AC Powerline Conducted Emissions

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. All of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:
All

Operating Modes Investigated:
Typical frequency hopping mode.

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
Host Power Input = 120 VAC, 60 Hz.

Frequency Range Investigated			
Start Frequency	450 kHz	Stop Frequency	30 MHz

Software\Firmware Applied During Test			
Exercise software	Standard Production Software	Version	Unknown
Description			
The system was tested using standard operating production software to exercise the functions of the device during the testing.			

Equipment Modifications

No EMI suppression devices were added or modified. The EUT was tested as delivered.

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
Host System	SpaceLabs Medical	90310-1A	PAR327-1
Ethernet Board	SpaceLabs Medical	670-0829-00	N3112-95B-040
Power Supply	SpaceLabs Medical	90486	486-101522
EUT	Proxim	6330	A30549980020A6386465
Antenna	Centurion Wireless Technologies	CAF 94103	010306

Northwest
EMC

AC Powerline Conducted Emissions

Revision 2/4/02

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8	No	Power Supply	AC Mains
DC Power	Yes	.96	Yes	Power Supply	Host System
Antenna	Yes	3.0	No	Host System	Antenna

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

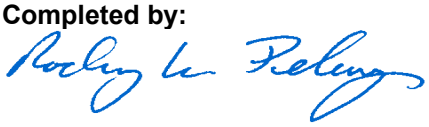
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	03/23/2001	12 mo
LISN	Solar	9252-50-R-24-BNC	LIP	06/21/2001	12 mo
High Pass Filter	TTE	H97-100k-50-720B	HFC	12/11/2001	12 mo

Test Description

Requirement: Per 47 15.207(d), if the EUT is connected to the AC power line indirectly, obtaining its power from another device that is connected to the AC power line, then it should be tested to demonstrate compliance with the conducted limits of 15.207.

Configuration: The AC power line conducted emissions were measured with the EUT operating in a frequency hopping mode. The EUT was transmitting at its maximum data rate. The spectrum was scanned from 450 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-1992.

Completed by:



NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

REV df1.83 02/04/2002

EUT:	6330			Work Order:	SPAC0264
Serial Number:	A30549980020A6386465			Date:	2/18/02 12:34
Customer:	Spacelabs Medical			Temperature:	72
Attendees:	N/A	Tested by:	Rod Peloquin	Humidity:	30%
Cust. Ref. No.:		Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	47 CFR 15.207(d)	Year:	Most recent
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

Frequency hopping mode

EUT OPERATING MODES

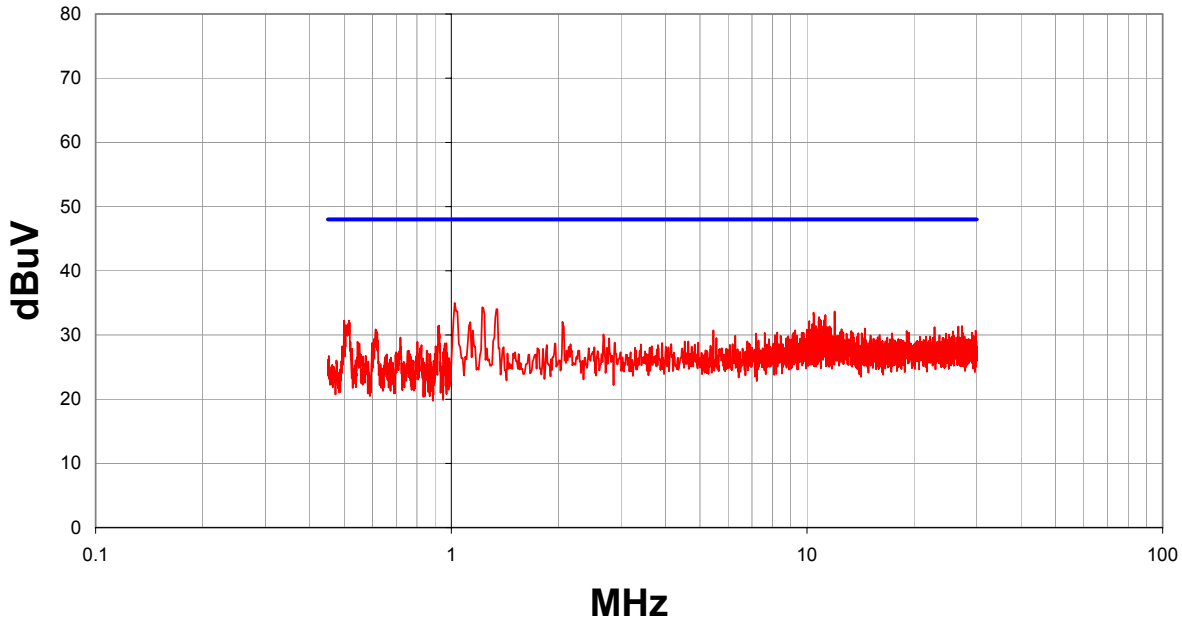
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L1	1

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
1.022	14.6			0.0	0.4	20.0				35.0	48.0	-13.0
1.222	13.9			0.0	0.4	20.0				34.3	48.0	-13.7
1.348	13.6			0.0	0.4	20.0				34.0	48.0	-14.0
11.960	12.7			0.0	1.0	20.0				33.7	48.0	-14.3
10.432	12.6			0.0	0.9	20.0				33.5	48.0	-14.5
11.267	12.2			0.0	0.9	20.0				33.1	48.0	-14.9
10.824	11.9			0.0	0.9	20.0				32.8	48.0	-15.2
10.875	11.5			0.0	0.9	20.0				32.4	48.0	-15.6
11.176	11.4			0.0	0.9	20.0				32.3	48.0	-15.7
0.515	12.0			0.0	0.3	20.0				32.3	48.0	-15.7
0.500	12.0			0.0	0.2	20.0				32.2	48.0	-15.8
10.955	11.3			0.0	0.9	20.0				32.2	48.0	-15.8
10.784	11.3			0.0	0.9	20.0				32.2	48.0	-15.8
10.151	11.3			0.0	0.9	20.0				32.2	48.0	-15.8
2.054	11.6			0.0	0.5	20.0				32.1	48.0	-15.9
1.131	11.6			0.0	0.4	20.0				32.0	48.0	-16.0
10.352	10.8			0.0	0.9	20.0				31.7	48.0	-16.3
0.924	11.1			0.0	0.4	20.0				31.5	48.0	-16.5
10.593	10.5			0.0	0.9	20.0				31.4	48.0	-16.6
27.259	9.6			0.0	1.8	20.0				31.4	48.0	-16.6
11.578	10.4			0.0	0.9	20.0				31.3	48.0	-16.7

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

REV df1.83 02/04/2002

EUT:	6330			Work Order:	SPAC0264
Serial Number:	A30549980020A6386465			Date:	2/18/02 12:36
Customer:	Spacelabs Medical			Temperature:	72
Attendees:	N/A	Tested by:	Rod Peloquin	Humidity:	30%
Cust. Ref. No.:		Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	47 CFR 15.207(d)	Year:	Most recent
Method:	ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

COMMENTS

Frequency hopping mode

EUT OPERATING MODES

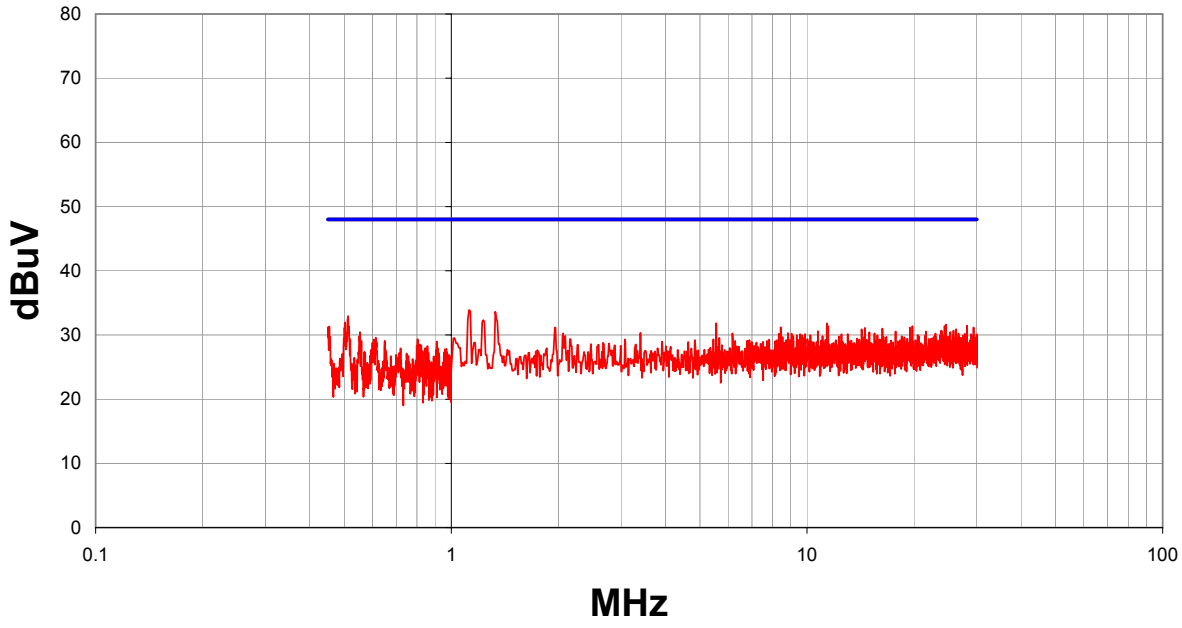
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L2	2

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
1.122	13.5			0.0	0.4	20.0				33.9	48.0	-14.1
1.330	13.2			0.0	0.4	20.0				33.6	48.0	-14.4
0.513	12.7			0.0	0.3	20.0				33.0	48.0	-15.0
1.231	11.9			0.0	0.4	20.0				32.3	48.0	-15.7
0.503	11.7			0.0	0.2	20.0				31.9	48.0	-16.1
11.377	10.9			0.0	0.9	20.0				31.8	48.0	-16.2
5.556	11.2			0.0	0.6	20.0				31.8	48.0	-16.2
24.579	10.0			0.0	1.6	20.0				31.6	48.0	-16.4
24.376	9.8			0.0	1.6	20.0				31.4	48.0	-16.6
28.172	9.6			0.0	1.8	20.0				31.4	48.0	-16.6
19.789	10.0			0.0	1.4	20.0				31.4	48.0	-16.6
11.478	10.4			0.0	0.9	20.0				31.3	48.0	-16.7
0.454	11.1			0.0	0.2	20.0				31.3	48.0	-16.7
0.451	11.0			0.0	0.2	20.0				31.2	48.0	-16.8
8.443	10.4			0.0	0.8	20.0				31.2	48.0	-16.8
29.411	9.3			0.0	1.9	20.0				31.2	48.0	-16.8
19.477	9.8			0.0	1.4	20.0				31.2	48.0	-16.8
1.964	10.7			0.0	0.4	20.0				31.1	48.0	-16.9
0.501	10.9			0.0	0.2	20.0				31.1	48.0	-16.9
14.553	10.0			0.0	1.1	20.0				31.1	48.0	-16.9
16.291	9.8			0.0	1.2	20.0				31.0	48.0	-17.0