



**Report No.:** 30762628.005 Page 1 of 50

# **Electromagnetic Compatibility Test Report**

Prepared in accordance with

**Product Standard:** 

**FCC Part 15** 

on

**Footswitch** 

# **RF Medical Switch**

Prepared for:

**Linemaster Switch** 

29 Plaine Hill Road

Woodstock, CT 06281

Prepared by:

**TUV Rheinland of North America, Inc.** 





30762628.005 Report No.: Page 2 of 50 **Linemaster Switch** Auftraggeber: 29 Plaine Hill Road Client: Woodstock, CT 06281 PT1003T, P1004T, **Bezeichnung:** Serien-Nr.: **Footswitch** P1005T Identification: Serial No. Gegenstand der November 11th-16th, Prüfdatum: Prüfung: **RF Medical Switch** 2007 Date tested: Test item: TUV Rheinland of North America Prüfort: 12 Commerce Road Testing location: Newtown, CT 06470-1607 NVLAP # 200111-0 Prüfgrundlage: FCC Part 15: FCC Part 15C Section 15.247 FCC Part 15.247 (a)(2), FCC Par 15.247 (b)(3), FCC Part 15.247 Test (b)(5) and 1.1310, FCC Part 15.247 (c), 15.205, 15.209, FCC Part 15, specification: FCC Part 15.247 (e), FCC Part 15.215 (c) Prüfergebnis: Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage. The above product was found to be Compliant Test Result to the above test standard(s) geprüft / tested by: Dieter Baldamus kontrolliert / reviewed by: Randall Masline 22 October 2008 22 October 2008 **Datum** Name Unterschrift Datum Name Unterschrift Name Signature Date Name Signature **Sonstiges:** None Other Aspects: OK, Pass, Compliant, Complies = entspricht Prüfgrundlage Abbreviations: OK. Pass. Compliant. Complies = passed Fail, Not Compliant, Does not Comply = entspricht nicht Fail, Not Compliant, Does Not Comply = failed Prüfgrundlage N/A = not applicable N/A = nicht anwendbar NVLAP **Industry Canada** 889954 200111-0 3466D-1





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#### 1 General Information

## 1.1 Scope

This report is intended to document the status of conformance with the requirements of the FCC Part 15C, based on the results of testing performed on the Footswitch, Model No. RF Medical Switch, manufactured by Linemaster Switch. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

## 1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT (Equipment Under Test) in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.





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1.3	1.3 Summary of Test Results									
	Linem	emaster Switch			(860) 974	1-1000	Contact	Mark Groch	owski	
Applicant 29 Plaine Hill Woodstock, C				Fax	(860) 974	1-0502	email	MGrochows om	ski@linemaster.c	
Type of Equipment Footswitch				Model Number		RF M	edical Switc	h		
Standar	ds		Description	S	Severity Le	evel or I	Limit	Criteria	Test Result	
FCC Part 15			Radio Frequency Devices -Part C	See cal	led out bas	ic stand	ards below	See Below	Complies	
FCC Part 15.247 (b) (3)			Spectrum Bandwith of a Direct Sequence Spread Spectrum System	500kHz on a 6dB Bandwith, 2.405 GHz - 2.480 GHz			Limit	Complies		
FCC Part 15.247	7 (b) (3)		Maximum Output Power	1 Watt (30dBm)		Limit	Complies			
FCC Part 15.247 and 1.1310	7 (b)(5)		RF Human Exposure Limit	1.0 (m <sup>-</sup>	W/cm2)			Limit	Complies	
FCC Part 15.247 15.205, 15.209	7 (c),		Radiated Spurious Emissions	-20dBc, 15.205 (a), 15.209 (a)		Limit	Complies			
FCC Part 15.247	7 (e)		Transmitter Power Density	8 dBm	/3kHz			Limit	Complies	
FCC Part 15.207 Con			Conducted Emissions	15.207 (a)			Limit	Complies		
FCC Part 15.215	5 (c)		Frequency Stability	Containment of 20dB,			Limit	Complies		





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## 2 Laboratory Information

#### 2.1 Accreditations & Endorsements

#### 2.1.1 US Federal Communications Commission

TUV Rheinland of North America located at 12 Commerce Road, Newtown CT is accredited by the commission for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Registration No 889954). The laboratory scope of accreditation includes: Title 47 CFR Part 15, and 18. The accreditation is updated every 3 years.

#### 2.1.2 NIST / NVLAP

Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Lab code: 200111-0). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

## 2.1.3 Industry Canada

Registration No.: 3466D-1. The OATS has been accepted by Industry Canada to perform testing to 3 and to 10m, based on the test procedures described in ANSI C63.4-2003.

## 2.2 Measurement Uncertainty

#### General

The estimated combined standard uncertainty for conducted immunity measurements is  $\pm 1.4$ dB.

The estimated combined standard uncertainty for radiated emissions measurements is  $\pm 1.6$  dB.

The estimated combined standard uncertainty for conducted emissions measurements is  $\pm$  1.2dB.

## 2.3 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005. Equipment calibration records are kept on file at the test facility.

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## 2.4 Measurement Equipment Used

Equipment	Manufacturer	Model #	Serial/Inst #	Last Cal dd/mm/yy	Next Cal dd/mm/yy	Test
Power Supply	California Instruments	5001iX	HK53766	08/04/07	08/04/08	All
Antenna Horn	Emco	3115	9402-4227	03/17/08	03/17/10	RE, RI
Antenna, Log. Periodic	Emco	3146	9309-3691	06/26/06	06/26/08	RE, RI
Antenna, Bicon	Emco	3108	2234	06/26/06	06/26/08	RE, RI
Receiver	Hewlett Packard	HP 8546A, 85460A	3330A00125, 3325A00134	03/14/08	03/14/09	CE, DP, CE
Spectrum Analyzer	Hewlett Packard	HP 8593E	3410A01090	06/26/08	06/26/09	CE, DP, CE
Antenna	Sunol Sciences	JB3	A022707	03/08/07	03/08/09	RE,RI

Note: CE = Conducted Emissions, CI= Conducted Immunity, DP=Disturbance Power, EFT=Electrical Fast Transients, ESD = Electrostatic Discharge, FLI=Flicker, HAR=Harmonics, MF=Magnetic Field Immunity, RE=Radiated Emissions, RI=Radiated Immunity, SI=Surge Immunity, VDSI=Voltage Dips and Short Interruptions





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## 3 Product Information

## 3.1 Product Description

The EUT is a wireless foot pedal used for various applications in the industrial environment. The wireless system eliminates the nuisance of wires under foot while invisible waves fill a room with 360° of signal. The EUT consist of a wireless foot pedal transmitter and a receiver; one (the transmitter) used with batteries and one (the receiver) used with an AC/DC adapter. The receiver also sends a signal every second to control de antenna output power of the transmitter

## 3.2 Equipment Modifications

No modifications were needed to bring product into compliance.

#### 3.3 Test Plan

The EUT product information, test configuration, mode of operation, test types, test procedures, test levels, pass/failure criteria, in this report were carried out per the product test plan located in appendix A of this report





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Figure 1 – Photo of EUT (Transmitter)

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## 4 Emissions

## 4.1 Spectrum Bandwidth

This test measures the spectrum bandwidth of the intentional radiator signal generated by the EUT.

#### 4.1.1 Over View of Test

Results	Complies (as tested per this report)  Date 11/11/2007								
Standard	FCC Part 15.247 (b) (3)	FCC Part 15.247 (b) (3)							
<b>Product Model</b>	RF Medical Switch	RF Medical Switch Serial# Pt1003t, P1004t, P1005t							
Configuration	See test plan for deta	See test plan for details							
Test Set-up	Tested @ 3m on O.A.T.S. placed on turn-table, see test plans for details								
EUT Powered By	AC/DC Adapter & Batteries	Temp	22°C	Humidity	45%	Pressure	998mbar		
Frequency Range	2.405 GHz - 2.480 G	GHz @ 31	n						
Perf. Criteria	500kHz. (Below Limit) <b>Perf. Verification</b> Readings Under Limit						imit		
Mod. to EUT	None		Test Perf	ormed By	Dieter	Baldamus			

#### 4.1.2 Test Procedure

Radiated and FCC emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 2.405-2.480 GHz was investigated for radiated emissions, testing the lowest middle and highest channels.

Radiated emission testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies for which these measurements will be made on the 3m OATS.

## 4.1.3 Deviations

There were no deviations from the test methodology listed in the test plan.

#### 4.1.4 Final Test

All final radiated emissions measurements were below (in compliance) the limits.





AMERICA'S FOOT SWITCH LEADER		r redistry ringing.
Report No.:	30762628.005	Page 12 of 50
4.1.5 Summary of	Final Data	
NOTES:	Spectrum Band Low Frequen	
99:59:43 12 NOV 2007  MFR: LINEMASTERSWITCH REF 11000dBµV	MODEL: RF MEDICAL #AT 20dB	MKR 1.613 MHz .49 dB
PEAK EMC ANA LOG (c)HP 198 dB/	ALYZER 85712D REV A. <b>60</b> (1) 17 - 1992	
MARKER 1.613 MHz .49 dB	Man John Man Man Man Man Man Man Man Man Man Ma	My
VA SB SC FC CORR		
CENTER 2.41@000GHz #RES BW 1@0kHz	VBW 38kHz	SPAN 5.000MHz #SWP 144 msec
3146 Log Per 3	ANTENNA/COUPLER 3109 Bicon	X-Wing NNB-4/63TL LISN NNB-4/200X LISN
Radiated Prescan	LARIZATION:       DISTANC         Vertical          ☐ 3 Meter         Horizontal          ☐ 10 Meter	E: LOCATION: OATS Semi-Anechoic

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Line

NA.

Neutral

Conducted

Other\_

**Disturbance Power** 

**Shielded Room** 

**Factory Floor** 

Other\_





AMERICA'S FOOT SWITCH LEADER			. realesty mgm				
Report No.:	307626	30762628.005					
TES:							
TES.		um Bandwidth lle Frequency					
1039:48 12 NOV 2007 FF MFR: LINEMASTERS REF 97.0dBpV	WITCH MODEL: RF MEDICAL #AT ØdB	MKR 1.65 MHz .73 dE	9				
PEAK							
LOG							
10 dB/	many						
100000000000000000000000000000000000000	1 9 9						
MARKER 1.65 MHz	<i>ک</i> ر	\					
.73 dB							
	M	\ M					
	W W W	V Market					
VA SB	2 A M.M.	AMOUNT AND POOL	L fail :				
VA SB SC FC		, III, A.	<b>~</b> /¶\  <sub>/</sub> \  <sub>/</sub>				
CORR			1,7				
	+						
L CENTER 2.44525 GHz	AVG 34.82	SPAN 1000MHz					
RES BW 100kHz	#VBW 3®kHz	SWP 200msec					
	ANTENNA/C		7				
9124 Bicon 3146 Log Per	3109 Bicon 3115 Horn	☐ CBL6140 X-Wing ☐ JB3 Bilog	NNB-4/63TL LISN NNB-4/200X LISN				
3106 Horn	CBL6112B Bilog	NSLK 8126 LISN	MDS-21 Clamp				
EAS TYPE:	POLARIZATION: D	ISTANCE: I	OCATION:				

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3 Meter

10 Meter

Meter

Vertical

Line

Neutral

Horizontal

**Radiated Prescan** 

**Disturbance Power** 

**Radiated Final** 

Conducted

Other

OATS

Other

Semi-Anechoic
Shielded Room

**Factory Floor** 





AMERI	GA'S FOOT SWITCH LEADER				
F	Report No.:	307	62628.005		Page 14 of 50
NOTES:			ectrum Bandwi High Frequency		
		WITCH MODEL: RF MEDICAL #AT ØdB		MKR 1.63 MHz 29 dB	
PEAK					
LOG 10					
dB/		marana u			
	MARKER	<del></del>	Ŷ		
	1.63 MHz	ا لم	ly		
	29 dB	/			
	19		100	$\rightarrow$	
		, / W	₩ "\ <mark>.</mark>	k:	
	A AMUN'A	*W	, v	M . A .	
MA SB SC FC	N. A. M.			of the state of th	ال معامل ال
CORR				1]21]	10
			+		
		AVG	27.78		
CENTER	RES BW 100kHz	#VBW 3 <b>0</b> 0kH	7	SPAN 1000MHz SWP 200msec	
			A/COUPLER:		_
9124 Bic		3109 Bicon	CBL6140 X-	Wing	NNB-4/63TL LISN
3146 Log		☐ 3115 Horn ☐ CBL6112B Bilog	JB3 Bilog NSLK 8126	LISN	NNB-4/200X LISN MDS-21 Clamp
MEAS TY		POLARIZATION:	DISTANCE:		OCATION:
<b>Radiated</b>	l Prescan	<b>▼</b> Vertical	3 Meter		OATS
Radiated	l Final	Horizontal	10 Meter		Semi-Anechoic

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Meter

Line

NA

Neutral

Conducted

Other

**Disturbance Power** 

Semi-Anechoic Shielded Room

**Factory Floor** 

Other





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## 4.1.6 Tabulated Test Data

Radiated Emissions	Measure	ements				
Standard:	47 CFR 15	5.247 (a) (2)			Date:	11/12/2007
Device Tested:	Linemaste	r Switch - Indust	rial Switch		File:	0711110 6dB Bandwith.xls
				Minimum		
				Limit ° □		
				(Average		
				+		
				Correction		
	Freq	6dB Bandwith	Minimum Limit	Factors -		
Meas #	(MHz)	(MHz)	(MHz)	Limit)	Result	Comment
Channel 1 (2410GHz)	2410.25	1.6130	0.5000	-1.11	Complied	
Channel 8 (2450GHz)	2445.28	1.6500	0.5000	-1.15	Complied	
Channel 15 (2480GHz)	2480.25	1.6300	0.5000	-1.13	Complied	
Tested by:	Dieter Balo	damus				
TUV Rheinland of North A	merica, Inc.	12 Commerce	Road Newt	own, CT 06	6470 Tel:(203) 4	426-0888 Fax: (203) 426-4009

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## **4.1.7 Photos**



Figure 2 - Radiated Emissions Test Setup (O.A.T.S.)





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## 4.2 Maximum Output Power

This test measures the radiated electromagnetic levels of the intentional radiator generated by the EUT through the antenna port.

#### 4.2.1 Over View of Test

Results	Complies (as tested	per this re		Date	11/12/200	)7		
Standard	FCC Part 15.247 (b) (3)							
<b>Product Model</b>	RF Medical Switch Serial# Pt1003t, P1004t, P1005t							P1005t
Configuration	See test plan for deta	See test plan for details						
Test Set-up	Tested @ 3m on O.A.T.S. placed on turn-table, see test plans for details							
<b>EUT Powered By</b>	AC/DC Adapter & Batteries	Temp	22°C	Hı	umidity	45%	Pressure	998mbar
Frequency Range	2.405GHz - 2.480GH	Hz @ 3m						
Perf. Criteria	1 Watt (30dBm) (Bellow Limit)	Perf. Verification			Readings Under Limit for L1 and L2			
Mod. to EUT	None	Test Per	formed I	Ву	Dieter E	Baldamu	ıs	

## 4.2.2 Test Procedure

Radiated emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. In addition the alternative test procedure, described in the "Measurement of Digital Transmission Systems", from March 23, 2005, was followed.

The photos included with the report show the EUT in its maximized configuration.

The frequency range from 2.405-2.480 GHz was investigated for radiated emissions, testing the lowest middle and highest channels.

Radiated emission testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies for which these measurements will be made on the 3m OATS.

### 4.2.3 Deviations

There were no deviations from the test methodology listed in the test plan.

#### 4.2.4 Final Test

All final radiated emissions measurements were below (in compliance) the limits.

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AMERICA	S FOOT SWITCH J	LEADER								riet	isely night.
Re	port No.:				:	30762628	.005				Page 18 of 50
4.2.5	5 Sum	mary	of Fina	ıl Data	l						
NOTES:					Du	ty Cycle	Measur	ement			
MFR:			CH MOD #AT 2		EDICAL		MKR	-41. <b>59</b> 2 m		7	
PEAK LOG 10 dB/	вру		#A12	2008					07 dB		
_	MARKER -41.092 m: 07 dB	sec									
WA SB SC FS CORR	was a state of the	فيرسطهاش	desorphise his	,	. عالم بيه <sup>ا م</sup> يمياله ر	- Windyson day	f-fedicaleagh	- <u> </u>	Mariantantan	Anna	
CENTER 2.	.4895510 GH; ES BW 1.01		-	AVG 34.	#VBW31	мнz		#SWI	SPAN Ø P 95.6 mse		
9124 Bicon 3146 Log F 3106 Horn	Per	<b>311</b>	9 Bicon 5 Horn L6112B		JB3	NA/COU L6140 X-W Bilog LK 8126 L	Ving			NNB-4	/63TL LISN /200X LISN 21 Clamp
MEAS TYP Radiated F Radiated F Conducted Distr	Prescan Final	Ver Ho	ARIZA' rtical rizontal ne utral	ΓΙΟΝ:	DISTA  3 M  10 N  NA					Shielde	

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Other

NA

Other\_





AMERICA	VS FOOT SWITCH LEAS	bER				ricolscry riight.
Re	port No.:		307626	Page 19 of 50		
NOTES:			Duty Cyc	ele Measure	ment	
		RSWITCH MODEL: RI #AT 20dB	F MEDICAL	MKR -9	75. <b>80</b> µsec .32 (	dB
PEAK LOG 10 dB/						
	MARKER -975.Ø0µsec .32 dB					
VA SB SC FC CORR	-vorder States	waran tahuraharaha	kodu som og det en de en d	- Vayas	wywyrhenne thus	M. Adulton
		AVG	34.82			
	2.46955ØGHz RES BW 1.ØM	Hz	#VBW3 MHz		SPAN Ø #SWP 15.0mse	
			ANTENNA/CO			
9124 Bicon 3146 Log I 3106 Horn	Per	☐ 3109 Bicon ☐ 3115 Horn ☐ CBL6112B	Bilog	CBL6140 X-   JB3 Bilog   NSLK 8126 I	J	NNB-4/63TL LISN NNB-4/200X LISN MDS-21 Clamp
MEAS TYP  Radiated I Radiated I Conducted Disturban Other	Prescan Final d	POLARIZA'  Vertical  Horizontal  Line  Neutral  NA		STANCE: 3 Meter 10 MeterMeter NA		LOCATION:  OATS Semi-Anechoic Shielded Room Factory Floor Other





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#### 4.2.6 Tabulated Test Data

Radiated Emission								13				3.00000	100000000000000000000000000000000000000	Western
Standard:	47 C FR 15	.247(b) (3)	lance-werd		- 5		8	14 3		- 3		Pred	coan/Final:	Final
Device Testod:	Unem as le	switch - Inde	us frial Switch				8			- 3			Distance:	3.0m
Meas #	Freq (MHz)	Me asured Pe ak (dB p V/m)	Anienna Correction Factor (dB)	Amplitier Correction		Corrected Measured Peak (V/m)	EUT Anlenna Gain (d8i)	Total Peak EIRP (m Walts)	EIRP		Ave rage	Peak Umll 1 Wall (30d Bm)	Peak (d B) D	Result
			7	9 18										
Channel 1 (2410GHz)	2409.35	89.93	31.10	23,60	97 .43	0.07.44	2.00	0.83	-0.81	-36.88	-37,69	30.00	-67.69	Compiled
Channel 8 (2 450G Hz)	2445.48	84.10	31.20	23.70	91.60	0.0380	2.00	0.22	-6.64	-36.88	-43.52	30.00	-7 3.52	Compiled
Channel 15 (2480G Hz)	2480.24	81.22	31.10	23.09	89.23	0.0289	2.00	0.13	-9.01	-36.88	-+5.89	30.00	-75.89	Compiled
Tesled by:	Die ler Bak	amus		- 6			9					3		

Average Values were calculated based on the duty cycle of the transmission frequency Measured Pulse is  $0.895\mu Sec$ , and there are 1.6 packages in 100ms

 $\begin{array}{c} {\rm Duty\ Cycle} = 0.895*1.6/100 = 0.01432 \\ {\rm Duty\ Cycle} = 20\log\ (0.01432) = -36.8811 \\ {\rm Average\ Value} = {\rm Peak\ Value\ (in\ dBuV)} - {\rm Duty\ Cycle} \end{array}$ 

Corrected Measurement Peak (dBµV/m) = Measured Peak + Antenna Correction Factor - Cable & Amplifier correction factor

According to Alternative test Procedure of DTS from March 23, 2005 Total EIRP = (E\*d) squared/(30\*G)e.g. for 2.40935 GHz = $(0.0704*3)^2/(30*2) = 0.0007413$  watts = -1.299981 dBm





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Figure 3 – Maximum Output Power (O.A.T.S)





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## 4.3 RF Human Exposure Limits

This test evaluates the RF Human Exposure to prove the safety of radiation harmfulness to human body.

#### 4.3.1 Test Over View

Results	Complies (as tested	l per this	report)		Date	11/11/2	2007
Standard	FCC Part 15.247 (b)	(5) and 1	.1310				
<b>Product Model</b>	RF Medical Switch			Serial#	Pt1003	3t, P1004t, F	21005t
Configuration	See test plan for deta	ails					
Test Set-up	NA						
<b>EUT Powered By</b>	AC/DC Adapter & Batteries	Temp	22°C	Humidity	45%	Pressure	998mbar
Frequency Range	2.405GHz - 2.480G	Hz @ 3n	1				
Perf. Criteria	1.0 (mW/cm2) (Bell Limit)	ow	Perf. Ver	ification	Readir	ngs under Li	mit
Mod to EUT	None		Test Perf	ormed By	Dieter	Baldamus	

### 4.3.2 Test Procedure

In this document, we try to prove the safety of radiation harmfulness to the human body for our product. The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The Gain of the antenna used in this product is measured in a Semi-Anechoic Chamber, and also the maximum total power input to the antenna is measured. Through the Friis transmission formula (see section 4.9.6) and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis transmission formula is a far field assumption, the calculated result of that is an over-prediction for near field power density. We will take that as the worst case to specify the safety range.

## 4.3.3 RF Exposure Limit

According to FCC 1.1310 table 1: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)

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#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Average Time (minutes)
	(A)Limits For	Occupational / Con	trol Exposures	
300-1500			F/300	6
1500-100,000			5	6
	(B)Limits For Gen	eral Population / Uno	controlled Exposure	
300-1500			F/1500	6
1500-100,000			1.0	30

F = Frequency in MHz

#### 4.3.4 Deviations

There were no deviations from the test methodology listed in the test plan

#### 4.3.5 Antenna Gain

The maximum Gain measured in the OATS is 3.24 dBi or 2.109 (numeric).

### 4.3.6 Test Results

## Output Power into Antenna & RF Exposure value at distance 20cm:

Calculations for this report are based on highest power measurement and the highest gain of the antenna. Limit for MPE (from FCC part 1.1310 table 1) is 1.0 mW/cm<sup>2</sup> for 2.4-2.483.5 GHz.

Highest Pout is 0.74 mW (-1.29dBm), (Including antenna gain) and R is 20cm.

 $Pd = (0.74) / (4*\pi*20^2) = 0.0001472 \text{mW/cm}^2$ , which is 0.9985 mW/cm<sup>2</sup> below to the limit.

## **Sample Calculation**

The Friis transmission formula: Pd = (Pout\*G) /  $(4*\pi*R^2)$ 

Where;

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

 $\pi \approx 3.1416$ 

R = distance between observation point and center of the radiator in cm

Ref.: David K. Cheng, Field and Wave Electromagnetics, Second Edition, Page 640, Eq. (11-133).

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## 4.4 Radiated Spurious Emissions

This test measures the radiated electromagnetic levels of the intentional and unintentional radiator generated by the EUT.

#### 4.4.1 Test Over View

Results	Complies (as teste	d per this re	port)		Date	11/11 <sup>th</sup> –	12 <sup>th</sup> /2007
Standard	FCC Part 15.247 (c),	15.205, 15.209	)				
<b>Product Model</b>	RF Medical Switch	ļ		Serial#	Pt1003	8t, P1004t, F	21005t
Configuration	See test plan for de	tails					
Test Set-up	Tested @ 3m on O	.A.T.S. plac	ed on tur	n-table, see te	est plans	for details	
<b>EUT Powered By</b>	AC/DC Adapter & Batteries	Temp	22°C	Humidity	45%	Pressure	998mbar
Frequency Range	2.405GHz - 2.4800	GHz @ 3m					
Perf. Criteria	-20dBc, 15.205 (a),	15.209 (a)	Perf. Vo	erification	Readir	ngs under Li	mit
Mod to EUT	None		Test Pe	rformed By	Dieter	Baldamus	

#### 4.4.2 Test Procedure

Radiated and FCC emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 2.405-2.480 GHz was investigated for radiated emissions, testing the lowest middle and highest channels.

Radiated emission testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies for which these measurements will be made on the 3m OATS.

## 4.4.3 Deviations

There were no deviations from the test methodology listed in the test plan.

#### 4.4.4 Final Test

The Radiated Spurious Emissions of the EUT were below the limits specified in the standard.

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AMERICA'S FOOT SWITCH LEADER		Tredisery riight.
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4.4.5 Summary of	Final Data	
NOTES:	Radiated Emissions Prescan	
(♠) 09:59:16 NOV 1 MFR: L]NEMAS] MARKER 224.4 MHz 22.59 dBµV/m		
LOG REF 50.0 dBաl	Um PR	EAMP ON
10 dB/ #AIN 0 dB	was a state of the	the sale de contraction
and have all brooking the sail	Survey of the total of the tota	
VA VB SC FC ACORR		
START 30.0 MHz T JF BW 120 kF		10.0 MHz 253 msec
	ANTENNA/COUPLER:	
3146 Log Per 31	CBL6140 X-Wing	☐ NNB-4/63TL LISN ☐ NNB-4/200X LISN ☐ MDS-21 Clamp
Radiated Prescan Radiated Final	ARIZATION:    Certical	LOCATION: OATS Semi-Anechoic Shielded Room

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Other\_

**Disturbance Power** 

Neutral

NA

**Factory Floor** 

Other\_





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NOTES:	Radiated Spurious Emissions Prescan	
(%) 10:18:17 NOV 12, MFR: LINEMASTER MARKER 2.2000 GHz 42.42 dBuV/m	42.47	7704 R04537
10 dB/ #AIN 0 dB	more and the contract of the second and the second a	
DL 54.0 dBµV/n VA VB SC FC ACDRR		
START 2.0000 GHz L ]F BW 1.0 MHz		4000 GHz 0.0 msec
	ANTENNA/COUPLER:  D Bicon  CBL6140 X-Wing	NNB-4/63TL LISN
	5 Horn JB3 Bilog L6112B Bilog NSLK 8126 LISN	MDS-21 Clamp
Radiated Prescan Ver	izontal 10 MeterMeter	LOCATION:  OATS Semi-Anechoic Shielded Room Factory Floor Other





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NOTES:	Radiated Spurious Emissions Presc	an
(%) 10:18:17 NOV MFR: LINEMAS MARKER 2.2000 GHz 42.42 dBuV/n		, E U K
10 dB/ #AIN 0 dB	and the state of t	
DL 54.0 dBuV/m VA VB SC FC ACDRR		
START 2.0000 GHz L ]F BW 1.0 M		OP 2.4000 GHz SWP 20.0 msec
9124 Bicon	ANTENNA/COUPLER:  3109 Bicon	NNB-4/200X LISN
MEAS TYPE: P	OLARIZATION:    Vertical	LOCATION:  OATS Semi-Anechoic Shielded Room Factory Floor Other





R	eport No.:		30762	2628.005		Page 28 of 50
NOTES:		Radiated	l Spurious I	Emissions Pres	can	
		TCH MODEL: RF ME #AT 30dB	DICAL	MKF	? 2.87628 GHz 36.59 dBµV	
PEAK LOG 10 dB/	ЕМС	ANALYZER 85712D 1987 - 1992	REVA.000			
DL 54.Ď dΒμV	MARKER 2.87628 GHz	ination of the construction of the	dotal quinded this abo	ad an	disappadrishipas	policy depth (MAC)
VA VB SC FC CORR						
	.835ØDGHz RES BW 1ØkHz		VBW 10kHz	STOP	2.9 <b>600</b> GHz SWP 1.95 sec	
9124 Bico 3146 Log 3106 Hor	Per n	3109 Bicon 3115 Horn CBL6112B Bild		COUPLER:  CBL6140 X-V  JB3 Bilog  NSLK 8126 L  DISTANCE:	ISN [	NNB-4/63TL LISN NNB-4/200X LISN MDS-21 Clamp LOCATION:

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3 Meter

10 Meter

Meter

Vertical

Line

Neutral

Horizontal

Radiated Prescan

**Radiated Final** 

**Disturbance Power** 

Conducted

\_ Other\_

OATS

Other\_

Semi-Anechoic
Shielded Room

**Factory Floor** 

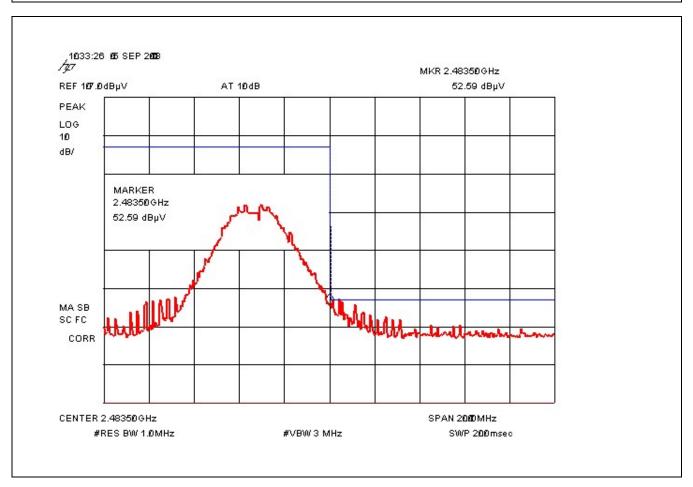




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## 4.4.6 Band Edge Graphs

NOTES:
Band Edge Measurement
(Radiated)



	ANTENNA	/COUPLER:	
9124 Bicon	3109 Bicon	CBL6140 X-Wing	NNB-4/63TL LISN
<b>☐</b> 3146 Log Per	<b>⊠</b> 3115 Horn	☐ JB3 Bilog	NNB-4/200X LISN
3106 Horn	CBL6112B Bilog	NSLK 8126 LISN	MDS-21 Clamp
MEAS TYPE:	<b>POLARIZATION:</b>	<b>DISTANCE:</b>	LOCATION:
Radiated Prescan	<b>▼ Vertical</b>	3 Meter	OATS
Radiated Final	Morizontal	10 Meter	Semi-Anechoic
☐ Conducted	Line	Meter	Shielded Room
Disturbance Power	Neutral Neutral	□ NA	Factory Floor
Other	□ NA		Other





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## 4.4.7 Tabulated Test Data

Radiated Emissions Measurements	sions Mea	suremen	Ş													
Standard:	47 CFR 15.247 (c)	247 (c), 15.2	15.209 and 15.205	92							_	Prescan/Final: Final	Final		Date:	Date: 11/11/2007
Device Tested:	Linemaster Switch	Switch -Mea	-Medical Switch									Distance: 3.0m	3.0m		File:	File: 07111105 RE Spurious Emissions.xls
				Cable &												
			Antenna	Amplifier Corrected	Corrected		Corrected			15.247	15.247					
		Measured	_	orrection			Average		15.209	ч.	Average				Antenna	
		Peak				Dufy Cycle	Value	15.209 Limit		(-20dBc)	_imit ∆			Angle	Height	
Meas #	Freq (MHz) (dBµV/m)	(dBµV/m)	9	9	(dBµV/m)	(dBµV)	(dBµV/lm)	(dBµV/m)	(dBµV/m)	(dBµV/m)	(dBµV/m)	Result	Polarization	(degrees)	(meters)	Comment
Lower Channel																
_	2410.65	89.45	31.20	16.20	104.45								Horizontal	187	2.66	
2	2407.75	69.45	31.10	16.20	84.35								Horizontal	187	2.66	-20dBc
m	2400.00	52.59	31.30	16.20	69'.29	-38.06	29.63	53.98	-24.35	84.45	-54.82	Complied	Horizontal	187	2.66	at bandedge
4	4820.14	43.73	31.10	16.40	58.43	-38.06	20.37	53.98	-33.61	84.45	-64.08	Complied	Horizontal	9	1.00	2nd Harmonic
Middle Channel																
ιΩ	2445.75	62.78	31.20	16.30	102.69								Horizontal	180	2.29	
؈	4889.00	42.18	31.10	16.40	98.98	98.06	18.82	53.98	-35.16	82.69	-63.87	Complied	Horizontal	336	1.00	2nd Harmonic
High Channel																
7	2479.65	85.19	31.10	16.40	99.89								Horizontal	1.83	2.45	
00	2482.85	65.19	31.10	16.30	79.99								Horizontal	1.83	2.45	-20dBc
60	2483.50	58.23	31.10	16.30	73.03	-38:06	34.97	53.98	-19.01	68.62	-44.92	Complied	Horizontal	1.83	2.45	at bandedge
10	4959.10	40.70	31.10	16.40	55.40	38:06	17.34	53.98	-36.64	79.89	-62.55	Complied	Horizontal	9	1.00	2nd Harmonic
Tested by:	Dieter Baldamus	mus														
TUV Rheinland of North America, Inc.	orth America,	_	2 Commerce Road		Newtown, CT 06470		1:(203) 426-0	Tel:(203) 426-0888 Fax: (203) 426-4009	3 426-4009							
	Average Valu	ues were ca	culated bas	ed on the o	luty cycle o	of the transr	Average Values were calculated based on the duty cycle of the transmission frequency	ency								
	Measured Duty Cycle is a 0.975msec package in 78ms	uty Cycle is	a 0.975ms	ec package	in 78ms											
		Duty Cycle = 0.975ms/78ms =	= 0.975ms/	78ms =	1.25%											
		Duty Cycle = 20log (0.0125) =	= 20log (0.0	1125)=	-38.0618											
	Average Value = Peak Value (in dBμV/m) - Duty Cycle	ue = Peak \	/alue (in dB	JV/m) - Dut	y Cycle											
	Corrected M	easured Pe:	ak (dBµV/m)	) = Measure	ed Peak +	Antenna Co	rrection Fact	Corrected Measured Peak (dBuV/m) = Measured Peak + Antenna Correction Factor - Cable & Amplifier Correction Factor	nplifier Con	ection Factor						
	Corrected Average = Corrected Measured Peak + Duty Cycle	verage = Co	rrected Mea	sured Peak	+ Duty Cy	cle										
			-													
	All Emissions are within the restricted band specified at FCC part 15.205 (a)	ns are within	the restrict	ed band sp	ecified at h	CC part 15.	205 (a)									

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## **4.4.8** Photos



Figure 4 - Radiated Spurious Emissions Test Setup (Semi-Anechoic Chamber 2)





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Figure 5 - Radiated Spurious Emissions Test Setup (O.A.T.S.)





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## 4.5 Transmitter Power Density Spectrum

This test is to evaluate

#### 4.5.1 Test Over View

Results	Complies (as teste	ed per this	report)			Date	<b>e</b> 11/	/12/2007
Standard	FCC Part 15.215 (c	e)						
<b>Product Model</b>	RF Medical Switch	1			Serial#	Pt10	003t, P10	004t, P1005t
Configuration	See test plan for details							
Test Set-up	Tested @ 3m on C	).A.T.S. p	olaced or	ı turı	n-table, see	test pla	ns for d	etails
EUT Powered By	AC/DC Adapter & Temp 22°C Humidity 45% Pressure 998mbar							
Frequency Range	2.405GHz - 2.480GHz @ 3m							
Perf. Criteria	8dBm in a 3kHz BW <b>Perf. Verification</b> Readings under Limit							
Mod to EUT	None		Test P	erfo	rmed By	Dieter	Baldan	nus

#### 4.5.2 Test Procedure

The PSD Option 2 test procedure, described in the "Measurement of Digital Transmission Systems", from March 23, 2005, was followed.

The Radiated Power Density was performed using a 100 sweeps over a 3kHz Resolution bandwidth and a 10 kHz Video bandwidth using a Peak detector.

The frequency range from 2.405-2.480 GHz was investigated for radiated emissions, testing the lowest middle and highest channels

Radiated emission testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies for which these measurements will be made on the 3m OATS

#### 4.5.3 Deviations

There were no deviations from the test methodology listed in the test plan for the Transmitter Power Density Immunity test.

#### 4.5.4 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TUV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TUV Rheinland, NVLAP or any agency of the United States Government.





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## 4.5.5 Test Results

Radiated Emissions Measurements - Power Spectral Density	s Measur	ements -	Power S	pectral De	nsity					
Standard:	47 CFR 15.247 (d)	247 (d)							Date:	Date: 11/12/2007
Device Tested:	Linemaste	r Switch - Ir	Linemaster Switch - Industrial Switch	itch					File:	File: 07111104 P.S.D.xls
			Antenna	Cable &	Corrected			Minimum		
		Measured	Measured Correction	Amplifier	Measured	Measured		Limit Δ		
	Freq	Peak	Factor	Correction	Peak	Power Spectral	Minimum	(Measured		
Meas #	(MHz)	(dBµV/m)	(dB)	Factor (dB)	(dBµV/m)	Density (dBm)	Limit (MHz)	PSD - Limit)	Result	Comment
Channel 1 (2410GHz)	2410.09	76.42	31.10	23.60	83.92	-23.07	8.0000	-31.07	Complied	
Channel 8 (2450GHz)	2445.16	73.93	31.20	23.70	81.43	-25.56	0000'8	93.56	Complied	
Channel 15 (2480GHz)	2480.07	72.23	31.10	23.09	80.24	-26.75	8.0000	-34.75	Complied	
Tested by:	Dieter Baldamus	damus								
TUV Rheinland of North America, Inc. 12 Commerce Road	merica, Inc.	12 Comm	erce Road	Newtown,	Newtown, CT 06470	Tel: (203) 426-0888 Fax: (203) 426-4009	988 Fax: (203	) 426-4009		
	Corrected	Measured F	eak = Mea	sured Peak =	Antenna Fac	Corrected Measured Peak = Measured Peak = Antenna Factor - Cable & Amplifier Correction Factor	plifier Correctio	n Factor		



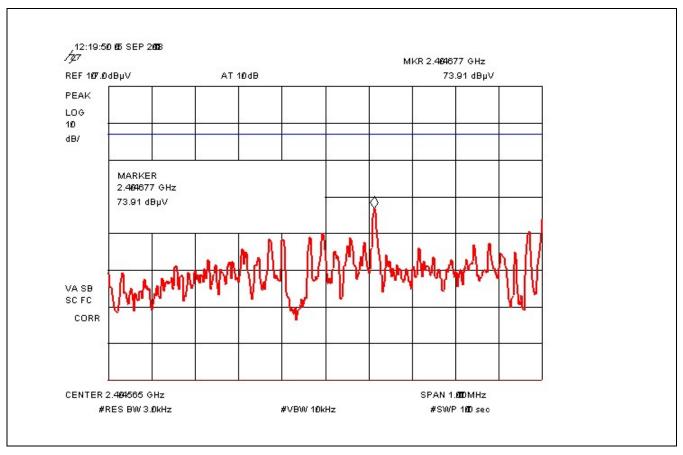


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## 4.5.6 Summary of Final Data

NOTES:

## Transmitter Power Density Measurement Low Channel

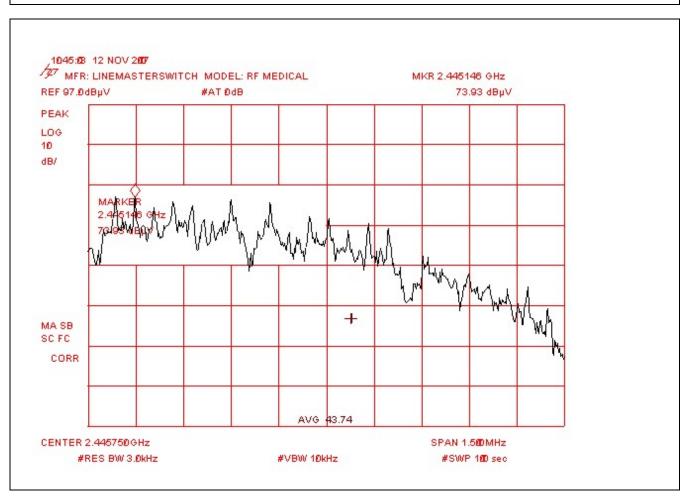


ANTENNA/COUPLER:					
9124 Bicon	3109 Bicon	CBL6140 X-Wing	NNB-4/63TL LISN		
<b>3146 Log Per</b>		☐ JB3 Bilog	NNB-4/200X LISN		
3106 Horn	CBL6112B Bilog	NSLK 8126 LISN	MDS-21 Clamp		
MEAS TYPE:	POLARIZATION:	DISTANCE:	LOCATION:		
Radiated Prescan	<b>Vertical</b>	3 Meter	OATS		
Radiated Final	Morizontal	10 Meter	Semi-Anechoic		
Conducted	Line	Meter	Shielded Room		
Disturbance Power	Neutral Neutral	□ NA	Factory Floor		
Other	□ NA		Other		





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NOTES:	Transmitter Power Density Measurement Middle Channel	

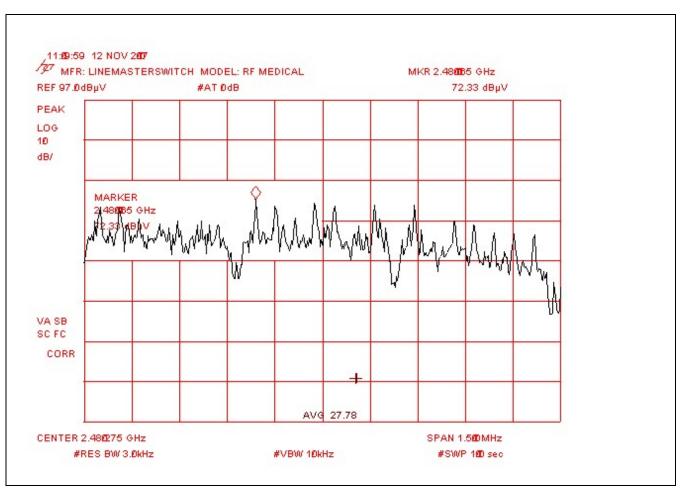


ANTENNA/COUPLER:					
9124 Bicon	3109 Bicon	CBL6140 X-Wing	NNB-4/63TL LISN		
3146 Log Per		☐ JB3 Bilog	NNB-4/200X LISN		
☐ 3106 Horn	CBL6112B Bilog	NSLK 8126 LISN	MDS-21 Clamp		
MEAS TYPE:	POLARIZATION:	DISTANCE:	LOCATION:		
Radiated Prescan	<b>Vertical</b>	3 Meter	OATS		
Radiated Final	Morizontal	10 Meter	Semi-Anechoic		
☐ Conducted	Line	Meter	Shielded Room		
Disturbance Power	Neutral Neutral	□ NA	Factory Floor		
Other	│		Other		





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NOTES:	Transmitter Power Density Measurement High Channel	



ANTENNA/COUPLER:								
9124 Bicon	3109 Bicon	CBL6140 X-Wing	NNB-4/63TL LISN					
3146 Log Per	<b>⊠</b> 3115 Horn	☐ JB3 Bilog	NNB-4/200X LISN					
3106 Horn	CBL6112B Bilog	NSLK 8126 LISN	MDS-21 Clamp					
MEAS TYPE:	POLARIZATION:	DISTANCE:	LOCATION:					
Radiated Prescan	<b>Vertical</b>	3 Meter	OATS					
Radiated Final	Horizontal	10 Meter	Semi-Anechoic					
☐ Conducted	Line	Meter	Shielded Room					
☐ Disturbance Power	Neutral	□ NA	Factory Floor					
Other	□ NA		Other					
		IVA						





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## **4.5.7** Photos



Figure 6 – Transmitter Power Density Spectrum (Semi-Anechoic Chamber 2)





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## 4.6 Frequency Stability

This test is to evaluate the performance of the EUT when subjected to high-energy disturbances on the power and interconnecting lines.

#### 4.6.1 Test Over View

Results	Complies (as tested per this report)				Date	10/09/200	)7	
Standard	FCC Part 15.215	FCC Part 15.215						
<b>Product Model</b>	RF Medical Switch	1		Serial#	Pt100	3t, P1004t, F	P1005t	
Configuration	See test plan for de	tails						
Test Set-up	Tested @ 3m on C	Tested @ 3m on O.A.T.S. placed on turn-table, see test plans for details						
<b>EUT Powered By</b>	AC/DC Adapter & Batteries	Temp	22°C	Humidity	45%	Pressure	998mbar	
Frequency Range	2.405 GHZ – 2.480GHz <b>Temperature Range</b> 0°C – 70°C							
Perf. Criteria	Containment of 20dB of frequency range		Perf. Ver	ification	Readings under Limit			
Mod to EUT	None		Test Perf	Performed By Dieter Baldamus				

## 4.6.2 Test Procedure

EUT was place in a temperature chamber. Frequency and output power level were measured at room temperature. Temperature in the chamber was increased to 70°C and maintained till the EUT reached that temperature. Frequency and level was measured again. EUT was placed into a humidity chamber and temperature was set to 0 °C. Temperature was maintained till the EUT reached that temperature. Frequency and level were measured again.

#### 4.6.3 Deviations

There were no deviations from the test methodology listed in the test plan for the Surge Immunity test.

#### 4.6.4 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

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# **4.6.5** Summary of Final Test Results

Radiated Emissi	ions Measurer	nents - Freque	ency Stability To	est	
Standard:	47 CFR 15.247				10/8/2007
Device Tested:	Linemasterswite	ch - Industrial Swit	ch	File:	071008711 Freq Stability
Test Variation:	Temperature Va	ariation			
Meas #	- 20dB Freq (MHz)	Limit Freq (MHz)	Frequency ✓ (MHz)	Result	Comment
Low Bandedge	ì	Ì	, ,		
22°	2403.24	2400.00	3.24	Complied	
0 °	2401.50	2400.00	1.50	Complied	
70°	2401.20	2400.00	1.20	Complied	
High Bandedge					
22°	2481.45	2483.50	-2.05	Complied	
0 °	2482.50	2483.50	-1.00	Complied	
70°	2482.70	2483.50	-0.80	Complied	
Tested by:	Dieter Baldamu	S			
TUV Rheinland of No	rth America, Inc.	12 Commerce Ro	ad Newtown, C	T 06470 Tel:(203	) 426-0888 Fax: (203) 426-4009

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## **4.6.6** Photos



Figure 7 – Frequency Stability Test Setup – Temperature Chamber at +70°C





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Figure 8 – Frequency Stability Test Setup – Humidity Chamber at 0°C





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# Appendix A

## 5 Test Plan

This test report is intended to follow this test plan outlined here in unless other wise stated in this here report. The following test plan will give details on product information, standards to be used, test set ups and refer to TUV test procedures. The test procedures will give the steps to be taken when performing the stated test. The product information below came via client, product manual, product itself and or the internet.

#### 5.1 General Information

Client	Linemaster Switch
Address	29 Plaine Hill Road
Address	Woodstock, CT 06281
<b>Contact Person</b>	Mark Grochowski
Telephone	(860) 974-1000
Fax	(860) 974-0502
email	MGrochowski@linemaster.com

## 5.2 Model(s) Name

RF Medical Switch			

## **5.3** Type of Product

Footswitch
------------





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## **5.4** Equipment Under Test (EUT) Description

The EUT is a wireless foot pedal used for various applications in the industrial environment. The wireless system eliminates the nuisance of wires under foot while invisible waves fill a room with 360° of signal. The EUT consist of a wireless foot pedal transmitter and a receiver; one (the transmitter) used with batteries and one (the receiver) used with an AC/DC adapter. The receiver also sends a signal every second to control de antenna output power of the transmitter.

## 5.5 Product Environment

Residential	$\boxtimes$	Hospital
Light Industrial	$\boxtimes$	Small Clinic
Industrial	$\boxtimes$	Doctor's office
Other		

#### 5.6 Countries

$\boxtimes$	USA
	Taiwan
	Japan
	Europe

<sup>\*</sup>Check all that apply

<sup>\*</sup>Check all that apply





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# 5.7 Applicable Documents

Standard	Description
FCC Part 15	Rado Frquency Devices -Part C
FCC Part 15.247 (a) (2)	Spectrum Bandwith of a Direct Sequence Spread Spectrum System
FCC Part 15.247 (b)	Maximum Output Power
FCC Part 1.1310	RF Human Exposure Limit
FCC Part 15.247 (c), 15.205, 15.209	Radiated Spurious Emissions
FCC Part 15.247 (d)	Transmitter Power Density of a Direct Sequence Spread Spectrum System
FCC Part 15.207	Conducted Emissions
FCC Part 15.215 (b)	Frequency Stability





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#### 5.8 General Product Information

EUT(1)	Tran	Transmitter					
Size	Н	7.5cm	W	22cm	L	15cm	
Weight	2.5kg		Fork-	Lift Needed	No		
EUT(1)	Rece	Receiver					
Size	Н	8cm	W	12cm	L	8cm	
Weight	2.0kg Fork-Lift Needed No						
Notes							

#### **5.9 EUT Powered Information**

## 5.9.1 Power Type

AC	DC	$\boxtimes$	Batteries	Host -
(Receicer)			(Transmitter)	

#### **5.9.2** Power Information

Name		Туре	Voltage		Frequency	Current	Notes
			min	max			
6VDC USA AC/DC Adapter		Class 1	120VAC	120VAC	60Hz	500mA	
Notes	AC/DC Adpater Models: GTM341-6-500						

## 5.10 EUT Modes Of operation

The EUT footswitch transmitter has 2 modes of operation. Switch ON or Switch OFF. Both modes were in operation during the test. The receiver was constantly on receiving signals from the footswitch transmitter.

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# **5.11** EUT Configurations

Configuration	Description					
Configuration 1	Switch ON, Switch OFF					
Note: all configurations are the same except as noted above						

# **5.12** EUT Clock/Oscillator Frequencies

	Less than 108MHz	FCC – scan up to 1GHz
	Less than 500MHz	FCC – scan up to 2GHz
	Less than 1000MHz	FCC – scan up to 5GHz
$\boxtimes$	Greater then 1000MHz	FCC – scan up to 5 <sup>th</sup> Harmonic or 40GHz (2.4GHz)

## 5.13 Electrical Support Equipment

Туре	Manufacture	Model	<b>Connected To</b>
NA	NA	NA	NA

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	Item			Notes		
NA		NA				
		I				
5.15 EU	J <b>T Equip</b>	ment/Cabling In	formation			
EUT P	ort	<b>Connected To</b>	Location		Cable Type	
				Length	Shielded	Be
DC Inpu	it AC	/DC Adapter	Receiver	1.5m	No	N
5.16 E	CUT Door	'S				
	None					
	For service personnel only					
	For serv					
		or will wear ESD s	trap			





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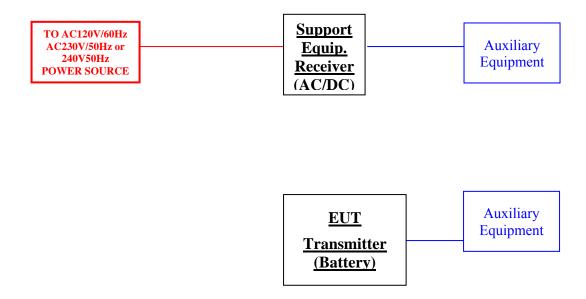
## 5.18 EUT Test Program

None

## 5.19 Monitoring of EUT during Testing

During the test a LED in the receiver indicates that the switch of the transmitter is ON. If the LED is off the foot switch is OFF as well.

## 5.20 EUT Configuration Block Diagram







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## 5.21 Constructional Data Form

TUV Rheinland		Please submit in duplicate					
D-51101 Köln 91		Gen-Ausw-Nr.	Aktenzeichen:			Anlage-Nr.	
2 02202 22022 2			30762628.005 Linemaster - RF Medical Switch FC 15.247		tch FCC Part	1 of 1	
Am Grauen Stein/							
Konstantin-Wille	-Str. 1						
			Cone	EMC/EMV structional Data Form			
Item Listing No.				Structional Data Form			
& Location in EUT	1	Component Sub-Assemb		Part No. & Description	Freq.; ERP/A		
1.1	Enclos	ure		Plastic (Footswitch Transmitter)	2.40	GHz	
1.2	Enclos	ure		Plastic (Receiver) Support Equipme	nt 2.40	GHz	
2.1	AC/DC Adpater			GTM341-6-500	N	A	
3.0	Antenna			Nano Blue	2.0	dBi	
TUV Rheinland Prüfstelle für Gerätesicherheit Köln, den:			rheit	Applicant Ort/place:	Datum/date:		
Koiii, den:				Ouplace.	Jatuill/date.		
(repo	rt copy no	ot signed)		(report copy not signed)			
TUV Rheinland				(Stempel und Unterschrift des Antragstellers/			
Prüfstelle für Gerätesicherheit				stamp and signature of a	pplicant)		