Impinj, Inc.

ADDENDUM TEST REPORT FOR 90557-6

RFID Integrated Reader, IPJR640

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.207 & 15.247
and
RSS-210 Version 7

Report No.: 90557-6A

Date of issue: May 19, 2010

ACCREDITED

TESTING
CERT #803.01, 803.02, 803.05, 803.06

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Impinj, Inc.
701 N. 34th St.
Seattle, WA 98103

Representative: Bill Ashley
Customer Reference Number: 102475

REPORT PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 90557

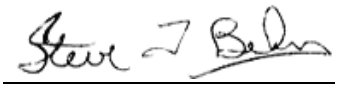
DATE OF EQUIPMENT RECEIPT: April 21, 2010
DATE(S) OF TESTING: April 21-22, 2010

Revision History

Original: Test of the RFID Integrated Reader, IPJR640 to FCC Part 15 Subpart C Sections 15.207 & 15.247.
Addendum A: Added a Laptop Computer and USB Hub to Peripheral sections, added better definition on the connections, cable type and operational mode in the test conditions, replaced plots with revised distance correction factor and antenna polarity, replaced bandedge compliance data/plots and peak power data/plots.

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
22116 23rd Drive S.E., Suite A
Bothell, WA 98021-4413

Site Registration & Accreditation Information

Location	Japan	Canada	FCC
Bothell	R-2296, C-2506 & T-1489	3082C-1	318736

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C 15.207, 15.247

Description	Test Procedure/Method	Results
Conducted Emissions	FCC Part 15 Subpart C Section 15.207(a)/ ANSI C63.4	Pass
20 dB Bandwidth	FCC Part 15 Subpart C Section 15.247(a)(1)(i)/ FCC Public Notice DA 00-705	Pass
Maximum Peak Power	FCC Part 15 Subpart C Section 15.247(b)(1) / FCC Public Notice DA 00-705	Pass
RF Conducted Spurious Emissions	FCC Part 15 Subpart C Section 15.247(d)/ FCC Public Notice DA 00-705	Pass
RF Radiated Spurious Emissions	FCC Part 15 Subpart C Section 15.247(d)/ FCC Public Notice DA 00-705	Pass

Standard / Specification: RSS-210 Version 7

Description	Test Procedure/Method	Results
99% Bandwidth	RSS-210 Version 7/ FCC Public Notice DA 00-705	Pass

Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
The device can operate from two different power sources; 24VDC or 48VDC POE (Power Over Ethernet). Worst case emissions were found using the 48VDC POE option and are reported.

EQUIPMENT UNDER TEST (EUT)

The EUT is an UHF RFID portal reader system consisting of an integrated antenna with reader.

EQUIPMENT UNDER TEST

The following model was tested by CKC Laboratories: **RFID, IPJR640**

Since the time of testing the manufacturer has chosen to use the following model name in its place. Any differences between the names does not affect their EMC characteristics and therefore meets the level of testing equivalent to the tested model name shown on the data sheets: **RFID Integrated Reader, IPJR640**

RFID Integrated Reader
Manuf: Impinj, Inc.
Model: IPJR640
Serial: 37009510054

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

48VDC Power Adapter
Manuf: D-LINK
Model: VAN90C-480B
Serial: 13092600057-0D

POE Switch
Manuf: D-LINK
Model: DES-1008PA
Serial: F3GR188000310

24VDC Power Adapter
Manuf: CUI, Inc.
Model: DSA-60W-20
Serial: DTS240250UC-P11P-DB

Laptop Computer
Manuf: Dell.
Model: Latitude
Serial: 6497402833

USB Hub
Manuf: SI Tech
Model: 2173
Serial: 079536

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) 47 CFR 15C requirements for Unlicensed Radio Frequency Devices, Subpart C - Intentional Radiators.

Temperature and Humidity During Testing
The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

15.33(a) Frequency Ranges Tested
15.207 Conducted Emissions: 150 kHz – 30 MHz
15.247 Radiated Emissions: 30 kHz – 9.3GHz

15.203 Antenna Requirements
The antenna is removable and uses a RP-TNC type connector.

EUT Operating Frequency
The EUT was operating at 902 - 928 MHz

15.207 AC Conducted Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Conducted Emissions** Time: 10:50:58 AM
Equipment: **RFID** Sequence#: 1
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640 120V 60Hz
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01492	50uH LISN-Line (dB)	3816/2NM	6/2/2009	6/2/2011
	AN01492	50uH LISN-Neutral (dB)	3816/2NM	6/2/2009	6/2/2011
T2	ANP05435	Attenuator	PE7015-10	9/5/2008	9/5/2010
T3	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T4	ANP05366	Cable	RG-214	11/5/2008	11/5/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
T6	AN02611	High Pass Filter	HE9615-150K-50-720B	7/21/2008	7/21/2010
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
24VDC Power adapter	CUI, Inc.	DSA-60W-20	DTS240250UC-P11P-DB
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

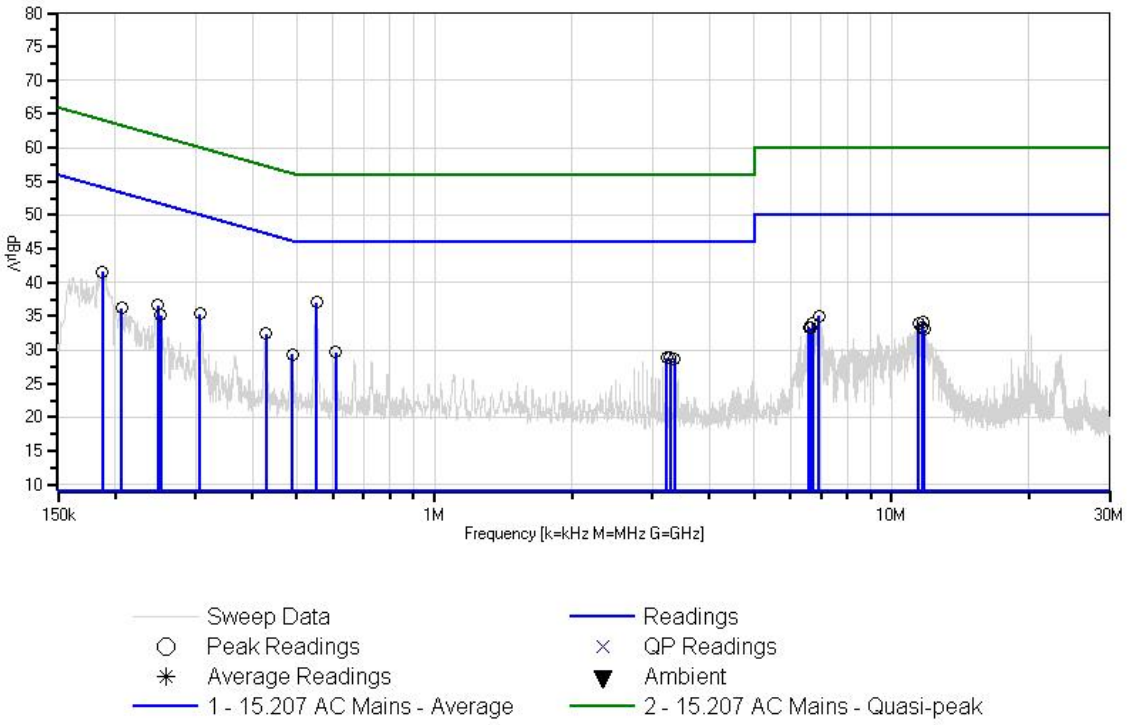
Frequency Range Investigated: 150 kHz - 30 MHz
22ºC /Relative Humidity 35% / 102.0 kPa
Setup and testing per ANSI C63.4
EUT is transmitting continuously, fully modulated (100%).
Ethernet and USB ports are loaded. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
EUT power is 24VDC from an AC/DC power adapter; input power is 120VAC / 60Hz.

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	551.418k	27.0	+0.1 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	37.0	46.0	-9.0	Line
2	187.815k	31.7	+0.1 +0.0	+9.6 +0.2	+0.0	+0.0	+0.0	41.6	54.1	-12.5	Line
3	306.349k	25.6	+0.1 +0.0	+9.6 +0.1	+0.0	+0.0	+0.0	35.4	50.1	-14.7	Line
4	427.793k	22.5	+0.1 +0.0	+9.6 +0.1	+0.1	+0.0	+0.0	32.4	47.3	-14.9	Line
5	6.932M	24.6	+0.4 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	35.0	50.0	-15.0	Line
6	248.173k	26.7	+0.1 +0.0	+9.6 +0.2	+0.0	+0.0	+0.0	36.6	51.8	-15.2	Line
7	11.716M	23.5	+0.6 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	34.1	50.0	-15.9	Line
8	11.463M	23.5	+0.5 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	34.0	50.0	-16.0	Line
9	6.725M	23.5	+0.4 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	33.9	50.0	-16.1	Line
10	608.867k	19.7	+0.1 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	29.7	46.0	-16.3	Line
11	251.809k	25.3	+0.1 +0.0	+9.6 +0.2	+0.0	+0.0	+0.0	35.2	51.7	-16.5	Line
12	11.670M	22.8	+0.6 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	33.4	50.0	-16.6	Line
13	6.598M	22.8	+0.4 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	33.2	50.0	-16.8	Line
14	6.661M	22.8	+0.4 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	33.2	50.0	-16.8	Line
15	488.151k	19.3	+0.1 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	29.3	46.2	-16.9	Line
16	11.788M	22.4	+0.6 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	33.0	50.0	-17.0	Line
17	206.722k	26.3	+0.1 +0.0	+9.6 +0.2	+0.0	+0.0	+0.0	36.2	53.3	-17.1	Line
18	3.220M	18.6	+0.2 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	28.8	46.0	-17.2	Line
19	3.284M	18.6	+0.2 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	28.8	46.0	-17.2	Line
20	3.348M	18.5	+0.2 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	28.7	46.0	-17.3	Line

CKC Laboratories, Inc. Date: 4/21/2010 Time: 10:50:58 AM Impinj, Inc. WO#: 90557
15.207 AC Mains - Average Test Lead: Line 120V 60Hz Sequence#: 1 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Conducted Emissions** Time: 10:56:06 AM
Equipment: **RFID** Sequence#: 2
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640 120V 60Hz
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01492	50uH LISN-Line (dB)	3816/2NM	6/2/2009	6/2/2011
T1	AN01492	50uH LISN-Neutral (dB)	3816/2NM	6/2/2009	6/2/2011
T2	ANP05435	Attenuator	PE7015-10	9/5/2008	9/5/2010
T3	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T4	ANP05366	Cable	RG-214	11/5/2008	11/5/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
T6	AN02611	High Pass Filter	HE9615-150K-50-720B	7/21/2008	7/21/2010
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
24VDC Power adapter	CUI, Inc.	DSA-60W-20	DTS240250UC-P11P-DB
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 150 kHz - 30 MHz
22ºC / Relative Humidity 35% / 102.0 kPa
Setup and testing per ANSI C63.4
EUT is transmitting continuously, fully modulated (100%).
Ethernet and USB ports are loaded. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
EUT power is 24VDC from an AC/DC power adapter; input power is 120VAC / 60Hz.

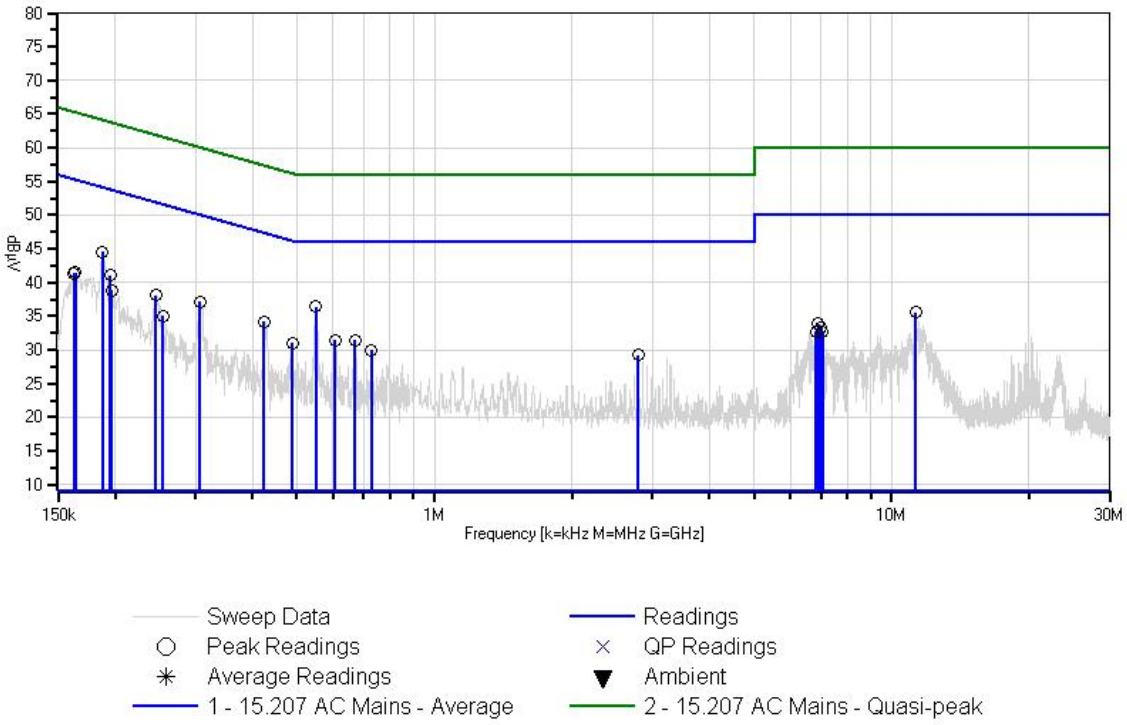
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Neutral

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	187.815k	34.6	+0.1 +0.0	+9.6 +0.2	+0.0	+0.0	+0.0	44.5	54.1	-9.6	Neutr
2	550.691k	26.5	+0.0 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	36.4	46.0	-9.6	Neutr
3	195.087k	31.2	+0.1 +0.0	+9.6 +0.2	+0.0	+0.0	+0.0	41.1	53.8	-12.7	Neutr
4	307.076k	27.5	+0.0 +0.0	+9.6 +0.1	+0.0	+0.0	+0.0	37.2	50.0	-12.8	Neutr

5	424.157k	24.4	+0.0 +0.0	+9.6 +0.1	+0.1	+0.0	+0.0	34.2	47.4	-13.2	Neutr
6	163.817k	31.3	+0.1 +0.0	+9.6 +0.5	+0.0	+0.0	+0.0	41.5	55.3	-13.8	Neutr
7	245.991k	28.3	+0.0 +0.0	+9.6 +0.2	+0.0	+0.0	+0.0	38.1	51.9	-13.8	Neutr
8	162.363k	31.1	+0.1 +0.0	+9.6 +0.6	+0.0	+0.0	+0.0	41.4	55.3	-13.9	Neutr
9	11.301M	25.4	+0.2 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	35.6	50.0	-14.4	Neutr
10	606.685k	21.6	+0.0 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	31.5	46.0	-14.5	Neutr
11	670.679k	21.5	+0.0 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	31.4	46.0	-14.6	Neutr
12	196.541k	29.0	+0.1 +0.0	+9.6 +0.2	+0.0	+0.0	+0.0	38.9	53.8	-14.9	Neutr
13	488.878k	21.1	+0.0 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	31.0	46.2	-15.2	Neutr
14	728.129k	20.0	+0.0 +0.0	+9.6 +0.2	+0.1	+0.1	+0.0	30.0	46.0	-16.0	Neutr
15	6.905M	23.8	+0.1 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	33.9	50.0	-16.1	Neutr
16	254.718k	25.2	+0.0 +0.0	+9.6 +0.2	+0.0	+0.0	+0.0	35.0	51.6	-16.6	Neutr
17	2.795M	19.2	+0.1 +0.0	+9.6 +0.1	+0.1	+0.1	+0.0	29.2	46.0	-16.8	Neutr
18	7.004M	23.1	+0.1 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	33.2	50.0	-16.8	Neutr
19	6.833M	22.6	+0.1 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	32.7	50.0	-17.3	Neutr
20	7.067M	22.5	+0.1 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	32.6	50.0	-17.4	Neutr

CKC Laboratories, Inc. Date: 4/21/2010 Time: 10:56:06 AM Impinj, Inc. WO#: 90557
15.207 AC Mains - Average Test Lead: Neutral 120V 60Hz Sequence#: 2 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Conducted Emissions** Time: 16:19:16
Equipment: **RFID** Sequence#: 6
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640 120V 60Hz
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01492	50uH LISN-Line (dB)	3816/2NM	6/2/2009	6/2/2011
	AN01492	50uH LISN-Neutral (dB)	3816/2NM	6/2/2009	6/2/2011
T2	ANP05435	Attenuator	PE7015-10	9/5/2008	9/5/2010
T3	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T4	ANP05366	Cable	RG-214	11/5/2008	11/5/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
T6	AN02611	High Pass Filter	HE9615-150K-50-720B	7/21/2008	7/21/2010
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
POE Switch	D-LINK	DES-1008PA	F3GR188000310
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 150 kHz - 30 MHz
22ºC /Relative Humidity 35% / 102.0 kPa
Setup and testing per ANSI C63.4
EUT is transmitting continuously, fully modulated (100%).
Ethernet and USB ports are loaded. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
EUT power is 48VDC POE from a D-LINK POE switch.
The D-LINK is powered by an AC/DC power adapter; input power is 120VAC / 60Hz.

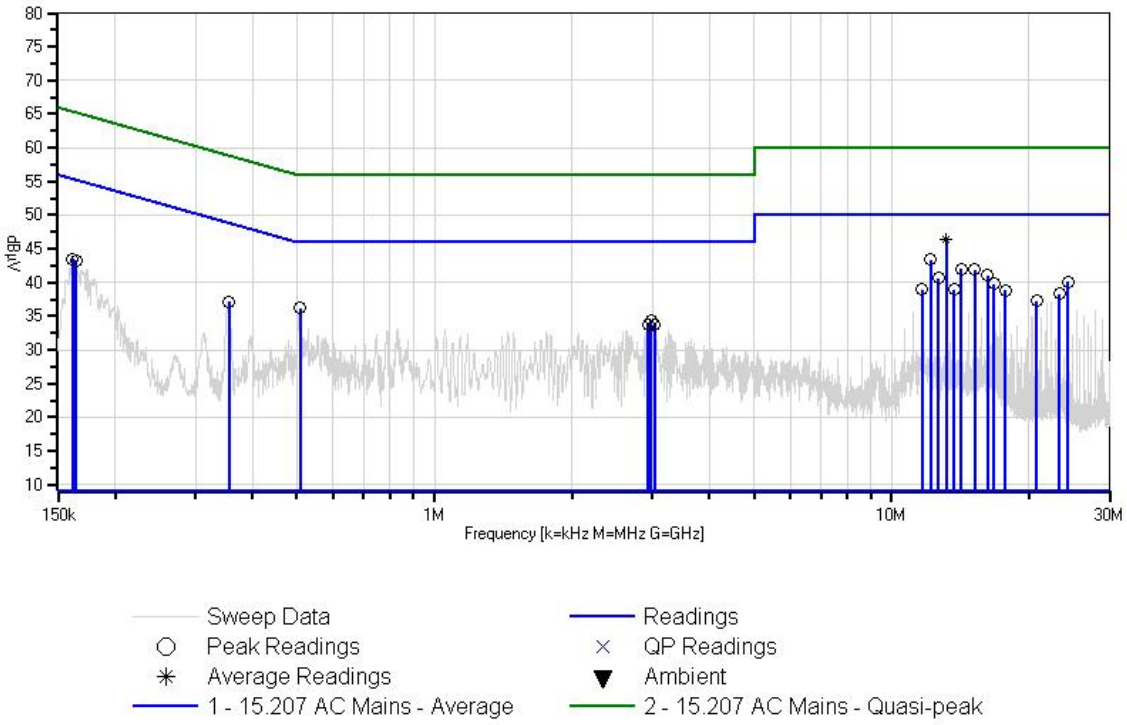
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	13.191M	35.7	+0.6	+9.5	+0.2	+0.2	+0.0	46.3	50.0	-3.7	Line
Ave			+0.0	+0.1							
^	13.189M	37.0	+0.6	+9.5	+0.2	+0.2	+0.0	47.6	50.0	-2.4	Line
			+0.0	+0.1							
^	13.193M	35.8	+0.6	+9.5	+0.2	+0.2	+0.0	46.4	50.0	-3.6	Line
			+0.0	+0.1							

4	12.175M	32.8	+0.6 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	43.4	50.0	-6.6	Line
5	14.211M	31.4	+0.6 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	42.0	50.0	-8.0	Line
6	15.220M	31.3	+0.6 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	41.9	50.0	-8.1	Line
7	16.238M	30.3	+0.6 +0.0	+9.5 +0.1	+0.3	+0.3	+0.0	41.1	50.0	-8.9	Line
8	12.679M	30.0	+0.6 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	40.6	50.0	-9.4	Line
9	508.513k	26.2	+0.1 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	36.2	46.0	-9.8	Line
10	24.354M	28.7	+1.0 +0.1	+9.5 +0.2	+0.3	+0.3	+0.0	40.1	50.0	-9.9	Line
11	16.743M	28.9	+0.6 +0.0	+9.5 +0.2	+0.3	+0.3	+0.0	39.8	50.0	-10.2	Line
12	13.697M	28.4	+0.6 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	39.0	50.0	-11.0	Line
13	11.670M	28.4	+0.6 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	39.0	50.0	-11.0	Line
14	17.761M	27.8	+0.7 +0.1	+9.5 +0.2	+0.3	+0.3	+0.0	38.9	50.0	-11.1	Line
15	355.072k	27.3	+0.1 +0.0	+9.6 +0.1	+0.1	+0.0	+0.0	37.2	48.8	-11.6	Line
16	2.978M	24.3	+0.2 +0.0	+9.6 +0.1	+0.1	+0.1	+0.0	34.4	46.0	-11.6	Line
17	23.340M	27.0	+0.9 +0.1	+9.5 +0.2	+0.3	+0.3	+0.0	38.3	50.0	-11.7	Line
18	161.635k	33.2	+0.1 +0.0	+9.6 +0.6	+0.0	+0.0	+0.0	43.5	55.4	-11.9	Line
19	164.544k	33.1	+0.1 +0.0	+9.6 +0.5	+0.0	+0.0	+0.0	43.3	55.2	-11.9	Line
20	2.936M	23.7	+0.2 +0.0	+9.6 +0.1	+0.1	+0.1	+0.0	33.8	46.0	-12.2	Line
21	3.029M	23.6	+0.2 +0.0	+9.6 +0.1	+0.1	+0.1	+0.0	33.7	46.0	-12.3	Line
22	20.797M	26.1	+0.8 +0.1	+9.5 +0.2	+0.3	+0.3	+0.0	37.3	50.0	-12.7	Line

CKC Laboratories, Inc. Date: 4/21/2010 Time: 16:19:16 Impinj, Inc. WO#: 90557
15.207 AC Mains - Average Test Lead: Line 120V 60Hz Sequence#: 6 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Conducted Emissions** Time: 16:39:01
Equipment: **RFID** Sequence#: 8
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640 120V 60Hz
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01492	50uH LISN-Line (dB)	3816/2NM	6/2/2009	6/2/2011
T1	AN01492	50uH LISN-Neutral (dB)	3816/2NM	6/2/2009	6/2/2011
T2	ANP05435	Attenuator	PE7015-10	9/5/2008	9/5/2010
T3	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T4	ANP05366	Cable	RG-214	11/5/2008	11/5/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
T6	AN02611	High Pass Filter	HE9615-150K-50-720B	7/21/2008	7/21/2010
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
POE Switch	D-LINK	DES-1008PA	F3GR188000310
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 150 kHz - 30 MHz
22ºC /Relative Humidity 35% / 102.0 kPa
Setup and testing per ANSI C63.4
EUT is transmitting continuously, fully modulated (100%).
Ethernet and USB ports are loaded. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
EUT power is 48VDC POE from a D-LINK POE switch.
The D-LINK is powered by an AC/DC power adapter; input power is 120VAC / 60Hz.

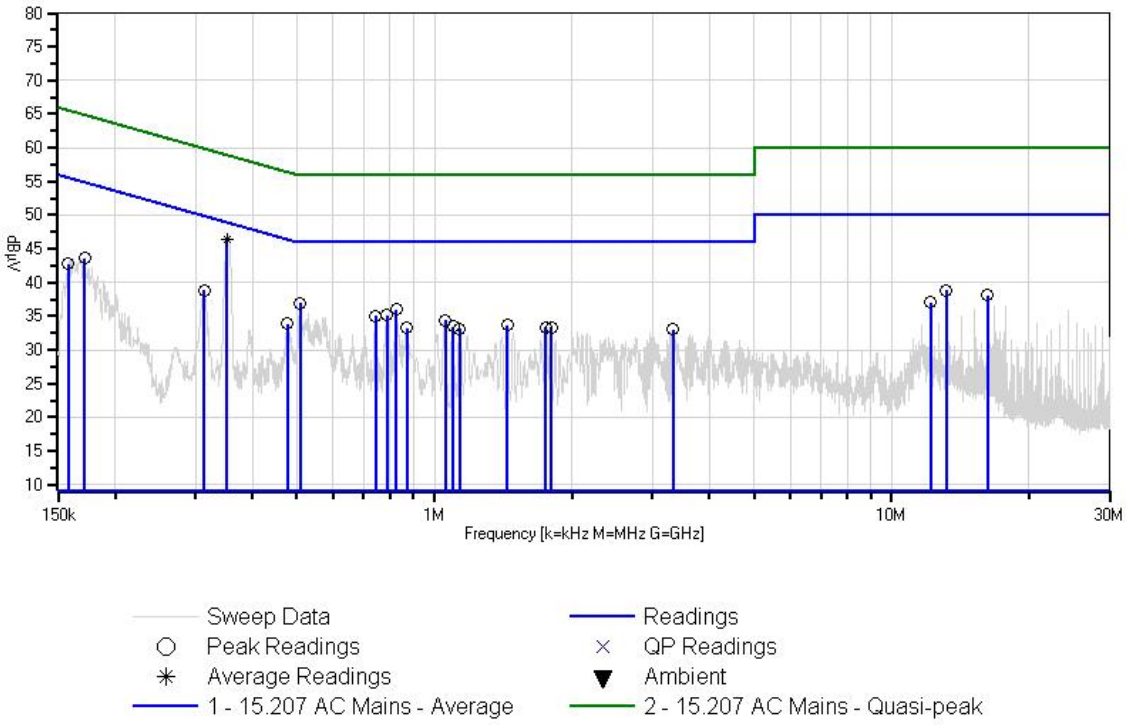
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Neutral

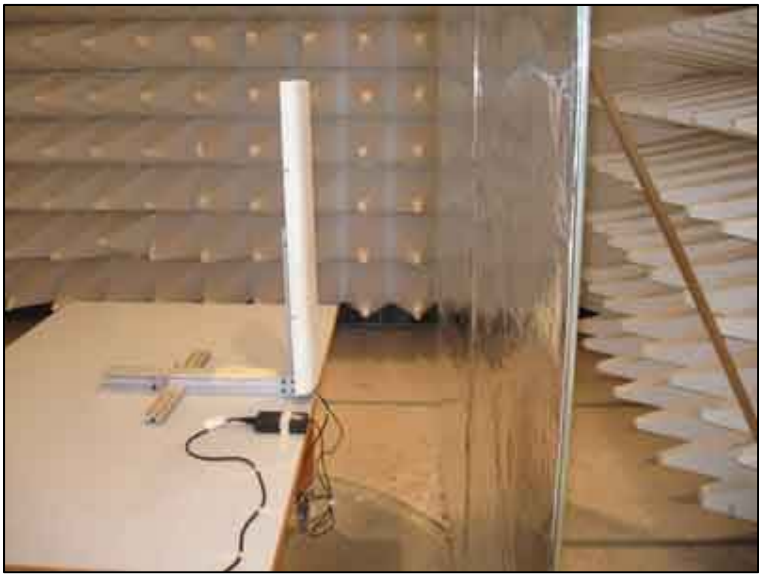
#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	350.900k	36.6	+0.0	+9.6	+0.1	+0.0	+0.0	46.4	48.9	-2.5	Neutr
Ave			+0.0	+0.1							
^	351.820k	37.5	+0.0	+9.6	+0.1	+0.0	+0.0	47.3	48.9	-1.6	Neutr
			+0.0	+0.1							
^	353.618k	37.3	+0.0	+9.6	+0.1	+0.0	+0.0	47.1	48.9	-1.8	Neutr
			+0.0	+0.1							

4	508.513k	27.0	+0.0 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	36.9	46.0	-9.1	Neutr
5	826.302k	26.0	+0.0 +0.0	+9.6 +0.2	+0.1	+0.1	+0.0	36.0	46.0	-10.0	Neutr
6	787.760k	25.2	+0.0 +0.0	+9.6 +0.2	+0.1	+0.1	+0.0	35.2	46.0	-10.8	Neutr
7	744.127k	25.0	+0.0 +0.0	+9.6 +0.2	+0.1	+0.1	+0.0	35.0	46.0	-11.0	Neutr
8	13.193M	28.6	+0.3 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	38.9	50.0	-11.1	Neutr
9	312.894k	29.1	+0.0 +0.0	+9.6 +0.1	+0.0	+0.0	+0.0	38.8	49.9	-11.1	Neutr
10	171.816k	33.5	+0.1 +0.0	+9.6 +0.4	+0.0	+0.0	+0.0	43.6	54.9	-11.3	Neutr
11	1.056M	24.4	+0.0 +0.0	+9.6 +0.2	+0.1	+0.1	+0.0	34.4	46.0	-11.6	Neutr
12	16.229M	27.5	+0.4 +0.0	+9.5 +0.1	+0.3	+0.3	+0.0	38.1	50.0	-11.9	Neutr
13	1.443M	23.6	+0.1 +0.0	+9.6 +0.2	+0.1	+0.1	+0.0	33.7	46.0	-12.3	Neutr
14	1.098M	23.5	+0.0 +0.0	+9.6 +0.2	+0.1	+0.1	+0.0	33.5	46.0	-12.5	Neutr
15	477.243k	24.0	+0.0 +0.0	+9.6 +0.2	+0.1	+0.0	+0.0	33.9	46.4	-12.5	Neutr
16	1.800M	23.4	+0.1 +0.0	+9.6 +0.1	+0.1	+0.1	+0.0	33.4	46.0	-12.6	Neutr
17	1.753M	23.4	+0.1 +0.0	+9.6 +0.1	+0.1	+0.1	+0.0	33.4	46.0	-12.6	Neutr
18	869.207k	23.3	+0.0 +0.0	+9.6 +0.2	+0.1	+0.1	+0.0	33.3	46.0	-12.7	Neutr
19	157.999k	32.0	+0.1 +0.0	+9.6 +1.1	+0.0	+0.0	+0.0	42.8	55.6	-12.8	Neutr
20	1.137M	23.1	+0.0 +0.0	+9.6 +0.2	+0.1	+0.1	+0.0	33.1	46.0	-12.9	Neutr
21	12.175M	26.7	+0.3 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	37.0	50.0	-13.0	Neutr
22	3.323M	22.9	+0.1 +0.0	+9.5 +0.1	+0.2	+0.2	+0.0	33.0	46.0	-13.0	Neutr

CKC Laboratories, Inc. Date: 4/21/2010 Time: 16:39:01 Impinj, Inc. WO#: 90557
15.207 AC Mains - Average Test Lead: Neutral 120V 60Hz Sequence#: 8 Ext ATTN: 0 dB



Test Setup Photos



15.247(a)(1)(i) 20 dB Bandwidth

Test Conditions: Frequency Range investigated: 902 - 928 MHz; 22º C / Relative Humidity 35% / 102.0 kPa; Conducted RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems. The EUT is transmitting continuously, fully modulated; the Ethernet port is connected to a laptop, but this is only used to configure the EUT for transmit testing. Low CH: 902.75 MHz; Mid CH: 915.25 MHz; High CH: 927.25 MHz.

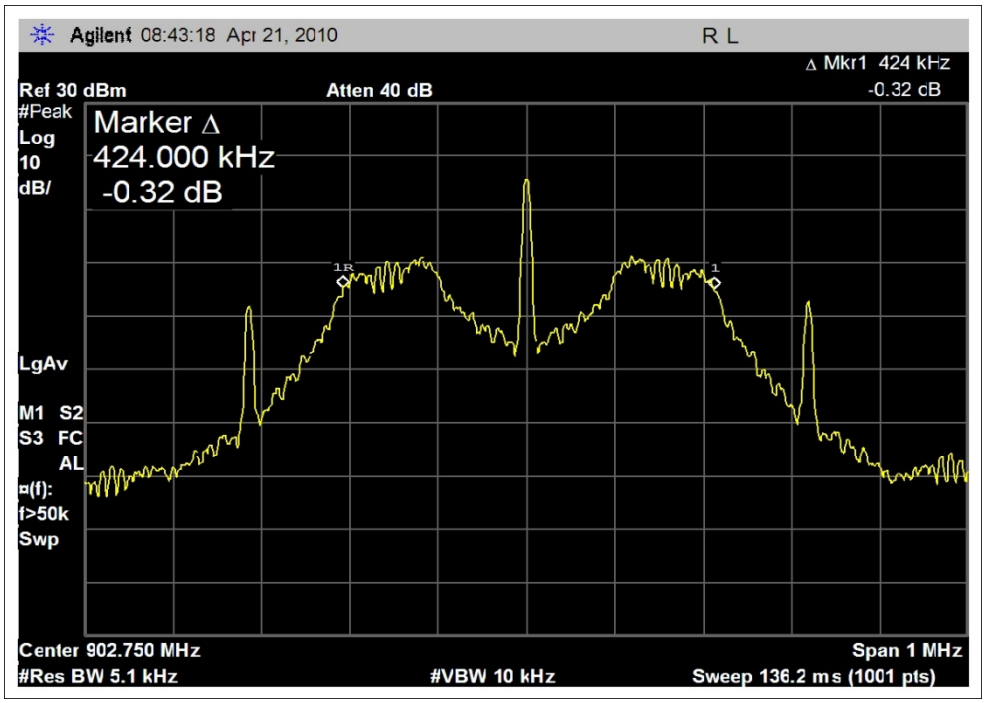
Engineer Name: J. Gilbert

Test Equipment				
Equipment	**Model**	**Cal Date**	**Cal Due**	**Asset**
Cable	27	4/17/2009	4/17/2011	ANP05238
Cable	32026-2-29080-84	10/23/2009	10/23/2011	AN03121
Attenuator	PE7015-10	9/5/2008	9/5/2010	ANP05435
Spectrum Analyzer	E4440A	8/25/2009	8/25/2011	AN02872

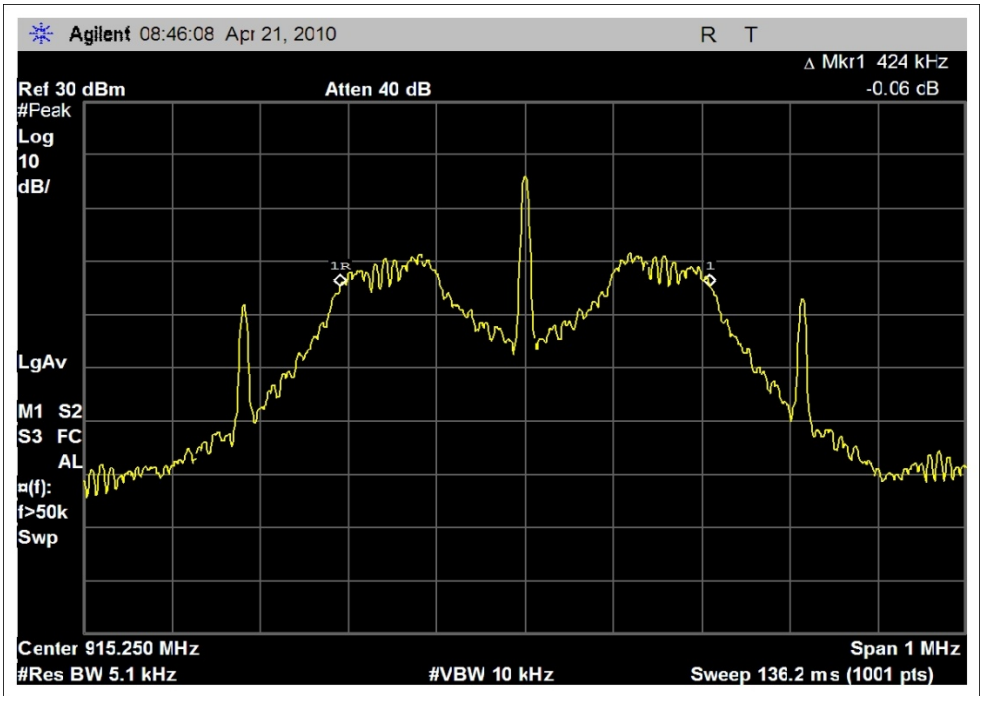
Test Data

15.247(a)(1)(i) - 20 dB Bandwidth

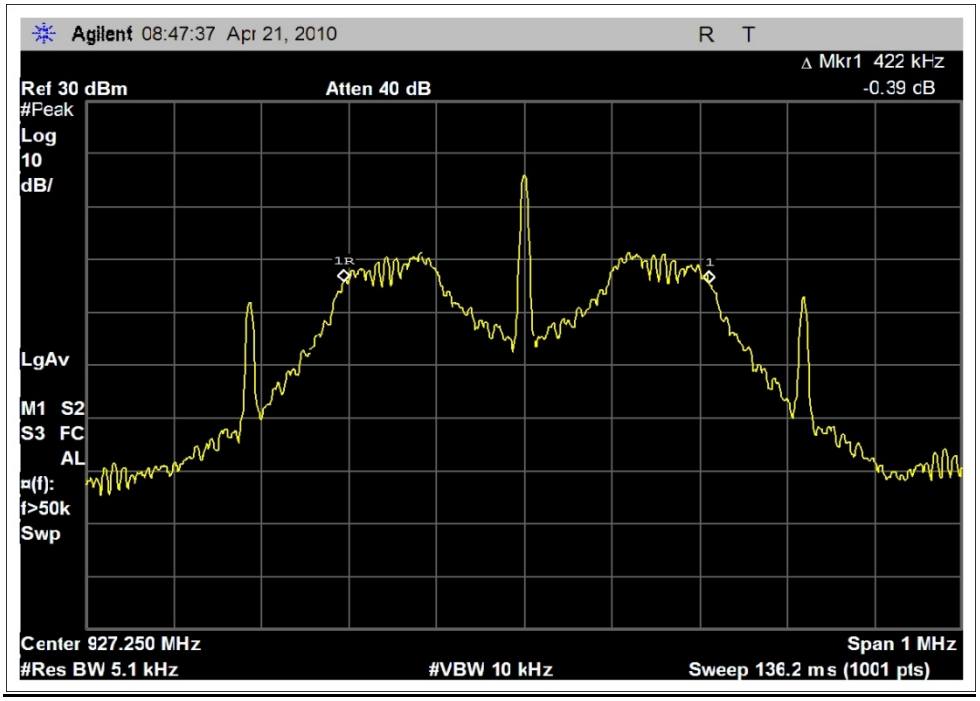
Frequency MHz	Measured 20 dB BW kHz	15.247 Limit kHz	Pass/Fail
902.75	424	500	Pass
915.25	424	500	Pass
927.25	422	500	Pass



Low Channel 20dB Bandwidth

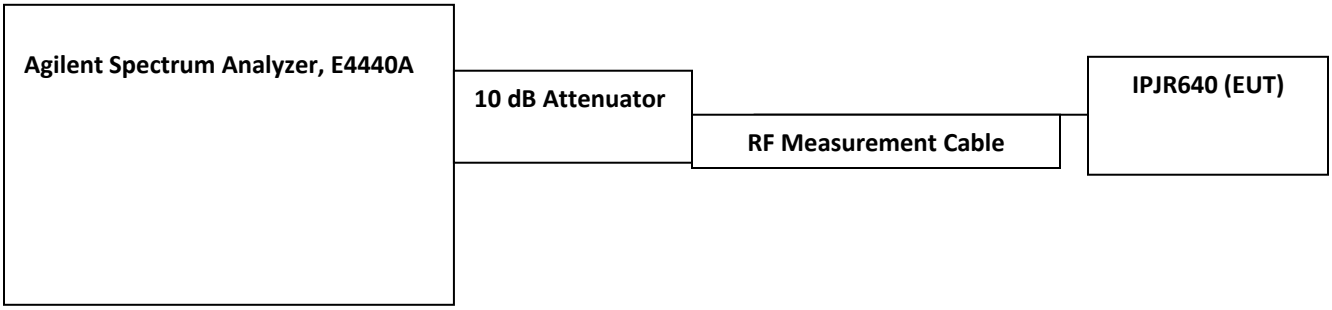


Mid Channel 20dB Bandwidth



High Channel 20dB Bandwidth

Test Setup Diagram



15.247(b)(1) Maximum Peak Power

Test Data

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(b) 902-928 MHz FHSS >50 Channels**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Maximized Emissions** Time: 17:56:16
Equipment: **RFID** Sequence#: 1
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05238	Cable	27	4/17/2009	4/17/2011
T2	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
T3	ANP05435	Attenuator	PE7015-10	9/5/2008	9/5/2010
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 902 - 928 MHz
22ºC / Relative Humidity 35% / 102.2 kPa
Conducted RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated. The Ethernet port is connected to a laptop, but this is only used to configure the EUT for transmit testing.
Low CH: 902.75 MHz
Mid CH: 915.25 MHz
High CH: 927.25 MHz

Ext Attn: 0 dB

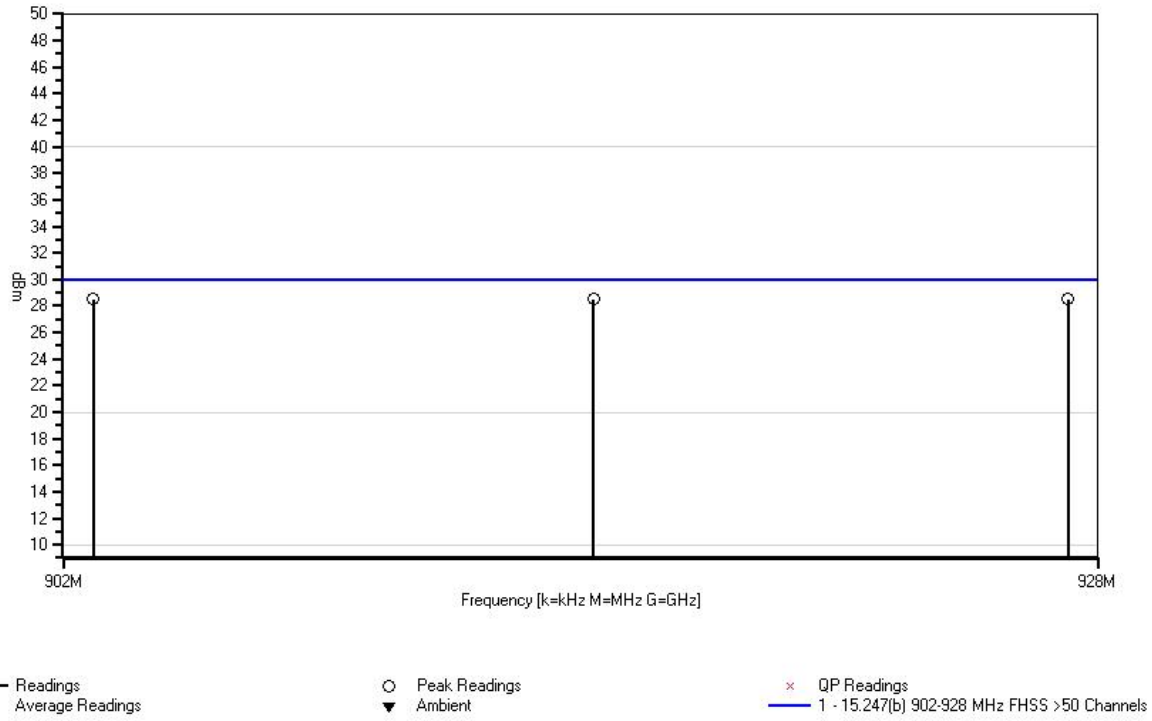
Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBm	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBm	Spec dBm	Margin dB	Polar Ant
1	927.244M	17.7	+0.4	+0.8	+9.6		+0.0	28.5	30.0	-1.5	None 101
2	902.754M	17.7	+0.4	+0.8	+9.6		+0.0	28.5	30.0	-1.5	None 101
3	915.246M	17.7	+0.4	+0.8	+9.6		+0.0	28.5	30.0	-1.5	None 101

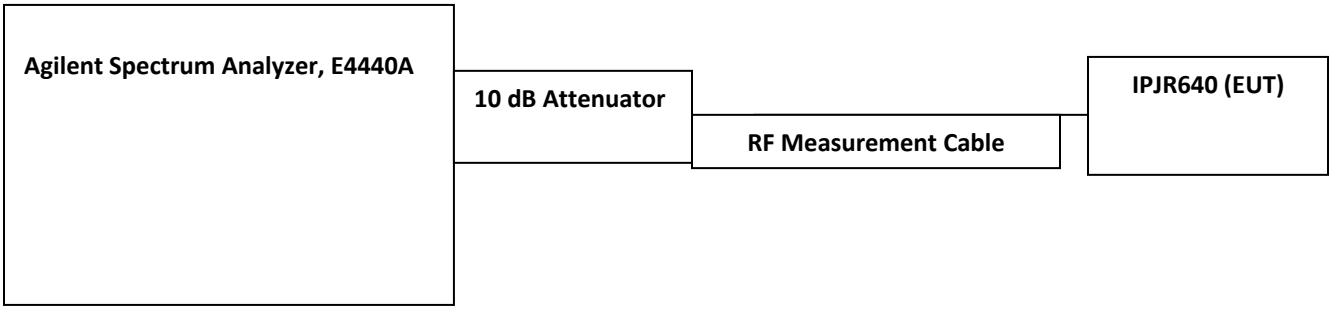
15.247(b)(1) - Maximum Peak Power

Frequency MHz	Conducted Power dBm	15.247 Limit dBm	Pass/Fail
902.75	28.5	30.0	Pass
915.25	28.5	30.0	Pass
927.25	28.5	30.0	Pass

CKC Laboratories, Inc. Date: 4/21/2010 Time: 17:56:16 Impinj, Inc. WO#: 90557
15.247(b) 902-928 MHz FHSS >50 Channels Test Distance: None Sequence#: 1 Ext ATTN: 0 dB



Test Setup Diagram



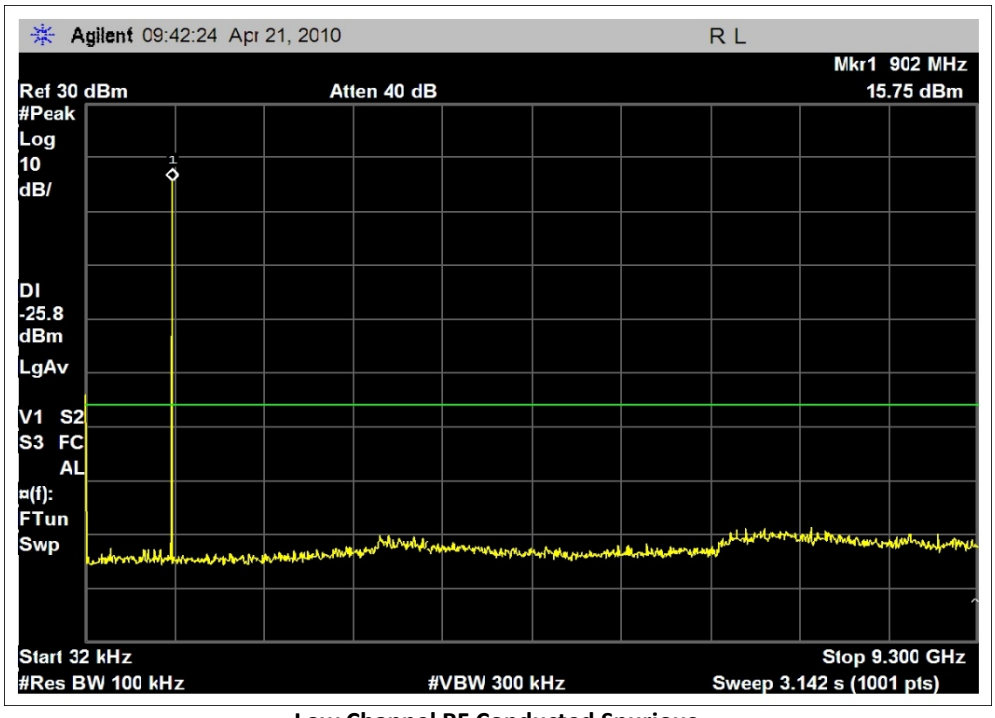
15.247(d) RF Conducted Spurious Emissions

Test Conditions: Frequency Range Investigated: 902 - 928 MHz; 22º C / 35% / 102.0 kPa; Conducted RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems; EUT is transmitting continuously, fully modulated; the Ethernet port is connected to a laptop, but this is only used to configure the EUT for transmit testing. Low CH: 902.75 MHz; Mid CH: 915.25 MHz; High CH: 927.25 MHz.

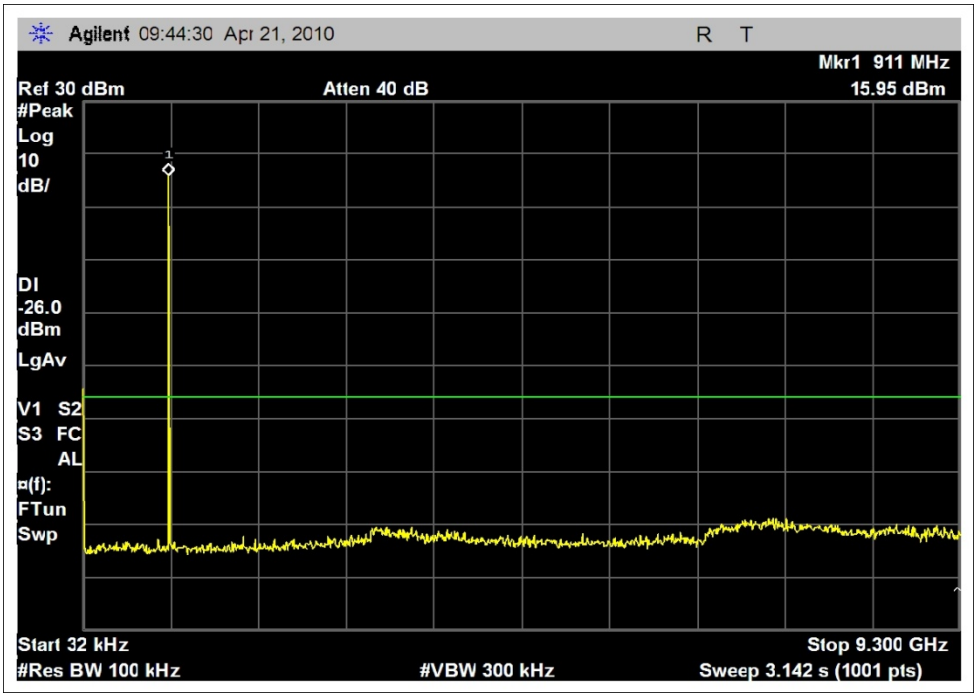
Engineer Name: J. Gilbert

Test Equipment				
Equipment	**Model**	**Cal Date**	**Cal Due**	**Asset**
Cable	27	4/17/2009	4/17/2011	ANP05238
Cable	32026-2-29080-84	10/23/2009	10/23/2011	AN03121
Attenuator	PE7015-10	9/5/2008	9/5/2010	ANP05435
Spectrum Analyzer	E4440A	8/25/2009	8/25/2011	AN02872

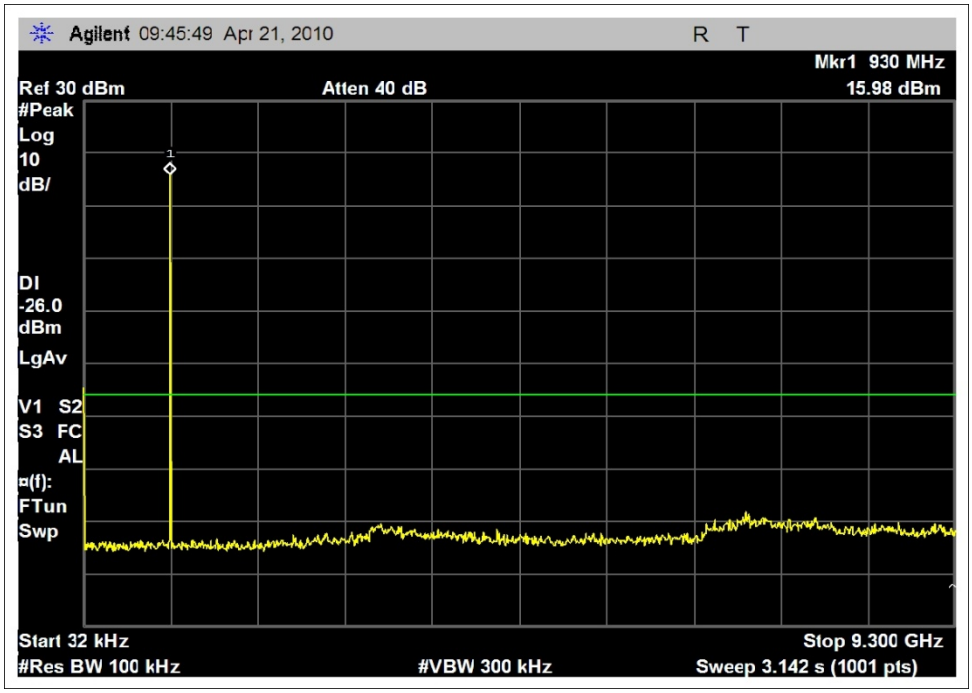
Test Plots



Low Channel RF Conducted Spurious

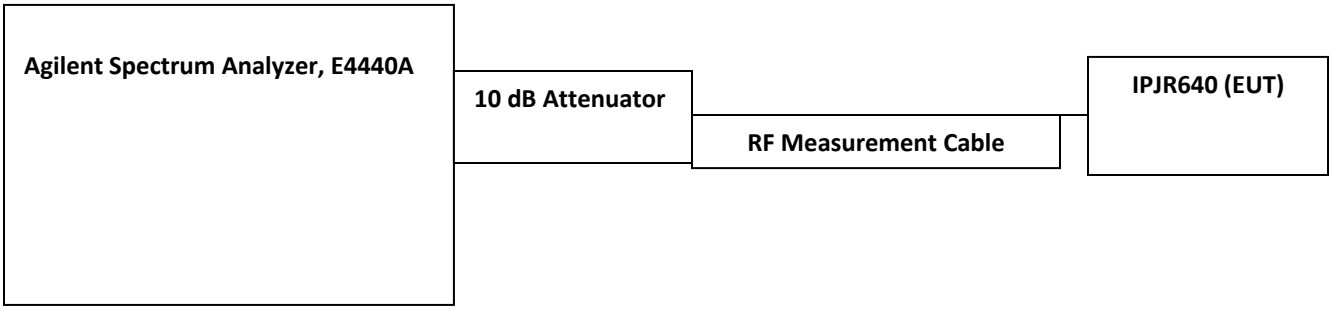


Mid Channel RF Conducted Spurious



High Channel RF Conducted Spurious

Test Setup Diagram



15.247(d) RF Radiated Spurious Emissions

Test Data

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Maximized Emissions** Time: 4:51:26 PM
Equipment: **RFID** Sequence#: 6
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00052	Loop Antenna	6502	6/4/2008	6/4/2010
T2	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T3	ANP05366	Cable	RG-214	11/5/2008	11/5/2010
T4	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
T5	AN01717	High Pass Filter	F3440-P005	7/21/2008	7/21/2010
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

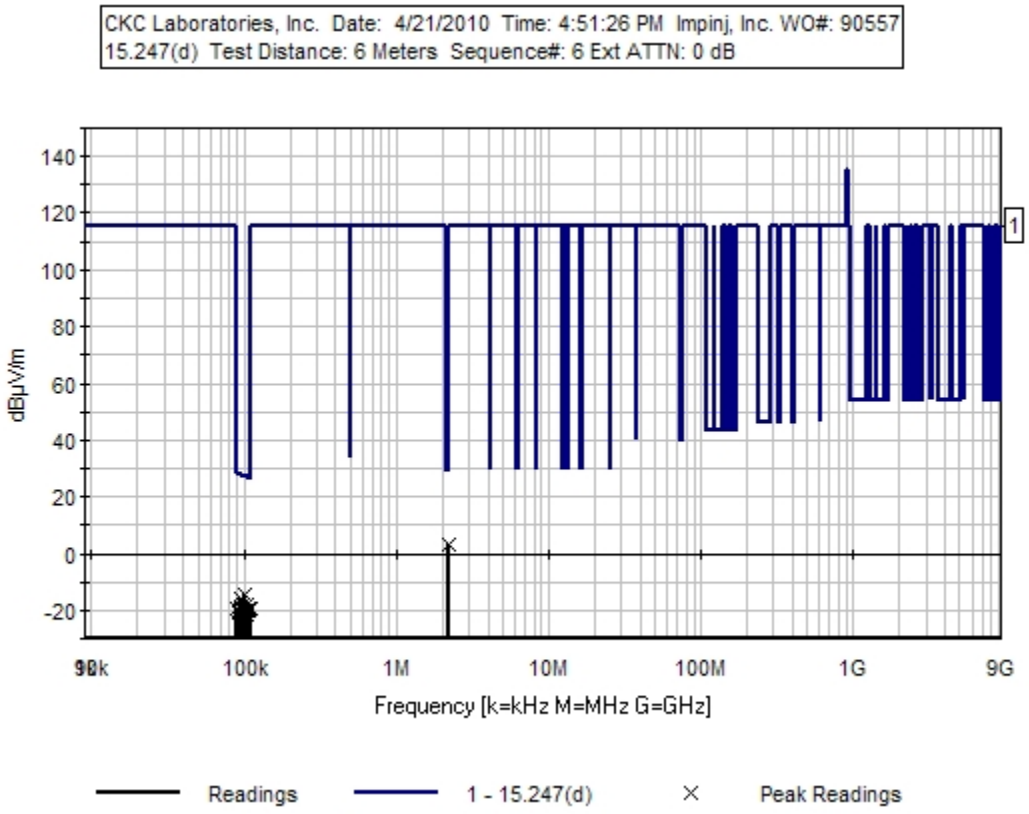
Test Conditions / Notes:

Frequency Range Investigated: 30 kHz - 30 MHz
22ºC / Relative Humidity 35% / 102.0 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 6 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2.185M	20.8	+10.4 +0.0	+0.1	+0.1	+0.0	-28.0	3.4	29.5	-26.1	Verti 100
2	101.880k	43.7	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-14.3	27.4	-41.7	Verti 100
3	96.600k	42.1	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-15.9	27.9	-43.8	Verti 100
4	102.720k	39.7	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-18.3	27.4	-45.7	Verti 100
5	97.320k	39.8	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-18.2	27.8	-46.0	Verti 100
6	107.640k	39.0	+9.9 +0.0	+0.0	+0.0	+0.0	-68.0	-19.1	27.0	-46.1	Verti 100
7	109.080k	38.7	+9.9 +0.0	+0.0	+0.0	+0.0	-68.0	-19.4	26.9	-46.3	Verti 100
8	106.440k	38.8	+9.9 +0.0	+0.0	+0.0	+0.0	-68.0	-19.3	27.1	-46.4	Verti 100
9	95.880k	39.2	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-18.8	28.0	-46.8	Verti 100
10	103.080k	38.2	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-19.8	27.4	-47.2	Verti 100
11	108.240k	37.8	+9.9 +0.0	+0.0	+0.0	+0.0	-68.0	-20.3	26.9	-47.2	Verti 100
12	95.400k	38.7	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-19.3	28.0	-47.3	Verti 100
13	94.920k	38.6	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-19.4	28.0	-47.4	Verti 100
14	101.160k	38.1	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-19.9	27.5	-47.4	Verti 100
15	90.600k	38.9	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-19.1	28.4	-47.5	Verti 100
16	94.440k	38.4	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-19.6	28.1	-47.7	Verti 100
17	98.160k	37.7	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-20.3	27.8	-48.1	Verti 100
18	91.560k	37.8	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-20.2	28.4	-48.6	Verti 100
19	103.560k	36.6	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-21.4	27.3	-48.7	Verti 100
20	92.160k	37.5	+10.0 +0.0	+0.0	+0.0	+0.0	-68.0	-20.5	28.3	-48.8	Verti 100


CKC Laboratories, Inc. Date: 4/21/2010 Time: 4:51:26 PM Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 6 Meters Sequence#: 6 Ext ATTN: 0 dB
140
120
100
80
60
40
20
0
-20
dBµV/m
1
90k
100k
1M
10M
100M
1G
9G
Frequency [k=kHz M=MHz G=GHz]
Readings
1 - 15.247(d)
Peak Readings

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Maximized Emissions** Time: 5:23:07 PM
Equipment: **RFID** Sequence#: 8
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T2	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T3	AN01517	Preamp	8447D	7/8/2008	7/8/2010
T4	ANP05366	Cable	RG-214	11/5/2008	11/5/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

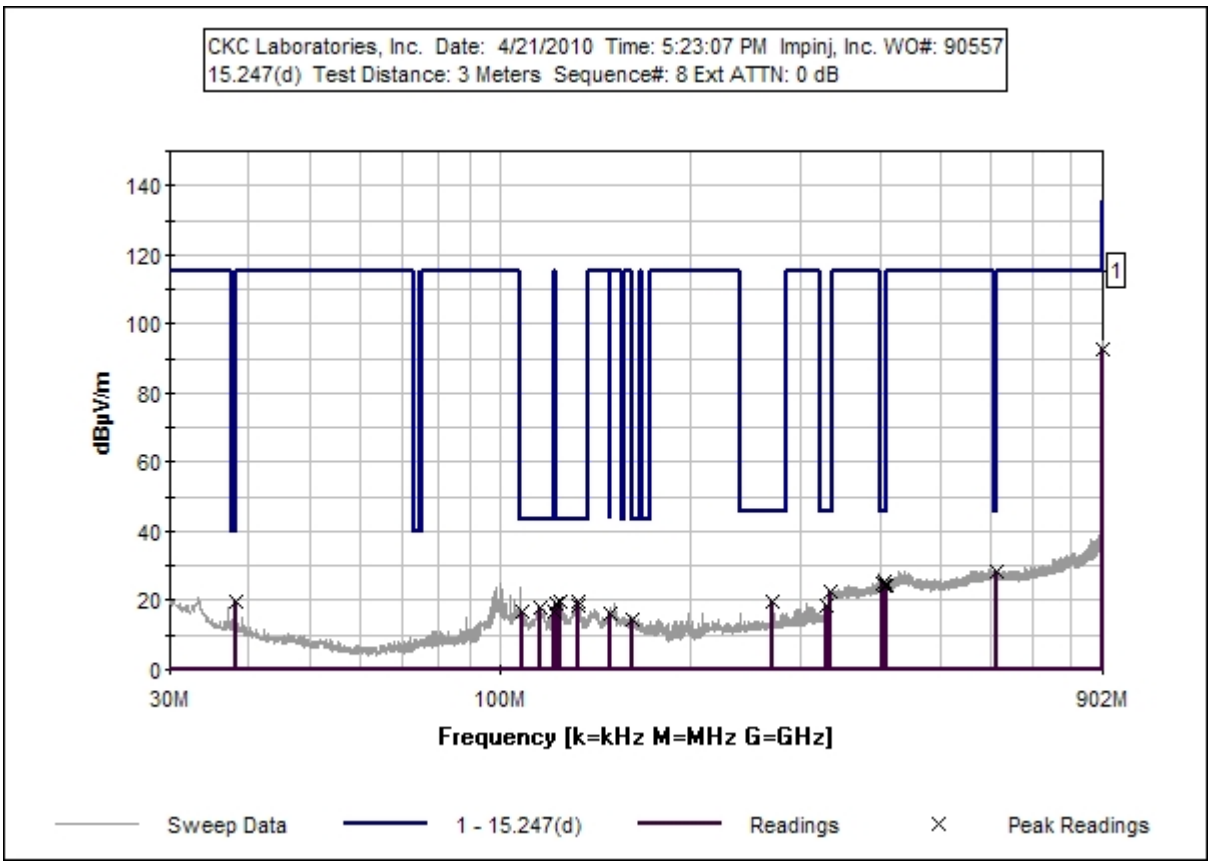
Frequency Range Investigated: 30 - 902 MHz
22ºC / Relative Humidity 35% / 102.2 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	612.084M	33.6	+20.0 +0.6	+1.6	-29.6	+1.9	+0.0 360	28.1	46.0	-17.9	Horiz 110
2	38.037M	35.6	+12.2 +0.1	+0.4	-29.1	+0.4	+0.0 360	19.6	40.0	-20.4	Horiz 110
3	405.838M	34.4	+16.5 +0.5	+1.3	-29.0	+1.5	+0.0 360	25.2	46.0	-20.8	Horiz 110
4	402.835M	34.1	+16.5 +0.5	+1.3	-29.0	+1.5	+0.0 360	24.9	46.0	-21.1	Horiz 110
5	404.277M	34.0	+16.5 +0.5	+1.3	-29.0	+1.5	+0.0 360	24.8	46.0	-21.2	Horiz 110

6	409.682M	33.8	+16.6 +0.5	+1.3	-29.1	+1.5	+0.0 360	24.6	46.0	-21.4	Horiz 110
7	407.520M	33.7	+16.5 +0.5	+1.3	-29.1	+1.5	+0.0 360	24.4	46.0	-21.6	Horiz 110
8	901.736M	94.1	+23.1 +0.8	+1.9	-29.3	+2.0	+0.0 360	92.6	115.5	-22.9	Horiz 110
9	333.526M	33.7	+14.6 +0.4	+1.3	-28.5	+1.3	+0.0 360	22.8	46.0	-23.2	Horiz 110
10	133.046M	34.8	+12.2 +0.3	+0.7	-29.0	+0.7	+0.0 360	19.7	43.5	-23.8	Horiz 110
11	124.757M	34.6	+12.3 +0.2	+0.7	-29.0	+0.7	+0.0 360	19.5	43.5	-24.0	Horiz 110
12	123.076M	34.8	+11.9 +0.2	+0.7	-29.0	+0.7	+0.0 360	19.3	43.5	-24.2	Horiz 110
13	133.526M	33.9	+12.2 +0.3	+0.7	-29.0	+0.7	+0.0 360	18.8	43.5	-24.7	Horiz 110
14	115.748M	34.4	+10.9 +0.2	+0.6	-29.0	+0.6	+0.0 360	17.7	43.5	-25.8	Horiz 110
15	108.181M	34.1	+10.6 +0.2	+0.6	-29.1	+0.6	+0.0 360	17.0	43.5	-26.5	Horiz 110
16	269.982M	32.4	+13.0 +0.4	+1.0	-28.4	+1.1	+0.0 360	19.5	46.0	-26.5	Horiz 110
17	121.875M	32.5	+11.6 +0.2	+0.7	-29.0	+0.7	+0.0 360	16.7	43.5	-26.8	Horiz 110
18	149.983M	31.2	+12.1 +0.3	+0.8	-28.9	+0.8	+0.0 360	16.3	43.5	-27.2	Horiz 110
19	330.042M	29.4	+14.5 +0.4	+1.3	-28.5	+1.3	+0.0 360	18.4	46.0	-27.6	Horiz 110
20	162.355M	30.4	+11.1 +0.3	+0.8	-28.8	+0.9	+0.0 360	14.7	43.5	-28.8	Horiz 110


CKC Laboratories, Inc. Date: 4/21/2010 Time: 5:23:07 PM Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 8 Ext ATTN: 0 dB
140
120
100
80
60
40
20
0
dBµV/m
1
30M
100M
902M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
1 - 15.247(d)
Readings
Peak Readings

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Maximized Emissions** Time: 17:21:32
Equipment: **RFID** Sequence#: 7
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T2	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T3	AN01517	Preamp	8447D	7/8/2008	7/8/2010
T4	ANP05366	Cable	RG-214	11/5/2008	11/5/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

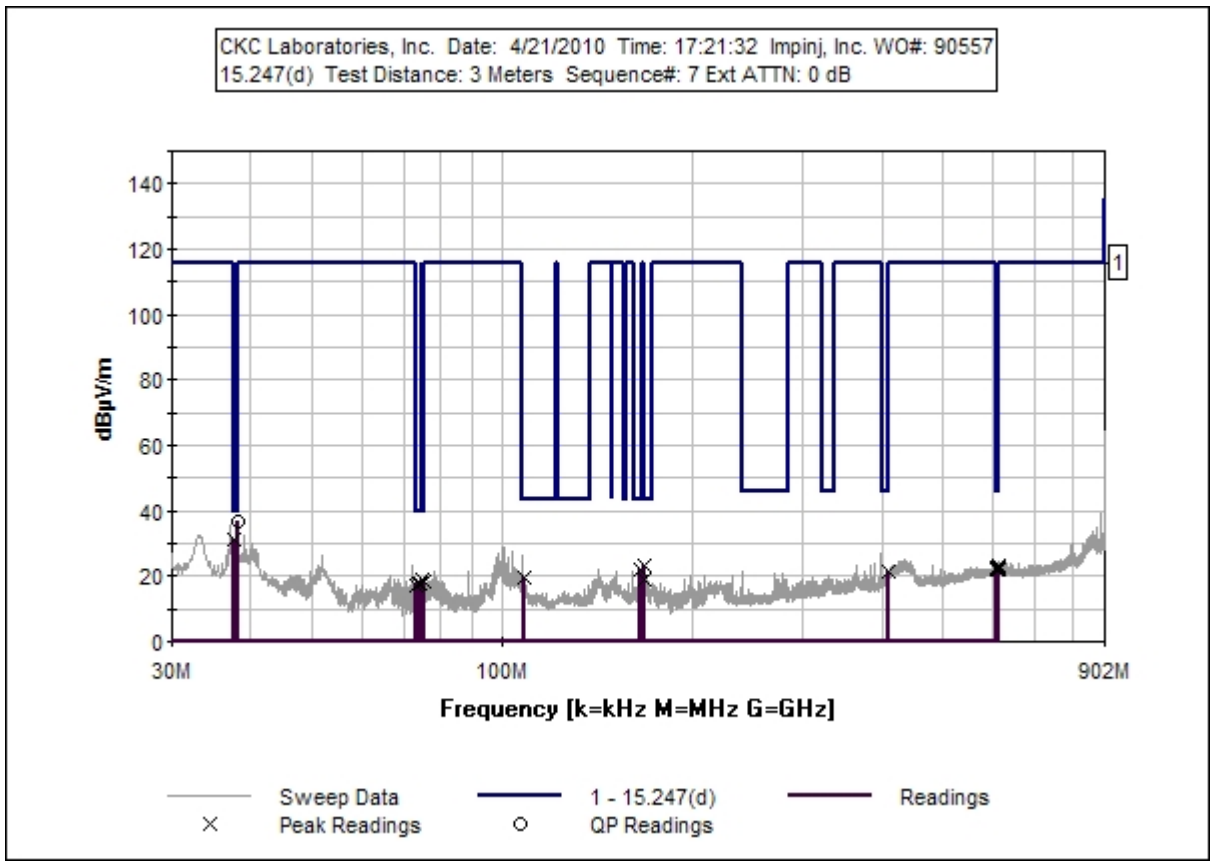
Frequency Range Investigated: 30 - 902 MHz
22ºC / Relative Humidity 35% / 102.2 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	38.055M	52.9	+12.2	+0.4	-29.1	+0.4	+0.0	36.9	40.0	-3.1	Verti
	QP		+0.1				285				100
^	38.037M	51.2	+12.2	+0.4	-29.1	+0.4	+0.0	35.2	40.0	-4.8	Verti
			+0.1								140
3	37.531M	47.3	+12.4	+0.4	-29.1	+0.4	+0.0	31.5	40.0	-8.5	Verti
			+0.1								140
4	168.481M	39.4	+10.5	+0.8	-28.8	+0.9	+0.0	23.1	43.5	-20.4	Verti
			+0.3								140
5	74.553M	39.0	+7.6	+0.5	-29.1	+0.5	+0.0	18.7	40.0	-21.3	Verti
			+0.2								140

6	75.060M	38.8	+7.7 +0.2	+0.5	-29.1	+0.5	+0.0	18.6	40.0	-21.4	Verti 140
7	166.079M	38.1	+10.7 +0.3	+0.8	-28.8	+0.9	+0.0	22.0	43.5	-21.5	Verti 140
8	74.047M	38.3	+7.6 +0.2	+0.5	-29.1	+0.5	+0.0	18.0	40.0	-22.0	Verti 140
9	73.604M	38.1	+7.5 +0.2	+0.5	-29.1	+0.5	+0.0	17.7	40.0	-22.3	Verti 140
10	612.324M	28.9	+20.0 +0.6	+1.6	-29.6	+1.9	+0.0	23.4	46.0	-22.6	Verti 140
11	73.034M	37.6	+7.4 +0.2	+0.5	-29.1	+0.5	+0.0	17.1	40.0	-22.9	Verti 140
12	609.321M	28.3	+20.0 +0.6	+1.6	-29.6	+1.9	+0.0	22.8	46.0	-23.2	Verti 140
13	613.886M	28.2	+20.0 +0.6	+1.6	-29.6	+1.9	+0.0	22.7	46.0	-23.3	Verti 140
14	612.925M	27.9	+20.0 +0.6	+1.6	-29.6	+1.9	+0.0	22.4	46.0	-23.6	Verti 140
15	611.844M	27.9	+20.0 +0.6	+1.6	-29.6	+1.9	+0.0	22.4	46.0	-23.6	Verti 140
16	610.282M	27.8	+20.0 +0.6	+1.6	-29.6	+1.9	+0.0	22.3	46.0	-23.7	Verti 140
17	610.883M	27.8	+20.0 +0.6	+1.6	-29.6	+1.9	+0.0	22.3	46.0	-23.7	Verti 140
18	608.000M	27.6	+20.0 +0.6	+1.6	-29.6	+1.9	+0.0	22.1	46.0	-23.9	Verti 140
19	108.781M	36.4	+10.7 +0.2	+0.6	-29.1	+0.6	+0.0	19.4	43.5	-24.1	Verti 140
20	409.442M	30.9	+16.6 +0.5	+1.3	-29.1	+1.5	+0.0	21.7	46.0	-24.3	Verti 140
21	168.001M	35.3	+10.5 +0.3	+0.8	-28.8	+0.9	+0.0	19.0	43.5	-24.5	Verti 140


CKC Laboratories, Inc. Date: 4/21/2010 Time: 17:21:32 Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 7 Ext ATTN: 0 dB
140
120
100
80
60
40
20
0
dBµV/m
1
30M
100M
902M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
1 - 15.247(d)
Readings
Peak Readings
QP Readings

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Maximized Emissions** Time: 5:46:47 PM
Equipment: **RFID** Sequence#: 10
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T2	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T3	AN01517	Preamp	8447D	7/8/2008	7/8/2010
T4	ANP05366	Cable	RG-214	11/5/2008	11/5/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

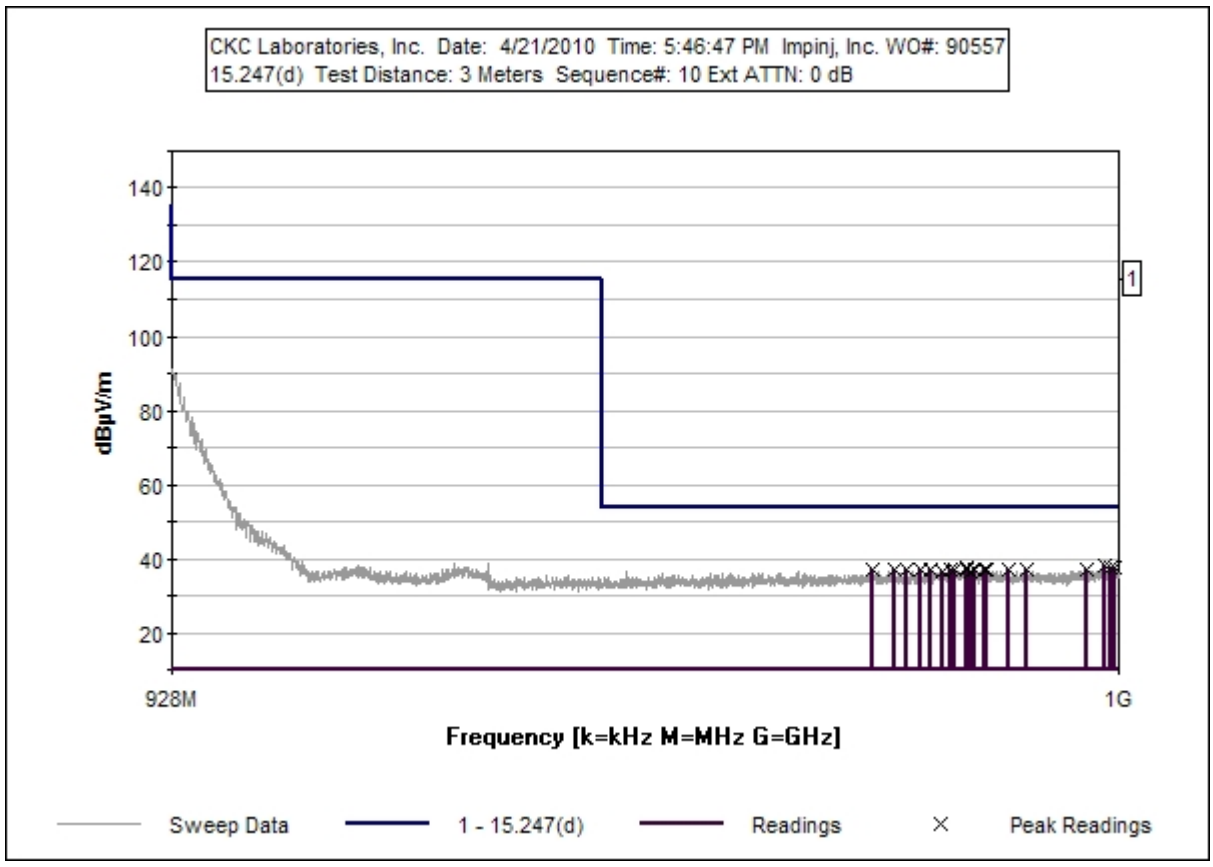
Frequency Range Investigated: 928 - 1000 MHz
22ºC / Relative Humidity 35% / 102.2 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	998.819M	37.5	+24.4 +0.8	+2.1	-29.0	+2.1	+0.0 360	37.9	54.0	-16.1	Horiz 130
2	999.729M	37.3	+24.4 +0.8	+2.1	-29.0	+2.1	+0.0 360	37.7	54.0	-16.3	Horiz 130
3	988.118M	37.0	+24.3 +0.8	+2.0	-29.0	+2.2	+0.0 360	37.3	54.0	-16.7	Horiz 130
4	999.385M	36.9	+24.4 +0.8	+2.1	-29.0	+2.1	+0.0 360	37.3	54.0	-16.7	Horiz 130
5	985.191M	37.0	+24.2 +0.8	+2.0	-29.1	+2.2	+0.0 360	37.1	54.0	-16.9	Horiz 130

6	988.709M	36.8	+24.3 +0.8	+2.0	-29.0	+2.2	+0.0 360	37.1	54.0	-16.9	Horiz 130
7	997.515M	36.7	+24.4 +0.8	+2.1	-29.0	+2.1	+0.0 360	37.1	54.0	-16.9	Horiz 130
8	989.471M	36.7	+24.3 +0.8	+2.0	-29.0	+2.2	+0.0 360	37.0	54.0	-17.0	Horiz 130
9	989.668M	36.7	+24.3 +0.8	+2.0	-29.0	+2.2	+0.0 360	37.0	54.0	-17.0	Horiz 130
10	991.390M	36.7	+24.3 +0.8	+2.0	-29.0	+2.1	+0.0 360	36.9	54.0	-17.1	Horiz 130
11	982.435M	36.9	+24.2 +0.8	+1.9	-29.1	+2.2	+0.0 360	36.9	54.0	-17.1	Horiz 130
12	980.738M	36.9	+24.2 +0.8	+1.9	-29.1	+2.2	+0.0 360	36.9	54.0	-17.1	Horiz 130
13	988.020M	36.6	+24.3 +0.8	+2.0	-29.0	+2.2	+0.0 360	36.9	54.0	-17.1	Horiz 130
14	986.740M	36.8	+24.2 +0.8	+2.0	-29.1	+2.2	+0.0 360	36.9	54.0	-17.1	Horiz 130
15	984.453M	36.8	+24.2 +0.8	+1.9	-29.1	+2.2	+0.0 360	36.8	54.0	-17.2	Horiz 130
16	983.444M	36.8	+24.2 +0.8	+1.9	-29.1	+2.2	+0.0 360	36.8	54.0	-17.2	Horiz 130
17	992.694M	36.6	+24.3 +0.8	+2.0	-29.0	+2.1	+0.0 360	36.8	54.0	-17.2	Horiz 130
18	987.109M	36.7	+24.2 +0.8	+2.0	-29.1	+2.2	+0.0 360	36.8	54.0	-17.2	Horiz 130
19	986.199M	36.6	+24.2 +0.8	+2.0	-29.1	+2.2	+0.0 360	36.7	54.0	-17.3	Horiz 130
20	988.438M	36.4	+24.3 +0.8	+2.0	-29.0	+2.2	+0.0 360	36.7	54.0	-17.3	Horiz 130


CKC Laboratories, Inc. Date: 4/21/2010 Time: 5:46:47 PM Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 10 Ext ATTN: 0 dB
140
120
100
80
60
40
20
dBµV/m
1
928M
1G
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
1 - 15.247(d)
Readings
Peak Readings

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Maximized Emissions** Time: 5:42:55 PM
Equipment: **RFID** Sequence#: 9
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T2	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T3	AN01517	Preamp	8447D	7/8/2008	7/8/2010
T4	ANP05366	Cable	RG-214	11/5/2008	11/5/2010
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

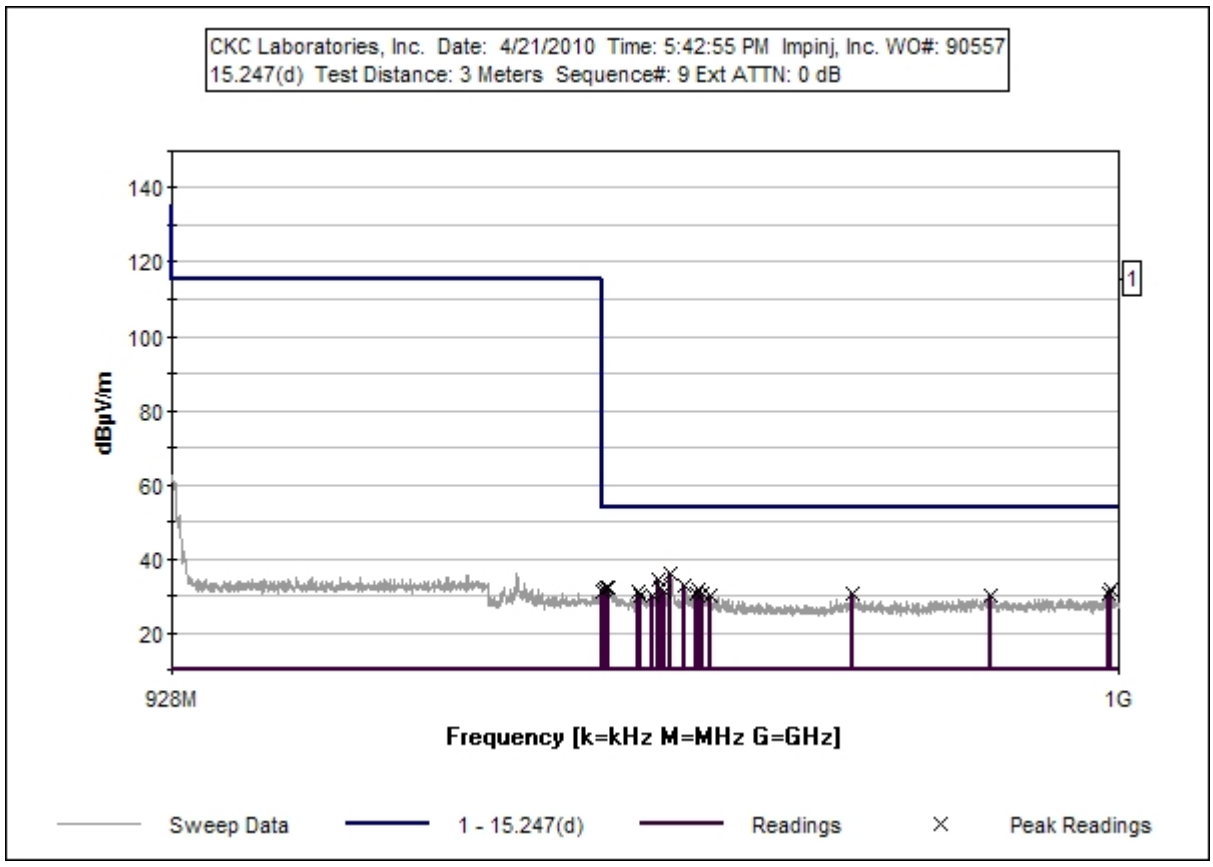
Frequency Range Investigated: 928 - 1000 MHz
22ºC / Relative Humidity 35% / 102.2 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	965.274M	36.0	+24.0 +0.8	+1.8	-29.1	+2.2	+0.0	35.7	54.0	-18.3	Verti 130
2	964.290M	34.5	+24.0 +0.8	+1.8	-29.1	+2.2	+0.0	34.2	54.0	-19.8	Verti 130
3	966.330M	32.9	+24.0 +0.8	+1.8	-29.1	+2.2	+0.0	32.6	54.0	-21.4	Verti 130
4	960.331M	32.8	+23.9 +0.8	+1.8	-29.2	+2.2	+0.0	32.3	54.0	-21.7	Verti 130
5	960.547M	32.7	+23.9 +0.8	+1.8	-29.2	+2.2	+0.0	32.2	54.0	-21.8	Verti 130

6	964.434M	32.4	+24.0 +0.8	+1.8	-29.1	+2.2	+0.0	32.1	54.0	-21.9	Verti 130
7	999.336M	31.3	+24.4 +0.8	+2.1	-29.0	+2.1	+0.0	31.7	54.0	-22.3	Verti 130
8	960.283M	32.1	+23.9 +0.8	+1.8	-29.2	+2.2	+0.0	31.6	54.0	-22.4	Verti 130
9	967.409M	31.9	+24.0 +0.8	+1.8	-29.1	+2.2	+0.0	31.6	54.0	-22.4	Verti 130
10	964.794M	31.6	+24.0 +0.8	+1.8	-29.1	+2.2	+0.0	31.3	54.0	-22.7	Verti 130
11	960.019M	31.5	+23.9 +0.8	+1.8	-29.2	+2.2	+0.0	31.0	54.0	-23.0	Verti 130
12	962.754M	31.4	+23.9 +0.8	+1.8	-29.1	+2.2	+0.0	31.0	54.0	-23.0	Verti 130
13	967.625M	31.0	+24.0 +0.8	+1.8	-29.1	+2.2	+0.0	30.7	54.0	-23.3	Verti 130
14	999.213M	30.2	+24.4 +0.8	+2.1	-29.0	+2.1	+0.0	30.6	54.0	-23.4	Verti 130
15	979.262M	30.6	+24.1 +0.8	+1.9	-29.1	+2.2	+0.0	30.5	54.0	-23.5	Verti 130
16	967.146M	30.7	+24.0 +0.8	+1.8	-29.1	+2.2	+0.0	30.4	54.0	-23.6	Verti 130
17	962.874M	30.5	+23.9 +0.8	+1.8	-29.1	+2.2	+0.0	30.1	54.0	-23.9	Verti 130
18	968.297M	30.4	+24.0 +0.8	+1.8	-29.1	+2.2	+0.0	30.1	54.0	-23.9	Verti 130
19	989.963M	29.8	+24.3 +0.8	+2.0	-29.0	+2.1	+0.0	30.0	54.0	-24.0	Verti 130
20	963.858M	30.3	+23.9 +0.8	+1.8	-29.1	+2.2	+0.0	29.9	54.0	-24.1	Verti 130


CKC Laboratories, Inc. Date: 4/21/2010 Time: 5:42:55 PM Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 9 Ext ATTN: 0 dB
140
120
100
80
60
40
20
dBµV/m
1
928M
1G
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
1 - 15.247(d)
Readings
Peak Readings

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Maximized Emissions** Time: 19:08:17
Equipment: **RFID** Sequence#: 13
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 1000 - 8000 MHz
22ºC / Relative Humidity 35% / 102.2 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 902.75 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

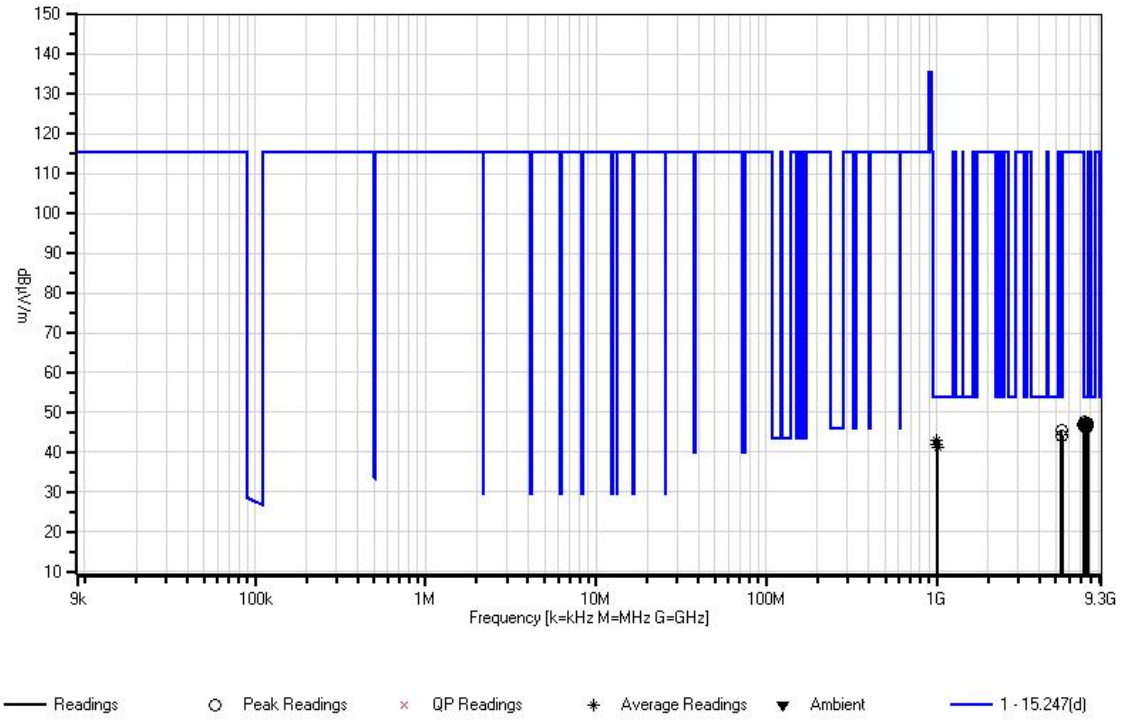
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	7330.365M	38.7	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0	47.6	54.0	-6.4	Horiz 100
2	7539.315M	38.1	+35.5 +5.4	+0.2 +2.5	+0.4	-34.7	+0.0	47.4	54.0	-6.6	Horiz 100
3	7673.640M	37.9	+35.6 +5.4	+0.1 +2.5	+0.5	-34.7	+0.0	47.3	54.0	-6.7	Horiz 100
4	7713.440M	37.7	+35.7 +5.4	+0.1 +2.5	+0.5	-34.6	+0.0	47.3	54.0	-6.7	Horiz 100

5	7638.815M	37.8	+35.6 +5.4	+0.2 +2.6	+0.4	-34.8	+0.0	47.2	54.0	-6.8	Horiz 100
6	7279.620M	38.2	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0	47.1	54.0	-6.9	Horiz 100
7	7624.885M	37.7	+35.6 +5.4	+0.2 +2.6	+0.4	-34.8	+0.0	47.1	54.0	-6.9	Horiz 100
8	7731.350M	37.3	+35.7 +5.4	+0.1 +2.5	+0.5	-34.6	+0.0	46.9	54.0	-7.1	Horiz 100
9	7644.785M	37.4	+35.6 +5.4	+0.2 +2.6	+0.4	-34.8	+0.0	46.8	54.0	-7.2	Horiz 100
10	7651.750M	37.2	+35.6 +5.4	+0.2 +2.5	+0.5	-34.7	+0.0	46.7	54.0	-7.3	Horiz 100
11	7418.920M	37.6	+35.3 +5.3	+0.2 +2.3	+0.5	-34.6	+0.0	46.6	54.0	-7.4	Horiz 100
12	7503.495M	37.3	+35.4 +5.4	+0.2 +2.5	+0.4	-34.6	+0.0	46.6	54.0	-7.4	Horiz 100
13	7379.120M	37.4	+35.3 +5.3	+0.2 +2.3	+0.5	-34.6	+0.0	46.4	54.0	-7.6	Horiz 100
14	7521.405M	37.2	+35.4 +5.4	+0.2 +2.5	+0.4	-34.7	+0.0	46.4	54.0	-7.6	Horiz 100
15	7479.615M	37.1	+35.4 +5.4	+0.2 +2.4	+0.4	-34.6	+0.0	46.3	54.0	-7.7	Horiz 100
16	5416.413M	38.4	+33.6 +4.6	+0.2 +2.1	+0.5	-33.9	+0.0	45.5	54.0	-8.5	Horiz 100
17	5436.433M	36.6	+33.7 +4.6	+0.2 +2.2	+0.5	-33.9	+0.0	43.9	54.0	-10.1	Horiz 100
18	1000.315M Ave	34.7	+22.2 +1.8	+20.5 +0.8	+0.1	-37.2	+0.0 185	42.9	54.0	-11.1	Horiz 100
^	1000.315M	48.2	+22.2 +1.8	+20.5 +0.8	+0.1	-37.2	+0.0 185	56.4	54.0	+2.4	Horiz 100
^	1000.315M	45.8	+22.2 +1.8	+20.5 +0.8	+0.1	-37.2	+0.0	54.0	54.0	+0.0	Horiz 100
21	1007.183M Ave	35.0	+22.3 +1.8	+19.2 +0.8	+0.1	-37.2	+0.0 185	42.0	54.0	-12.0	Horiz 100
^	1007.183M	48.6	+22.3 +1.8	+19.2 +0.8	+0.1	-37.2	+0.0 185	55.6	54.0	+1.6	Horiz 100
^	1007.183M	46.8	+22.3 +1.8	+19.2 +0.8	+0.1	-37.2	+0.0	53.8	54.0	-0.2	Horiz 100
24	1013.191M Ave	35.2	+22.3 +1.8	+18.1 +0.8	+0.1	-37.1	+0.0 180	41.2	54.0	-12.8	Horiz 100
^	1013.191M	49.2	+22.3 +1.8	+18.1 +0.8	+0.1	-37.1	+0.0 180	55.2	54.0	+1.2	Horiz 100
^	1013.191M	47.7	+22.3 +1.8	+18.1 +0.8	+0.1	-37.1	+0.0	53.7	54.0	-0.3	Horiz 100

CKC Laboratories, Inc. Date: 4/21/2010 Time: 19:08:17 Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 13 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/21/2010
Test Type: **Maximized Emissions** Time: 6:34:37 PM
Equipment: **RFID** Sequence#: 11
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN02750	High Pass Filter	9SH10-1000/T10000-O/O	3/15/2010	3/15/2012
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 1000 - 8000 MHz
22ºC / Relative Humidity 35% / 102.2 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 902.75 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

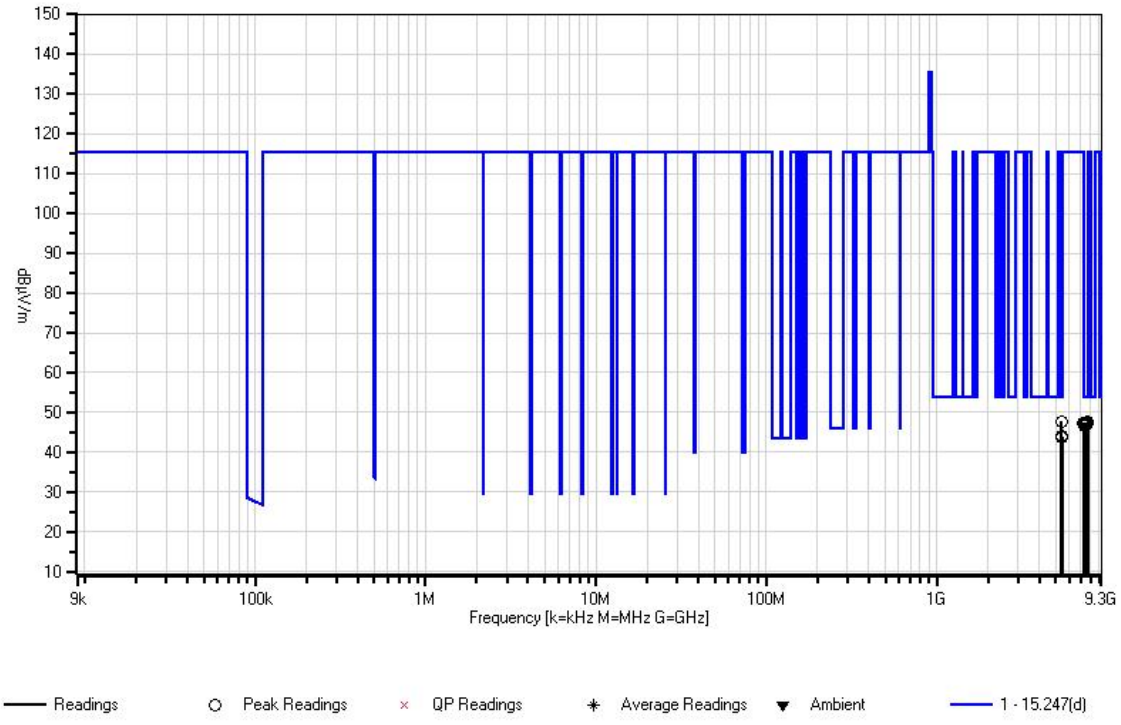
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	7739.310M	37.9	+35.7 +5.4	+0.4 +2.5	+0.5	-34.6	+0.0 360	47.8	54.0	-6.2	Verti 100
2	5416.413M	40.7	+33.6 +4.6	+0.1 +2.1	+0.5	-33.9	+0.0 360	47.7	54.0	-6.3	Verti 100
3	7704.485M	37.7	+35.7 +5.4	+0.4 +2.5	+0.5	-34.6	+0.0 360	47.6	54.0	-6.4	Verti 100

4	7734.335M	37.6	+35.7 +5.4	+0.4 +2.5	+0.5	-34.6	+0.0 360	47.5	54.0	-6.5	Verti 100
5	7605.980M	38.0	+35.5 +5.4	+0.4 +2.6	+0.4	-34.9	+0.0 360	47.4	54.0	-6.6	Verti 100
6	7654.735M	37.7	+35.6 +5.4	+0.4 +2.5	+0.5	-34.7	+0.0 360	47.4	54.0	-6.6	Verti 100
7	7296.535M	38.3	+35.2 +5.2	+0.3 +2.4	+0.5	-34.6	+0.0 360	47.3	54.0	-6.7	Verti 100
8	7667.670M	37.6	+35.6 +5.4	+0.4 +2.5	+0.5	-34.7	+0.0 360	47.3	54.0	-6.7	Verti 100
9	7472.650M	37.9	+35.4 +5.3	+0.4 +2.4	+0.4	-34.6	+0.0 360	47.2	54.0	-6.8	Verti 100
10	7730.355M	37.3	+35.7 +5.4	+0.4 +2.5	+0.5	-34.6	+0.0 360	47.2	54.0	-6.8	Verti 100
11	7360.215M	38.2	+35.3 +5.2	+0.3 +2.3	+0.5	-34.6	+0.0 360	47.2	54.0	-6.8	Verti 100
12	7379.120M	38.0	+35.3 +5.3	+0.4 +2.3	+0.5	-34.6	+0.0 360	47.2	54.0	-6.8	Verti 100
13	7315.440M	38.1	+35.2 +5.2	+0.3 +2.4	+0.5	-34.6	+0.0 360	47.1	54.0	-6.9	Verti 100
14	7509.465M	37.7	+35.4 +5.4	+0.3 +2.5	+0.4	-34.6	+0.0 360	47.1	54.0	-6.9	Verti 100
15	7492.550M	37.5	+35.4 +5.4	+0.4 +2.4	+0.4	-34.6	+0.0 360	46.9	54.0	-7.1	Verti 100
16	7338.325M	37.6	+35.2 +5.2	+0.3 +2.4	+0.5	-34.6	+0.0 360	46.6	54.0	-7.4	Verti 100
17	5428.425M	36.8	+33.7 +4.6	+0.1 +2.2	+0.5	-33.9	+0.0 360	44.0	54.0	-10.0	Verti 100
18	5436.433M	36.8	+33.7 +4.6	+0.1 +2.2	+0.5	-33.9	+0.0 360	44.0	54.0	-10.0	Verti 100
19	5439.436M	36.7	+33.7 +4.6	+0.1 +2.2	+0.5	-33.9	+0.0 360	43.9	54.0	-10.1	Verti 100
20	5458.455M	36.6	+33.7 +4.6	+0.1 +2.2	+0.5	-33.9	+0.0 360	43.8	54.0	-10.2	Verti 100

CKC Laboratories, Inc. Date: 4/21/2010 Time: 6:34:37 PM Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 11 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 08:48:14
Equipment: **RFID** Sequence#: 15
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 1000 - 8000 MHz
21ºC / Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 915.25 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

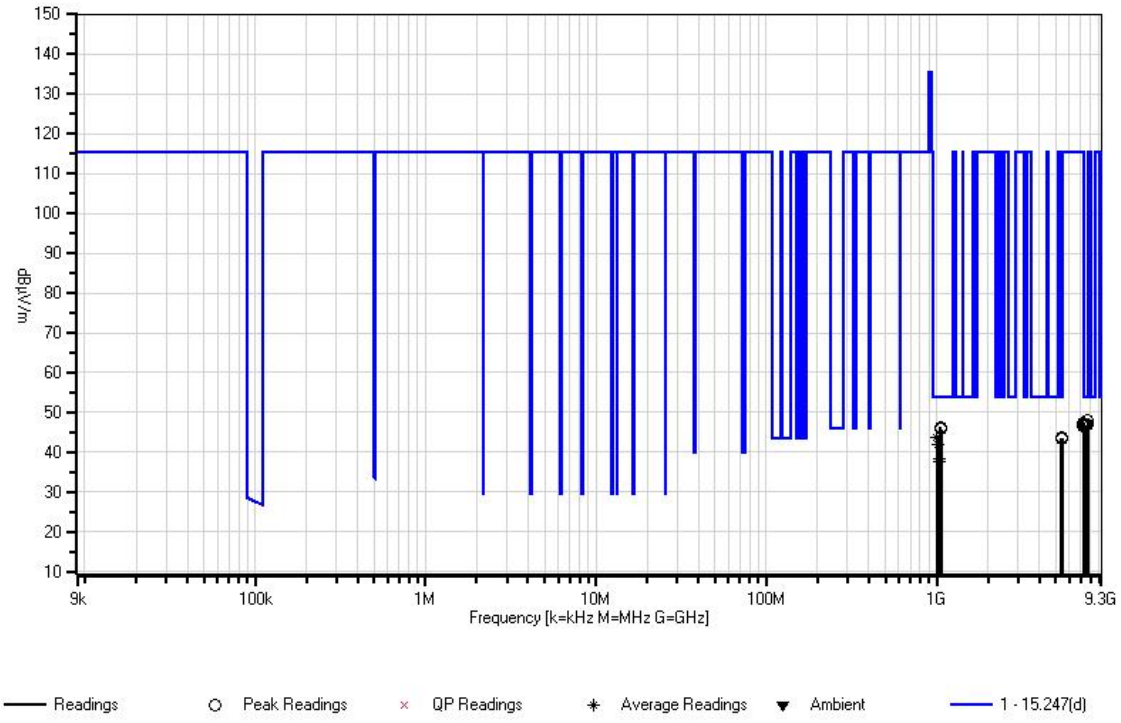
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	7694.535M	38.5	+35.7 +5.4	+0.1 +2.5	+0.5	-34.6	+0.0 360	48.1	54.0	-5.9	Horiz 101
2	7259.720M	38.5	+35.1 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	47.3	54.0	-6.7	Horiz 101
3	7740.305M	37.5	+35.7 +5.4	+0.1 +2.5	+0.5	-34.6	+0.0 360	47.1	54.0	-6.9	Horiz 101
4	7331.360M	38.1	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	47.0	54.0	-7.0	Horiz 101

5	7286.585M	38.0	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	46.9	54.0	-7.1	Horiz 101
6	7265.690M	38.1	+35.1 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	46.9	54.0	-7.1	Horiz 101
7	7625.880M	37.5	+35.6 +5.4	+0.2 +2.6	+0.4	-34.8	+0.0 360	46.9	54.0	-7.1	Horiz 101
8	7621.900M	37.5	+35.6 +5.4	+0.2 +2.6	+0.4	-34.8	+0.0 360	46.9	54.0	-7.1	Horiz 101
9	7524.390M	37.6	+35.4 +5.4	+0.2 +2.5	+0.4	-34.7	+0.0 360	46.8	54.0	-7.2	Horiz 101
10	7657.720M	37.3	+35.6 +5.4	+0.2 +2.5	+0.5	-34.7	+0.0 360	46.8	54.0	-7.2	Horiz 101
11	7308.475M	37.8	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	46.7	54.0	-7.3	Horiz 101
12	1057.000M	47.3	+22.6 +1.9	+10.3 +0.9	+0.2	-36.9	+0.0 360	46.3	54.0	-7.7	Horiz 101
13	1059.000M	47.1	+22.6 +1.9	+9.9 +0.9	+0.2	-36.9	+0.0 360	45.7	54.0	-8.3	Horiz 101
14	1000.795M Ave	35.6	+22.2 +1.8	+20.4 +0.8	+0.1	-37.2	+0.0 180	43.7	54.0	-10.3	Horiz 100
^	1000.795M	48.6	+22.2 +1.8	+20.4 +0.8	+0.1	-37.2	+0.0 180	56.7	54.0	+2.7	Horiz 100
^	1000.795M	45.7	+22.2 +1.8	+20.4 +0.8	+0.1	-37.2	+0.0 360	53.8	54.0	-0.2	Horiz 101
17	5417.414M	36.6	+33.6 +4.6	+0.2 +2.1	+0.5	-33.9	+0.0 360	43.7	54.0	-10.3	Horiz 101
18	5396.393M	36.3	+33.6 +4.6	+0.2 +2.1	+0.5	-33.9	+0.0 360	43.4	54.0	-10.6	Horiz 101
19	5435.432M	36.1	+33.7 +4.6	+0.2 +2.2	+0.5	-33.9	+0.0 360	43.4	54.0	-10.6	Horiz 101
20	1011.503M Ave	35.6	+22.3 +1.8	+18.4 +0.8	+0.1	-37.1	+0.0 180	41.9	54.0	-12.1	Horiz 101
^	1011.503M	49.8	+22.3 +1.8	+18.4 +0.8	+0.1	-37.1	+0.0 180	56.1	54.0	+2.1	Horiz 101
^	1011.503M	47.0	+22.3 +1.8	+18.4 +0.8	+0.1	-37.1	+0.0 360	53.3	54.0	-0.7	Horiz 101
23	1035.494M Ave	35.8	+22.5 +1.8	+14.1 +0.8	+0.2	-37.0	+0.0 180	38.2	54.0	-15.8	Horiz 100
^	1035.494M	49.3	+22.5 +1.8	+14.1 +0.8	+0.2	-37.0	+0.0 180	51.7	54.0	-2.3	Horiz 100
^	1035.494M	46.9	+22.5 +1.8	+14.1 +0.8	+0.2	-37.0	+0.0 360	49.3	54.0	-4.7	Horiz 101
26	1039.469M Ave	35.9	+22.5 +1.8	+13.3 +0.8	+0.2	-37.0	+0.0 180	37.5	54.0	-16.5	Horiz 100
^	1039.469M	49.1	+22.5 +1.8	+13.3 +0.8	+0.2	-37.0	+0.0 180	50.7	54.0	-3.3	Horiz 100
^	1039.469M	47.5	+22.5 +1.8	+13.3 +0.8	+0.2	-37.0	+0.0 360	49.1	54.0	-4.9	Horiz 101

CKC Laboratories, Inc. Date: 4/22/2010 Time: 08:48:14 Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 15 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 08:17:42
Equipment: **RFID** Sequence#: 14
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 1000 - 8000 MHz
21ºC / Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 915.25 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

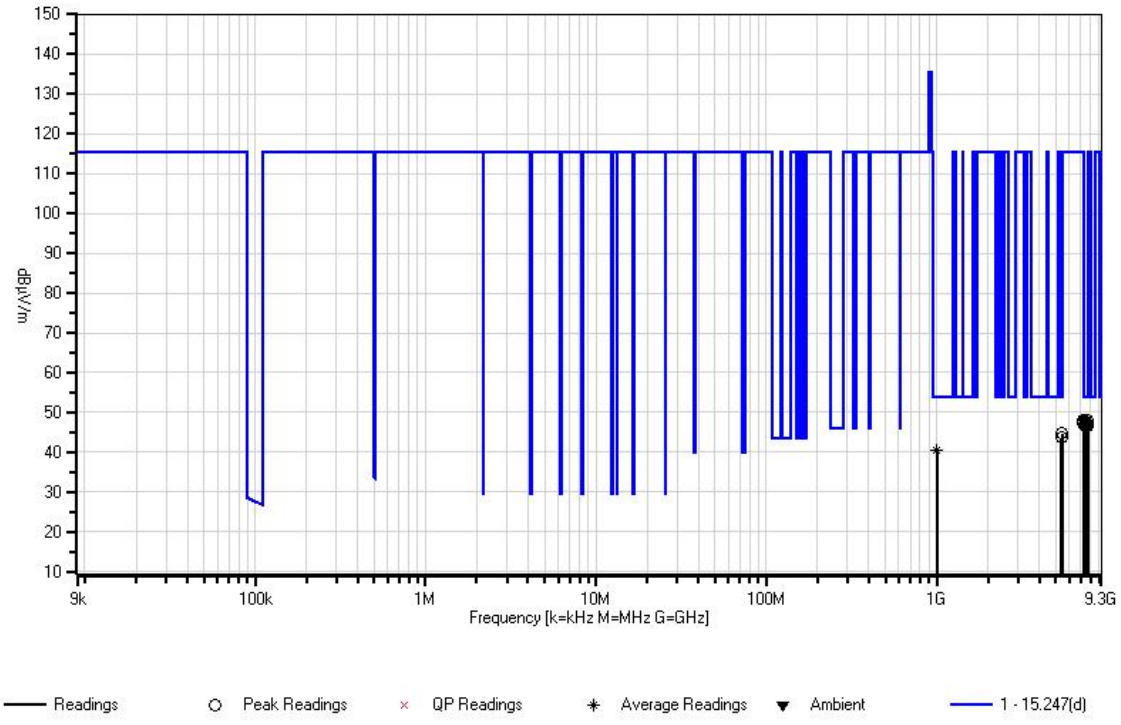
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	7738.315M	38.5	+35.7 +5.4	+0.1 +2.5	+0.5	-34.6	+0.0 360	48.1	54.0	-5.9	Verti 100
2	7298.525M	39.0	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	47.9	54.0	-6.1	Verti 100
3	7459.715M	38.6	+35.4 +5.3	+0.2 +2.4	+0.4	-34.6	+0.0 360	47.7	54.0	-6.3	Verti 100
4	7270.665M	38.7	+35.1 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	47.5	54.0	-6.5	Verti 100

5	7273.650M	38.5	+35.1 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	47.3	54.0	-6.7	Verti 100
6	7277.630M	38.4	+35.1 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	47.2	54.0	-6.8	Verti 100
7	7528.370M	37.7	+35.5 +5.4	+0.2 +2.5	+0.4	-34.7	+0.0 360	47.0	54.0	-7.0	Verti 100
8	7675.630M	37.6	+35.6 +5.4	+0.1 +2.5	+0.5	-34.7	+0.0 360	47.0	54.0	-7.0	Verti 100
9	7691.550M	37.4	+35.6 +5.4	+0.1 +2.5	+0.5	-34.6	+0.0 360	46.9	54.0	-7.1	Verti 100
10	7420.910M	37.9	+35.3 +5.3	+0.2 +2.3	+0.5	-34.6	+0.0 360	46.9	54.0	-7.1	Verti 100
11	7514.440M	37.6	+35.4 +5.4	+0.2 +2.5	+0.4	-34.6	+0.0 360	46.9	54.0	-7.1	Verti 100
12	7625.880M	37.5	+35.6 +5.4	+0.2 +2.6	+0.4	-34.8	+0.0 360	46.9	54.0	-7.1	Verti 100
13	7518.420M	37.6	+35.4 +5.4	+0.2 +2.5	+0.4	-34.7	+0.0 360	46.8	54.0	-7.2	Verti 100
14	7321.999M Ave	37.8	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 199	46.7	54.0	-7.3	Verti 101
^	7322.037M	44.1	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 199	53.0	54.0	-1.0	Verti 101
^	7322.037M	41.7	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	50.6	54.0	-3.4	Verti 100
17	7608.965M	37.5	+35.5 +5.4	+0.2 +2.6	+0.4	-34.9	+0.0 360	46.7	54.0	-7.3	Verti 100
18	7600.010M	37.4	+35.5 +5.4	+0.2 +2.6	+0.4	-34.9	+0.0 360	46.6	54.0	-7.4	Verti 100
19	7472.650M	37.5	+35.4 +5.3	+0.2 +2.4	+0.4	-34.6	+0.0 360	46.6	54.0	-7.4	Verti 100
20	5459.456M	37.4	+33.7 +4.6	+0.2 +2.2	+0.5	-33.9	+0.0 360	44.7	54.0	-9.3	Verti 100
21	5395.392M	36.5	+33.6 +4.6	+0.2 +2.1	+0.5	-33.9	+0.0 360	43.6	54.0	-10.4	Verti 100
22	1000.887M Ave	32.6	+22.2 +1.8	+20.3 +0.8	+0.1	-37.2	+0.0 180	40.6	54.0	-13.4	Verti 100
^	1000.887M	46.4	+22.2 +1.8	+20.3 +0.8	+0.1	-37.2	+0.0 180	54.4	54.0	+0.4	Verti 100
^	1000.887M	44.2	+22.2 +1.8	+20.3 +0.8	+0.1	-37.2	+0.0 360	52.2	54.0	-1.8	Verti 100

CKC Laboratories, Inc. Date: 4/22/2010 Time: 08:17:42 Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 14 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 09:14:47
Equipment: **RFID** Sequence#: 17
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 1000 - 8000 MHz
21ºC /Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 927.25 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

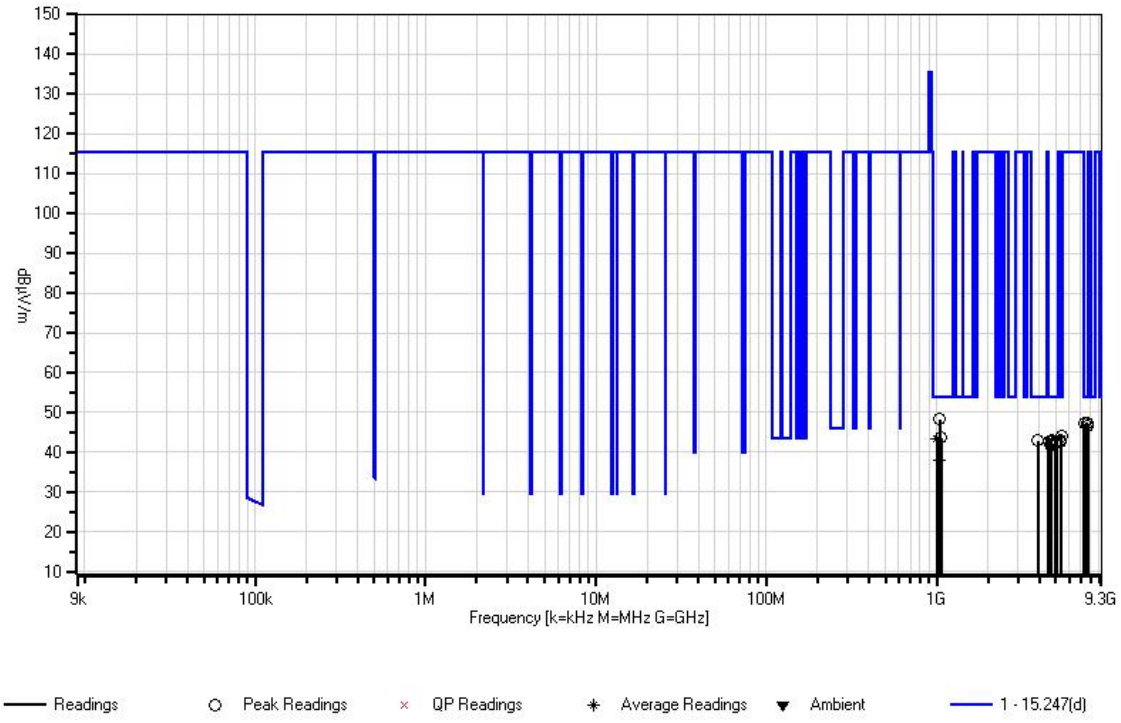
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	1040.000M	46.7	+22.5 +1.8	+13.3 +0.8	+0.2	-37.0	+0.0 360	48.3	54.0	-5.7	Horiz 100
2	7661.700M	37.8	+35.6 +5.4	+0.2 +2.5	+0.5	-34.7	+0.0 360	47.3	54.0	-6.7	Horiz 100
3	7332.355M	38.3	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	47.2	54.0	-6.8	Horiz 100
4	7738.315M	37.6	+35.7 +5.4	+0.1 +2.5	+0.5	-34.6	+0.0 360	47.2	54.0	-6.8	Horiz 100

5	7678.615M	37.3	+35.6 +5.4	+0.1 +2.5	+0.5	-34.7	+0.0 360	46.7	54.0	-7.3	Horiz 100
6	7670.655M	37.3	+35.6 +5.4	+0.1 +2.5	+0.5	-34.7	+0.0 360	46.7	54.0	-7.3	Horiz 100
7	5399.396M	37.0	+33.6 +4.6	+0.2 +2.1	+0.5	-33.9	+0.0 360	44.1	54.0	-9.9	Horiz 100
8	1067.000M	46.4	+22.7 +1.9	+8.5 +0.9	+0.2	-36.9	+0.0 360	43.7	54.0	-10.3	Horiz 100
9	1003.498M Ave	35.7	+22.2 +1.8	+19.9 +0.8	+0.1	-37.2	+0.0 180	43.3	54.0	-10.7	Horiz 101
^	1003.498M	48.5	+22.2 +1.8	+19.9 +0.8	+0.1	-37.2	+0.0 180	56.1	54.0	+2.1	Horiz 101
^	1003.498M	46.2	+22.2 +1.8	+19.9 +0.8	+0.1	-37.2	+0.0 360	53.8	54.0	-0.2	Horiz 100
12	4740.738M	37.3	+32.6 +4.3	+0.3 +2.0	+0.4	-33.8	+0.0 360	43.1	54.0	-10.9	Horiz 100
13	3927.926M	38.6	+31.7 +3.7	+0.3 +1.8	+0.3	-33.5	+0.0 360	42.9	54.0	-11.1	Horiz 100
14	5366.363M	36.1	+33.5 +4.5	+0.2 +2.1	+0.4	-33.9	+0.0 360	42.9	54.0	-11.1	Horiz 100
15	4541.539M	37.5	+32.4 +4.1	+0.3 +1.9	+0.4	-33.9	+0.0 360	42.7	54.0	-11.3	Horiz 100
16	5360.357M	35.9	+33.5 +4.5	+0.2 +2.1	+0.4	-33.9	+0.0 360	42.7	54.0	-11.3	Horiz 100
17	4720.718M	36.9	+32.5 +4.3	+0.3 +2.0	+0.4	-33.8	+0.0 360	42.6	54.0	-11.4	Horiz 100
18	5056.053M	36.5	+32.9 +4.3	+0.2 +2.0	+0.4	-33.8	+0.0 360	42.5	54.0	-11.5	Horiz 100
19	4999.997M	36.2	+32.8 +4.3	+0.2 +2.0	+0.4	-33.7	+0.0 360	42.2	54.0	-11.8	Horiz 100
20	4665.663M	36.6	+32.5 +4.2	+0.3 +1.9	+0.4	-33.8	+0.0 360	42.1	54.0	-11.9	Horiz 100
21	4705.703M	36.4	+32.5 +4.3	+0.3 +2.0	+0.4	-33.8	+0.0 360	42.1	54.0	-11.9	Horiz 100
22	1034.585M Ave	35.4	+22.5 +1.8	+14.2 +0.8	+0.2	-37.0	+0.0 180	37.9	54.0	-16.1	Horiz 101
^	1034.585M	48.5	+22.5 +1.8	+14.2 +0.8	+0.2	-37.0	+0.0 180	51.0	54.0	-3.0	Horiz 101
^	1034.585M	46.3	+22.5 +1.8	+14.2 +0.8	+0.2	-37.0	+0.0 360	48.8	54.0	-5.2	Horiz 100

CKC Laboratories, Inc. Date: 4/22/2010 Time: 09:14:47 Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 17 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 08:55:28
Equipment: **RFID** Sequence#: 16
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 1000 - 8000 MHz
21ºC / Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 927.25 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

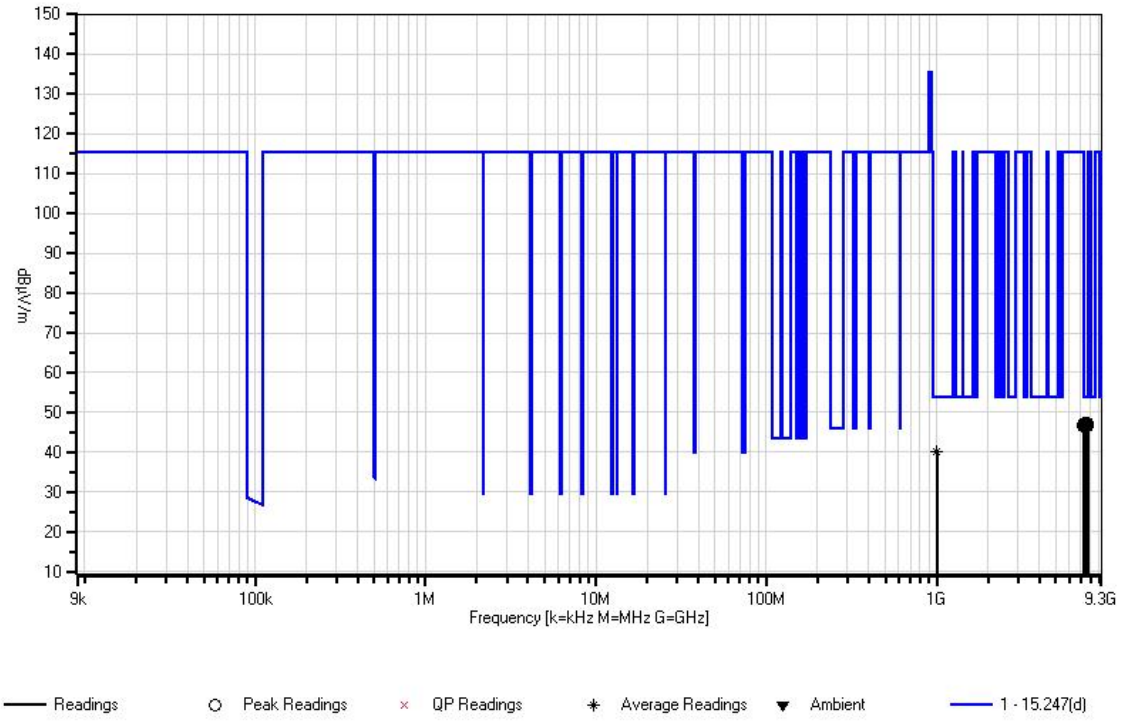
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	7556.230M	38.2	+35.5 +5.4	+0.2 +2.5	+0.4	-34.8	+0.0 360	47.4	54.0	-6.6	Verti 100
2	7698.515M	37.8	+35.7 +5.4	+0.1 +2.5	+0.5	-34.6	+0.0 360	47.4	54.0	-6.6	Verti 100
3	7417.925M	38.3	+35.3 +5.3	+0.2 +2.3	+0.5	-34.6	+0.0 360	47.3	54.0	-6.7	Verti 100
4	7677.620M	37.9	+35.6 +5.4	+0.1 +2.5	+0.5	-34.7	+0.0 360	47.3	54.0	-6.7	Verti 100

5	7309.470M	38.2	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	47.1	54.0	-6.9	Verti 100
6	7681.600M	37.7	+35.6 +5.4	+0.1 +2.5	+0.5	-34.7	+0.0 360	47.1	54.0	-6.9	Verti 100
7	7492.550M	37.7	+35.4 +5.4	+0.2 +2.4	+0.4	-34.6	+0.0 360	46.9	54.0	-7.1	Verti 100
8	7623.890M	37.5	+35.6 +5.4	+0.2 +2.6	+0.4	-34.8	+0.0 360	46.9	54.0	-7.1	Verti 100
9	7636.825M	37.5	+35.6 +5.4	+0.2 +2.6	+0.4	-34.8	+0.0 360	46.9	54.0	-7.1	Verti 100
10	7288.575M	37.8	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	46.7	54.0	-7.3	Verti 100
11	7258.725M	37.9	+35.1 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	46.7	54.0	-7.3	Verti 100
12	7338.325M	37.7	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	46.6	54.0	-7.4	Verti 100
13	7357.230M	37.8	+35.2 +5.2	+0.2 +2.3	+0.5	-34.6	+0.0 360	46.6	54.0	-7.4	Verti 100
14	7374.145M	37.6	+35.3 +5.3	+0.2 +2.3	+0.5	-34.6	+0.0 360	46.6	54.0	-7.4	Verti 100
15	7504.490M	37.2	+35.4 +5.4	+0.2 +2.5	+0.4	-34.6	+0.0 360	46.5	54.0	-7.5	Verti 100
16	7313.450M	37.6	+35.2 +5.2	+0.2 +2.4	+0.5	-34.6	+0.0 360	46.5	54.0	-7.5	Verti 100
17	7549.265M	37.2	+35.5 +5.4	+0.2 +2.5	+0.4	-34.7	+0.0 360	46.5	54.0	-7.5	Verti 100
18	7512.450M	37.2	+35.4 +5.4	+0.2 +2.5	+0.4	-34.6	+0.0 360	46.5	54.0	-7.5	Verti 100
19	7648.765M	36.9	+35.6 +5.4	+0.2 +2.6	+0.5	-34.8	+0.0 360	46.4	54.0	-7.6	Verti 100
20	1001.443M Ave	32.2	+22.2 +1.8	+20.2 +0.8	+0.1	-37.2	+0.0 180	40.1	54.0	-13.9	Verti 100
^	1001.443M	45.4	+22.2 +1.8	+20.2 +0.8	+0.1	-37.2	+0.0 180	53.3	54.0	-0.7	Verti 100
^	1001.443M	43.9	+22.2 +1.8	+20.2 +0.8	+0.1	-37.2	+0.0 360	51.8	54.0	-2.2	Verti 100

CKC Laboratories, Inc. Date: 4/22/2010 Time: 08:55:28 Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 3 Meters Sequence#: 16 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 9:37:52 AM
Equipment: **RFID** Sequence#: 19
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 8000 - 9300 MHz
22ºC /Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 902.75 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

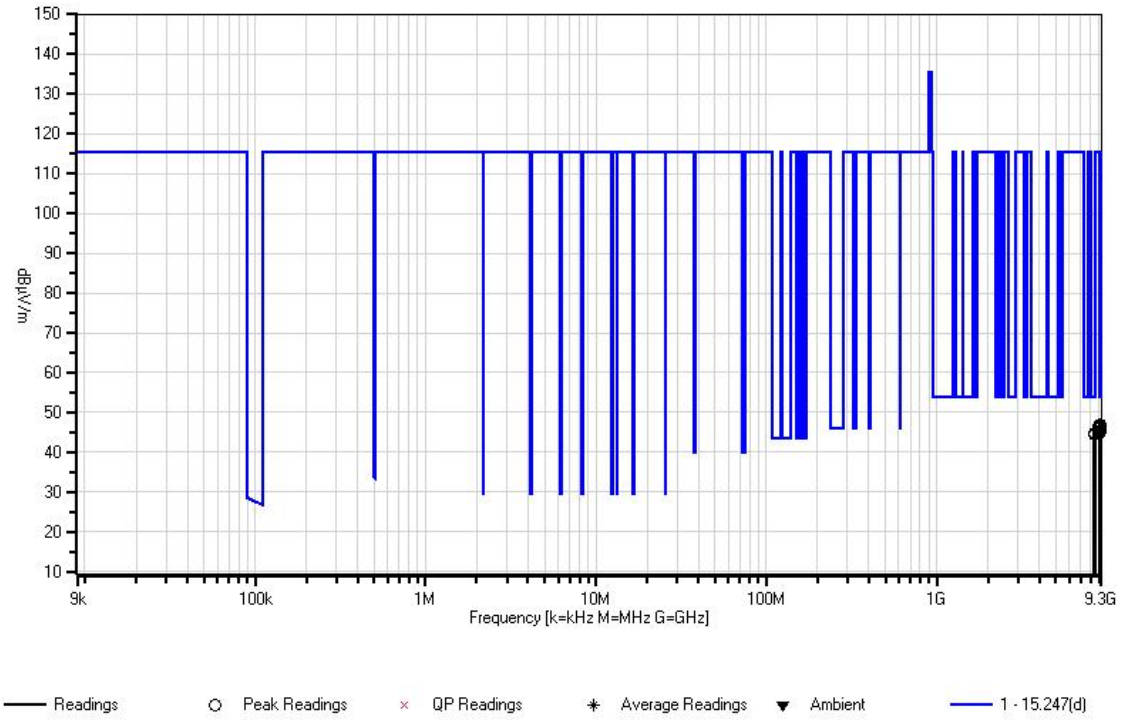
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 2 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9154.774M	37.6	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	46.8	54.0	-7.2	Horiz 100
2	9054.162M	37.5	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	46.6	54.0	-7.4	Horiz 100
3	9009.092M	37.3	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	46.4	54.0	-7.6	Horiz 100
4	9055.073M	37.3	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	46.4	54.0	-7.6	Horiz 100

5	9033.220M	37.1	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	46.2	54.0	-7.8	Horiz 100
6	9000.897M	36.7	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.8	54.0	-8.2	Horiz 100
7	9027.757M	36.7	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.8	54.0	-8.2	Horiz 100
8	9093.769M	36.4	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.5	54.0	-8.5	Horiz 100
9	9101.053M	36.4	+38.5 +5.7	+0.2 +2.7	+0.3	-34.3	-4.0	45.5	54.0	-8.5	Horiz 100
10	9143.392M	36.3	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	45.5	54.0	-8.5	Horiz 100
11	9068.275M	36.3	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.4	54.0	-8.6	Horiz 100
12	9014.100M	36.0	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.1	54.0	-8.9	Horiz 100
13	9019.107M	35.9	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.0	54.0	-9.0	Horiz 100
14	9099.232M	36.0	+38.5 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.0	54.0	-9.0	Horiz 100
15	8372.244M	37.8	+37.0 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0	44.8	54.0	-9.2	Horiz 100
16	8481.916M	37.3	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	44.8	54.0	-9.2	Horiz 100
17	8499.668M	37.2	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	44.7	54.0	-9.3	Horiz 100
18	9010.458M	35.6	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	44.7	54.0	-9.3	Horiz 100
19	8371.421M	37.6	+37.0 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0	44.6	54.0	-9.4	Horiz 100
20	8494.905M	37.1	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	44.6	54.0	-9.4	Horiz 100

CKC Laboratories, Inc. Date: 4/22/2010 Time: 9:37:52 AM Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 2 Meters Sequence#: 19 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 09:36:02
Equipment: **RFID** Sequence#: 18
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 8000 - 9300 MHz
22ºC / Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 902.75 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

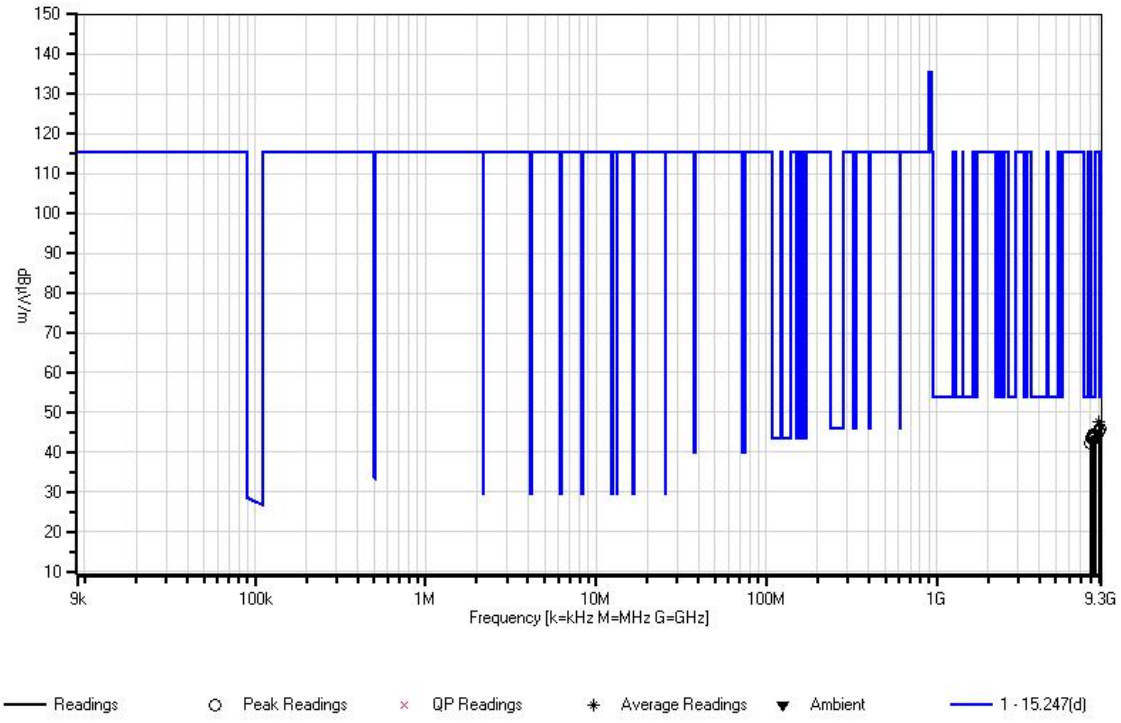
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 2 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9027.515M	38.6	+38.6	+0.2	+0.3	-34.3	-4.0	47.7	54.0	-6.3	Verti
	Ave		+5.7	+2.6			210				106
^	9027.452M	43.5	+38.6	+0.2	+0.3	-34.3	-4.0	52.6	54.0	-1.4	Verti
			+5.7	+2.6			210				106
^	9027.452M	39.9	+38.6	+0.2	+0.3	-34.3	-4.0	49.0	54.0	-5.0	Verti
			+5.7	+2.6			360				100
4	9096.046M	36.9	+38.5	+0.2	+0.3	-34.3	-4.0	45.9	54.0	-8.1	Verti
			+5.7	+2.6			360				100

5	9045.057M	36.8	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.9	54.0	-8.1	Verti 100
6	9008.181M	36.4	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.5	54.0	-8.5	Verti 100
7	9003.629M	36.1	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.2	54.0	-8.8	Verti 100
8	9010.458M	36.1	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.2	54.0	-8.8	Verti 100
9	8476.287M	37.0	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0 360	44.5	54.0	-9.5	Verti 100
10	8492.740M	36.9	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0 360	44.4	54.0	-9.6	Verti 100
11	8455.938M	36.9	+37.2 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0 360	44.3	54.0	-9.7	Verti 100
12	8219.064M	37.5	+36.6 +5.5	+0.3 +2.7	+0.4	-34.7	-4.0 360	44.3	54.0	-9.7	Verti 100
13	8467.628M	36.7	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0 360	44.2	54.0	-9.8	Verti 100
14	8450.309M	36.7	+37.2 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0 360	44.1	54.0	-9.9	Verti 100
15	8471.525M	36.5	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0 360	44.0	54.0	-10.0	Verti 100
16	8387.480M	37.0	+37.0 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0 360	44.0	54.0	-10.0	Verti 100
17	8186.946M	37.1	+36.5 +5.5	+0.3 +2.7	+0.4	-34.7	-4.0 360	43.8	54.0	-10.2	Verti 100
18	8336.420M	36.9	+36.9 +5.5	+0.3 +2.5	+0.4	-34.7	-4.0 360	43.8	54.0	-10.2	Verti 100
19	8359.891M	36.3	+37.0 +5.6	+0.3 +2.5	+0.4	-34.7	-4.0 360	43.4	54.0	-10.6	Verti 100
20	8363.597M	36.3	+37.0 +5.6	+0.3 +2.5	+0.4	-34.7	-4.0 360	43.4	54.0	-10.6	Verti 100
21	8355.362M	36.3	+37.0 +5.6	+0.3 +2.5	+0.4	-34.7	-4.0 360	43.4	54.0	-10.6	Verti 100
22	8042.825M	36.4	+36.1 +5.5	+0.2 +2.5	+0.4	-34.7	-4.0 360	42.4	54.0	-11.6	Verti 100

CKC Laboratories, Inc. Date: 4/22/2010 Time: 09:36:02 Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 2 Meters Sequence#: 18 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 9:47:52 AM
Equipment: **RFID** Sequence#: 21
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 8000 - 9300 MHz
22ºC /Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 915.25 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

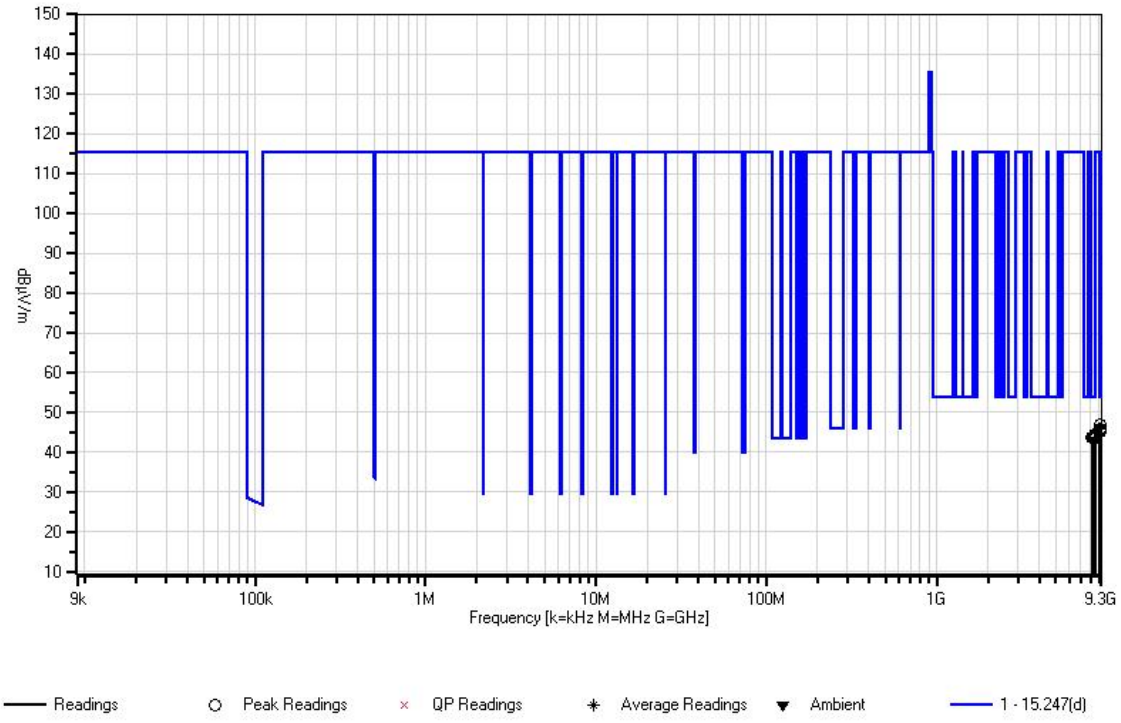
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 2 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9082.388M	37.9	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	47.0	54.0	-7.0	Horiz 101
2	9142.026M	36.7	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	45.9	54.0	-8.1	Horiz 101
3	9152.497M	36.5	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	45.7	54.0	-8.3	Horiz 101
4	9188.918M	36.5	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	45.7	54.0	-8.3	Horiz 101

5	9083.298M	36.4	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.5	54.0	-8.5	Horiz 101
6	9106.061M	36.4	+38.5 +5.7	+0.2 +2.7	+0.3	-34.3	-4.0	45.5	54.0	-8.5	Horiz 101
7	9129.279M	36.3	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	45.5	54.0	-8.5	Horiz 101
8	9089.217M	36.3	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.4	54.0	-8.6	Horiz 101
9	9133.377M	36.1	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	45.3	54.0	-8.7	Horiz 101
10	9173.894M	36.1	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	45.3	54.0	-8.7	Horiz 101
11	8463.731M	37.2	+37.2 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	44.6	54.0	-9.4	Horiz 101
12	8475.421M	36.7	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	44.2	54.0	-9.8	Horiz 101
13	8382.951M	37.0	+37.0 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0	44.0	54.0	-10.0	Horiz 101
14	8484.514M	36.5	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	44.0	54.0	-10.0	Horiz 101
15	8137.945M	37.4	+36.4 +5.5	+0.2 +2.6	+0.4	-34.7	-4.0	43.8	54.0	-10.2	Horiz 101
16	8457.670M	36.4	+37.2 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	43.8	54.0	-10.2	Horiz 101
17	8494.472M	36.2	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	43.7	54.0	-10.3	Horiz 101
18	8254.065M	36.8	+36.7 +5.5	+0.3 +2.6	+0.4	-34.7	-4.0	43.6	54.0	-10.4	Horiz 101
19	8352.479M	36.5	+37.0 +5.6	+0.3 +2.5	+0.4	-34.7	-4.0	43.6	54.0	-10.4	Horiz 101
20	8373.068M	36.5	+37.0 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0	43.5	54.0	-10.5	Horiz 101

CKC Laboratories, Inc. Date: 4/22/2010 Time: 9:47:52 AM Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 2 Meters Sequence#: 21 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 09:46:46
Equipment: **RFID** Sequence#: 20
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 8000 - 9300 MHz
22ºC / Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 915.25 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

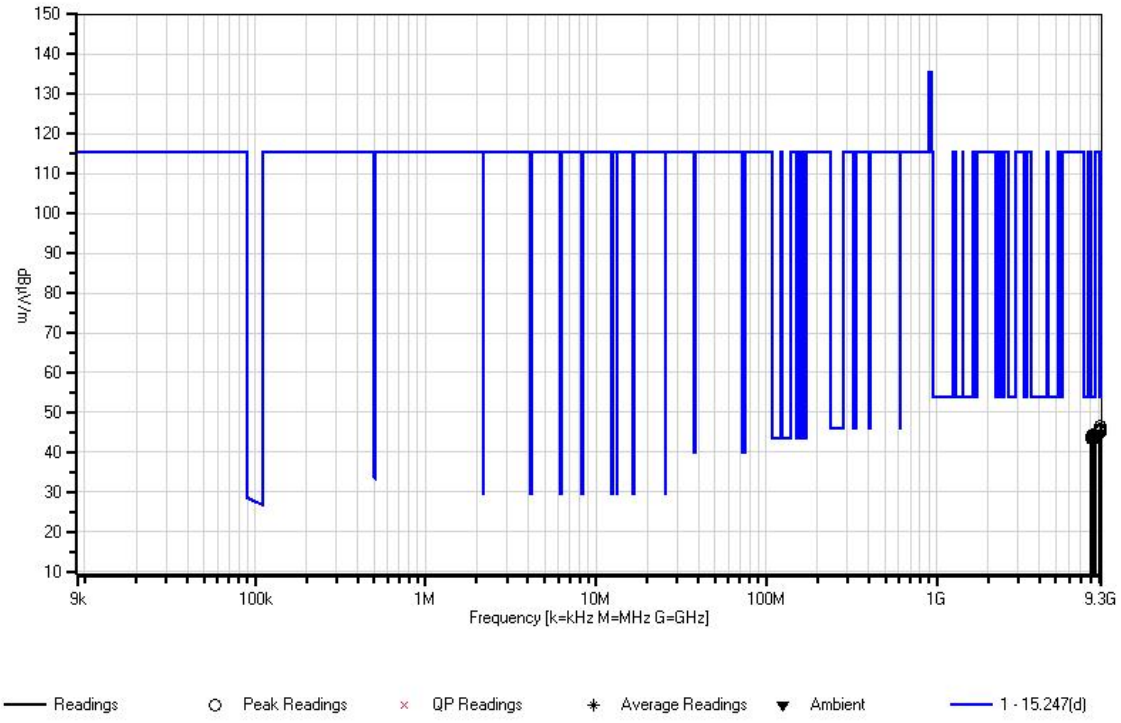
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 2 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9128.369M	37.2	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	46.4	54.0	-7.6	Verti 100
2	9191.194M	36.7	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	45.9	54.0	-8.1	Verti 100
3	9091.948M	36.7	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.8	54.0	-8.2	Verti 100
4	9173.439M	36.4	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	45.6	54.0	-8.4	Verti 100

5	9107.427M	36.3	+38.5 +5.7	+0.2 +2.7	+0.3	-34.3	-4.0 360	45.4	54.0	-8.6	Verti 100
6	9183.455M	36.0	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	45.2	54.0	-8.8	Verti 100
7	9193.925M	36.0	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	45.2	54.0	-8.8	Verti 100
8	8283.301M	37.6	+36.8 +5.5	+0.3 +2.6	+0.4	-34.7	-4.0 360	44.5	54.0	-9.5	Verti 100
9	8462.432M	37.0	+37.2 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0 360	44.4	54.0	-9.6	Verti 100
10	9152.512M Ave	35.1	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 215	44.3	54.0	-9.7	Verti 101
^	9152.522M	41.8	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 215	51.0	54.0	-3.0	Verti 101
^	9152.497M	39.0	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	48.2	54.0	-5.8	Verti 100
13	8497.070M	36.7	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0 360	44.2	54.0	-9.8	Verti 100
14	8118.179M	37.7	+36.3 +5.5	+0.2 +2.6	+0.4	-34.7	-4.0 360	44.0	54.0	-10.0	Verti 100
15	8448.577M	36.7	+37.2 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0 360	43.9	54.0	-10.1	Verti 100
16	8392.421M	36.7	+37.1 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0 360	43.8	54.0	-10.2	Verti 100
17	8381.715M	36.8	+37.0 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0 360	43.8	54.0	-10.2	Verti 100
18	8272.595M	36.9	+36.7 +5.5	+0.3 +2.6	+0.4	-34.7	-4.0 360	43.7	54.0	-10.3	Verti 100
19	8426.496M	36.6	+37.1 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0 360	43.7	54.0	-10.3	Verti 100
20	8411.363M	36.4	+37.1 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0 360	43.5	54.0	-10.5	Verti 100
21	8166.769M	36.8	+36.5 +5.5	+0.3 +2.7	+0.4	-34.7	-4.0 360	43.5	54.0	-10.5	Verti 100
22	8352.479M	36.4	+37.0 +5.6	+0.3 +2.5	+0.4	-34.7	-4.0 360	43.5	54.0	-10.5	Verti 100

CKC Laboratories, Inc. Date: 4/22/2010 Time: 09:46:46 Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 2 Meters Sequence#: 20 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 9:55:10 AM
Equipment: **RFID** Sequence#: 23
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 8000 - 9300 MHz
22ºC / Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 927.25 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

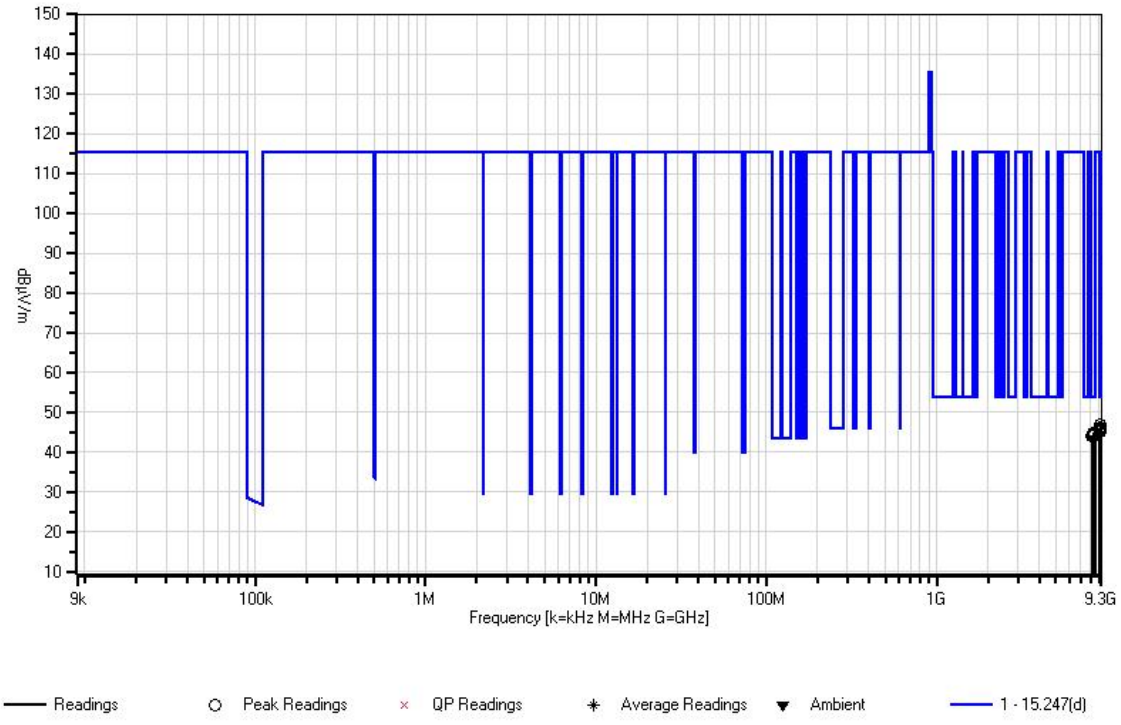
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 2 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9127.003M	37.6	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	46.8	54.0	-7.2	Horiz 101
2	9093.314M	37.0	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	46.1	54.0	-7.9	Horiz 101
3	9044.146M	36.9	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	46.0	54.0	-8.0	Horiz 101
4	9056.438M	36.7	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.8	54.0	-8.2	Horiz 101

5	9046.423M	36.4	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.5	54.0	-8.5	Horiz 101
6	9065.088M	36.4	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.5	54.0	-8.5	Horiz 101
7	9071.462M	36.4	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.5	54.0	-8.5	Horiz 101
8	9047.788M	36.3	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.4	54.0	-8.6	Horiz 101
9	9076.470M	36.3	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.4	54.0	-8.6	Horiz 101
10	9100.143M	36.3	+38.5 +5.7	+0.2 +2.7	+0.3	-34.3	-4.0	45.4	54.0	-8.6	Horiz 101
11	9112.890M	36.1	+38.5 +5.7	+0.2 +2.7	+0.3	-34.3	-4.0	45.2	54.0	-8.8	Horiz 101
12	9171.163M	36.0	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0	45.2	54.0	-8.8	Horiz 101
13	9049.610M	35.9	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0	45.0	54.0	-9.0	Horiz 101
14	8356.597M	37.8	+37.0 +5.6	+0.3 +2.5	+0.4	-34.7	-4.0	44.9	54.0	-9.1	Horiz 101
15	8477.153M	37.2	+37.3 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	44.7	54.0	-9.3	Horiz 101
16	8400.245M	37.3	+37.1 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0	44.4	54.0	-9.6	Horiz 101
17	8465.030M	36.9	+37.2 +5.6	+0.3 +2.5	+0.4	-34.6	-4.0	44.3	54.0	-9.7	Horiz 101
18	8234.712M	37.5	+36.6 +5.5	+0.3 +2.6	+0.4	-34.7	-4.0	44.2	54.0	-9.8	Horiz 101
19	8297.301M	37.3	+36.8 +5.5	+0.3 +2.6	+0.4	-34.7	-4.0	44.2	54.0	-9.8	Horiz 101
20	8205.064M	37.3	+36.6 +5.5	+0.3 +2.7	+0.4	-34.7	-4.0	44.1	54.0	-9.9	Horiz 101

CKC Laboratories, Inc. Date: 4/22/2010 Time: 9:55:10 AM Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 2 Meters Sequence#: 23 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **Impinj, Inc.**
Specification: **15.247(d)**
Work Order #: **90557** Date: 4/22/2010
Test Type: **Maximized Emissions** Time: 9:51:14 AM
Equipment: **RFID** Sequence#: 22
Manufacturer: Impinj, Inc. Tested By: Jeff Gilbert
Model: IPJR640
S/N: 37009510054

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03170	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T3	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T4	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T5	ANP05542	Cable	Heliax	10/23/2009	10/23/2011
T6	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
RFID*	Impinj, Inc.	IPJR640	37009510054

Support Devices:

Function	Manufacturer	Model #	S/N
48VDC Power adapter	D-LINK	VAN90C-480B	13092600057-0D
POE Switch	D-LINK	DES-1008PA	F3GR188000310
USB Hub	SI Tech	2173	079536
Laptop	Dell	Latitude	6497402833

Test Conditions / Notes:

Frequency Range Investigated: 8000 - 9300 MHz
22ºC / Relative Humidity 33% / 102.5 kPa
Radiated RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems
EUT is transmitting continuously, Fully modulated; 927.25 MHz. The USB port is connected to a powered USB hub; there is no traffic on the USB port. The Ethernet port is connected to a laptop outside the chamber, but this is only used to configure the EUT for transmit testing.
48VDC via POE; input to POE adapter is 120VAC / 60Hz

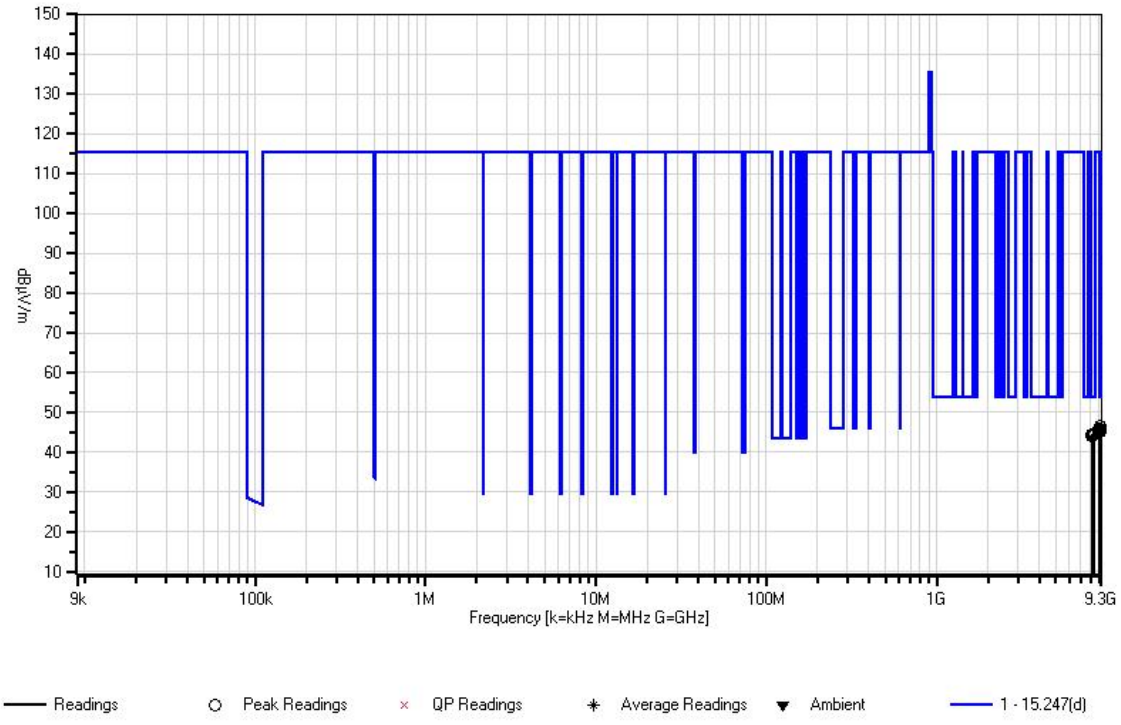
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 2 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9083.754M	37.3	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	46.4	54.0	-7.6	Verti 101
2	9186.641M	36.6	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	45.8	54.0	-8.2	Verti 101
3	9013.644M	36.6	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.7	54.0	-8.3	Verti 101
4	9156.139M	36.5	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	45.7	54.0	-8.3	Verti 101

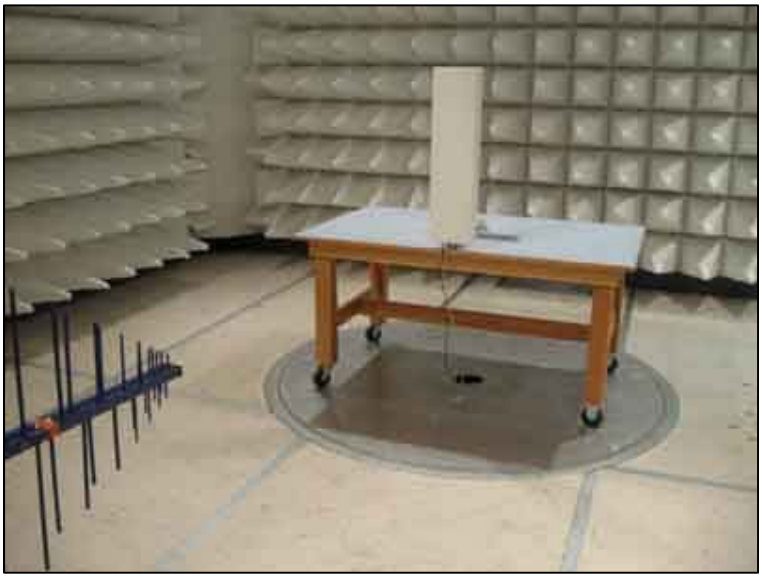
5	9183.455M	36.5	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	45.7	54.0	-8.3	Verti 101
6	9040.960M	36.5	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.6	54.0	-8.4	Verti 101
7	9076.014M	36.4	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.5	54.0	-8.5	Verti 101
8	9140.661M	36.3	+38.5 +5.7	+0.2 +2.7	+0.3	-34.2	-4.0 360	45.5	54.0	-8.5	Verti 101
9	9048.244M	36.2	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.3	54.0	-8.7	Verti 101
10	9114.711M	36.2	+38.5 +5.7	+0.2 +2.7	+0.3	-34.3	-4.0 360	45.3	54.0	-8.7	Verti 101
11	9035.041M	36.2	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.3	54.0	-8.7	Verti 101
12	9044.146M	36.2	+38.6 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.3	54.0	-8.7	Verti 101
13	9096.501M	36.1	+38.5 +5.7	+0.2 +2.6	+0.3	-34.3	-4.0 360	45.1	54.0	-8.9	Verti 101
14	8372.656M	37.7	+37.0 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0 360	44.7	54.0	-9.3	Verti 101
15	8171.710M	37.8	+36.5 +5.5	+0.3 +2.7	+0.4	-34.7	-4.0 360	44.5	54.0	-9.5	Verti 101
16	8427.795M	37.4	+37.1 +5.6	+0.3 +2.4	+0.4	-34.7	-4.0 360	44.5	54.0	-9.5	Verti 101
17	8215.358M	37.6	+36.6 +5.5	+0.3 +2.7	+0.4	-34.7	-4.0 360	44.4	54.0	-9.6	Verti 101
18	8137.945M	37.9	+36.4 +5.5	+0.2 +2.6	+0.4	-34.7	-4.0 360	44.3	54.0	-9.7	Verti 101
19	8274.654M	37.5	+36.7 +5.5	+0.3 +2.6	+0.4	-34.7	-4.0 360	44.3	54.0	-9.7	Verti 101
20	8203.005M	37.4	+36.6 +5.5	+0.3 +2.7	+0.4	-34.7	-4.0 360	44.2	54.0	-9.8	Verti 101

CKC Laboratories, Inc. Date: 4/22/2010 Time: 9:51:14 AM Impinj, Inc. WO#: 90557
15.247(d) Test Distance: 2 Meters Sequence#: 22 Ext ATTN: 0 dB



Test Setup Photos

30kHz-30MHz



30MHz-1GHz

1GHz-9.3GHz

RSS-210 99% Bandwidth

Test Conditions: Frequency Range Investigated: 902 - 928 MHz; 22º C / 35% / 102.0 kPa; Conducted RF testing per FCC Public Notice DA 00-705 for Frequency Hopping Spread Spectrum Systems. The EUT is transmitting continuously, fully modulated; the Ethernet port is connected to a laptop, but this is only used to configure the EUT for transmit testing. Low CH: 902.75 MHz; Mid CH: 915.25 MHz; High CH: 927.25 MHz.

Engineer Name: J. Gilbert

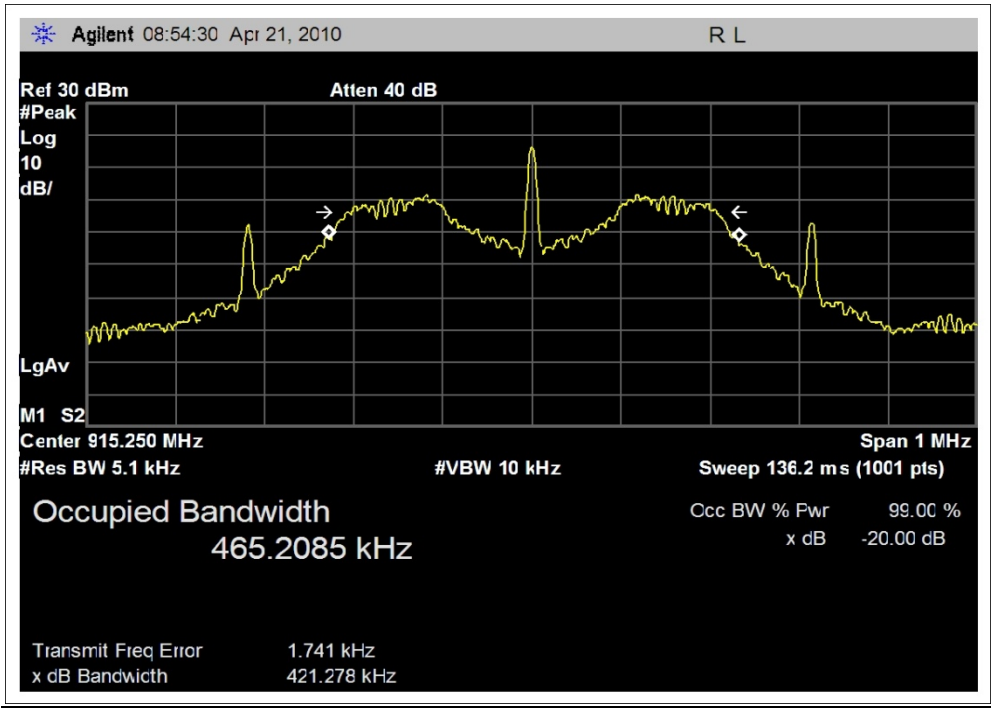
Test Equipment				
Equipment	**Model**	**Cal Date**	**Cal Due**	**Asset**
Cable	27	4/17/2009	4/17/2011	ANP05238
Cable	32026-2-29080-84	10/23/2009	10/23/2011	AN03121
Attenuator	PE7015-10	9/5/2008	9/5/2010	ANP05435
Spectrum Analyzer	E4440A	8/25/2009	8/25/2011	AN02872

Test Data

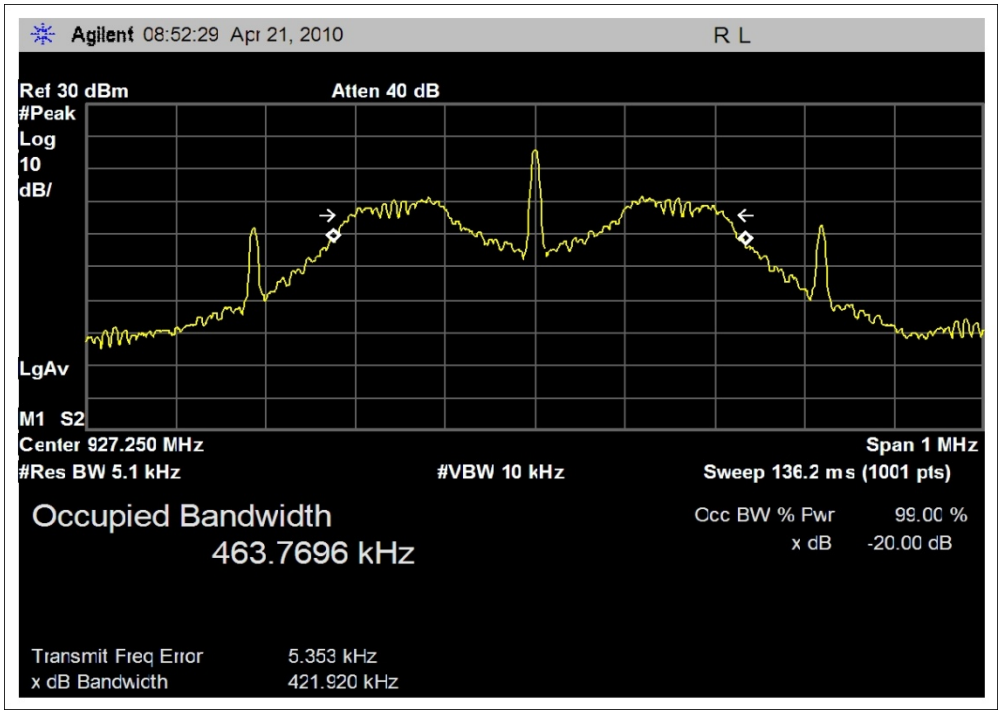
RSP-100 – 99%BW

Frequency MHz	Measured 99% BW kHz	Min Limit kHz	Pass/Fail
902.75	464	500	Pass
915.25	465.2	500	Pass
927.25	463.8	500	Pass

Low Channel 99 % Bandwidth

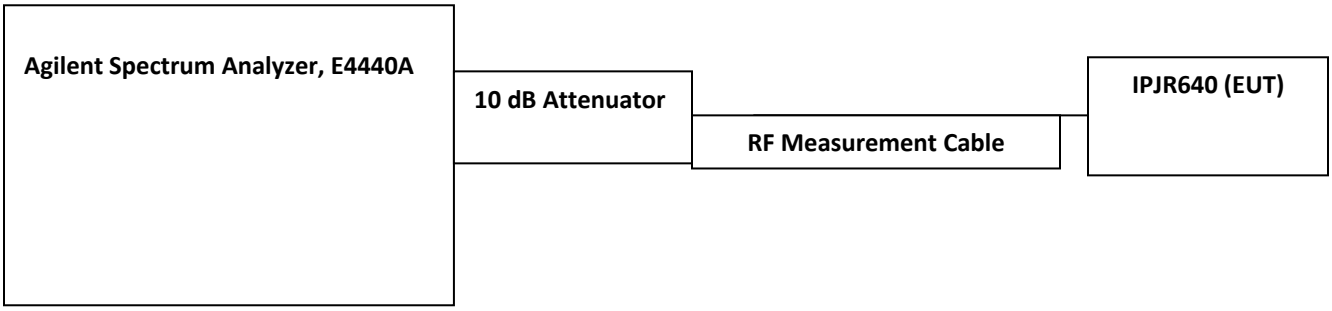


Mid Channel 99 % Bandwidth



High Channel 99 % Bandwidth

Test Setup Photos



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. The following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. When conducted emissions testing was performed, a 10 dB external attenuator was used with internal offset correction in the analyzer.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.