

**EMC QUALIFICATION  
TEST REPORT**

**PHASE IV TECHNOLOGY**

**RFID AIRPLANE TIRE PRESSURE TESTER, IHHR**

TESTED TO CONFORM WITH:

☒ **EMISSIONS STANDARDS  
FOR**

**INDUSTRIAL, SCIENTIFIC AND MEDICAL (ISM)**

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Manufacturer's Address: 2820 Wilderness Place, Unit C  
Boulder, CO 80301

Approved by:



Laboratory Director



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The client is aware that Criterion Technology has performed testing in accordance with the applicable standard(s). Test data is accurate within ANSI parameters for Emissions testing, unless a specific level of accuracy has been defined in writing prior to testing, by Criterion Technology and the client.

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# EMC QUALIFICATION TEST REPORT

## RFID AIRPLANE TIRE PRESSURE TESTER, IHHR

### 1.0 EXECUTIVE SUMMARY

#### 1.1 PURPOSE

The purpose of this report is to present EMC test data and demonstrate conformity to the requirements of the prescribed standards for Emissions and/or Immunity.

#### 1.2 CONFORMITY

The test article was tested to the standards listed in Table I with the indicated conformity status. All test methods were performed in accordance to with the standards listed.

TABLE I. EMISSIONS CONFORMITY SUMMARY

TEST TYPE	COMPLIANCE STANDARD	TESTING TECHNIQUE	TEST DESCRIPTION	PRODUCT CLASSIFICATION	CONFORMITY STATUS
EMISSIONS	FCC Part 15 ICES-003	<input checked="" type="checkbox"/> IEC/EN 55011 (below 1GHz) <input checked="" type="checkbox"/> FCC Title 47 Part 15 Section 31 (a)(3) (above 1GHz)	Unintentional Radiated Emissions	Class A	PASSED
		<input checked="" type="checkbox"/> FCC 15.249 <input checked="" type="checkbox"/> EN 300 328 <input checked="" type="checkbox"/> EN 300 330 <input checked="" type="checkbox"/> RSS 210E sec. 2	Intentional Radiated Emissions		PASSED

#### 1.3 EQUIPMENT UNDER TEST (EUT)

EUT NAME: RFID AIRPLANE TIRE PRESSURE TESTER  
EUT MODEL/PART NUMBER(S): IHHR  
EUT SERIAL NUMBER(S): 000261

## 2.0 EMISSIONS TEST STANDARDS

EN 55011 for ISM Equipment	Class A
FCC Part 15, Subpart B	Class A
FCC 15.249	Class A
EN 300 328	Class A
EN 300 330	Class A
RSS 210E sec.2	Class A

### 2.1 ☒ UNINTENTIONAL RADIATED EMISSIONS – 30 MHZ TO 1000 MHZ

Measurements for *Radiated Emissions* were performed over the frequency range of 30 MHz to 1000 MHz in the horizontal and vertical antenna polarities to the requirements of:

EN 55011 for ISM Equipment	Class A
----------------------------	---------

#### Testing Conditions

Date of Test: January 21, 2009  
Temperature: 18° C  
Relative Humidity: 21 %  
Test Voltage: Battery  
Test Operator: LWS

#### Test Location

#### Criterion Technology Open Area Test Site

#### Test Distance

Antenna Distance: **10 meter(s)**      **Final Measurement(s)**

#### Test Equipment

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Hewlett-Packard Spectrum Analyzer, HP 8566B | <input checked="" type="checkbox"/> Hewlett-Packard Quasi-Peak Adapter, HP 85650A |
| <input type="checkbox"/> Hewlett-Packard Tracking Generator, HP 85645A          |   |
| <input type="checkbox"/> Rohde and Schwarz Receiver, ESHS-30                    | <input checked="" type="checkbox"/> Rohde and Schwarz Receiver, ESVS-30           |
| <input checked="" type="checkbox"/> Mini Circuits Pre-Amp #2                    | <input type="checkbox"/> Veratech Pre-Amp #3                                      |
| <input checked="" type="checkbox"/> Chase BiLog Antenna, Model CB6111           | <input type="checkbox"/> Antenna Research, Horn Antenna, Model DRG118/A           |
| <input type="checkbox"/> EMCO BiConnical Antenna, Model 3108                    | <input type="checkbox"/> EMCO Log Periodic Antenna, Model 3146                    |

Test Accessories: See Appendix C for support equipment details

#### Test Results of Radiated Emissions

Test Status: **PASSED**

Frequency Range: **30 MHz to 1000 MHz**

Minimum Margin to Limit: **-8.57** dB at **46.1169** MHz

#### Remarks

See: **APPENDIX A** for EUT Photographs  
**APPENDIX B** for Data Sheets  
**APPENDIX D** for Test Equipment Calibration Status

**2.2** ☒ **UNINTENTIONAL RADIATED EMISSIONS ABOVE 1GHZ**

Measurements for *Radiated Emissions* were performed over the frequency range of 1 GHz to 2 GHz in the horizontal and vertical antenna polarities to the requirements of:

**FCC 47CFR15.31****Class A**Testing Conditions

Date of Test: January 26, 2009  
Temperature: 15° C  
Relative Humidity: 22 %  
Test Voltage: Battery  
Test Operator: LWS

Test Location**Criterion Technology Open Area Test Site**Test DistanceAntenna Distance: **3 meter(s)**      **Final Measurement(s)**Test Equipment

- ☒ Hewlett-Packard Spectrum Analyzer, HP 8566B      ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A  
☐ Hewlett-Packard Tracking Generator, HP 85645A  
☐ Rohde and Schwarz Receiver, ESHS-30      ☐ Rohde and Schwarz Receiver, ESVS-30  
☐ Mini Circuits Pre-Amp #2    ☒ Veratech Pre-Amp #3  
☐ Chase BiLog Antenna, Model 1121    ☒ Antenna Research, Horn Antenna, Model DRG118/A  
☐ EMCO BiConnical Antenna, Model 3108      ☐ EMCO Log Periodic Antenna, Model 3146

Test Accessories: See Appendix C for support equipment details

Test Results of Radiated EmissionsTest Status: **PASSED**Frequency Range: **1 GHz to 2 GHz**Minimum Margin to Limit: **-13.92** dB at **1440.2064** MHzRemarks

See: **APPENDIX A** for EUT Photographs  
**APPENDIX B** for Data Sheets  
**APPENDIX D** for Test Equipment Calibration Status

**2.3 ☒ INTENTIONAL RADIATOR - BLUETOOTH**

Measurements for *Intentional Radiated Emissions* were performed over the frequency range of 1 GHz to 25 GHz the horizontal and vertical antenna polarities to the requirements of:

**FCC 15.249**  
**EN 300 328**  
**RSS 210E sec.2**

**Class A**  
**Class A**  
**Class A**

Testing Conditions

Date of Test: January 23, 2009  
Temperature: 13° C  
Relative Humidity: 24 %  
Test Voltage: Battery  
Test Operator: LWS

Test Location**Criterion Technology Open Area Test Site**Test Distance

Antenna Distance: **10 meter(s)**      **Final Measurement(s)**

Test Equipment

- ☒ Hewlett-Packard Spectrum Analyzer, HP 8566B      ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A  
☐ Hewlett-Packard Tracking Generator, HP 85645A  
☐ Rohde and Schwarz Receiver, ESHS-30      ☐ Rohde and Schwarz Receiver, ESVS-30  
☐ Mini Circuits Pre-Amp #2    ☒ Veratech Pre-Amp #3  
☐ Chase BiLog Antenna, Model 1121    ☒ Antenna Research, Horn Antenna, Model DRG118/A  
☐ EMCO BiConnical Antenna, Model 3108      ☐ EMCO Log Periodic Antenna, Model 3146  
☒ EMCO Active Loop, 6502

Test Accessories: See Appendix C for support equipment details

Test Results of Radiated Emissions

Test Status: **PASSED**      Frequency Range: **1 GHz to 25 GHz**

Minimum Margin to Limit: **-3.4** dB at **4.883** GHz

Remarks

See: **APPENDIX A** for EUT Photographs  
**APPENDIX B** for Data Sheets  
**APPENDIX D** for Test Equipment Calibration Status

**2.4** ☒ **INTENTIONAL RADIATOR - RFID**

Measurements for *Intentional Radiated Emissions* were performed over the frequency range of 100 kHz to 1.4 MHz the horizontal and vertical antenna polarities to the requirements of:

<b>FCC 15.249</b>	<b>Class A</b>
<b>EN 300 330</b>	<b>Class A</b>
<b>RSS 210E sec.2</b>	<b>Class A</b>

Testing Conditions

Date of Test:	May 15, 2009
Temperature:	21° C
Relative Humidity:	26 %
Test Voltage:	Battery
Test Operator:	LWS

Test Location**Criterion Technology Open Area Test Site**Test Distance

Antenna Distance: **10 meter(s)**      **Final Measurement(s)**

Test Equipment

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Hewlett-Packard Spectrum Analyzer, HP 8566B | <input checked="" type="checkbox"/> Hewlett-Packard Quasi-Peak Adapter, HP 85650A  |
| <input type="checkbox"/> Hewlett-Packard Tracking Generator, HP 85645A          |  |
| <input type="checkbox"/> Rohde and Schwarz Receiver, ESHS-30                    | <input type="checkbox"/> Rohde and Schwarz Receiver, ESVS-30                       |
| <input type="checkbox"/> Mini Circuits Pre-Amp #2                               | <input checked="" type="checkbox"/> Veratech Pre-Amp #3                            |
| <input type="checkbox"/> Chase BiLog Antenna, Model 1121                        | <input checked="" type="checkbox"/> Antenna Research, Horn Antenna, Model DRG118/A |
| <input type="checkbox"/> EMCO BiConnical Antenna, Model 3108                    | <input type="checkbox"/> EMCO Log Periodic Antenna, Model 3146                     |
| <input checked="" type="checkbox"/> EMCO Active Loop, 6502                      |  |

Test Accessories: See Appendix C for support equipment details

Test Results of Radiated Emissions

Test Status: **PASSED**      Frequency Range: **100 kHz to 1.4 MHz**

Minimum Margin to Limit:      **FCC:**      **-22.10**      dB at      **1342**      kHz

Minimum Margin to Limit:      **EN 300 330:**      **-30.00**      dB at      **268.4**      kHz

Remarks

See: **APPENDIX A** for EUT Photographs  
**APPENDIX B** for Data Sheets  
**APPENDIX D** for Test Equipment Calibration Status



## 2.5 OCCUPIED BANDWIDTH

Measurements for bandwidth, band edges, number of channels were performed in accordance with the Operations to the Requirements of:

### FCC Part 15

#### Testing Conditions

Date of Test: September 25, 2009  
Temperature: 16° C  
Relative Humidity: 39 %  
Test Voltage: battery  
Test Operator: LWS

#### Test Location

#### Criterion Technology Open Area Test Site

#### Test Equipment

Hewlett-Packard Spectrum Analyzer, HP 8566B  
Rohde and Schwarz Receiver, ESVS-30

Test Accessories: See Appendix C for support equipment details

#### Test Results

Test Status: **PASSED**

Frequency Range: **1 GHz to 2.5 GHz**

Occupied Bandwidth: **-6dB = 81.967557 MHz**

Occupied Bandwidth: **-20dB = 86.313186 MHz**

#### Remarks

See: **APPENDIX A** for EUT Photographs  
**APPENDIX B** for Data Sheets  
**APPENDIX D** for Test Equipment Calibration Status

### 3.0 APPENDIX A: EUT PHOTOGRAPHS

#### 3.1 RADIATED EMISSIONS – FRONT VIEW



### 3.2 RADIATED EMISSIONS – REAR VIEW



## 4.0 APPENDIX B: DATA SHEETS

### 4.1 UNINTENTIONAL RADIATED EMISSIONS PLOT – 30 MHz TO 1 GHz

Criterion Technology

EUT: RFID airplane tire pressure tester, IHHR

Manufacturer: Phase IV Technology

Tester: LWS

EUT Information: 5022-a, h=1 and 2m, d=10m

Test Information: 10m, battery, EN 55011 Class A

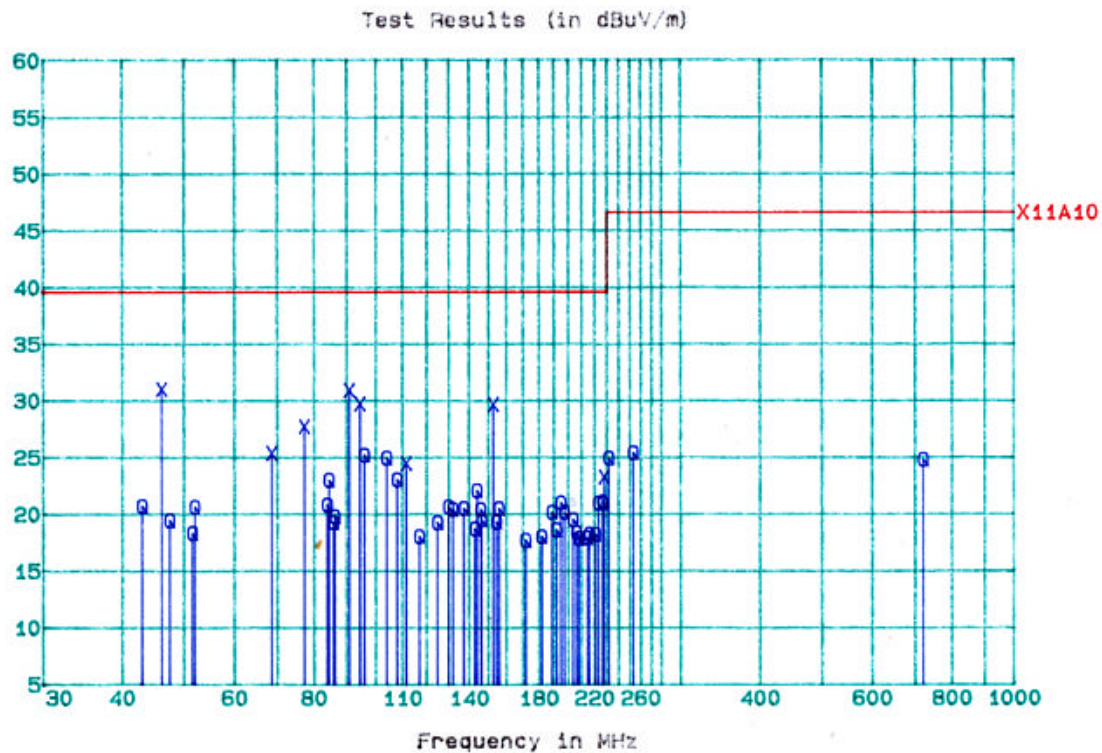
Test Cond: Temp: 18° C

Date: January 21, 2009

S/N: 000261

SpiD: 090119-1365

Humidity: 21 %



**4.2 UNINTENTIONAL RADIATED EMISSIONS TABLE – 30 MHZ TO 1 GHZ****Notes:**

The third column below contains alpha characters which pertain to the type of measurements made. The following are the definitions for those characters: q = Quasi Peak, m = Maximized (cable, rotation and antenna height), s = scanned but no data taken, and a = average. For the first character in column four, a '-' indicates that value is below the limit while an '\*' indicates that value is above the limit

If the list is sorted using "I-sort", then quasi-peak and average levels are weighted higher than peak levels and are moved to the front of the scan list.

The following keys help to better understand the data:

TT: Turntable position in degrees

Hght: Height of antenna in centimeters

Az: Azimuth, V = Vertical, H= Horizontal

Criterion Technology Wed Jan 21 15:35:48 2009

EUT: RFID airplane tire pressure tester, IHHR

S/N: 000261

Manufacturer: Phase IV Technology

Tester: LWS

Special ID: 090119-1365

EUT Information: 5022-a, h=1 and 2m, d=10m

Test information: 10m, EN 55011 Class A

**Table 1: Scan List, sorted by margin to limit X11A10, -21.5dB filter**

<u>Freq, MHz</u>	<u>Value dBuV/m</u>	<u>Sts</u>	<u>MArgin to X11A10</u> <u>limits (dB)</u>	<u>TT</u>	<u>Hght</u>	<u>Az</u>	<u>Comment</u>
46.1169	30.97	m	-8.57	357	100	V	.
90.9665	30.88	m	-8.66	114	194	V	13M clk
94.4534	29.69	m	-9.85	356	100	V	8.58M clk
152.9249	29.61	m	-9.93	120	107	V	.
77.2992	27.69	m	-11.85	270	200	H	8.58M clk
68.7104	25.33	m	-14.21	0	200	H	8.58M clk
95.9450	25.19	q	-14.35	91	100	H	12M clk
104.0545	24.92	q	-14.62	-2	100	V	13M clk
111.6544	24.43	m	-15.11	270	100	V	8.58M clk
228.0000	23.24	m	-16.30	91	200	H	12M clk
108.0525	23.02	q	-16.52	91	100	V	12M clk
84.4710	22.99	q	-16.55	-2	100	V	.
144.0000	22.06	q	-17.48	0	200	V	12M clk
226.6679	21.04	q	-18.50	91	200	H	.
195.0000	20.97	q	-18.57	91	100	V	13M clk
226.9376	20.95	q	-18.59	91	200	H	.
223.3088	20.94	q	-18.60	91	200	H	8.588M clk
84.0000	20.79	q	-18.75	-2	100	V	12M clk
42.9440	20.67	q	-18.87	91	100	V	8.58M clk
130.0000	20.63	q	-18.91	270	100	H	13M clk
51.9950	20.59	q	-18.95	-2	100	V	13M clk
137.4208	20.50	q	-19.04	179	100	V	8.58M clk
156.0000	20.48	q	-19.06	270	100	V	12M clk, 13M clk
132.0000	20.41	q	-19.13	270	100	V	12M clk
146.0096	20.39	q	-19.15	91	100	V	8.58M clk
197.5424	20.15	q	-19.39	179	100	V	8.58M clk, 8.588M clk
188.9536	20.14	q	-19.40	-2	100	V	8.58M clk, 8.588M clk
86.2710	19.76	q	-19.78	270	200	V	.
146.4165	19.49	q	-20.05	91	100	V	.
204.0000	19.48	q	-20.06	0	200	V	12M clk
47.4795	19.40	q	-20.14	91	100	V	.

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154.5984	19.30	q	-20.24	270	100	V	8.58M clk
85.8880	19.23	q	-20.31	-2	100	V	8.58M clk
124.9601	19.23	q	-20.31	91	200	H	.
143.0000	18.69	q	-20.85	179	100	V	13M clk
192.0000	18.60	q	-20.94	0	200	V	12M clk
206.1312	18.38	q	-21.16	270	200	H	8.588M clk
253.3605	25.38	q	-21.16	91	200	H	.
51.5328	18.28	q	-21.26	91	100	V	8.58M clk
216.0000	18.22	q	-21.32	270	200	H	12M clk
221.0000	18.20	q	-21.34	91	200	H	13M clk

Table 2: Scan List for X11A10, sorted by Frequency, -21.5dB filter

<u>Freq. MHz</u>	<u>Final Value dBuV/m</u>	<u>Sts</u>	<u>MArgin to X11A10 limits (dB)</u>	<u>TT</u>	<u>Hght</u>	<u>Az</u>	<u>Comment</u>
42.9440	20.67	q	-18.87	91	100	V	8.58M clk
46.1169	30.97	m	-8.57	357	100	V	.
47.4795	19.40	q	-20.14	91	100	V	.
51.5328	18.28	q	-21.26	91	100	V	8.58M clk
51.9950	20.59	q	-18.95	-2	100	V	13M clk
68.7104	25.33	m	-14.21	0	200	H	8.58M clk
77.2992	27.69	m	-11.85	270	200	H	8.58M clk
84.0000	20.79	q	-18.75	-2	100	V	12M clk
84.4710	22.99	q	-16.55	-2	100	V	.
85.8880	19.23	q	-20.31	-2	100	V	8.58M clk
86.2710	19.76	q	-19.78	270	200	V	.
90.9665	30.88	m	-8.66	114	194	V	13M clk
94.4534	29.69	m	-9.85	356	100	V	8.58M clk
95.9450	25.19	q	-14.35	91	100	H	12M clk
104.0545	24.92	q	-14.62	-2	100	V	13M clk
108.0525	23.02	q	-16.52	91	100	V	12M clk
111.6544	24.43	m	-15.11	270	100	V	8.58M clk
124.9601	19.23	q	-20.31	91	200	H	.
130.0000	20.63	q	-18.91	270	100	H	13M clk
132.0000	20.41	q	-19.13	270	100	V	12M clk
137.4208	20.50	q	-19.04	179	100	V	8.58M clk
143.0000	18.69	q	-20.85	179	100	V	13M clk
144.0000	22.06	q	-17.48	0	200	V	12M clk
146.0096	20.39	q	-19.15	91	100	V	8.58M clk
146.4165	19.49	q	-20.05	91	100	V	.
152.9249	29.61	m	-9.93	120	107	V	.
154.5984	19.30	q	-20.24	270	100	V	8.58M clk
156.0000	20.48	q	-19.06	270	100	V	12M clk, 13M clk
188.9536	20.14	q	-19.40	-2	100	V	8.58M clk, 8.588M clk
192.0000	18.60	q	-20.94	0	200	V	12M clk
195.0000	20.97	q	-18.57	91	100	V	13M clk
197.5424	20.15	q	-19.39	179	100	V	8.58M clk, 8.588M clk
204.0000	19.48	q	-20.06	0	200	V	12M clk
206.1312	18.38	q	-21.16	270	200	H	8.588M clk
216.0000	18.22	q	-21.32	270	200	H	12M clk
221.0000	18.20	q	-21.34	91	200	H	13M clk
223.3088	20.94	q	-18.60	91	200	H	8.588M clk
226.6679	21.04	q	-18.50	91	200	H	.
226.9376	20.95	q	-18.59	91	200	H	.
228.0000	23.24	m	-16.30	91	200	H	12M clk
253.3605	25.38	q	-21.16	91	200	H	.

Table 3: Complete Scan List Sorted by Frequency

Freq. MHz	I-val before xducer factors dBuV	Final value dBuV/m	Sts	TT	Hght	Az	Time	Comment
34.3552	20.52	14.41	q	179	100	V	Wed Jan 21 11:44:39 2009	8.58M clk
36.0000	24.11	17.21	q	270	200	V	Wed Jan 21 12:13:32 2009	12M clk
39.0000	24.37	16.16	q	0	200	V	Wed Jan 21 11:03:14 2009	13M clk
42.9440	31.11	20.67	q	91	100	V	Wed Jan 21 10:35:58 2009	8.58M clk
46.1169	43.02	30.97	m	357	100	V	Wed Jan 21 14:24:46 2009	.
47.4795	32.24	19.40	q	91	100	V	Wed Jan 21 10:36:02 2009	.
48.0000	29.93	16.81	q	91	100	V	Wed Jan 21 10:36:04 2009	12M clk
51.5328	32.98	18.28	q	91	100	V	Wed Jan 21 10:36:08 2009	8.58M clk
51.9950	35.45	20.59	q	-2	100	V	Wed Jan 21 10:16:04 2009	13M clk
60.0000	33.00	16.85	q	0	200	H	Wed Jan 21 10:56:59 2009	12M clk
60.1216	33.12	16.98	q	0	200	H	Wed Jan 21 10:57:01 2009	8.58M clk
65.0000	33.08	17.02	q	270	200	V	Wed Jan 21 12:14:32 2009	13M clk
68.7104	41.21	25.33	m	0	200	H	Wed Jan 21 10:57:06 2009	8.58M clk
72.0000	32.79	17.29	q	0	200	H	Wed Jan 21 10:57:09 2009	12M clk
77.2992	42.58	27.69	m	270	200	H	Wed Jan 21 12:07:13 2009	8.58M clk
78.0000	31.77	16.91	q	0	200	H	Wed Jan 21 10:57:15 2009	13M clk
84.0000	34.52	20.79	q	-2	100	V	Wed Jan 21 10:16:22 2009	12M clk
84.4710	36.71	22.99	q	-2	100	V	Wed Jan 21 10:10:34 2009	.
85.8880	32.90	19.23	q	-2	100	V	Wed Jan 21 10:16:24 2009	8.58M clk
86.2710	33.37	19.76	q	270	200	V	Wed Jan 21 12:20:14 2009	.
90.9665	43.83	30.88	m	114	194	V	Wed Jan 21 14:30:03 2009	13M clk
94.4534	42.13	29.69	m	356	100	V	Wed Jan 21 15:09:17 2009	8.58M clk
95.9450	37.38	25.19	q	91	100	H	Wed Jan 21 14:02:33 2009	12M clk
104.0545	35.95	24.92	q	-2	100	V	Wed Jan 21 10:16:39 2009	13M clk
108.0525	33.63	23.02	q	91	100	V	Wed Jan 21 10:36:52 2009	12M clk
111.6544	34.78	24.43	m	270	100	V	Wed Jan 21 11:53:12 2009	8.58M clk
117.0000	27.95	18.02	q	179	100	H	Wed Jan 21 11:38:32 2009	13M clk
120.0000	24.78	15.25	q	179	100	V	Wed Jan 21 11:45:52 2009	12M clk
120.2432	26.35	16.81	q	270	200	V	Wed Jan 21 12:15:18 2009	8.58M clk
124.9601	28.75	19.23	q	91	200	H	Wed Jan 21 10:50:31 2009	.
128.8320	25.42	15.87	q	91	100	H	Wed Jan 21 10:30:34 2009	8.58M clk
130.0000	30.16	20.63	q	270	100	H	Wed Jan 21 12:00:24 2009	13M clk
132.0000	29.98	20.41	q	270	100	V	Wed Jan 21 11:53:33 2009	12M clk
137.4208	30.05	20.50	q	179	100	V	Wed Jan 21 11:46:07 2009	8.58M clk
143.0000	28.35	18.69	q	179	100	V	Wed Jan 21 11:46:09 2009	13M clk
144.0000	31.78	22.06	q	0	200	V	Wed Jan 21 11:04:33 2009	12M clk
146.0096	30.29	20.39	q	91	100	V	Wed Jan 21 10:37:22 2009	8.58M clk
146.4165	29.43	19.49	q	91	100	V	Wed Jan 21 10:37:24 2009	.
152.9249	40.04	29.61	m	120	107	V	Wed Jan 21 14:36:14 2009	.
154.5984	29.88	19.30	q	270	100	V	Wed Jan 21 11:53:46 2009	8.58M clk
156.0000	31.20	20.48	q	270	100	V	Wed Jan 21 11:53:49 2009	12M clk, 13M clk
163.1872	25.74	14.65	q	270	200	H	Wed Jan 21 12:08:15 2009	8.58M clk, 8.588M clk
168.0000	28.38	16.80	q	270	100	V	Wed Jan 21 11:53:55 2009	12M clk
169.0000	25.97	14.32	q	270	100	V	Wed Jan 21 11:53:58 2009	13M clk
171.7760	29.31	17.68	q	-2	100	V	Wed Jan 21 10:17:29 2009	8.58M clk, 8.588M clk
176.0757	26.99	15.52	q	91	100	V	Wed Jan 21 10:37:41 2009	.



180.0000	28.20	16.04	q	270	100	V	Wed Jan 21 11:54:05 2009	12M clk
180.3648	29.36	17.14	q	91	100	V	Wed Jan 21 10:37:46 2009	8.58M clk, 8.588M clk
182.0000	30.28	18.00	q	0	200	V	Wed Jan 21 11:05:03 2009	13M clk
188.9536	32.09	20.14	q	-2	100	V	Wed Jan 21 10:17:41 2009	8.58M clk, 8.588M clk
192.0000	30.45	18.60	q	0	200	V	Wed Jan 21 11:05:08 2009	12M clk
195.0000	32.67	20.97	q	91	100	V	Wed Jan 21 10:37:57 2009	13M clk
197.5424	31.48	20.15	q	179	100	V	Wed Jan 21 11:46:51 2009	8.58M clk, 8.588M clk
204.0000	30.60	19.48	q	0	200	V	Wed Jan 21 11:05:16 2009	12M clk
206.1312	29.65	18.38	q	270	200	H	Wed Jan 21 12:08:49 2009	8.588M clk
208.0000	29.21	17.85	q	270	200	H	Wed Jan 21 12:08:52 2009	13M clk
214.7200	29.14	17.91	q	270	200	H	Wed Jan 21 12:08:55 2009	8.588M clk
216.0000	29.40	18.22	q	270	200	H	Wed Jan 21 12:08:57 2009	12M clk
221.0000	29.09	18.20	q	91	200	H	Wed Jan 21 10:51:41 2009	13M clk
223.3088	31.54	20.94	q	91	200	H	Wed Jan 21 10:51:44 2009	8.588M clk
226.6679	31.22	21.04	q	91	200	H	Wed Jan 21 10:51:46 2009	.
226.9376	31.08	20.95	q	91	200	H	Wed Jan 21 10:51:48 2009	.
228.0000	33.17	23.24	m	91	200	H	Wed Jan 21 10:51:51 2009	12M clk
231.9115	34.52	24.91	q	91	200	H	Wed Jan 21 10:51:53 2009	8.588M clk
234.0000	33.39	23.82	q	91	200	H	Wed Jan 21 10:51:55 2009	13M clk
240.0000	32.66	23.45	q	91	200	H	Wed Jan 21 10:51:58 2009	12M clk
240.4909	33.09	23.93	q	91	200	H	Wed Jan 21 10:52:00 2009	8.588M clk
244.7805	32.95	24.23	q	91	200	H	Wed Jan 21 10:52:02 2009	.
247.0000	32.46	24.00	q	91	200	H	Wed Jan 21 10:52:04 2009	13M clk
249.0705	32.37	24.19	q	91	200	H	Wed Jan 21 10:52:07 2009	8.588M clk
253.3605	33.11	25.38	q	91	200	H	Wed Jan 21 10:52:09 2009	.
257.6805	31.68	24.00	q	91	200	H	Wed Jan 21 10:52:11 2009	8.588M clk
260.0000	31.70	23.85	q	91	200	H	Wed Jan 21 10:52:13 2009	13M clk
266.2607	26.53	18.48	q	91	200	H	Wed Jan 21 10:52:16 2009	8.588M clk
273.0000	25.43	17.48	q	91	200	H	Wed Jan 21 10:52:19 2009	13M clk
274.8411	22.90	14.95	q	270	200	H	Wed Jan 21 12:09:37 2009	8.588M clk
283.4507	22.57	14.91	q	270	200	V	Wed Jan 21 12:17:07 2009	8.588M clk
286.0000	19.93	12.35	q	91	200	V	Wed Jan 21 10:45:24 2009	13M clk
287.9808	23.04	15.54	q	270	200	H	Wed Jan 21 12:09:44 2009	.
292.0192	22.86	15.49	q	91	200	H	Wed Jan 21 10:52:31 2009	8.588M clk
299.0000	21.59	14.28	q	179	200	H	Wed Jan 21 11:33:44 2009	13M clk
300.6080	19.17	11.78	q	91	200	H	Wed Jan 21 10:52:36 2009	8.588M clk
309.1968	22.72	15.09	q	91	200	H	Wed Jan 21 10:52:38 2009	8.588M clk
317.7856	23.91	16.66	q	91	100	H	Wed Jan 21 10:32:32 2009	8.588M clk
326.3744	21.51	14.54	q	91	200	H	Wed Jan 21 10:52:42 2009	8.588M clk
334.9632	24.10	17.56	q	91	200	H	Wed Jan 21 10:52:45 2009	8.588M clk
343.5520	21.59	15.45	q	91	200	H	Wed Jan 21 10:52:47 2009	8.588M clk
352.1408	23.66	17.91	q	91	200	H	Wed Jan 21 10:52:49 2009	8.588M clk
360.7296	20.68	15.51	q	91	200	H	Wed Jan 21 10:52:52 2009	8.588M clk
369.3184	22.74	17.21	q	91	200	H	Wed Jan 21 10:52:54 2009	8.588M clk
377.9072	22.66	17.32	q	270	200	V	Wed Jan 21 12:17:38 2009	8.588M clk
386.4960	22.16	17.23	q	91	200	H	Wed Jan 21 10:52:58 2009	8.588M clk
395.0848	22.14	17.60	q	270	200	H	Wed Jan 21 12:10:14 2009	8.588M clk
395.1431	21.16	16.63	q	270	200	H	Wed Jan 21 12:10:17 2009	.
403.6736	22.19	18.15	q	91	200	H	Wed Jan 21 10:53:05 2009	8.588M clk

412.2624	23.64	20.03	q	270	200	H	Wed Jan 21 12:10:21 2009	8.588M clk
412.3034	23.64	20.03	q	270	200	H	Wed Jan 21 12:10:23 2009	.
420.8512	20.55	16.98	q	270	200	H	Wed Jan 21 12:10:26 2009	8.588M clk
429.4400	23.29	19.78	q	270	200	H	Wed Jan 21 12:10:28 2009	8.588M clk
438.0438	21.94	18.62	q	270	200	H	Wed Jan 21 12:10:30 2009	8.588M clk
446.6176	21.87	18.82	q	270	200	H	Wed Jan 21 12:10:32 2009	8.588M clk
455.2161	24.63	21.69	q	270	200	H	Wed Jan 21 12:10:38 2009	8.588M clk
463.7922	21.35	18.61	q	-2	100	H	Wed Jan 21 10:26:28 2009	8.588M clk
472.3999	22.88	20.27	q	270	200	H	Wed Jan 21 12:10:43 2009	8.588M clk
480.9797	24.51	22.06	q	270	100	V	Wed Jan 21 11:56:20 2009	8.588M clk
489.5897	20.41	18.39	q	91	100	H	Wed Jan 21 10:33:21 2009	8.588M clk
498.1697	20.83	19.16	q	270	200	H	Wed Jan 21 12:10:51 2009	8.588M clk
506.7392	19.30	17.51	q	270	200	H	Wed Jan 21 12:10:53 2009	8.588M clk
515.3299	23.31	21.45	q	270	200	H	Wed Jan 21 12:10:56 2009	8.588M clk
523.9339	19.20	17.74	q	0	200	H	Wed Jan 21 11:00:46 2009	8.588M clk
532.5199	21.67	20.33	q	270	200	H	Wed Jan 21 12:11:00 2009	8.588M clk
541.0944	20.48	19.03	q	270	200	H	Wed Jan 21 12:11:02 2009	8.588M clk
541.1264	20.08	18.63	q	270	200	H	Wed Jan 21 12:11:05 2009	.
549.7059	19.97	18.71	q	91	100	H	Wed Jan 21 10:33:40 2009	8.588M clk
558.2837	19.80	18.90	q	270	100	H	Wed Jan 21 12:03:38 2009	8.588M clk
566.8637	19.61	18.95	q	270	200	H	Wed Jan 21 12:11:11 2009	8.588M clk
575.4496	19.86	19.36	q	91	100	H	Wed Jan 21 10:33:46 2009	8.588M clk
584.0384	19.23	18.59	q	91	200	V	Wed Jan 21 10:46:48 2009	8.588M clk
592.6272	20.27	19.61	q	270	100	H	Wed Jan 21 12:03:47 2009	8.588M clk
601.2160	19.64	19.27	q	91	200	V	Wed Jan 21 10:46:53 2009	8.588M clk
609.8048	20.65	20.50	q	91	100	H	Wed Jan 21 10:33:55 2009	8.588M clk
618.3936	20.39	20.58	q	0	200	V	Wed Jan 21 11:07:42 2009	8.588M clk
626.9824	19.61	20.00	q	270	100	H	Wed Jan 21 12:03:55 2009	8.588M clk
635.5712	19.42	20.04	q	91	100	H	Wed Jan 21 10:34:02 2009	8.588M clk
644.1600	20.09	20.84	q	91	100	H	Wed Jan 21 10:34:04 2009	8.588M clk
652.7488	20.34	21.11	q	270	100	H	Wed Jan 21 12:04:02 2009	8.588M clk
661.3376	20.52	21.28	q	91	100	H	Wed Jan 21 10:34:09 2009	8.588M clk
669.9264	20.67	21.37	q	91	100	H	Wed Jan 21 10:34:11 2009	8.588M clk
678.5152	19.80	20.59	q	270	100	H	Wed Jan 21 12:04:08 2009	8.588M clk
687.1040	19.92	20.81	q	91	100	H	Wed Jan 21 10:34:15 2009	8.588M clk
695.6928	20.77	21.86	q	270	100	H	Wed Jan 21 12:04:13 2009	8.588M clk
704.2816	20.80	22.09	q	270	100	H	Wed Jan 21 12:04:15 2009	8.588M clk
712.8704	21.65	22.88	q	270	100	H	Wed Jan 21 12:04:17 2009	8.588M clk
721.4592	23.39	24.76	q	91	100	H	Wed Jan 21 10:34:24 2009	8.588M clk
730.0480	22.01	23.40	q	270	100	H	Wed Jan 21 12:04:21 2009	8.588M clk
738.6368	22.49	23.95	q	270	100	H	Wed Jan 21 12:04:24 2009	8.588M clk
747.2256	20.93	22.32	q	91	100	H	Wed Jan 21 10:34:31 2009	8.588M clk
755.8144	22.73	24.43	q	270	100	H	Wed Jan 21 12:04:28 2009	8.588M clk
764.4032	20.56	22.48	q	270	100	H	Wed Jan 21 12:04:30 2009	8.588M clk
772.9920	20.42	22.52	q	91	100	H	Wed Jan 21 10:34:38 2009	8.588M clk
781.5808	20.91	23.13	q	91	100	H	Wed Jan 21 10:34:40 2009	8.588M clk
790.1696	19.50	21.66	q	270	100	H	Wed Jan 21 12:04:37 2009	8.588M clk
798.7584	20.51	22.68	q	91	100	H	Wed Jan 21 10:34:45 2009	8.588M clk
807.3472	18.88	21.46	q	-2	100	H	Wed Jan 21 10:03:00 2009	8.588M clk

815.9360	19.81	22.77	q	270	100	H	Wed Jan 21 12:04:43 2009	8.588M clk
824.5248	19.01	22.29	q	91	100	H	Wed Jan 21 10:34:51 2009	8.588M clk
833.1136	19.58	22.80	q	270	100	H	Wed Jan 21 12:04:48 2009	8.588M clk
841.7024	19.06	22.29	q	270	100	H	Wed Jan 21 12:04:50 2009	8.588M clk
850.2912	19.68	22.67	q	0	200	V	Wed Jan 21 11:22:07 2009	8.588M clk
858.8800	19.42	22.33	q	0	200	V	Wed Jan 21 11:22:09 2009	8.588M clk
867.4688	19.73	22.36	q	0	200	V	Wed Jan 21 11:22:11 2009	8.588M clk
876.0576	19.90	22.66	q	270	200	V	Wed Jan 21 12:19:46 2009	8.588M clk
884.6464	19.90	22.53	q	-2	100	V	Wed Jan 21 10:21:27 2009	8.588M clk
893.2352	20.80	23.42	q	91	100	H	Wed Jan 21 10:35:08 2009	8.588M clk
901.8240	19.85	22.60	q	270	100	H	Wed Jan 21 12:05:05 2009	8.588M clk
910.4128	20.35	22.99	q	270	100	H	Wed Jan 21 12:05:07 2009	8.588M clk
919.0016	19.91	22.77	q	91	100	H	Wed Jan 21 10:35:15 2009	8.588M clk
927.5904	20.27	23.40	q	0	200	V	Wed Jan 21 11:22:26 2009	8.588M clk
936.1792	20.32	23.96	q	0	200	V	Wed Jan 21 11:22:28 2009	8.588M clk
944.7680	20.11	24.03	q	0	200	V	Wed Jan 21 11:22:30 2009	8.588M clk
953.3568	20.15	24.33	q	0	200	V	Wed Jan 21 11:22:33 2009	8.588M clk
961.9456	19.89	24.37	q	0	200	V	Wed Jan 21 11:22:35 2009	8.588M clk

Minimum Margin to Limit: **-8.57** dB at **46.1169** MHz

**4.3 UNINTENTIONAL RADIATED EMISSIONS PLOT – ABOVE 1 GHZ**

Criterion Technology

EUT: RFID airplane tire pressure tester, IHHR

Manufacturer: Phase IV Technology

Tester: LWS

EUT Information: d=3m, FCC P15-A, h=1 and 2m

Test Information: 3m, battery, FCC Part 15 Class A

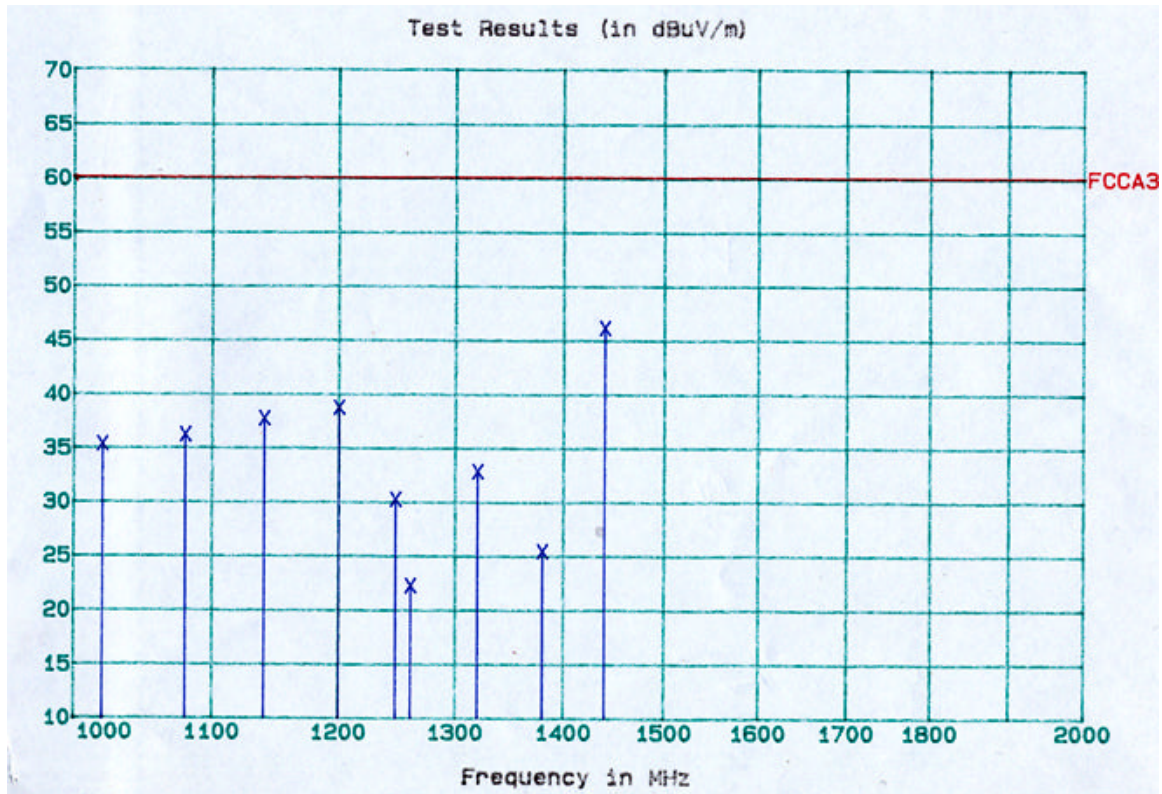
Test Cond: Temp: 15° C

Date: January 26, 2009

S/N: 000261

SpiD: 090119-1365

Humidity: 22 %



**4.4 UNINTENTIONAL RADIATED EMISSIONS TABLE – ABOVE 1 GHZ****Notes:**

The third column below contains alpha characters which pertain to the type of measurements made. The following are the definitions for those characters: q = Quasi Peak, m = Maximized (cable, rotation and antenna height), s = scanned but no data taken, and a = average. For the first character in column four, a '-' indicates that value is below the limit while an '\*' indicates that value is above the limit

If the list is sorted using "I-sort", then quasi-peak and average levels are weighted higher than peak levels and are moved to the front of the scan list.

The following keys help to better understand the data:

TT: Turntable position in degrees

Hght: Height of antenna in centimeters

Az: Azimuth, V = Vertical, H= Horizontal

Criterion Technology Mon Jan 26 16:09:04 2009

EUT: RFID airplane tire pressure tester, IHHR

S/N:000261

Manufacturer: Phase IV Technology

Tester: LWS

Special ID: 090119-1365

EEUT Information: d=3m, FCC P15-A, h=1 and 2 m

Test information: 3m, FCC part 15 Class A

**Table 1: Scan List, sorted by margin to limit FCCA3, -70.0dB filter**

<u>Freq, MHz</u>	<u>Value dBuV/m</u>	<u>Sts</u>	<u>Margin to FCCA3 limits (dB)</u>	<u>TT</u>	<u>Hght</u>	<u>Az</u>	<u>Comment</u>
1440.2064	46.07	m	-13.92	47	100	V	60M clk
1200.1720	38.69	m	-21.30	46	100	V	60M clk
1140.1634	37.67	m	-22.32	297	100	V	60M clk
1080.1548	36.17	m	-23.82	50	100	V	60M clk
1020.1462	35.32	m	-24.67	276	112	V	60M clk
1320.1892	32.79	m	-27.20	281	100	V	60M clk
1247.9445	30.21	m	-29.78	270	99	V	.
1380.1918	25.41	m	-34.58	58	100	V	60M clk
1261.0205	22.24	m	-37.75	43	104	V	60M clk

**Table 2: Scan List for FCCA3, sorted by Frequency, -70.0dB filter**

<u>Freq. MHz</u>	<u>Final Value dBuV/m</u>	<u>Sts</u>	<u>Margin to FCCA3 limits (dB)</u>	<u>TT</u>	<u>Hght</u>	<u>Az</u>	<u>Comment</u>
1020.1462	35.32	m	-24.67	276	112	V	60M clk
1080.1548	36.17	m	-23.82	50	100	V	60M clk
1140.1634	37.67	m	-22.32	297	100	V	60M clk
1200.1720	38.69	m	-21.30	46	100	V	60M clk
1247.9445	30.21	m	-29.78	270	99	V	.
1261.0205	22.24	m	-37.75	43	104	V	60M clk
1320.1892	32.79	m	-27.20	281	100	V	60M clk
1380.1918	25.41	m	-34.58	58	100	V	60M clk
1440.2064	46.07	m	-13.92	47	100	V	60M clk

**Table 3: Complete Scan List Sorted by Frequency**

<u>Freq. MHz</u>	<u>I-val before xducer factors dBuV</u>	<u>Final value dBuV/m</u>	<u>Sts</u>	<u>TT</u>	<u>Hght</u>	<u>Az</u>	<u>Time</u>	<u>Comment</u>
1020.1462	51.38	35.32	m	276	112	V	Mon Jan 26 15:10:45 2009	60M clk
1080.1548	52.00	36.17	m	50	100	V	Mon Jan 26 15:14:50 2009	60M clk
1140.1634	53.15	37.67	m	297	100	V	Mon Jan 26 15:19:27 2009	60M clk
1200.1720	53.73	38.69	m	46	100	V	Mon Jan 26 15:23:41 2009	60M clk
1247.9445	45.00	30.21	m	270	99	V	Mon Jan 26 15:02:21 2009	.
1261.0205	36.96	22.24	m	43	104	V	Mon Jan 26 15:28:13 2009	60M clk
1320.1892	47.10	32.79	m	281	100	V	Mon Jan 26 15:32:37 2009	60M clk
1380.1918	39.31	25.41	m	58	100	V	Mon Jan 26 16:03:21 2009	60M clk
1440.2064	59.59	46.07	m	47	100	V	Mon Jan 26 16:09:04 2009	60M clk

Minimum Margin to Limit: **-13.92** dB at **1440.2064** MHz

## 4.5 EMISSIONS PLOT – INTENTIONAL RADIATOR - 1 GHZ TO 18 GHZ - BLUETOOTH

Criterion Technology

EUT: RFID airplane tire pressure tester, IHHR

Manufacturer: Phase IV Technology

Tester: LWS

EUT Information: d=3m, FCC P15-A, h=1 and 2m

Test Information: 3m, battery, FCC 15.249, EN 300 328, RSS 210E sec.2, Class A

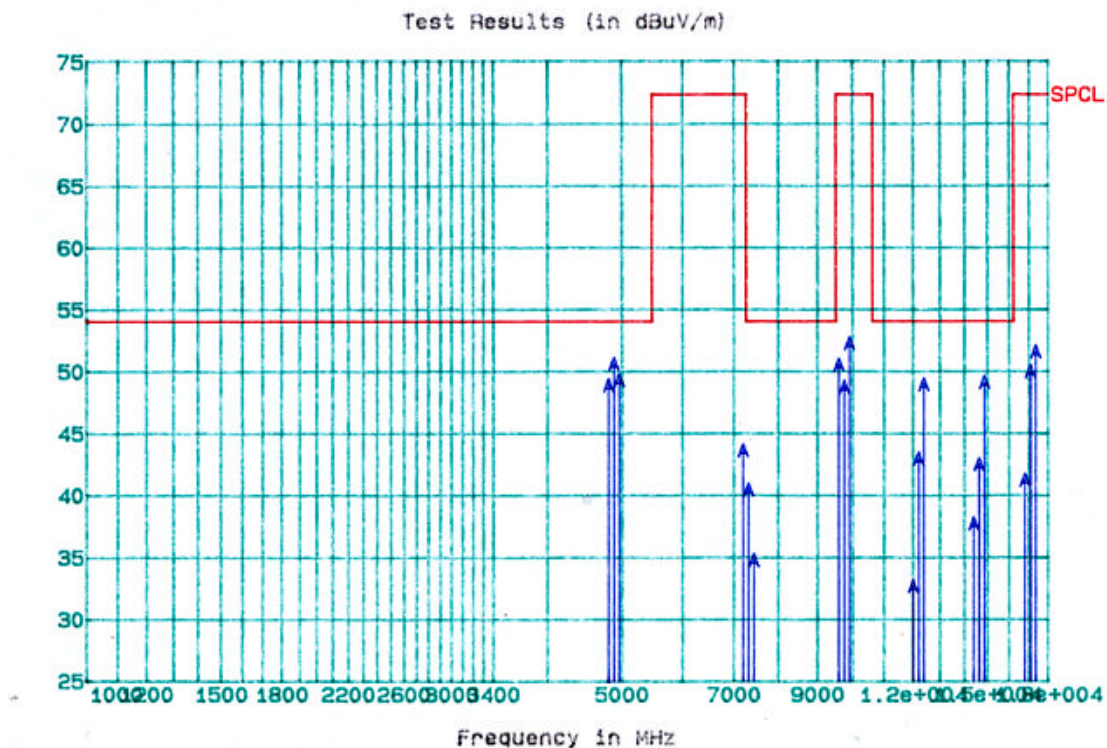
Test Cond: Temp: 13° C

Date: January 23, 2009

S/N: 000261

SpiD: 090119-1365

Humidity: 24 %



**4.6 EMISSIONS TABLE – INTENTIONAL RADIATOR - 1 GHZ TO 18 GHZ - BLUETOOTH****RFID AIRPLANE TIRE PRESSUE TESTER**

<u>Fundamental Freq (GHz)</u>	<u>band position</u>	<u>Pwr Out (dbuv/m) @ 3 M</u>	<u>Orientation</u>	<u>rcv ant</u>	<u>TT</u>
2.4027	lower	91.67	Stand	Vrt/100	249
2.4027	lower	92.30	Side	Hrz/100	266
2.4027	lower	87.41	Flat	Vrt/100	97
2.4415	middle	87.82	Stand	Vrt/100	110
2.4415	middle	91.52	Side	Hrz/100	267
2.4415	middle	89.02	Flat	Vrt/100	252
2.4802	upper	85.45	Stand	Vrt/100	250
2.4802	upper	89.89	Side	Hrz/100	267
2.4802	upper	88.02	Flat	Hrz/100	250

<u>Harmonic #</u>		<u>Frequency</u>	<u>F val unit on side</u>	<u>Adjustment for Duty Cycle</u>	<u>Adjusted F val</u>	<u>FCC limit (dbuV/m)</u>	<u>Margin to Limit (db)</u>	<u>Pol/Ht</u>	<u>AZ</u>	<u>COMMENTS</u>
2 Fo	lower	4.8054	48.87	0	48.87	54	-5.13	V/131	1	
2 Fo	middle	4.883	50.6	0	50.6	54	-3.40	H/134	157	
2 Fo	upper	4.9604	49.28	0	49.28	54	-4.72	H/167	159	
3 Fo	lower	7.2081	43.62	0	43.62	54	-10.38	H/119	5	
3 Fo	middle	7.3245	40.46	0	40.46	54	-13.54	Hrz/117	0	
3 Fo	upper	7.4406	34.79	0	34.79	54	-19.21	H/169	159	
4 Fo	lower	9.6108	50.29	0	50.29	54	-3.71	H/102	21	
4 Fo	middle	9.766	48.73	0	48.73	54	-5.277	H/126	177	
4 Fo	upper	9.9208	52.23	0	52.23	54	-1.77	H/129	170	
5 Fo	lower	12.0135	32.67	0	32.67	54	-21.33	H/100	0	Noise Floor
5 Fo	middle	12.2075	40.46	0	40.46	54	-13.54	H/100	0	Noise Floor
5 Fo	upper	12.401	46.92	0	46.92	54	-7.08	H/100	0	Noise Floor

Notes: Harmonics from 12.0 GHz thru 25 GHz (10<sup>th</sup> harmonic) are substantially below the noise floor, spec limit, and unobservable below the noise floor.



## 4.7 EMISSIONS TABLE – INTENTIONAL RADIATOR - 100 KHZ TO 1.4 MHZ - RFID AIRPLANE TIRE

## PRESSUE TESTER, IHHR RFID TRANSMITTER

INTENTIONAL RADIATOR							
<u>Fundamental Freq (kHz)</u>	<u>Orienta tion</u>	<u>Pwr Out (dbuv/m) @ 10 M</u>	<u>FCC 10m Pout limit (dbuv/m)</u>	<u>Margin to limit (db)</u>		<u>TT</u>	<u>COMMENTS</u>
134.2	Stand	15.1*	54.55	39.45		90	noise floor
134.2	Side	15.2*	54.55	39.35		90	noise floor
134.2	Flat	15.2*	54.55	39.35		90	noise floor
			<b>EN 300 330 limit</b>				
134.2	Stand	-36.5	36.4 dbua/m	-72.9		0	noise floor
134.2	Side	-36.4	36.4 dbua/m	-72.8		0	noise floor
134.2	Flat	-36.5	36.4 dbua/m	-72.9		0	noise floor

INTENTIONAL RADIATOR HARMONICS									
<u>Harmonic #</u>		<u>Frequency (kHz)</u>	<u>F val unit on side (dbuV/m)</u>	<u>FCC limit (dbuV/m) 10 m</u>		<u>FCC Margin to Limit (db)</u>		<u>AZ</u>	<u>Comments</u>
2 Fo	Side	268.4	15.1	49		-33.50		90	noise floor
3 Fo	Side	402.6	14.4	45.10		-30.70		90	noise floor
4 Fo	Side	536.8	14.1	42.60		-28.50		90	noise floor
5 Fo	Side	671	13.8	40.70		-26.90		90	noise floor
6 Fo	Side	805.2	14.5	39.00		-24.50		90	noise floor
7 Fo	Side	939.4	13.9	38		-23.80		90	noise floor
8 Fo	Side	1073.6	13.1	37		-23.40		90	noise floor
9 Fo	Side	1207.8	12.9	35.50		-22.60		90	noise floor
10 Fo	Side	1342	12.5	34.60		-22.10		90	noise floor
<u>Harmonic #</u>		<u>Frequency (kHz)</u>	<u>db uA/m</u>	<u>EN300 330 limit operating</u>	<u>EN 300 330 limit standby</u>	<u>EN 300 330 Margin to Limit (db) operating</u>	<u>EN 300 330 Margin to Limit (db) standby</u>		
2 Fo	Side	268.4	-36.2	15.3	-6.2	-51.50	-30.00	0	noise floor
3 Fo	Side	402.6	-37.1	15.3	-6.2	-52.40	-30.90	0	noise floor
4 Fo	Side	536.8	-37.5	15.3	-6.2	-52.80	-31.30	0	noise floor
5 Fo	Side	671	-37.8	15.3	-6.2	-53.10	-31.60	0	noise floor
6 Fo	Side	805.2	-37.2	15.3	-6.2	-52.50	-31.00	0	noise floor
7 Fo	Side	939.4	-37.5	15.3	-6.2	-52.80	-31.30	0	noise floor
8 Fo	Side	1073.6	-37.6	15.3	-6.2	-52.90	-31.40	0	noise floor
9 Fo	Side	1207.8	-37.9	15.3	-6.2	-53.20	-31.70	0	noise floor
10 Fo	Side	1342	-38	15.3	-6.2	-53.30	-31.80	0	noise floor

\* Measurement at system noise floor

#### 4.8 OCCUPIED BANDWIDTH

Criterion Technology  
EUT: RFID airplane tire pressure tester, IHHR  
Manufacturer: Phase IV Technology  
Tester: LWS  
Test Cond: Temp: 16° C

Date: January 23, 2009  
S/N: 000261

SpiD: 090119-1365  
Humidity: 39 %

-6 dB lower Bandedge: 2.481729114 GHz

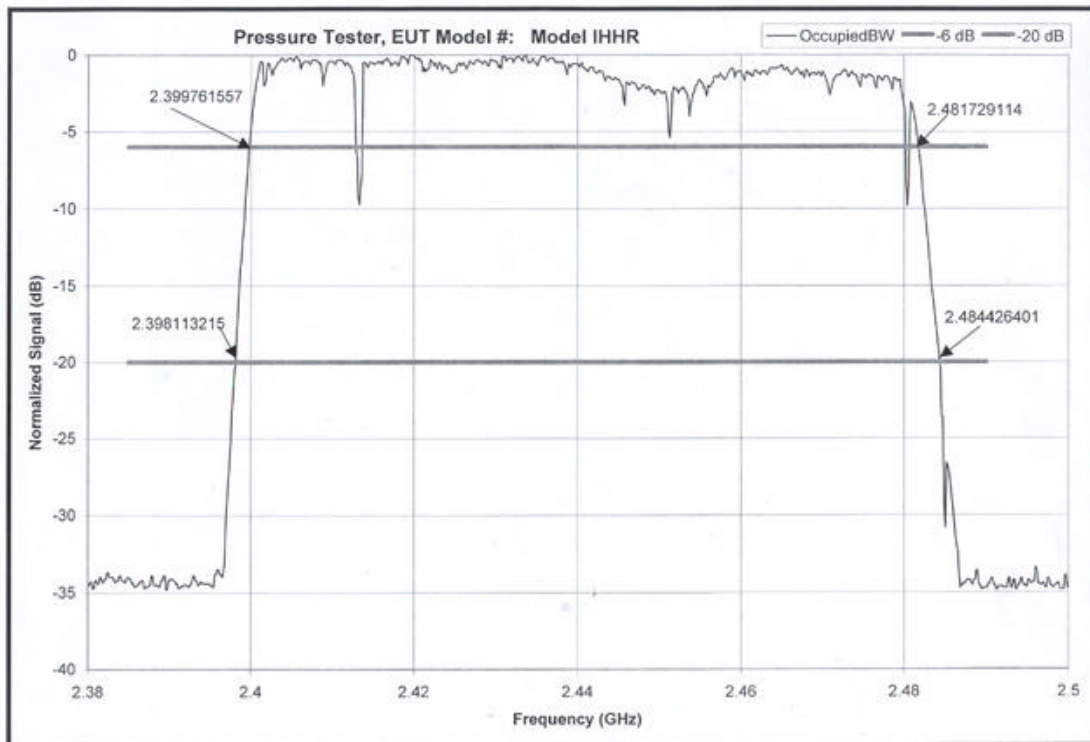
-6 dB upper Bandedge: 2.399761557 GHz

-6 dB Occupied Bandwidth: 81.967557 MHz

-20 dB lower Bandedge: 2.484426401 GHz

-20 dB upper Bandedge: 2.398113215 GHz

-20 dB Occupied Bandwidth: 86.313186 MHz



**5.0 APPENDIX C: PRODUCT INFORMATION FORM****CRITERION TECHNOLOGY PRODUCT INFORMATION FORM****General Information****Date:** 3-10-09

Company Name: Phase IV Technology  
Company Address: 2820 Wilderness Place, Unit C  
Boulder, CO 80301 USA

**Contacts:**

Compliance Engineer: Bill Soderborg Phone 303-452-5717 Email: Bill@percept.com  
Design Engineer: Joe Letkomiller Phone: 303-931-1632 Email: \_\_\_\_\_

**Test Description**

De-Bug \_\_\_\_\_ Formal (Initial) X Formal (Re-Verification) \_\_\_\_\_

**Market Information (Check all that Apply)**

USA X Canada X Euro. Union X Taiwan \_\_\_\_\_ Japan \_\_\_\_\_ New Zealand \_\_\_\_\_ Australia \_\_\_\_\_  
Other \_\_\_\_\_

**Product Information**

Name: RFID airplane tire pressure tester Model Number: IHHR Serial Number: 000261

Product Dimensions: About 18 inches long by 3 inches in diameter Weight: less than 2 pounds

**Product Power Source:****Battery**

Type Bosch 12 volt  
Redundant Power Supplies N/A

**AC Supply**

Input Voltage Range(s) \_\_\_\_\_  
Phases N/A Delta \_\_\_\_\_ Wye \_\_\_\_\_  
Current Less than 0.5 A DC  
Frequency N/A  
Manufacturer Bosch  
Model Number \_\_\_\_\_

**Topology**

Linear N/A Switching Mode N/A Switching Frequency N/A

**Support Equipment (if used):** N/A

I/O Cables – Manufacturer, P/N, Length :

Serial Port N/A  
Parallel Port \_\_\_\_\_  
SCSI Port \_\_\_\_\_  
Other USB port to a Memory stick

**Operation Software:**

Name PDA custom program Version Number \_\_\_\_\_

**Operating Modes: (Please Include Cycle Time)**

Continuous RFID read, save and Bluetooth connection Less than one second

Time necessary for EUT to be exercised and able to fully respond: Less than 1 second(s).

**Operation Pass/Fail Criteria:**

Display will go out or change format

**Test Type – Emissions (Please check all that apply):****Information Technology Equipment**Class A ☐Class B ☐

Oscillator/Clock Frequencies (MHz) \_\_\_\_\_

**Industrial, Scientific, Medical Equipment**Class A ☒Class B ☐Oscillator/Clock Frequencies (MHz) Y4 8.5888 MHz, Y1 8.5888, Y2 32.768, X1 32.768 kHz, X2 13.0000, Y3 12.0**Unintentional Radiator**Class A ☒Class B ☐

Oscillator/Clock Frequencies (MHz) \_\_\_\_\_

Receiver

Type (Regen., Superhet., Direct Conv., Homodyne) \_\_\_\_\_

Local Oscillator Frequencies \_\_\_\_\_

Frequency Range \_\_\_\_\_

**Intentional Radiator**Fundamental Frequency Range ) 2.4 Ghz , 32.768

Local Oscillator Frequencies \_\_\_\_\_

Power Output (to antenna) \_\_\_\_\_

Integral Antenna (Yes/No) \_\_\_\_\_

Unintentional radiator -

Modulation Type (AM, CM, Pulse, Spread Spectrum) RFID, Bluetooth

Control Circuits (Microprocessor/Micro-controller) \_\_\_\_\_

Oscillator/Clock Frequencies (MHz) \_\_\_\_\_

**TEST CRITERIA ATTACHMENT****EMISSIONS**

To be compliant with C63.4-2003 test methodology, for the emissions testing, the equipment must be exercising all of the functionality within the capability of the Equipment under test. In addition, the equipment must be equipped in the configuration of maximum capability which will be offered to customers,. The test software installed in the Equipment Under Test (EUT) must exercise all of the modules in this maximum capability configuration.

Description of the maximum capability configuration: The USB port is connected, the Bluetooth is constantly searching and the unit operates all of the circuits continuously

Name and revision # of the test software used for the emissions test: Not given

**6.0 APPENDIX D: TEST EQUIPMENT AND CALIBRATION STATUS**

Manufacturer	Name/Description	Model Number	Serial Number	Cal. Due Date
Haefely Trench	Surge Generator	PSURGE 6.1	083-906-07	4/10/2009
Haefely Trench	EFT Tester	PEFT Junior	583-333-51	4/10/2009
Haefely Trench	Surge Coupler	FP-Surge 32.1	083-925-05	4/10/2009
Haefely Trench	Interrupter tester	Pline 1610	083-970-07	4/10/2009
Amplifier Research	Power Amplifier	100W1000M1	20214	6/1/2009
EMCO	Active Loop	6502	2626	6/19/2009
Amplifier Research	E-Field Probe	FP2080	20236	7/16/2009
Veratech	Preamplifier (AMP2)	unknown	N/A	7/18/2009
EMCO	biconnical antenna	3108	9103-2441	7/22/2009
Amplifier Research	Power Amplifier	150A100A	20183	7/22/2009
EMCO	log periodic antenna	3146	9004-2763	7/23/2009
Chase	Bilog 30 - 1000 MHz	CB6111	1121	7/23/2009
Rohde/ Schwarz	VHF/UHF Receiver	ESVS-30	863342014	9/4/2009
Rohde/ Schwarz	LISN	ESH2-Z5	828739-001	9/4/2009
Rohde/ Schwarz	HF Receiver	ESHS-30	826003/011	9/4/2009
Tegam	Current Probe	925236-1	12588	11/19/2009
Microwave Technologies	Standard Gain Horn & Harmonic Mixer	12A-18 & HP1197OK	19527JE & 2332A01314	11/26/2009
EMCO	Horn	3160-08	1147	11/28/2009
FCC	EM Clamp	F2031	309	12/7/2009
FCC	CDN	FCC-801-M3-25	9714	12/7/2009
Amplifier Research	Directional Coupler	DC2600	302981	12/7/2009
Solar Electronics	LISN	8012-50-R-24-BNC	892310	12/7/2009
Haefely Trench	Test Mag	Mag 100	80162	12/12/2009
Hewlett Packard	Signal Generator	HP 8648D	3642000145	1/7/2010
Hewlett Packard	Quasi Peak Adapter	85650A	2403A07322	3/3/2010
Hewlett Packard	Spectrum Analyzer	HP 8566B	2421A00527	3/5/2010
Hewlett Packard	Spectrum Analyzer Display	HP 85662A	2403A07322	3/5/2010
Hewlett Packard	Tracking Generator	HP85645A	3210A00124	3/6/2010
Haefely Trench	ESD Gun	PESD 1600	H605100	4/3/2010
Califorina Instruments	AC Power Source Pacs-1	5001IX-CTS-411	55637/ 72242	3/24/2011

## 7.0 APPENDIX E: TEST DIRECTIVES, STANDARDS AND METHODS

### 7.1.1 EUROPEAN DIRECTIVES, STANDARDS AND METHODS

89/336/EEC: Council Directive of 03 May 1989 on the Approximation of the Laws of the Member States Relating to Electromagnetic Compatibility, OJEC No. L 139/19-26, Aug 1993.

BS DD ENV 50204 (CENELEC): Testing and Measurement Techniques; Radiated Electromagnetic Field from Digital Radio Telephones - Immunity Test, 1996.

EN 55011 (CENELEC): ISM Radio-Frequency Equipment Radio Disturbance Characteristics - Limits and Methods of Measurement, 2007.

EN 55014-1 (CENELEC): Part 1. Electromagnetic Compatibility Requirements for Household Appliances, Electric Tools and Similar Apparatus - Part 1. Emission - Product Family Standard, 2006.

EN 55022 (CENELEC): ITE - Radio-Frequency Equipment Radio Disturbance Characteristics - Limits and Methods of Measurement, 2006.

EN 55024 (CENELEC): ITE - Immunity Characteristics - Limits and Methods of Measurement, 2003.

EN 55103-1: Product Family standard for audio, video, audio - visual and entertainment lighting control apparatus for professional use. Part 1: Emissions, April 1997.

EN 55103-2: Product Family standard for audio, video, audio - visual and entertainment lighting control apparatus for professional use. Part 2: Immunity, April 1997.

EN 60601-1-2 (CENELEC): Medical Electrical Equipment. Part 1. General Requirements for Safety - Section 1.2. Collateral Standard: Electromagnetic Compatibility - Requirements and Tests, A1:2006, A2: 2007.

EN 61000-6-1: EMC- Part 6-1. Generic Standard-Immunity for residential, commercial and light-industrial Environments 2007.

EN 61000-6-2: EMC- Part 6-2. Generic Standard-Immunity for Industrial Environments, 2005.

EN 61000-6-3: EMC- Part 6-3. Generic Standard-Emissions for residential, commercial and light-industrial Environments 2007.

EN61000-6-4 (CENELEC): EMC - Generic Emission Standard, Part 6-4: Industrial Environment, 2007.

EN 61000-3-2 (CENELEC): EMC - Part 2. Limits for Harmonic Current Emissions (Equipment Input Current  $\leq 16$  A per phase), with Amendment 14, 2006.

EN 61000-3-3 (CENELEC): EMC - Part 3. Limitation of Voltage Fluctuation and Flicker in Low-Voltage Supply Systems for Equipment with Rated Current  $\leq 16$  A, 1998, A1:2001, A2:2005, A3:2006.

EN 61000-4-7 (CENELEC): EMC – Part 4-7 Testing and measurement techniques – General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto: 2002, incorporating corrigenda Nos. 1:2004 and 2:2005.

EN 300 328 v1.7.1: Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive, 2006.

EN 300 330 v1.4.1: Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop system in the frequency range 9 kHz to 30 MHz, 2005.

EN 61000-4-2 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 2. Electrostatic Discharge Immunity Test, with Amendments 1 & 2, 2001.

EN 61000-4-3 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 3. Radiated, Radio-Frequency, Electromagnetic Field Immunity, 2006.

EN 61000-4-4 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 4. Electrical Fast Transient/Burst Immunity Test, incorporating corrigendum no. 1: January 2007.

EN 61000-4-5 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 5. Surge Immunity Test, 2006.

EN 61000-4-6 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 6. Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields, 2005, A1: 2007.

EN 61000-4-8 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 8. Power Frequency Magnetic Field Immunity Test, 1993 with the incorporation of amendment A1:2001.

EN 61000-4-11 (CENELEC): EMC - Part 4. Testing and Measurement Techniques; Section 11. Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests, 2004

EN 61326 (CENELEC): Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements, 1997, with the incorporation of amendments A1:1998, A2:2001 and A3:2003.

7.1.2 47 CFR FCC PART 15 RADIO FREQUENCY DEVICES: OCT 2008

Subpart A General.

Subpart B Unintentional Radiators.

Subpart C Intentional Radiators.

Subpart D Unlicensed Personal Communications Service Devices.

7.1.3 47 CFR FCC PART 22 PUBLIC MOBILE SERVICES: OCT 2008

7.1.4 47 CFR FCC PART 24 PERSONAL COMMUNICATIONS SERVICES: OCT 2008

7.1.5 JAPAN

VCCI V-3

7.1.6 CANADA

ICES-001: Interference-Causing Equipment Standard - ISM RF Generators, 2006.

ICES-003: Interference-Causing Equipment Standard - Digital Apparatus, 2004.

7.1.7 AUSTRALIA/NEW ZEALAND

SAA AS/NZ 3548: Limits and Methods of Measurement of Radio Disturbance Characteristics of ITE, 1997.

AS/NZS CISPR22

7.1.8 TAIWAN

CNS13438, 2006.

7.1.9 KOREA

KN22, September 29, 2005

KN24, 1998

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