

#### FCC Part 15, Subpart C, Section 15.247 Test Report

On

Outdoor XT2 Blink Camera Module FCC ID: 2AF77-H1981713

Customer Name: Immedia Semiconductor, LLC

Customer P.O: ISI032919\_PDG

**Date of Report:** May 1, 2019

Test Report No: R-6412N-1

**Test Start Date:** April 16, 2019

Test Finish Date: April 17, 2019

**Test Engineer:** T. Hannemann

**Test Technician:** M. Seamans

**Approved By:** S. Wentworth

Report Prepared By: P. Harris

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#### **40 YEARS OF TESTING EXCELLENCE**

**Technical Information** 

Report Number: R-6412N-1

Customer: Immedia Semiconductor, LLC

Address: 100 Riverpark Drive

North Reading, MA 01864

Manufacturer: Immedia Semiconductor, LLC

Manufacturer Address: 100 Riverpark Drive

North Reading, MA 01864

**Test Sample:** Outdoor XT2 Blink Camera Module

Model Number: BCM00200U

820-000-523(Conducted Testing)

**Serial Number:** 870-000-537 (Radiated Testing)

**FCC ID:** 2AF77-H1981713

**Type:** Frequency Hopping Spread Spectrum Transmitter

5 VDC via External 120 VAC power adapter or 3 VDC via

**Power Requirements:** internal batteries

Frequency of Operation: 902.4 MHz to 927.6 MHz

Equipment Class: DSS

**Antenna Type:** Internal PCB Antenna – 1.5 dBi Gain

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 15.247 Meas Guidance v05r02, April 2, 2019

#### **Test Facility:**

Retlif Testing Laboratories 101 New Boston Road Goffstown, NH 03045

FCC Designation Number: US5327



#### **Retlif Testing Laboratories**

Table 1 – Tests Performed

FCC Part 15, Subpart C	Test Method			
15.247(a)(1)	Channel Separation			
15.247(a)(1)	20 dB Bandwidth			
15.247(a)(1)(i)	Number of Channels and Occupancy Time			
15.247(b)(2) and (4)	Peak Conducted Output Power			
15.247(d)	Spurious Emissions, 30 MHz to 10 GHz			
15.247(a)/15.209(a)	Field Strength of Spurious Emissions			
Section 15.207 (a)	Conducted Emissions			

Table 2 – Support Equipment

Description	Manufacturer	Model Number	Serial Number			
Radiated Testing						
Laptop PC	HP	Probook 450G5	SC088466QTY			
USB Adapter	Alfa Network	AWUS036NHA	180636A0001785			
Sync Module Immedia Semiconductor		BSM00200U	230-054-628			
	Conducted Testing					
Laptop PC	HP	Probook 450G5	SC088466QTY			
Sync Module Immedia Semiconductor		BSM00200U	230-054-628			



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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

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 report must not be used by the client to claim product endorsement by ANSI National Accreditation Board (ANAB).



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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
-	May 1, 2019	Original Release



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#### Requirements and Test Results

#### Requirement:

FCC Section 15.247 (a)(1)

#### Channel Separation and 20 dB Bandwidth

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

#### Results:

The carrier frequencies were separated by 401.8 kHz which exceeded the maximum 20 dB bandwidth of 115 kHz which complies with the requirements specified above.

## FCC Section 15.247 (a)(1)(i) Number of Channels and Occupancy Time

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

#### Results:

The number of hopping frequencies used was 64 and the average time of occupancy was 9.733 msec which complied with the above requirements.



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#### Requirements and Test Results (con't)

#### FCC Section 15.247 (b)(2) and (4) Peak Conducted Output Power

- (1) For frequency hopping systems operating in the 902-928 MHz band employing at least 50 non-overlapping hopping channels: 1 watt. For systems employing less than 50 hopping channels, but at least 25 hopping channels: 0.25 watts.
- (4) The conducted output power limit specified in Paragraph (b) of Section 15.247 is based on the use of antenna with directional gains that do not exceed 6 dBi. Except as shown in Paragraph (c) of Section 15.247, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in Paragraph (b)(1), (b)(2) and (b)(3) of Section 15.247, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### Results:

The frequency hopping system utilizes a transmitting antenna with a gain of 1.5 dBi. The maximum peak conducted output power was measured to be 21.48 milliwatts and the EIRP is less than 1W.

## FCC Section 15.247 (d) Spurious Emissions

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 Section 15.247, 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 emission limits specified in Section 15.209(a) (see Section 15.205(c)).

#### Results:

The antenna port conducted spurious emissions comply with the requirement that the radio frequency power be at least 20 dB below the highest in band level.

In addition, Harmonic and Spurious Emissions which were found to be within the restricted bands of operation, as defined in section 15.205 (a) were found to be in compliance with the general limits specified in section 15.209 (a).



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#### Requirements and Test Results (con't)

#### **FCC Section 15.247 (a)**

#### Field Strength of Spurious Radiation

Operation under the provisions of Section 15.247 is limited to frequency hopping and digitally modulated intentional radiators that comply with the provisions stated in Section 15.247(a)(1).

#### 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 3.

Table 3 - 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 3.



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#### 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  $dB\mu V/m$ 

 $M_R$  = Uncorrected Meter Reading in dB $\mu$ V

C<sub>F</sub> = Correction Factor in dB (Antenna Factor, Pre-amp + Cable Loss)

Example:

 $M_R = 15.35 dB\mu V$ 

 $C_F = 16.85 \text{ dB}$ 

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

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



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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 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 915 MHz S = 0.6 mW/cmsq

Power = Max Power Input to Antenna = 21.48mW

Gain = Max Power Gain of Antenna = 1.5 dBi = 1.41 numeric

0.61 mW/cmsq = 
$$\frac{21.48 \times 1.41}{4 \times (3.14) \times D^2}$$
 =  $\frac{30.29}{12.56 \times D^2}$ 

$$D^{4}2 = \frac{30.29}{12.56 \times 0.61}$$

D = 
$$\sqrt{1.47}$$
 = 1.21 cm

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



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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 4, as measured using a 50  $\mu$ 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 4 - Conducted Emission Limits

Frequency of Emission	Conducted Limit (dBµV)			
(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 4.



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#### **Equipment List**

#### FCC Section 15.247(a)(1) Channel Separation

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5134	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz, 2 W	757C-10	12/19/2018	12/31/2019
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019

#### FCC Section 15.247(a)(1) 20 dB Bandwidth

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5134	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz, 2 W	757C-10	12/19/2018	12/31/2019
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019

## FCC Section 15.247 (a)(1) (iii) Number of Channels and Occupancy Time

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5134	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz, 2 W	757C-10	12/19/2018	12/31/2019
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019

## FCC Section 15.247 (a)(1) Peak Conducted Output Power

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5134	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz, 2 W	757C-10	12/19/2018	12/31/2019
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019

## FCC Section 15.247 (d) Conducted Spurious Emissions, 30 MHz to 10 GHz

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5134	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz, 2 W	757C-10	12/19/2018	12/31/2019
5231	AGILENT / HP	ANALYZER, SPECTRUM	3 Hz - 26.5 GHz	E4440A	4/12/2018	4/30/2019



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# FCC Section 15.247 (a) / 15.209(a) Field Strength of Spurious Radiated Emissions

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
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
5070	ROHDE & SCHWARZ	RECEIVER, EMI	20 Hz - 40 GHz	ESIB40	11/6/2018	11/30/2019
5188	Cybertron	COMPUTER, CONTROL	N/A	TSVQJA2221	No Calibration	Required
5224	ETS / EMCO	ANTENNA, BICONICAL	20 - 200 MHz	3104C	4/10/2018	10/31/2019
5242	TELEDYNE MICROWAVE	CABLE, COAXIAL	10 kHz - 6 GHz	PR90-195-1275, 106'	9/5/2018	9/30/2019

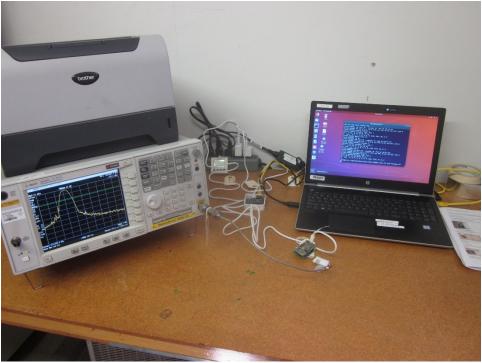
#### FCC Section 15.207(a) Conducted Limit

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5070	ROHDE & SCHWARZ	RECEIVER, EMI	20 Hz - 40 GHz	ESIB40	11/6/2018	11/30/2019
5135	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz, 2 W	757C-10	11/9/2018	11/30/2019
5188	Cybertron	COMPUTER, CONTROL	N/A	TSVQJA2221	No Calibratio	n Required
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



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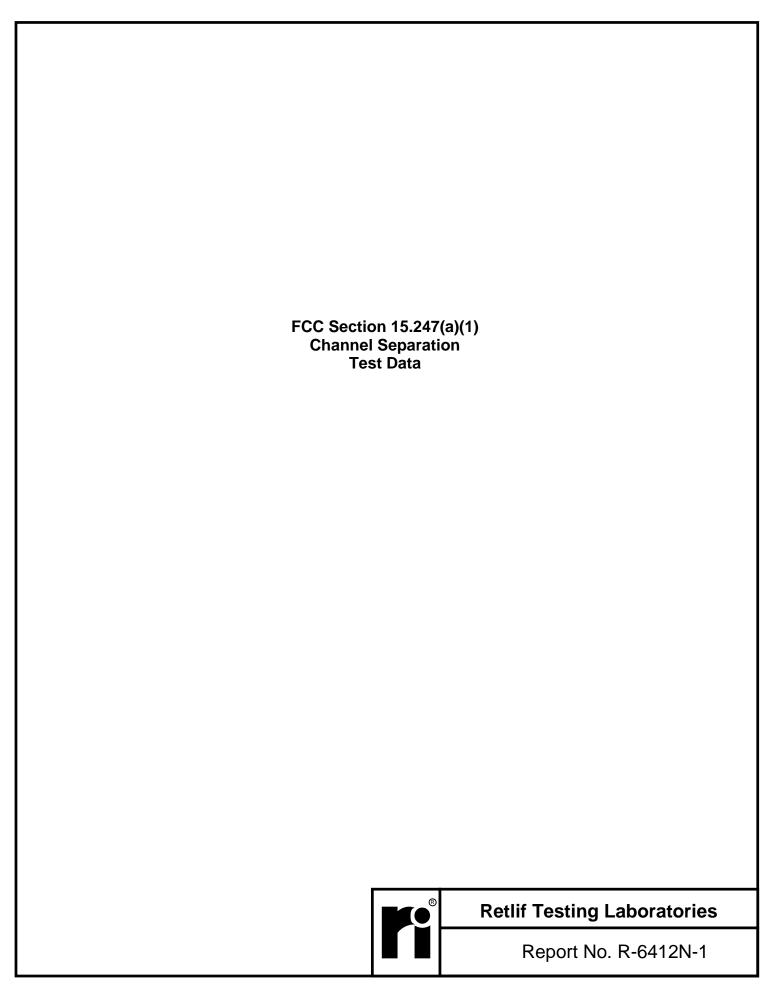
# Test Photographs Channel Separation



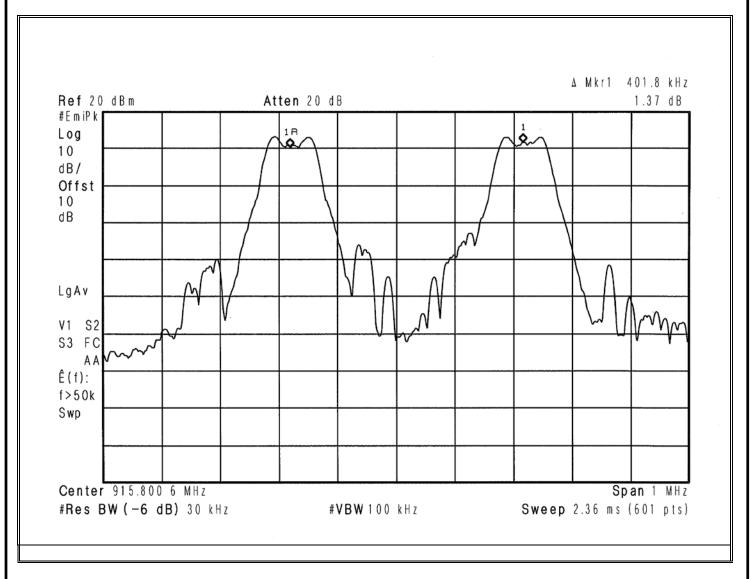
Test Setup



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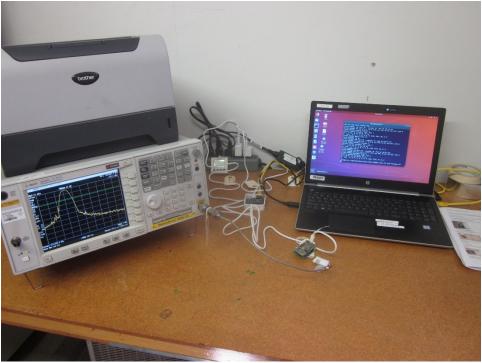


EMISSIONS TEST DATA SHEET	
Method:	Channel Separation
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(1)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	Channel Separation: 401.8 kHz





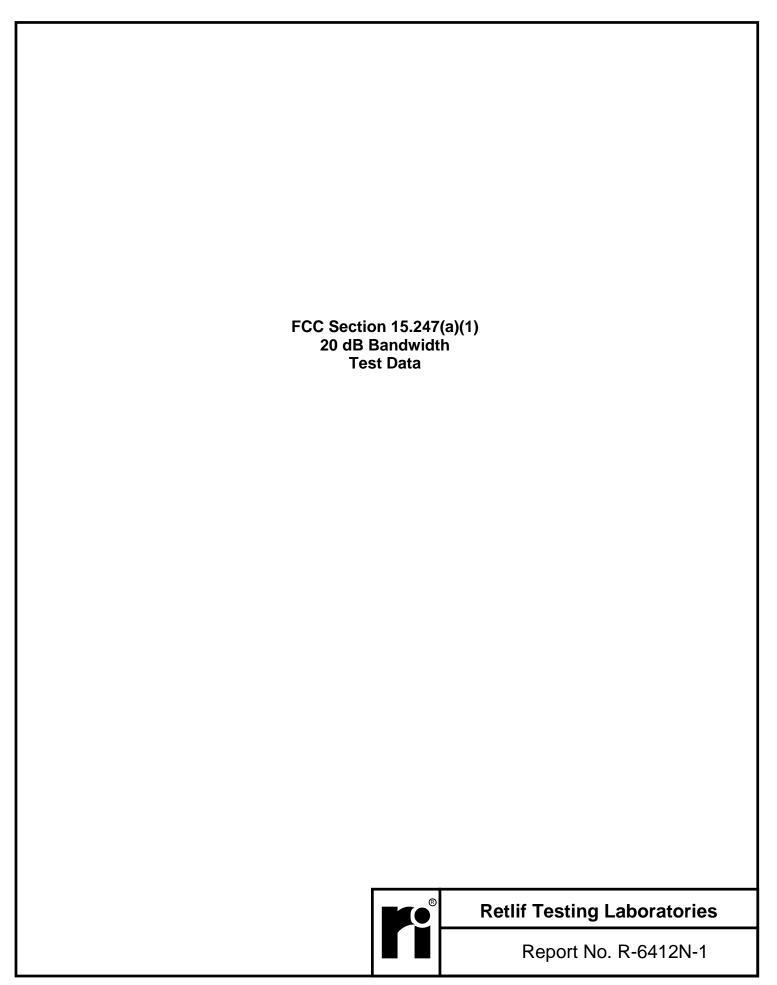
# Test Photographs 20 dB Bandwidth



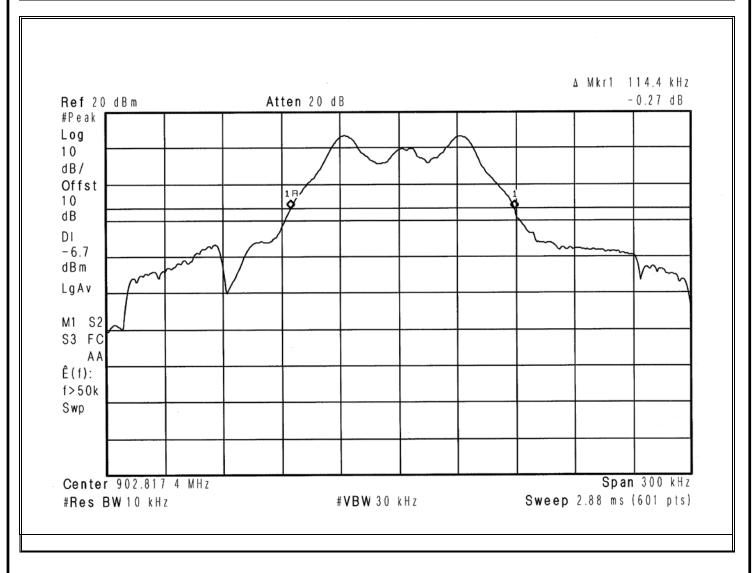
Test Setup



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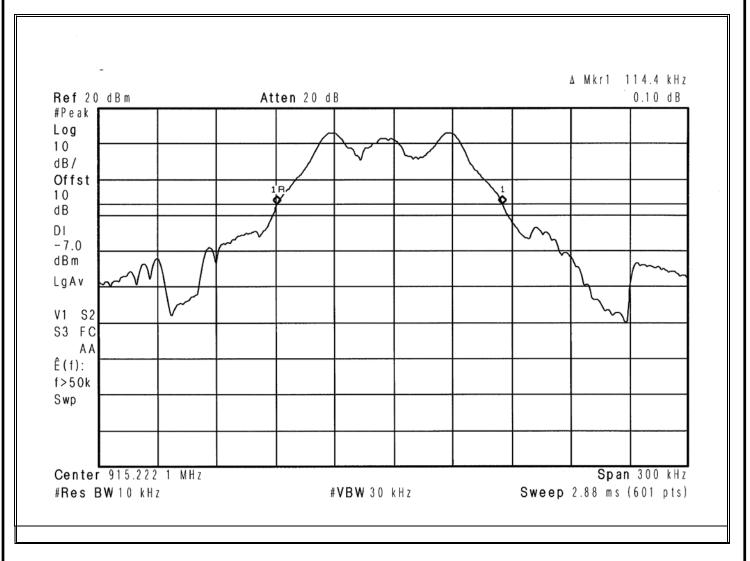


EMISSIONS TEST DATA SHEET	
Method:	Occupied Bandwidth
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(i)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	20dB Bandwidth: 114.4 kHz



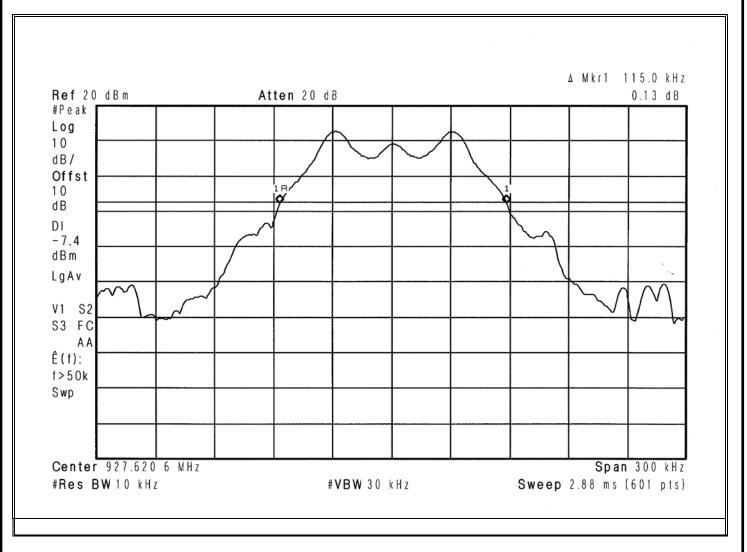


EMISSIONS TEST DATA SHEET	
Method:	Occupied Bandwidth
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(i)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	20dB Bandwidth: 114.4 kHz



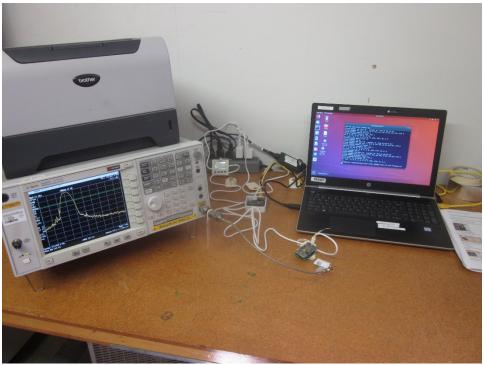


EMISSIONS TEST DATA SHEET	
Method:	Occupied Bandwidth
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(i)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	20dB Bandwidth: 115.0 kHz





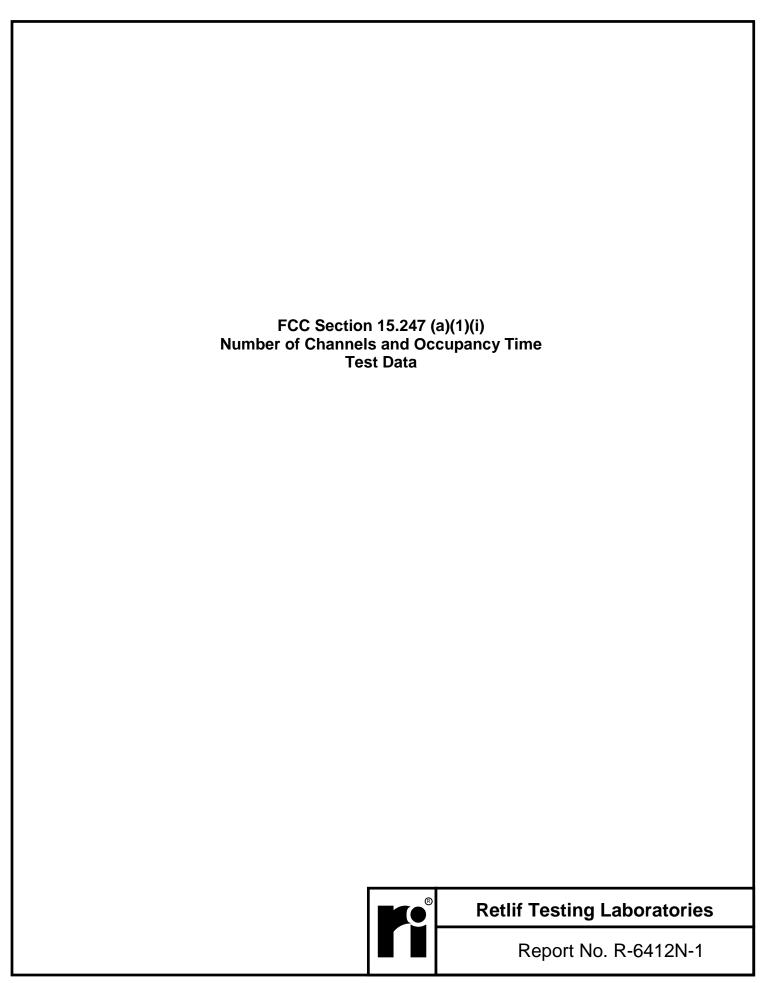
# Test Photographs Number of Channels and Occupancy Time



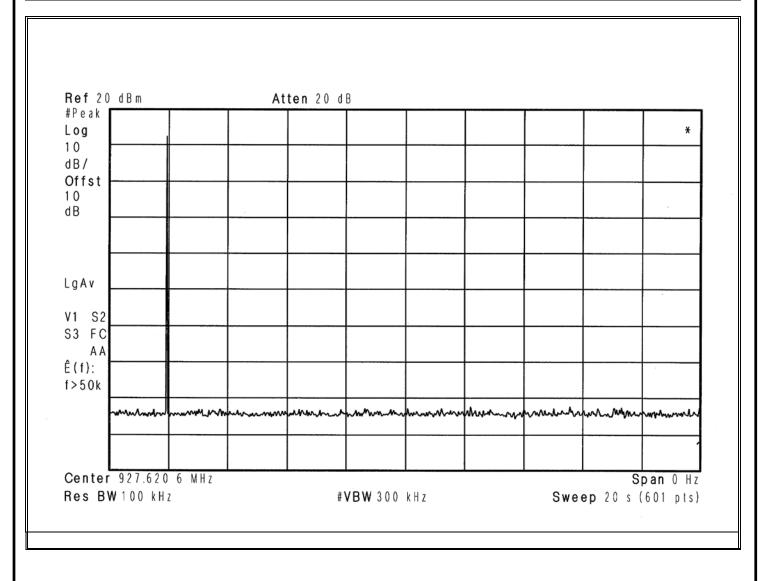
Test Setup



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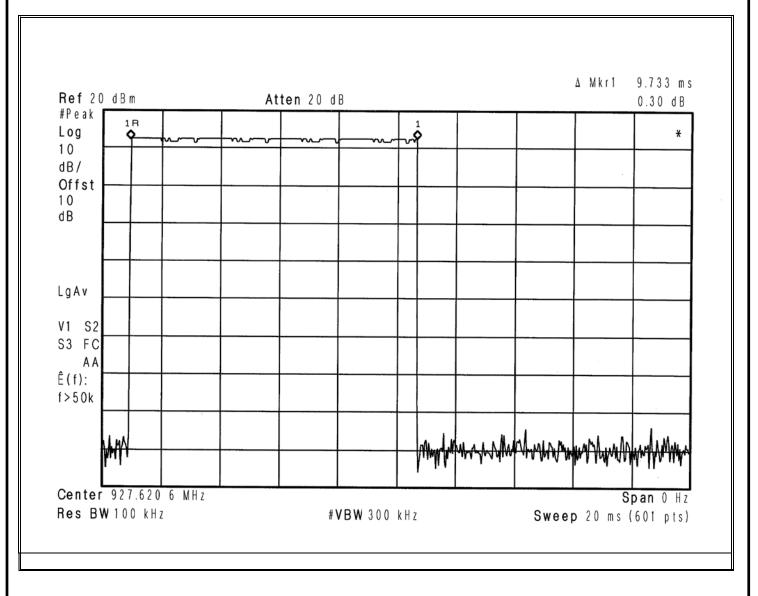


EMISSIONS TEST DATA SHEET	
Method:	Time of Occupancy
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(iii)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	Time of Occupancy: (1 pulse in 20 second window)



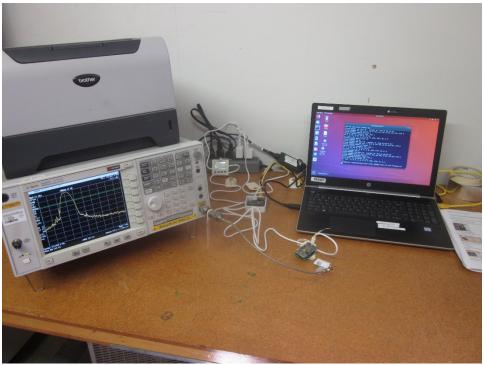


EMISSIONS TEST DATA SHEET	
Method:	Time of Occupancy
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(iii)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	Time of Occupancy: 9.733ms (1 pulse in 20 second window)





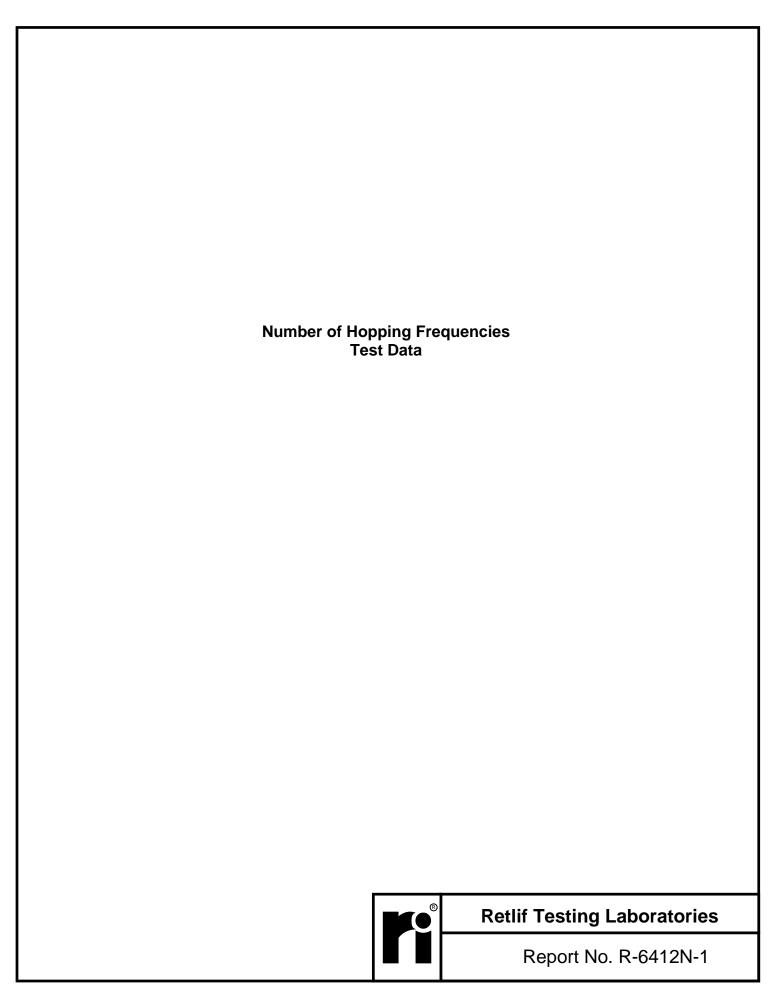
# Test Photographs Number of Hopping Frequencies



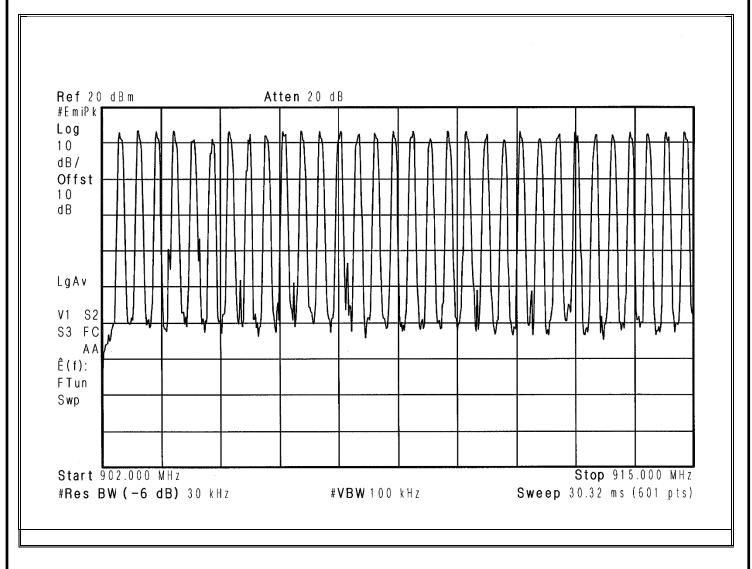
Test Setup



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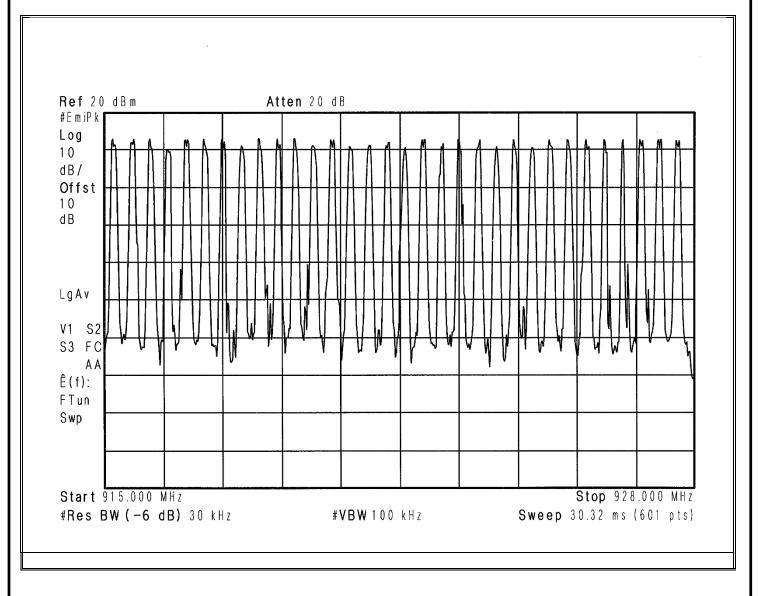


EMISSIONS TEST DATA SHEET	
Method:	Number of Hopping Channels
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(iii)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	Number of Hopping Channels: 64



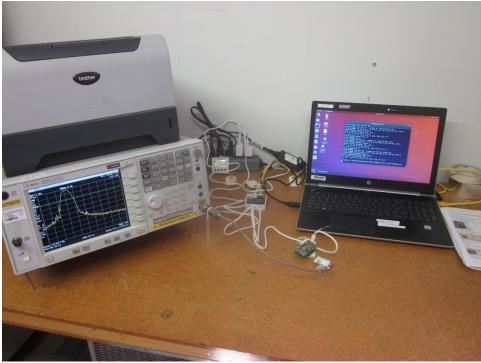


EMISSIONS TEST DATA SHEET	
Method:	Number of Hopping Channels
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (a)(iii)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	Number of Hopping Channels: 64





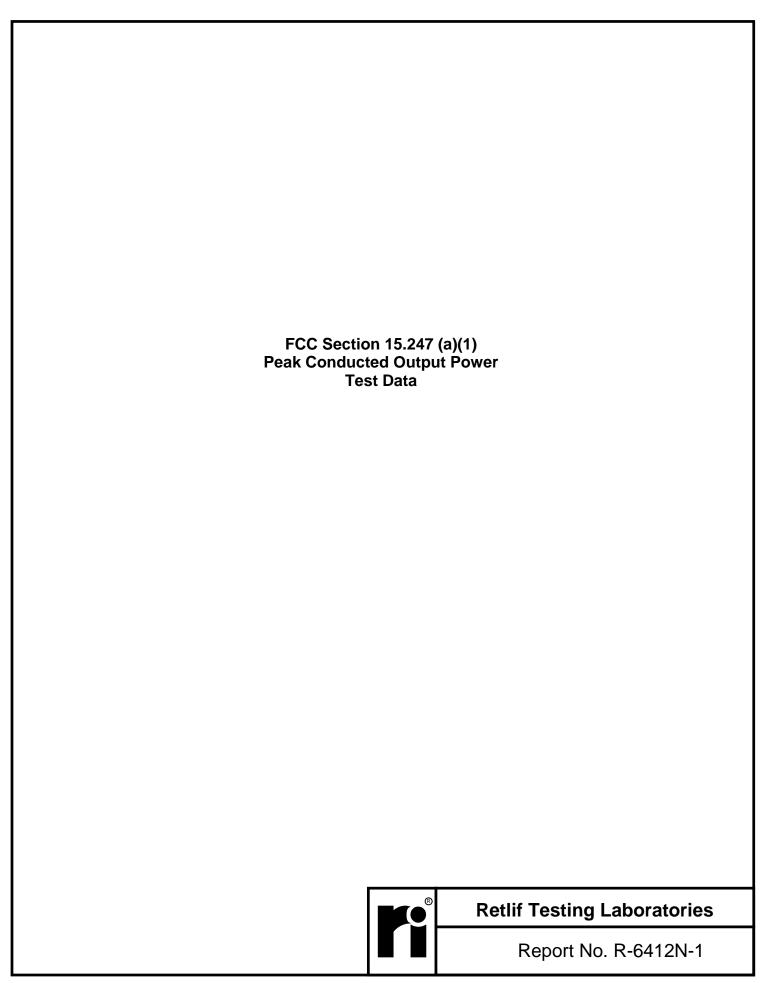
# Test Photographs Peak Conducted Output Power



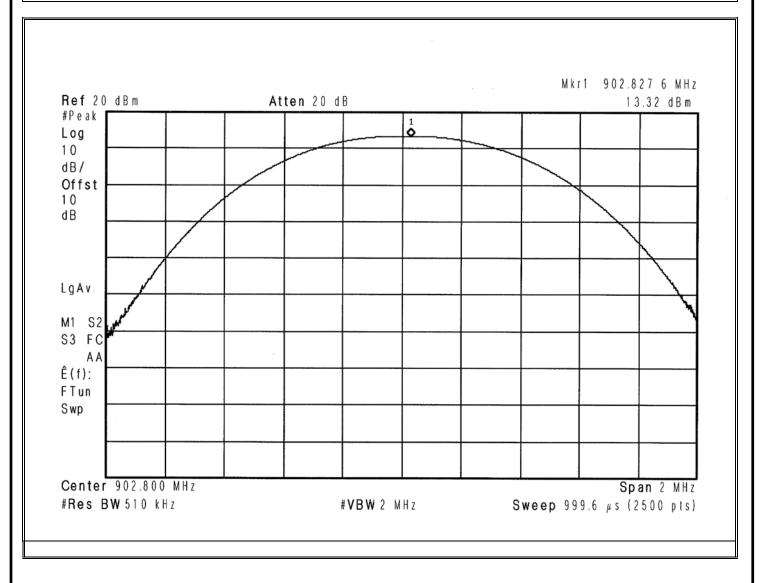
Test Setup



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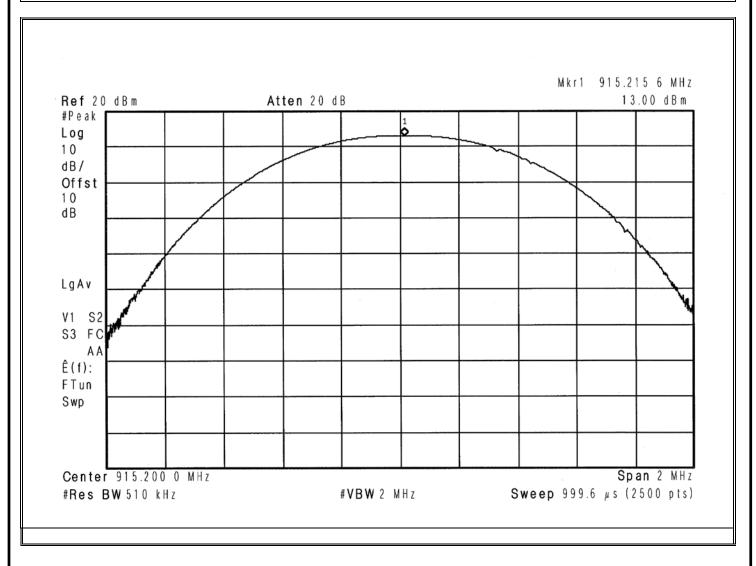


EMISSIONS TEST DATA SHEET	
Method:	Power Output
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (b)(1)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	Power Output: 13.32 dBm



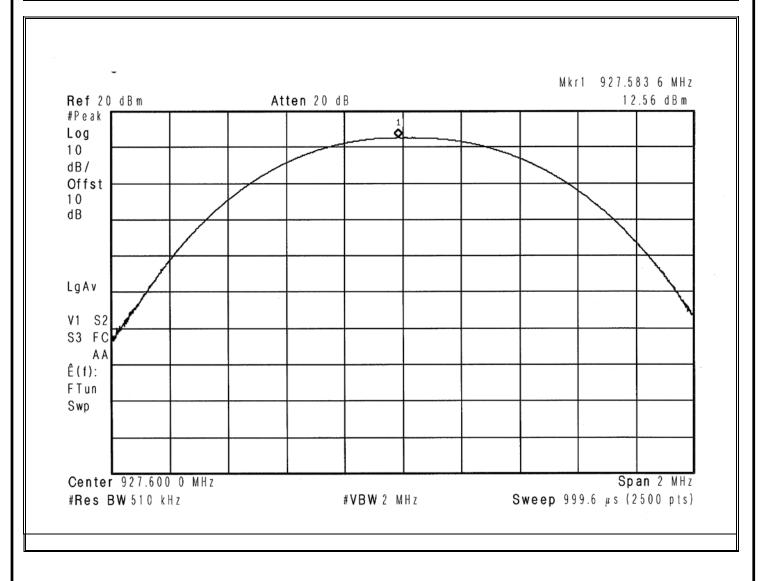


EMISSIONS TEST DATA SHEET	
Method:	Power Output
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (b)(1)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	Power Output: 13.00 dBm



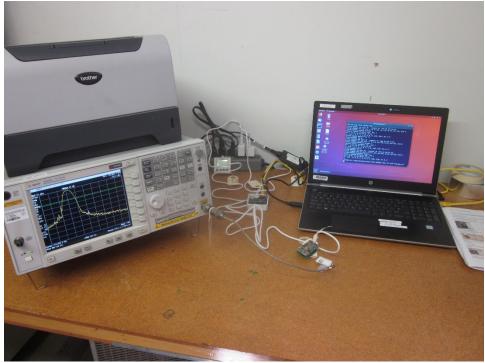


EMISSIONS TEST DATA SHEET	
Method:	Power Output
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (b)(1)
Job Number:	R-6412N-1
Customer:	Immedia Semiconductor LLC
Test Sample:	Outdoor XT2 Blink Camera Module
Model Number:	BCM00200U
Serial Number:	820-000-523
Operating Mode:	Transmitting modulated signal
Technician:	M.Seamans
Date(s):	April 16 <sup>th</sup> , 2019
Temp/ Relative Humidity:	20.4 °C / 31.1 %
Result:	Power Output: 12.56 dBm





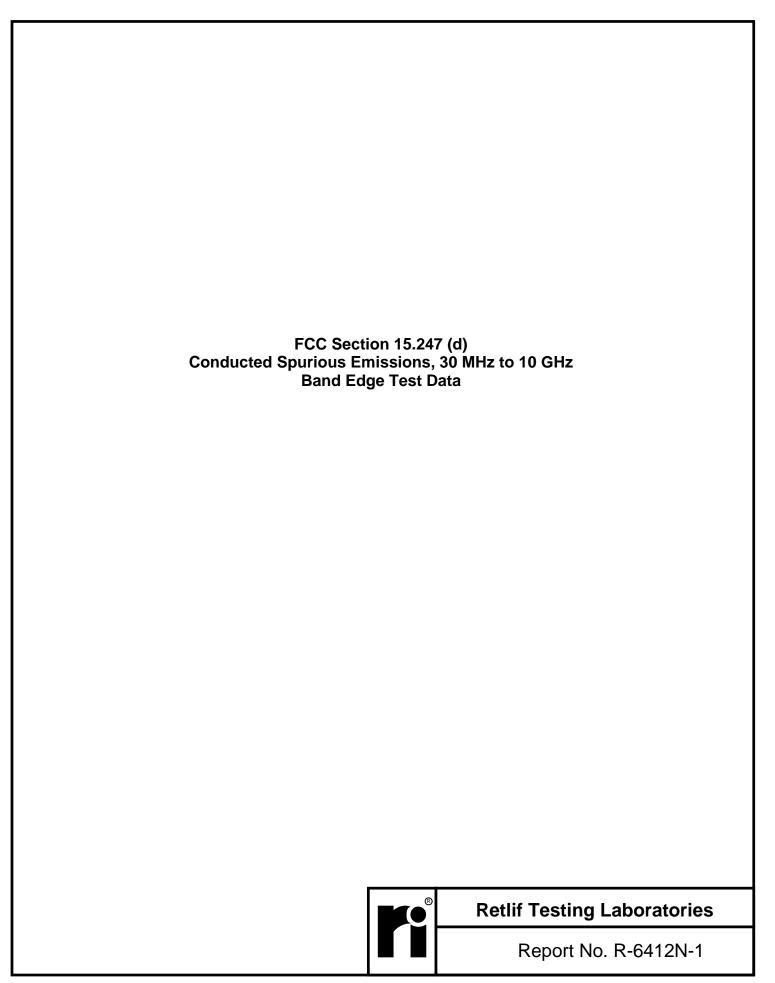
# Test Photographs Conducted Spurious Emissions, 30 MHz to 10 GHz



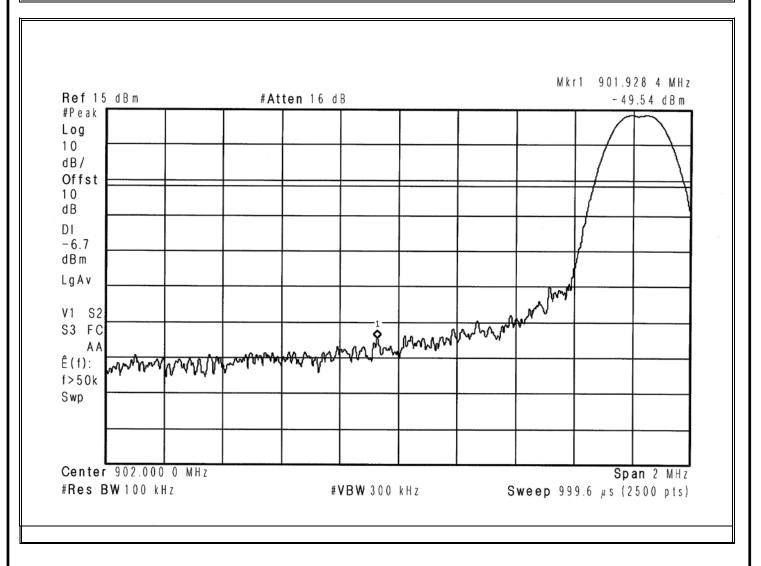
Test Setup



**Retlif Testing Laboratories** 

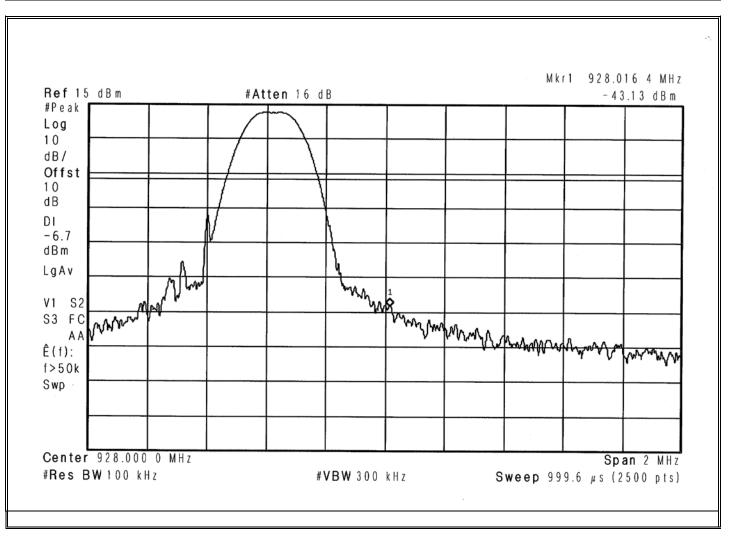


EMISSIONS TEST DATA SHEET						
Method:	Band Edge					
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Job Number:	R-6412N-1					
Customer:	Immedia Semiconductor LLC					
Test Sample:	oor XT2 Blink Camera Module					
Model Number:	CM00200U					
Serial Number:	820-000-523					
Operating Mode:	Transmitting modulated signal					
Technician:	M.Seamans					
Date(s):	April 16 <sup>th</sup> , 2019					
Temp/ Relative Humidity:	20.4 °C / 31.1 %					
Notes:	Limit: -6.7 dBm					



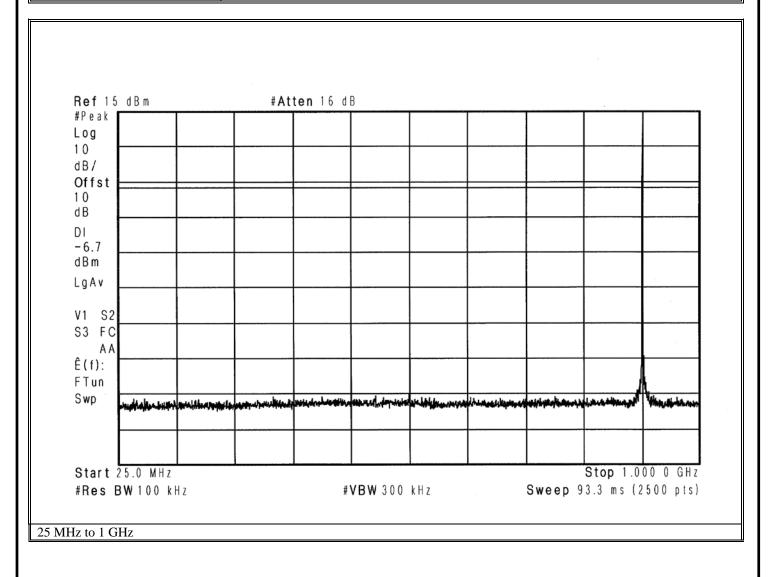


EMISSIONS TEST DATA SHEET					
Method:	Band Edge				
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)				
Job Number:	6412N-1				
Customer:	edia Semiconductor LLC				
Test Sample:	oor XT2 Blink Camera Module				
Model Number:	CM00200U				
Serial Number:	20-000-523				
Operating Mode:	Transmitting modulated signal				
Technician:	M.Seamans				
Date(s):	April 16 <sup>th</sup> , 2019				
Temp/ Relative Humidity:	20.4 °C / 31.1 %				
Notes:	Limit: -6.7 dBm				



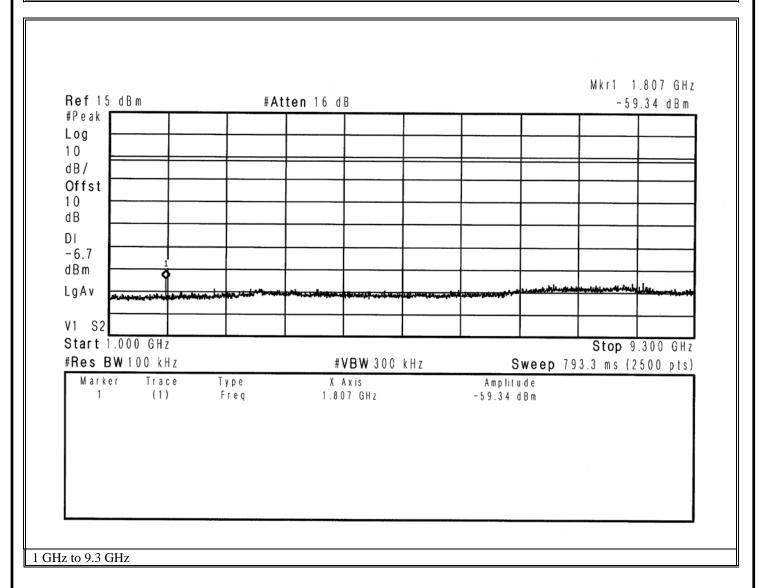


EMISSIONS TEST DATA SHEET					
Method:	Conducted Out of Band				
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)				
Job Number:	R-6412N-1				
Customer:	nedia Semiconductor LLC				
Test Sample:	or XT2 Blink Camera Module				
Model Number:	CM00200U				
Serial Number:	820-000-523				
Operating Mode:	Transmitting modulated signal				
Technician:	M.Seamans				
Date(s):	April 16 <sup>th</sup> , 2019				
Temp/ Relative Humidity:	20.4 °C / 31.1 %				
Notes:	Limit: -6.7 dBm				



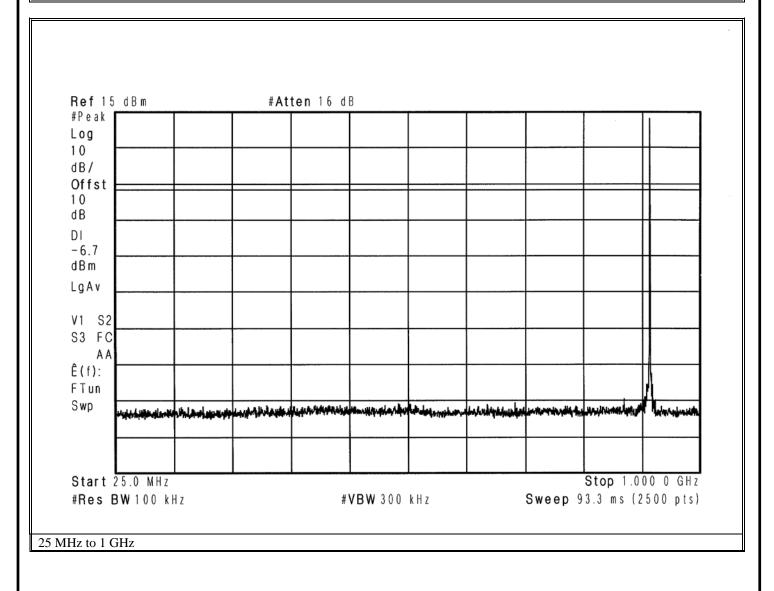


EMISSIONS TEST DATA SHEET					
Method:	Conducted Out of Band				
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)				
Job Number:	R-6412N-1				
Customer:	Immedia Semiconductor LLC				
Test Sample:	oor XT2 Blink Camera Module				
Model Number:	M00200U				
Serial Number:	320-000-523				
Operating Mode:	Transmitting modulated signal				
Technician:	M.Seamans				
Date(s):	April 16 <sup>th</sup> , 2019				
Temp/ Relative Humidity:	20.4 °C / 31.1 %				
Notes:	Limit: -6.7 dBm				



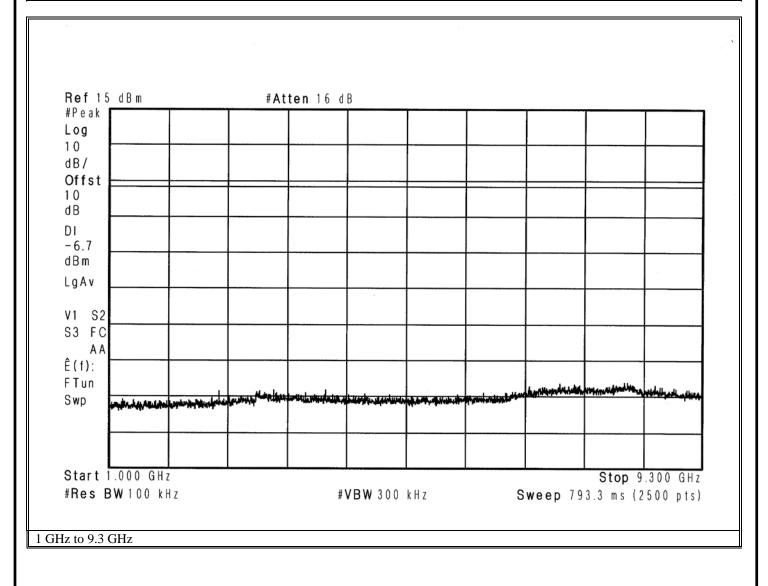


EMISSIONS TEST DATA SHEET						
Method:	Conducted Out of Band					
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)					
Job Number:	R-6412N-1					
Customer:	Immedia Semiconductor LLC					
Test Sample:	oor XT2 Blink Camera Module					
Model Number:	CM00200U					
Serial Number:	320-000-523					
Operating Mode:	Transmitting modulated signal					
Technician:	M.Seamans					
Date(s):	April 16 <sup>th</sup> , 2019					
Temp/ Relative Humidity:	20.4 °C / 31.1 %					
Notes:	Limit: -6.7 dBm					



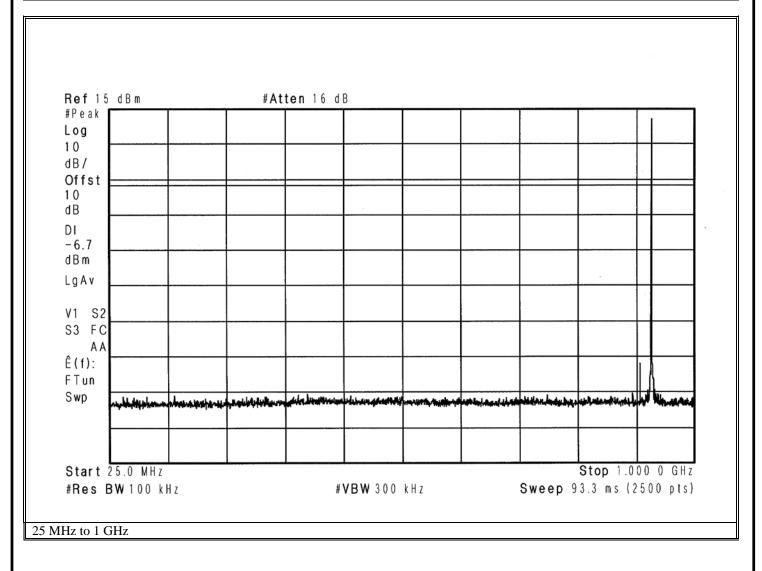


EMISSIONS TEST DATA SHEET					
Method:	Conducted Out of Band				
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)				
Job Number:	R-6412N-1				
Customer:	Immedia Semiconductor LLC				
Test Sample:	or XT2 Blink Camera Module				
Model Number:	CM00200U				
Serial Number:	820-000-523				
Operating Mode:	Transmitting modulated signal				
Technician:	M.Seamans				
Date(s):	April 16 <sup>th</sup> , 2019				
Temp/ Relative Humidity:	20.4 °C / 31.1 %				
Notes:	Limit: -6.7 dBm				



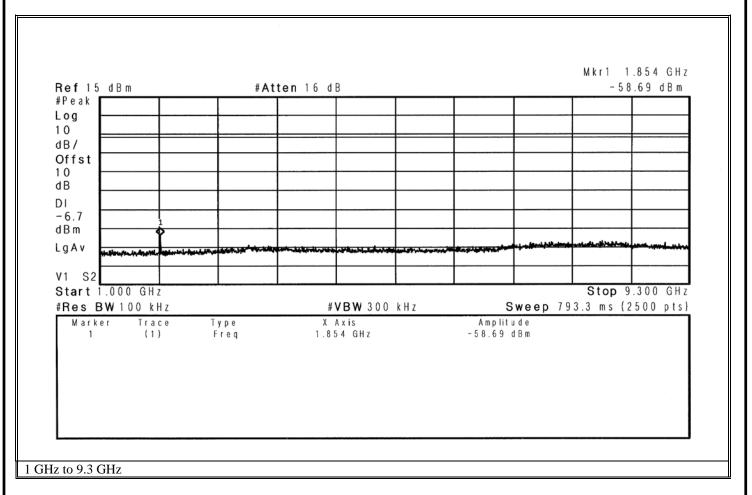


EMISSIONS TEST DATA SHEET				
Method:	Conducted Out of Band			
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)			
Job Number:	R-6412N-1			
Customer:	dia Semiconductor LLC			
Test Sample:	or XT2 Blink Camera Module			
Model Number:	M00200U			
Serial Number:	20-000-523			
Operating Mode:	Transmitting modulated signal			
Technician:	M.Seamans			
Date(s):	April 16 <sup>th</sup> , 2019			
Temp/ Relative Humidity:	20.4 °C / 31.1 %			
Notes:	Limit: -6.7 dBm			





EMISSIONS TEST DATA SHEET				
Method:	Conducted Out of Band			
Test Specification:	FCC Part 15, Subpart C Paragraph: 15.247 (d)			
Job Number:	R-6412N-1			
Customer:	Immedia Semiconductor LLC			
Test Sample:	or XT2 Blink Camera Module			
Model Number:	CM00200U			
Serial Number:	220-000-523			
Operating Mode:	Transmitting modulated signal			
Technician:	M.Seamans			
Date(s):	April 16 <sup>th</sup> , 2019			
Temp/ Relative Humidity:	20.4 °C / 31.1 %			
Notes:	Limit: -6.7 dBm			





# Test Photographs Field Strength of Spurious Emissions



Test Configuration



**Retlif Testing Laboratories** 

Test Photographs
Field Strength of Spurious Emissions



Horizontal Antenna Polarization, 30 to 200 MHz



Vertical Antenna Polarization, 30 to 200 MHz



Test Photographs
Field Strength of Spurious Emissions



Horizontal Antenna Polarization, 200 MHz to 1 GHz



Vertical Antenna Polarization, 200 MHz to 1 GHz



Test Photographs
Field Strength of Spurious Emissions

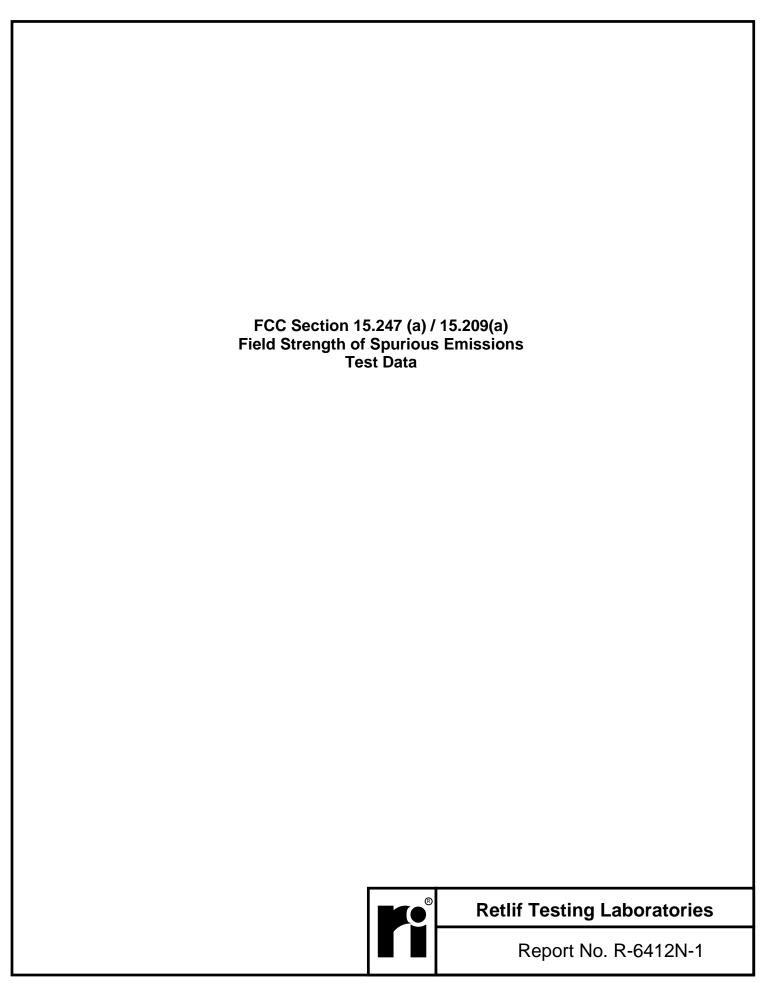


Horizontal Antenna Polarization, 1 GHz to 10 GHz



Vertical Antenna Polarization, 1 GHz to 10 GHz





RETLIF TESTING LABORATORIES					
	EMISSIONS TEST DATA SHEET				
Test Method	Unwanted Emissions into Restricted Frequency Bands				
Customer	Immedia Semiconductor LLC				
Job Number	R-6412N-1				
Test Sample	Outdoor XT2 Blink Camera Module				
Model Number	Model Number BCM00200U				
Serial Number	820-000-523				
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)			
Operating Mode	Streaming video to laptop				
Technician	M. Seamans				
Date	April 17 <sup>th</sup> , 2019				

			TEST P	ARAMETERS			
Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit at
MHz	MHz	dBuV	dB	dBuV/m		uV/m	uV/m
37.50	-	-	-	-		-	100.00
	38.00	9.32	13.28	22.60	*	13.49	I
38.25	-	-	-	-		-	100.00
73.00	-	-	-	-		-	100.00
	74.00	14.78	9.02	23.80	*	15.49	I
74.60	-	-	-	-		-	100.00
74.80	-	-	-	-		-	100.00
	75.00	13.78	9.02	22.80	*	13.80	
75.20	-	-	-	-		-	100.00
108.00	-	-	-	-		-	150.00
	115.00	8.34	15.46	23.80	*	14.62	
	-	-	-	-		-	
121.94	-	-	-	-		-	150.00
123.00	-	-	-	-		-	150.00
	130.00	8.19	15.11	23.30	*		
	-	-	-	-		-	
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**

RETLIF TESTING LABORATORIES				
	EMISSIONS TEST DATA SHEET			
Test Method	Unwanted Emissions into Restricted Frequency Bands			
Customer	Immedia Semiconductor LLC			
Job Number	R-6412N-1			
Test Sample	Outdoor XT2 Blink Camera Module			
Model Number BCM00200U				
Serial Number	820-000-523			
Test Specification FCC Part 15 Subpart C Paragraph: 15.2				
Operating Mode	Streaming video to laptop			
Technician	M. Seamans			
Date	April 17 <sup>th</sup> , 2019			
· · · · · · · · · · · · · · · · · · ·				

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	7.03	16.07	23.10	*	14.29	
150.05	-	-	-	-		-	150.00
156.52	_		_	-			150.00
	156.52	5.73	17.37	23.10	*	14.29	
156.52	-	-	-	-		-	150.00
156.70	-		-	-		_	150.00
	156.80	5.67	17.43	23.10	*	14.29	
156.90	-	-	-	-		-	150.00
162.01	-	-	-	-			150.00
	165.00	5.57	18.63	24.20	*	16.22	
167.17	-	-	-	-		-	150.00
167.72	-	-	-	-			150.00
	170.00	6.20	19.20	25.40	*	18.62	
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**

RETLIF TESTING LABORATORIES						
	EMISSIONS TEST DATA SHEET					
Test Method	Unwanted Emissions into Restricted Frequency Bands					
Customer	Immedia Semiconductor LLC					
Job Number	R-6412N-1					
Test Sample	Outdoor XT2 Blink Camera Module					
Model Number	BCM00200U					
Serial Number	820-000-523					
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)				
Operating Mode	Streaming video to laptop					
Technician	M. Seamans					
Date	April 17 <sup>th</sup> , 2019					

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	5.01	16.59	21.60	*	12.02	
285.00	-	-	-	-		-	200.00
322.80	-	-	-	-		-	200.00
	330.00	4.71	18.99	23.70	*	15.31	
335.40	-	-	-	-		-	200.00
399.90	-		-	-		-	200.00
	405.00	4.55	20.85	25.40	*	18.62	
410.00	-	-	-	-		-	200.00
608.00	-		-	-		_	200.00
	611.00	4.72	25.88	30.60	*	33.88	
614.00	-	-	-	-		-	200.00
960.00	_	_	_	-		_	500.00
1	975.00	4.60	33.10	37.70	*	76.74	
1240.00	-	-	-	-		-	500.00
1300.00	-	_	-	-		-	500.00
	1350.00	31.94	-9.40	22.54	*	13.40	
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**

RETLIF TESTING LABORATORIES							
	EMISSIONS TEST DATA SHEET						
Test Method	Unwanted Emissions into Restricted Frequency Bands						
Customer	Immedia Semiconductor LLC						
Job Number	R-6412N-1						
Test Sample	Outdoor XT2 Blink Camera Module						
Model Number	BCM00200U						
Serial Number	820-000-523						
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)					
Operating Mode	Streaming video to laptop						
Technician	M. Seamans						
Date	April 17 <sup>th</sup> , 2019						
Notes: Antenna Test Di	stance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz						

			TEST P.	ARAMETERS	S		
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
1	1500.00	32.25	-8.64	23.61	*	15.15	
1646.50	-	-	-	-		-	500.00
1660.00	-	-	-	-		-	500.00
	1680.00	32.10	-7.81	24.29	*	16.39	
1710.00	-	-	-	-		-	500.00
1718.80	-	-	-	-		-	500.00
	1720.00	32.00	-7.65	24.35	*	16.50	
1722.20	-	-	-	-		-	500.00
2200.00	-	-	-	-		-	500.00
	2250.00	31.31	-5.78	25.53	*	18.90	
2300.00	-	-	-	-		-	500.00
2310.00	-	1	-	-		-	500.00
	2390.00	42.80	-5.46	37.34		73.62	
2390.00	-	1	-	-		-	500.00
2483.50	-	1	-	-		-	500.00
	2490.00	28.91	-5.11	23.80	*	15.43	
2500.00	-	-	-	-		-	500.00

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						
	EMISSIONS TEST DATA SHEET					
Test Method	Unwanted Emissions into Restricted Frequency Bands					
Customer	Immedia Semiconductor LLC					
Job Number	R-6412N-1					
Test Sample	Outdoor XT2 Blink Camera Module	Outdoor XT2 Blink Camera Module				
Model Number	BCM00200U					
Serial Number	820-000-523					
Test Specification	FCC Part 15 Subpart C	Paragraph: 15.247(d)				
Operating Mode	Streaming video to laptop					
Technician	M. Seamans					
Date	April 17 <sup>th</sup> , 2019					

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

**Notes:** Antenna Test Distance: 3 meters

	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	
	-	-	-	-		-		
	2750.00	31.64	-4.45	27.19	*	22.88		
	-	-	-	-		-		
2900.00	-	-	-	-		-	500.00	
3260.00	-	-	-	-		-	500.00	
	3263.00	31.05	-2.88	28.17	*	25.62		
3267.00	-	-	-	-		-	500.00	
3332.00	-	-	-	-		-	500.00	
	3336.00	31.42	-2.62	28.80	*	27.54		
3339.00	-	-	-	-		-	500.00	
3345.00	-	-	-	-		-	500.00	
	3350.00	31.97	-2.57	29.40	*	29.51		
3358.00	-	-	-	-		-	500.00	
3600.00	-	-	-	-		-	500.00	
	-	-	-	-		-		
	3700.00	30.87	-1.52	29.35	*	29.34	i	
	-	-	-	-		-		

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**

RETLIF TESTING LABORATORIES							
	EMISSIONS TEST DATA SHEET						
Test Method	Unwanted Emissions into Restricted Frequency Bands						
Customer	Immedia Semiconductor LLC						
Job Number	R-6412N-1						
Test Sample	Outdoor XT2 Blink Camera Module						
Model Number	BCM00200U						
Serial Number	820-000-523						
<b>Test Specification</b>	FCC Part 15 Subpart C	Paragraph: 15.247(d)					
Operating Mode	Streaming video to laptop						
Technician	M. Seamans						
Date	April 17th, 2019						

			TEST P.	ARAMETERS			
Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading		Converted Reading	Limit a
MHz	MHz	dBuV	dB	dBuV/m		uV/m	uV/m
	-	-	-	-		-	
4400.00	-	-	-	-		-	500.00
4500.00	-	-	-	-		-	500.00
	4800.00	34.66	0.29	34.95	*	55.91	
5150.00	-	-	-	-		-	500.00
5350.00	-	-	-	-		-	500.00
	5400.00	32.52	0.92	33.44	*	46.99	
5460.00	-	-	-	-		-	500.00
7250.00	-	-	-	-		-	500.00
	7440.00	32.35	3.65	36.00	*	63.10	
7750.00	-	-	-	-		-	500.00
8025.00	-	-	-	-		-	500.00
	8300.00	32.28	4.43	36.71	*	68.47	
8500.00	-	-	-	-		-	500.00
9000.00	-	-	-	-		-	500.00
	9100.00	33.70	5.10	38.80	*	87.10	
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**

	<b>RETLIF TESTING LABORATORIES</b>				
	EMISSIONS TEST DATA SHEET				
Test Method	Unwanted Emissions into Restricted Frequency Bands				
Customer	Immedia Semiconductor LLC				
Job Number	R-6412N-1				
Test Sample	Outdoor XT2 Blink Camera Module				
Model Number	BCM00200U				
Serial Number	820-000-523				
<b>Test Specification</b>	FCC Part 15 Subpart C	Paragraph: 15.247(d)			
Operating Mode	Streaming video to laptop				
Technician	M. Seamans				
Date	April 17 <sup>th</sup> , 2019				
Notes: Antenna Test Di	istance: 3 meters Detector: Quasi-Peak <1GHz, Average >1GHz				

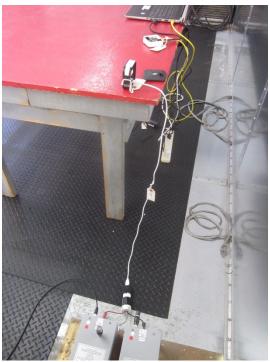
	TEST PARAMETERS								
Restricted Band	Measured Frequency	Meter Reading	Correction Factor	Corrected Reading			Converted Reading	Limit at 3M	
MHz	MHz	dBuV	dB	dBuV/m			uV/m	uV/m	
9300.00	-	-	-	-			-	500.00	
	9400.00	32.76	5.38	38.14	*		80.72		
9500.00	-	-	-	-			-	500.00	

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**

# **Test Photographs Conducted Limits**



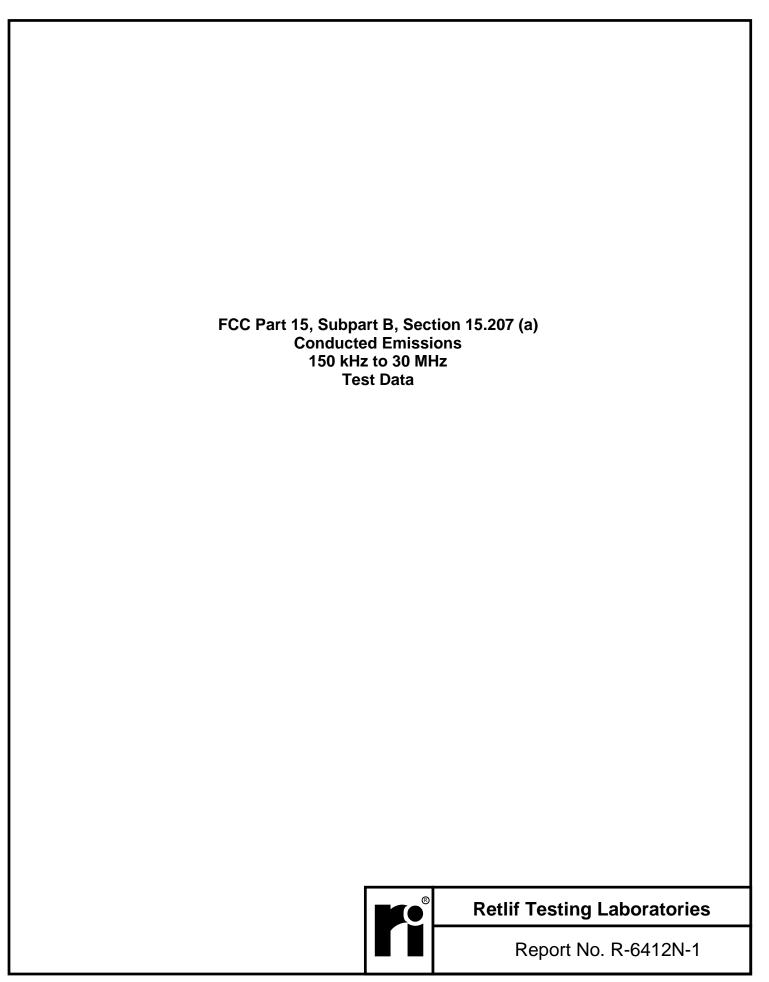
**EUT Configuration** 



Test Setup



# **Retlif Testing Laboratories**



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-6412N-1 / Immedia Semiconductor LLC					
Test Sample: Outdoor XT2 Blink Camera Module					
Model Number:	BCM00200U				
Serial Number:	820-000-523				
Operating Mode:	Sending video to laptop via sync module				
Technician:	M. Seamans				
Date(s):	April 17 <sup>th</sup> , 2019				
Temp/ Relative Humidity:	20.0 °C / 31.8 %				
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
0.158	Hot	38.05	34.60	21.10	65.57	55.57
0.150	Neutral	41.74	36.00	21.30	66.00	56.00
0.230	Hot	39.16	34.70	20.60	62.45	52.45
0.206	Neutral	39.96	35.00	19.30	63.37	53.37
0.382	Hot	39.16	34.40	25.10	58.24	48.24
0.258	Neutral	38.90	37.20	19.10	61.50	51.50
0.412	Hot	42.11	40.20	31.40	57.61	47.61
0.466	Neutral	40.31	36.30	23.30	56.58	46.58
0.722	Hot	37.79	33.10	21.90	56	46
0.882	Neutral	38.40	33.70	21.20	56	46
1.150	Hot	35.70	31.20	23.30	56	46
2.158	Neutral	35.19	28.60	17.40	56	46

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**