

# Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC147520

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# **FCC Radio Test Report** FCC ID: 2AH3V-VPC2100WI

# **Original Grant**

Report No. TB-FCC147520

VISIONPLUS (HK) LIMITED **Applicant** 

**Equipment Under Test (EUT)** 

HEAVY DUTY WIFI IP CAMERA **EUT Name** 

Model No. VPC2100WI

Series No. N/A

**Brand Name VISIONPLUS** 

**Receipt Date** 2016-04-06

2016-04-06 to 2016-04-22 **Test Date** 

**Issue Date** 2016-04-23

FCC Part 15, Subpart C (15.247:2015) **Standards** 

**Test Method** ANSI C63.10: 2013

Conclusions **PASS** 

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC and IC requirements

**Test/Witness Engineer** 

Approved& **Authorized** 

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0

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# 1. General Information about EUT

#### 1.1 Client Information

Applicant: VISIONPLUS (HK) LIMITED

Address : UNIT 04, 7/F BRIGHT WAY TOWER NO.33 MONG KOK RD, KL,

HONGKONG, CHINA

Manufacturer : VISIONPLUS (HK) LIMITED

Address: UNIT 04, 7/F BRIGHT WAY TOWER NO.33 MONG KOK RD, KL,

HONGKONG, CHINA

## 1.2 General Description of EUT (Equipment Under Test)

| EUT Name               | n: | HEAVY DUTY WIFI II                       | P CAMERA   |  |
|------------------------|----|--|--|--|
| Models No.             |    | VPC2100WI                                |  |  |
| Model<br>Difference    |    | N/A                                      |  |  |
|                        |    | Operation Frequency 802.11b/g/n(HT20): 2 |  |  |
|                        | N  | Number of Channel:                       | 802.11b/g/n(HT20):11 channels see note(3)  |  |
| Product                |    | RF Output Power:                         | 802.11b: 15.29 dBm<br>802.11g: 12.94 dBm<br>802.11n (HT20): 11.47 dBm                  |  |
| Description            | :  | Antenna Gain:                            | 3 dBi Dipole Antenna   |  |
|                        |    | Modulation Type:                         | 802.11b: CCK, QPSK, BPSK<br>802.11g: OFDM<br>802.11n: OFDM                             |  |
|                        |    | Bit Rate of Transmitter:                 | 802.11b:11/5.5/2/1 Mbps<br>802.11g:54/48/36/24/18/12/9/6 Mbps<br>802.11n:up to 150Mbps |  |
| Power Supply           |    | DC power from DC Cable.                  |  |  |
| Power Rating           | :  | DC 12~32V.                               |  |  |
| Connecting I/O Port(S) | Ñ  | Please refer to the User's Manual        |  |  |

#### Note:

- (1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v03r05.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (3) Channel List:



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| Channel | Frequency<br>(MHz) | Channel | Frequency<br>(MHz) | Channel | Frequency<br>(MHz) |
|---------|--------------------|---------|--------------------|---------|--------------------|
| 01      | 2412               | 05      | 2432               | 09      | 2452               |
| 02      | 2417               | 06      | 2437               | 10      | 2457               |
| 03      | 2422               | 07      | 2442               | 11      | 2462               |
| 04      | 2427               | 08      | 2447               |         |                    |
| 04      | 2427               | 08      | 2447               |         |                    |

- (4) The Antenna information about the equipment is provided by the applicant.
- 1.3 Block Diagram Showing the Configuration of System Tested

## **TX Mode**

EUT

1.4 Description of Support Units

The EUT has been test as an independent unit



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# 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

| For Conducted Test          |           |  |  |  |  |
|-----------------------------|-----------|--|--|--|--|
| Final Test Mode Description |           |  |  |  |  |
| Mode 1                      | TX B Mode |  |  |  |  |

| For Radiated Test           |                                       |  |  |  |
|-----------------------------|---------------------------------------|--|--|--|
| Final Test Mode Description |                                       |  |  |  |
| Mode 3                      | TX Mode B Mode Channel 01/06/11       |  |  |  |
| Mode 4                      | TX Mode G Mode Channel 01/06/11       |  |  |  |
| Mode 5                      | TX Mode N(HT20) Mode Channel 01/06/11 |  |  |  |

#### Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

802.11b Mode: CCK (1 Mbps) 802.11g Mode: OFDM (6 Mbps)

802.11n (HT20) Mode: MCS 0 (6.5 Mbps)

- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.



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# 1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN.

| Test Software Version | RT5350QA.EXE |       |       |
|-----------------------|--------------|-------|-------|
| Channel               | CH 01        | CH 06 | CH 11 |
| IEEE 802.11b DSSS     | DEF          | DEF   | DEF   |
| IEEE 802.11g OFDM     | DEF          | DEF   | DEF   |
| IEEE 802.11n (HT20)   | DEF          | DEF   | DEF   |

# 1.7 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

| Test Item           | Parameters        | Expanded Uncertainty (U <sub>Lab</sub> ) |
|---------------------|-------------------|--|
|                     | Level Accuracy:   |  |
| Conducted Emission  | 9kHz~150kHz       | ±3.42 dB                                 |
|                     | 150kHz to 30MHz   | ±3.42 dB                                 |
| Dadiated Emission   | Level Accuracy:   | . 4 CO dD                                |
| Radiated Emission   | 9kHz to 30 MHz    | ±4.60 dB                                 |
| Dadiated Emission   | Level Accuracy:   | . 4 40 dD                                |
| Radiated Emission   | 30MHz to 1000 MHz | ±4.40 dB                                 |
| Radiated Emission   | Level Accuracy:   | ±4.20 dB                                 |
| Radiated Effilssion | Above 1000MHz     | ±4.20 dB                                 |



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## 1.7 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

#### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

#### FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

#### IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.



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# 2. Test Summary

| FCC Part 15 Subpart C(15.247)/ RSS 247 Issue 1 |                    |  |              |        |  |  |
|--|--------------------|--|--------------|--------|--|--|
| Standa   | rd Section         |  | luciani di l | Remark |  |  |
| FCC  | IC                 | Test Item                              | Judgment     |        |  |  |
| 15.203   | 1                  | Antenna Requirement                    | PASS         | N/A    |  |  |
| 15.207   | RSS-GEN 7.2.4      | Conducted Emission                     | N/A          | (1)    |  |  |
| 15.205   | RSS-GEN 7.2.2      | Restricted Bands                       | PASS         | N/A    |  |  |
| 15.247(a)(2)                                   | RSS 247<br>5.2 (1) | 6dB Bandwidth                          | PASS         | N/A    |  |  |
| 15.247(b)                                      | RSS 247<br>5.4 (4) | Peak Output Power                      | PASS         | N/A    |  |  |
| 15.247(e)                                      | RSS 247<br>5.2 (2) | Power Spectral Density                 | PASS         | N/A    |  |  |
| 15.247(d)                                      | RSS 247<br>5.5     | Transmitter Radiated Spurious Emission | PASS         | N/A    |  |  |

Note: (1) The EUT is powered by DC battery, no requirement for this test item.

N/A is an abbreviation for Not Applicable.



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# 3. Test Equipment

| Conducted Emission Test   |                                  |             |            |               |                  |  |
|---------------------------|----------------------------------|-------------|------------|---------------|------------------|--|
| Equipment                 | Manufacturer                     | Model No.   | Serial No. | Last Cal.     | Cal. Due<br>Date |  |
| EMI Test<br>Receiver      | Rohde & Schwarz                  | ESCI        | 100321     | Aug. 07, 2015 | Aug. 06, 2016    |  |
| RF Switching<br>Unit      | Compliance Direction Systems Inc | RSU-A4      | 34403      | Aug. 07, 2015 | Aug. 06, 2016    |  |
| AMN                       | SCHWARZBECK                      | NNBL 8226-2 | 8226-2/164 | Aug. 07, 2015 | Aug. 06, 2016    |  |
| LISN                      | Rohde & Schwarz                  | ENV216      | 101131     | Aug. 08, 2015 | Aug. 07, 2016    |  |
| Equipment                 | Manufacturer                     | Model No.   | Serial No. | Last Cal.     | Date             |  |
| Radiation                 | Emission Tes                     | it<br>T     |            |               | Cal. Due         |  |
| Spectrum<br>Analyzer      | Agilent                          | E4407B      | MY45106456 | Aug. 07, 2015 | Aug. 06, 2016    |  |
| EMI Test<br>Receiver      | Rohde & Schwarz                  | ESCI        | 100010/007 | Aug. 07, 2015 | Aug. 06, 2016    |  |
| Bilog Antenna             | ETS-LINDGREN                     | 3142E       | 00117537   | Mar. 26, 2016 | Mar. 25, 2017    |  |
| Bilog Antenna             | ETS-LINDGREN                     | 3142E       | 00117542   | Mar. 26, 2016 | Mar. 25, 2017    |  |
| Horn Antenna              | ETS-LINDGREN                     | 3117        | 00143207   | Mar. 26, 2016 | Mar. 25, 2017    |  |
| Horn Antenna              | ETS-LINDGREN                     | 3117        | 00143209   | Mar. 26, 2016 | Mar. 25, 2017    |  |
| Pre-amplifier             | Sonoma                           | 310N        | 185903     | Mar. 26, 2016 | Mar. 25, 2017    |  |
| Pre-amplifier             | HP                               | 8447B       | 3008A00849 | Mar. 26, 2016 | Mar. 25, 2017    |  |
| Cable                     | HUBER+SUHNER                     | 100         | SUCOFLEX   | Mar. 26, 2016 | Mar. 25, 2017    |  |
| Positioning<br>Controller | ETS-LINDGREN                     | 2090        | N/A        | N/A           | N/A              |  |



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# 4. Conducted Emission Test

#### 4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

#### 4.1.2 Test Limit

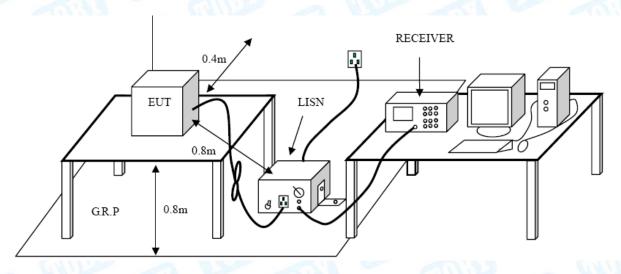
#### **Conducted Emission Test Limit**

| - TOTAL - TOTA | Maximum RF Lin   | e Voltage (dBμV) |
|--|------------------|------------------|
| Frequency  | Quasi-peak Level | Average Level    |
| 150kHz~500kHz  | 66 ~ 56 *        | 56 ~ 46 *        |
| 500kHz~5MHz  | 56               | 46               |
| 5MHz~30MHz   | 60               | 50               |

#### Notes:

- (1) \*Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2 Test Setup



#### 4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



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I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

## 4.4 EUT Operating Mode

Please refer to the description of test mode.

#### 4.5 Test Data

The EUT is powered by DC battery, no requirement for this test item.



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# 5. Radiated Emission Test

## 5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.209

5.1.2 Test Limit

#### Radiated Emission Limits (9kHz~1000MHz)

| Frequency<br>(MHz | Field Strength (microvolt/meter) | Measurement Distance (meters) |  |
|-------------------|----------------------------------|-------------------------------|--|
| 0.009~0.490       | 2400/F(KHz)                      | 300                           |  |
| 0.490~1.705       | 24000/F(KHz)                     | 30                            |  |
| 1.705~30.0        | 30                               | 30                            |  |
| 30~88             | 100                              | 3                             |  |
| 88~216            | 150                              | 3                             |  |
| 216~960           | 200                              | 3                             |  |
| Above 960         | 500                              | 3                             |  |

## Radiated Emission Limit (Above 1000MHz)

| Frequency  | Class A (dBuV | /m)(at 3 M) | Class B (dBuV/m)(at 3 M) |         |  |
|------------|---------------|-------------|--------------------------|---------|--|
| (MHz)      | Peak          | Average     | Peak                     | Average |  |
| Above 1000 | 80            | 60          | 74                       | 54      |  |

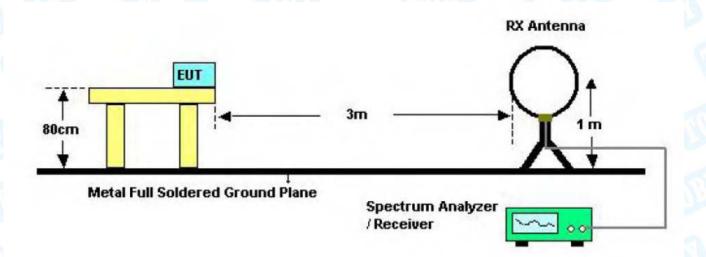
#### Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

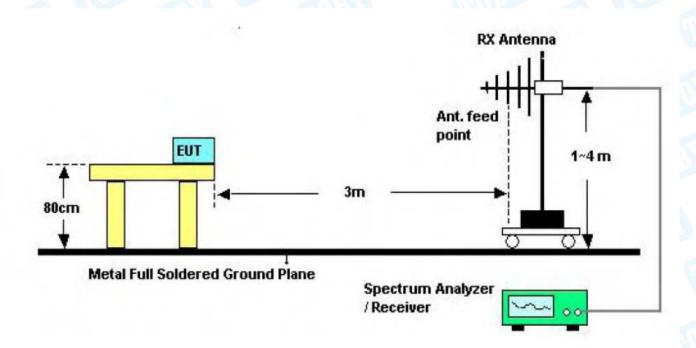


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# 5.2 Test Setup



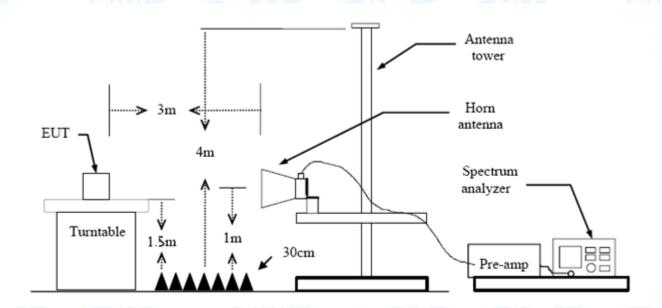
Below 30MHz Test Setup



Below 1000MHz Test Setup



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Above 1GHz Test Setup

#### 5.3 Test Procedure

- (1) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (5) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (6) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (7) For the actual test configuration, please see the test setup photo.

# 5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.



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## 5.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Test data please refer the following pages.



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| EUT:         |  |                             | TEAV                  | ו טע ז                     | Y VVIFI                 | IP CAMERA   | Model:  |                                    | VPC210                        | OVVI   |
|--------------|--|-----------------------------|-----------------------|----------------------------|-------------------------|---|---|------------------------------------|-------------------------------|--|
| Temp         | erature:                                   | 2                           | 25 ℃                  |                            | TH'                     |   | Relative I  | Humidity:                          | 55%                           |  |
| Test \       | Voltage:                                   | I                           | DC 1                  | 2V                         |                         |   | 11  | Dim)                               | 133                           |  |
| Ant. F       | Pol.                                       | I                           | Horiz                 | ontal                      |                         | A SOF   |   | 1 62                               |                               |  |
| Test I       | Mode:                                      | -                           | TX B                  | Mode                       | 2412                    | MHz   | (dillip)  |                                    |                               | A STATE OF THE PARTY OF THE PAR |
| Rema         | ark:                                       | (                           | Only                  | worse                      | case                    | is reported   |   |                                    | 3                             |  |
| 80.0         | dBuV/m                                     |                             |                       |                            |                         |   |   |                                    |                               |  |
| 30           | **   | 2<br>X                      |                       |                            |                         | 3   | * MAN MAN   | (RF)FCC 15(                        | C 3M Radiation<br>Margin -6   |  |
| -20          | Marie J.                                   |                             |                       | MANNIN                     | hju de person           | <b>\</b> \'   | V   |                                    |                               |  |
| -20<br>30.00 | 00 40                                      | 50 6                        | 0 70                  | 80                         | New March               | (MHz)   | 300   | 400 500                            | 0 600 700                     | 1000.00  |
| 30.00        | 00 40 :                                    | 50 6                        |                       |                            | ding                    | (MHz)  Correct Factor                                   | 300<br>Measure-<br>ment                               | 400 500<br>Limit                   | 0 600 700<br>Over             | 1000.00  |
| 30.00        |  |                             | q.                    | Rea<br>Le                  | _                       | Correct   | Measure-  |                                    |                               | 1000.000   |
|              | o. Mk.                                     | Free                        | q.<br><u>z</u>        | Rea<br>Le                  | vel<br>uv               | Correct<br>Factor                                       | Measure-<br>ment                                      | Limit                              | Over                          |  |
| 30.00        | o. Mk.                                     | Free                        | q.<br>2               | Rea<br>Lev<br>dB           | vel<br>uv               | Correct<br>Factor                                       | Measure-<br>ment<br>dBuV/m                            | Limit<br>dBuV/m                    | Over<br>dB                    | Detecto  |
| No.000       | o. Mk.<br>4                                | Fred<br>MHz<br>7.49         | q.<br>2<br>17         | Rea<br>Lev<br>dB<br>53.    | vel<br>uv<br>.61        | Correct<br>Factor<br>dB/m<br>-23.33                     | Measure-<br>ment<br>dBuV/m<br>30.28                   | Limit dBuV/m 40.00                 | Over dB -9.72                 | Detecto<br>peak  |
| No.000       | o. Mk.<br>4 <sup>-</sup><br>57<br>16       | Free<br>MHz<br>7.49<br>2.39 | q.<br>2<br>17<br>12   | Rea Lev dB 53.             | vel<br>uV<br>.61<br>.49 | Correct<br>Factor<br>dB/m<br>-23.33<br>-24.42           | Measure-<br>ment<br>dBuV/m<br>30.28<br>29.07          | Limit  dBuV/m  40.00  40.00        | Over  dB  -9.72 -10.93        | Detecto<br>peak<br>peak  |
| No.000       | 5. Mk.<br>4 <sup>-</sup><br>5.<br>16<br>25 | Free<br>MHz<br>7.49<br>2.39 | q.<br>17<br>12<br>156 | Rea Lev dB 53. 53. 50. 53. | vel<br>.61<br>.49       | Correct<br>Factor<br>dB/m<br>-23.33<br>-24.42<br>-20.53 | Measure-<br>ment<br>dBuV/m<br>30.28<br>29.07<br>29.92 | Limit  dBuV/m  40.00  40.00  43.50 | Over  dB  -9.72 -10.93 -13.58 | Detecto<br>peak<br>peak<br>peak  |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA   | Model:             | VPC2100WI |  |  |  |  |
|---------------|-----------------------------|--------------------|-----------|--|--|--|--|
| Temperature:  | 25 ℃                        | Relative Humidity: | 55%       |  |  |  |  |
| Test Voltage: | DC 12V                      |                    |           |  |  |  |  |
| Ant. Pol.     | Vertical                    |                    | CITION .  |  |  |  |  |
| Test Mode:    | TX B Mode 2412MHz           |                    |           |  |  |  |  |
| Remark:       | Only worse case is reported | ani)               | 3         |  |  |  |  |
|               |                             |                    |           |  |  |  |  |



|   | No. | Mk. | Freq.    | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit  | Over   |          |
|---|-----|-----|----------|------------------|-------------------|------------------|--------|--------|----------|
|   |     |     | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m | dB     | Detector |
| 1 |     | *   | 43.8119  | 59.21            | -21.77            | 37.44            | 40.00  | -2.56  | peak     |
| 2 | 2   |     | 98.4865  | 59.07            | -21.95            | 37.12            | 43.50  | -6.38  | peak     |
| 3 | 3   | İ   | 143.3260 | 60.08            | -21.71            | 38.37            | 43.50  | -5.13  | peak     |
| 4 | 1   |     | 250.3011 | 56.33            | -18.11            | 38.22            | 46.00  | -7.78  | peak     |
| 5 | 5   |     | 601.4265 | 48.92            | -9.41             | 39.51            | 46.00  | -6.49  | peak     |
| 6 | 6   |     | 721.7259 | 41.87            | -7.10             | 34.77            | 46.00  | -11.23 | peak     |

<sup>\*:</sup>Maximum data x:Over limit !:over margin



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| °C 32V orizontal (B Mode 2412) ally worse case |  | Relative H  | Humidity:                                      | 55%   |  |
|--|--|---|--|---|--|
| orizontal<br>3 B Mode 2412                     |  | mus a   |  | S S S S S S S S S S S S S S S S S S S   |  |
| ( B Mode 2412                                  |  | (III)   |  | O   |  |
|  |  | <b>GIID</b>   | 10:1   | I W   |  |
| nly worse case                                 | is reported  | Con   |  |   |  |
|  |  |   | B . 12 1 1 1 1                                 | 3   |  |
|  |  |   |  |   |  |
| A A A A A A A A A A A A A A A A A A A          | 3  | ***************************************   | (RF)FCC 15C                                    | 3M Radiation<br>Margin -6 o   | dB F   |
| 70 80  | (MHz)  | 300   | 400 500  | 600 700   | 1000.000   |
| Reading<br>Level                               | Correct<br>Factor  | Measure-<br>ment  | Limit  | Over  |  |
| dBuV   | dB/m   | dBuV/m  | dBuV/m   | dB  | Detecto  |
| 53.61  | -23.33   | 30.28   | 40.00  | -9.72   | peak   |
| 53.49  | -24.42   | 29.07   | 40.00  | -10.93  | peak   |
| 5 50.45  | -20.53   | 29.92   | 43.50  | -13.58  | peak   |
| 53.53  | -18.11   | 35.42   | 46.00  | -10.58  | peak   |
| 48.97  | -9.41  | 39.56   | 46.00  | -6.44   | peak   |
|  |  |   |  |   | peak   |
|  | Reading<br>Level<br>dBuV<br>53.61<br>53.49<br>5 50.45<br>0 53.53 | Reading Correct Factor    ABuV   dB/m     53.61   -23.33     53.49   -24.42     5   50.45   -20.53     0   53.53   -18.11     5   48.97   -9.41 | Reading Level Factor Measure-ment    Magraphic | Reading Correct Measure-<br>Level Factor ment Limit    dBuV   dB/m   dBuV/m   dBuV/m     53.61   -23.33   30.28   40.00     53.49   -24.42   29.07   40.00     50.45   -20.53   29.92   43.50     53.53   -18.11   35.42   46.00     548.97   -9.41   39.56   46.00 | Reading Level Factor Measure-Factor Measure-Bull Measure- |



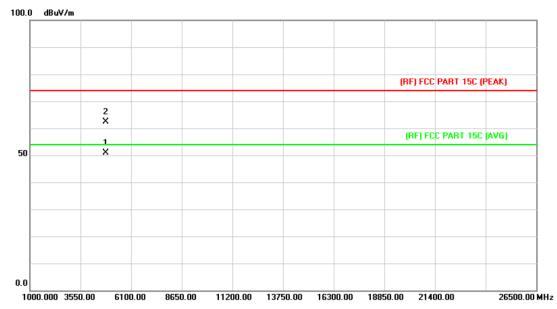
Page: 20 of 73

| EUT:                   |                                  | HEAV                           | /Y DU                       | TY WIF                                    | I IP CAMERA   | Model:   |                                      | VPC210                               | 0WI  |
|------------------------|----------------------------------|--------------------------------|-----------------------------|---|---|--|--------------------------------------|--------------------------------------|--|
| Temperatu              | ıre:                             | 25 °C                          | С                           | TITE                                      | 13  | Relative H   | lumidity:                            | 55%                                  | 111/1                                      |
| Test Voltag            | ge:                              | DC 3                           | 32V                         |   |   | 1  | Tim                                  | 133                                  |  |
| Ant. Pol.              |                                  | Verti                          | cal                         |   | Asin  |  | 1 62                                 |                                      |  |
| Test Mode              | ):                               | TX B                           | 3 Mod                       | de 2412                                   | 2MHz  | MILLS  | 2                                    | A W                                  | Likes                                      |
| Remark:                |                                  | Only                           | wors                        | se case                                   | is reported   | C. Service   |                                      | 3                                    |  |
| 80.0 dBuV/m            |                                  |                                |                             |   |   |  |                                      |                                      |  |
| 30                     | 1<br>×                           | المديدة الما                   | Marin Marin                 | 2<br>************************************ | **************************************                            | 4  | (RF)FCC 150                          | C 3M Radiation<br>Margin -6          |  |
| M <sub>prod</sub> o "Y | di. July                         | ,<br>IrrellMe,                 |                             | 1. pd                                     | MV-V-   | man markan   |                                      | KY (Invocal In                       | (A. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. |
| 20<br>30.000 40        |                                  | 60 70                          | Rea                         | ading                                     |   | 300<br>Measure-  | 400 500                              |                                      | 1000.00                                    |
|                        |                                  | eq.                            | Rea<br>Le                   | ading<br>evel                             | Correct<br>Factor   | Measure-<br>ment   | Limit                                | Over                                 | 1000.00                                    |
| 30.000 40<br>No. Mk    | α. Fr∈                           | eq.<br>Iz                      | Rea<br>Le                   | evel<br>BuV                               | Correct<br>Factor   | Measure-<br>ment<br>dBuV/m                                     | Limit<br>dBuV/m                      | Over<br>dB                           | Detecto                                    |
| No. Mk                 | K. Fre                           | eq.<br>Iz<br>119               | Rea<br>Le                   | evel<br>BuV<br>9.21                       | Correct<br>Factor<br>dB/m<br>-21.77                               | Measure-<br>ment<br>dBuV/m                                     | Limit<br>dBuV/m<br>40.00             | Over<br>dB<br>-2.56                  | Detecto                                    |
| No. Mk                 | 43.8°<br>98.48                   | eq.<br>Iz<br>119<br>365        | Rea<br>Le<br>dl<br>59       | BuV<br>9.21<br>9.07                       | Correct<br>Factor<br>dB/m<br>-21.77<br>-21.95                     | Measure-<br>ment<br>dBuV/m<br>37.44<br>37.12                   | Limit dBuV/m 40.00 43.50             | Over  dB  -2.56  -6.38               | Detector<br>peal                           |
| No. Mk  1 * 2 3 !      | 43.8°<br>98.48                   | eq.<br>dz<br>119<br>365<br>259 | Rea<br>Le<br>59<br>59       | 9.21<br>9.07<br>0.08                      | Correct<br>Factor<br>dB/m<br>-21.77<br>-21.95<br>-21.71           | Measure-<br>ment<br>dBuV/m<br>37.44<br>37.12<br>38.37          | Limit dBuV/m 40.00 43.50 43.50       | Over  dB  -2.56  -6.38  -5.13        | Detector peal peal peal                    |
| No. Mk  1 * 2 3 !      | 43.8°<br>98.48<br>143.3<br>250.3 | eq.<br>119<br>365<br>259       | Rea<br>Le<br>59<br>59<br>60 | 9.21<br>9.07<br>9.08<br>6.33              | Correct<br>Factor<br>dB/m<br>-21.77<br>-21.95<br>-21.71<br>-18.11 | Measure-<br>ment<br>dBuV/m<br>37.44<br>37.12<br>38.37<br>38.22 | Limit dBuV/m 40.00 43.50 43.50 46.00 | Over  dB  -2.56  -6.38  -5.13  -7.78 | Detector peal peal peal peal               |
| No. Mk  1 * 2 3 !      | 43.8°<br>98.48                   | eq.<br>119<br>365<br>259       | Rea<br>Le<br>59<br>59<br>60 | 9.21<br>9.07<br>0.08                      | Correct<br>Factor<br>dB/m<br>-21.77<br>-21.95<br>-21.71           | Measure-<br>ment<br>dBuV/m<br>37.44<br>37.12<br>38.37          | Limit dBuV/m 40.00 43.50 43.50       | Over  dB  -2.56  -6.38  -5.13        | Detector peal peal peal                    |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA      | Model:   | VPC2100WI |  |  |  |  |  |
|---------------|--------------------------------|--|-----------|--|--|--|--|--|
| Temperature:  | <b>25</b> ℃                    | Relative Humidity:   | 55%       |  |  |  |  |  |
| Test Voltage: | DC 12V                         | DC 12V   |           |  |  |  |  |  |
| Ant. Pol.     | Horizontal                     | Horizontal   |           |  |  |  |  |  |
| Test Mode:    | TX B Mode 2412MHz              |  | F. B. C.  |  |  |  |  |  |
| Remark:       | No report for the emission whi | No report for the emission which more than 10 dB below the |           |  |  |  |  |  |
|               | prescribed limit.              |  |           |  |  |  |  |  |

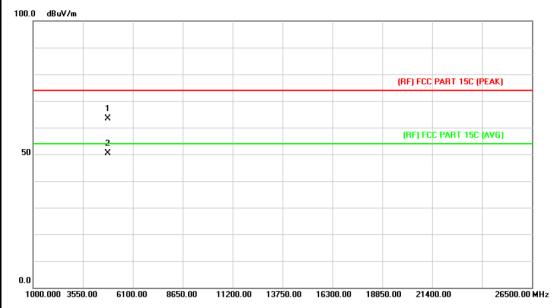


| No | . Mk | . Freq.  | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|----|------|----------|------------------|-------|------------------|--------|--------|----------|
|    |      | MHz      | dBu∀             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1  | *    | 4823.897 | 37.41            | 13.56 | 50.97            | 54.00  | -3.03  | AVG      |
| 2  |      | 4824.365 | 48.93            | 13.56 | 62.49            | 74.00  | -11.51 | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA     | Model:   | VPC2100WI |  |  |  |  |  |
|---------------|-------------------------------|--|-----------|--|--|--|--|--|
| Temperature:  | 25 ℃                          | Relative Humidity:   | 55%       |  |  |  |  |  |
| Test Voltage: | DC 12V                        |  |           |  |  |  |  |  |
| Ant. Pol.     | Vertical                      | Vertical   |           |  |  |  |  |  |
| Test Mode:    | TX B Mode 2412MHz             |  | F. F. L.  |  |  |  |  |  |
| Remark:       | No report for the emission wh | No report for the emission which more than 10 dB below the |           |  |  |  |  |  |
|               | prescribed limit.             |  |           |  |  |  |  |  |

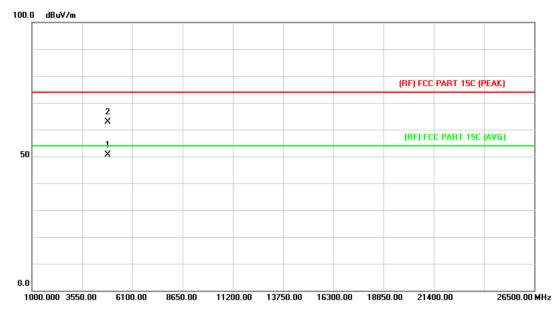


| No | . Mk. | Freq.    | _     | Correct<br>Factor | Measure-<br>ment | Limit  | Over   |          |
|----|-------|----------|-------|-------------------|------------------|--------|--------|----------|
|    |       | MHz      | dBu∨  | dB/m              | dBuV/m           | dBuV/m | dB     | Detector |
| 1  |       | 4823.674 | 49.94 | 13.56             | 63.50            | 74.00  | -10.50 | peak     |
| 2  | *     | 4824.034 | 36.80 | 13.56             | 50.36            | 54.00  | -3.64  | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA Model:                           |                    | VPC2100WI |  |  |  |  |
|---------------|--|--------------------|-----------|--|--|--|--|
| Temperature:  | 25 ℃   | Relative Humidity: | 55%       |  |  |  |  |
| Test Voltage: | DC 12V   |                    |           |  |  |  |  |
| Ant. Pol.     | Horizontal   | Horizontal         |           |  |  |  |  |
| Test Mode:    | TX B Mode 2437MHz  |                    | F. H. C.  |  |  |  |  |
| Remark:       | No report for the emission which more than 10 dB below the |                    |           |  |  |  |  |
|               | prescribed limit.  |                    |           |  |  |  |  |

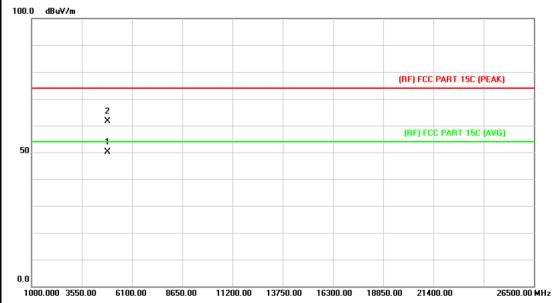


| - | No. | Mk. | Freq.    | _     |       | Measure-<br>ment | Limit  | Over   |          |
|---|-----|-----|----------|-------|-------|------------------|--------|--------|----------|
|   |     |     | MHz      | dBu∨  | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1 |     | *   | 4873.658 | 36.68 | 13.86 | 50.54            | 54.00  | -3.46  | AVG      |
| 2 |     |     | 4874.314 | 48.98 | 13.86 | 62.84            | 74.00  | -11.16 | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA  | Model:             | VPC2100WI |  |  |  |  |
|---------------|--|--------------------|-----------|--|--|--|--|
| Temperature:  | 25 ℃   | Relative Humidity: | 55%       |  |  |  |  |
| Test Voltage: | DC 12V   | DC 12V             |           |  |  |  |  |
| Ant. Pol.     | Vertical   | Vertical           |           |  |  |  |  |
| Test Mode:    | TX B Mode 2437MHz  |                    | H.H.      |  |  |  |  |
| Remark:       | No report for the emission which more than 10 dB below the prescribed limit. |                    |           |  |  |  |  |

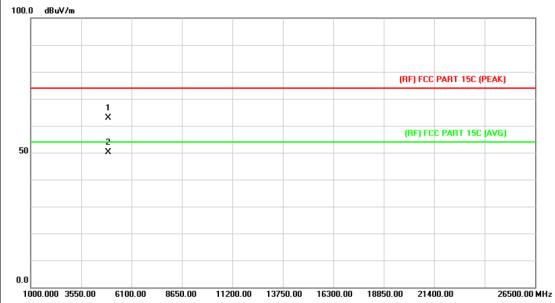


| 1 | No. | Mk. | Freq.    | _     |       | Measure-<br>ment | Limit  | Over   |          |
|---|-----|-----|----------|-------|-------|------------------|--------|--------|----------|
|   |     |     | MHz      | dBu∀  | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1 |     | *   | 4873.125 | 36.28 | 13.86 | 50.14            | 54.00  | -3.86  | AVG      |
| 2 |     |     | 4874.210 | 47.71 | 13.86 | 61.57            | 74.00  | -12.43 | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA        | EAVY DUTY WIFI IP CAMERA <b>Model:</b> VPC2100             |      |  |  |  |  |  |
|---------------|----------------------------------|--|------|--|--|--|--|--|
| Temperature:  | <b>25</b> ℃                      | Relative Humidity: 55%                                     |      |  |  |  |  |  |
| Test Voltage: | DC 12V                           | DC 12V   |      |  |  |  |  |  |
| Ant. Pol.     | Horizontal                       | Horizontal   |      |  |  |  |  |  |
| Test Mode:    | TX B Mode 2462MHz                |  | Alle |  |  |  |  |  |
| Remark:       | No report for the emission which | No report for the emission which more than 10 dB below the |      |  |  |  |  |  |
|               | prescribed limit.                |  |      |  |  |  |  |  |

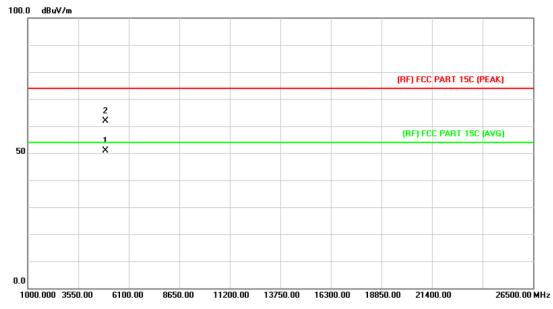


| N | o. Mł | . Freq.  | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|---|-------|----------|------------------|-------|------------------|--------|--------|----------|
|   |       | MHz      | dBu∀             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1 |       | 4923.974 | 48.74            | 14.15 | 62.89            | 74.00  | -11.11 | peak     |
| 2 | *     | 4924.310 | 36.06            | 14.15 | 50.21            | 54.00  | -3.79  | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA                                  | HEAVY DUTY WIFI IP CAMERA Model: V |             |  |  |  |  |  |
|---------------|--|------------------------------------|-------------|--|--|--|--|--|
| Temperature:  | 25 ℃   | 55%                                |             |  |  |  |  |  |
| Test Voltage: | DC 12V   | DC 12V                             |             |  |  |  |  |  |
| Ant. Pol.     | Vertical   | Vertical                           |             |  |  |  |  |  |
| Test Mode:    | TX B Mode 2462MHz  |                                    | A PROPERTY. |  |  |  |  |  |
| Remark:       | No report for the emission which more than 10 dB below the |                                    |             |  |  |  |  |  |
|               | prescribed limit.  | prescribed limit.                  |             |  |  |  |  |  |



| No | o. Mk | . Freq.  | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|----|-------|----------|------------------|-------|------------------|--------|--------|----------|
|    |       | MHz      | dBu∨             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1  | *     | 4923.687 | 36.72            | 14.15 | 50.87            | 54.00  | -3.13  | AVG      |
| 2  |       | 4924.064 | 47.69            | 14.15 | 61.84            | 74.00  | -12.16 | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA   | EAVY DUTY WIFI IP CAMERA Model: |      |  |  |  |  |
|---------------|---|---------------------------------|------|--|--|--|--|
| Temperature:  | 25 ℃  | C Relative Humidity: 55°        |      |  |  |  |  |
| Test Voltage: | DC 12V  |                                 |      |  |  |  |  |
| Ant. Pol.     | Horizontal  | Horizontal                      |      |  |  |  |  |
| Test Mode:    | TX G Mode 2412MHz   |                                 | FILL |  |  |  |  |
| Remark:       | emark: No report for the emission which more than 10 dB below the prescribed limit. |                                 |      |  |  |  |  |

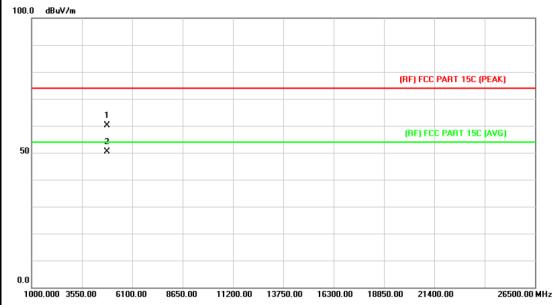


| No | . Mk. | Freq.    | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|----|-------|----------|------------------|-------|------------------|--------|--------|----------|
|    |       | MHz      | dBu∨             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1  |       | 4823.974 | 48.42            | 13.56 | 61.98            | 74.00  | -12.02 | peak     |
| 2  | *     | 4824.067 | 37.13            | 13.56 | 50.69            | 54.00  | -3.31  | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA  | Model:             | VPC2100WI |  |  |  |  |  |
|---------------|--|--------------------|-----------|--|--|--|--|--|
| Temperature:  | 25 ℃   | Relative Humidity: | 55%       |  |  |  |  |  |
| Test Voltage: | DC 12V   | DC 12V             |           |  |  |  |  |  |
| Ant. Pol.     | Vertical   | Vertical           |           |  |  |  |  |  |
| Test Mode:    | TX G Mode 2412MHz  |                    | P. P. C.  |  |  |  |  |  |
| Remark:       | : No report for the emission which more than 10 dB below the prescribed limit. |                    |           |  |  |  |  |  |

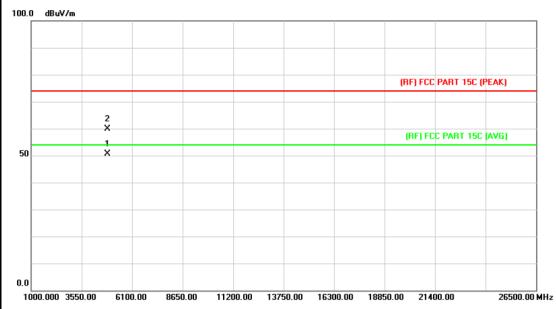


| No | o. Mk | . Freq.  | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|----|-------|----------|------------------|-------|------------------|--------|--------|----------|
|    |       | MHz      | dBu∀             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1  |       | 4824.287 | 46.58            | 13.56 | 60.14            | 74.00  | -13.86 | peak     |
| 2  | *     | 4824.317 | 36.76            | 13.56 | 50.32            | 54.00  | -3.68  | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA        | Y DUTY WIFI IP CAMERA <b>Model</b> : VPC2100               |      |  |  |  |  |
|---------------|----------------------------------|--|------|--|--|--|--|
| Temperature:  | <b>25</b> ℃                      | Relative Humidity:   | 55%  |  |  |  |  |
| Test Voltage: | DC 12V                           |  |      |  |  |  |  |
| Ant. Pol.     | Horizontal                       | Horizontal   |      |  |  |  |  |
| Test Mode:    | TX G Mode 2437MHz                |  | HILL |  |  |  |  |
| Remark:       | No report for the emission which | No report for the emission which more than 10 dB below the |      |  |  |  |  |
|               | prescribed limit.                |  |      |  |  |  |  |



| No. | Mk. | Freq.    | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|-----|-----|----------|------------------|-------|------------------|--------|--------|----------|
|     |     | MHz      | dBu∨             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1   | *   | 4874.349 | 36.74            | 13.86 | 50.60            | 54.00  | -3.40  | AVG      |
| 2   |     | 4875.785 | 46.11            | 13.87 | 59.98            | 74.00  | -14.02 | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA <b>Model:</b> VPC210                               |          |        |  |  |  |
|---------------|--|----------|--------|--|--|--|
| Temperature:  | 25 ℃ Relative Humidity: 55%  |          |        |  |  |  |
| Test Voltage: | DC 12V   |          |        |  |  |  |
| Ant. Pol.     | Vertical   | Vertical |        |  |  |  |
| Test Mode:    | TX G Mode 2437MHz  |          | I WILL |  |  |  |
| Remark:       | No report for the emission which more than 10 dB below the prescribed limit. |          |        |  |  |  |

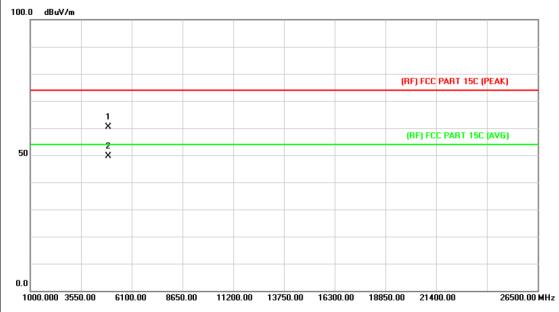


| 1 | No. | Mk. | Freq.    | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|---|-----|-----|----------|------------------|-------|------------------|--------|--------|----------|
|   |     |     | MHz      | dBu∨             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1 |     |     | 4873.695 | 45.88            | 13.86 | 59.74            | 74.00  | -14.26 | peak     |
| 2 |     | *   | 4874.641 | 36.48            | 13.86 | 50.34            | 54.00  | -3.66  | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA <b>Model:</b> VPC210                               |            |          |  |  |  |
|---------------|--|------------|----------|--|--|--|
| Temperature:  | 25 ℃ Relative Humidity: 55%  |            |          |  |  |  |
| Test Voltage: | DC 12V   |            |          |  |  |  |
| Ant. Pol.     | Horizontal   | Horizontal |          |  |  |  |
| Test Mode:    | TX G Mode 2462MHz  |            | A. H. C. |  |  |  |
| Remark:       | No report for the emission which more than 10 dB below the prescribed limit. |            |          |  |  |  |

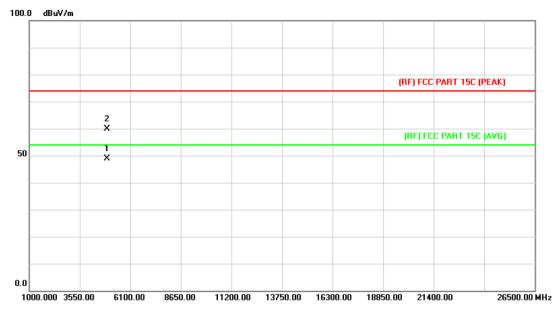


| N | lo. I | Mk. | Freq.    | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|---|-------|-----|----------|------------------|-------|------------------|--------|--------|----------|
|   |       |     | MHz      | dBu∨             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1 |       |     | 4923.641 | 46.21            | 14.15 | 60.36            | 74.00  | -13.64 | peak     |
| 2 | 4     | k   | 4924.312 | 35.50            | 14.15 | 49.65            | 54.00  | -4.35  | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA <b>Model</b> : VPC2100\ |  |      |  |  |  |  |
|---------------|---|--|------|--|--|--|--|
| Temperature:  | 25 ℃ Relative Humidity: 55%                       |  |      |  |  |  |  |
| Test Voltage: | DC 12V  |  |      |  |  |  |  |
| Ant. Pol.     | Vertical  | Vertical   |      |  |  |  |  |
| Test Mode:    | TX G Mode 2462MHz                                 |  | Line |  |  |  |  |
| Remark:       | No report for the emission wh prescribed limit.   | No report for the emission which more than 10 dB below the prescribed limit. |      |  |  |  |  |

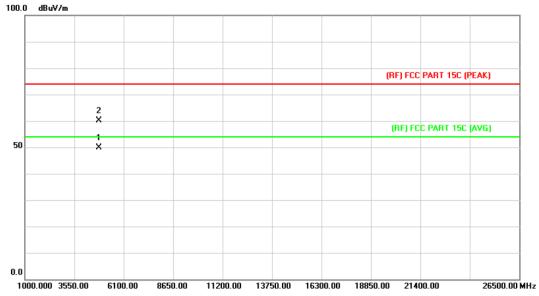


| 1 | No. | Mk. | Freq.    | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|---|-----|-----|----------|------------------|-------|------------------|--------|--------|----------|
|   |     |     | MHz      | dBuV             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1 |     | *   | 4923.678 | 34.83            | 14.15 | 48.98            | 54.00  | -5.02  | AVG      |
| 2 |     |     | 4924.351 | 45.61            | 14.15 | 59.76            | 74.00  | -14.24 | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA <b>Model:</b> |                        | VPC2100WI   |  |  |  |  |
|---------------|---|------------------------|-------------|--|--|--|--|
| Temperature:  | 25 °C Relative Humidity: 55%            |                        |             |  |  |  |  |
| Test Voltage: | DC 12V                                  | DC 12V                 |             |  |  |  |  |
| Ant. Pol.     | Horizontal                              | Horizontal             |             |  |  |  |  |
| Test Mode:    | TX N(HT20) Mode 2412MHz                 |                        | A Principal |  |  |  |  |
| Remark:       | No report for the emission wh           | ich more than 10 dB be | elow the    |  |  |  |  |
|               | prescribed limit.                       |                        |             |  |  |  |  |
| 100.0 dBuV/m  |   |                        |             |  |  |  |  |

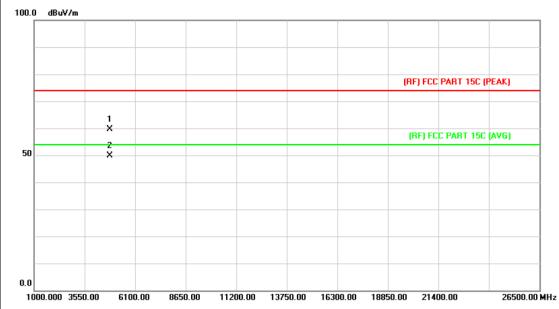


|   | No. | Mk. | Freq.    | _     | Correct<br>Factor | Measure-<br>ment | Limit  | Over   |          |
|---|-----|-----|----------|-------|-------------------|------------------|--------|--------|----------|
|   |     |     | MHz      | dBu∨  | dB/m              | dBuV/m           | dBuV/m | dB     | Detector |
| 1 |     | *   | 4823.654 | 36.41 | 13.56             | 49.97            | 54.00  | -4.03  | AVG      |
| 2 | 2   |     | 4824.254 | 46.63 | 13.56             | 60.19            | 74.00  | -13.81 | peak     |



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| HEAVY DUTY WIFI IP CAMERA  | VPC2100WI   |   |  |  |  |  |
|--|---|---|--|--|--|--|
| 25 ℃ Relative Humidity: 55%  |   |   |  |  |  |  |
| DC 12V   |   |   |  |  |  |  |
| Vertical   | Vertical  |   |  |  |  |  |
| TX N(HT20) Mode 2412MHz  | CHILDES -   | A VIII  |  |  |  |  |
| No report for the emission which more than 10 dB below the prescribed limit. |   |   |  |  |  |  |
|  | 25 °C  DC 12V  Vertical  TX N(HT20) Mode 2412MHz  No report for the emission wh | 25 °C Relative Humidity:  DC 12V  Vertical  TX N(HT20) Mode 2412MHz  No report for the emission which more than 10 dB b |  |  |  |  |

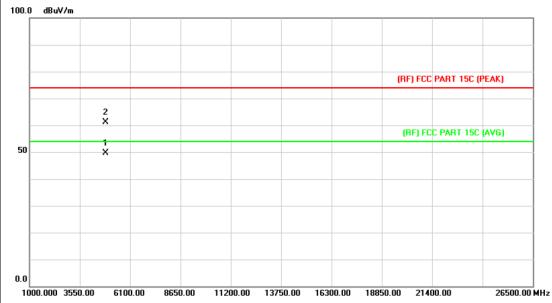


| No. | Mk. | Freq.    | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|-----|-----|----------|------------------|-------|------------------|--------|--------|----------|
|     |     | MHz      | dBu∨             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1   |     | 4823.598 | 46.11            | 13.56 | 59.67            | 74.00  | -14.33 | peak     |
| 2   | *   | 4824.541 | 36.36            | 13.56 | 49.92            | 54.00  | -4.08  | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA <b>Model:</b> VPC2100V |  |     |  |  |  |
|---------------|--|--|-----|--|--|--|
| Temperature:  | 25 °C Relative Humidity: 55%                     |  |     |  |  |  |
| Test Voltage: | DC 12V   |  |     |  |  |  |
| Ant. Pol.     | Horizontal                                       | Horizontal   |     |  |  |  |
| Test Mode:    | TX N(HT20) Mode 2437MHz                          |  | MAG |  |  |  |
| Remark:       | No report for the emission which                 | No report for the emission which more than 10 dB below the |     |  |  |  |
|               | prescribed limit.                                |  |     |  |  |  |

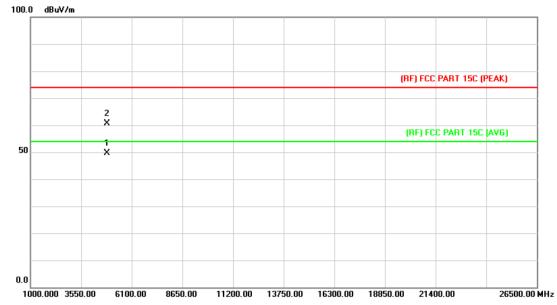


| No | o. Mk | . Freq.  | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|----|-------|----------|------------------|-------|------------------|--------|--------|----------|
|    |       | MHz      | dBu∨             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1  | *     | 4873.598 | 35.79            | 13.86 | 49.65            | 54.00  | -4.35  | AVG      |
| 2  |       | 4875.012 | 47.15            | 13.87 | 61.02            | 74.00  | -12.98 | peak     |



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| ℃<br>12V   | Relative Humidity:   | 55%   |  |  |  |  |  |  |  |
|--|----------------------|---|--|--|--|--|--|--|--|
| 12V  |                      | 13.3  |  |  |  |  |  |  |  |
|  |                      | DC 12V  |  |  |  |  |  |  |  |
| Vertical   |                      |   |  |  |  |  |  |  |  |
| TX N(HT20) Mode 2437MHz                                    |                      |   |  |  |  |  |  |  |  |
| No report for the emission which more than 10 dB below the |                      |   |  |  |  |  |  |  |  |
| ,  | N(HT20) Mode 2437MHz | N(HT20) Mode 2437MHz report for the emission which more than 10 dB be |  |  |  |  |  |  |  |

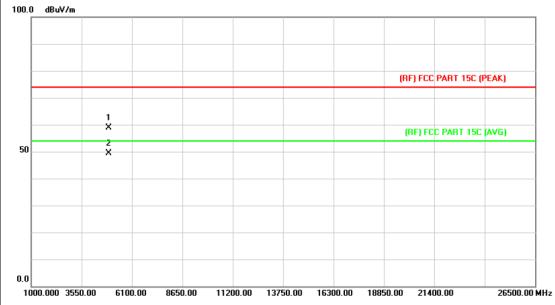


| No | o. Mk | . Freq.  | _     |       | Measure-<br>ment | Limit  | Over   |          |
|----|-------|----------|-------|-------|------------------|--------|--------|----------|
|    |       | MHz      | dBu∀  | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1  | *     | 4873.854 | 35.83 | 13.86 | 49.69            | 54.00  | -4.31  | AVG      |
| 2  |       | 4874.651 | 46.83 | 13.86 | 60.69            | 74.00  | -13.31 | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA                          | Model:   | VPC2100WI |  |  |  |  |  |
|---------------|--|--|-----------|--|--|--|--|--|
| Temperature:  | 25 ℃   | Relative Humidity:   | 55%       |  |  |  |  |  |
| Test Voltage: | DC 12V   |  |           |  |  |  |  |  |
| Ant. Pol.     | Horizontal   |  |           |  |  |  |  |  |
| Test Mode:    | TX N(HT20) Mode 2462MHz                            |  | F. H. C.  |  |  |  |  |  |
| Remark:       | No report for the emission which prescribed limit. | No report for the emission which more than 10 dB below the |           |  |  |  |  |  |

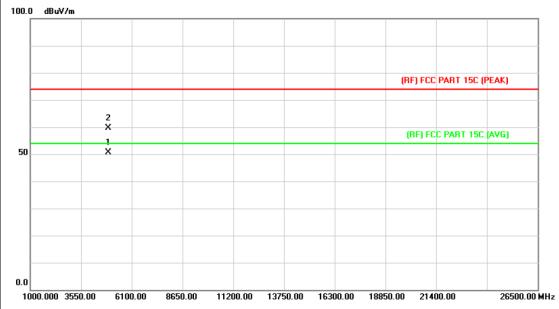


| No. | Mk. | Freq.    | _     |       | Measure-<br>ment | Limit  | Over   |          |
|-----|-----|----------|-------|-------|------------------|--------|--------|----------|
|     |     | MHz      | dBu∀  | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1   |     | 4923.899 | 44.82 | 14.15 | 58.97            | 74.00  | -15.03 | peak     |
| 2   | *   | 4924.158 | 35.17 | 14.15 | 49.32            | 54.00  | -4.68  | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA        | Model:                 | VPC2100WI |  |  |  |  |
|---------------|----------------------------------|------------------------|-----------|--|--|--|--|
| Temperature:  | <b>25</b> ℃                      | Relative Humidity:     | 55%       |  |  |  |  |
| Test Voltage: | DC 12V                           |                        |           |  |  |  |  |
| Ant. Pol.     | Vertical                         |                        |           |  |  |  |  |
| Test Mode:    | TX N(HT20) Mode 2462MHz          | (III)                  | MAIN      |  |  |  |  |
| Remark:       | No report for the emission which | ch more than 10 dB bel | ow the    |  |  |  |  |
|               | prescribed limit.                |                        |           |  |  |  |  |



| No. | . Mk | . Freq.  | Reading<br>Level |       | Measure-<br>ment | Limit  | Over   |          |
|-----|------|----------|------------------|-------|------------------|--------|--------|----------|
|     |      | MHz      | dBu∨             | dB/m  | dBuV/m           | dBuV/m | dB     | Detector |
| 1   | *    | 4923.654 | 36.48            | 14.15 | 50.63            | 54.00  | -3.37  | AVG      |
| 2   |      | 4924.265 | 45.53            | 14.15 | 59.68            | 74.00  | -14.32 | peak     |



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# 6. Restricted Bands Requirement

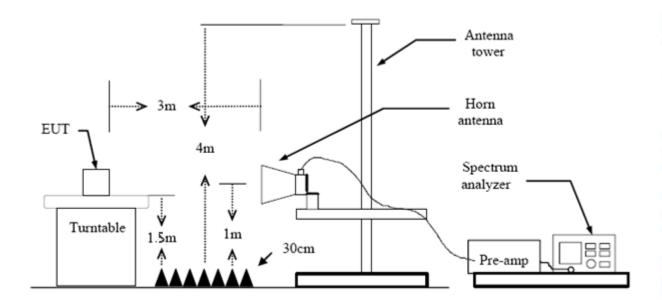
#### 6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.209 FCC Part 15.205

6.1.2 Test Limit

| Restricted Frequency | Class B (dBuV/m)(at 3 M) |         |  |  |  |
|----------------------|--------------------------|---------|--|--|--|
| Band<br>(MHz)        | Peak                     | Average |  |  |  |
| 2310 ~2390           | 74                       | 54      |  |  |  |
| 2483.5 ~2500         | 74                       | 54      |  |  |  |

# 6.2 Test Setup



### 6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.



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(4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

# 6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

### 6.5 Test Data

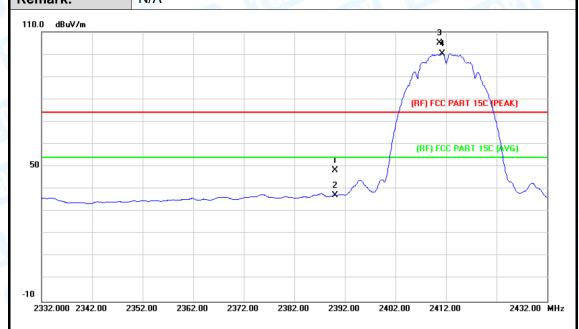
Please see the next page.



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(1) Radiation Test

| EUT:          | HEAVY DUTY WIFI IP CAMERA | Model:             | VPC2100WI |  |  |  |  |
|---------------|---------------------------|--------------------|-----------|--|--|--|--|
| Temperature:  | 25 ℃                      | Relative Humidity: | 55%       |  |  |  |  |
| Test Voltage: | DC 12V                    | DC 12V             |           |  |  |  |  |
| Ant. Pol.     | Horizontal                | CUDDO -            | W. C.     |  |  |  |  |
| Test Mode:    | TX B Mode 2412MHz         |                    | 3 - 0     |  |  |  |  |
| Remark:       | N/A                       | A HILL             |           |  |  |  |  |



| No | o. Mk | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit                 | Over        |          |
|----|-------|----------|------------------|-------------------|------------------|-----------------------|-------------|----------|
|    |       | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m                | dB          | Detector |
| 1  |       | 2390.000 | 47.66            | 0.77              | 48.43            | 74.00                 | -25.57      | peak     |
| 2  |       | 2390.000 | 36.40            | 0.77              | 37.17            | 54.00                 | -16.83      | AVG      |
| 3  | X     | 2410.700 | 104.15           | 0.86              | 105.01           | Fundamental Frequency |             | peak     |
| 4  | *     | 2411.300 | 99.48            | 0.86              | 100.34           | Fundamenta            | I Frequency | AVG      |



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| EUT         | :          | HEAVY DUTY WIFI IP CAMERA <b>Model:</b> VP |        |         | C2100WI |          |      |                  |              |           |              |             |
|-------------|------------|--|--------|---------|---------|----------|------|------------------|--------------|-----------|--------------|-------------|
| Tem         | peratu     | re:  | 25 °   | C       |         | 13       |      | Re               | lative F     | lumidity  | : 55%        | <b>%</b>    |
| Test        | Voltag     | e:   | DC 1   | I2V     |         |          | (n)  |                  | 1            | Cul       | 11:30        |             |
| Ant.        | Pol.       |  | Verti  | cal     |         | 113      |      |                  | 1            | I W       |              |             |
| Test        | Mode:      |  | TX E   | 8 Mode  | 2412    | MHz      |      | 6                | 1110         |           |              | N. C.       |
| Remark: N/A |            |  |        |         |         | _ (      |      |                  |              |           |              |             |
| 110.0       | dBuV/m     |  |        |         |         |          |      |                  |              |           | 4            |             |
|             |            |  |        |         |         |          |      |                  |              |           | PART 15C IPI | EAK)        |
| 50          |            |  |        |         |         |          |      | 1<br>X<br>2<br>X |              | (RF) FC   | C PART 15C ( | vG)         |
| -10<br>233  | 32.000 234 | 2.00 2                                     | 352.00 | 2362.00 | 2372    | .00 2382 | 2.00 | 2392             | .00 240      | 2.00 2412 | 2.00         | 2432.00 MHz |
| N           | lo. Mk     | . Fr                                       | eq.    | Read    |         | Corre    |      |                  | sure-<br>ent | Limit     | Over         |             |
|             |            | MH   | łz     | dBu     | V       | dB/m     |      | dBı              | uV/m         | dBuV/m    | dB           | Detector    |
| 1           |            | 2390                                       | 000    | 48.4    | 15      | 0.77     |      | 49               | ).22         | 74.00     | -24.7        | 8 peak      |
| 2           |            | 2390                                       | 000    | 37.8    | 31      | 0.77     |      | 38               | 3.58         | 54.00     | -15.4        | 2 AVG       |
| 3           | *          | 2411                                       |        | 101.    |         | 0.86     |      |                  | 2.78         |           | tal Frequenc | 41/0        |

**Emission Level= Read Level+ Correct Factor** 

106.62

0.86

107.48

2413.500

4

X

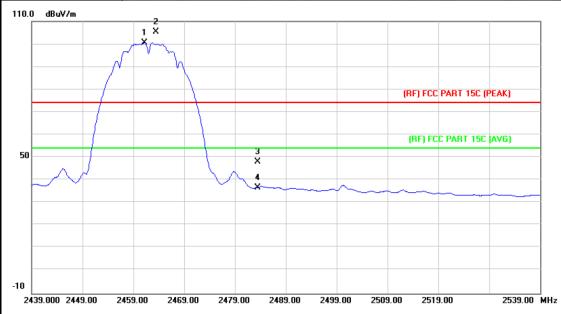
peak

**Fundamental Frequency** 



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| S | EUT:          | HEAVY DUTY WIFI IP CAMERA | Model:             | VPC2100WI |  |  |  |  |
|---|---------------|---------------------------|--------------------|-----------|--|--|--|--|
|   | Temperature:  | 25 ℃                      | Relative Humidity: | 55%       |  |  |  |  |
|   | Test Voltage: | C 12V                     |                    |           |  |  |  |  |
| Ę | Ant. Pol.     | Horizontal                | Horizontal         |           |  |  |  |  |
|   | Test Mode:    | TX B Mode 2462MHz         |                    | THU.      |  |  |  |  |
|   | Remark:       | N/A                       |                    |           |  |  |  |  |
|   |               |                           |                    |           |  |  |  |  |

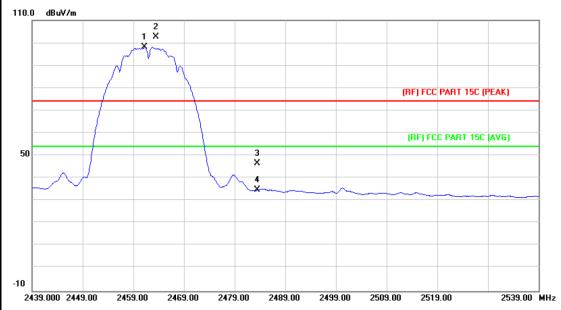


| N | No. | Mk. | Freq.    | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit                 | Over   |          |
|---|-----|-----|----------|------------------|-------------------|------------------|-----------------------|--------|----------|
|   |     |     | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m                | dB     | Detector |
| 1 |     | *   | 2461.200 | 99.56            | 1.07              | 100.63           | Fundamental Frequency |        | AVG      |
| 2 |     | X   | 2463.400 | 104.20           | 1.08              | 105.28           | Fundamental Frequency |        | peak     |
| 3 |     |     | 2483.500 | 46.98            | 1.17              | 48.15            | 74.00                 | -25.85 | peak     |
| 4 |     |     | 2483.500 | 35.57            | 1.17              | 36.74            | 54.00                 | -17.26 | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA | Model: | VPC2100WI  |  |  |  |  |
|---------------|---------------------------|--------|------------|--|--|--|--|
| Temperature:  | 25 ℃                      | 55%    |            |  |  |  |  |
| Test Voltage: | DC 12V                    |        |            |  |  |  |  |
| Ant. Pol.     | Vertical                  |        |            |  |  |  |  |
| Test Mode:    | TX B Mode 2462MHz         |        | All Inches |  |  |  |  |
| Remark:       | N/A                       | W. F.  |            |  |  |  |  |

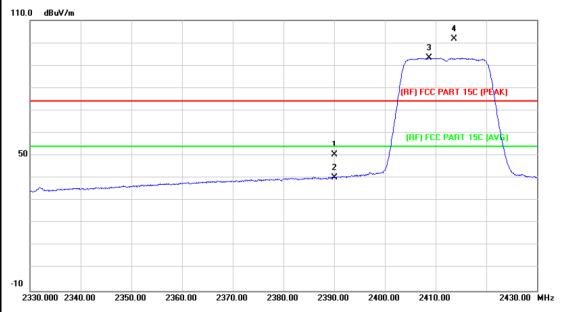


| No. | . Mk. | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit      | Over         |          |
|-----|-------|----------|------------------|-------------------|------------------|------------|--------------|----------|
|     |       | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m     | dB           | Detector |
| 1   | *     | 2461.200 | 97.00            | 1.07              | 98.07            |            |              | AVG      |
|     |       | 2401.200 | 91.00            | 1.07              |                  | Fundamenta | al Frequency |          |
| 2   | X     | 2463.400 | 101.63           | 1.08              | 102.71           | Fundamenta | I Frequency  | peak     |
| 3   |       | 2483.500 | 45.51            | 1.17              | 46.68            | 74.00      | -27.32       | peak     |
| 4   |       | 2483.500 | 33.57            | 1.17              | 34.74            | 54.00      | -19.26       | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA | Model:             | VPC2100WI |  |  |  |  |
|---------------|---------------------------|--------------------|-----------|--|--|--|--|
| Temperature:  | 25 ℃                      | Relative Humidity: | 55%       |  |  |  |  |
| Test Voltage: | DC 12V                    | OC 12V             |           |  |  |  |  |
| Ant. Pol.     | Horizontal                |                    |           |  |  |  |  |
| Test Mode:    | TX G Mode 2412MHz         |                    | A TOTAL   |  |  |  |  |
| Remark:       | N/A                       | (1)                | 3 _ 6     |  |  |  |  |
| 110.0 dBuV/m  |                           |                    |           |  |  |  |  |

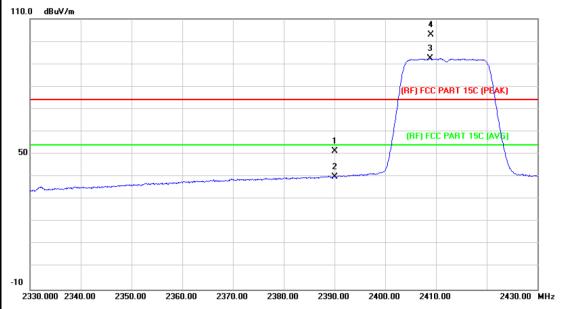


| No. | Mk. | Freq.    | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit                 | Over        |          |
|-----|-----|----------|------------------|-------------------|------------------|-----------------------|-------------|----------|
|     |     | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m                | dB          | Detector |
| 1   |     | 2390.000 | 49.60            | 0.77              | 50.37            | 74.00                 | -23.63      | peak     |
| 2   |     | 2390.000 | 39.62            | 0.77              | 40.39            | 54.00                 | -13.61      | AVG      |
| 3   | *   | 2408.700 | 92.46            | 0.85              | 93.31            | Fundamental Frequency |             | AVG      |
| 4   | X   | 2413.700 | 100.91           | 0.86              | 101.77           | Fundamenta            | l Frequency | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA    | Model: | VPC2100WI |  |  |  |
|---------------|------------------------------|--------|-----------|--|--|--|
| Temperature:  | 25 °C Relative Humidity: 55% |        |           |  |  |  |
| Test Voltage: | DC 12V                       |        |           |  |  |  |
| Ant. Pol.     | Vertical                     |        | TO THE    |  |  |  |
| Test Mode:    | TX G Mode 2412MHz            |        |           |  |  |  |
| Remark:       | N/A                          | 100    |           |  |  |  |
|               |                              |        |           |  |  |  |

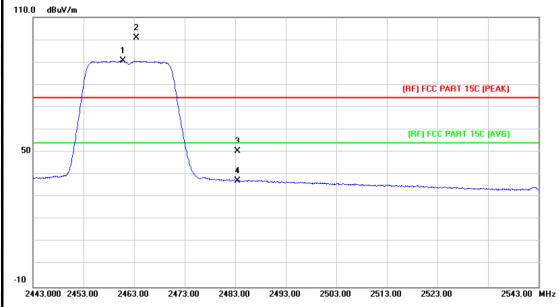


| No. | Mk | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit                 | Over        |          |
|-----|----|----------|------------------|-------------------|------------------|-----------------------|-------------|----------|
|     |    | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m                | dB          | Detector |
| 1   |    | 2390.000 | 50.60            | 0.77              | 51.37            | 74.00                 | -22.63      | peak     |
| 2   |    | 2390.000 | 39.30            | 0.77              | 40.07            | 54.00                 | -13.93      | AVG      |
| 3   | *  | 2408.800 | 91.57            | 0.85              | 92.42            | Fundamental Frequency |             | AVG      |
| 4   | X  | 2409.000 | 101.97           | 0.85              | 102.82           | Fundamenta            | I Frequency | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA    | Model: | VPC2100WI |  |  |  |
|---------------|------------------------------|--------|-----------|--|--|--|
| Temperature:  | 25 °C Relative Humidity: 55% |        |           |  |  |  |
| Test Voltage: | DC 12V                       |        |           |  |  |  |
| Ant. Pol.     | Horizontal                   |        |           |  |  |  |
| Test Mode:    | TX G Mode 2462MHz            |        |           |  |  |  |
| Remark:       | N/A                          | anis)  |           |  |  |  |
|               |                              |        |           |  |  |  |

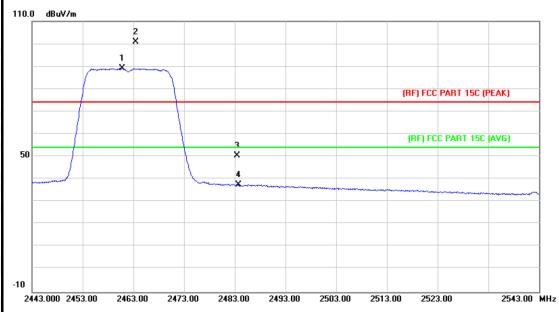


| No | . Mk | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit       | Over      |          |
|----|------|----------|------------------|-------------------|------------------|-------------|-----------|----------|
|    |      | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m      | dB        | Detector |
| 1  | *    | 2460.800 | 89.51            | 1.06              | 90.57            | Fundamental | Frequency | AVG      |
| 2  | Χ    | 2463.500 | 99.81            | 1.08              | 100.89           | Fundamental | Frequency | peak     |
| 3  |      | 2483.500 | 49.43            | 1.17              | 50.60            | 74.00       | -23.40    | peak     |
| 4  |      | 2483.500 | 36.09            | 1.17              | 37.26            | 54.00       | -16.74    | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA | Model: | VPC2100WI  |  |  |  |
|---------------|---------------------------|--------|------------|--|--|--|
| Temperature:  | 25 ℃                      | 55%    |            |  |  |  |
| Test Voltage: | DC 12V                    |        |            |  |  |  |
| Ant. Pol.     | Vertical                  |        |            |  |  |  |
| Test Mode:    | TX G Mode 2462MHz         |        | ALL STATES |  |  |  |
| Remark:       | N/A                       | anis.  |            |  |  |  |
|               |                           |        |            |  |  |  |



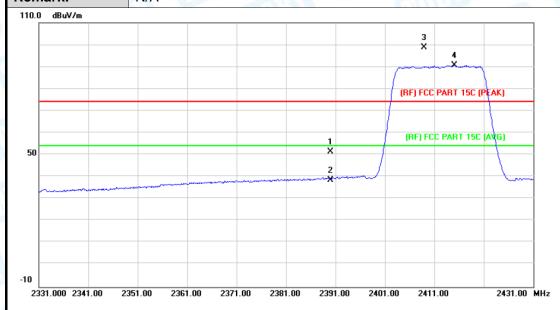
| No | . Mk | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit       | Over        |          |
|----|------|----------|------------------|-------------------|------------------|-------------|-------------|----------|
|    |      | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m      | dB          | Detector |
| 1  | *    | 2460.800 | 88.01            | 1.06              | 89.07            | Fundamenta  | I Frequency | AVG      |
| 2  | Χ    | 2463.500 | 99.81            | 1.08              | 100.89           | Fundamental | Frequency   | peak     |
| 3  |      | 2483.500 | 49.43            | 1.17              | 50.60            | 74.00       | -23.40      | peak     |
| 4  |      | 2483.700 | 36.37            | 1.17              | 37.54            | 54.00       | -16.46      | AVG      |



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| Line of the second |                           |                    | الله      |
|--------------------|---------------------------|--------------------|-----------|
| EUT:               | HEAVY DUTY WIFI IP CAMERA | Model:             | VPC2100WI |
| Temperature:       | 25 ℃                      | Relative Humidity: | 55%       |
| Test Voltage:      | DC 12V                    |                    | 13        |
| Ant. Pol.          | Horizontal                |                    |           |
| Test Mode:         | TX N(HT20) Mode 2412MHz   |                    | Alle      |

Remark: N/A

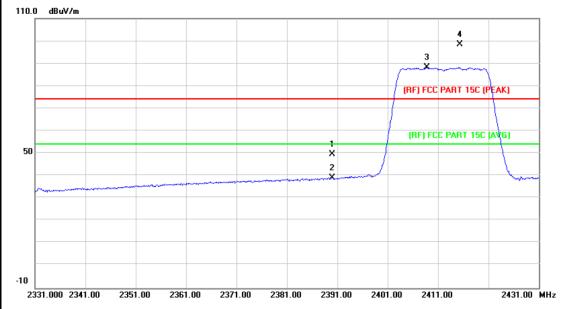


| No. | Mk | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit      | Over         |          |
|-----|----|----------|------------------|-------------------|------------------|------------|--------------|----------|
|     |    | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m     | dB           | Detector |
| 1   |    | 2390.000 | 50.55            | 0.77              | 51.32            | 74.00      | -22.68       | peak     |
| 2   |    | 2390.000 | 37.67            | 0.77              | 38.44            | 54.00      | -15.56       | AVG      |
| 3   | *  | 2408.900 | 97.80            | 0.85              | 98.65            | Fundamenta | al Frequency | peak     |
| 4   | Χ  | 2415.100 | 89.88            | 0.88              | 90.76            | Fundamenta | I Frequency  | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA | Model:             | VPC2100WI |  |  |  |
|---------------|---------------------------|--------------------|-----------|--|--|--|
| Temperature:  | 25 ℃                      | Relative Humidity: | 55%       |  |  |  |
| Test Voltage: | DC 12V                    |                    |           |  |  |  |
| Ant. Pol.     | Vertical                  |                    | TO THE    |  |  |  |
| Test Mode:    | TX N(HT20) Mode 2412MHz   |                    | A THE     |  |  |  |
| Remark:       | N/A                       | W. T.              |           |  |  |  |

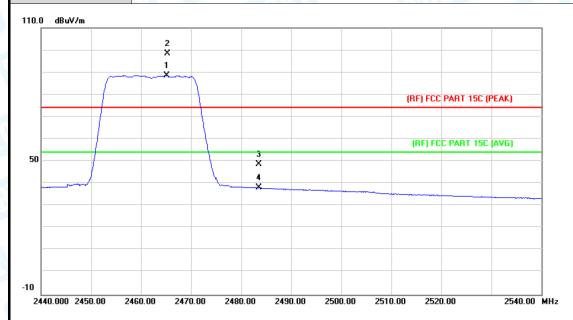


| No | o. Mk | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit      | Over        |          |
|----|-------|----------|------------------|-------------------|------------------|------------|-------------|----------|
|    |       | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m     | dB          | Detector |
| 1  |       | 2390.000 | 48.83            | 0.77              | 49.60            | 74.00      | -24.40      | peak     |
| 2  |       | 2390.000 | 38.18            | 0.77              | 38.95            | 54.00      | -15.05      | AVG      |
| 3  | *     | 2408.800 | 87.34            | 0.85              | 88.19            | Fundamenta | I Frequency | AVG      |
| 4  | Χ     | 2415.300 | 97.44            | 0.88              | 98.32            | Fundamenta | I Frequency | peak     |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA | Model:             | VPC2100WI |
|---------------|---------------------------|--------------------|-----------|
| Temperature:  | 25 ℃                      | Relative Humidity: | 55%       |
| Test Voltage: | DC 12V                    |                    | 500       |
| Ant. Pol.     | Horizontal                |                    |           |
| Test Mode:    | TX N(HT20) Mode 2462MHz   |                    | FILL      |
| Remark:       | N/A                       |                    | 3 _ (1)   |

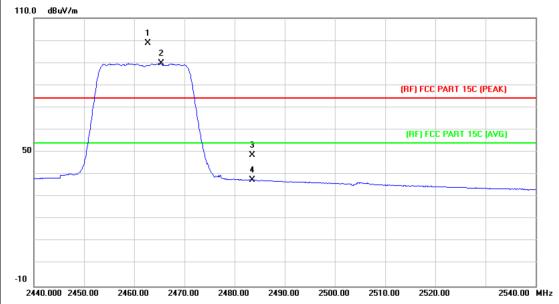


| No. | . Mk | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit                 | Over      |          |
|-----|------|----------|------------------|-------------------|------------------|-----------------------|-----------|----------|
|     |      | MHz      | dBu∨             | dB/m              | dBuV/m           | dBuV/m                | dB        | Detector |
| 1   | Χ    | 2465.200 | 87.59            | 1.09              | 88.68            | Fundamental           | Frequency | peak     |
| 2   | *    | 2465.300 | 97.50            | 1.09              | 98.59            | Fundamental Frequency |           | peak     |
| 3   |      | 2483.500 | 47.53            | 1.17              | 48.70            | 74.00                 | -25.30    | peak     |
| 4   |      | 2483.500 | 36.84            | 1.17              | 38.01            | 54.00                 | -15.99    | AVG      |



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| EUT:          | HEAVY DUTY WIFI IP CAMERA | Model:             | VPC2100WI  |
|---------------|---------------------------|--------------------|------------|
| Temperature:  | 25 ℃                      | Relative Humidity: | 55%        |
| Test Voltage: | DC 12V                    |                    |            |
| Ant. Pol.     | Vertical                  |                    |            |
| Test Mode:    | TX N(HT20) Mode 2462MHz   |                    | All Inches |
| Remark:       | N/A                       | W. T.              |            |



| No | . Mk | . Freq.  | Reading<br>Level | Correct<br>Factor | Measure-<br>ment | Limit                 | Over   |          |
|----|------|----------|------------------|-------------------|------------------|-----------------------|--------|----------|
|    |      | MHz      | dBu∀             | dB/m              | dBuV/m           | dBuV/m                | dB     | Detector |
| 1  | X    | 2462.700 | 97.59            | 1.08              | 98.67            | Fundamental Frequency |        | peak     |
| 2  | *    | 2465.400 | 88.59            | 1.09              | 89.68            | Fundamental Frequency |        | AVG      |
| 3  |      | 2483.500 | 47.53            | 1.17              | 48.70            | 74.00                 | -25.30 | peak     |
| 4  |      | 2483.500 | 36.34            | 1.17              | 37.51            | 54.00                 | -16.49 | AVG      |

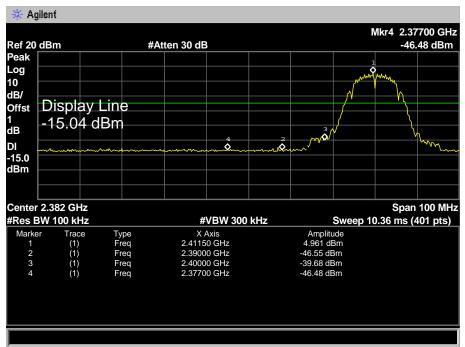


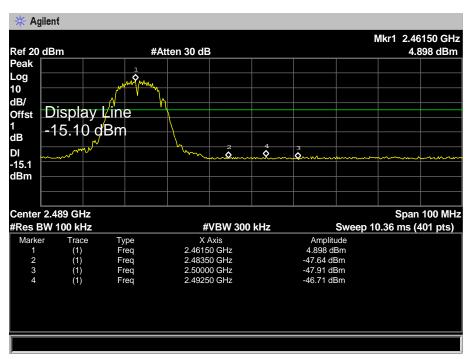


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# (2) Conducted Test

| EUT:          | HEAVY DUTY WIFI IP CAMERA                              | Model:             | VPC2100WI |  |  |
|---------------|--|--------------------|-----------|--|--|
| Temperature:  | 25 ℃   | Relative Humidity: | 55%       |  |  |
| Test Voltage: | DC 12V   |                    |           |  |  |
| Test Mode:    | TX B Mode 2412MHz / TX B Mode 2462MHz                  |                    |           |  |  |
| Remark:       | The EUT is programed in continuously transmitting mode |                    |           |  |  |



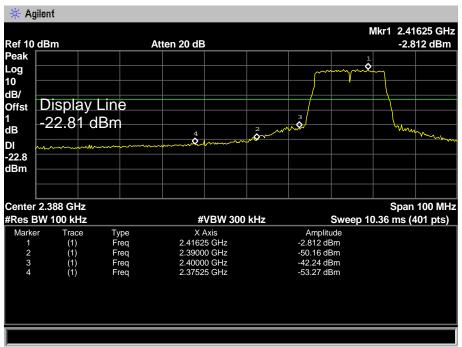


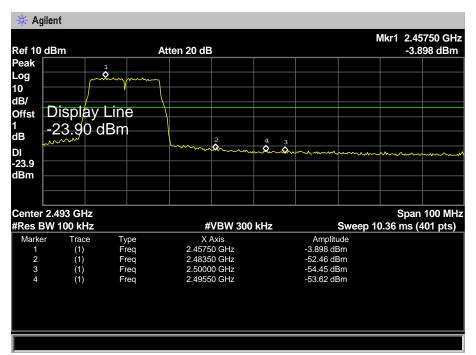




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| EUT:          | HEAVY DUTY WIFI IP CAMERA                              | Model:             | VPC2100WI |  |  |
|---------------|--|--------------------|-----------|--|--|
| Temperature:  | 25 ℃   | Relative Humidity: | 55%       |  |  |
| Test Voltage: | DC 12V   |                    |           |  |  |
| Test Mode:    | TX G Mode 2412MHz / TX G Mode 2462MHz                  |                    |           |  |  |
| Remark:       | The EUT is programed in continuously transmitting mode |                    |           |  |  |
|               |  |                    |           |  |  |



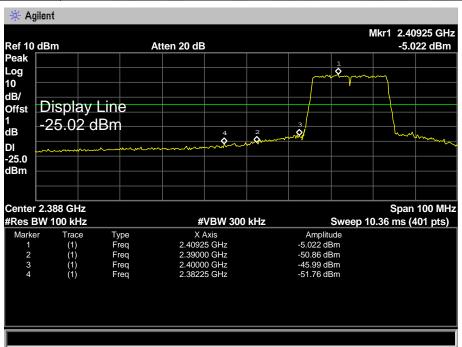


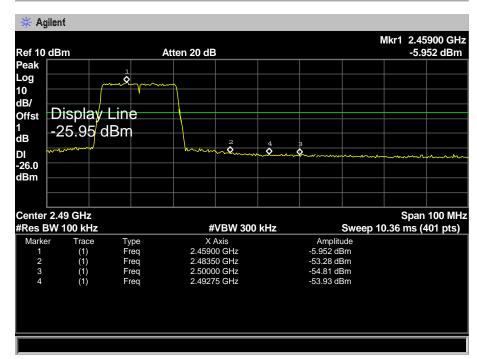




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| EUT:          | HEAVY DUTY WIFI IP CAMERA                              | Model:             | VPC2100WI |  |  |
|---------------|--|--------------------|-----------|--|--|
| Temperature:  | 25 ℃   | Relative Humidity: | 55%       |  |  |
| Test Voltage: | DC 12V   |                    |           |  |  |
| Test Mode:    | TX N(HT20) Mode 2412MHz / TX N(HT20) Mode 2462MHz      |                    |           |  |  |
| Remark:       | The EUT is programed in continuously transmitting mode |                    |           |  |  |
| <u>'</u>      |  |                    |           |  |  |







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# 7. Bandwidth Test

### 7.1 Test Standard and Limit

7.1.1 Test Standard FCC Part 15.247 (a)(2)

7.1.2 Test Limit

| FCC       | FCC Part 15 Subpart C(15.247)/RSS-210 |             |  |  |  |  |
|-----------|---------------------------------------|-------------|--|--|--|--|
| Test Item | Test Item Limit Frequency Range(MHz)  |             |  |  |  |  |
| Bandwidth | >=500 KHz<br>(6dB bandwidth)          | 2400~2483.5 |  |  |  |  |

# 7.2 Test Setup



### 7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
- (3)Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:300 kHz, Detector: Peak, Sweep Time set auto.

# 7.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.



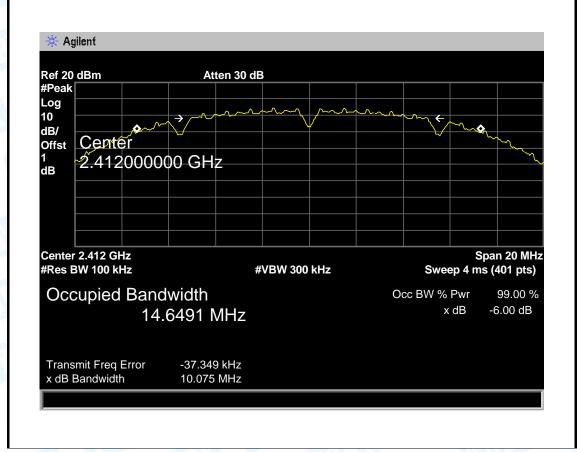
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# 7.5 Test Data

| EUT:              | HEAVY DUTY WIFI IP CAMERA | Model:             | VPC2100WI  |
|-------------------|---------------------------|--------------------|--|
| Temperature:      | 25 ℃                      | Relative Humidity: | 55%  |
| Test Voltage:     | DC 12V                    |                    | COLUMN TO THE PARTY OF THE PART |
| Test Mode:        | TX 802.11B Mode           | THE PARTY OF       | F. San   |
| Channel frequence | cy 6dB Bandwidth          | 99% Bandwidth      | Limit  |
| (MHz)             | (MHz)                     | (MHz)              | (MHz)  |
| 2412              | 10.075                    | 14.6491            |  |
| 2437              | 10.068                    | 14.5683            | >=0.5  |
| 2462              | 10.070                    | 14.5671            |  |

#### 802.11B Mode

#### 2412 MHz



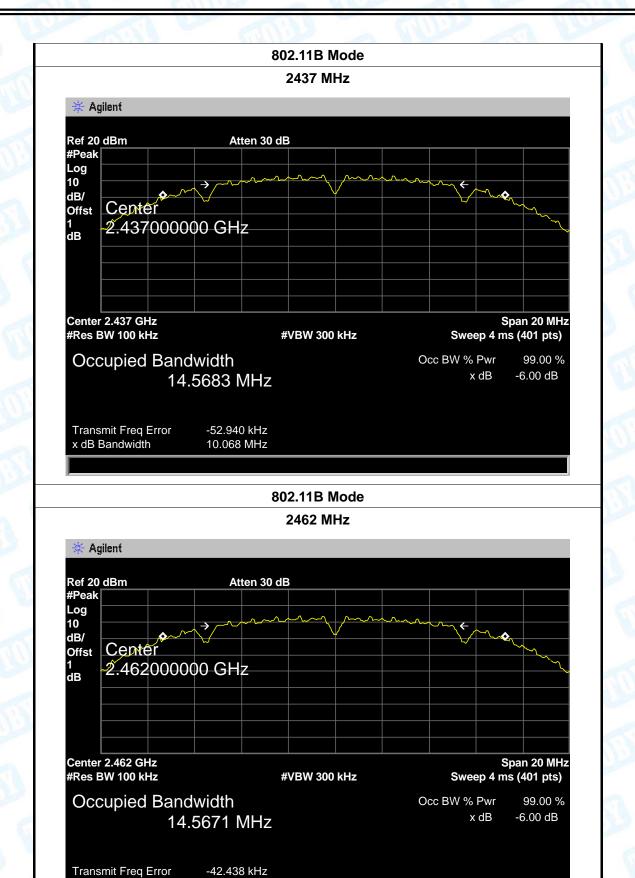


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x dB Bandwidth

10.070 MHz





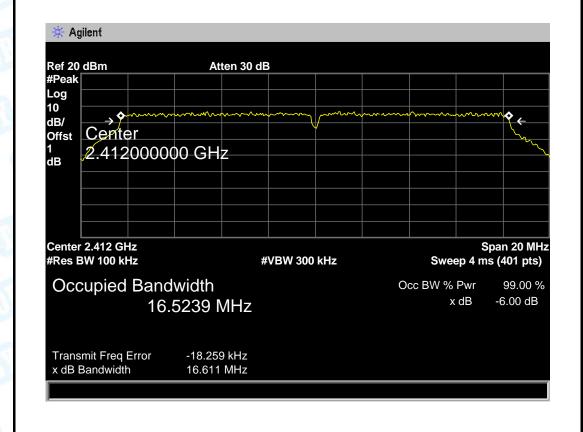
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| EUT:                       | HEAVY DUTY WIFI IP CAMERA | Model:             | VPC2100WI |
|----------------------------|---------------------------|--------------------|-----------|
| Temperature:               | 25 ℃                      | Relative Humidity: | 55%       |
| Test Voltage:              | DC 12V                    |                    |           |
| Test Mode: TX 802.11G Mode |                           |                    | THU.      |
| Channel frequence          | cy 6dB Bandwidth          | 99% Bandwidth      | Limit     |
| (MHz)                      | (MHz)                     | (MHz)              | (MHz)     |
| 2412                       | 16.611                    | 16.5239            |           |
| 2437                       | 16.546                    | 16.5183            | >=0.5     |
| 2462                       | 16.525                    | 16.4555            |           |
|                            | 802 11G M                 | nde                | -         |

#### 802.11G Mode

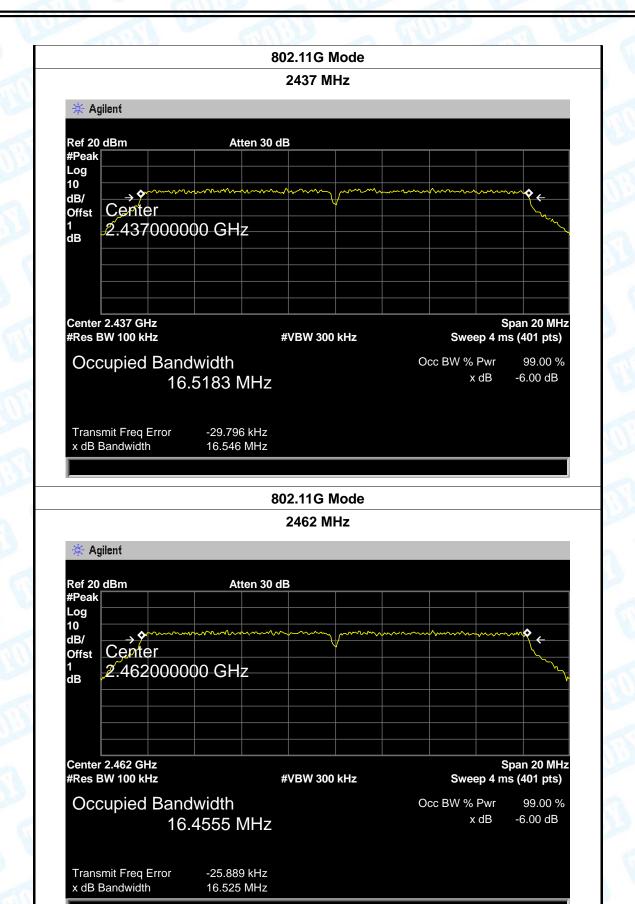
#### 2412 MHz





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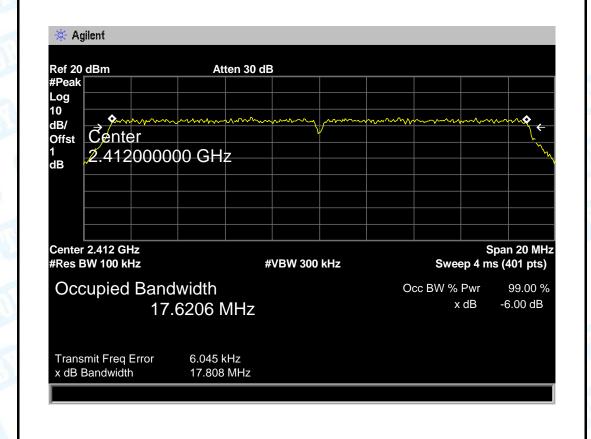


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|              | $\mathbf{v}$ |
|--------------|--------------|
|              |              |
| $\mathbf{L}$ |              |
|              | 0            |

| EUT:               | HEAVY DUTY WIFI IP CAMERA   | Model:             | VPC2100WI |  |
|--------------------|-----------------------------|--------------------|-----------|--|
| Temperature:       | 25 ℃                        | Relative Humidity: | 55%       |  |
| Test Voltage:      | DC 12V                      |                    |           |  |
| Test Mode:         | Mode: TX 802.11N(HT20) Mode |                    |           |  |
| Channel frequence  | cy 6dB Bandwidth            | 99% Bandwidth      | Limit     |  |
| (MHz)              | (MHz)                       | (MHz)              | (MHz)     |  |
| 2412               | 17.808                      | 17.6206            |           |  |
| 2437               | 17.825                      | 17.6263            | >=0.5     |  |
| 2462               | 17.834                      | 17.6233            |           |  |
| 802.11N(HT20) Mode |                             |                    |           |  |

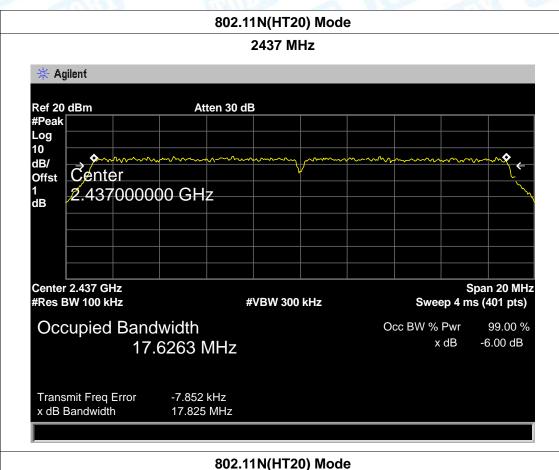
#### 2412 MHz





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### 2462 MHz 🔆 Agilent Ref 20 dBm Atten 30 dB #Peak Log 10 dB/ Ĉenter Offst 1 dB 2.462000000 GHz Center 2.462 GHz Span 20 MHz #Res BW 100 kHz **#VBW 300 kHz** Sweep 4 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % -6.00 dB x dB 17.6333 MHz Transmit Freq Error -7.121 kHz x dB Bandwidth 17.834 MHz



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# 8. Peak Output Power Test

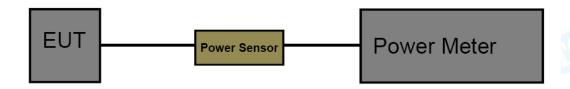
# 8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (b)

8.1.2 Test Limit

| FCC Part 15 Subpart C(15.247)/RSS-210 |                       |             |  |
|---------------------------------------|-----------------------|-------------|--|
| Test Item                             | Limit Frequency Range |             |  |
| Peak Output Power                     | 1 Watt or 30 dBm      | 2400~2483.5 |  |

# 8.2 Test Setup



### 8.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 DTS Meas Guidance v03r05.

The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

# 8.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.



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# 8.5 Test Data

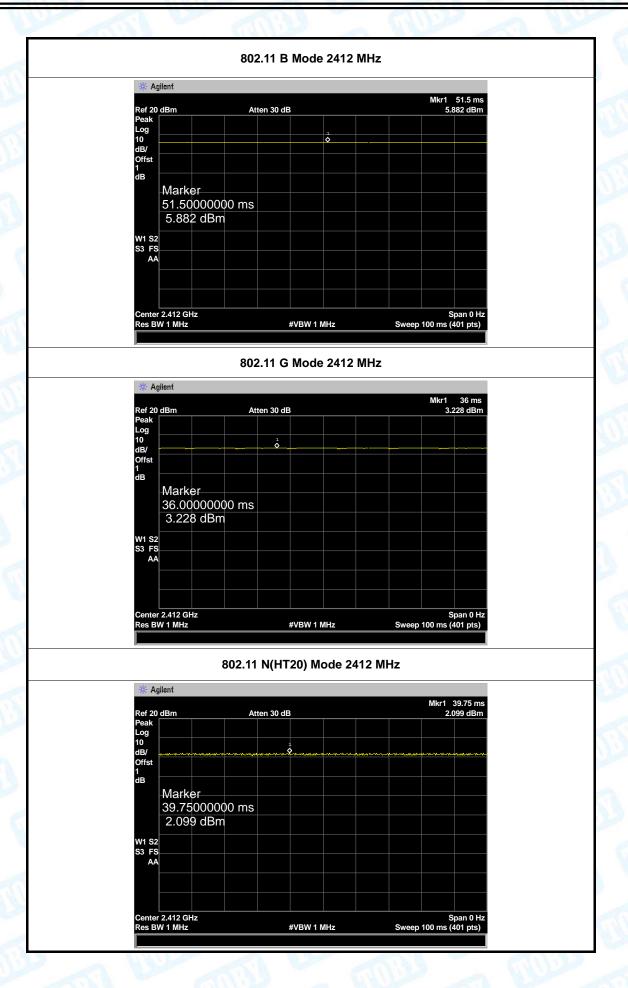
|               |                            |   |              |     | 0.177.1.1.2 |
|---------------|----------------------------|---|--------------|-----|-------------|
| EUT:          | HEAVY DUTY WIFI IP C       | HEAVY DUTY WIFI IP CAMERA <b>Model:</b> |              |     | VPC2100WI   |
| Temperature:  | 25 °C Relative Humid       |   | ity:         | 55% |             |
| Test Voltage: | DC 12V                     | The same                                |              |     |             |
| Mode          | Channel frequency<br>(MHz) | Test                                    | Result (dBm) |     | Limit (dBm) |
|               | 2412                       |   | 15.29        |     |             |
| 802.11b       | 2437                       | 14.40                                   |              |     |             |
|               | 2462                       |   | 14.48        |     |             |
| 802.11g       | 2412                       |   | 12.94        | 30  |             |
|               | 2437                       |   | 12.84        |     |             |
|               | 2462                       |   | 12.41        |     |             |
| 802.11n       | 2412                       |   | 11.47        |     |             |
|               | 2437                       |   | 11.33        |     |             |
| (HT20)        | 2462                       |   | 11.00        |     |             |
|               | Resi                       | ult: PA                                 | ASS          |     |             |

| Duty Cycle              |              |  |  |
|-------------------------|--------------|--|--|
| Channel frequency (MHz) | Test Result  |  |  |
| 2412                    |              |  |  |
| 2412                    | >98%         |  |  |
| 802.11n (HT20) 2412     |              |  |  |
|                         | 2412<br>2412 |  |  |



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# 9. Power Spectral Density Test

### 9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247 (e)

9.1.2 Test Limit

| FCC Part 15 Subpart C(15.247)     |                    |                      |
|-----------------------------------|--------------------|----------------------|
| Test Item Limit Frequency Range(M |                    | Frequency Range(MHz) |
| Power Spectral Density            | 8dBm(in any 3 kHz) | 2400~2483.5          |

# 9.2 Test Setup



## 9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v03r05.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser center frequency to DTS channel center frequency.
- (3) Set the span to 1.5 times the DTS bandwidth.
- (4) Set the RBW to: 3 kHz(5) Set the VBW to: 10 kHz
- (6) Detector: peak(7) Sweep time: auto
- (8) Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

# 9.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.



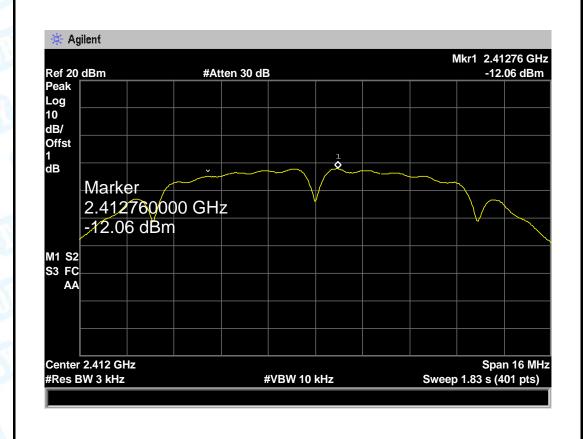
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# 9.5 Test Data

| EUT:              | HEAVY DUTY WIFI IP CAMERA |            | Model:                    | VPC2100WI  |
|-------------------|---------------------------|------------|---------------------------|--|
| Temperature:      | 25 ℃                      |            | Relative Humidity:        | 55%  |
| Test Voltage:     | DC 12V                    |            |                           | CONTRACT OF THE PARTY OF THE PA |
| Test Mode:        | TX 802.1                  | 1B Mode    | CHO.                      | 1 Use  |
| Channel Frequency | uency                     | Power Dens | Power Density Limit (dBm) |  |
| (MHz)             |                           | (3 kHz/dBr | n)                        |  |
| 2412              |                           | -12.06     |                           |  |
| 2437              | 2437                      |            |                           | 8  |
| 2462              |                           | -13.26     |                           |  |
| 802 11B Mode      |                           |            |                           |  |

#### \_\_\_\_\_

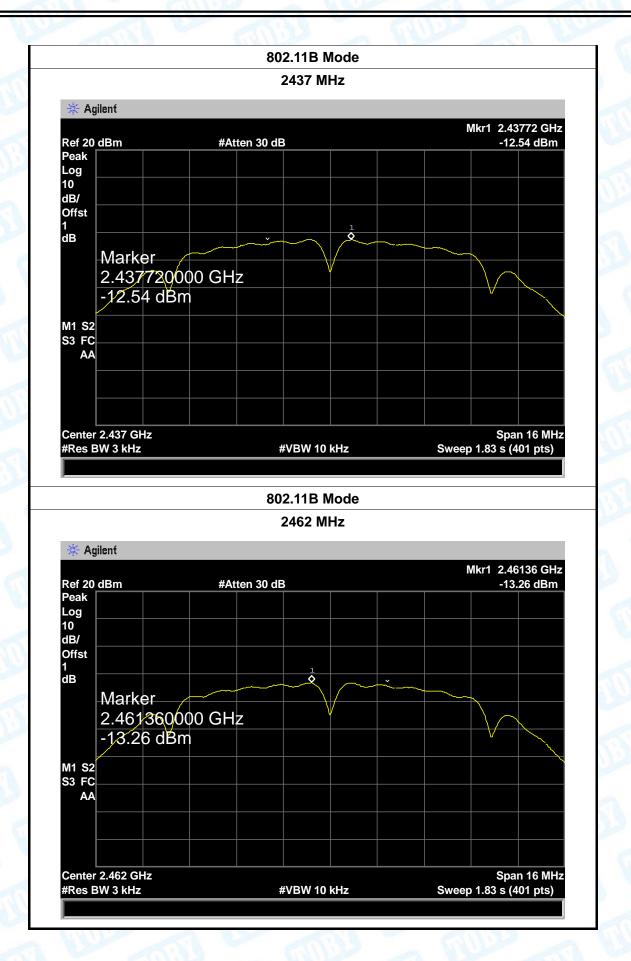
#### 2412 MHz





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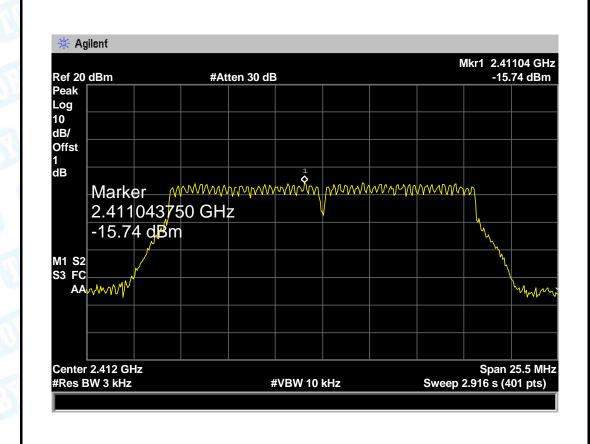


2462

| EUT:                  | HEAVY DUTY WIFI IP CAMERA <b>Model:</b> |  |           | VPC2100WI |           |
|-----------------------|---|--|-----------|-----------|-----------|
| Temperature:          | 25 ℃                                    | 100 July 100 | Temperatu | re:       | 25 ℃      |
| Test Voltage:         | DC 12V                                  |  | 3         | Tim       | 333       |
| Test Mode:            | TX 802.11                               | IG Mode  | - 41      | 600       |           |
|                       |   |  |           |           |           |
| Channel Freq          | uency                                   | Power Dens   | sity      | Lin       | nit (dBm) |
| Channel Freq<br>(MHz) | uency                                   | Power Dens<br>(3 kHz/dBr   |           | Lim       | nit (dBm) |
| •                     | uency                                   |  |           | Lim       | nit (dBm) |

# -16.06 **802.11G Mode**

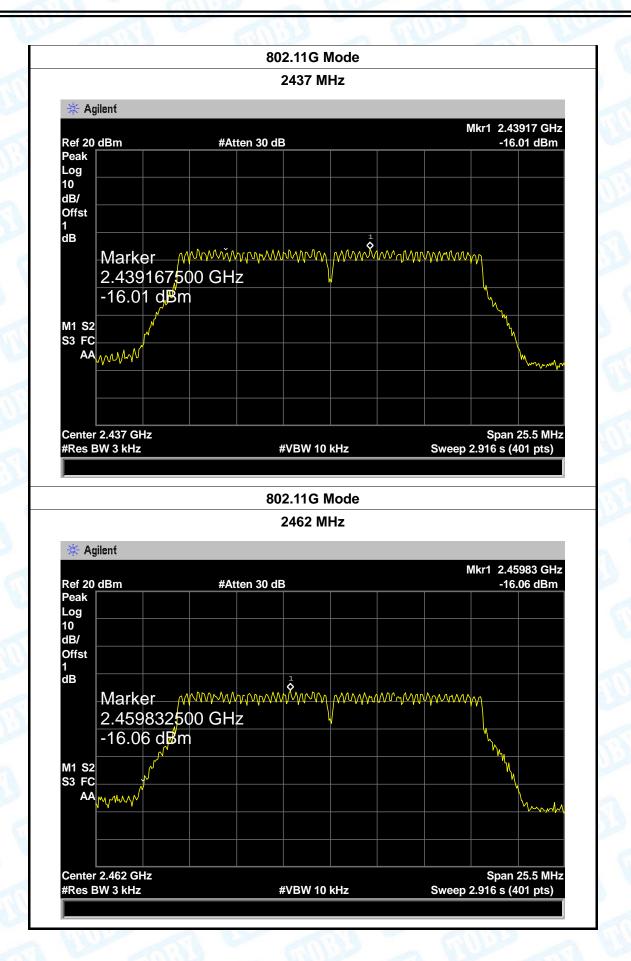
### 2412 MHz





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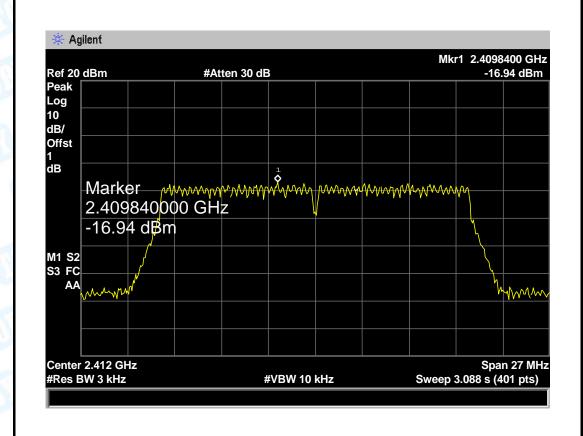




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| EUT:          | HEAVY DUTY WIFI IP CAMERA    |                 | Model: | VPC2100WI   |
|---------------|------------------------------|-----------------|--------|-------------|
| Temperature:  | 25 ℃                         | °C Temperature: |        | 25 ℃        |
| Test Voltage: | DC 12V                       |                 | 1      |             |
| Test Mode:    | TX 802.11N(HT20) Mode        |                 |        |             |
| Channel Freq  | nnel Frequency Power Density |                 | sity   | Limit (dBm) |
| (MHz)         |                              | (3 kHz/dBr      | n)     |             |
| 2412          | -16.94                       |                 |        |             |
| 2437          | 2437 -17.09                  |                 |        | 8           |
| 2462          | -17.00                       |                 |        |             |
|               |                              | 802.11N(HT20)   | Mode   |             |
|               |                              |                 |        |             |

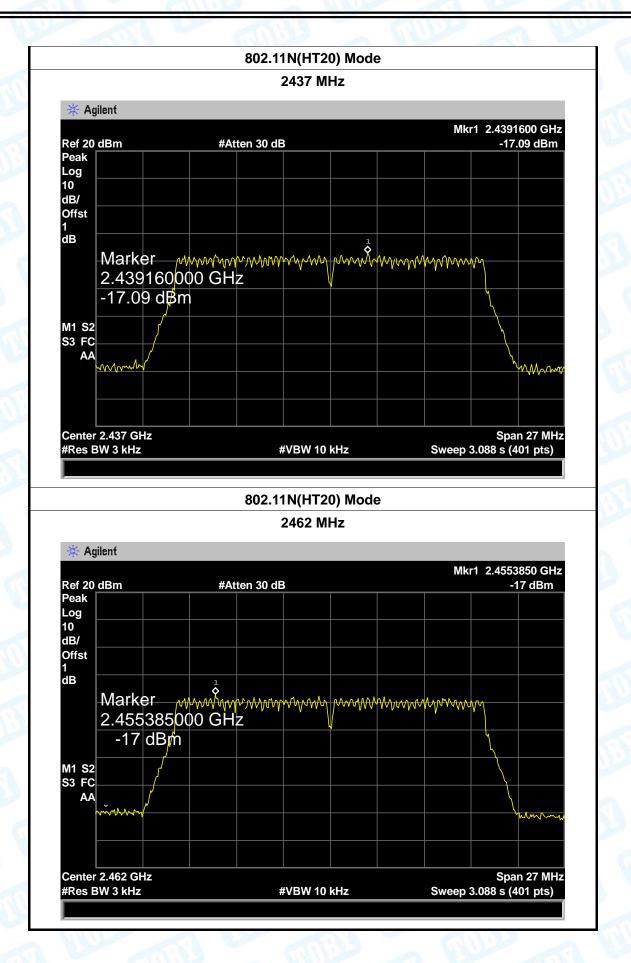






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# 10. Antenna Requirement

# 10.1 Standard Requirement

10.1.1 Standard FCC Part 15.203

# 10.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

### 10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 3 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

## Result

The EUT antenna is a Dipole Antenna. It complies with the standard requirement.

|     | Antenna Type                        |
|-----|-------------------------------------|
|     | □ Permanent attached antenna        |
| Em. | ☑ Unique connector antenna          |
|     | □ Professional installation antenna |