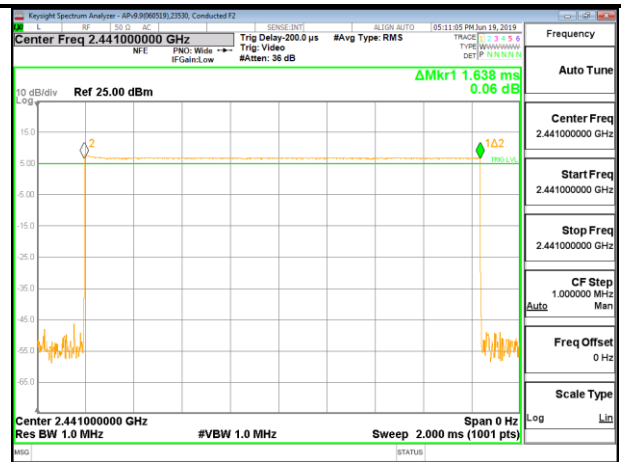
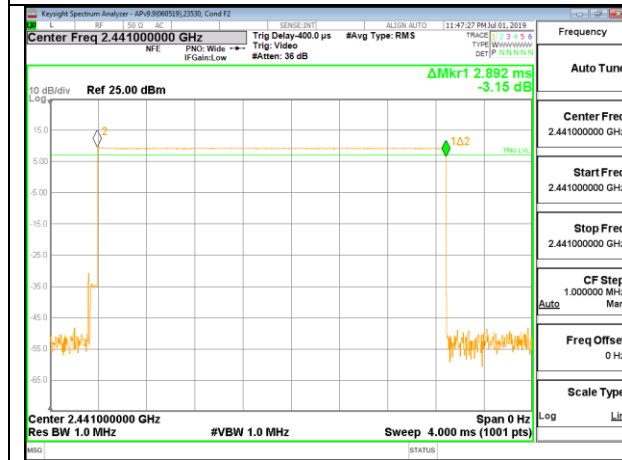


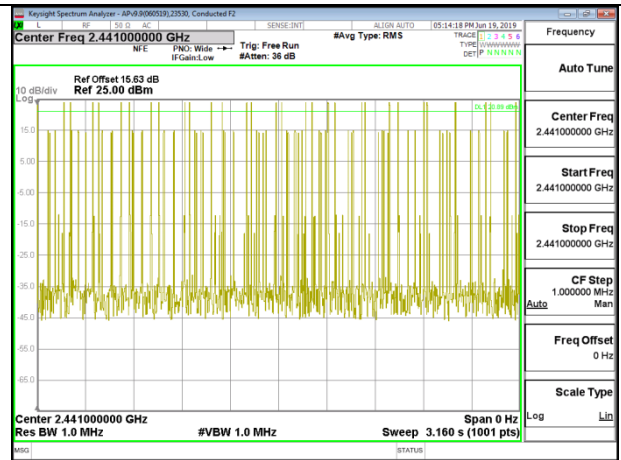
PULSE WIDTH – DH1



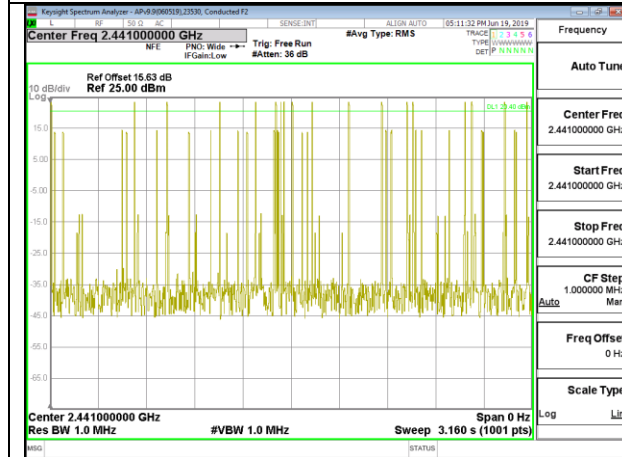
PULSE WIDTH– DH3



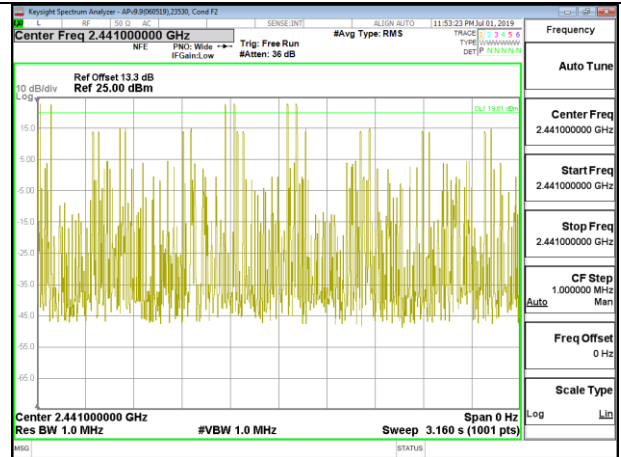
PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – DH1



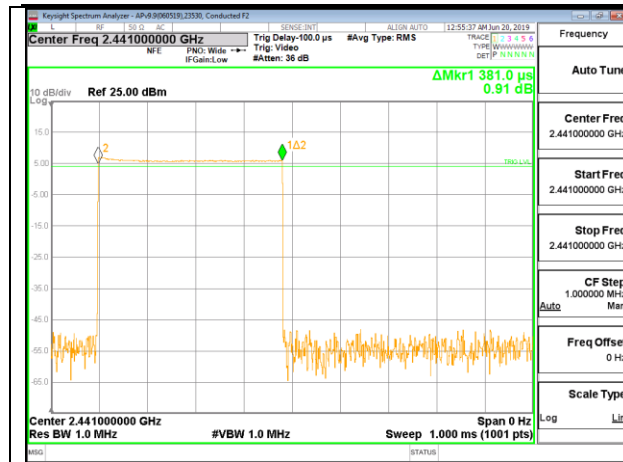
NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – DH3



NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – DH5

**Antenna 3**

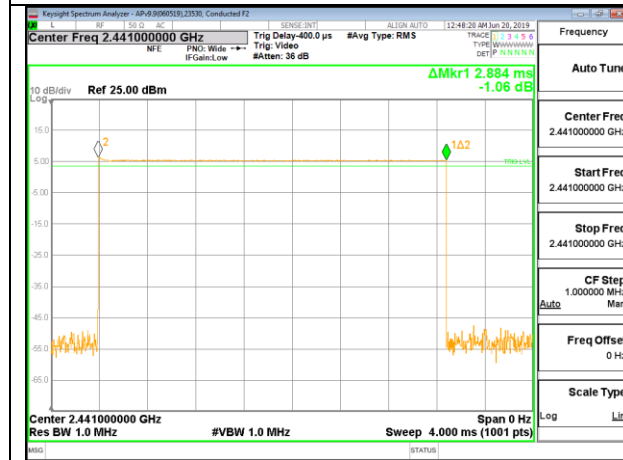
| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| GFSK Normal Mode |                    |                                  |                                 |             |              |
| DH1              | 0.381              | 32                               | 0.1219                          | 0.4         | -0.2781      |
| DH3              | 1.638              | 15                               | 0.2457                          | 0.4         | -0.1543      |
| DH5              | 2.884              | 8                                | 0.2307                          | 0.4         | -0.1693      |
|                  |                    |                                  |                                 |             |              |
| DH Packet        | Pulse Width (sec)  | Number of Pulses in 0.8 seconds  | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
| GFSK AFH Mode    |                    |                                  |                                 |             |              |
| DH1              | 0.381              | 8                                | 0.03048                         | 0.4         | -0.3695      |
| DH3              | 1.638              | 3.75                             | 0.06143                         | 0.4         | -0.3386      |
| DH5              | 2.884              | 2                                | 0.05768                         | 0.4         | -0.3423      |



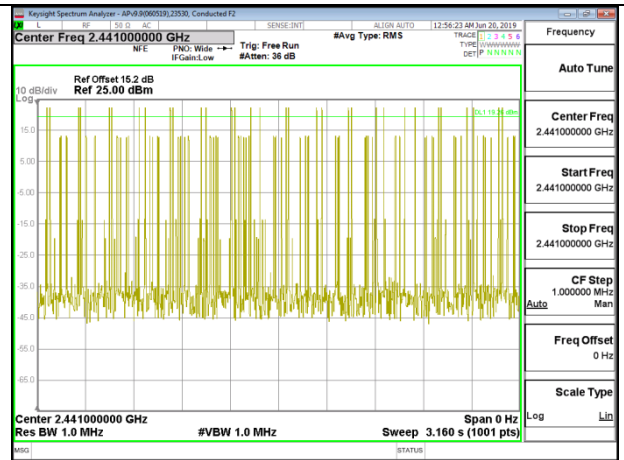
PULSE WIDTH – DH1



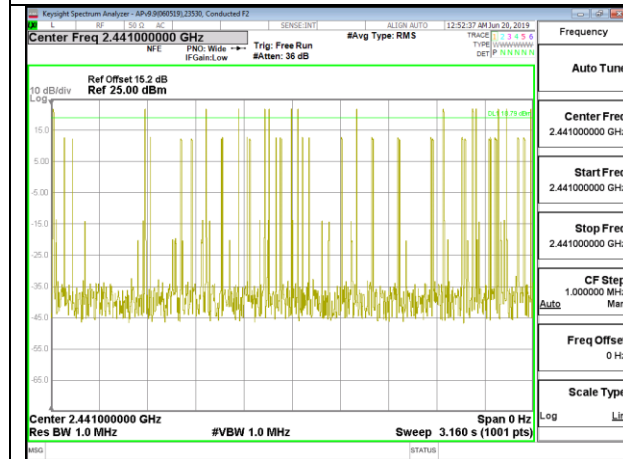
PULSE WIDTH – DH3



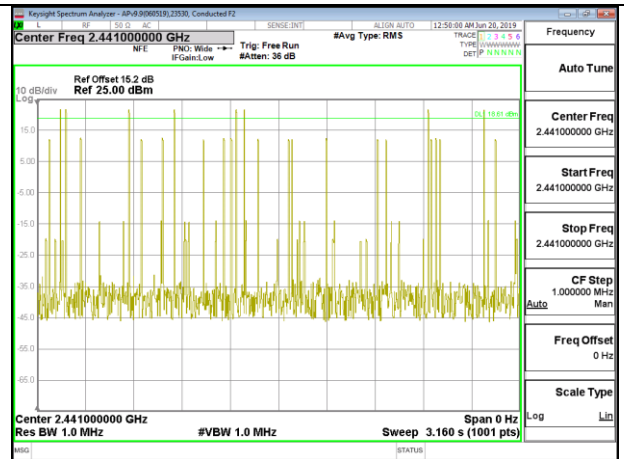
PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – DH1



NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – DH3



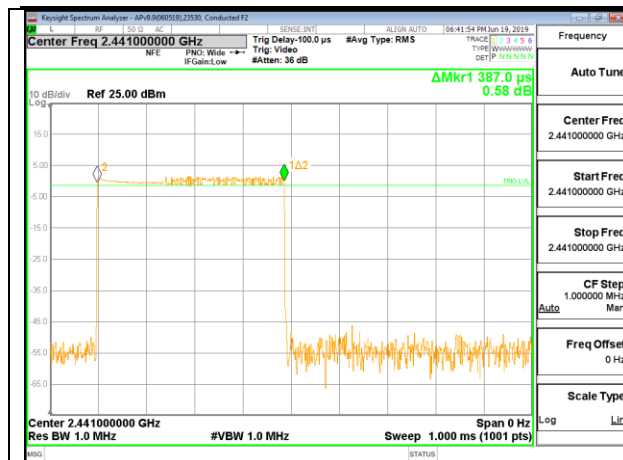
NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – DH5

## 8.9.2. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

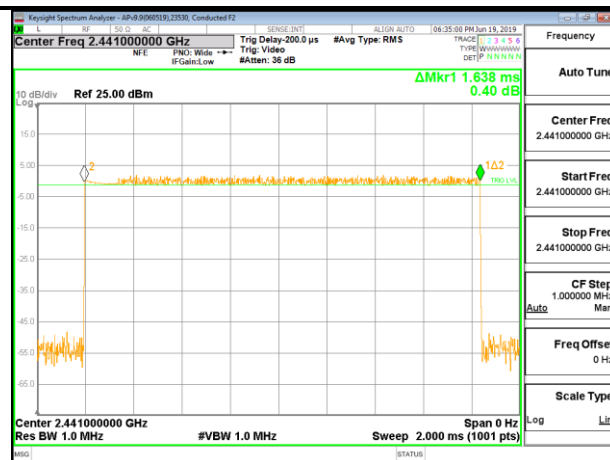
### Antenna 4

| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| 8PSK Normal Mode |                    |                                  |                                 |             |              |
| 3DH1             | 0.387              | 32                               | 0.12384                         | 0.4         | -0.2762      |
| 3DH3             | 1.638              | 17                               | 0.27846                         | 0.4         | -0.1215      |
| 3DH5             | 2.888              | 5                                | 0.1444                          | 0.4         | -0.2556      |

Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.



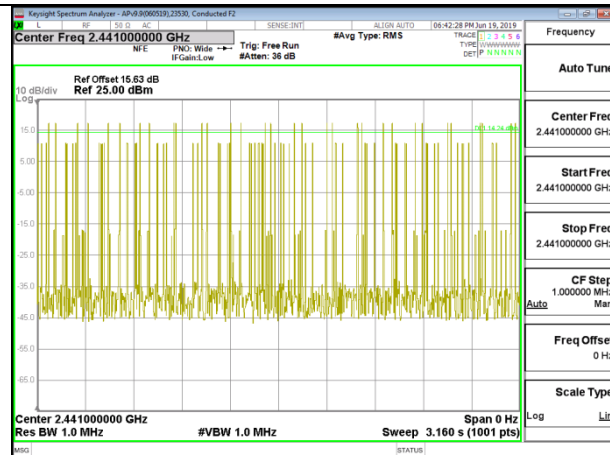
**PULSE WIDTH – 3DH1**



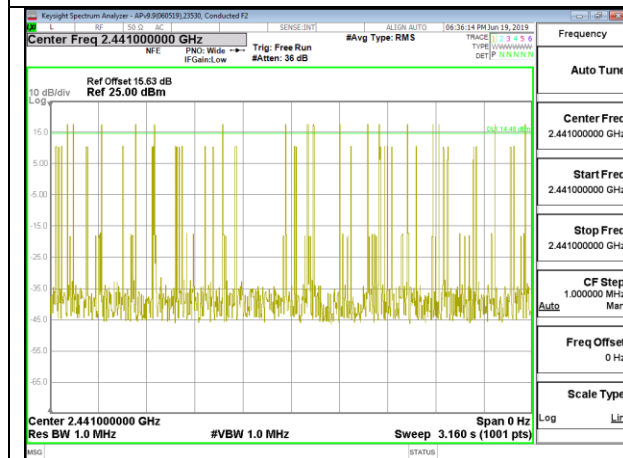
**PULSE WIDTH – 3DH3**



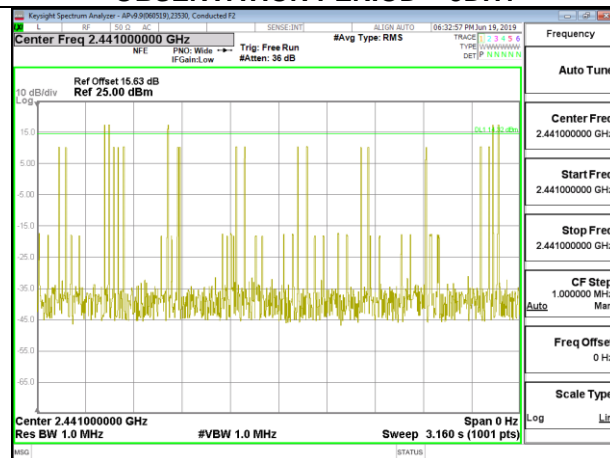
**PULSE WIDTH – 3DH5**



**NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – 3DH1**



**NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – 3DH3**

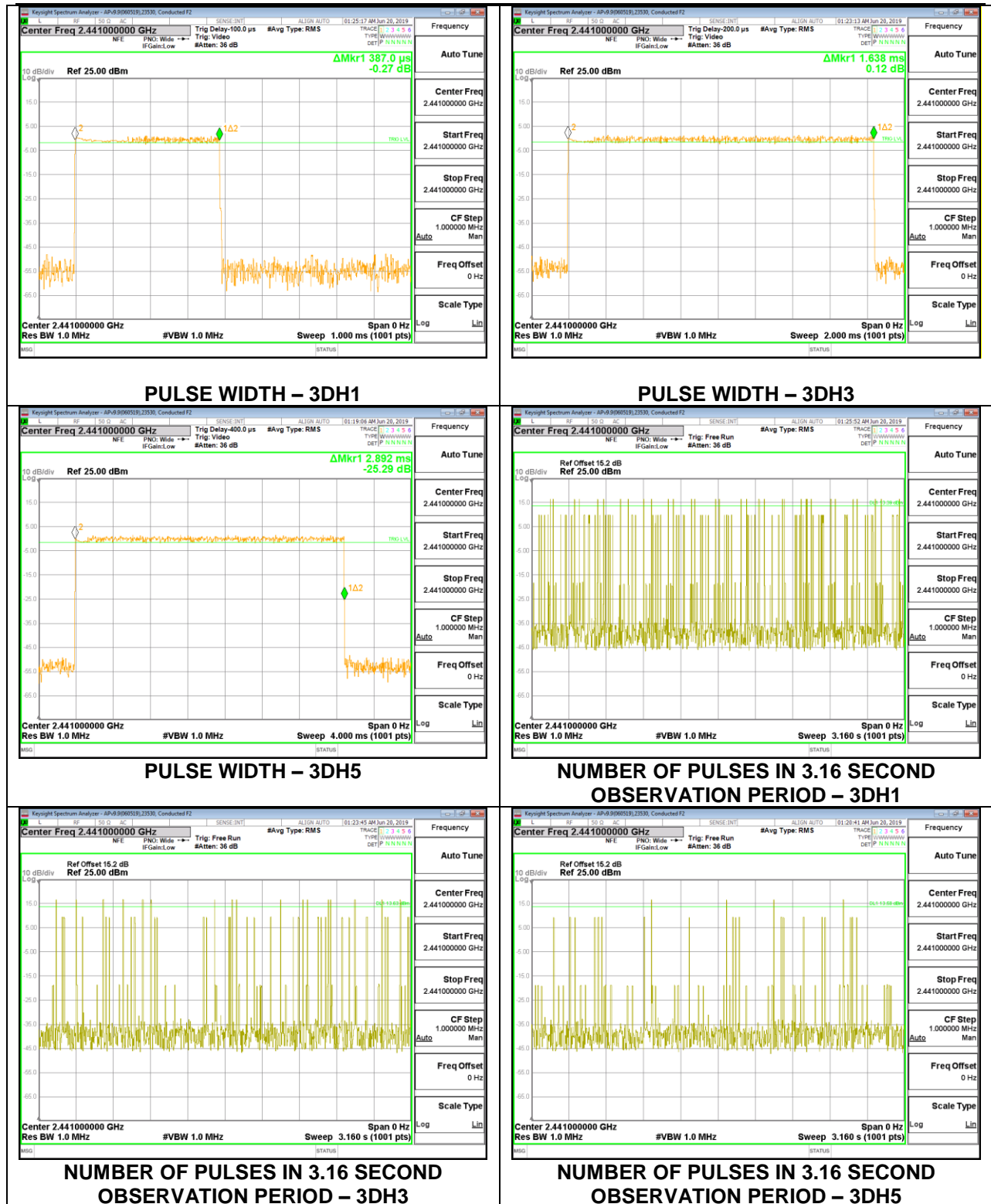


**NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – 3DH5**

**Antenna 3**

| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| 8PSK Normal Mode |                    |                                  |                                 |             |              |
| 3DH1             | 0.387              | 33                               | 0.12771                         | 0.4         | -0.2723      |
| 3DH3             | 1.638              | 17                               | 0.27846                         | 0.4         | -0.1215      |
| 3DH5             | 2.888              | 4                                | 0.11552                         | 0.4         | -0.2845      |

Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.

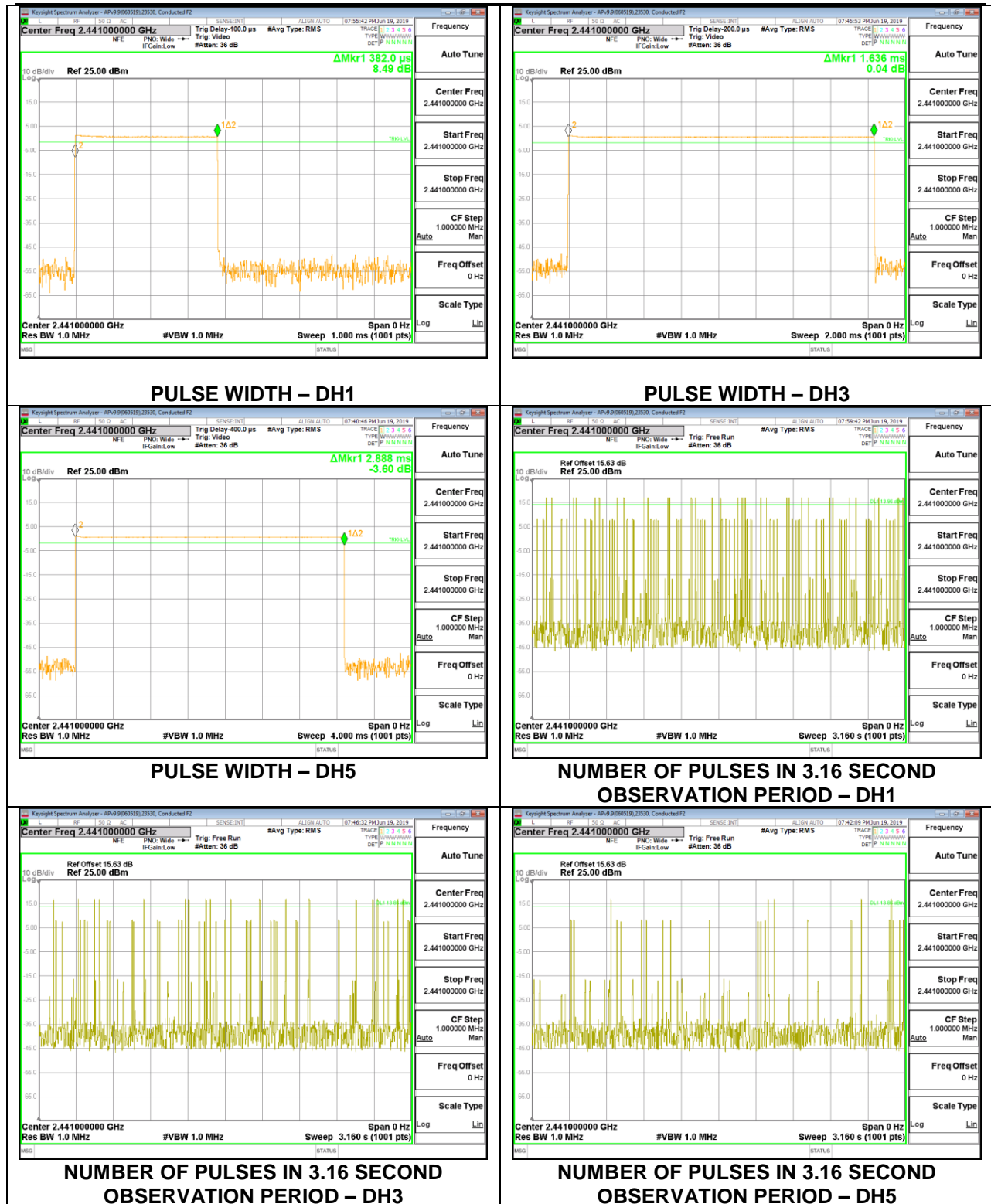


### 8.9.3. LOW POWER BASIC DATA RATE GFSK MODULATION

#### Antenna 4

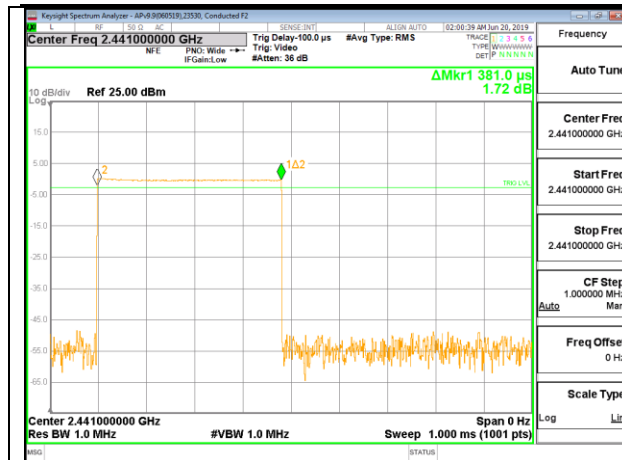
| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| GFSK Normal Mode |                    |                                  |                                 |             |              |
| DH1              | 0.382              | 34                               | 0.1299                          | 0.4         | -0.2701      |
| DH3              | 1.636              | 18                               | 0.2945                          | 0.4         | -0.1055      |
| DH5              | 2.888              | 5                                | 0.1444                          | 0.4         | -0.2556      |
|                  |                    |                                  |                                 |             |              |
| DH Packet        | Pulse Width (sec)  | Number of Pulses in 0.8 seconds  | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
| GFSK AFH Mode    |                    |                                  |                                 |             |              |
| DH1              | 0.382              | 8.5                              | 0.03247                         | 0.4         | -0.3675      |
| DH3              | 1.636              | 4.5                              | 0.07362                         | 0.4         | -0.3264      |
| DH5              | 2.888              | 1.25                             | 0.03610                         | 0.4         | -0.3639      |





**Antenna 3**

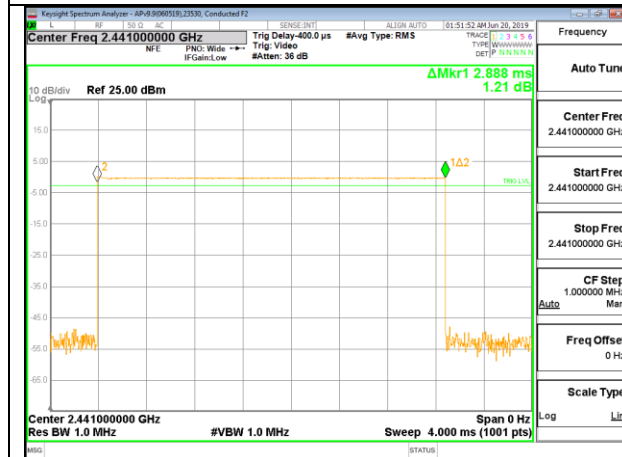
| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| GFSK Normal Mode |                    |                                  |                                 |             |              |
| DH1              | 0.382              | 32                               | 0.1222                          | 0.4         | -0.2778      |
| DH3              | 1.636              | 17                               | 0.2781                          | 0.4         | -0.1219      |
| DH5              | 2.888              | 4                                | 0.1155                          | 0.4         | -0.2845      |
|                  |                    |                                  |                                 |             |              |
| DH Packet        | Pulse Width (sec)  | Number of Pulses in 0.8 seconds  | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
| GFSK AFH Mode    |                    |                                  |                                 |             |              |
| DH1              | 0.382              | 8                                | 0.03056                         | 0.4         | -0.3694      |
| DH3              | 1.636              | 4.25                             | 0.06953                         | 0.4         | -0.3305      |
| DH5              | 2.888              | 1                                | 0.02888                         | 0.4         | -0.3711      |



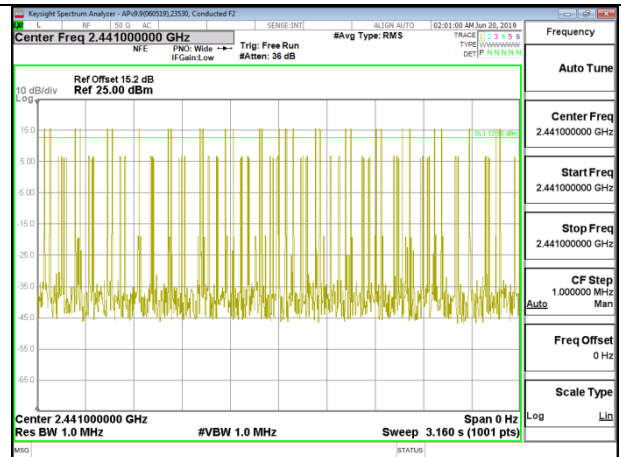
**PULSE WIDTH – DH1**



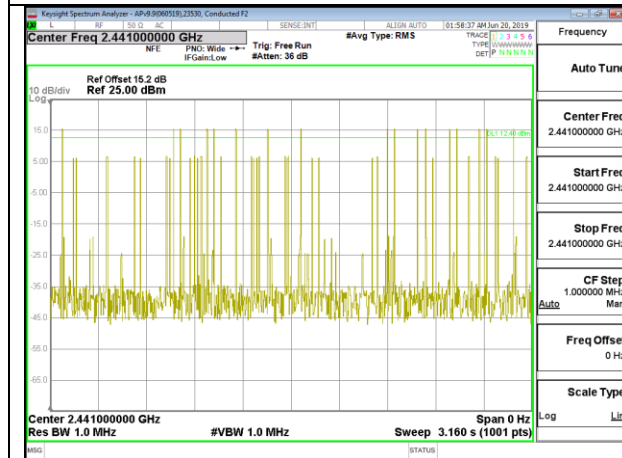
**PULSE WIDTH – DH3**



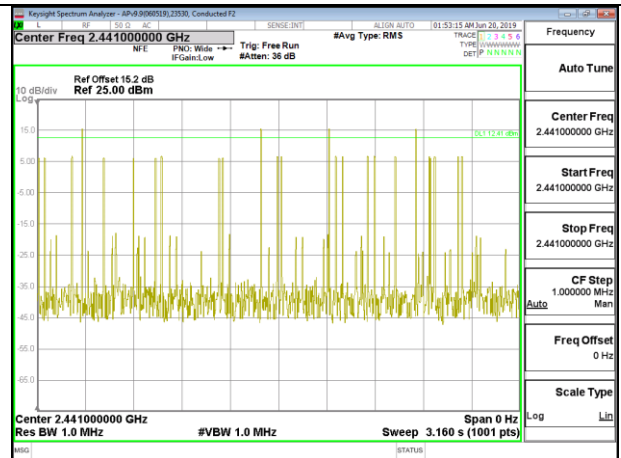
**PULSE WIDTH – DH5**



**NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – DH1**



**NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – DH3**



**NUMBER OF PULSES IN 3.16 SECOND  
OBSERVATION PERIOD – DH5**

## 8.9.4. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

### Antenna 4

| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| 8PSK Normal Mode |                    |                                  |                                 |             |              |
| 3DH1             | 0.387              | 32                               | 0.12384                         | 0.4         | -0.2762      |
| 3DH3             | 1.638              | 16                               | 0.26208                         | 0.4         | -0.1379      |
| 3DH5             | 2.892              | 7                                | 0.20244                         | 0.4         | -0.1976      |

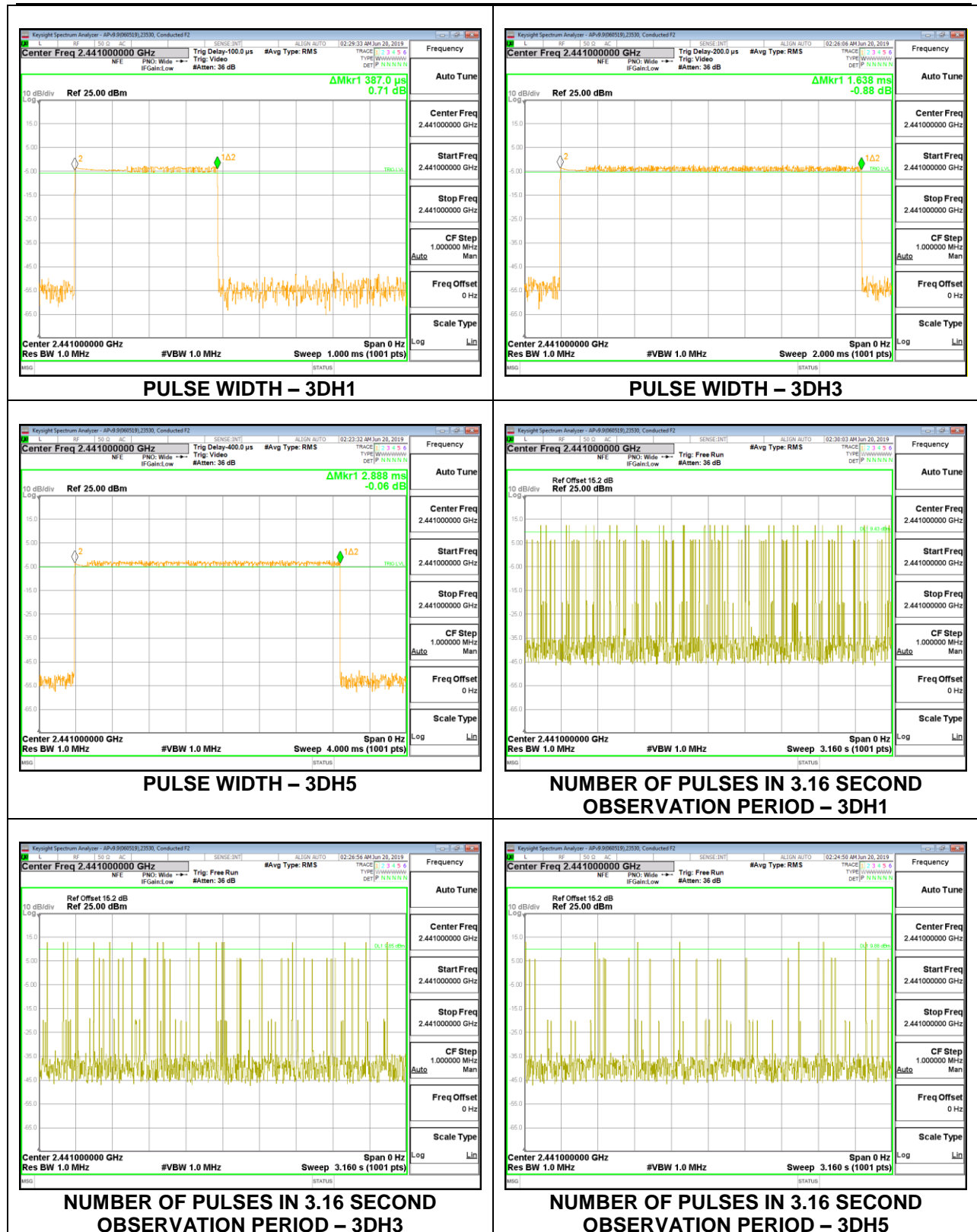
Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.



**Antenna 3**

| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| 8PSK Normal Mode |                    |                                  |                                 |             |              |
| 3DH1             | 0.387              | 32                               | 0.12384                         | 0.4         | -0.2762      |
| 3DH3             | 1.638              | 16                               | 0.26208                         | 0.4         | -0.1379      |
| 3DH5             | 2.888              | 7                                | 0.20216                         | 0.4         | -0.1978      |

Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.



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## **8.10. OUTPUT POWER**

### **LIMITS**

§15.247 (b) (1)

RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

### **TEST PROCEDURE**

Measurements perform using a wideband gated RF power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated peak reading of power.

### **RESULTS**



### 8.10.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

#### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 16.29                 | 21             | -4.71          |
| Middle  | 2441               | 16.51                 | 21             | -4.49          |
| High    | 2480               | 16.40                 | 21             | -4.6           |

#### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 19.51                 | 21             | -1.49          |
| Middle  | 2441               | 19.54                 | 21             | -1.46          |
| High    | 2480               | 19.47                 | 21             | -1.53          |

## 8.10.2. HIGH POWER ENHANCED DATA RATE QPSK MODULATION

### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 18.26                 | 21             | -2.74          |
| Middle  | 2441               | 18.46                 | 21             | -2.54          |
| High    | 2480               | 18.38                 | 21             | -2.62          |

### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 18.33                 | 21             | -2.67          |
| Middle  | 2441               | 18.41                 | 21             | -2.59          |
| High    | 2480               | 18.35                 | 21             | -2.65          |

### 8.10.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

#### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 18.55                 | 21             | -2.45          |
| Middle  | 2441               | 18.58                 | 21             | -2.42          |
| High    | 2480               | 18.54                 | 21             | -2.46          |

#### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 18.56                 | 21             | -2.44          |
| Middle  | 2441               | 18.57                 | 21             | -2.43          |
| High    | 2480               | 18.51                 | 21             | -2.49          |

## 8.10.4. LOW POWER BASIC DATA RATE GFSK MODULATION

### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 12.51                 | 21             | -8.49          |
| Middle  | 2441               | 12.57                 | 21             | -8.43          |
| High    | 2480               | 12.53                 | 21             | -8.47          |

### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 12.53                 | 21             | -8.47          |
| Middle  | 2441               | 12.59                 | 21             | -8.41          |
| High    | 2480               | 12.49                 | 21             | -8.51          |

### 8.10.5. LOW POWER ENHANCED DATA RATE QPSK MODULATION

#### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 11.27                 | 21             | -9.73          |
| Middle  | 2441               | 11.39                 | 21             | -9.61          |
| High    | 2480               | 11.38                 | 21             | -9.62          |

#### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 11.47                 | 21             | -9.53          |
| Middle  | 2441               | 11.51                 | 21             | -9.49          |
| High    | 2480               | 11.45                 | 21             | -9.55          |

### 8.10.6. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

#### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 11.36                 | 21             | -9.64          |
| Middle  | 2441               | 11.41                 | 21             | -9.59          |
| High    | 2480               | 11.31                 | 21             | -9.69          |

#### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 11.39                 | 21             | -9.61          |
| Middle  | 2441               | 11.40                 | 21             | -9.6           |
| High    | 2480               | 11.36                 | 21             | -9.64          |

## 8.11. BEAMFORMING OUTPUT POWER

### 8.11.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>Antenna 4<br>(dBm) | Output Power<br>Antenna 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|------------------------------------|------------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 16.38                              | 17.02                              | 19.72                | 21             | -1.28          |
| Middle  | 2441               | 16.43                              | 17.05                              | 19.76                | 21             | -1.24          |
| High    | 2480               | 16.41                              | 17.03                              | 19.74                | 21             | -1.26          |

### 8.11.2. HIGH POWER ENHANCED DATA RATE QPSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>Antenna 4<br>(dBm) | Output Power<br>Antenna 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|------------------------------------|------------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 17.44                              | 17.51                              | 20.49                | 21             | -0.51          |
| Middle  | 2441               | 17.53                              | 17.59                              | 20.57                | 21             | -0.43          |
| High    | 2480               | 17.49                              | 17.53                              | 20.52                | 21             | -0.48          |

### 8.11.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>Antenna 4<br>(dBm) | Output Power<br>Antenna 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|------------------------------------|------------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 17.47                              | 17.53                              | 20.51                | 21             | -0.49          |
| Middle  | 2441               | 17.55                              | 17.61                              | 20.59                | 21             | -0.41          |
| High    | 2480               | 17.53                              | 17.57                              | 20.56                | 21             | -0.44          |

### 8.11.4. LOW POWER BASIC DATA RATE GFSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>Antenna 4<br>(dBm) | Output Power<br>Antenna 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|------------------------------------|------------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 12.58                              | 12.54                              | 15.57                | 21             | -5.43          |
| Middle  | 2441               | 12.61                              | 12.60                              | 15.62                | 21             | -5.38          |
| High    | 2480               | 12.59                              | 12.57                              | 15.59                | 21             | -5.41          |

### 8.11.5. LOW POWER ENHANCED DATA RATE QPSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>Antenna 4<br>(dBm) | Output Power<br>Antenna 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|------------------------------------|------------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 11.37                              | 11.46                              | 14.43                | 21             | -6.57          |
| Middle  | 2441               | 11.48                              | 11.44                              | 14.47                | 21             | -6.53          |
| High    | 2480               | 11.42                              | 11.47                              | 14.46                | 21             | -6.54          |

### 8.11.6. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date:      | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Output Power<br>Antenna 4<br>(dBm) | Output Power<br>Antenna 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|------------------------------------|------------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 11.42                              | 11.56                              | 14.50                | 21             | -6.50          |
| Middle  | 2441               | 11.47                              | 11.57                              | 14.53                | 21             | -6.47          |
| High    | 2480               | 11.45                              | 11.56                              | 14.52                | 21             | -6.48          |



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## **8.12. AVERAGE POWER**

### **LIMITS**

None; for reporting purposes only

### **TEST PROCEDURE**

Measurements perform using a wideband gated RF power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated average reading of power.

### **RESULTS**

## 8.12.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 16.09                  |
| Middle  | 2441               | 16.23                  |
| High    | 2480               | 16.20                  |

### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 19.18                  |
| Middle  | 2441               | 19.23                  |
| High    | 2480               | 19.20                  |

## 8.12.2. HIGH POWER ENHANCED DATA RATE QPSK MODULATION

### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 15.65                  |
| Middle  | 2441               | 15.74                  |
| High    | 2480               | 15.73                  |

### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 15.68                  |
| Middle  | 2441               | 15.72                  |
| High    | 2480               | 15.69                  |

### 8.12.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

#### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 15.73                  |
| Middle  | 2441               | 15.75                  |
| High    | 2480               | 15.73                  |

#### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 15.71                  |
| Middle  | 2441               | 15.75                  |
| High    | 2480               | 15.70                  |

## 8.12.4. LOW POWER BASIC DATA RATE GFSK MODULATION

### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 12.23                  |
| Middle  | 2441               | 12.25                  |
| High    | 2480               | 12.22                  |

### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 12.19                  |
| Middle  | 2441               | 12.21                  |
| High    | 2480               | 12.17                  |

### 8.12.5. LOW POWER ENHANCED DATA RATE QPSK MODULATION

#### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 8.62                   |
| Middle  | 2441               | 8.64                   |
| High    | 2480               | 8.68                   |

#### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 8.66                   |
| Middle  | 2441               | 8.68                   |
| High    | 2480               | 8.63                   |

### 8.12.6. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

#### Antenna 4

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 8.68                   |
| Middle  | 2441               | 8.73                   |
| High    | 2480               | 8.65                   |

#### Antenna 3

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 8.71                   |
| Middle  | 2441               | 8.73                   |
| High    | 2480               | 8.69                   |

## 8.13. BEAMFORMING AVERAGE POWER

### 8.13.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>Antenna 4<br>(dBm) | Average Power<br>Antenna 3<br>(dBm) | Total<br>Average Power<br>(dBm) |
|---------|--------------------|-------------------------------------|-------------------------------------|---------------------------------|
| Low     | 2402               | 16.11                               | 16.62                               | 19.38                           |
| Middle  | 2441               | 16.15                               | 16.68                               | 19.43                           |
| High    | 2480               | 16.13                               | 16.66                               | 19.41                           |

### 8.13.2. HIGH POWER ENHANCED ENHANCED RATE QPSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>Antenna 4<br>(dBm) | Average Power<br>Antenna 3<br>(dBm) | Total<br>Average Power<br>(dBm) |
|---------|--------------------|-------------------------------------|-------------------------------------|---------------------------------|
| Low     | 2402               | 14.67                               | 14.69                               | 17.69                           |
| Middle  | 2441               | 14.70                               | 14.72                               | 17.72                           |
| High    | 2480               | 14.68                               | 14.69                               | 17.70                           |

### 8.13.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>Antenna 4<br>(dBm) | Average Power<br>Antenna 3<br>(dBm) | Total<br>Average Power<br>(dBm) |
|---------|--------------------|-------------------------------------|-------------------------------------|---------------------------------|
| Low     | 2402               | 14.71                               | 14.72                               | 17.73                           |
| Middle  | 2441               | 14.75                               | 14.73                               | 17.75                           |
| High    | 2480               | 14.72                               | 14.70                               | 17.72                           |



### 8.13.4. LOW POWER BASIC DATA RATE GFSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>Antenna 4<br>(dBm) | Average Power<br>Antenna 3<br>(dBm) | Total<br>Average Power<br>(dBm) |
|---------|--------------------|-------------------------------------|-------------------------------------|---------------------------------|
| Low     | 2402               | 12.22                               | 12.18                               | 15.21                           |
| Middle  | 2441               | 12.24                               | 12.21                               | 15.24                           |
| High    | 2480               | 12.23                               | 12.20                               | 15.23                           |

### 8.13.5. LOW POWER ENHANCED DATA RATE QPSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>Antenna 4<br>(dBm) | Average Power<br>Antenna 3<br>(dBm) | Total<br>Average Power<br>(dBm) |
|---------|--------------------|-------------------------------------|-------------------------------------|---------------------------------|
| Low     | 2402               | 8.61                                | 8.67                                | 11.65                           |
| Middle  | 2441               | 8.66                                | 8.64                                | 11.66                           |
| High    | 2480               | 8.59                                | 8.63                                | 11.62                           |

### 8.13.6. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

#### 2TX Antenna 4 + Antenna 3 TxBF Mode

|            |           |
|------------|-----------|
| Tested By: | 23530     |
| Date       | 7/17/2019 |

| Channel | Frequency<br>(MHz) | Average Power<br>Antenna 4<br>(dBm) | Average Power<br>Antenna 3<br>(dBm) | Total<br>Average Power<br>(dBm) |
|---------|--------------------|-------------------------------------|-------------------------------------|---------------------------------|
| Low     | 2402               | 8.65                                | 8.72                                | 11.70                           |
| Middle  | 2441               | 8.71                                | 8.70                                | 11.72                           |
| High    | 2480               | 8.68                                | 8.73                                | 11.72                           |

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## **8.14. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

RSS-247 5.5

Limit = -20 dBc

### **TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

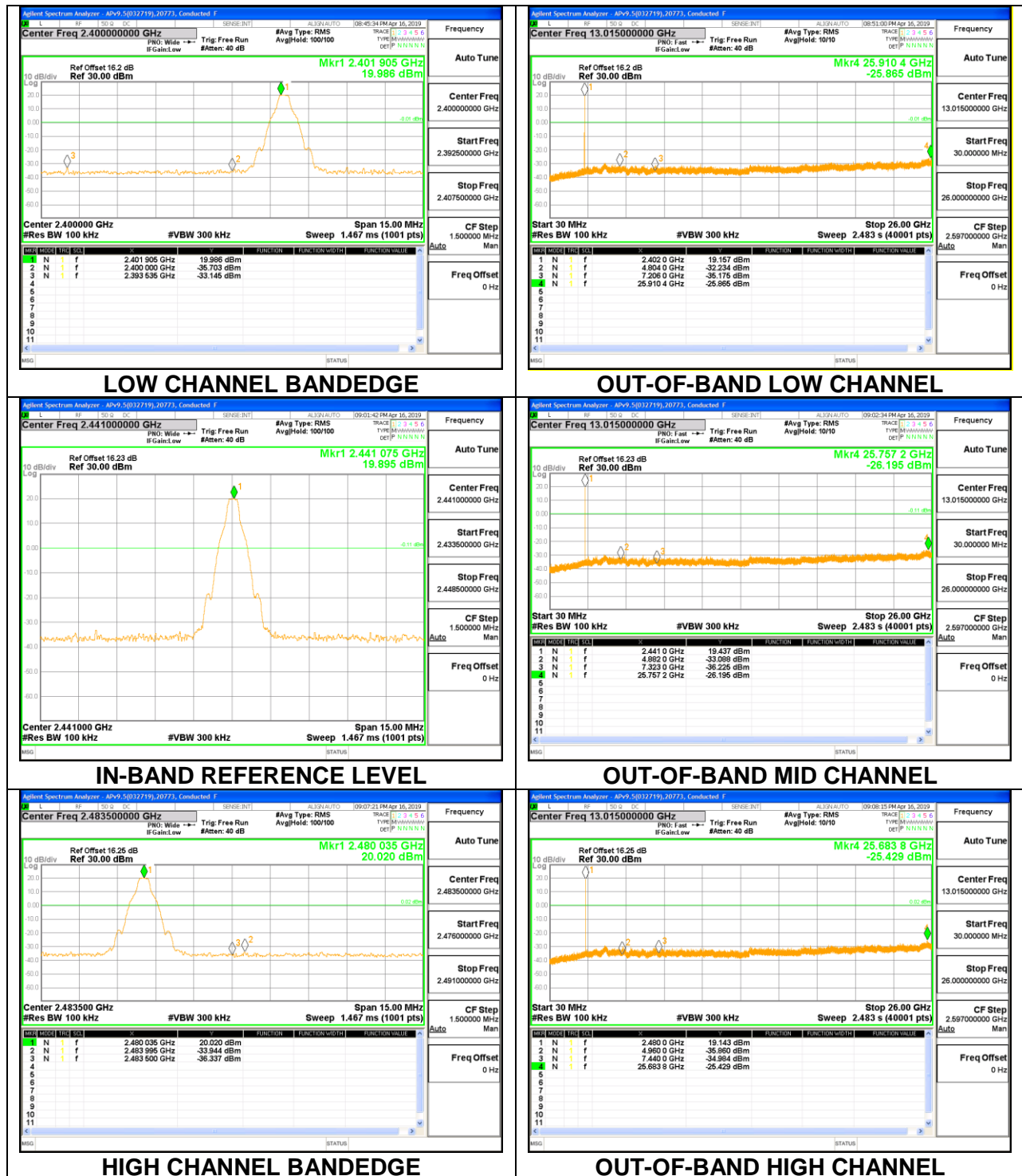
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

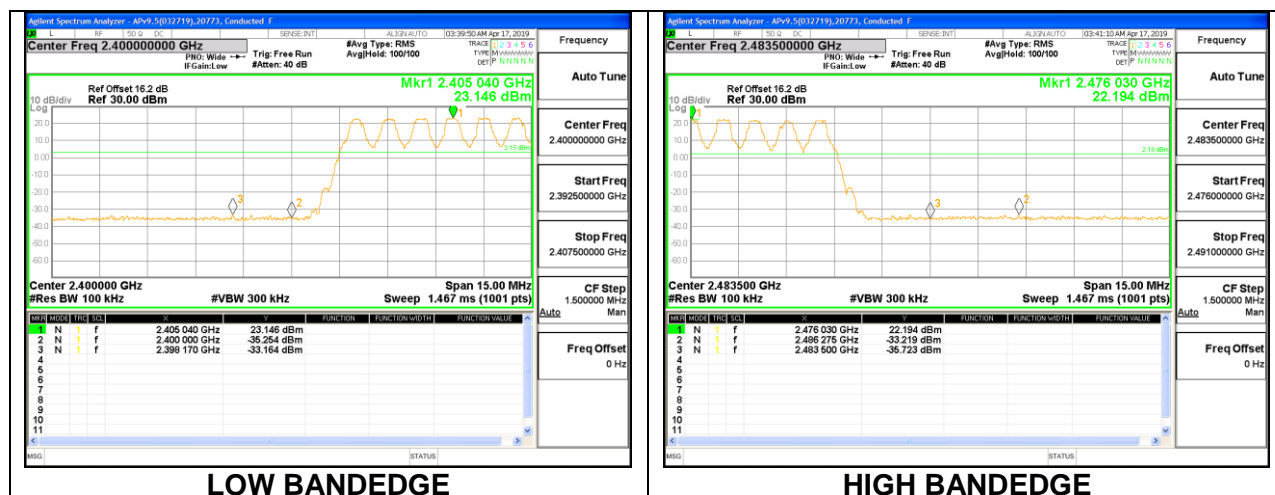
### **RESULTS**

## 8.14.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

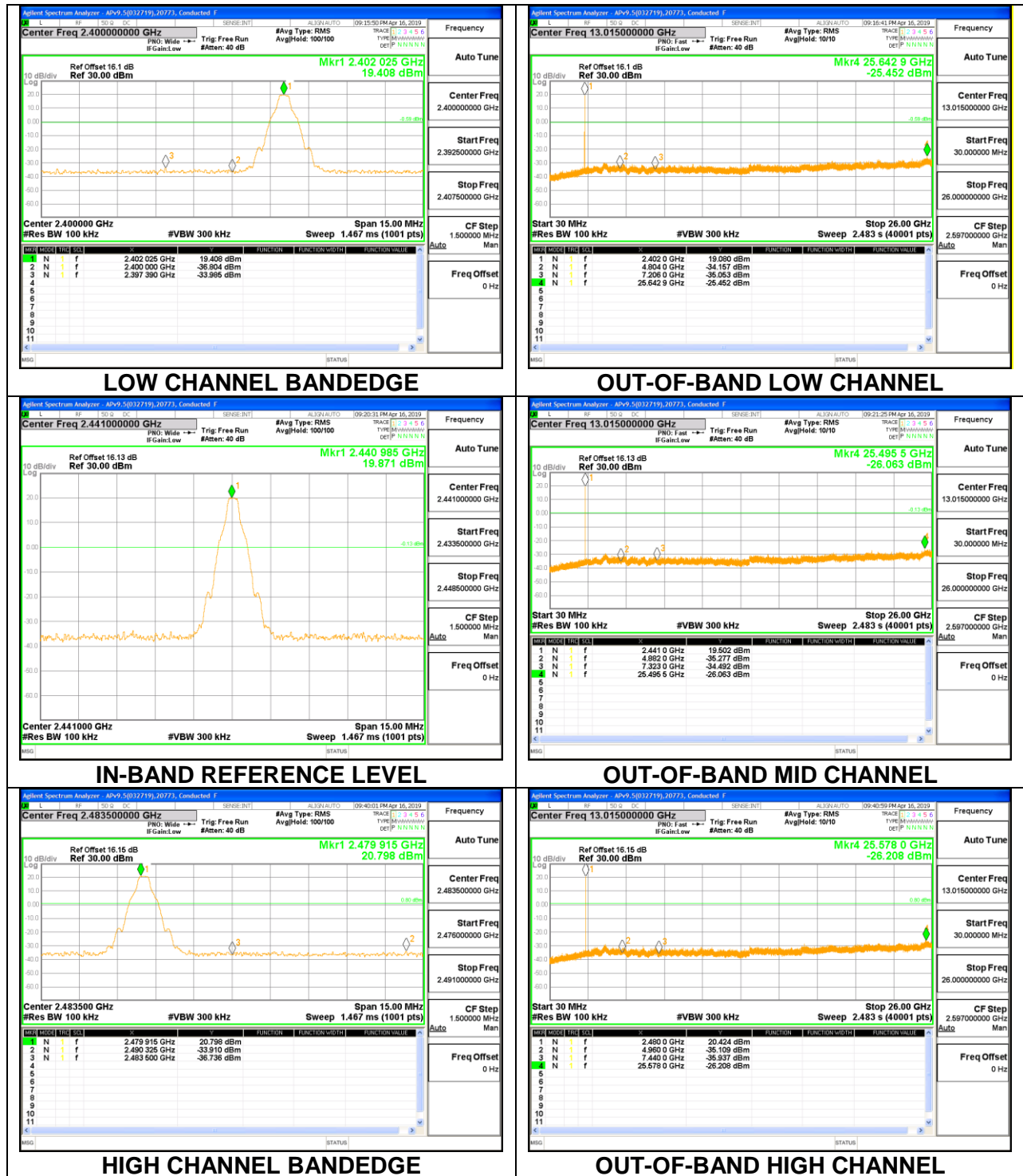
### Antenna 4 SPURIOUS EMISSIONS, NON-HOPPING



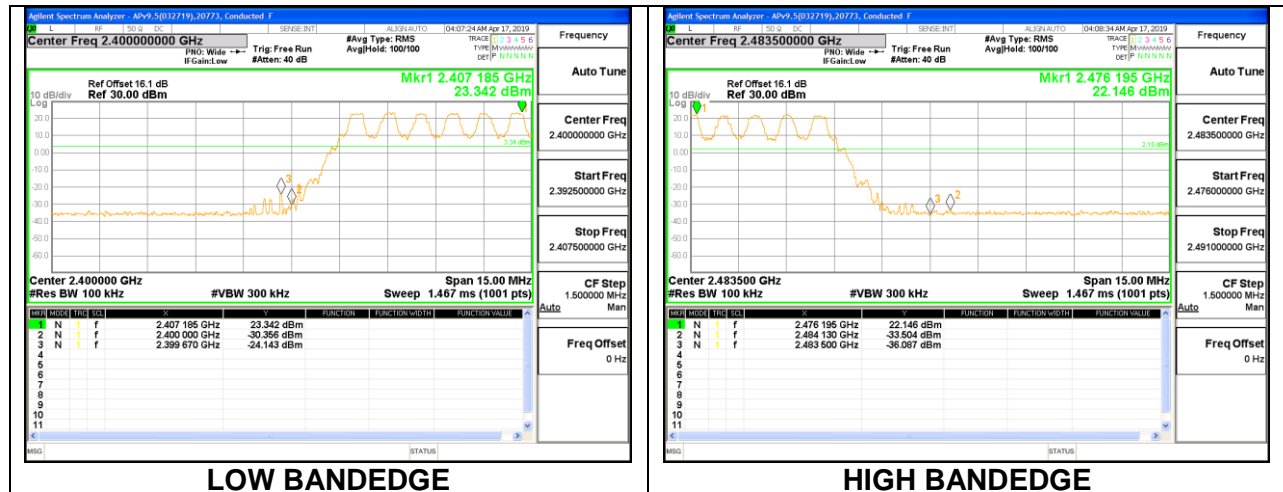
**Antenna 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



**Antenna 3 SPURIOUS EMISSIONS, NON-HOPPING**

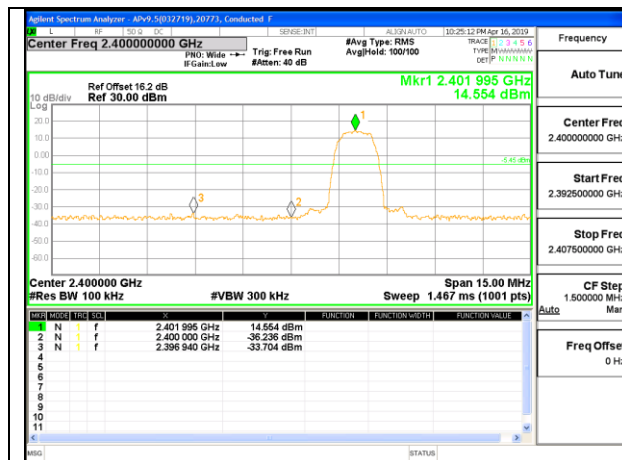


**Antenna 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

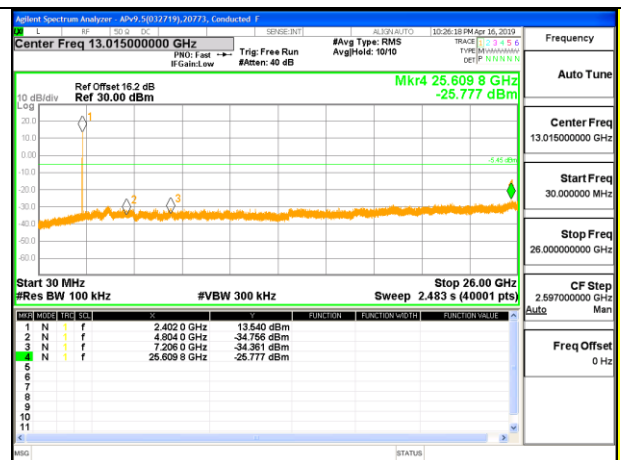


## 8.14.2. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

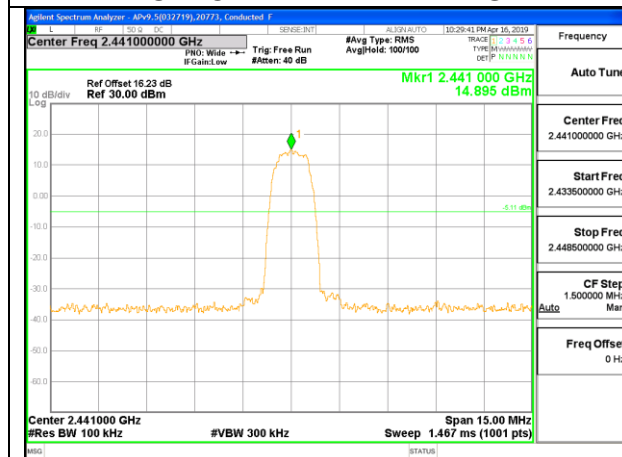
### Antenna 4 SPURIOUS EMISSIONS, NON-HOPPING



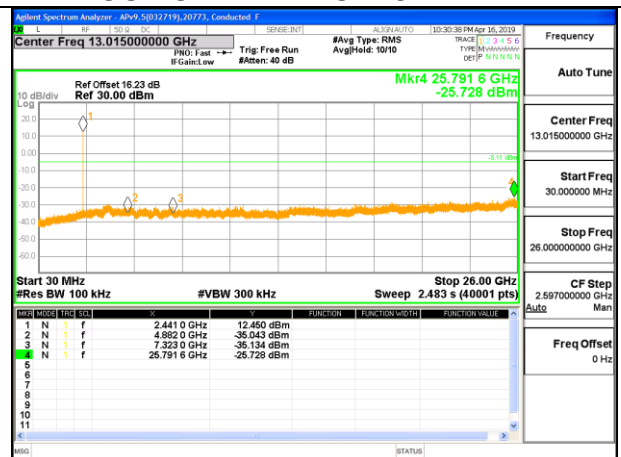
LOW CHANNEL BANDEDGE



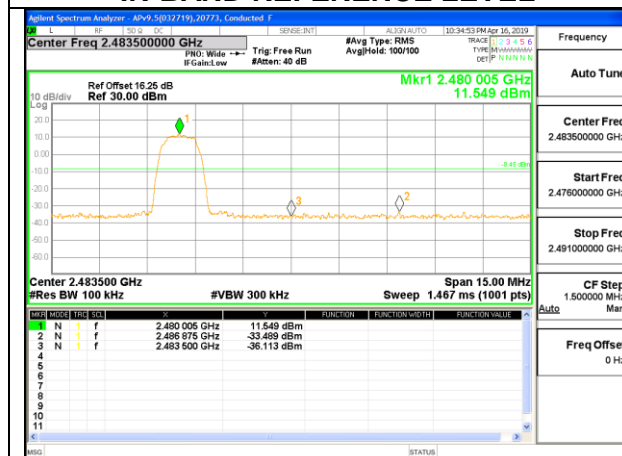
OUT-OF-BAND LOW CHANNEL



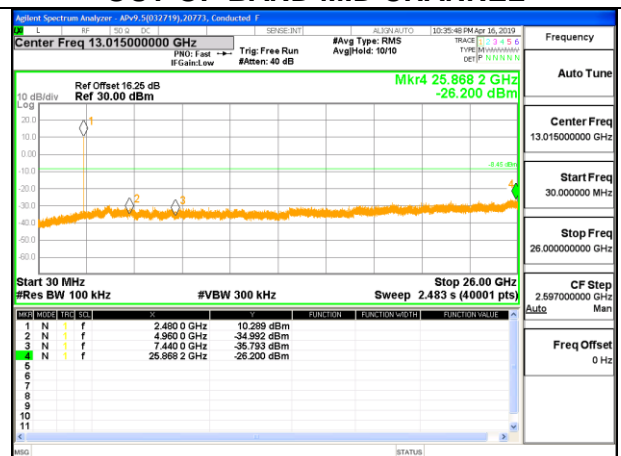
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

**Left Plot: LOW BANDEDGE**

Center Freq 2.400000000 GHz  
 Ref Offset 16.2 dB  
 Ref 30.00 dBm  
 Mkr1 2.406 180 GHz  
 17.023 dBm  
 Span 15.00 MHz  
 #Res BW 100 kHz  
 Sweep 1.467 ms (1001 pts)  
 #VBW 300 kHz  
 CF Step 1.5000000 MHz  
 Auto Man  
 Freq Offset 0 Hz

| Line | Freq (GHz) | Mag (dBm) |
|------|------------|-----------|
| 1    | 2.406 180  | 17.023    |
| 2    | 2.400 000  | -36.317   |
| 3    | 2.395 085  | -33.446   |

**Right Plot: HIGH BANDEDGE**

Center Freq 2.483500000 GHz  
 Ref Offset 16.2 dB  
 Ref 30.00 dBm  
 Mkr1 2.479 885 GHz  
 16.807 dBm  
 Span 15.00 MHz  
 #Res BW 100 kHz  
 Sweep 1.467 ms (1001 pts)  
 #VBW 300 kHz  
 CF Step 1.5000000 MHz  
 Auto Man  
 Freq Offset 0 Hz

| Line | Freq (GHz) | Mag (dBm) |
|------|------------|-----------|
| 1    | 2.479 885  | 16.807    |
| 2    | 2.490 715  | -32.482   |
| 3    | 2.483 500  | -36.196   |