

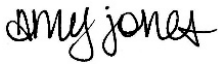


# EMCE Engineering

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## MEASUREMENT REPORT

### FCC PART15.407 / ISSED RSS-247 WLAN(802.11n(20/40MHz)) – 5GHz Band

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>Applicant Name:</b><br>Stem Innovation, LLC dBa Iconoscope, LLC<br>21 G Street, Salt Lake City, UT 84102 USA                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Date of Issue :</b><br>11/27/2017<br><b>Test Site/Location:</b><br>EMCE ENGINEERING<br>1726 Ringwood Avenue, San Jose, CA 95131 USA<br><b>Report No.:</b> 4325-3<br><b>EMCE FRN:</b> 0007198120 |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>FCC ID :</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>YM780-9500</b>                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>IC :</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>9637A-809500</b>                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>Application Type</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Certification                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>Model:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 80-9500                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>Additional Model(s):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | N/A                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>EUT Type:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | IP Camera                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>Max. RF Output Power:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <table><tr><td><b>UNII-1 802.11n-20 MHz BW (7.12 dBm), UNII-1 802.11n-40 MHz BW 3.99 dBm)</b></td></tr><tr><td><b>UNII-2A 802.11n-20 MHz BW (8.32 dBm), UNII-2A 802.11n-40 MHz BW (3.92 dBm),</b></td></tr><tr><td><b>UNII-2C 802.11n-20 MHz BW (10.49 dBm), UNII-2C 802.11n-40 MHz BW (6.27 dBm),</b></td></tr><tr><td><b>UNII-3 802.11n-20 MHz BW (10.89 dBm), UNII-3 802.11n-40 MHz BW (6.40 dBm)</b></td></tr></table> |                                                                                                                                                                                                    |                     | <b>UNII-1 802.11n-20 MHz BW (7.12 dBm), UNII-1 802.11n-40 MHz BW 3.99 dBm)</b> | <b>UNII-2A 802.11n-20 MHz BW (8.32 dBm), UNII-2A 802.11n-40 MHz BW (3.92 dBm),</b> | <b>UNII-2C 802.11n-20 MHz BW (10.49 dBm), UNII-2C 802.11n-40 MHz BW (6.27 dBm),</b> | <b>UNII-3 802.11n-20 MHz BW (10.89 dBm), UNII-3 802.11n-40 MHz BW (6.40 dBm)</b> |
| <b>UNII-1 802.11n-20 MHz BW (7.12 dBm), UNII-1 802.11n-40 MHz BW 3.99 dBm)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>UNII-2A 802.11n-20 MHz BW (8.32 dBm), UNII-2A 802.11n-40 MHz BW (3.92 dBm),</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>UNII-2C 802.11n-20 MHz BW (10.49 dBm), UNII-2C 802.11n-40 MHz BW (6.27 dBm),</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>UNII-3 802.11n-20 MHz BW (10.89 dBm), UNII-3 802.11n-40 MHz BW (6.40 dBm)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>Frequency Range:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5180 MHz – 5240 MHz(UNII-1) / 5260 MHz – 5320 MHz(UNII-2A) / 5500 MHz – 5700 MHz(UNII-2C) / 5745 MHz – 5825 MHz(UNII-3)                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>Modulation type</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | OFDM (802.11n(20/40MHz))                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>FCC Classification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Unlicensed National Information Infrastructure (NII)                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>FCC Rule Part(s):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Part 15.407                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>ISED Rule Part(s):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | RSS-247 Issue 2(Feb. 2017) / RSS-GEN Issue 4 (Nov. 2014)                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <b>Test Procedure(s):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ANSI C63.10-2013 / KDB 789033 D02(05/02/2017)                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this Equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. <b>EMCE Engineering</b> Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C.853(a) |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                    |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| <br>Report prepared by<br>: Amy Jones<br>Administrative Assistant,<br><b>EMCE Engineering</b>                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                            | <br>Approved by<br>: Bob Cole<br><b>President</b><br><b>EMCE Engineering</b>                                   |                     |                                                                                |                                                                                    |                                                                                     |                                                                                  |
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| FCC PT.15.407<br>TEST REPORT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                    | FCC ID : YM780-9500 |                                                                                |                                                                                    |                                                                                     |                                                                                  |
| Test Report No.<br>4325-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Date of Issue: 11/27/2017                                                                                                                                                                                                                                                                                                                                                                                                  | EUT : IP Camera                                                                                                                                                                                    | IC : 9637A-809500   |                                                                                |                                                                                    |                                                                                     |                                                                                  |

## Version

| TEST REPORT NO. | DATE     | DESCRIPTION             |
|-----------------|----------|-------------------------|
| 4325-3          | 11/27/17 | - First Approval Report |

|                              |                                                            |                 |                     |
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| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

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## 1. GENERAL INFORMATION

|                                  |                                                                  |
|----------------------------------|------------------------------------------------------------------|
| <b>Applicant</b>                 | Stem Innovation, LLC dBa Iconoscope, LLC                         |
| <b>Applicant Address</b>         | 21 G Street, Salt Lake City, UT 84102 USA                        |
| <b>FCC ID</b>                    | YM780-9500                                                       |
| <b>EUT Type</b>                  | IP Camera                                                        |
| <b>Model name(s)</b>             | 80-9500                                                          |
| <b>Additional Model name(s):</b> | N/A                                                              |
| <b>Date(s) of Tests:</b>         | 07/10/2017 – 10/05/2017                                          |
| <b>Place of Tests:</b>           | EMCE ENGINEERING<br>1726 Ringwood Avenue, San Jose, CA 95131 USA |

## 2. EUT DESCRIPTION

|                                 |                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT Type</b>                 | IP Camera                                                                                                                                                                                                                                                                                                            |
| <b>Model Name</b>               | 80-9500                                                                                                                                                                                                                                                                                                              |
| <b>Additional Model Name(s)</b> | N/A                                                                                                                                                                                                                                                                                                                  |
| <b>Power Supply</b>             | DC 5.0 vdc                                                                                                                                                                                                                                                                                                           |
| <b>Battery type</b>             | Li-ion Battery(Standard)                                                                                                                                                                                                                                                                                             |
| <b>Frequency Range(TX/RX)</b>   | 5180 - 5240 MHz (UNII-1 Band - 20 / 40 MHz), 5260 - 5320 MHz (UNII-2A Band - 20 / 40 MHz), 5500 - 5700 MHz (UNII-2C Band - 20 / 40 MHz), 5745 - 5825 MHz (UNII-3 Band - 20 / 40 MHz)                                                                                                                                 |
| <b>Max. RF Output Power</b>     | UNII-1 802.11n-20 MHz BW (5.62 dBm), UNII-1 802.11n-40 MHz BW (7.32 dBm)<br>UNII-2A 802.11n-20 MHz BW (8.32 dBm), UNII-2A 802.11n-40 MHz BW (6.77 dBm),<br>UNII-2C 802.11n-20 MHz BW (10.49 dBm), UNII-2C 802.11n-40 MHz BW (6.53 dBm),<br>UNII-3 802.11n-20 MHz BW (10.89 dBm), UNII-3 802.11n-40 MHz BW (6.37 dBm) |
| <b>Modulation Type</b>          | OFDM(802.11n(20/40MHz))                                                                                                                                                                                                                                                                                              |
| <b>Antenna Specification</b>    | Manufacturer: MOLEX<br>Antenna type : 5 GHz Balance Flex Antenna 1461530100<br>Peak Gain : 4.75 dBi                                                                                                                                                                                                                  |

|                              |                                                            |                     |
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## 3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D02 General UNII Test Procedures v01r04 dated May 2, 2017 entitled “ Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Oart15, Subpart E” and ANSI C63.10-2013 ‘the American National Standard for Testing Unlicensed Wireless Devices’ were used in the measurement.  
For 802.11ac, KDB644545 D03 v01 dated August 14, 2014 if applicable.

### 3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

### 3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E.

### 3.3 GENERAL TEST PROCEDURES

#### Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section Section 6.2 of of ANSI C63.10. (Version : 2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

#### Radiated Emissions

The EUT is placed on the turntable which is 0.8 m height from the ground floor for below 1GHz. And the EUT is placed on the turntable which is 1.5m height from the ground floor for above 1GHz with absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.10 (Version: 2013). To record the final measurements, the analyzer detector function was set to CISPR quasi-peak mode and the bandwidth of the spectrum analyzer was set to 120 kHz for frequencies below 1 GHz or 1 MHz for frequencies above 1 GHz. For average measurements above 1 GHz, the analyzer was set to peak detector with a reduced VBW setting(RBW = 1 MHz, VBW = 1/T Hz, where T = Pulse width).

|                              |                                                            |                 |                     |
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### Conducted Antenna Terminal

See Section from 8.1 to 8.4.(KDB 789033 D02 v01r04)

### 3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low, mid and high with highest data rate (worst case) is chosen for full testing.

## 4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards

## 5. FACILITIES AND ACCREDITATIONS

### 5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at 1726 Ringwood Avenue, San Jose, CA 95131 USA. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22. Detailed description of test facility has been accredited by NVLAP, designated by NIST(US0125)

### 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

|                              |                                                            |                 |                     |
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## 6. ANTENNA REQUIREMENTS

**According to FCC 47 CFR §15.203:**

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

\* The antenna is a Flex Antenna attached to the PCB using a uFL connector and 4" cable.

\*The E.U.T Complies with the requirement of §15.203

|                              |                                                            |                 |                     |
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## 7. SUMMARY OF TEST RESULTS

[FCC Part]

| Test Description                                                       | FCC Part Section(s)               | Test Limit                                                                                                                                    | Test Condition | Test Result |
|------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------|
| 26 dB BW                                                               | 15.407<br>(for Power Measurement) | N/A                                                                                                                                           |                |             |
| 6 dB Bandwidth                                                         | §15.407(e)                        | > 500 kHz<br>(5725 – 5850 MHz)                                                                                                                | CONDUCTED      | PASS        |
| Maximum Conducted Output Power                                         | §15.407(a)(1)                     | 5150 – 5250MHz<br><250 mW,<br>5250 – 5350 MHz and<br>5470 – 5725 MHz<br><250 mW or $11 + 10 \log_{10}$<br>(BW)dBm,<br>5725 – 5850 MHz<br><1 W |                | PASS        |
| Peak Power Spectral Density                                            | §15.407(a)(1)(5)                  | 5150-5250 MHz, 5250 – 5350 MHz, 5470 – 5725 MHz:<br>-11 dBm / MHz<br>5725- 5850: <30 dBm / 500 kHz                                            |                | PASS        |
| Frequency Stability                                                    | §15.407(g)                        | N/A                                                                                                                                           |                | PASS        |
| AC Power line Conducted Emissions                                      | §15.207                           | 15.207 Limits                                                                                                                                 |                | N/A         |
| Undesirable Emissions                                                  | §15.407(b)                        | -27 dBm / MHz EIRP<br>(UNII 1, 2A, 2C)<br>Cf. Section 9.7.1(UNII 3)                                                                           | RADIATED       | PASS        |
| General Field Strength Limits(Restricted Bands and Radiated Emissions) | §15.205, 15.407(b)(5)(6)          | Emissions in the restricted band must meet the limits detailed in 15.209                                                                      |                | PASS        |

|                              |                                                            |                 |                     |
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[ISED Part]

| Test Description                                                       | FCC Part Section(s)   | Test Limit                                                                                                                                                                                                                | Test Condition | Test Result |
|------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------|
| 99% Bandwidth                                                          | RSS-Gen, 6.6          | N/A                                                                                                                                                                                                                       |                | PASS        |
| 6 dB Bandwidth                                                         | RSS-247, 6.2.4.1      | > 500 kHz<br>(5725 – 5850 MHz)                                                                                                                                                                                            |                | PASS        |
| Maximum Conducted Output Power                                         | RSS-247, 6.2          | <250 mW or $11 + 10 \log \log_{10}(BW)dBm$<br>(5250 – 5350MHz)<br><250 mW or $11 + 10 \log \log_{10}(BW)dBm$<br>(5470 – 5600 MHz, 5650 – 5725 MHz)<br>Whichever power is less                                             | CONDUCTED      | PASS        |
|                                                                        | RSS-247, 6.2.4.1      | <1 W<br>(5725 – 5850 MHz )                                                                                                                                                                                                |                |             |
| Maximum e.i.r.p.                                                       | RSS-247, 6.2          | <200 mW or $10 + 10 \log \log_{10}(BW)dBm$<br>(5150 – 5250MHz)<br><1 W or $17 + 10 \log \log_{10}(BW)dBm$<br>(5250 – 5350 MHz)<br><1 W or $17 + 10 \log \log_{10}(BW)dBm$<br>(5470 – 5725 MHz)<br>Whichever power is less |                |             |
| Peak Power Spectral Density                                            | RSS-247, 6.2          | <10 dBm / MHz(e.i.r.p.)<br>(5150-5250 MHz)<br><11 dBm / MHz(Conducted)<br>(5250-5350 MHz, 5470 – 5600 MHz, 5650 – 5725 MHz)                                                                                               |                | PASS        |
|                                                                        | RSS-247, 6.2.4.1      | <30 dBm/500KHz(Conducted)<br>(5725-5850 MHz)                                                                                                                                                                              |                |             |
| AC Power line Conducted Emissions                                      | RSS-Gen, 8.8          | RSS-Gen section 8.8 table 3                                                                                                                                                                                               |                | PASS        |
| Undesirable Emissions                                                  | RSS-247, 6.2.1.2      | 26 dBc at 5150-5350 MHz                                                                                                                                                                                                   |                | PASS        |
|                                                                        | RSS-247, 6.2          | <-27 dBm / MHz EIRP<br>(UNII 1, 2A, 2C)                                                                                                                                                                                   | RADIATED       | PASS        |
|                                                                        | RSS-247, 6.2.4.2      | Cf. Section 9.7.1(UNII 3)                                                                                                                                                                                                 |                | PASS        |
| General Field Strength Limits(Restricted Bands and Radiated Emissions) | RSS-Gen, 8.9 and 8.10 | RSS-Gen section 8.9 table 4,5 and Section 8.10 table 6                                                                                                                                                                    |                | PASS        |

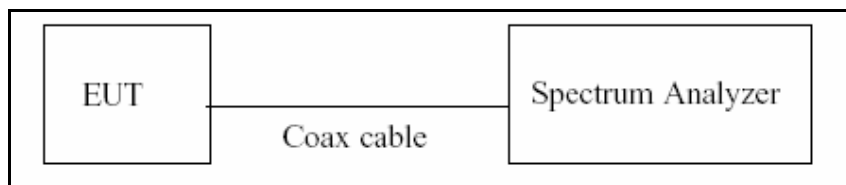
|                           |                                                            |                 |                     |
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| FCC PT.15.407 TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
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## 8. TEST RESULT

### 8.1 DUTY CYCLE

The zero-span mode on a spectrum analyzer or EMI receiver ,if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set  $RBW \geq EBW$  if possible; otherwise, set RBW to the largest available value. Set  $VBW \geq RBW$ . Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are  $> 50/T$ , where  $T$  is defined in section B)1)a), and the number of sweep points across duration  $T$  exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if  $T \leq 16.7$  microseconds.)

#### ■ TEST CONFIGURATION



#### ■ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. We tested according to the zero-span measurement method, (B.2 in KDB 789033 D02 v01r04)

The largest available value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if  $T \leq 6.25$  microseconds. ( $50/6.25 = 8$ )

The zero-span method was used because all measured  $T$  data are  $> 6.25$  microseconds and both RBW and VBW are  $> 50/T$ .

1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ( $\geq$  RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep  $> 100$
6. Trace mode = Clear write
7. Measure  $T_{total}$  and  $T_{on}$
8. Calculate Duty Cycle =  $T_{on} / T_{total}$  and Duty Cycle Factor =  $10 \cdot \log(1/\text{Duty Cycle})$

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

■ Duty Cycle Factor

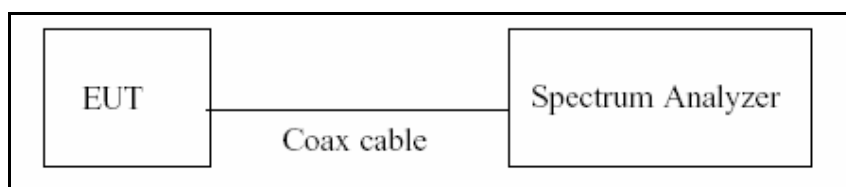
| Mode              | T <sub>on</sub><br>(ms) | T <sub>total</sub><br>(ms) | Duty Cycle | Duty Cycle Factor(dB) |
|-------------------|-------------------------|----------------------------|------------|-----------------------|
| 802.11n_20 MHz BW | -                       | -                          | -          | -                     |
| 802.11n_40 MHz BW | -                       | -                          | -          | -                     |

## 8.2 EMISSION BANDWIDTH AND MINIMUM EMISSION BANDWIDTH MEASUREMENT

The bandwidth at 26 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033 D02 v01r04, at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26 dB bandwidth.

The 26 dB bandwidth is used to determine the conducted power limits.

### ■ TEST CONFIGURATION



### ■ TEST PROCEDURE (26dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to( C.1 in KDB 789033 D02 v01r04)

1. RBW = approximately 1 % of the emission bandwidth
2. VBW > RBW
3. Detector = Peak
4. Trace mode = max hold
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

Note : 1) We tested 26dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set to 26dB.

2) In order to simplify the test report, attached plots were only for the widest channel.

3) DFS test channels should be defined. So we performed the OBW test to prove that no part of the fundamental emissions of any channels belong to UNII 1 and UNII 3 band for DFS.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

■ **TEST PROCEDURE (for the band 5.725 – 5.85 GHz, 6dB Bandwidth)**

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to( C.1 in KDB 789033 D02 v01r04)

1. RBW = 100 kHz
2. VBW  $\geq 3 \times$  RBW
3. Detector = Peak
4. Trace mode = max hold
5. Allow the trace to stabilize
6. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note : We tested 6dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set to 6dB.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

■ TEST RESULTS

20 MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11n

| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5180            | 36          | 18.89                       | N/A                        | Pass        |
| 5200            | 40          | 18.82                       | N/A                        | Pass        |
| 5240            | 48          | 18.87                       | N/A                        | Pass        |

Conducted 26 dB Bandwidth Measurements for 802.11n

| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5260            | 52          | 18.77                       | N/A                        | Pass        |
| 5300            | 60          | 18.87                       | N/A                        | Pass        |
| 5320            | 64          | 18.72                       | N/A                        | Pass        |

Conducted 26 dB Bandwidth Measurements for 802.11n

| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5500            | 100         | 18.77                       | N/A                        | Pass        |
| 5580            | 116         | 18.97                       | N/A                        | Pass        |
| 5700            | 144         | 18.92                       | N/A                        | Pass        |

Conducted 6 dB Bandwidth Measurements for 802.11n

| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5745            | 149         | 17.62                       | N/A                        | Pass        |
| 5805            | 161         | 17.62                       | N/A                        | Pass        |
| 5825            | 165         | 17.60                       | N/A                        | Pass        |

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

40 MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11n

| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5190            | 38          | 39.77                       | N/A                        | Pass        |
| 5230            | 46          | 39.51                       | N/A                        | Pass        |

Conducted 26 dB Bandwidth Measurements for 802.11n

| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5270            | 54          | 39.43                       | N/A                        | Pass        |
| 5310            | 62          | 39.43                       | N/A                        | Pass        |

Conducted 26 dB Bandwidth Measurements for 802.11n

| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5510            | 102         | 40.35                       | N/A                        | Pass        |
| 5550            | 110         | 40.59                       | N/A                        | Pass        |
| 5670            | 142         | 44.09                       | N/A                        | Pass        |

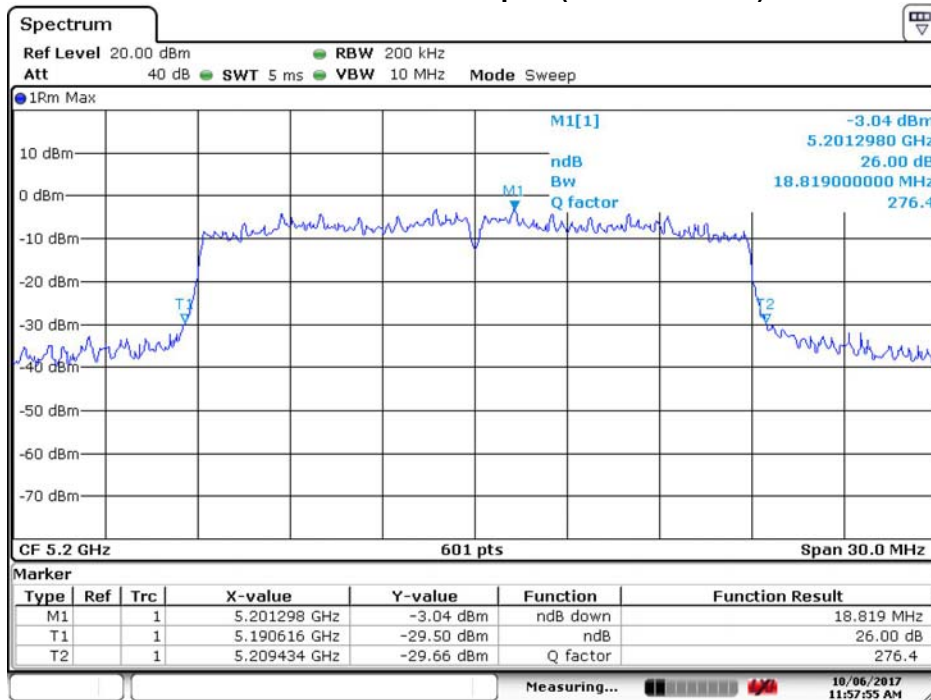
Conducted 26 dB Bandwidth Measurements for 802.11n

| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5755            | 151         | 42.76                       | N/A                        | Pass        |
| 5795            | 159         | 42.01                       | N/A                        | Pass        |

■ RESULT PLOTS

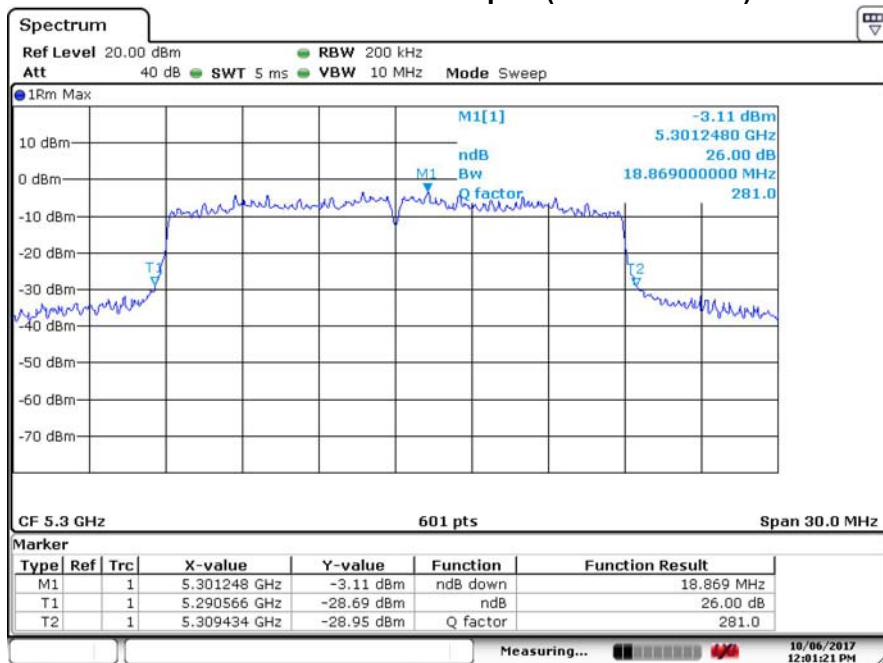
20 MHz BW

UNII-1 26 dB Bandwidth plot (802.11n-CH 40)



Date: 6.OCT.2017 11:57:56

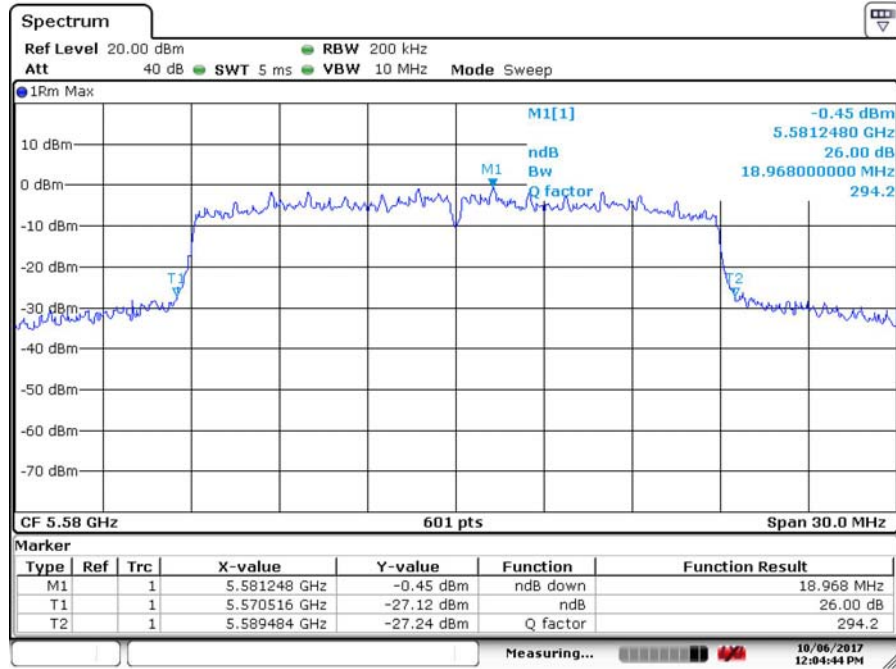
UNII-2A 26 dB Bandwidth plot (802.11n-CH 60)



Date: 6 OCT.2017 12:01:21

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

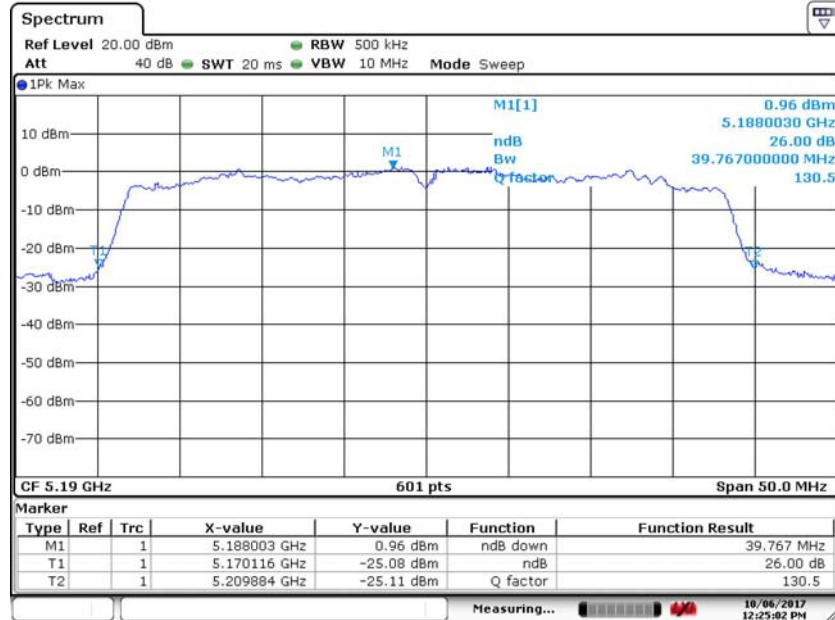
### UNII-2C 26 dB Bandwidth plot (802.11n-CH 116)



Date: 6.OCT.2017 12:04:44

### 40 MHz BW

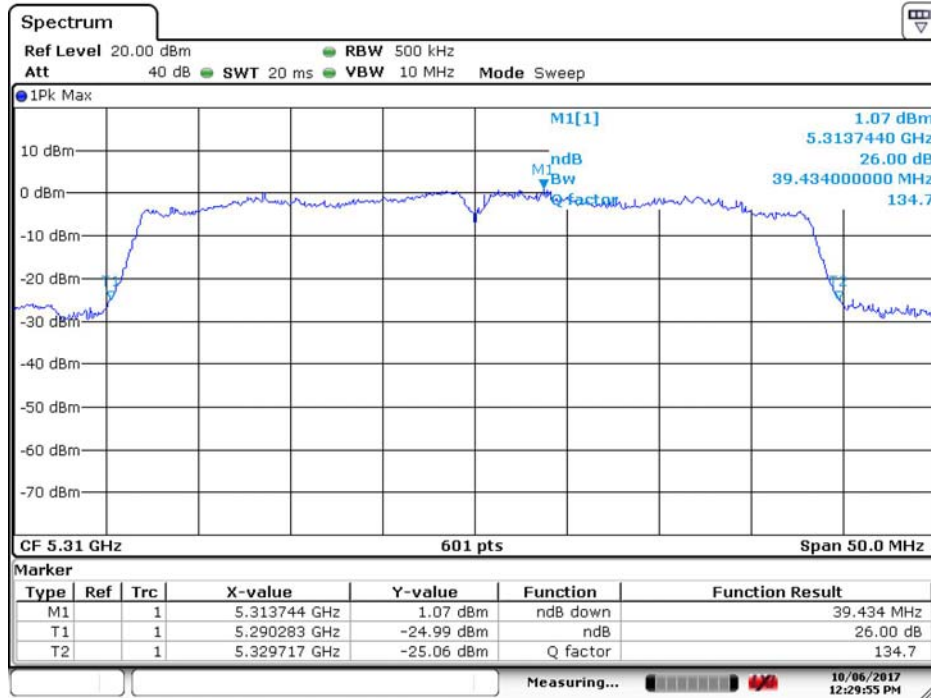
### UNII-1 26 dB Bandwidth plot (802.11n 40 CH 38)



Date: 6.OCT.2017 12:25:02

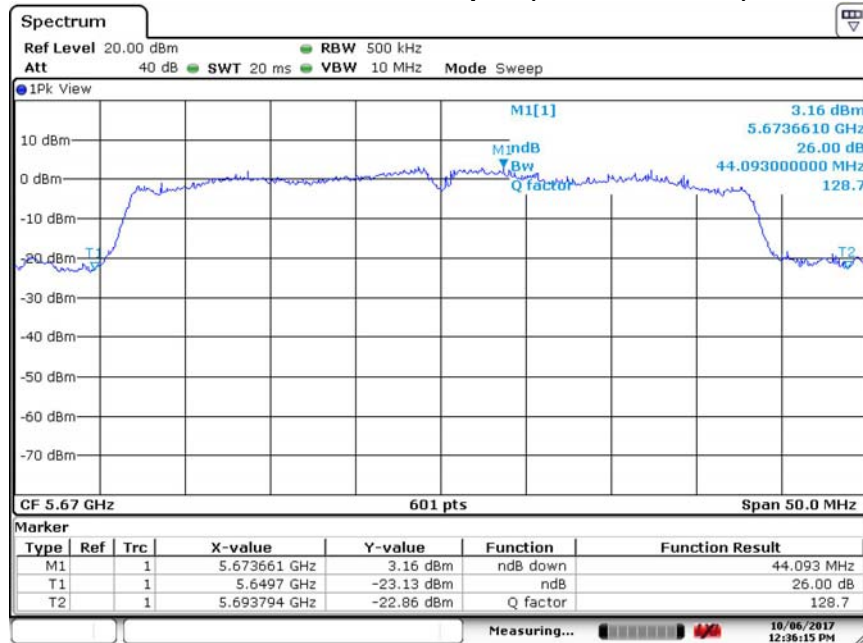
|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

### UNII-2A 26 dB Bandwidth plot (802.11n 40 CH 62)



Date: 6.OCT.2017 12:29:55

### UNII-2C 26 dB Bandwidth plot (802.11n-CH 102)



Date: 6.OCT.2017 12:36:15

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

■ TEST RESULTS

20 MHz BW

Conducted 6 dB Bandwidth Measurements for 802.11n

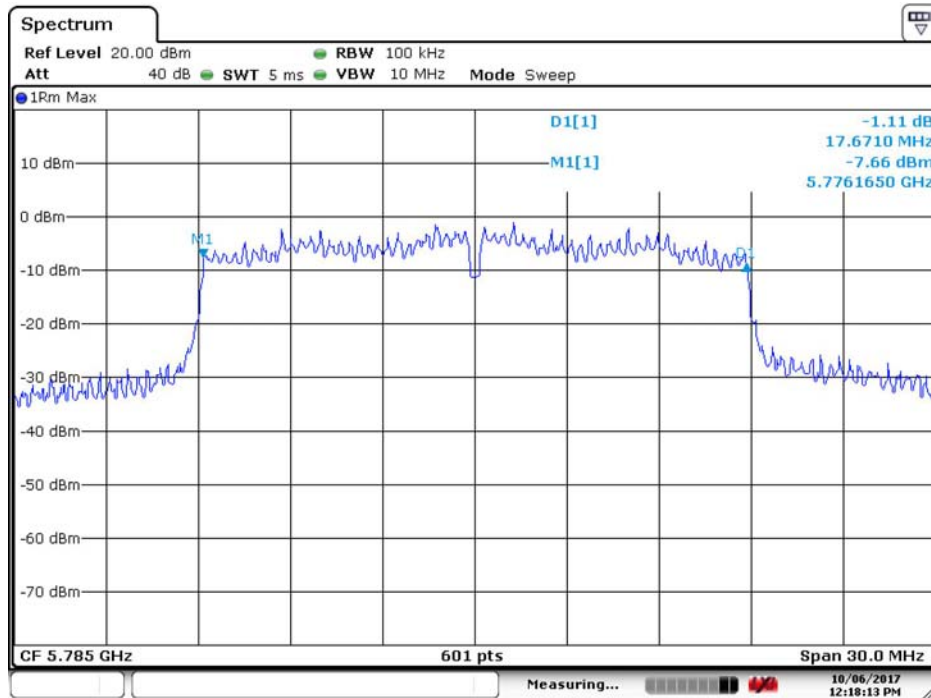
| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5745            | 149         | 17.62                       | 0.5                        | Pass        |
| 5785            | 157         | 17.67                       | 0.5                        | Pass        |
| 5825            | 165         | 17.62                       | 0.5                        | Pass        |

40 MHz BW

Conducted 6 dB Bandwidth Measurements for 802.11n

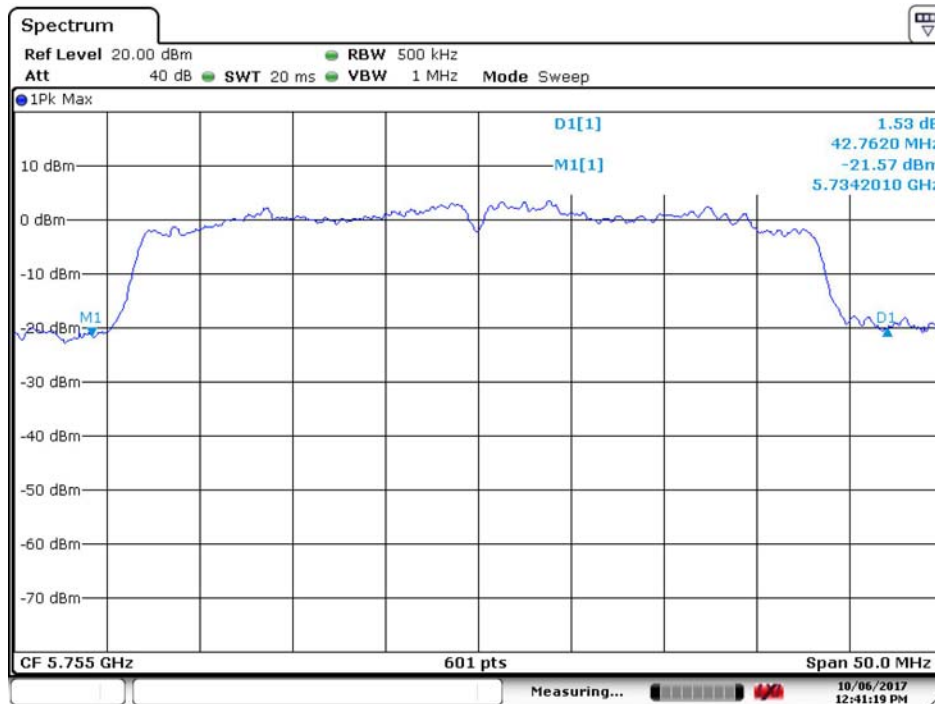
| 802.11n Mode    |             | Measured Bandwidth<br>[MHz] | Minimum Bandwidth<br>[MHz] | Pass / Fail |
|-----------------|-------------|-----------------------------|----------------------------|-------------|
| Frequency [MHz] | Channel No. |                             |                            |             |
| 5755            | 151         | 42.76                       | 0.5                        | Pass        |
| 5795            | 159         | 42.01                       | 0.5                        | Pass        |

### UNII-3 20 MHz CH 157



Date: 6.OCT.2017 12:18:13

### UNII-3 40 MHz CH 151



Date: 6.OCT.2017 12:41:19

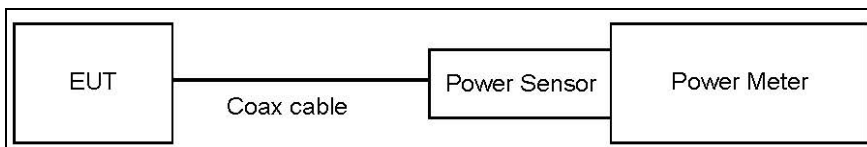
|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## 8.3 OUTPUT POWER MEASUREMENT

### Test Requirements and limit, §15.407(a)(1)

A transmitter antenna terminal of EUT is connected to the input of a Spectrum Analyzer. Measurement is made while the EUT is operating in transmission mode at the appropriate frequencies. In the 5.15 – 5.25 GHz band, the maximum permissible conducted output power is the lesser of 250 mW ((23.98 dBm). In the 5.25 – 5.35 GHz band and 5.47 – 5.725 GHz band, the maximum permissible conducted output power is the lesser of 250 mW (23.98 dBm) or  $11 \text{ dBm} + 10 \log_{10} (26 \text{ dB BW})$ . In the 5.725 – 5.85 GHz band, the maximum permissible conducted output power is the lesser of 1 W ((30 dBm).

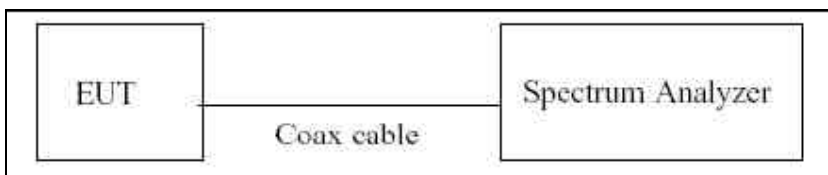
### ■ TEST CONFIGURATION(20 MHz BW)



### ■ TEST PROCEDURE(20 MHz BW)

- Average Power (Procedure E.3.a in KDB 789033 D02 v01r04)
  1. Measure the duty cycle.
  2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
  3. Add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

### ■ TEST CONFIGURATION(40 MHz BW)



|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

#### ■ TEST PROCEDURE(40 MHz BW)

##### ▪ Average Power

The transmitter output is connected to the Spectrum Analyzer. We use the spectrum analyzer's integrated band power measurement function. We tested according to Method SA-2 in KDB 789033 D02 v01r04.

The Spectrum Analyzer is set to

1. Measure the duty cycle.
2. Set span to encompass the 26 dB EBW of the signal.
3. RBW = 1 MHz.
4. VBW  $\geq$  3 MHz.
5. Number of points in sweep  $\geq$  2\*span/RBW.
6. Sweep time = auto.
7. Detector = RMS.
8. Do not use sweep triggering. Allow the sweep to "free run".
9. Trace average at least 100 traces in power averaging(RMS) mode
10. Integrated bandwidth = OBW
11. Add  $10\log(1/x)$ , where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

#### ■ Sample Calculation

Output Power = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

Output Power = 10 dBm + 20 dB + 0.8 dB + 0.21 dB = 31.01 dBm

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## ■ TEST RESULTS

### 20 MHz BW

**Conducted Output Power Measurements (802.11n Mode: 5180~5240)**

| 802.11n Mode    |             | Measured Power(dBm) | Duty Cycle Factor | Measured Power(dBm) + Duty Cycle Factor | Limit (dBm) |
|-----------------|-------------|---------------------|-------------------|-----------------------------------------|-------------|
| Frequency [MHz] | Channel No. |                     |                   |                                         |             |
| 5180            | 36          | 6.87                | -                 | 5.25                                    | 23.98       |
| 5200            | 40          | 6.83                | -                 | 5.62                                    | 23.98       |
| 5240            | 48          | 6.56                | -                 | 7.12                                    | 23.98       |

**Conducted Output Power Measurements (802.11n Mode: 5260~5320)**

| 802.11n Mode    |             | Measured Power(dBm) | Duty Cycle Factor | Measured Power(dBm) + Duty Cycle Factor | Limit (dBm) |
|-----------------|-------------|---------------------|-------------------|-----------------------------------------|-------------|
| Frequency [MHz] | Channel No. |                     |                   |                                         |             |
| 5260            | 52          | 6.37                | -                 | 7.13                                    | 23.98       |
| 5300            | 60          | 6.03                | -                 | 7.45                                    | 23.98       |
| 5320            | 64          | 6.35                | -                 | 8.32                                    | 23.98       |

**Conducted Output Power Measurements (802.11n Mode: 5500~5720)**

| 802.11n Mode    |             | Measured Power(dBm) | Duty Cycle Factor | Measured Power(dBm) + Duty Cycle Factor | Limit (dBm) |
|-----------------|-------------|---------------------|-------------------|-----------------------------------------|-------------|
| Frequency [MHz] | Channel No. |                     |                   |                                         |             |
| 5500            | 100         | 8.28                | -                 | 9.94                                    | 23.98       |
| 5600            | 120         | 8.44                | -                 | 10.49                                   | 23.98       |
| 5700            | 144         | 8.35                | -                 | 10.24                                   | 23.98       |

**Conducted Output Power Measurements (802.11n Mode: 5745~5825)**

| 802.11n Mode    |             | Measured Power(dBm) | Duty Cycle Factor | Measured Power(dBm) + Duty Cycle Factor | Limit (dBm) |
|-----------------|-------------|---------------------|-------------------|-----------------------------------------|-------------|
| Frequency [MHz] | Channel No. |                     |                   |                                         |             |
| 5745            | 149         | 8.68                | -                 | 9.89                                    | 23.98       |
| 5785            | 157         | 8.79                | -                 | 10.45                                   | 23.98       |
| 5825            | 165         | 9.05                | -                 | 10.87                                   | 23.98       |

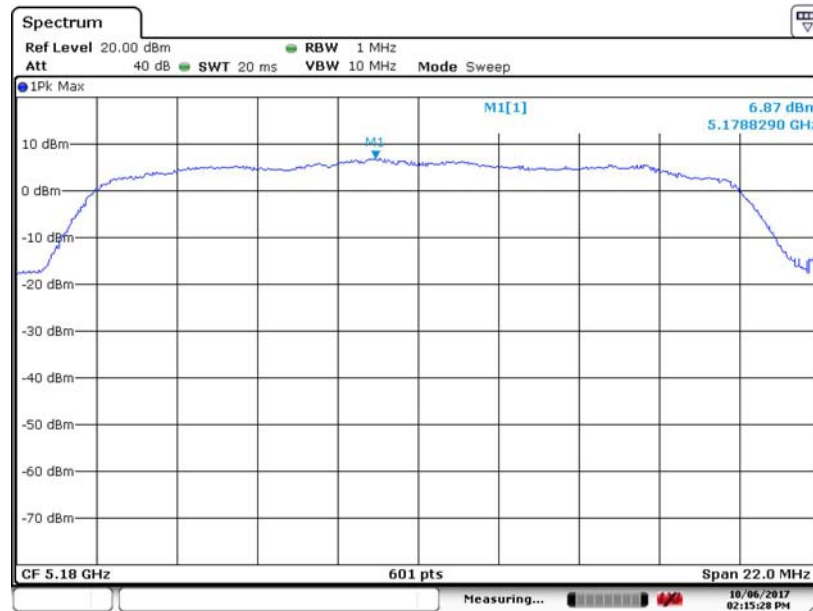
|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

In order to simplify the test report, attached plots were only for the worst case channel in each band.

**20 MHz BW**

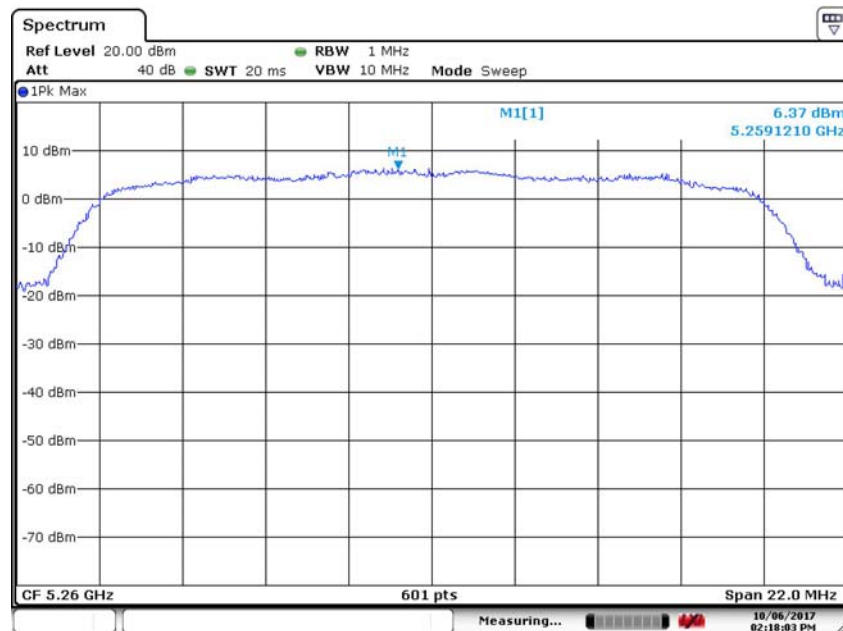
**RESULT PLOTS**

**UNII-1 Conducted Output Power (802.11n-CH 36) 20.0 Mbps**



Date: 6.OCT.2017 14:15:29

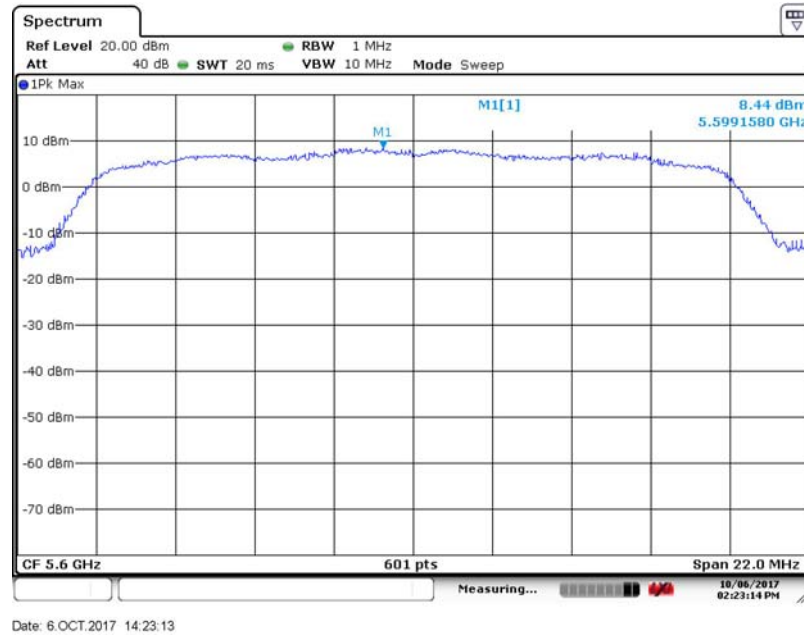
**UNII-2A Conducted Output Power (802.11n-CH 52) 20.0 Mbps**



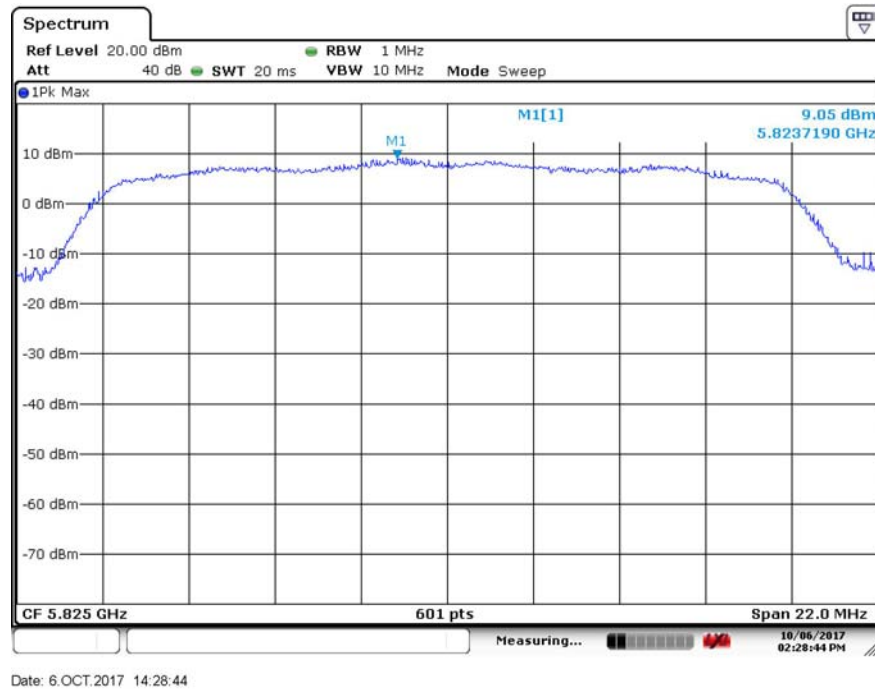
Date: 6.OCT.2017 14:18:03

|                              |                                                            |                     |
|------------------------------|------------------------------------------------------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera     |
|                              |                                                            | IC : 9637A-809500   |

### UNII-2C Conducted Output Power (802.11n-CH 120) 20.0 Mbps



### UNII-3 Conducted Output Power (802.11n-CH 52) 20.0 Mbps



|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## 40 MHz BW

### Conducted Output Power Measurements (802.11n Mode: 5190~5230)

| 802.11n Mode    |             | Measured Power(dBm) | Duty Cycle Factor | Measured Power(dBm) + Duty Cycle Factor | Limit (dBm) |
|-----------------|-------------|---------------------|-------------------|-----------------------------------------|-------------|
| Frequency [MHz] | Channel No. |                     |                   |                                         |             |
| 5190            | 38          | 3.99                | -                 | 3.99                                    | 16.99       |
| 5230            | 46          | 3.79                | -                 | 3.79                                    | 16.99       |

### Conducted Output Power Measurements (802.11n Mode: 5270~5310)

| 802.11n Mode    |             | Measured Power(dBm) | Duty Cycle Factor | Measured Power(dBm) + Duty Cycle Factor | Limit (dBm) |
|-----------------|-------------|---------------------|-------------------|-----------------------------------------|-------------|
| Frequency [MHz] | Channel No. |                     |                   |                                         |             |
| 5270            | 54          | 3.92                | -                 | 3.92                                    | 23.98       |
| 5310            | 62          | 3.83                | -                 | 3.83                                    | 23.98       |

### Conducted Output Power Measurements (802.11n Mode: 5510~5710)

| 802.11n Mode    |             | Measured Power(dBm) | Duty Cycle Factor | Measured Power(dBm) + Duty Cycle Factor | Limit (dBm) |
|-----------------|-------------|---------------------|-------------------|-----------------------------------------|-------------|
| Frequency [MHz] | Channel No. |                     |                   |                                         |             |
| 5510            | 102         | 6.27                | -                 | 6.27                                    | 23.98       |
| 5550            | 110         | 6.25                | -                 | 6.25                                    | 23.98       |
| 5710            | 142         | N/A                 | -                 | N/A                                     | 23.98       |

### Conducted Output Power Measurements (802.11n Mode: 5755~5795)

| 802.11n Mode    |             | Measured Power(dBm) | Duty Cycle Factor | Measured Power(dBm) + Duty Cycle Factor | Limit (dBm) |
|-----------------|-------------|---------------------|-------------------|-----------------------------------------|-------------|
| Frequency [MHz] | Channel No. |                     |                   |                                         |             |
| 5755            | 151         | 6.28                | -                 | 6.28                                    | 23.98       |
| 5795            | 159         | 6.40                | -                 | 6.40                                    | 23.98       |

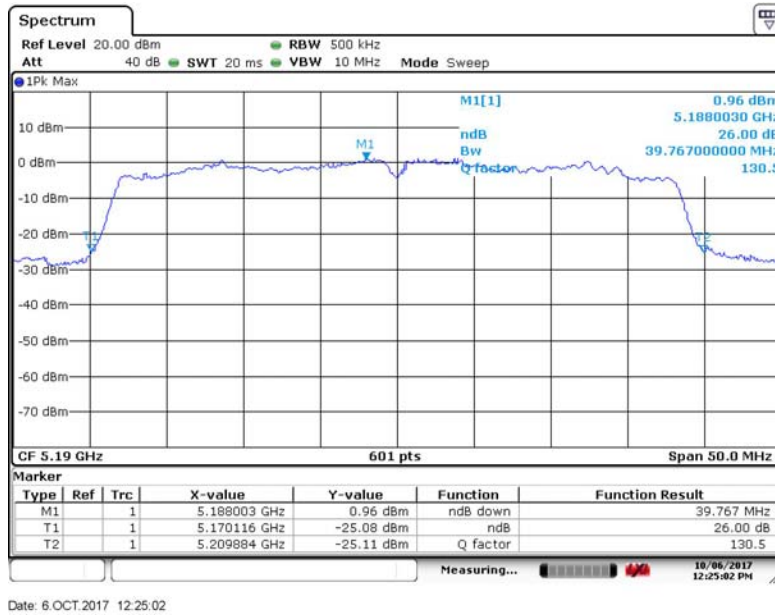
In order to simplify the test report, attached plots were only for the worst case channel in each band.

|                           |                                                            |                 |                     |
|---------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407 TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No. 4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

40 MHz BW

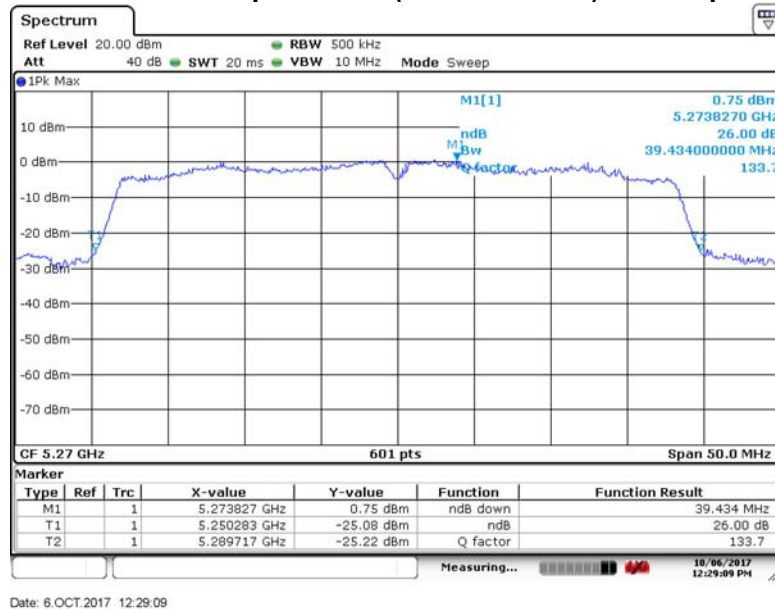
■ RESULT PLOTS

Conducted Output Power (802.11n-CH 38) 40.0 Mbps



■ RESULT PLOTS (5270 MHz ~5310 MHz)

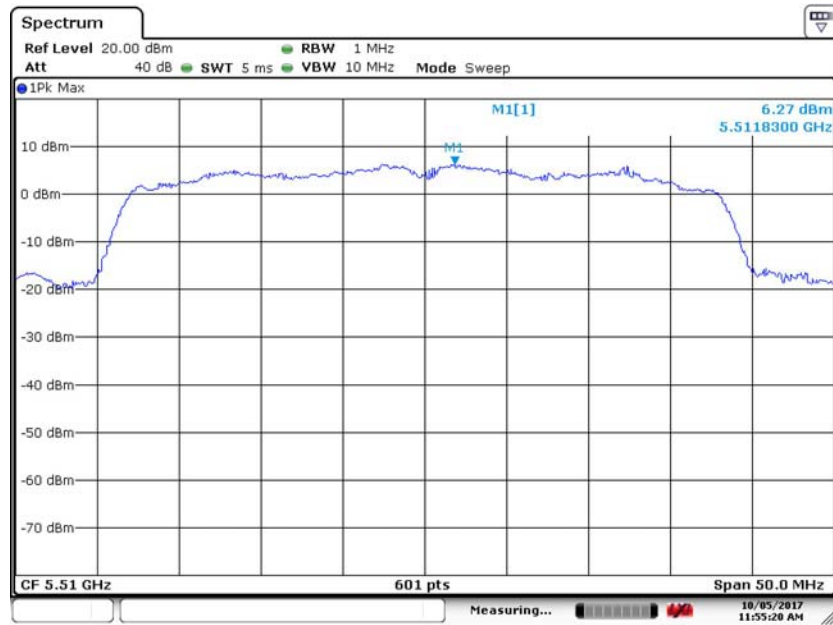
Conducted Output Power (802.11n-CH 54) 40.0 Mbps



|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

■ RESULT PLOTS (5510 MHz ~5710 MHz)

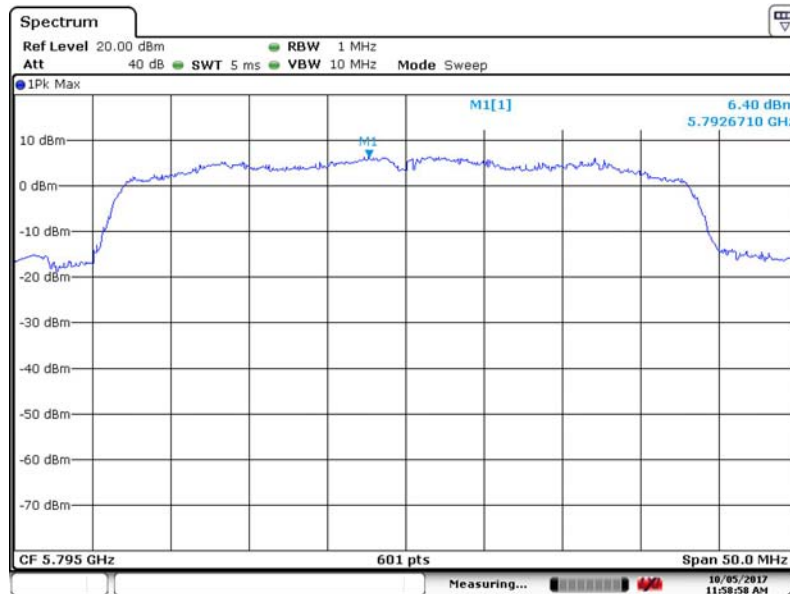
Conducted Output Power (802.11n-CH 102) 40.0 Mbps



Date: 5.OCT.2017 11:55:21

■ RESULT PLOTS (5510 MHz ~5710 MHz)

Conducted Output Power (802.11n-CH 159) 40.0 Mbps



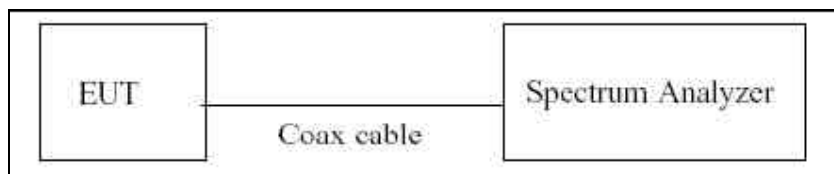
Date: 5.OCT.2017 11:58:59

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## 8.4 POWER SPECTRAL DENSITY

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies. The maximum permissible peak power spectral density is 11 dBm/ MHz in the 5.15 GHz – 5.25 GHz / 5.25 GHz – 5.35 GHz / 5.47 GHz – 5.725 GHz bands and 30 dBm/ 500 kHz in the 5.725 GHz – 5.85 GHz band.

### ■ TEST CONFIGURATION



### ■ TEST PROCEDURE

We tested according to Method in KDB 789033 D02 v01r04

The spectrum analyzer is set to :

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz.
3. VBW  $\geq$  3 MHz.
4. Number of points in sweep  $\geq 2 \times \text{span} / \text{RBW}$ .
5. Sweep time = auto.
6. Detector = RMS(i.e., power averaging), if available. Otherwise, use sample detector mode.
7. Do not use sweep triggering. Allow the sweep to “free run”.
8. Trace average at least 100 traces in power averaging(RMS) mode
9. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.
10. If Method SA-2 was used, add  $10 \log(1/x)$ , where x is the duty cycle, to the peak of the spectrum.

### ■ Sample Calculation

PSD = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

Output Power = -5 dBm + 10 dB + 0.8 dB + 0.21 dB = 16.01 dBm

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

■ TEST RESULTS

Conducted Power Density Measurements

| Frequency<br>(MHz) | Channel<br>No. | Mode                   | Test Result                           |                              |                                                                |                |           |
|--------------------|----------------|------------------------|---------------------------------------|------------------------------|----------------------------------------------------------------|----------------|-----------|
|                    |                |                        | Measured<br>Power<br>Density<br>(dBm) | Duty Cycle<br>Factor<br>(dB) | Measured<br>Power<br>Density(dBm)<br>+<br>Duty Cycle<br>Factor | Limit<br>(dBm) | Pass/Fail |
| 5180               | 36             | 802.11n<br>20MHz<br>BW | -2.60                                 | -                            | N/A                                                            | 11             | Pass      |
| 5200               | 40             |                        | -2.56                                 | -                            | N/A                                                            | 11             | Pass      |
| 5240               | 48             |                        | -3.02                                 | -                            | N/A                                                            | 11             | Pass      |
| 5260               | 52             |                        | -3.01                                 | -                            | N/A                                                            | 11             | Pass      |
| 5300               | 60             |                        | -3.04                                 | -                            | N/A                                                            | 11             | Pass      |
| 5320               | 64             |                        | -3.01                                 | -                            | N/A                                                            | 11             | Pass      |
| 5500               | 100            |                        | -0.65                                 | -                            | N/A                                                            | 11             | Pass      |
| 5580               | 116            |                        | -0.50                                 | -                            | N/A                                                            | 11             | Pass      |
| 5700               | 144            |                        | -1.09                                 | -                            | N/A                                                            | 11             | Pass      |
| 5745               | 149            |                        | -0.38                                 | -                            | N/A                                                            | 30             | Pass      |
| 5785               | 157            |                        | -0.19                                 | -                            | N/A                                                            | 30             | Pass      |
| 5825               | 165            |                        | -0.17                                 | -                            | N/A                                                            | 30             | Pass      |

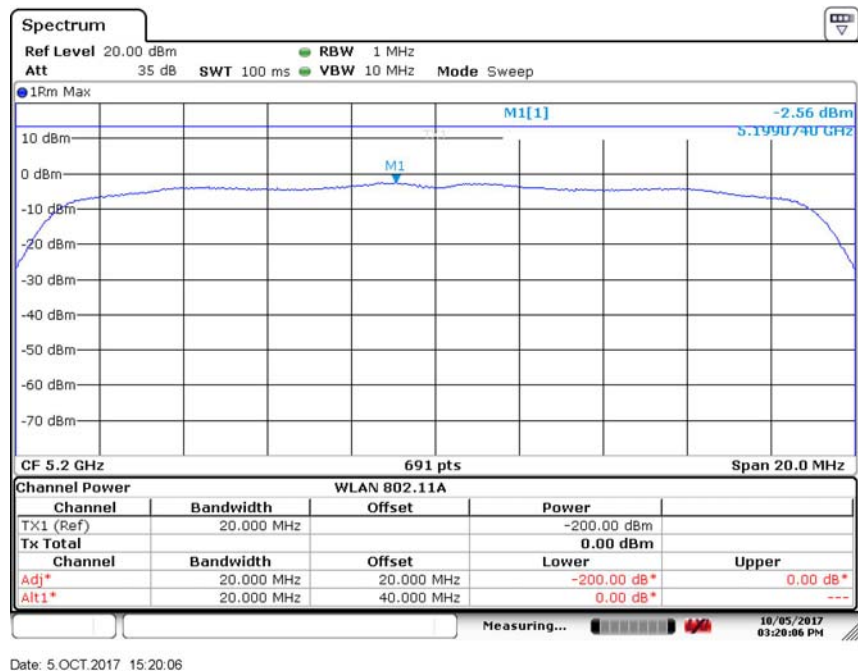
Conducted Power Density Measurements

| Frequency (MHz) | Channel No. | Mode                | Test Result                  |                        |                                                 |             |           |
|-----------------|-------------|---------------------|------------------------------|------------------------|-------------------------------------------------|-------------|-----------|
|                 |             |                     | Measured Power Density (dBm) | Duty Cycle Factor (dB) | Measured Power Density(dBm) + Duty Cycle Factor | Limit (dBm) | Pass/Fail |
| 5190            | 38          | 802.11n<br>40MHz BW | -5.94                        | -                      |                                                 | 11          | Pass      |
| 5230            | 46          |                     | -6.22                        | -                      |                                                 | 11          | Pass      |
| 5270            | 54          |                     | -6.69                        | -                      |                                                 | 11          | Pass      |
| 5310            | 62          |                     | -6.70                        | -                      |                                                 | 11          | Pass      |
| 5510            | 102         |                     | -4.10                        | -                      |                                                 | 11          | Pass      |
| 5550            | 110         |                     | -4.33                        | -                      |                                                 | 11          | Pass      |
| 5710            | 142         |                     | -4.27                        | -                      |                                                 | 11          | Pass      |
| 5755            | 151         |                     | -3.90                        | -                      |                                                 | 30          | Pass      |
| 5795            | 159         |                     | -3.88                        | -                      |                                                 | 30          | Pass      |

1. In order to simplify the report, attached plots were only the highest PSD channel.

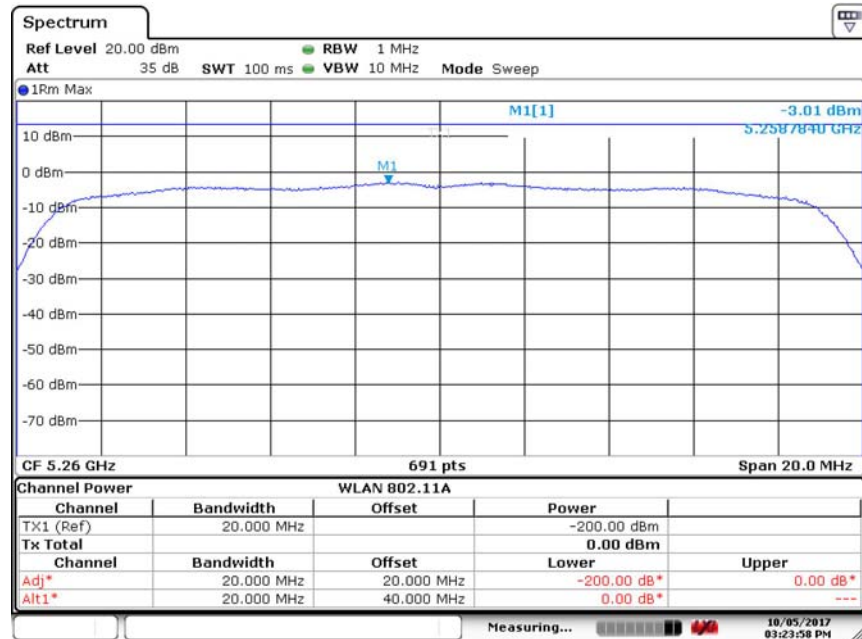
■ RESULT PLOTS

UNII-1 Power Spectral Density (802.11n-CH 36) 20.0 Mbps



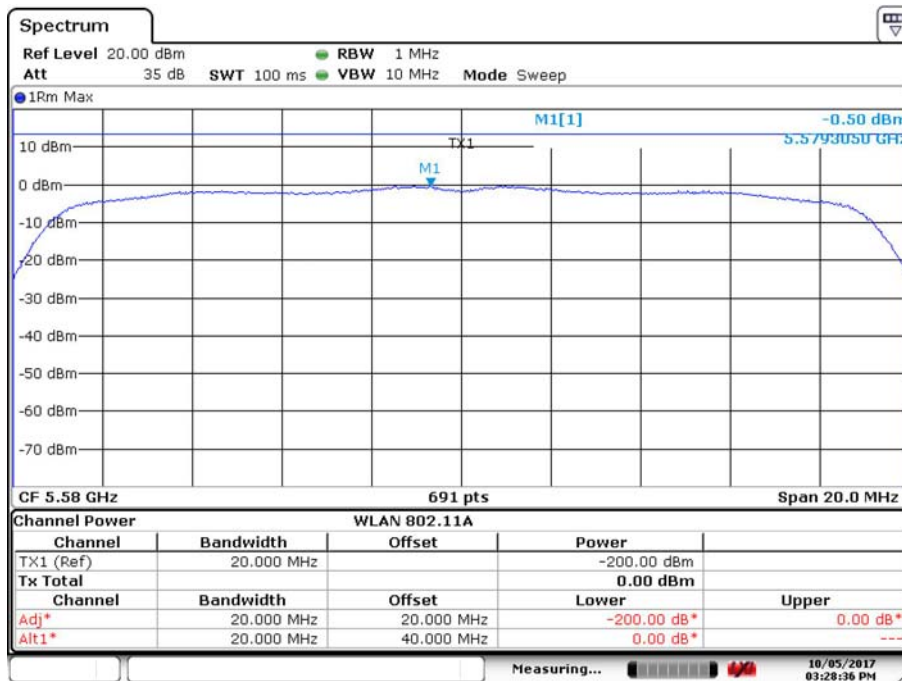
|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

### UNII-2A Power Spectral Density (802.11n-CH 52) 20.0 Mbps



Date: 5.OCT.2017 15:23:58

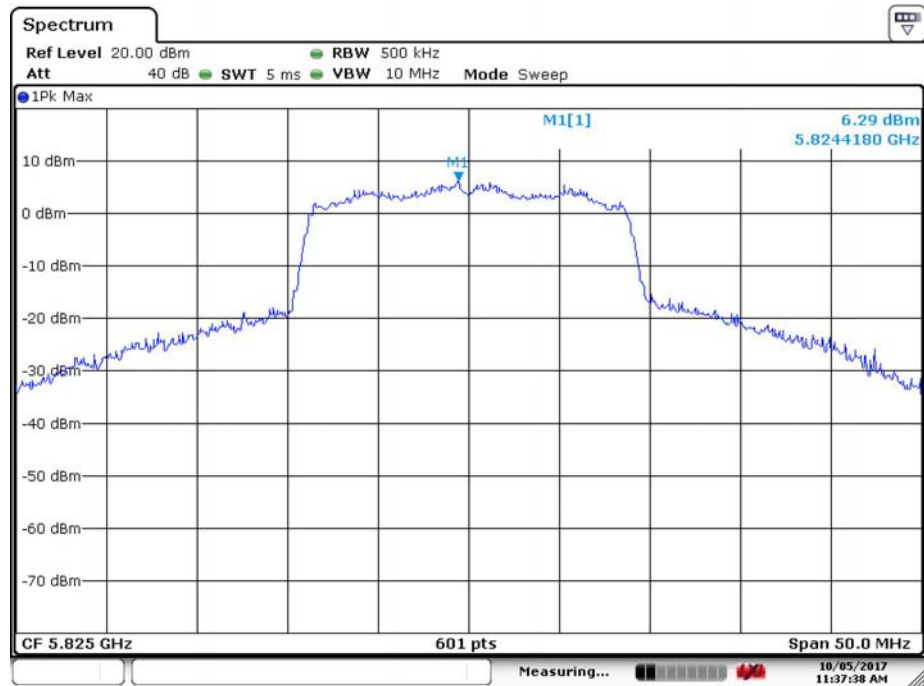
### UNII-2C Power Spectral Density (802.11n-CH 116) 20.0 Mbps



Date: 5.OCT.2017 15:28:36

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

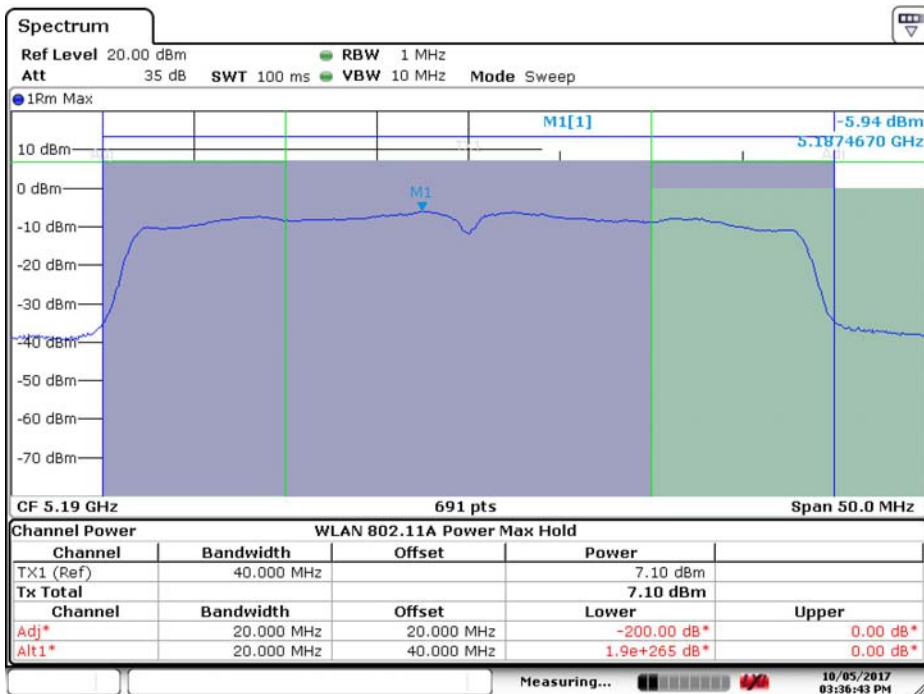
### UNII-3 Power Spectral Density (802.11n-CH 38) 20.0 Mbps



Date: 5.OCT.2017 11:37:39

### 40 MHz BW

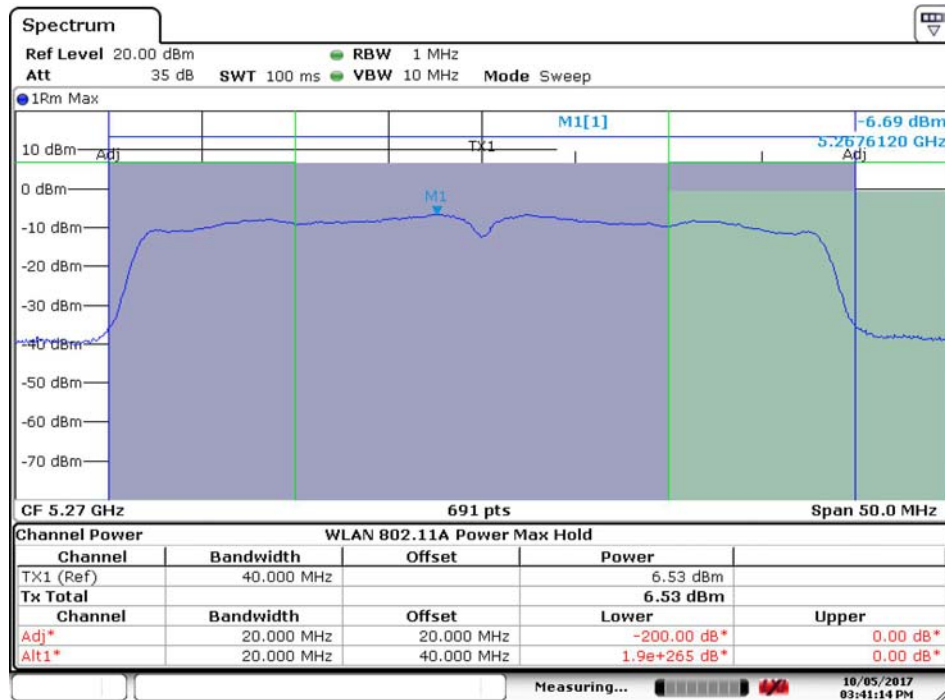
### UNII-1 Power Spectral Density (802.11n-CH 46)



Date: 5.OCT.2017 15:36:44

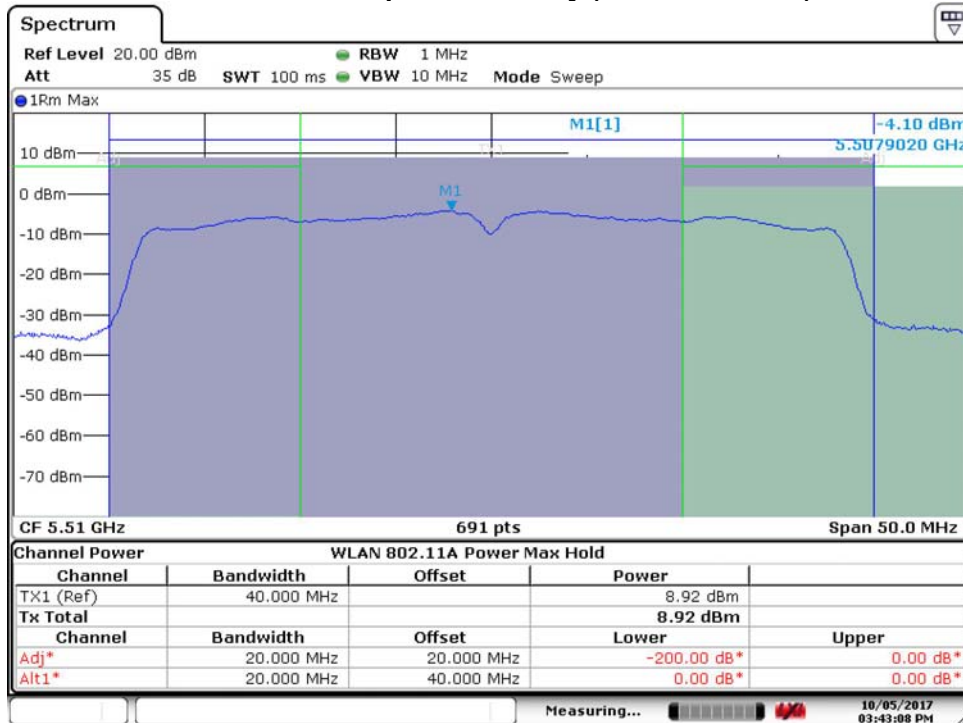
|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

### UNII-2A Power Spectral Density (802.11n-CH 54)



Date: 5.OCT.2017 15:41:14

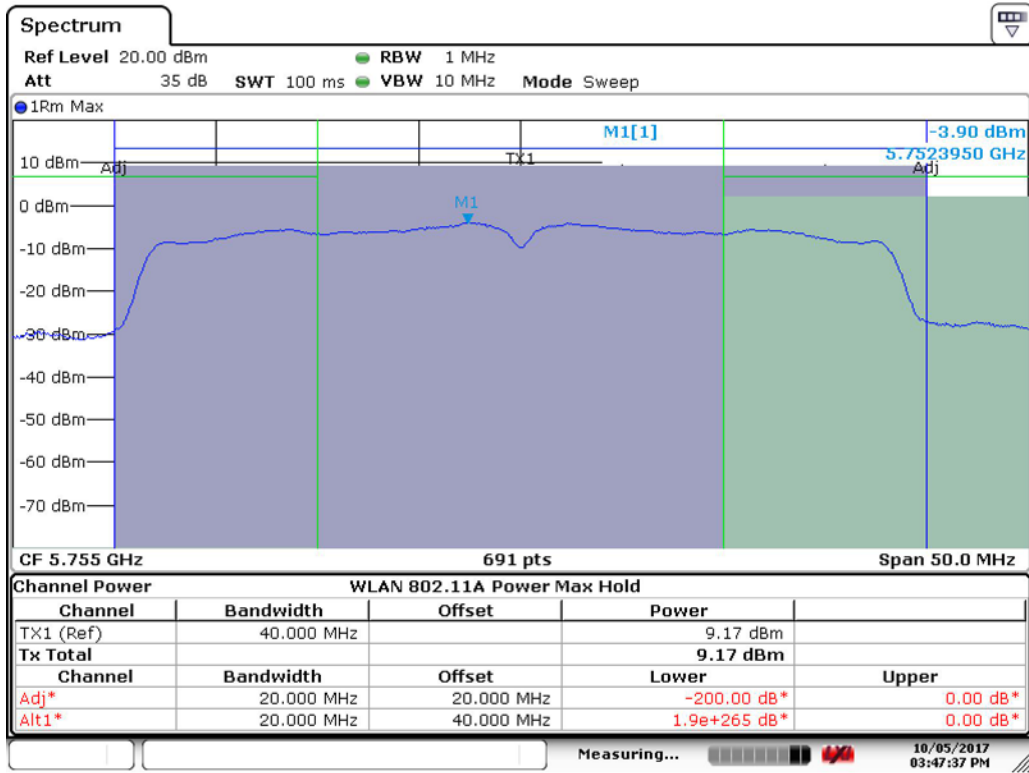
### UNII-2C Power Spectral Density (802.11n-CH 110)



Date: 5.OCT.2017 15:43:08

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

### Power Spectral Density (802.11n-CH 151)



Date: 5.OCT.2017 15:47:38

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## 8.5 FREQUENCY STABILITY.

The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between -30 °C and 50 °C. The temperature was incremented by 10 °C intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

### 20 MHz BW

OPERATING BAND: UNII Band 1  
 OPERATING FREQUENCY: 5,180,000,000 Hz  
 CHANNEL: 36  
 REFERENCE VOLTAGE: 5.0 VDC

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (kHz) | Frequency Error (kHz) |
|----------------|-------------|------------|-----------------|-----------------------|
| 100%           | 5.00        | +20(Ref)   | 5 180 007.33    | 7.33                  |
| 100%           |             | -30        | 5 179 995.04    | -4.96                 |
| 100%           |             | -20        | 5 179 994.57    | -5.43                 |
| 100%           |             | -10        | 5 179 997.39    | -2.61                 |
| 100%           |             | 0          | 5 179 995.92    | -4.08                 |
| 100%           |             | +10        | 5 180 002.44    | 2.44                  |
| 100%           |             | +30        | 5 180 003.55    | 3.55                  |
| 100%           |             | +40        | 5 179 997.09    | -2.91                 |
| 100%           |             | +50        | 5 179 998.22    | -1.78                 |
| 115%           | 5.75        | +20        | 5 180 004.99    | 4.99                  |
| Batt. Endpoint | 4.70        | +20        | 5 180005.57     | 5.57                  |

### Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

OPERATING BAND: UNII Band 2A  
 OPERATING FREQUENCY: 5,260,000,000 Hz  
 CHANNEL: 52  
 REFERENCE VOLTAGE: 5.0 VDC

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (kHz) | Frequency Error (kHz) |
|----------------|-------------|------------|-----------------|-----------------------|
| 100%           | 5.00        | +20(Ref)   | 5 260 007.11    | 7.11                  |
| 100%           |             | -30        | 5 259 994.70    | -6.50                 |
| 100%           |             | -20        | 5 259 994.33    | -5.67                 |
| 100%           |             | -10        | 5 259 994.19    | -5.81                 |
| 100%           |             | 0          | 5 259 999.11    | -0.89                 |
| 100%           |             | +10        | 5 260 003.22    | 3.22                  |
| 100%           |             | +30        | 5 260 002.49    | 2.49                  |
| 100%           |             | +40        | 5 259 996.32    | -3.68                 |
| 100%           |             | +50        | 5 259 996.38    | -3.62                 |
| 115%           | 5.75        | +20        | 5 260 003.85    | 3.85                  |
| Batt. Endpoint | 4.70        | +20        | 5 260 005.72    | 5.72                  |

**Note:**

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

OPERATING BAND: UNII Band 2C  
 OPERATING FREQUENCY: 5,500,000,000 Hz  
 CHANNEL: 100  
 REFERENCE VOLTAGE: 5.0 VDC

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (kHz) | Frequency Error (kHz) |
|----------------|-------------|------------|-----------------|-----------------------|
| 100%           | 5.00        | +20(Ref)   | 5 500 003.46    | 6.46                  |
| 100%           |             | -30        | 5 499 996.99    | -2.01                 |
| 100%           |             | -20        | 5 499 995.83    | -4.17                 |
| 100%           |             | -10        | 5 499 997.02    | -2.98                 |
| 100%           |             | 0          | 5 499 995.85    | -4.15                 |
| 100%           |             | +10        | 5 500 002.87    | 2.87                  |
| 100%           |             | +30        | 5 500 002.62    | 2.62                  |
| 100%           |             | +40        | 5 499 001.94    | 1.94                  |
| 100%           |             | +50        | 5 499 999.01    | -0.99                 |
| 115%           | 5.75        | +20        | 5 500 002.58    | 2.58                  |
| Batt. Endpoint | 4.70        | +20        | 5 500 003.27    | 3.27                  |

**Note:**

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND: UNII Band 3  
 OPERATING FREQUENCY: 5,745,000,000 Hz  
 CHANNEL: 149  
 REFERENCE VOLTAGE: 5.0 VDC

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (kHz) | Frequency Error (kHz) |
|----------------|-------------|------------|-----------------|-----------------------|
| 100%           | 5.00        | +20(Ref)   | 5 500 002.77    | 2.77                  |
| 100%           |             | -30        | 5 499 996.83    | -3.17                 |
| 100%           |             | -20        | 5 499 996.36    | -3.64                 |
| 100%           |             | -10        | 5 499 997.87    | -2.13                 |
| 100%           |             | 0          | 5 499 998.01    | -1.99                 |
| 100%           |             | +10        | 5 500 002.05    | 2.05                  |
| 100%           |             | +30        | 5 500 998.64    | -1.36                 |
| 100%           |             | +40        | 5 499 995.88    | -4.12                 |
| 100%           |             | +50        | 5 499 996.01    | -3.99                 |
| 115%           | 5.75        | +20        | 5 500 002.22    | 2.22                  |
| Batt. Endpoint | 4.70        | +20        | 5 500 003.42    | 3.42                  |

**Note:**

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

#### 40 MHz BW

OPERATING BAND: UNII Band 1  
 OPERATING FREQUENCY: 5,190,000,000 Hz  
 CHANNEL: 38  
 REFERENCE VOLTAGE: 5.0 VDC

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (kHz) | Frequency Error (kHz) |
|----------------|-------------|------------|-----------------|-----------------------|
| 100%           | 5.00        | +20(Ref)   | 5 190 002.55    | 2.55                  |
| 100%           |             | -30        | 5 189 998.09    | -1.91                 |
| 100%           |             | -20        | 5 189 996.35    | -3.65                 |
| 100%           |             | -10        | 5 189 995.95    | -4.05                 |
| 100%           |             | 0          | 5 189 997.33    | -2.67                 |
| 100%           |             | +10        | 5 190 001.58    | 1.58                  |
| 100%           |             | +30        | 5 190 002.44    | 2.44                  |
| 100%           |             | +40        | 5 189 997.17    | -2.83                 |
| 100%           |             | +50        | 5 189 995.85    | -4.15                 |
| 115%           | 5.75        | +20        | 5 190 003.33    | 3.33                  |
| Batt. Endpoint | 4.70        | +20        | 5 190 004.38    | 4.38                  |

#### Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

OPERATING BAND: UNII Band 2A  
 OPERATING FREQUENCY: 5,270,000,000 Hz  
 CHANNEL: 54  
 REFERENCE VOLTAGE: 5.0 VDC

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (kHz) | Frequency Error (kHz) |
|----------------|-------------|------------|-----------------|-----------------------|
| 100%           | 5.00        | +20(Ref)   | 5 270 -3.72     | 3.72                  |
| 100%           |             | -30        | 5 269 997.88    | -2.12                 |
| 100%           |             | -20        | 5 269 995.80    | -4.20                 |
| 100%           |             | -10        | 5 269 995.03    | -4.97                 |
| 100%           |             | 0          | 5 269 996.84    | -3.16                 |
| 100%           |             | +10        | 5 270 003.19    | 3.19                  |
| 100%           |             | +30        | 5 270 003.01    | 3.01                  |
| 100%           |             | +40        | 5 269 996.47    | -3.53                 |
| 100%           |             | +50        | 5 269 997.01    | -2.99                 |
| 115%           | 5.75        | +20        | 5 270 004.45    | 4.45                  |
| Batt. Endpoint | 4.70        | +20        | 5 270 003.07    | 3.07                  |

**Note:**

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

OPERATING BAND: UNII Band 2C  
 OPERATING FREQUENCY: 5,510,000,000 Hz  
 CHANNEL: 102  
 REFERENCE VOLTAGE: 5.0 VDC

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (kHz) | Frequency Error (kHz) |
|----------------|-------------|------------|-----------------|-----------------------|
| 100%           | 5.00        | +20(Ref)   | 5 510 001.69    | 1.69                  |
| 100%           |             | -30        | 5 510 002.56    | 2.56                  |
| 100%           |             | -20        | 5 509 997.36    | -2.64                 |
| 100%           |             | -10        | 5 509 995.43    | -4.57                 |
| 100%           |             | 0          | 5 509 998.05    | -1.95                 |
| 100%           |             | +10        | 5 510 004.31    | 4.31                  |
| 100%           |             | +30        | 5 510 005.27    | 5.27                  |
| 100%           |             | +40        | 5 510 003.92    | 3.92                  |
| 100%           |             | +50        | 5 510 001.81    | 1.81                  |
| 115%           | 5.75        | +20        | 5 510 005.21    | 5.21                  |
| Batt. Endpoint | 4.70        | +20        | 5 510 005.04    | 5.04                  |

**Note:**

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

OPERATING BAND: UNII Band 3  
 OPERATING FREQUENCY: 5,755,000,000 Hz  
 CHANNEL: 151  
 REFERENCE VOLTAGE: 5.0 VDC

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (kHz) | Frequency Error (kHz) |
|----------------|-------------|------------|-----------------|-----------------------|
| 100%           | 5.00        | +20(Ref)   | 5 510 003.33    | 3.33                  |
| 100%           |             | -30        | 5 510 002.34    | 2.34                  |
| 100%           |             | -20        | 5 509 996.50    | -3.50                 |
| 100%           |             | -10        | 5 509 995.91    | -4.09                 |
| 100%           |             | 0          | 5 509 998.18    | -1.82                 |
| 100%           |             | +10        | 5 510 005.31    | 5.31                  |
| 100%           |             | +30        | 5 510 006.44    | 6.44                  |
| 100%           |             | +40        | 5 510 002.93    | 2.93                  |
| 100%           |             | +50        | 5 510 002.01    | 2.01                  |
| 115%           | 5.75        | +20        | 5 510 005.31    | 5.31                  |
| Batt. Endpoint | 4.70        | +20        | 5 510 006.33    | 6.33                  |

**Note:**

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

## 8.6 RADIATED MEASUREMENT.

### 8.6.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209, §15.407

| Frequency (MHz) | Field Strength (uV/m) | Measurement Distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.009 – 0.490   | 2400/F(kHz)           | 300                      |
| 0.490 – 1.705   | 24000/F(kHz)          | 30                       |
| 1.705 – 30      | 30                    | 30                       |
| 30-88           | 100                   | 3                        |
| 88-216          | 150                   | 3                        |
| 216-960         | 200                   | 3                        |
| Above 960       | 500                   | 3                        |

#### ■ §15.407, KDB 789033 D02

All harmonics that do not lie in a restricted band are subject to a peak limit of -27 dBm/MHz. At a distance of 3 meters the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2 dB to the EIRP limit of -27 dBm/MHz to obtain the limit for out of band spurious emissions of 68.2 dBμV/m.

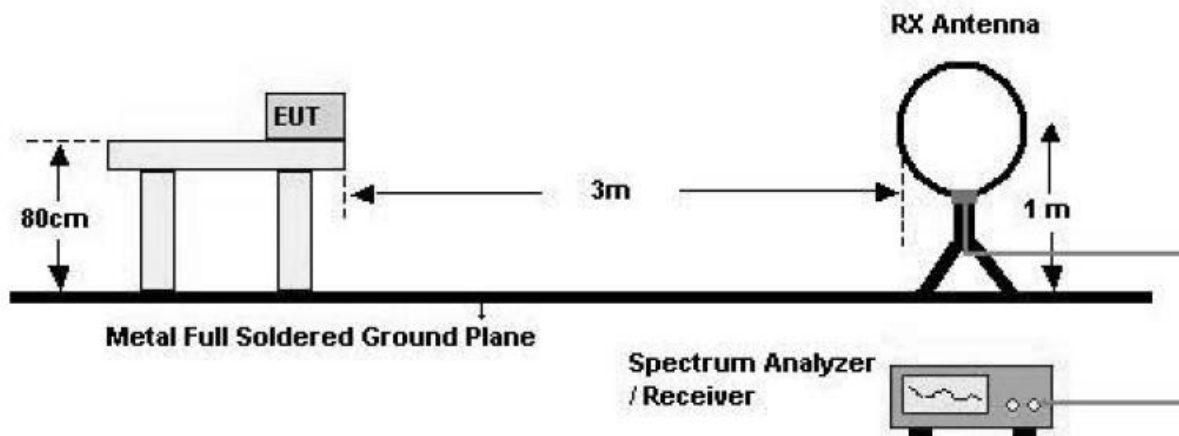
Especially, for transmitter operating in the 5725 MHz – 5850 MHz :

All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasingly linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

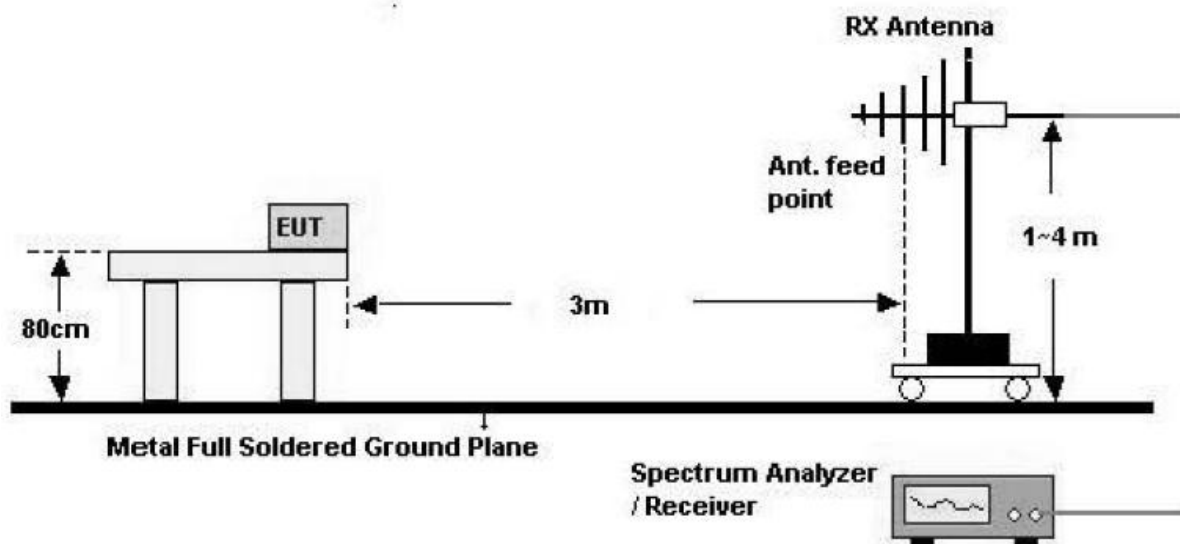
|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## Test Configuration

### Below 30 MHz

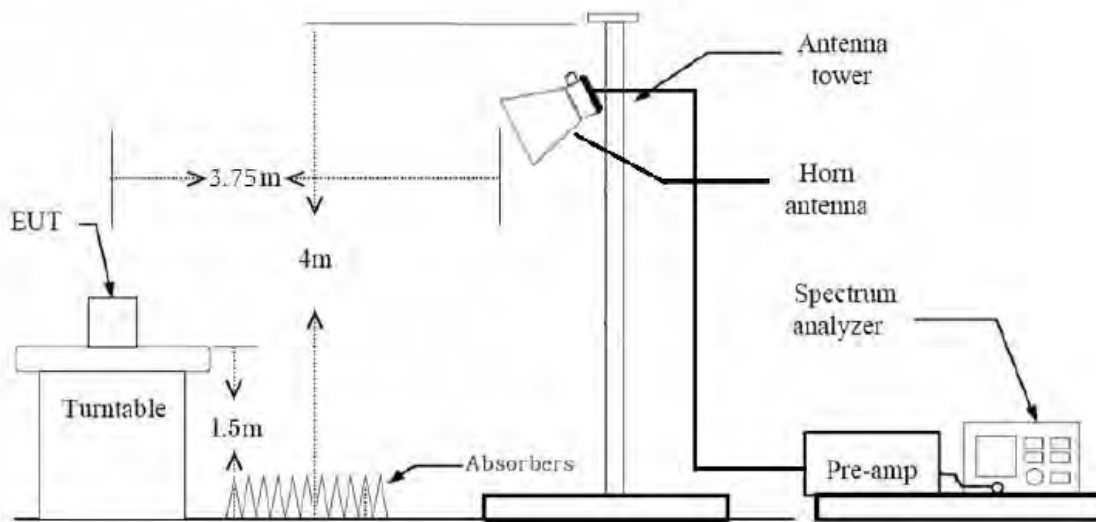


### 30 MHz - 1 GHz



|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## Above 1 GHz



## TEST PROCEDURE USED

ANSI C63.10 - 2013

Method H)5) in KDB 789033 D02 v01r04 (Peak)

Method H)6)d) in KDB 789033 D02 v01r04 (Average)

### . Spectrum setting:

- Peak.

1. RBW = 1 MHz

2. VBW  $\geq$  3 MHz

3. Detector = Peak

4. Sweep Time = auto

5. Trace mode = max hold

6. Allow sweeps to continue until the trace stabilizes.

7. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately  $1/x$ , where  $x$  is the duty cycle.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

- Average ( Method VB :Averaging using reduced video bandwidth)

1. RBW = 1 MHz

2. VBW

2.1. If the EUT is configured to transmit with duty cycle  $\geq 98$  percent, set  $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.

2.2. If the EUT duty cycle is  $< 98$  percent, set  $VBW \geq 1/T$ , where T is the minimum transmission duration.

3. The analyzer is set to linear detector mode.

4. Detector = Peak.

5. Sweep time = auto.

6. Trace mode = max hold.

7. Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of  $1/x$ , where x is the duty cycle.

**Note :**

1. We used the Method VB for 802.11n\_20/n\_40 to perform the average filed strength measurements.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## TEST RESULTS

**9 kHz – 30MHz**

**Operation Mode:** Normal Mode

Test Conditions:

| Frequency<br>(MHz)                         | Meter<br>dBμV/m | Corr.<br>Factor | Corr.<br>Reading | Spec | Margin | Detector<br>Type | Table<br>Azimuth | Antenna<br>Height | Polarity | Test<br>Distance |
|--------------------------------------------|-----------------|-----------------|------------------|------|--------|------------------|------------------|-------------------|----------|------------------|
| No Signals Detected Within 10 dB of Limits |                 |                 |                  |      |        |                  |                  |                   |          |                  |

### Notes:

1. Measuring frequencies from 9 kHz to the 30MHz.
2. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
3. Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB)
4. Limit line = specific Limits (dBuV) + Distance extrapolation factor
5. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## TEST RESULTS

**Below 1 GHz**

**Operation Mode:** Normal Mode

Test Conditions:

| Frequency<br>(MHz)                         | Meter<br>dB $\mu$ V/m | Corr.<br>Factor | Corr.<br>Reading | Spec | Margin | Detector<br>Type | Table<br>Azimuth | Antenna<br>Height | Polarity | Test<br>Distance |
|--------------------------------------------|-----------------------|-----------------|------------------|------|--------|------------------|------------------|-------------------|----------|------------------|
| No Signals Detected Within 10 dB of Limits |                       |                 |                  |      |        |                  |                  |                   |          |                  |

### Notes:

1. Measuring frequencies from 30 MHz to the 1 GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## 1 GHz – 26.5 GHz

### Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
  2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown.
  4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
  5. We have done all data rate in 802.11n\_40 MHz BW. Worst case is 13.5 Mbps in 802.11n\_40 MHz BW.
  6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. To simplify report, worst case data for each UNII Band is shown here.

## 20 MHz Mode

### UNII-1

| Test Conditions: UNII-1 802.11n 20 MHz 5180 CH 36 |              |              |               |      |        |               |               |                |          |               |
|---------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|---------------|----------------|----------|---------------|
| Frequency (MHz)                                   | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Table Azimuth | Antenna Height | Polarity | Test Distance |
| 10360.00                                          | 34.50        | 23.27        | 57.77         | 74   | 16.23  | PK            | 259           | 120            | H        | 3 Meters      |
| 10360.00                                          | 23.60        | 23.27        | 46.87         | 54   | 7.13   | AVE           | 162           | 119            | H        | 3 Meters      |
| 7154.77                                           | 37.24        | 20.10        | 57.34         | 74   | 16.66  | PK            | 201           | 125            | V        | 3 Meters      |
| 7154.77                                           | 25.10        | 20.10        | 45.20         | 54   | 8.80   | AVE           | 62            | 128            | V        | 3 Meters      |
| 10360.00                                          | 33.56        | 23.27        | 56.83         | 74   | 17.17  | PK            | 148           | 115            | V        | 3 Meters      |
| 10360.00                                          | 24.56        | 23.27        | 47.83         | 54   | 6.17   | AVE           | 141           | 120            | V        | 3 Meters      |

### UNII-2A

| Test Conditions: UNII-2A 802.11n 20 MHz 5300 CH 60 |              |              |               |      |        |               |               |                |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|---------------|----------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Table Azimuth | Antenna Height | Polarity | Test Distance |
| 10600.00                                           | 39.19        | 23.52        | 62.71         | 74   | 11.29  | PK            | 259           | 120            | V        | 3 Meters      |
| 10600.00                                           | 24.11        | 23.52        | 47.63         | 54   | 6.37   | AVE           | 162           | 119            | V        | 3 Meters      |
| 1572.22                                            | 39.08        | 8.56         | 47.64         | 74   | 26.36  | PK            | 201           | 125            | H        | 3 Meters      |
| 1725.08                                            | 28.34        | 8.90         | 37.24         | 54   | 16.76  | AVE           | 62            | 128            | V        | 3 Meters      |
| 10600.00                                           | 35.40        | 23.52        | 58.92         | 74   | 15.08  | PK            | 148           | 115            | H        | 3 Meters      |
| 10600.00                                           | 25.51        | 23.52        | 49.03         | 54   | 4.97   | AVE           | 141           | 120            | H        | 3 Meters      |

|                              |                                                            |  |                 |  |                     |  |
|------------------------------|------------------------------------------------------------|--|-----------------|--|---------------------|--|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |  |                 |  | FCC ID : YM780-9500 |  |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  |  | EUT : IP Camera |  | IC : 9637A-809500   |  |

## UNII-2C

| Test Conditions: UNII-2A 802.11n 20 MHz 5510 CH 102 |              |              |               |      |        |               |               |                |          |               |
|-----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|---------------|----------------|----------|---------------|
| Frequency (MHz)                                     | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Table Azimuth | Antenna Height | Polarity | Test Distance |
| 11020.00                                            | 37.29        | 23.96        | 61.25         | 74   | 12.75  | PK            | 119           | 283            | V        | 3 Meters      |
| 11020.00                                            | 24.08        | 23.96        | 48.04         | 54   | 5.96   | AVE           | 209           | 217            | V        | 3 Meters      |
| 7726.27                                             | 36.22        | 20.63        | 56.85         | 74   | 17.15  | PK            | 138           | 174            | V        | 3 Meters      |
| 1594.38                                             | 35.68        | 8.61         | 44.29         | 74   | 29.71  | PK            | 94            | 301            | V        | 3 Meters      |
| 11020.00                                            | 35.40        | 23.96        | 59.36         | 74   | 14.64  | PK            | 175           | 275            | H        | 3 Meters      |
| 11020.00                                            | 25.51        | 23.96        | 49.47         | 54   | 4.53   | AVE           | 117           | 240            | H        | 3 Meters      |

## UNII-3

| Test Conditions: UNII-3 802.11n 20 MHz 5795 CH 159 |              |              |               |      |        |               |               |                |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|---------------|----------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Table Azimuth | Antenna Height | Polarity | Test Distance |
| 11590.00                                           | 35.12        | 24.55        | 59.67         | 74   | 14.33  | PK            | 216           | 192            | V        | 3 Meters      |
| 11590.00                                           | 23.08        | 24.55        | 47.63         | 54   | 6.37   | AVE           | 128           | 245            | V        | 3 Meters      |
| 7270.94                                            | 34.78        | 20.20        | 20.20         | 74   | 53.80  | PK            | 184           | 188            | V        | 3 Meters      |
| 1554.88                                            | 34.12        | 8.52         | 42.64         | 74   | 31.36  | PK            | 38            | 245            | V        | 3 Meters      |
| 11590.00                                           | 35.11        | 24.55        | 59.66         | 74   | 14.34  | PK            | 72            | 308            | H        | 3 Meters      |
| 11590.00                                           | 24.35        | 24.55        | 48.90         | 54   | 5.10   | AVE           | 155           | 250            | H        | 3 Meters      |

## 40 MHz Mode

### UNII-1

| Test Conditions: UNII-1 802.11n 40 MHz 5510 CH 46 |              |              |               |      |        |               |               |                |          |               |
|---------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|---------------|----------------|----------|---------------|
| Frequency (MHz)                                   | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Table Azimuth | Antenna Height | Polarity | Test Distance |
| 11020.00                                          | 37.82        | 23.96        | 61.78         | 74   | 12.22  | PK            | 158           | 319            | H        | 3 Meters      |
| 11020.00                                          | 25.44        | 23.96        | 49.40         | 54   | 4.60   | AVE           | 174           | 257            | H        | 3 Meters      |
| 2319.92                                           | 33.12        | 10.22        | 43.34         | 74   | 30.66  | PK            | 92            | 158            | V        | 3 Meters      |
| 1724.37                                           | 32.45        | 8.90         | 41.35         | 74   | 32.65  | PK            | 308           | 184            | H        | 3 Meters      |
| 11020.00                                          | 36.01        | 23.96        | 59.97         | 74   | 14.03  | PK            | 188           | 246            | V        | 3 Meters      |
| 11020.00                                          | 24.98        | 23.96        | 48.94         | 54   | 5.06   | AVE           | 97            | 285            | V        | 3 Meters      |

### UNII-2A

| Test Conditions: UNII-2A 802.11n 40 MHz 5270 CH 54 |              |              |               |      |        |               |               |                |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|---------------|----------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Table Azimuth | Antenna Height | Polarity | Test Distance |
| 10540.00                                           | 35.61        | 23.46        | 59.07         | 74   | 14.93  | PK            | 90            | 201            | V        | 3 Meters      |
| 10540.00                                           | 24.23        | 23.46        | 47.69         | 54   | 6.31   | AVE           | 212           | 249            | V        | 3 Meters      |
| 9100.26                                            | 34.87        | 22.00        | 56.87         | 74   | 17.13  | PK            | 188           | 172            | H        | 3 Meters      |
| 7244.85                                            | 35.90        | 20.18        | 56.08         | 74   | 17.92  | PK            | 164           | 257            | H        | 3 Meters      |
| 10540.00                                           | 35.12        | 23.46        | 58.58         | 74   | 15.42  | PK            | 92            | 290            | H        | 3 Meters      |
| 10540.00                                           | 24.12        | 23.46        | 47.58         | 54   | 6.42   | AVE           | 272           | 222            | H        | 3 Meters      |

|                              |                                                            |  |  |  |                 |  |                     |                   |  |  |
|------------------------------|------------------------------------------------------------|--|--|--|-----------------|--|---------------------|-------------------|--|--|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |  |  |  |                 |  | FCC ID : YM780-9500 |                   |  |  |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  |  |  |  | EUT : IP Camera |  |                     | IC : 9637A-809500 |  |  |

## UNII-2C

| Test Conditions: UNII-2C 802.11n 40 MHz 5510 CH 110 |              |              |               |      |        |               |               |                |          |               |
|-----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|---------------|----------------|----------|---------------|
| Frequency (MHz)                                     | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Table Azimuth | Antenna Height | Polarity | Test Distance |
| 11020.00                                            | 37.22        | 23.96        | 61.18         | 74   | 12.82  | PK            | 90            | 201            | H        | 3 Meters      |
| 11020.00                                            | 24.09        | 23.96        | 48.05         | 54   | 5.95   | AVE           | 212           | 249            | H        | 3 Meters      |
| 7124.11                                             | 36.72        | 20.07        | 56.79         | 74   | 17.21  | PK            | 188           | 172            | V        | 3 Meters      |
| 7124.11                                             | 24.93        | 20.07        | 45.00         | 54   | 9.00   | AVE           | 164           | 257            | V        | 3 Meters      |
| 11020.00                                            | 36.09        | 23.96        | 60.05         | 74   | 13.95  | PK            | 92            | 290            | V        | 3 Meters      |
| 11020.00                                            | 24.71        | 23.96        | 48.67         | 54   | 5.33   | AVE           | 272           | 222            | V        | 3 Meters      |

## UNII-3

| Test Conditions: UNII-3 802.11n 40 MHz 5755 CH 151 |              |              |               |      |        |               |               |                |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|---------------|----------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Table Azimuth | Antenna Height | Polarity | Test Distance |
| 11510.00                                           | 37.31        | 24.47        | 61.78         | 74   | 12.22  | PK            | 90            | 201            | H        | 3 Meters      |
| 11510.00                                           | 24.59        | 24.47        | 49.06         | 54   | 4.94   | AVE           | 212           | 249            | H        | 3 Meters      |
| 1595.37                                            | 40.19        | 8.61         | 48.80         | 74   | 25.20  | PK            | 188           | 172            | V        | 3 Meters      |
| 1711.09                                            | 37.74        | 8.87         | 46.61         | 74   | 27.39  | PK            | 164           | 257            | H        | 3 Meters      |
| 11510.00                                           | 36.09        | 24.47        | 60.56         | 74   | 13.44  | PK            | 92            | 290            | V        | 3 Meters      |
| 11510.00                                           | 24.71        | 24.47        | 49.18         | 54   | 4.82   | AVE           | 272           | 222            | V        | 3 Meters      |

## 8.6.2 RADIATED RESTRICTED BAND EDGE MEASUREMENTS

### Test Requirements and limit, §15.247(d) §15.205, §15.209

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. 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)).

### 20 MHz Mode

UNII-1 5150 MHz CH 36

| Test Conditions: UNII-1 802.11n 20 MHz 5150 CH 36 |              |              |               |      |        |               |          |               |
|---------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                   | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5150.00                                           | 35.24        | 18.33        | 53.57         | 74   | 20.43  | PK            | V        | 3 Meters      |
| 5150.00                                           | 24.09        | 18.33        | 42.42         | 54   | 11.58  | AVE           | V        | 3 Meters      |
| 5150.00                                           | 32.77        | 18.33        | 51.10         | 74   | 22.90  | PK            | H        | 3 Meters      |
| 5150.00                                           | 24.89        | 18.33        | 43.22         | 54   | 10.78  | AVE           | H        | 3 Meters      |

UNII-1 5250 MHz CH 48

| Test Conditions: UNII-1 802.11n 20 MHz 5250 CH 48 |              |              |               |      |        |               |          |               |
|---------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                   | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5250.00                                           | 34.99        | 18.42        | 53.41         | 74   | 20.59  | PK            | V        | 3 Meters      |
| 5250.00                                           | 24.37        | 18.42        | 42.79         | 54   | 11.21  | AVE           | V        | 3 Meters      |
| 5250.00                                           | 33.75        | 18.42        | 52.17         | 74   | 21.83  | PK            | H        | 3 Meters      |
| 5250.00                                           | 25.01        | 18.42        | 43.43         | 54   | 10.57  | AVE           | H        | 3 Meters      |

UNII-2A 5250 MHz CH 52

| Test Conditions: UNII-2A 802.11n 20 MHz 5250 CH 52 |              |              |               |      |        |               |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5250.00                                            | 35.05        | 18.42        | 53.47         | 74   | 20.53  | PK            | V        | 3 Meters      |
| 5250.00                                            | 24.90        | 18.42        | 43.32         | 54   | 11.19  | AVE           | V        | 3 Meters      |
| 5250.00                                            | 34.78        | 18.42        | 53.20         | 74   | 20.80  | PK            | H        | 3 Meters      |
| 5250.00                                            | 24.39        | 18.42        | 42.81         | 54   | 11.19  | AVE           | H        | 3 Meters      |

#### UNII-2A 5350 CH 64

| Test Conditions: UNII-2A 802.11n 20 MHz 5350 CH 64 |              |              |               |      |        |               |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5350.00                                            | 36.24        | 18.51        | 54.75         | 74   | 19.25  | PK            | V        | 3 Meters      |
| 5350.00                                            | 24.38        | 18.51        | 42.89         | 54   | 11.11  | AVE           | V        | 3 Meters      |
| 5350.00                                            | 35.50        | 18.51        | 54.01         | 74   | 19.99  | PK            | H        | 3 Meters      |
| 5350.00                                            | 24.84        | 18.51        | 43.35         | 54   | 10.65  | AVE           | H        | 3 Meters      |

#### UNII-2C 5470 CH 100

| Test Conditions: UNII-2C 802.11n 20 MHz 5470 CH 100 |              |              |               |      |        |               |          |               |
|-----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                     | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5470.00                                             | 36.24        | 18.61        | 54.85         | 74   | 19.15  | PK            | V        | 3 Meters      |
| 5470.00                                             | 24.38        | 18.61        | 42.99         | 54   | 11.01  | AVE           | V        | 3 Meters      |
| 5470.00                                             | 35.50        | 18.61        | 54.11         | 74   | 19.89  | PK            | H        | 3 Meters      |
| 5470.00                                             | 24.84        | 18.61        | 43.45         | 54   | 10.55  | AVE           | H        | 3 Meters      |

#### UNII-2C 5725 CH 144

| Test Conditions: UNII-2C 802.11n 20 MHz 5725 CH 144 |              |              |               |      |        |               |          |               |
|-----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                     | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5725.00                                             | 36.22        | 18.84        | 55.06         | 74   | 18.94  | PK            | V        | 3 Meters      |
| 5725.00                                             | 24.41        | 18.84        | 43.25         | 54   | 10.75  | AVE           | V        | 3 Meters      |
| 5725.00                                             | 35.38        | 18.84        | 18.84         | 74   | 55.16  | PK            | H        | 3 Meters      |
| 5725.00                                             | 24.83        | 18.84        | 43.67         | 54   | 10.33  | AVE           | H        | 3 Meters      |

#### UNII-3 5725 CH 149

| Test Conditions: UNII-2C 802.11n 20 MHz 5725 CH 149 |              |              |               |      |        |               |          |               |
|-----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                     | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5725.00                                             | 35.47        | 18.84        | 54.31         | 74   | 19.69  | PK            | V        | 3 Meters      |
| 5725.00                                             | 23.98        | 18.84        | 42.82         | 54   | 11.18  | AVE           | V        | 3 Meters      |
| 5725.00                                             | 36.01        | 18.84        | 54.85         | 74   | 19.15  | PK            | H        | 3 Meters      |
| 5725.00                                             | 24.35        | 18.84        | 43.19         | 54   | 10.81  | AVE           | H        | 3 Meters      |

#### UNII-3 5850 CH 165

| Test Conditions: UNII-3 802.11n 20 MHz 5850 CH 165 |              |              |               |      |        |               |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5850.00                                            | 36.25        | 18.95        | 55.20         | 74   | 18.80  | PK            | V        | 3 Meters      |
| 5850.00                                            | 24.75        | 18.95        | 43.70         | 54   | 10.30  | AVE           | V        | 3 Meters      |
| 5850.00                                            | 35.22        | 18.95        | 54.17         | 74   | 19.83  | PK            | H        | 3 Meters      |
| 5850.00                                            | 25.09        | 18.95        | 44.04         | 54   | 9.96   | AVE           | H        | 3 Meters      |

|                              |                                                            |  |  |                 |  |                     |                   |  |
|------------------------------|------------------------------------------------------------|--|--|-----------------|--|---------------------|-------------------|--|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |  |  |                 |  | FCC ID : YM780-9500 |                   |  |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  |  |  | EUT : IP Camera |  |                     | IC : 9637A-809500 |  |

## 40 MHz MODE

UNII-1 5150 CH38

| Test Conditions: UNII-1 802.11n 40 MHz 5150 CH 38 |              |              |               |      |        |               |          |               |
|---------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                   | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5150.00                                           | 36.28        | 18.33        | 54.61         | 74   | 19.39  | PK            | V        | 3 Meters      |
| 5150.00                                           | 24.63        | 18.33        | 42.96         | 54   | 11.04  | AVE           | V        | 3 Meters      |
| 5150.00                                           | 36.44        | 18.33        | 54.77         | 74   | 19.23  | PK            | H        | 3 Meters      |
| 5150.00                                           | 25.12        | 18.33        | 43.45         | 54   | 10.55  | AVE           | H        | 3 Meters      |

UNII-1 5250 CH 46

| Test Conditions: UNII-1 802.11n 40 MHz 5250 CH 46 |              |              |               |      |        |               |          |               |
|---------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                   | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5250.00                                           | 34.89        | 18.42        | 53.31         | 74   | 20.69  | PK            | V        | 3 Meters      |
| 5250.00                                           | 23.59        | 18.42        | 42.01         | 54   | 11.99  | AVE           | V        | 3 Meters      |
| 5250.00                                           | 36.09        | 18.42        | 54.51         | 74   | 19.49  | PK            | H        | 3 Meters      |
| 5250.00                                           | 24.85        | 18.42        | 43.27         | 54   | 10.73  | AVE           | H        | 3 Meters      |

UNII-2A 5250 CH54

| Test Conditions: UNII-1 802.11n 40 MHz 5250 CH 54 |              |              |               |      |        |               |          |               |
|---------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                   | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5250.00                                           | 35.54        | 18.42        | 53.96         | 74   | 20.04  | PK            | V        | 3 Meters      |
| 5250.00                                           | 23.95        | 18.42        | 42.37         | 54   | 11.63  | AVE           | V        | 3 Meters      |
| 5250.00                                           | 35.70        | 18.42        | 54.12         | 74   | 19.88  | PK            | H        | 3 Meters      |
| 5250.00                                           | 24.49        | 18.42        | 42.91         | 54   | 11.09  | AVE           | H        | 3 Meters      |

UNII-2A 5350 CH62

| Test Conditions: UNII-1 802.11n 40 MHz 5350 CH 62 |              |              |               |      |        |               |          |               |
|---------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                   | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5350.00                                           | 36.45        | 18.51        | 54.96         | 74   | 19.04  | PK            | V        | 3 Meters      |
| 5350.00                                           | 25.11        | 18.51        | 43.62         | 54   | 10.38  | AVE           | V        | 3 Meters      |
| 5350.00                                           | 36.12        | 18.51        | 54.63         | 74   | 19.37  | PK            | H        | 3 Meters      |
| 5350.00                                           | 24.71        | 18.51        | 43.22         | 54   | 10.78  | AVE           | H        | 3 Meters      |

UNII-2C 5470 102

| Test Conditions: UNII-2C 802.11n 40 MHz 5470 CH102 |              |              |               |      |        |               |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5470.00                                            | 35.37        | 18.61        | 53.98         | 74   | 20.02  | PK            | V        | 3 Meters      |
| 5470.00                                            | 24.61        | 18.61        | 43.22         | 54   | 10.78  | AVE           | V        | 3 Meters      |
| 5470.00                                            | 35.60        | 18.61        | 54.21         | 74   | 19.79  | PK            | H        | 3 Meters      |
| 5470.00                                            | 23.98        | 18.61        | 42.59         | 54   | 11.41  | AVE           | H        | 3 Meters      |

|                              |                                                            |  |  |                 |                     |                   |  |  |
|------------------------------|------------------------------------------------------------|--|--|-----------------|---------------------|-------------------|--|--|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |  |  |                 | FCC ID : YM780-9500 |                   |  |  |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  |  |  | EUT : IP Camera |                     | IC : 9637A-809500 |  |  |

UNII-2C 5725 CH 142

| Test Conditions: UNII-1 802.11n 40 MHz 5725 CH 142 |              |              |               |      |        |               |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5725.00                                            | 37.39        | 18.84        | 56.23         | 74   | 17.77  | PK            | V        | 3 Meters      |
| 5725.00                                            | 26.03        | 18.84        | 44.87         | 54   | 9.13   | AVE           | V        | 3 Meters      |
| 5725.00                                            | 36.09        | 18.84        | 54.93         | 74   | 19.07  | PK            | H        | 3 Meters      |
| 5725.00                                            | 24.23        | 18.84        | 43.07         | 54   | 10.93  | AVE           | H        | 3 Meters      |

UNII-2C 5850 CH 159

| Test Conditions: UNII-1 802.11n 40 MHz 5850 CH 159 |              |              |               |      |        |               |          |               |
|----------------------------------------------------|--------------|--------------|---------------|------|--------|---------------|----------|---------------|
| Frequency (MHz)                                    | Meter dBμV/m | Corr. Factor | Corr. Reading | Spec | Margin | Detector Type | Polarity | Test Distance |
| 5725.00                                            | 38.51        | 18.84        | 57.35         | 74   | 16.65  | PK            | V        | 3 Meters      |
| 5725.00                                            | 26.52        | 18.84        | 45.36         | 54   | 8.64   | AVE           | V        | 3 Meters      |
| 5725.00                                            | 37.52        | 18.84        | 56.36         | 74   | 17.64  | PK            | H        | 3 Meters      |
| 5725.00                                            | 25.84        | 18.84        | 44.68         | 54   | 9.32   | AVE           | H        | 3 Meters      |

## 8.7 POWERLINE CONDUCTED EMISSIONS

### Test Requirements and limit, §15.207

For an intentional radiator which 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 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

| Frequency Range (MHz) | Limits (dBμV) |          |
|-----------------------|---------------|----------|
|                       | Quasi-peak    | Average  |
| 0.15 to 0.50          | 66 to 56      | 56 to 46 |
| 0.50 to 5             | 56            | 46       |
| 5 to 30               | 60            | 50       |

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

## TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference groundplane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.
5. We are performed the AC Power Line Conducted Emission test for 6 Mbps, Ch.52 and 802.11a mode in UNII 2. Because 802.11a mode in UNII 2 is worst case.

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## RESULT DATA

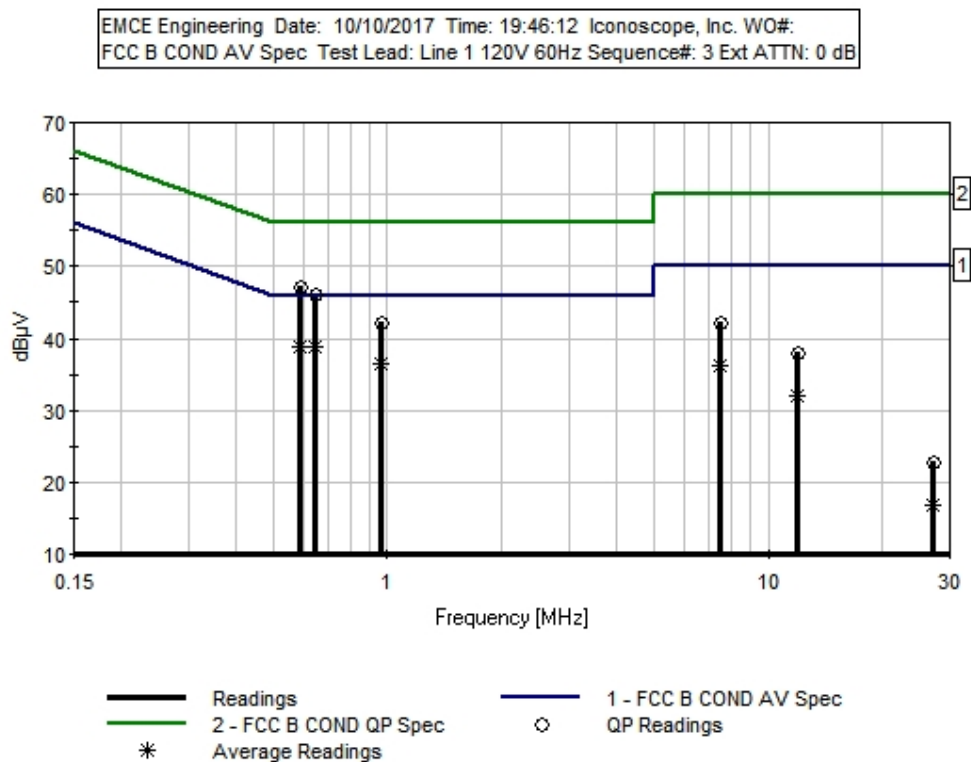
Measurement Data:

Test Lead: Line 1

| #  | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB |  | Dist<br>dB | Corr<br>dBμV | Spec<br>dBμV | Margin<br>dB | Polar<br>Ant |
|----|-------------|--------------|----------|----------|--|------------|--------------|--------------|--------------|--------------|
| 1  | 586.324k    | 46.4         | +0.6     | +0.1     |  | +0.0       | 47.1         | 56.0         | -8.9         | Line         |
|    | QP          |              |          |          |  |            |              |              |              |              |
| 2  | 586.324k    | 38.1         | +0.6     | +0.1     |  | +0.0       | 38.8         | 46.0         | -7.2         | Line         |
|    | Ave         |              |          |          |  |            |              |              |              |              |
| 3  | 647.974k    | 45.5         | +0.6     | +0.1     |  | +0.0       | 46.2         | 56.0         | -9.8         | Line         |
|    | QP          |              |          |          |  |            |              |              |              |              |
| 4  | 647.974k    | 38.0         | +0.6     | +0.1     |  | +0.0       | 38.7         | 46.0         | -7.3         | Line         |
|    | Ave         |              |          |          |  |            |              |              |              |              |
| 5  | 964.131k    | 41.6         | +0.5     | +0.1     |  | +0.0       | 42.2         | 56.0         | -13.8        | Line         |
|    | QP          |              |          |          |  |            |              |              |              |              |
| 6  | 964.131k    | 35.9         | +0.5     | +0.1     |  | +0.0       | 36.5         | 46.0         | -9.5         | Line         |
|    | Ave         |              |          |          |  |            |              |              |              |              |
| 7  | 7.490M      | 41.3         | +0.7     | +0.1     |  | +0.0       | 42.1         | 60.0         | -17.9        | Line         |
|    | QP          |              |          |          |  |            |              |              |              |              |
| 8  | 7.490M      | 35.5         | +0.7     | +0.1     |  | +0.0       | 36.3         | 50.0         | -13.7        | Line         |
|    | Ave         |              |          |          |  |            |              |              |              |              |
| 9  | 11.912M     | 37.2         | +0.7     | +0.1     |  | +0.0       | 38.0         | 60.0         | -22.0        | Line         |
|    | QP          |              |          |          |  |            |              |              |              |              |
| 10 | 11.912M     | 31.1         | +0.7     | +0.1     |  | +0.0       | 31.9         | 50.0         | -18.1        | Line         |
|    | Ave         |              |          |          |  |            |              |              |              |              |
| 11 | 27.120M     | 22.0         | +0.8     | +0.1     |  | +0.0       | 22.9         | 60.0         | -37.1        | Line         |
|    | QP          |              |          |          |  |            |              |              |              |              |
| 12 | 27.120M     | 16.0         | +0.8     | +0.1     |  | +0.0       | 16.9         | 50.0         | -33.1        | Line         |
|    | Ave         |              |          |          |  |            |              |              |              |              |

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## Conducted Emissions (Line 2)



### Measurement Data:

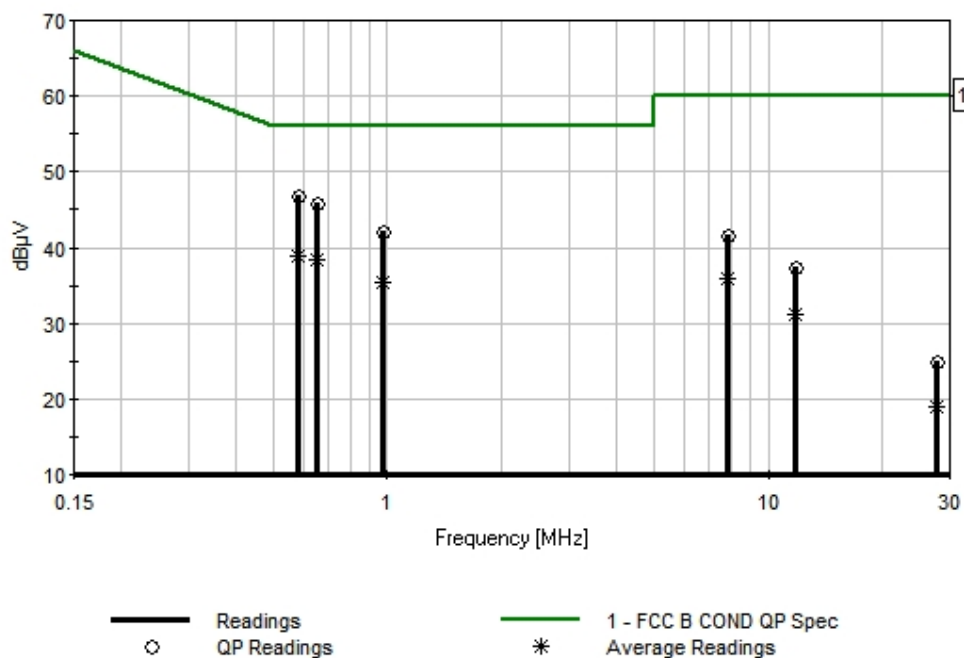
Test Lead: Line 2

| #   | Freq<br>MHz | Rdng<br>dBμV | T1<br>dB | T2<br>dB | Dist<br>dB | Corr<br>dBμV | Spec<br>dBμV | Margin<br>dB | Polar<br>Ant |
|-----|-------------|--------------|----------|----------|------------|--------------|--------------|--------------|--------------|
| 1   | 584.009k    | 46.2         | +0.6     | +0.1     | +0.0       | 46.9         | 56.0         | -9.1         | Line         |
| QP  |             |              |          |          |            |              |              |              |              |
| 2   | 584.009k    | 38.3         | +0.6     | +0.1     | +0.0       | 39.0         | 46.0         | -7.0         | Line         |
| Ave |             |              |          |          |            |              |              |              |              |
| 3   | 650.000k    | 45.1         | +0.6     | +0.1     | +0.0       | 45.8         | 56.0         | -10.2        | Line         |
| QP  |             |              |          |          |            |              |              |              |              |
| 4   | 650.000k    | 37.6         | +0.6     | +0.1     | +0.0       | 38.3         | 46.0         | -7.7         | Line         |
| Ave |             |              |          |          |            |              |              |              |              |
| 5   | 975.615k    | 41.4         | +0.5     | +0.1     | +0.0       | 42.0         | 56.0         | -14.0        | Line         |
| QP  |             |              |          |          |            |              |              |              |              |
| 6   | 975.615k    | 34.7         | +0.5     | +0.1     | +0.0       | 35.3         | 46.0         | -10.7        | Line         |
| Ave |             |              |          |          |            |              |              |              |              |

|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

|     |         |      |      |      |      |      |      |       |      |
|-----|---------|------|------|------|------|------|------|-------|------|
| 7   | 7.837M  | 40.8 | +0.7 | +0.1 | +0.0 | 41.6 | 60.0 | -18.4 | Line |
| QP  |         |      |      |      |      |      |      |       |      |
| 8   | 7.837M  | 35.0 | +0.7 | +0.1 | +0.0 | 35.8 | 50.0 | -14.2 | Line |
| Ave |         |      |      |      |      |      |      |       |      |
| 9   | 11.782M | 36.7 | +0.7 | +0.1 | +0.0 | 37.5 | 60.0 | -22.5 | Line |
| QP  |         |      |      |      |      |      |      |       |      |
| 10  | 11.782M | 30.3 | +0.7 | +0.1 | +0.0 | 31.1 | 50.0 | -18.9 | Line |
| Ave |         |      |      |      |      |      |      |       |      |
| 11  | 27.679M | 24.0 | +0.8 | +0.1 | +0.0 | 24.9 | 60.0 | -35.1 | Line |
| QP  |         |      |      |      |      |      |      |       |      |
| 12  | 27.679M | 18.0 | +0.8 | +0.1 | +0.0 | 18.9 | 50.0 | -31.1 | Line |
| Ave |         |      |      |      |      |      |      |       |      |

EMCE Engineering Date: 10/10/2017 Time: 20:01:38 Iconoscope, Inc. WO#:  
FCC B COND QP Spec Test Lead: Line 2 120V 60Hz Sequence#: 4 Ext ATTN: 0 dB



|                              |                                                            |                 |                     |
|------------------------------|------------------------------------------------------------|-----------------|---------------------|
| FCC PT.15.407<br>TEST REPORT | FCC Part 15.407 WLAN(802.11n(20/40MHz)) – 5GHz Test Report |                 | FCC ID : YM780-9500 |
| Test Report No.<br>4325-3    | Date of Issue: 11/27/2017                                  | EUT : IP Camera | IC : 9637A-809500   |

## 9. LIST OF TEST EQUIPMENT

| Manufacturer    | Model / Equipment               | Calibration Interval | Calibration Due | Serial No.      |
|-----------------|---------------------------------|----------------------|-----------------|-----------------|
| Omega           | IBTHXBP / Temp & Humidity Meter | Annual               | 07/08/2018      | 14490199        |
| Fluke           | 87 / DMM                        | Annual               | 07/28/2018      | 64920001        |
| ETS             | EmPower / Power Sensor          | Annual               | 08/09/2018      | 141000-48SNO051 |
| EMCO            | 3816-2 / LISN                   | Annual               | 08/12/2018      | 9809-1089       |
| Rohde & Schwarz | FSV40 / Spectrum Analyzer       | Annual               | 07/20/2018      | 101424          |
| Sunol Sciences  | JB6 / Bi-Conilog Antenna        | Annual               | 07/08/2018      | A042610         |
| A.H. Systems    | SAS- 571 / Horn Antenna         | Annual               | 07/13/2018      | 236             |