



166 South Carter, Genoa City, WI 53128

Company:	Whirlpool Corporation
Model Tested:	WICHIN01
Report Number:	21556
DLS Project:	7619

## Code of Federal Regulations 47 Part 15 – Radio Frequency Devices

### Subpart C – Intentional Radiators

#### Section 15.247

Operation within the bands 902 - 928 MHz,  
2400 - 2483.5 MHz, 5725 - 5875 MHz,  
and 24.0 - 24.25 GHz.

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name:	Indigo WiFi Module
Kind of Equipment:	802.11b/g/n Wi-Fi appliance module
Frequency Range:	2412-2462 MHz
Test Configuration:	DC powered transceiver module
Model Number(s):	WICHIN01
Model(s) Tested:	WICHIN01
Serial Number(s):	18101F27001354600349M000 (with external connector), 18101F27001354600367M000
Date of Tests:	December 7 <sup>th</sup> to 18 <sup>th</sup> , 2015
Test Conducted For:	Whirlpool Corporation 750 Monte Rd Benton Harbor, MI 49022, USA

**NOTICE:** “This test report relates only to the items tested and must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government”. Please see the "Description of Test Sample" page listed inside of this report.

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## SIGNATURE PAGE

Tested By:

A handwritten signature in black ink that reads "Craig Brandt". The signature is written in a cursive style with a long horizontal stroke at the end.

Craig Brandt  
Senior Test Engineer

Reviewed By:

A handwritten signature in black ink that reads "William Stumpf". The signature is written in a cursive style with a long horizontal stroke at the end.

William Stumpf  
OATS Manager

Approved By:

A handwritten signature in black ink that reads "Brian J. Mattson". The signature is written in a cursive style with a long horizontal stroke at the end.

Brian Mattson  
General Manager



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United States Department of Commerce  
National Institute of Standards and Technology



**Certificate of Accreditation to ISO/IEC 17025:2005**

NVLAP LAB CODE: 100276-0

**D.L.S. Electronic Systems, Inc.**  
Wheeling, IL

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:*


**Electromagnetic Compatibility & Telecommunications**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).*

2015-09-25 through 2016-09-30

Effective Dates



  
For the National Voluntary Laboratory Accreditation Program

**ELECTROMAGNETIC  
COMPATIBILITY &  
TELECOMMUNICATIONS**

**NVLAP LAB CODE 100276-0**

**Emissions**

**Designation**

Off-site test location

**Description**

D.L.S. Electronics performs radiated emissions testing at an additional location, 166 South Carter Street, Genoa City, WI 53128.



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## 1.0 Summary of Test Report

It was determined that the Whirlpool Inc Indigo WiFi Module model WICHIN01, complies with the requirements of CFR 47 Part 15 Subpart C Section 15.247.

### Subpart C Section 15.247 Applicable Technical Requirements Tested:

Section	Description	Procedure	Note	Compliant?
15.247(a)(2)	DTS Bandwidth	ANSI C63.10-2013 Sections 11.8 & 11.8.1	1	Yes
15.247(b)(3)	Fundamental Emission Output Power	ANSI C63.10-2013 Sections 11.9.1 & 11.9.1.3	1	Yes
15.247(e)	Maximum Power Spectral Density	ANSI C63.10-2013 Sections 11.10 & 11.10.2	1	Yes
15.247(d)	Emissions in Non-Restricted Frequency Bands – RF Conducted	ANSI C63.10-2013 Sections 11.11, 11.11.2 & 11.11.3	1	Yes
15.247(d) 15.205(a) 15.209(a)	Emissions in Restricted Frequency Bands – Radiated	ANSI C63.10-2013 Sections 11.12 & 11.12.1	2	Yes
15.247(d)	Operating Band-Edge Measurements – RF Conducted	ANSI C63.10-2013 Sections 11.11, 11.11.2 & 11.11.3	1	Yes
15.247(d) 15.205(a) 15.209(a)	Restricted Band-Edge Measurements - Radiated	ANSI C63.10-2013 Sections 11.12 & 11.12.1	2	Yes
15.207	AC Line Conducted Emissions	ANSI C63.10-2013 Section 6.2	3	Yes
Informative	Duty Cycle	ANSI C63.10-2013 Sections 11.6 & 11.6(b)		NA

Note 1: RF conducted measurement.

Note 2: Radiated emission measurement.

Note 3: AC power line conducted measurement.



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## 2.0 Introduction

From December 7<sup>th</sup> to 18<sup>th</sup>, 2015, the Indigo WiFi Module model WICHIN01, as provided from Whirlpool Corporation was tested to the requirements of CFR 47 Part 15 Subpart C Section 15.247 for single modular approval. To meet these requirements, the procedures contained within this report were performed by personnel of D.L.S Electronic Systems, Inc.

## 3.0 Test Facilities

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety Testing Laboratory accredited to ISO 17025. NVLAP Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, Industry Canada, and VCCI.

### Wisconsin Test Facility:

D.L.S. Electronic Systems, Inc.  
166 S. Carter Street  
Genoa City, Wisconsin 53128

### Wheeling Test Facility:

D.L.S. Electronic Systems, Inc.  
1250 Peterson Drive  
Wheeling, IL 60090

### FCC Registration #90531

## 4.0 Description of Test Sample

### Description:

The test samples consist of 2 Indigo WiFi modules. The 802.11b/g/n specification compliant transceivers are mounted on FR4 substrate which includes an integrated printed circuit board with two "on-board" or imbedded antennas and a shield covering the RF circuitry. Through software configuration the "off-board" or external antenna can be enabled depending on the geographic environment. Test tools are used to allow for different modulation types, power settings and frequency of operation to be set as needed. A 7.2V battery and mating connectors are used to power the device. USB is used to communicate with the DUT.

### Type of Equipment / Frequency Range:

Mobile / 2412-2462 MHz

### Physical Dimensions of Equipment Under Test:

Length: 197.43 mm, Width: 67.88 mm, Height: 23.50 mm



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#### 4.0 Description of Test Sample (continued)

##### Power Source:

12 VDC  $\pm$  5% provided from the host appliance  
7.2 VDC used for testing  
Stepped down to 3.3VDC for use by the transmitter

120V / 60Hz for AC Line Conducted Testing

##### Internal Frequencies:

38.4 MHz, 26 MHz, 32.768 kHz  
Switching power supply frequencies: 3 MHz, 800 kHz

##### Transmit / Receive Frequencies Used For Test Purpose:

Low channel: 2412 MHz, Middle channel: 2437 MHz, High channel: 2462 MHz  
20MHz channel bandwidth

##### Type of Modulation(s) / Antenna Type:

802.11b/g/n Modulations /

Internal Vertical Slot Antenna (0.6 dBi = highest antenna gain)  
Internal Horizontal Slot Antenna (1.8 dBi = highest antenna gain)  
External Planar F ("PIFA") Antenna Model W10445535 (4.2 dBi = highest antenna gain)  
External F Type Antenna Model W10503567 (1.6 dBi = highest antenna gain)

##### Description of Circuit Board(s) / Part Number:

PC Board	W10812057
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## 5.0 Test Equipment

A list of the equipment used can be found in the table below. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.

### Radiated 30 – 1000 MHz (Site 2)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	6-25-15	6-25-16
Low Pass Filter	Mini-Circuits	VLFX-1125	MUU9260	30 MHz – 1 GHz	7-1-15	7-1-16
Preamplifier	Rohde & Schwarz	TS-PR10	032001/004	9 kHz – 1 GHz	12-3-15	12-3-16
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	10-1-14	10-1-16
Antenna	EMCO	3146	1205	200 MHz – 1 GHz	10-24-14	10-24-16
Test Software	Rohde & Schwarz	ESK-1	V1.7.1	N/A	N/A	N/A

### AC Line Conducted (Screen Room)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Receiver	Narda PMM	9010F	020WW40102	10Hz-50MHz	6-25-15	6-25-16
LISN	Solar	9252-50-R-24-BNC	961019	9 kHz – 30 MHz	5-21-15	5-21-16
Filter- High-Pass	SOLAR	7930-120	090702	120 kHz – 30 MHz	12-3-15	12-3-16
Limiter	Electro-Metrics	EM-7600	705	9 kHz – 30 MHz	12-3-15	12-3-16
Test Software	Narda PMM	PMM Emission Suite	Rel.2.17	N/A	N/A	N/A



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## 5.0 Test Equipment - continued

### Radiated 1-18 GHz (Site G1)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	6-25-15	6-25-16
Preamp	Ciao	CA118-4010	101	1GHz-18GHz	1-26-15	1-26-16
Horn Antenna	EMCO	3115	9502-4451	1-18GHz	6-1-15	6-1-17
Filter- High-Pass	Q-Microwave	100462	1	4.2GHz-18GHz	5-27-15	5-27-16
Test Software	Rohde & Schwarz	ESK-1	V1.7.1	N/A	N/A	N/A

### Additional Radiated 18-26 GHz (Site G1)

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
Preamp	Miteq	AMF-8B-180265-40-10P-H/S	438727	18GHz-26GHz	6-29-15	6-29-16
Horn Antenna	EMCO	3116	2549	18 – 40GHz	9-2-14	9-2-16
Filter- High Pass	K&L	50140-11SH10-18000/T40000-K-K	438727	18-40GHz	3-24-15	3-24-16
Test Software	Rohde & Schwarz	ESK-1	V1.7.1	N/A	N/A	N/A

### RF Conducted / Other

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Date	Cal Due Dates
20 dB attenuator	Aeroflex/weinschel	75A-20-12	1071	DC – 40 GHz	7-1-15	7-1-16
20 dB attenuator	Anritsu	42N50-20	000451	DC – 18 GHz	5-29-15	5-29-16
Power Meter	Anritsu	ML2487A	6K00002069	N/A	6-25-15	6-25-16
Wideband Power Sensor	Anritsu	MA2490A	031563	50 MHz – 8 GHz	6-25-15	6-25-16



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## 6.0 Test Arrangements

### Radiated Emissions Measurement Arrangement:

All radiated emission measurements were performed at D.L.S. Electronic Systems, Inc. and set up according to ANSI C63.10-2013, unless otherwise noted. Description of procedures and measurements can be found in Appendix B – Measurement Data. See Appendix A for additional photos of the test set up. See Appendix C for measurement uncertainty.

Unless otherwise noted, the bandwidth of the measuring receiver / analyzer used during testing is shown below.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

### RF Conducted Emissions Measurement Arrangement:

All RF conducted emission measurements were performed at D.L.S. Electronic Systems, Inc. and set up according to ANSI C63.10-2013, unless otherwise noted. Description of procedures and measurements can be found in Appendix B – Measurement Data. See Appendix A for additional photos of the test set up. See Appendix C for measurement uncertainty.

## 7.0 Test Conditions

### Normal Test Conditions:

### Temperature and Humidity:

65°F at 28% RH unless otherwise noted on test data

### Supply Voltage:

7.2 VDC,  
120V / 60Hz for AC Line Conducted Testing



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## **8.0 Modifications Made To EUT For Compliance**

The output power settings were set during testing. The output power setting is not related to the output power level in dBm.

## **9.0 Additional Descriptions**

The EUT was powered with an AC to DC power adapter for RF conducted emissions, and with a rechargeable battery for radiated emissions.

The EUT was tested stand-alone for Single Modular Approval.

The EUT was programmed for continuous transmission on Low, Mid, and High channels, using 802.11-b, g, and n modulation types with various data rates.

For radiated emissions, the EUT with the on-board antennas was tested in the two positions representing final installation possibilities. Worst case findings reported.

For radiated emissions, the EUT with either external antenna was rotated through 3 orthogonal axis to find worst-case.

AC line conducted tested with HON-KWANG, model HK-CP12-A12 12V DC power supply.



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## 10.0 Final Settings

802.11b – with either on-board antenna, or PIFA antenna, or F antenna											
Channel	1	2	3	4	5	6	7	8	9	10	11
Power Setting	18	18	18	18	18	18	18	18	18	18	18

802.11g – with on-board antenna 1											
Channel	1	2	3	4	5	6	7	8	9	10	11
Power Setting	13	16	17	17	17	17	17	17	16	15	10

802.11g – with on-board antenna 2											
Channel	1	2	3	4	5	6	7	8	9	10	11
Power Setting	12	16	17	17	17	17	17	17	16	14	11

802.11g – with PIFA antenna											
Channel	1	2	3	4	5	6	7	8	9	10	11
Power Setting	12	16	17	17	17	17	17	17	16	15	12

802.11g – with F antenna											
Channel	1	2	3	4	5	6	7	8	9	10	11
Power Setting	14	17	17	17	17	17	17	17	17	16	14

802.11n – with on-board antenna 1											
Channel	1	2	3	4	5	6	7	8	9	10	11
Power Setting	12	14	14	14	14	14	14	14	14	14	10

802.11n – with on-board antenna 2											
Channel	1	2	3	4	5	6	7	8	9	10	11
Power Setting	11	14	14	14	14	14	14	14	14	14	9

802.11n – with PIFA antenna											
Channel	1	2	3	4	5	6	7	8	9	10	11
Power Setting	12	14	14	14	14	14	14	14	14	14	10

802.11n – with F antenna											
Channel	1	2	3	4	5	6	7	8	9	10	11
Power Setting	14	14	14	14	14	14	14	14	14	14	12



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## 11.0 Results

Measurements were performed in accordance with CFR 47 Part 15 Subpart C Section 15.247 and ANSI C63.10-2013. Graphical and tabular data can be found in Appendix B at the end of this report.

## 12.0 Conclusion

The Indigo WiFi Module model WICHIN01, as provided from Whirlpool, tested from December 7<sup>th</sup> to 18<sup>th</sup>, 2015 **meets** the requirements of CFR 47 Part 15 Subpart C Section 15.247.



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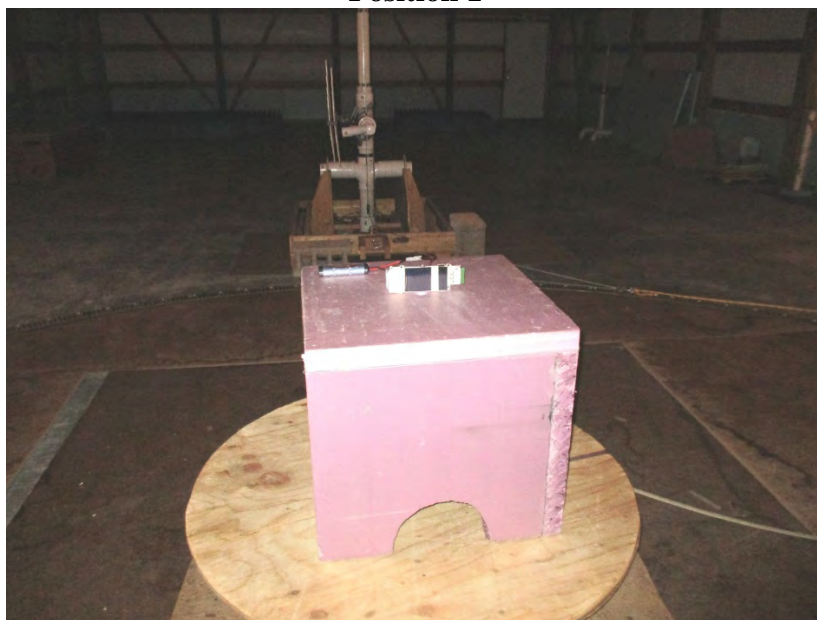
## Appendix A – Test Photos

### Photo Information and Test Setup:

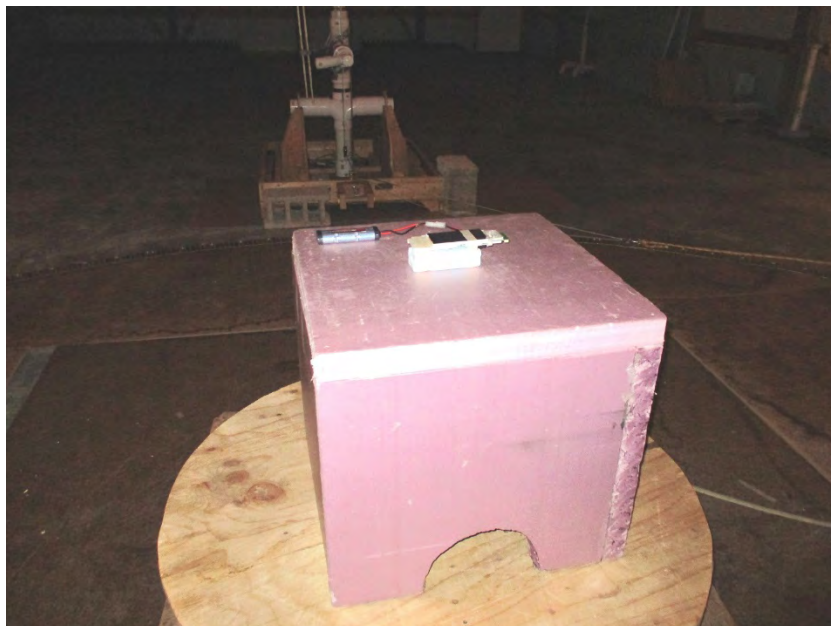
Item0: Whirlpool Corporation Model WICHIN01  
Item1: Battery pack (not part of the EUT)

### Radiated Emissions Below 1 GHz

**Position 1**



**Position 2**

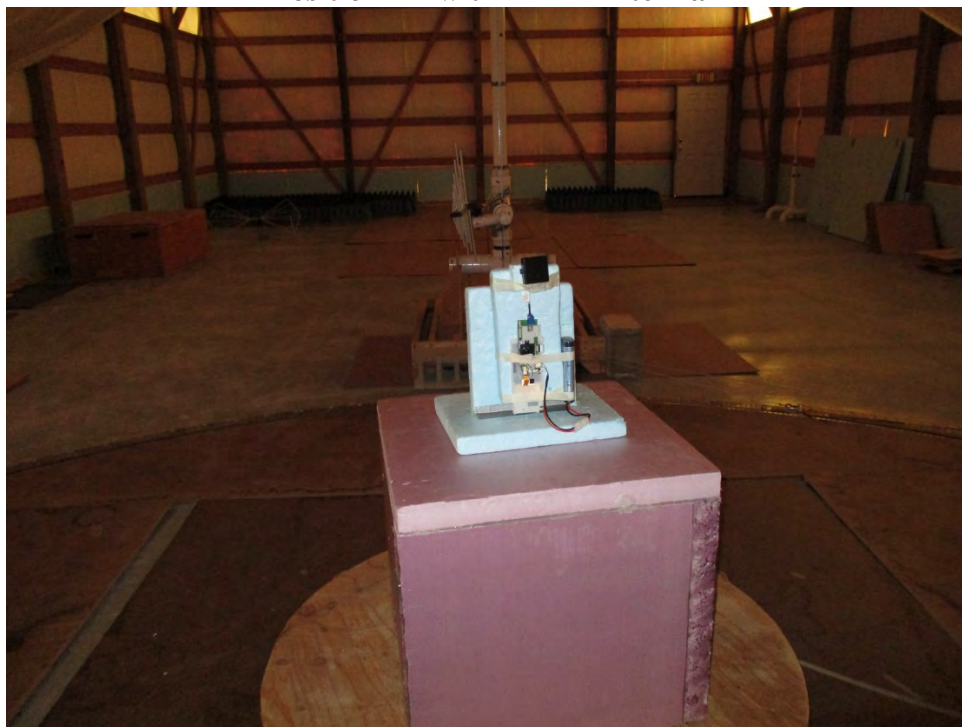




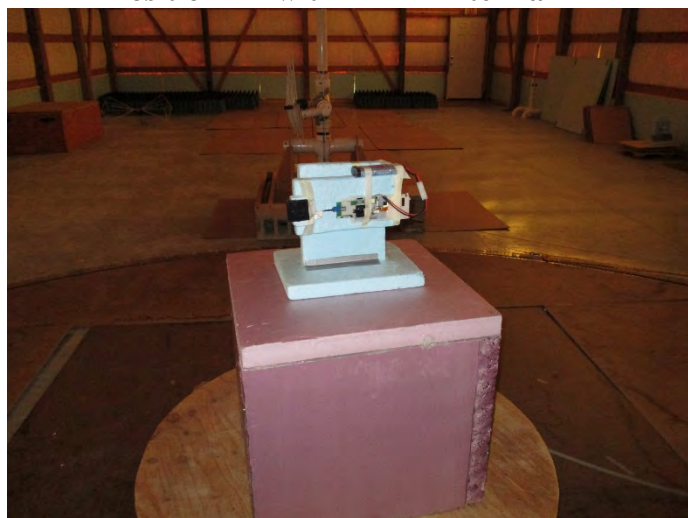
## Appendix A

### Radiated Emissions Below 1 GHz

#### Position 1 – with PIFA Antenna



#### Position 2 – with PIFA Antenna



#### Position 3 – with PIFA Antenna

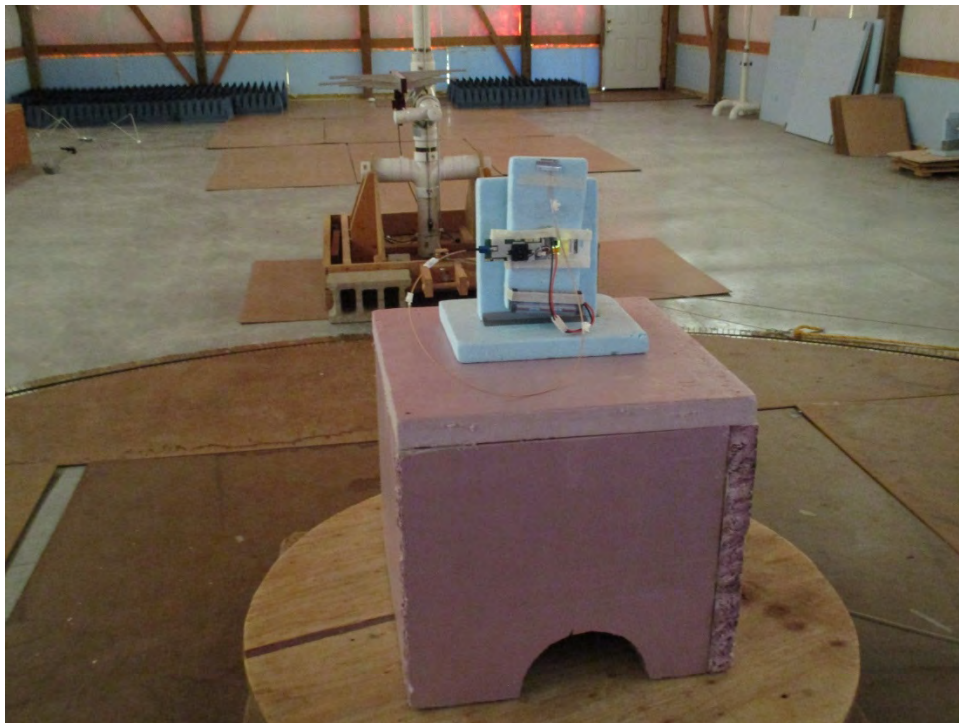




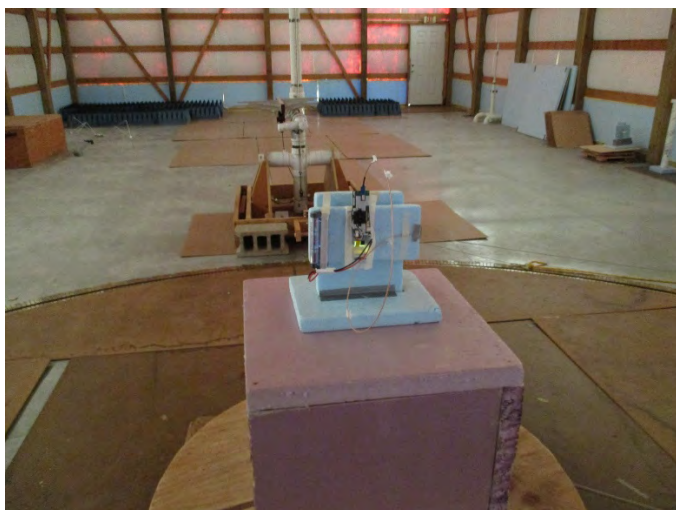
## Appendix A

### Radiated Emissions Below 1 GHz

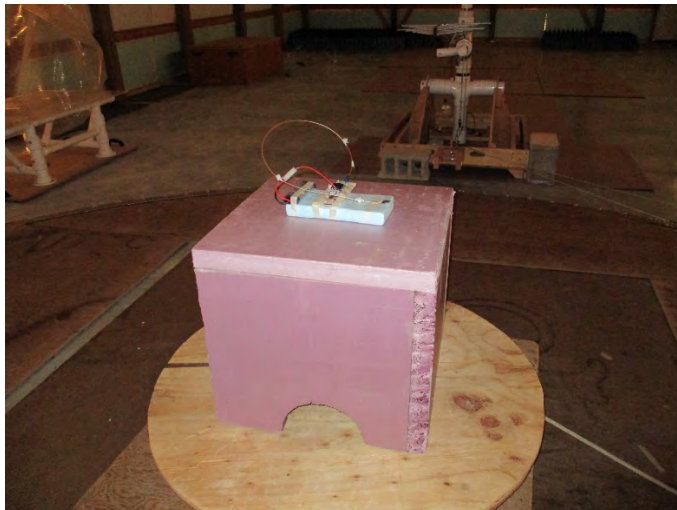
Position 1 – with F Antenna



Position 2 – with F Antenna



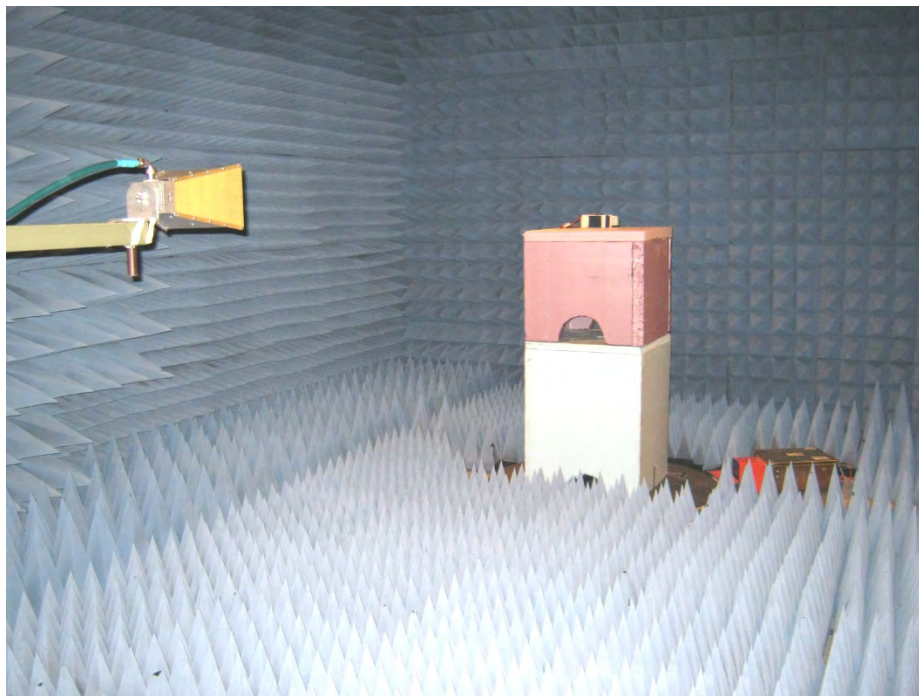
Position 3 – with F Antenna



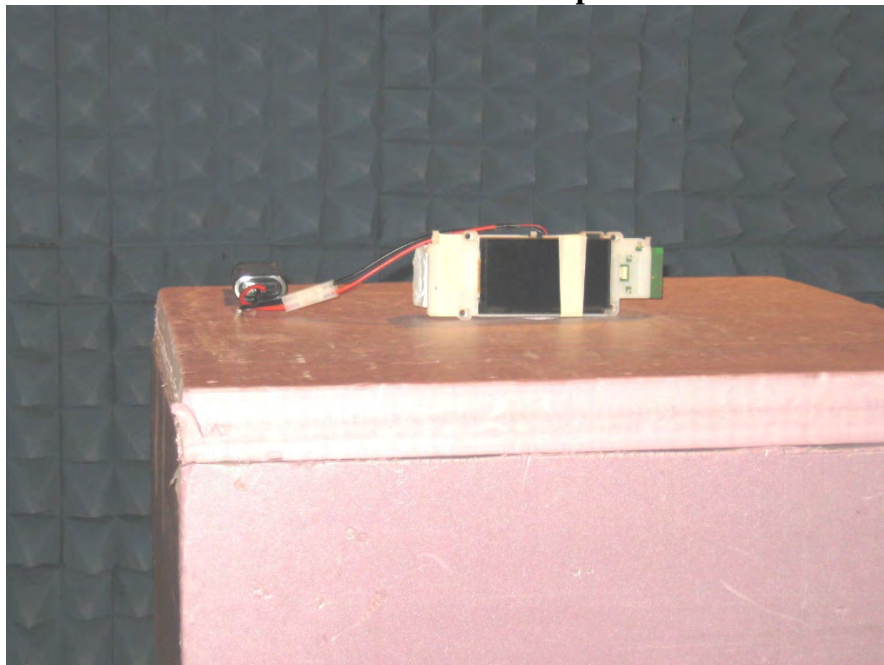
## Appendix A

### Radiated Emissions Above 1 GHz

Position 1



Position 1 – Close-up







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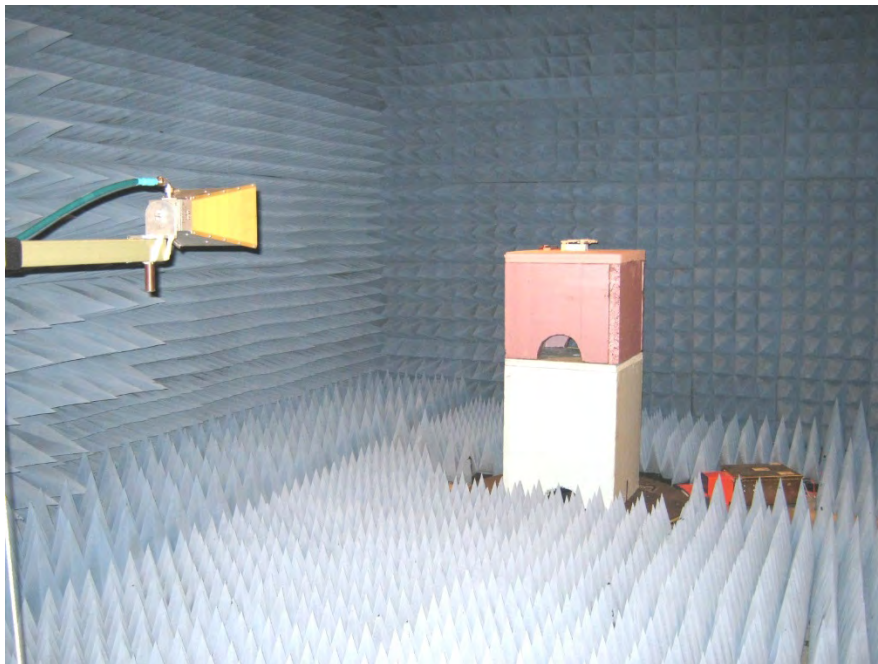
Company:  
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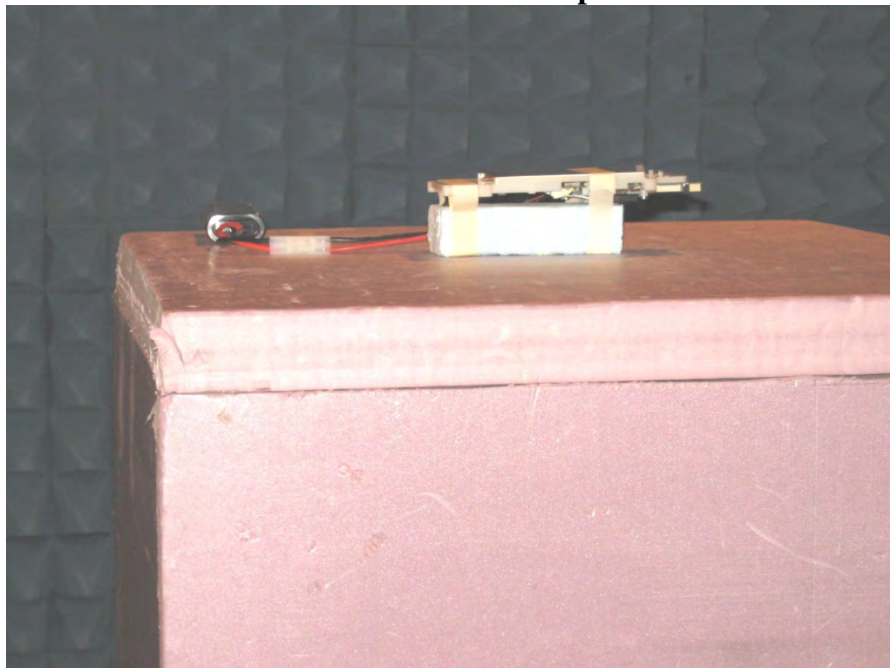
## Appendix A

### Radiated Emissions Above 1 GHz

Position 2



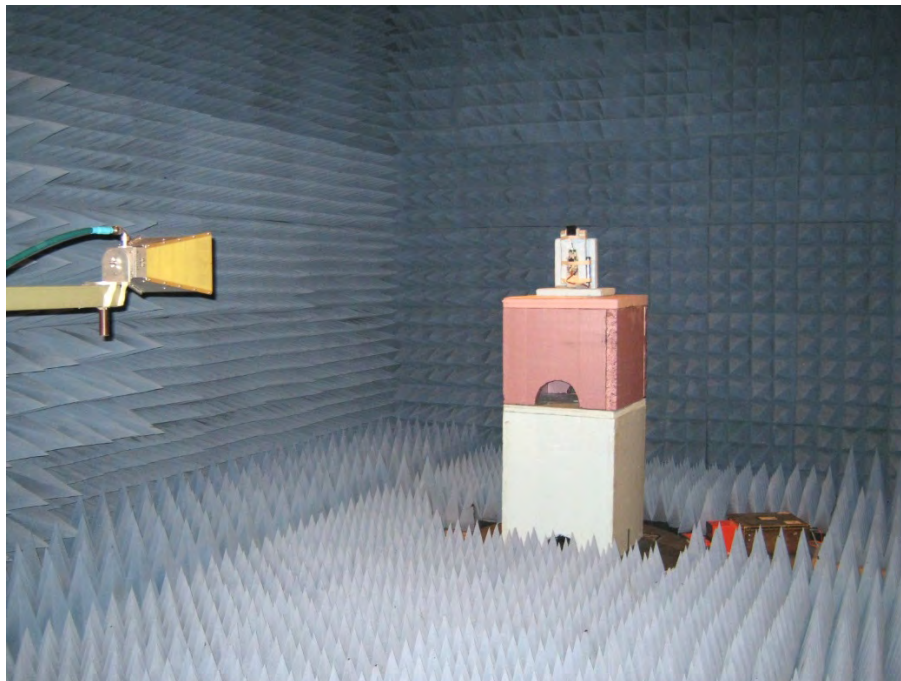
Position 2 – Close-up



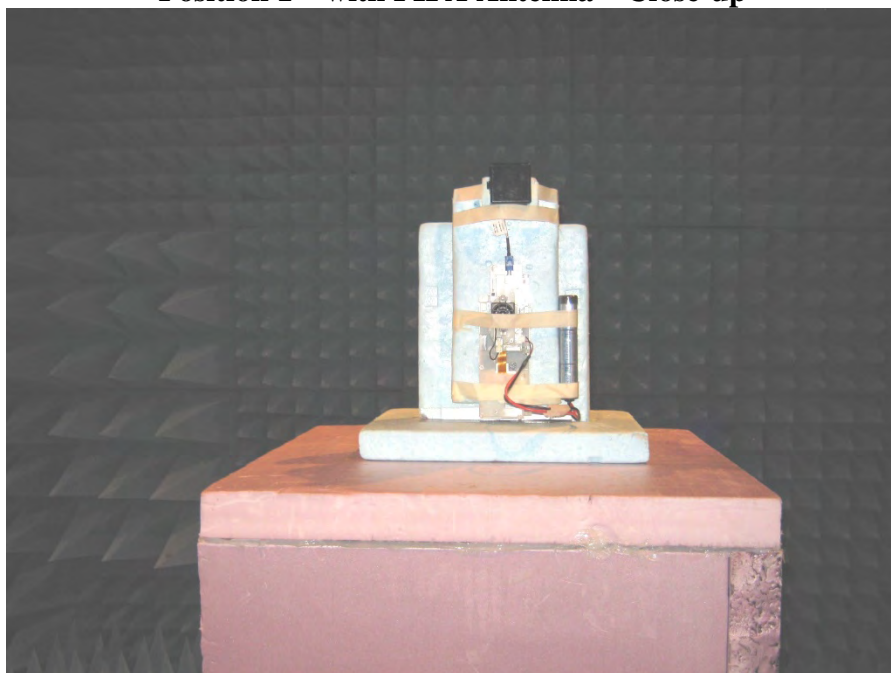
## Appendix A

### Radiated Emissions Above 1 GHz

#### Position 1 – with PIFA Antenna



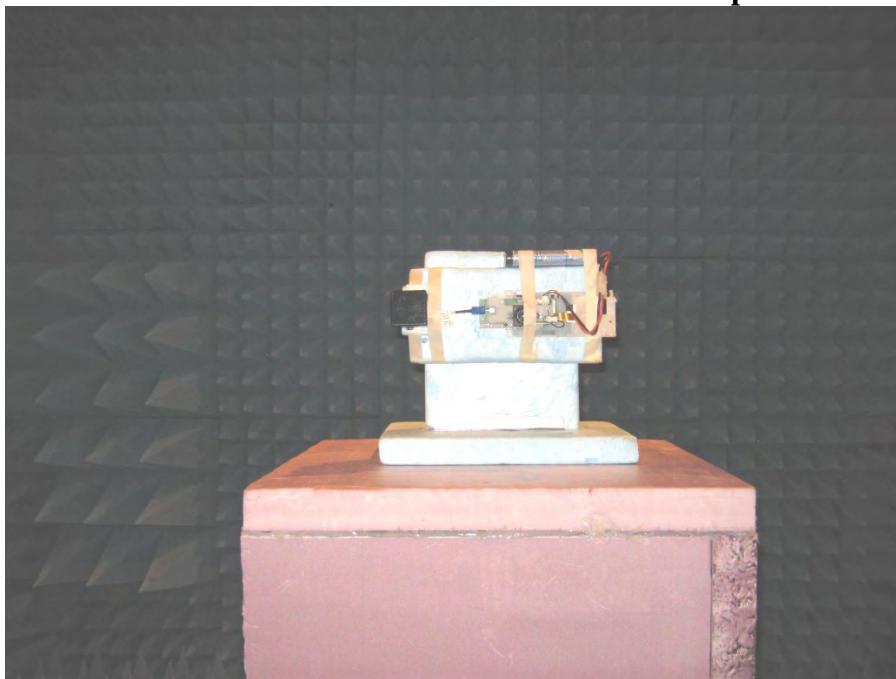
#### Position 1 – with PIFA Antenna – Close-up



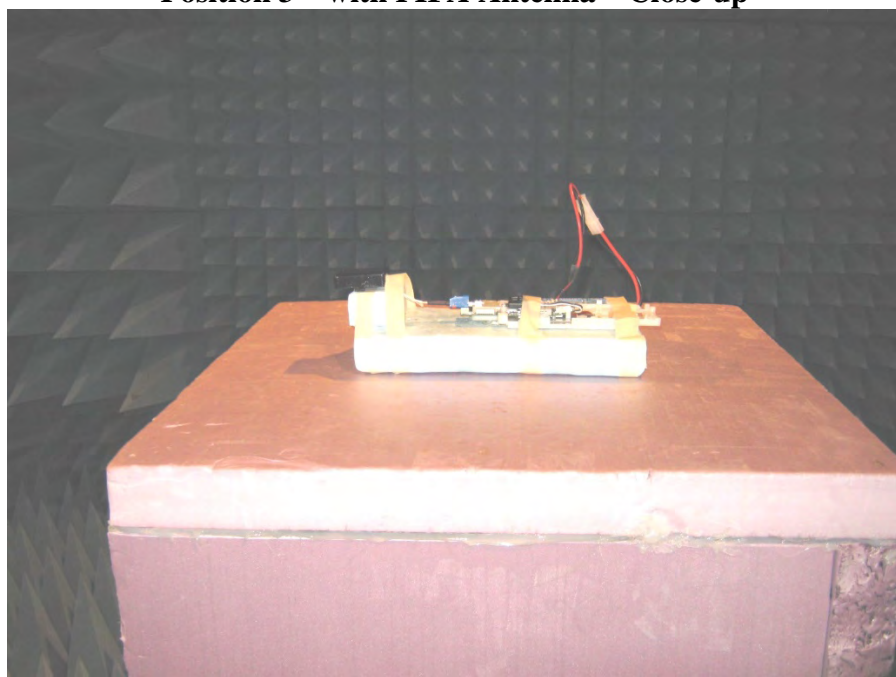
## Appendix A

### Radiated Emissions Above 1 GHz

#### Position 2 – with PIFA Antenna – Close-up



#### Position 3 – with PIFA Antenna – Close-up

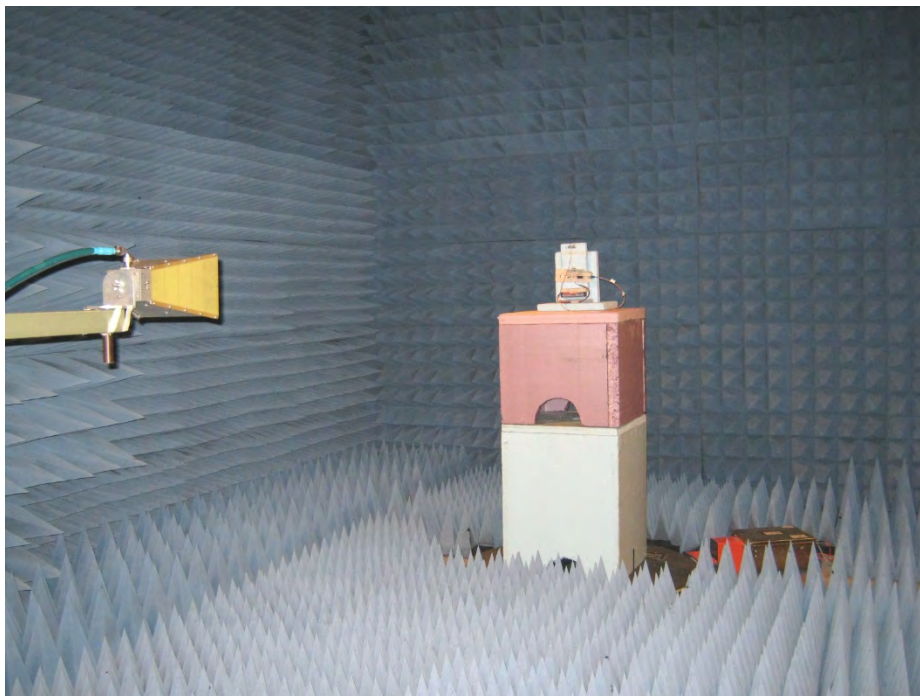




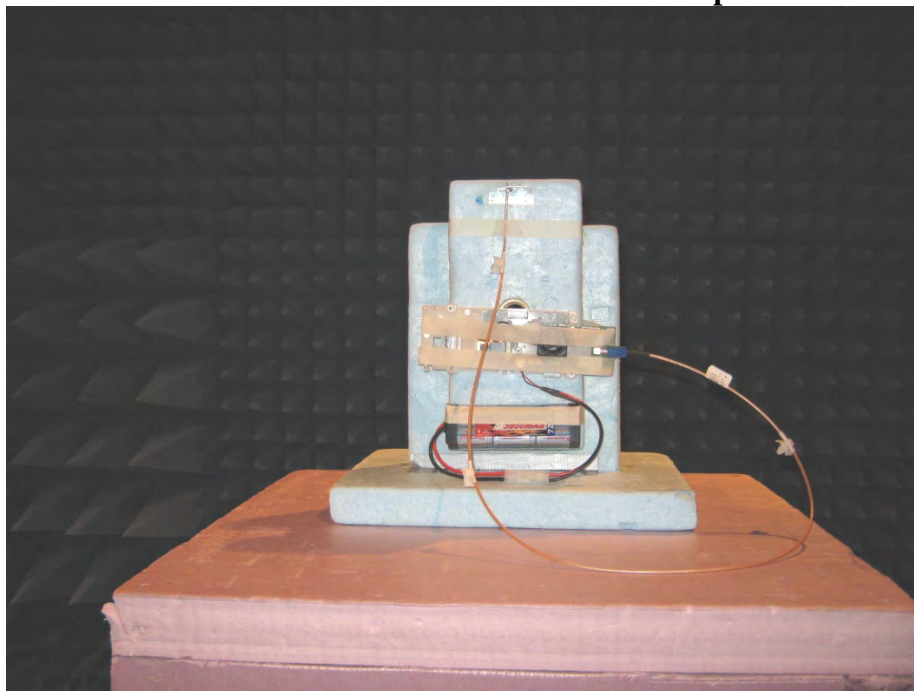
## Appendix A

### Radiated Emissions Above 1 GHz

#### Position 1 – with F Antenna



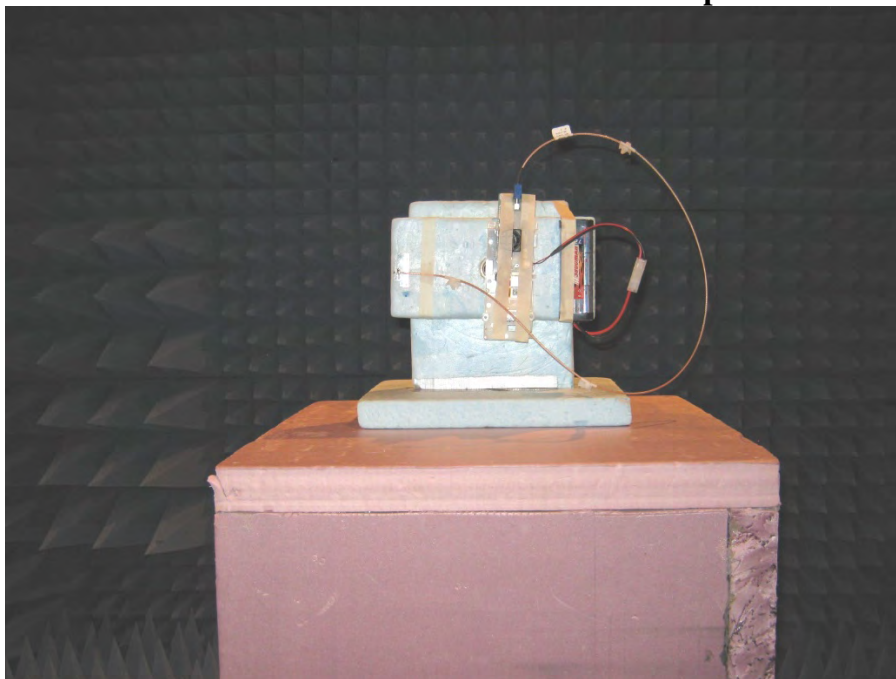
#### Position 1 – with F Antenna – Close-up



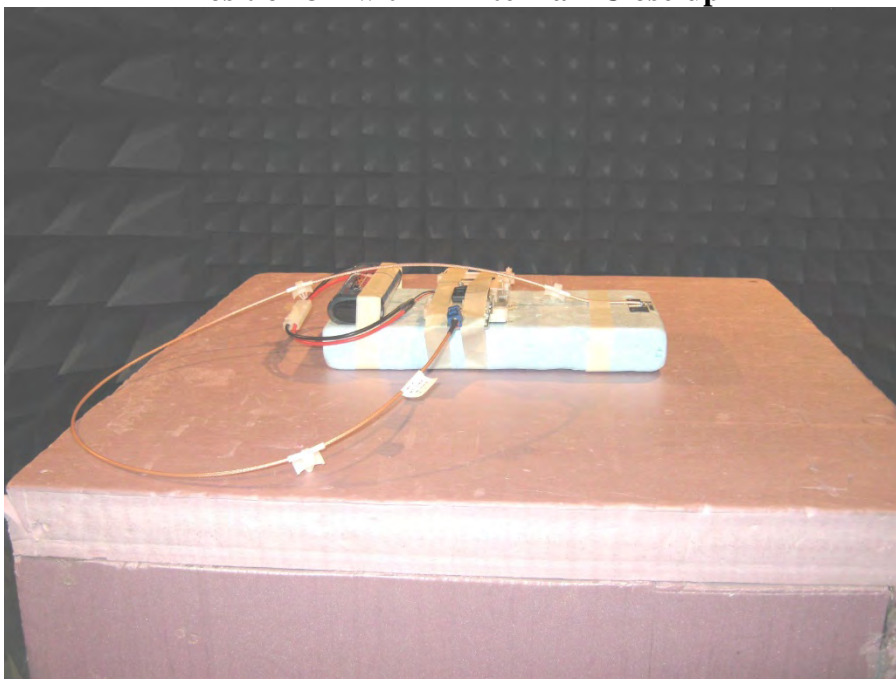
## Appendix A

### Radiated Emissions Above 1 GHz

#### Position 2 – with F Antenna – Close-up



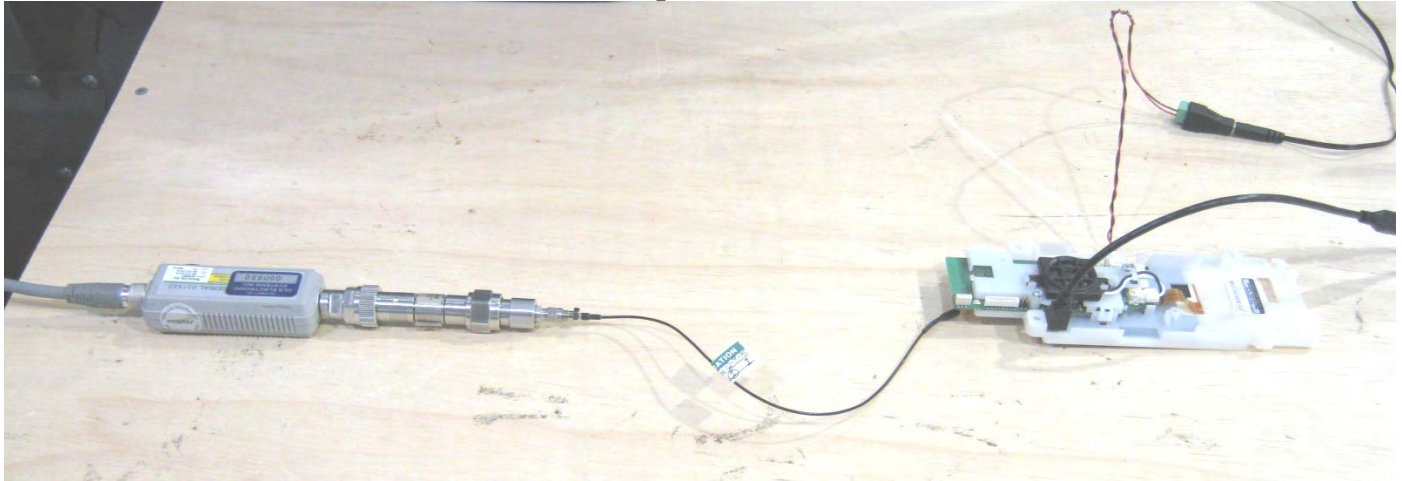
#### Position 3 – with F Antenna – Close-up





## Appendix A

### Output Power



### AC Line Conducted – Front







166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

## Appendix A

### AC Line Conducted – Back





166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

## Appendix B – Measurement Data

### B1.0 DTS Bandwidth

#### Rule Part:

Section 15.247(a)(2)

#### Test Procedure:

ANSI C63.10-2013  
11.8 DTS Bandwidth  
11.8.1 Option 1

#### Limit:

6 dB bandwidth shall be at least 500 kHz

#### Results:

Compliant  
Minimum 6 dB bandwidth: **10.1 MHz**

#### Notes:

Initial bandwidth measurements indicate the narrowest (worst-case) channel bandwidth occurred with the fastest data rate using 802.11-b modulation (11 Mbps). Therefore, measurements were performed in this mode. Testing was performed using the manufacturer's test software with output power setting 18. The EUT was tested at the low, middle, and high channels of operation.



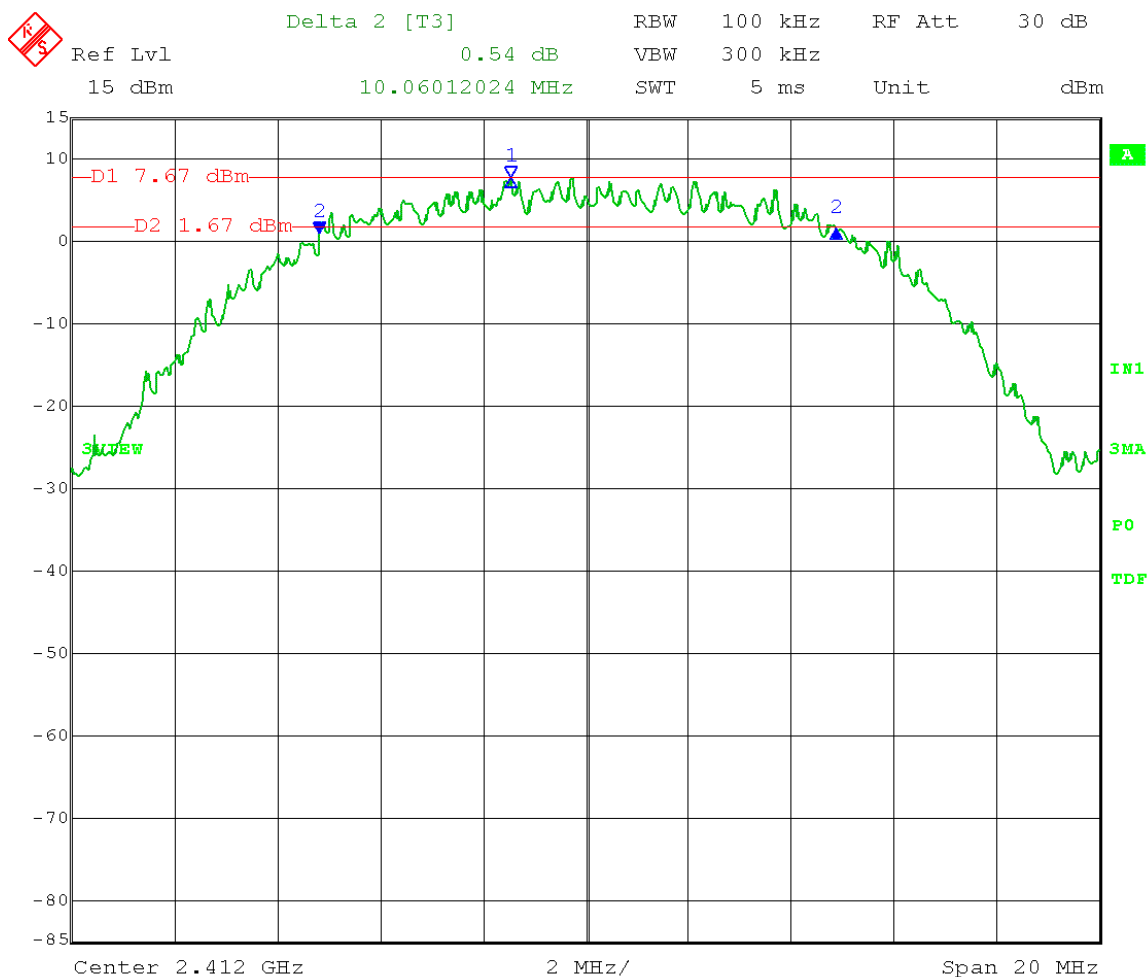
166 South Carter, Genoa City, WI 53128

Company: Whirlpool Corporation  
Model Tested: WICHIN01  
Report Number: 21556  
DLS Project: 7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: DTS Bandwidth  
6 dB Bandwidth  
Operator: Craig B

Antenna: On-board #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-b, 11 Mbps  
Power setting: 18

Comment: DTS Bandwidth = 10.06 MHz



Date: 10.DEC.2015 10:21:30



166 South Carter, Genoa City, WI 53128

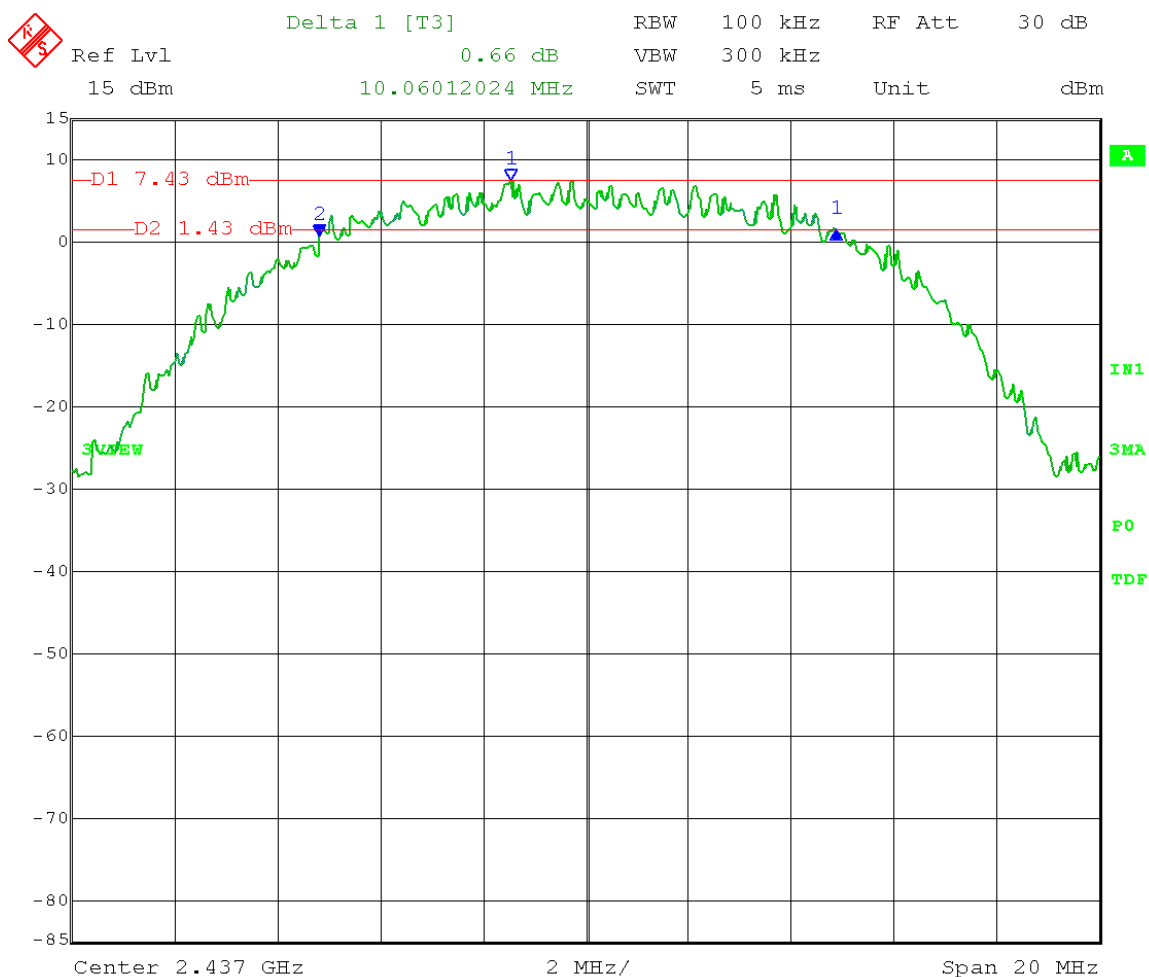
Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: DTS Bandwidth  
6 dB Bandwidth  
Operator: Craig B

Antenna: On-board #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-b, 11 Mbps  
Power setting: 18

Comment: DTS Bandwidth = 10.06 MHz



Date: 10.DEC.2015 10:03:57



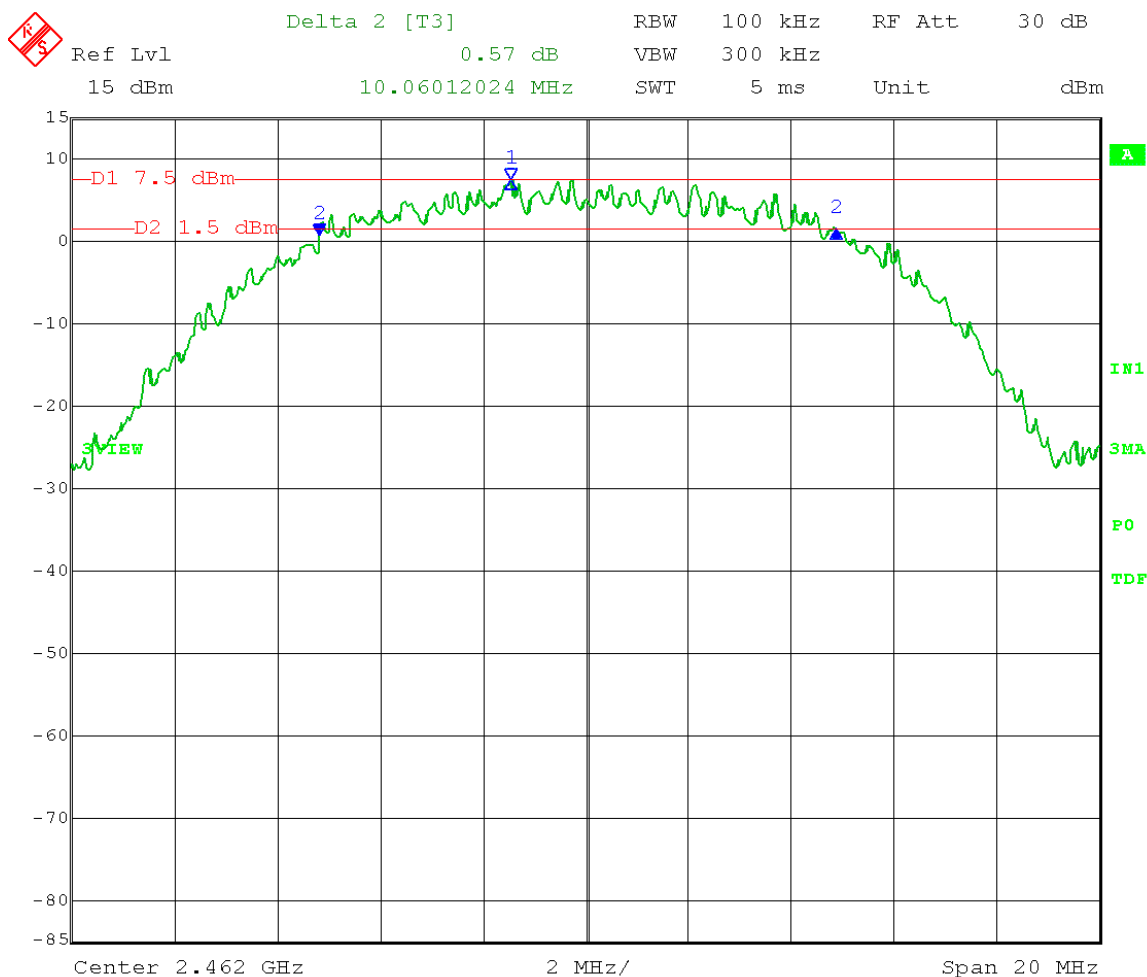
166 South Carter, Genoa City, WI 53128

Company: Whirlpool Corporation  
Model Tested: WICHIN01  
Report Number: 21556  
DLS Project: 7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: DTS Bandwidth  
6 dB Bandwidth  
Operator: Craig B

Antenna: On-board #2  
Channel: High, 2462 MHz  
Modulation: 802.11-b, 11 Mbps  
Power setting: 18

Comment: DTS Bandwidth = 10.06 MHz



Date: 10.DEC.2015 10:24:33



166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

## Appendix B

### B2.0 Fundamental Emission Output Power

#### Rule Part:

15.247(b)(3)

#### Test Procedure:

ANSI C63.10-2013  
11.9.1 Maximum Peak Conducted Output Power  
11.9.1.3 PKPM1 Peak power meter method

#### Limit:

The maximum peak conducted output power limit is 1 watt (30 dBm).

#### Results:

Compliant  
Maximum peak conducted output power: **266 mW (24.25 dBm)**

#### Notes:

The EUT has 2 on-board antennas and two external antenna ports of which only one can operate at a time. Initial output power measurements indicate the highest power levels occurred from on-board antenna #2. Measurements were performed on this antenna to represent worst-case power levels. Testing was performed using the manufacturer's test software with output power setting 18 for 802.11-b mode, 17 for 802.11-g, and 14 for 802.11-n mode. The data rate was set to worst-case (highest peak power) for each modulation type. The EUT was tested at the low, middle, and high channels of operation. The power meter measurements were corrected to account for the cable loss and external attenuator.

The output power was measured with power setting 18 for 802.11-b mode, and 17 for 802.11-g, and 14 for 802.11-n modes. It was later determined that the power settings of the low and high channels needed to be reduced to meet the restricted band-edge requirements. See page 13 for the final power settings.



166 South Carter, Genoa City, WI 53128

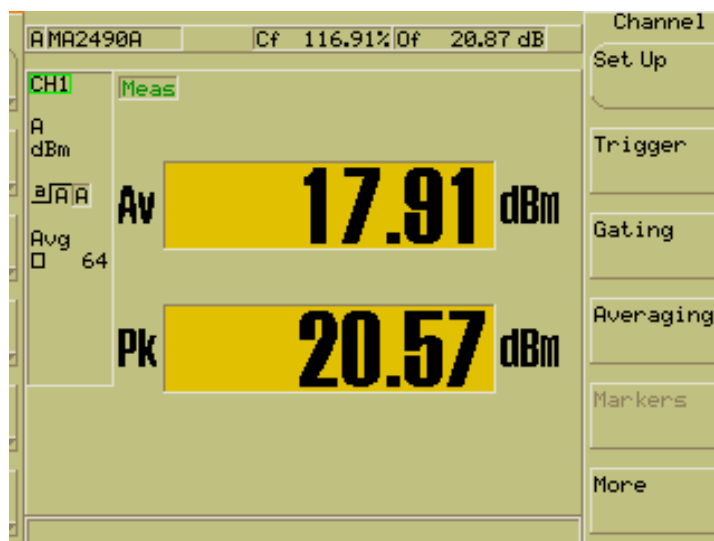
Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Fundamental emission output power  
Maximum peak conducted output power  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

Comment: Maximum peak conducted output power = 20.57 dBm





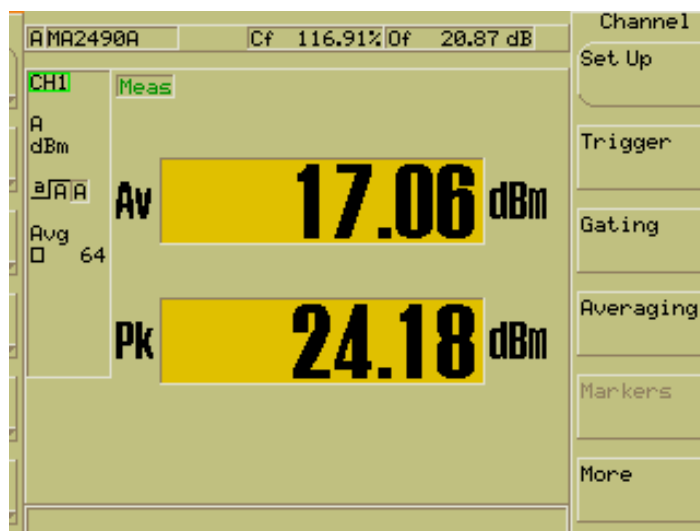
166 South Carter, Genoa City, WI 53128

Company:	Whirlpool Corporation
Model Tested:	WICHIN01
Report Number:	21556
DLS Project:	7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Fundamental emission output power  
Maximum peak conducted output power  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

Comment: Maximum peak conducted output power = 24.18 dBm







166 South Carter, Genoa City, WI 53128

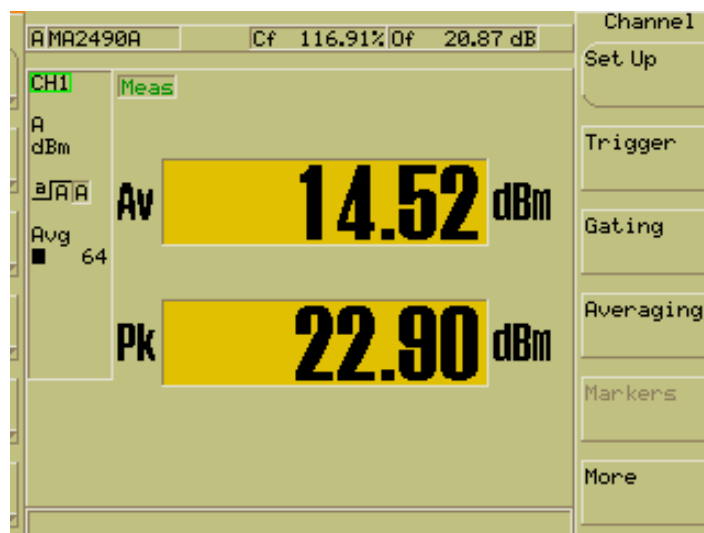
Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Fundamental emission output power  
Maximum peak conducted output power  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

Comment: Maximum peak conducted output power = 22.90 dBm





166 South Carter, Genoa City, WI 53128

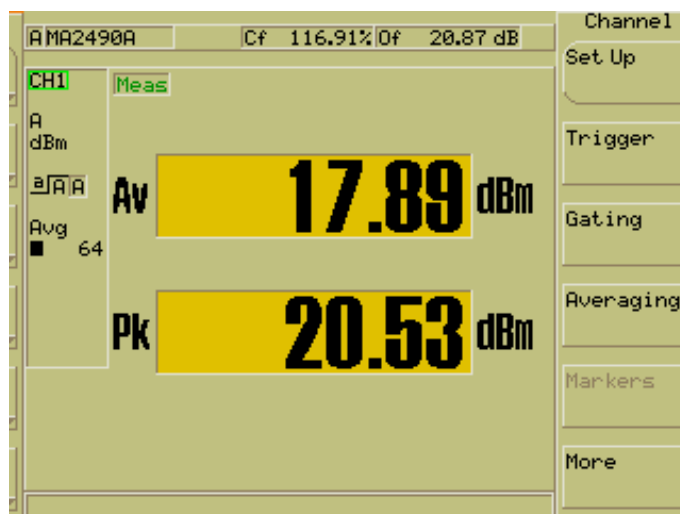
Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Fundamental emission output power  
Maximum peak conducted output power  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

Comment: Maximum peak conducted output power = 20.53 dBm





166 South Carter, Genoa City, WI 53128

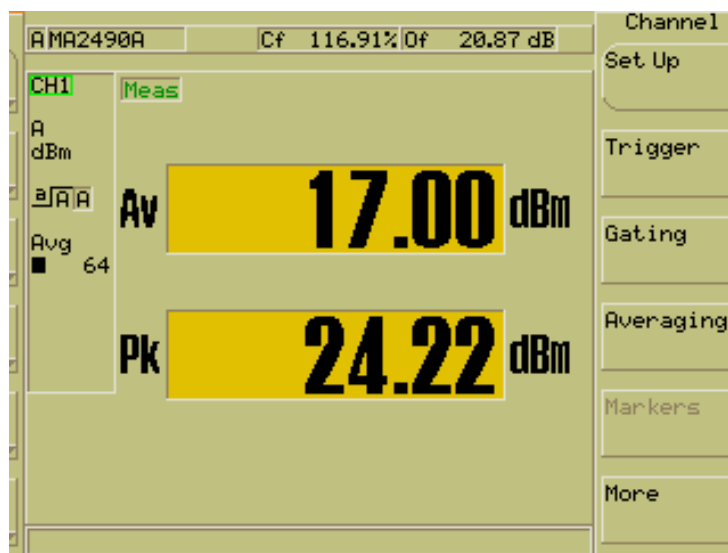
Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Fundamental emission output power  
Maximum peak conducted output power  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

Comment: Maximum peak conducted output power = 24.22 dBm





166 South Carter, Genoa City, WI 53128

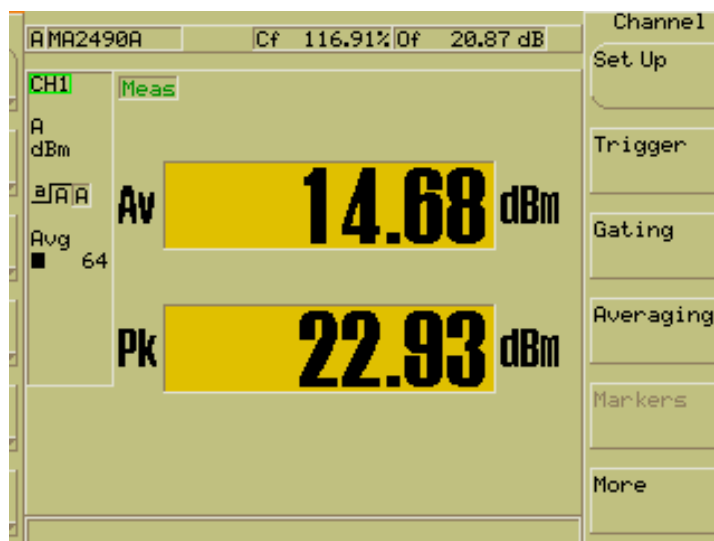
Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Fundamental emission output power  
Maximum peak conducted output power  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

Comment: Maximum peak conducted output power = 22.93 dBm





166 South Carter, Genoa City, WI 53128

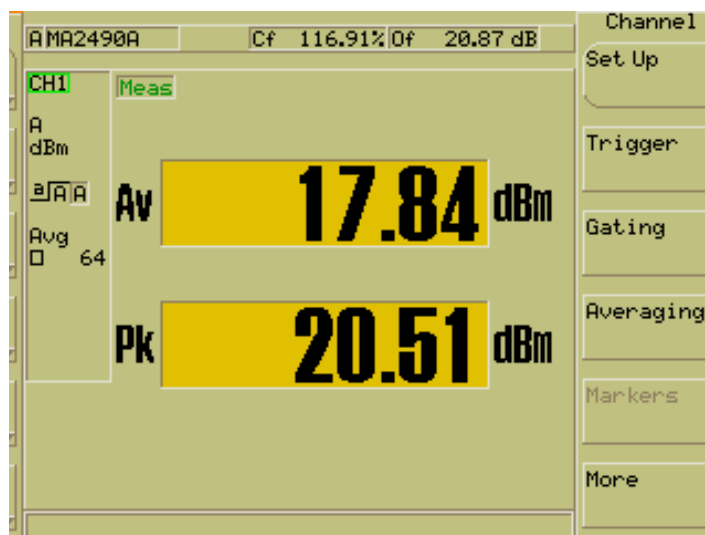
Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Fundamental emission output power  
Maximum peak conducted output power  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

Comment: Maximum peak conducted output power = 20.51 dBm





166 South Carter, Genoa City, WI 53128

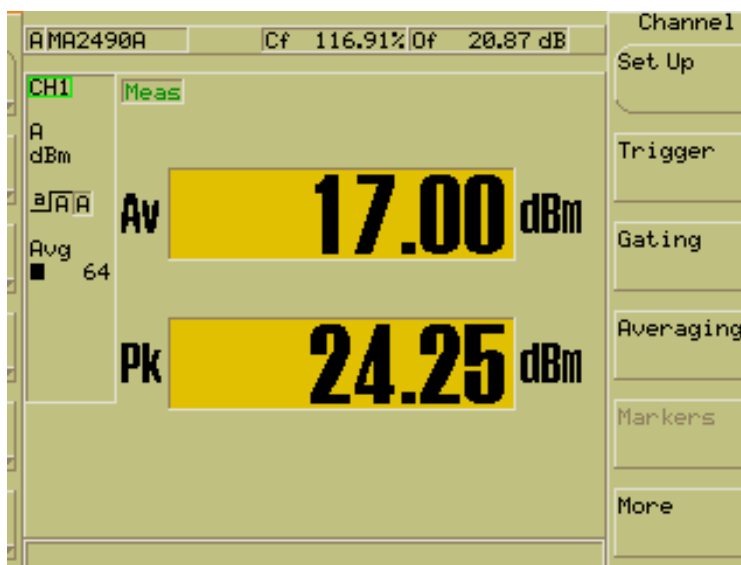
Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Fundamental emission output power  
Maximum peak conducted output power  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

Comment: Maximum peak conducted output power = 24.25 dBm





166 South Carter, Genoa City, WI 53128

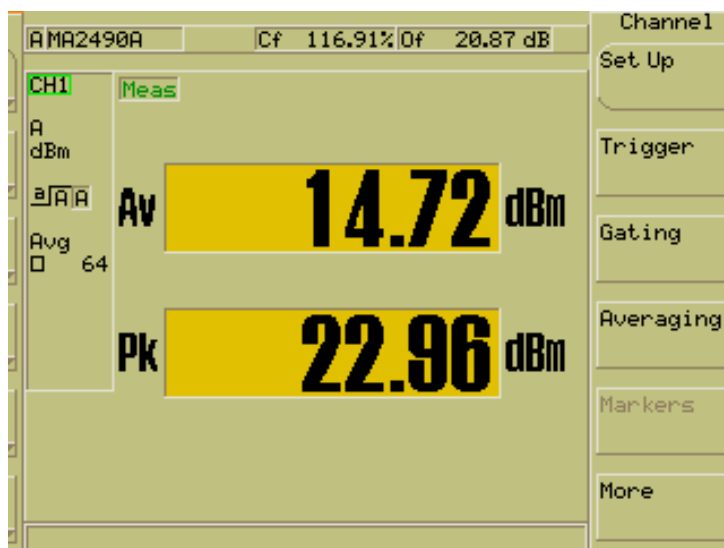
Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Fundamental emission output power  
Maximum peak conducted output power  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

Comment: Maximum peak conducted output power = 22.96 dBm





166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

## Appendix B

### B3.0 Maximum Power Spectral Density (PSD)

#### Rule Part:

15.247(e)

#### Test Procedure:

ANSI C63.10-2013

11.10 Maximum Power Spectral Density Level in the Fundamental Emission

11.10.2 Method PKPSD (peak PSD)

#### Limit:

+8 dBm in any 3 kHz band segment within the fundamental during any time interval of continuous transmission.

#### Results:

Compliant

Maximum conducted power spectral density (PSD): **-6.15 dBm**

#### Notes:

The EUT has 2 on-board antennas and two external antenna ports of which only one can operate at a time. Initial pre-scan measurements indicate the highest power spectral density occurred from on-board antenna #2 using 802.11-b modulation and 11 Mbps data rate. Therefore, measurements were performed in this mode from on-board antenna #2 to represent worst-case power spectral density levels. The EUT was tested at the low, middle, and high channels of operation with power setting 18. The spectrum analyzer measurements were corrected to account for the cable loss and external attenuator.





166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

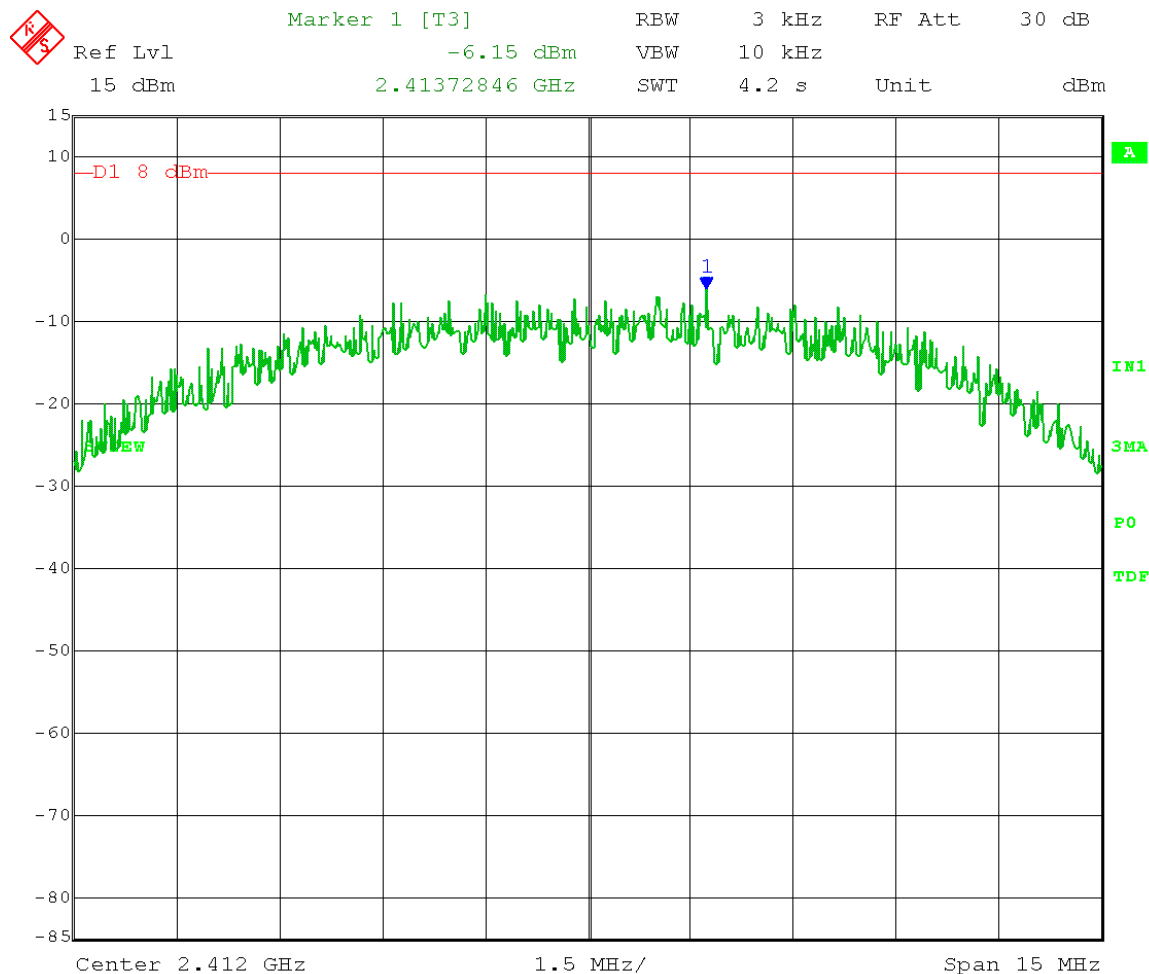
Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Maximum power spectral density level in the fundamental emission  
Peak Power Spectral Density  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-b, 11 Mbps  
Power setting: 18

Limit: 8 dBm / 3 kHz

Peak PSD = -6.15 dBm / 3 kHz



Date: 10.DEC.2015 11:59:06



166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

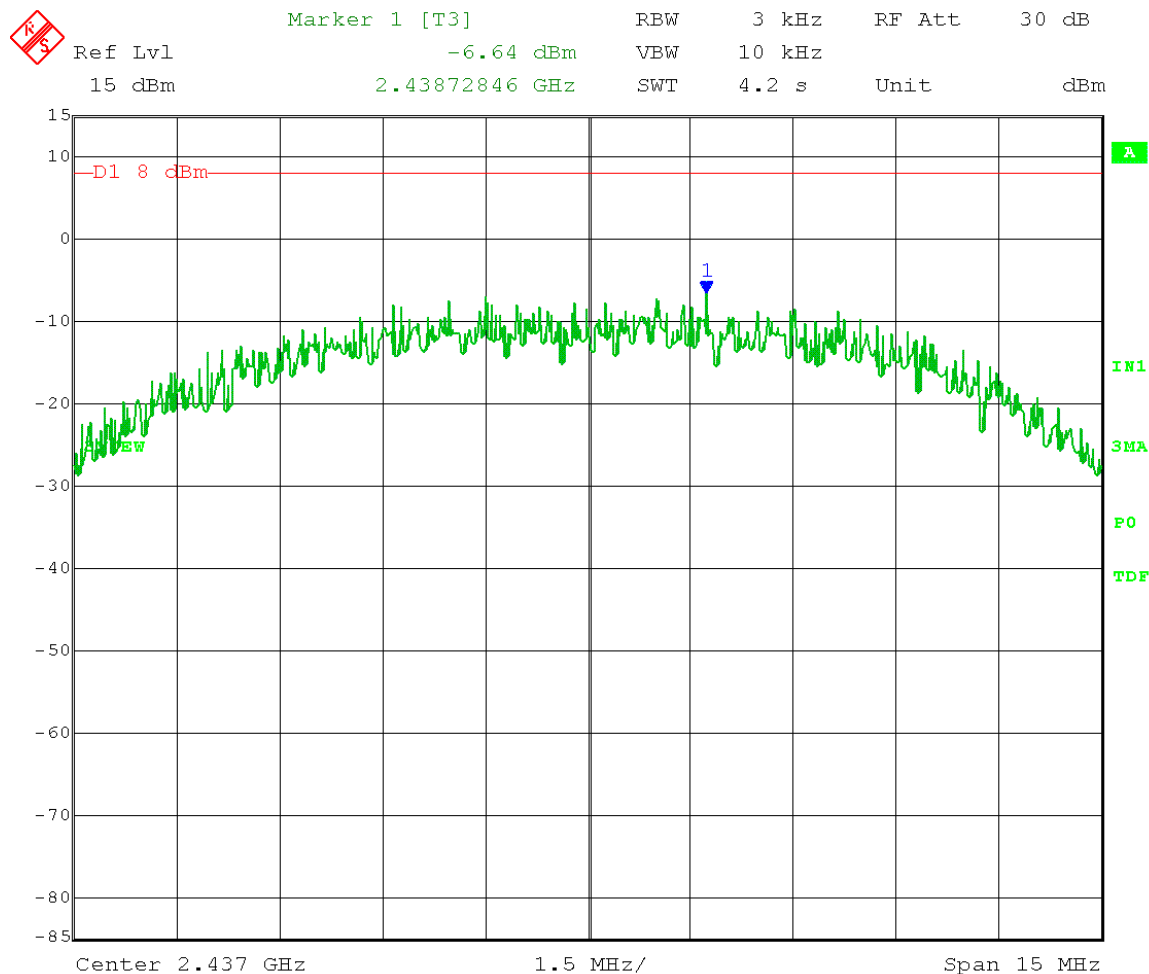
Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Maximum power spectral density level in the fundamental emission  
Peak Power Spectral Density  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-b, 11 Mbps  
Power setting: 18

Limit: 8 dBm / 3 kHz

Peak PSD = -6.64 dBm / 3 kHz



Date: 10.DEC.2015 11:39:07



166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

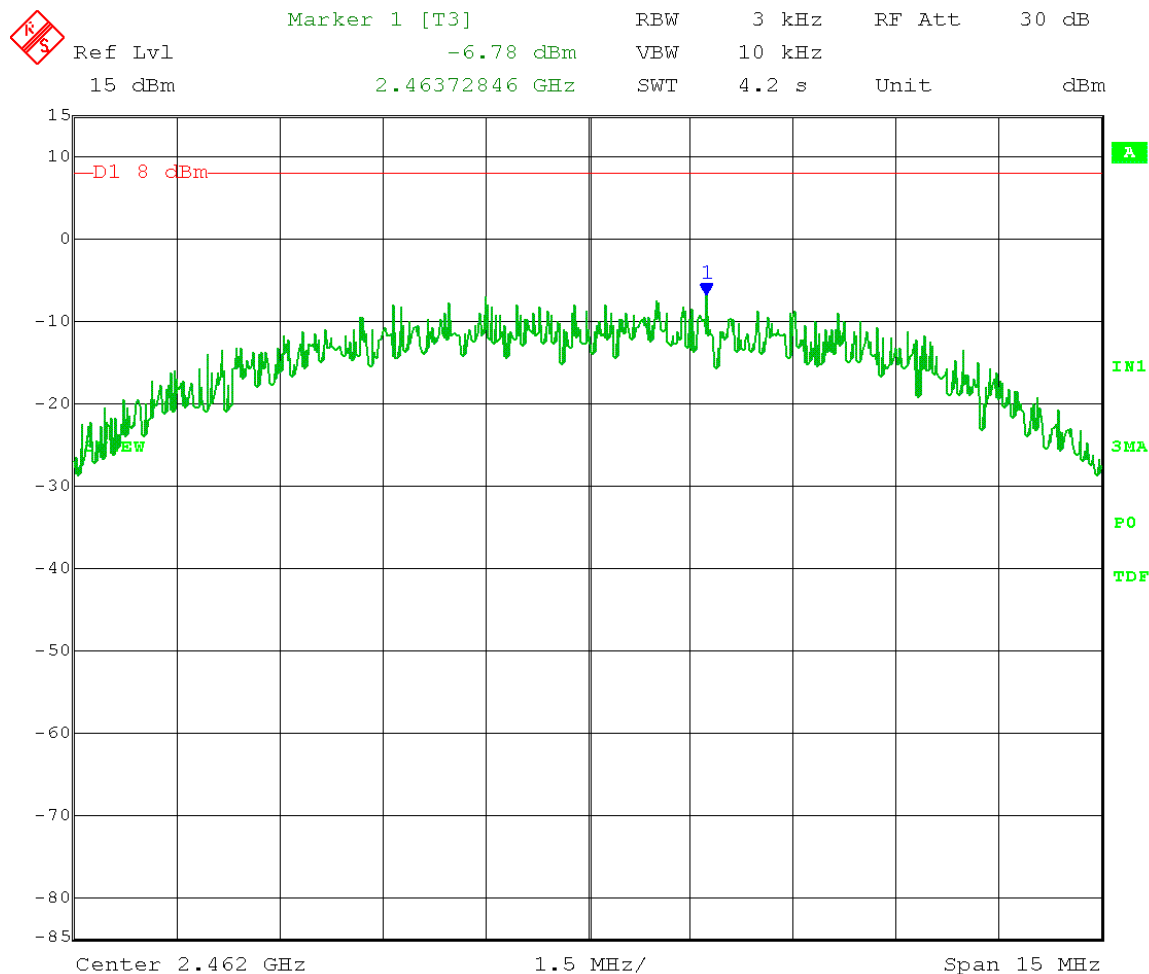
Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Maximum power spectral density level in the fundamental emission  
Peak Power Spectral Density  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-b, 11 Mbps  
Power setting: 18

Limit: 8 dBm / 3 kHz

Peak PSD = -6.78 dBm / 3 kHz



Date: 10.DEC.2015 12:04:10



166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

## **Appendix B**

### **B4.0 Emissions in Non-Restricted Frequency Bands - RF Conducted**

#### **Rule Part:**

15.247(d)

#### **Test Procedure:**

ANSI C63.10-2013  
11.11 Emissions in non-restricted frequency bands  
11.11.2 Reference Level Measurement  
11.11.3 Unwanted Emissions Level Measurement

#### **Limit:**

The peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

#### **Results:**

Compliant

#### **Notes:**

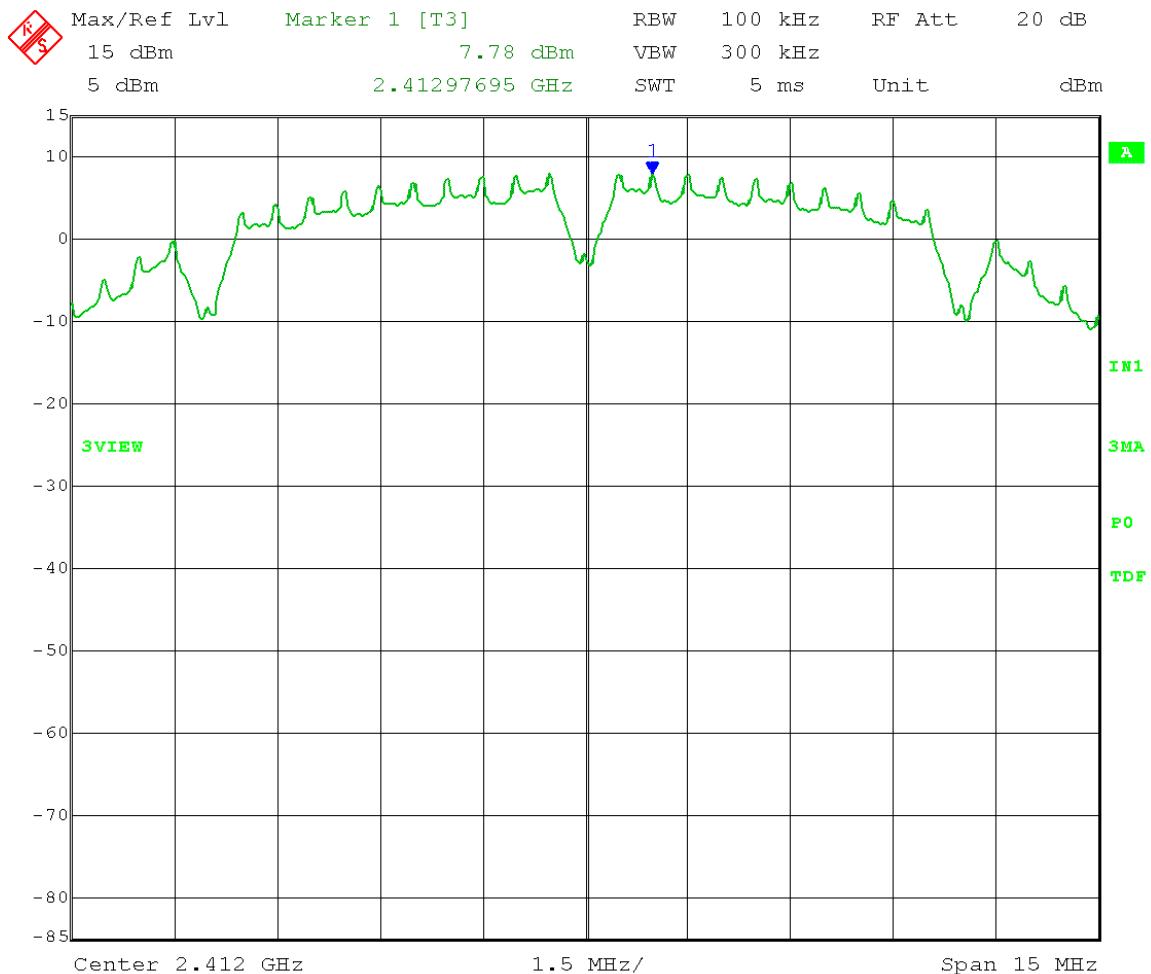
The EUT has 2 on-board antennas and two external antenna ports of which only one can operate at a time. Initial output power measurements indicate the highest power levels occurred from on-board antenna #2. Measurements were performed on this antenna to represent worst-case emissions. Testing was performed using the manufacturer's test software with output power setting 18 for 802.11-b mode, 17 for 802.11-g, and 14 for 802.11-n mode. The data rate was set to worst-case (highest peak power) for each modulation type. The EUT was tested at the low, middle, and high channels of operation. The spectrum analyzer measurements were corrected to account for the cable loss and external attenuator.

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Reference Level measurement

$$\text{Limit} = 7.78 \text{ dBm} - 20 \text{ dB} = -12.22 \text{ dBm}$$



Date: 10.DEC.2015 13:17:15

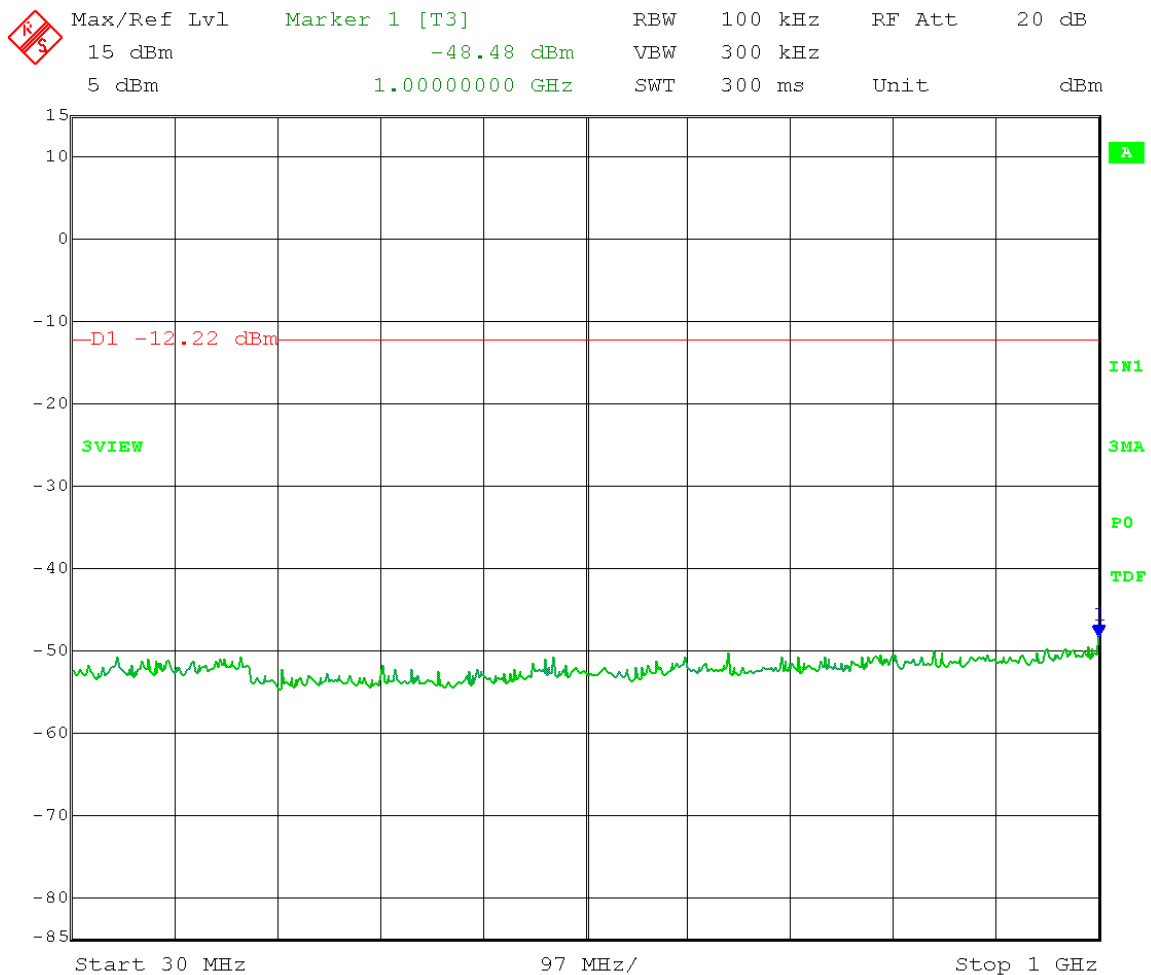
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.78 \text{ dBm} - 20 \text{ dB} = -12.22 \text{ dBm}$$

Frequency Range: 30 - 1000 MHz



Date: 10.DEC.2015 13:27:32

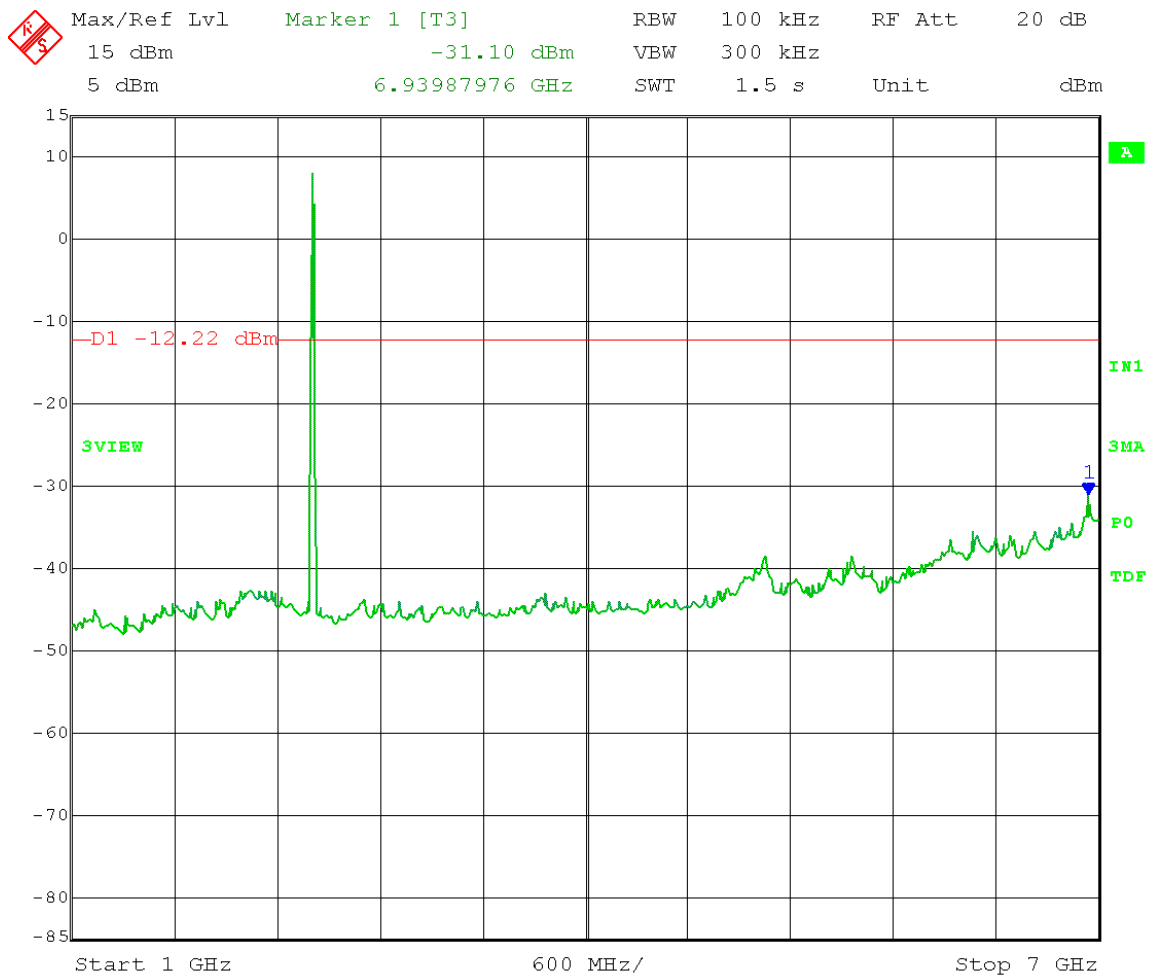
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.78 \text{ dBm} - 20 \text{ dB} = -12.22 \text{ dBm}$$

Frequency Range: 1 - 7 GHz



Date: 10.DEC.2015 13:21:58

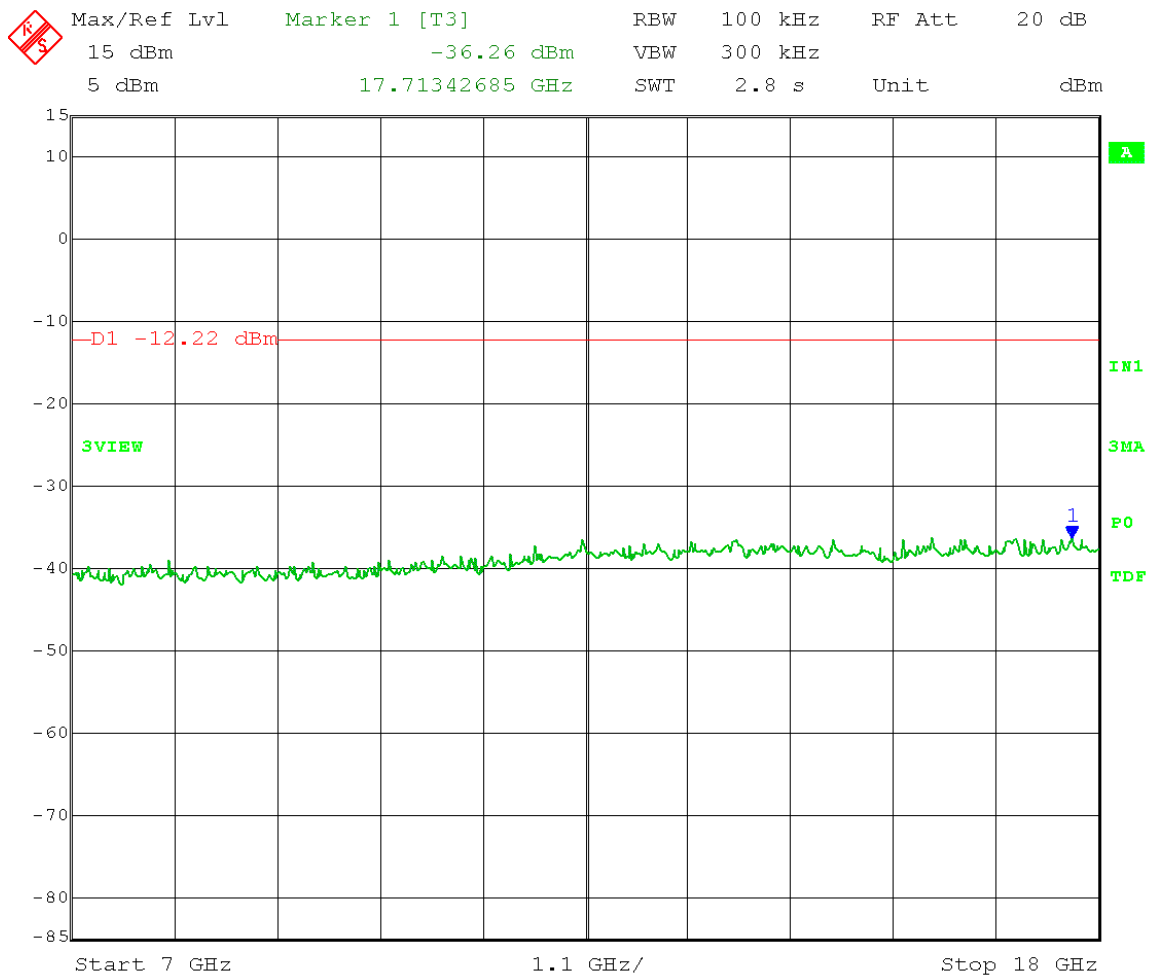
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.78 \text{ dBm} - 20 \text{ dB} = -12.22 \text{ dBm}$$

Frequency Range: 7 - 18 GHz



Date: 10.DEC.2015 13:24:07



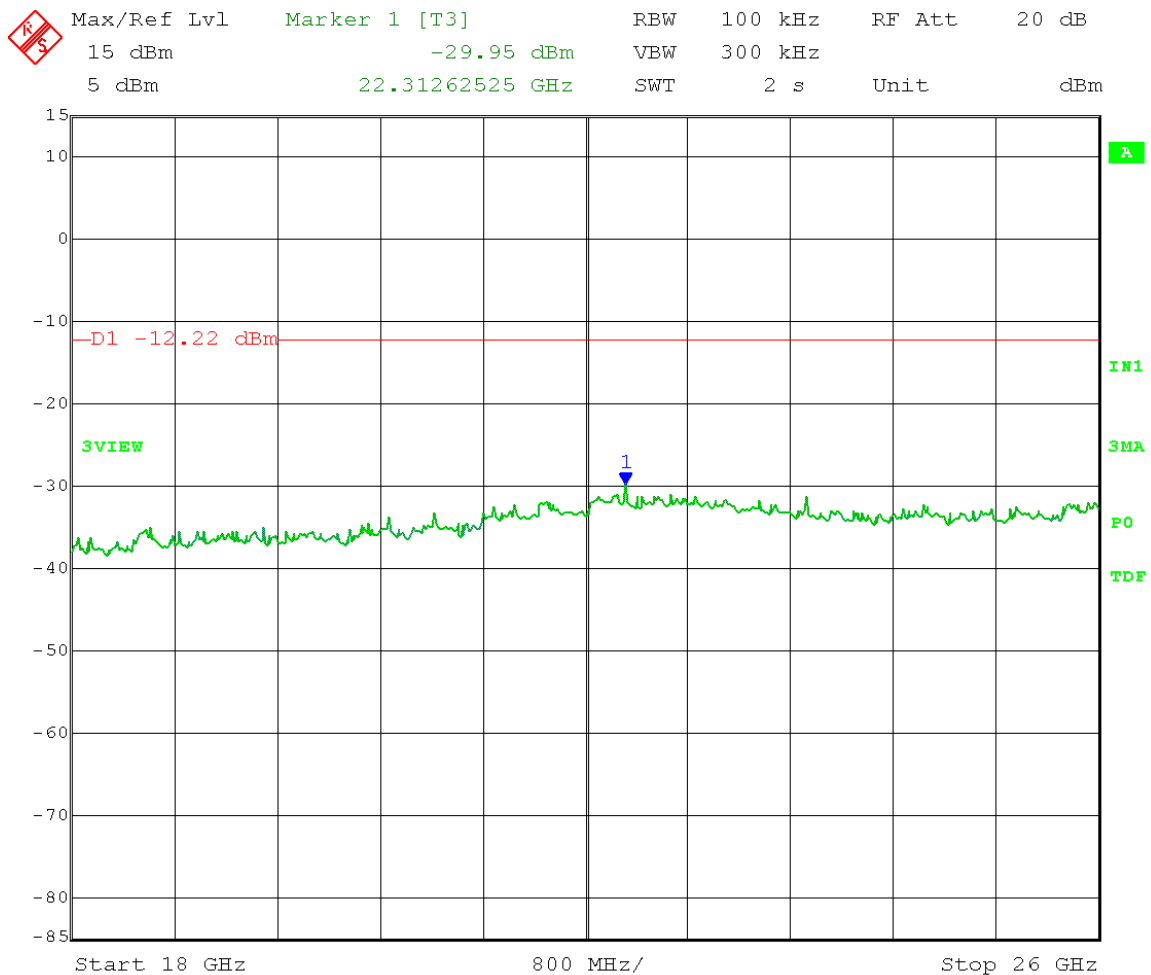
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.78 \text{ dBm} - 20 \text{ dB} = -12.22 \text{ dBm}$$

Frequency Range: 18 - 26 GHz



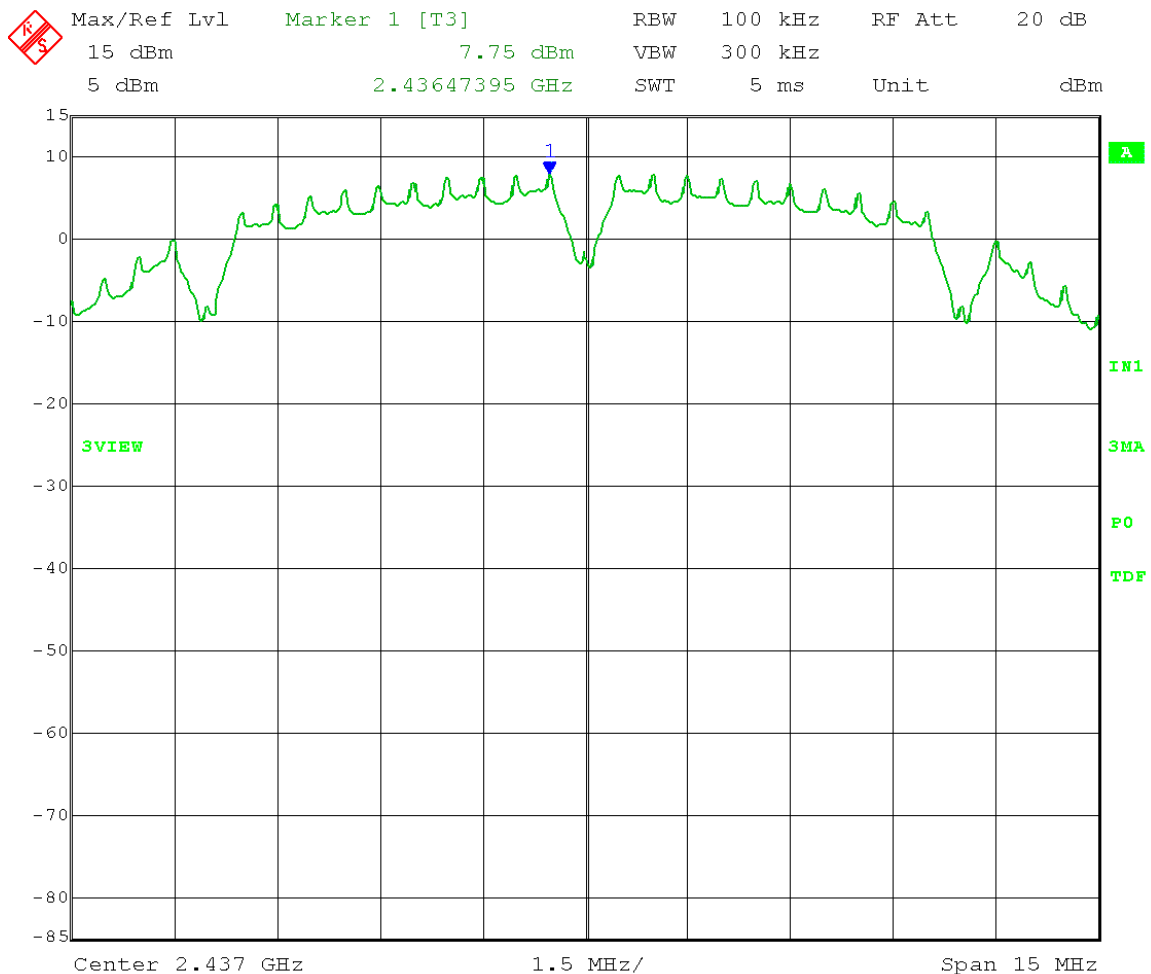
Date: 10.DEC.2015 13:25:57

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Reference Level measurement

$$\text{Limit} = 7.75 \text{ dBm} - 20 \text{ dB} = -12.25 \text{ dBm}$$



Date: 10.DEC.2015 13:29:40

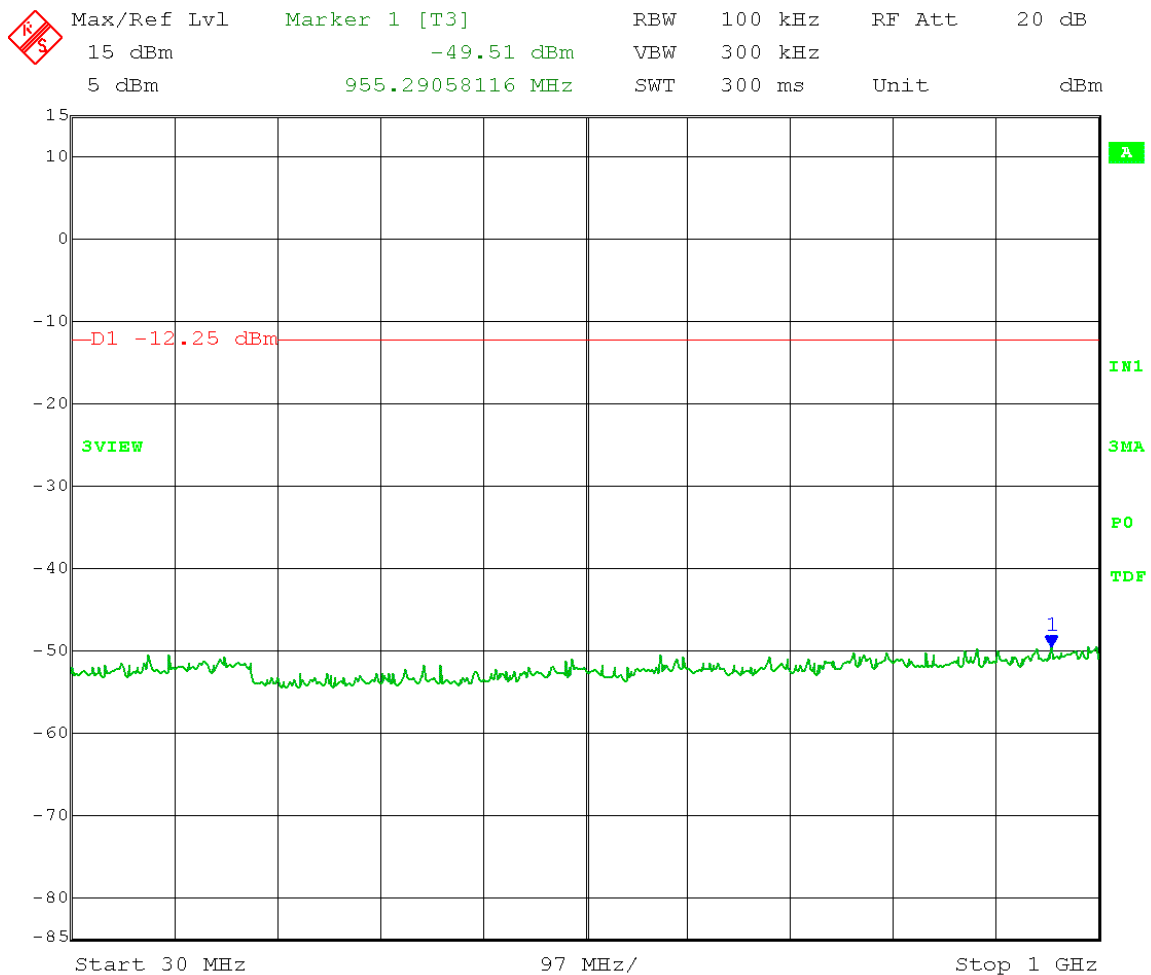
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.75 \text{ dBm} - 20 \text{ dB} = -12.25 \text{ dBm}$$

Frequency Range: 30 – 1000 MHz



Date: 10.DEC.2015 13:37:23

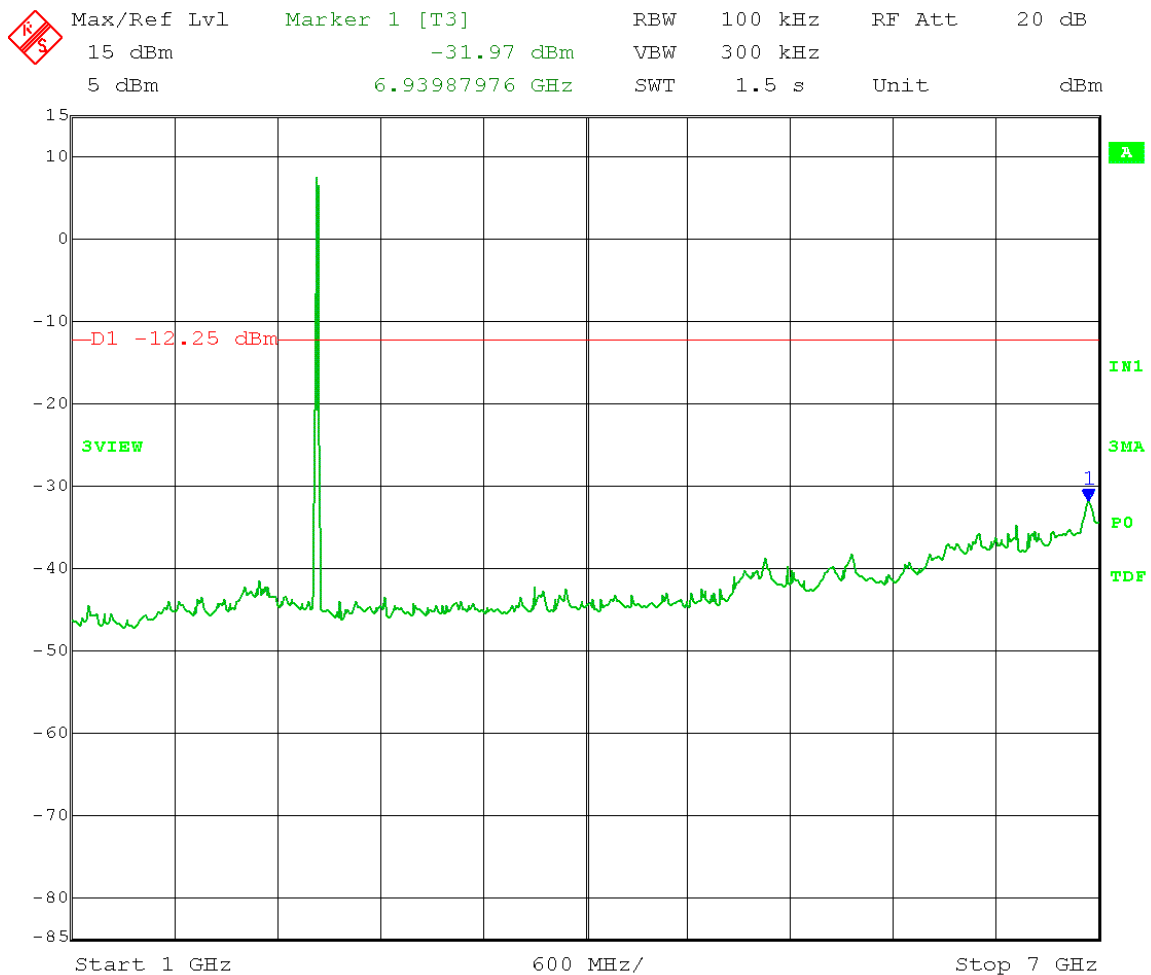
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.75 \text{ dBm} - 20 \text{ dB} = -12.25 \text{ dBm}$$

Frequency Range: 1 – 7 GHz



Date: 10.DEC.2015 13:32:17

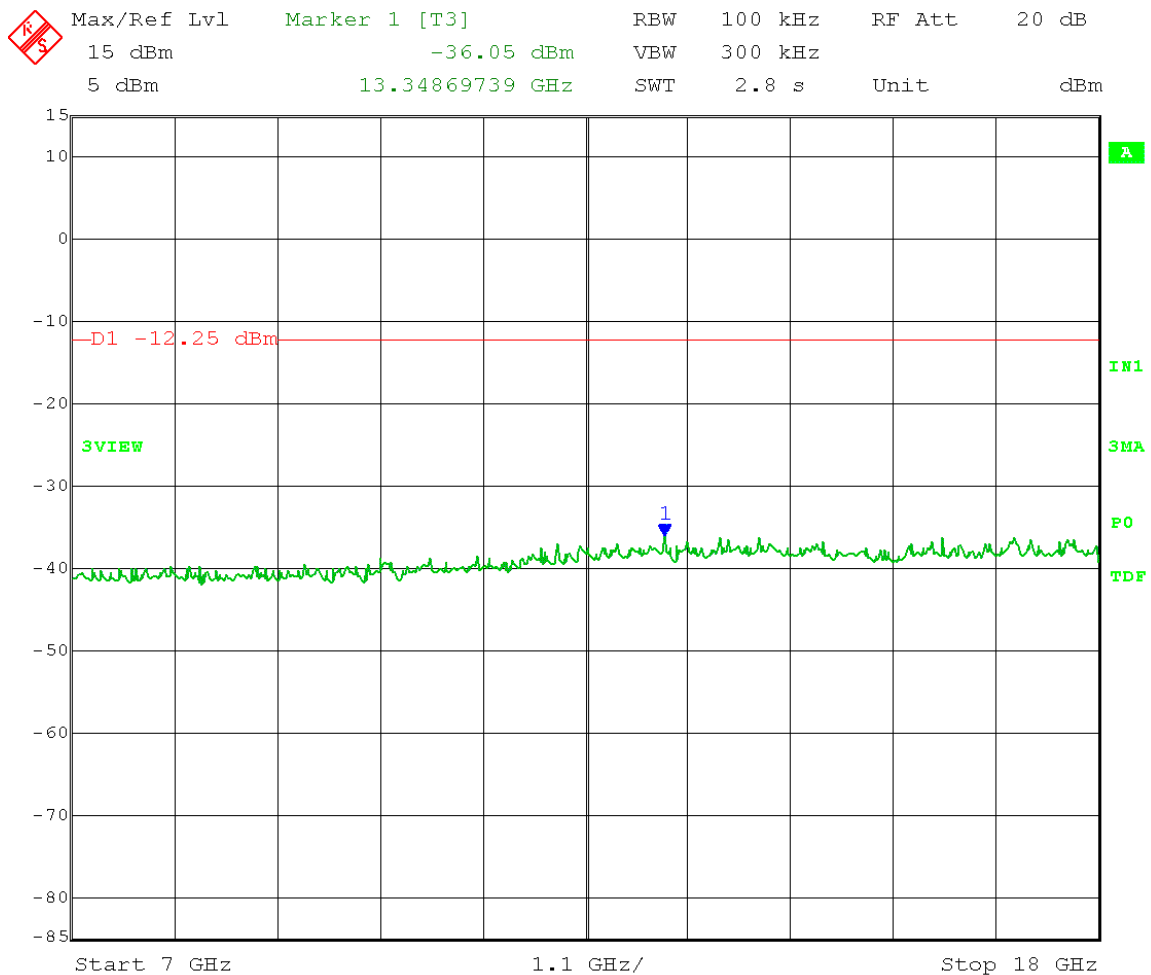
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.75 \text{ dBm} - 20 \text{ dB} = -12.25 \text{ dBm}$$

Frequency Range: 7 – 18 GHz



Date: 10.DEC.2015 13:33:45

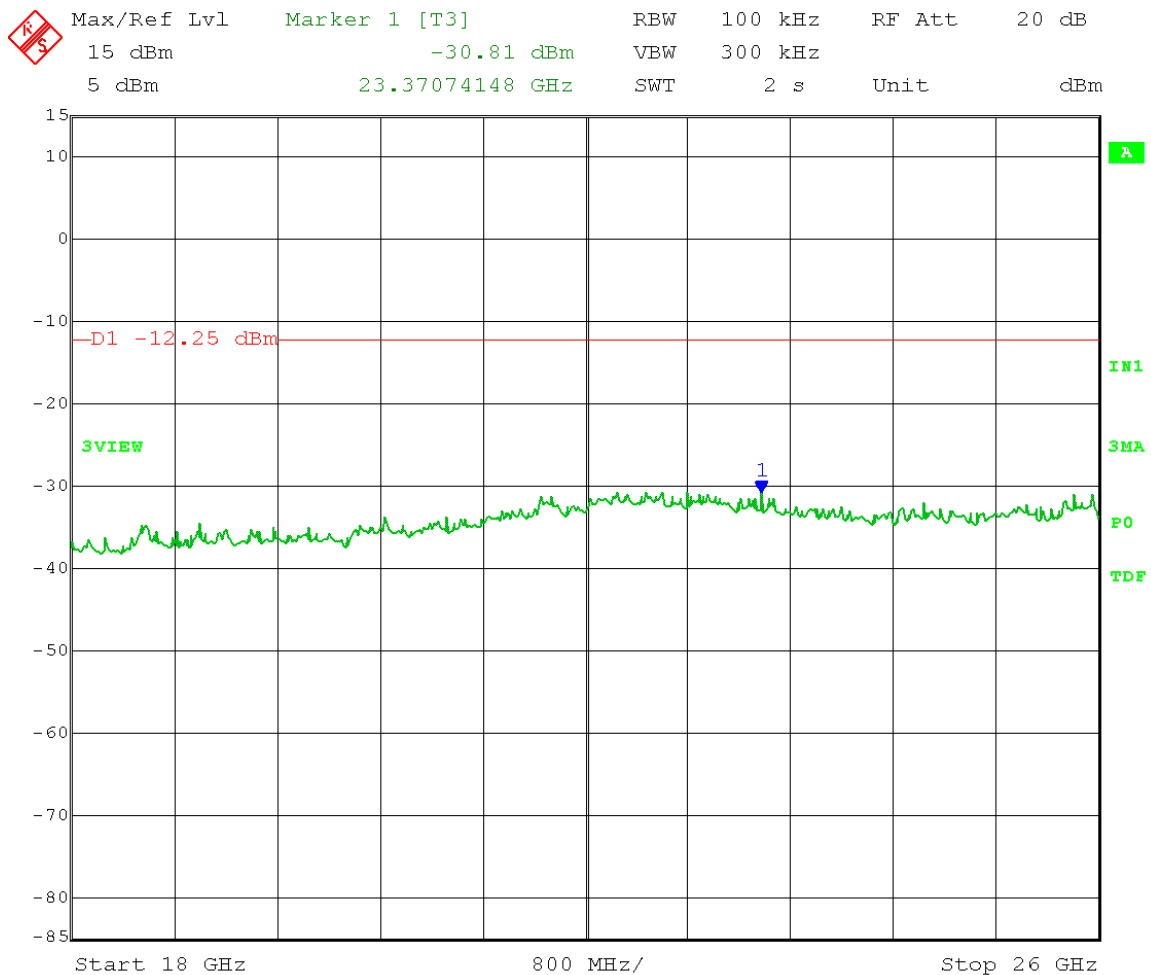
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.75 \text{ dBm} - 20 \text{ dB} = -12.25 \text{ dBm}$$

Frequency Range: 18 – 26 GHz



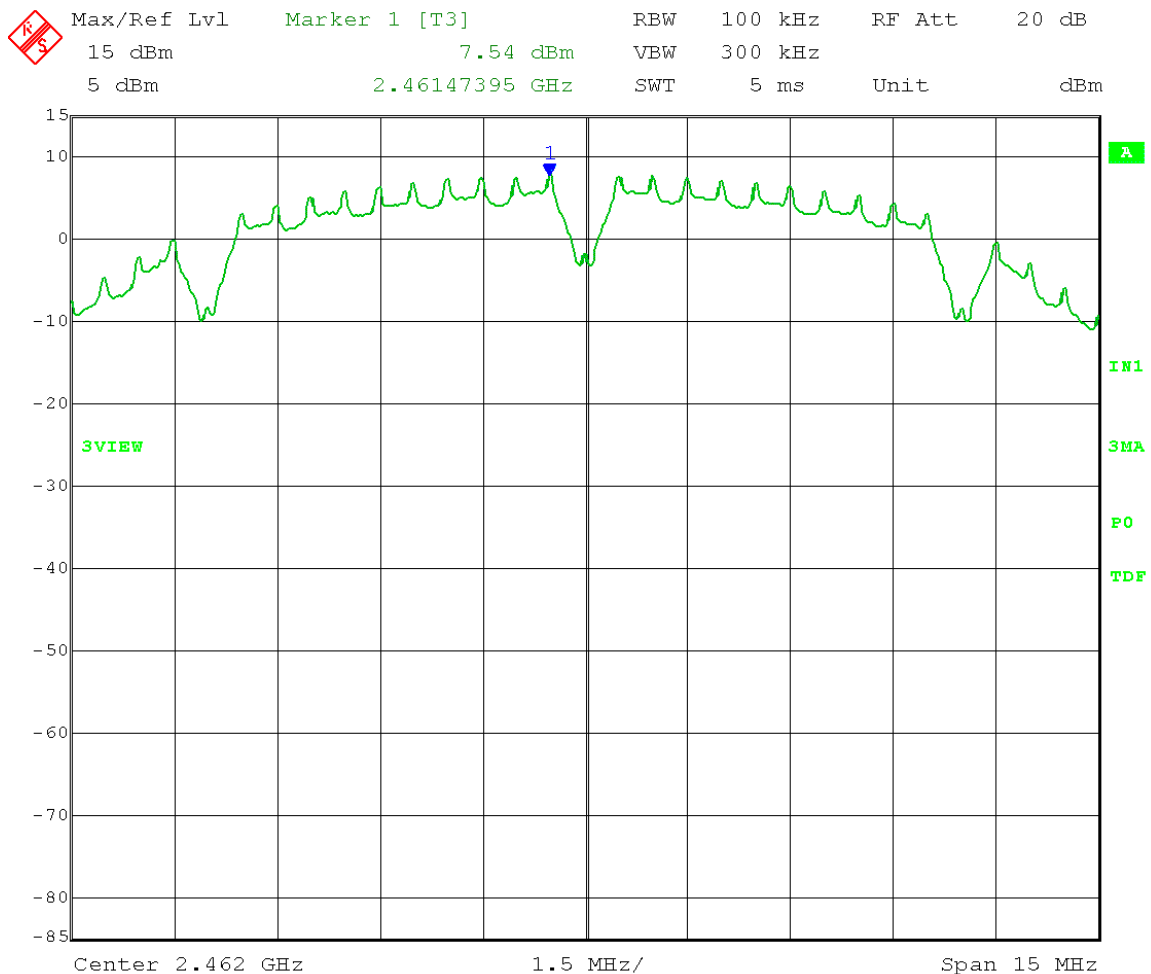
Date: 10.DEC.2015 13:35:44

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Reference Level measurement

$$\text{Limit} = 7.54 \text{ dBm} - 20 \text{ dB} = -12.46 \text{ dBm}$$



Date: 10.DEC.2015 13:42:48

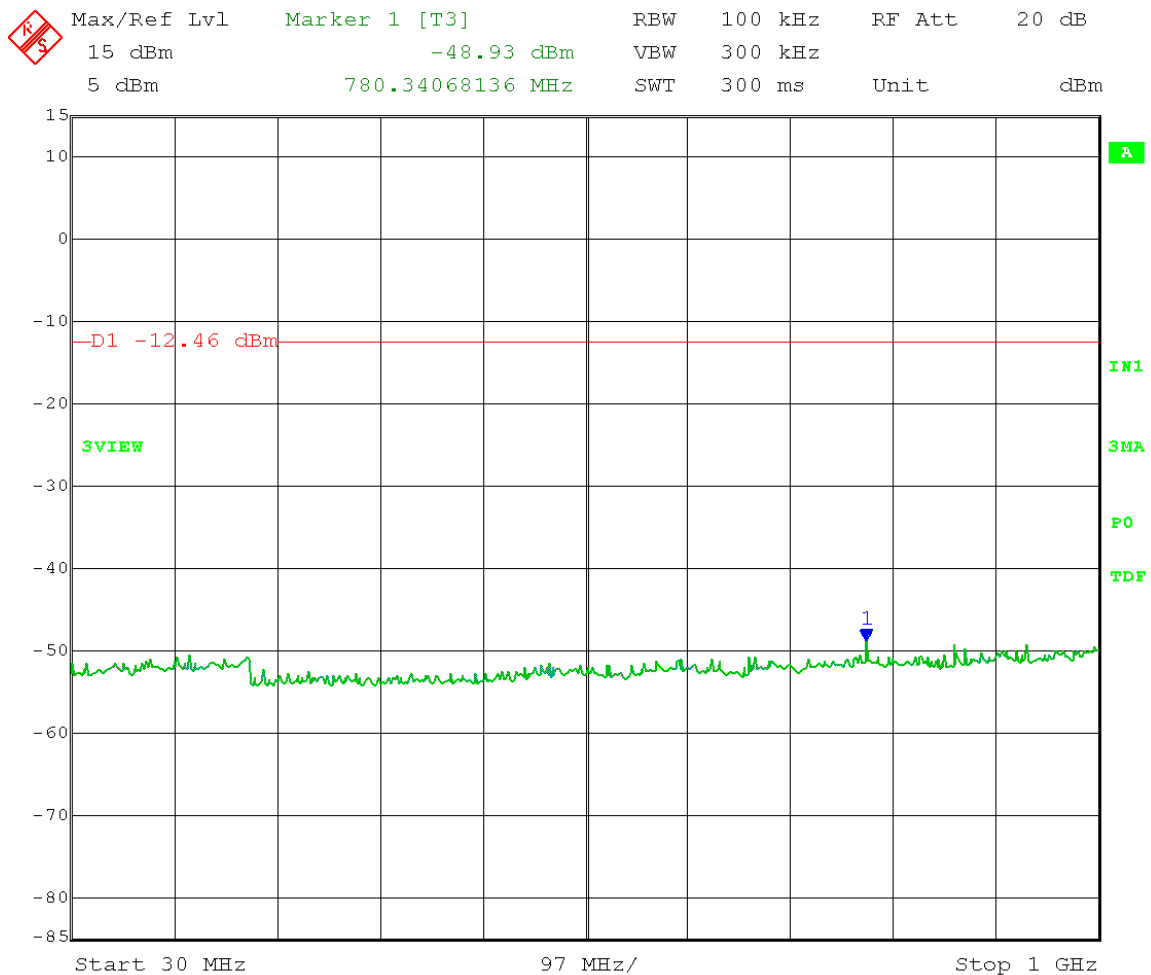
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.54 \text{ dBm} - 20 \text{ dB} = -12.46 \text{ dBm}$$

Frequency Range: 30 – 1000 MHz



Date: 10.DEC.2015 14:48:30



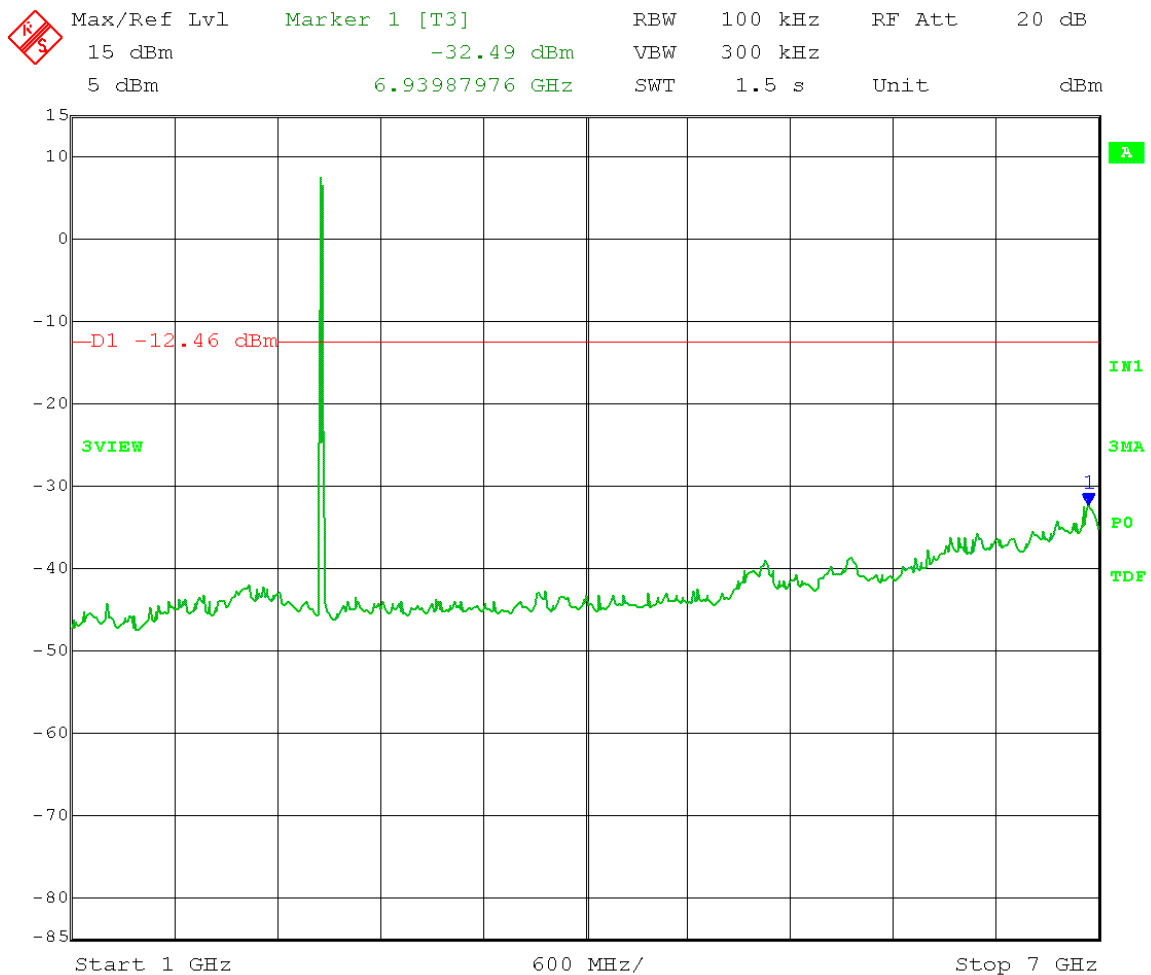
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.54 \text{ dBm} - 20 \text{ dB} = -12.46 \text{ dBm}$$

Frequency Range: 1 – 7 GHz



Date: 10.DEC.2015 13:46:48

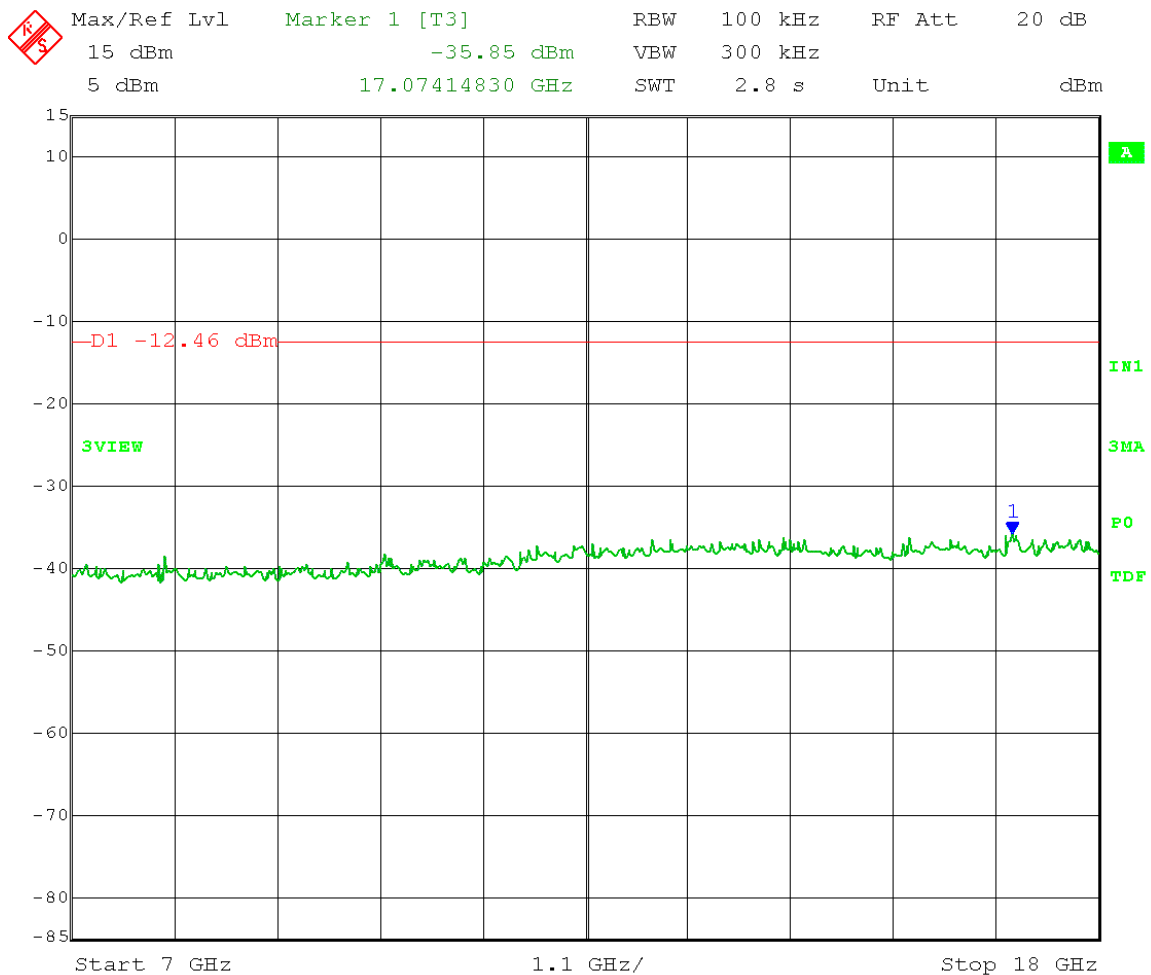
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.54 \text{ dBm} - 20 \text{ dB} = -12.46 \text{ dBm}$$

Frequency Range: 7 – 18 GHz



Date: 10.DEC.2015 14:44:02

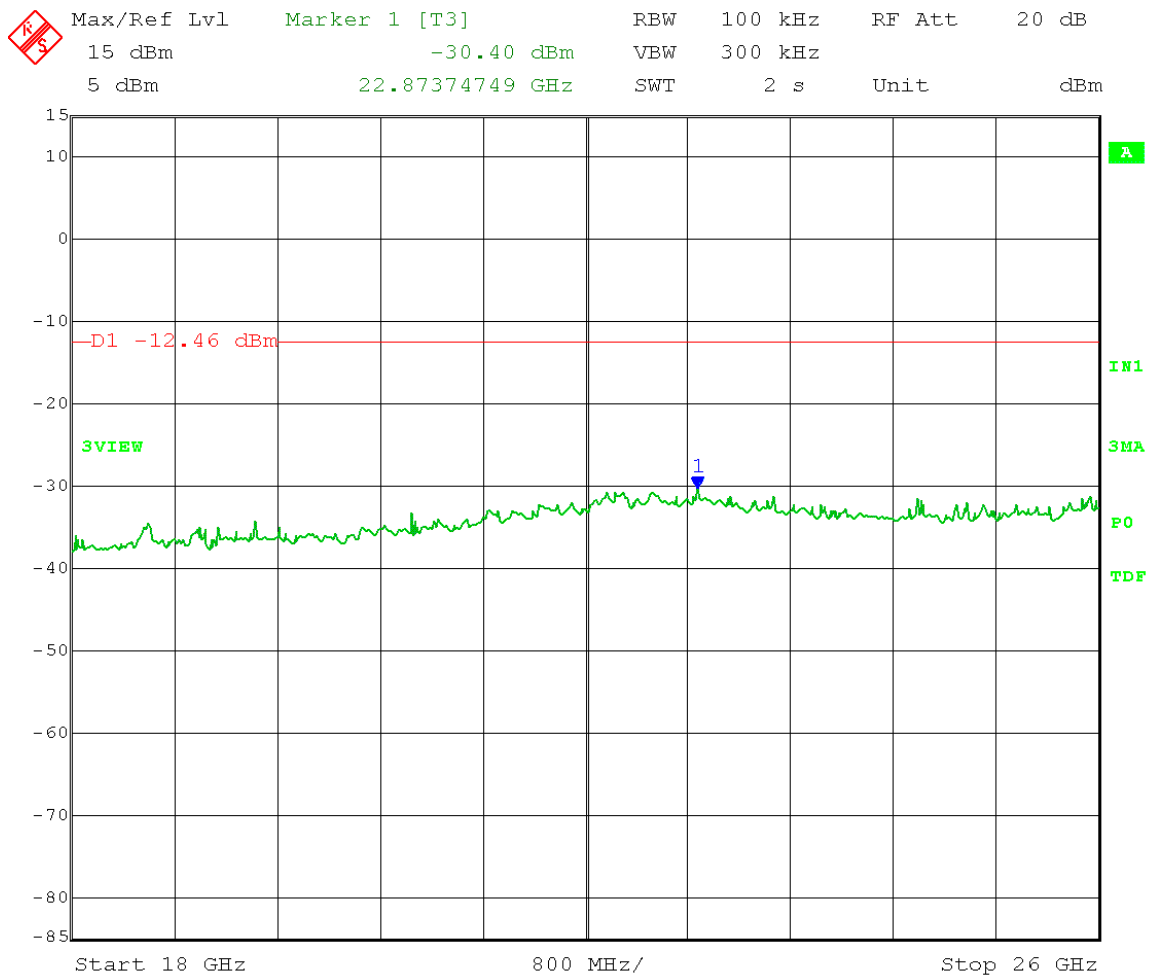
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-b, 1 Mbps  
Power setting: 18

### Emission Level measurement

$$\text{Limit} = 7.54 \text{ dBm} - 20 \text{ dB} = -12.46 \text{ dBm}$$

Frequency Range: 18 – 26 GHz



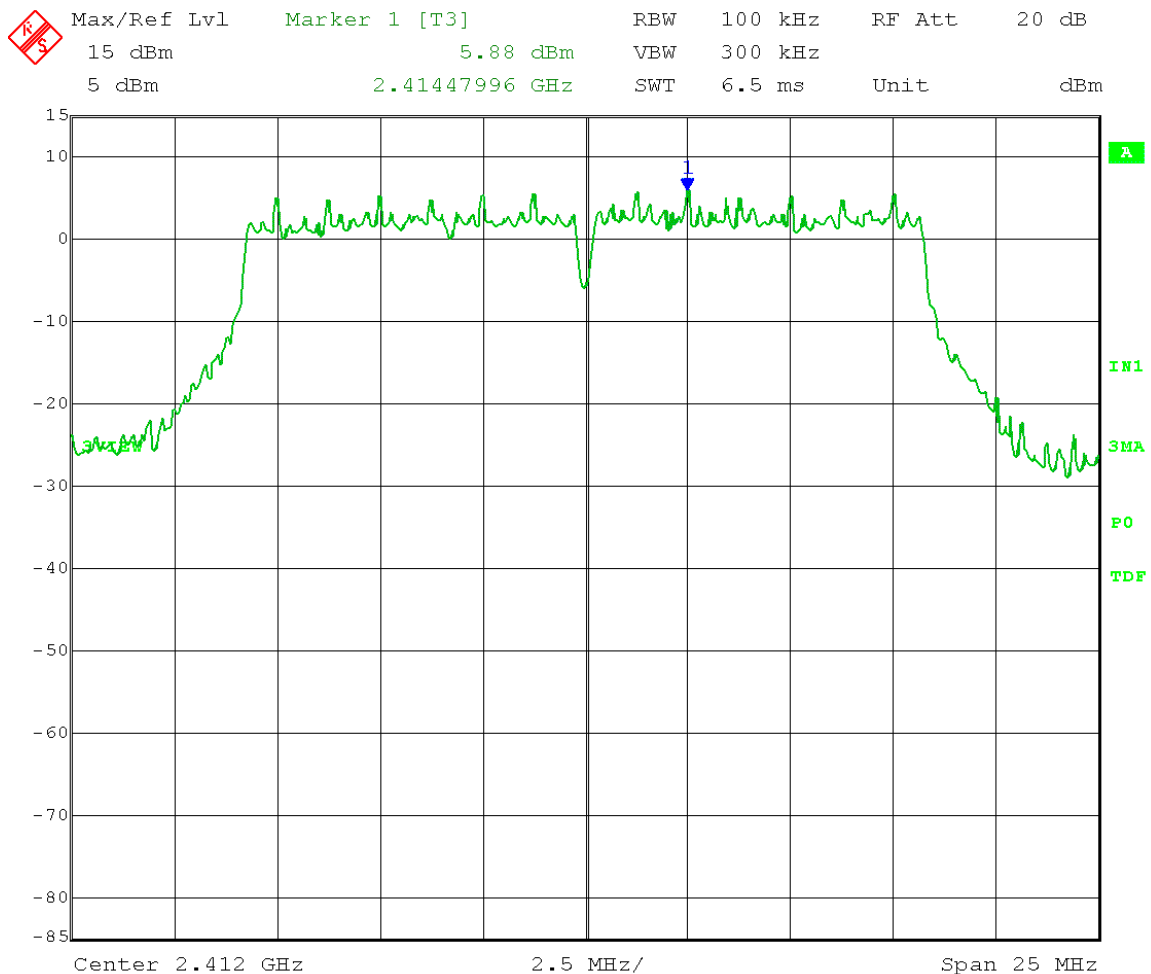
Date: 10.DEC.2015 14:46:11

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Reference Level measurement

$$\text{Limit} = 5.88 \text{ dBm} - 20 \text{ dB} = -14.12 \text{ dBm}$$



Date: 10.DEC.2015 14:55:02

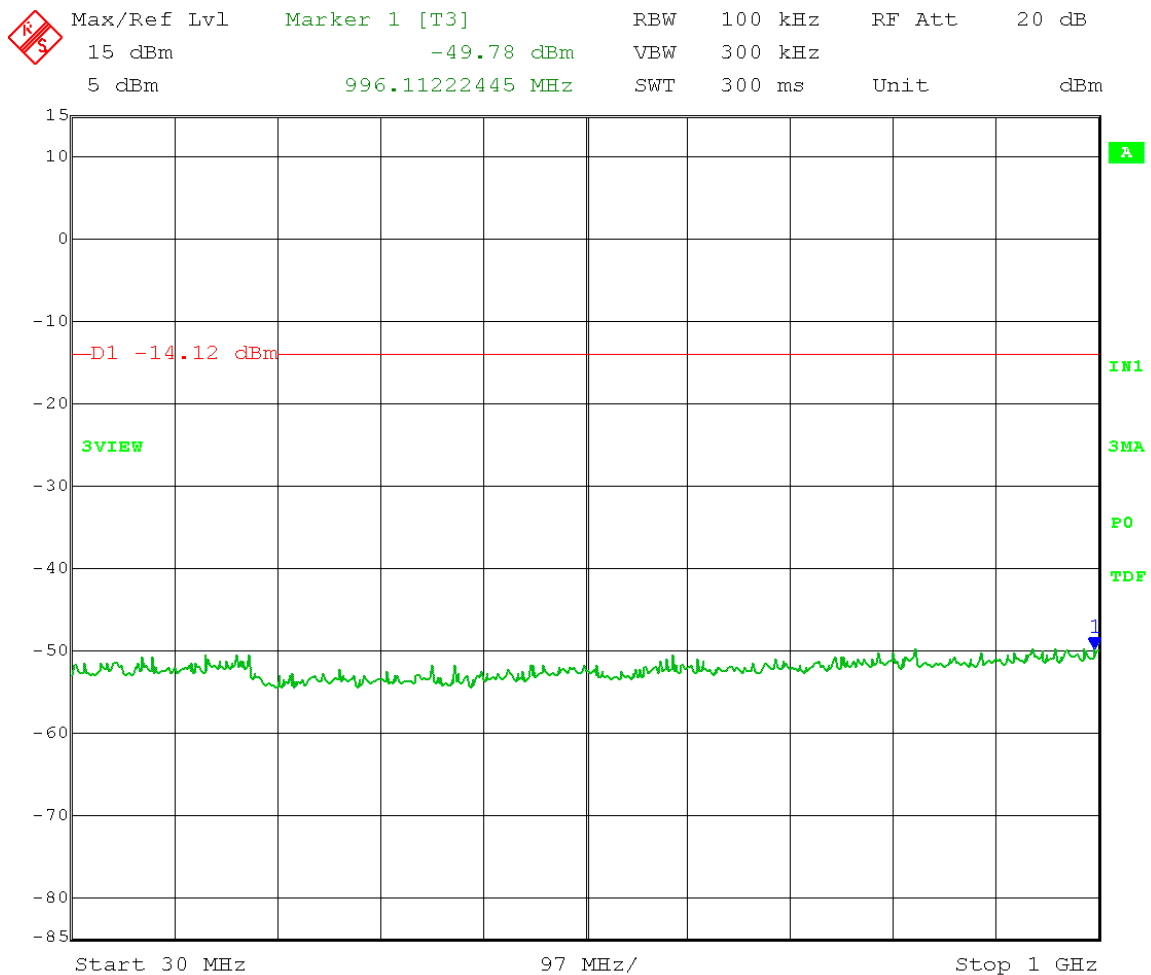
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.88 \text{ dBm} - 20 \text{ dB} = -14.12 \text{ dBm}$$

Frequency Range: 30 – 1000 MHz



Date: 10.DEC.2015 15:03:06

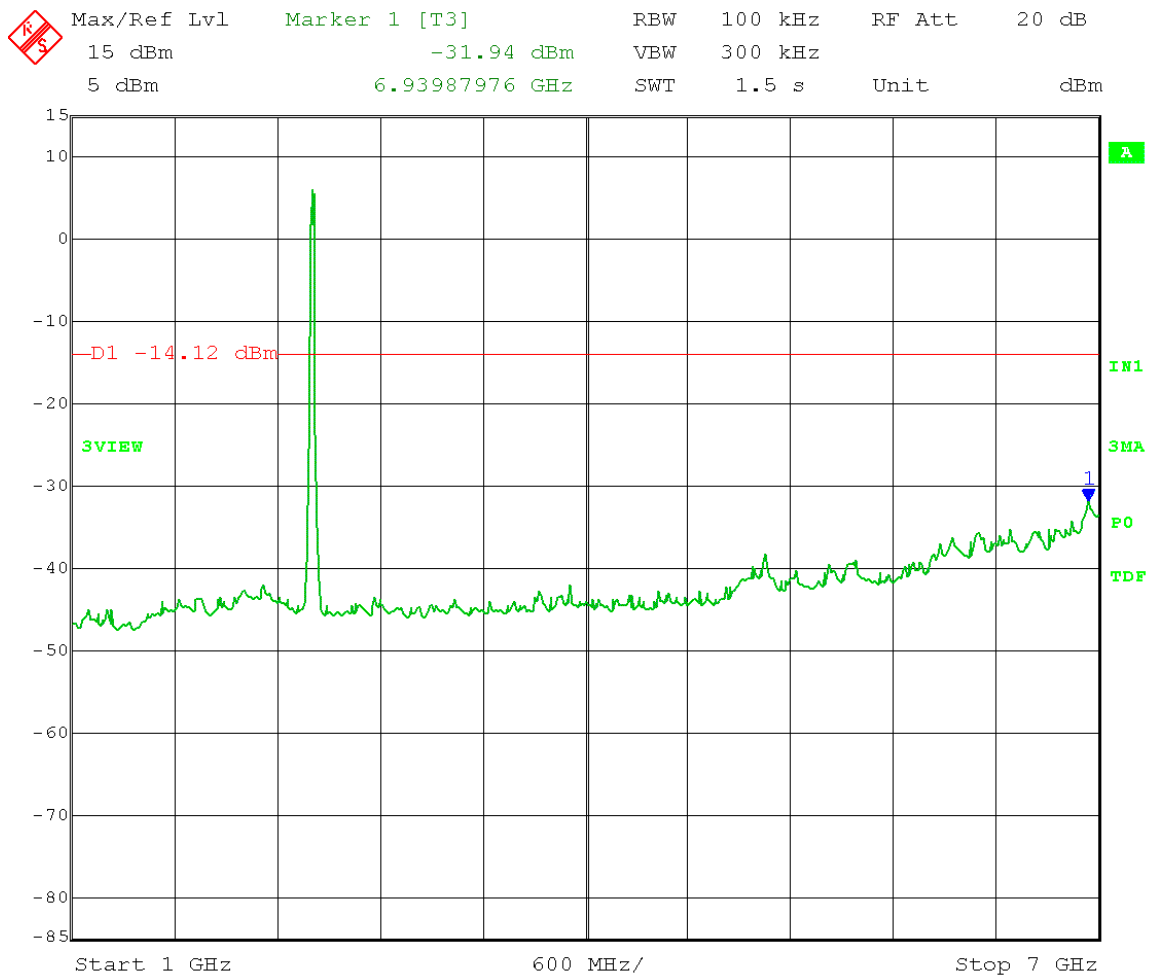
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.88 \text{ dBm} - 20 \text{ dB} = -14.12 \text{ dBm}$$

Frequency Range: 1 – 7 GHz



Date: 10.DEC.2015 14:57:19

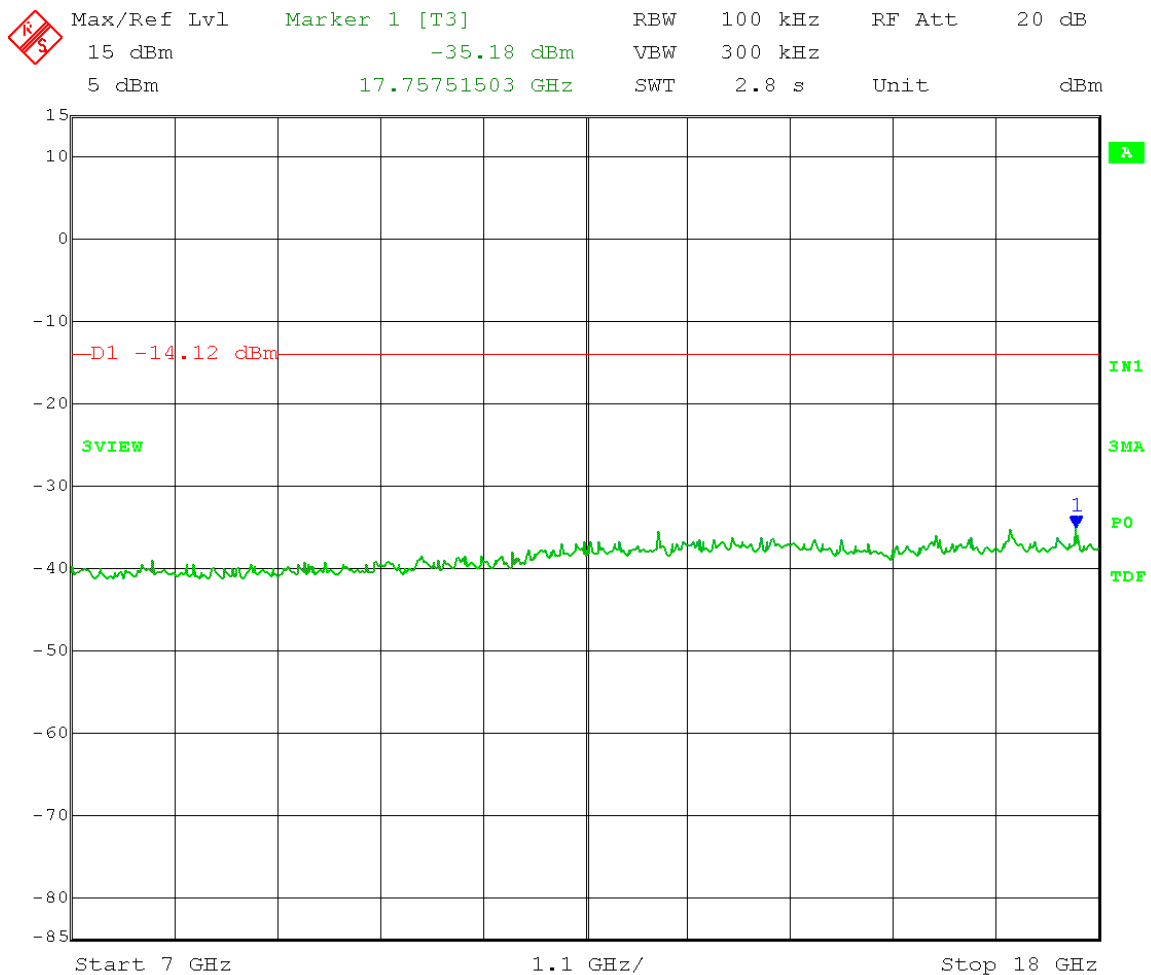
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.88 \text{ dBm} - 20 \text{ dB} = -14.12 \text{ dBm}$$

Frequency Range: 7 – 18 GHz



Date: 10.DEC.2015 14:59:41

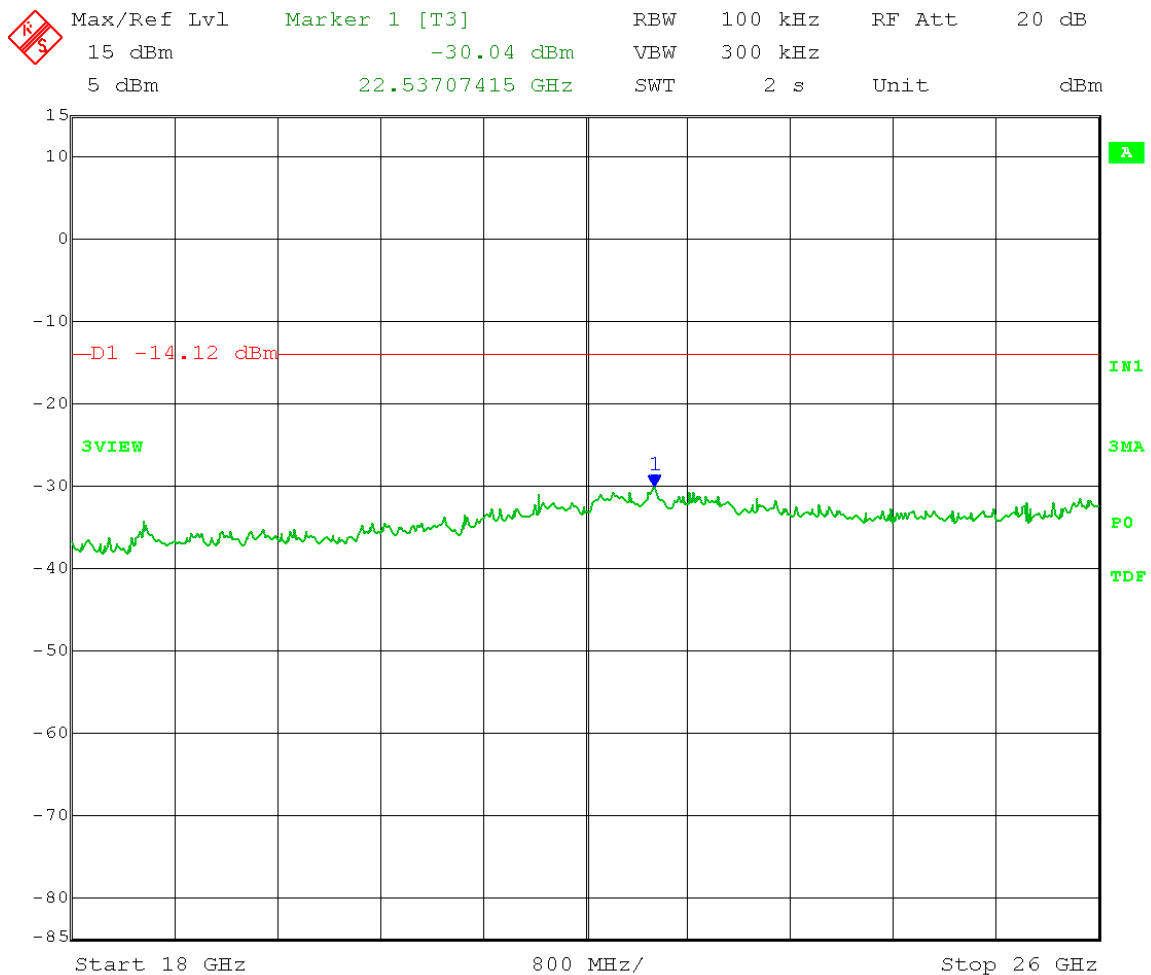
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.88 \text{ dBm} - 20 \text{ dB} = -14.12 \text{ dBm}$$

Frequency Range: 18 – 26 GHz



Date: 10.DEC.2015 15:01:37

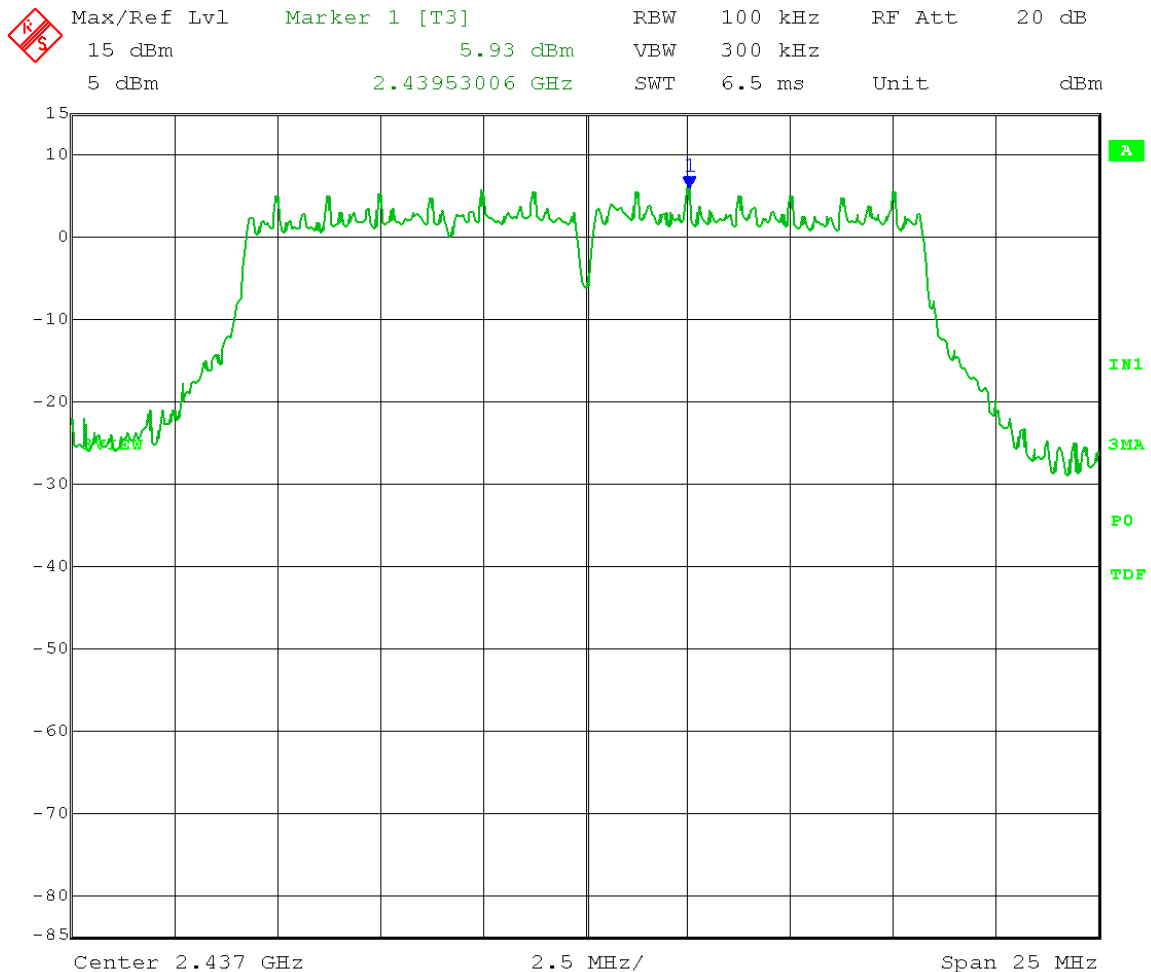


Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Reference Level measurement

$$\text{Limit} = 5.93 \text{ dBm} - 20 \text{ dB} = -14.07 \text{ dBm}$$



Date: 10.DEC.2015 15:05:29

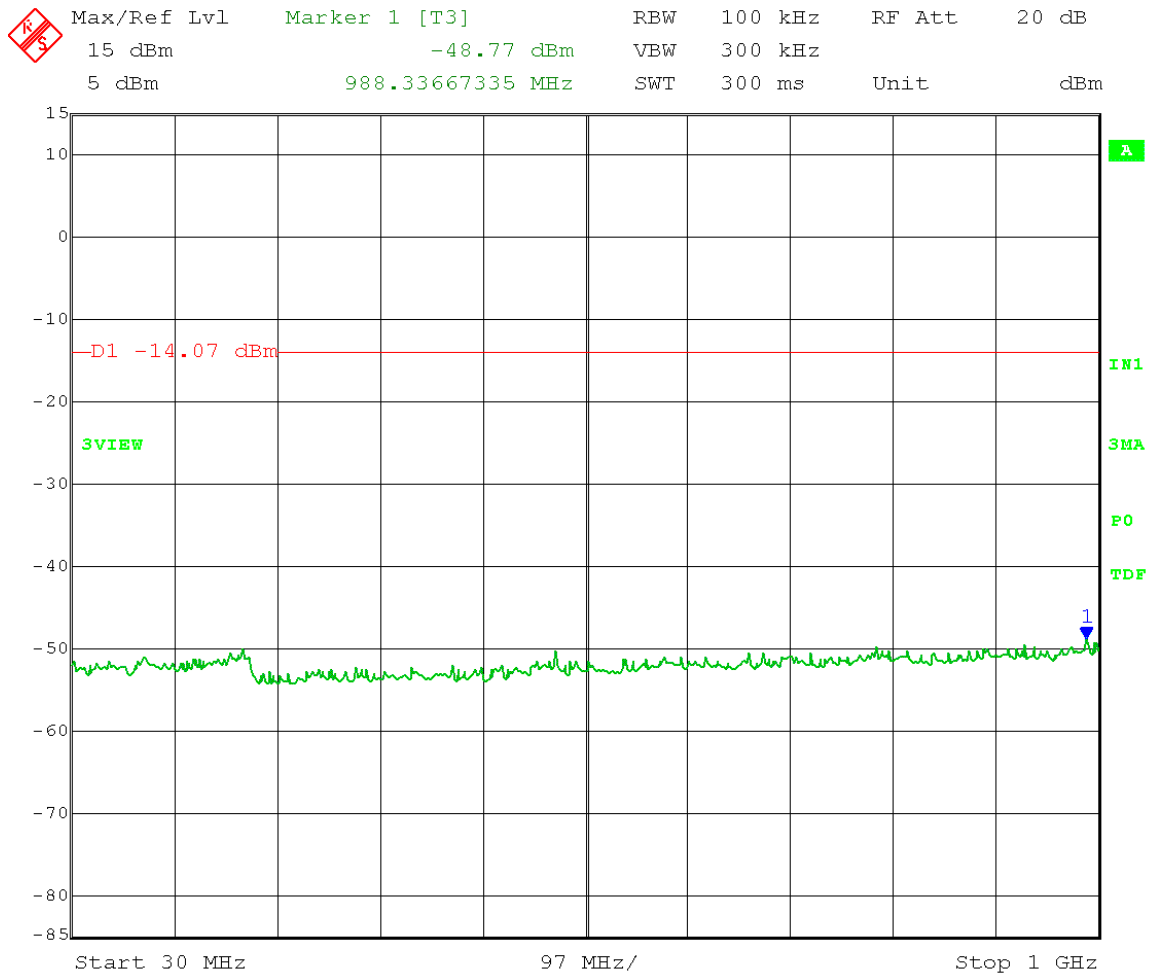
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.93 \text{ dBm} - 20 \text{ dB} = -14.07 \text{ dBm}$$

Frequency Range: 30 – 1000 MHz



Date: 10.DEC.2015 15:13:50

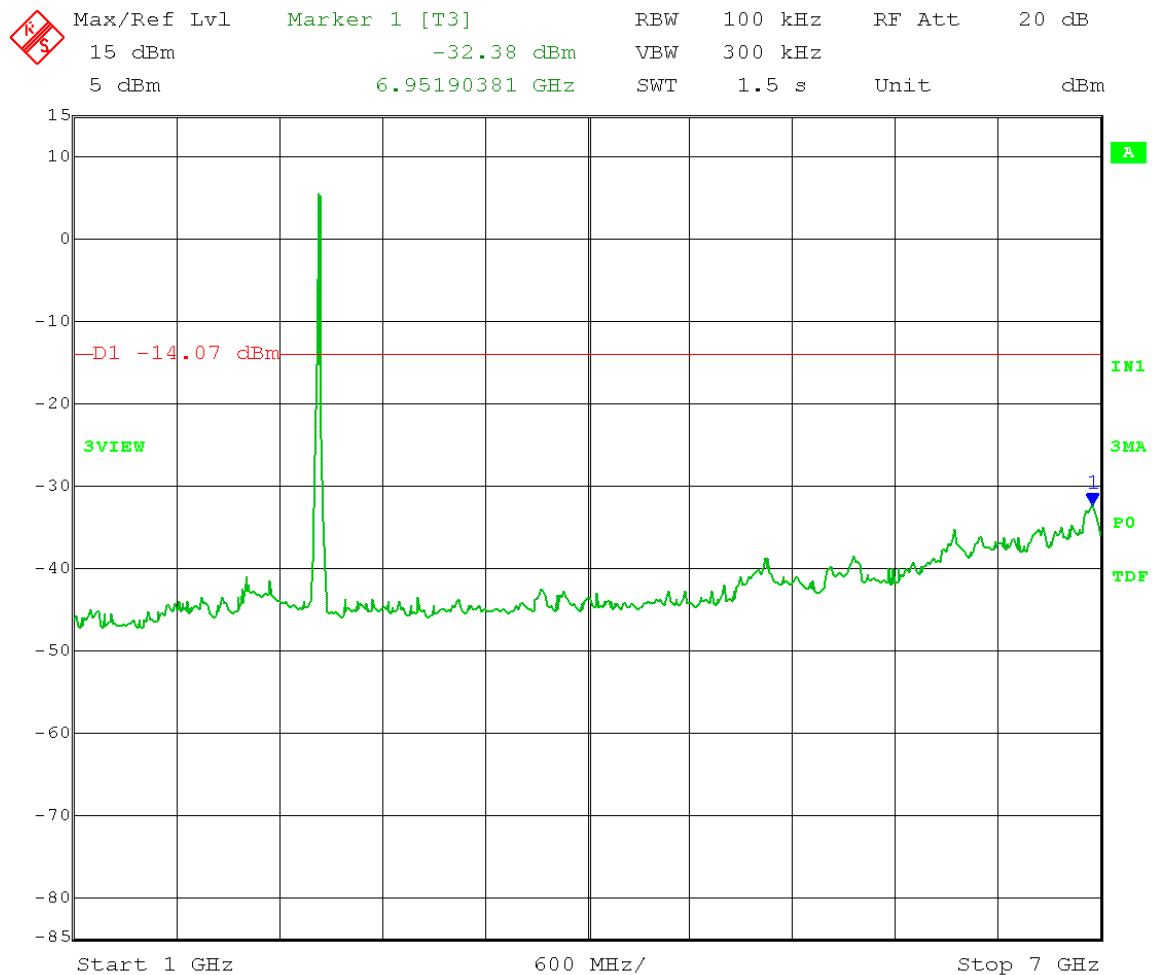
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.93 \text{ dBm} - 20 \text{ dB} = -14.07 \text{ dBm}$$

Frequency Range: 1 – 7 GHz



Date: 10.DEC.2015 15:07:51

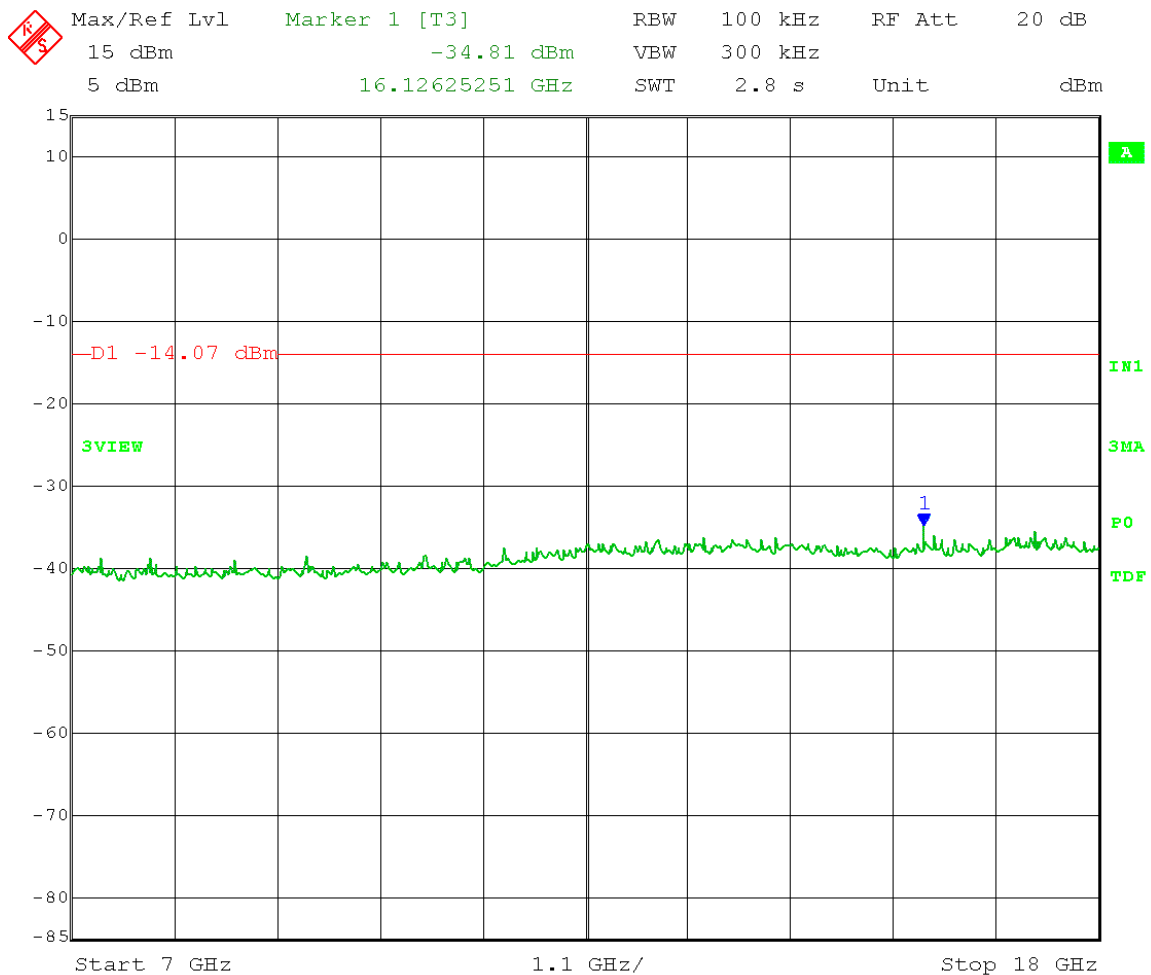
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.93 \text{ dBm} - 20 \text{ dB} = -14.07 \text{ dBm}$$

Frequency Range: 7 – 18 GHz



Date: 10.DEC.2015 15:09:52

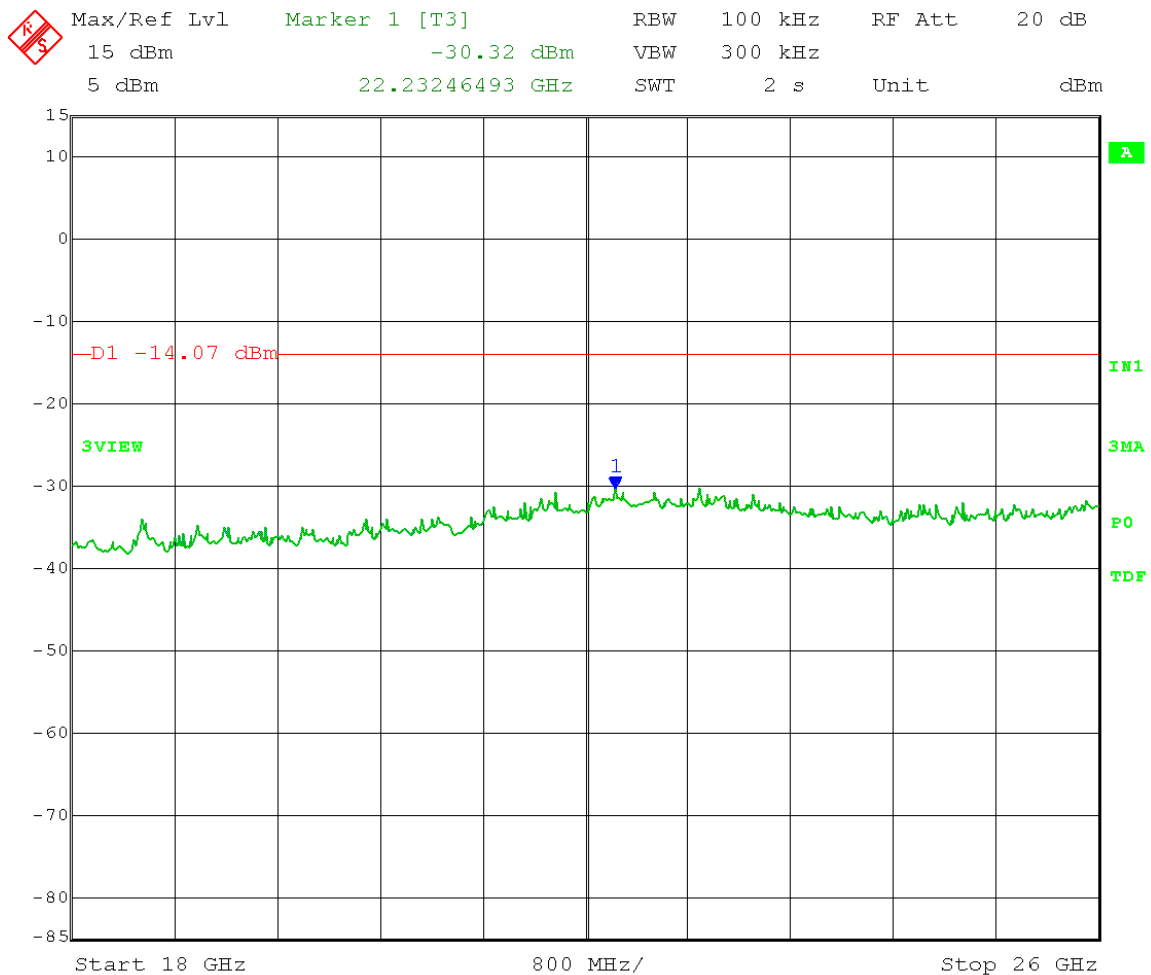
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.93 \text{ dBm} - 20 \text{ dB} = -14.07 \text{ dBm}$$

Frequency Range: 18 – 26 GHz

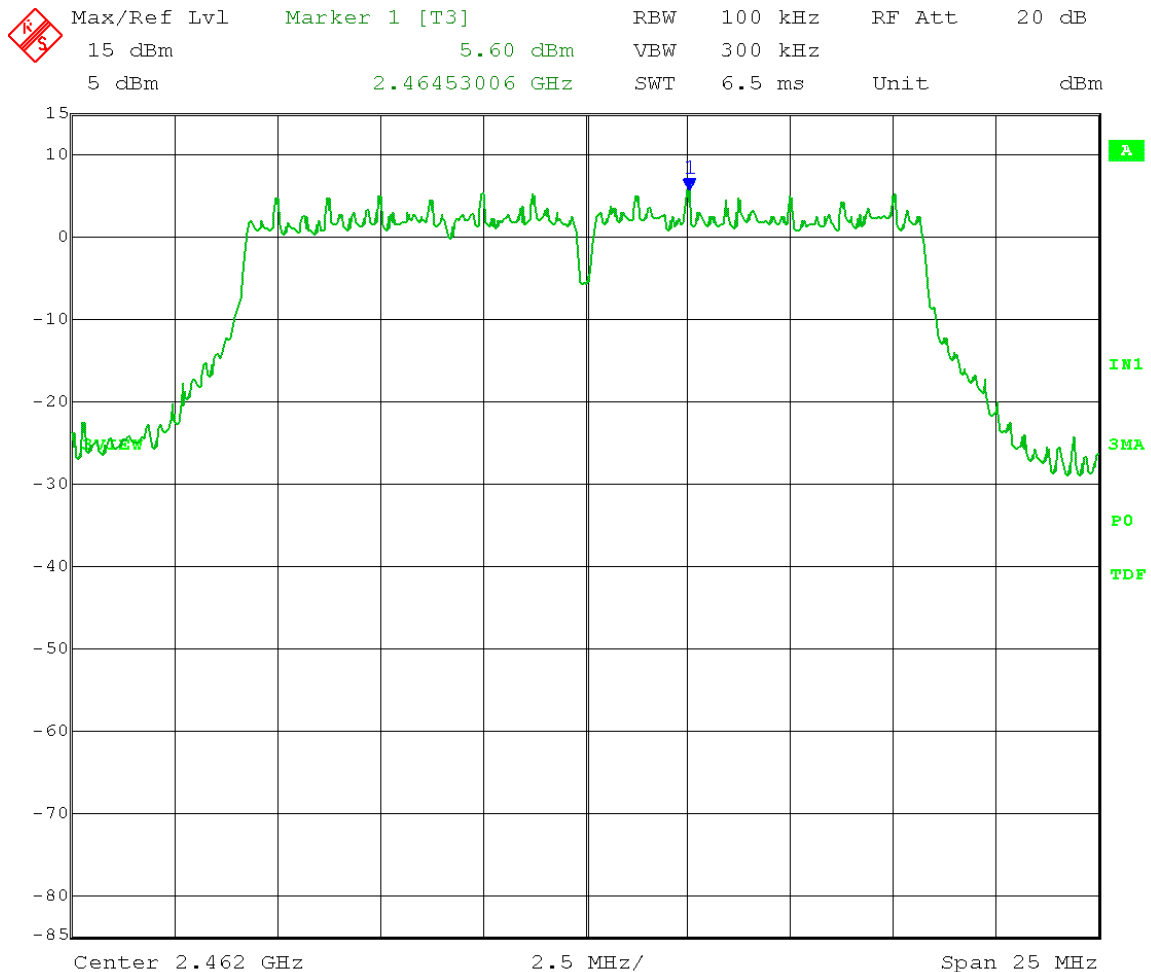


Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Reference Level measurement

$$\text{Limit} = 5.60 \text{ dBm} - 20 \text{ dB} = -14.40 \text{ dBm}$$



Date: 10.DEC.2015 15:16:38

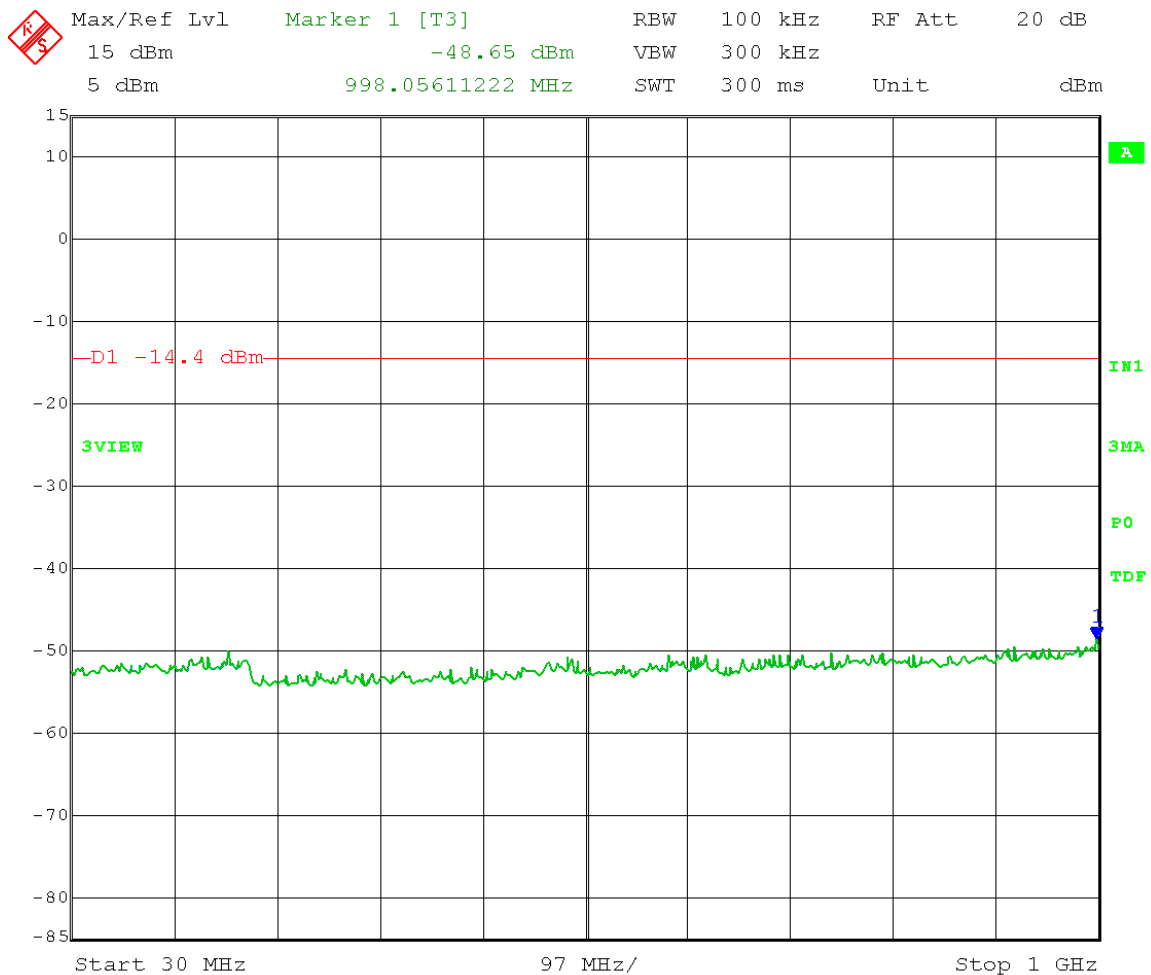
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.60 \text{ dBm} - 20 \text{ dB} = -14.40 \text{ dBm}$$

Frequency Range: 30 – 1000 MHz



Date: 10.DEC.2015 15:24:07

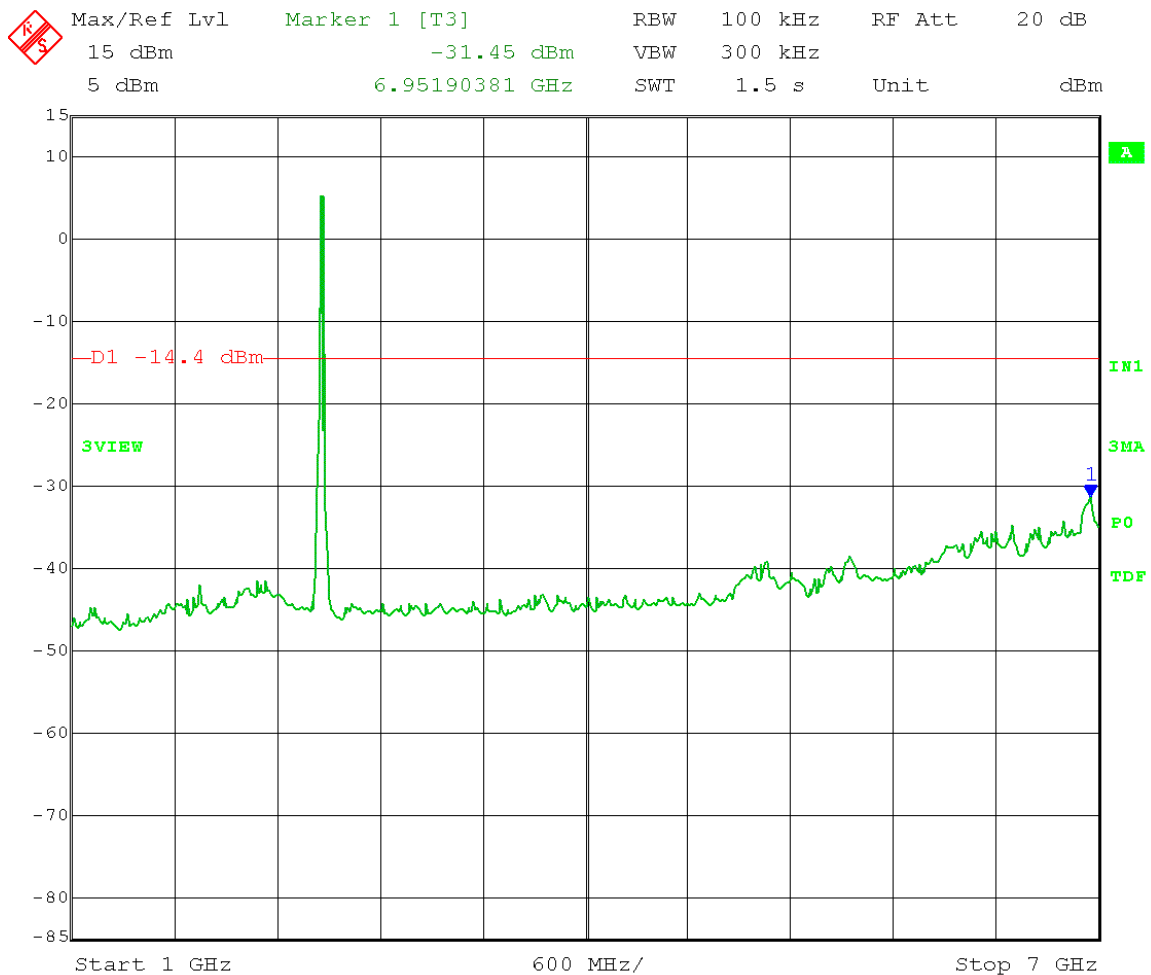
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.60 \text{ dBm} - 20 \text{ dB} = -14.40 \text{ dBm}$$

Frequency Range: 1 – 7 GHz



Date: 10.DEC.2015 15:19:07



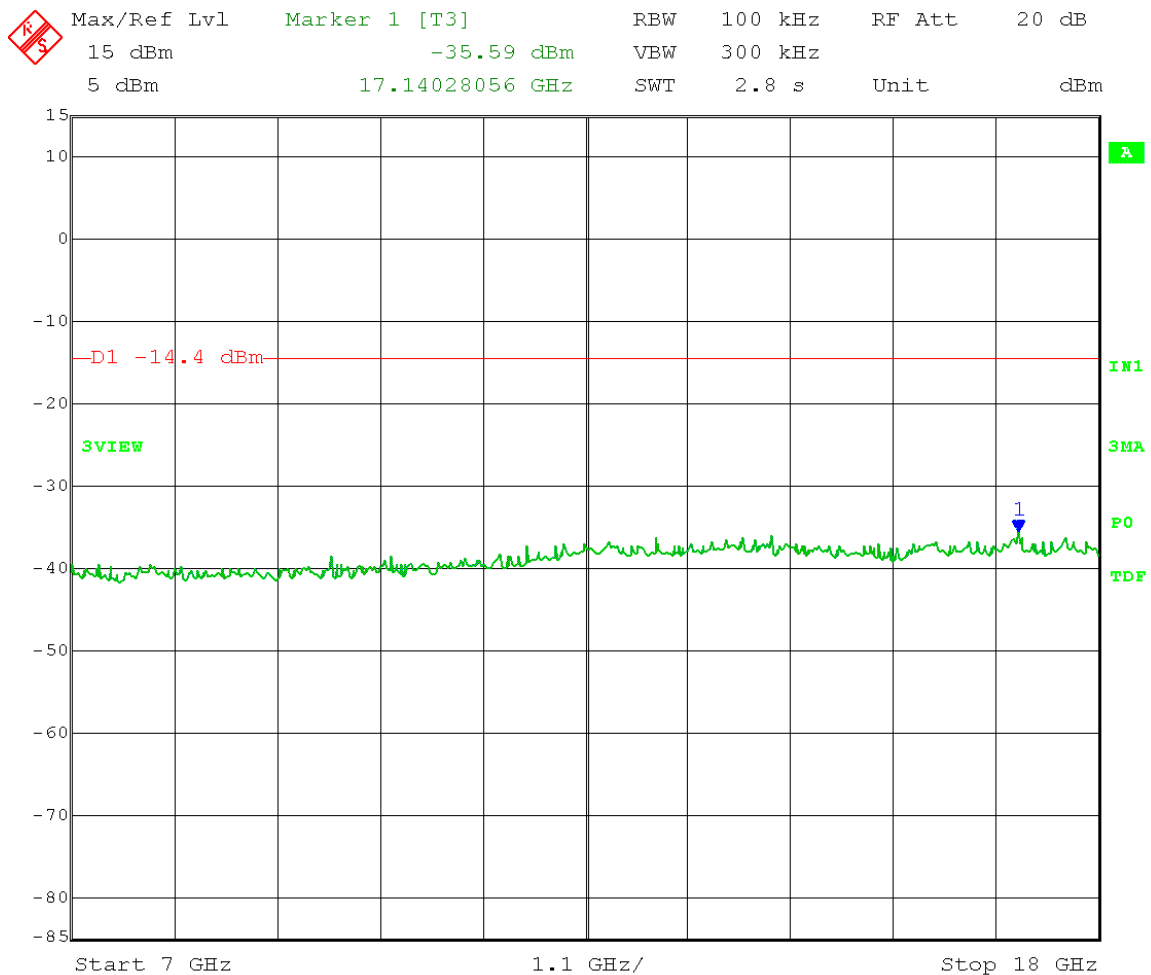
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.60 \text{ dBm} - 20 \text{ dB} = -14.40 \text{ dBm}$$

Frequency Range: 7 – 18 GHz



Date: 10.DEC.2015 15:20:43

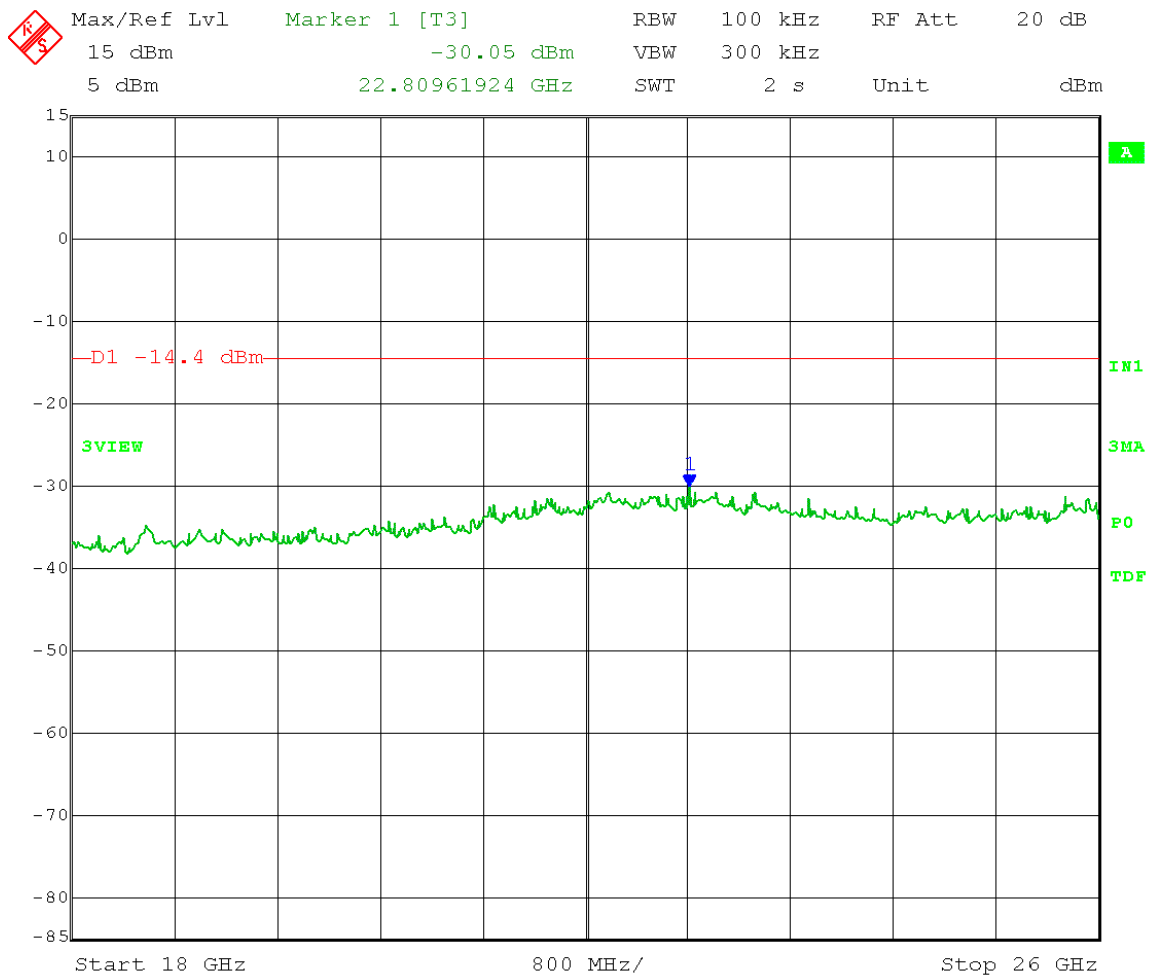
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-g, 54 Mbps  
Power setting: 17

### Emission Level measurement

$$\text{Limit} = 5.60 \text{ dBm} - 20 \text{ dB} = -14.40 \text{ dBm}$$

Frequency Range: 18 – 26 GHz



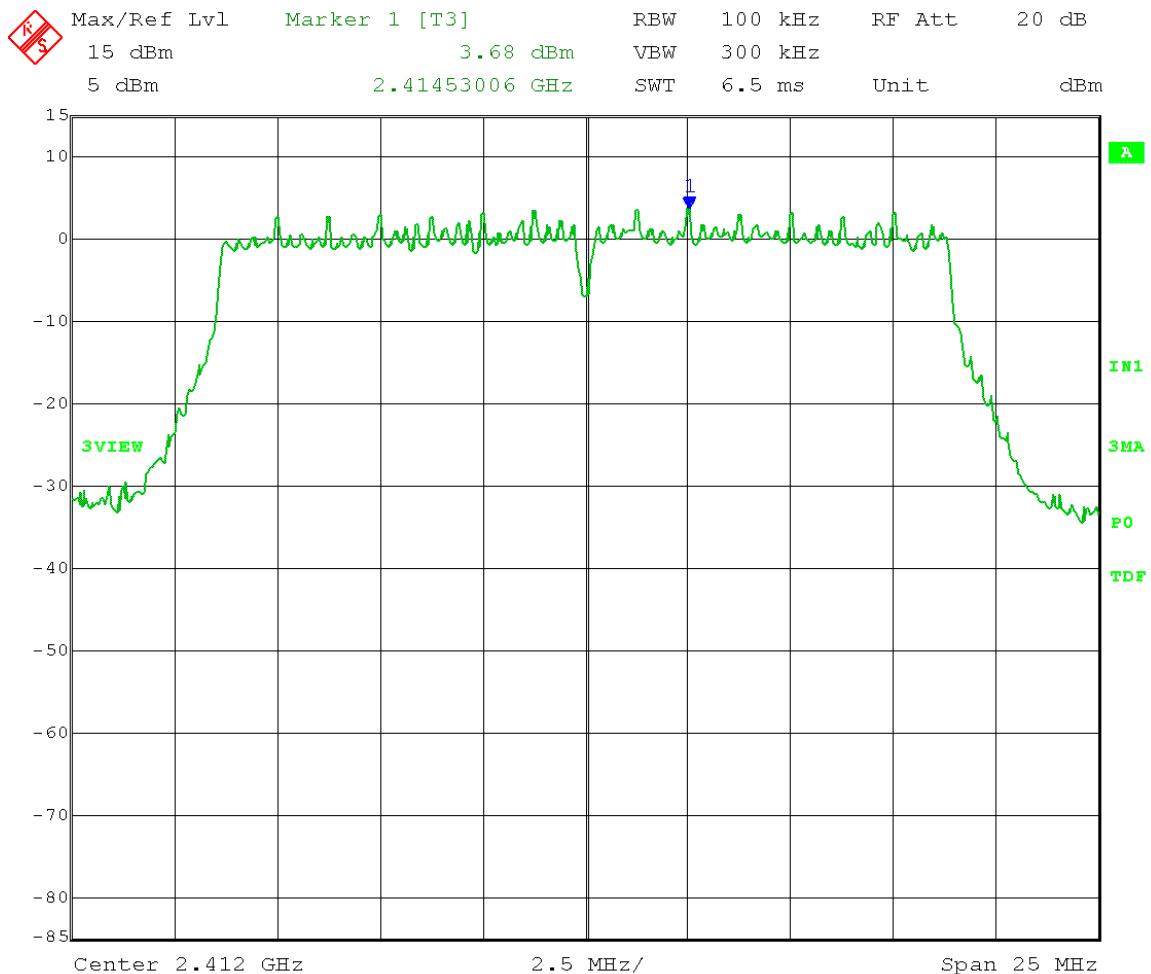
Date: 10.DEC.2015 15:22:07

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Reference Level measurement

$$\text{Limit} = 3.68 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$



Date: 10.DEC.2015 16:06:17

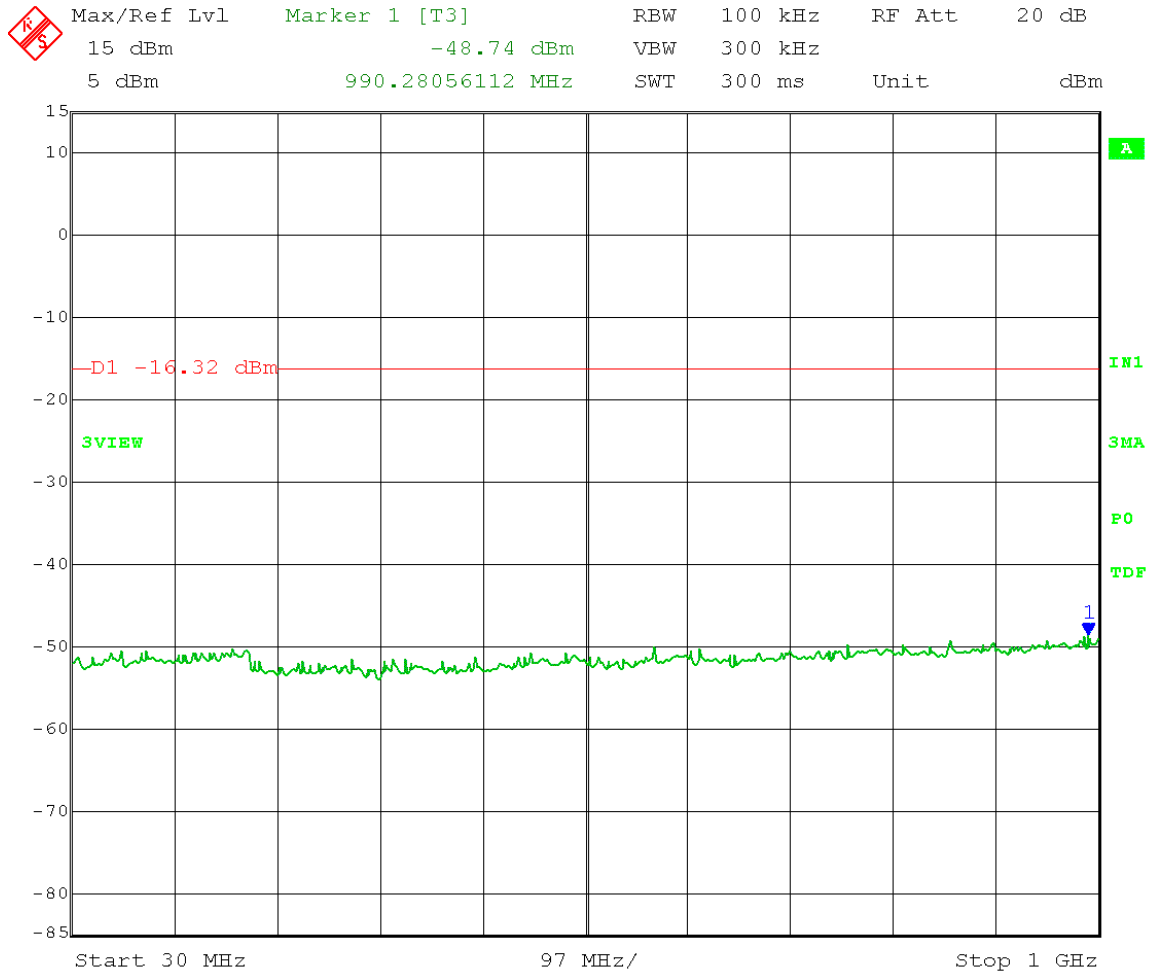
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.68 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$

Frequency Range: 30 – 1000 MHz



Date: 10.DEC.2015 16:24:59

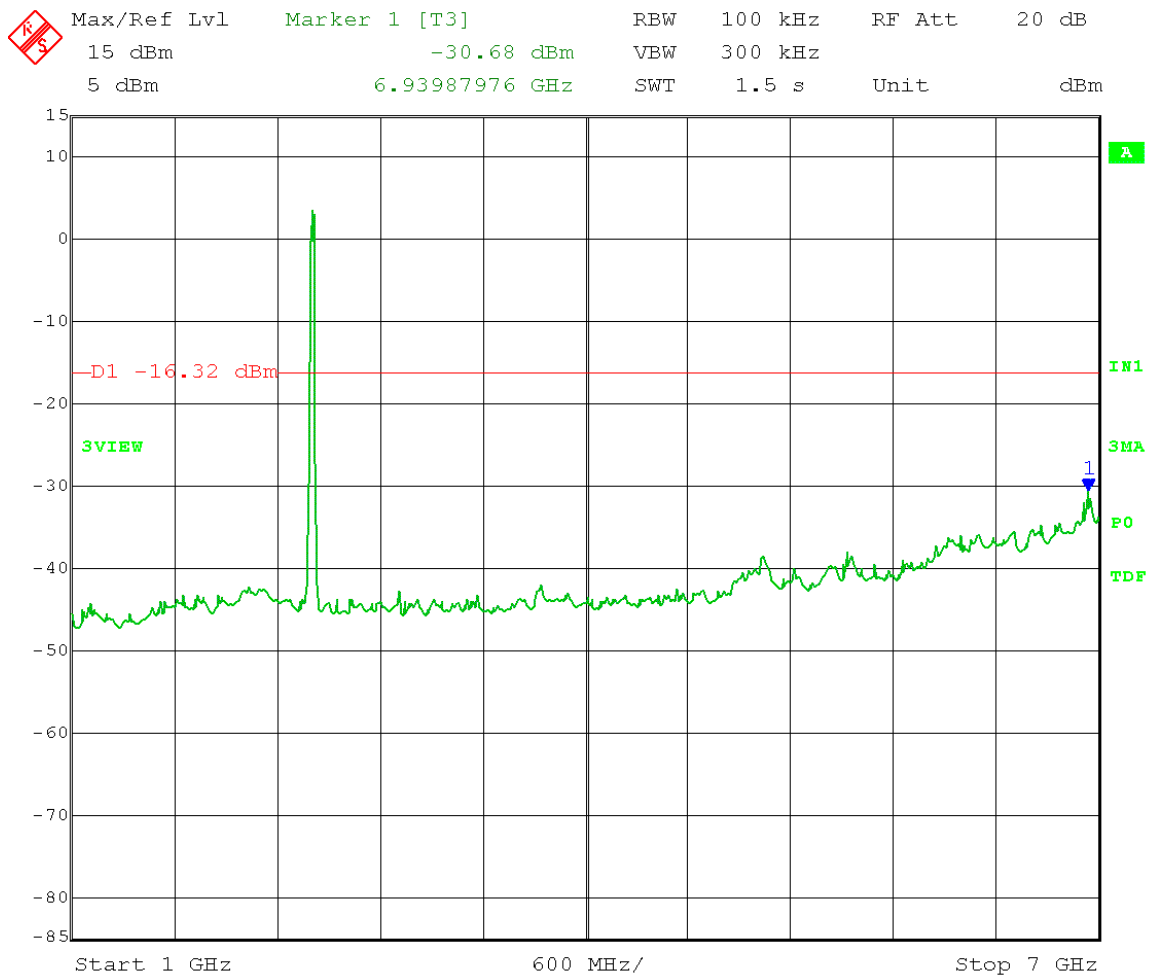
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.68 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$

Frequency Range: 1 – 7 GHz



Date: 10.DEC.2015 16:08:46

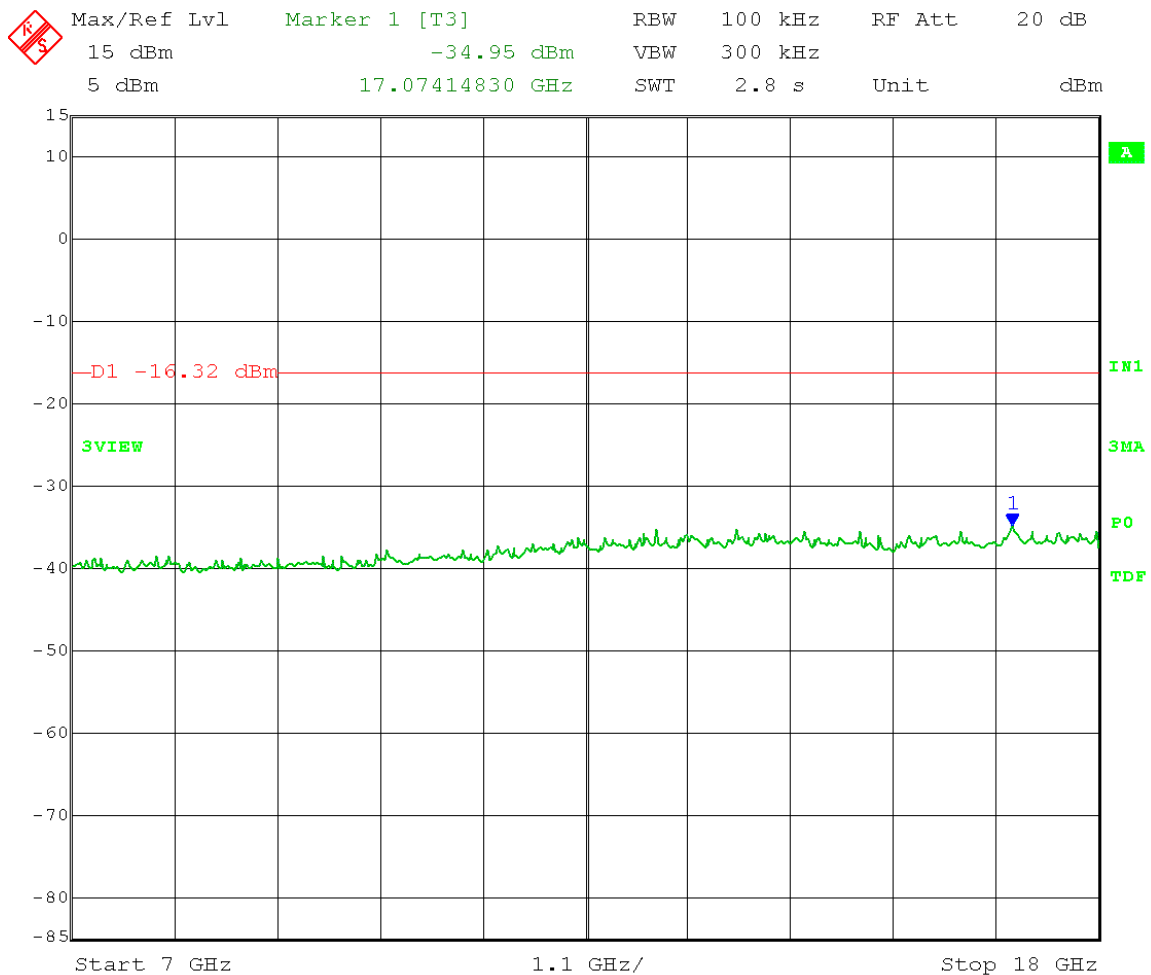
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.68 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$

Frequency Range: 7 – 18 GHz



Date: 10.DEC.2015 16:18:39

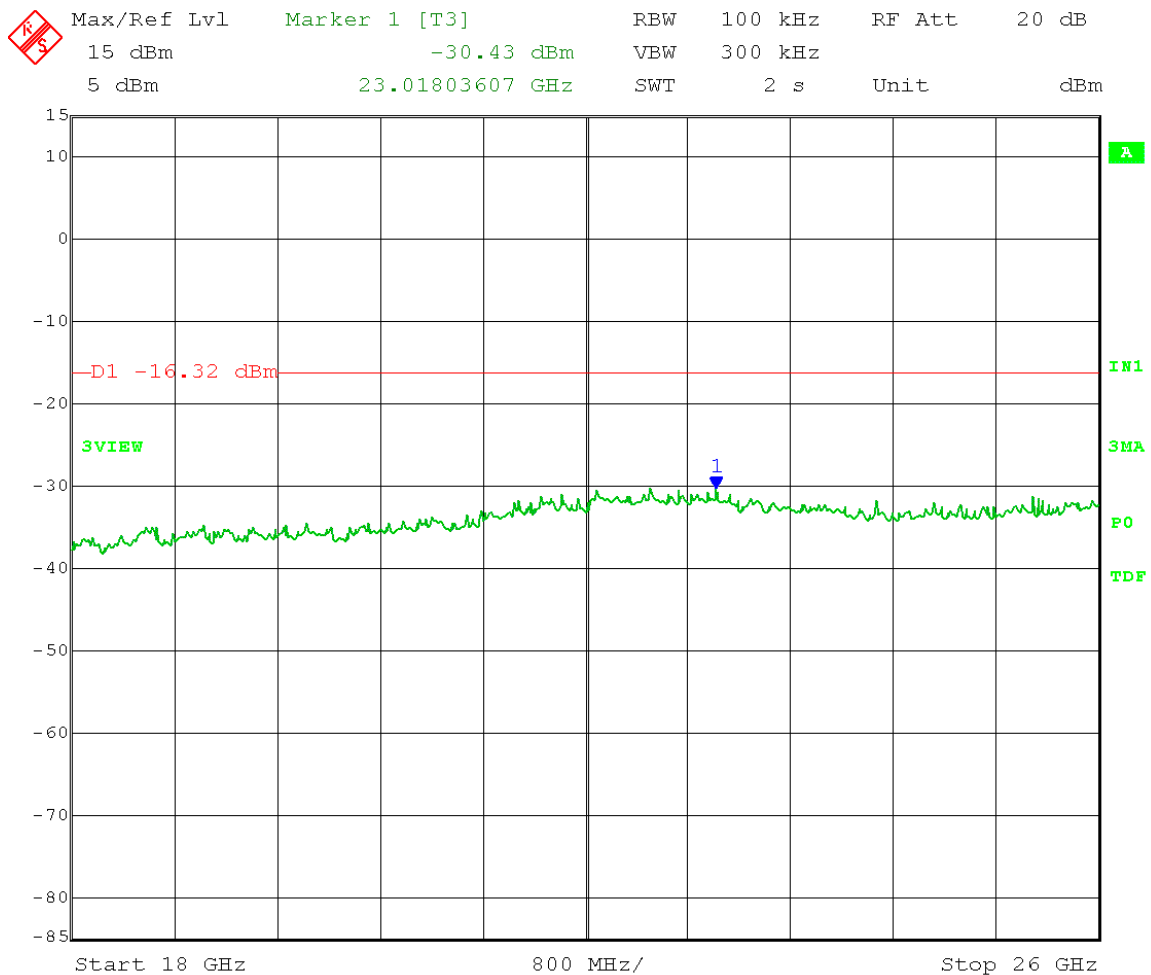
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.68 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$

Frequency Range: 18 – 26 GHz



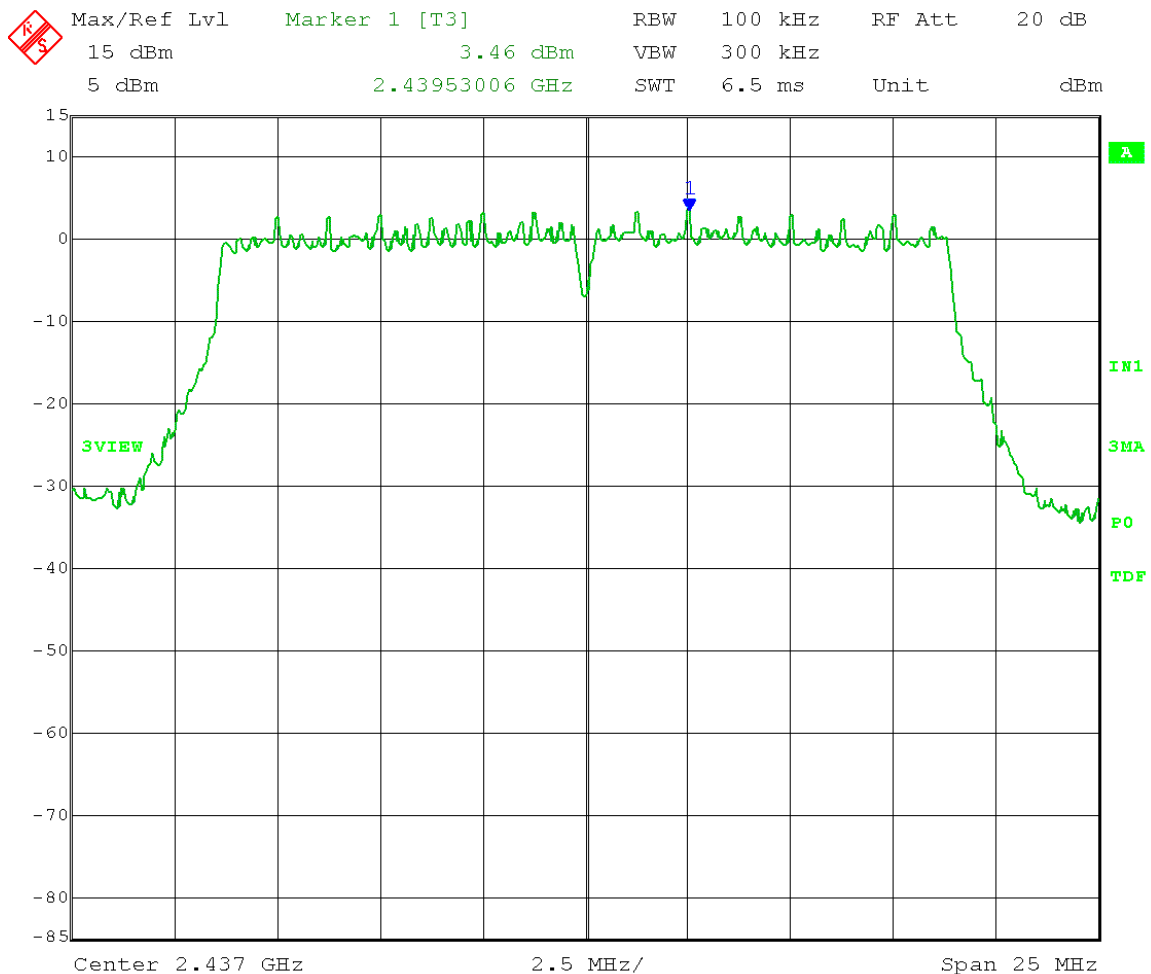
Date: 10.DEC.2015 16:20:37

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Reference Level measurement

$$\text{Limit} = 3.46 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$



Date: 10.DEC.2015 16:37:35



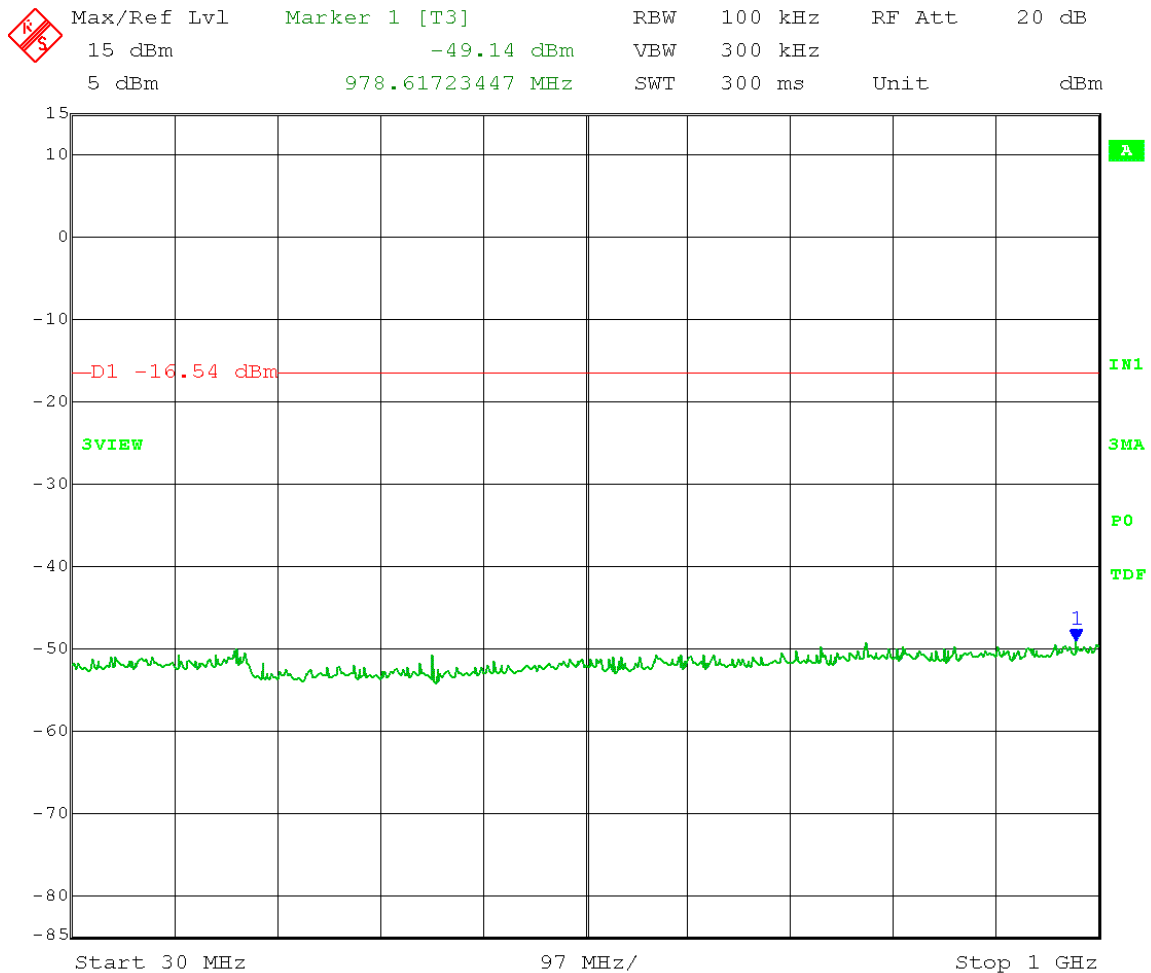
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.46 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$

Frequency Range: 30 – 1000 MHz



Date: 10.DEC.2015 16:46:29

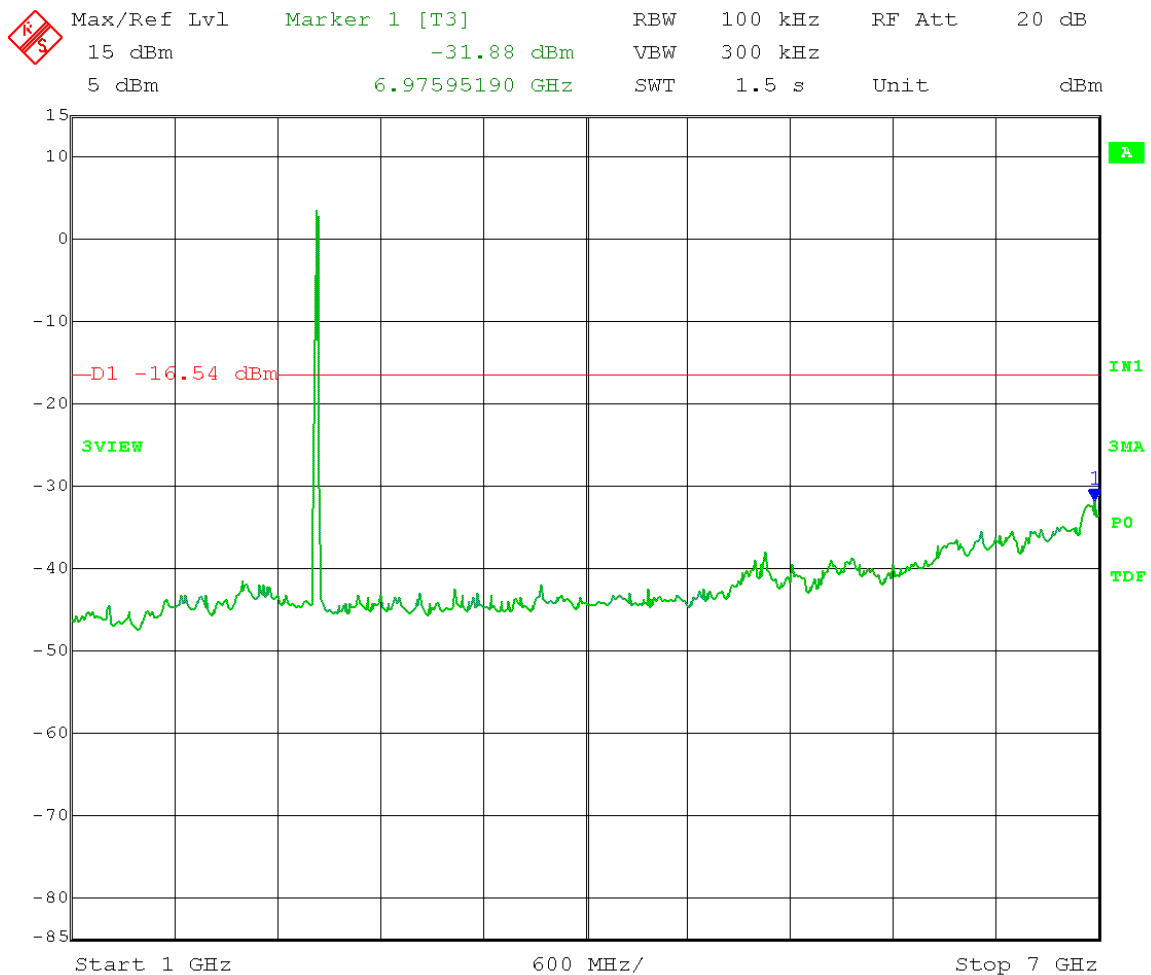
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.46 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$

Frequency Range: 1 – 7 GHz



Date: 10.DEC.2015 16:39:57

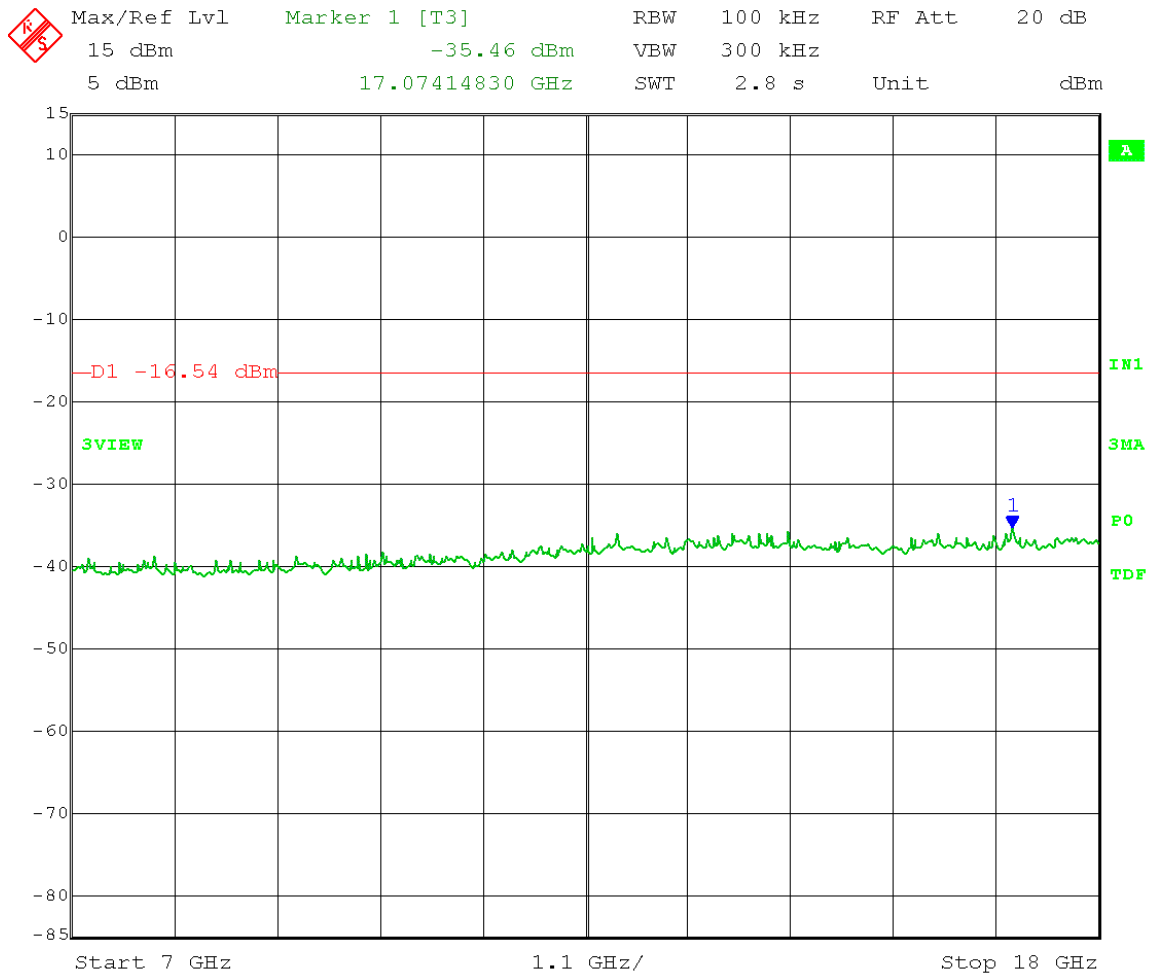
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.46 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$

Frequency Range: 7 – 18 GHz



Date: 10.DEC.2015 16:42:08

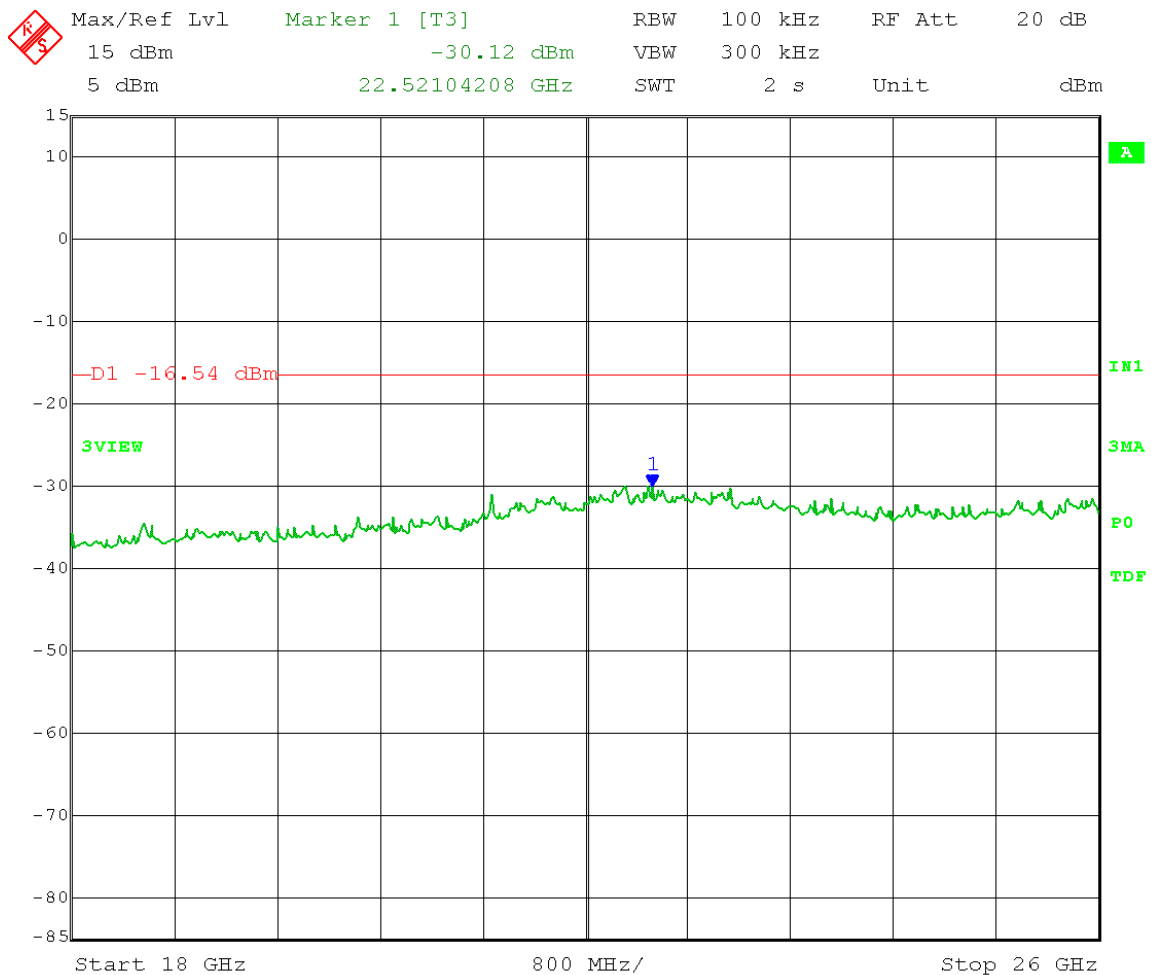
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: Mid, 2437 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.46 \text{ dBm} - 20 \text{ dB} = -16.32 \text{ dBm}$$

Frequency Range: 18 – 26 GHz



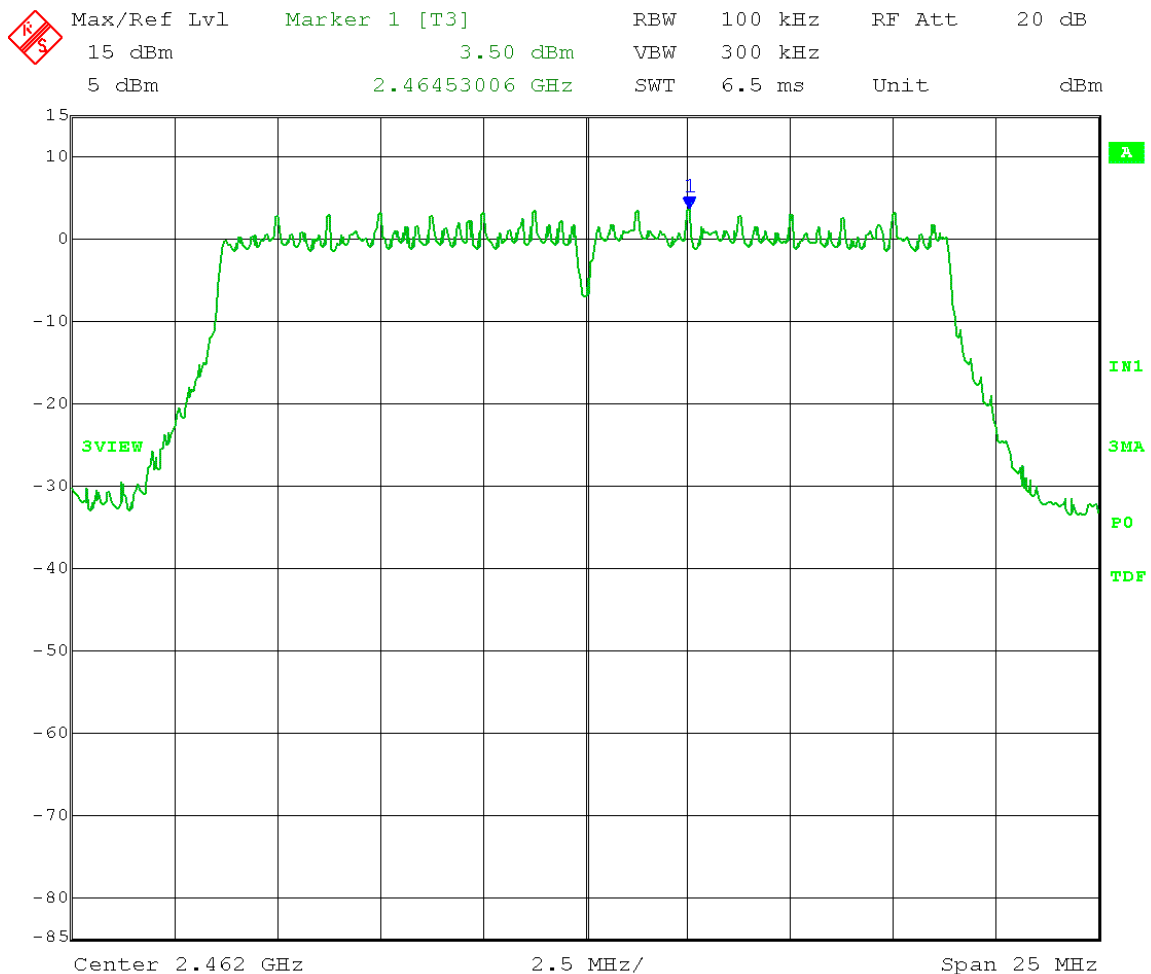
Date: 10.DEC.2015 16:44:26

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Reference Level measurement

$$\text{Limit} = 3.50 \text{ dBm} - 20 \text{ dB} = -16.50 \text{ dBm}$$



Date: 10.DEC.2015 16:53:56

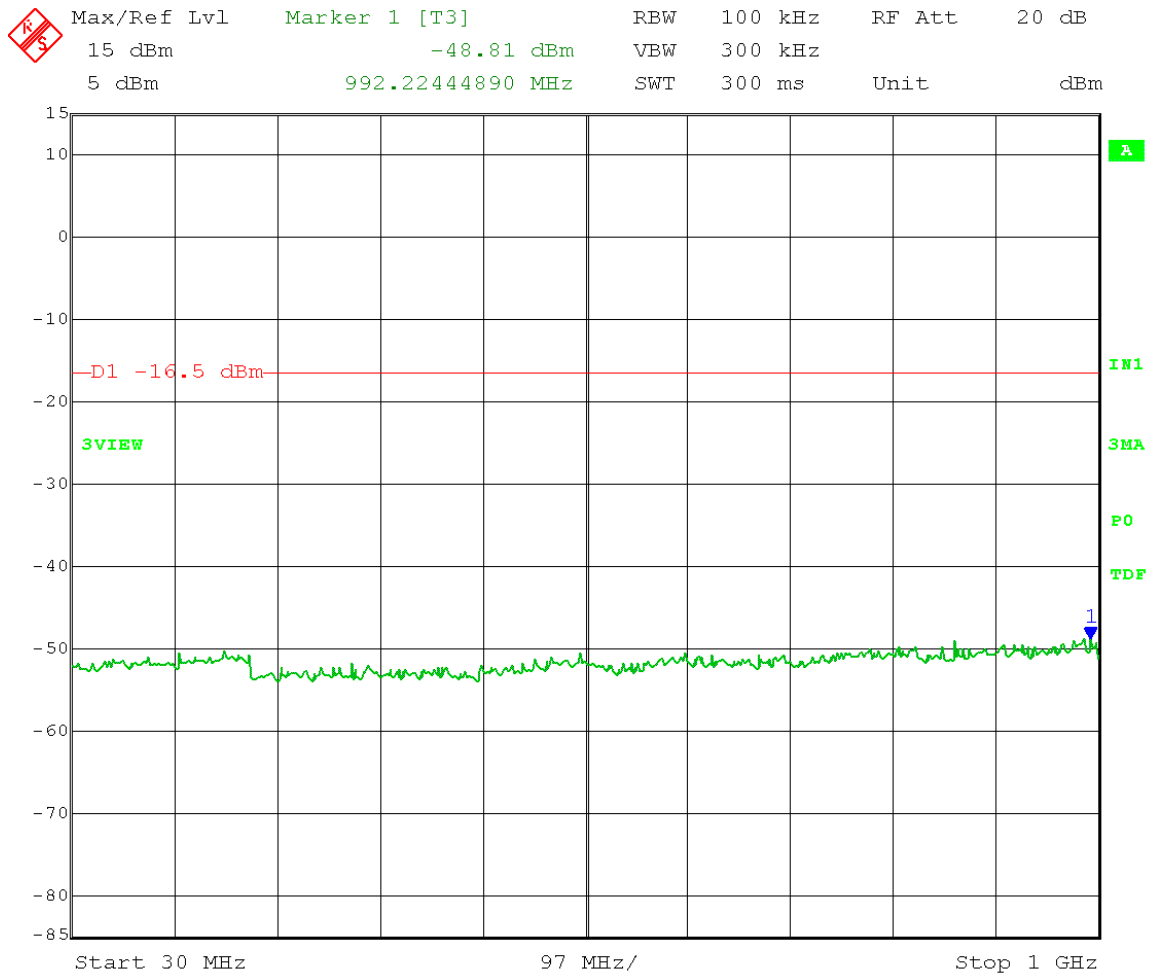
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.50 \text{ dBm} - 20 \text{ dB} = -16.50 \text{ dBm}$$

Frequency Range: 30 – 1000 MHz



Date: 10.DEC.2015 17:03:07

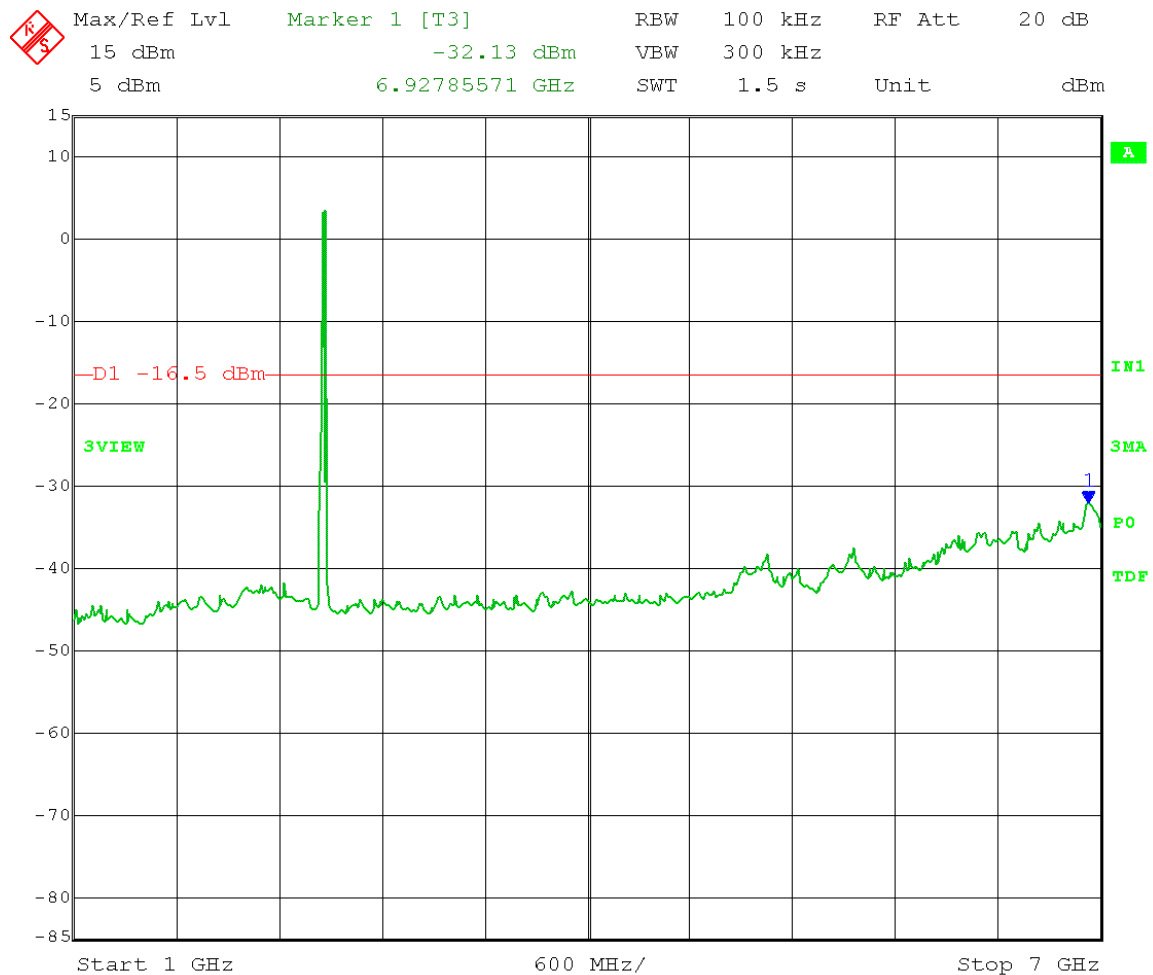
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.50 \text{ dBm} - 20 \text{ dB} = -16.50 \text{ dBm}$$

Frequency Range: 1 – 7 GHz



Date: 10.DEC.2015 16:56:45

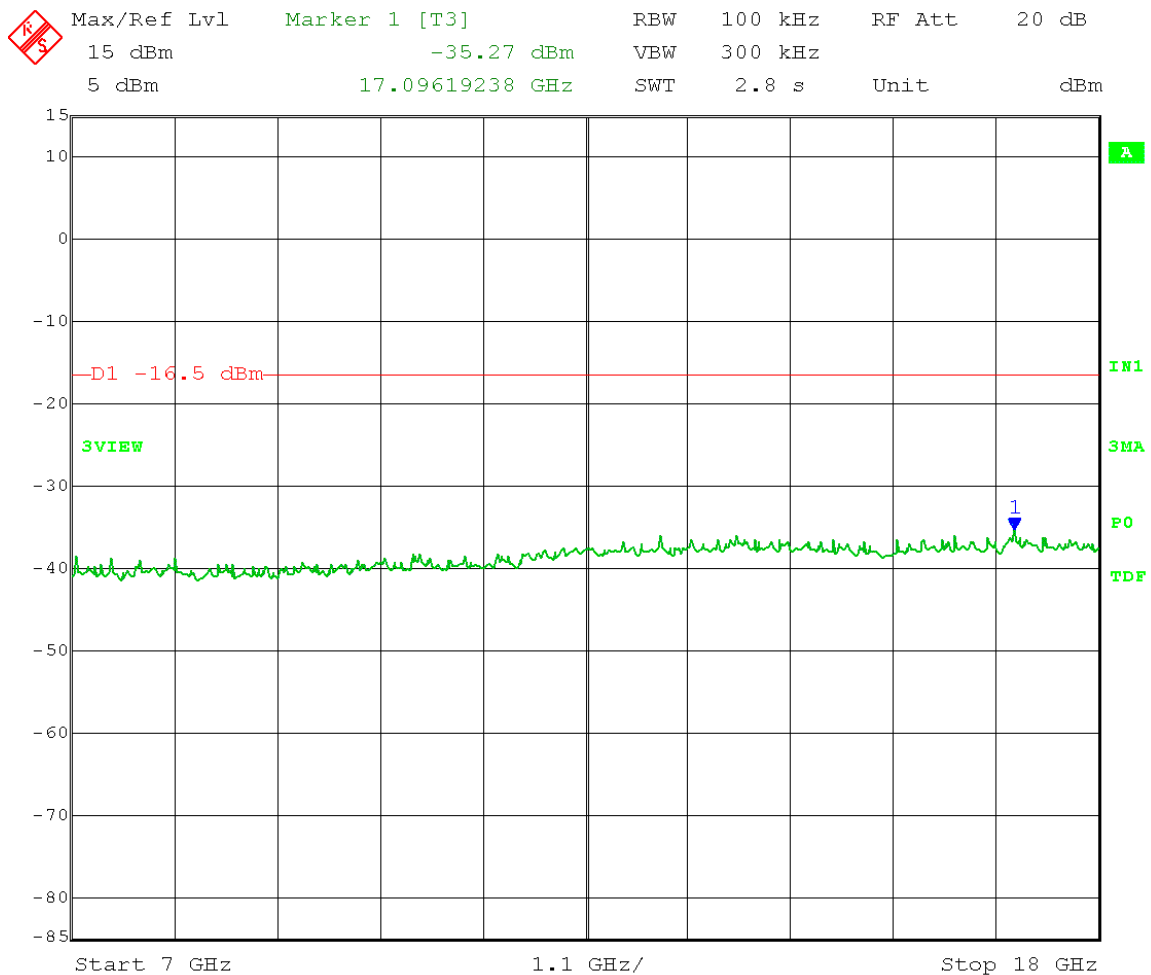
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.50 \text{ dBm} - 20 \text{ dB} = -16.50 \text{ dBm}$$

Frequency Range: 7 – 18 GHz



Date: 10.DEC.2015 16:58:20



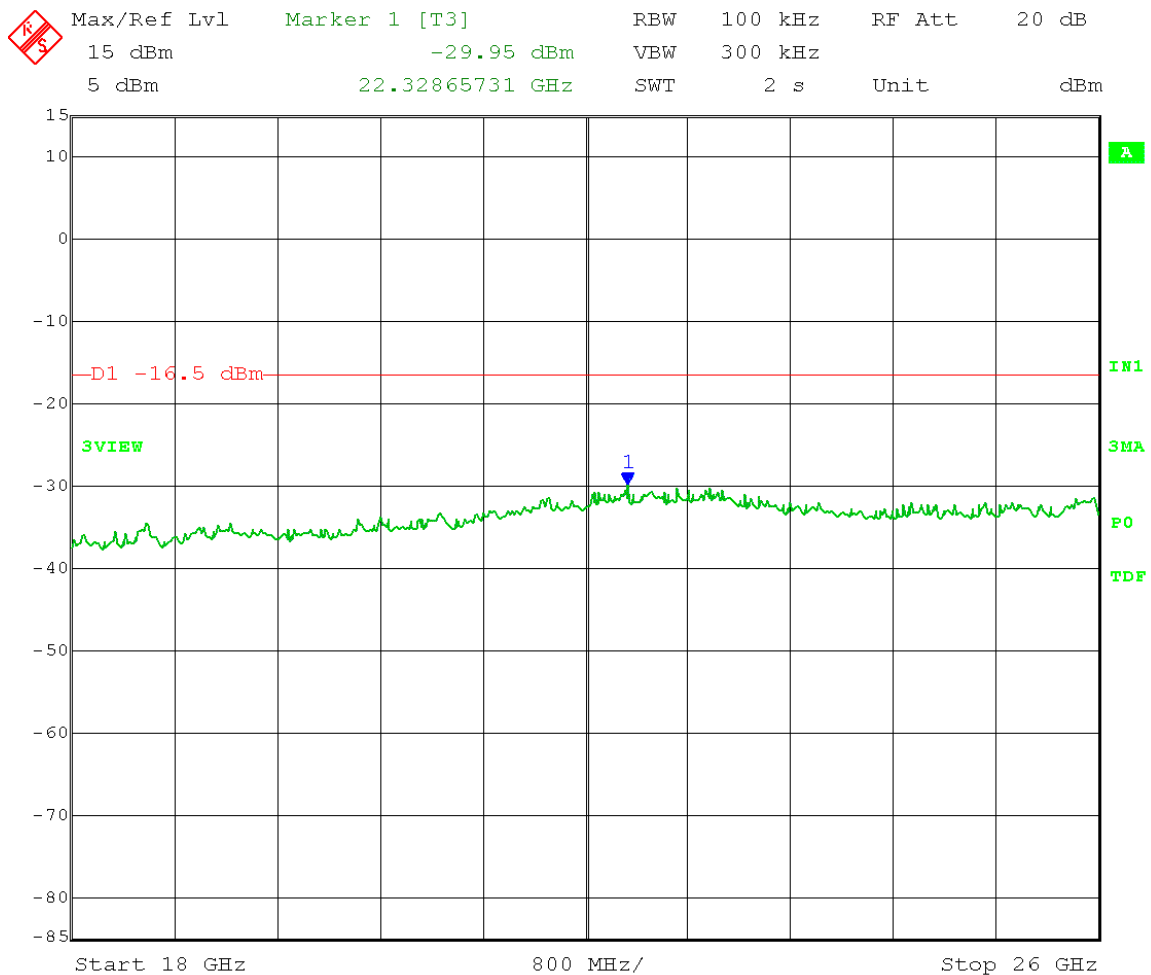
Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted spurious emissions  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

### Emission Level measurement

$$\text{Limit} = 3.50 \text{ dBm} - 20 \text{ dB} = -16.50 \text{ dBm}$$

Frequency Range: 18 – 26 GHz



Date: 10.DEC.2015 17:00:45



166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

## Appendix B

### B5.0 Emissions in Restricted Frequency Bands – Radiated

#### Rule Part:

15.247(d), 15.205(a), 15.209(a)

#### Test Procedure:

ANSI C63.10-2013  
11.12 Emissions in Restricted Frequency Bands  
11.12.1 Radiated Emissions Measurements

#### Limit:

15.209(a)

#### Results:

Compliant

#### Notes:

Measurements were performed while the EUT was transmitting from on-board antenna number 1. Testing was then repeated with the EUT transmitting from on-board antenna number 2. Because both external antenna connectors measured the same power level, the PIFA and F antennas were tested using only port #2. Testing was performed with 802.11-b 1 Mbps modulation (found to be worst-case) and output power setting 18. The EUT was tested at the low, middle, and high channels of operation. Two versions of the F antenna were tested: Model W10503567 (has a 41 inch long cable), and Model W10806955 Rev A (as a 16.5 inch long cable). Model W10503567 was found to be worst-case and the data shown in the test report for the F antenna is data taken with this worst-case version of the antenna.

**Electric Field Strength**

EUT: Indigo  
Manufacturer: Whirlpool Corp.  
Operating Condition: 65deg. F; 28% R.H.  
Test Site: DLS Site 2  
Operator: Craig B #7619  
Test Specification: Transmitter Spurious Emissions with both on-board antennas  
Comment: L,M,H channels; 802.11-b, 1 Mbps, pwr 18, continuous Tx  
Date: 12-18-2015

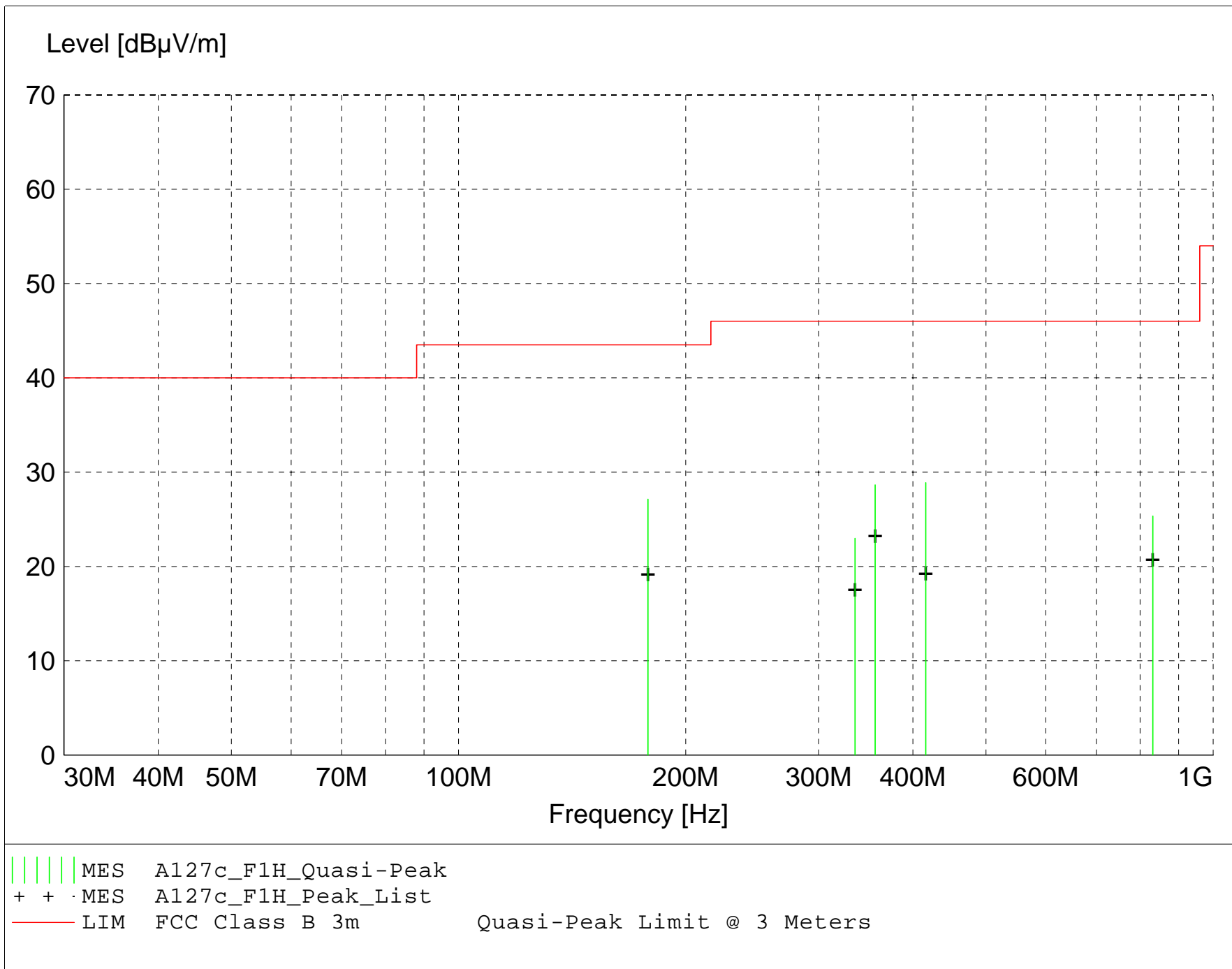
**TEXT: "Horz 3 meters"**

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

Equations: 
$$\text{Total Level(dB}\mu\text{V/m)} = \text{Level(dB}\mu\text{V)} + \text{System Loss(dB)} + \text{Antenna Factor(dB}\mu\text{V/m)}$$
$$\text{Margin(dB)} = \text{Limit(dB}\mu\text{V/m)} - \text{Total Level(dB}\mu\text{V/m)}$$

Graph Markers: + Frequency marker (Level of marker not related to final level)  
| Final maximized level using Quasi-Peak detector  
X Final maximized level using Average detector  
# Final maximized level using Peak detector



**MEASUREMENT RESULT: "A127c\_F1H\_Final"**

12/18/2015 4:25PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
178.270000	33.96	15.80	-22.6	27.1	43.5	16.4	1.50	340	QUASI-PEAK	None
415.990000	34.00	16.12	-21.2	28.9	46.0	17.1	2.00	190	QUASI-PEAK	None
356.550000	35.35	14.90	-21.6	28.7	46.0	17.3	1.00	20	QUASI-PEAK	None
831.980000	21.87	22.08	-18.6	25.3	46.0	20.7	1.00	0	QUASI-PEAK	None
335.210000	29.87	14.71	-21.6	23.0	46.0	23.0	1.00	0	QUASI-PEAK	None

**Electric Field Strength**

EUT: Indigo  
Manufacturer: Whirlpool Corp.  
Operating Condition: 65deg. F; 28% R.H.  
Test Site: DLS Site 2  
Operator: Craig B #7619  
Test Specification: Transmitter Spurious Emissions with both on-board antennas  
Comment: L,M,H channels; 802.11-b, 1 Mbps, pwr 18, continuous Tx  
Date: 12-18-2015

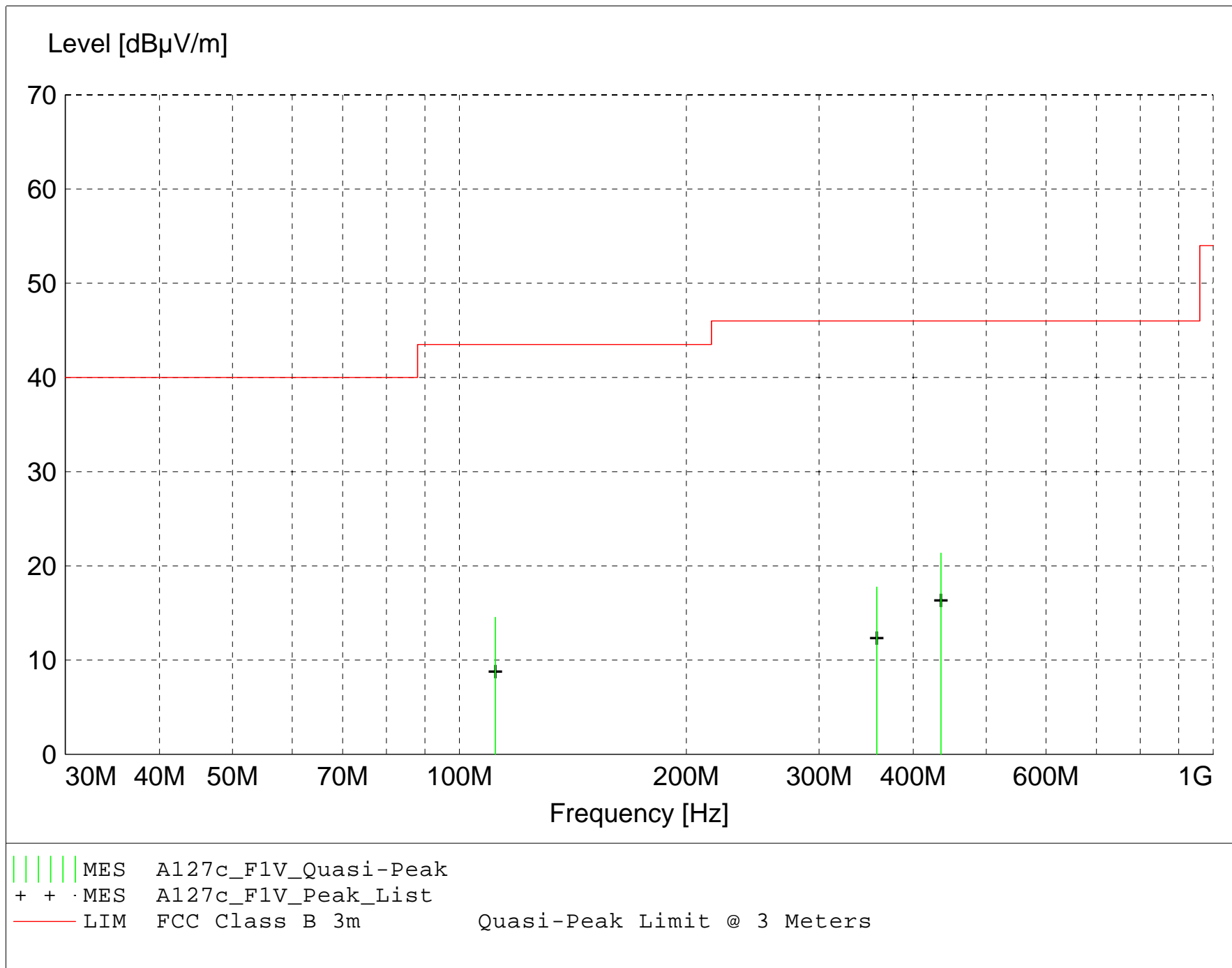
**TEXT: "Vert 3 meters"**

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

Equations: 
$$\text{Total Level(dB}\mu\text{V/m)} = \text{Level(dB}\mu\text{V)} + \text{System Loss(dB)} + \text{Antenna Factor(dB}\mu\text{V/m)}$$
$$\text{Margin(dB)} = \text{Limit(dB}\mu\text{V/m)} - \text{Total Level(dB}\mu\text{V/m)}$$

Graph Markers: + Frequency marker (Level of marker not related to final level)  
| Final maximized level using Quasi-Peak detector  
X Final maximized level using Average detector  
# Final maximized level using Peak detector



**MEASUREMENT RESULT: "A127c\_F1V\_Final"**

12/18/2015 5:22PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
435.310000	26.05	16.41	-21.1	21.4	46.0	24.6	2.60	225	QUASI-PEAK	None
357.910000	24.43	14.90	-21.6	17.7	46.0	28.3	1.00	300	QUASI-PEAK	None
111.590000	25.76	12.02	-23.2	14.5	43.5	29.0	1.00	0	QUASI-PEAK	noise floor



## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 68 deg F; 35% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** Low channel: 2.412 GHz, 802.11-b, DSSS, 1 Mbps; On-Board antenna #1  
**Date:** 12-17-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
4.824	Max Peak	Vert	54.98	32.88	-36.5	51.4	74	22.6	1.0	176	Harmonic
4.824	Average	Vert	51.32	32.88	-36.5	47.7	54	6.3	1.0	176	Harmonic
4.824	Max Peak	Horz	54.23	32.88	-36.5	50.6	74	23.4	1.9	96	Harmonic
4.824	Average	Horz	48.02	32.88	-36.5	44.4	54	9.6	1.9	96	Harmonic
7.236	Max Peak	Vert	52.69	35.99	-33.7	55.0	74	19.0	2.3	229	Harmonic
7.236	Average	Vert	45.27	35.99	-33.7	47.6	54	6.4	2.3	229	Harmonic
7.236	Max Peak	Horz	NF								
7.236	Average	Horz	NF								

NF = noise floor

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 68 deg F; 35% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** Mid channel: 2.437 GHz, 802.11-b, DSSS, 1 Mbps; On-Board antenna #1  
**Date:** 12-17-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
4.874	Max Peak	Vert	55.11	32.98	-36.5	51.6	74	22.4	1.3	180	Harmonic
4.874	Average	Vert	51.01	32.98	-36.5	47.5	54	6.5	1.3	180	Harmonic
4.874	Max Peak	Horz	55.56	32.98	-36.5	52.0	74	22.0	1.8	82	Harmonic
4.874	Average	Horz	50.49	32.98	-36.5	47.0	54	7.0	1.8	82	Harmonic
7.311	Max Peak	Vert	50.89	36.44	-33.4	53.9	74	20.1	2.5	234	Harmonic
7.311	Average	Vert	40.80	36.44	-33.4	43.8	54	10.2	2.5	234	Harmonic
7.311	Max Peak	Horz	NF								
7.311	Average	Horz	NF								

NF = noise floor

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 68 deg F; 35% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** **High channel: 2.462 GHz, 802.11-b, DSSS, 1 Mbps; On-Board antenna #1**  
**Date:** 12-17-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
4.924	Max Peak	Vert	56.29	33.05	-36.5	52.8	74	21.2	1.1	132	Harmonic
4.924	Average	Vert	52.25	33.05	-36.5	48.8	54	5.2	1.1	132	Harmonic
4.924	Max Peak	Horz	55.82	33.05	-36.5	52.4	74	21.6	1.9	92	Harmonic
4.924	Average	Horz	51.05	33.05	-36.5	47.6	54	6.4	1.9	92	Harmonic
7.386	Max Peak	Vert	54.57	36.60	-33.8	57.4	74	16.6	2.2	149	Harmonic
7.386	Average	Vert	45.80	36.60	-33.8	48.6	54	5.4	2.2	149	Harmonic
7.386	Max Peak	Horz	NF								
7.386	Average	Horz	NF								

NF = noise floor

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 70 deg F; 36% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** Low channel: 2.412 GHz, 802.11-b, DSSS, 1 Mbps; On-Board antenna #2  
**Date:** 12-16-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
4.824	Max Peak	Vert	55.43	32.88	-36.5	51.8	74	22.2	1.0	226	Harmonic
4.824	Average	Vert	51.27	32.88	-36.5	47.7	54	6.3	1.0	226	Harmonic
4.824	Max Peak	Horz	53.30	32.88	-36.5	49.7	74	24.3	1.5	167	Harmonic
4.824	Average	Horz	47.71	32.88	-36.5	44.1	54	9.9	1.5	167	Harmonic
7.236	Max Peak	Vert	54.64	35.99	-33.7	56.9	74	17.1	1.0	151	Harmonic
7.236	Average	Vert	46.39	35.99	-33.7	48.7	54	5.3	1.0	151	Harmonic
7.236	Max Peak	Horz	51.68	35.99	-33.7	54.0	74	20.0	1.9	204	Harmonic
7.236	Average	Horz	43.03	35.99	-33.7	45.3	54	8.7	1.9	204	Harmonic

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 70 deg F; 36% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** Mid channel: 2.437 GHz, 802.11-b, DSSS, 1 Mbps; On-Board antenna #2  
**Date:** 12-16-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
4.874	Max Peak	Vert	54.50	32.98	-36.5	51.0	74	23.0	1.0	207	Harmonic
4.874	Average	Vert	49.13	32.98	-36.5	45.6	54	8.4	1.0	207	Harmonic
4.874	Max Peak	Horz	53.56	32.98	-36.5	50.0	74	24.0	1.2	166	Harmonic
4.874	Average	Horz	47.56	32.98	-36.5	44.0	54	10.0	1.2	166	Harmonic
7.311	Max Peak	Vert	49.49	36.44	-33.4	52.5	74	21.5	1.0	169	Harmonic
7.311	Average	Vert	38.68	36.44	-33.4	41.7	54	12.3	1.0	169	Harmonic
7.311	Max Peak	Horz	48.57	36.44	-33.4	51.6	74	22.4	1.9	205	Harmonic
7.311	Average	Horz	35.95	36.44	-33.4	39.0	54	15.0	1.9	205	Harmonic

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 70 deg F; 36% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** **High channel: 2.462 GHz, 802.11-b, DSSS, 1 Mbps; On-Board antenna #2**  
**Date:** 12-16-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
4.924	Max Peak	Vert	54.50	33.05	-36.5	51.1	74	23.0	1.3	216	Harmonic
4.924	Average	Vert	48.72	33.05	-36.5	45.3	54	8.7	1.3	216	Harmonic
4.924	Max Peak	Horz	53.70	33.05	-36.5	50.3	74	23.8	1.8	170	Harmonic
4.924	Average	Horz	46.84	33.05	-36.5	43.4	54	10.6	1.8	170	Harmonic
7.386	Max Peak	Vert	49.36	36.60	-33.8	52.2	74	21.8	1.0	168	Harmonic
7.386	Average	Vert	38.62	36.60	-33.8	41.4	54	12.6	1.0	168	Harmonic
7.386	Max Peak	Horz	48.16	36.60	-33.8	51.0	74	23.0	1.8	137	Harmonic
7.386	Average	Horz	36.23	36.60	-33.8	39.0	54	15.0	1.8	137	Harmonic

**Electric Field Strength**

EUT: Indigo  
Manufacturer: Whirlpool Corp.  
Operating Condition: 65deg. F; 28% R.H.  
Test Site: DLS Site 2  
Operator: Craig B #7619  
Test Specification: Transmitter Spurious Emissions with PIFA antenna  
Comment: L,M,H channels; 802.11-b, 1 Mbps, pwr 18, continuous Tx  
Date: 12-18-2015

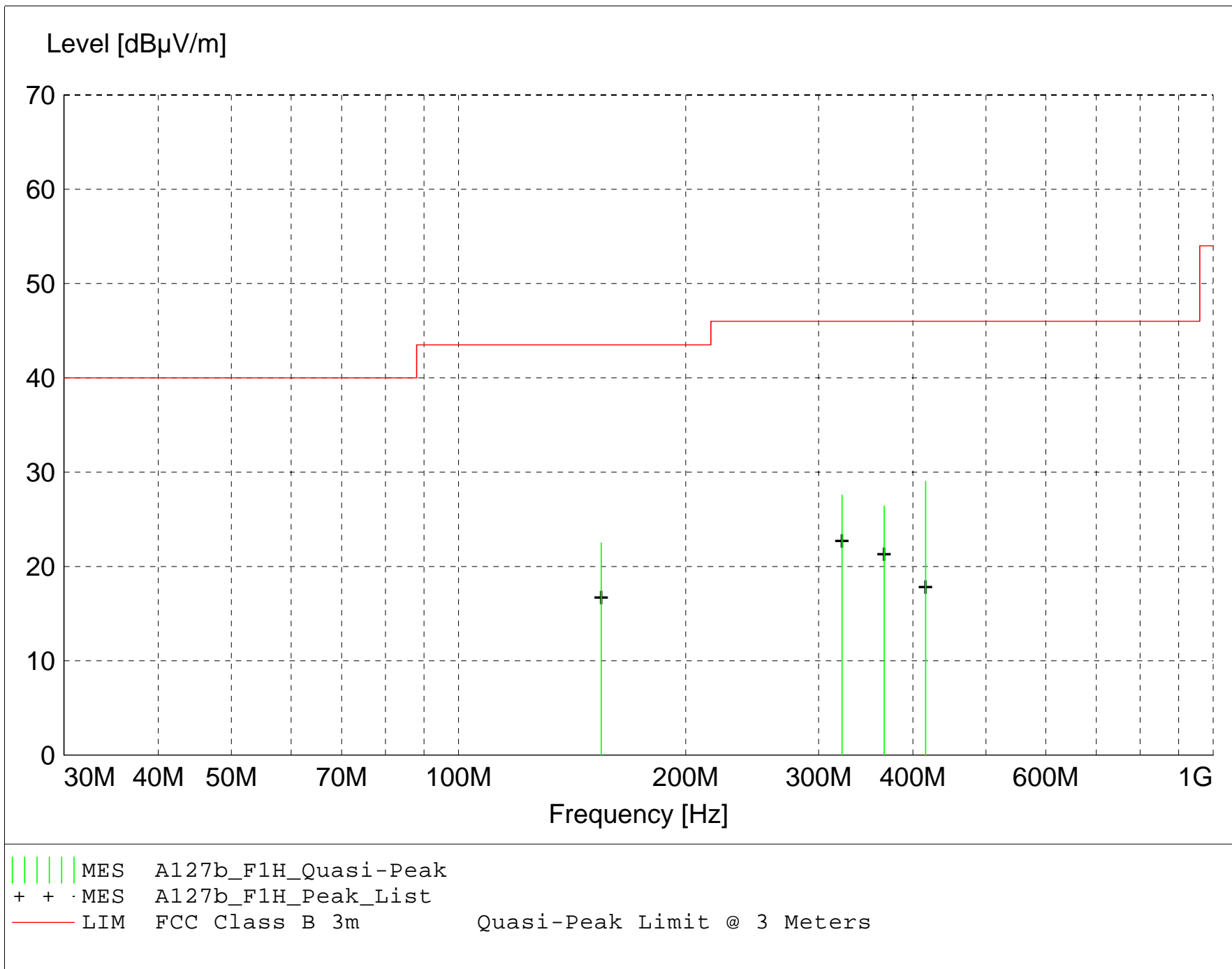
**TEXT: "Horz 3 meters"**

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

Equations: 
$$\text{Total Level(dB}\mu\text{V/m)} = \text{Level(dB}\mu\text{V)} + \text{System Loss(dB)} + \text{Antenna Factor(dB}\mu\text{V/m)}$$
$$\text{Margin(dB)} = \text{Limit(dB}\mu\text{V/m)} - \text{Total Level(dB}\mu\text{V/m)}$$

Graph Markers: + Frequency marker (Level of marker not related to final level)  
| Final maximized level using Quasi-Peak detector  
X Final maximized level using Average detector  
# Final maximized level using Peak detector





**MEASUREMENT RESULT: "A127b\_F1H\_Final"**

12/18/2015 1:30PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
415.980000	34.14	16.12	-21.2	29.0	46.0	17.0	2.00	270	QUASI-PEAK	None
322.220000	34.85	14.50	-21.8	27.6	46.0	18.4	1.00	180	QUASI-PEAK	None
366.430000	32.95	15.03	-21.6	26.4	46.0	19.6	1.00	180	QUASI-PEAK	None
154.580000	33.21	12.26	-23.0	22.5	43.5	21.0	2.10	0	QUASI-PEAK	None

**Electric Field Strength**

EUT: Indigo  
Manufacturer: Whirlpool Corp.  
Operating Condition: 65deg. F; 28% R.H.  
Test Site: DLS Site 2  
Operator: Craig B #7619  
Test Specification: Transmitter Spurious Emissions with PIFA antenna  
Comment: L,M,H channels; 802.11-b, 1 Mbps, pwr 18, continuous Tx  
Date: 12-18-2015

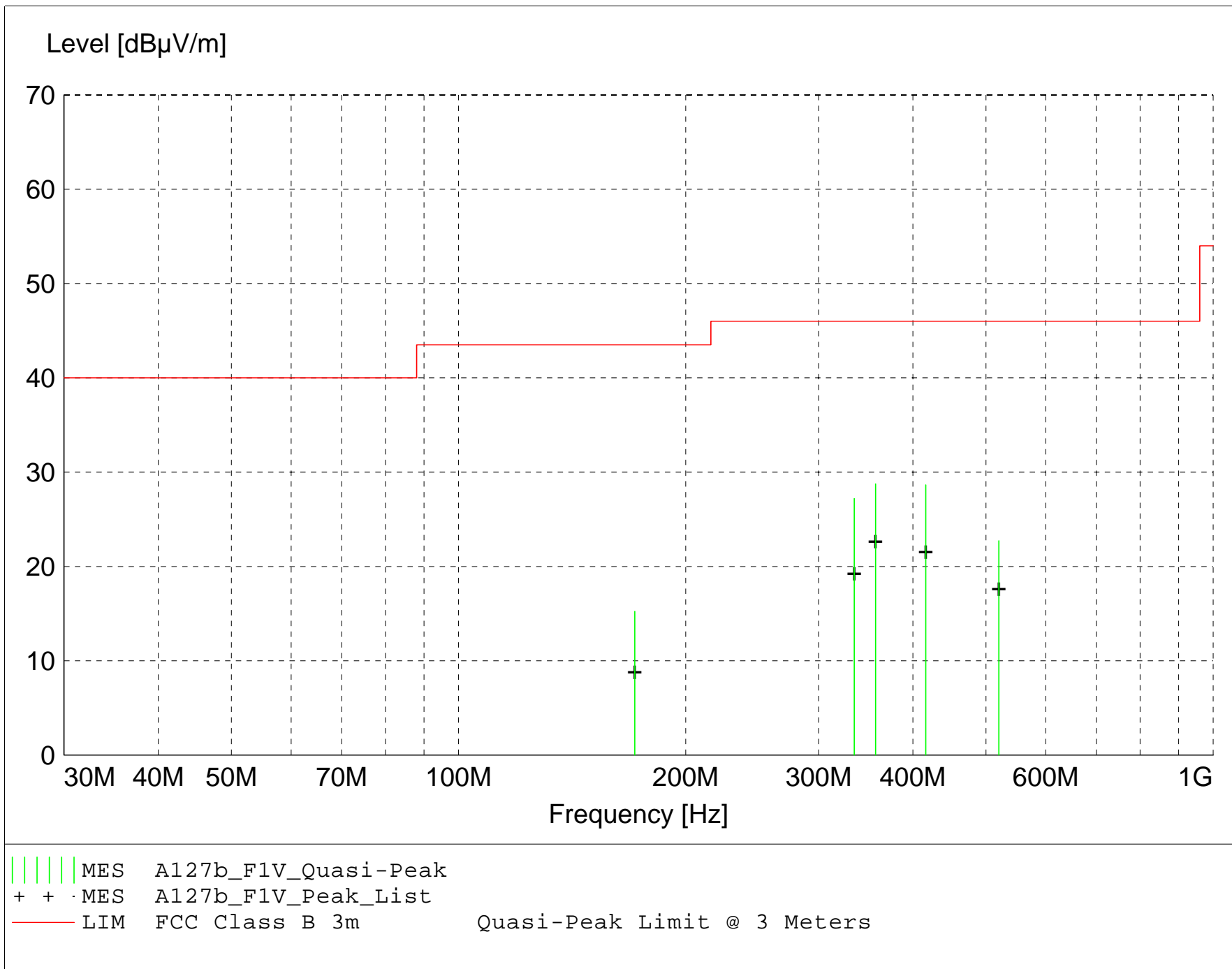
**TEXT: "Vert 3 meters"**

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

Equations: 
$$\text{Total Level(dB}\mu\text{V/m)} = \text{Level(dB}\mu\text{V)} + \text{System Loss(dB)} + \text{Antenna Factor(dB}\mu\text{V/m)}$$
$$\text{Margin(dB)} = \text{Limit(dB}\mu\text{V/m)} - \text{Total Level(dB}\mu\text{V/m)}$$

Graph Markers: + Frequency marker (Level of marker not related to final level)  
| Final maximized level using Quasi-Peak detector  
X Final maximized level using Average detector  
# Final maximized level using Peak detector



**MEASUREMENT RESULT: "A127b\_F1V\_Final"**

12/18/2015 1:46PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
356.990000	35.44	14.90	-21.6	28.8	46.0	17.2	1.20	170	QUASI-PEAK	None
415.990000	33.76	16.12	-21.2	28.7	46.0	17.3	1.00	125	QUASI-PEAK	None
334.510000	34.10	14.69	-21.6	27.2	46.0	18.8	1.30	200	QUASI-PEAK	None
519.990000	24.74	18.40	-20.4	22.7	46.0	23.3	1.00	90	QUASI-PEAK	None
171.240000	23.26	14.65	-22.7	15.2	43.5	28.3	1.00	0	QUASI-PEAK	noise floor

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 70 deg F; 36% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** **Low channel: 2.412 GHz, 802.11-b, DSSS, 1 Mbps; Port #2 with PIFA antenna**  
**Date:** 12-16-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
4.824	Max Peak	Vert	49.24	32.88	-36.5	45.6	74	28.4	2.1	12	Harmonic
4.824	Average	Vert	38.46	32.88	-36.5	34.8	54	19.2	2.1	12	Harmonic
4.824	Max Peak	Horz	49.67	32.88	-36.5	46.1	74	28.0	2.0	352	Harmonic
4.824	Average	Horz	39.04	32.88	-36.5	35.4	54	18.6	2.0	352	Harmonic
7.236	Max Peak	Vert	54.10	35.99	-33.7	56.4	74	17.6	1.5	334	Harmonic
7.236	Average	Vert	46.48	35.99	-33.7	48.8	54	5.2	1.5	334	Harmonic
7.236	Max Peak	Horz	55.37	35.99	-33.7	57.7	74	16.3	1.5	26	Harmonic
7.236	Average	Horz	46.50	35.99	-33.7	48.8	54	5.2	1.5	26	Harmonic

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 70 deg F; 36% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** Mid channel: 2.437 GHz, 802.11-b, DSSS, 1 Mbps; Port #2 with PIFA antenna  
**Date:** 12-16-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
4.874	Max Peak	Vert	49.75	32.98	-36.5	46.2	74	27.8	2.0	18	Harmonic
4.874	Average	Vert	37.84	32.98	-36.5	34.3	54	19.7	2.0	18	Harmonic
4.874	Max Peak	Horz	49.28	32.98	-36.5	45.8	74	28.2	2.0	351	Harmonic
4.874	Average	Horz	38.13	32.98	-36.5	34.6	54	19.4	2.0	351	Harmonic
7.311	Max Peak	Vert	52.76	36.44	-33.4	55.8	74	18.2	1.6	331	Harmonic
7.311	Average	Vert	44.06	36.44	-33.4	47.1	54	6.9	1.6	331	Harmonic
7.311	Max Peak	Horz	51.93	36.44	-33.4	55.0	74	19.0	1.5	33	Harmonic
7.311	Average	Horz	43.71	36.44	-33.4	46.8	54	7.2	1.5	33	Harmonic

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 70 deg F; 36% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** **High channel: 2.462 GHz, 802.11-b, DSSS, 1 Mbps; Port #2 with PIFA antenna**  
**Date:** 12-16-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
4.924	Max Peak	Vert	49.75	33.05	-36.5	46.3	74	27.7	1.9	15	Harmonic
4.924	Average	Vert	36.91	33.05	-36.5	33.5	54	20.5	1.9	15	Harmonic
4.924	Max Peak	Horz	49.49	33.05	-36.5	46.0	74	28.0	2.0	351	Harmonic
4.924	Average	Horz	37.23	33.05	-36.5	33.8	54	20.2	2.0	351	Harmonic
7.386	Max Peak	Vert	52.21	36.60	-33.8	55.0	74	19.0	2.1	331	Harmonic
7.386	Average	Vert	42.22	36.60	-33.8	45.0	54	9.0	2.1	331	Harmonic
7.386	Max Peak	Horz	50.78	36.60	-33.8	53.6	74	20.4	1.5	38	Harmonic
7.386	Average	Horz	41.59	36.60	-33.8	44.4	54	9.6	1.5	38	Harmonic

**Electric Field Strength**

EUT: Indigo  
Manufacturer: Whirlpool Corp.  
Operating Condition: 65deg. F; 28% R.H.  
Test Site: DLS Site 2  
Operator: Craig B #7619  
Test Specification: Transmitter Spurious Emissions with F antenna  
Comment: L,M,H channels; 802.11-b, 1 Mbps, pwr 18, continuous Tx  
Date: 12-18-2015

**TEXT: "Horz 3 meters"**

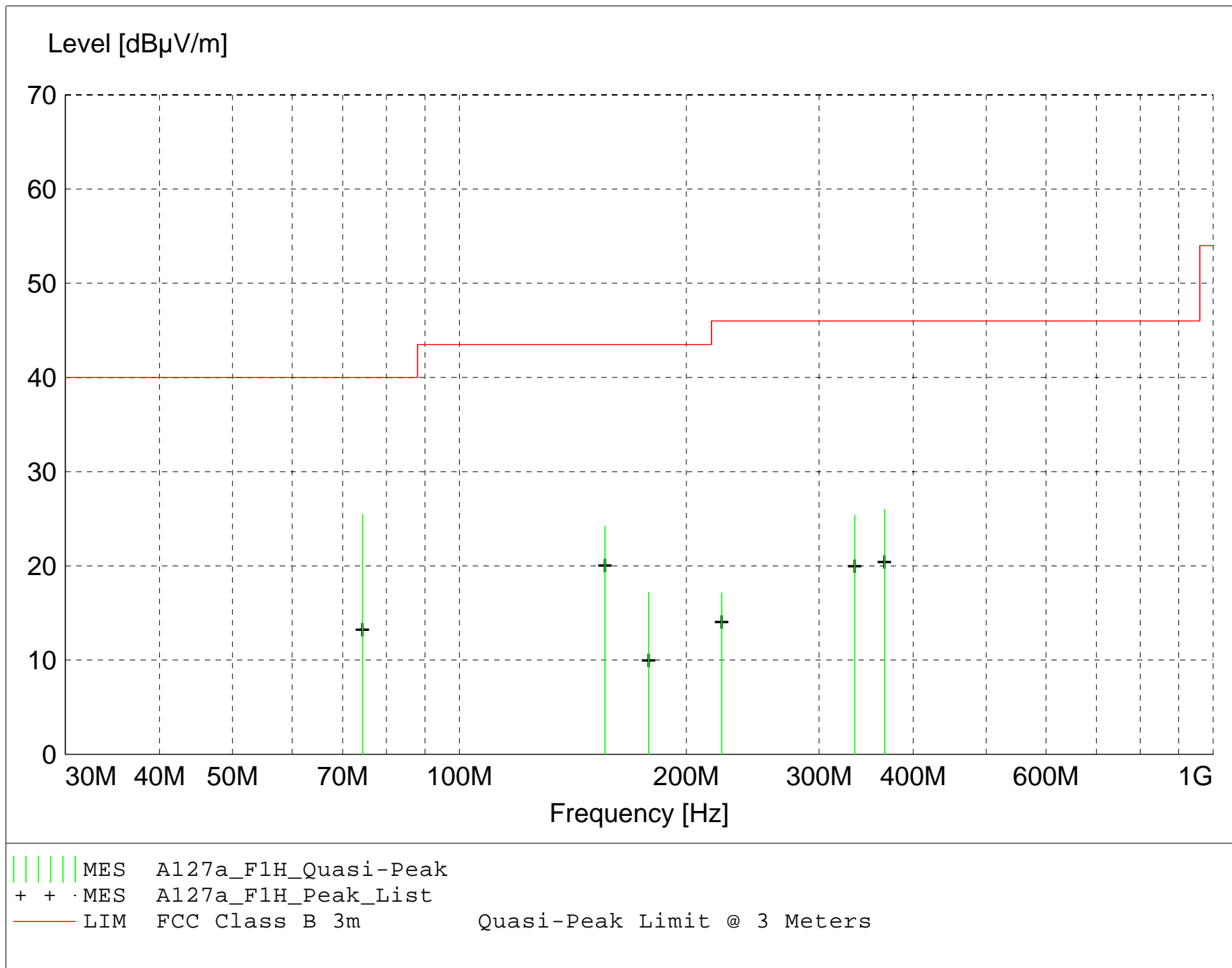
Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization

Equations: 
$$\text{Total Level(dB}\mu\text{V/m)} = \text{Level(dB}\mu\text{V)} + \text{System Loss(dB)} + \text{Antenna Factor(dB}\mu\text{V/m)}$$
$$\text{Margin(dB)} = \text{Limit(dB}\mu\text{V/m)} - \text{Total Level(dB}\mu\text{V/m)}$$

Graph Markers: + Frequency marker (Level of marker not related to final level)  
| Final maximized level using Quasi-Peak detector  
X Final maximized level using Average detector  
# Final maximized level using Peak detector





**MEASUREMENT RESULT: "A127a\_F1H\_Final"**

12/18/2015 10:40AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
74.380000	42.89	6.22	-23.7	25.4	40.0	14.6	2.50	135	QUASI-PEAK	None
155.990000	34.75	12.40	-23.0	24.2	43.5	19.3	2.10	180	QUASI-PEAK	None
366.560000	32.53	15.03	-21.6	26.0	46.0	20.0	2.50	190	QUASI-PEAK	None
334.610000	32.28	14.69	-21.6	25.4	46.0	20.6	3.00	0	QUASI-PEAK	None
178.280000	24.00	15.80	-22.6	17.2	43.5	26.3	1.70	135	QUASI-PEAK	None
222.850000	28.40	11.24	-22.5	17.1	46.0	28.9	1.00	90	QUASI-PEAK	None

**Electric Field Strength**

EUT: Indigo  
Manufacturer: Whirlpool Corp.  
Operating Condition: 65deg. F; 28% R.H.  
Test Site: DLS Site 2  
Operator: Craig B #7619  
Test Specification: Transmitter Spurious Emissions with F antenna  
Comment: L,M,H channels; 802.11-b, 1 Mbps, pwr 18, continuous Tx  
Date: 12-18-2015

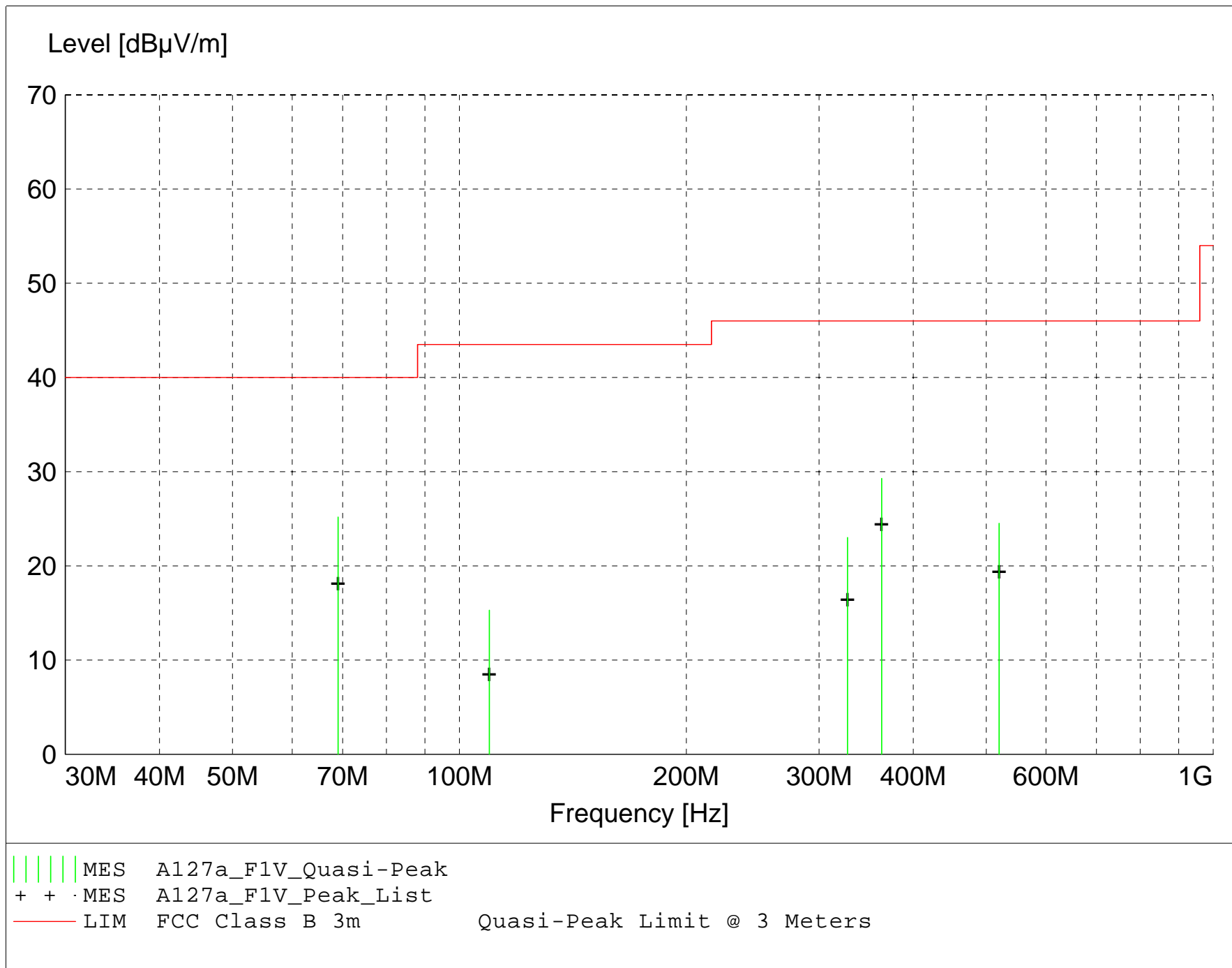
**TEXT: "Vert 3 meters"**

Short Description: Test Set-up

Test Set-up: EUT Measured at 3 Meters with VERTICAL Antenna Polarization

Equations: 
$$\text{Total Level(dB}\mu\text{V/m)} = \text{Level(dB}\mu\text{V)} + \text{System Loss(dB)} + \text{Antenna Factor(dB}\mu\text{V/m)}$$
$$\text{Margin(dB)} = \text{Limit(dB}\mu\text{V/m)} - \text{Total Level(dB}\mu\text{V/m)}$$

Graph Markers: + Frequency marker (Level of marker not related to final level)  
| Final maximized level using Quasi-Peak detector  
X Final maximized level using Average detector  
# Final maximized level using Peak detector



**MEASUREMENT RESULT: "A127a\_F1V\_Final"**

12/18/2015 11:03AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
69.020000	41.51	7.40	-23.7	25.2	40.0	14.8	1.00	315	QUASI-PEAK	None
363.140000	35.88	14.96	-21.6	29.3	46.0	16.7	1.30	225	QUASI-PEAK	None
519.980000	26.54	18.40	-20.4	24.5	46.0	21.5	1.00	315	QUASI-PEAK	None
327.250000	30.15	14.55	-21.7	23.0	46.0	23.0	1.60	0	QUASI-PEAK	None
109.540000	26.81	11.81	-23.3	15.3	43.5	28.2	1.00	0	QUASI-PEAK	noise floor

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 70 deg F; 38% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** Low channel: 2.412 GHz, 802.11-b, DSSS, 1 Mbps; Port #2 with F antenna  
**Date:** 12-15-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
7.236	Max Peak	Vert	54.44	35.99	-33.7	56.7	74	17.3	1.7	120	Harmonic
7.236	Average	Vert	43.71	35.99	-33.7	46.0	54	8.0	1.7	120	Harmonic
7.236	Max Peak	Horz	52.60	35.99	-33.7	54.9	74	19.1	1.1	101	Harmonic
7.236	Average	Horz	44.65	35.99	-33.7	46.9	54	7.1	1.1	101	Harmonic

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 70 deg F; 38% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** Mid channel: 2.437 GHz, 802.11-b, DSSS, 1 Mbps; Port #2 with F antenna  
**Date:** 12-15-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
7.311	Max Peak	Vert	51.13	36.44	-33.4	54.2	74	19.8	1.7	120	Harmonic
7.311	Average	Vert	42.04	36.44	-33.4	45.1	54	8.9	1.7	120	Harmonic
7.311	Max Peak	Horz	52.20	36.44	-33.4	55.2	74	18.8	1.1	106	Harmonic
7.311	Average	Horz	42.25	36.44	-33.4	45.3	54	8.7	1.1	106	Harmonic

## Radiated Emissions in Restricted Bands – 1 GHz to 26 GHz

1 GHz to 18 GHz Tested at a 3 Meter Distance

18 GHz to 26 GHz Tested at a 1 Meter Distance

**EUT:** Indigo  
**Manufacturer:** Whirlpool Corporation  
**Operating Condition:** 70 deg F; 38% R.H.  
**Test Site:** Site G1  
**Operator:** Craig B  
**Test Specification:** FCC Part 15.247 and Part 15.205  
**Comment:** **High channel: 2.462 GHz, 802.11-b, DSSS, 1 Mbps; Port #2 with F antenna**  
**Date:** 12-15-2015  
**Notes:** All other emissions at least 20 dB under the limit.

Frequency (GHz)	Measurement Type	Antenna Polarization	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	EUT Angle (deg)	Comment
7.386	Max Peak	Vert	48.49	36.60	-33.8	51.3	74	22.7	1.8	120	Harmonic
7.386	Average	Vert	37.17	36.60	-33.8	40.0	54	14.0	1.8	120	Harmonic
7.386	Max Peak	Horz	48.75	36.60	-33.8	51.6	74	22.5	1.1	104	Harmonic
7.386	Average	Horz	37.36	36.60	-33.8	40.2	54	13.8	1.1	104	Harmonic





166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

Whirlpool Corporation  
WICHIN01  
21556  
7619

## **Appendix B**

### **B6.0 Operating Band-Edge Measurements – RF Conducted**

#### **Rule Part:**

15.247(d)

#### **Test Procedure:**

ANSI C63.10-2013

11.11 Emissions in non-restricted frequency bands

11.11.2 Reference Level Measurement

11.11.3 Unwanted Emissions Level Measurement

#### **Limit:**

The peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

#### **Results:**

Compliant

#### **Notes:**

The EUT has 2 on-board antennas and two external antenna ports of which only one can operate at a time. Initial output power measurements indicate the highest power levels occurred from on-board antenna #2. Measurements were performed on this antenna to represent worst-case emissions. Testing was performed using the manufacturer's test software with output power setting 14 and with modulation and data rate set to 802.11-n, 72.2 Mbps (widest signal; worst-case). The EUT was tested at the lowest, and highest channels of operation. The spectrum analyzer measurements were corrected to account for the cable loss and external attenuator.



166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

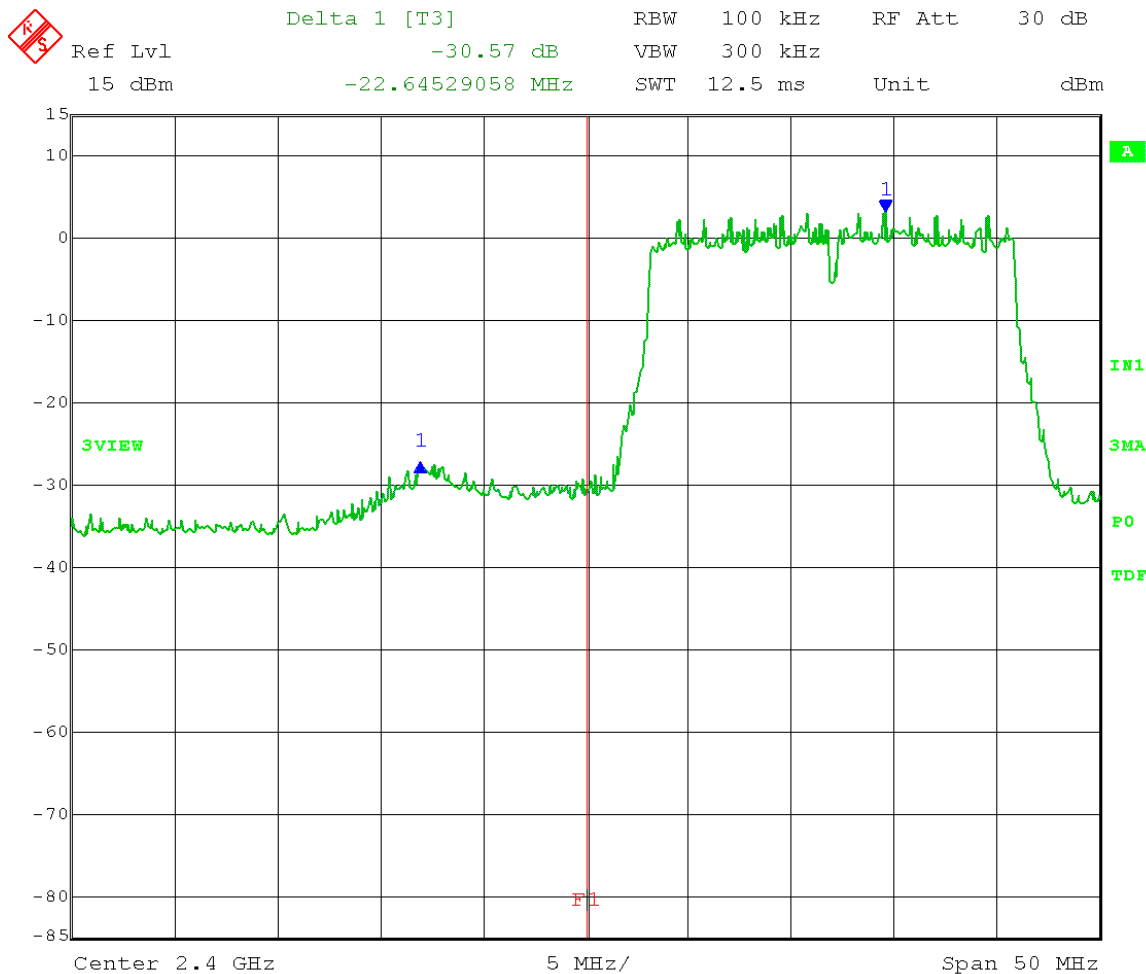
Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted band-edge emission  
Operator: Craig B

Antenna: On-board, #2  
Channel: Low, 2412 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

Limit: Band-Edge > 20 dB Below Peak In-Band Emission

Band-Edge Frequency = 2.4 GHz



Date: 10.DEC.2015 12:10:07



166 South Carter, Genoa City, WI 53128

Company:  
Model Tested:  
Report Number:  
DLS Project:

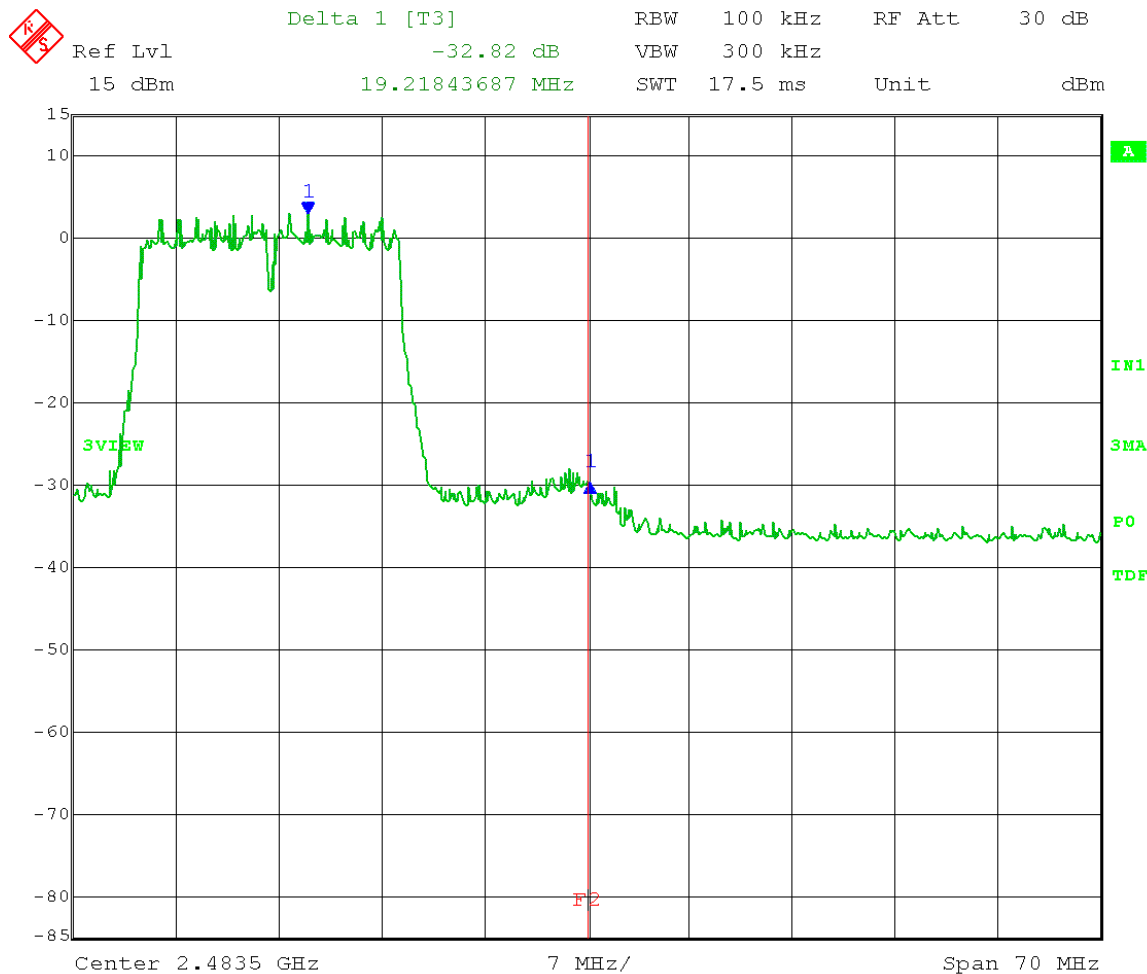
Whirlpool Corporation  
WICHIN01  
21556  
7619

Test Date: 12-10-2015  
Company: Whirlpool Corporation  
EUT: Indigo  
Test: Emissions in non-restricted frequency bands  
RF conducted band-edge emission  
Operator: Craig B

Antenna: On-board, #2  
Channel: High, 2462 MHz  
Modulation: 802.11-n, 72.2 Mbps  
Power setting: 14

Limit: Band-Edge > 20 dB Below Peak In-Band Emission

Band-Edge Frequency = 2.4835 GHz



Date: 10.DEC.2015 12:13:18