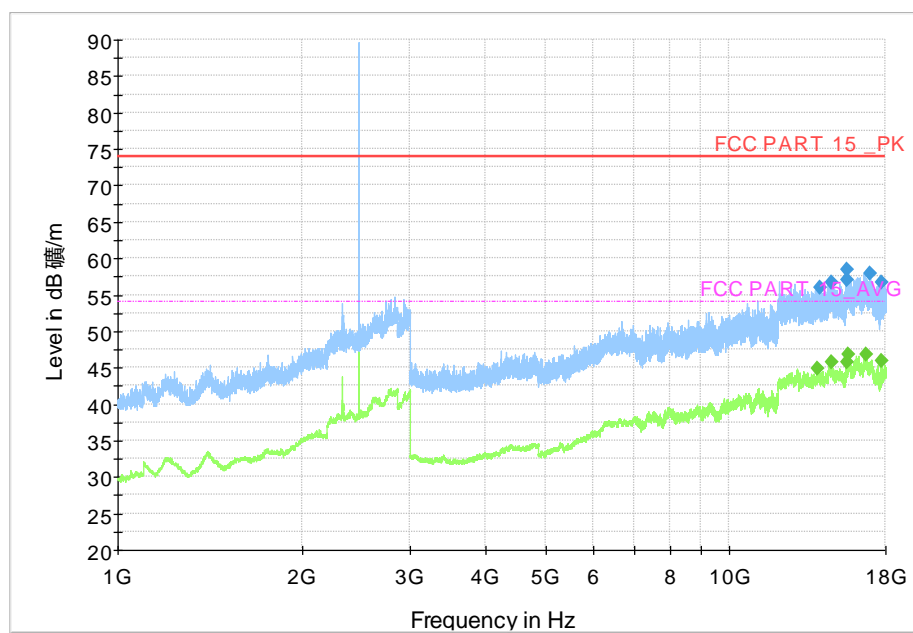


**Fig. 48 Radiated Spurious Emission ( $\pi/4$  DQPSK, Ch39, 1 GHz ~18 GHz)**



**Fig. 49 Radiated Spurious Emission ( $\pi/4$  DQPSK, Ch78, 1 GHz ~18 GHz)**

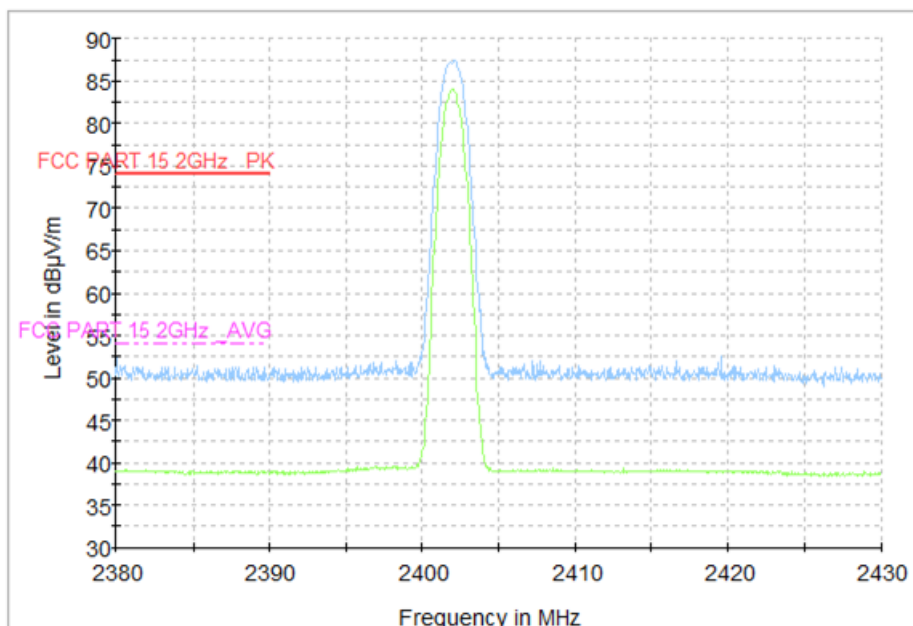


Fig. 50 Radiated Band Edges ( $\pi/4$  DQPSK, Ch0, 2380GHz~2450GHz)

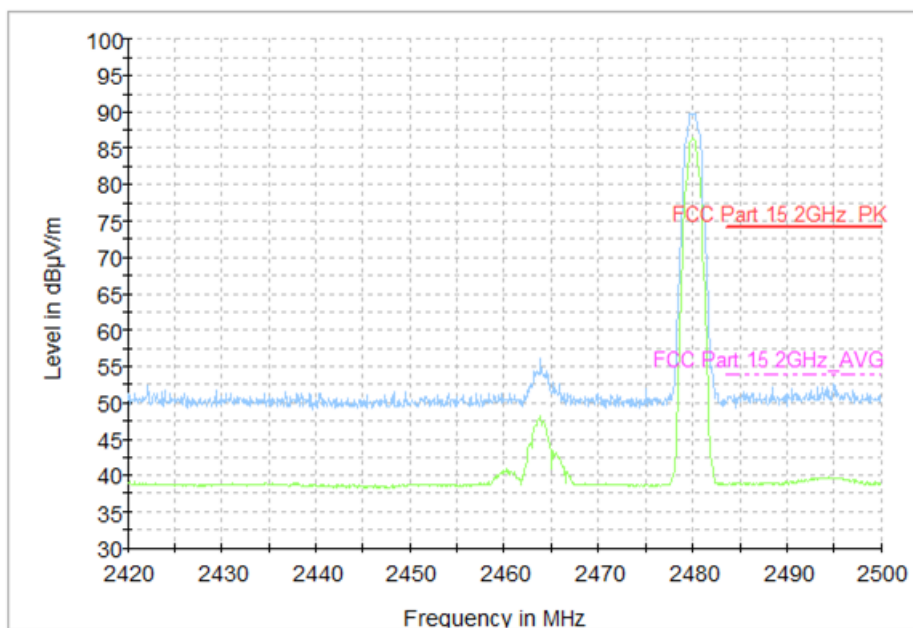
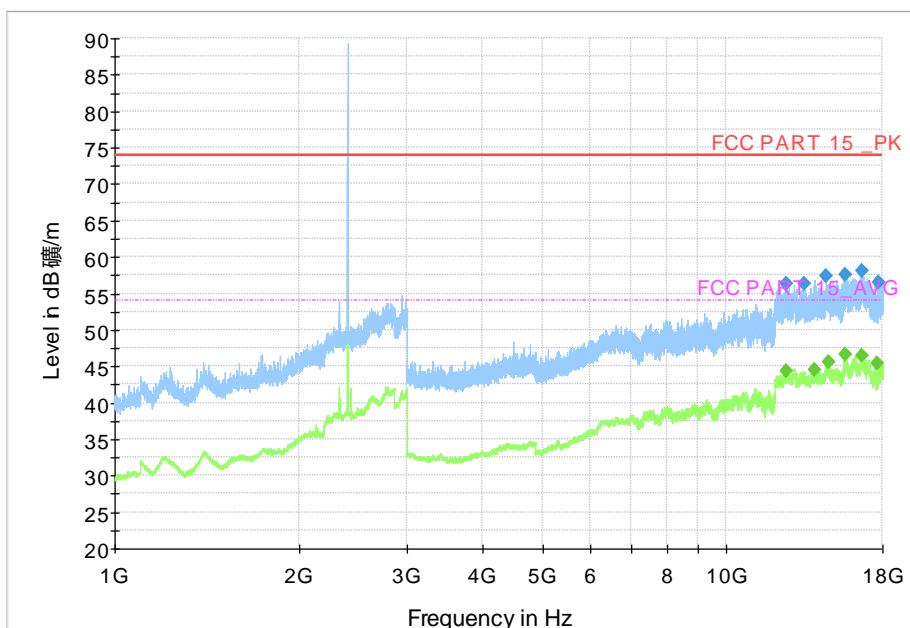
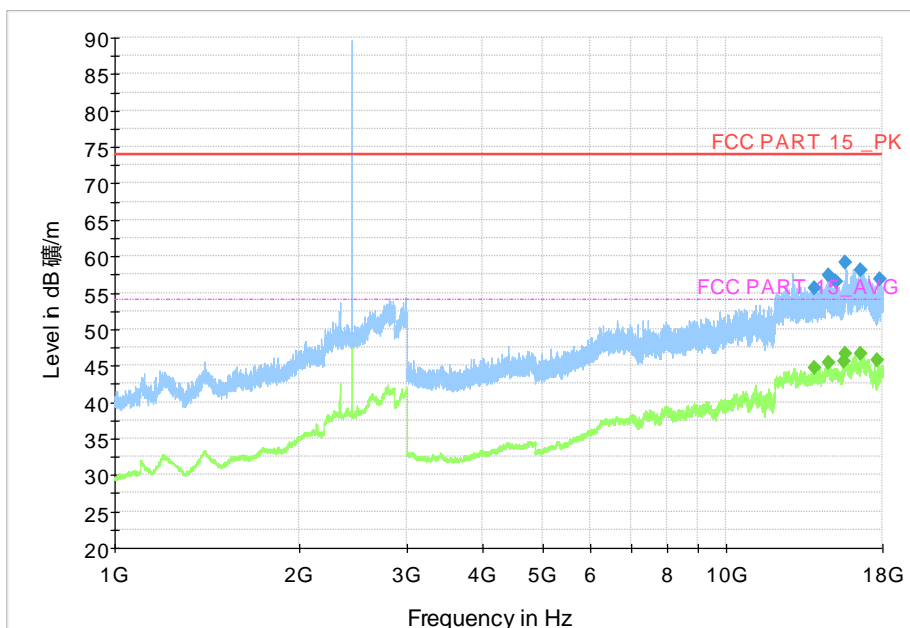


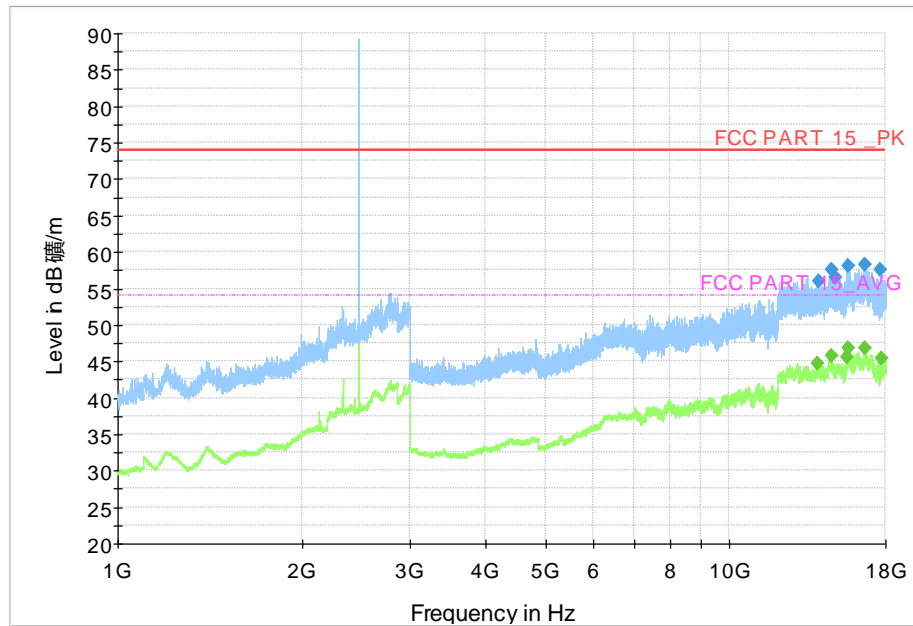
Fig. 51 Radiated Band Edges ( $\pi/4$  DQPSK, Ch78, 2450GHz~2500GHz)



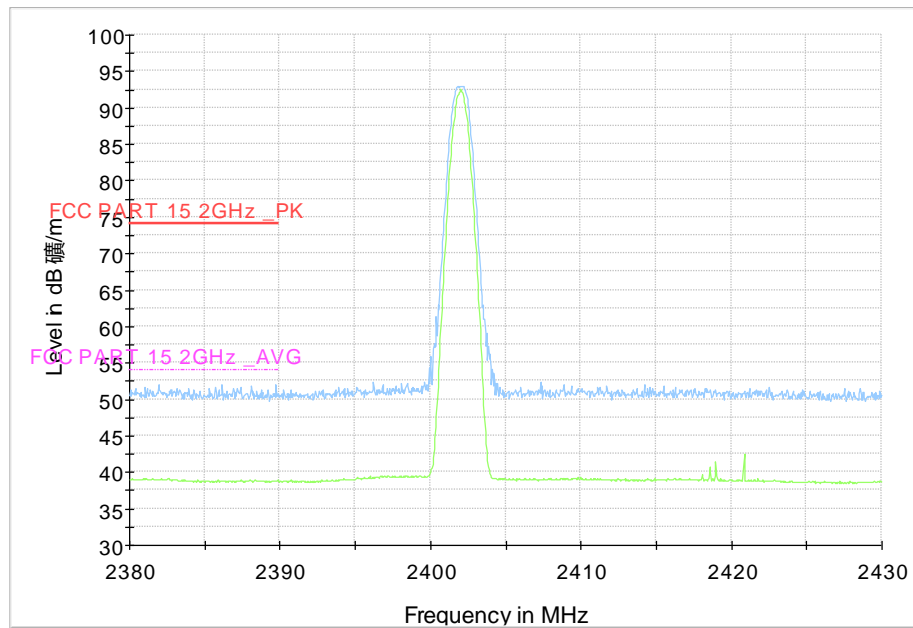
**Fig. 52 Radiated Spurious Emission (8DPSK, Ch0, 1 GHz ~18 GHz)**



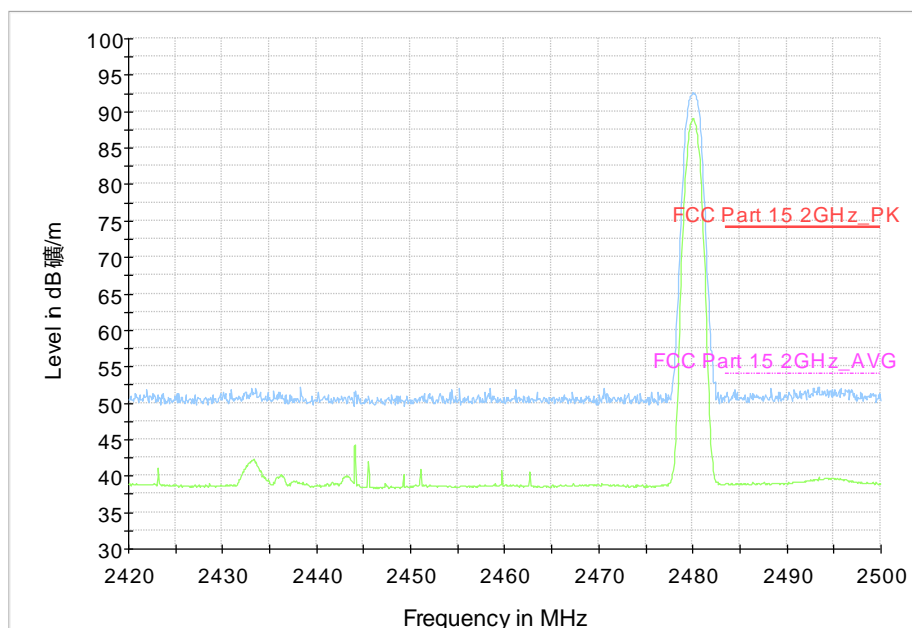
**Fig. 53 Radiated Spurious Emission (8DPSK, Ch39, 1 GHz ~18 GHz)**



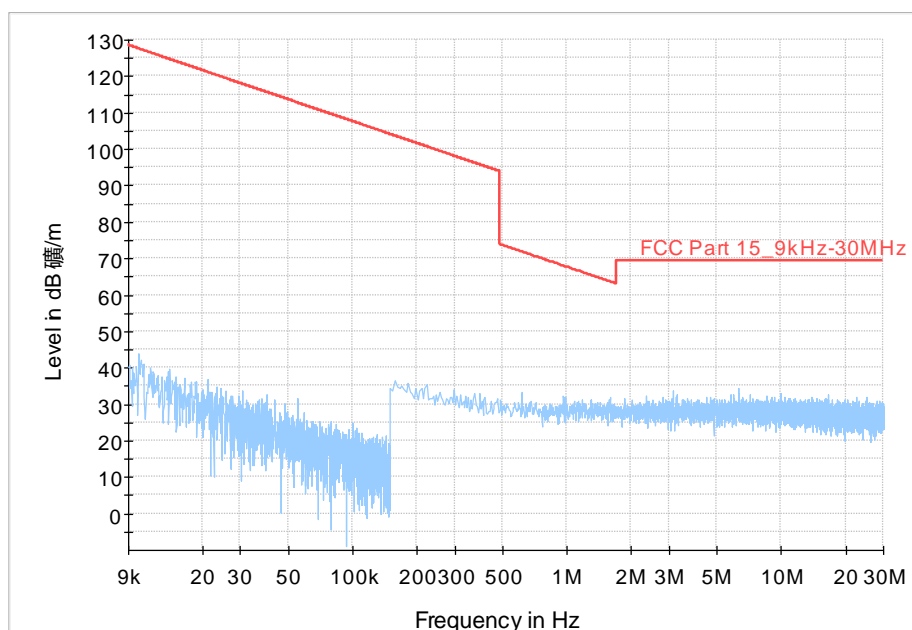
**Fig. 54 Radiated Spurious Emission (8DPSK, Ch78, 1 GHz ~18 GHz)**



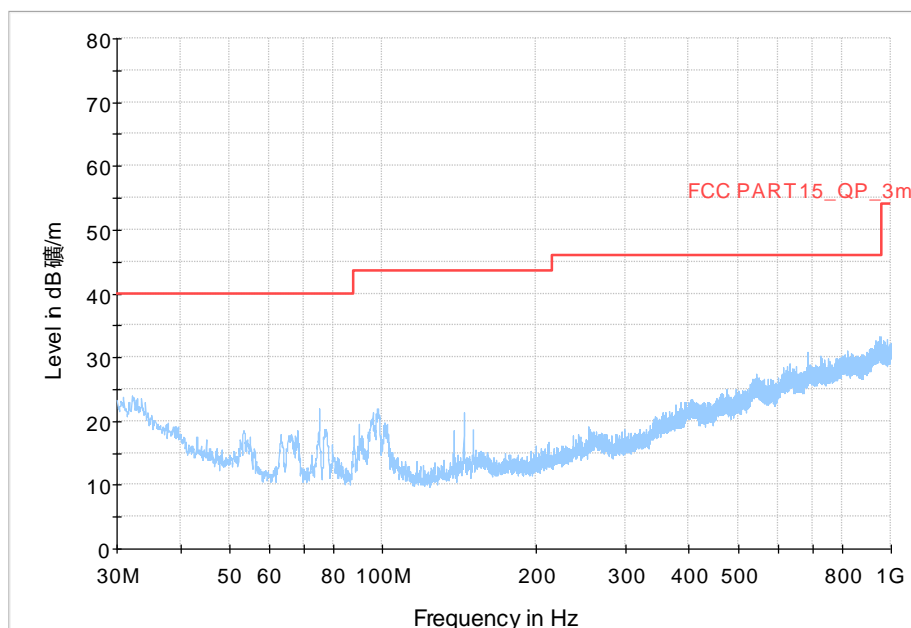
**Fig. 55 Radiated Band Edges (8DPSK, Ch0, 2380GHz~2450GHz)**



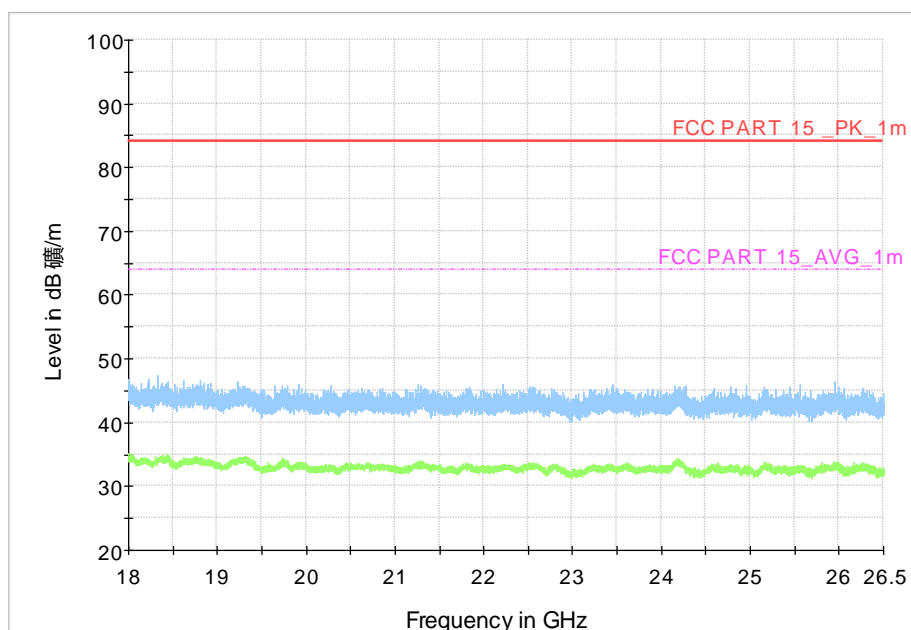
**Fig. 56 Radiated Band Edges (8DPSK, Ch78, 2450GHz~2500GHz)**



**Fig. 57 Radiated Spurious Emission (All Channels, 9 kHz ~30 MHz)**



**Fig. 58 Radiated Spurious Emission (All Channels, 30 MHz ~1 GHz)**



**Fig. 59 Radiated Spurious Emission (All Channels, 18 GHz ~26.5 GHz)**

## A.5 20dB Bandwidth

### Measurement Limit:

| Standard                   | Limit (kHz) |
|----------------------------|-------------|
| FCC 47 CFR Part 15.247 (a) | /           |

### Measurement Result:

| Mode          | Channel | 20dB Bandwidth<br>( KHz) |         | conclusion |
|---------------|---------|--------------------------|---------|------------|
| GFSK          | 0       | Fig.60                   | 936.75  | /          |
|               | 39      | Fig.61                   | 936.75  |            |
|               | 78      | Fig.62                   | 936.75  |            |
| $\pi/4$ DQPSK | 0       | Fig.63                   | 1277.25 | /          |
|               | 39      | Fig.64                   | 1284.00 |            |
|               | 78      | Fig.65                   | 1277.25 |            |
| 8DPSK         | 0       | Fig.66                   | 1290.75 | /          |
|               | 39      | Fig.67                   | 1265.25 |            |
|               | 78      | Fig.68                   | 1264.50 |            |

See below for test graphs.

Conclusion: PASS

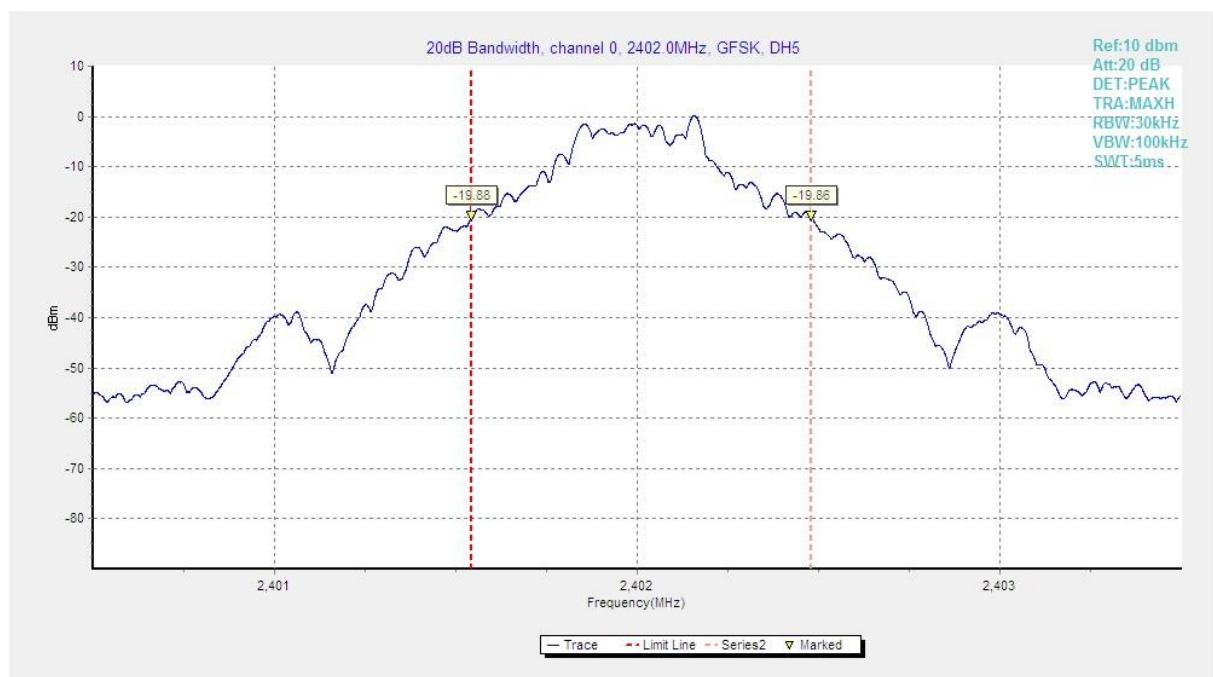
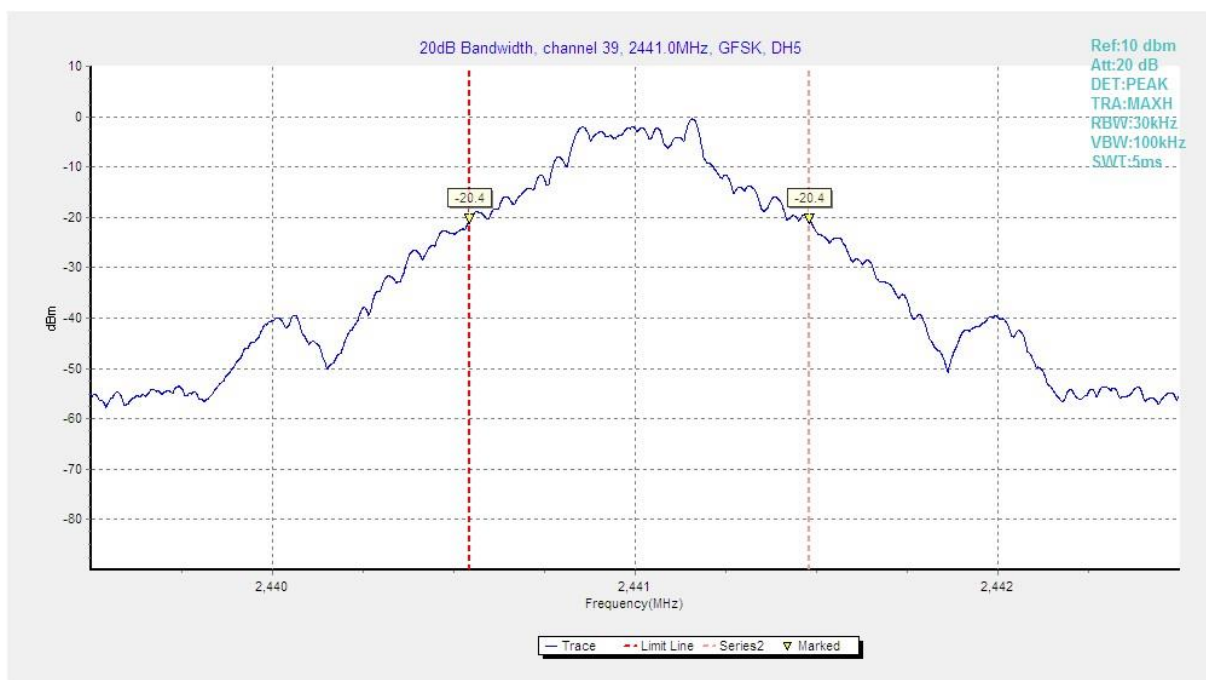
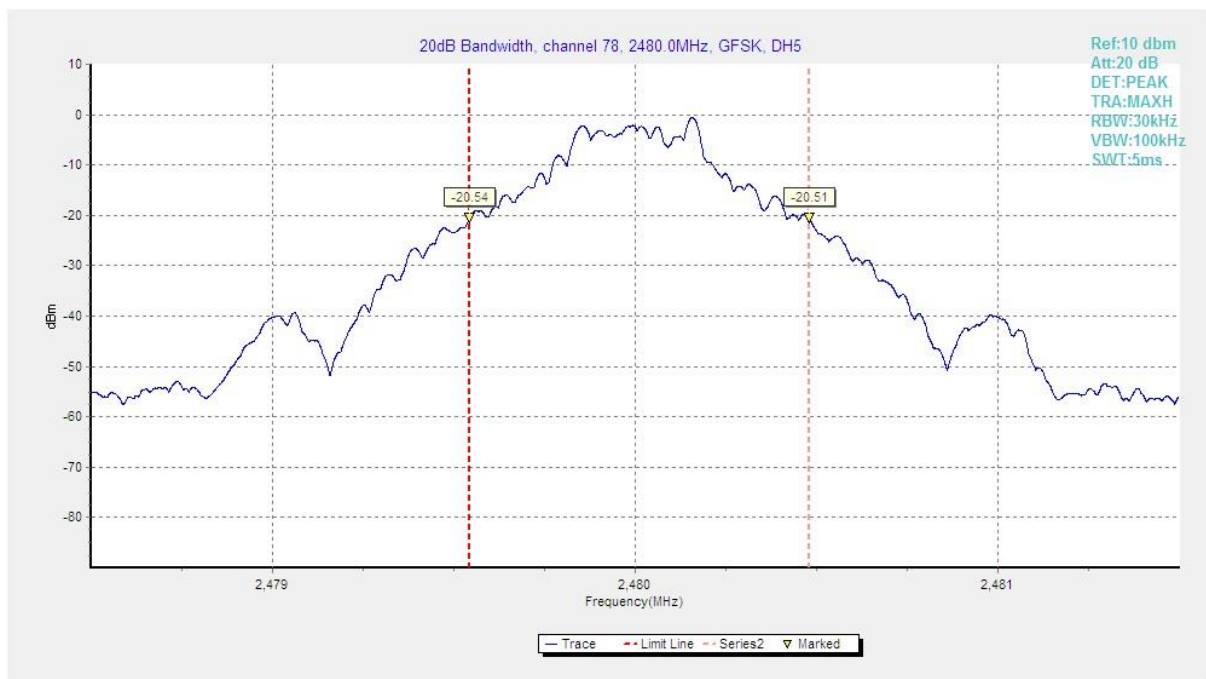


Fig. 60 20dB Bandwidth (GFSK, Ch 0)

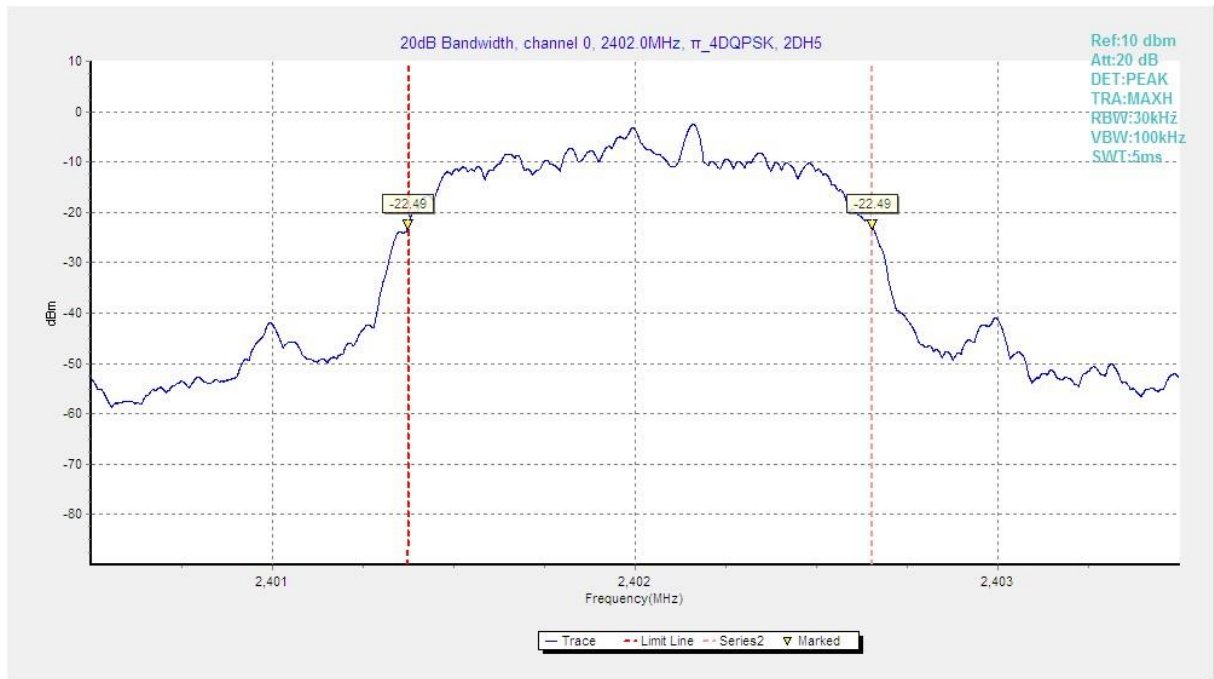


**Fig. 61 20dB Bandwidth (GFSK, Ch 39)**



**Fig. 62 20dB Bandwidth (GFSK, Ch 78)**





**Fig. 63 20dB Bandwidth ( $\pi$ /4 DQPSK, Ch 0)**



**Fig. 64 20dB Bandwidth ( $\pi$ /4 DQPSK, Ch 39)**

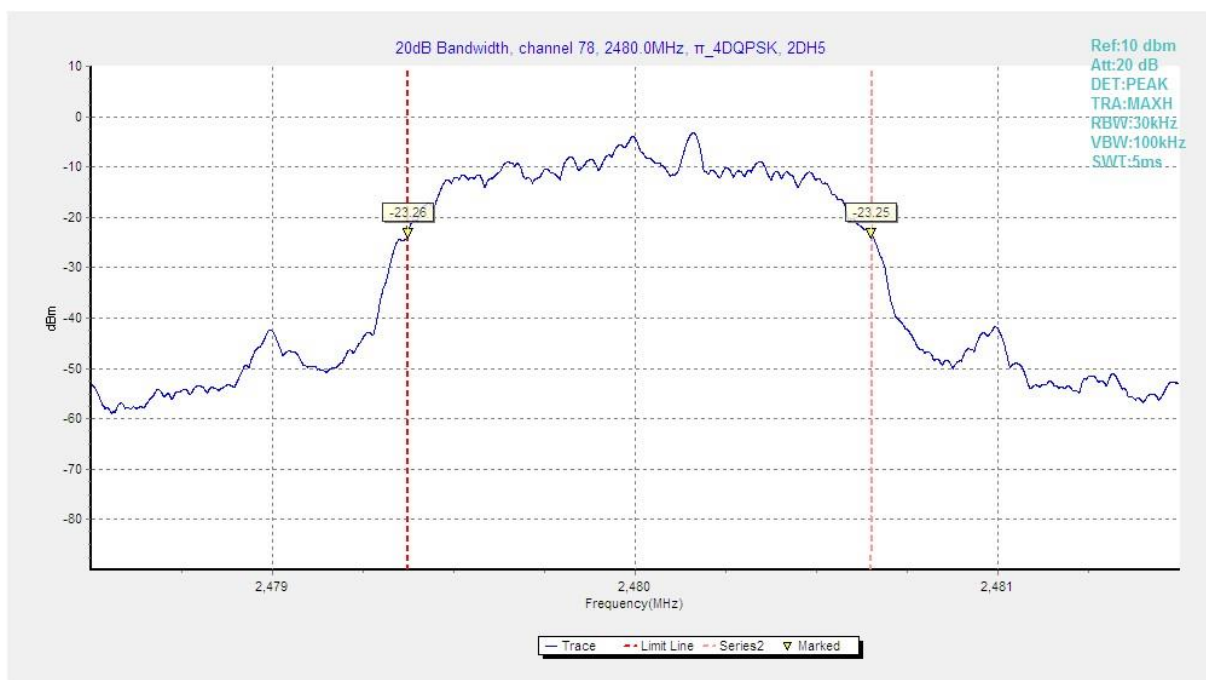


Fig. 65 20dB Bandwidth ( $\pi/4$  DQPSK, Ch 78)

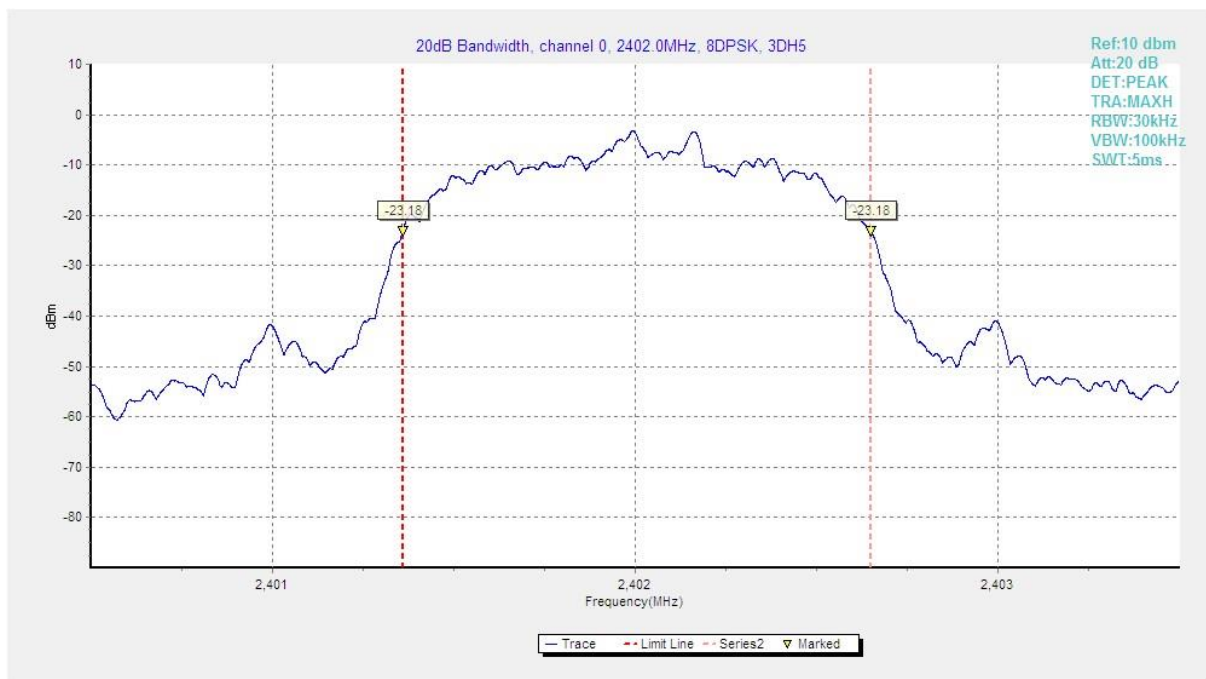


Fig. 66 20dB Bandwidth (8DPSK, Ch 0)

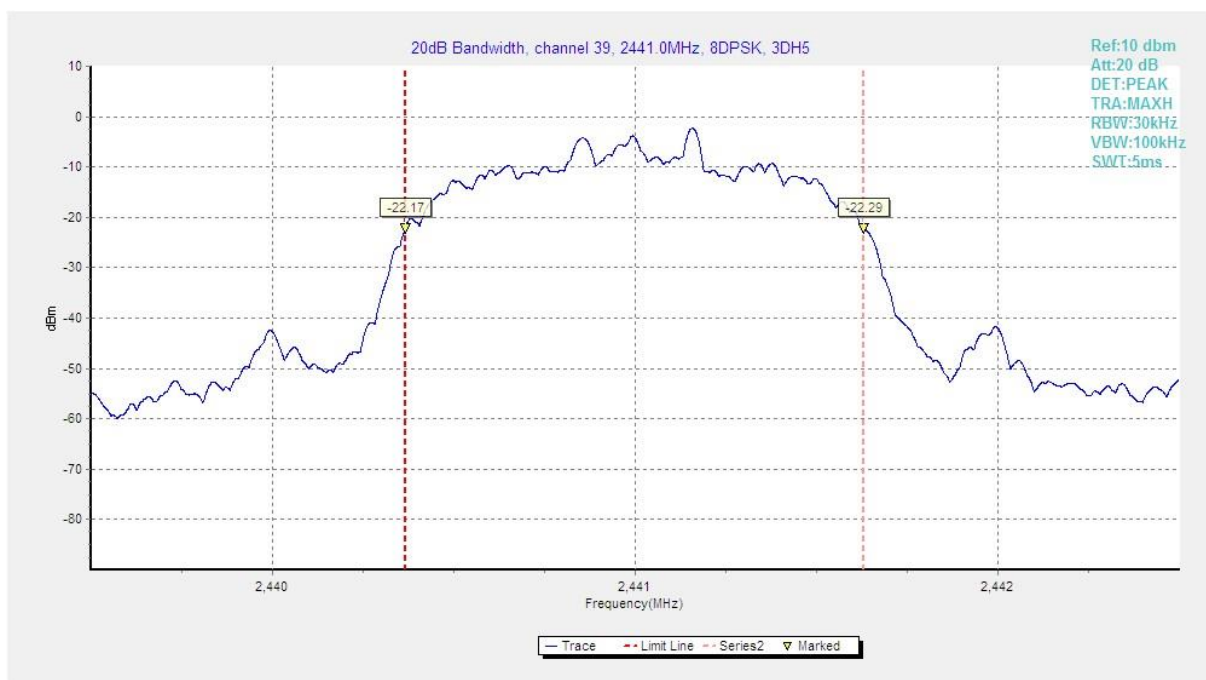


Fig. 67 20dB Bandwidth (8DPSK, Ch 39)

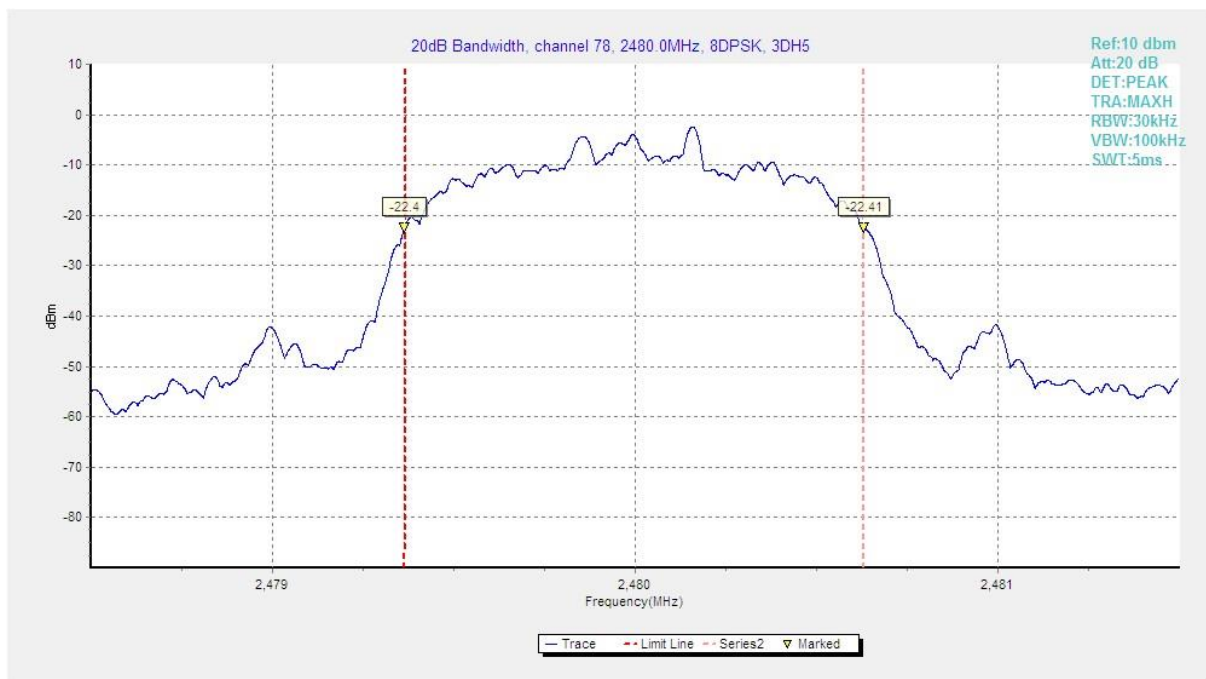


Fig. 68 20dB Bandwidth (8DPSK, Ch 78)

## A.6 Time of Occupancy (Dwell Time)

### Measurement Limit:

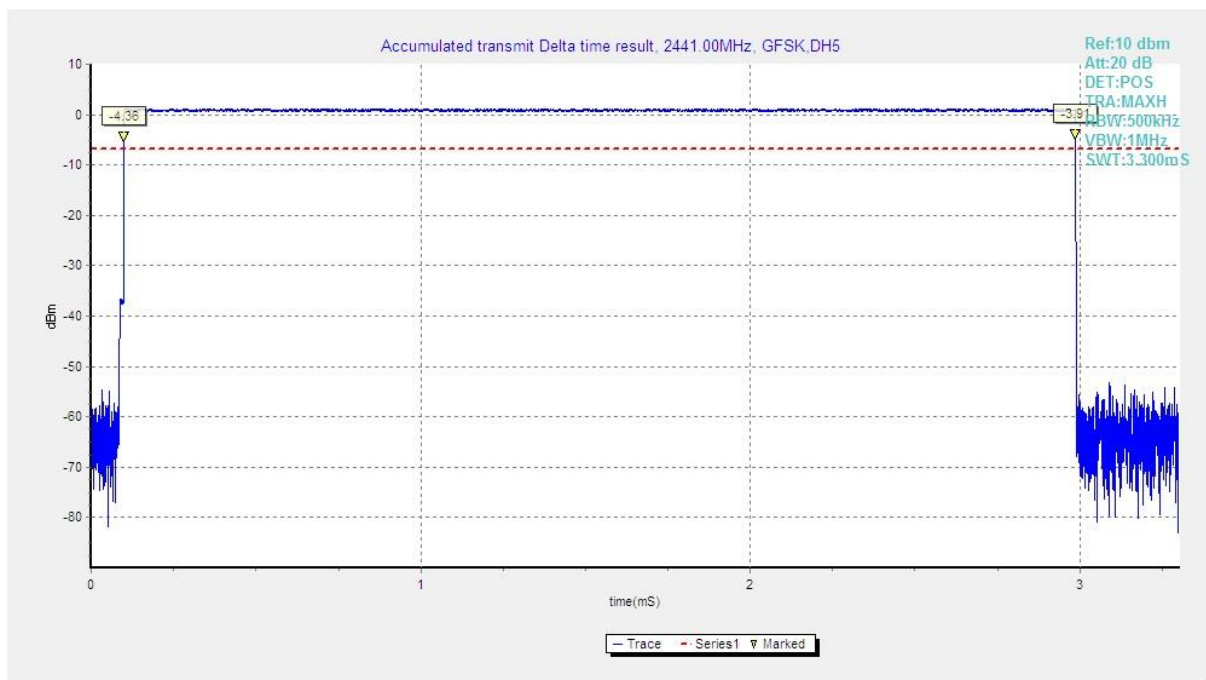
| Standard                  | Limit    |
|---------------------------|----------|
| FCC 47 CFR Part 15.247(a) | < 400 ms |

### Measurement Results:

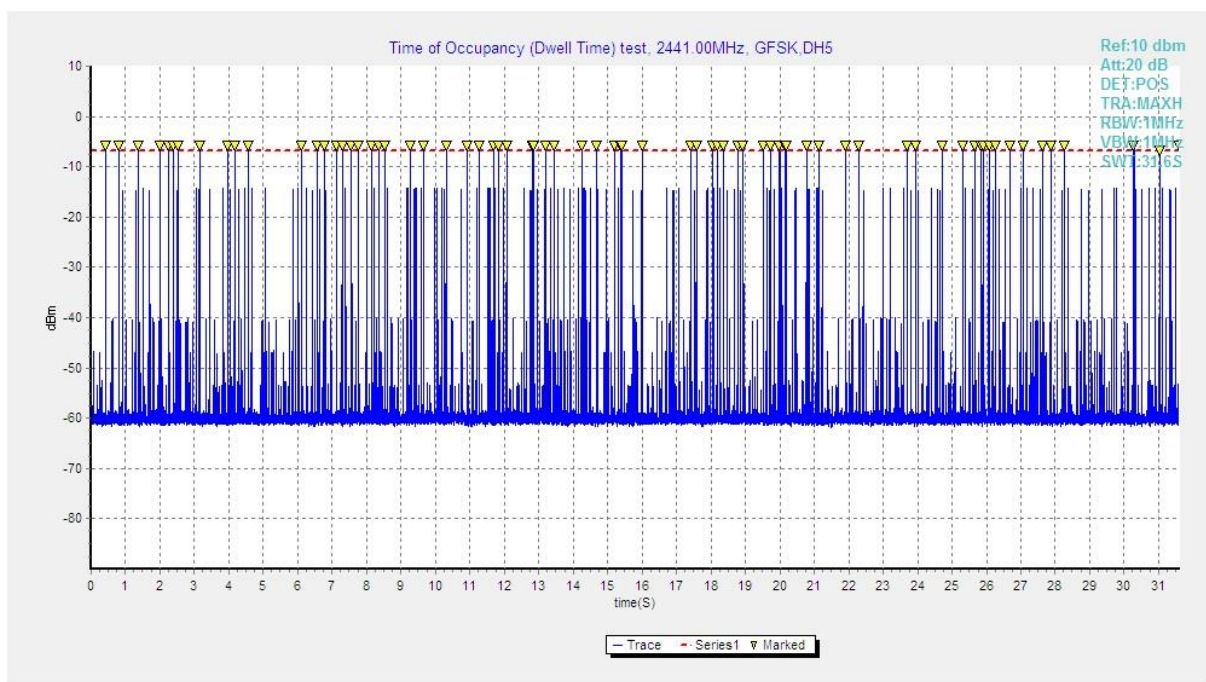
| Mode          | Channel | Packet | Dwell Time(ms) |        | Conclusion |
|---------------|---------|--------|----------------|--------|------------|
| GFSK          | 39      | DH5    | Fig.69         | 207.76 | <b>P</b>   |
|               |         |        | Fig.70         |        |            |
| $\pi/4$ DQPSK | 39      | 2-DH5  | Fig.71         | 207.89 | <b>P</b>   |
|               |         |        | Fig.72         |        |            |
| 8DPSK         | 39      | 3-DH5  | Fig.73         | 190.69 | <b>P</b>   |
|               |         |        | Fig.74         |        |            |

See below for test graphs.

**Conclusion: Pass**



**Fig. 69 Time of Occupancy(Dwell Time) (GFSK, Ch39)**



**Fig. 70 Time of Occupancy(Dwell Time) (GFSK, Ch39)**



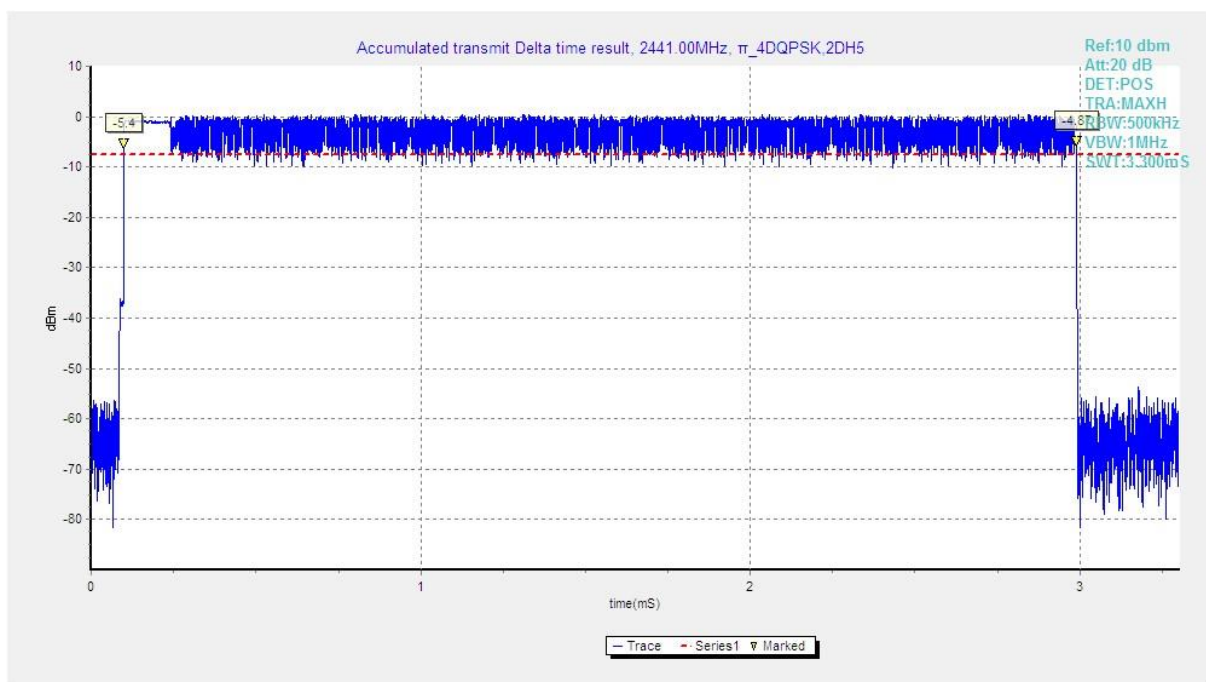


Fig. 71 Time of Occupancy(Dwell Time) ( $\pi/4$  DQPSK, Ch39)

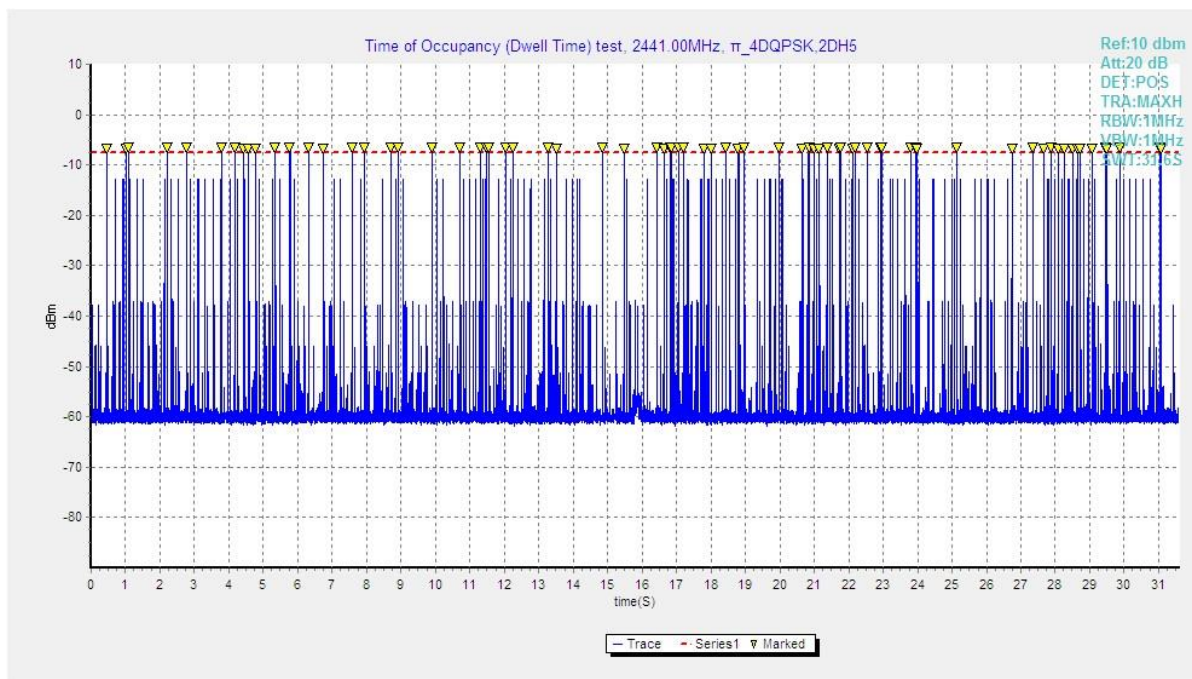
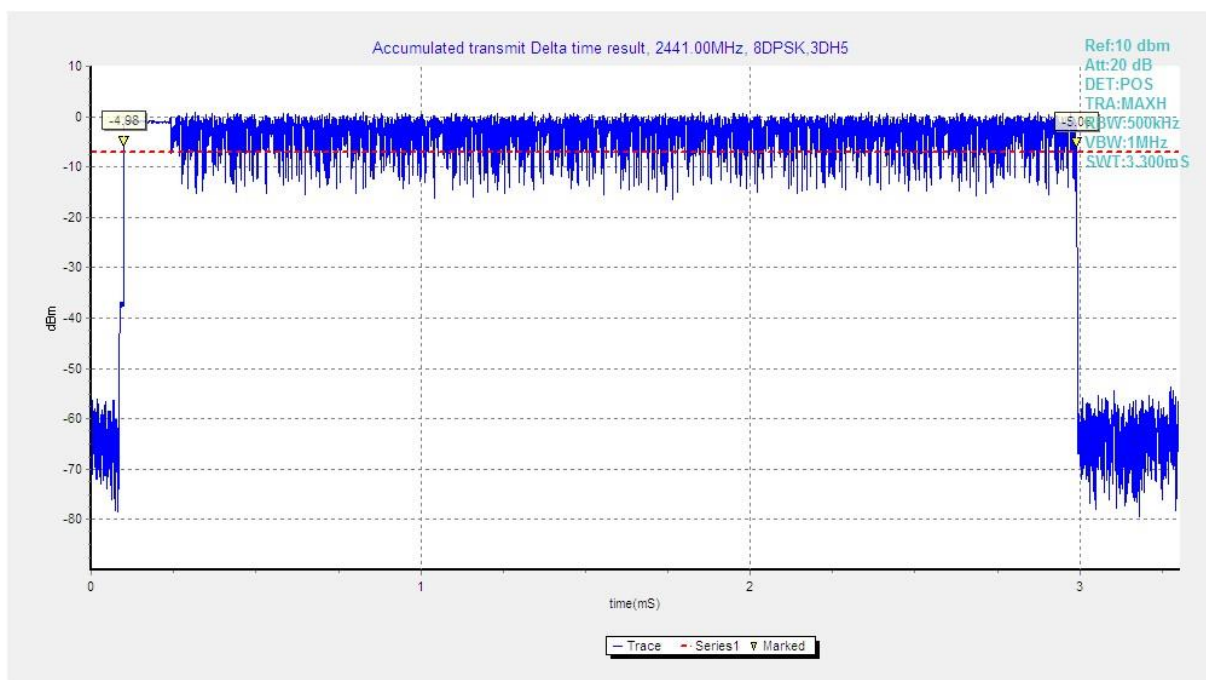
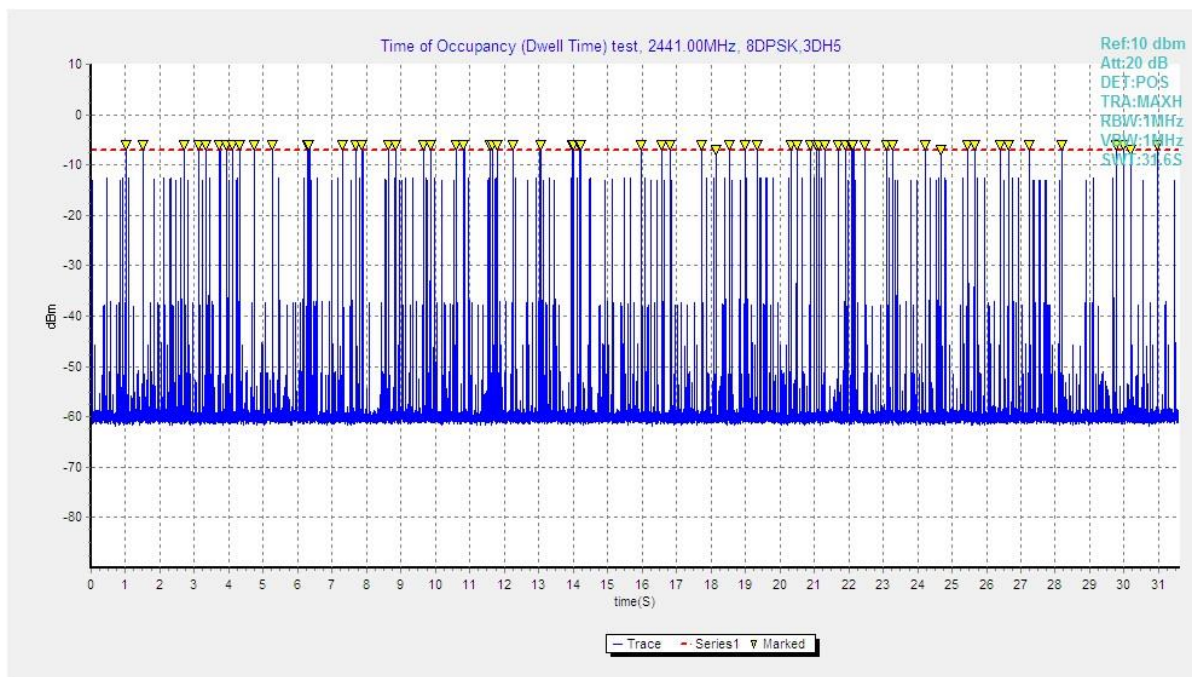


Fig. 72 Time of Occupancy(Dwell Time) ( $\pi/4$  DQPSK, Ch39)



**Fig. 73 Time of Occupancy(Dwell Time) (8DPSK, Ch39)**



**Fig. 74 Time of Occupancy(Dwell Time) (8DPSK, Ch39)**

## A.7 Number of Hopping Channels

### Measurement Limit:

| Standard                  | Limit                                |
|---------------------------|--------------------------------------|
| FCC 47 CFR Part 15.247(a) | At least 15 non-overlapping channels |

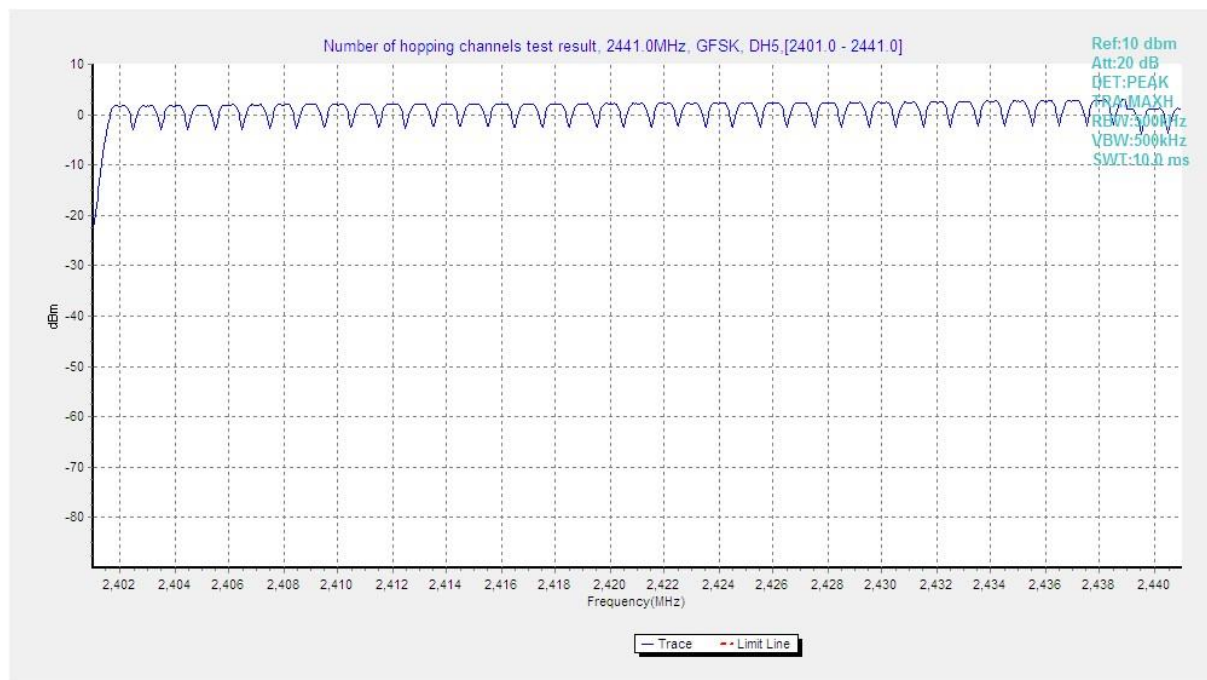
### Measurement Results:

| Mode          | Packet | Number of hopping |        | Test result | Conclusion |
|---------------|--------|-------------------|--------|-------------|------------|
| GFSK          | DH5    | Fig.75            | Fig.76 | 79          | <b>P</b>   |
| $\pi/4$ DQPSK | 2-DH5  | Fig.77            | Fig.78 | 79          | <b>P</b>   |
| 8DPSK         | 3-DH5  | Fig.79            | Fig.80 | 79          | <b>P</b>   |

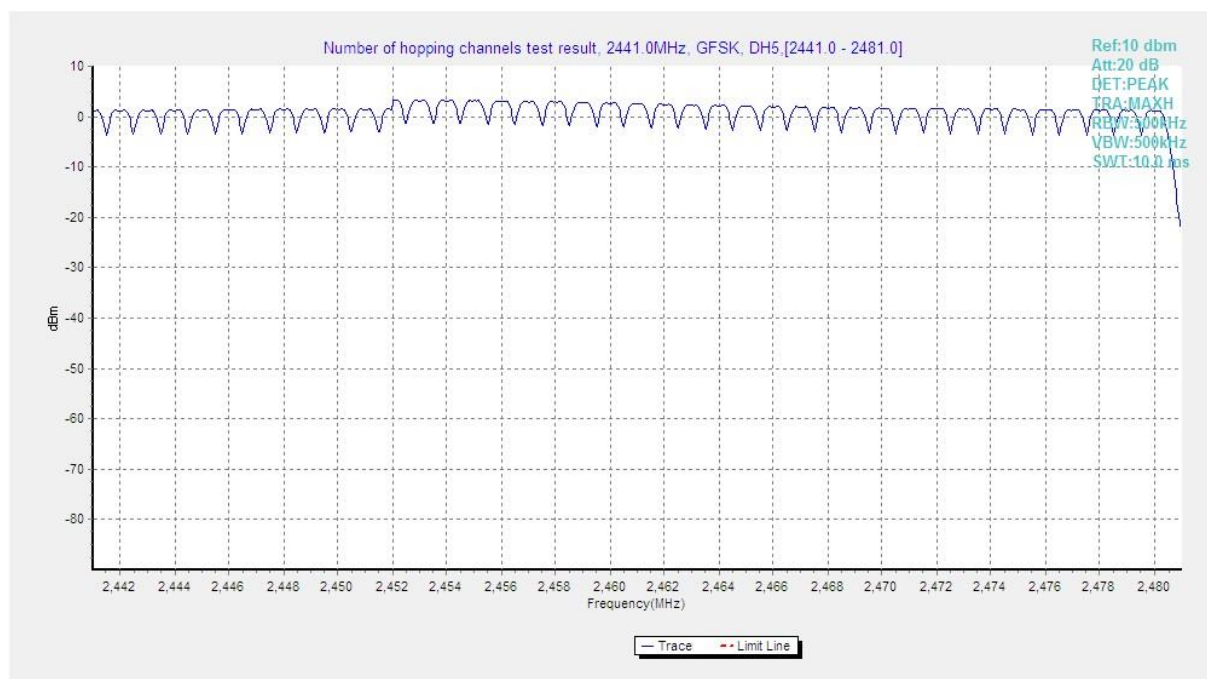
See below for test graphs.

**Conclusion: Pass**

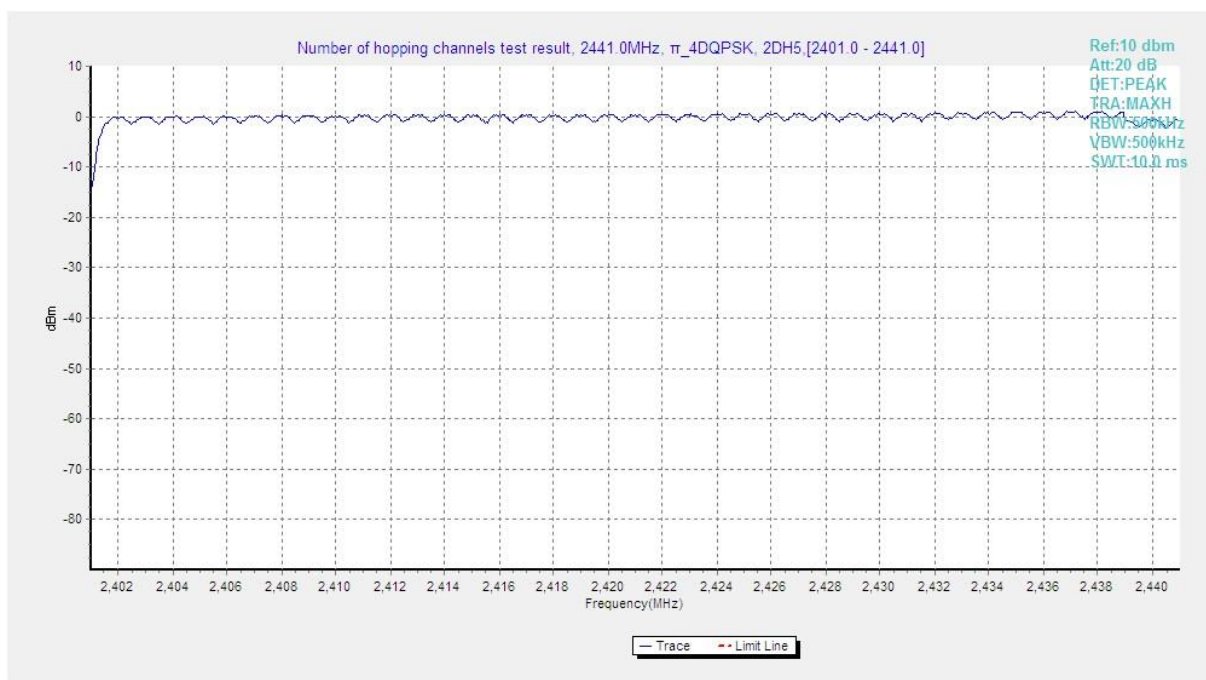




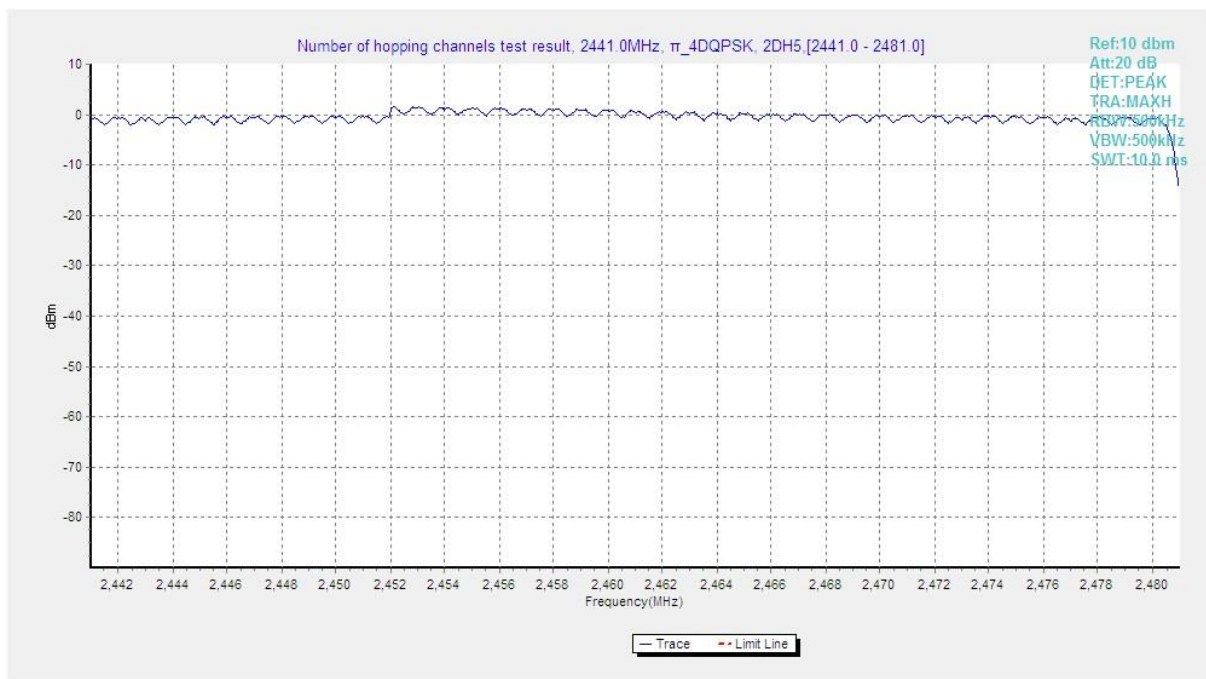
**Fig. 75 Hopping channel ch0~39 (GFSK, Ch39)**



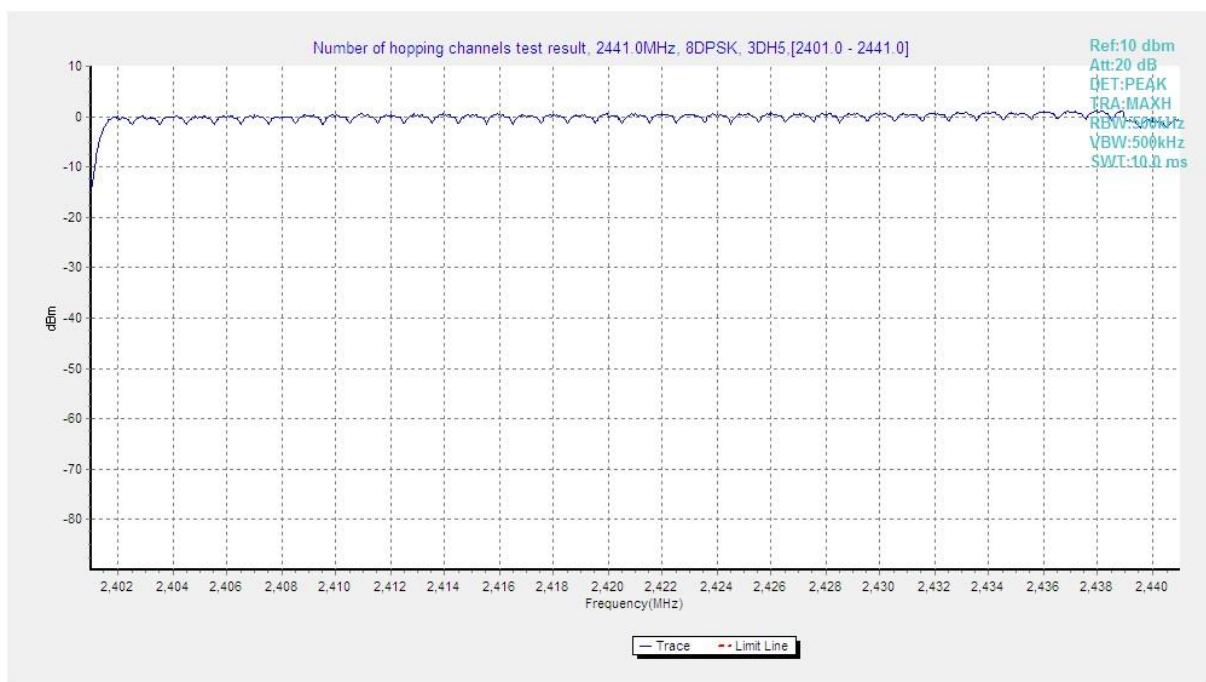
**Fig. 76 Hopping channel ch39~78 (GFSK, Ch39)**



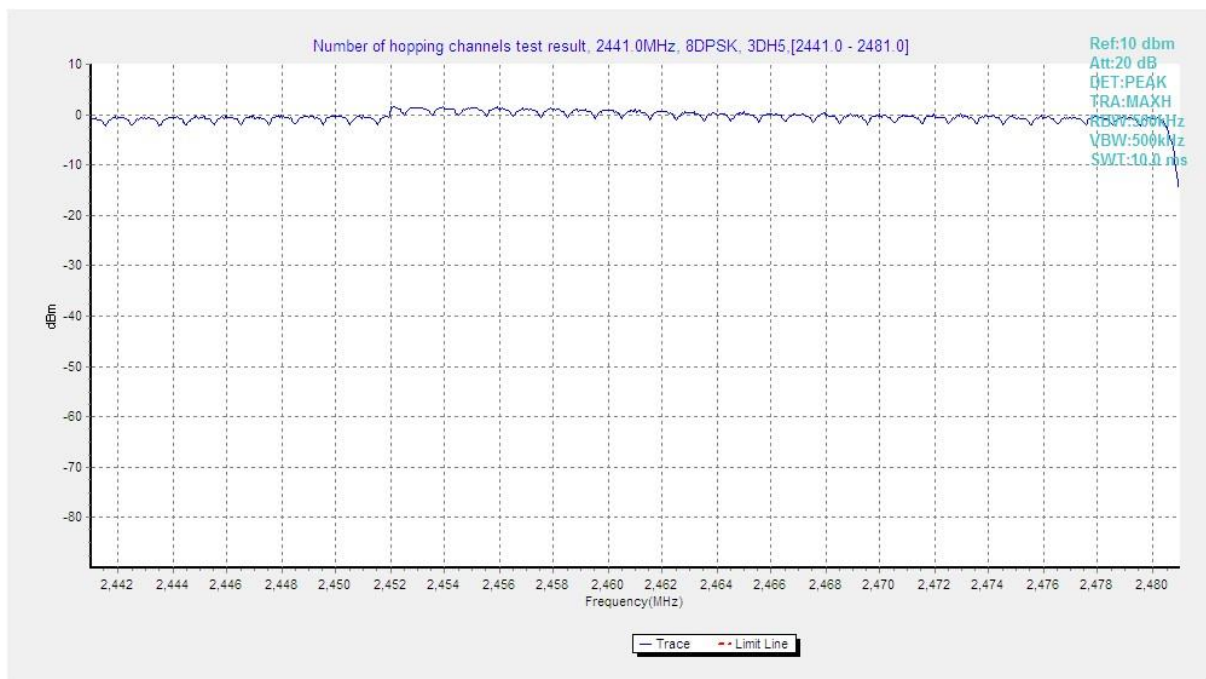
**Fig. 77 Hopping channel ch0~39 ( $\pi/4$  DQPSK, Ch39)**



**Fig. 78 Hopping channel ch39~78 ( $\pi/4$  DQPSK, Ch39)**



**Fig. 79 Hopping channel ch0~39 (8DPSK, Ch39)**



**Fig. 80 Hopping channel ch39~78 (8DPSK, Ch39)**

## A.8 Carrier Frequency Separation

### Measurement Limit:

| Standard                  | Limit  |
|---------------------------|--|
| FCC 47 CFR Part 15.247(a) | By a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater |

### Measurement Results:

| Mode          | Channel | Packet | Separation of hopping channels | Test result (KHz) | Conclusion |
|---------------|---------|--------|--------------------------------|-------------------|------------|
| GFSK          | 39      | DH5    | Fig.81                         | 995.25            | <b>P</b>   |
| $\pi/4$ DQPSK | 39      | 2-DH5  | Fig.82                         | 1019.25           | <b>P</b>   |
| 8DPSK         | 39      | 3-DH5  | Fig.83                         | 996.00            | <b>P</b>   |

See below for test graphs.

Conclusion: Pass

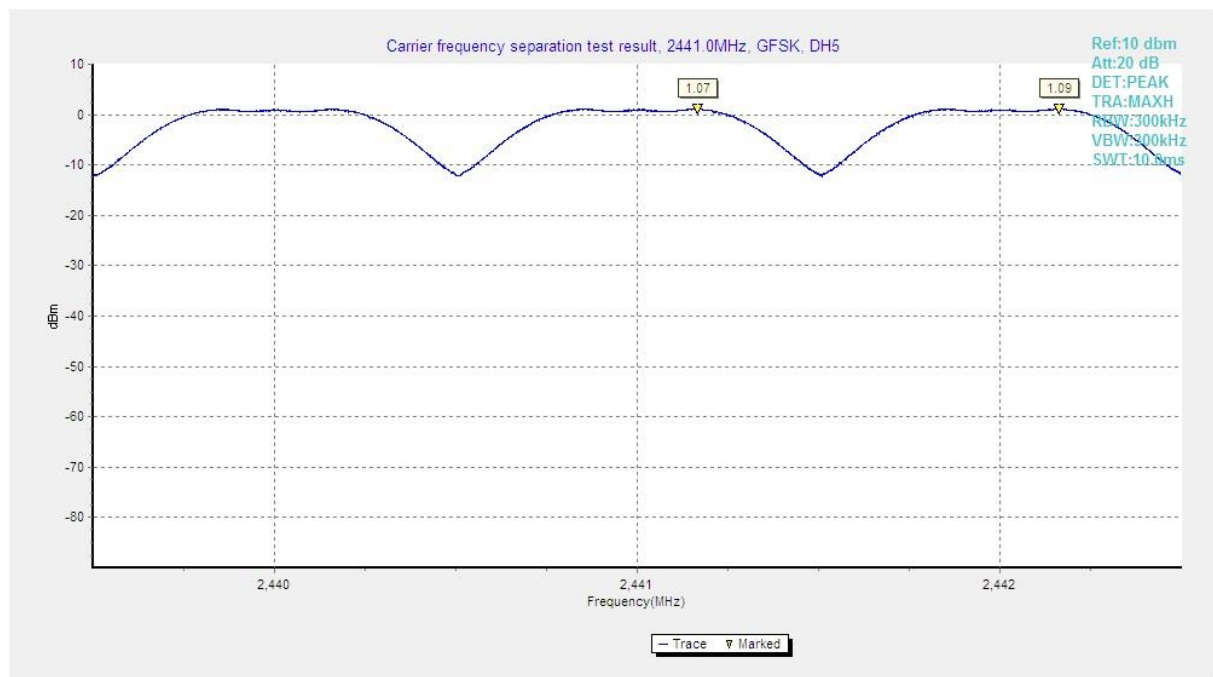
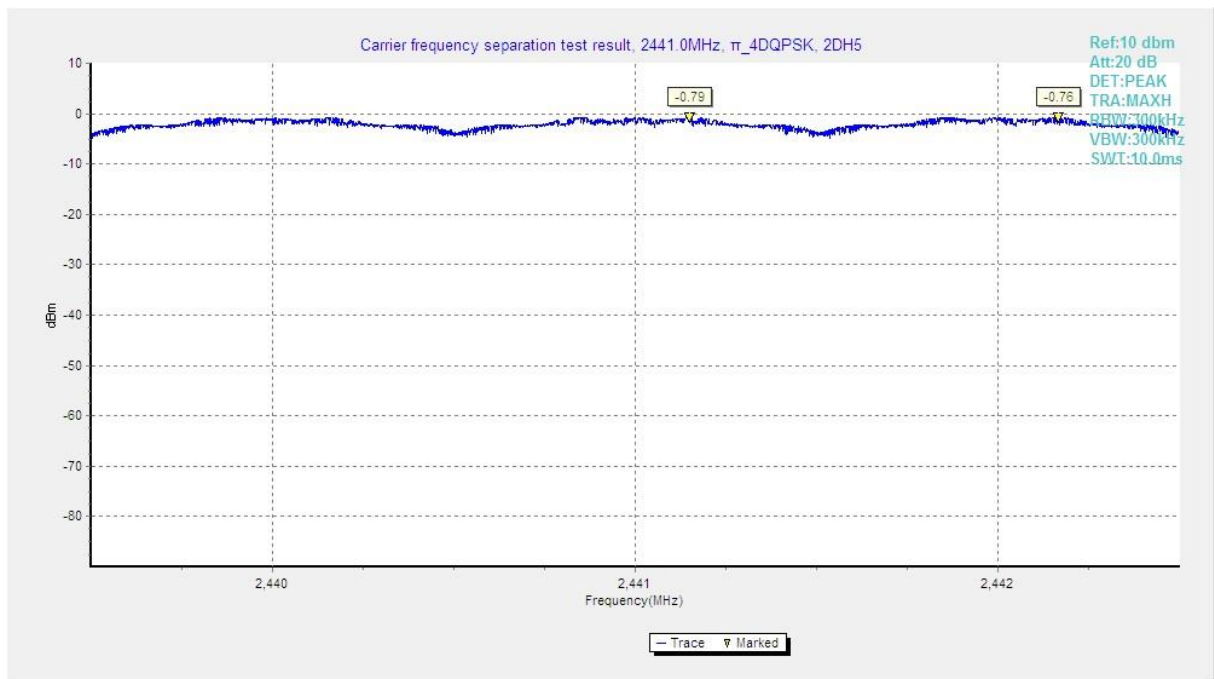
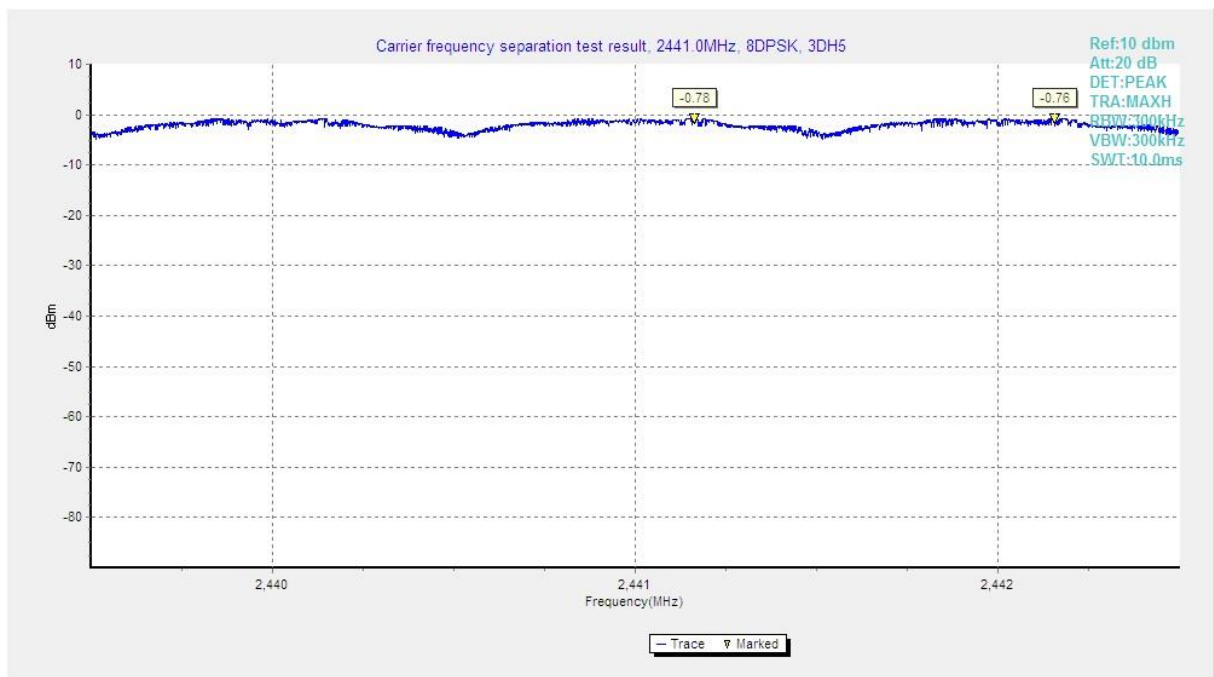


Fig. 81 Carrier Frequency Separation (GFSK, Ch39)



**Fig. 82 Carrier Frequency Separation ( $\pi/4$  DQPSK, Ch39)**



**Fig. 83 Carrier Frequency Separation (8DPSK, Ch39)**

## A.9 AC Power line Conducted Emission

### Test Condition:

| Voltage (V) | Frequency (Hz) |
|-------------|----------------|
| 120         | 60             |

### Measurement Result and limit:

BT (Quasi-peak Limit)

| Frequency range<br>(MHz) | Quasi-peak<br>Limit (dB $\mu$ V) | Result (dB $\mu$ V) |        | Conclusion |
|--------------------------|----------------------------------|---------------------|--------|------------|
|                          |                                  | Traffic             | Idle   |            |
| 0.15 to 0.5              | 66 to 56                         | Fig.93              | Fig.94 | <b>P</b>   |
| 0.5 to 5                 | 56                               |                     |        |            |
| 5 to 30                  | 60                               |                     |        |            |

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

BT (Average Limit)

| Frequency range<br>(MHz) | Average-peak<br>Limit (dB $\mu$ V) | Result (dB $\mu$ V) |        | Conclusion |
|--------------------------|------------------------------------|---------------------|--------|------------|
|                          |                                    | Traffic             | Idle   |            |
| 0.15 to 0.5              | 56 to 46                           | Fig 93              | Fig 94 | <b>P</b>   |
| 0.5 to 5                 | 46                                 |                     |        |            |
| 5 to 30                  | 50                                 |                     |        |            |

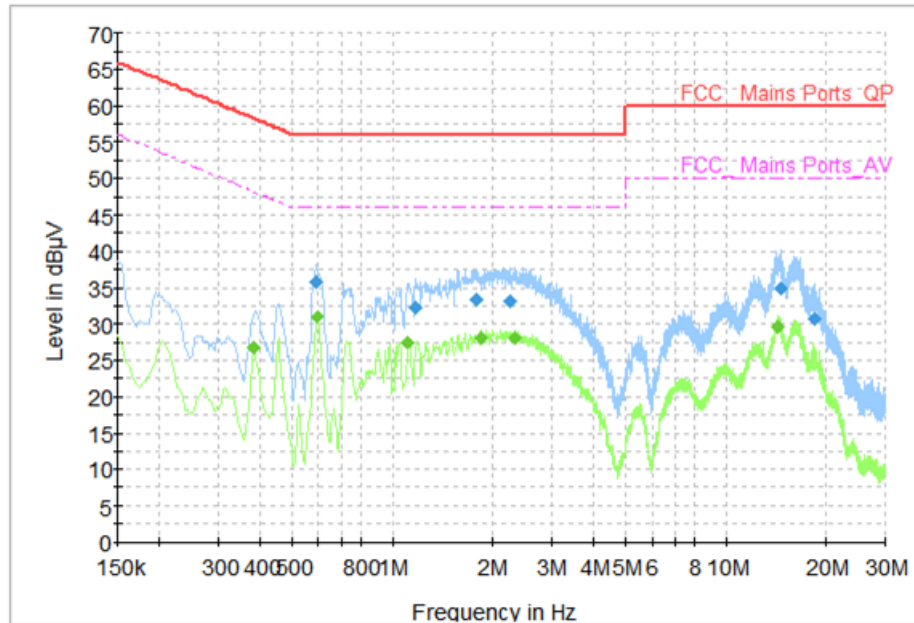
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

**Note:** The measurement results include the L1 and N measurements.

See below for test graphs.

**Conclusion: Pass**





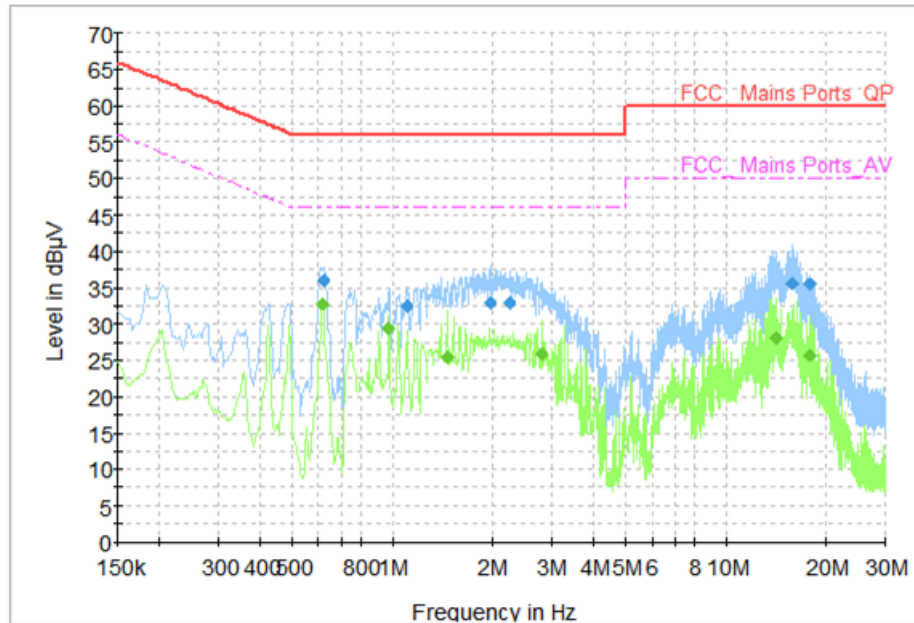
**Fig. 84 AC Powerline Conducted Emission (Traffic)**

**Measurement Results: Quasi Peak**

| Frequency (MHz) | Quasi Peak (dBμV) | Limit (dBμV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|-------------------|--------------|-------------|------|--------|------------|
| 0.586000        | 35.86             | 56.00        | 20.14       | L1   | ON     | 9.7        |
| 1.174000        | 32.18             | 56.00        | 23.82       | L1   | ON     | 9.7        |
| 1.770000        | 33.26             | 56.00        | 22.74       | L1   | ON     | 9.7        |
| 2.258000        | 33.07             | 56.00        | 22.93       | N    | ON     | 9.7        |
| 14.590000       | 34.91             | 60.00        | 25.09       | L1   | ON     | 10.1       |
| 18.406000       | 30.70             | 60.00        | 29.30       | N    | ON     | 10.3       |

**Measurement Results : Average**

| Frequency (MHz) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|----------------|--------------|-------------|------|--------|------------|
| 0.382000        | 26.77          | 48.24        | 21.46       | L1   | ON     | 9.7        |
| 0.594000        | 31.06          | 46.00        | 14.94       | L1   | ON     | 9.7        |
| 1.110000        | 27.54          | 46.00        | 18.46       | L1   | ON     | 9.7        |
| 1.846000        | 28.07          | 46.00        | 17.93       | N    | ON     | 9.7        |
| 2.318000        | 28.05          | 46.00        | 17.95       | N    | ON     | 9.7        |
| 14.274000       | 29.67          | 50.00        | 20.33       | N    | ON     | 9.9        |



**Fig. 85 AC Power line Conducted Emission (Idle)**

**Measurement Results: Quasi Peak**

| Frequency (MHz) | Quasi Peak (dBμV) | Limit (dBμV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|-------------------|--------------|-------------|------|--------|------------|
| 0.618000        | 35.94             | 56.00        | 20.06       | N    | ON     | 9.7        |
| 1.102000        | 32.36             | 56.00        | 23.64       | N    | ON     | 9.7        |
| 1.954000        | 33.01             | 56.00        | 22.99       | L1   | ON     | 9.7        |
| 2.234000        | 33.01             | 56.00        | 22.99       | N    | ON     | 9.7        |
| 15.702000       | 35.68             | 60.00        | 24.32       | L1   | ON     | 10.1       |
| 17.858000       | 35.38             | 60.00        | 24.62       | N    | ON     | 10.2       |

**Measurement Results : Average**

| Frequency (MHz) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|----------------|--------------|-------------|------|--------|------------|
| 0.614000        | 32.79          | 46.00        | 13.21       | N    | ON     | 9.7        |
| 0.974000        | 29.45          | 46.00        | 16.55       | L1   | ON     | 9.7        |
| 1.462000        | 25.38          | 46.00        | 20.62       | N    | ON     | 9.7        |
| 2.790000        | 25.98          | 46.00        | 20.02       | N    | ON     | 9.7        |
| 14.094000       | 27.99          | 50.00        | 22.01       | N    | ON     | 9.9        |
| 17.858000       | 25.77          | 50.00        | 24.23       | N    | ON     | 10.2       |

\*\*\*END OF REPORT\*\*\*