RETLIF TESTING LABORATORIES

Put Us To The Test"

FCC Part 15, Subpart C, Section 15.247 Test Report

On

Outdoor Wifi Connected Home Security Camera FCC ID: 2AF77-H1663003

Customer Name:	Immedia Semiconductor
Customer P.O:	1003
Date of Report:	March 9, 2017
Test Report No:	R-6173N-3
Test Start Date:	February 13, 2017
Test Finish Date:	February 17, 2017
Test Technician:	M. Seamans
Report Approved By:	S. Wentworth
Report Prepared By:	J. Ramsey

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Technical Information

Report Number:	R-6173N-3	
Customer:	Immedia Semiconductor	
Address:	100 Burtt Road, Suite 100	
	Andover, MA 01810	
Manufacturer:	Immedia Semiconductor	
Manufacturer Address:	100 Burtt Road, Suite 100	
_	Andover, MA 01810	
Test Sample:	Outdoor Wifi Connected Home Security Camera	
Model Number:	BCM00600U	
Serial Number:	670-000-043	
FCC ID:	2AF77-H1663003	
Type:	Digital Transmission - Direct Sequence Spread Spectrum Transmitter	
Power Requirements:	5VDC via 120 VAC, 60 Hz AC/DC Power Adapter	
Power Supply:	AC Adapter, Sunun, Model: SA68-050100U	
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

Test Facility:

Retlif Testing Laboratories 101 New Boston Road Goffstown, NH 03045

FCC Registered Test Site Number: 90899



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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 Outdoor Wifi Connected Home Security Camera 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.

Description	Manufacturer	Model Number	Serial Number		
Laptop PC	Toshiba	Satellite P55-A	00179-60817-80261- AA0EM		
Sync Module	Immedia Semiconductor	BSM00200U	260-100-957		
Test Board	Texas Instruments	CC31XXEMUB00ST	EM-400514-NA5000974		
iPod	Apple	A1574	CCQQP2SWGGK4		
Wireless Router	ASUS	RT-N66U	G51A08005445		
Laptop PC	Lenovo	80Q7	PFOFMVOB		

Table 1 – Support Equipment



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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.

lesto Wender

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 March 9, 2017 Pages Affected Original Release



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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 15120 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 74.817 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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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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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.

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

Table 2 - Radiated Emission Limits

Results:

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



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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
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Eroqueney of Emission (MHz)	Conducted Limit (dBµV)			
Frequency of Emission (MHZ)	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 dBµV/m M_R = Uncorrected Meter Reading in dBµV C_F = Correction Factor in dB (Antenna Factor, Pre-amp + Cable Loss) Example: $M_{R} = 15.35 \text{ dB}\mu\text{V}$ $C_{F} = 16.85 \text{ dB}$ $C_R = 15.35 \text{ dBuV} + 16.85 = 32.2 \text{ dB}\mu\text{V/m}$ dBµV/M is converted to uV/M for comparison to the specified limit using the formula: invLog dBµV/M/20 32.2 dBuV/m = 40.74 uV/m **RF** Power Conversion: Power readings in dBm may be converted to mW using the formula: InvLog dBm/10 Example: 20dBm = 100mW **Retlif Testing Laboratories** Report No. R-6173N-3

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 access 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.

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

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 = 74.8 mW

Gain = Max Power Gain of Antenna = 2.0 dBi = 1.58 numeric

1.0 mW/cmsq = $\frac{74.8x1.58}{4x(3.14)xD^2}$ = $\frac{118.58}{12.56xD^2}$

 $\mathsf{D^{A}2} = \frac{118.58}{12.56x1.0}$

D = 9.44 = 3.07 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
5135	NARDA MICROWAVE	E ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz	757C-10	11/23/2016	11/30/2017
R469	AGILENT / HP	ANALYZER, SPECTRUM	100 Hz - 26.5 GHz	E7405A;A	12/1/2016	12/31/2017

FCC Section 15.247(b)(3) Power Output

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
R477	AGILENT / HP	ANALYZER, PEAK POWER	50 MHz - 40 GHz	8990B	11/15/2016	11/30/2017
R477A	AGILENT / HP	SENSOR, WIDEBAND PEAP POWER	50 MHz - 18 GHz	N1923A	11/9/2016	11/30/2017

FCC Section 15.247(d) Antenna Port, Conducted Emissions

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5070	ROHDE & SCHWARZ	RECEIVER, EMI	20 Hz - 40 GHz	ESIB40	10/21/2016	10/31/2017
5135	NARDA MICROWAVE	E ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz	757C-10	11/23/2016	11/30/2017

FCC Section 15.247(e) Antenna Port, Power Density

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5070	ROHDE & SCHWARZ	RECEIVER, EMI	20 Hz - 40 GHz	ESIB40	10/21/2016	10/31/2017
5135	NARDA MICROWAVE	E ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz	757C-10	11/23/2016	11/30/2017



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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	6/16/2016	6/30/2017
3258	ETS / EMCO	ANTENNA, DOUBLE RIDGED GUIDE	1 - 18 GHz	3115	10/13/2016	4/30/2018
3427B	ETS / EMCO	ANTENNA, BICONICAL	20 - 200 MHz	3104	2/5/2016 8	/31/2017
3430	MCS	ANTENNA, HORN	18 - 26.5 GHz	K-5039	No Calibrati	on Required
4029B	RETLIF	OPEN AREA TEST SITE, ATTENUATION	3 / 10 Meters	RNH	4/13/2016	4/30/2018
443	ELECTRO-METRICS	ANTENNA, LOG PERIODIC	200 MHz - 1000 MHz	LPA-25	10/6/2016	4/30/2018
4984G	MICROLAB / FXR	ANTENNA, HIGH GAIN HORN	12.4 - 18 GHz	Y638A	No Calibrati	on Required
5135	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz	757C-10	11/23/2016	11/30/2017
R469	AGILENT / HP	ANALYZER, SPECTRUM	100 Hz - 26.5 GHz	E7405A;A	12/1/2016	12/31/2017

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

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5135	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz	757C-10	11/23/2016	11/30/2017
5209	SOLAR ELECTRONICS	LISN	50 uH, 150 kHz - 30 MHz	21106-50-BP-25-B	SNC 3/23/2016	3/31/2017
5210	SOLAR ELECTRONICS	LISN	50 uH, 150 kHz - 30 MHz	21106-50-BP-25-B	NC 3/23/2016	3/31/2017
R469	AGILENT / HP	ANALYZER, SPECTRUM	100 Hz - 26.5 GHz	E7405A;A	12/1/2016	12/31/2017



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Test Photographs Occupied Bandwidth (6dB Bandwidth)



Test Setup



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



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RETLIF TESTING LABORATORIES Test Method 6dB Channel Bandwidth R-6173N-3 Customer Immedia Semiconductor, Inc. Job No. **Test Sample** Outdoor WiFi Connected Home Security Camera BCM00600U Model Number Serial No. 670-000-043 Transmitting modulated Data **Operating Mode** FCC Part 15, Subpart C Paragraph: 15.247 (a)(2) **Test Specification** February 14th, 2017 M. Seamans Date Technician **Climatic Conditions** Temp: 22.2 °C Relative Humidity: 16.9 % Transmit Frequency: 2412 MHz 6dB Bandwidth: 15.142 MHz Notes

🔆 Agilent 09:35:24 Feb 14, 2017



RETLIF TESTING LABORATORIES Test Method 6dB Channel Bandwidth Customer Immedia Semiconductor, Inc. Job No. R-6173N-3 **Test Sample** Outdoor WiFi Connected Home Security Camera BCM00600U Model Number Serial No. 670-000-043 Transmitting modulated Data **Operating Mode** FCC Part 15, Subpart C Paragraph: 15.247 (a)(2) **Test Specification** M. Seamans February 14th, 2017 Technician Date **Climatic Conditions** Temp: 22.2 °C Relative Humidity: 16.9 % Transmit Frequency: 2442 MHz 6dB Bandwidth: 15.126 MHz Notes

🔆 Agilent 09:45:47 Feb 14, 2017



Page 2 of 3

RETLIF TESTING LABORATORIES Test Method 6dB Channel Bandwidth R-6173N-3 Customer Immedia Semiconductor, Inc. Job No. **Test Sample** Outdoor WiFi Connected Home Security Camera BCM00600U Model Number Serial No. 670-000-043 Transmitting modulated Data **Operating Mode** FCC Part 15, Subpart C Paragraph: 15.247 (a)(2) **Test Specification** M. Seamans February 14th, 2017 Technician Date **Climatic Conditions** Temp: 22.2 °C Relative Humidity: 16.9 % Transmit Frequency: 2472 MHz 6dB Bandwidth: 15.120 MHz Notes

*** Agilent** 09:56:41 Feb 14, 2017



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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RETLIF TESTING LABORATORIES						
	EMISSIONS TEST DATA SHEET					
Test Method	Peak Power Output					
Customer	Immedia Semiconductor, Inc.					
Job Number	R-6173N-3					
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U					
Serial Number	670-000-043					
Test Specification	Test Specification FCC Part 15, Subpart C Paragraph 15.247 (b)(3)					
Operating Mode	Operating Mode Transmitting modulated signal					
Technician	M. Seamans					
Date	February 13 th , 2017					
Notes: Measurement method: 9.1.2, PKPM1 Broadband RF Peak Power Meter						

Transmit Frequency	Power Meter Reading	Cable Loss	Corrected Reading	Converted Reading	Limit
MHz	dBm	dB	dBM	mW	mW
2412.00	17.91	0.55	18.46	70.146	1000.00
2442.00	18.12	0.55	18.67	73.621	1000.00
2472.00	18.19	0.55	18.74	74.817	1000.00

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Report No. R-6173N-3

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Test Photographs Antenna Port, Conducted Emissions



Test Setup



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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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RETLIF TESTING LABORATORIES						
Test Method	Band Edge Emissions Conducted					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U	Serial No.	670-000-043			
Operating Mode	Transmitting modulated signal					
Test Specification	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Technician	M. Seamans	Date	February 14 th , 2017			
Climatic Conditions	nditions Temp: 21.1 °C Relative Humidity: 17.3 %					
Notes	Transmit Frequency: 2412 MHz Limit is 20dB down from the Fundamental Frequency Peak Power Density(100kHz)					





RETLIF TESTING LABORATORIES						
Test Method	Band Edge Emissions Conducted					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U	Serial No.	670-000-043			
Operating Mode	Transmitting modulated signal					
Test Specification	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Technician	M. Seamans	Date	February 14 th , 2017			
Climatic Conditions	Temp: 21.1 °C Relative Humidity: 17.3 %					
Notes	Transmit Frequency: 2472 MHz Limit is 20dB down from the Fundamental Frequency Peak Power Density(100kHz)					

Agilent 11:00:23 Feb 14, 2017



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



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RETLIF TESTING LABORATORIES						
Test Method	Unwanted Emissions into Non-Restricted Frequency Bands					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U	Serial No.	670-000-043			
Operating Mode	Transmitting modulated signal					
Test Specification	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Technician	M. Seamans	Date	February 14 th , 2017			
Climatic Conditions	ic Conditions Temp: 21.1 °C Relative Humidity: 17.3 %					
Notes	Transmit Frequency: 2412 MHz Limit is 20dB down from the Fundamental Frequency Peak Power Density(100kHz)					

Agilent 11:22:48 Feb 14, 2017



RETLIF TESTING LABORATORIES						
Test Method	Unwanted Emissions into Non-Restricted Frequency Bands					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U	Serial No.	670-000-043			
Operating Mode	Transmitting modulated signal					
Test Specification	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Technician	M. Seamans	Date	February 14 th , 2017			
Climatic Conditions	Slimatic Conditions Temp: 21.1 °C Relative Humidity: 17.3 %					
Notes	Transmit Frequency: 2412 MHz Limit is 20dB down from the Fundamental Frequency Peak Power Density(100kHz)					

Agilent 11:27:38 Feb 14, 2017



RETLIF TESTING LABORATORIES						
Test Method	Unwanted Emissions into Non-Restricted Frequency Bands					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U	Serial No.	670-000-043			
Operating Mode	Transmitting modulated signal					
Test Specification	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Technician	M. Seamans	Date	February 14 th , 2017			
Climatic Conditions	imatic Conditions Temp: 21.1 °C Relative Humidity: 17.3 %					
Notes	Transmit Frequency: 2442 MHz Limit is 20dB down from the Fundamental Frequency Peak Power Density(100kHz)					

Agilent 11:33:44 Feb 14, 2017



RETLIF TESTING LABORATORIES						
Test Method	Unwanted Emissions into Non-Restricted Frequency Bands					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U	Serial No.	670-000-043			
Operating Mode	Transmitting modulated signal					
Test Specification	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Technician	M. Seamans	Date	February 14 th , 2017			
Climatic Conditions	Climatic Conditions Temp: 21.1 °C Relative Humidity: 17.3 %					
Notes	Transmit Frequency: 2442 MHz Limit is 20dB down from the Fundamental Frequency Peak Power Density(100kHz)					

Agilent 11:31:24 Feb 14, 2017



RETLIF TESTING LABORATORIES						
Test Method	Unwanted Emissions into Non-Restricted Frequency Bands					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U	Serial No.	670-000-043			
Operating Mode	Transmitting modulated signal					
Test Specification	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Technician	M. Seamans	Date	February 14 th , 2017			
Climatic Conditions	imatic Conditions Temp: 21.1 °C Relative Humidity: 17.3 %					
Notes	Transmit Frequency: 2472 MHz Limit is 20dB down from the Fundamental Frequency Peak Power Density(100kHz)					

Agilent 11:39:52 Feb 14, 2017



RETLIF TESTING LABORATORIES						
Test Method	Unwanted Emissions into Non-Restricted Frequency Bands					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U	Serial No.	670-000-043			
Operating Mode	Transmitting modulated signal					
Test Specification	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Technician	M. Seamans	Date	February 14 th , 2017			
Climatic Conditions	Climatic Conditions Temp: 21.1 °C Relative Humidity: 17.3 %					
Notes	Transmit Frequency: 2472 MHz Limit is 20dB down from the Fundamental Frequency Peak Power Density(100kHz)					

Agilent 11:42:13 Feb 14, 2017



Test Photographs Antenna Port, Power Density



Test Setup



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



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RETLIF TESTING LABORATORIES						
Test Method	Power Spectral Density					
Customer	Immedia Semiconducter, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U	Serial No.	670-000-043			
Operating Mode	Transmitting modulated signal					
Test Specification	FCC Part 15, Subpart C Paragraph: 15.247 (b)(3)					
Technician	M. Seamans	Date	February 13 th , 2017			
Climatic Conditions	Temp: 18.9 °C Relative Humidity: 25.6 %					
Notes	Transmit Frequency: 2442 MHz Limit: 8dBm Power Spectral Der	sity: 4.19 dBr	n			





Test Photographs Spurious Radiated Emissions, 30 MHz to 25 GHz



EUT Configuration, 80 cm



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Test Photographs Spurious Radiated Emissions, 30 MHz to 25 GHz



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



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



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



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



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Horizontal Polarization, 1- 12 GHz, Double Ridge Guide, 150 cm



Vertical Polarization, 1-12 GHz, Double Ridge Guide, 150 cm



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Horizontal Polarization, 12-18 GHz, High Gain Horn, 150 cm



Vertical Polarization, 12-18 GHz, High Gain Horn, 150 cm



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Horizontal Polarization, 18 - 25 GHz, Standard Gain Horn, 150 cm



Vertical Polarization, 18 - 25 GHz, Standard Gain Horn, 150 cm



Retlif Testing Laboratories

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



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RETLIF TESTING LABORATORIES						
EMISSIONS TEST DATA SHEET						
Test Method	Unwanted Emissions into Restricted Frequency Bands					
Customer	Immedia Semiconductor, Inc.					
Job Number	R-6173N-3	R-6173N-3				
Test Sample	Outdoor WiFi Connected Home Security Camera	Outdoor WiFi Connected Home Security Camera				
Model Number	BCM00600U	BCM00600U				
Serial Number	670-000-043					
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)				
Operating Mode	Transmitting Modulated Data at 2412 MHz, 2442 MHz an	nd 2472 MHz consecutively.				
Technician	M. Seamans					
Date	February 17 th , 2017					

	TEST PARAMETERS									
Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit at 3M			
MHZ	MHZ	dBuV	dВ	dBuV/m		uV/m	uv/m			
37.50	-	-	-	-		-	100.00			
	38.00	9.40	14.20	23.60	*	15.14	<u> </u>			
38.25	-	-	-	-		-	100.00			
73.00	-	-	-	-		-	100.00			
	74.00	16.94	8.36	25.30	*	18.41	I			
74.60	-	-	-	-		-	100.00			
74.80	-	-	-	-		-	100.00			
	75.00	13.54	8.36	21.90	*	12.45				
75.20	-	-	-	-		-	100.00			
108.00	-	-	-	-		-	150.00			
	110.00	7.88	10.02	17.90	*	7.85				
	-	-	-	-		-				
121.94	-	-	-	-		-	150.00			
123.00	-	-	-	-		-	150.00			
	125.00	12.76	9.44	22.20	*	12.88				
	-	-	-	-		-	I			
138.00	-	-	-	-		-	150 00			
							100.00			

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 1 of 8

Retlif Testing Laboratories

Report No. R-6173N-3

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RETLIF TESTING LABORATORIES						
	EMISSIONS TEST DATA SHEET					
Test Method	Unwanted Emissions into Restricted Frequency Bands					
Customer	Immedia Semiconductor, Inc.	Immedia Semiconductor, Inc.				
Job Number	R-6173N-3					
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U					
Serial Number	670-000-043					
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)				
Operating Mode	Transmitting Modulated Data at 2412 MHz, 2442 MHz an	d 2472 MHz consecutively.				
Technician	M. Seamans					
Date	February 17 th , 2017					

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	6.93	11.17	18.10	*	8.04			
150.05	-	-	-	-		-	150.00		
156.52	-	-	-	-		-	150.00		
	156.52	4.12	12.08	16.20	*	6.46			
156.52	-	-	-	-		-	150.00		
156.70	-	-	-	-		-	150.00		
	156.80	3.78	12.12	15.90	*	6.24			
156.90	-	-	-	-		-	150.00		
162.01	-	-	-	-			150.00		
	165.00	4.92	12.68	17.60	*	7.59			
167.17	-	-	-	-		-	150.00		
167 72							150.00		
107.72	170.00	6 10	12.90	18.00	*	9.91	150.00		
172.20	170.00	0.10	12.00	10.90		0.01	150.00		
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).

Data Sheet 2 of 8

Retlif Testing Laboratories

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	RETLIF TESTING LABORATORI	ES				
	EMISSIONS TEST DATA SHEET					
Test Method	Unwanted Emissions into Restricted Frequency Bands					
Customer	Immedia Semiconductor, Inc.	Immedia Semiconductor, Inc.				
Job Number	R-6173N-3					
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model Number	BCM00600U					
Serial Number	670-000-043					
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)				
Operating Mode	Transmitting Modulated Data at 2412 MHz, 2442 MHz and	2472 MHz consecutively.				
Technician	M. Seamans \ T. Hannemann					
Date	February 17 th , 2017					

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		
	269.392	9.15	16.85	26.00		19.95			
285.00	-	-	-	-		-	200.00		
322.80	-	-	-	-		-	200.00		
	330.00	4.19	18.91	23.10	*	14.29			
335.40	-	-	-	-		-	200.00		
200.00							200.00		
399.90	-	-	-	- 20.50	*	- 10.50	200.00		
410.00	-	-0.33	-	-		-	200.00		
110.00							200.00		
608.00	-	-	-	-		-	200.00		
	611.00	-3.34	27.34	24.00	*	15.85			
614.00	-	-	-	-		-	200.00		
960.00	_	-	-	-		-	500.00		
	975.00	1.00	32.10	33.10	*	45.19			
1240.00	-	-	-	-		-	500.00		
1300.00	_						500.00		
1000.00	1350.00	34 92	-9.50	25.42	*	18.66	1		
1427.00	-	-	-	-		-	500.00		
EUT emission limit are listed sensitivity (No	1427.00 - - 500.00 EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor). - 500.00								

Data Sheet 3 of 8



Retlif Testing Laboratories

RETLIF TESTING LABORATORIES							
EMISSIONS TEST DATA SHEET							
Test Method	Unwanted Emissions into Restricted Frequency Bands						
Customer	Immedia Semiconductor, Inc.						
Job Number	R-6173N-3	R-6173N-3					
Test Sample	Outdoor WiFi Connected Home Security Camera						
Model Number	BCM00600U						
Serial Number	670-000-043						
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)					
Operating Mode	Transmitting Modulated Data at 2412 MHz, 2442 MHz and 2472 MHz co	nsecutively.					
Technician	M. Seamans						
Date	February 17 th , 2017						
Notes: Antenna Test D	Notes: Antenna Test Distance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz						

Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit a 3M
MHz	MHz	dBuV	dB	dBuV/m		uV/m	uV/m
1435.00	-	-	-	<u>+ </u>	I		500.00
	1500.00	36.62	-9.40	27.22	*	22.96	-
1646.50		-		-		-	500.00
1660.00	+ - +		-	-			500.00
	1680.00	36.61	-9.04	27.58	*	23.93	
1710.00		-	-				500.00
1718.80	- +		-	-			500.00
	1720.00	36.51	-8.64	27.87	*	24.75	
1722.20	-	-	-	-		-	500.00
2200.00	- +	_	-	-			500,00
	2250.00	42.48	-6.76	35.72		61.09	
2300.00	-		-	-			500.00
2310.00	- +		-	-			500.00
	2360.00	41.33	-6.51	34.82		55.08	
2390.00		-		-		-	500.00
2483.50	- +	-	-	-			500.00
	2490.00	42.94	-6.11	36.83		69.42	
2500.00	-	-	-	-		-	500.00

Data Sheet 4 of 8

Retlif Testing Laboratories

Report No. R-6173N-3

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RETLIF TESTING LABORATORIES					
	EMISSIONS TEST DATA SHEET				
Test Method	Unwanted Emissions into Restricted Frequency Bands				
Customer	Immedia Semiconductor, Inc.				
Job Number	R-6173N-3				
Test Sample	le Outdoor WiFi Connected Home Security Camera				
Model Number	BCM00600U				
Serial Number	670-000-043				
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)			
Operating Mode	Transmitting Modulated Data at 2412 MHz, 2442 MHz and 2472 MHz co	nsecutively.			
Technician	M. Seamans				
Date	February 17 th , 2017				

Detector: Quasi-Peak <1GHz, Average >1GHz

			TEST P	ARAMETEF	RS		
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
	2707.20	34.84	-5.40	29.44	*	29.65	
	2745.00	34.27	-5.40	28.87	*	27.77	
	2782.50	35.02	-5.40	29.62	*	30.27	
2900.00	-	-	-	-		-	500.00
3260.00	-	-	-	-		-	500.00
	3263.00	34.47	-3.30	31.17	*	36.18	
3267.00	-	-	-	-		-	500.00
3332.00	-	-	-	-		-	500.00
	3336.00	34.98	-3.10	31.88	*	39.26	
3339.00	-	-	-	-		-	500.00
3345.00	-	-	-	-		-	500.00
	3350.00	34.65	-3.05	31.60	*	38.02	
3358.00	-	-	-	-		-	500.00
3600.00	-	-	-	-		-	500.00
	3609.60	34.67	-1.50	33.17	*	45.55	
	3660.00	34.41	-1.25	33.16	*	45.50	
	3708.00	34.25	-1.05	33.20	*	45.71	

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 5 of 8



Report No. R-6173N-3

Retlif Testing Laboratories

RETLIF TESTING LABORATORIES							
	EMISSIONS TEST DATA SHEET						
Test Method	Unwanted Emissions into Restricted Frequency Bands						
Customer	Immedia Semiconductor, Inc.						
Job Number	er R-6173N-3						
Test Sample	Outdoor WiFi Connected Home Security Camera						
Model Number	BCM00600U						
Serial Number	670-000-043						
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)					
Operating Mode	Transmitting Modulated Data at 2412 MHz, 2442 MHz and 2472 MHz co	nsecutively.					
Technician	M. Seamans						
Date	February 17 th , 2017						

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	<u>abuv</u>	an	aBuv/m		UV/m	uv/m
		-		-			
4400.00	-	-	-	-		-	500.00
	ļļ			ļ	L		
4500.00	-	-	-	-		-	500.00
	4824.00	33.73	0.35	34.08	*	50.58	
	4884.00	33.50	0.40	33.90	*	49.55	
	4944.00	34.17	0.45	34.62	*	53.83	
	-	-	-	-		-	
5150.00	-	-	-	-		-	500.00
		-					
5350.00	-	-	-	-		-	500.00
	5400.00	34.34	1.05	35.39	*	58.82	
5460.00	-	-	-	-		-	500.00
		-		1			
7250.00	-	-	-	- 1		-	500.00
	7500.00	35.42	3.75	39.17	*	90.89	
7750.00	-	-		-		-	500.00
				+			000.00
8025.00	-	-	-	<u>+ - </u>			500.00
	8121.60	34.77	4.20	38.97	*	88.82	1
	8235.00	34 64	4 30	38.64	*	85.54	
	8347.50	34.62	4.40	39.02	*	80.33	
	0047.00	04.02	4.40	33.02	· · · · · · · · · · · · · · · · · · ·	09.00	
9500.00		-			· · · · · · · · · · · · · · · · · · ·		500.00
		-	-			-	500.00

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 6 of 8

Retlif Testing Laboratories



RETLIF TESTING LABORATORIES					
EMISSIONS TEST DATA SHEET					
Unwanted Emissions into Restricted Frequency Bands					
Immedia Semiconductor, Inc.					
b Number R-6173N-3					
ple Outdoor WiFi Connected Home Security Camera					
odel Number BCM00600U					
670-000-043					
SpecificationFCC Part 15 Subpart CParagraph 15.247(d)					
perating Mode Transmitting Modulated Data at 2412 MHz, 2442 MHz and 2472 MHz consecutively.					
M. Seamans					
February 17 th , 2017					
	RETLIF TESTING LABORATORIES EMISSIONS TEST DATA SHEET Unwanted Emissions into Restricted Frequency Bands Immedia Semiconductor, Inc. R-6173N-3 Outdoor WiFi Connected Home Security Camera BCM00600U 670-000-043 FCC Part 15 Subpart C Transmitting Modulated Data at 2412 MHz, 2442 MHz and 2472 MHz co M. Seamans February 17 th , 2017				

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
9000.00	-	-	-	-		-	500.00
	9100.00	35.35	5.01	40.36	*	104.23	
9200.00	-	-	-	-			500.00
9300.00	-		-			-	500.00
	9400.00	35.61	5.50	41.11	*	113.63	
9500.00	-	-	-	-		-	500.00
10600.00	-		-	-			500.00
	12000.00	35.19	7.90	43.09	*	142.72	
12700.00	-	-		-		-	500.00
13250.00	-		-	-			500.00
	13300.00	34.25	-1.05	33.20	*	45.71	Í
13400.00	-	-		-		-	500.00
14470.00	-	-	-	-			500.00
	14490.00	35.22	-0.58	34.64	*	53.95	Í
14500.00	-	-	-	-			500.00
15350.00			<u> </u>				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).

Data Sheet 7 of 8

Retlif Testing Laboratories

Report No. R-6173N-3

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RETLIF TESTING LABORATORIES					
EMISSIONS TEST DATA SHEET					
Unwanted Emissions into Restricted Frequency Bands					
Immedia Semiconductor, Inc.					
b Number R-6173N-3					
e Outdoor WiFi Connected Home Security Camera					
I Number BCM00600U					
670-000-043					
Paragraph: 15.247(d)					
Dperating Mode Transmitting Modulated Data at 2412 MHz, 2442 MHz and 2472 MHz consecutively.					
echnician M. Seamans					
February 17 th , 2017					
	RETLIF TESTING LABORATORIES EMISSIONS TEST DATA SHEET Unwanted Emissions into Restricted Frequency Bands Immedia Semiconductor, Inc. R-6173N-3 Outdoor WiFi Connected Home Security Camera BCM00600U 670-000-043 FCC Part 15 Subpart C Transmitting Modulated Data at 2412 MHz, 2442 MHz and 2472 MHz co M. Seamans February 17 th , 2017				

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
	15800.00	36.78	0.01	36.79	*	69.10	
16200.00	-	-	-	-		-	500.00
17700.00	-	-	-	-		-	500.00
	-	-	-	-		-	
	19296.00	36.09	-6.25	29.84	*	31.05	
	19536.00	35.75	-6.35	29.40	*	29.51	
	19776.00	35.91	-6.45	29.46	*	29.72	
21400.00	-	-	-	-		-	500.00
22010.00	-	-	-	-		-	500.00
	22500.00	34.19	-5.25	28.94	*	27.99	
23120.00	-	-	-	-		-	500.00
23600.00	-	-	-	-		-	500.00
	23800.00	35.75	-4.15	31.60	*	38.02	
25000.00	-	-	-	-		-	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).

Data Sheet 8 of 8

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



EUT Configuration



Test Setup



Retlif Testing Laboratories

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



Retlif Testing Laboratories

RETLIF TESTING LABORATORIES						
Test Method	Conducted Emissions 150 kHz to 30 MHz					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model No.	BCM00600U	Serial No.	670-000-043			
Operating Mode	Live streaming video					
Test Specification	FCC Part 15. 207(a)					
Technician	M. Seamans	Date	February 15 th , 2017			
Climatic Conditions	Temp: 23.2 °C Relative Humidity: 19.7 %					
Lead Tested	120 VAC 60 Hz Hot Peak Readings to Average Limits.					

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RETLIF TESTING LABORATORIES						
Test Method	Conducted Emissions 150 kHz to 30 MHz					
Customer	Immedia Semiconductor, Inc.	Job No.	R-6173N-3			
Test Sample	Outdoor WiFi Connected Home Security Camera					
Model No.	BCM00600U	Serial No.	670-000-043			
Operating Mode	Live streaming video					
Test Specification	FCC Part 15. 207(a)					
Technician	M. Seamans	Date	February 15 th , 2017			
Climatic Conditions	Temp: 23.2 °C Relative Humidity: 19.7 %					
Lead Tested	120 VAC 60 Hz Neutral Peak Readings to Average Limits.					

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