



FCC Part 15, Subpart C, Section 15.247
Test Report

On

Blink Doorbell
FCC ID: 2AF77-H1773003

Customer Name: Immedia Semiconductor, LLC

Customer P.O.: ISI06042018_MG3

Date of Report: August 24, 2018

Test Report No.: R-6331N-3

Test Start Date: July 23, 2018

Test Finish Date: July 27, 2018

Test Technician: M. Seamans

Approved By: S. Wentworth

Report Prepared By: P. Harris

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Technical Information

Report Number: R-6173N-3

Customer: Immedia Semiconductor, LLC

Address: 100 Burtt Road
Andover, MA 01810

Manufacturer: Immedia Semiconductor, LLC

Manufacturer Address: 100 Burtt Road
Andover, MA 01810

Test Sample: Blink Doorbell

Model Number: BCM00700U

Serial Number: 700-001-426 (Conducted Testing)
770-001-500 (Conducted Emissions and Radiated Testing)

FCC ID: 2AF77-H1773003

Type: Digital Transmission - Direct Sequence Spread Spectrum Transmitter

Power Requirements: 12 VAC or 3.0 VDC via Internal Lithium Ion AA Batteries

Frequency of Operation: 2412.0 MHz to 2472.0 MHz

Equipment Class: DTS

Equipment Use: Used in a Home Monitoring System

Test Specification:

FCC Rules and Regulations Part 15, Subpart C, Section 15.247

Test Procedure:

ANSI C63.4:2014

ANSI C63.10:2013

FCC 558074 D01 DTS Meas Guidance V04, April 5, 2017

Test Facility:

Retlif Testing Laboratories

101 New Boston Road

Goffstown, NH 03045

FCC Accreditation Designation Number: US5327



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Report No. R-6331N-3

Tests Performed

FCC Part 15, Subpart C	Test Method
15.247(a)(2)	Occupied Bandwidth (6dB Bandwidth)
15.247(b)(3)	Power Output
15.247(d)	Antenna Port, Conducted Emissions
15.247(e)	Antenna Port, Power Density
15.247(d)	Spurious Radiated Emissions, 30 MHz to 25 GHz
15.207(b)	Conducted Emissions, Power Leads, 150 kHz to 30 MHz

EUT Operation:

The Blink Doorbell operates using only 802.11n20 protocol. The EUT was evaluated in all possible data rates and the lowest data rate of 9Mbps (ofdm) was used for testing as this data rate resulted in the highest output power and worst case emissions.

Table 1 – Support Equipment

Description	Manufacturer	Part Number	Model Number	Serial Number
Laptop PC	Toshiba	PSPMJU-01U02J	Satellite P55-AS312	80215205S
Support PCB	Texas Instruments	N/A	CC31XXEMUBOOST	N/A
Blink Sync Module	Immedia Semiconductor	N/A	BSM00201U	270-457-050
Laptop PC	HP	N/A	EliteBook 8540W	CND131D5GX
Wi-Fi Module	TP-Link	N/A	TL-WN722N	2158333014811
Blink Sync Module	Immedia Semiconductor	N/A	BSM00200U	210-037-831
Doorbell Transformer	Health Zenith	N/A	EM57583	N/A
Doorbell Chime	Dongguan SMART Hero Electronic Products CO LTD	N/A	N/A	17SE25



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Certification and Signatures

We certify that this report is a true representation of the results obtained from the tests of the equipment stated. We further certify that the measurements shown in this report were made in accordance with the procedures indicated and vouch for the qualifications of all Retlif Testing Laboratories personnel taking them.



Scott Wentworth
Branch Manager
NVLAP Approved Signatory



Todd Hannemann
EMC Test Engineer
iNARTE Certified Technician ATL-0255-T

Non-Warranty Provision

The testing services have been performed, findings obtained and reports prepared in accordance with generally accepted laboratory principles and practices. This warranty is in lieu of all others, either expressed or implied.

Non-Endorsement

This test report contains only findings and results arrived at after employing the specific test procedures and standards listed herein. It is not intended to constitute a recommendation, endorsement or certification of the product or material tested. This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.



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Revision History

Revisions to this document are listed below; the latest revised document supersedes all previous issues of this document:

Revision	Date	Pages Affected
-	August 24, 2018	Original Release



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Report No. R-6331N-3

Requirements and Test Results

Requirement:

FCC Section 15.247(a)(2)

Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz bands. The minimum 6 dB bandwidths shall be at least 500 kHz.

- **Results:**

The minimum 6 dB bandwidth measured 16498 kHz which complies with the requirement that the Bandwidth be no less than 500 kHz.

Requirement:

FCC Sections 15.247(b)(3)

Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

For systems using digital modulation in the 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antenna and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antenna and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

- **Results:**

The maximum measured peak conducted output power was 94.841 mW. The maximum antenna gain of the PCB antenna is 2.0 dBi. The device was found to meet the power output requirements of 15.247 (b)(3) including de facto EIRP.



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Requirements and Test Results (con't)

Requirement:

FCC Section 15.247(d):

Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) must also comply with the radiated emissions limits specified in Section 15.209(a) (see Section 15.205(c)).

- **Results:**

In any 100 kHz bandwidth outside the frequency band in which the Spread spectrum intentional radiator was operating, the radio frequency power that was produced by the intentional radiator was at least 20 dB below that in the 100 kHz bandwidth within the band that contained the highest level of the desired power. All emissions, which fell within the restricted bands specified in 15.205(a), were measured and found to be in compliance with the limits specified in 15.209(a).



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Requirements and Test Results (con't)

Requirement:

FCC Section 15.247(e):

Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

- **Results:**

The power spectral density conducted from the intentional radiator to the antenna was not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density was determined in accordance with Section 15.247(b)(3), herein.

Requirement:

FCC Section 15.209(a) - Radiated Emission Limits, General Requirements

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in Table 2.

Table 2 - Radiated Emission Limits

Frequency of Emission (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 to 88	100	3
88 to 216	150	3
216 to 960	200	3
Above 960	500	3

- **Results:**

The field strength of spurious radiated emissions did not exceed the limits specified in Table 2.



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Requirements and Test Results (con't)

Requirement:

FCC Section 15.207(a) - Conducted Limits

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits shown in Table 3, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of the paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Table 3 - Conducted Emission Limits

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

*Decreases due to logarithm of the frequency

- **Results:**

The conducted emissions observed did not exceed the limits specified in Table 3.



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Requirements and Test Results (con't)

Field Strength Calculation/Conversion:

The maximized field strength of the emission was obtained as follows:

$$C_R = M_R + C_F$$

Where:

C_R = Corrected Reading in dB μ V/m

M_R = Uncorrected Meter Reading in dB μ V

C_F = Correction Factor in dB (Antenna Factor, Pre-amp + Cable Loss)

Example:

$$M_R = 15.35 \text{ dB}\mu\text{V}$$

$$C_F = 16.85 \text{ dB}$$

$$C_R = 15.35 \text{ dB}\mu\text{V} + 16.85 = 32.2 \text{ dB}\mu\text{V/m}$$

dB μ V/M is converted to uV/M for comparison to the specified limit using the formula:

$$\text{invLog dB}\mu\text{V/M}/20$$

$$32.2 \text{ dB}\mu\text{V/m} = 40.74 \text{ uV/m}$$

RF Power Conversion:

Power readings in dBm may be converted to mW using the formula:

$$\text{InvLog dBm}/10$$

$$\text{Example: } 20\text{dBm} = 100\text{mW}$$



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Requirements and Test Results (con't)

**FCC Section 15.247 (i)
RF Exposure Limits**

Spread Spectrum Transmitters operating under 15.247 must be operated in a manner that ensures the public is not exposed to RF energy levels in excess of the commission's guidelines. Based on the transmitter power and maximum antenna gain (see calculation below) the minimum separation distance was calculated to determine the distance for acceptable MPE power density levels to meet both the Occupational/Controlled Exposure and the General Population/Uncontrolled Exposure requirements of FCC Part 1.1310. The calculation below uses the more stringent General Population MPE Limits.

$$S = \frac{PG}{4\pi Dsq}$$

D = Minimum Separation Distance in cm

S = Max allowed Power Density in mW/cmsq

Per 1.1310 For the Frequency of 2400 MHz S = 1 mW/cmsq

Power = Max Power Input to Antenna = 94.84mW

Gain = Max Power Gain of Antenna = 2 dBi = 1.58 numeric

$$1 \text{ mW/cmsq} = \frac{94.84 \times 1.58}{4 \times (3.14) \times D^2} = \frac{149.85}{12.56 \times D^2}$$

$$D^2 = \frac{149.85}{12.56 \times 1}$$

$$D = \sqrt{11.93} = 3.45 \text{ cm}$$

The test sample has an internal antenna and the minimum separation distance will always be maintained.



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Equipment List

FCC Section 15.247(a)(2) Occupied Bandwidth (6 dB Bandwidth)

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019

FCC Section 15.247(b)(3) Power Output

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
R493	AGILENT / HP	ANALYZER, PEAK POWER	50 MHz - 40 GHz	8990B	2/5/2018	2/28/2019

FCC Section 15.247(d) Antenna Port, Conducted Emissions

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019

FCC Section 15.247(e) Antenna Port, Power Density

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019

FCC Section 15.247(d) Spurious Radiated Emissions, 30 MHz to 25 GHz

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
1232	AGILENT / HP	PRE-AMPLIFIER	1 - 26.5 GHz	8449B	5/25/2018	5/31/2019
3258	ETS / EMCO	ANTENNA, DOUBLE RIDGED GUIDE	1 - 18 GHz	3115	5/10/2018	11/30/2019
3427B	ETS / EMCO	ANTENNA, BICONICAL	20 - 200 MHz	3104	9/21/2017	3/31/2019
3430	MCS	ANTENNA, HORN	18 - 26.5 GHz	K-5039	No Calibration Required	
4029B	RETLIF	OPEN AREA TEST SITE, ATTENUATION	3 / 10 Meters	RNH	8/16/2017	8/31/2019
443	ELECTRO-METRICS	ANTENNA, LOG PERIODIC	200 MHz - 1000 MHz	LPA-25	5/21/2018	11/30/2019
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019

FCC Section 15.207(b) Conducted Emissions, Power Leads, 150 kHz to 30 MHz

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5133	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz	757C-10	10/25/2017	10/31/2018
5209	SOLAR ELECTRONICS	LISN	50 uH, 150 kHz - 30 MHz	21106-50-BP-25-BNC	4/26/2018	4/30/2019
5210	SOLAR ELECTRONICS	LISN	50 uH, 150 kHz - 30 MHz	21106-50-BP-25-BNC	4/26/2018	4/30/2019
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019



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Test Photographs
Occupied Bandwidth (6dB Bandwidth)



Test Setup



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Report No. R-6331N-3

**FCC Part 15, Subpart C, Section 15.247(a)(2)
Occupied Bandwidth (6 dB Bandwidth)
Test Data**

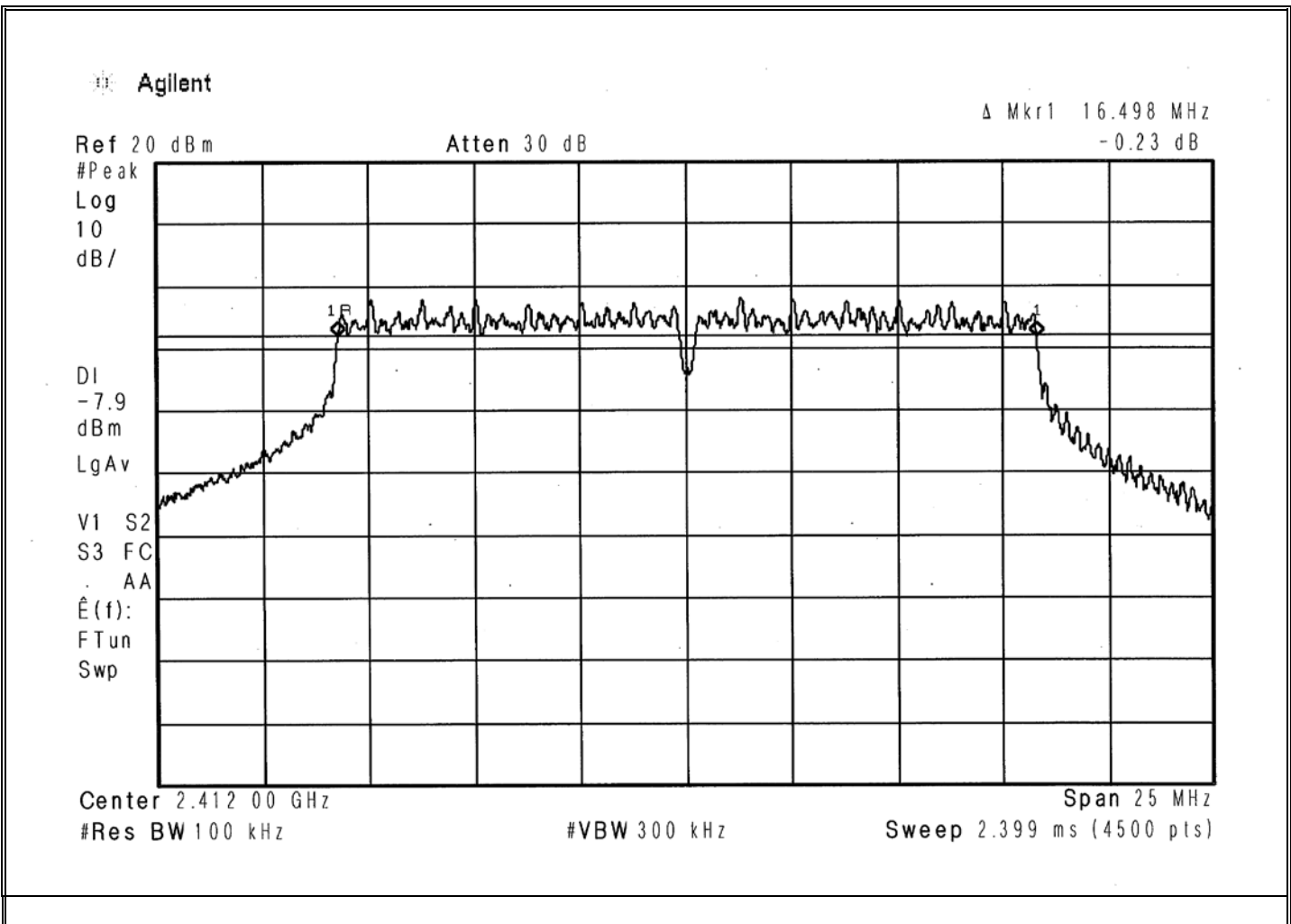


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Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

Method:	Occupied Bandwidth
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(2)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2412 MHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	6dB Bandwidth: 16.498 MHz

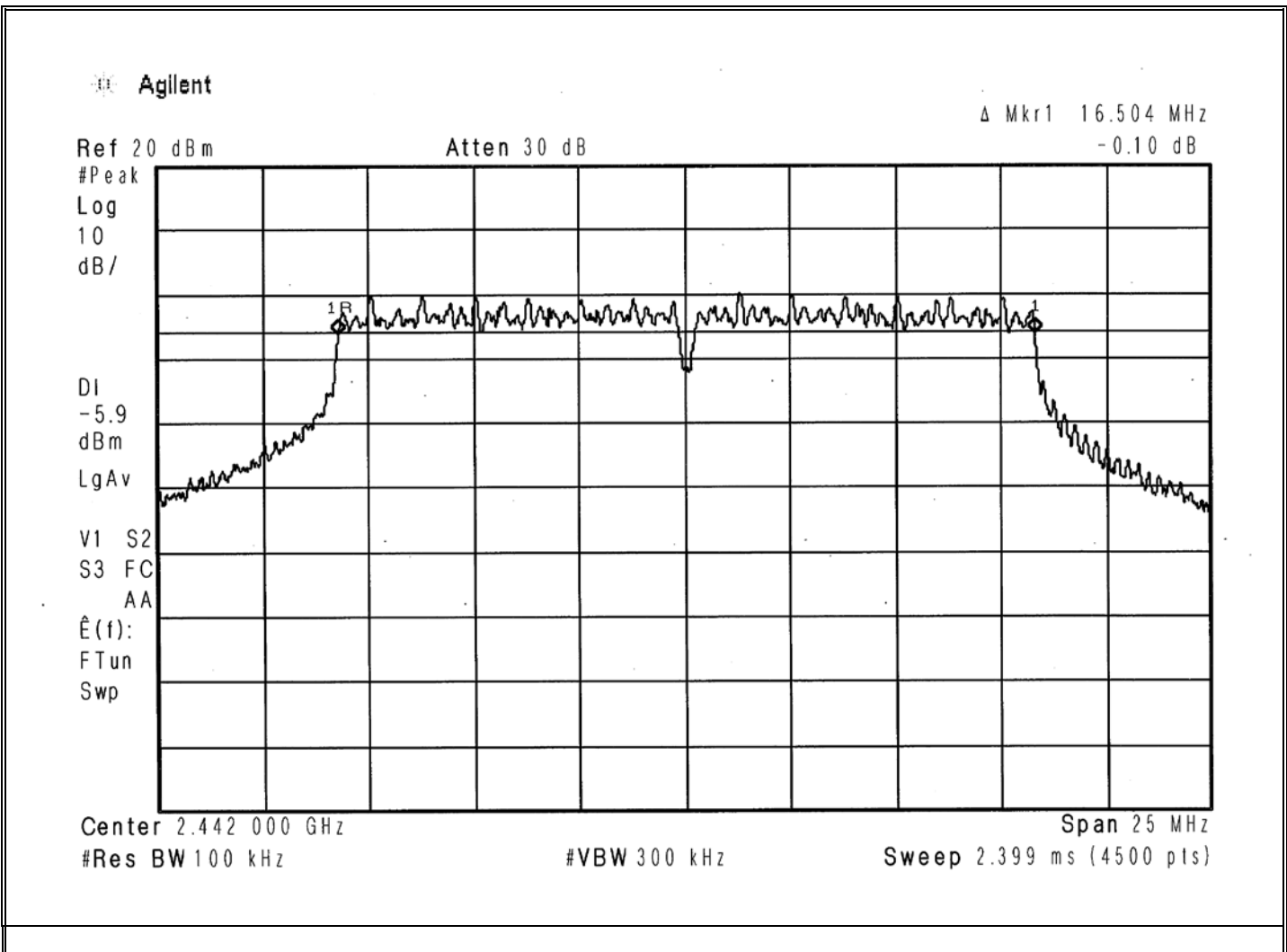


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Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

Method:	Occupied Bandwidth
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(2)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2442 MHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	6dB Bandwidth: 16.504 MHz

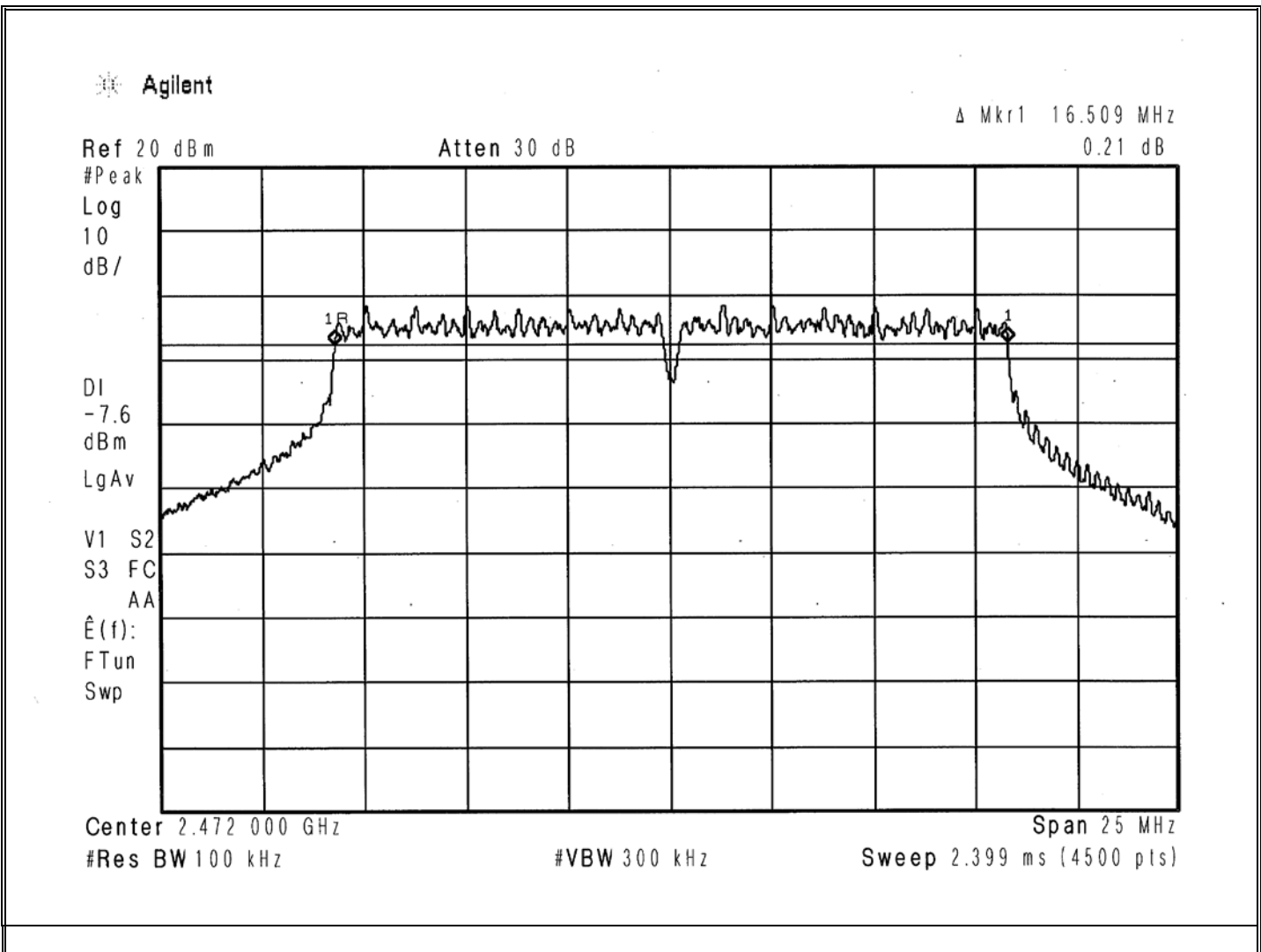


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Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

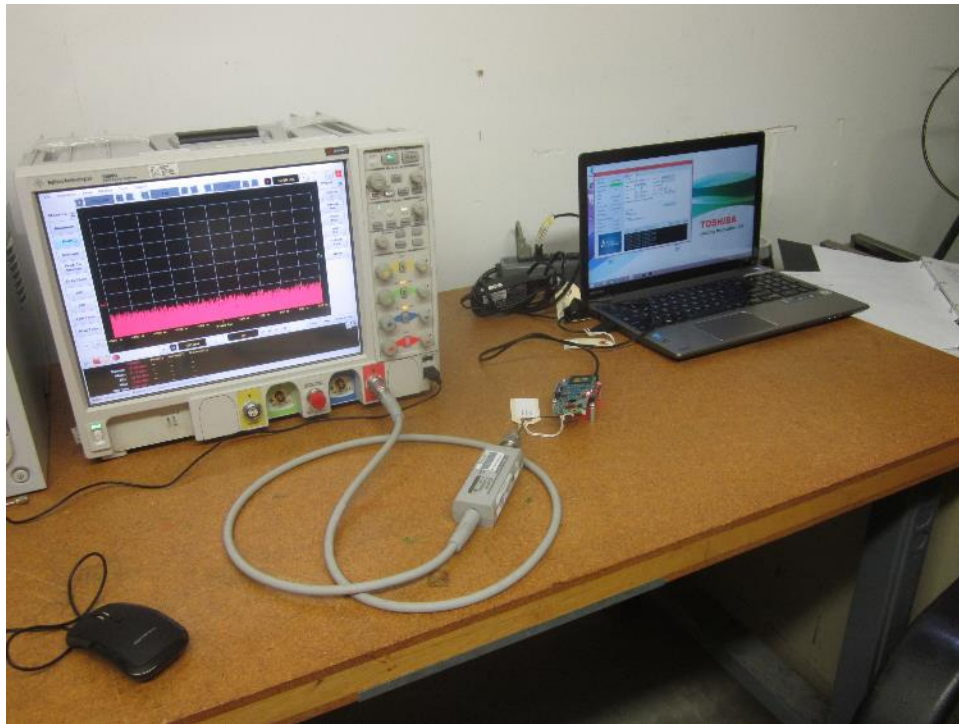
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Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(2)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2472 MHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	6dB Bandwidth: 16.509 MHz



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**Test Photographs
Conducted Emissions, Power Output**



Test Setup



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**FCC Part 15, Subpart C, Section 15.247(b)(3)
Conducted Emissions, Power Output
Test Data**



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Report No. R-6331N-3

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET

Test Method	Peak Power Output
Customer	Immedia Semiconductor LLC
Job Number	R-6331N-3
Test Sample	Blink Doorbell
Model Number	BCM00700U
Serial Number	700-001-426
Test Specification	FCC Part 15, Subpart C Paragraph 15.247 (b)(3)
Operating Mode	Transmitting modulated signal
Technician	M. Seamans
Date	July 23 rd , 2018

Notes: Measurement method: 9.1.3, PKPM1 Peak-reading power meter

Transmit Frequency		Power Meter Reading	Converted Reading	Limit
MHz		dBm	mW	mW
2412.00		19.05	80.352	1000.00
2442.00		19.26	84.333	1000.00
2472.00		19.77	94.841	1000.00



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Test Photographs
Antenna Port, Conducted Emissions



Test Setup



Retlif Testing Laboratories

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**FCC Part 15, Subpart C, Section 15.247(d)
Antenna Port, Conducted Emissions
Band Edge Test Data**

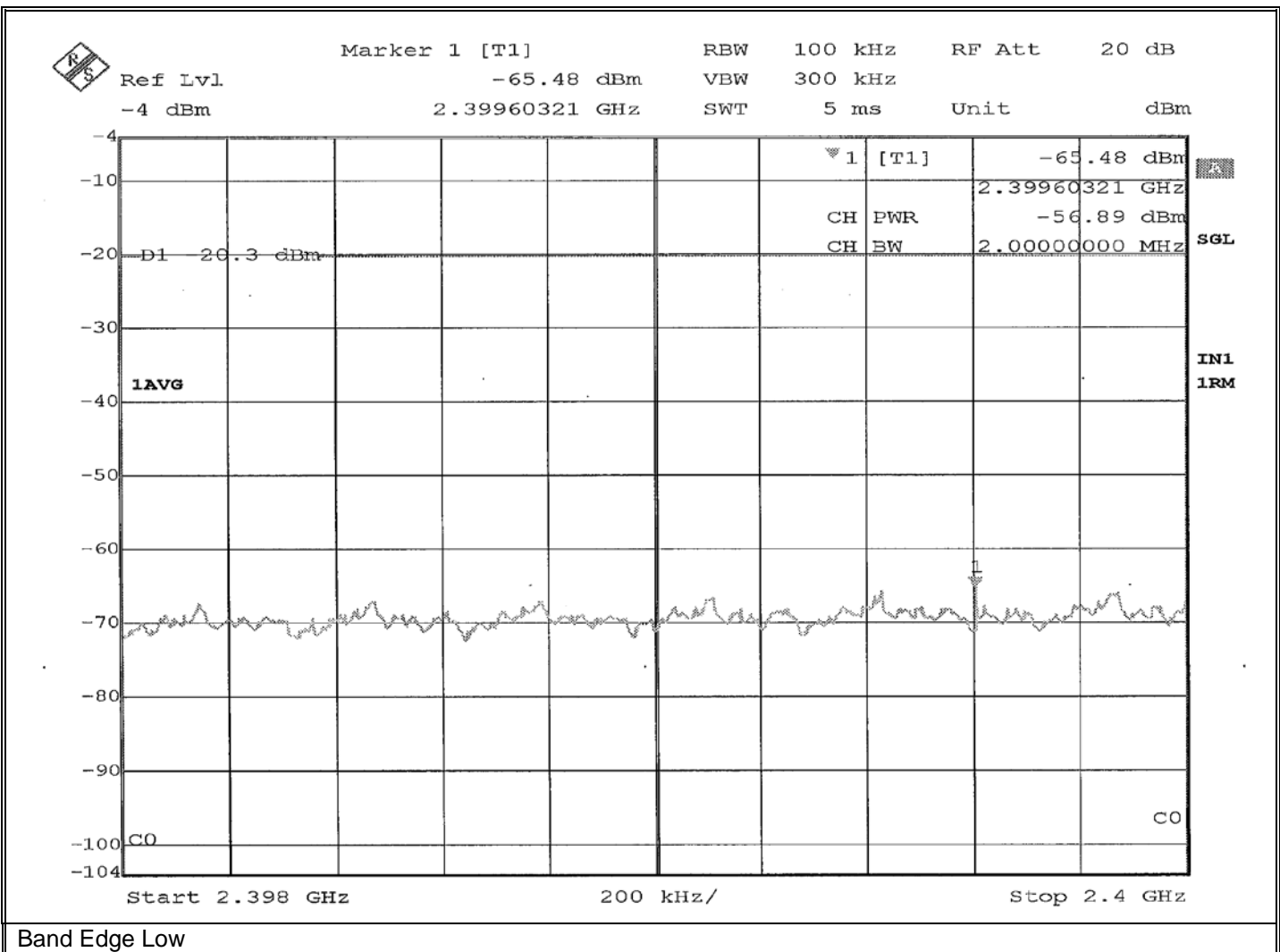


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EMISSIONS TEST DATA SHEET

Method:	Band Edge
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2.412 GHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	Limit: -20.3 dBm

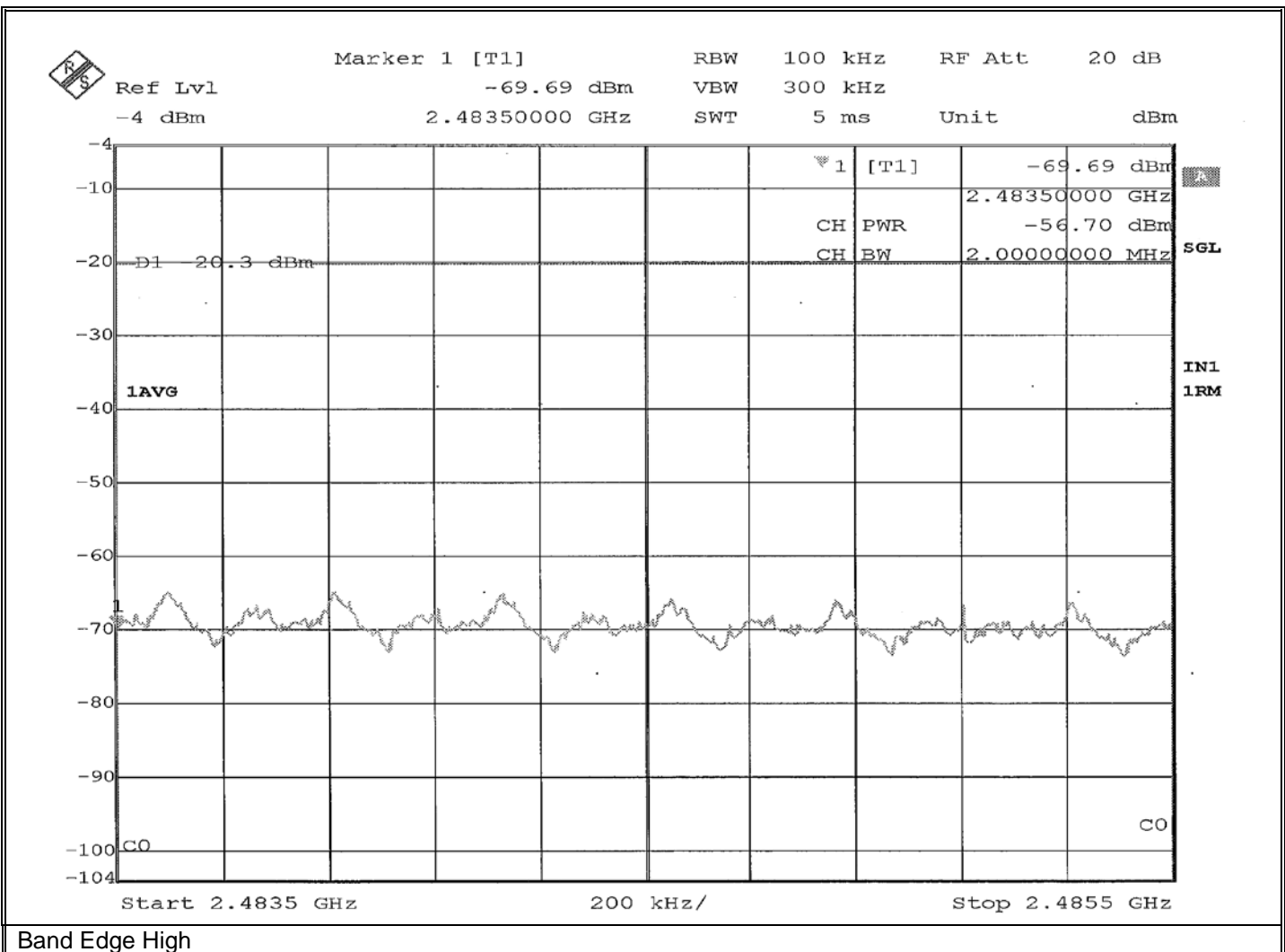


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EMISSIONS TEST DATA SHEET

Method:	Band Edge
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2.472 GHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	Limit: -20.3 dBm



Retlif Testing Laboratories

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**Unwanted Emissions into Non-Restricted Frequency Bands
25 MHz to 25 GHz
Test Data**

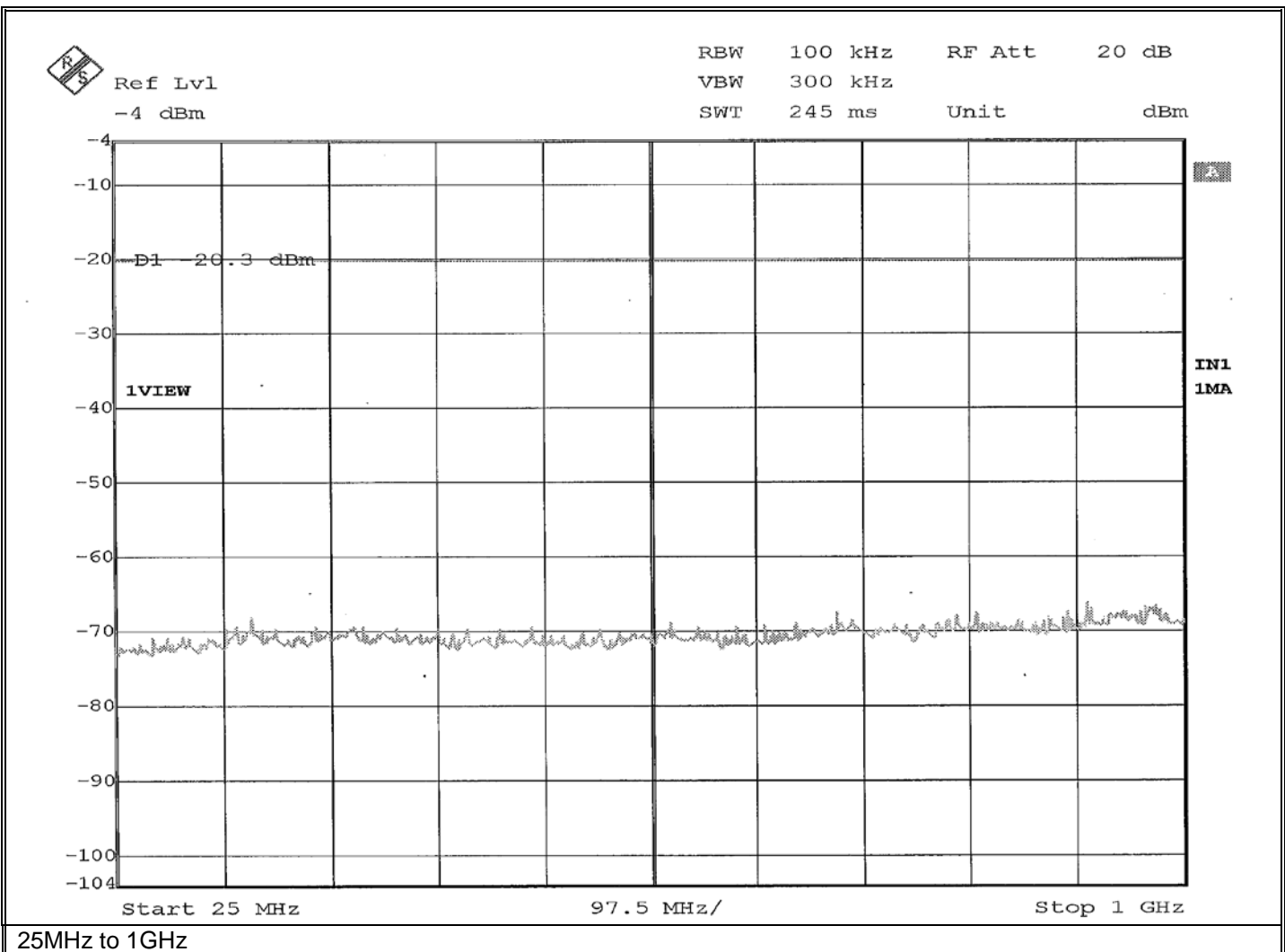


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Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

Method:	Conducted Out of Band
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2412 MHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	Limit: -20.3 dBm

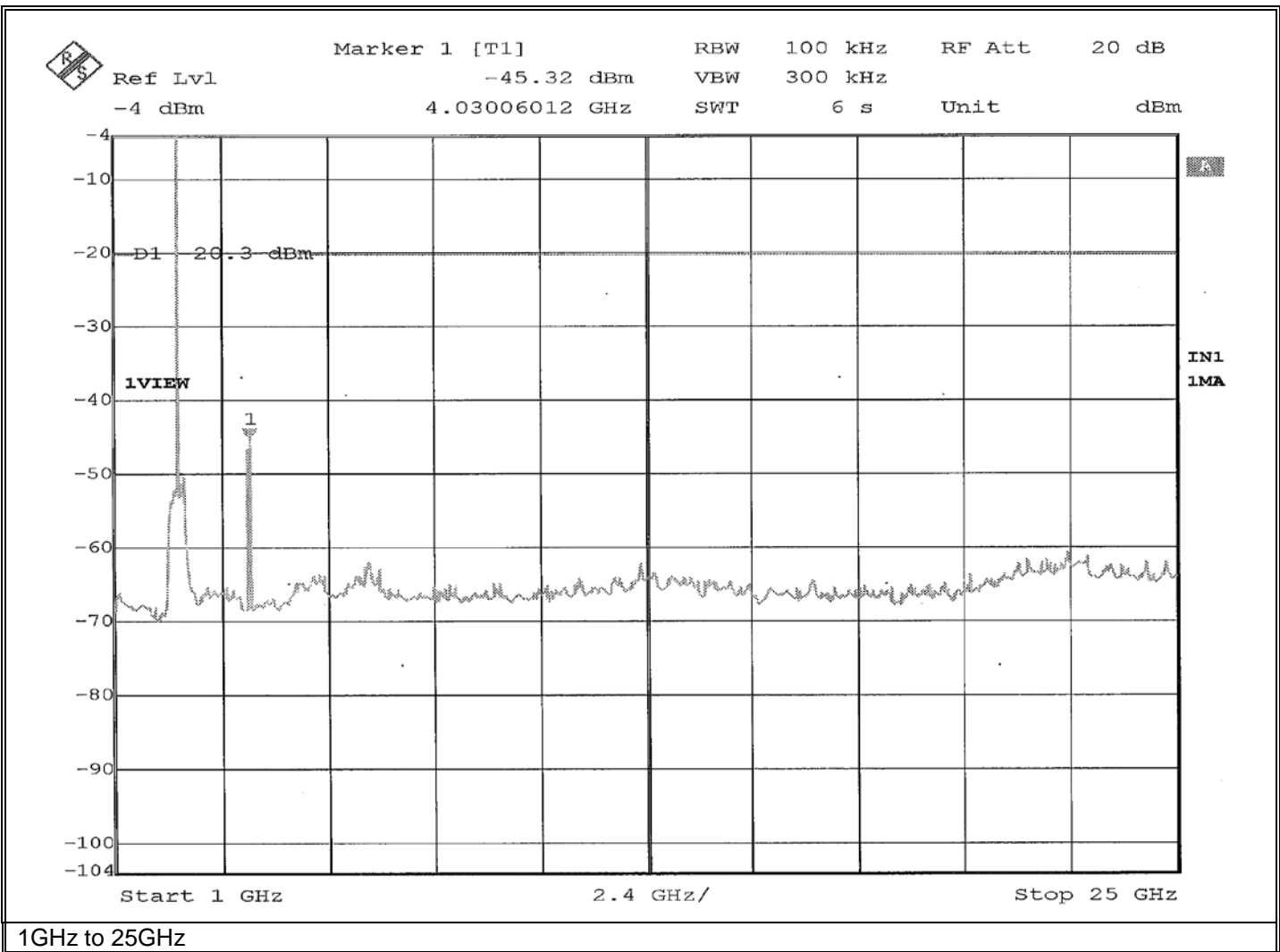


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Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

Method:	Conducted Out of Band
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)
Job Number:	R-6331N-3
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Test Sample:	Blink Doorbell
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Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2412 MHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	Limit: -20.3 dBm

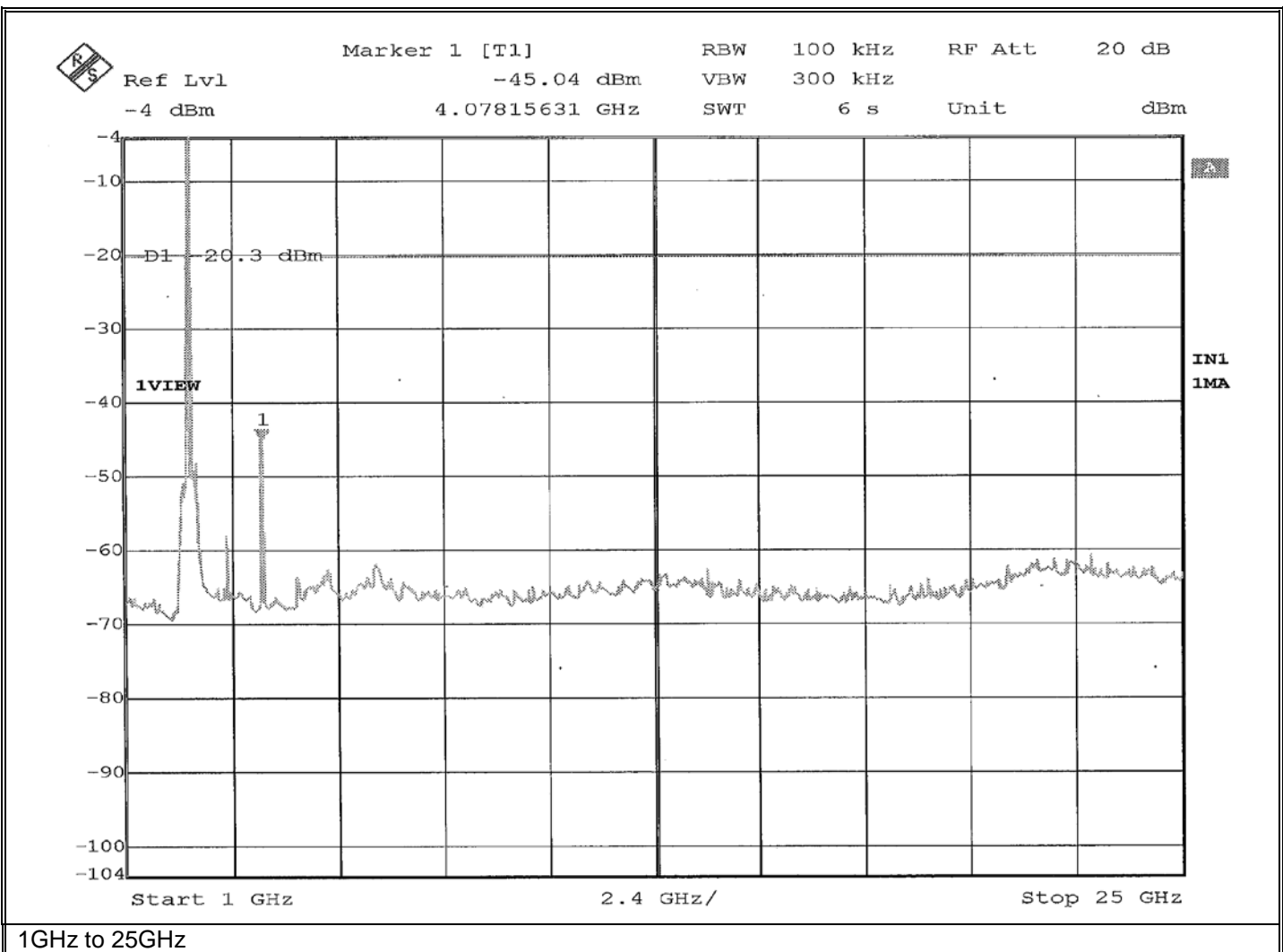


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EMISSIONS TEST DATA SHEET

Method:	Conducted Out of Band
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2442 MHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	Limit: -20.3 dBm

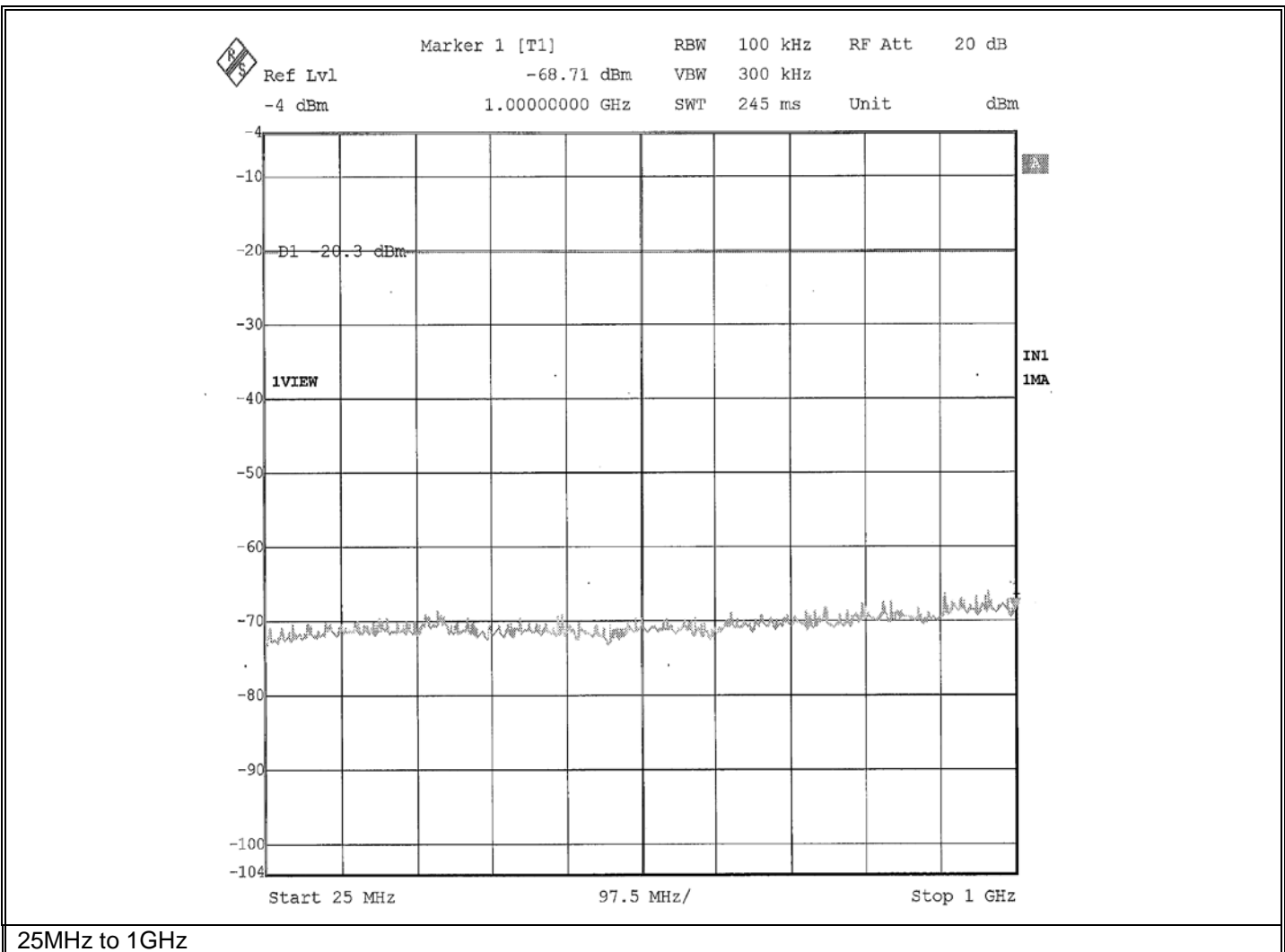


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EMISSIONS TEST DATA SHEET

Method:	Conducted Out of Band
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)
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Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	Limit: -20.3 dBm

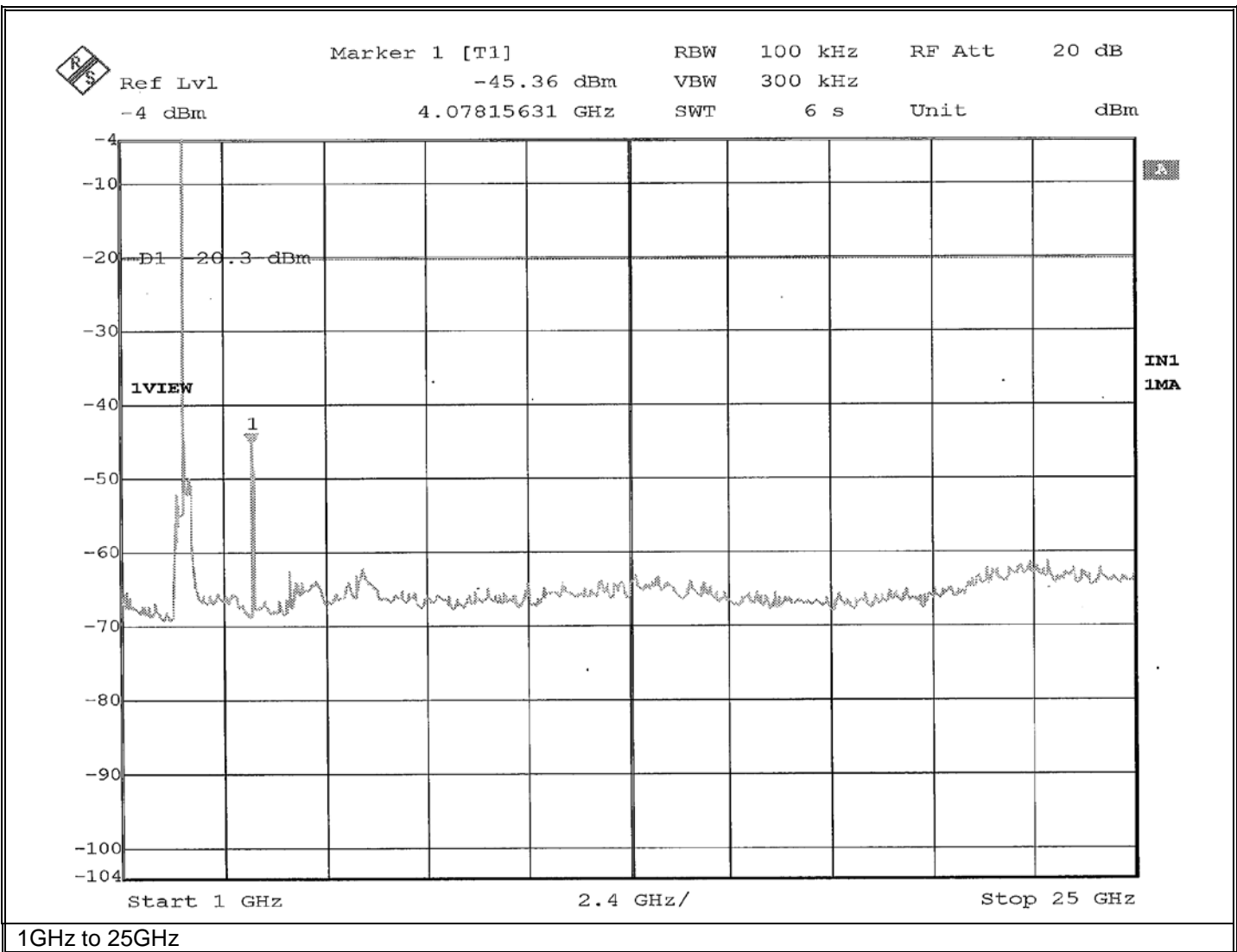


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Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

Method:	Conducted Out of Band
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Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 50.4 %
Notes:	Limit: -20.3 dBm



Retlif Testing Laboratories

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Test Photographs
Antenna Port, Power Density



Test Setup



Retlif Testing Laboratories

Report No. R-6331N-3

**FCC Part 15, Subpart C, Section 15.247(e)
Antenna Port, Power Density
Test Data**

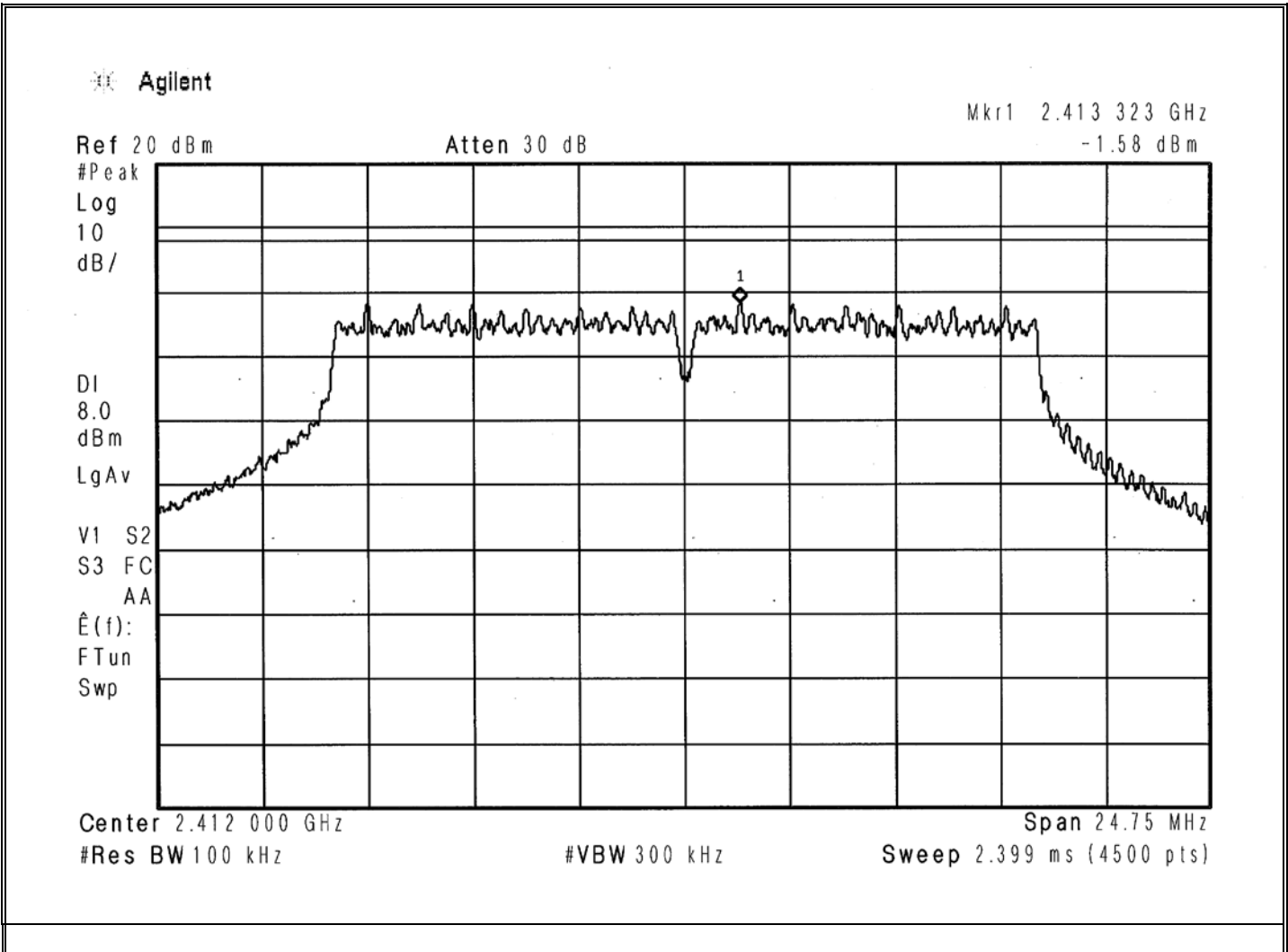


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Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

Method:	Power Spectral Density
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (e)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2412 MHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 54.8 %
Notes:	KDB Method: 10.2 Power Spectral Density: -1.58 dBm

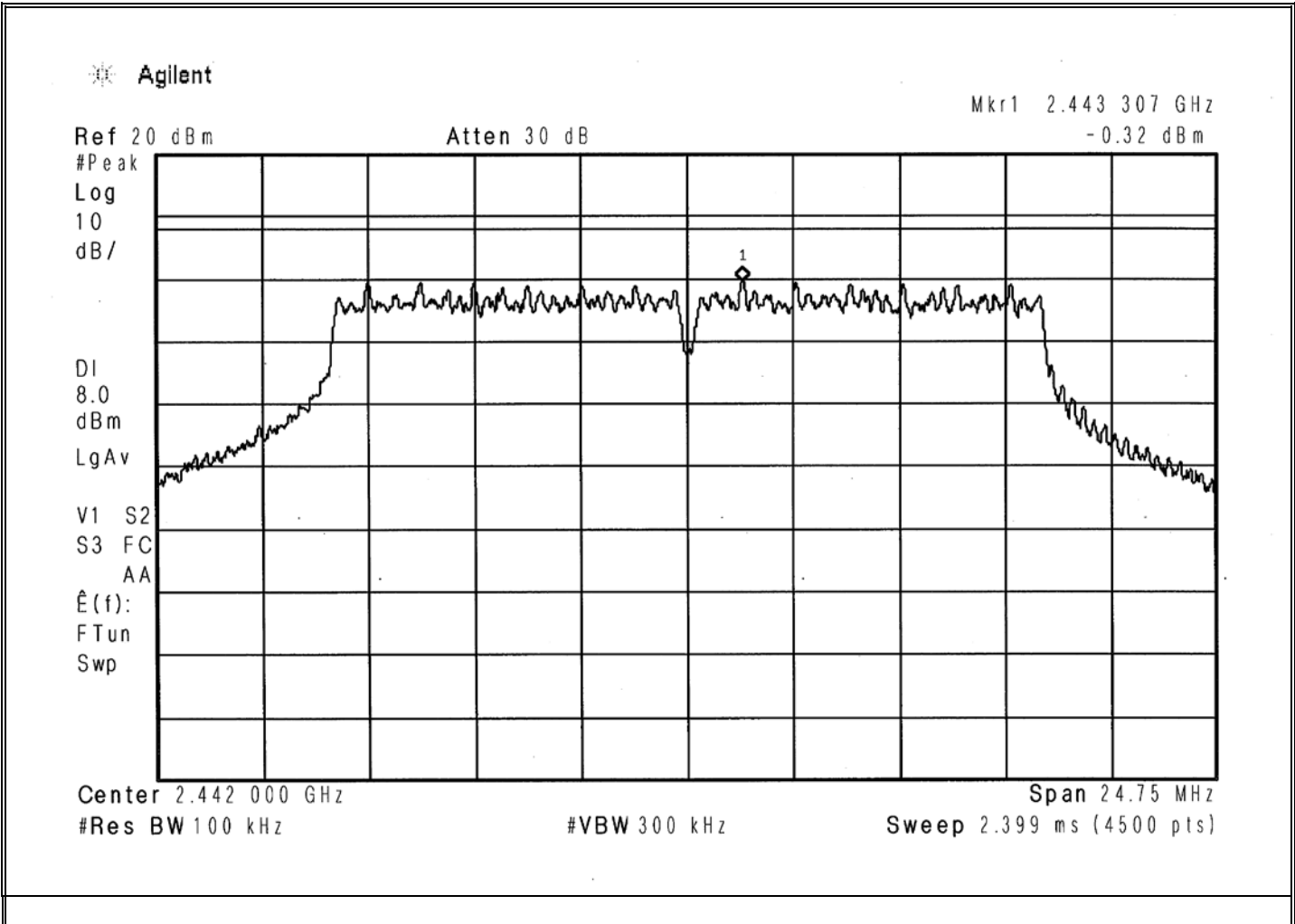


Retlif Testing Laboratories

Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

Method:	Power Spectral Density
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (e)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2442 MHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 54.8 %
Notes:	KDB Method: 10.2 Power Spectral Density: -0.32 dBm

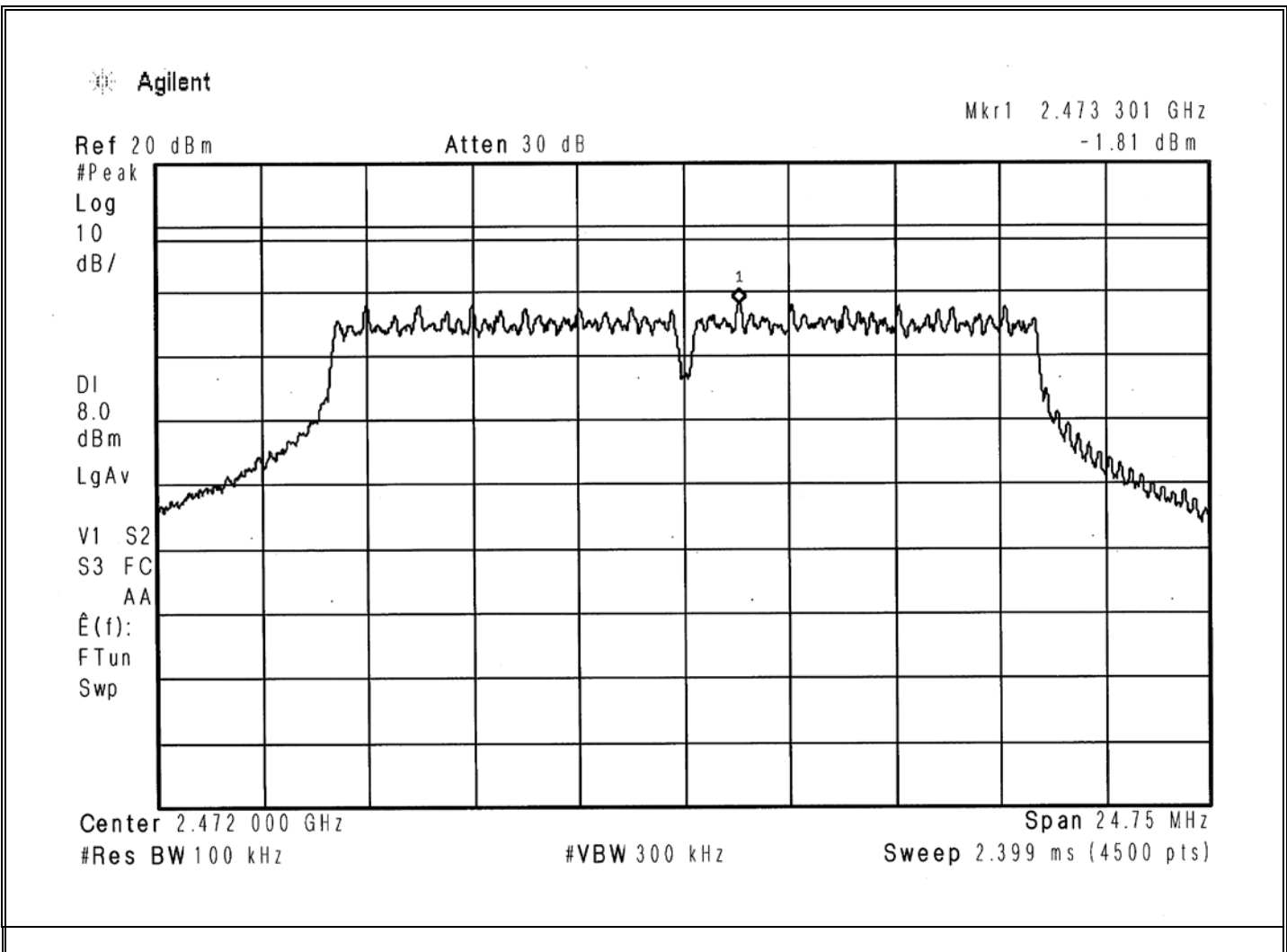


Retlif Testing Laboratories

Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

Method:	Power Spectral Density
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (e)
Job Number:	R-6331N-3
Customer:	Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	700-001-426
Operating Mode:	Transmitting modulated signal at 2472 MHz
Technician:	M.Seamans
Date(s):	July 23 rd , 2018
Temp/ Relative Humidity:	23.2 °C / 54.8 %
Notes:	KDB Method: 10.2 Power Spectral Density: -1.81dBm



Retlif Testing Laboratories

Report No. R-6331N-3

Test Photographs
Spurious Radiated Emissions, 30 MHz to 25 GHz



EUT Configuration, 80 cm



Retlif Testing Laboratories

Report No. R-6331N-3

Test Photographs
Spurious Radiated Emissions, 30 MHz to 25 GHz



Horizontal Polarization, 30 to 200 MHz, Biconical Antenna, 80 cm



Vertical Polarization, 30 to 200 MHz, Biconical Antenna, 80 cm



Retlif Testing Laboratories

Report No. R-6331N-3

Test Photographs
Spurious Radiated Emissions, 30 MHz to 25 GHz



Horizontal Polarization, 200 MHz to 1 GHz, Log Periodic, 80 cm



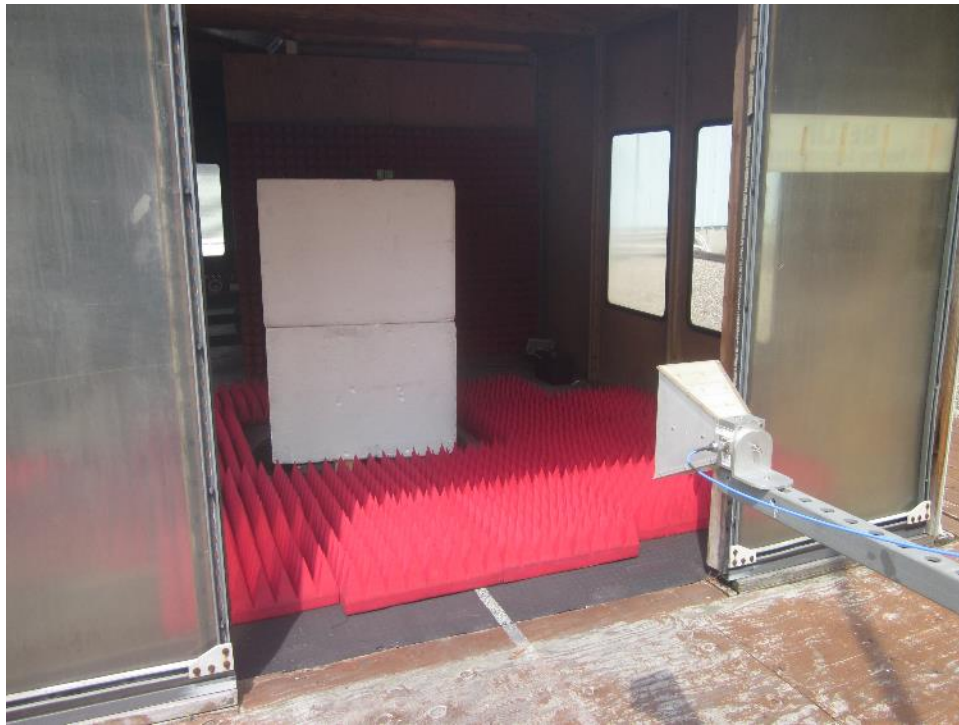
Vertical Polarization, 200 MHz to 1 GHz, Log Periodic, 80 cm



Retlif Testing Laboratories

Report No. R-6331N-3

Test Photographs
Spurious Radiated Emissions, 30 MHz to 25 GHz



Horizontal Polarization, 1 to 18 GHz, Double Ridge Guide, 150 cm



Vertical Polarization, 1 to 18 GHz, Double Ridge Guide, 150 cm



Retlif Testing Laboratories

Report No. R-6331N-3

Test Photographs
Spurious Radiated Emissions, 30 MHz to 25 GHz



Horizontal Polarization, 18 to 25 GHz, High Gain Horn, 150 cm



Vertical Polarization, 18 to 25 GHz, High Gain Horn, 150 cm



Retlif Testing Laboratories

Report No. R-6331N-3

**FCC Part 15, Subpart B, Section 15.209(a)
Spurious Radiated Emissions, 30 MHz to 25 GHz
Test Data**



Retlif Testing Laboratories

Report No. R-6331N-3

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET

Test Method	Unwanted Emissions into Restricted Frequency Bands	
Customer	Immedia Semiconductor LLC	
Job Number	R-6331N-1	
Test Sample	Blink Doorbell	
Model Number	BCM00700U	
Serial Number	770-001-500	
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)
Operating Mode	Transmitting modulated signal	
Technician	M. Seamans	
Date	July 27 th , 2018	

Notes: Antenna Test Distance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz

TEST PARAMETERS

Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit at 3M
MHz	MHz	dBuV	dB	dBuV/m		uV/m	uV/m
37.50	-	-	-	-		-	100.00
	38.00	12.38	13.28	25.66	*	19.19	
38.25	-	-	-	-		-	100.00
73.00	-	-	-	-		-	100.00
	74.00	19.76	9.02	28.78	*	27.48	
74.60	-	-	-	-		-	100.00
74.80	-	-	-	-		-	100.00
	75.00	15.60	9.02	24.62	*	17.02	
75.20	-	-	-	-		-	100.00
108.00	-	-	-	-		-	150.00
	115.00	2.57	15.46	18.03	*	7.97	
	-	-	-	-		-	
121.94	-	-	-	-		-	150.00
123.00	-	-	-	-		-	150.00
	130.00	3.35	15.11	18.46	*	8.38	
	-	-	-	-		-	
138.00	-	-	-	-		-	150.00

No EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).



Retlif Testing Laboratories

Report No. R-6331N-3

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET

Test Method	Unwanted Emissions into Restricted Frequency Bands	
Customer	Immedia Semiconductor LLC	
Job Number	R-6331N-1	
Test Sample	Blink Doorbell	
Model Number	BCM00700U	
Serial Number	770-001-500	
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)
Operating Mode	Transmitting modulated signal	
Technician	M. Seamans	
Date	July 27 th , 2018	

Notes: Antenna Test Distance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz

TEST PARAMETERS

Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit at 3M
MHz	MHz	dBuV	dB	dBuV/m		uV/m	uV/m
149.90	-	-	-	-		-	150.00
	150.00	2.39	16.07	18.46	*	8.38	
150.05	-	-	-	-		-	150.00
156.52	-	-	-	-		-	150.00
	156.52	1.22	17.37	18.59	*	8.50	
156.52	-	-	-	-		-	150.00
156.70	-	-	-	-		-	150.00
	156.80	1.17	17.43	18.60	*	8.51	
156.90	-	-	-	-		-	150.00
162.01	-	-	-	-		-	150.00
	165.00	0.47	18.63	19.10	*	9.02	
167.17	-	-	-	-		-	150.00
167.72	-	-	-	-		-	150.00
	170.00	0.72	19.20	19.92	*	9.21	
173.20	-	-	-	-		-	150.00

No EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).



Retlif Testing Laboratories

Report No. R-6331N-3

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET

Test Method	Unwanted Emissions into Restricted Frequency Bands	
Customer	Immedia Semiconductor LLC	
Job Number	R-6331N-1	
Test Sample	Blink Doorbell	
Model Number	BCM00700U	
Serial Number	770-001-500	
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)
Operating Mode	Transmitting modulated signal	
Technician	M. Seamans	
Date	July 27 th , 2018	

Notes: Antenna Test Distance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz

TEST PARAMETERS

Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit at 3M
MHz	MHz	dBuV	dB	dBuV/m		uV/m	uV/m
240.00	-	-	-	-		-	200.00
	260.00	0.46	16.59	17.05	*	7.12	
285.00	-	-	-	-		-	200.00
322.80	-	-	-	-		-	200.00
	330.00	0.27	18.99	19.26	*	9.18	
335.40	-	-	-	-		-	200.00
399.90	-	-	-	-		-	200.00
	405.00	0.40	20.85	21.25	*	11.55	
410.00	-	-	-	-		-	200.00
608.00	-	-	-	-		-	200.00
	611.00	0.34	25.88	26.22	*	20.46	
614.00	-	-	-	-		-	200.00
960.00	-	-	-	-		-	500.00
	975.00	-0.92	33.10	34.02	*	34.22	
1240.00	-	-	-	-		-	500.00
1300.00	-	-	-	-		-	500.00
	1350.00	31.97	-9.40	22.57	*	22.57	
1427.00	-	-	-	-		-	500.00

No EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).



Retlif Testing Laboratories

Report No. R-6331N-3

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET

Test Method	Unwanted Emissions into Restricted Frequency Bands	
Customer	Immedia Semiconductor LLC	
Job Number	R-6331N-1	
Test Sample	Blink Doorbell	
Model Number	BCM00700U	
Serial Number	770-001-500	
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)
Operating Mode	Transmitting modulated signal	
Technician	M. Seamans	
Date	July 27 th , 2018	

Notes: Antenna Test Distance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz

TEST PARAMETERS

Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit at 3M
MHz	MHz	dBuV	dB	dBuV/m		uV/m	uV/m
1435.00	-	-	-	-		-	500.00
	1500.00	33.17	-8.64	24.53	*	16.86	
1646.50	-	-	-	-		-	500.00
1660.00	-	-	-	-		-	500.00
	1680.00	31.40	-7.81	23.60	*	15.14	
1710.00	-	-	-	-		-	500.00
1718.80	-	-	-	-		-	500.00
	1720.00	31.14	-7.65	23.49	*	14.95	
1722.20	-	-	-	-		-	500.00
2200.00	-	-	-	-		-	500.00
	2250.00	31.17	-5.78	25.39	*	18.60	
2300.00	-	-	-	-		-	500.00
2310.00	-	-	-	-		-	500.00
	2360.00	30.72	-5.46	25.26	*	18.32	
2390.00	-	-	-	-		-	500.00
2483.50	-	-	-	-		-	500.00
	2490.00	31.42	-5.11	26.31	*	20.68	
2500.00	-	-	-	-		-	500.00

No EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).



Retlif Testing Laboratories

Report No. R-6331N-3

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET

Test Method	Unwanted Emissions into Restricted Frequency Bands	
Customer	Immedia Semiconductor LLC	
Job Number	R-6331N-1	
Test Sample	Blink Doorbell	
Model Number	BCM00700U	
Serial Number	770-001-500	
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)
Operating Mode	Transmitting modulated signal	
Technician	M. Seamans	
Date	July 27 th , 2018	

Notes: Antenna Test Distance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz

TEST PARAMETERS

Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading			Converted Reading	Limit at 3M
MHz	MHz	dBuV	dB	dBuV/m			uV/m	uV/m
2690.00	-	-	-	-			-	500.00
	2707.90	31.08	-4.55	26.53	*		21.21	
	2745.00	31.18	-4.45	26.73	*		21.70	
	2782.50	31.30	-4.36	26.94	*		22.23	
2900.00	-	-	-	-			-	500.00
3260.00	-	-	-	-			-	500.00
	3263.00	30.60	-2.88	27.72	*		24.32	
3267.00	-	-	-	-			-	500.00
3332.00	-	-	-	-			-	500.00
	3336.00	31.47	-2.62	28.85	*		27.70	
3339.00	-	-	-	-			-	500.00
3345.00	-	-	-	-			-	500.00
	3350.00	31.50	-2.57	28.93	*		27.96	
3358.00	-	-	-	-			-	500.00
3600.00	-	-	-	-			-	500.00
	3609.02	31.18	-1.69	29.49	*		29.82	
	3660.00	31.18	-1.52	29.66	*		30.41	
	3710.00	31.30	-1.36	29.94	*		31.41	

No EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).



Retlif Testing Laboratories

Report No. R-6331N-3

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET

Test Method	Unwanted Emissions into Restricted Frequency Bands	
Customer	Immedia Semiconductor LLC	
Job Number	R-6331N-1	
Test Sample	Blink Doorbell	
Model Number	BCM00700U	
Serial Number	770-001-500	
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)
Operating Mode	Transmitting modulated signal	
Technician	M. Seamans	
Date	July 27 th , 2018	

Notes: Antenna Test Distance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz

TEST PARAMETERS

Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit at 3M
MHz	MHz	dBuV	dB	dBuV/m		uV/m	uV/m
	-	-	-	-		-	
4400.00	-	-	-	-		-	500.00
4500.00	-	-	-	-		-	500.00
	4800.00	31.10	0.29	31.39	*	37.11	
5150.00	-	-	-	-		-	500.00
5350.00	-	-	-	-		-	500.00
	5400.00	30.75	0.92	31.67	*	38.33	
5460.00	-	-	-	-		-	500.00
7250.00	-	-	-	-		-	500.00
	7440.00	30.74	3.65	34.39	*	52.42	
7750.00	-	-	-	-		-	500.00
8025.00	-	-	-	-		-	500.00
	8300.00	31.98	4.43	36.41	*	66.15	
8500.00	-	-	-	-		-	500.00
9000.00	-	-	-	-		-	500.00
	9100.00	31.95	5.10	37.05	*	71.20	
9200.00	-	-	-	-		-	500.00

No EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).



Retlif Testing Laboratories

Report No. R-6331N-3

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET

Test Method	Unwanted Emissions into Restricted Frequency Bands	
Customer	Immedia Semiconductor LLC	
Job Number	R-6331N-1	
Test Sample	Blink Doorbell	
Model Number	BCM00700U	
Serial Number	770-001-500	
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)
Operating Mode	Transmitting modulated signal	
Technician	M. Seamans	
Date	July 27 th , 2018	

Notes: Antenna Test Distance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz

TEST PARAMETERS

Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit at 3M
MHz	MHz	dBuV	dB	dBuV/m		uV/m	uV/m
9300.00	-	-	-	-		-	500.00
	9400.00	31.94	5.38	37.32	*	73.45	
9500.00	-	-	-	-		-	500.00
10600.00	-	-	-	-		-	500.00
	12200.00	32.15	7.90	40.05	*	100.58	
12700.00	-	-	-	-		-	500.00
13250.00	-	-	-	-		-	500.00
	13300.00	32.30	-1.05	31.25	*	36.52	
13400.00	-	-	-	-		-	500.00
14470.00	-	-	-	-		-	500.00
	14490.00	32.56	-0.58	31.98	*	39.72	
14500.00	-	-	-	-		-	500.00
15350.00	-	-	-	-		-	500.00
	15800.00	32.60	0.01	32.61	*	42.71	
16200.00	-	-	-	-		-	500.00
17700.00	-	-	-	-		-	500.00
	19240.00	32.45	-6.25	26.20	*	20.42	
21400.00	-	-	-	-		-	500.00

No EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).



Retlif Testing Laboratories

Report No. R-6331N-3

Test Photographs
Conducted Emissions, Power Leads, 150 kHz to 30 MHz



EUT Configuration



Test Setup



Retlif Testing Laboratories

Report No. R-6331N-3

**FCC Part 15, Subpart B, Section 15.207(a)
Conducted Emissions, Power Leads, 150 kHz to 30 MHz
Test Data**



Retlif Testing Laboratories

Report No. R-6331N-3

EMISSIONS TEST DATA SHEET

Test Specification:	FCC Part 15, Subpart B, Section 15.207(a), Conducted Emissions
Method:	ANSI C63.4, Section 7., AC power-line conducted emission measurements
Job Number/Customer:	R-6331N-3 / Immedia Semiconductor LLC
Test Sample:	Blink Doorbell
Model Number:	BCM00700U
Serial Number:	770-001-500
Operating Mode:	Sending video to laptop via sync module
Technician:	M. Seamans
Date(s):	July 26 th , 2018
Lead Tested:	120 VAC 60 Hz

Frequency	Lead Tested	Peak Meter Reading	Quasi-Peak Meter Reading	Average Meter Reading	Quasi-Peak Limit	Average Limit
MHz		dBuV	dBuV	dBuV	dBuV	dBuV
0.151	Hot	36.39	35.65	27.16	65.94	55.94
0.152	Neutral	32.01	26.64	17.21	65.89	55.89
5.930	Hot	24.84	17.85	11.54	60	50
4.207	Neutral	24.56	19.35	11.94	56	46
14.371	Hot	27.15	20.62	13.80	60	50
15.374	Neutral	27.51	20.74	12.76	60	50
21.265	Hot	28.60	22.45	15.20	60	50
17.404	Neutral	26.73	21.34	13.95	60	50
25.691	Hot	30.04	23.33	17.26	60	50
21.371	Neutral	28.22	21.89	14.03	60	50
29.965	Hot	33.10	28.51	22.44	60	50
29.811	Neutral	31.44	27.69	21.29	60	50

The frequency range was scanned from 0.15 MHz to 30 MHz.
 The six highest emissions relative to the limit are presented.
The emissions observed from the EUT do not exceed the specified limits.



Retlif Testing Laboratories

Report No. R-6331N-3