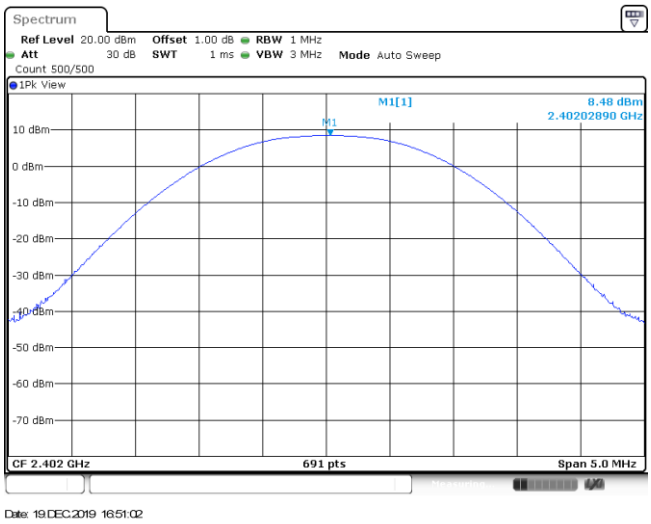
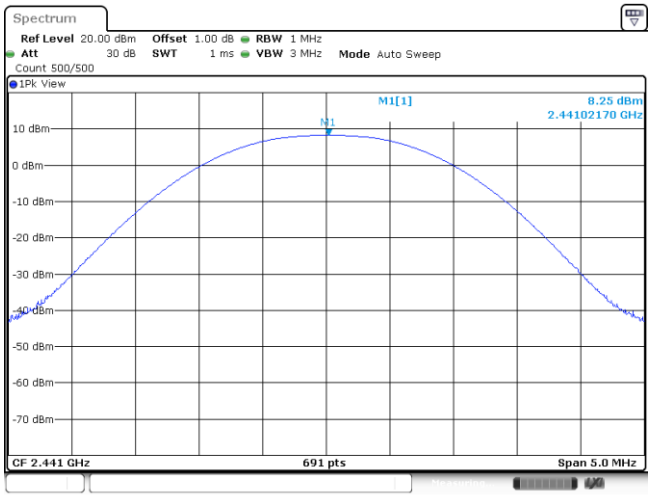
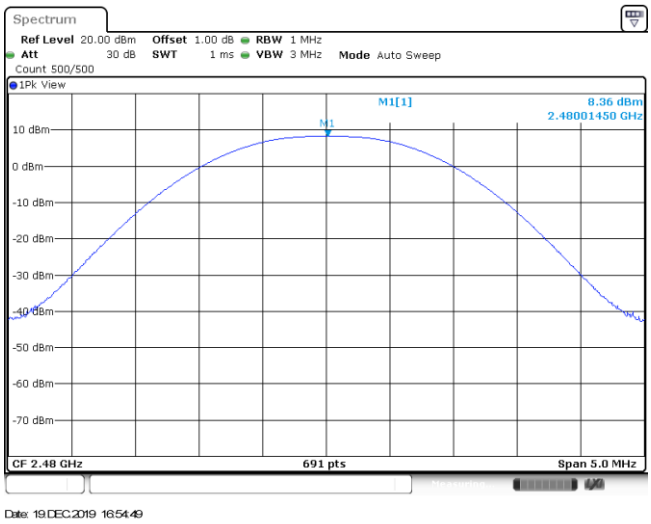
# APPENDIX REPORT

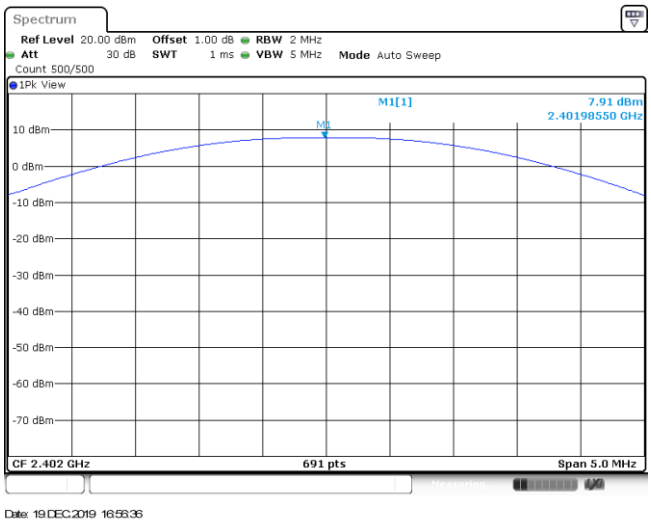
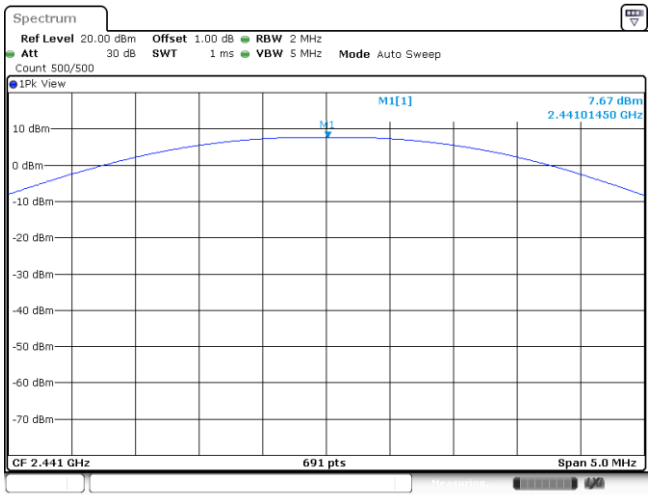
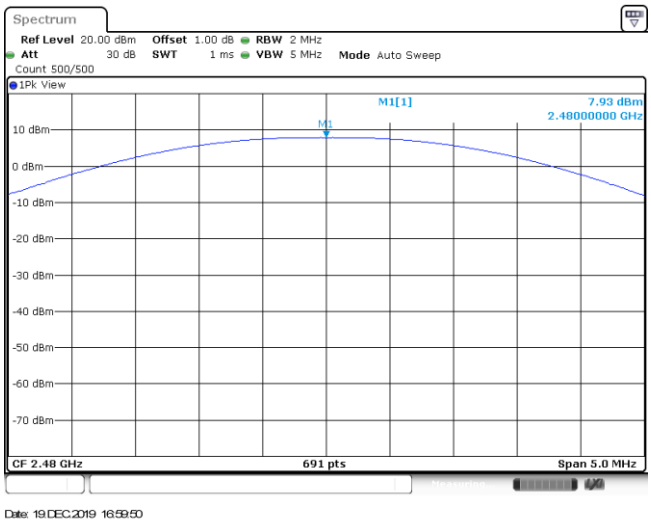
| | | | |
|---|---|---|---|
| Project No. | SHT1911051203EW | Radio Specification | Bluetooth EDR |
| Test sample No. | YPHT19110512009 | Model No. | iData K1S |
| Start test date | 2019/12/20 | Finish date | 2019/12/20 |
| Temperature | 25°C | Humidity | 50% |
| Test Engineer | Ximing.Huang | Auditor | William.wang |

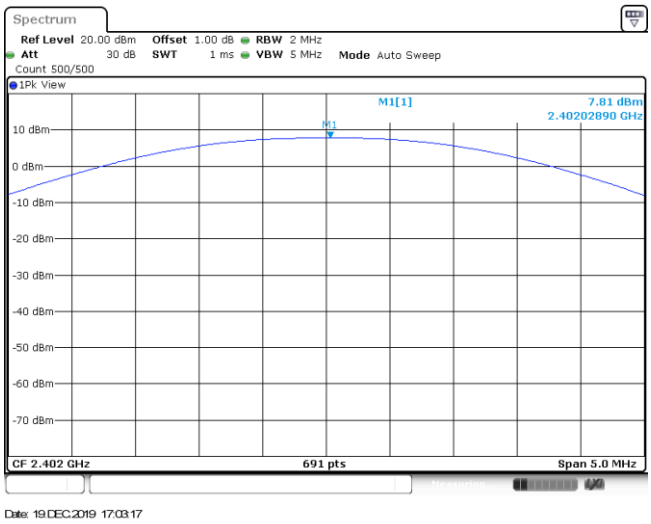
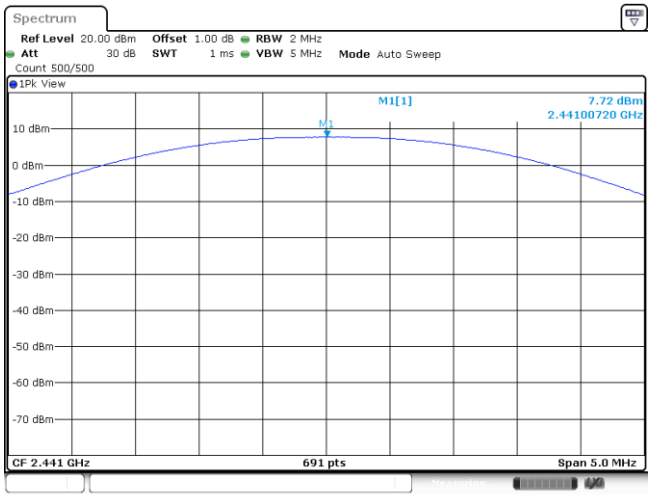
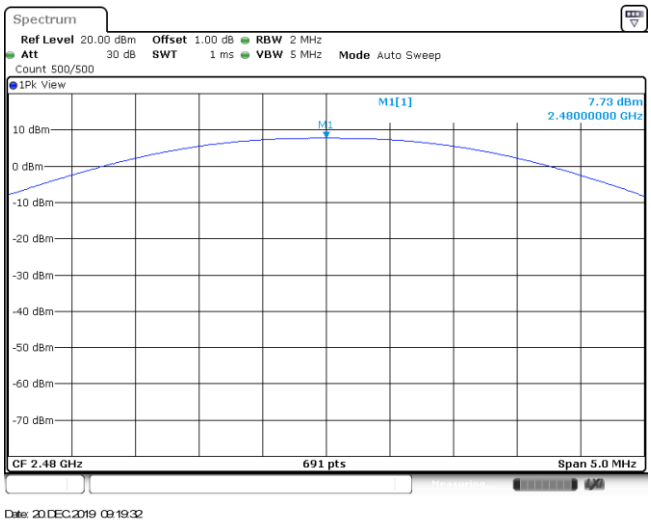
| Appendix clause | Test item | Result |
|---|---|---|
| A | Peak Output Power | PASS |
| B | 20 dB Bandwidth | PASS |
| C | 99% Occupied Bandwidth | PASS |
| D | Carrier Frequencies Separation | PASS |
| E | Hopping Channel Number | PASS |
| F | Dwell Time | PASS |
| G | Duty Cycle Correction Factor (DCCF) | PASS |
| H | Band edge and Spurious Emissions(coducted) | PASS |

## Appendix A：Peak Output Power

| Modulation type | Channel | Output power (dBm) | Average Output power (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|
| GFSK | 00 | 8.48 | 8.46 | ≤ 30.00 | Pass |
| | 39 | 8.25 | 8.24 | | |
| | 78 | 8.36 | 8.34 | | |
| π/4DQPSK | 00 | 7.91 | 7.18 | ≤ 21.00 | Pass |
| | 39 | 7.67 | 6.85 | | |
| | 78 | 7.93 | 7.02 | | |
| 8DPSK | 00 | 7.81 | 6.87 | ≤ 21.00 | Pass |
| | 39 | 7.72 | 6.63 | | |
| | 78 | 7.73 | 6.65 | | |

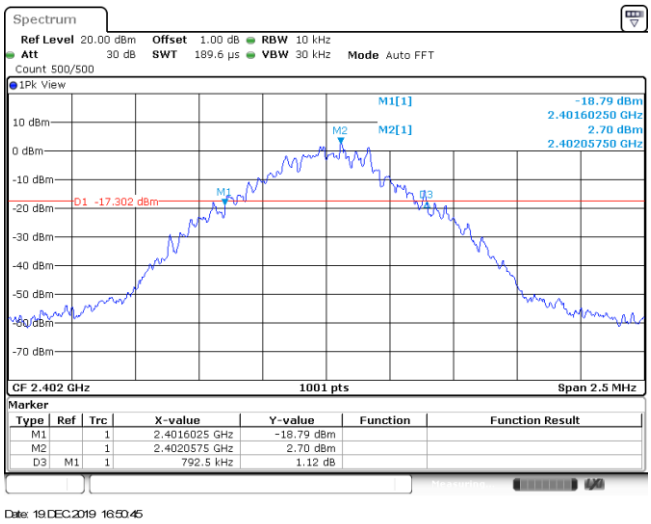
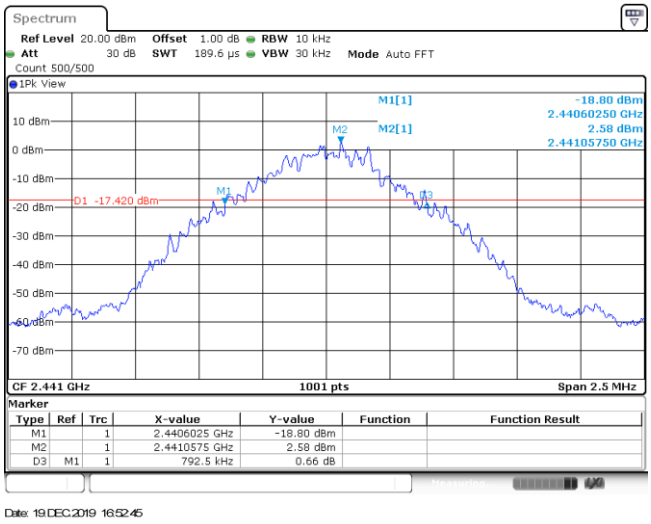
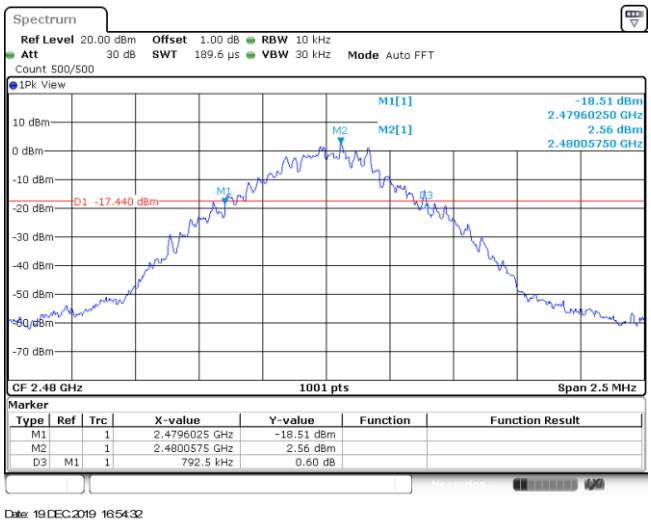
| Modulation Type: | GFSK |
|---|---|
| CH00 |  |
| CH39 |  |
| CH78 |  |

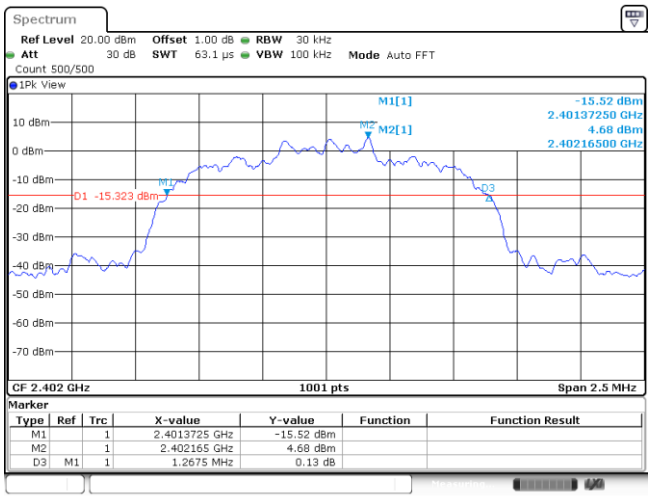
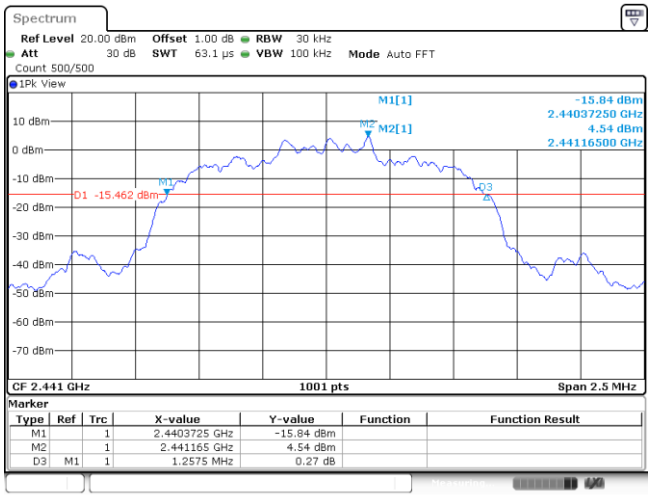
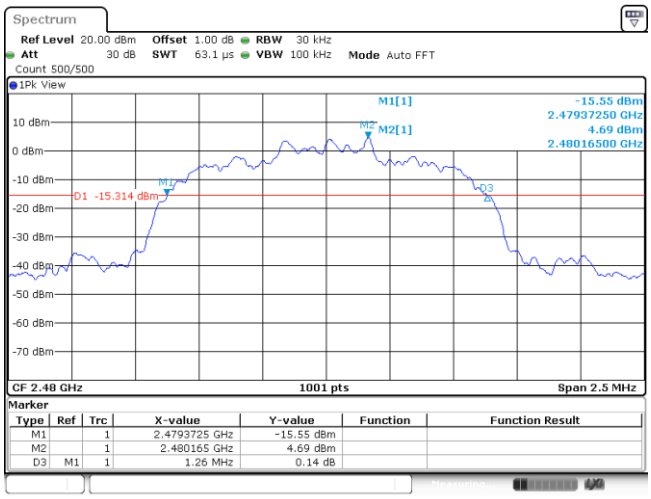
| Modulation Type: | π/4DQPSK |
|---|---|
| CH00 |  |
| CH39 |  |
| CH78 |  |

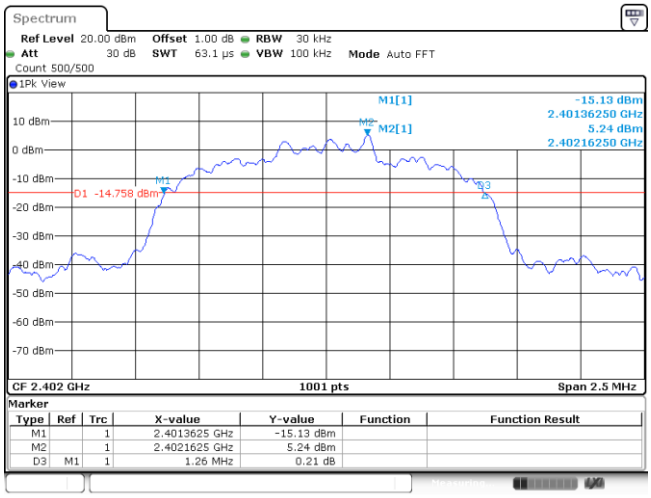
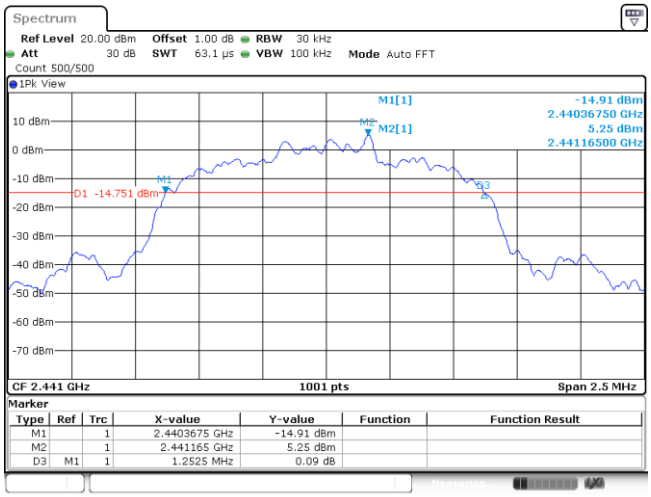
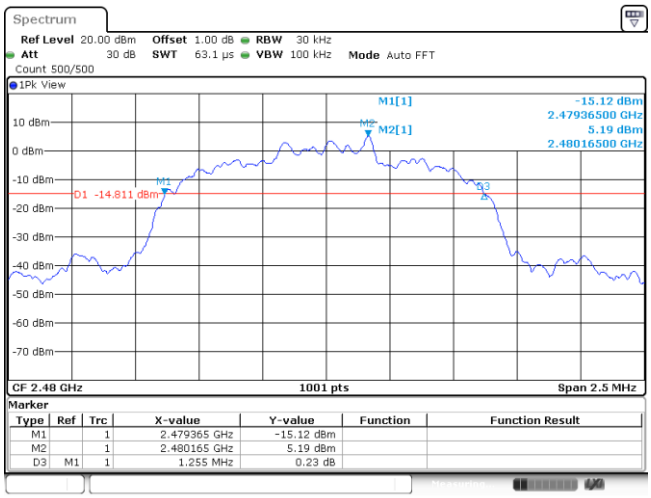
| Modulation Type: | 8DPSK |
|---|---|
| CH00 |  |
| CH39 |  |
| CH78 |  |

## Appendix B : 20 dB Bandwidth

| Modulation type | Channel | 20 dB Bandwidth (kHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| GFSK | 00 | 793.00 | - | Pass |
| | 39 | 793.00 | | |
| | 78 | 793.00 | | |
| π/4DQPSK | 00 | 1267.00 | - | Pass |
| | 39 | 1258.00 | | |
| | 78 | 1260.00 | | |
| 8DPSK | 00 | 1260.00 | - | Pass |
| | 39 | 1253.00 | | |
| | 78 | 1255.00 | | |

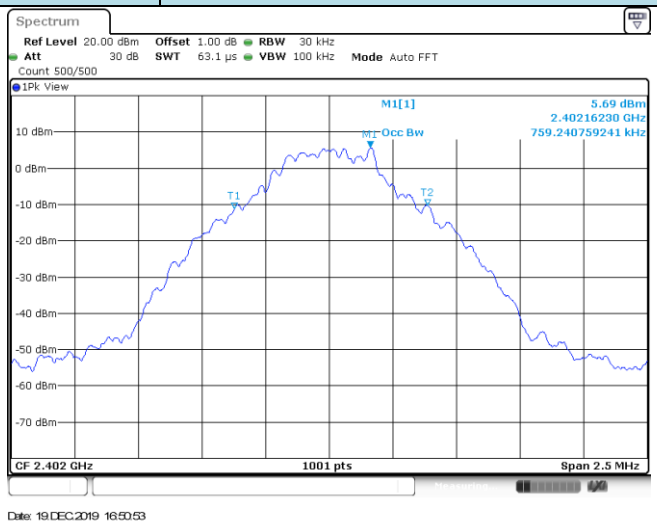
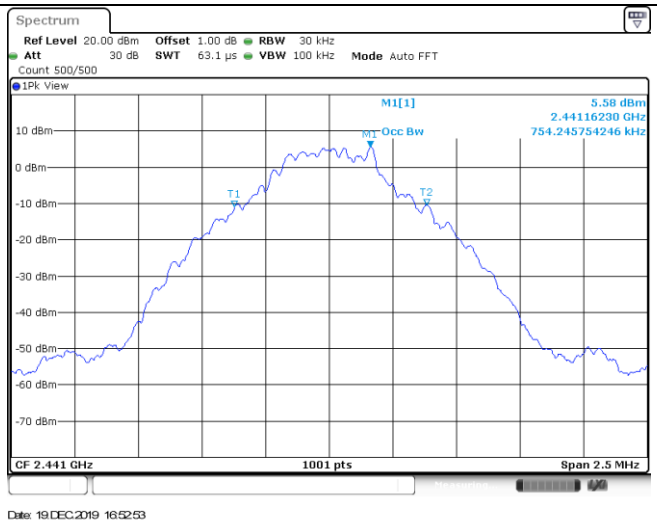
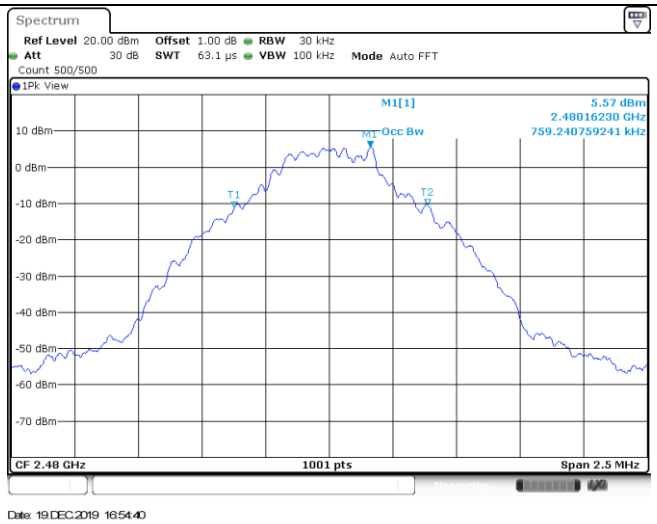
| Modulation Type: | GFSK |
|---|---|
| CH00 |  |
| CH39 |  |
| CH78 |  |

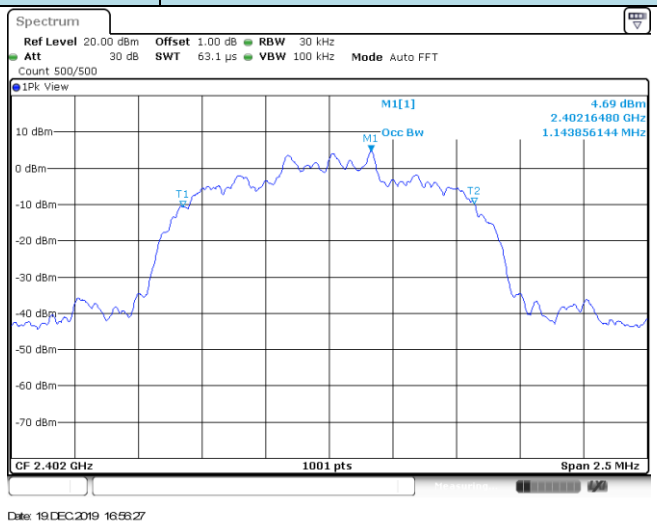
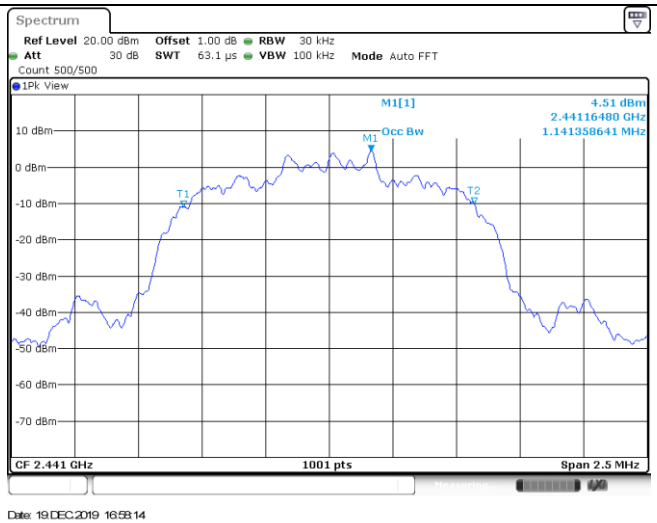
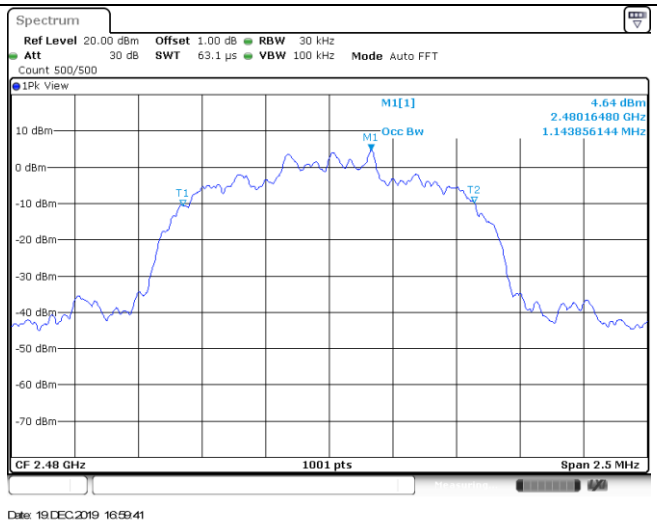
| Modulation Type: | π/4DQPSK |
|---|---|
| CH00 |  |
| CH39 |  |
| CH78 |  |

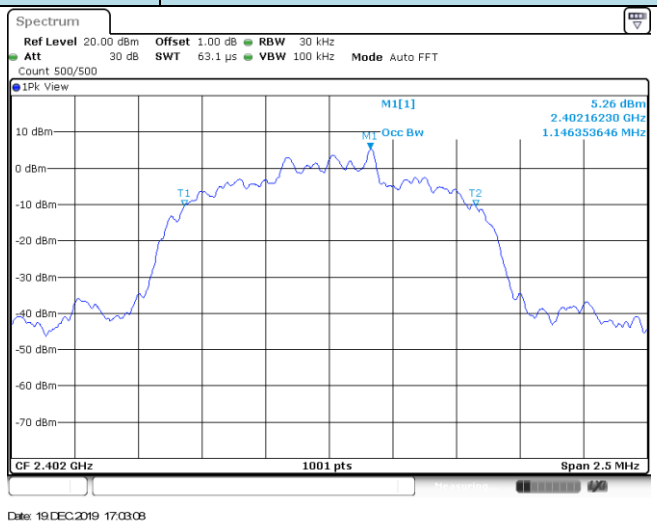
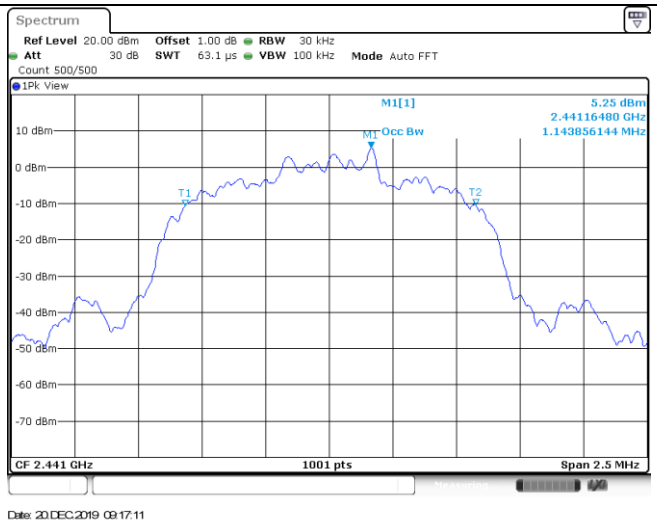
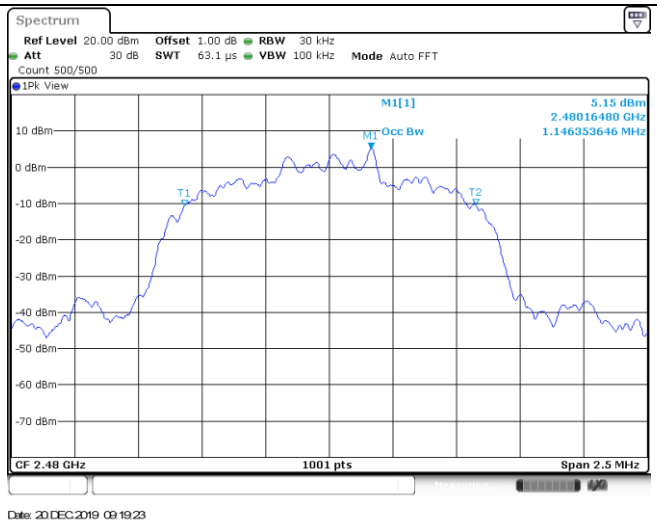
| Modulation Type: | 8DPSK |
|---|---|
| CH00 |  |
| CH39 |  |
| CH78 |  |

## Appendix C：99% Occupied Bandwidth

| Modulation type | Channel | 99% Occupied Bandwidth (MHz) | Limit (MHz) | Result |
|---|---|---|---|---|
| GFSK | 00 | 0.76 | - | Pass |
| | 39 | 0.75 | | |
| | 78 | 0.76 | | |
| π/4DQPSK | 00 | 1.14 | - | Pass |
| | 39 | 1.14 | | |
| | 78 | 1.14 | | |
| 8DPSK | 00 | 1.15 | - | Pass |
| | 39 | 1.14 | | |
| | 78 | 1.15 | | |

| Modulation Type: | GFSK |
|---|---|
| CH00 |  |
| CH39 |  |
| CH78 |  |

| Modulation Type: | π/4DQPSK |
|---|---|
| CH00 |  |
| CH39 |  |
| CH78 |  |

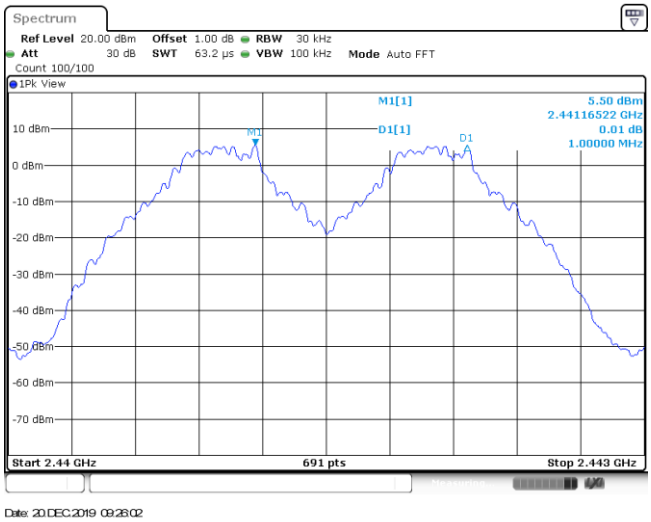
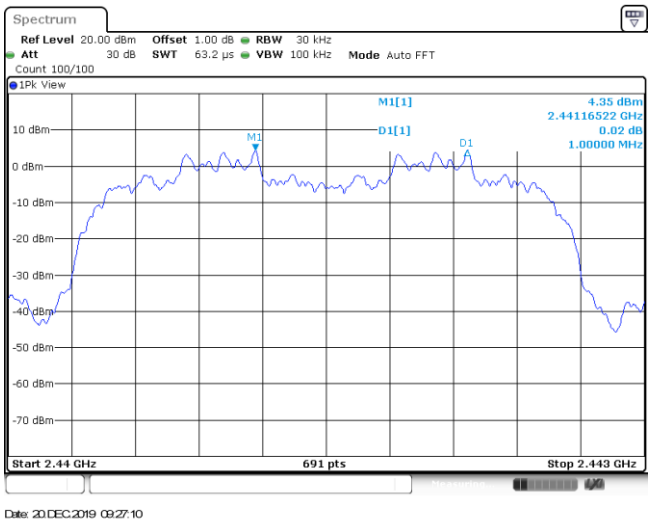
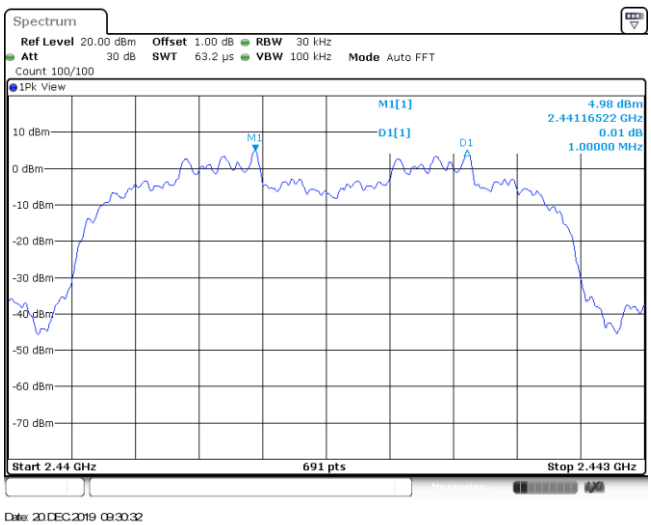
| Modulation Type: | 8DPSK |
|---|---|
| CH00 |  |
| CH39 |  |
| CH78 |  |

## Appendix D：Carrier Frequencies Separation

| Modulation type | Channel | Carrier Frequencies Separation (MHz) | Limit (kHz) * | Result |
|---|---|---|---|---|
| GFSK | 39 | 1.00 | ≥ | Pass |
| π/4DQPSK | 39 | 1.00 | ≥ | Pass |
| 8DPSK | 39 | 1.00 | ≥ | Pass |

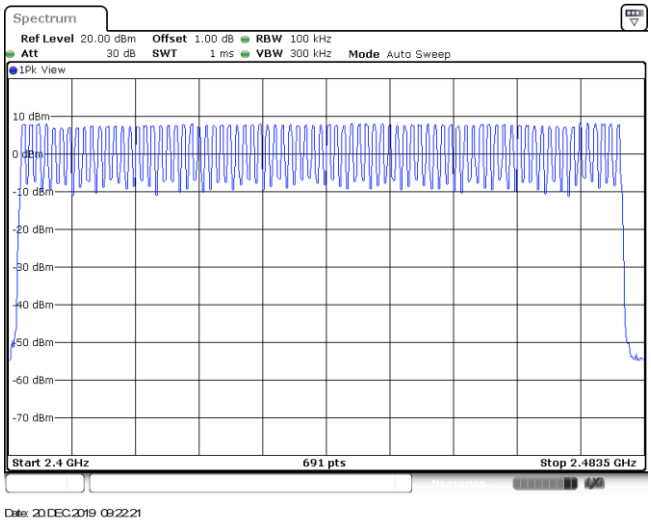
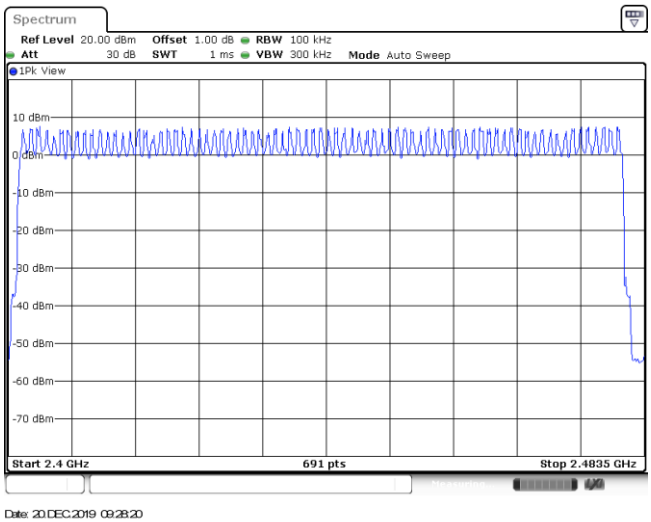
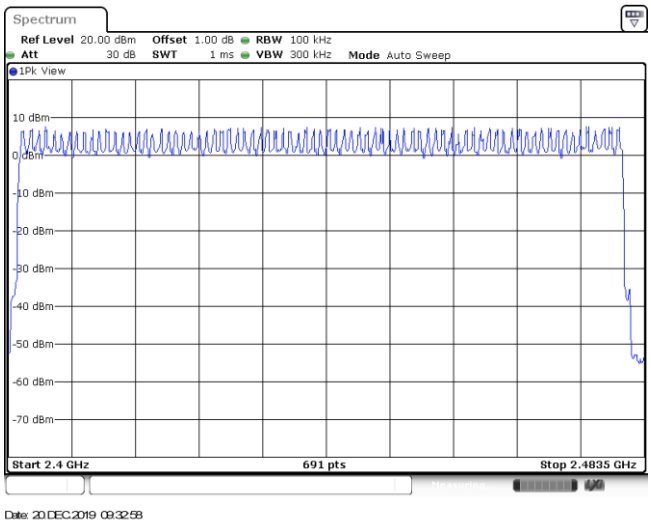
Note:

*: GFSK limit = The maximum 20 dB Bandwidth for GFSK modulation on the appendix B.
π/4DQPSK limit = 2/3 * The maximum 20 dB Bandwidth for π/4DQPSK modulation on the appendix B.
8DPSK limit = 2/3 * The maximum 20 dB Bandwidth for 8DPSK modulation on the appendix B

| | |
|---|---|
| GFSK |  |
| π/4DQPSK |  |
| 8DPSK |  |

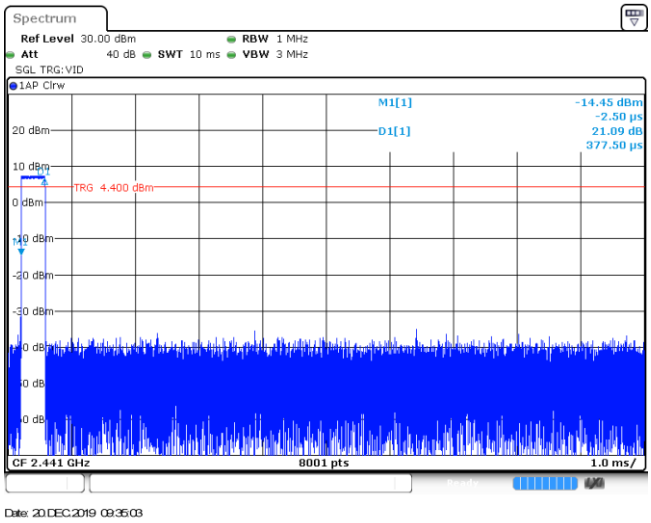
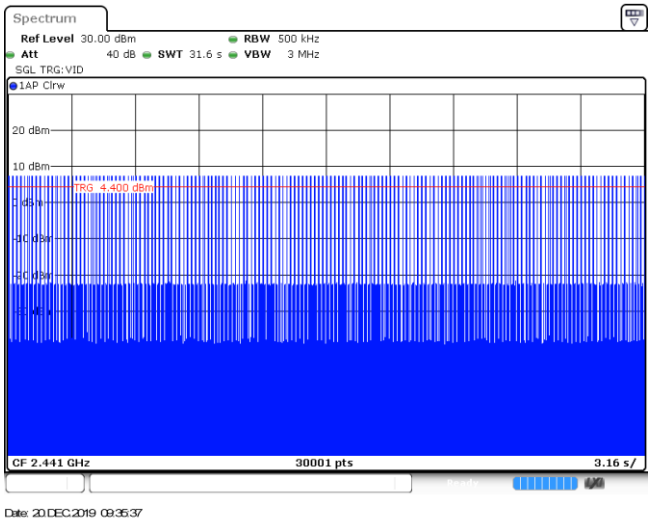
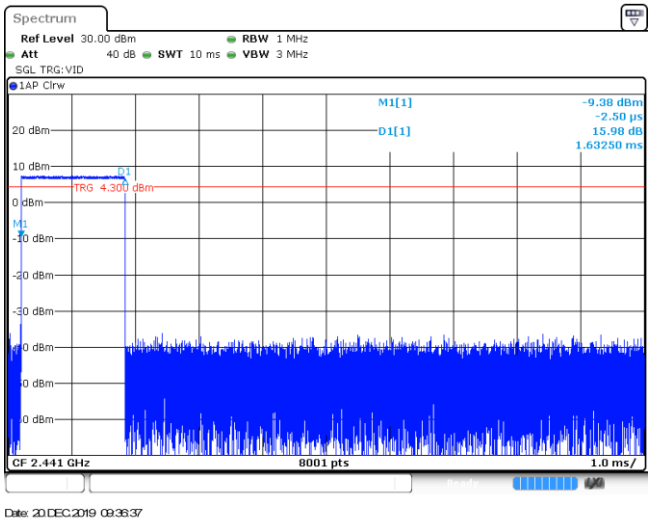
## Appendix E：Hopping Channel Number

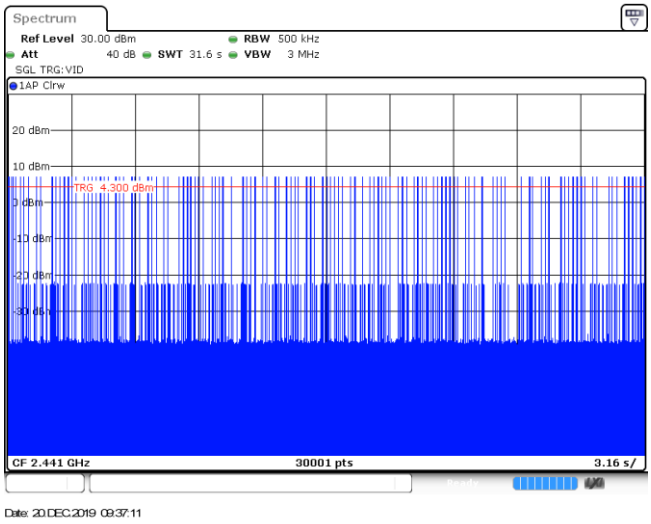
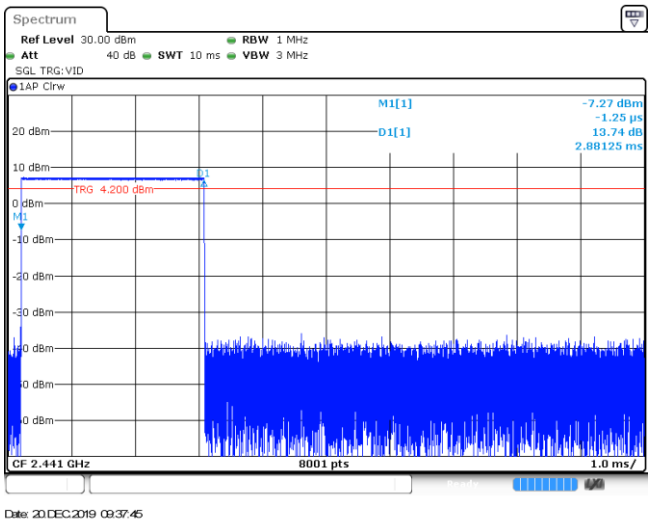
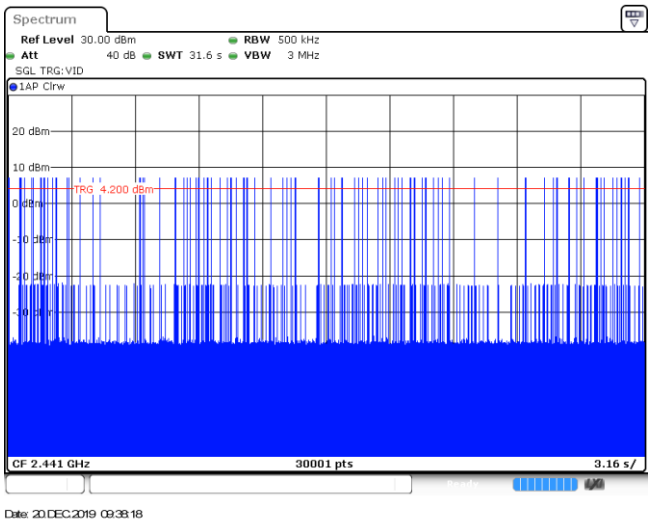
| Modulation type | Channel number | Limit | Result |
|---|---|---|---|
| GFSK | 79 | ≥15.00 | Pass |
| π/4DQPSK | 79 | | |
| 8DPSK | 79 | | |

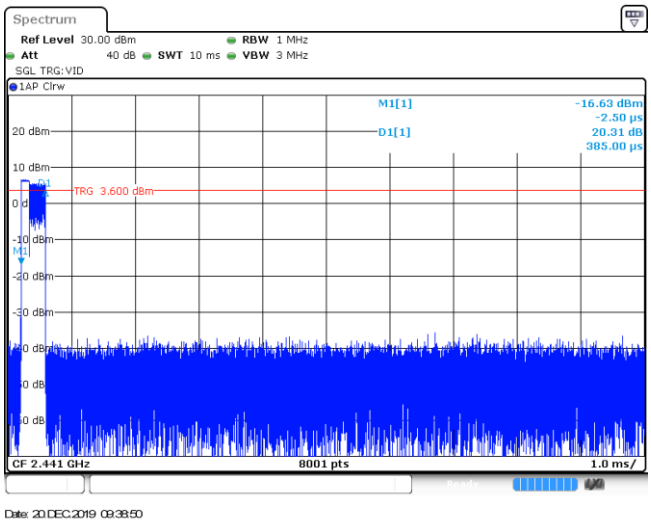
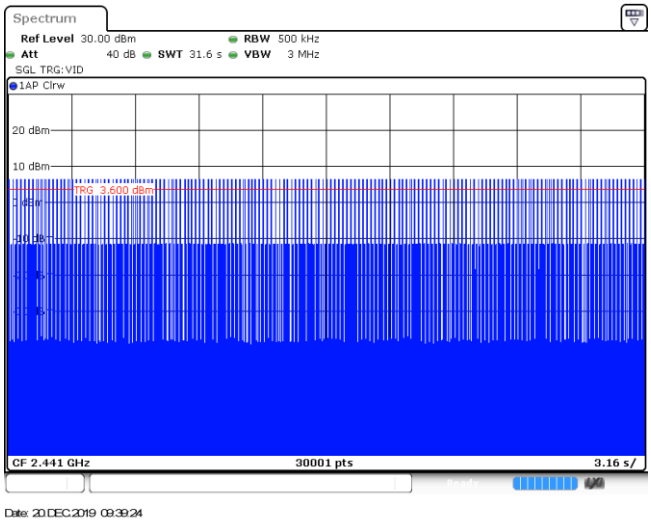
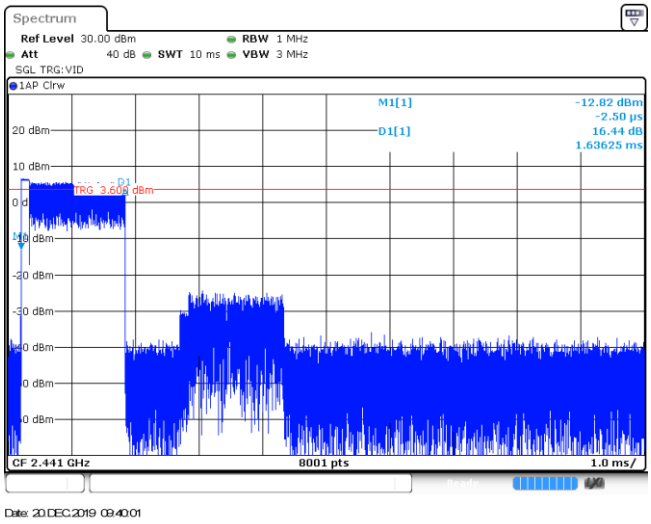
| | |
|---|---|
| GFSK |  |
| π/4DQPSK |  |
| 8DPSK |  |

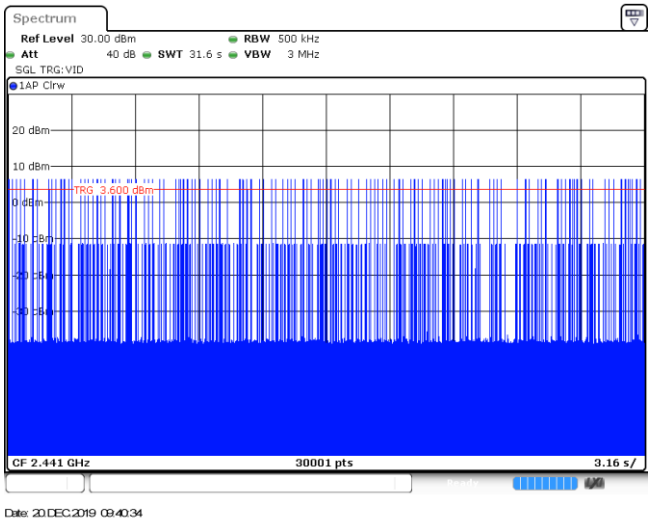
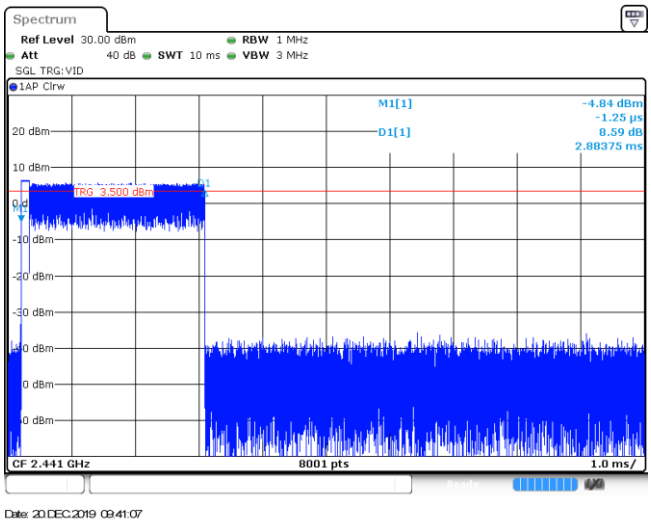
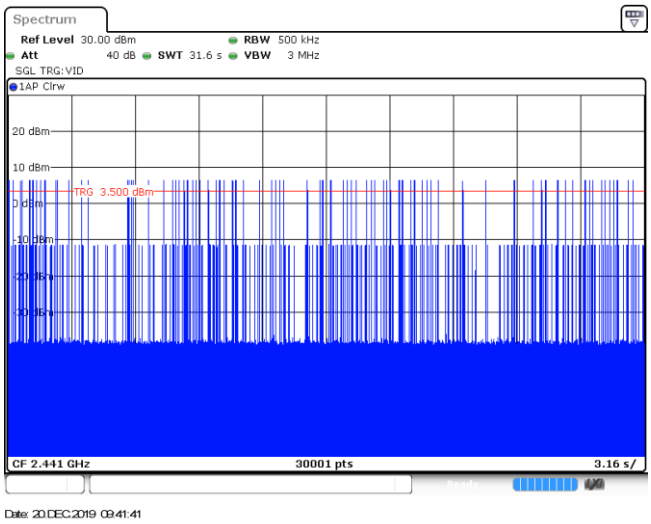
## Appendix F：Dwell Time

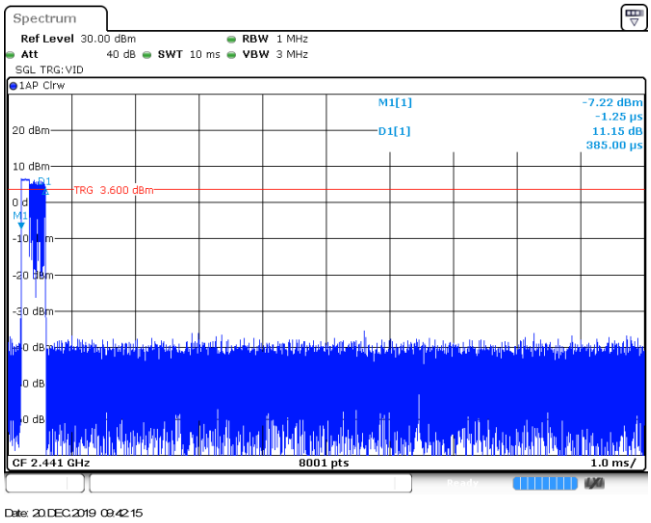
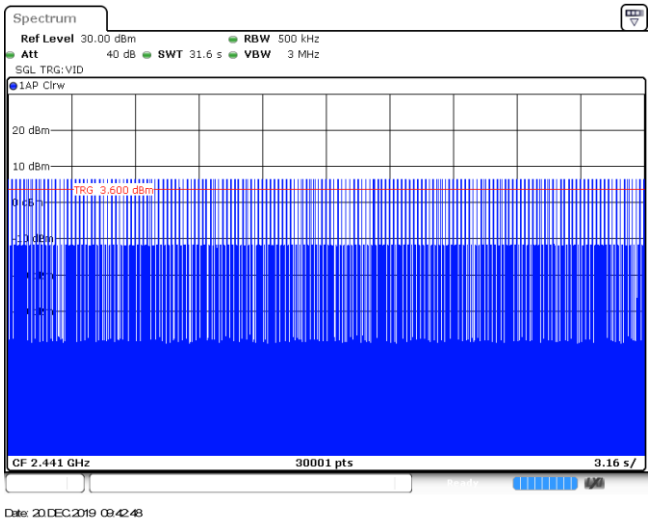
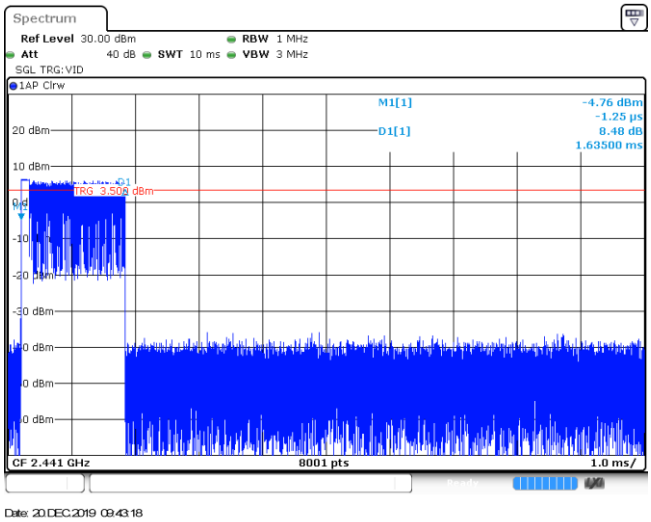
| Modulation type | Packet | Burst Width [ms] | Total Hops[hop*ch] | Dwell time (Second) | Limit (Second) | Result |
|---|---|---|---|---|---|---|
| GFSK | DH1 | 0.38 | 315 | 0.12 | ≤ 0.40 | Pass |
| | DH3 | 1.63 | 162 | 0.26 | | |
| | DH5 | 2.88 | 102 | 0.29 | | |
| π/4DQPSK | 2DH1 | 0.39 | 313 | 0.12 | ≤ 0.40 | Pass |
| | 2DH3 | 1.64 | 160 | 0.26 | | |
| | 2DH5 | 2.88 | 101 | 0.29 | | |
| 8DPSK | 3DH1 | 0.38 | 314 | 0.12 | ≤ 0.40 | Pass |
| | 3DH3 | 1.64 | 159 | 0.26 | | |
| | 3DH5 | 2.89 | 102 | 0.29 | | |

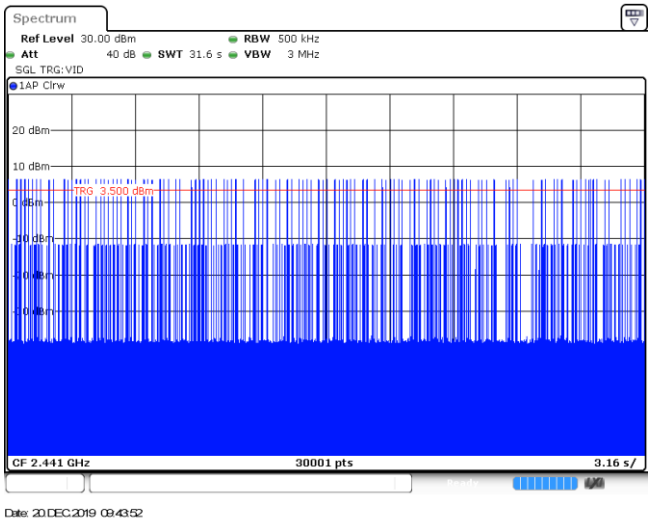
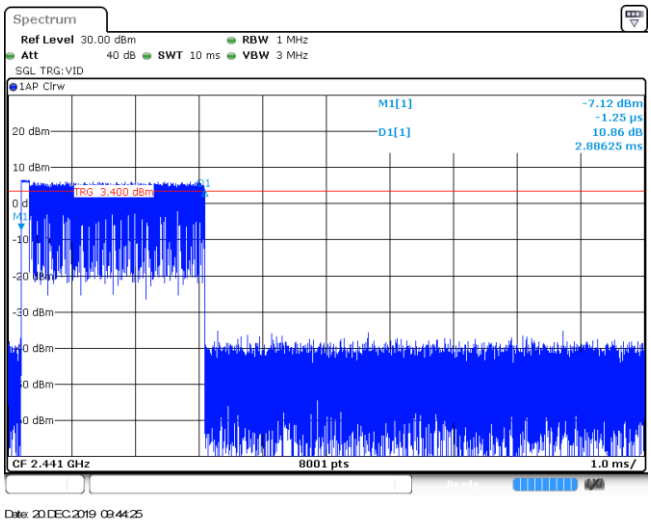
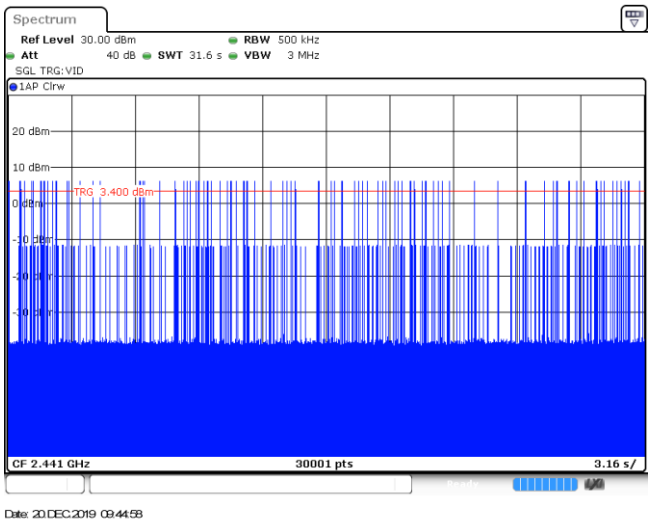
| **Modulation Type:** | **GFSK** |
|---|---|
| DH1<br>Burst width |  |
| DH1<br>Burst number |  |
| DH3<br>Burst width |  |

| | |
|---|---|
| DH3<br>Burst number |  |
| DH5<br>Burst width |  |
| DH5<br>Burst number |  |

| Modulation Type: | π/4DQPSK |
|---|---|
| 2DH1<br>Burst width |  |
| 2DH1<br>Burst number |  |
| 2DH3<br>Burst width |  |

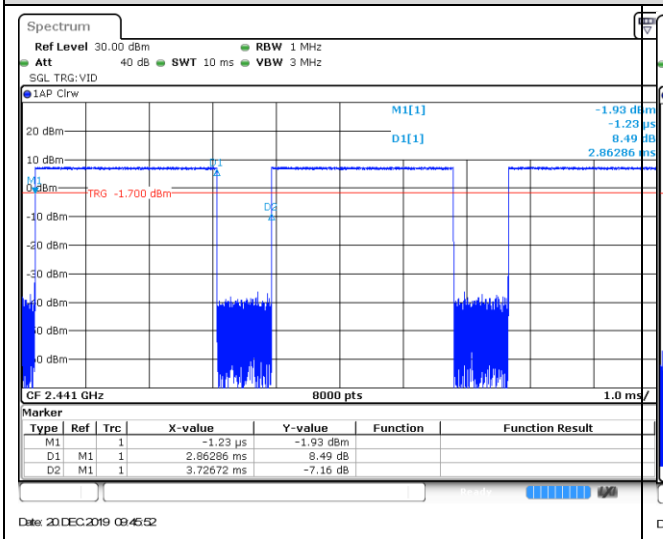
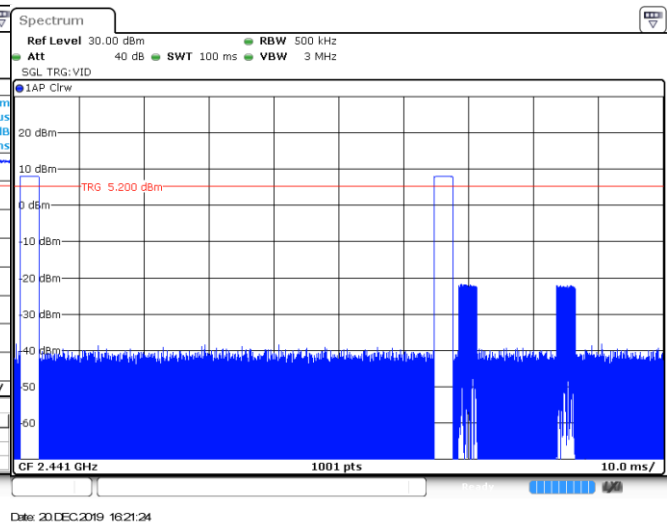
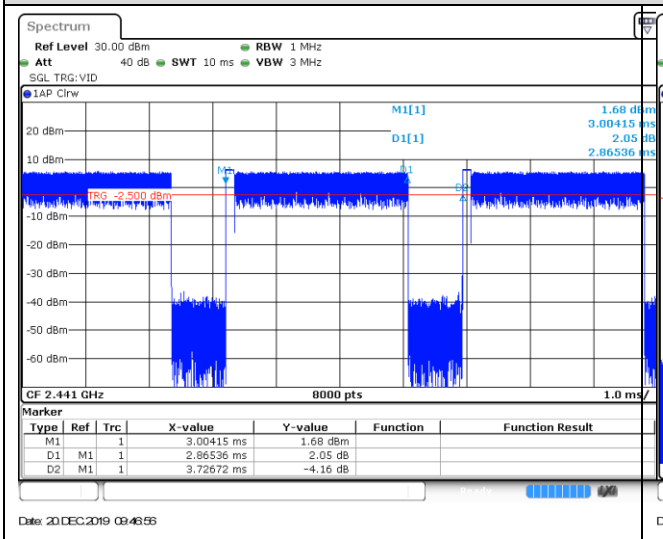
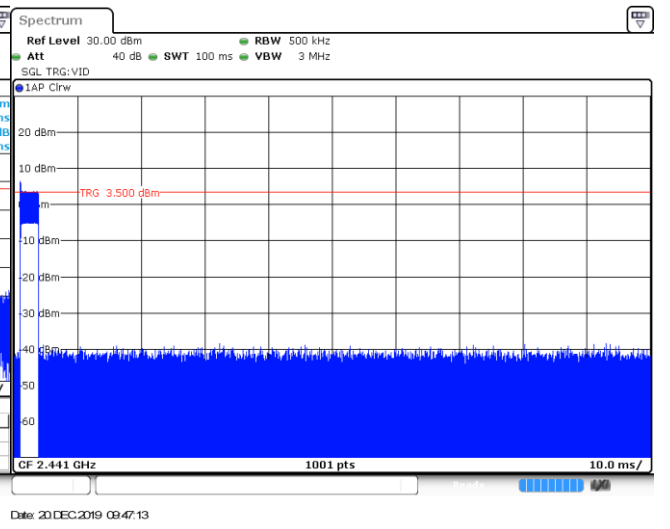
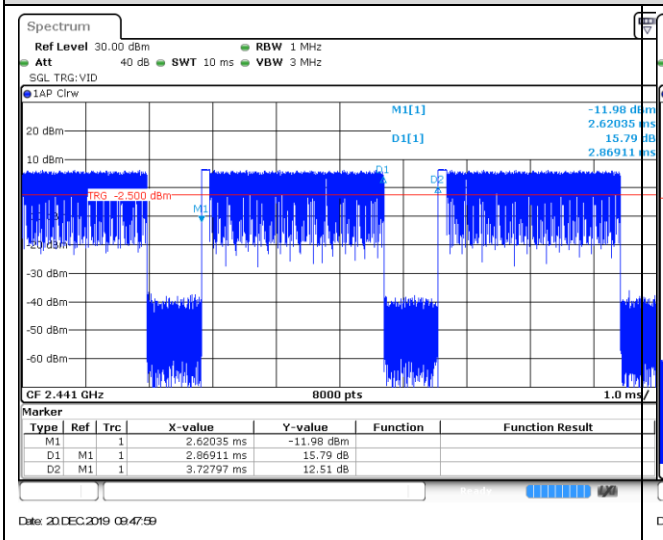
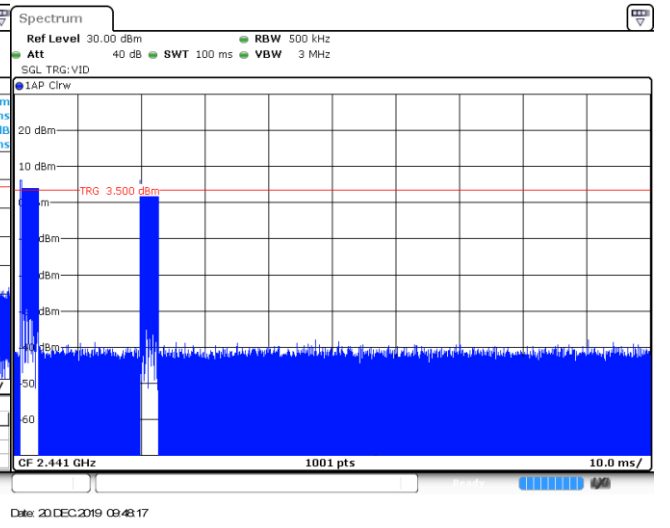
| | |
|---|---|
| 2DH3<br>Burst number |  |
| 2DH5<br>Burst width |  |
| 2DH5<br>Burst number |  |

| Modulation Type: | 8DPSK |
|---|---|
| 3DH1<br>Burst width |  |
| 3DH1<br>Burst number |  |
| 3DH3<br>Burst width |  |

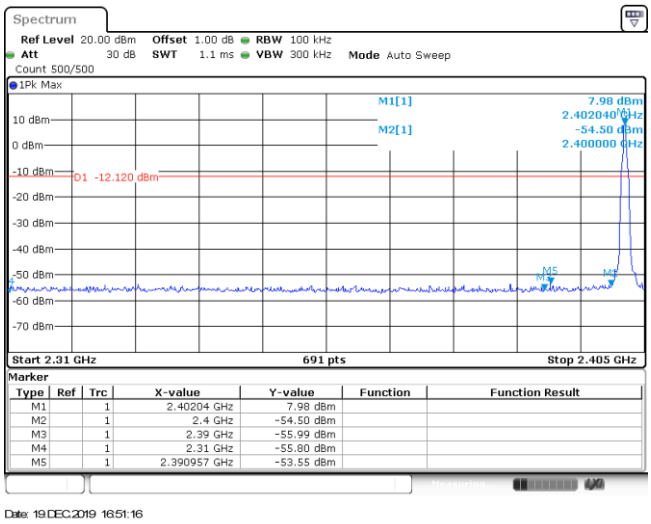
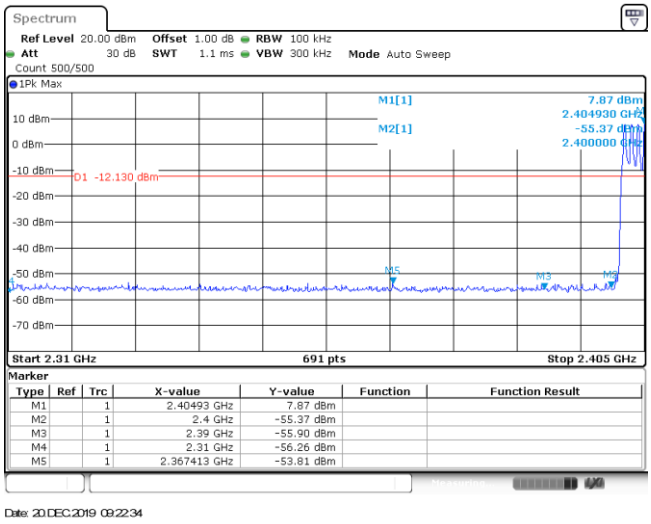
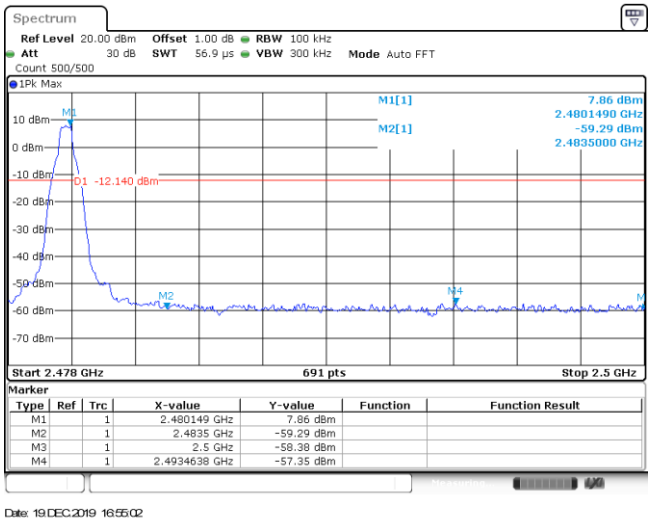
| | |
|---|---|
| 3DH3<br>Burst number |  |
| 3DH5<br>Burst width |  |
| 3DH5<br>Burst number |  |

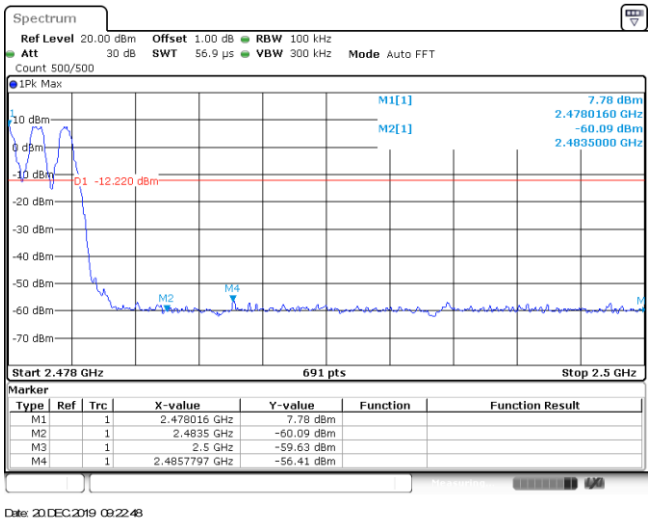
## Appendix G：Duty Cycle Correction Factor (DCCF)

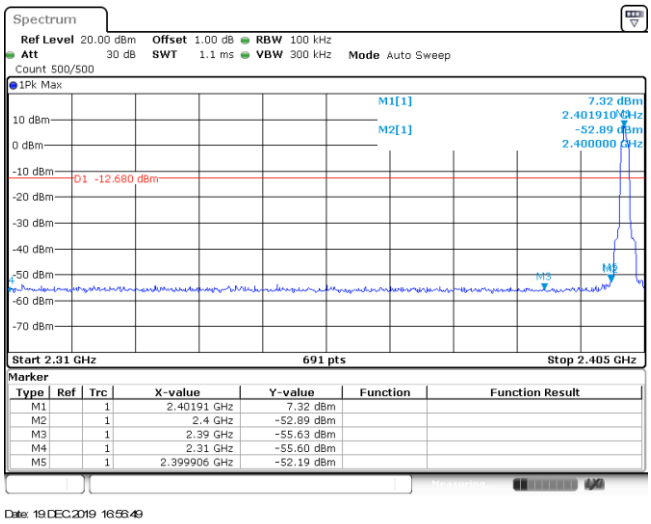
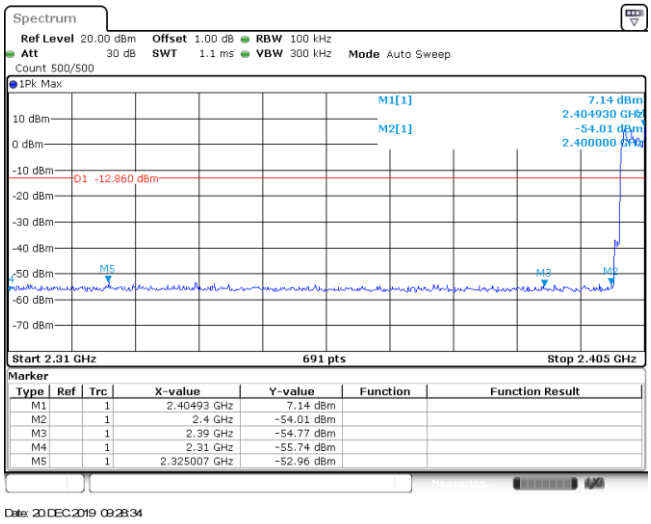
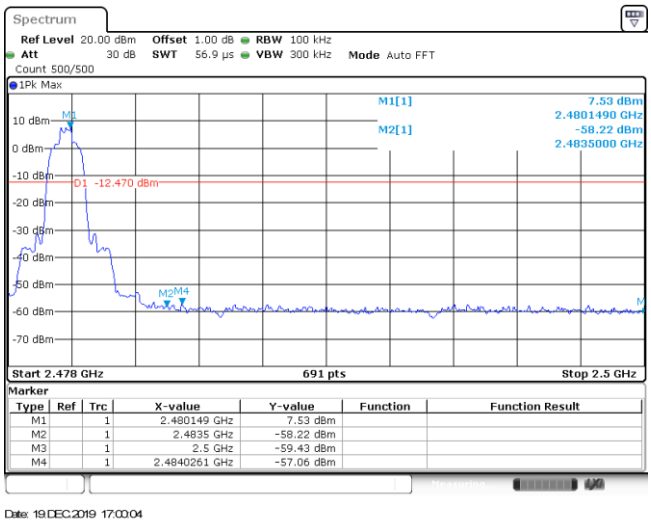
| DCCF Calculate Formula | | | | | |
|---|---|---|---|---|---|
| DCCF=20 * Log(duty cycle) = 20 * Log($T_{on\ time}$ / $T_{period}$) | | | | | |
| Modulation type | Test Frequency（MHz） | $T_{on\ time}$ for single burst [ms] | $T_{period}$ [ms] | Burst Quantity | DCCF [dB] |
| GFSK | 2441 | 2.86 | 100 | 4 | -18.83 |
| π/4 DQPSK | 2441 | 2.87 | 100 | 1 | -30.84 |
| 8DPSK | 2441 | 2.87 | 100 | 2 | -24.82 |

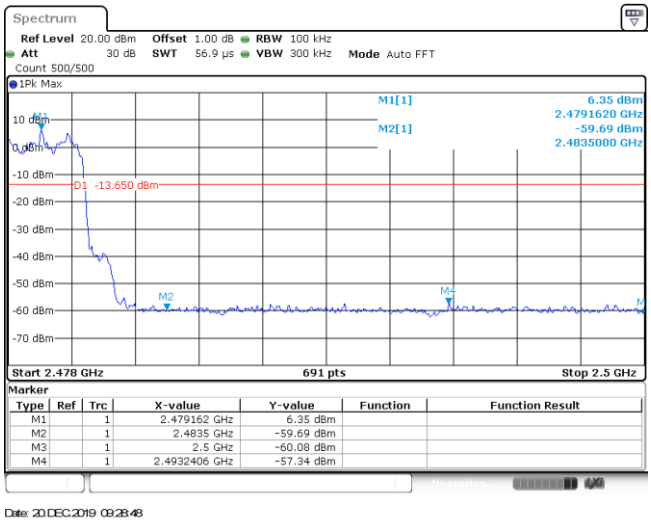
| GFSK | |
|---|---|
|  |  |
| $T_{on\ time}$ for single burst | Burst Quantity |
| **π /4 DQPSK** | |
|  |  |
| $T_{on\ time}$ for single burst | Burst Quantity |
| **8DPSK** | |
|  |  |
| $T_{on\ time}$ for single burst | Burst Quantity |

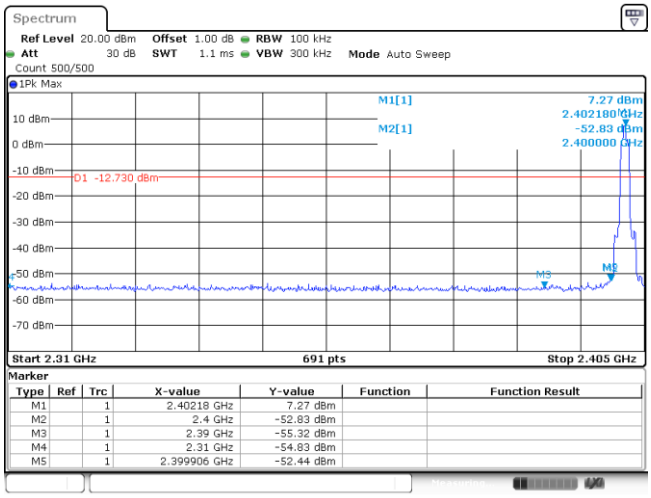
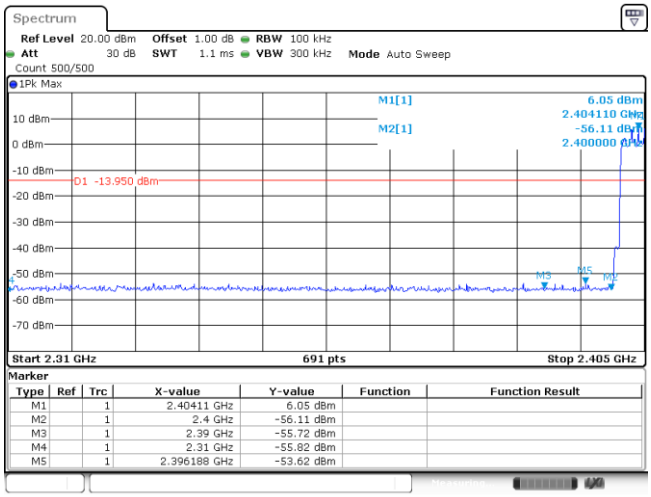
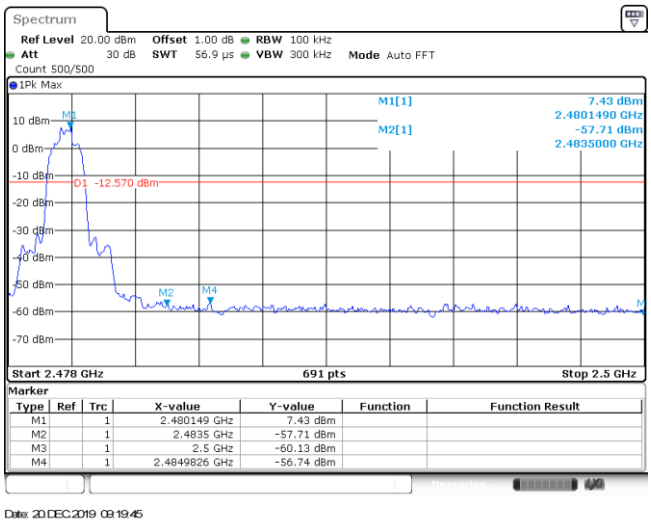
## Appendix H：Band edge and Spurious Emissions (conducted)

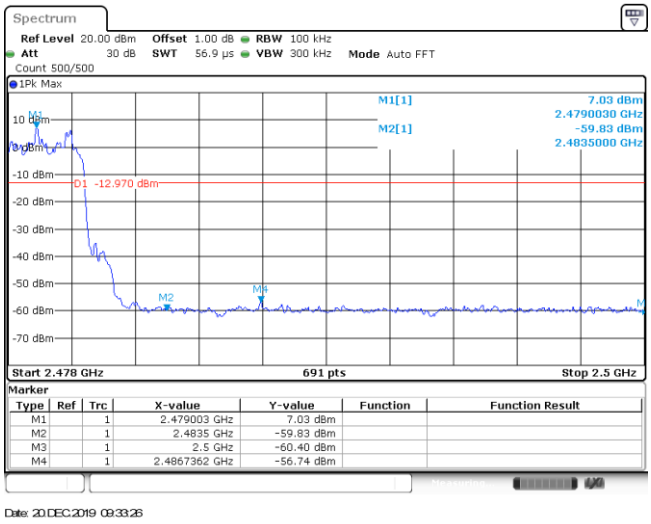
| Test Item: | Band edge | Modulation type: | GFSK |
|---|---|---|---|
| CH00<br>No hopping mode |  |
| CH00<br>Hopping mode |  |
| CH78<br>No hopping mode |  |

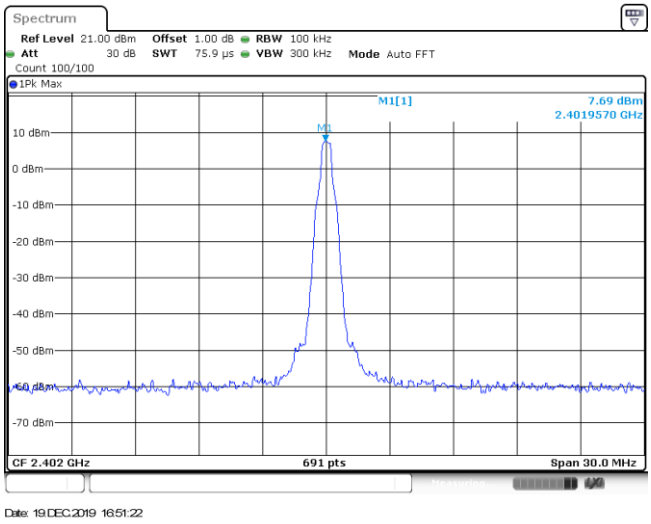
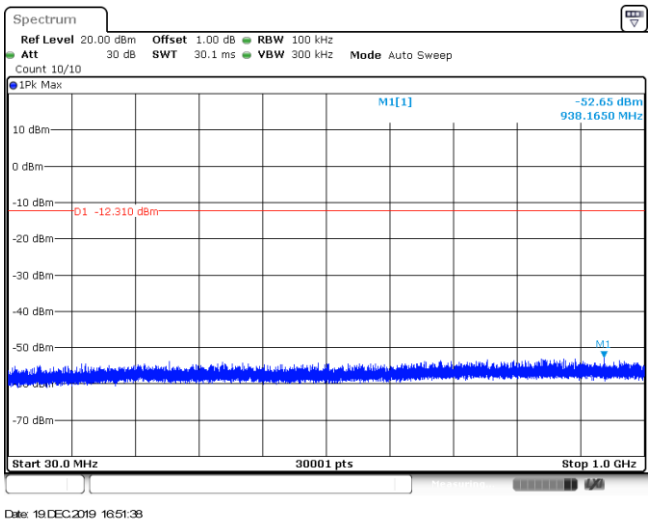
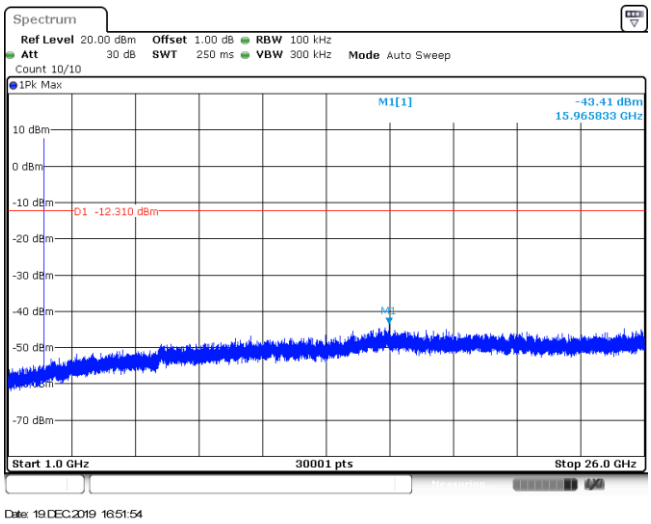
| | |
|---|---|
| CH78<br>Hopping mode |  |

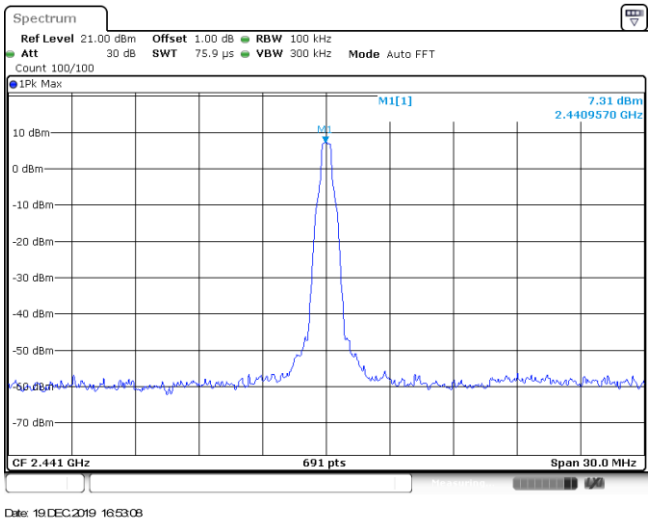
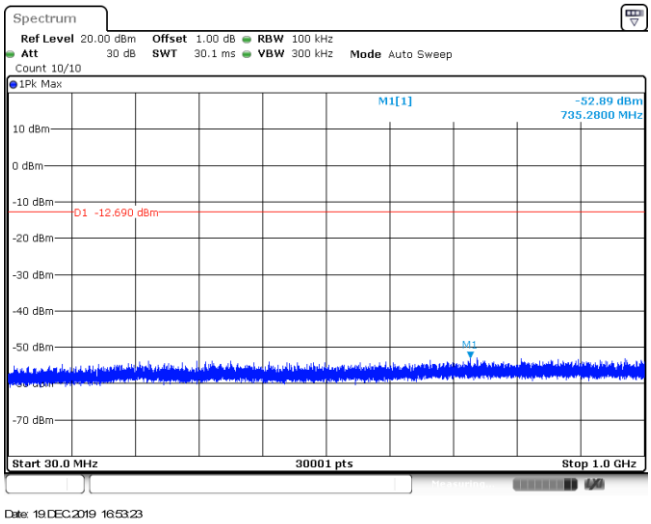
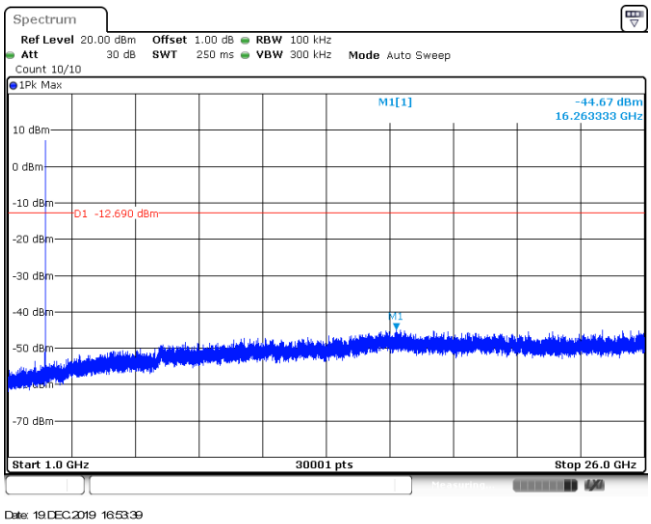
| Test Item: | Band edge | Modulation type: | π/4DQPSK |
|---|---|---|---|
| CH00<br>No hopping mode |  |
| CH00<br>Hopping mode |  |
| CH78<br>No hopping mode |  |

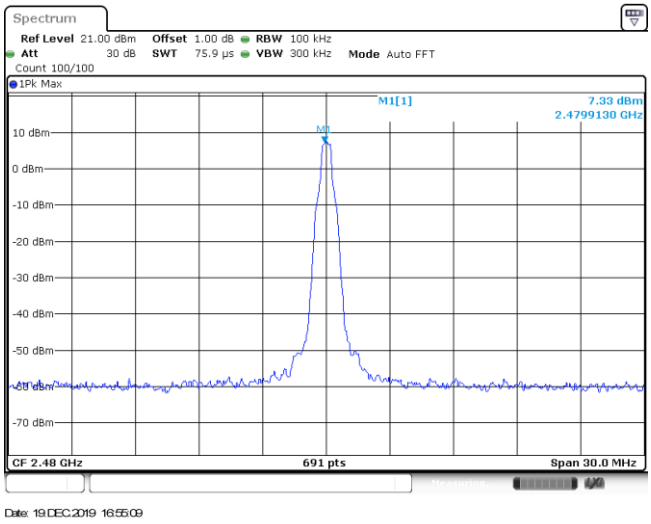
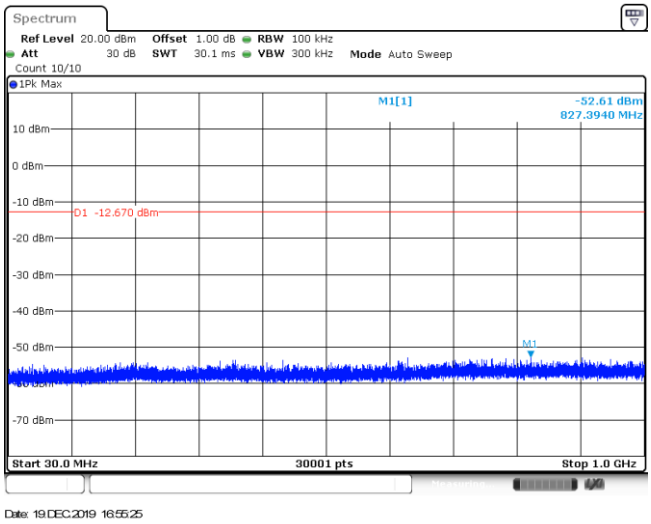
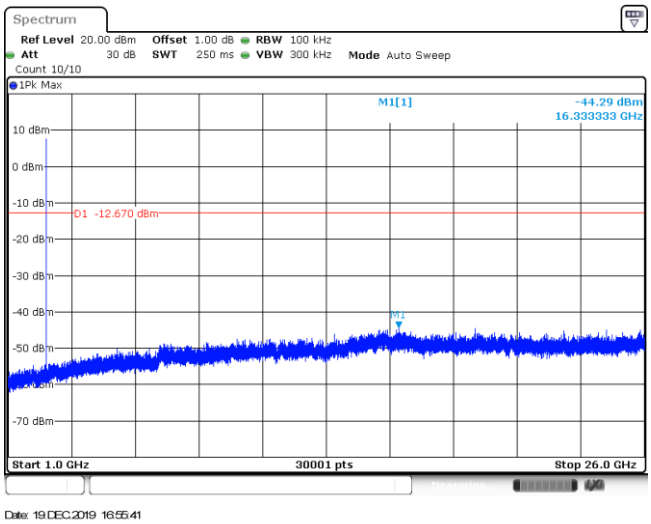
| | |
|---|---|
| CH78<br>Hopping mode |  |

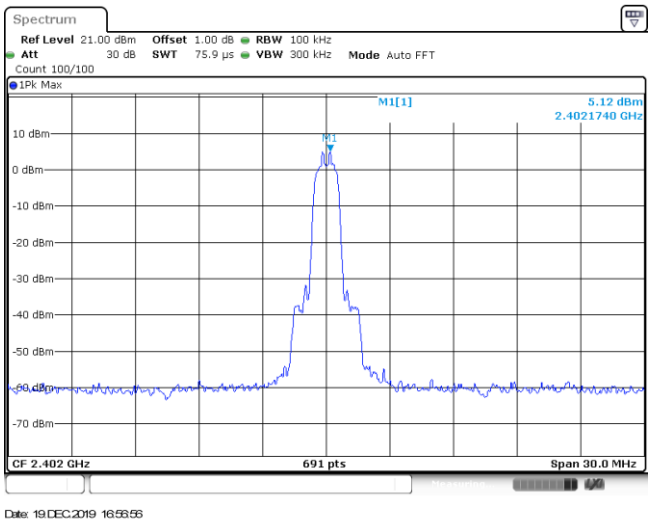
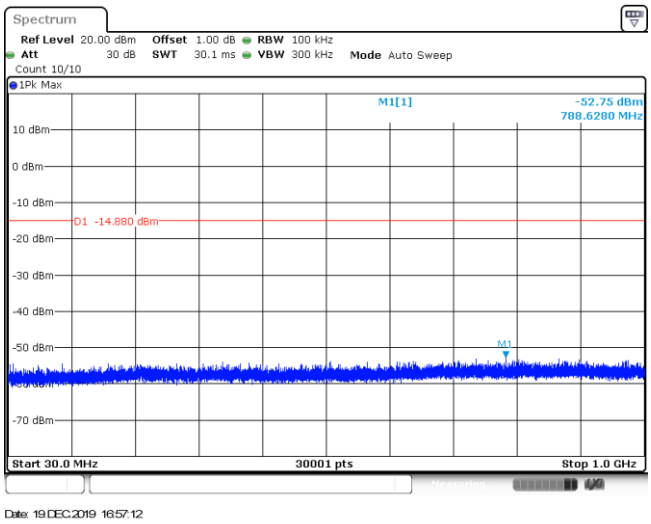
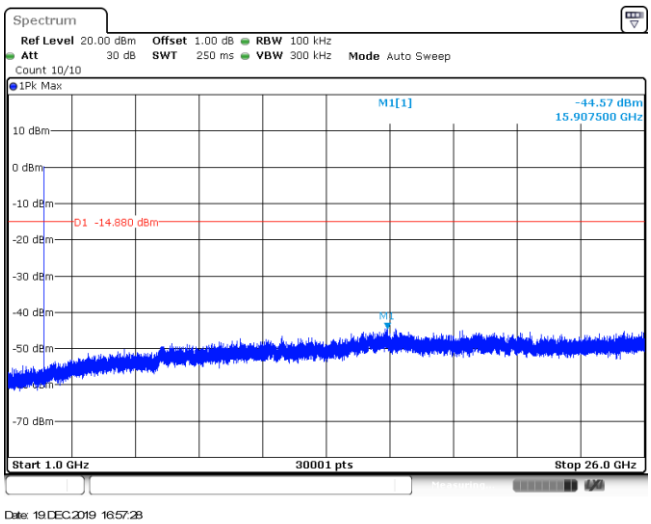
| Test Item: | Band edge | Modulation type: | 8DPSK |
|---|---|---|---|
| CH00<br>No hopping mode |  |
| CH00<br>Hopping mode |  |
| CH78<br>No hopping mode |  |

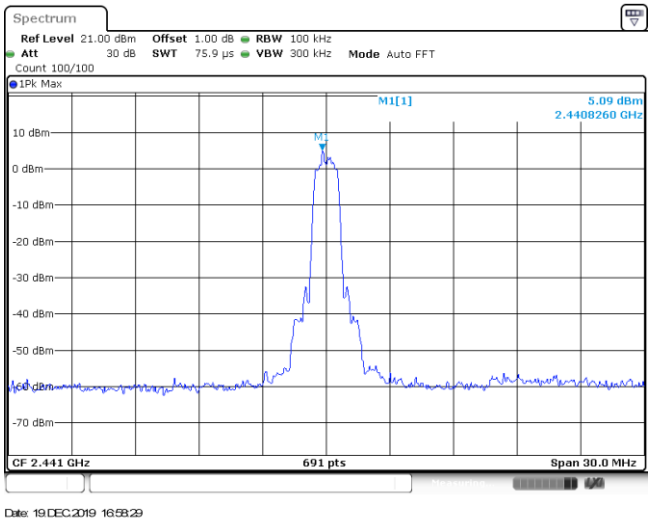
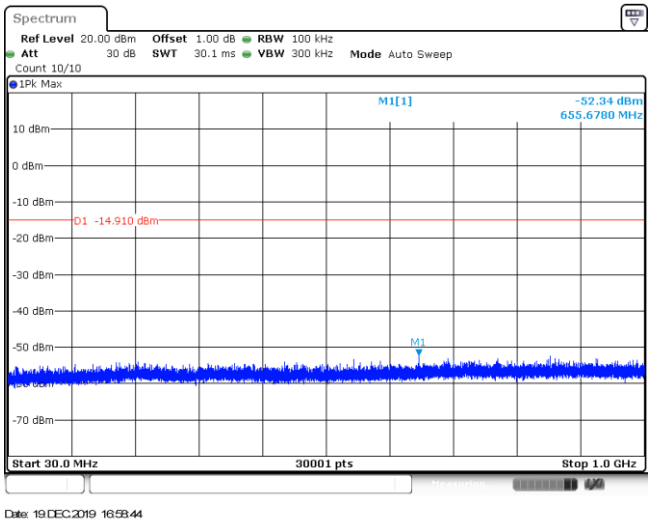
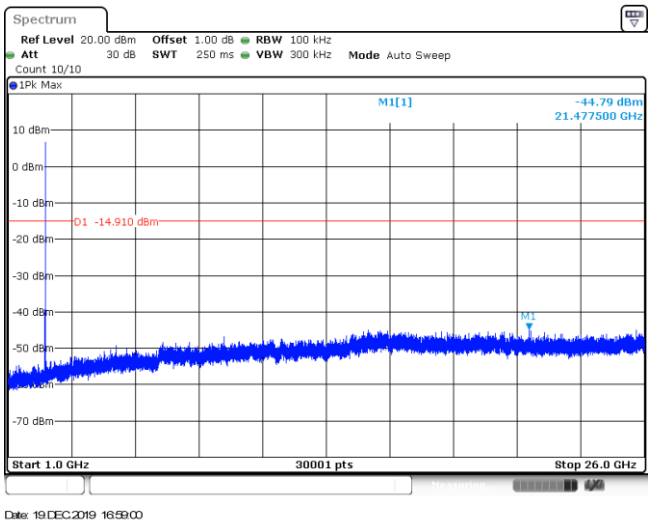
| | |
|---|---|
| CH78<br>Hoppig mode |  |

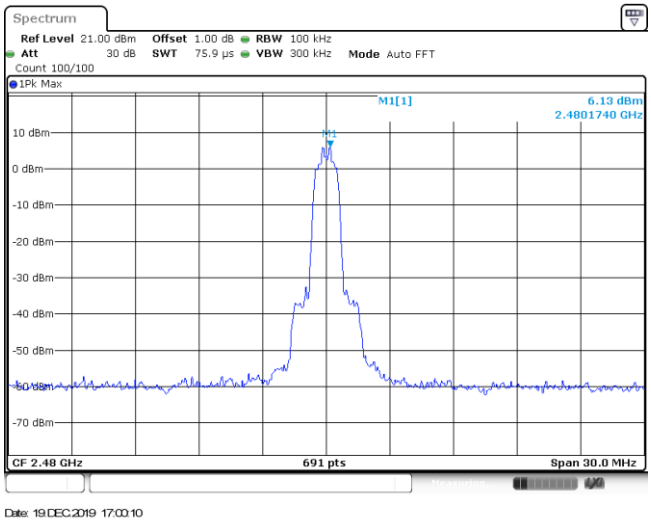
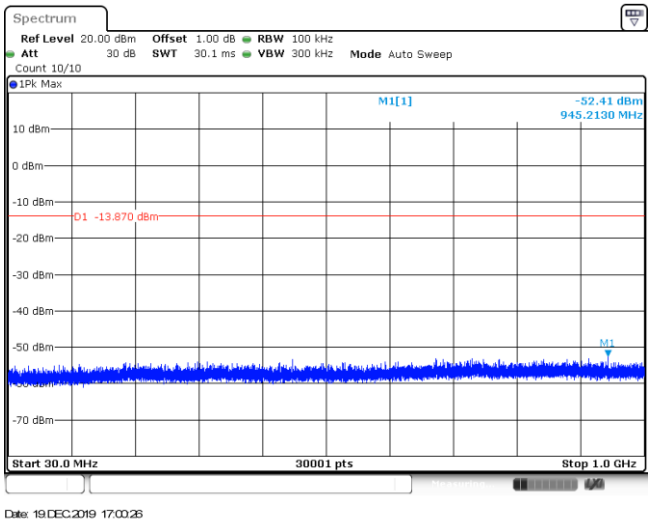
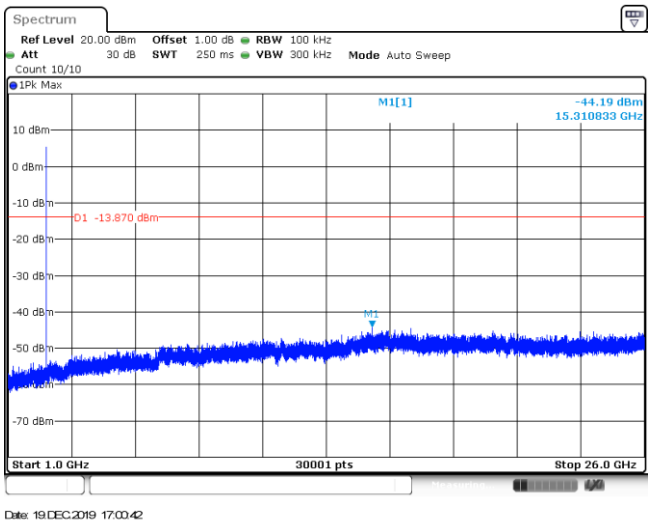
| Test Item: | Spurious Emission | Modulation type: | GFSK |
|---|---|---|---|
| CH00<br>Reference level |  | | |
| CH00<br>30MHz~1000MHz |  | | |
| CH00<br>1GHz~26GHz |  | | |

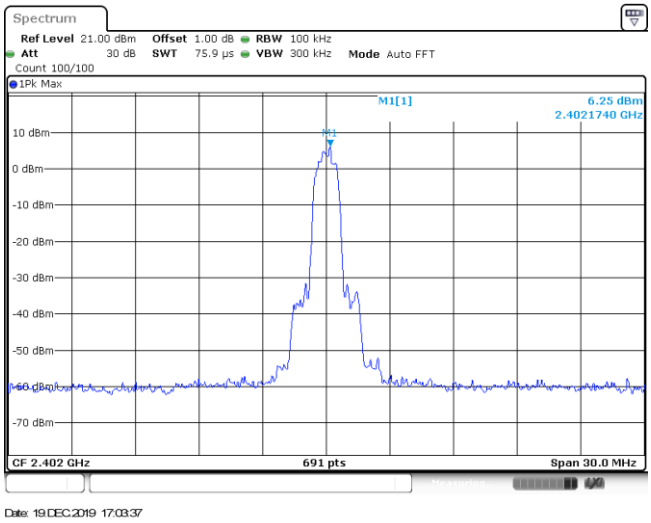
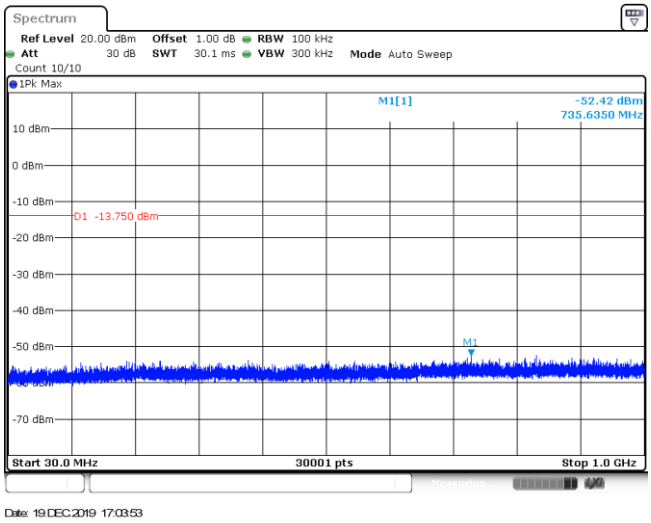
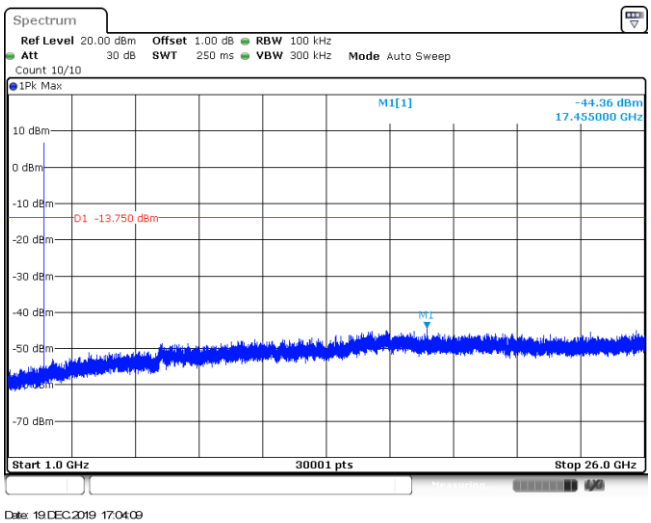
| | |
|---|---|
| CH39<br>Reference level |  |
| CH39<br>30MHz~1000MHz |  |
| CH39<br>1GHz~26GHz |  |

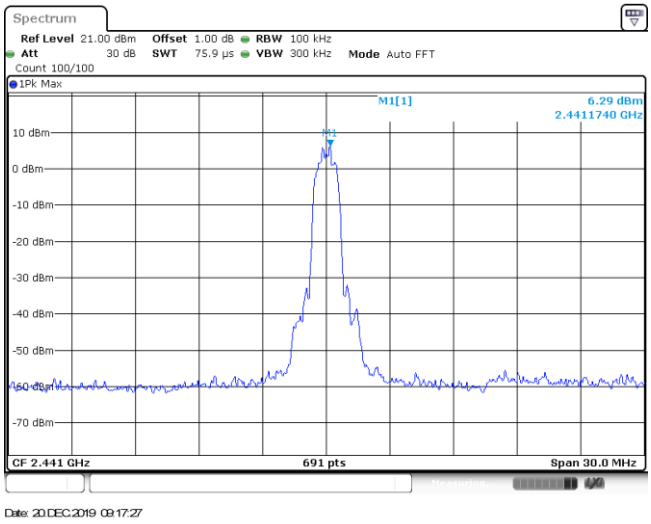
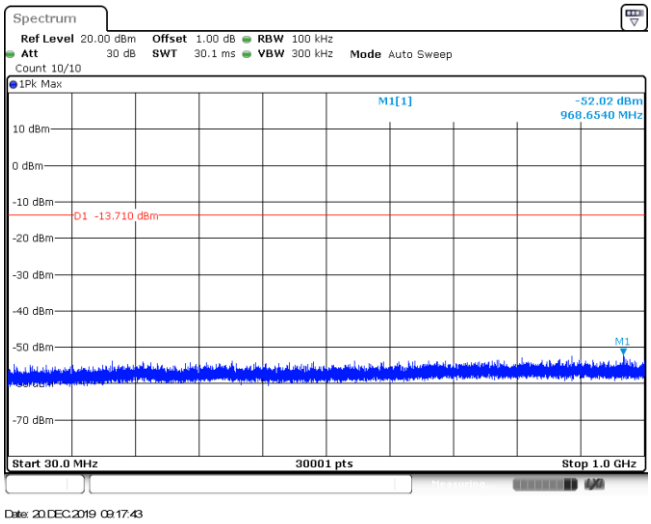
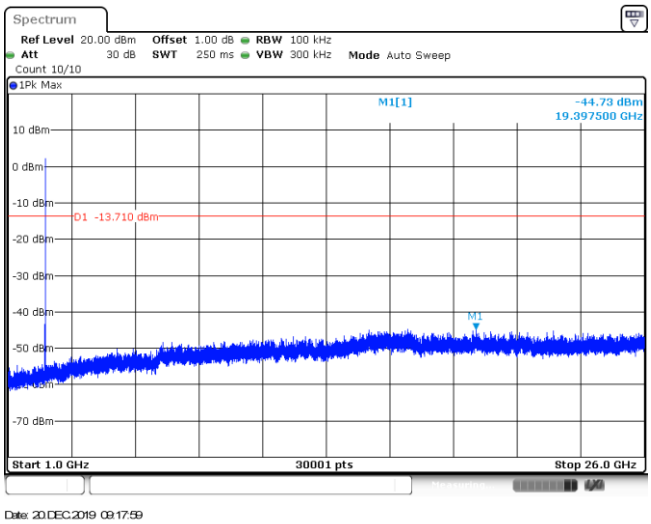
| | |
|---|---|
| CH78<br>Reference level |  |
| CH78<br>30MHz~1000MHz |  |
| CH78<br>1GHz~26GHz |  |

| Test Item: | Spurious Emission | Modulation type: | π/4DQPSK |
|---|---|---|---|
| CH00<br>Reference level |  | | |
| CH00<br>30MHz~1000MHz |  | | |
| CH00<br>1GHz~26GHz |  | | |

| | |
|---|---|
| CH39<br>Reference level |  |
| CH39<br>30MHz~1000MHz |  |
| CH39<br>1GHz~26GHz |  |

| | |
|---|---|
| CH78<br>Reference level |  |
| CH78<br>30MHz~1000MHz |  |
| CH78<br>1GHz~26GHz |  |

| Test Item: | Spurious Emission | Modulation type: | 8DPSK |
|---|---|---|---|
| CH00<br>Reference level |  | | |
| CH00<br>30MHz~1000MHz |  | | |
| CH00<br>1GHz~26GHz |  | | |

| | |
|---|---|
| CH39<br>Reference level |  |
| CH39<br>30MHz~1000MHz |  |
| CH39<br>1GHz~26GHz |  |

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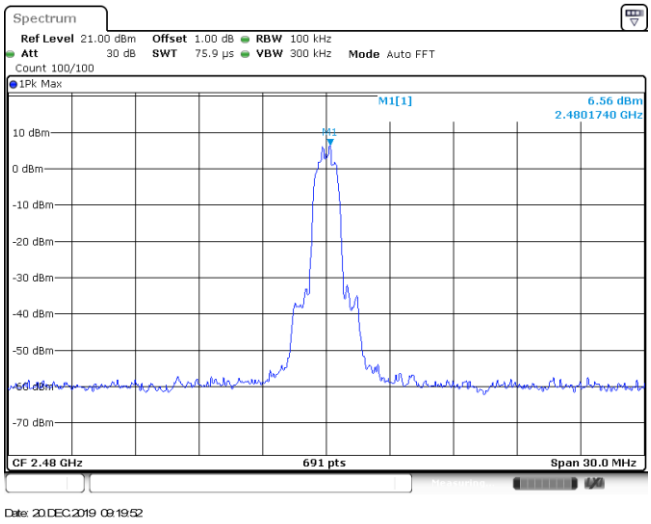
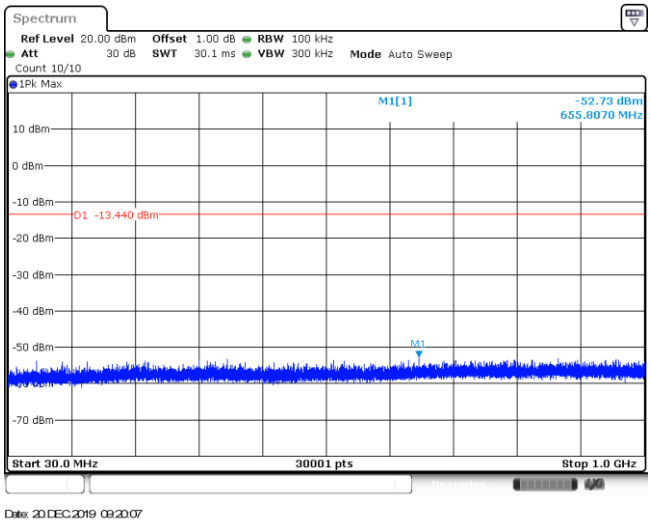
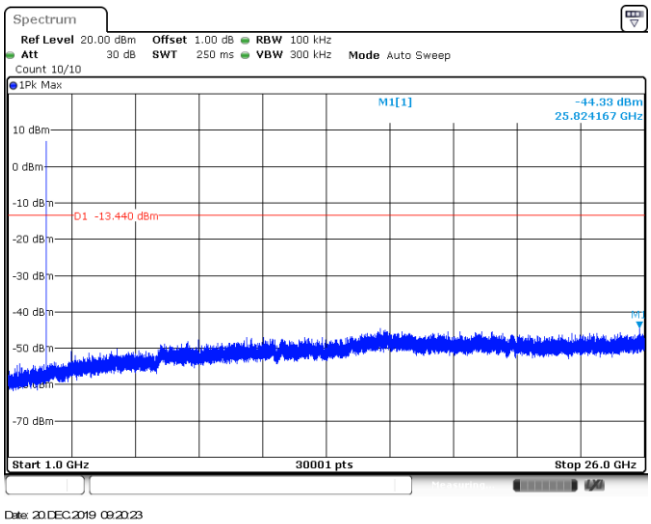
|---|---|
| CH78<br>Reference level |  |
| CH78<br>30MHz~1000MHz |  |
| CH78<br>1GHz~26GHz |  |

--------End of Report--------