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Report On

FCC Testing of the NEWTECH, INC.
Short Range Device Vital Signs Monitor Receiver NT1D-USB1
In accordance with FCC CFR 47 Part 15 Part C

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FCC ID: XPAUSB1

Document 57009051 Report 02 Issue 1

September 2009





Product Service

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REPORT ON

FCC CRF 47 Parts 15 C: 2008 Testing of the
NEWTECH, INC. Short Range Device Vital Signs Monitor Receiver NT1D-
USB1

Document 57009051 Report 02 Issue 1

September 09

PREPARED FOR

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PREPARED BY

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APPROVED BY

Li Qun
Project engineer

DATED

4 September 2009

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 CFR 47: Part 15. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

Q Li

X Zhang



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SECTION 1

REPORT SUMMARY

FCC Testing of the NEWTECH, INC.
Short Range Device Vital Signs Monitor Receiver NT1D-USB1
in accordance with FCC CFR 47 Part 15C



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the NEWTECH, INC. Short Range Device Vital Signs Monitor Receiver NT1D-USB1 to the requirements of FCC CFR 47 Part 15C: 2008.

Testing was carried out in support of an application for Grant of Equipment Authorisation of Short Range Device Vital Signs Monitor Receiver NT1D-USB1.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	NEWTECH, INC.
Model Number(s)	Short Range Device Vital Signs Monitor Receiver NT1D-USB1
Serial Number(s)	Engineering sample
Antenna Gain	-0.3dBi
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15C: 2008
Incoming Release Date	Declaration of Build Status 24 July 2009
Start of Test	28 July 2009
Finish of Test	18 August 2009
Name of Engineer(s)	Q Li X Zhang
Related Document(s)	FCC CFR 47 Part 15:2008 ANSI C63.4:2003



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results in accordance with FCC CFR 47 Part 15: 2008 is shown below.

Configuration - Short Range Device Vital Signs Monitor Receiver						
Section	FCC Clause	Test Description	Mode	Mod State	Result	Comments
2.1	15.249 (a)(e)	Field Strength and Harmonics	2440 MHz	0	Pass	-
2.2	15.249 (c)(d)(e) 15.209	Radiated Spurious Emissions	2440 MHz	0	Pass	-
2.3	2.1049 (h)	Occupied Bandwidth	2440 MHz	0	Pass	-
2.4	15.207	Conducted Emissions on Power Line	2440 MHz	0	Pass	-



1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Short Range Device Vital Signs Monitor Receiver
MANUFACTURER	NEWTECH, INC.
TYPE	NT1D-USB1
PART NUMBER	--
SERIAL NUMBER	Engineering sample
HARDWARE VERSION	--
SOFTWARE VERSION	--
TRANSMITTER OPERATING RANGE	2440MHz
RECEIVER OPERATING RANGE	2440MHz
COUNTRY OF ORIGIN	P.R. CHINA
INTERMEDIATE FREQUENCIES	--
ITU DESIGNATION OF EMISSION	2M55F1D
HIGHEST INTERNALLY GENERATED FREQUENCY	2440MHz
FCC ID	XPAUSB1
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	NT1D-USB1 is a Short Range Device Vital Signs Monitor Receiver
MANUFACTURING DESCRIPTION	<p>The Vital Signs Monitor Receiver NT1D-USB1 was powered by Notebook Computer: Model Type: Compaq nc4400 Manufacturer: HP Serial Number: CND6460KCL</p> <p>Adaptor Model: PA-1650-02HC Manufacturer: HP Serial Number: 384019-001</p>

Signature

Tang Dekai

Date

20 July 2009

D of B S Serial No

57009051

No responsibility will be accepted by TÜV Product Service Beijing Branch as to the accuracy of the information declared in this document by the manufacturer.



Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) NT1D-USB1 was a NEWTECH, INC. Short Range Device Vital Signs Monitor Receiver as shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.



Equipment Under Test



Product Service

1.4.2 Test Configuration

Configuration 1: 2.4GHz Short Range Device

The EUT was configured in accordance with FCC CFR 47 Part 15: 2008.

1.4.3 Modes of Operation

Operation Modes

Mode 1 – 2440 MHz

Information on the specific test modes utilised are detailed in the test procedure for each individual test.



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1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or an open test area as appropriate.

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.7 MODIFICATION RECORD

Modification State	Description of Modification fitted to EUT	Sample S/N
0	Initial sample supplied by customer	Engineering sample

No modifications were made to the EUT during testing.

1.8 ALTERNATIVE TEST SITE

The testing was conducted at following site registrations:

FCC Accreditation

910917 The State Radio Monitoring Center, No.80 Beilishi Road Xicheng District Beijing, China.



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SECTION 2

TEST DETAILS

FCC Testing of the NEWTECH, INC.
Short Range Device Vital Signs Monitor Receiver NT1D-USB1
in accordance with FCC CFR 47 Part 15C



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2.1 FIELD STRENGTH AND HARMONICS

2.1.1 Specification Reference

FCC CFR 47 Part 15: 2008, Subpart C, Clause 15.249(a)(e)

2.1.2 Equipment Under Test

Short Range Device Vital Signs Monitor Receiver NT1D-USB1

2.1.3 Date of Test and Modification State

06 August 2009 – Modification State 0

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 15: 2008.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Emissions identified within the range 2.4GHz – 2.4385GHz were formally measured using Peak and Average Detectors, as appropriate.

The measurements were performed at a 3m distance unless otherwise stated.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration1 - Mode 1

2.1.6 Environmental Conditions

06 August 2009

Ambient Temperature 23.2°C

Relative Humidity 24.1%



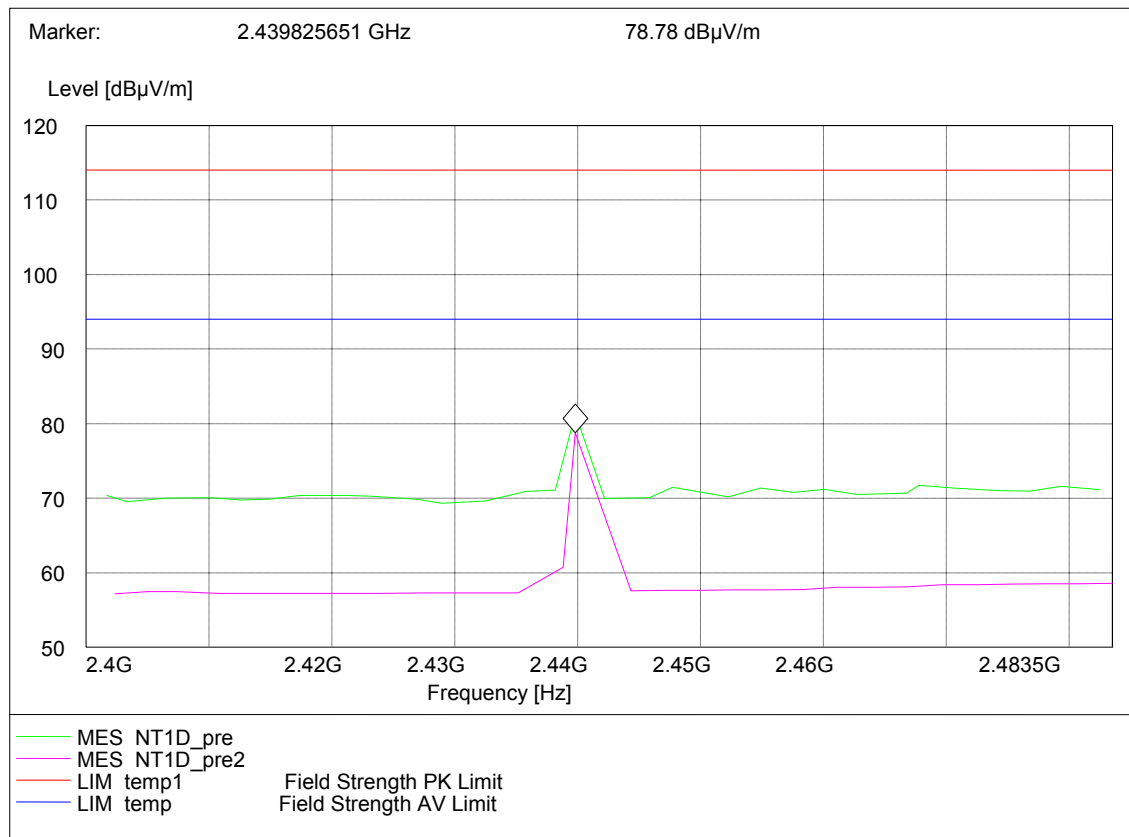
2.1.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 15: 2008 for Field Strength and Harmonics.

The test results are shown below.

Configuration 1 - Mode 1

Fundamental Frequencies





Harmonic Frequencies

Harmonic Frequency (MHz)	Polarisation	Height (cm)	Azimuth (degree)	Field Strength		Limit	
				dB μ V/m	μ V/m	dB μ V/m	μ V/m
4880	Horizontal	200.00	270.00	31.43 AV	37.28	54.0	500
4880	Horizontal	200.00	270.00	53.25 PK	459.73	74.0	5000
7320	Horizontal	200.00	270.00	32.06 AV	40.09	54.0	500
7320	Horizontal	100.00	270.00	48.43 PK	263.94	74.0	5000
9760	Horizontal	200.00	270.00	27.75 AV	24.41	54.0	500
9760	Horizontal	200.00	270.00	41.06 PK	112.98	74.0	5000
12200	Vertical	300.00	0.00	32.06 AV	40.09	54.0	500
12200	Horizontal	300.00	270.00	45.12 PK	180.30	74.0	5000
14640	Vertical	300.00	0.00	31.72 AV	38.55	54.0	500
14640	Vertical	100.00	0.00	45.12 PK	180.30	74.0	5000
17080	Vertical	100.00	0.00	35.32 AV	58.34	54.0	500
17080	Vertical	300.00	0.00	48.10 PK	254.10	74.0	5000
19520	Vertical	100.00	0.00	41.72 AV	121.90	54.0	500
19520	Vertical	100.00	180.00	55.66 PK	606.74	74.0	5000
21960	Vertical	200.00	0.00	47.52 AV	193.20	54.0	500
21960	Vertical	300.00	180.00	60.00 PK	1000.00	74.0	5000
24400	Vertical	100.00	0.00	48.43 AV	263.94	54.0	500
24400	Vertical	200.00	270.00	60.90 PK	1109.17	74.0	5000

Limit	Fundamental : $\leq 50\text{mV/m}$ or $\leq 94\text{dB}\mu\text{V/m}$ $\leq 500\text{mV/m}$ or $\leq 114\text{dB}\mu\text{V/m}$ Harmonics: $\leq 500\text{ }\mu\text{V/m}$ or $\leq 54\text{dB}\mu\text{V/m(Avg)}$ $\leq 5000\text{ }\mu\text{V/m}$ or $\leq 74\text{dB}\mu\text{V/m(PK)}$
-------	---

Remarks

The field strength of emissions from the intentional radiator operated in the 2400MHz to 2483.5MHz band did not exceed 50mV/m or 94/m (Average) & 500mV/m or 114/m (Peak) for the fundamental, 500 μ V/m or 54dB μ V/m (Average) & 5000 μ V/m or 74dB μ V/m (Peak) for harmonics.



Product Service

2.2 RADIATED SPURIOUS EMISSIONS

2.2.1 Specification Reference

FCC CFR 47 Part 15: 2008, Subpart C, Clause 15.249(c)(d)(e), 15.209

2.2.2 Equipment Under Test

Short Range Device Vital Signs Monitor Receiver NT1D-USB1

2.2.3 Date of Test and Modification State

06 & 18 August 2009 – Modification State 0

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 15: 2008.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within the anechoic chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations.

Emissions identified within the range 30MHz – 1GHz were then formally measured using a Peak detector. Emissions identified within the range 1GHz – 25GHz were then formally measured using Peak and Average Detectors, as appropriate.

The measurements were performed at a 3m distance unless otherwise stated.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1

2.2.6 Environmental Conditions

	06 August 2009	18 August 2009
Ambient Temperature	23.2°C	22.4°C
Relative Humidity	24.1%	23.5%

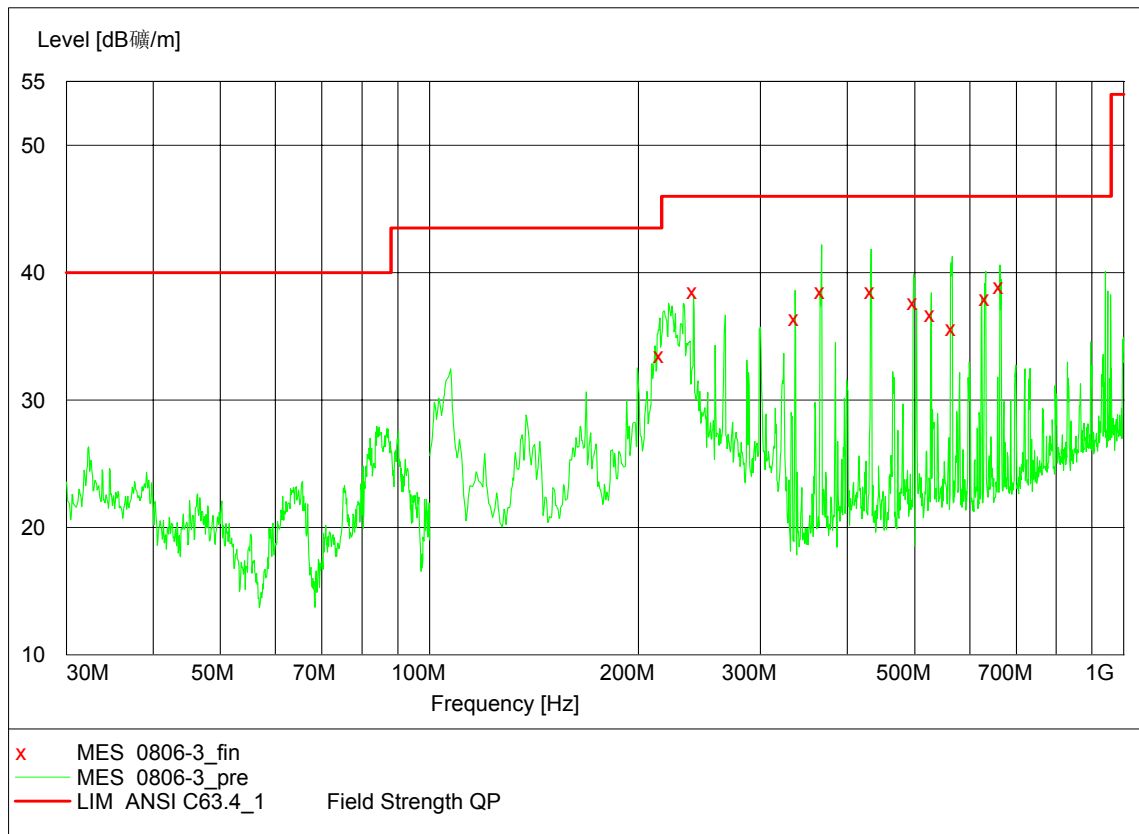


2.2.7 Test Results

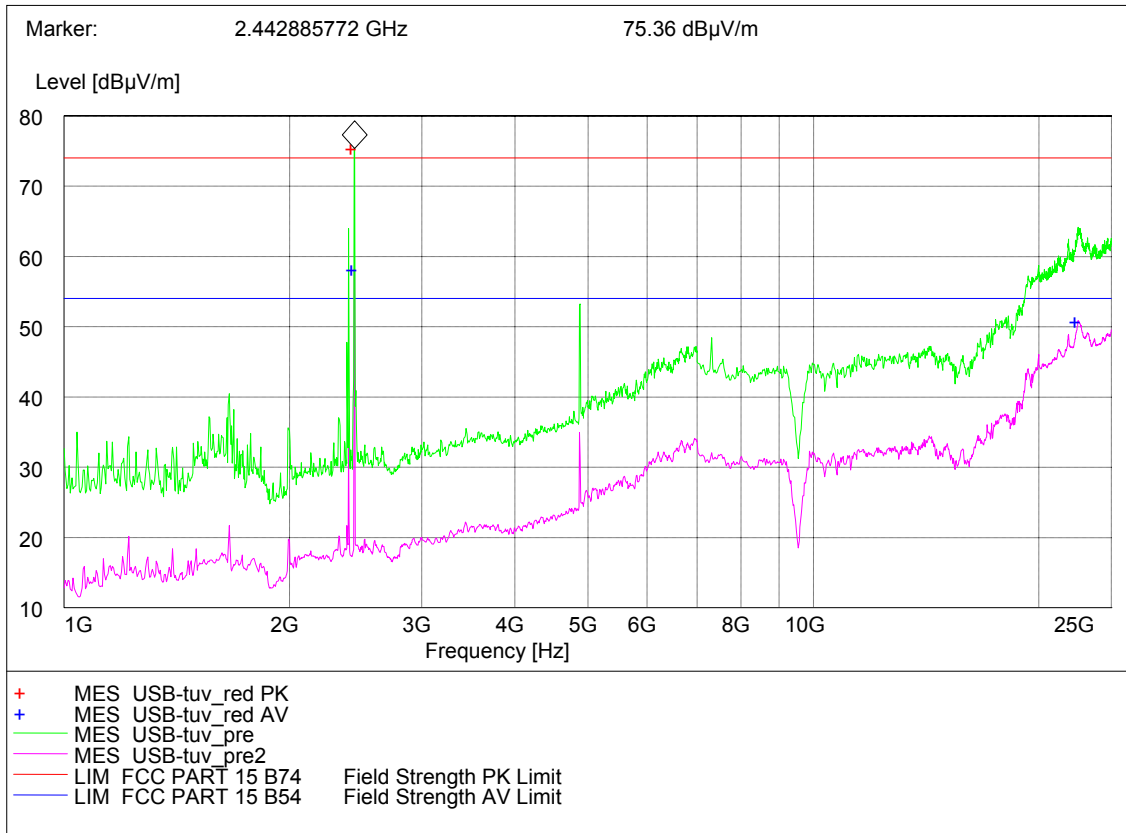
For the period of test the EUT met the requirements of FCC CFR 47 Part 15: 2008 Radiated Spurious Emissions.

The test results are shown below.

Configuration 1 - Mode 1



Emission Frequency (MHz)	Polarisation	Height (cm)	Azimuth (degree)	Field Strength		Limit	
				dBμV/m	μV/m	dBμV/m	μV/m
239.980000	Horizontal	100.00	0.00	38.50	84.14	46.02	200.00
366.460000	Horizontal	100.00	180.00	38.50	84.14	46.02	200.00
433.120000	Vertical	100.00	270.00	38.50	84.14	46.02	200.00
497.980000	Vertical	200.00	90.00	37.60	75.86	46.02	200.00
633.080000	Vertical	200.00	270.00	38.00	79.43	46.02	200.00
663.620000	Vertical	100.00	180.00	38.90	88.10	46.02	200.00



Note: The emission beyond the limit is the operating frequency.

Limit

Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (meters)
30 – 88	100	40.00	3
88 – 216	150	43.52	3
216 – 960	200	46.02	3
Above 960	500	54.0	3

Remarks

The EUT does not exceed the limit at the measured frequencies.



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2.3 OCCUPIED BANDWIDTH**2.3.1 Specification Reference**

FCC CFR 47 Part 2: 2008, Clause 2.1049(h)

2.3.2 Equipment Under Test

Short Range Device Vital Signs Monitor Receiver NT1D-USB1

2.3.3 Date of Test and Modification State

28 July 2009 – Modification State 0

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 2: 2008.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1

2.3.6 Environmental Conditions

28 July 2009

Ambient Temperature 23.6°C

Relative Humidity 24.3%



2.3.7 Test Results

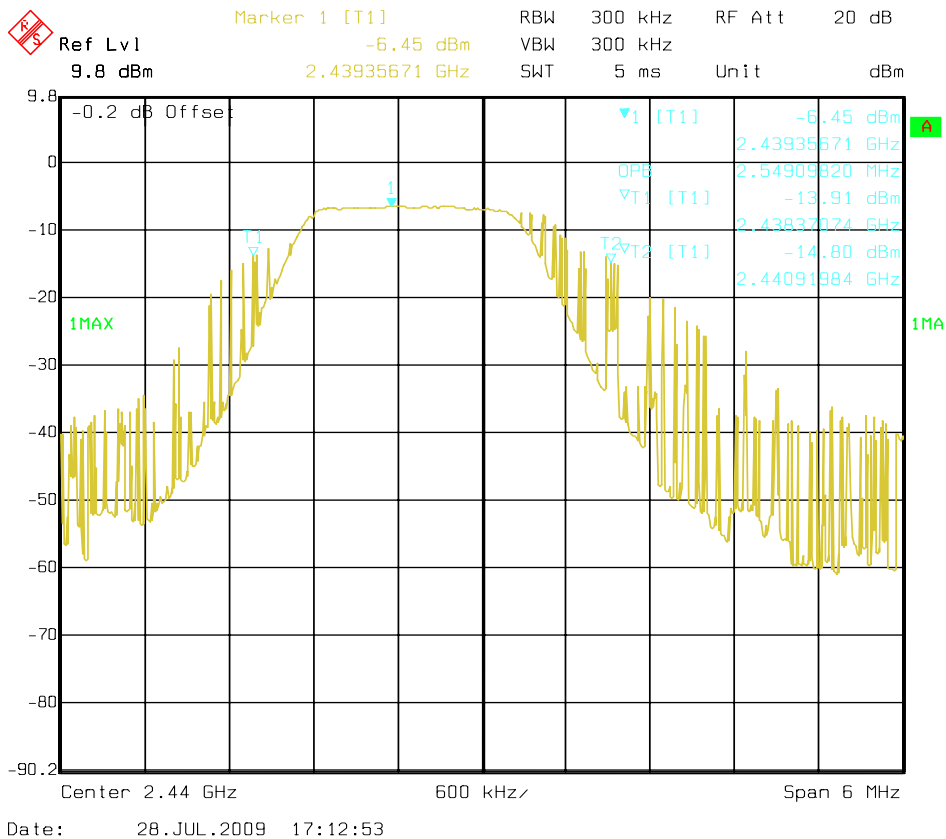
For the period of test the EUT met the requirements of FCC CFR 47 Part 2: 2008 for Occupied Bandwidth.

Configuration 1 - Mode 1

Frequency (MHz)	Occupied bandwidth (MHz)
2440	2.55

The plot of test result are shown below.

Configuration 1 - Mode 1





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2.4 CONDUCTED EMISSION ON POWER LINE

2.4.1 Specification Reference

FCC CFR 47 Part 15: 2008, Subpart C, Clause 15.207

2.4.2 Equipment Under Test

Short Range Device Vital Signs Monitor Receiver NT1D-USB1

2.4.3 Date of Test and Modification State

27 August 2009 – Modification State 0

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 15: 2008.

Emissions were formally measured using a Quasi-Peak and Average Detectors, which meet the CISPR requirements. The details of the worst-case emissions for the Live and Neutral Lines are presented in the tables below.

Conducted Emission were measured on Live and Neutral Lines in turn.

Measurements were made over the frequency range 0.15MHz to 30MHz.

The EUT was supplied from a 120V, 60Hz supply (Model: PA-1650-02HC).

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1

2.4.6 Environmental Conditions

27 August 2009

Ambient Temperature 23.3°C

Relative Humidity 24.4%



2.4.7 Test Results

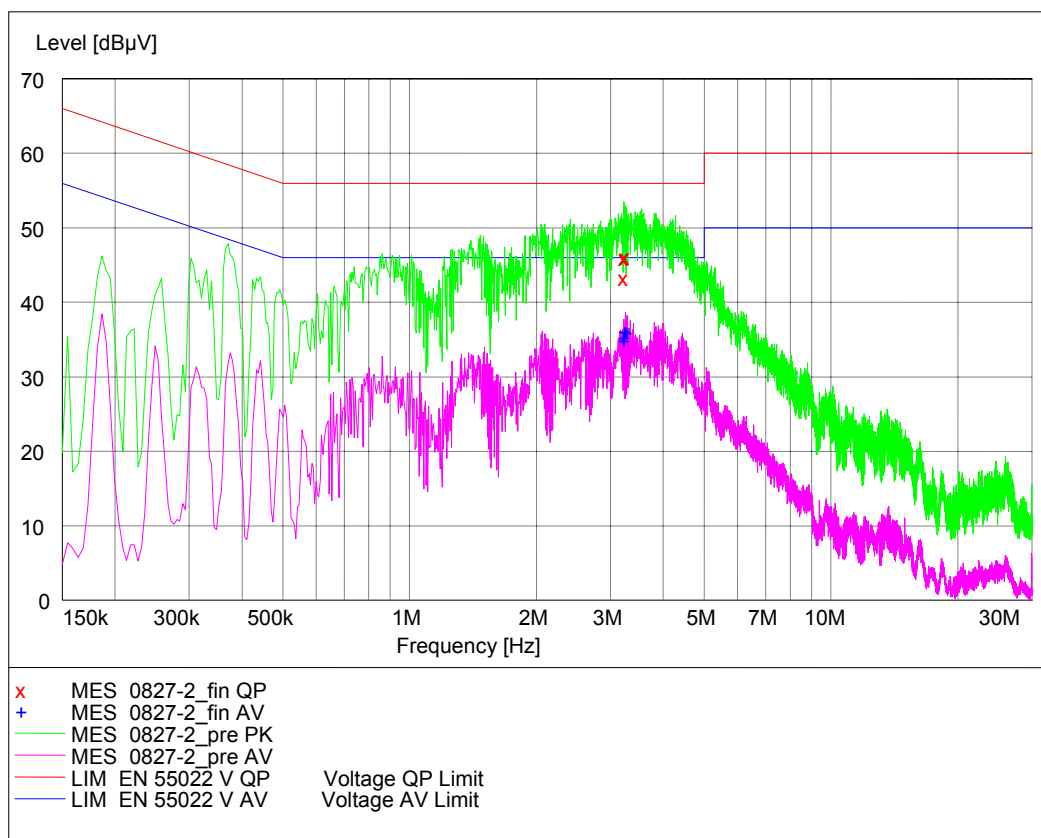
For the period of test the EUT met the requirements of FCC CFR 47 Part 15: 2008 for Conducted Emissions on Power Line.

The plots of test results are shown below.

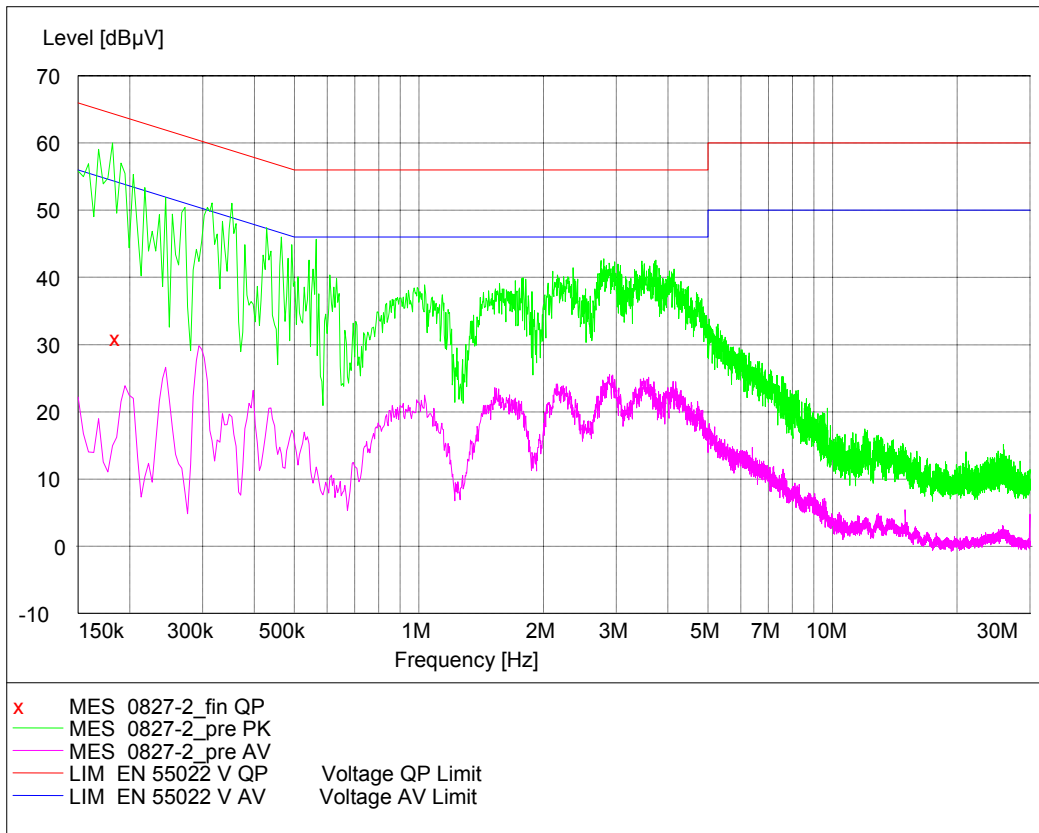
No emissions

Configuration 1 - Mode 1

Live Line



Emission Frequency (MHz)	Average Level	Margin	Average Limit	
	dBμV		dBμV	μV
3.232000	35.40	10.6	46.00	200.00
3.236000	35.00	11.0	46.00	200.00
3.256500	36.10	9.9	46.00	200.00
3.262000	36.10	9.9	46.00	200.00
3.281500	36.00	10.0	46.00	200.00

**Neutral Line**

The margin between the specification requirements and all other emissions was 20dB or more below the specified Quasi-Peak and 20dB or more below the specified Average limit.



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SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	Serial No.	Calibration Due
Spectrum Analyser	R&S	FSEK30	838495	2010/08/19
Network Analyzer	Agilent	E8363B	MY43030474	2010/08/19
EMI Receiver	Rohde & Schwarz	ESI 40	100015	2010/08/19
Ultra log test antenna	Rohde & Schwarz	HL562	100167	2010/08/19
Double-Ridged Waveguide Horn Antenna	Rohde & Schwarz	HF 906	100029	2010/08/19
Antenna master	Frankonia	MA 260	-	TU
Relay Switch Unit	Rohde & Schwarz	331.1601.31	338965002	TU
Semi- Anechoic Chamber	Frankonia	23.18m×16.88m×9.60m	-	2010/09/23
Turn Table	Frankonia	PS2000	-	2010/08/19
EMI test software	Rohde & Schwarz	ES-K1	-	TU
EMI Test receiver	Rohde & Schwarz	ESCS	100029	2010/08/19
LISN	Rohde & Schwarz	ESH2Z11	50FH-020-10	2010/08/19
Thermo-hygrometer	AZ Instruments	8705	9151655	2010/12/16

TU Traceability Unscheduled



3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Worst case error for both Time and Frequency measurement 12 parts in 10 ⁶ .		

* In accordance with CISPR 16-4



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SECTION 4

DISCLAIMERS AND COPYRIGHT



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4.1 DISCLAIMERS AND COPYRIGHT

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