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FCC PT 95H COMPOSITE DEVICE

Pt 95H WMTS TEST REPORT

APPLICANT	CLEVELAND MEDICAL DEVICES, INC
ADDRESS	4415 EUCLID AVE 4TH FLOOR CLEVELAND OHIO 44103
FCC ID	N9Y0091
MODEL NUMBER	100-0091
PRODUCT DESCRIPTION	WMTS Device
DATE SAMPLE RECEIVED	December 12, 2007
DATE TESTED	January 12, 2008
TESTED BY	Nam Nguyen
APPROVED BY	Mario de Aranzeta
TIMCO REPORT NO.	2324BUT7TestReport.pdf
TEST RESULTS	☒ PASS ☐ FAIL

ACCREDITED

Test Certificate # 0955-01

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ATTESTATIONS

Test certificate # 0955-01

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report. No modifications were made to the equipment during testing in order to demonstrate compliance with these standards.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made, under my supervision, at one or more of the test sites of:

Timco Engineering Inc.
849 NW State Road 45
Newberry, Fl 32669

Authorized Signatory Name:

Mario de Aranzeta C.E.T.
Compliance Engineer/ Lab. Supervisor

REPORT SUMMARY

Purpose of Test:	To demonstrate compliance with FCC Pt 95H for wireless medical telemetry radio.
Applicable Standards:	Pt 95.1115, ANSI C63.4: 2003; TIA-603-C-2004
Related Reports:	2324CUT7TestReport.pdf

TEST ENVIRONMENT AND TEST SETUP

Test Facilities:	All measurements were made at one or more of the test sites of TIMCO ENGINEERING INC. located at 849 N.W. State Road 45, Newberry, FL 32669.
Laboratory Test Conditions:	Temperature: 26°C, Humidity: 55%
Test Exercise:	The DUT was set in continuous transmit mode of operation.
Deviation to the Standards:	There was no deviation from the standard.
Modification to the DUT:	No modification was made.
Supporting Accessories:	Laptop: Dell Inspirion 1100

DUT DESCRIPTION

Manufacturer:	Cleveland Medical Devices, Inc
Description of Certified System:	WMTS Device
Product Description:	WMTS Device
FCC ID:	N9Y0091
Brand Name:	N/A
Operating Frequency:	608-614, 1395-1400, and 1427-1429.5 MHz
Power Output	See report
Emission Designator:	560K0F1D
EUT Power Source:	Primary Power 3Vdc (USB port powered)
	Secondary Power – N/A
Test Item:	Prototype
Type of Equipment	Medical telemetry
Antennas	Vertical dipole
Antenna Connector	Reverse SMA

EMC EQUIPMENT LIST

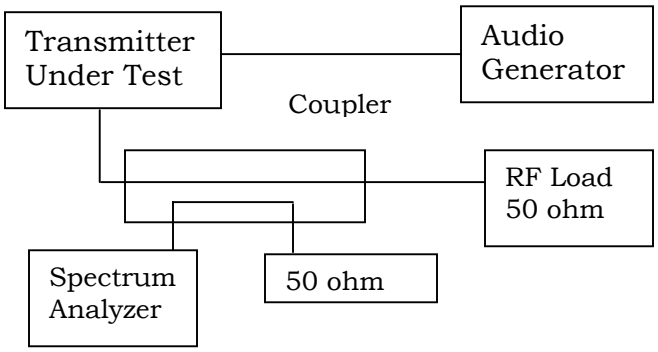
Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/20/07	3/19/10
3-Meter OATS	TEI	N/A	N/A	Listed 1/11/06	1/10/09
Antenna: Biconnical	Eaton	94455-1	1057	CAL 1/15/08	1/15/10
Antenna: Biconnical	Eaton	94455-1	1096	CAL 10/11/06	10/11/08
Antenna: Biconnical	Electro-Metrics	BIA-25	1171	CAL 7/18/07	7/18/09
Analyzer Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 5/17/07	5/17/09
Analyzer Blue Tower RF Preselector	HP	85685A	2926A00983	CAL 5/17/07	5/17/09
Analyzer Blue Tower Spectrum Analyzer	HP	8566B	2928A04729 2848A18049	CAL 5/17/07	5/17/09
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/5/06	10/5/08
LISN	Electro-Metrics	EM-7820	2682	CAL 7/23/07	7/23/09
Antenna: Log-Periodic	Eaton	96005	1243	CAL 12/13/07	12/13/09

TEST PROCEDURES

Power Line Conducted Interference: The procedure used was ANSI C63.4-2003. A 50uH LISN was used . The spectrum was scanned from 0.15 to 30 MHz.

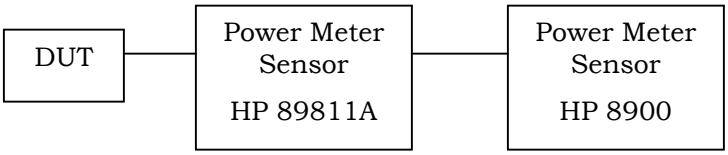
Bandwidth: The measurements were made with the spectrum analyzer's resolution bandwidth (RBW)=1 MHz and the video bandwidth (VBW) >=RBW and the span set as shown on plot.

Bandwidth Test Setup Diagram



RF Power Output: The RF power output was measured at the antenna feed point using a peak power meter.

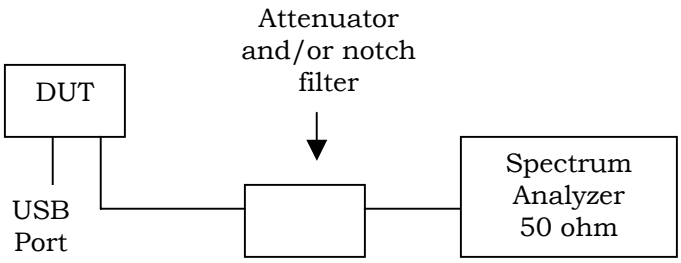
Output Power Test Setup Diagram



Radiation Interference: The test procedure used was ANSI C63.4-2003 using an Agilent spectrum analyzer with a pre-selector. The bandwidth (RBW) of the spectrum analyzer was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW was always greater than or equal to the RBW unless notes. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

Antenna Conducted Spurious Emissions: The RBW=100 kHz, VBW>= RBW and the span set to 10 MHz and the spectrum was scanned from 30 MHz to the 10th harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = >RBW and the span to 50 MHz.

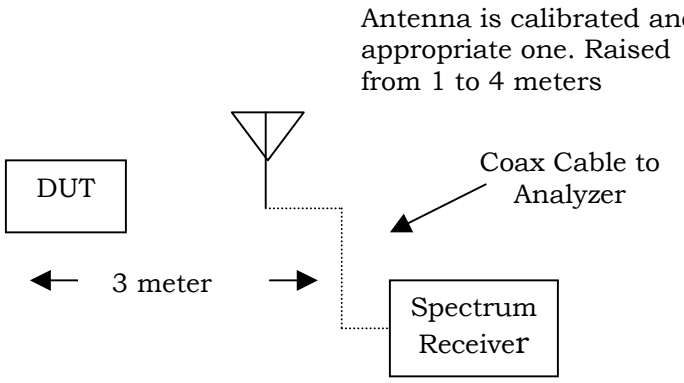
RF Conducted Spurious Emissions Test Setup Diagram



Radiated Spurious Emissions Into Adjacent Restricted Band: An inband plot of the fundamental emission at the lowest and highest frequencies was made using the RBW and detector function required by C63.4-2003 and FCC Rules.

Frequency Stability: The frequency stability was measured per ANSI/TIA 603-C-2004.

Radiated Spurious Emissions: The procedure used was ANSI C63.4-2003.



DUT is placed 80 cm above ground plane on a rotatable platform

RF POWER OUTPUT

Rule Part No.: Pt 95.639(g), Pt 95.649, 95.1115(a), 2.1033(c) (6), 2.1033(c) (7), Pt 2.1033 (c) (8), Pt 2.1046 (a)

Requirements: The maximum field strength allowed is:

Frequency Band MHz	Field Strength dBuV/m
608 to 614	106
1395 to 1400	117.4
1427 to 1429.5	117.4

The unit shall not incorporate provisions for increasing or varying its transmitter power to any level in excess of this limit.

Test Data: RF power is measured radiated as a field strength.

Frequency Band MHz	Field strength dBuV/m	Margin dB
608 to 614	93.74	12.26
1395 to 1400	93.74	23.66
1427 to 1429.5	89.98	27.42

The dc voltage applied to and dc currents into the several elements of the final radio frequency amplifying device for normal operation over the power range is:

Input Voltage Input Current
Input Power: (3.0V)(0.15A) = 0.45 Watts

MODULATION CHARACTERISTICS

Rule Part No.: Pt 2.1047(a), (b)

Requirements: Video and audio not allowed in this service

Test Data: The module is a data radio with the following characteristics.

Type of Emission: gaussian filtered GFSK (F1D) 560K0F1D

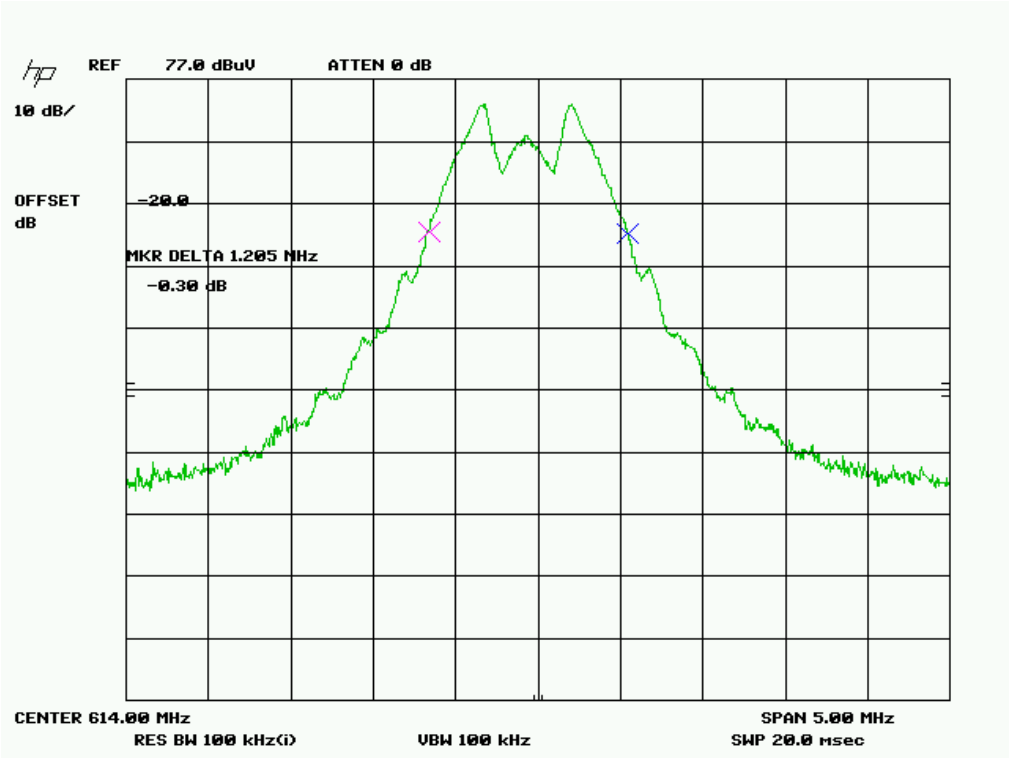
Bn = 2.4D+1R
R = 200k bps
D = 150k
Bn = 2.4(150000)+200000
Bn = 360k+200k
Bn = 560k

OCCUPIED BANDWIDTH

Rules Part No.: Pt 95.1115 (d) (2), Pt 95.633, Pt 2.1049

Requirements: WMTS utilizing broadband technologies such as spread spectrum shall be capable fo operating within one or more the following channels of 1.5 MHz each, up to maximum of 6 MHz, and shall operate on the minimum number of channels.

Test Data: The OBW is the same for all bands and frequencies.



FIELD STRENGTH SPURIOUS EMISSIONS

Rules Part No.: Pt 95.1115(b), Pt 2.1053

Requirements: 608-614 MHz 200 mV at 3 meters (106 dBuV/m)
1395-1400 and 1427-1429.5 740 mV at 3 meters (117.4 dBuV/m)
500 uV/m @3m above 960 MHz (average)(1 MHz RBW)
200 uV/m @3m below 960 MHz (QP) (46 dBuV/m)

Test Data:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
608.0	608.00	66.9	H	3.85	19.74	90.49	15.51
608.0	608.00	70.1	V	3.85	19.14	93.09	12.91
608.0	1,216.00	15.9	V	1.31	27.73	44.94	9.06
608.0	1,216.00	17.1	H	1.31	27.73	46.14	7.86
608.0	1,824.00	13.9	V	1.61	30.49	46.00	8.00
608.0	1,824.00	14.6	H	1.61	30.49	46.70	7.30
608.0	3,040.00	14.3	H	2.11	32.82	49.21	4.79
608.0	3,040.00	15.0	V	2.11	32.82	49.93	4.07
608.0	3,648.00	11.2	H	2.29	33.22	46.71	7.29
608.0	3,648.00	12.2	V	2.29	33.22	47.71	6.29
608.0	4,256.00	13.2	H	2.48	33.70	49.38	4.62
608.0	4,256.00	14.6	V	2.48	33.70	50.78	3.22
614.0	614.00	66.5	H	3.88	19.80	90.18	15.82
614.0	614.00	70.5	V	3.88	19.36	93.74	12.26
614.0	1,228.00	16.0	H	1.31	27.74	45.05	8.95
614.0	1,228.00	17.4	V	1.31	27.74	46.45	7.55
614.0	1,842.00	12.8	H	1.62	30.64	45.06	8.94
614.0	1,842.00	13.3	V	1.62	30.64	45.56	8.44
614.0	3,070.00	13.5	V	2.12	32.84	48.46	5.54
614.0	3,070.00	13.7	H	2.12	32.84	48.66	5.34
614.0	3,684.00	10.0	H	2.31	33.25	45.56	8.44
614.0	3,684.00	10.2	V	2.31	33.25	45.76	8.24
614.0	4,298.00	11.4	H	2.49	33.74	47.63	6.37
614.0	4,298.00	11.5	V	2.49	33.74	47.73	6.27

All measurements are peak unless indicated as average by an 'A'.

[Continued]

Test Data:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
1,395.3	1,395.30	57.4	H	1.40	27.84	86.64	30.76
1,395.3	1,395.30	64.5	V	1.40	27.84	93.74	23.66
1,395.3	2,790.60	12.6	V	2.02	32.72	47.34	6.66
1,395.3	2,790.60	13.0	H	2.02	32.72	47.74	6.26
1,395.3	4,185.90	11.0	V	2.46	33.65	47.11	6.89
1,395.3	4,185.90	12.3	H	2.46	33.65	48.41	5.59
1,395.3	5,581.20	9.8	H	2.93	34.71	47.44	6.56
1,395.3	5,581.20	10.5	V	2.93	34.71	48.14	5.86
1,395.3	6,976.50	11.5	V	3.30	35.60	50.40	3.60
1,395.3	6,976.50	11.8	H	3.30	35.60	50.70	3.30
1,399.8	1,399.80	54.0	H	1.40	27.84	83.24	34.16
1,399.8	1,399.80	61.9	V	1.40	27.84	91.14	26.26
1,399.8	2,799.60	12.6	V	2.02	32.72	47.34	6.66
1,399.8	2,799.60	12.9	H	2.02	32.72	47.64	6.36
1,399.8	4,199.40	11.7	V	2.46	33.66	47.82	6.18
1,399.8	4,199.40	12.3	H	2.46	33.66	48.42	5.58
1,399.8	5,599.20	9.6	V	2.94	34.74	47.28	6.72
1,399.8	5,599.20	10.0	H	2.94	34.74	47.68	6.32
1,399.8	6,999.00	11.2	H	3.30	35.60	50.10	3.90
1,399.8	6,999.00	11.9	V	3.30	35.60	50.80	3.20
1,427.1	1,427.10	53.6	H	1.41	27.86	82.87	34.53
1,427.1	1,427.10	60.5	V	1.41	27.86	89.77	27.63
1,427.1	2,854.20	12.2	H	2.04	32.74	46.98	7.02
1,427.1	2,854.20	12.8	V	2.04	32.74	47.58	6.42
1,427.1	4,281.30	13.7	H	2.48	33.73	49.91	4.09
1,427.1	4,281.30	13.9	V	2.48	33.73	50.11	3.89
1,427.1	5,708.40	10.0	V	2.98	34.89	47.87	6.13
1,427.1	5,708.40	10.5	H	2.98	34.89	48.37	5.63
1,427.1	7,135.50	11.4	H	3.34	35.57	50.31	3.69
1,427.1	7,135.50	11.9	V	3.34	35.57	50.81	3.19
1,429.4	1,429.40	53.7	H	1.42	27.86	82.98	34.42
1,429.4	1,429.40	60.7	V	1.42	27.86	89.98	27.42
1,429.4	2,858.80	12.5	H	2.05	32.75	47.30	6.70
1,429.4	2,858.80	14.4	V	2.05	32.75	49.20	4.80

All measurements are peak unless indicated as average by an 'A'.

[Continued]

Test Data:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
1,429.4	4,288.20	13.5	V	2.49	33.74	49.73	4.27
1,429.4	4,288.20	14.0	H	2.49	33.74	50.23	3.77
1,429.4	5,717.60	10.3	V	2.99	34.92	48.21	5.79
1,429.4	5,717.60	10.9	H	2.99	34.92	48.81	5.19
1,429.4	7,147.00	11.0	H	3.35	35.57	49.92	4.08
1,429.4	7,147.00	12.4	V	3.35	35.57	51.32	2.68

All measurements are peak unless indicated as average by an 'A'.

FREQUENCY STABILITY

Rule Parts. No.: Pt 95.1115 (e), Pt 2.1055

Requirements: Manufacturers of wireless medical telemetry devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all of the manufacturer's specified conditions.

The manufacturer specifies a temperature range of 66 to 86 °F.

Test Data: Over the temperature range of 66 to 86 °F, the emissions did not exceed the band of 608 to 614 MHz, 1395 to 1400 MHz, or 1427 to 1429.5 MHz.

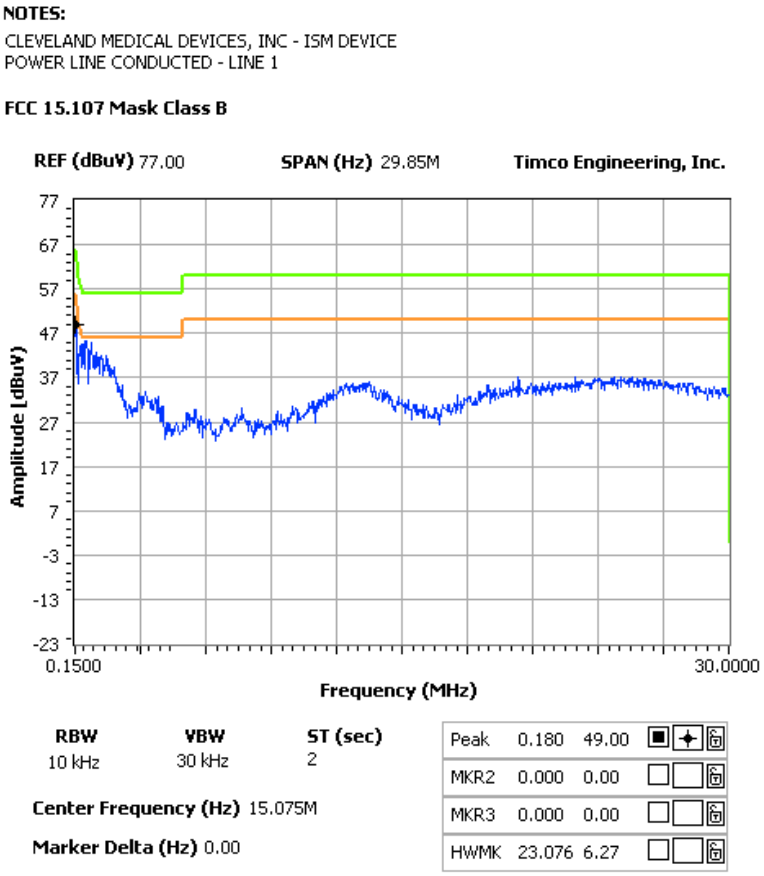
POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: 15.207

Requirements:

Frequency (MHz)	Quasi Peak Limits (dBuV)	Average Limits (dBuV)
0.15 – 0.5	66 – 56	56 – 46
0.5 – 5.0	56	46
5.0 – 30	60	50

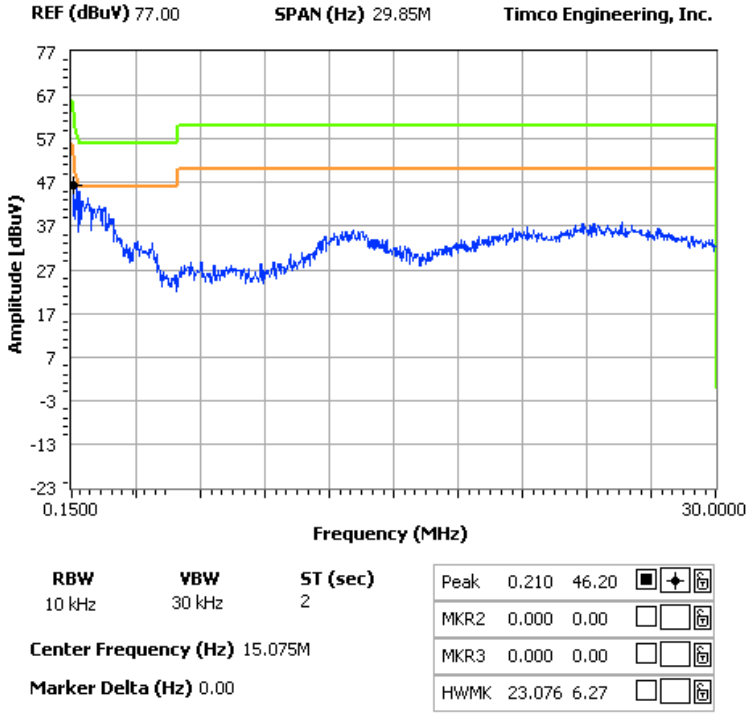
Test Data: The attached plots represent the emissions for power line conducted. Both lines were observed.



NOTES:

CLEVELAND MEDICAL DEVICES, INC - ISM DEVICE
POWER LINE CONDUCTED - LINE 2

FCC 15.107 Mask Class B



RBW	VBW	ST (sec)
10 kHz	30 kHz	2

Center Frequency (Hz) 15.075M

Marker Delta (Hz) 0.00

Peak	0.210	46.20
MKR2	0.000	0.00
MKR3	0.000	0.00
HWMK	23.076	6.27