




<b>Prüfbericht-Nr.:</b> <i>Test Report No.:</i>	<b>50172249 001</b>	<b>Auftrags-Nr.:</b> <i>Order No.:</i>	<b>144192162</b>	<b>Seite 1 von 22</b> <i>Page 1 of 22</i>	
<b>Kunden-Referenz-Nr.:</b> <i>Client Reference No.:</i>	<b>N/A</b>	<b>Auftragsdatum:</b> <i>Order date:</i>	<b>26.07.2018</b>		
<b>Auftraggeber:</b> <i>Client:</i>	<b>PerimeterSafe Home Monitoring Limited</b> The Atrium 1321 Blanshard Street, Suite 301, Victoria, British Columbia, BC V8W 0B6 Canada				
<b>Prüfgegenstand:</b> <i>Test item:</i>	<b>Smart Home Security Camera</b>				
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type No.:</i>	<b>CHERISH F680</b>				
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	<b>FCC Certification and IC Certification</b>				
<b>Prüfgrundlage:</b> <i>Test specification:</i>	<b>FCC Part 15 Subpart C</b> <b>RSS-247 Issue 2</b> <b>ANSI C63.10-2013</b>				
<b>Wareneingangsdatum:</b> <i>Date of receipt:</i>	<b>25.07.2018</b>				
<b>Prüfmuster-Nr.:</b> <i>Test sample No.:</i>	<b>A000781367</b> <b>A000797103</b>				
<b>Prüfzeitraum:</b> <i>Testing period:</i>	<b>25.07.2018 - 27.08.2018</b>				
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	<b>TÜV Rheinland Hong Kong Ltd.</b>				
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	<b>TÜV Rheinland Hong Kong Ltd.</b>				
<b>Prüfergebnis*:</b> <i>Test result*:</i>	<b>Pass</b>				
<b>geprüft von / tested by:</b>		<b>kontrolliert von / reviewed by:</b>			
<p>27.08.2018 <b>Benny Lau</b> Senior Project Manager</p> 		<p>27.08.2018 <b>Sharon Li</b> Senior Unit Manager</p> 			
<b>Datum</b> <i>Date</i>	<b>Name / Stellung</b> <i>Name / Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>	<b>Name / Stellung</b> <i>Name / Position</i>	<b>Unterschrift</b> <i>Signature</i>
<b>Sonstiges / Other:</b>		<b>FCC ID: 2APVD-F680</b> <b>IC: 23907-F680</b>			
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>		<b>Prüfmuster vollständig und unbeschädigt</b> <i>Test item complete and undamaged</i>			
<p>* Legende: 1 = sehr gut      2 = gut      3 = befriedigend      4 = ausreichend      5 = mangelhaft  P(ass) = entspricht o.g. Prüfgrundlage(n)      F(ail) = entspricht nicht o.g. Prüfgrundlage(n)      N/A = nicht anwendbar      N/T = nicht getestet</p> <p>Legend: 1 = very good      2 = good      3 = satisfactory      4 = sufficient      5 = poor  P(ass) = passed a.m. test specification(s)      F(ail) = failed a.m. test specification(s)      N/A = not applicable      N/T = not tested</p>					
<p><b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b></p> <p><i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i></p>					

# Table of Content

	<b>Page</b>
<b>Cover Page</b> .....	<b>1</b>
<b>Table of Content</b> .....	<b>2</b>
<b>Product information</b> .....	<b>4</b>
<b>Manufacturers declarations</b> .....	<b>4</b>
<b>Product function and intended use</b> .....	<b>4</b>
<b>Submitted documents</b> .....	<b>4</b>
<b>Independent Operation Modes</b> .....	<b>4</b>
<b>Related Submittal(s) Grants</b> .....	<b>4</b>
<b>Remark</b> .....	<b>4</b>
<b>Test Set-up and Operation Mode</b> .....	<b>5</b>
<b>Principle of Configuration Selection</b> .....	<b>5</b>
<b>Test Operation and Test Software</b> .....	<b>5</b>
<b>Special Accessories and Auxiliary Equipment</b> .....	<b>5</b>
<b>Countermeasures to achieve EMC Compliance</b> .....	<b>5</b>
<b>Test Methodology</b> .....	<b>6</b>
<b>Radiated Emission</b> .....	<b>6</b>
<b>Field Strength Calculation</b> .....	<b>6</b>
<b>Test Setup Diagram</b> .....	<b>7</b>
<b>Test Facility</b> .....	<b>9</b>
<b>Test Laboratory Information</b> .....	<b>9</b>
<b>List of Test and Measurement Instruments</b> .....	<b>10</b>
<b>Measurement Uncertainty</b> .....	<b>11</b>
<b>Results FCC Part 15 – Subpart C/ RSS-247 Issue 2</b> .....	<b>12</b>
<b>FCC 15.203 – Antenna Requirement 1</b> ..... <b>Pass</b> .....	<b>12</b>
<b>FCC 15.204 – Antenna Requirement 2</b> ..... <b>Pass</b> .....	<b>12</b>
<b>RSS-Gen 6.3 – External Control</b> ..... <b>Pass</b> .....	<b>12</b>
<b>RSS-Gen 8.3 – Antenna Requirement</b> .....	<b>Pass</b> ..... <b>12</b>
<b>FCC 15.207/ RSS-Gen 8.8 – Conducted Emission on AC Mains</b> ..... <b>Pass</b> .....	<b>13</b>
<b>FCC 15.247 (a)(2) / RSS-247 5.2 – 6dB Bandwidth Measurement</b> ..... <b>Pass</b> .....	<b>14</b>
<b>FCC 15.247(b)(3) / RSS-247 5.4 – Maximum Peak Couducted Output Power</b> ..... <b>Pass</b> .....	<b>15</b>

**FCC 15.247(e) / RSS-247 5.2 – Power Spectral Density ..... Pass..... 16**

**FCC 15.247(d) / RSS-247 5.5 – Spurious Conducted Emissions ..... Pass..... 17**

**FCC 15.205/ RSS-Gen 8.10 – Radiated Emissions in Restricted Frequency Bands... Pass..... 18**

**FCC 15.209/ RSS-Gen 8.9 – Radiated Emissions ..... Pass..... 21**

**Appendix 1 – Test protocols ..... 46 pages**

**Appendix 2 – Test setup ..... 2 pages**

**Appendix 3 – EUT External Photos ..... 4 pages**

**Appendix 4 – EUT Internal Photos ..... 6 pages**

**Appendix 5 – RF exposure information..... 3 pages**

## Product information

### Manufacturers declarations

	<b>Transceiver</b>
Operating frequency range	2412 - 2462 MHz
Type of modulation	802.11b: DSSS (DBPSK/DQPSK/CCK) 802.11g: OFDM (BPSK/QPSK/16-QAM) 802.11n: OFDM (BPSK/QPSK/16QAM/64QAM)
Number of channels	11 for 20MHz Bandwidth 9 for 40MHz Bandwidth
Channel separation	5 MHz
Type of antenna	Integral PCB Antenna
Antenna gain (dBi)	1 dBi
Power level	fix
Type of equipment	stand alone radio device
Connection to public utility power line	Yes
Nominal voltage	V <sub>nom</sub> : 100-240VAC and 3.8 VDC
Independent Operation Modes	Transmitting

### Product function and intended use

The equipment under test (EUT) is a IP-CAM with Wi-Fi connectivity .

FCC ID: 2APVD-F680/ IC: 23907-F680

<b>Models</b>	<b>Product description</b>
CHERISH F680	Smart Home Security Camera

### Submitted documents

Circuit Diagram  
Block Diagram  
Technical Description  
User manual  
Label

### Independent Operation Modes

The basic operation modes are:

- Transmitting mode.
- Video Streaming mode

For further information refer to User Manual

### Related Submittal(s) Grants

This is a single application for certification of the Wi-Fi transmitter.

### Remark

The test results in this test report are only relevant to the tested sample and does not involve any assessment in the production.

## Test Set-up and Operation Mode

### Principle of Configuration Selection

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

### Test Operation and Test Software

Test operation should refer to test methodology.

- During test, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power was selected according to the instruction given by the manufacturer. The setting of the RF output power expected by the customer shall be fixed on the firmware of the final end product.

### Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

1. AC-DC adaptor Model: 97B050150BW01 (Provided by applicant)

### Countermeasures to achieve EMC Compliance

- NIL

## Test Methodology

### Radiated Emission

The radiated emission measurements of the transmitter part were performed according to the procedures in ANSI C63.10-2013.

For measurement below 1GHz - the equipment under test (EUT) was placed at the middle of the 80 cm height turntable. For measurement above 1GHz - the EUT was placed at the middle of the 1.5 m height turntable and RF absorbing material was placed on ground plane between turntable and measuring antenna. During the testing, the EUT was operated standalone and arranged for maximum emissions. The EUT was tested in three orthogonal planes.

The investigation is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

All radiated tests were performed at an antenna to EUT with 3 meters distance, unless stated otherwise in particular parts of this test report.

### Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

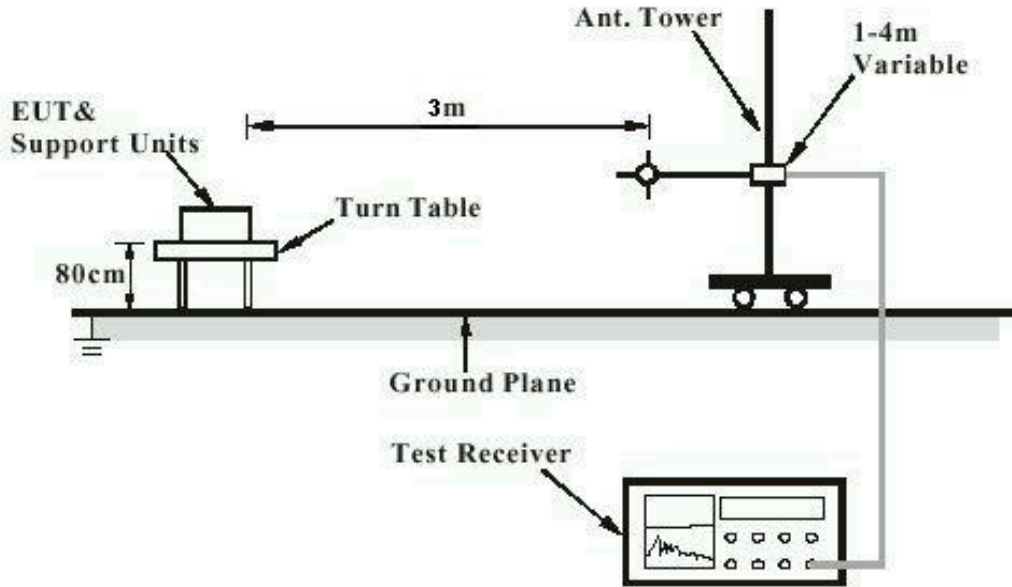
$$FS = R + AF + CF + FA - PA$$

Where FS = Field Strength in dBuV/m at 3 meters.  
R = Reading of Spectrum Analyzer in dBuV.  
AF = Antenna Factor in dB.  
CF = Cable Attenuation Factor in dB.  
FA = Filter Attenuation Factor in dB.  
PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

## Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test



Note: Measurements above 1 GHz are done with a table height of 1.5m. In addition, there is RF absorbing material on the floor of the test site for above 1GHz measurement.

Diagram of Measurement Equipment Configuration for Mains Conduction Measurement (if applicable)

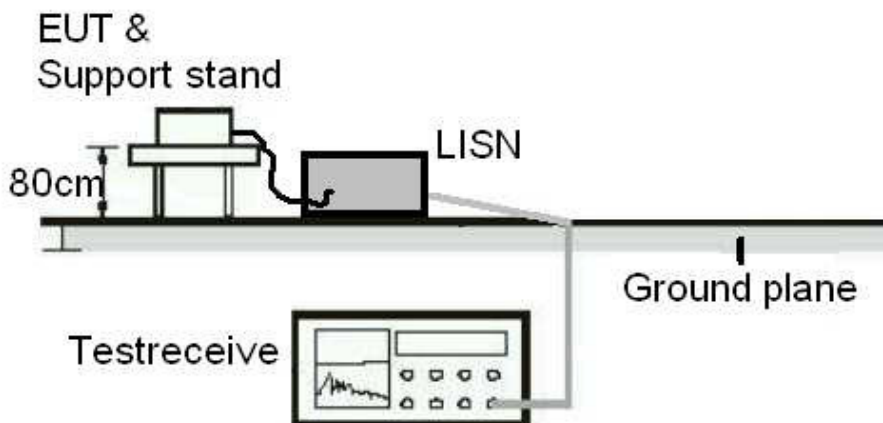
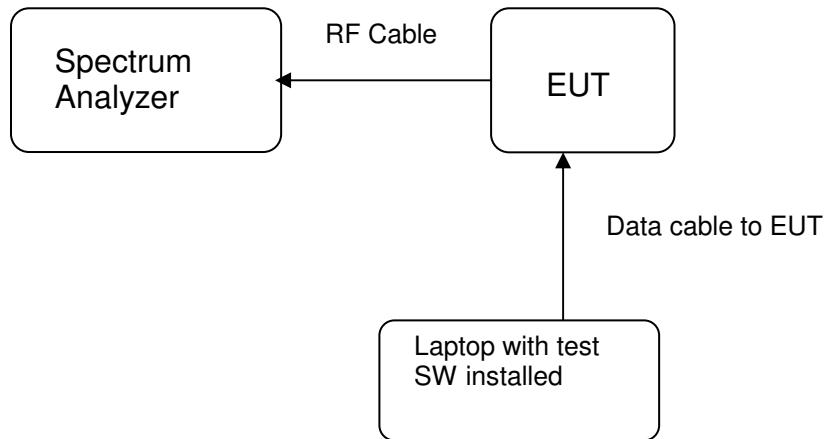


Diagram of Equipment Configuration for Antenna-port Conducted Measurement (if applicable)





## Test Facility

### Test Laboratory Information

TÜV Rheinland Hong Kong Ltd.

Address: 3-4, 11/F., Fou Wah Industrial Building, 10-16 Pun Shan Street, Tsuen Wan, N.T., Hong Kong

Tel.: +852 2192 1000

Fax: +852 2192 1001

Email [service-gc@tuv.com](mailto:service-gc@tuv.com)

Web: [www.tuv.com](http://www.tuv.com)

The test facility is recognized or accredited by the following organizations:

#### **FCC**

Type	: Accredited Test Firm
Designation Number	: HK0013
Test Firm Registration Number	: 371735
Scope	: Intentional Radiators

#### **Industry Canada**

The 10m Semi-anechoic chamber used by TÜV Rheinland Hong Kong Ltd at Hong Kong Productivity Council has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

Test Site Registration Number : 4780A-1

## List of Test and Measurement Instruments

### Radiated Emission

Equipment	Manufacturer	Type	Cal. Date	Due Date
Semi-anechoic Chamber	Frankonia	Nil	23-Apr-18	23-Apr-19
Test Receiver	R & S	ESU40	12-Jun-18	12-Jun-19
Active Loop Antenna	EMCO	6502	30-Oct-17	30-Oct-18
Bi-conical Antenna	R & S	HK116	21-Mar-18	21-Mar-20
Log Periodic Antenna	R & S	HL223	22-Mar-18	22-Mar-20
Horn Antenna	EMCO	3115	28-Mar-18	28-Mar-20
Coaxial cable	Huber+Suhner	CNM-NMCMILX800-473	11-Dec-17	11-Dec-19
High Frequency Cable	Huber+Suhner	CNM-NMCMILX800-473	11-Dec-17	11-Dec-19
Microwave amplifier 0.5-26.5GHz, 25dB gain	HP	83017A	18-Jul-17	18-Jul-19
Preamplifier 18GHz to 40GHz with cable	A.H. Systems, Inc.	PAM-1840VH	29-Jan-18	29-Jan-19
High Pass Filter (cutoff freq. =1000MHz)	Trilithic	23042	30-Oct-17	30-Oct-19

### AC Mains Conducted Emission

Equipment	Manufacturer	Type	Cal. Date	Due Date
Test Receiver	R & S	ESU40	12-Jun-18	12-Jun-19
LISN	R & S	ENV216	31-Jul-18	31-Jul-19
Double Shield Cable	Huber+ Suhner	RG223/U-01	18-May-17	18-May-19

### Radio Test

Equipment	Manufacturer	Type	Cal. Date	Due Date
Spectrum Analyzer	R & S	FSP30	03-May-18	02-May-19
Power Meter	Boonton	55066	08-Mar-18	09-Mar-19

## Measurement Uncertainty

The estimated combined standard uncertainty for power-line conducted emissions measurements is  $\pm 2.42$ dB.

The estimated combined standard uncertainty for radiated emissions measurements is  $\pm 4.81$ dB (9kHz to 30MHz) and  $\pm 4.62$ dB (30MHz to 200MHz) and  $\pm 5.67$ dB (200MHz to 1000MHz) and is  $\pm 5.07$ dB (1GHz to 8.2GHz) and  $\pm 4.58$ dB (8.2GHz to 12.4GHz) and  $\pm 4.78$ dB (12.4GHz to 18GHz)

The estimated combined standard uncertainty for antenna conducted emission is  $\pm 2.1$ dB

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of  $k=2$ , which for the level of confidence is approximately 95%.

## Results FCC Part 15 – Subpart C/ RSS-247 Issue 2

<b>FCC 15.203 – Antenna Requirement 1</b>		<b>Pass</b>
<b>FCC Requirement:</b>	No antenna other than that furnished by the responsible party shall be used with the device	
<b>Results:</b>	a) Antenna type:	Fixed Integral antenna
	b) Manufacturer and model no:	Cinatic Technology Limited
	c) Peak Gain:	1 dBi
<b>Verdict:</b>	Pass	

<b>FCC 15.204 – Antenna Requirement 2</b>		<b>Pass</b>
<b>FCC Requirement:</b>	An intentional radiator may be operated only with the antenna with which it is authorized. If an antenna is marketed with the intentional radiator, it shall be of a type which is authorized with the intentional radiator.	
<b>Results:</b>	Only one integral antenna can be used.	
<b>Verdict:</b>	N/A	

<b>RSS-Gen 6.3 – External Control</b>		<b>Pass</b>
<b>IC Requirement:</b>	The device shall not have any external controls accessible to the user that enable it to be adjusted, selected or programmed to operate in violation of the limits prescribed in the applicable RSS.	
<b>Results:</b>	The device does not have any transmitter external controls accessible to the user that can be adjusted and operated in violation of the limits of this standard.	
<b>Verdict:</b>	Pass	

<b>RSS-Gen 8.3 – Antenna Requirement</b>		<b>Pass</b>
<b>IC Requirement:</b>	When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device’s antenna shall be stated, based on measurement or on data from the antenna manufacturer.	
<b>Results:</b>	a) Antenna type:	Fixed Integral antenna
	b) Manufacturer	Cinatic Technology Limited
	c) model no	N/A
	d) Gain with reference to an isotropic radiator:	1 dBi
<b>Verdict:</b>	Pass	

<b>FCC 15.207/ RSS-Gen 8.8 – Conducted Emission on AC Mains</b>							<b>Pass</b>
Test Specification : ANSI C63.10-2013 Test date : 27.08.2018 Mode of operation : TX mode Supply voltage : 120Vac 60Hz Temperature : 23°C Humidity : 50%							
Requirement: 15.207(a)/ RSS-Gen 8.8							
<b>Results:</b> Pass							
<b>Live measurement</b>							
Frequency range (MHz)	Frequency (MHz)	Quasi-peak dBµV	Average dBµV	Limit QP (dBµV)	Limit AV (dBµV)	Verdict	
0,15 – 0,5	0.226	33.66	16.60	66 - 56	56 - 46	Pass	
> 0,5 - 5	0.506	32.26	20.10	56	46	Pass	
> 5 - 30	No peak found	---	---	60	50	Pass	
<b>Neutral measurement</b>							
Frequency range (MHz)	Frequency (MHz)	Quasi-peak dBµV	Average dBµV	Limit QP (dBµV)	Limit AV (dBµV)	Verdict	
0,15 – 0,5	0.166	37.87	16.10	66 - 56	56 - 46	Pass	
> 0,5 - 5	0.562	36.29	33.24	56	46	Pass	
> 5 - 30	No peak found	---	---	60	50	Pass	
<b>Results:</b> Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate.  The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz does not exceed the limits. For test Results plots refer to Appendix 1							

<b>FCC 15.247 (a)(2) / RSS-247 5.2 – 6dB Bandwidth Measurement</b>		<b>Pass</b>	
<b>Requirement:</b> Systems using digital modulation techniques may operate in the 902 – 928 MHz, 2400 – 2483.5 MHz, and 5725 – 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500kHz.			
Test Specification : ANSI C63.10 – 2013 Mode of operation : TX mode Port of testing : Temporary antenna port Detector : Peak Supply voltage : 5 Vdc Temperature : 23°C Humidity : 50%			
<b>Results:</b> For test protocols please refer to Appendix 1			
<b>802.11b</b>			
Channel frequency (MHz)	6 dB left (MHz)	6 dB right (MHz)	6dB bandwidth (MHz)
2412	2408.400	2415.160	6.76
2437	2433.200	2440.160	6.96
2462	2458.440	2465.160	6.72
<b>802.11g</b>			
Channel frequency (MHz)	6 dB left (MHz)	6 dB right (MHz)	6dB bandwidth (MHz)
2412	2403.720	2420.28	16.56
2437	2428.960	2445.28	16.32
2462	2453.790	2470.28	16.49
<b>802.11n20</b>			
Channel frequency (MHz)	6 dB left (MHz)	6 dB right (MHz)	6dB bandwidth (MHz)
2412	2403.120	2420.92	17.80
2437	2428.120	2445.92	17.80
2462	2453.120	2470.82	17.70
<b>802.11n40</b>			
Channel frequency (MHz)	6 dB left (MHz)	6 dB right (MHz)	6dB bandwidth (MHz)
2422	2403.760	2440.32	36.56
2437	2418.760	2455.32	36.56
2452	2433.760	2470.32	36.56

<b>FCC 15.247(b)(3) / RSS-247 5.4 – Maximum Peak Couducted Output Power</b>				<b>Pass</b>
<b>Requirement:</b> For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850MHz bands: 1 Watt (30dBm)				
Test Specification : ANSI C63.10 – 2013 Mode of operation : TX mode Port of testing : Temporary antenna port Detector : Peak (Power Meter) Supply voltage : 5.0 Vdc Temperature : 23°C Humidity : 50%				
<b>Results:</b> Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate. The worst cases is found in 1Mbps, 6Mbps, 6.5Mbps and 13.5Mbps respectively.				
<b>802.11b</b>				
Frequency (MHz)	Cable loss (dB)	Measured Output Power (dBm)	Limit (dBm)	Verdict
2412	1	20.149	30.0	Pass
2437	1	20.245	30.0	Pass
2462	1	20.042	30.0	Pass
<b>802.11g</b>				
Frequency (MHz)	Cable loss (dB)	Measured Output Power (dBm)	Limit (dBm)	Verdict
2412	1	23.264	30.0	Pass
2437	1	23.597	30.0	Pass
2462	1	23.604	30.0	Pass
<b>802.11n-HT20</b>				
Frequency (MHz)	Cable loss (dB)	Measured Output Power (dBm)	Limit (dBm)	Verdict
2412	1	23.143	30.0	Pass
2437	1	23.472	30.0	Pass
2462	1	23.524	30.0	Pass
<b>802.11n-HT40</b>				
Frequency (MHz)	Cable loss (dB)	Measured Output Power (dBm)	Limit (dBm)	Verdict
2422	1	23.383	30.0	Pass
2437	1	23.480	30.0	Pass
2452	1	23.560	30.0	Pass

<b>FCC 15.247(e) / RSS-247 5.2 – Power Spectral Density</b>				<b>Pass</b>
<b>Requirement:</b> 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.				
Test Specification : ANSI C63.10 – 2013 Mode of operation : TX mode Port of testing : Temporary antenna port Detector : Peak Supply voltage : 5.0 Vdc Temperature : 23°C Humidity : 50%				
<b>Results:</b> Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate. The worst cases is found in 1Mbps, 6Mbps, 6.5Mbps and 13.5Mbps respectively. For test protocols please refer to Appendix 1				
<b>802.11b</b>				
<b>Operating frequency (MHz)</b>	<b>Cable loss (dB)</b>	<b>Power density (dBm)</b>	<b>Limit (dBm)</b>	<b>Verdict</b>
2412	1	5.89	8.0	Pass
2437	1	5.49	8.0	Pass
2462	1	4.53	8.0	Pass
<b>802.11g</b>				
<b>Operating frequency (MHz)</b>	<b>Cable loss (dB)</b>	<b>Power density (dBm)</b>	<b>Limit (dBm)</b>	<b>Verdict</b>
2412	1	1.13	8.0	Pass
2437	1	0.46	8.0	Pass
2462	1	-0.26	8.0	Pass
<b>802.11n-HT20</b>				
<b>Operating frequency (MHz)</b>	<b>Cable loss (dB)</b>	<b>Power density (dBm)</b>	<b>Limit (dBm)</b>	<b>Verdict</b>
2412	1	0.90	8.0	Pass
2437	1	0.28	8.0	Pass
2462	1	-0.55	8.0	Pass
<b>802.11n-HT40</b>				
<b>Operating frequency (MHz)</b>	<b>Cable loss (dB)</b>	<b>Power density (dBm)</b>	<b>Limit (dBm)</b>	<b>Verdict</b>
2422	1	-1.58	8.0	Pass
2437	1	-1.72	8.0	Pass
2452	1	-2.39	8.0	Pass



<b>FCC 15.247(d) / RSS-247 5.5 – Spurious Conducted Emissions</b>						<b>Pass</b>
Test Specification : ANSI C63.10 – 2013 Mode of operation : TX mode Port of testing : Temporary antenna port Detector : Peak Supply voltage : 3.7 Vdc Temperature : 23 °C Humidity : 50 %						
<b>Requirement:</b> 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.						
<b>Results:</b> Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate. The worst cases is found in 1Mbps, 6Mbps, 6.5Mbps and 13.5Mbps respectively. Only the worst cases is shown below. For test protocols refer to Appendix 1						
<b>802.11b</b>						
Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict	
2412	2399.200	-28.15	4.89	33.04	Pass	
2437	4880.000	-40.29	4.49	44.78	Pass	
2462	24592.000	-31.54	3.53	35.07	Pass	
<b>802.11g</b>						
Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict	
2412	2399.600	-31.64	0.13	31.77	Pass	
2437	24568.000	-41.38	-0.54	40.84	Pass	
2462	24568.000	-41.60	-1.26	40.34	Pass	
<b>802.11n-HT20</b>						
Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict	
2412	2399.800	-29.60	-0.10	29.5	Pass	
2437	24616.000	-41.14	-0.72	40.42	Pass	
2462	2484.590	-40.06	-1.55	38.51	Pass	
<b>802.11n-HT40</b>						
Operating frequency (MHz)	Spurious frequency (MHz)	Spurious Level (dBm)	Reference value (dBm)	Delta (dB)	Verdict	
2422	2399.360	-31.65	-2.58	29.07	Pass	
2437	24568.000	-41.14	-2.72	38.42	Pass	
2452	2484.800	-33.50	-3.39	30.11	Pass	

<b>FCC 15.205/ RSS-Gen 8.10 – Radiated Emissions in Restricted Frequency Bands</b>		<b>Pass</b>
Test Specification : ANSI C63.10 – 2013 Mode of operation : TX mode Port of testing : Enclosure Detector : Peak Supply voltage : 5.0 Vdc Temperature : 23°C Humidity : 50%		
<b>Requirement:</b>	In any 100kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. 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 15.205(c).	
<b>Results:</b>	Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate.  All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.	
Mode: 802.11b 2412MHz TX <span style="float:right">Vertical Polarization</span>		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4824.123	57.7	74.0 / PK
4824.123	45.7	54.0 / AV
2390.000	55.8	74.0 / PK
2390.000	42.7	54.0 / AV
Mode: 802.11b 2412MHz TX <span style="float:right">Horizontal Polarization</span>		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4824.131	60.5	74.0 / PK
4824.131	49.1	54.0 / AV
2390.000	50.1	74.0 / PK
2390.000	37.3	54.0 / AV
Mode: 802.11b 2437 MHz TX <span style="float:right">Vertical Polarization</span>		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4874.136	55.4	74.0 / PK
4874.136	43.0	54.0 / AV
Mode: 802.11b 2437 MHz TX <span style="float:right">Horizontal Polarization</span>		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4874.128	56.4	74.0 / PK
4874.128	44.0	54.0 / AV
Mode: 802.11b 2462MHz TX <span style="float:right">Vertical Polarization</span>		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4924.134	54.9	74.0 / PK

4924.134	42.8	54.0 / AV
2483.500	51.0	74.0 / PK
2483.500	38.8	54.0 / AV
Mode: 802.11b 2462 MHz TX Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4924.121	59.4	74.0 / PK
4924.121	48.3	54.0 / AV
2483.500	49.4	74.0 / PK
2483.500	36.0	54.0 / AV
Mode: 802.11g 2412MHz TX Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
2390.000	62.7	74.0 / PK
2390.000	44.7	54.0 / AV
4824.121	51.6	74.0 / PK
4824.121	37.4	54.0 / AV
Mode: 802.11g 2412MHz TX Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
2390.000	60.2	74.0 / PK
2390.000	41.7	54.0 / AV
4824.120	52.1	74.0 / PK
4824.120	37.6	54.0 / AV
Mode: 802.11g 2437 MHz TX Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
43.26	32.6	40.0 / QP
4874.100	51.1	74.0 / PK
4874.100	37.7	54.0 / AV
Mode: 802.11g 2437 MHz TX Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
122.58	32.5	43.5 / QP
4874.100	51.5	74.0 / PK
4874.100	37.4	54.0 / AV
Mode: 802.11g 2462MHz TX Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4925.340	51.9	74.0 / PK
4925.340	38.5	54.0 / AV
2483.500	59.7	74.0 / PK
2483.500	44.0	54.0 / AV
Mode: 802.11g 2462 MHz TX Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4923.750	55.0	74.0 / PK
4923.750	41.2	54.0 / AV
2483.500	56.0	74.0 / PK
2483.500	40.4	54.0 / AV

Mode: 802.11n20 2412MHz TX		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2390.000	67.1	74.0 / PK	
2390.000	49.1	54.0 / AV	
4823.500	58.8	74.0 / PK	
4823.500	46.3	54.0 / AV	
Mode: 802.11n20 2412MHz TX		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2390.000	62.1	74.0 / PK	
2390.000	44.5	54.0 / AV	
4826.500	56.1	74.0 / PK	
4826.500	41.9	54.0 / AV	
Mode: 802.11n20 2437 MHz TX		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4876.620	57.7	74.0 / PK	
4876.620	43.8	54.0 / AV	
Mode: 802.11n20 2437 MHz TX		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4878.500	55.2	74.0 / PK	
4878.500	41.1	54.0 / AV	
Mode: 802.11n20 2462MHz TX		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4924.112	61.0	74.0 / PK	
4924.112	47.2	54.0 / AV	
2483.500	61.1	74.0 / PK	
2483.500	46.7	54.0 / AV	
Mode: 802.11n20 2462 MHz TX		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4924.100	54.4	74.0 / PK	
4924.100	41.2	54.0 / AV	
2483.500	57.8	74.0 / PK	
2483.500	43.2	54.0 / AV	
Mode: 802.11n40 2422MHz TX		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2390.000	55.1	74.0 / PK	
2390.000	40.3	54.0 / AV	
4844.100	59.4	74.0 / PK	
4844.100	46.4	54.0 / AV	
Mode: 802.11n40 2422MHz TX		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	

2390.000	52.4	74.0 / PK
2390.000	37.8	54.0 / AV
4844.100	55.2	74.0 / PK
4844.100	41.8	54.0 / AV
Mode: 802.11n40 2437 MHz TX Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4873.000	53.4	74.0 / PK
4873.000	40.6	54.0 / AV
Mode: 802.11n40 2437 MHz TX Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4876.000	55.9	74.0 / PK
4876.000	41.6	54.0 / AV
Mode: 802.11n40 2452MHz TX Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
2483.500	48.9	74.0 / PK
2483.500	34.8	54.0 / AV
4967.000	51.5	74.0 / PK
4967.000	38.0	54.0 / AV
Mode: 802.11n40 2452 MHz TX Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
2483.500	49.6	74.0 / PK
2483.500	35.7	54.0 / AV
4967.000	52.1	74.0 / PK
4967.000	38.0	54.0 / AV

<b>FCC 15.209/ RSS-Gen 8.9 – Radiated Emissions</b>		<b>Pass</b>
Test Specification : ANSI C63.10-2013 Mode of operation : Video Streaming mode. Port of testing : Enclosure Supply voltage : 120Vac Temperature : 23°C Humidity : 50%		
Requirement:	The field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the radiated limits shown in §15.209(a).	
Results:	Pass	
Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit dBuV/m</b>
43.260	32.6	40.0 / QP
816.772	40.8	46.0 / QP
891.024	44.4	46.0 / QP
Horizontal Polarization		

<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
122.580	32.5	43.5 / QP
637.516	43.7	46.0 / QP