



BUREAU
VERITAS

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

Test Report

Report No

EN2660-1

Client

Fishman
Michael Hoffer

Address

6 Riverside Drive
Andover, MA 01810

Phone

(978) 988 - 9199

Items tested

OEM Triple Play

FCC ID

RMU-OEMTRPP01

IC

10812A-OEMTRPP01

FRN

0022326151

Equipment Type

Low Power Communication Device Transmitter

Equipment Code

DXX

Standards

47CFR 15.249, RSS 210 issue 8, RSS GEN issue 3

Test Dates

Oct 9, 18, 25 of 2013

Results

As detailed within this report

Prepared by

Tuyen Truong – Test Engineer

Authorized by

Mairaj Hussain – EMC Supervisor

Issue Date

11/25/13

Conditions of Issue

This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 16 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 2-16-07 (DW)



Product Tested - Configuration Documentation



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Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.249. The product is OEM Triple Play. It is a transmitter that operates in the range 2404 – 2480 MHz.

We found that the product met the above requirements. The test sample was received in good condition.

Test Methodology

Radiated emission testing was performed according to the procedures specified in ANSI C63.4 (2003) and RSS-GEN. 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 cannot be maximized separately.

AC Main conducted emission was not done because the EUT is battery powered.

The product was tested with modulation on and peak readings were compared against the average limit presented in section CFR 15.249.

The EUT operating voltage is 3.7VDC.(Fresh battery were used during testing.)

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
>1GHz*	1MHz	30Hz

*Average readings



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Compliance Statement

The PC502.1 4G RF Repeater (0dB) has been found to conform to the following parts of 47 CFR and RSS 210 as detailed below:

RSS-GEN	RSS 210	Part 15	Comments
5.4		15.15(b)	There are no controls accessible to the user that vary the output power.
5.2		15.19	The label is shown in the label exhibit.
7.1.3		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
7.1.2		15.203	The antenna for this device is hardwired to the PCB.
7.2.4		15.207	EUT is Battery powered
	A2.9(a)	15.249(a)	The fundamental and harmonics meet the limits in 15.249(a)
	A2.9(b)	15.249(d)	Spurious emissions meet the limits in 15.209.
4.6.1			99% emissions bandwidth plot is provided.



Test Results

Fundamental Measurements

LIMITS

The field strength from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 - 928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

[15.249(a)]



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MEASUREMENTS / RESULTS

Adjusted Peak Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
 Average readings were taken with 30Hz VBW

Radiated Emissions Table

Date: 09-Oct-13		Company: Fishman							Work Order: N2660					
Engineer: Tuyen Truong		EUT Desc: OEM Triple Play							EUT Operating Voltage/Frequency: 3.7Vdc					
Temp: 25°C		Humidity: 32%							Pressure: 1023mBar					
Frequency Range: Fundamental Readings									Measurement Distance: 3 m					
Notes: running with -12dBm output of Transciever chip												EUT Max Freq: 2404 - 2480MHz		
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB μ V)	Average Reading (dB μ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB μ V/m)	Adjusted Avg Reading (dB μ V/m)	FCC 15.249 High Frequency - Peak			FCC 15.249 High Frequency - Average		
Low Channel x-direction		---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	2404.0	58.1	24.9	0.0	28.6	0.1	90.0	56.8	113.9	-23.9	Pass	93.9	-37.1	Pass
h	2404.0	64.62	25.9	0.0	28.6	3.3	96.5	57.8	113.9	-17.4	Pass	93.9	-36.1	Pass
y-direction		---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	2404.0	62.72	25.8	0.0	28.6	3.3	94.6	57.7	113.9	-19.3	Pass	93.9	-36.2	Pass
h	2404.0	60.88	25.5	0.0	28.6	3.3	92.8	57.4	113.9	-21.1	Pass	93.9	-36.5	Pass
z-direction		---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	2404.0	63.92	25.8	0.0	28.6	3.3	95.8	57.7	113.9	-18.1	Pass	93.9	-36.2	Pass
h	2404.0	60.94	25.5	0.0	28.6	3.3	92.8	57.4	113.9	-21.1	Pass	93.9	-36.5	Pass
Mid Channel x-direction		---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	2441.0	58.76	25.1	0.0	28.8	3.4	91.0	57.3	113.9	-22.9	Pass	93.9	-36.6	Pass
h	2441.0	64.75	26.2	0.0	28.8	3.4	97.0	58.4	113.9	-16.9	Pass	93.9	-35.5	Pass
y-direction		---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	2441.0	61.8	25.6	0.0	28.8	3.4	94.0	57.8	113.9	-19.9	Pass	93.9	-36.1	Pass
h	2441.0	59.26	25.1	0.0	28.8	3.4	91.5	57.3	113.9	-22.4	Pass	93.9	-36.6	Pass
z-direction		---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	2441.0	64.53	26.1	0.0	28.8	3.4	96.7	58.3	113.9	-17.2	Pass	93.9	-35.6	Pass
h	2441.0	61.03	24.7	0.0	28.8	3.4	93.2	56.9	113.9	-20.7	Pass	93.9	-37.0	Pass
High Channel x-direction		---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	2480.0	60.92	25.2	0.0	28.9	3.4	93.2	57.5	113.9	-20.7	Pass	93.9	-36.4	Pass
h	2480.0	67.37	26.4	0.0	28.9	3.4	99.7	58.7	113.9	-14.2	Pass	93.9	-35.2	Pass
y-direction		---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	2480.0	63.57	25.5	0.0	28.9	3.4	95.9	57.8	113.9	-18.0	Pass	93.9	-36.1	Pass
h	2480.0	61.2	25.3	0.0	28.9	3.4	93.5	57.6	113.9	-20.4	Pass	93.9	-36.3	Pass
z-direction		---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	2480.0	66.82	25.8	0.0	28.9	3.4	99.1	58.1	113.9	-14.8	Pass	93.9	-35.8	Pass
h	2480.0	64.46	25.2	0.0	28.9	3.4	96.8	57.5	113.9	-17.1	Pass	93.9	-36.4	Pass
Table Result:		Pass	by	-14.2 dB								Worst Freq: 2480.0 MHz		
Test Site: EMI Chamber 2			Cable 1: Asset #1782			Cable 2: Asset #1784			Cable 3: ---			Antenna: Black Horn		
Analyzer: Gold			Preamp: none			Preselector: ---								

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/18/2014
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	2/15/2014	
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/5/2015
Cables	Range	Mfr	Cat	Calibration Due			
Asset #1782	9kHz - 18GHz	Florida RF	II	3/6/2014			
Asset #1784	9kHz - 18GHz	Florida RF	II	3/14/2014			
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	
Weather Clock (Pressure Only)	BA928	Oregon Scientific	C3166-1	831	I	3/20/2014	
CHAMBER2 Thermohygrometer	35519-044	Control Company	72457639	1347	II	Retired	

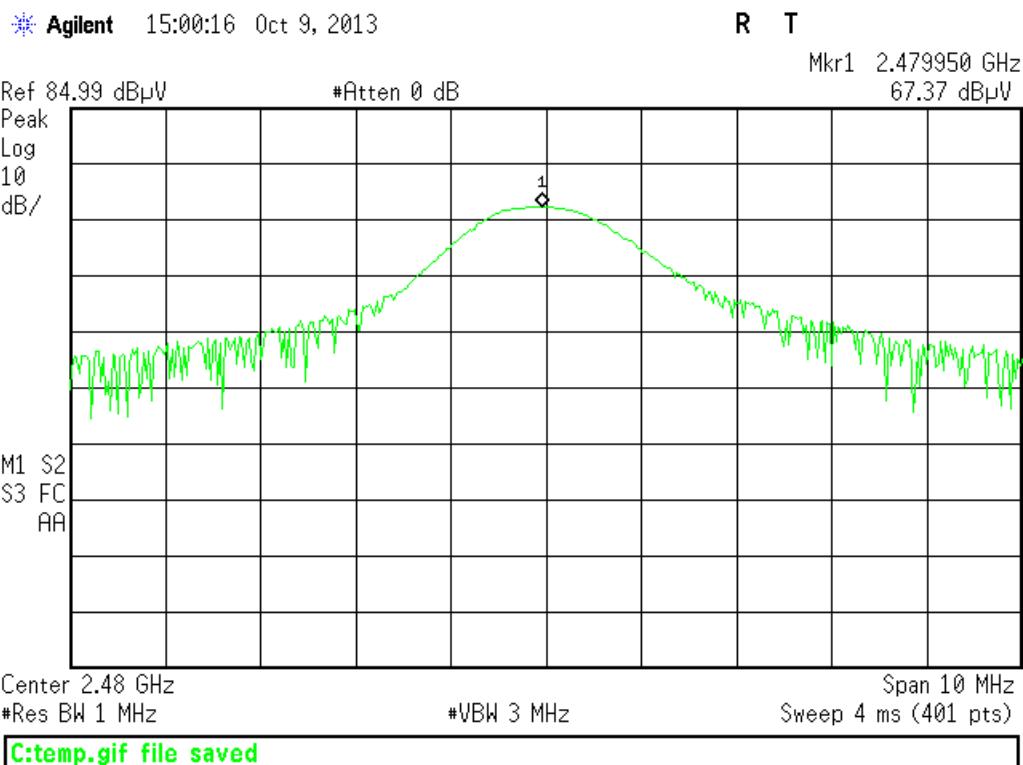
All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



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Sample Plot

Radiated Spurious Emissions

LIMITS

15.249 (d) *Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.*

MEASUREMENTS / RESULTS

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table												
Date: 14-Oct-13		Company: Fishman		Work Order: N2660								
Engineer: Arik Zwirner		EUT Desc: OEM Triple Play		EUT Operating Voltage/Frequency: 3.7Vdc								
Temp: 25°C		Humidity: 33%		Pressure: 1001mBar								
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: EUT at 80cm height							EUT Max Freq: 16MHz					
Antenna Polarization (H/V)	Frequency (MHz)	Reading (dB _{uV})	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB _{uV/m})				FCC 15.209		
										Limit (dB _{uV/m})	Margin (dB)	Result (Pass/Fail)
V	59.6	27.7	25.4	7.1	0.5	9.9				40.0	-30.1	Pass
V	87.6	26.1	25.1	7.5	0.6	9.1				40.0	-30.9	Pass
V	148.4	29.3	25.1	12.4	0.8	17.4				43.5	-26.1	Pass
V	157.4	28.6	25.0	12.2	0.9	16.7				43.5	-26.8	Pass
H	180.0	28.8	25.1	10.9	0.8	15.4				43.5	-28.1	Pass
V	180.6	26.8	25.1	10.9	0.8	13.4				43.5	-30.1	Pass
V	270.0	31.5	25.1	13.2	1.2	20.8				46.0	-25.2	Pass
H	362.0	36.1	25.1	14.9	1.3	27.2				46.0	-18.8	Pass
H	632.2	29.4	25.1	19.6	1.7	25.6				46.0	-20.4	Pass
Table Result: Pass by -18.8 dB							Worst Freq: 362.0 MHz					
Test Site: EMI Chamber 2			Cable 1: Asset #1782			Cable 2: Asset #1784			Antenna: Red-Black			
Analyzer: Rental SA#2			Preamp: Red									

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Spectrum Analyzers / Receivers/Preselectors Rental SA #2			Range 9kHz-26.5 GHz	MN E7405A	Mfr Agilent	SN MY45104194	Asset rental	Cat I	Calibration Due 12/8/2013	
Radiated Emissions Sites EMI Chamber 2			FCC Code 719150	IC Code 2762A-7	VCCI Code A-0015	Range 30-1000MHz		Cat II	Calibration Due 2/15/2014	
Preamps /Couplers Attenuators / Filters Red			Range 0.009-2000MHz	MN ZFL-1000-LN	Mfr CS	SN N/A	Asset 798	Cat II	Calibration Due 2/2/2014	
Antennas Red-Black Biolog			Range 30-2000MHz	MN JB1	Mfr Sunol	SN A091604-2	Asset 1106	Cat I	Calibration Due 1/28/2015	
Cables Asset #1782 Asset #1784			Range 9kHz - 18GHz 9kHz - 18GHz		Mfr Florida RF Florida RF			Cat II	Calibration Due 3/6/2014 3/14/2014	
Meteorological Meters Weather Clock (Pressure Only) CHAMBER2 Thermohygrometer			MN BA928 35519-044	Mfr Oregon Scientific Control Company	SN C3166-1 72457639	Asset 831 1347	Cat I II	Cat II	Calibration Due 3/20/2014 Retired	

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Radiated Emissions Table

Date: 18-Oct-13 Engineer: Chris Bramley Temp: 25.5°C		Company: Fishman EUT Desc: OEM Triple Play Humidity: 33% Pressure: 1001mBar								Work Order: N2660 EUT Operating Voltage/Frequency: 3.7Vdc							
Frequency Range: 1-6GHz								Measurement Distance: 3 m									
Notes: Tx on High Channel(2480MHz)								EUT Max Freq: 16MHz									
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB μ V)	Average Reading (dB μ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB μ V/m)	Adjusted Avg Reading (dB μ V/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average					
v	1500.0	32.88	19.5	21.4	26.0	2.9	40.4	27.0	74.0	-33.6	Pass	54.0	-27.0	Pass			
v	2836.5	35.39	21.4	22.6	29.4	3.6	45.8	31.8	74.0	-28.2	Pass	54.0	-22.2	Pass			
v	3000.0	34.12	19.9	22.3	30.5	3.6	45.9	31.7	74.0	-28.1	Pass	54.0	-22.3	Pass			
v	4000.0	32.64	18.3	21.4	32.6	4.2	48.0	33.7	74.0	-26.0	Pass	54.0	-20.3	Pass			
h	4960.0	38.63	20.6	20.7	33.4	5.1	56.4	38.4	74.0	-17.6	Pass	54.0	-15.6	Pass			
v	5500.0	31.3	17.5	20.5	34.7	5.8	51.3	37.5	74.0	-22.7	Pass	54.0	-16.5	Pass			
Table Result:		Pass	by	-15.6 dB		Worst Freq: 4960.0 MHz											
Test Site: EMI Chamber 1 Analyzer: Gold		Table 1: Asset #1781 Preamp: Asset #1517				Table 2: Asset #1785 Antenna: Black Horn											

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Spectrum Analyzers / Receivers /Preselectors Gold	Range 100Hz-26.5 GHz	MN E4407B	Mfr Agilent	SN MY45113816	Asset 1284	Cat I	Calibration Due 3/18/2014
Radiated Emissions Sites EMI Chamber 1	FCC Code 719150	IC Code 2762A-6	VCCI Code A-0015	Range 30-1000MHz		Cat II	Calibration Due 2/16/2014
Preamps /Couplers Attenuators / Filters 1517 HF Preamp	Range 1-20GHz	MN CS	Mfr CS	SN N/A	Asset 1517	Cat II	Calibration Due 9/11/2014
Antennas Black Horn	Range 1-18GHz	MN 3115	Mfr EMCO	SN 9703-5148	Asset 56	Cat I	Calibration Due 8/5/2015
Cables Asset #1781 Asset #1785	Range 9kHz - 18GHz 9kHz - 18GHz		Mfr Florida RF Florida RF			Cat II	Calibration Due 3/6/2014 3/14/2014
Meteorological Meters Weather Clock (Pressure Only) CHAMBER1 Thermohygrometer	MN BA928 35519-044	Mfr Oregon Scientific Control Company	SN C3166-1 72457642	Asset 831 1345	Cat I II	Calibration Due 3/20/2014 Retired	

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Band Edge**Radiated Emissions Table**

Date: 18-Oct-13		Company: Fishman		Work Order: N2660											
Engineer: Chris Bramley		EUT Desc: OEM Triple Play		EUT Operating Voltage/Frequency: 3.7Vdc											
Temp: 25.5°C		Humidity: 33%		Pressure: 1001mBar											
Frequency Range: Band Edge													Measurement Distance: 3 m		
Notes: Duty cycle: 5400microseconds On time in 100ms window or 25.35dB Duty cycle correction factor applied to peak readings													EUT Tx Freq: 2404-2480MHz		
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB _{UV})	Average Reading (dB _{UV})	Preamp Factor (dB)	Antenna Factor (dB)	Cable Factor (dB)	Adjusted Peak Reading (dB _{UV/m})	Adjusted Avg Reading (dB _{UV/m})	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average			
									Limit (dB _{UV/m})	Margin (dB)	Result (Pass/Fail)	Limit (dB _{UV/m})	Margin (dB)	Result (Pass/Fail)	
h	2400.0	34.37	22.2	22.3	28.6	3.3	44.0	31.8	74.0	-30.0	Pass	54.0	-22.2	Pass	
v	2400.0	28.23	21.0	22.3	28.6	3.3	37.8	30.6	74.0	-36.2	Pass	54.0	-23.4	Pass	
h	2483.5	41.74	23.2	22.7	28.9	3.3	51.2	32.7	74.0	-22.8	Pass	54.0	-21.3	Pass	
v	2483.5	34.96	23.2	22.7	28.9	3.3	44.5	32.7	74.0	-29.5	Pass	54.0	-21.3	Pass	
Table Result:		Pass	by	-21.3 dB	Worst Freq: 2483.5 MHz										
Test Site: EMI Chamber 1		Cable 1: Asset #1781		Cable 2: Asset #1785		Analyzer: Gold		Preamp: Asset #1517		Antenna: Black Horn					

Radiated Emissions Table

Date: 18-Oct-13		Company: Fishman		Work Order: N2660											
Engineer: Chris Bramley		EUT Desc: OEM Triple Play		EUT Operating Voltage/Frequency: 3.7Vdc											
Temp: 25.5°C		Humidity: 33%		Pressure: 1001mBar											
Frequency Range: 6-18GHz													Measurement Distance: 1 m		
Notes: Tx on High Channel(2480MHz)													EUT Max Freq: 16MHz		
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB _{UV})	Average Reading (dB _{UV})	Preamp Factor (dB)	Antenna Factor (dB)	Cable Factor (dB)	Adjusted Peak Reading (dB _{UV/m})	Adjusted Avg Reading (dB _{UV/m})	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average			
									Limit (dB _{UV/m})	Margin (dB)	Result (Pass/Fail)	Limit (dB _{UV/m})	Margin (dB)	Result (Pass/Fail)	
v	7440.0	36.77	20.9	20.4	38.1	6.4	60.9	45.0	83.5	-22.6	Pass	63.5	-18.5	Pass	
v	9920.0	34.12	20.2	19.5	39.3	7.2	61.1	47.2	83.5	-22.4	Pass	63.5	-16.3	Pass	
v	11760.0	34.76	19.7	19.7	39.3	8.2	62.6	47.5	83.5	-20.9	Pass	63.5	-16.0	Pass	
v	12400.0	34.44	20.1	19.5	39.2	8.4	62.5	48.2	83.5	-21.0	Pass	63.5	-15.3	Pass	
v	14880.0	35.38	21.5	19.3	40.7	8.4	65.2	51.3	83.5	-18.3	Pass	63.5	-12.2	Pass	
v	17360.0	35.36	20.5	19.1	43.9	8.4	68.6	53.7	83.5	-14.9	Pass	63.5	-9.8	Pass	
Table Result:		Pass	by	-9.8 dB	Worst Freq: 17360.0 MHz										
Test Site: EMI Chamber 1		Cable 1: Asset #1781		Cable 2: Asset #1785		Analyzer: Gold		Preamp: Asset #1517		Antenna: Black Horn					

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Spectrum Analyzers / Receivers /Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Gold		100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/18/2014
Radiated Emissions Sites		FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	
EMI Chamber 1		719150	2762A-6	A-0015	30-1000MHz	II	2/16/2014	
Preamps /Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
1517 HF Preamp		1-20GHz	CS	CS	N/A	1517	II	9/11/2014
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Black Horn		1-18GHz	3115	EMCO	9703-5148	56	I	8/5/2015
Cables		Range	Mfr		Cat	Calibration Due		
Asset #1781		9kHz - 18GHz	Florida RF		II	3/6/2014		
Asset #1785		9kHz - 18GHz	Florida RF		II	3/14/2014		
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/20/2014	
CHAMBER1 Thermohygrometer		35519-044	Control Company	72457642	1345	II	Retired	

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Radiated Emissions Table

Date: 18-Oct-13		Company: Fishman							Work Order: N2660							
Engineer: Chris Bramley		EUT Desc: OEM Triple Play							EUT Operating Voltage/Frequency: 3.7Vdc							
Temp: 25.5°C		Humidity: 33%							Pressure: 1001mBar							
Frequency Range: 18-25GHz							Measurement Distance: 0.1 m									
Notes: Tx on High Channel(2480MHz)							EUT Max Freq: 16MHz									
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB μ V)	Average Reading (dB μ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB μ V/m)	Adjusted Avg Reading (dB μ V/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average				
No Emissions found									Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)		

Table Result: --- by --- dB**Worst Freq:** --- MHz

Test Site: EMI Chamber 1

Cable 1: EMIR-HIGH-21

Analyzer: Gold

Preamp: 18-26.5GHz

Antenna: 18-26.5GHz Horn

Rev.10/6/2013

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/18/2014
Radiated Emissions Sites EMI Chamber 1	FCC Code 719150	IC Code 2762A-6	VCCI Code A-0015	Range 30-1000MHz		Cat II	Calibration Due 2/16/2014
Preamps /Couplers Attenuators / Filters HF (Yellow)	Range 18-26.5GHz	MN AFS4-18002650-60-8P-4	Mfr CS	SN 467559	Asset 1266	Cat I	Calibration Due 10/13/2013
Antennas HF (White) Horn	Range 18-26.5GHz	MN 801-WLM	Mfr WaveLine	SN 758	Asset 758	Cat I	Calibration Due Verify before Use
Cables REMI-High-21	Range 9kHz - 26.5GHz		Mfr C-S			Cat II	Calibration Due 2/2/2014
Meteorological Meters Weather Clock (Pressure Only) CHAMBER1 Thermohygrometer		MN BA928 35519-044	Mfr Oregon Scientific Control Company	SN C3166-1 72457642	Asset 831 1345	Cat I II	Calibration Due 3/20/2014 Retired

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



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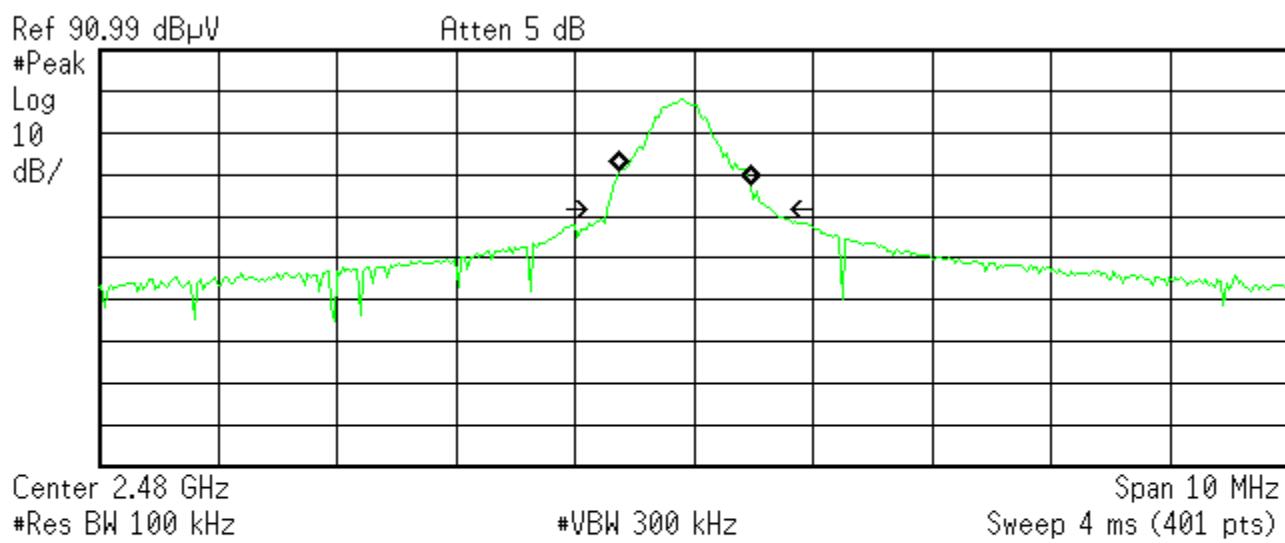
Occupied Bandwidth

REQUIREMENT

When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured. [RSS-GEN 4.6.1]

* Agilent 17:45:21 Oct 2, 2013

R T



Occupied Bandwidth
1.1005 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -72.876 kHz
x dB Bandwidth 1.362 MHz

C:\temp.gif file saved

High Channel



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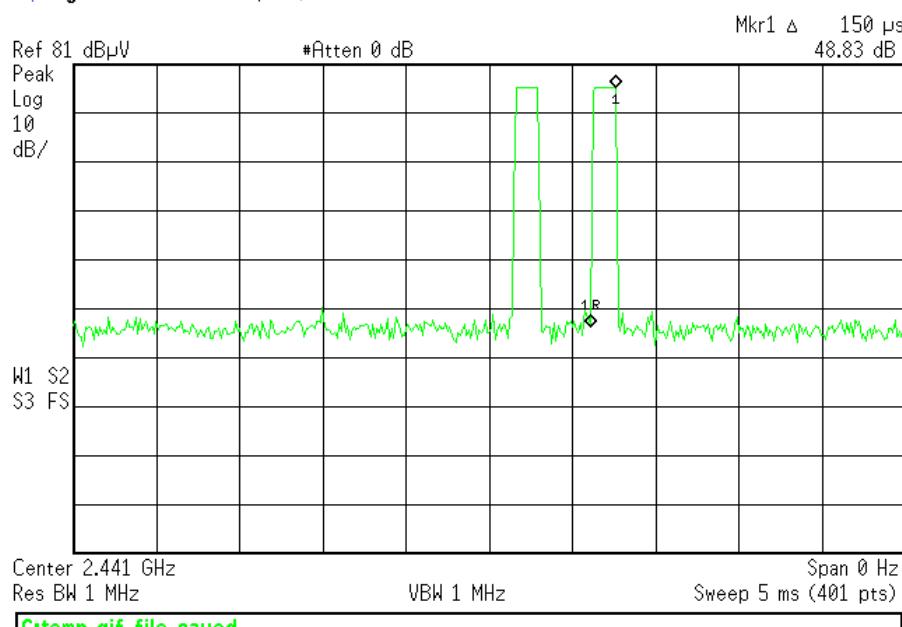


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Duty Cycle

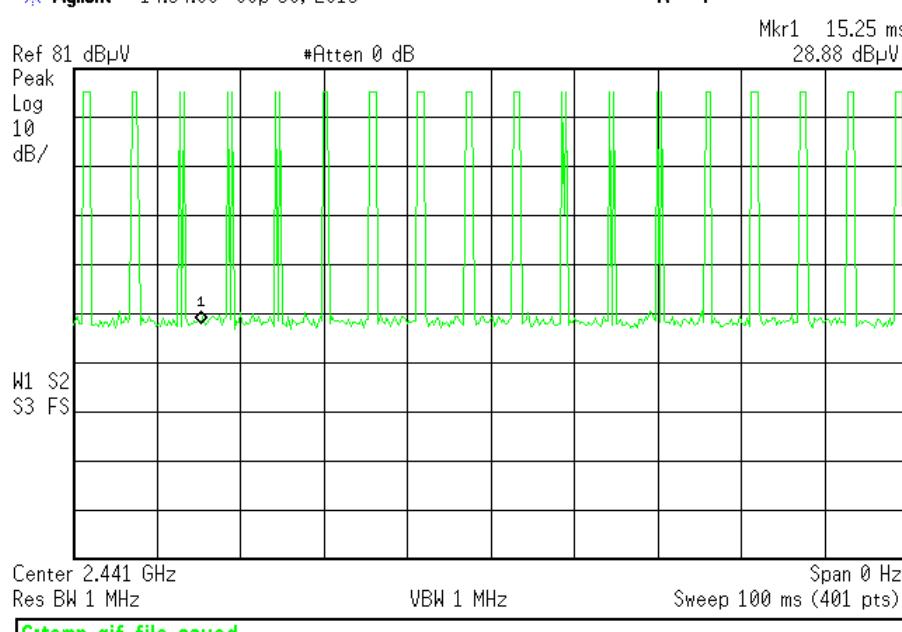
* Agilent 14:31:54 Sep 30, 2013

R T



* Agilent 14:34:09 Sep 30, 2013

R T



$$DCCF = 20 \cdot \log(0.15 \cdot 2 \cdot 18 / 100) = -25.35 \text{ dB}$$



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 (Ucispqr)
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 (Ucispqr)
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		



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-STRAUSS (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 were 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.



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.

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