



## **FCC / IC Test Report**

**For**

**5800RP-AT**

**Report #: 727556**

**FCC ID: CFS8DL5800RP2**

**IC ID: 573F-5800RP2**

**Report Completion Date: 2017-10-23**

*Prepared by and for:*  
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Testing

NVLAP Lab Code: 600110

### **Document Introduction**

Honeywell tested the above equipment in accordance with the requirements set forth in the listed standards. All indications of Pass/Fail in the report are opinions expressed by Honeywell based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

This document is a record of the FCC/IC Test Report for Honeywell products. It demonstrates the data required to be analyzed to certify a product according to the requirements of the FCC & IC.

The results in the report reflect only the model of the items under test unless noted otherwise. This document may not be altered or revised in any way unless done so by Honeywell and all revisions are duly noted in the revisions section. Any alterations of this document not carried out by Honeywell will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

| <b>Test Report Revision History</b> |                    |                    |                         |                     |
|-------------------------------------|--------------------|--------------------|-------------------------|---------------------|
| <b>Revision</b>                     | <b>Prepared By</b> | <b>Reviewed By</b> | <b>Revision Detail</b>  | <b>Release Date</b> |
| ---                                 | <b>M. Antola</b>   | <b>A. Roussin</b>  | <b>Original Release</b> | <b>2017-10-23</b>   |
|                                     |                    |                    |                         |                     |
|                                     |                    |                    |                         |                     |

**Report Authorization**

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### **Applicable Test Standards**

| <b>Test Standard</b>                     | <b>Result</b> | <b>Dates Tested</b> |
|------------------------------------------|---------------|---------------------|
| ANSI C63.10: 2013                        | Complaint     | 7/12/17-10/20/17    |
| RSS-210, Issue 9                         | Complaint     | 7/12/17-10/20/17    |
| RSS-GEN, Issue 4                         | Complaint     | 7/12/17-10/20/17    |
| CFR 47 Part 15 Subpart C, Section 15.231 | Complaint     | 7/12/17-10/20/17    |
|                                          |               |                     |

### **Deviations from Test Methods**

| <b>#</b> | <b>Deviation Description</b> |
|----------|------------------------------|
|          | None                         |
|          |                              |
|          |                              |
|          |                              |
|          |                              |

### **Facilities and Accreditation**

The test site and measurement facility used to collect data are located at 2 Corporate Center Dr., Melville, NY 11747, USA. Honeywell International is accredited by NVLAP, Laboratory Code 600110-0. The full scope of accreditation can be viewed at the NVLAP website.

### **Test Item Description**

The 5800RP-AT is a part of a wireless security system for burglary and fire alarm applications. The 5800RP-AT is mounted on a wall. The device operates on a single frequency for both transmitted and received messages. Any message originating from an authorized 5800 series security transmitter and received by the 5800RP-AT is then retransmitted immediately following completion of the originating message.

### **Worse-Case Configuration & Mode**

Radiated emissions was performed with the EUT set to transmit at the channel with the highest output power as worst-case scenario. The EUT utilizes two (2) antennas and each was tested individually. See setup photos for details.

### **Test Sample Identification**

| <b>Sample ID Number</b> | <b>Sample Serial Number</b>    | <b>Date Received</b> |
|-------------------------|--------------------------------|----------------------|
| MEL-264                 | Non-serialized production unit | 2017-05-17           |
| MEL-362                 | Non-serialized production unit | 2017-05-17           |
|                         |                                |                      |
|                         |                                |                      |
|                         |                                |                      |
|                         |                                |                      |

## Calibration & Measurement Uncertainty

- Measuring Instrument Calibration – The measuring equipment utilized to perform the tests documented in this report have been calibrated in accordance with the manufacturer’s recommendations and is traceable to recognized national standards.
- Sample Calculation – Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

[i.e.] 37 dBuV/m = 30 dBuV + 18.5 dB/m + 0.5 dB – 12 dB

- Uncertainty - Figures are valid to a confidence level of 95%.

| Test                                        | Standard Uncertainty |
|---------------------------------------------|----------------------|
| Radiated Emissions (30-200MHz Horizontal)   | +/- 5.05 dB          |
| Radiated Emissions (30-200MHz Vertical)     | +/- 5.28 dB          |
| Radiated Emissions (200-1000MHz Horizontal) | +/- 10.21 dB         |
| Radiated Emissions (200-1000MHz Vertical)   | +/- 10.36 dB         |
| Radiated Emissions (Above 1GHz)             | +/- 9.70 dB          |

## Opinions / Interpretations

None

### Test Summary

All tests described below are required, unless otherwise noted. Notes should be described in detail in the "Additional notes" section.

| # | Test Description                 | Status |
|---|----------------------------------|--------|
| 1 | Radiated Emissions (Intentional) | PASS   |

## Radiated Emissions (Intentional Radiator)

### Test Description

Intentional Radiator Radiated Emissions are a test of the emissions, and harmonics on the UUT. The UUT is positioned to get the maximum emissions after a series of prescan measurements. The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1 GHz measurements and 1.5 m above the ground plane for above 1 GHz measurements. The antenna to EUT distance is 3 meters. For measurements below 1 GHz the resolution bandwidth is set to 120 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 1 MHz for peak measurements and as applicable for average measurements. The spectrum from 30 MHz to the 10<sup>th</sup> harmonic of the fundamental is investigated with the transmitter set to the lowest, middle, and highest channels (where applicable) in each applicable band. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

### Test Criteria

| Reference                           | Limit                       |                                            |                                                   |
|-------------------------------------|-----------------------------|--------------------------------------------|---------------------------------------------------|
|                                     | Fundamental Frequency (MHz) | Field strength of fundamental (uV/m) at 3M | Field strength of spurious emissions (uV/m) at 3M |
| CFR 47 Subpart C, 15.231<br>RSS-210 | 40.66-40.70                 | 2250                                       | 225                                               |
|                                     | 70-130                      | 1250                                       | 125                                               |
|                                     | 130-174                     | <sup>1</sup> 1250 to 3750                  | <sup>1</sup> 125 to 375                           |
|                                     | 174-260                     | 3750                                       | 375                                               |
|                                     | 260-470                     | <sup>1</sup> 3750 to 12500                 | <sup>1</sup> 375 to 1250                          |
|                                     | Above 470                   | 12500                                      | 1250                                              |

<sup>1</sup>Linear interpolation

| Reference                                                       | Limit           |                                   |                                     |
|-----------------------------------------------------------------|-----------------|-----------------------------------|-------------------------------------|
|                                                                 | Frequency Range | Field Strength Limit (uV/m) at 3M | Field Strength Limit (dBuV/m) at 3M |
| CFR 47 Subpart C, 15.205<br>CFR 47 Subpart C, 15.209<br>RSS-GEN | 30-88           | 100                               | 40                                  |
|                                                                 | 88-216          | 150                               | 43.5                                |
|                                                                 | 216-960         | 200                               | 46                                  |
|                                                                 | Above 960       | 500                               | 54                                  |

### Test Information

| Tester | Test Location | Date             | Temperature (°C) | Humidity (%RH) | Pressure (mbar) | Results (P/F) |
|--------|---------------|------------------|------------------|----------------|-----------------|---------------|
| CL/JB  | OATS          | 7/12/17, 8/10/17 | 21.7             | 67.0           | 1020            | P             |
| JB     | OATS          | 10/20/17         | 16.7             | 52.0           | 1020            | P             |

**Average correction factor calculation**

An Average correction factor is calculated of -14.7dB (see calculations below).

Data is Manchester-encoded and transmitted with a 272 $\mu$ s bit time.

The longest packet the device may transmit consists of: 13 ID/control bytes + 2 repeater bytes + 16 bit preamble = 136 bits

136 bits \* 272  $\mu$ s = 36.99 ms total transmission time for the message.

Multiplying this by 50% for Manchester yields 18.5ms on time.

Time between RF transmission packets is 100ms.

One RF transmission message consists of 6 identical packets back to back = 100ms \* 6 = 600ms.

The worst case on time in 100ms window is thus 18.5ms.

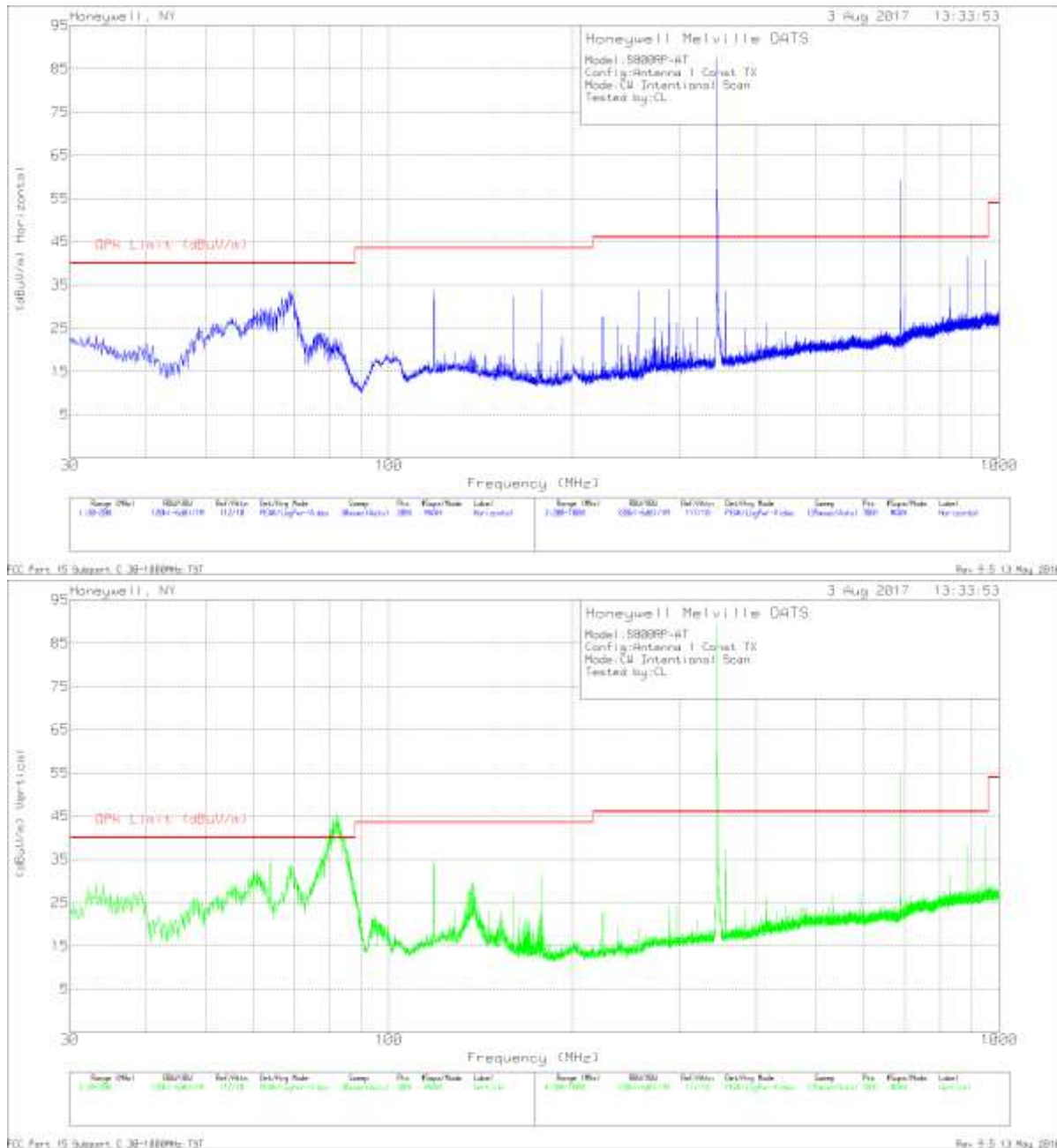
This makes the average correction factor = 18.5ms/100ms = 18.5%, or **-14.7dB**.

**Equipment List**

| <b>Instrument Type</b>        | <b>ID #</b> | <b>Serial #</b> | <b>Manufacturer</b> | <b>Model</b> | <b>Cal Date</b> | <b>Cal Due Date</b> |
|-------------------------------|-------------|-----------------|---------------------|--------------|-----------------|---------------------|
| Spectrum Analyzer             | 11545       | 103125          | Rohde & Schwarz     | FSW26        | 2017-02-14      | 2018-02-14          |
| Bilog Antenna<br>(30MHz-6GHz) | 11534       | A012816         | Sunol               | JB6          | 2017-03-09      | 2018-03-09          |
| Horn Antenna<br>(1-18GHz)     | 2973        | 3127            | EMCO                | RGA-60       | 2017-02-03      | 2018-02-03          |
| Preamp<br>(10-4200MHz)        | 11537       | 1603006         | Mini Circuits       | TVA-11-422   | N/A             | N/A                 |
| Preamp<br>(100kHz-1.3GHz)     | 11540       | 2443AUF555      | HP                  | 8447D        | N/A             | N/A                 |
| Measurement<br>Software       | 11543       | Version 9.5     | UL                  | UL EMC       | N/A             | N/A                 |
| Environmental Meter           | 11548       | A078188         | Extech Instruments  | SD700        | 2017-04-24      | 2018-04-24          |

**Test Results – Antenna 1**

**Below 1GHz - Plots**



NOTE: Prescans performed in an anechoic chamber, final measurements performed on an OATS

**Below 1GHz – Data**

| Frequency (MHz) | Meter Reading (dBuV) | Det | AF [dB/m] | HP Preamp [dB] | Cable 1 [dB] | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|-----|-----------|----------------|--------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 63.6613         | 32.77                | Qp  | 12        | -24.4          | 1.5          | 21.87                      | 40                 | -18.13      | 287            | 115         | V        |
| 82.0471         | 38.32                | Qp  | 11.8      | -24.4          | 1.7          | 27.42                      | 40                 | -12.58      | 309            | 220         | V        |
| 889.3876        | 22.1                 | Qp  | 26.9      | -24.5          | 10.3         | 34.8                       | 46.02              | -11.22      | 236            | 368         | H        |
| 948.5032        | -11.67               | Qp  | 27.4      | -24.3          | 10.7         | 2.13                       | 46.02              | -43.89      | 338            | 134         | H        |
| 948.5473        | 27.87                | Qp  | 27.4      | -24.3          | 10.7         | 41.67                      | 46.02              | -4.35       | 304            | 126         | V        |

Qp - Quasi-Peak detector

| Frequency (MHz) | Meter Reading (dBuV) | Det | AF [dB/m] | HP Preamp [dB] | Cable 1 [dB] | DCF [dB] | Corrected Reading (dBuV/m) | 15.231 Limit - Pk (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|-----|-----------|----------------|--------------|----------|----------------------------|----------------------------|-------------|----------------|-------------|----------|
| 344.938         | 63.21                | Pk  | 19.2      | -              | 3.7          | -        | 86.11                      | 97.3                       | -11.19      | 137            | 102         | H        |
| 689.88          | 36.34                | Pk  | 24.8      | -              | 6.8          | -        | 67.94                      | 77.3                       | -9.36       | 307            | 116         | H        |
| 344.938         | 68.61                | Pk  | 19.2      | -              | 3.7          | -        | 91.51                      | 97.3                       | -5.79       | 85             | 141         | V        |
| 689.88          | 31.67                | Pk  | 24.8      | -              | 6.8          | -        | 63.27                      | 77.3                       | -14.03      | 286            | 101         | V        |
| Frequency (MHz) | Meter Reading (dBuV) | Det | AF [dB/m] | HP Preamp [dB] | Cable 1 [dB] | DCF [dB] | Corrected Reading (dBuV/m) | 15.231 Limit - Av (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
| 344.938         | 63.21                | Pk  | 19.2      | -              | 3.7          | -14.7    | 71.41                      | 77.3                       | -5.89       | 137            | 102         | H        |
| 689.88          | 36.34                | Pk  | 24.8      | -              | 6.8          | -14.7    | 53.24                      | 57.3                       | -4.06       | 307            | 116         | H        |
| 344.938         | 68.61                | Pk  | 19.2      | -              | 3.7          | -14.7    | 76.81                      | 77.3                       | -0.49       | 85             | 141         | V        |
| 689.88          | 31.67                | Pk  | 24.8      | -              | 6.8          | -14.7    | 48.57                      | 57.3                       | -8.73       | 286            | 101         | V        |

Pk - Peak detector

Average Reading = Pk + Duty Cycle Correction Factor (DCF)

**Plot 1: FCC Part 15 Subpart C 1-5GHz Frequency Test**

Location: Honeywell, NY  
Date: 12 Jul 2017 15:49:43

Test Title: Radiated Emissions 1-Meters

UPN Number:  
Model:  
Config:  
Mode:  
Tested by:

Peak Limit: 75 dBuV/m  
Avg Limit: 55 dBuV/m

Frequency (GHz)

| Range (GHz) | RF/EM | Ref/Min | Det/Ag Mode | Sweep   | Flt  | Resp/Mode | Label |
|-------------|-------|---------|-------------|---------|------|-----------|-------|
| 1-5         | RF/EM | 1/1/1   | Peak/Ag     | Max/Min | None | None      | None  |

**Plot 2: FCC Part 15 Subpart C 1-5GHz Frequency Test**

Location: Honeywell, NY  
Date: 12 Jul 2017 15:49:43

Test Title: Radiated Emissions 1-Meters

UPN Number:  
Model:  
Config:  
Mode:  
Tested by:

Peak Limit: 75 dBuV/m  
Avg Limit: 55 dBuV/m

Frequency (GHz)

| Range (GHz) | RF/EM | Ref/Min | Det/Ag Mode | Sweep   | Flt  | Resp/Mode | Label |
|-------------|-------|---------|-------------|---------|------|-----------|-------|
| 1-5         | RF/EM | 1/1/1   | Peak/Ag     | Max/Min | None | None      | None  |

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**Above 1GHz – Peak Data**

| Frequency<br>(GHz) | Meter<br>Reading<br>(dBuV) | Det | AF<br>(dB/m) | Preamp<br>(dB) | SMA7<br>(dB) | SMA6<br>(dB) | Corrected<br>Reading<br>(dBuV/m) | Pk Limit<br>(dBuV/m) | PK Margin<br>(dB) | Azimuth<br>(Degs) | Height<br>(cm) | Polarity |
|--------------------|----------------------------|-----|--------------|----------------|--------------|--------------|----------------------------------|----------------------|-------------------|-------------------|----------------|----------|
| * 1.035            | 49.24                      | Pk  | 24.1         | -26.7          | 1.7          | 0.8          | 49.14                            | 74                   | -24.86            | 229               | 217            | H        |
| * 1.38             | 44.91                      | Pk  | 25.2         | -26.7          | 2            | 0.9          | 46.31                            | 74                   | -27.69            | 213               | 113            | H        |
| 1.725              | 37.38                      | Pk  | 26.5         | -26.8          | 2.2          | 1            | 40.28                            | 77.3                 | -37.02            | 168               | 232            | H        |
| 2.069              | 37                         | Pk  | 28           | -27            | 2.4          | 1.1          | 41.5                             | 77.3                 | -35.8             | 160               | 109            | H        |
| 2.416              | 35.09                      | Pk  | 28.6         | -27            | 2.6          | 1.1          | 40.39                            | 77.3                 | -36.91            | 163               | 366            | H        |
| * 2.759            | 38.32                      | Pk  | 29.4         | -27            | 2.8          | 1.2          | 44.72                            | 74                   | -29.28            | 155               | 120            | H        |
| 3.104              | 34.93                      | Pk  | 30.7         | -27            | 3            | 1.3          | 42.93                            | 77.3                 | -34.37            | 266               | 335            | H        |
| 3.449              | 38.12                      | Pk  | 31.2         | -27            | 3.1          | 1.4          | 46.82                            | 77.3                 | -30.48            | 157               | 213            | H        |
| * 1.035            | 47.52                      | Pk  | 24.1         | -26.7          | 1.7          | 0.8          | 47.42                            | 74                   | -26.58            | 324               | 139            | V        |
| * 1.38             | 46.98                      | Pk  | 25.2         | -26.7          | 2            | 0.9          | 48.38                            | 74                   | -25.62            | 359               | 128            | V        |
| 1.725              | 42.95                      | Pk  | 26.5         | -26.8          | 2.2          | 1            | 45.85                            | 77.3                 | -31.45            | 229               | 264            | V        |
| 2.069              | 40.93                      | Pk  | 28           | -27            | 2.4          | 1.1          | 45.43                            | 77.3                 | -31.87            | 41                | 202            | V        |
| 2.415              | 40.3                       | Pk  | 28.6         | -27            | 2.6          | 1.1          | 45.6                             | 77.3                 | -31.7             | 336               | 272            | V        |
| * 2.759            | 37.92                      | Pk  | 29.4         | -27            | 2.8          | 1.2          | 44.32                            | 74                   | -29.68            | 349               | 348            | V        |
| 3.105              | 34.45                      | Pk  | 30.8         | -27            | 3            | 1.3          | 42.55                            | 77.3                 | -34.75            | 317               | 289            | V        |
| 3.449              | 33.52                      | Pk  | 31.2         | -27            | 3.1          | 1.4          | 42.22                            | 77.3                 | -35.08            | 102               | 302            | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector

NOTE: 15.231 limit applied to all non-restricted band harmonics, 15.209 limit applied to all restricted band harmonics.

**Above 1GHz – Average Data**

| Frequency<br>(GHz) | Meter<br>Reading<br>(dBuV) | Det | AF<br>(dB/m) | Preamp<br>(dB) | SMA7<br>(dB) | SMA6<br>(dB) | DCF<br>(dB) | Corrected<br>Reading<br>(dBuV/m) | Avg Limit<br>(dBuV/m) | Margin<br>(dB) | Azimuth<br>(deg) | Height<br>(cm) | Polarity |
|--------------------|----------------------------|-----|--------------|----------------|--------------|--------------|-------------|----------------------------------|-----------------------|----------------|------------------|----------------|----------|
| * 1.035            | 49.24                      | Pk  | 24.1         | -26.7          | 1.7          | 0.8          | -14.7       | 34.44                            | 54                    | -19.56         | 229              | 217            | H        |
| * 1.38             | 44.91                      | Pk  | 25.2         | -26.7          | 2            | 0.9          | -14.7       | 31.61                            | 54                    | -22.39         | 213              | 113            | H        |
| 1.725              | 37.38                      | Pk  | 26.5         | -26.8          | 2.2          | 1            | -14.7       | 25.58                            | 57.3                  | -31.72         | 168              | 232            | H        |
| 2.069              | 37                         | Pk  | 28           | -27            | 2.4          | 1.1          | -14.7       | 26.8                             | 57.3                  | -30.5          | 160              | 109            | H        |
| 2.416              | 35.09                      | Pk  | 28.6         | -27            | 2.6          | 1.1          | -14.7       | 25.69                            | 57.3                  | -31.61         | 163              | 366            | H        |
| * 2.759            | 38.32                      | Pk  | 29.4         | -27            | 2.8          | 1.2          | -14.7       | 30.02                            | 54                    | -23.98         | 155              | 120            | H        |
| 3.104              | 34.93                      | Pk  | 30.7         | -27            | 3            | 1.3          | -14.7       | 28.23                            | 57.3                  | -29.07         | 266              | 335            | H        |
| 3.449              | 38.12                      | Pk  | 31.2         | -27            | 3.1          | 1.4          | -14.7       | 32.12                            | 57.3                  | -25.18         | 157              | 213            | H        |
| * 1.035            | 47.52                      | Pk  | 24.1         | -26.7          | 1.7          | 0.8          | -14.7       | 32.72                            | 54                    | -21.28         | 324              | 139            | V        |
| * 1.38             | 46.98                      | Pk  | 25.2         | -26.7          | 2            | 0.9          | -14.7       | 33.68                            | 54                    | -20.32         | 359              | 128            | V        |
| 1.725              | 42.95                      | Pk  | 26.5         | -26.8          | 2.2          | 1            | -14.7       | 31.15                            | 57.3                  | -26.15         | 229              | 264            | V        |
| 2.069              | 40.93                      | Pk  | 28           | -27            | 2.4          | 1.1          | -14.7       | 30.73                            | 57.3                  | -26.57         | 41               | 202            | V        |
| 2.415              | 40.3                       | Pk  | 28.6         | -27            | 2.6          | 1.1          | -14.7       | 30.9                             | 57.3                  | -26.4          | 336              | 272            | V        |
| * 2.759            | 37.92                      | Pk  | 29.4         | -27            | 2.8          | 1.2          | -14.7       | 29.62                            | 54                    | -24.38         | 349              | 348            | V        |
| 3.105              | 34.45                      | Pk  | 30.8         | -27            | 3            | 1.3          | -14.7       | 27.85                            | 57.3                  | -29.45         | 317              | 289            | V        |
| 3.449              | 33.52                      | Pk  | 31.2         | -27            | 3.1          | 1.4          | -14.7       | 27.52                            | 57.3                  | -29.78         | 102              | 302            | V        |

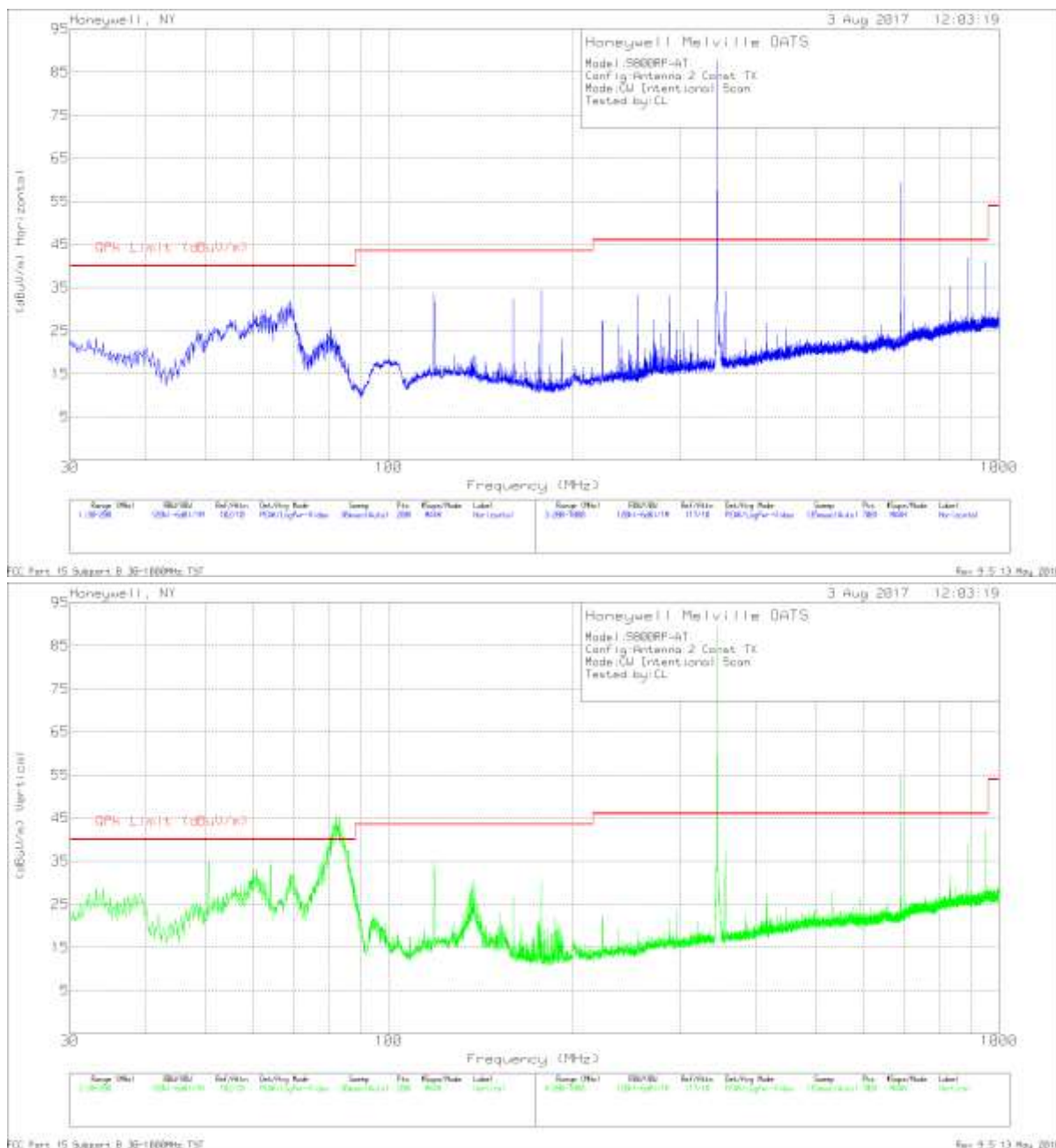
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector

Average Reading = Pk + Duty Cycle Correction Factor (DCF)

NOTE: 15.231 limit applied to all non-restricted band harmonics, 15.209 limit applied to all restricted band harmonics.

**Test Results – Antenna 2**

**Below 1GHz - Plots**



NOTE: Prescans performed in an anechoic chamber, final measurements performed on an OATS

**Below 1GHz – Data**

| Frequency (MHz) | Meter Reading (dBuV) | Det | AF [dB/m] | HP Preamp [dB] | Cable 1 [dB] | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|-----|-----------|----------------|--------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 67.1876         | 36.91                | Qp  | 12.2      | -24.4          | 1.6          | 26.31                      | 40                 | -13.69      | 117            | 379         | H        |
| 178.0037        | 21.41                | Qp  | 15.8      | -24.1          | 2.6          | 15.71                      | 43.52              | -27.81      | 16             | 326         | H        |
| 50.6187         | 48.33                | Qp  | 12.6      | -24.4          | 1.4          | 37.93                      | 40                 | -2.07       | 329            | 372         | V        |
| 60.7442         | 29.68                | Qp  | 11.9      | -24.4          | 1.5          | 18.68                      | 40                 | -21.32      | 74             | 160         | V        |
| 63.904          | 32.04                | Qp  | 12        | -24.4          | 1.5          | 21.14                      | 40                 | -18.86      | 80             | 112         | V        |
| 68.7742         | 30.1                 | Qp  | 12.1      | -24.4          | 1.6          | 19.4                       | 40                 | -20.6       | 176            | 144         | V        |
| 81.9095         | 39.2                 | Qp  | 11.8      | -24.4          | 1.7          | 28.3                       | 40                 | -11.7       | 140            | 175         | V        |
| * 118.5715      | 44.1                 | Qp  | 17.5      | -24.3          | 2.1          | 39.4                       | 43.52              | -4.12       | 41             | 235         | V        |
| 889.2008        | 20.6                 | Qp  | 26.9      | -24.5          | 10.3         | 33.3                       | 46.02              | -12.72      | 340            | 357         | H        |
| 948.5044        | 7.89                 | Qp  | 27.4      | -24.3          | 10.7         | 21.69                      | 46.02              | -24.33      | 327            | 137         | H        |
| 355.7043        | 42.66                | Qp  | 19.5      | -24.1          | 4.6          | 42.66                      | 46.02              | -3.36       | 33             | 134         | V        |
| 889.4122        | 24.61                | Qp  | 26.9      | -24.5          | 10.2         | 37.21                      | 46.02              | -8.81       | 143            | 339         | V        |
| 948.5493        | 31.84                | Qp  | 27.4      | -24.3          | 10.7         | 45.64                      | 46.02              | -.38        | 74             | 218         | V        |

Qp – Quasi-Peak detector

| Frequency (MHz) | Meter Reading (dBuV) | Det | AF [dB/m] | HP Preamp [dB] | Cable 1 [dB] | DCF [dB] | Corrected Reading (dBuV/m) | 15.231 Limit - Pk (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|-----|-----------|----------------|--------------|----------|----------------------------|----------------------------|-------------|----------------|-------------|----------|
| 344.928         | 61.49                | Pk  | 19.2      | -              | 3.7          | -        | 84.39                      | 97.3                       | -12.91      | 40             | 102         | H        |
| 689.86          | 35.67                | Pk  | 24.8      | -              | 6.8          | -        | 67.27                      | 77.3                       | -10.03      | 306            | 109         | H        |
| 344.926         | 68.64                | Pk  | 19.2      | -              | 3.7          | -        | 91.54                      | 97.3                       | -5.76       | 226            | 132         | V        |
| 689.854         | 31.66                | Pk  | 24.8      | -              | 6.8          | -        | 63.26                      | 77.3                       | -14.04      | 172            | 146         | V        |
| Frequency (MHz) | Meter Reading (dBuV) | Det | AF [dB/m] | HP Preamp [dB] | Cable 1 [dB] | DCF [dB] | Corrected Reading (dBuV/m) | 15.231 Limit - Av (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
| 344.938         | 61.49                | Pk  | 19.2      | -              | 3.7          | -14.7    | 69.69                      | 77.3                       | -7.61       | 40             | 102         | H        |
| 689.88          | 35.67                | Pk  | 24.8      | -              | 6.8          | -14.7    | 52.57                      | 57.3                       | -4.73       | 306            | 109         | H        |
| 344.938         | 68.64                | Pk  | 19.2      | -              | 3.7          | -14.7    | 76.84                      | 77.3                       | -0.46       | 226            | 132         | V        |
| 689.88          | 31.66                | Pk  | 24.8      | -              | 6.8          | -14.7    | 48.56                      | 57.3                       | -8.74       | 172            | 146         | V        |

Pk - Peak detector

Average Reading = Pk + Duty Cycle Correction Factor (DCF)

Honeywell, NY

12 Jul 2017 13:48:02

Radiated Emissions 1-Meters

UP# Number:  
Model:  
Config:  
Mode:  
Tested By:

Peak Limit (dBuV/m)

Avg Limit (dBuV/m)

dBuV/m Horizontal

Frequency (GHz)

| Range (GHz) | FEM/AM   | Ref.Volts | Ref.Volts Mode | Temp     | P <sub>10</sub> | Max/Min | Label    | Range (GHz) | Min/Max | Ref.Volts | Derating Mode | Temp | P <sub>10</sub> | Max/Min | Label |
|-------------|----------|-----------|----------------|----------|-----------------|---------|----------|-------------|---------|-----------|---------------|------|-----------------|---------|-------|
| 1-5         | 10-40/30 | 11.7/10   | 100/100        | 25/25/25 | 1000            | 1000    | Ref:1000 |             |         |           |               |      |                 |         |       |

FIG. 8-15 Support (1-5GHz) Frequency Test

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**Above 1GHz – Peak Data**

| Frequency<br>(GHz) | Meter<br>Reading<br>(dBuV) | Det | AF<br>(dB/m) | Preamp<br>(dB) | SMA7<br>(dB) | SMA6<br>(dB) | Corrected<br>Reading<br>(dBuV/m) | Pk Limit<br>(dBuV/m) | PK Margin<br>(dB) | Azimuth<br>(Degs) | Height<br>(cm) | Polarity |
|--------------------|----------------------------|-----|--------------|----------------|--------------|--------------|----------------------------------|----------------------|-------------------|-------------------|----------------|----------|
| * 1.035            | 43.17                      | Pk  | 24.1         | -26.7          | 1.7          | 0.8          | 43.07                            | 74                   | -30.93            | 3                 | 148            | H        |
| * 1.38             | 39.26                      | Pk  | 25.2         | -26.7          | 2            | 0.9          | 40.66                            | 74                   | -33.34            | 197               | 144            | H        |
| 1.725              | 40.99                      | Pk  | 26.5         | -26.8          | 2.2          | 1            | 43.89                            | 77.3                 | -33.41            | 16                | 136            | H        |
| 2.07               | 37.05                      | Pk  | 28           | -27            | 2.4          | 1.1          | 41.55                            | 77.3                 | -35.75            | 41                | 128            | H        |
| 2.413              | 36.29                      | Pk  | 28.6         | -27            | 2.6          | 1.1          | 41.59                            | 77.3                 | -35.71            | 80                | 147            | H        |
| * 2.759            | 38.2                       | Pk  | 29.4         | -27            | 2.8          | 1.2          | 44.6                             | 74                   | -29.4             | 167               | 137            | H        |
| 3.104              | 35.35                      | Pk  | 30.7         | -27            | 3            | 1.3          | 43.35                            | 77.3                 | -33.95            | 317               | 102            | H        |
| 3.449              | 36.39                      | Pk  | 31.2         | -27            | 3.1          | 1.4          | 45.09                            | 77.3                 | -32.21            | 50                | 109            | H        |
| * 1.035            | 39.76                      | Pk  | 24.1         | -26.7          | 1.7          | 0.8          | 39.66                            | 74                   | -34.34            | 20                | 381            | V        |
| * 1.38             | 45.92                      | Pk  | 25.2         | -26.7          | 2            | 0.9          | 47.32                            | 74                   | -26.68            | 342               | 214            | V        |
| 1.725              | 47.04                      | Pk  | 26.5         | -26.8          | 2.2          | 1            | 49.94                            | 77.3                 | -27.36            | 175               | 309            | V        |
| 2.07               | 38.56                      | Pk  | 28           | -27            | 2.4          | 1.1          | 43.06                            | 77.3                 | -34.24            | 345               | 308            | V        |
| 2.416              | 29.5                       | Pk  | 28.6         | -27            | 2.6          | 1.1          | 34.8                             | 77.3                 | -42.5             | 312               | 292            | V        |
| * 2.759            | 38.81                      | Pk  | 29.4         | -27            | 2.8          | 1.2          | 45.21                            | 74                   | -28.79            | 173               | 146            | V        |
| 3.104              | 35.42                      | Pk  | 30.7         | -27            | 3            | 1.3          | 43.42                            | 77.3                 | -33.88            | 93                | 131            | V        |
| 3.449              | 36.56                      | Pk  | 31.2         | -27            | 3.1          | 1.4          | 45.26                            | 77.3                 | -32.04            | 224               | 117            | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector

NOTE: 15.231 limit applied to all non-restricted band harmonics, 15.209 limit applied to all restricted band harmonics.

**Above 1GHz – Average Data**

| Frequency<br>(GHz) | Meter<br>Reading<br>(dBuV) | Det | AF<br>(dB/m) | Preamp<br>(dB) | SMA7<br>(dB) | SMA6<br>(dB) | DCF<br>(dB) | Corrected<br>Reading<br>(dBuV/m) | Avg Limit<br>(dBuV/m) | Margin<br>(dB) | Azimuth<br>(deg) | Height<br>(cm) | Polarity |
|--------------------|----------------------------|-----|--------------|----------------|--------------|--------------|-------------|----------------------------------|-----------------------|----------------|------------------|----------------|----------|
| * 1.035            | 43.17                      | Pk  | 24.1         | -26.7          | 1.7          | 0.8          | -14.7       | 28.37                            | 54                    | -25.63         | 3                | 148            | H        |
| * 1.38             | 39.26                      | Pk  | 25.2         | -26.7          | 2            | 0.9          | -14.7       | 25.96                            | 54                    | -28.04         | 197              | 144            | H        |
| 1.725              | 40.99                      | Pk  | 26.5         | -26.8          | 2.2          | 1            | -14.7       | 29.19                            | 57.3                  | -28.11         | 16               | 136            | H        |
| 2.07               | 37.05                      | Pk  | 28           | -27            | 2.4          | 1.1          | -14.7       | 26.85                            | 57.3                  | -30.45         | 41               | 128            | H        |
| 2.413              | 36.29                      | Pk  | 28.6         | -27            | 2.6          | 1.1          | -14.7       | 26.89                            | 57.3                  | -30.41         | 80               | 147            | H        |
| * 2.759            | 38.2                       | Pk  | 29.4         | -27            | 2.8          | 1.2          | -14.7       | 29.9                             | 54                    | -24.1          | 167              | 137            | H        |
| 3.104              | 35.35                      | Pk  | 30.7         | -27            | 3            | 1.3          | -14.7       | 28.65                            | 57.3                  | -28.65         | 317              | 102            | H        |
| 3.449              | 36.39                      | Pk  | 31.2         | -27            | 3.1          | 1.4          | -14.7       | 30.39                            | 57.3                  | -26.91         | 50               | 109            | H        |
| * 1.035            | 39.76                      | Pk  | 24.1         | -26.7          | 1.7          | 0.8          | -14.7       | 24.96                            | 54                    | -29.04         | 20               | 381            | V        |
| * 1.38             | 45.92                      | Pk  | 25.2         | -26.7          | 2            | 0.9          | -14.7       | 32.62                            | 54                    | -21.38         | 342              | 214            | V        |
| 1.725              | 47.04                      | Pk  | 26.5         | -26.8          | 2.2          | 1            | -14.7       | 35.24                            | 57.3                  | -22.06         | 175              | 309            | V        |
| 2.07               | 38.56                      | Pk  | 28           | -27            | 2.4          | 1.1          | -14.7       | 28.36                            | 57.3                  | -28.94         | 345              | 308            | V        |
| 2.416              | 29.5                       | Pk  | 28.6         | -27            | 2.6          | 1.1          | -14.7       | 20.1                             | 57.3                  | -37.2          | 312              | 292            | V        |
| * 2.759            | 38.81                      | Pk  | 29.4         | -27            | 2.8          | 1.2          | -14.7       | 30.51                            | 54                    | -23.49         | 173              | 146            | V        |
| 3.104              | 35.42                      | Pk  | 30.7         | -27            | 3            | 1.3          | -14.7       | 28.72                            | 57.3                  | -28.58         | 93               | 131            | V        |
| 3.449              | 36.56                      | Pk  | 31.2         | -27            | 3.1          | 1.4          | -14.7       | 30.56                            | 57.3                  | -26.74         | 224              | 117            | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
Pk - Peak detector

Average Reading = Pk + Duty Cycle Correction Factor (DCF)

NOTE: 15.231 limit applied to all non-restricted band harmonics, 15.209 limit applied to all restricted band harmonics.

## Setup Photos

### Test Setup Photos – Radiated Emissions below 1GHz



### Test Setup Photos – Radiated Emissions above 1GHz



**END OF REPORT**