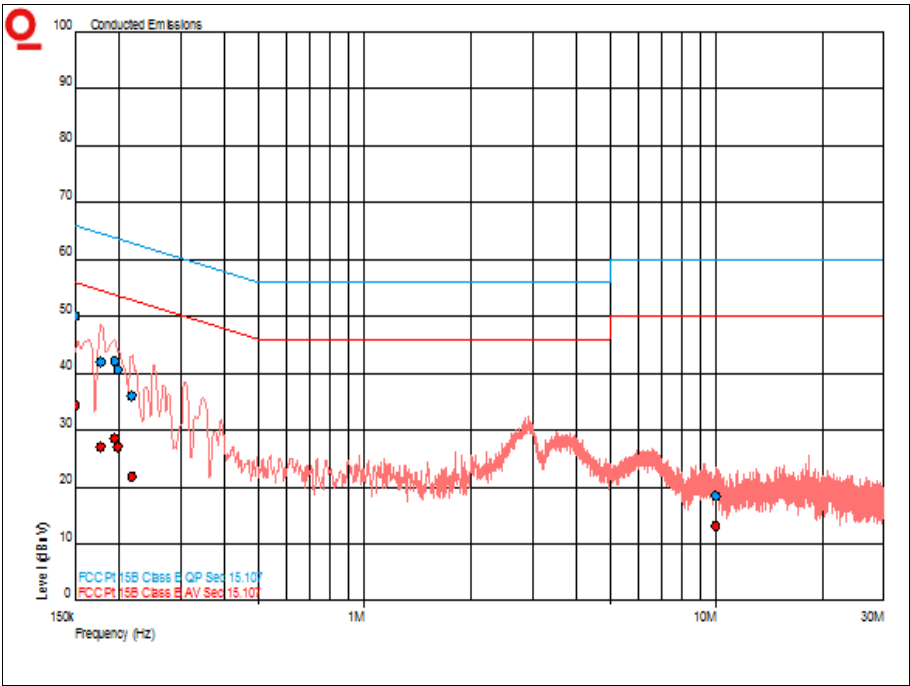


Figure 5 - Live Line - 150 kHz to 30 MHz



Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.150	51.3	66.0	-14.7	35.7	56.0	-20.3
0.169	46.3	65.0	-18.7	32.1	55.0	-23.0
0.188	42.7	64.1	-21.4	28.7	54.1	-25.4
0.206	38.8	63.4	-24.6	26.4	53.4	-27.0
0.233	40.0	62.3	-22.3	30.2	52.3	-22.1
10.000	47.2	60.0	-12.8	47.4	50.0	-2.6

Table 9 - Neutral Line Emissions Results

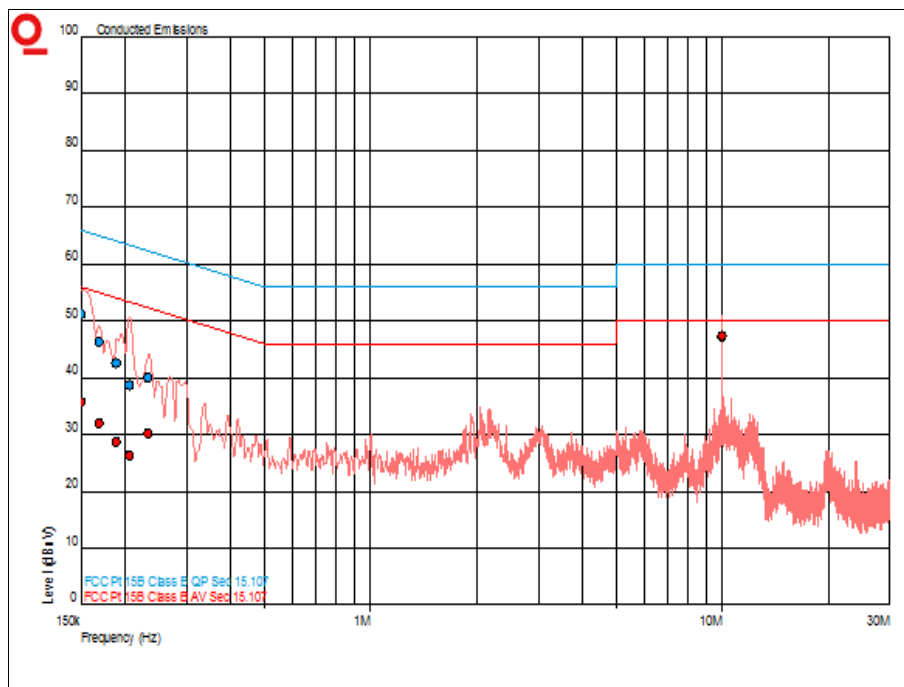


Figure 6 - Neutral Line - 150 kHz to 30 MHz



FCC 47 CFR Part 18, Limit Clause 18.307(b)

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

*Decreases with the logarithm of the frequency.

Table 10 - Limit Clause

2.1.14 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



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3 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Field Strength of Emissions	30 MHz to 1 GHz: ± 5.2 dB
AC Power Line Conducted Emissions	150 kHz to 30 MHz, LISN, ± 3.7 dB

Table 12