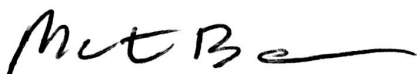
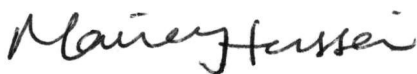




Test Report

Curtis-Straus LLC, a wholly owned subsidiary of BV CPS

Report No	EK0751-2
Client	Microwave Radio Corporation LLC
Address	101 Billerica Ave. Building 6 North Billerica, MA 01862
Phone	978-671-5720
Items tested FCC ID FRN	HDT1000 FC3HDT1000LS 0004267712
Equipment Type Equipment Code	DTS Digital Transmission System
FCC/IC Rule Parts	47 CFR 15.247
Test Dates	September 21-27, 2010
Results	As detailed within this report
Prepared by	 Matthew Burman – Test Engineer
Authorized by	 Mairaj Hussain – EMC Supervisor
Issue Date	<u>December 10, 2010</u>
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 24 of this report.

Curtis-Straus LLC is accredited by the American Association for Laboratory Accreditation for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation.



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Form Final Report REV 7-20-07 (DW)



Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.247. The product is the HDT1000. It is a transmitter that operates in the range 2400-2483.5MHz.

We found that the product met the above requirements with modification (see *Modifications Required for Compliance* section on page 5). Sal Blatti from Microwave Radio Corporation LLC was present during the testing. The test sample was received in good condition.

Verification testing was performed and issued under a separate report EK0751-1.

Test Methodology

Radiated emission and AC Line conducted testing was performed according to the procedures specified in ANSI C63.4 (2009). Radiated Emissions were maximized by rotating the device around three orthogonal axes as well as varying the test antenna's height and polarity. The device antenna was maximized separately.

Conducted emission at the antenna port was performed, as required by rule section.

The EUT operating voltage is 16Vdc.

The following bandwidths were used during radiated spurious and line conducted emissions.

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-25GHz	1MHz	3MHz

Low Channel = 2404.0MHz

Mid Channel = 2442.0MHz

High Channel = 2470.0MHz

The EUT does not receive, it transmits only.

EUT has two power levels, a high and reduced power.

Release Control Record

Issue No.	Reason for change	Date Issued
1	Original Release	December 10, 2010



Product Tested - Configuration Documentation

EUT Configuration											
Work Order: K0751 Company: Microwave Radio Communications, LLC Company Address: 101 Billerica Ave., Building 6 North Billerica, MA 01862 Contact: Sal Blatti Person Present: Sal Blatti											
MN						SN					
EUT: HDT-1000LS						8111577					
EUT Description: HDT1000											
EUT Max Frequency: 133 MHz (Associated Circuitry) and 2.2 GHz (Transmitter)											
Support Equipment:											
MN						SN					
60 dB Attenuator + 50 Ohm Load						--					
DC Power Supply						--					
EUT Ports:											
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason	
DC Power	Power Input	1	1	2-wired conductor	No	No	4ft	25ft	Indoor		
RF	SMA Coaxial	1	1	SMA Coaxial	Yes	No	0.5m	--	Indoor		
Ethernet	RJ45	1	1	RJ45, cat.5	No	No	4ft	328ft	Indoor		
Audio/Data	D-Sub Miniature	1	1	Unbalance Phono RCA (1x) /Serial (2x, DB9)	Yes	No	3ft	100ft	Indoor		
Video	BNC	1	1	Coaxial	Yes	No	4ft	100ft	Indoor		
Software / Operating Mode Description:											
Modulating an internal video and audio signal onto a digital carrier, through an attenuator, to 50 Ohm load.											



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Testing Cert. No. 1627-01

Statement of Conformity

The HDT1000 has been found to conform to the following parts of 47 CFR as detailed below:

Part 15	Comments
15.15(b)	There are no controls accessible to the user that varies the output power.
15.19	The label is shown in the label exhibit.
15.21	Information to the user is shown in the instruction manual exhibit.
15.27	No special accessories are required for compliance.
15.31	The EUT was tested in accordance with the measurement standards in this section.
15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
15.203	The antenna for this device is of unique connection through a reverse polarity SMA.
15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
15.207	EUT meets the AC Line conducted emissions requirements of 15.207.
15.247	The unit complies with the requirements of 15.247

Modifications Required for Compliance

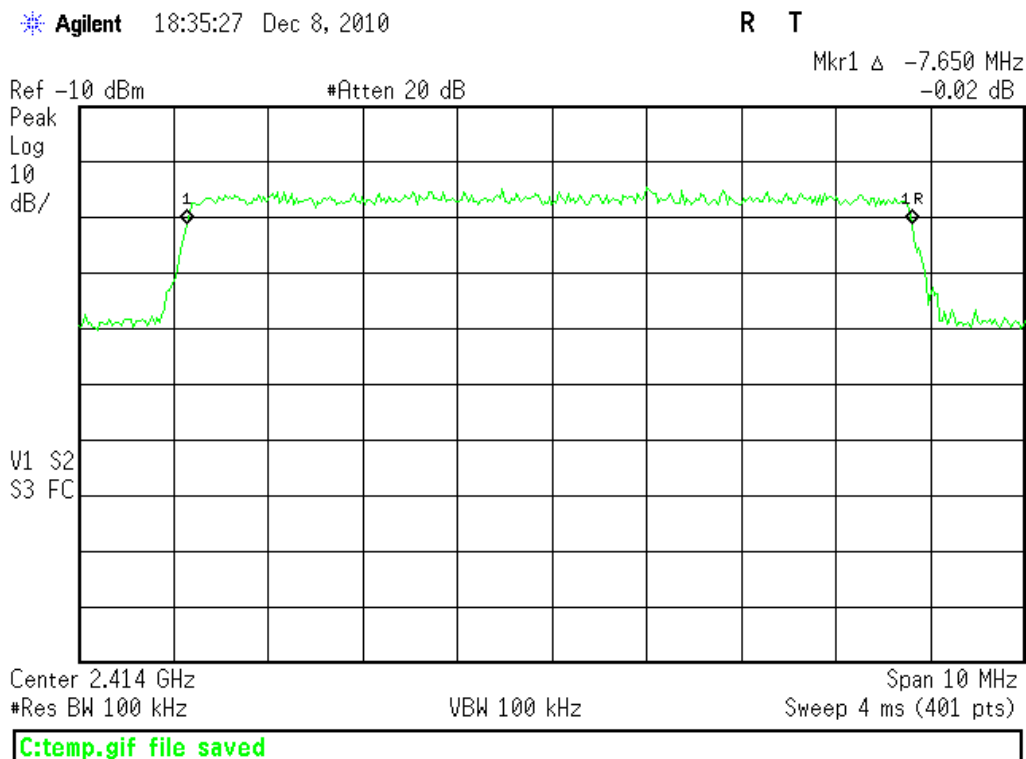
To meet the band edge requirement of 2483.5MHz, the highest channel had to be dropped and 2458MHz is the highest frequency. The lowest channel was also moved from 2404 to 2414MHz.

Test Results**Bandwidth****LIMIT**

The minimum 6 dB bandwidth shall be at least 500 kHz. [15.247(a) (2)]

MEASUREMENTS / RESULTS

6dB bandwidth										
Date: 20-Sep-10			Company: Microwave Radio Company					Work Order: K0751		
Engineer: Matthew Burman			EUT Desc: VISLINK HDT-1000					EUT Operating Voltage/Frequency: 16Vdc		
Temp: 21.7°C			Humidity: 36%					Pressure: 1011mbar		
Frequency Range: 2400-2483.5MHz							Measurement Distance: Conductive			
Notes:										
	Frequency (MHz)	Reading (Mhz)			---			FCC 15.247(a)(2)		
					Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (MHz)	Margin (MHz)	Result (Pass/Fail)
Low Channel	2414.0	7.6500	---	---	---	---	---	0.500	7.150	Pass
Mid Channel	2442.0	7.6750	---	---	---	---	---	0.500	7.175	Pass
High Channel	2458.0	7.6500	---	---	---	---	---	0.500	7.150	Pass
Test Site: 3m Indoor OATS Attenuator: PE7019-29										
Analyzer: Gold										

PLOT**Low Channel**

Mid Channel

Agilent 13:57:42 Sep 20, 2010

R T

Mkr1 Δ 7.675 MHz
1.062 dB

Ref 9 dBm

#Atten 20 dB

Peak
Log
10
dB/V1 S2
S3 FCCenter 2.442 GHz
Res BW 100 kHz

VBW 100 kHz

Span 10 MHz
Sweep 4 ms (401 pts)

C:\temp.gif file saved

High Channel

Agilent 18:36:47 Dec 8, 2010

R T

Mkr1 Δ 7.650 MHz
-0.867 dB

Ref -10 dBm

#Atten 20 dB

Peak
Log
10
dB/V1 S2
S3 FCCenter 2.458 GHz
#Res BW 100 kHz

VBW 100 kHz

Span 10 MHz
Sweep 4 ms (401 pts)

C:\temp.gif file saved



Peak Power**LIMIT**

Conducted Output Power

1 Watt

[15.247(b) (3)]

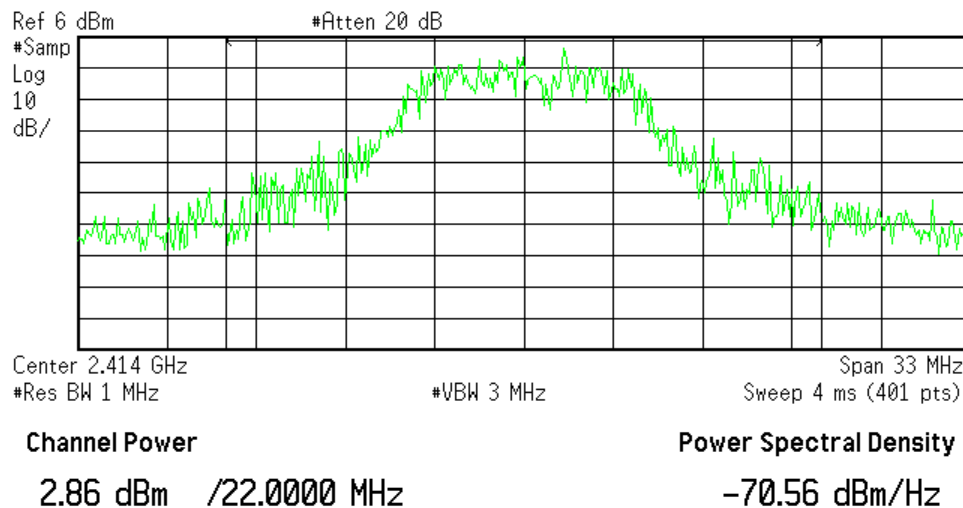
MEASUREMENTS / RESULTS**Peak Output Power**

Date: 20-Sep-10		Company: Microwave Radio Company		Work Order: K0751			
Engineer: Matthew Burman		EUT Desc: VISLINK HDT-1000		EUT Operating Voltage/Frequency: 16Vdc			
Temp: 21.7°C		Humidity: 36%		Pressure: 1011mbar			
Frequency Range: 2400-2483.5MHz				Measurement Distance: Conductive			
Notes: POP Option 2, Method 1							
	Frequency (MHz)	Reading (dBm)	Attenuator Factor (dB)	Adjusted Reading (dBm)	FCC 15.247(b)(3)		
					Limit (dBm)	Margin (dB)	Result (Pass/Fail)
Low Channel	2414.0	2.86	19.3	22.2	30.0	-7.840	Pass
	2414.0	-6.89	19.3	12.4	30.0	-17.590	Pass
Mid Channel	2442.0	2.78	19.3	22.1	30.0	-7.920	Pass
	2442.0	-7.14	19.3	12.2	30.0	-17.840	Pass
High Channel	2458.0	2.55	19.3	21.9	30.0	-8.150	Pass
	2458.0	-6.83	19.3	12.5	30.0	-17.530	Pass
Test Site: 3m Indoor OATS			Attenuator: PE7019-20				
Analyzer: Gold							

PLOTS**High Power****Low Channel**

Agilent 09:09:44 Dec 9, 2010

R T



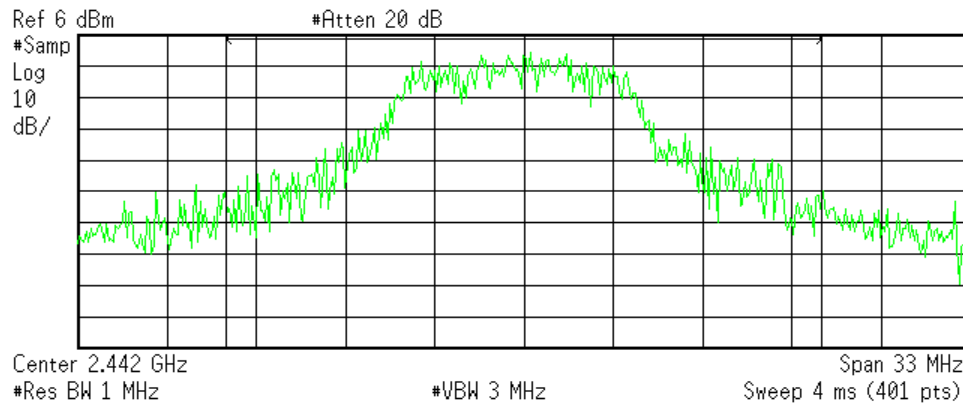
C:\temp.gif file saved



Mid Channel

Agilent 09:12:20 Dec 9, 2010

R T



Channel Power

2.78 dBm /22.0000 MHz

Power Spectral Density

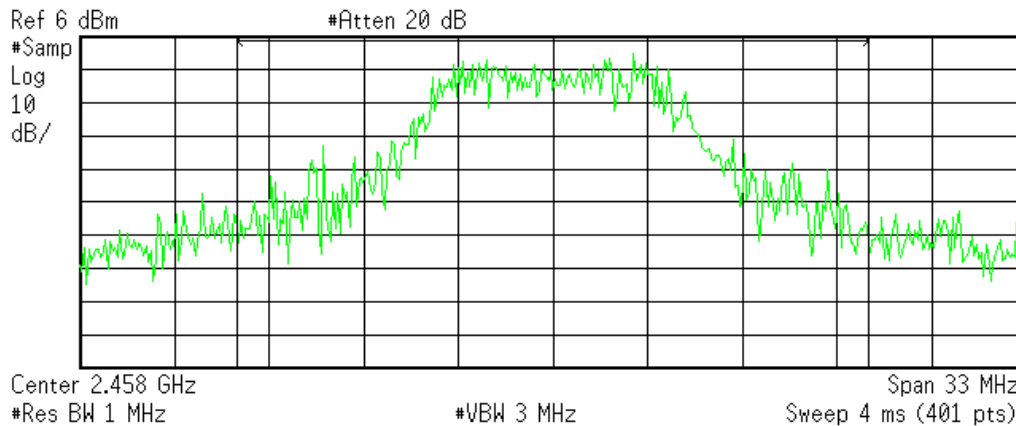
-70.64 dBm/Hz

C:\temp.gif file saved

High Channel

Agilent 09:14:55 Dec 9, 2010

R T



Channel Power

2.55 dBm /22.0000 MHz

Power Spectral Density

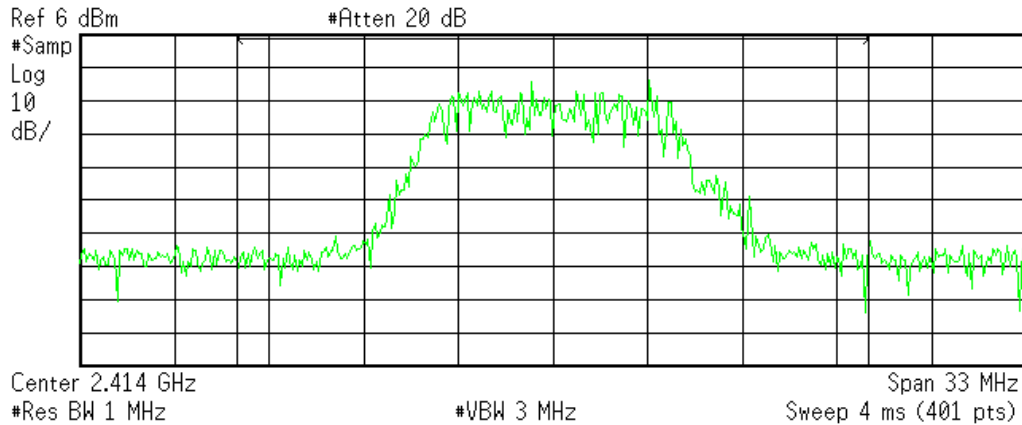
-70.88 dBm/Hz

C:\temp.gif file saved

Low Power**Low Channel**

Agilent 09:10:56 Dec 9, 2010

R T

**Channel Power**

-6.89 dBm /22.0000 MHz

Power Spectral Density

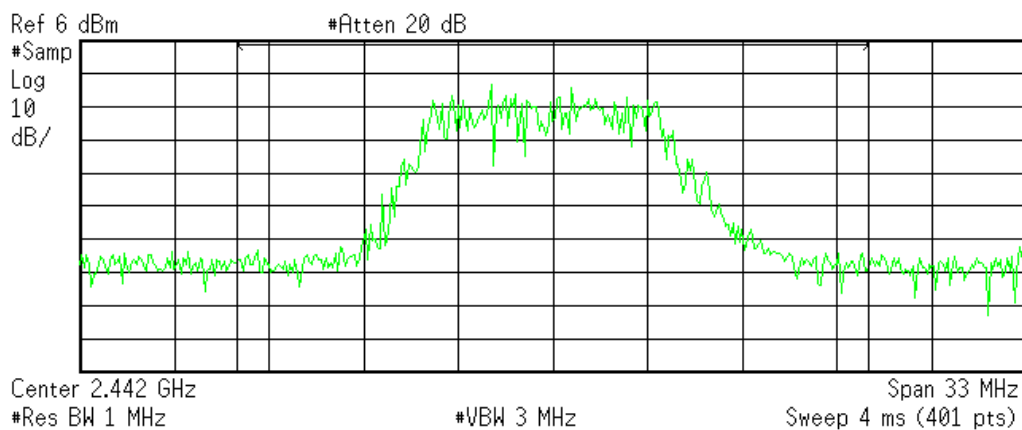
-80.31 dBm/Hz

C:\temp.gif file saved

Mid Channel

Agilent 09:13:21 Dec 9, 2010

R T

**Channel Power**

-7.14 dBm /22.0000 MHz

Power Spectral Density

-80.58 dBm/Hz

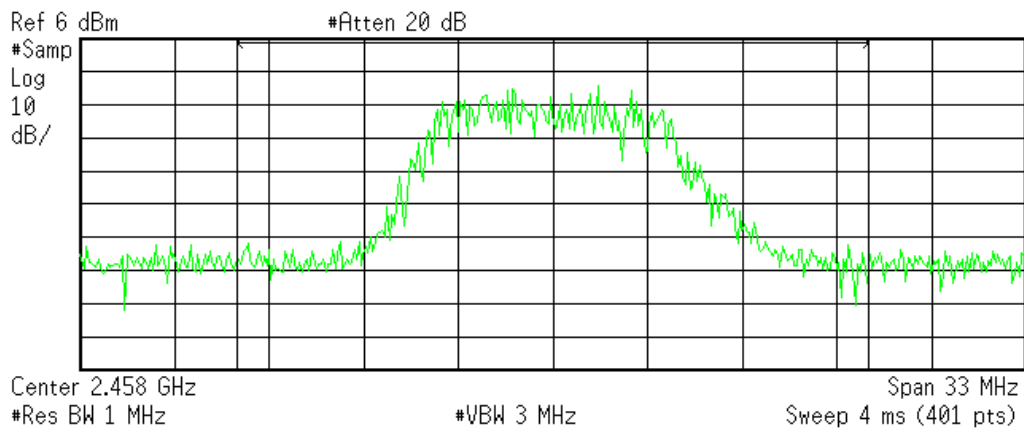
C:\temp.gif file saved



High Channel

* Agilent 09:16:25 Dec 9, 2010

R T



Channel Power

-6.83 dBm /22.0000 MHz

Power Spectral Density

-80.26 dBm/Hz

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Band Edge Measurements

LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
[15.247(d)]

MEASUREMENTS / RESULTS

Bandedge														
Date: 08-Dec-10		Company: Microwave Radio Corporation						Work Order: K0751						
Engineer: Matthew Burman		EUT Desc: Visilink HDT 1000						EUT Operating Voltage/Frequency: 16Vdc						
Temp: 18.5°C		Humidity: 25%						Pressure: 1005mBar						
Frequency Range: 2390-2483.5MHz								Measurement Distance: 1 m						
Notes:														
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
v	2390.0	72.0	52.1	21.2	28.7	2.3	81.8	61.9	83.5	-1.7	Pass	63.5	-1.6	Pass
v	2483.5	69.0	51.0	21.6	28.9	2.3	78.6	60.6	83.5	-4.9	Pass	63.5	-2.9	Pass
Table Result: Pass by -1.6 dB Worst Freq: 2390.0 MHz														
Test Site: IDCC-OATS-3M-I		Cable 1: EMIR-HIGH-14						Cable 2: ---			Cable 3: ---			
Analyzer: Rental SA#1		Preamp: Asset #1517						Antenna: Orange Horn			Preselector: ---			

Bandedge									
Date: 20-Sep-10			Company: Microwave Radio Company				Work Order: K0751		
Engineer: Matthew Burman			EUT Desc: VISLINK HDT-1000				EUT Operating Voltage/Frequency: 16Vdc		
Temp: 21.7°C			Humidity: 36%				Pressure: 1011mBar		
Frequency Range: 2390-2483.5MHz						Measurement Distance: Conductive			
Notes: Average used for power measurements, attenuation shall be 30dB									
	Frequency (MHz)	Reading (dBm)	Fundamental Reading (dBm)				FCC 15.247(d)		
							Limit (dBm)	Margin (dB)	Result (Pass/Fail)
	2400.0	-68.6000	-25.7300	---	---	---	-55.7300	-12.8700	Pass
	2483.5	-70.9200	-23.8600	---	---	---	-53.8600	-17.0600	Pass
Test Site: 3m Indoor OATS									
Attenuator: PE7019-20									
Analyzer: Gold									



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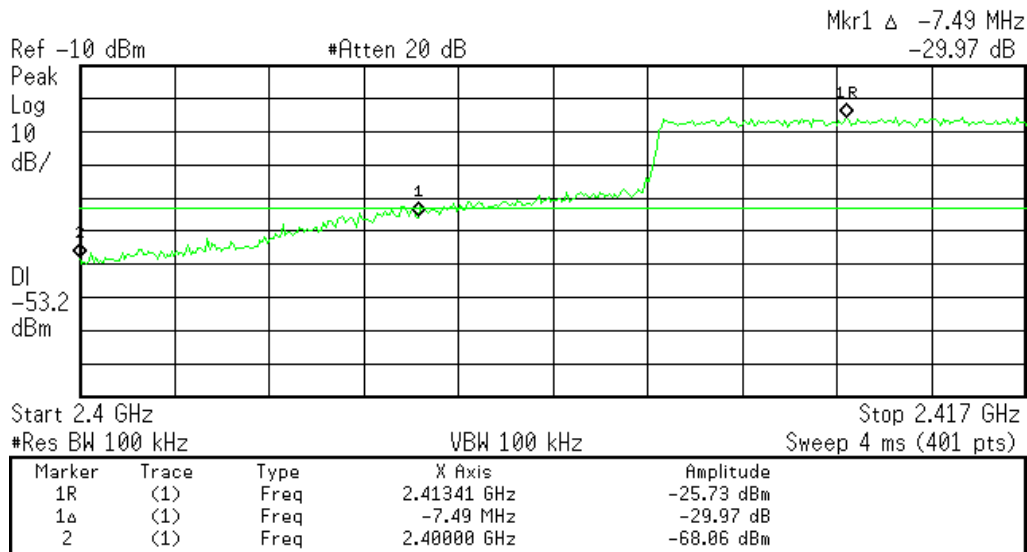
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2400MHz Limit

* Agilent 18:33:14 Dec 8, 2010

R T

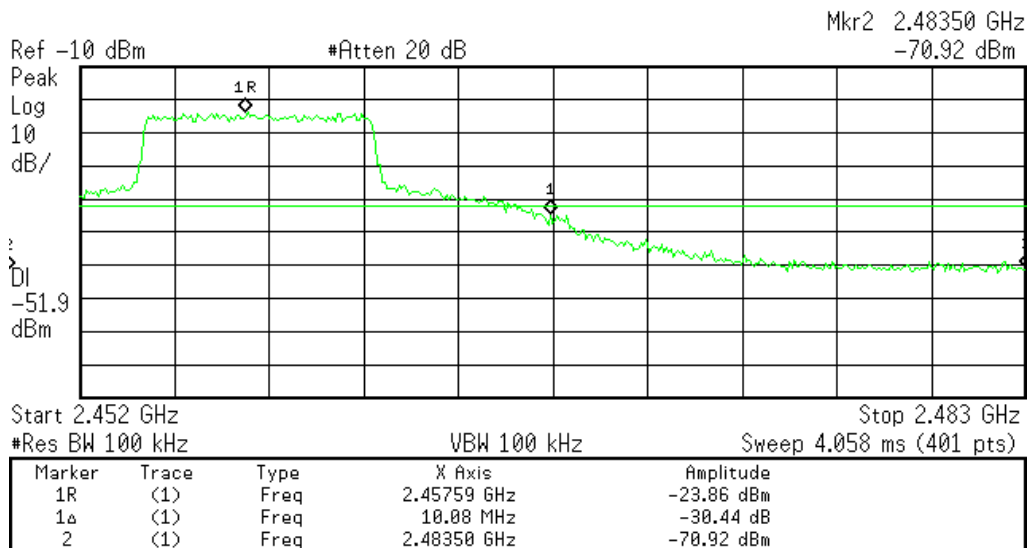


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2483.5MHz Limit

* Agilent 18:31:00 Dec 8, 2010

R T



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Radiated Spurious Emissions

LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
[15.247(d)]

MEASUREMENTS / RESULTS

Spurious Emissions Table												
Date: 27-Sep-10			Company: Microwave Radio Corporation						Work Order: K0751			
Engineer: Matthew Burman			EUT Desc: Visilink HDT-1000						EUT Operating Voltage/Frequency: 16Vdc			
Temp: 21.6°C			Humidity: 44%			Pressure: 998mBar						
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: Restricted Bands 15.247(d)												
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
---							FCC Class B					
vbb	116.5	31.4	25.5	12.7	1.9	20.5	---	---	---	43.5	-23.0	Pass
vbb	127.7	36.3	25.6	12.7	2.0	25.4	---	---	---	43.5	-18.1	Pass
vbb	156.525	29.0	25.5	11.1	2.3	16.9	---	---	---	43.5	-26.6	Pass
v	276.5	23.6	25.6	13.6	3.6	15.2	---	---	---	46.0	-30.8	Pass
h	405.0	35.0	25.6	16.9	4.7	31.0	---	---	---	46.0	-15.0	Pass
h	972.0	23.6	25.0	22.5	6.9	28.0	---	---	---	54.0	-26.0	Pass
Table Result: Pass			by -15.0 dB				Worst Freq:			405.0 MHz		
Test Site: 1DCC-OATS-3M-I			Cable 1: EMIR-11			Cable 2: ---			Cable 3: ---			
Analyzer: Gold			Preamp: Green			Antenna: Green			Preselector: ---			

Spurious Emissions Table														
Date: 24-Sep-10			Company: Microwave Radio Corporation							Work Order: K0751				
Engineer: Matthew Burman			EUT Desc: HDT-1000							EUT Operating Voltage/Frequency: 16Vdc				
Temp: 22.9°C			Humidity: 42%							Pressure: 1000mBar				
Frequency Range: 1-8GHz									Measurement Distance: 3 m					
Notes: No Duty Cycle Correction Factor														
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
v - nf	4810.875	27.9	27.9	20.4	32.9	2.2	42.6	42.6	74.0	-31.4	Pass	54.0	-11.4	Pass
h - nf	7214.025	30.68	30.7	18.9	36.0	2.8	50.6	50.6	74.0	-23.4	Pass	54.0	-3.4	Pass
Table Result:		Pass by -3.4 dB Worst Freq: 7214.025 MHz												
Test Site: 1DCC-OATS-3M-I			Cable 1: EMIR-HIGH-21			High Pass Filter: Asset #1311			Cable 3: ---					
Analyzer: Gold			Preamp: Brown			Antenna: Yellow Horn			Preselector: ---					

Spurious Emissions Table															
Date: 24-Sep-10			Company: Microwave Radio Corporation							Work Order: K0751					
Engineer: Matthew Burman			EUT Desc: HDT-1000							EUT Operating Voltage/Frequency: 16Vdc					
Temp: 22.9°C			Humidity: 42%				Pressure: 1000mBar								
Frequency Range: 8-18GHz										Measurement Distance: 1 m					
Notes: No duty cycle correction factor															
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Filter Factor (dB)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
										Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
v	9616.15	32.7	32.7	18.7	38.5	0.1	3.5	56.1	56.1	83.5	-27.4	Pass	63.5	-7.4	Pass
v - nf	12021.9	36.35	36.4	17.7	39.0	0.4	4.1	62.2	62.2	83.5	-21.4	Pass	63.5	-1.3	Pass
v - nf	14424.075	31.7	31.7	17.6	40.2	0.3	4.4	59.0	59.0	83.5	-24.5	Pass	63.5	-4.5	Pass
v - nf	16828.075	32.7	32.7	16.4	41.8	0.3	4.9	63.3	63.3	83.5	-20.2	Pass	63.5	-0.2	Pass
Table Result:				Pass		by -0.2		dB		Worst Freq:			16828.075 MHz		
Test Site: 1DCC-OATS-3M-I				Cable 1: EMIR-HIGH-21				High Pass Filter: Asset #00817				Cable 3: ---			
Analyzer: Gold				Preamp: Brown				Antenna: Yellow Horn				Preselector: ---			

Spurious Emissions Table															
Date: 24-Sep-10			Company: Microwave Radio Corporation							Work Order: K0751					
Engineer: Matthew Burman			EUT Desc: HDT-1000							EUT Operating Voltage/Frequency: 16Vdc					
Temp: 22.9°C			Humidity: 42%				Pressure: 1000mBar								
Frequency Range: 18-25GHz										Measurement Distance: 0.3 m					
Notes: No duty cycle correction factor used															
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average			
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
h - nf	24040.075	30.1	30.1	20.9	40.4	6.2	55.8	55.8	94.0	-38.2	Pass	74.0	-18.2	Pass	
h - nf	21636.075	31.2	31.2	21.1	40.4	5.7	56.2	56.2	94.0	-37.8	Pass	74.0	-17.8	Pass	
h - nf	19232.075	31.2	31.2	20.5	40.3	5.3	56.3	56.3	94.0	-37.7	Pass	74.0	-17.7	Pass	
Table Result:				Pass		by -17.7 dB		Worst Freq: 19232.075 MHz							
Test Site: 1DCC-OATS-3M-I				Cable 1: EMIR-HIGH-21				Cable 2: ---				Cable 3: ---			
Analyzer: Gold				Preamp: 18-26.5GHz				Antenna: 18-26.5GHz Horn				Preselector: ---			



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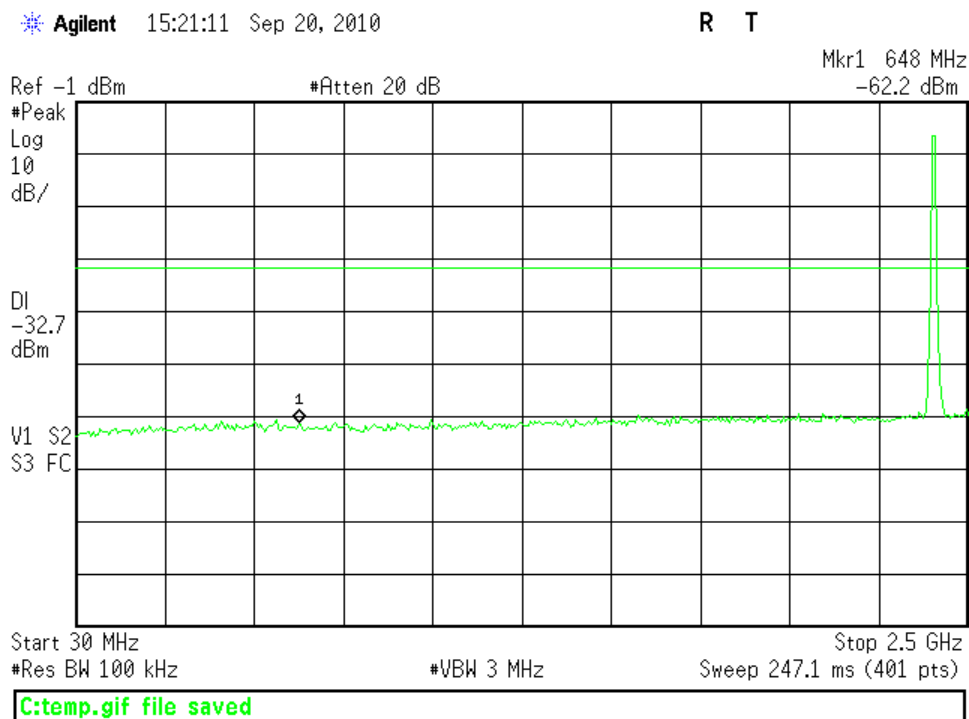
Conducted Spurious Emissions

LIMITS

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth that contains the highest level of desired power...

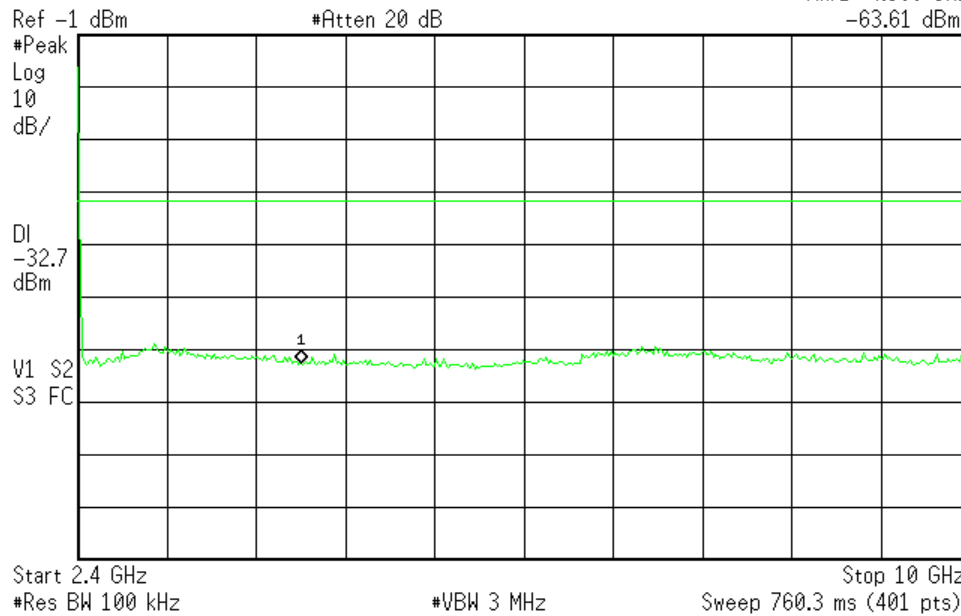
[15.247(d)]

MEASUREMENTS / RESULTS



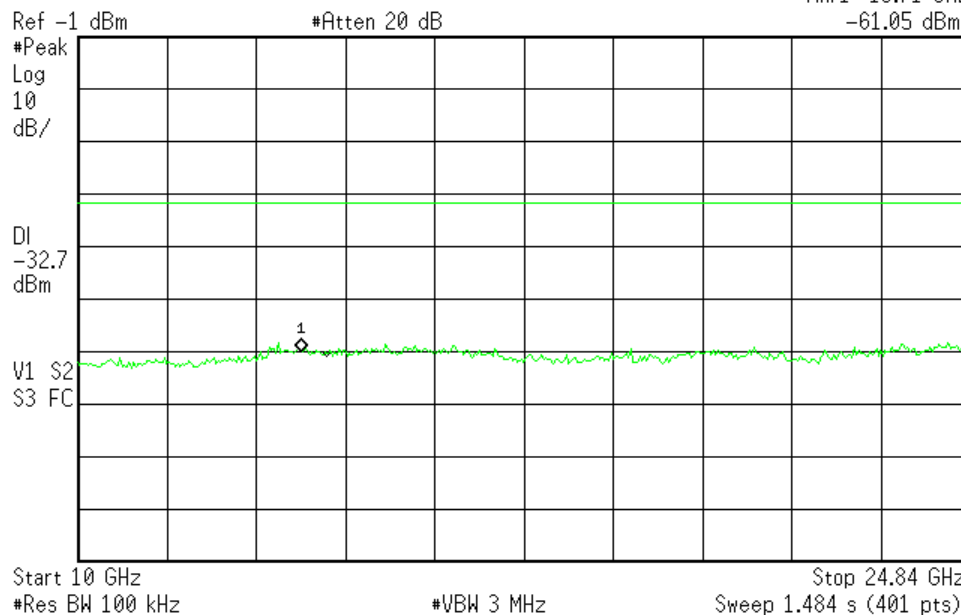
Agilent 15:21:53 Sep 20, 2010

R T

Mkr1 4.300 GHz
-63.61 dBm

Agilent 15:23:02 Sep 20, 2010

R T

Mkr1 13.71 GHz
-61.05 dBm

Power Spectral Density

LIMIT

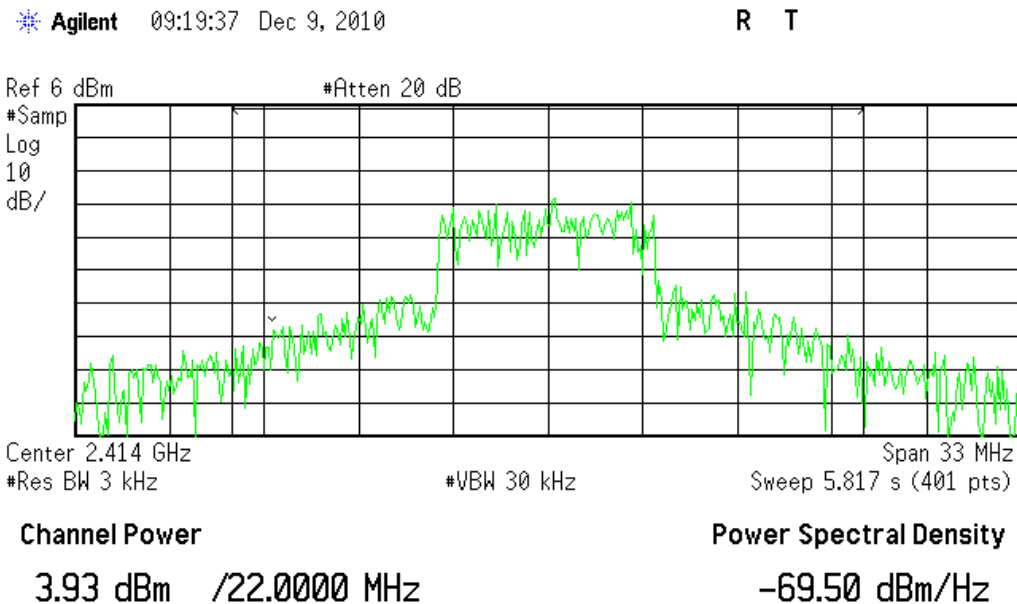
...the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
[15.247(e)]

MEASUREMENTS / RESULTS

Power Spectral Density											
Date: 20-Sep-10			Company: Microwave Radio Company					Work Order: K0751			
Engineer: Matthew Burman			EUT Desc: VISLINK HDT-1000					EUT Operating Voltage/Frequency: 16Vdc			
Temp: 21.7°C			Humidity: 36%		Pressure: 1011mbar						
Frequency Range: 2400-2483.5MHz								Measurement Distance: Conductive			
Notes: PSD Option 2											
	Frequency (MHz)	Reading (dBm)	Adjusting Factor (dB)	Attenuator Factor (dB)	Adjusted Reading (dBm)	---			FCC 15.247(e)		
						Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBm)	Margin (dB)	Result (Pass/Fail)
Low Channel	2414.0	-69.50	35.00	19.3	-15.2	---	---	---	8.0	-23.200	Pass
Mid Channel	2442.0	-69.72	35.00	19.3	-15.4	---	---	---	8.0	-23.420	Pass
High Channel	2458.0	-69.81	35.00	19.3	-15.5	---	---	---	8.0	-23.510	Pass
Test Site: 3m Indoor OATS						Attenuator: PE7019-20					
Analyzer: Gold											

PLOTS

Low Channel



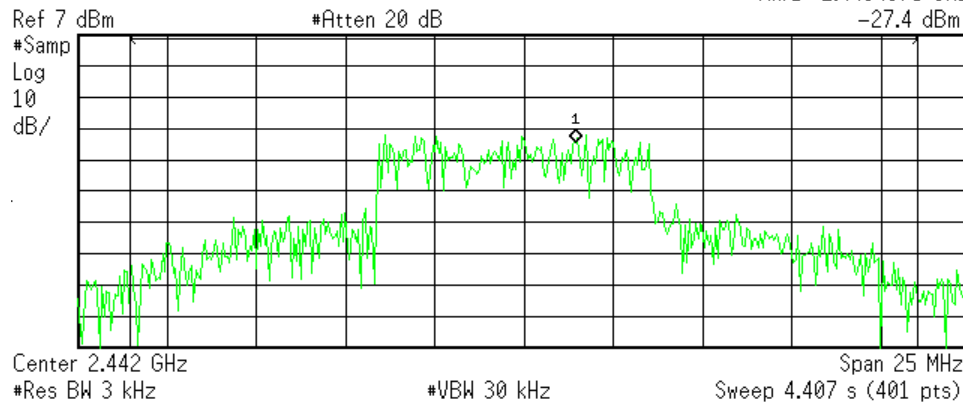
Ctemp.gif file saved



Mid Channel

* Agilent 14:48:35 Sep 20, 2010

R T

Mkr1 2.4434375 GHz
-27.4 dBm

Channel Power

3.71 dBm /22.0000 MHz

Power Spectral Density

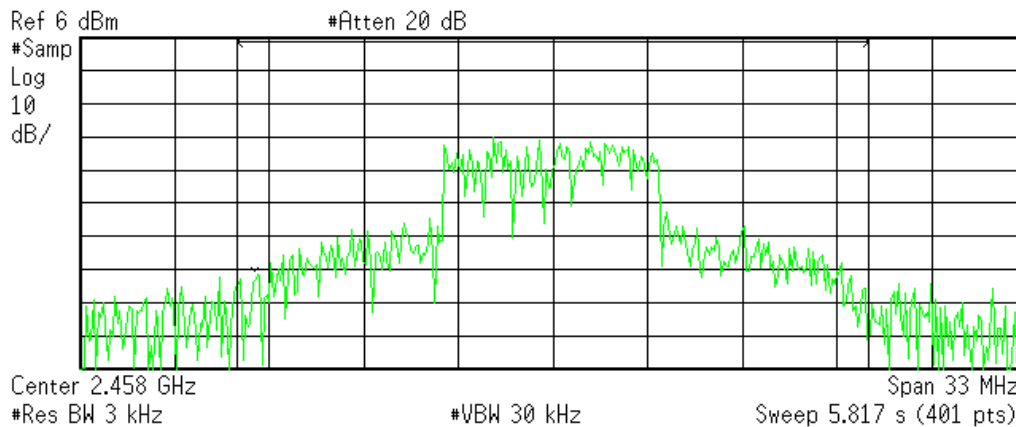
-69.72 dBm/Hz

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High Channel

* Agilent 09:18:32 Dec 9, 2010

R T



Channel Power

3.61 dBm /22.0000 MHz

Power Spectral Density

-69.81 dBm/Hz

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AC Line Conducted Emissions

LIMITS

Frequency of emission (MHz)	Quasi-peak limit (dBμV)	Average limit (dBμV)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

MEASUREMENTS / RESULTS

AC Mains Conducted Emissions

Date: 11-Jun-10			Company: Microwave Radio Communications				Work Order: K0751			
Engineer: Tuyen Truong			EUT Desc: HDT1000L/S				Test Site: CEMI2			
Temp: 23°C			Humidity: 34%				Pressure: 1010 mBar			
Notes:										
Measurement Device: Asset #1495 LISN					EUT Operating Voltage/Frequency: 18Vdc					
Range: 0.15-30MHz					Spectrum Analyzer: Red					
Frequency (MHz)	Q.P. Readings		Ave. Readings		Impedance Factor (dB)	FCC Class B		FCC Class B		Overall Result (Pass/Fail)
	QP1 (dBμV)	QP2 (dBμV)	AV1 (dBμV)	AV2 (dBμV)		qp Limit (dBμV)	qp Margin dB	AVE Limit (dBμV)	AVE Margin dB	
0.20	19.7	20.3	19.1	19.4	20.1	63.8	-23.4	53.8	-14.3	Pass
0.26	17.3	17.3	16.0	16.5	20.1	61.4	-24.0	51.4	-14.8	Pass
4.12	12.2	11.0	6.2	5.6	20.1	56.0	-23.7	46.0	-19.7	Pass
8.90	17.7	18.7	18.8	18.8	20.1	60.0	-21.2	50.0	-11.1	Pass
16.66	14.3	15.1	8.9	9.8	20.2	60.0	-24.7	50.0	-20.0	Pass
20.58	16.9	16.4	14.0	11.7	20.3	60.0	-22.8	50.0	-15.7	Pass
Table Result: Pass by -11.10 dB Worst Freq: 8.90 MHz										

Voltage Variations

REQUIREMENT

Measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery powered equipment, the equipment tests shall be performed using a new battery.

[15.31(e)]

MEASUREMENTS / RESULTS

Voltage Variation									
Date: 20-Sep-10		Company: Microwave Radio Company				Work Order: K0751			
Engineer: Matthew Burman		EUT Desc: VISLINK HDT-1000				EUT Operating Voltage/Frequency: 16Vdc			
Temp: 21.7°C		Humidity: 36%		Pressure: 1011mbar					
Frequency Range: 2400-2483.5MHz						Measurement Distance: Conductive			
Notes: Nominal Voltage = 16Vdc									
	Frequency (MHz)	Reading (dBm)	Attenuator Factor (dB)	Adjusted Reading (dBm)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Margin (dB)	
	nominal voltage	2414.0	3.42	19.3	22.7	---	---	---	
	85%	2414.0	3.42	19.3	22.7	---	---	0.000	
	115%	2414.0	3.42	19.3	22.7	---	---	0.000	
	FCC 15.31(e)								
Test Site: 3m Indoor OATS					Attenuator: PE7019-20				
Analyzer: Gold									



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Measurement Uncertainty

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radiated Emissions (30-1000MHz)		
NIST	5.6dB	N/A
CISPR	4.6dB	5.2dB (Ucisp)
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions		
NIST	3.9dB	N/A
CISPR	3.6dB	3.6dB (Ucisp)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency (@ 2.4GHz)	3.23×10^{-8}	1×10^{-7}
RF power, conducted	0.40dB	0.75dB
Maximum frequency deviation:		
• Within 300Hz and 6kHz of audio frequency / Within 6kHz and 25kHz of audio frequency	3.4% 0.3dB	5% 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	2.39dB	3dB
Conducted emission of receivers	1.3dB	3dB
Radiated emission of transmitter, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of transmitter, valid up to 80GHz	3.3dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of receiver, valid up to 80GHz	3.3dB	6dB
Humidity	2.37%	5%
Temperature	0.7°C	1.0°C
Time	4.1%	10%
RF Power Density, Conducted	0.4dB	3dB
DC and low frequency voltages	1.3%	3%
Voltage (AC, <10kHz)	1.3%	2%
Voltage (DC)	0.62%	1%
The above reflects a 95% confidence level		



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Test Equipment Used

Rev: 23-Sep-2010

Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Gold		100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	9-Apr-2011
Red		9kHz-1.8GHz	8591E	Agilent	3441A03559	24	I	10-Mar-2011
LISNs/Measurement Probes		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
230VAC LISN Asset 1495		10kHz-50MHz	9252-50-R-24-BNC	Solar	84716	1495	I	13-Apr-2011
Radiated Emissions Sites		FCC Code	IC Code	VCCI Code			Cat	Calibration Due
1DCC-OATS-3M-I		719150	2762A-8	R-3109			II	7-Jul-2011
Conducted Test Sites (Mains / Telco)		FCC Code		VCCI Code			Cat	Calibration Due
CEMI 2		719150		C-3361, T-1576			III	NA
Preamps / Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Green		0.009-2000MHz	ZFL-1000-LN	CS	N/A	802	II	9-Sep-2011
Brown		1-18GHz	CS	CS	N/A	1523	II	30-Jul-2011
HF (Yellow)		18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	I	5-Oct-2010
HF 20dB 50W Attenuator		0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	8-May-2011
High Pass Filter		0.03-14.5 GHz	11SH10-3000/T9000-0/0	K&L	1	1311	II	22-Dec-2011
High Pass Filter		0.03-20 GHz	SPA-F-55204	K&L	36	817	II	22-Dec-2011
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Green Bilog		30-2000MHz	CBL6112B	Chase	2742	620	I	17-Dec-2010
Yellow Horn		1-18GHz	3115	EMCO	9608-4898	37	I	27-May-2011
HF (White) Horn		18-26.5GHz	801-WLM	Waveline	758	758	I	Cal /Verify before Use
Meteorological Meters			MN	Mfr	SN	Asset	Cat	Calibration Due
Temp./Humidity/Atm. Pressure Gauge			7400 Perception II	Davis	N/A	965	I	6-Apr-2011
CEMI2 Thermohygrometer			35519-044	Control Company	72436083	1336	II	18-Aug-2011
1DCC-OATS-3M-I Thermohygrometer			35519-044	Control Company	72457635	1334	II	18-Aug-2011
Cables		Range		Mfr			Cat	Calibration Due
REMI-11		9kHz - 2GHz		C-S			II	8-Jan-2011
REMI-High-21		9kHz - 26.5GHz		C-S			II	8-Jan-2011
CEMI-01		9kHz - 2GHz		C-S			II	15-Sep-2011

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



Product Documentation

The following documentation has been provided by the client for inclusion in this report.



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Conditions Of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("Client"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "Conditions"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("Test Report") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "BUREAU VERITAS," "BUREAU VERITAS CONSUMER PRODUCTS SERVICES," "BVCPS," "MTL," "ACTS," "MTL-ACTS" and "CURTIS-STRAUS" (collectively, the "Marks") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only where such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.



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13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.

14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B) NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.\$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

Rev.160009121(2)_#684340 v13CS

