

TEST REPORT

Product Name: Rose Technics TWS Earbuds
FCC ID: 2BCSS-CERAMICS
Trademark: N/A
Model Number: CERAMICS, C1, C2, C3, CERAMICS 1, CERAMICS 2, CERAMICS 3
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Sample Received Date: Aug. 23, 2023
Sample tested Date: Aug. 23, 2023 to Sep. 08, 2023
Issue Date: Sep. 08, 2023
Report No.: CTB230905031RFX
Test Standards: FCC Part15.247
ANSI C63.10:2013
Test Results: PASS
Remark: This is Bluetooth radio test report.

Compiled by:

Reviewed by:

Approved by:

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Note: If there is any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client. "*" indicates the testing items were fulfilled by subcontracted lab. "#" indicates the items are not in CNAS accreditation scope.

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(Note: N/A means not applicable)



1. VERSION

| Report No. | Issue Date | Description | Approved |
|-----------------|---------------|-------------|----------|
| CTB230905031RFX | Sep. 08, 2023 | Original | Valid |

2. TEST SUMMARY

The Product has been tested according to the following specifications:

| Test Item | Test Requirement | Test method | Result |
|--|---|------------------|--------|
| AC Power Line Conducted Emission | 47 CFR Part 15 Subpart C Section 15.207 | ANSI C63.10-2013 | PASS |
| Radiated Spurious emissions | 47 CFR Part 15 Subpart C Section 15.205/15.209 | ANSI C63.10-2013 | PASS |
| Band edge and RF Conducted Spurious Emissions | 47 CFR Part 15 Subpart C Section 15.247(d)/15.205(a) | ANSI C63.10-2013 | PASS |
| Conducted Peak Output Power | 47 CFR Part 15 Subpart C Section 15.247 (b)(1) | ANSI C63.10-2013 | PASS |
| 20dB Occupied Bandwidth | 47 CFR Part 15 Subpart C Section 15.247 (a)(1) | ANSI C63.10-2013 | PASS |
| Carrier Frequencies Separation | 47 CFR Part 15 Subpart C Section 15.247 (a)(1) | ANSI C63.10-2013 | PASS |
| Hopping Channel Number | 47 CFR Part 15 Subpart C Section 15.247 (b) | ANSI C63.10-2013 | PASS |
| Dwell Time | 47 CFR Part 15 Subpart C Section 15.247 (a)(1) | ANSI C63.10-2013 | PASS |
| Pseudorandom Frequency Hopping Sequence | 47 CFR Part 15 Subpart C Section 15.247(a)&TCB Exclusion List (7 July 2002) | ANSI C63.10-2013 | PASS |
| Antenna Requirement | 47 CFR Part 15 Subpart C Section 15.203/15.247 (b) | / | PASS |
| RF Exposure Evaluation | 47 CFR Part 15 Subpart C Section 15.247 (i)/1.1310/2.1093 | KDB447498D01v06 | PASS |

Remark:

Test according to ANSI C63.10-2013.

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| Item | Uncertainty |
|--|--------------------|
| Occupancy bandwidth | 54.3kHz |
| Conducted output power Above 1G | 0.9dB |
| Conducted output power below 1G | 0.9dB |
| Power Spectral Density , Conduction | 0.9dB |
| Conduction spurious emissions | 2.0dB |
| Out of band emission | 2.0dB |
| 3m chamber Radiated spurious emission(9KHz-30MHz) | 4.8dB |
| 3m chamber Radiated spurious emission(30MHz-1GHz) | 4.6dB |
| 3m chamber Radiated spurious emission(1GHz-18GHz) | 5.1dB |
| 3m chamber Radiated spurious emission(18GHz-40GHz) | 3.4dB |
| humidity uncertainty | 5.5% |
| Temperature uncertainty | 0.63°C |
| frequency | 1×10 ⁻⁷ |
| Conducted Emission (150KHz-30MHz) | 3.2 dB |
| Radiated Emission(30MHz ~ 1000MHz) | 4.8 dB |
| Radiated Emission(1GHz ~6GHz) | 4.9 dB |

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s): CERAMICS, C1, C2, C3, CERAMICS 1, CERAMICS 2, CERAMICS 3

Model Description: All the model are the same circuit and RF module, only for model name. Test sample model: CERAMICS

Bluetooth Version: Bluetooth 5.0

Hardware Version: V1.0

Software Version: V1.0

Operation Frequency: Bluetooth: 2402-2480MHz

Max. RF output power: Bluetooth: 3.713dBm

Type of Modulation: Bluetooth: GFSK, $\pi/4$ DQPSK, 8DPSK

Antenna installation: Bluetooth: Chip Antenna

Antenna Gain: Bluetooth: 3.35dBi

Ratings: DC 5V charging from adapter
DC 3.7V by battery

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|------|-----------|-----------|----------------|------------|------|
| 1 | Adapter | JIYIN | JY-05100C | / | / |

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

| CH | Frequency (MHz) | CH | Frequency (MHz) | CH | Frequency (MHz) | CH | Frequency (MHz) |
|----|-----------------|----|-----------------|----|-----------------|----|-----------------|
| 0 | 2402 | 1 | 2403 | 2 | 2404 | 3 | 2405 |
| 4 | 2406 | 5 | 2407 | 6 | 2408 | 7 | 2409 |
| 8 | 2410 | 9 | 2411 | 10 | 2412 | 11 | 2413 |
| 12 | 2414 | 13 | 2415 | 14 | 2416 | 15 | 2417 |
| 16 | 2418 | 17 | 2419 | 18 | 2420 | 19 | 2421 |
| 20 | 2422 | 21 | 2423 | 22 | 2424 | 23 | 2425 |
| 24 | 2426 | 25 | 2427 | 26 | 2428 | 27 | 2429 |
| 28 | 2430 | 29 | 2431 | 30 | 2432 | 31 | 2433 |
| 32 | 2434 | 33 | 2435 | 34 | 2436 | 35 | 2437 |
| 36 | 2438 | 37 | 2439 | 38 | 2440 | 39 | 2441 |
| 40 | 2442 | 41 | 2443 | 42 | 2444 | 43 | 2445 |
| 44 | 2446 | 45 | 2447 | 46 | 2448 | 47 | 2449 |
| 48 | 2450 | 49 | 2451 | 50 | 2452 | 51 | 2453 |
| 52 | 2454 | 53 | 2455 | 54 | 2456 | 55 | 2457 |
| 56 | 2458 | 57 | 2459 | 58 | 2460 | 59 | 2461 |
| 60 | 2462 | 61 | 2463 | 62 | 2464 | 63 | 2465 |
| 64 | 2466 | 65 | 2467 | 66 | 2468 | 67 | 2469 |
| 68 | 2470 | 69 | 2471 | 70 | 2472 | 71 | 2473 |
| 72 | 2474 | 73 | 2475 | 74 | 2476 | 75 | 2477 |
| 76 | 2478 | 77 | 2479 | 78 | 2480 | 79 | / |

4.5 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

| Test mode | Low channel | Middle channel | High channel |
|--|-------------|----------------|--------------|
| Transmitting (GFSK, $\pi/4$ DQPSK, 8DPSK) | 2402MHz | 2441MHz | 2480MHz |
| Receiving (GFSK, $\pi/4$ DQPSK, 8DPSK) | 2402MHz | 2441MHz | 2480MHz |

4.6 Test Environment

| | |
|-----------------------------------|------|
| Humidity(%): | 54 |
| Atmospheric Pressure(kPa): | 101 |
| Normal Voltage(DC): | 3.7V |
| Normal Temperature($^{\circ}$ C) | 23 |
| Low Temperature($^{\circ}$ C) | 0 |
| High Temperature($^{\circ}$ C) | 40 |

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at 1&2F., Building A, No. 26, Xinh Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

| Item | Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|---|--------------|-----------------------|--------------|------------------|
| 1 | Spectrum Analyzer | Agilent | N9020A | MY52090073 | 2024.07.05 |
| 2 | Power Sensor | Agilent | U2021XA | MY56120032 | 2024.07.05 |
| 3 | Power Sensor | Agilent | U2021XA | MY56120034 | 2024.07.05 |
| 4 | Communication test set | R&S | CMW500 | 108058 | 2024.07.05 |
| 5 | Spectrum Analyzer | KEYSIGHT | N9020A | MY51289897 | 2024.07.05 |
| 6 | Signal Generator | Agilent | N5181A | MY50140365 | 2024.07.05 |
| 7 | Vector signal generator | Agilent | N5182A | MY47420195 | 2024.07.05 |
| 8 | Communication test set | Agilent | E5515C | MY50102567 | 2024.07.06 |
| 9 | 2.4 GHz Filter | Shenxiang | MSF2400-2483.5MS-1154 | 20181015001 | 2024.07.05 |
| 10 | 5 GHz Filter | Shenxiang | MSF5150-5850 MS-1155 | 20181015001 | 2024.07.06 |
| 11 | Filter | Xingbo | XBLBQ-DZA120 | 190821-1-1 | 2024.07.06 |
| 12 | BT&WI-FI Automatic test software | Microwave | MTS8000 | Ver. 2.0.0.0 | / |
| 13 | Rohde & Schwarz SFU Broadcast Test System | R&S | SFU | 101017 | 2023.10.30 |
| 14 | Temperature humidity chamber | Hongjing | TH-80CH | DG-15174 | 2024.07.05 |
| 15 | 234G Automatic test software | Microwave | MTS8200 | Ver. 2.0.0.0 | / |
| 16 | 966 chamber | C.R.T. | 966 | / | 2024.08.11 |
| 17 | Receiver | R&S | ESPI | 100362 | 2024.07.05 |
| 18 | Amplifier | HP | 8447E | 2945A02747 | 2024.07.05 |
| 19 | Amplifier | Agilent | 8449B | 3008A01838 | 2024.07.05 |
| 20 | TRILOG Broadband Antenna | Schwarzbeck | VULB 9168 | 00869 | 2024.07.08 |

| | | | | | |
|----|--------------------------------------|-------------|------------|------------|------------|
| 21 | Double Ridged Broadband Horn Antenna | Schwarzbeck | BBHA9120D | 01911 | 2024.07.08 |
| 22 | EMI test software | Fala | EZ-EMC | FA-03A2 RE | / |
| 23 | Loop Antenna | Schwarzbeck | FMZB 1519B | 1519B-224 | 2024.07.08 |
| 24 | loop antenna | ZHINAN | ZN30900A | GTS534 | / |
| 25 | 40G Horn antenna | A/H/System | SAS-574 | 588 | 2023.10.30 |
| 26 | Amplifier | AEROFLEX | Aeroflex | 097 | 2023.10.30 |

Continuous disturbance

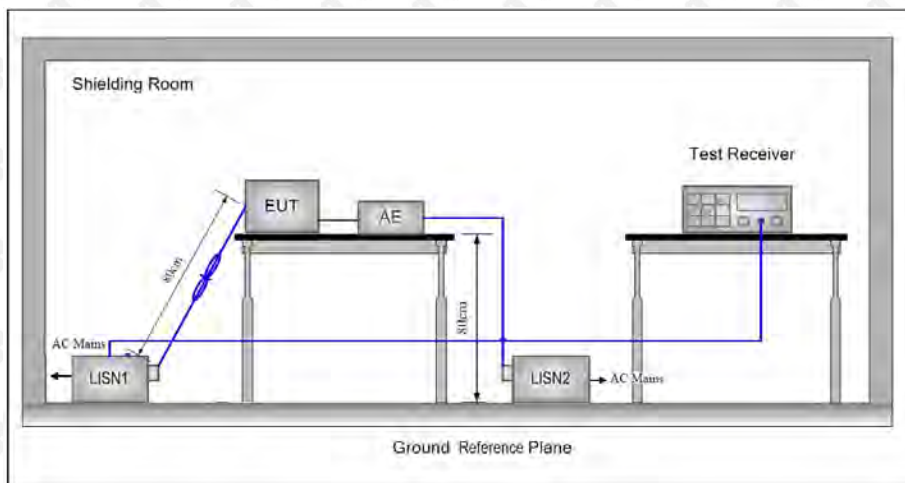
| No. | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|-----|------------------------|---------------|--------------------|------------|------------------|
| 1 | LISN | ROHDE&SCHWARZ | ESH3-Z5 | 100318 | 2024.07.05 |
| 2 | Pulse limiter | ROHDE&SCHWARZ | ESH3Z2 | 357881052 | 2024.07.05 |
| 3 | EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCI | 100428/003 | 2024.07.05 |
| 4 | Coaxial cable | ZDECL | Z302S-NJ-SMA J-12M | 18091905 | 2024.07.05 |
| 5 | ISN | Schwarzbeck | NTFM8158 | 183 | 2024.07.05 |
| 6 | Communication test set | Agilent | E5515C | MY50102567 | 2024.07.05 |
| 7 | Communication test set | R&S | CMW500 | 108058 | 2024.07.05 |
| 8 | EZ-EMC | Frad | EMC-con3A1.1 | / | / |

Radiated emission

| No. | Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|-----|--------------------------------------|---------------|------------------------|------------|------------------|
| 1 | Double Ridged Broadband Horn Antenna | Schwarzbeck | BBHA 9120 D | 01911 | 2024.07.08 |
| 2 | TRILOG Broadband Antenna | Schwarzbeck | VULB 9168 | 00869 | 2024.07.08 |
| 3 | Amplifier | Agilent | 8449B | 3008A01838 | 2024.07.05 |
| 4 | Amplifier | HP | 8447E | 2945A02747 | 2024.07.05 |
| 5 | EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCI | 100428/003 | 2024.07.05 |
| 6 | Coaxial cable | ETS | RFC-SNS-100-NMS-80 NI | / | 2024.07.05 |
| 7 | Coaxial cable | ETS | RFC-SNS-100-NMS-20 NI | / | 2024.07.05 |
| 8 | Coaxial cable | ETS | RFC-SNS-100-SMS-20 NI | / | 2024.07.05 |
| 9 | Coaxial cable | ETS | RFC-NNS-100-NMS-300 NI | / | 2024.07.05 |
| 10 | Communication test set | Agilent | E5515C | MY50102567 | 2024.07.05 |
| 11 | Communication test set | R&S | CMW500 | 108058 | 2024.07.05 |
| 12 | EZ-EMC | Frad | EMC-con3A1.1 | / | / |

6. AC POWER LINE CONDUCTED EMISSION

6.1 Block Diagram Of Test Setup



6.2 Limit

| Table 4 – AC power-line conducted emissions limits | | |
|--|------------------------------|----------------------------|
| Frequency (MHz) | Conducted limit (dB μ V) | |
| | Quasi-peak | Average |
| 0.15 - 0.5 | 66 to 56 ^{Note 1} | 56 to 46 ^{Note 1} |
| 0.5 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

Note 1: The level decreases linearly with the logarithm of the frequency.

* Decreasing linearly with the logarithm of the frequency

6.3 Test procedure

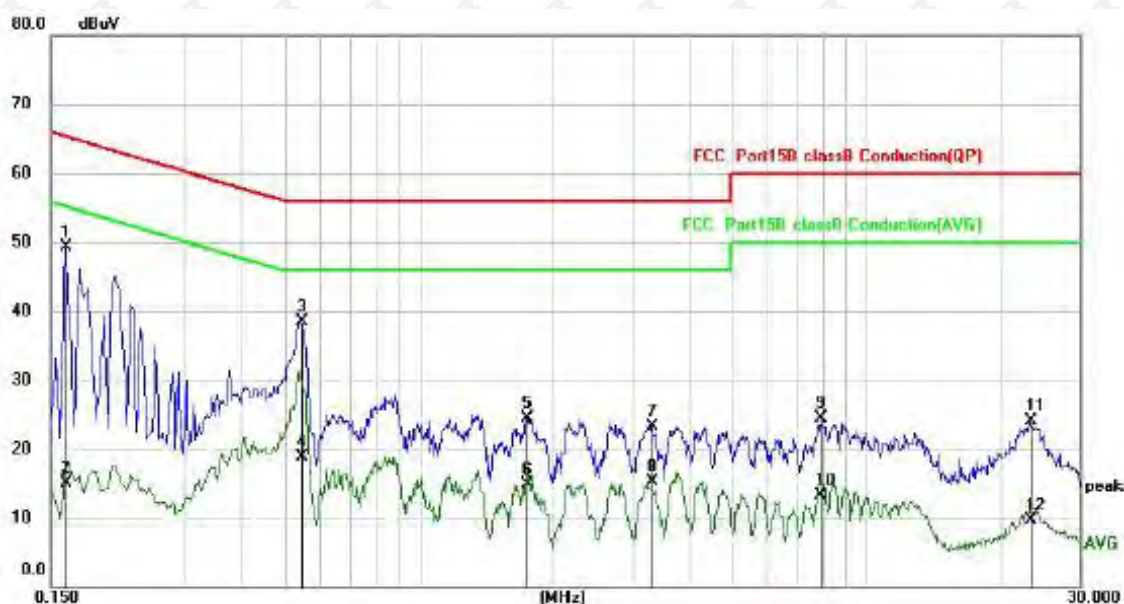
- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50 Ω /50 μ H + 5 Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane.

This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.
- 6) All modes were tested at AC 120V and 240V, only the worst result of AC 120V 60Hz was reported.
- 7) If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.

6.4 Test Result

L: Worst case-GFSK(low channel)

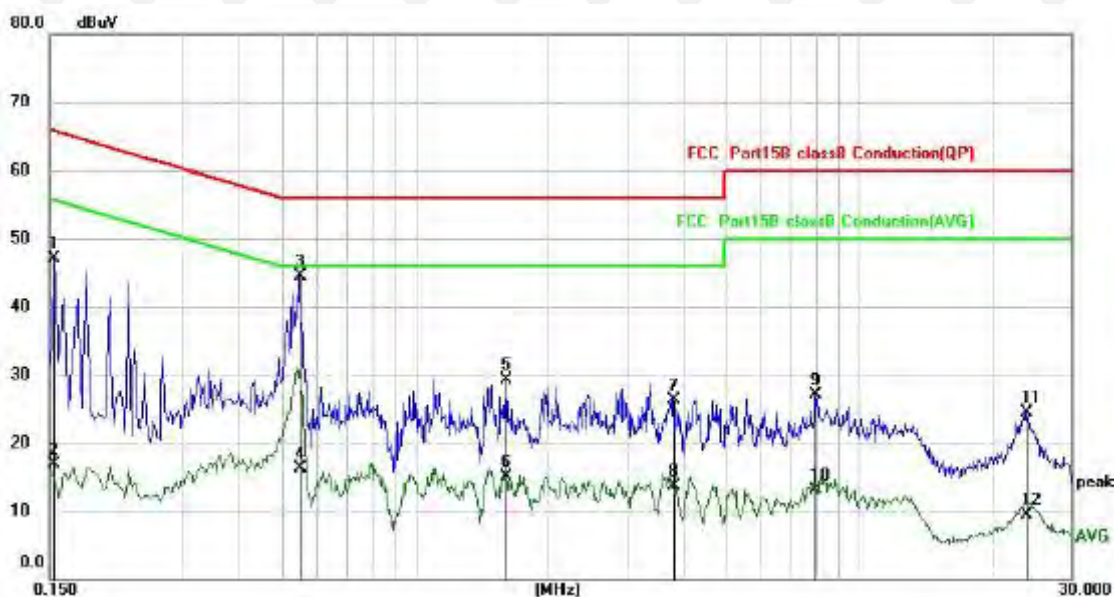


| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|
| 1 | * | 0.1620 | 39.51 | 9.70 | 49.21 | 65.36 | -16.15 | QP |
| 2 | | 0.1620 | 5.45 | 9.70 | 15.15 | 55.36 | -40.21 | AVG |
| 3 | | 0.5460 | 28.84 | 9.69 | 38.53 | 56.00 | -17.47 | QP |
| 4 | | 0.5460 | 9.17 | 9.69 | 18.86 | 46.00 | -27.14 | AVG |
| 5 | | 1.7420 | 14.64 | 9.80 | 24.44 | 56.00 | -31.56 | QP |
| 6 | | 1.7420 | 5.12 | 9.80 | 14.92 | 46.00 | -31.08 | AVG |
| 7 | | 3.3020 | 13.47 | 9.87 | 23.34 | 56.00 | -32.66 | QP |
| 8 | | 3.3020 | 5.38 | 9.87 | 15.25 | 46.00 | -30.75 | AVG |
| 9 | | 7.9060 | 14.45 | 10.07 | 24.52 | 60.00 | -35.48 | QP |
| 10 | | 7.9060 | 3.28 | 10.07 | 13.35 | 50.00 | -36.65 | AVG |
| 11 | | 23.1500 | 13.49 | 10.71 | 24.20 | 60.00 | -35.80 | QP |
| 12 | | 23.1500 | -1.08 | 10.71 | 9.63 | 50.00 | -40.37 | AVG |

Remark:

Factor = Cable loss + LISN factor, Margin = Measurement – Limit

N: Worst case-GFSK(low channel)



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measurement dBuV | Limit dBuV | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|---------------------|---------------|------------|----------|
| 1 | | 0.1539 | 37.38 | 9.70 | 47.08 | 65.79 | -18.71 | QP |
| 2 | | 0.1539 | 7.18 | 9.70 | 16.88 | 55.79 | -38.91 | AVG |
| 3 | * | 0.5500 | 34.90 | 9.69 | 44.59 | 56.00 | -11.41 | QP |
| 4 | | 0.5500 | 6.64 | 9.69 | 16.33 | 46.00 | -29.67 | AVG |
| 5 | | 1.6019 | 19.58 | 9.80 | 29.38 | 56.00 | -26.62 | QP |
| 6 | | 1.6019 | 5.27 | 9.80 | 15.07 | 46.00 | -30.93 | AVG |
| 7 | | 3.8020 | 16.39 | 9.89 | 26.28 | 56.00 | -29.72 | QP |
| 8 | | 3.8020 | 3.86 | 9.89 | 13.75 | 46.00 | -32.25 | AVG |
| 9 | | 7.9500 | 16.94 | 10.08 | 27.02 | 60.00 | -32.98 | QP |
| 10 | | 7.9500 | 3.06 | 10.08 | 13.14 | 50.00 | -36.86 | AVG |
| 11 | | 23.7020 | 13.79 | 10.73 | 24.52 | 60.00 | -35.48 | QP |
| 12 | | 23.7020 | -1.24 | 10.73 | 9.49 | 50.00 | -40.51 | AVG |

Remark:

Factor = Cable loss + LISN factor, Margin = Measurement – Limit

7. RADIATED SPURIOUS EMISSION

7.1 Block Diagram Of Test Setup

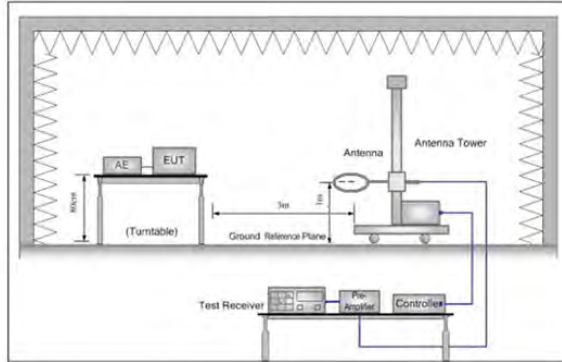


Figure 1. Below 30MHz

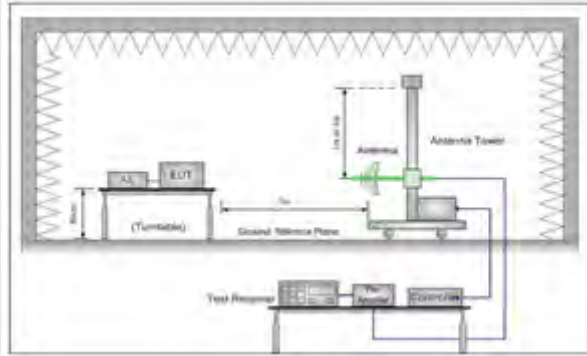


Figure 2. 30MHz to 1GHz

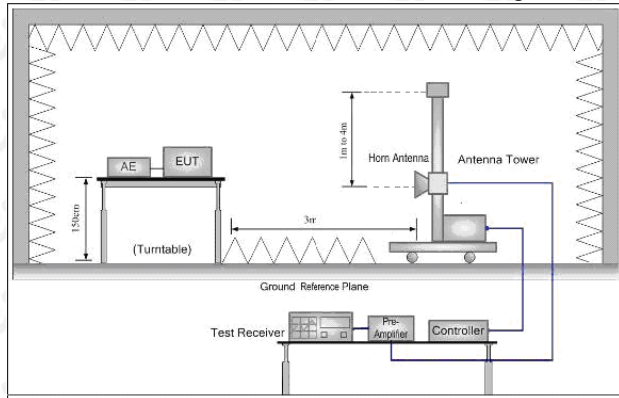


Figure 3. Above 1GHz

7.2 Limit

Spurious Emissions:

| Frequency | Field strength (microvolt/meter) | Limit (dB μ V/m) | Remark | Measurement distance (m) |
|-------------------|----------------------------------|-----------------------|------------|--------------------------|
| 0.009MHz-0.490MHz | 2400/F (kHz) | - | - | 300 |
| 0.490MHz-1.705MHz | 24000/F (kHz) | - | - | 30 |
| 1.705MHz-30MHz | 30 | - | - | 30 |
| 30MHz-88MHz | 100 | 40.0 | Quasi-peak | 3 |
| 88MHz-216MHz | 150 | 43.5 | Quasi-peak | 3 |
| 216MHz-960MHz | 200 | 46.0 | Quasi-peak | 3 |
| 960MHz-1GHz | 500 | 54.0 | Quasi-peak | 3 |
| Above 1GHz | 500 | 54.0 | Average | 3 |

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

7.3 Test procedure

Below 1GHz test procedure as below:

- a.The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b.The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c.The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d.For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f.If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- g.Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
- h.Test the EUT in the lowest channel ,the middle channel ,the Highest channel
- i.Repeat above procedures until all frequencies measured was complete.
- j. Full battery is used during test

Receiver set:

| Frequency | Detector | RBW | VBW | Remark |
|-------------------|------------|---------|--------|------------|
| 0.009MHz-0.090MHz | Peak | 10kHz | 30KHz | Peak |
| 0.009MHz-0.090MHz | Average | 10kHz | 30KHz | Average |
| 0.090MHz-0.110MHz | Quasi-peak | 10kHz | 30KHz | Quasi-peak |
| 0.110MHz-0.490MHz | Peak | 10kHz | 30KHz | Peak |
| 0.110MHz-0.490MHz | Average | 10kHz | 30KHz | Average |
| 0.490MHz -30MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak |
| 30MHz-1GHz | Quasi-peak | 120 kHz | 300KHz | Quasi-peak |
| Above 1GHz | Peak | 1MHz | 3MHz | Peak |
| | Peak | 1MHz | 10Hz | Average |

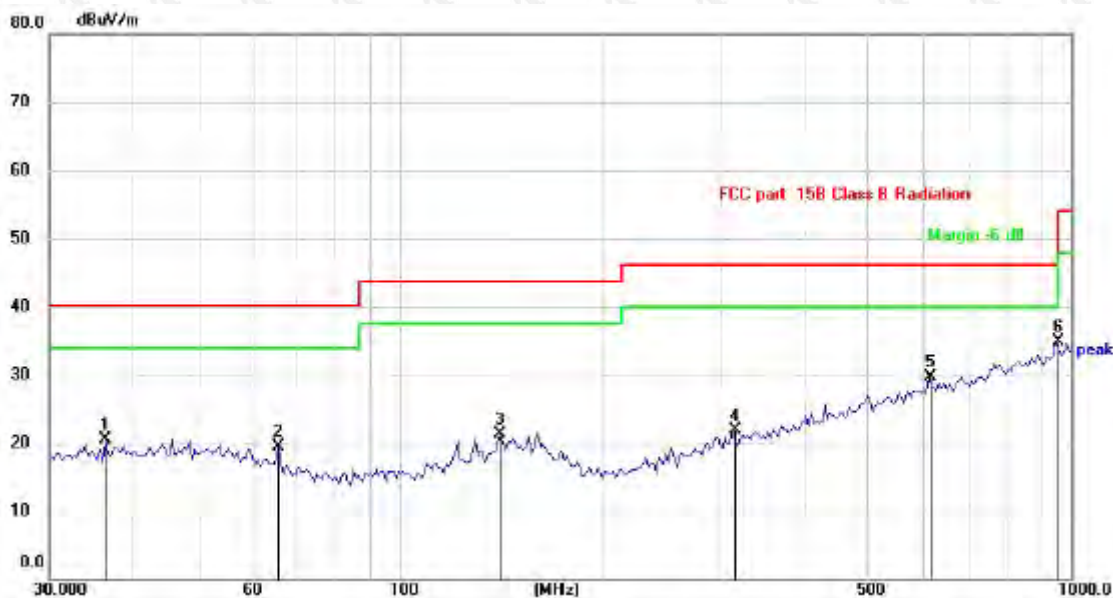
7.4 Test Result

Right ear:

Below 1GHz Test Results:

Antenna polarity: H

Worst case-GFSK(low channel)



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dB/m | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|---------------|------------|----------|
| 1 | | 36.3814 | 27.03 | -6.58 | 20.45 | 40.00 | -19.55 | QP |
| 2 | | 66.0342 | 27.90 | -8.47 | 19.43 | 40.00 | -20.57 | QP |
| 3 | | 141.5777 | 26.77 | -5.50 | 21.27 | 43.50 | -22.23 | QP |
| 4 | | 314.3765 | 26.97 | -5.06 | 21.91 | 46.00 | -24.09 | QP |
| 5 | | 612.0642 | 27.08 | 2.62 | 29.70 | 46.00 | -16.30 | QP |
| 6 | * | 948.7610 | 27.33 | 7.63 | 34.96 | 46.00 | -11.04 | QP |

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Measurement- Limit

Antenna polarity: V
 Worst case-GFSK(low channel)



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dB/m | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|---------------|------------|----------|
| 1 | | 42.6000 | 30.75 | -6.51 | 24.24 | 40.00 | -15.76 | QP |
| 2 | | 48.1626 | 30.50 | -6.59 | 23.91 | 40.00 | -16.09 | QP |
| 3 | | 97.1148 | 31.03 | -9.82 | 21.21 | 43.50 | -22.29 | QP |
| 4 | | 141.5777 | 27.08 | -5.50 | 21.58 | 43.50 | -21.92 | QP |
| 5 | | 384.6055 | 26.47 | -3.08 | 23.39 | 46.00 | -22.61 | QP |
| 6 | * | 846.5708 | 27.54 | 6.38 | 33.92 | 46.00 | -12.08 | QP |

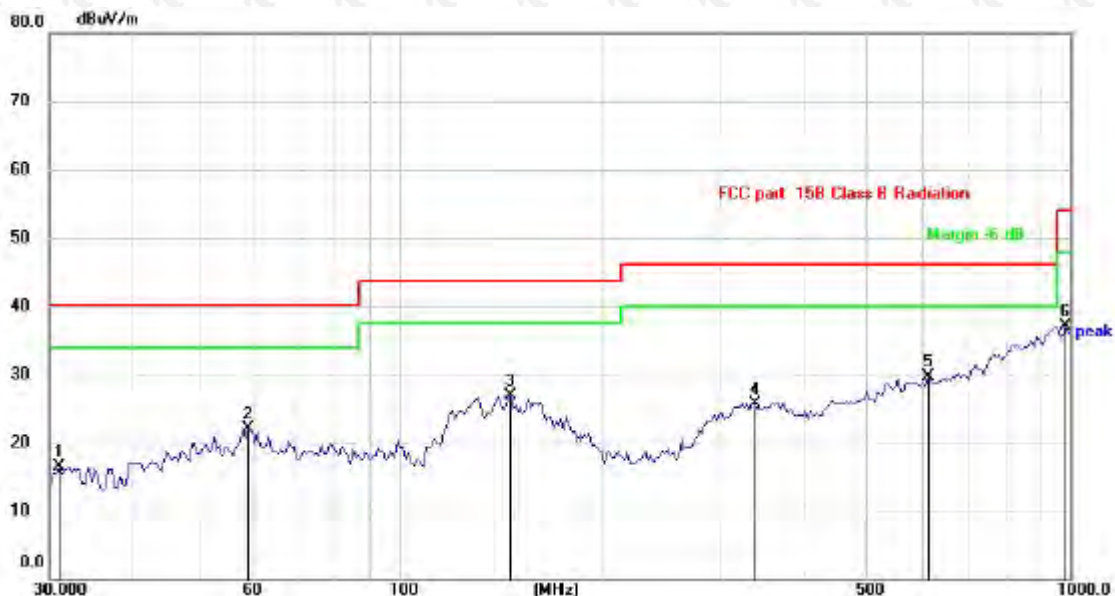
Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Measurement- Limit

Left ear:

Below 1GHz Test Results:

Antenna polarity: H

Worst case-GFSK(low channel)



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dB/m | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|---------------|------------|----------|
| 1 | | 31.0705 | 23.38 | -6.86 | 16.52 | 40.00 | -23.48 | QP |
| 2 | | 59.4405 | 29.55 | -7.50 | 22.05 | 40.00 | -17.95 | QP |
| 3 | | 146.6303 | 32.37 | -5.48 | 26.89 | 43.50 | -16.61 | QP |
| 4 | | 340.1847 | 30.12 | -4.33 | 25.79 | 46.00 | -20.21 | QP |
| 5 | * | 612.0641 | 27.08 | 2.62 | 29.70 | 46.00 | -16.30 | QP |
| 6 | | 982.6200 | 29.12 | 8.03 | 37.15 | 54.00 | -16.85 | QP |

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Measurement- Limit
 Measurement=Reading level+correct facto

Antenna polarity: V
Worst case-GFSK(low channel)



| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dB/m | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|---------------|------------|----------|
| 1 | | 40.0643 | 24.54 | -6.47 | 18.07 | 40.00 | -21.93 | QP |
| 2 | | 62.6505 | 29.37 | -7.96 | 21.41 | 40.00 | -18.59 | QP |
| 3 | | 139.1170 | 30.99 | -5.58 | 25.41 | 43.50 | -18.09 | QP |
| 4 | | 248.1165 | 27.79 | -7.90 | 19.89 | 46.00 | -26.11 | QP |
| 5 | | 438.6553 | 28.84 | -1.61 | 27.23 | 46.00 | -18.77 | QP |
| 6 | * | 892.2907 | 27.97 | 6.96 | 34.93 | 46.00 | -11.07 | QP |

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Measurement- Limit
Measurement=Reading level+correct facto

Right ear:

Above 1 GHz Test Results:

CH Low (2402MHz)

Horizontal:

| Frequency (MHz) | Reading Result (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector Type |
|--------------------|--------------------------|----------------|----------------------------|--------------------|----------------|---------------|
| 4804 | 59.26 | -3.65 | 55.61 | 74.00 | -18.39 | peak |
| 4804 | 50.83 | -3.65 | 47.18 | 54.00 | -6.82 | AVG |
| 7206 | 60.42 | -0.95 | 59.47 | 74.00 | -14.53 | peak |
| 7206 | 42.35 | -0.95 | 41.40 | 54.00 | -12.60 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

Vertical:

| Frequency (MHz) | Reading Result (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector Type |
|--------------------|--------------------------|----------------|----------------------------|--------------------|----------------|---------------|
| 4804 | 58.86 | -3.65 | 55.21 | 74.00 | -18.79 | peak |
| 4804 | 49.29 | -3.65 | 45.64 | 54.00 | -8.36 | AVG |
| 7206 | 60.94 | -0.95 | 59.99 | 74.00 | -14.01 | peak |
| 7206 | 40.16 | -0.95 | 39.21 | 54.00 | -14.79 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

CH Middle (2441MHz)

Horizontal:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------------|--------|---------------|
| (MHz) | (dB μ V) | (dB) | (dB μ V/m) | (dB μ V/m) | (dB) | |
| 4882.00 | 59.21 | -3.54 | 55.67 | 74.00 | -18.33 | peak |
| 4882.00 | 48.62 | -3.54 | 45.08 | 54.00 | -8.92 | AVG |
| 7323.00 | 57.69 | -0.81 | 56.88 | 74.00 | -17.12 | peak |
| 7323.00 | 43.06 | -0.81 | 42.25 | 54.00 | -11.75 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

Vertical:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------------|--------|---------------|
| (MHz) | (dB μ V) | (dB) | (dB μ V/m) | (dB μ V/m) | (dB) | |
| 4882.00 | 59.17 | -3.54 | 55.63 | 74.00 | -18.37 | peak |
| 4882.00 | 48.20 | -3.54 | 44.66 | 54.00 | -9.34 | AVG |
| 7323.00 | 58.63 | -0.81 | 57.82 | 74.00 | -16.18 | peak |
| 7323.00 | 43.61 | -0.81 | 42.80 | 54.00 | -11.20 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

CH High (2480MHz)

Horizontal:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------------|--------|---------------|
| (MHz) | (dB μ V) | (dB) | (dB μ V/m) | (dB μ V/m) | (dB) | |
| 4960 | 58.53 | -3.43 | 55.10 | 74.00 | -18.90 | peak |
| 4960 | 49.80 | -3.44 | 46.36 | 54.00 | -7.64 | AVG |
| 7440 | 60.26 | -0.77 | 59.49 | 74.00 | -14.51 | peak |
| 7440 | 40.11 | -0.77 | 39.34 | 54.00 | -14.66 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

Vertical:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------------|--------|---------------|
| (MHz) | (dB μ V) | (dB) | (dB μ V/m) | (dB μ V/m) | (dB) | |
| 4960 | 58.51 | -3.43 | 55.08 | 74.00 | -18.92 | peak |
| 4960 | 48.63 | -3.44 | 45.19 | 54.00 | -8.81 | AVG |
| 7440 | 58.65 | -0.77 | 57.88 | 74.00 | -16.12 | peak |
| 7440 | 40.00 | -0.77 | 39.23 | 54.00 | -14.77 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

The test range is 9K ~10 times the main wave, and other spurious below the limit of 20dB will not be reflected in the report

Restricted bands around fundamental frequency (Radiated)

hopping

Operation Mode: TX CH Low (2402MHz)

Horizontal (Worst case-GFSK)

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2310.00 | 58.26 | -5.81 | 52.45 | 74.00 | -21.55 | peak |
| 2310.00 | / | -5.81 | / | 54.00 | / | AVG |
| 2390.00 | 56.20 | -5.84 | 50.36 | 74.00 | -23.64 | peak |
| 2390.00 | / | -5.84 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor,
Margin = Emission level - l limits

Vertical:

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2310.00 | 55.69 | -5.81 | 49.88 | 74.00 | -24.12 | peak |
| 2310.00 | / | -5.81 | / | 54.00 | / | AVG |
| 2390.00 | 56.06 | -5.84 | 50.22 | 74.00 | -23.78 | peak |
| 2390.00 | / | -5.84 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission
Margin = Emission level - limits

When the peak value is smaller than the AVG limit, AVG is not reflected.

Operation Mode: TX CH High (2480MHz)
Horizontal (Worst case-GFSK)

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|-------------------------------|----------------|----------------------------------|--------------------------|----------------|---------------|
| 2483.50 | 55.69 | -5.81 | 49.88 | 74.00 | -24.12 | peak |
| 2483.50 | / | -5.81 | / | 54.00 | / | AVG |
| 2500.00 | 54.47 | -6.06 | 48.41 | 74.00 | -25.59 | peak |
| 2500.00 | / | -6.06 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - I limits

Vertical:

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|-------------------------------|----------------|----------------------------------|--------------------------|----------------|---------------|
| 2483.50 | 56.70 | -5.81 | 50.89 | 74.00 | -23.11 | peak |
| 2483.50 | / | -5.81 | / | 54.00 | / | AVG |
| 2500.00 | 53.60 | -6.06 | 47.54 | 74.00 | -26.46 | peak |
| 2500.00 | / | -6.06 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - I limits

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.

When the peak value is smaller than the AVG limit, AVG is not reflected.

NO hopping

Operation Mode: TX CH Low (2402MHz)
Horizontal (Worst case-GFSK)

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2310.00 | 56.93 | -5.81 | 51.12 | 74.00 | -22.88 | peak |
| 2310.00 | / | -5.81 | / | 54.00 | / | AVG |
| 2390.00 | 53.37 | -5.84 | 47.53 | 74.00 | -26.47 | peak |
| 2390.00 | / | -5.84 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor,
Margin = Emission level - Limits

Vertical:

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2310.00 | 55.44 | -5.81 | 49.63 | 74.00 | -24.37 | peak |
| 2310.00 | / | -5.81 | / | 54.00 | / | AVG |
| 2390.00 | 54.16 | -5.84 | 48.32 | 74.00 | -25.68 | peak |
| 2390.00 | / | -5.84 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor,
Margin = Emission level - Limits

When the peak value is smaller than the AVG limit, AVG is not reflected.

Operation Mode: TX CH High (2480MHz)
Horizontal (Worst case-GFSK)

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|-------------------------------|----------------|----------------------------------|--------------------------|----------------|---------------|
| 2483.50 | 57.08 | -5.81 | 51.27 | 74.00 | -22.73 | peak |
| 2483.50 | / | -5.81 | / | 54.00 | / | AVG |
| 2500.00 | 56.37 | -6.06 | 50.31 | 74.00 | -23.69 | peak |
| 2500.00 | / | -6.06 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - I limits

Vertical:

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|-------------------------------|----------------|----------------------------------|--------------------------|----------------|---------------|
| 2483.50 | 55.34 | -5.81 | 49.53 | 74.00 | -24.47 | peak |
| 2483.50 | / | -5.81 | / | 54.00 | / | AVG |
| 2500.00 | 53.54 | -6.06 | 47.48 | 74.00 | -26.52 | peak |
| 2500.00 | / | -6.06 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - I limits

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.

When the peak value is smaller than the AVG limit, AVG is not reflected.

Left ear:

Above 1 GHz Test Results:

CH Low (2402MHz)

Horizontal:

| Frequency (MHz) | Reading Result (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector Type |
|--------------------|--------------------------|----------------|----------------------------|--------------------|----------------|---------------|
| 4804 | 59.09 | -3.65 | 55.44 | 74.00 | -18.56 | peak |
| 4804 | 48.58 | -3.65 | 44.93 | 54.00 | -9.07 | AVG |
| 7206 | 60.35 | -0.95 | 59.40 | 74.00 | -14.60 | peak |
| 7206 | 42.55 | -0.95 | 41.60 | 54.00 | -12.40 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

Vertical:

| Frequency (MHz) | Reading Result (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector Type |
|--------------------|--------------------------|----------------|----------------------------|--------------------|----------------|---------------|
| 4804 | 56.75 | -3.65 | 53.10 | 74.00 | -20.90 | peak |
| 4804 | 48.55 | -3.65 | 44.90 | 54.00 | -9.10 | AVG |
| 7206 | 60.52 | -0.95 | 59.57 | 74.00 | -14.43 | peak |
| 7206 | 42.49 | -0.95 | 41.54 | 54.00 | -12.46 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

CH Middle (2441MHz)

Horizontal:

| Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|----------------|--------|----------------|----------------|--------|---------------|
| (dB μ V) | (dB) | (dB μ V/m) | (dB μ V/m) | (dB) | |
| 58.22 | -3.54 | 54.68 | 74.00 | -19.32 | peak |
| 48.61 | -3.54 | 45.07 | 54.00 | -8.93 | AVG |
| 56.17 | -0.81 | 55.36 | 74.00 | -18.64 | peak |
| 41.97 | -0.81 | 41.16 | 54.00 | -12.84 | AVG |

r = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, sion level - Limits

Vertical:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------------|--------|---------------|
| (MHz) | (dB μ V) | (dB) | (dB μ V/m) | (dB μ V/m) | (dB) | |
| 4882.00 | 59.48 | -3.54 | 55.94 | 74.00 | -18.06 | peak |
| 4882.00 | 48.72 | -3.54 | 45.18 | 54.00 | -8.82 | AVG |
| 7323.00 | 58.72 | -0.81 | 57.91 | 74.00 | -16.09 | peak |
| 7323.00 | 41.81 | -0.81 | 41.00 | 54.00 | -13.00 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

CH High (2480MHz)

Horizontal:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------------|--------|---------------|
| (MHz) | (dB μ V) | (dB) | (dB μ V/m) | (dB μ V/m) | (dB) | |
| 4960 | 56.84 | -3.43 | 53.41 | 74.00 | -20.59 | peak |
| 4960 | 47.71 | -3.44 | 44.27 | 54.00 | -9.73 | AVG |
| 7440 | 61.34 | -0.77 | 60.57 | 74.00 | -13.43 | peak |
| 7440 | 41.85 | -0.77 | 41.08 | 54.00 | -12.92 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

Vertical:

| Frequency | Reading Result | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|----------------|--------|----------------|----------------|--------|---------------|
| (MHz) | (dB μ V) | (dB) | (dB μ V/m) | (dB μ V/m) | (dB) | |
| 4960 | 57.14 | -3.43 | 53.71 | 74.00 | -20.29 | peak |
| 4960 | 49.39 | -3.44 | 45.95 | 54.00 | -8.05 | AVG |
| 7440 | 60.02 | -0.77 | 59.25 | 74.00 | -14.75 | peak |
| 7440 | 41.02 | -0.77 | 40.25 | 54.00 | -13.75 | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits

The test range is 9K ~10 times the main wave, and other spurious below the limit of 20dB will not be reflected in the report

Restricted bands around fundamental frequency (Radiated)

hopping

Operation Mode: TX CH Low (2402MHz)

Horizontal (Worst case-GFSK)

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2310.00 | 56.48 | -5.81 | 50.67 | 74.00 | -23.33 | peak |
| 2310.00 | / | -5.81 | / | 54.00 | / | AVG |
| 2390.00 | 55.63 | -5.84 | 49.79 | 74.00 | -24.21 | peak |
| 2390.00 | / | -5.84 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2310.00 | 55.77 | -5.81 | 49.96 | 74.00 | -24.04 | peak |
| 2310.00 | / | -5.81 | / | 54.00 | / | AVG |
| 2390.00 | 56.79 | -5.84 | 50.95 | 74.00 | -23.05 | peak |
| 2390.00 | / | -5.84 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

When the peak value is smaller than the AVG limit, AVG is not reflected.

Operation Mode: TX CH High (2480MHz)
Horizontal (Worst case-GFSK)

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2483.50 | 55.39 | -5.81 | 49.58 | 74.00 | -24.42 | peak |
| 2483.50 | / | -5.81 | / | 54.00 | / | AVG |
| 2500.00 | 54.76 | -6.06 | 48.70 | 74.00 | -25.30 | peak |
| 2500.00 | / | -6.06 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2483.50 | 56.61 | -5.81 | 50.80 | 74.00 | -23.20 | peak |
| 2483.50 | / | -5.81 | / | 54.00 | / | AVG |
| 2500.00 | 53.54 | -6.06 | 47.48 | 74.00 | -26.52 | peak |
| 2500.00 | / | -6.06 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

When the peak value is smaller than the AVG limit, AVG is not reflected.

NO hopping

Operation Mode: TX CH Low (2402MHz)
Horizontal (Worst case-GFSK)

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2310.00 | 56.64 | -5.81 | 50.83 | 74.00 | -23.17 | peak |
| 2310.00 | / | -5.81 | / | 54.00 | / | AVG |
| 2390.00 | 53.43 | -5.84 | 47.59 | 74.00 | -26.41 | peak |
| 2390.00 | / | -5.84 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|--------------------|----------------------------------|----------------|----------------------------------|--------------------------|----------------|------------------|
| 2310.00 | 54.43 | -5.81 | 48.62 | 74.00 | -25.38 | peak |
| 2310.00 | / | -5.81 | / | 54.00 | / | AVG |
| 2390.00 | 53.39 | -5.84 | 47.55 | 74.00 | -26.45 | peak |
| 2390.00 | / | -5.84 | / | 54.00 | / | AVG |

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

When the peak value is smaller than the AVG limit, AVG is not reflected.

Operation Mode: TX CH High (2480MHz)
Horizontal (Worst case-GFSK)

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|---|-------------------------------|----------------|----------------------------------|--------------------------|----------------|---------------|
| 2483.50 | 55.80 | -5.81 | 49.99 | 74.00 | -24.01 | peak |
| 2483.50 | / | -5.81 | / | 54.00 | / | AVG |
| 2500.00 | 53.67 | -6.06 | 47.61 | 74.00 | -26.39 | peak |
| 2500.00 | / | -6.06 | / | 54.00 | / | AVG |
| Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

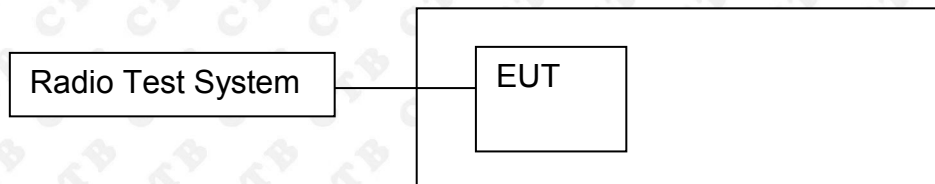
Vertical:

| Frequency (MHz) | Meter Reading (dB μ V) | Factor (dB) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector Type |
|---|-------------------------------|----------------|----------------------------------|--------------------------|----------------|---------------|
| 2483.50 | 56.75 | -5.81 | 50.94 | 74.00 | -23.06 | peak |
| 2483.50 | / | -5.81 | / | 54.00 | / | AVG |
| 2500.00 | 53.59 | -6.06 | 47.53 | 74.00 | -26.47 | peak |
| 2500.00 | / | -6.06 | / | 54.00 | / | AVG |
| Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

When the peak value is smaller than the AVG limit, AVG is not reflected.

8. BAND EDGE AND RF CONDUCTED SPURIOUS EMISSIONS

8.1 Block Diagram Of Test Setup



8.2 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

8.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:

Below 30MHz:

RBW = 100kHz, VBW = 300kHz, Sweep = auto

Detector function = peak, Trace = max hold

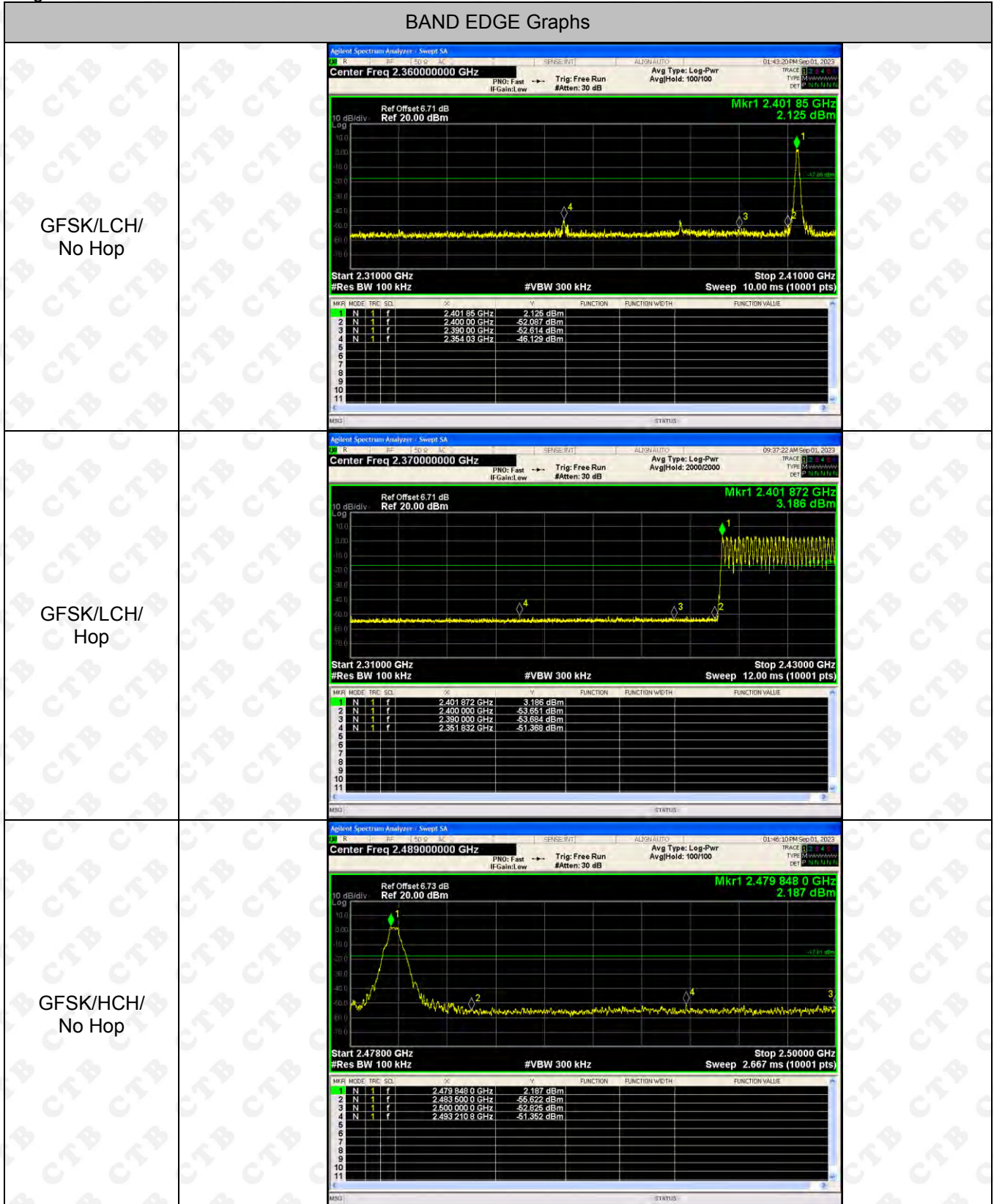
Above 30MHz:

RBW = 100KHz, VBW = 300KHz, Sweep = auto

Detector function = peak, Trace = max hold

8.4 Test Result

Right ear:



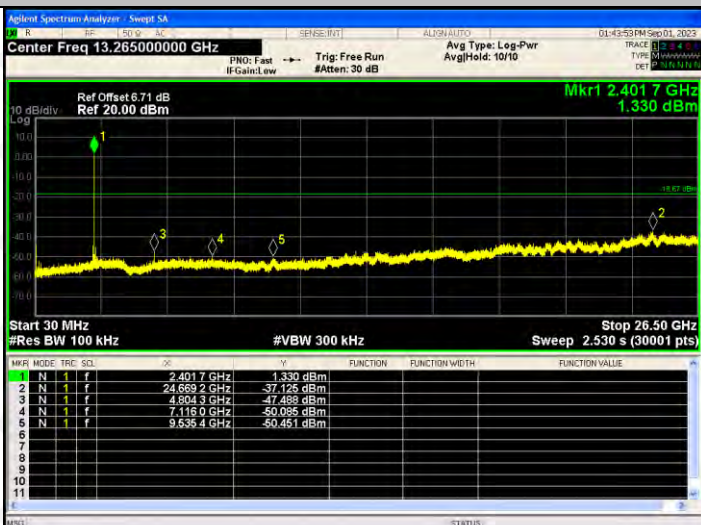
| <p>GFSK/HCH/ Hop</p> | <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.468750000 GHz</p> <p>Ref Offset 6.73 dB Ref 20.00 dBm</p> <p>Mkr1 2.46887500 GHz 3.158 dBm</p> <p>Start 2.43750 GHz #Res BW 100 kHz</p> <p>Stop 2.50000 GHz #VBW 300 kHz Sweep 6.000 ms (10001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.46887500 GHz</td> <td>3.158 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.48350000 GHz</td> <td>-54.209 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.49000000 GHz</td> <td>-54.789 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.49661250 GHz</td> <td>-50.857 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.46887500 GHz | 3.158 dBm | | | | 2 | N | 1 | f | 2.48350000 GHz | -54.209 dBm | | | | 3 | N | 1 | f | 2.49000000 GHz | -54.789 dBm | | | | 4 | N | 1 | f | 2.49661250 GHz | -50.857 dBm | | | |
|--|--|-----|------|----------------|-------------|----------|----------------|----------------|----------------|----------------|---|---|---|---|----------------|-----------|--|--|--|---|---|---|---|----------------|-------------|--|--|--|---|---|---|---|----------------|-------------|--|--|--|---|---|---|---|----------------|-------------|--|--|--|
| MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | N | 1 | f | 2.46887500 GHz | 3.158 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 2.48350000 GHz | -54.209 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 2.49000000 GHz | -54.789 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 2.49661250 GHz | -50.857 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>$\pi/4$DQPSK/LCH/ No Hop</p> | <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.360000000 GHz</p> <p>Ref Offset 6.71 dB Ref 20.00 dBm</p> <p>Mkr1 2.40185 GHz 2.044 dBm</p> <p>Start 2.31000 GHz #Res BW 100 kHz</p> <p>Stop 2.41000 GHz #VBW 300 kHz Sweep 10.00 ms (10001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.40185 GHz</td> <td>2.044 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.40000 GHz</td> <td>-51.998 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.39900 GHz</td> <td>-51.166 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.36382 GHz</td> <td>-46.192 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.40185 GHz | 2.044 dBm | | | | 2 | N | 1 | f | 2.40000 GHz | -51.998 dBm | | | | 3 | N | 1 | f | 2.39900 GHz | -51.166 dBm | | | | 4 | N | 1 | f | 2.36382 GHz | -46.192 dBm | | | |
| MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | N | 1 | f | 2.40185 GHz | 2.044 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 2.40000 GHz | -51.998 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 2.39900 GHz | -51.166 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 2.36382 GHz | -46.192 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>$\pi/4$DQPSK/LCH/ Hop</p> | <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.370000000 GHz</p> <p>Ref Offset 6.71 dB Ref 20.00 dBm</p> <p>Mkr1 2.405844 GHz 1.998 dBm</p> <p>Start 2.31000 GHz #Res BW 100 kHz</p> <p>Stop 2.43000 GHz #VBW 300 kHz Sweep 12.00 ms (10001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.405844 GHz</td> <td>1.998 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.40000 GHz</td> <td>-49.397 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.39900 GHz</td> <td>-51.186 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.369638 GHz</td> <td>-43.021 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.405844 GHz | 1.998 dBm | | | | 2 | N | 1 | f | 2.40000 GHz | -49.397 dBm | | | | 3 | N | 1 | f | 2.39900 GHz | -51.186 dBm | | | | 4 | N | 1 | f | 2.369638 GHz | -43.021 dBm | | | |
| MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | N | 1 | f | 2.405844 GHz | 1.998 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 2.40000 GHz | -49.397 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 2.39900 GHz | -51.186 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 2.369638 GHz | -43.021 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| <p>$\pi/4$DQPSK/HCH/ No Hop</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.48900000 GHz Ref Offset 6.73 dB Ref 20.00 dBm Mkr1 2.479 841 4 GHz 1.954 dBm</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.479 841 4 GHz</td> <td>1.954 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.483 500 0 GHz</td> <td>-57.325 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.500 000 0 GHz</td> <td>-53.122 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.499 502 8 GHz</td> <td>-50.409 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.479 841 4 GHz | 1.954 dBm | | | | 2 | N | 1 | f | 2.483 500 0 GHz | -57.325 dBm | | | | 3 | N | 1 | f | 2.500 000 0 GHz | -53.122 dBm | | | | 4 | N | 1 | f | 2.499 502 8 GHz | -50.409 dBm | | | | |
|--|---|-----|------|------------------|-------------|----------|----------------|----------------|----------------|----------------|---|---|---|---|------------------|-----------|--|--|--|---|---|---|---|------------------|-------------|--|--|--|---|---|---|---|------------------|-------------|--|--|--|---|---|---|---|------------------|-------------|--|--|--|--|
| MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | N | 1 | f | 2.479 841 4 GHz | 1.954 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 2.483 500 0 GHz | -57.325 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 2.500 000 0 GHz | -53.122 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 2.499 502 8 GHz | -50.409 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>$\pi/4$DQPSK/HCH/ Hop</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.48875000 GHz Ref Offset 6.73 dB Ref 20.00 dBm Mkr1 2.489 950 00 GHz 2.122 dBm</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.489 950 00 GHz</td> <td>2.122 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.483 500 00 GHz</td> <td>-50.601 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.500 000 00 GHz</td> <td>-49.264 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.488 993 75 GHz</td> <td>-40.276 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.489 950 00 GHz | 2.122 dBm | | | | 2 | N | 1 | f | 2.483 500 00 GHz | -50.601 dBm | | | | 3 | N | 1 | f | 2.500 000 00 GHz | -49.264 dBm | | | | 4 | N | 1 | f | 2.488 993 75 GHz | -40.276 dBm | | | | |
| MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | N | 1 | f | 2.483 500 00 GHz | -50.601 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 2.500 000 00 GHz | -49.264 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 2.488 993 75 GHz | -40.276 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>8DPSK/LCH/No Hop</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.38000000 GHz Ref Offset 6.71 dB Ref 20.00 dBm Mkr1 2.402 17 GHz 1.879 dBm</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.402 17 GHz</td> <td>1.879 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.400 00 GHz</td> <td>-53.843 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.390 00 GHz</td> <td>-53.312 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.384 28 GHz</td> <td>-46.922 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.402 17 GHz | 1.879 dBm | | | | 2 | N | 1 | f | 2.400 00 GHz | -53.843 dBm | | | | 3 | N | 1 | f | 2.390 00 GHz | -53.312 dBm | | | | 4 | N | 1 | f | 2.384 28 GHz | -46.922 dBm | | | | |
| MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | N | 1 | f | 2.402 17 GHz | 1.879 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 2.400 00 GHz | -53.843 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 2.390 00 GHz | -53.312 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 2.384 28 GHz | -46.922 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

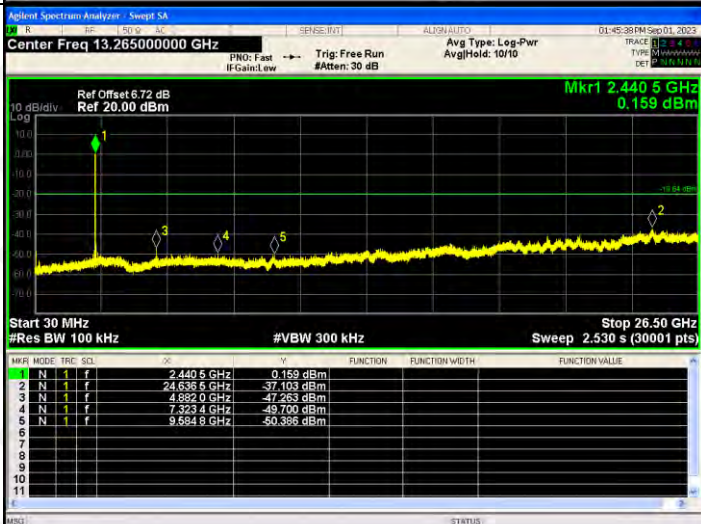
| <p>8DPSK /LCH/Hop</p> |  <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.406864 GHz</td> <td>2.982 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.400000 GHz</td> <td>-53.451 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.390000 GHz</td> <td>-54.547 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.381276 GHz</td> <td>-50.705 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.406864 GHz | 2.982 dBm | | | | 2 | N | 1 | f | 2.400000 GHz | -53.451 dBm | | | | 3 | N | 1 | f | 2.390000 GHz | -54.547 dBm | | | | 4 | N | 1 | f | 2.381276 GHz | -50.705 dBm | | | |
|------------------------------|--|-----|------|----------------|-------------|----------|----------------|----------------|----------------|----------------|---|---|---|---|----------------|-----------|--|--|--|---|---|---|---|--------------|-------------|--|--|--|---|---|---|---|--------------|-------------|--|--|--|---|---|---|---|---------------|-------------|--|--|--|
| MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | N | 1 | f | 2.406864 GHz | 2.982 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 2.400000 GHz | -53.451 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 2.390000 GHz | -54.547 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 2.381276 GHz | -50.705 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>8DPSK /HCH/No Hop</p> |  <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.4799976 GHz</td> <td>1.188 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.483500 GHz</td> <td>-56.100 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.500000 GHz</td> <td>-52.654 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.4914574 GHz</td> <td>-49.929 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.4799976 GHz | 1.188 dBm | | | | 2 | N | 1 | f | 2.483500 GHz | -56.100 dBm | | | | 3 | N | 1 | f | 2.500000 GHz | -52.654 dBm | | | | 4 | N | 1 | f | 2.4914574 GHz | -49.929 dBm | | | |
| MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | N | 1 | f | 2.500000 GHz | -52.654 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 2.4914574 GHz | -49.929 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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RF Conducted Spurious Emissions Graphs

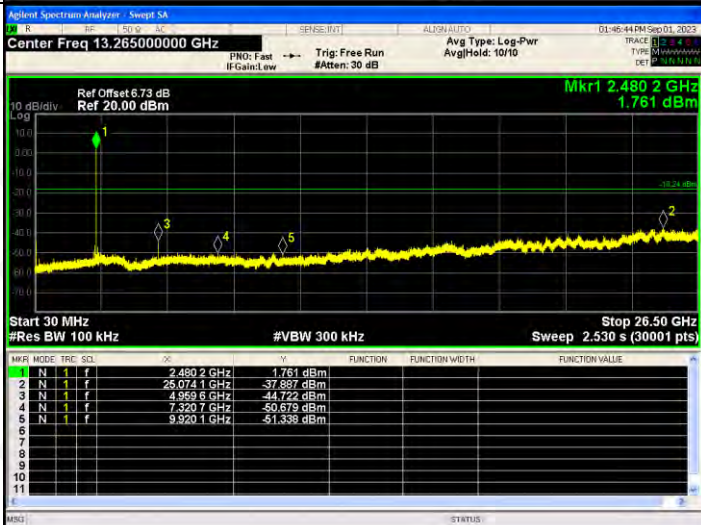
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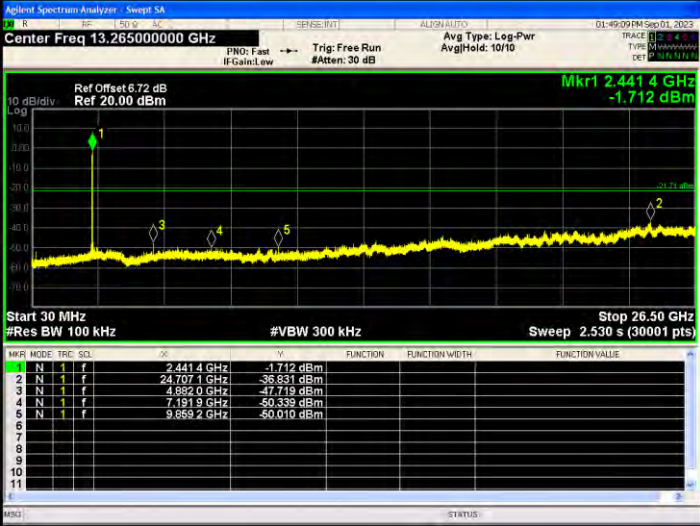
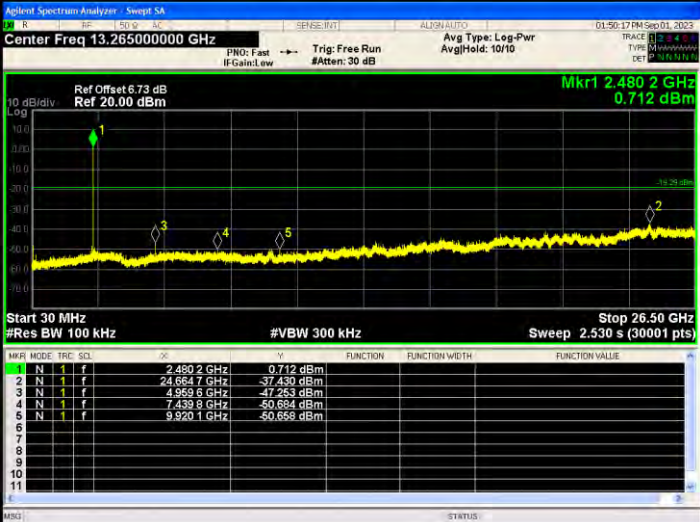


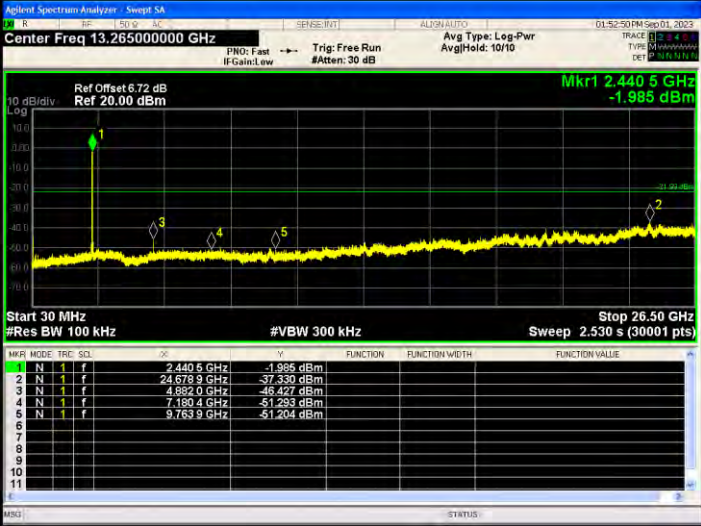
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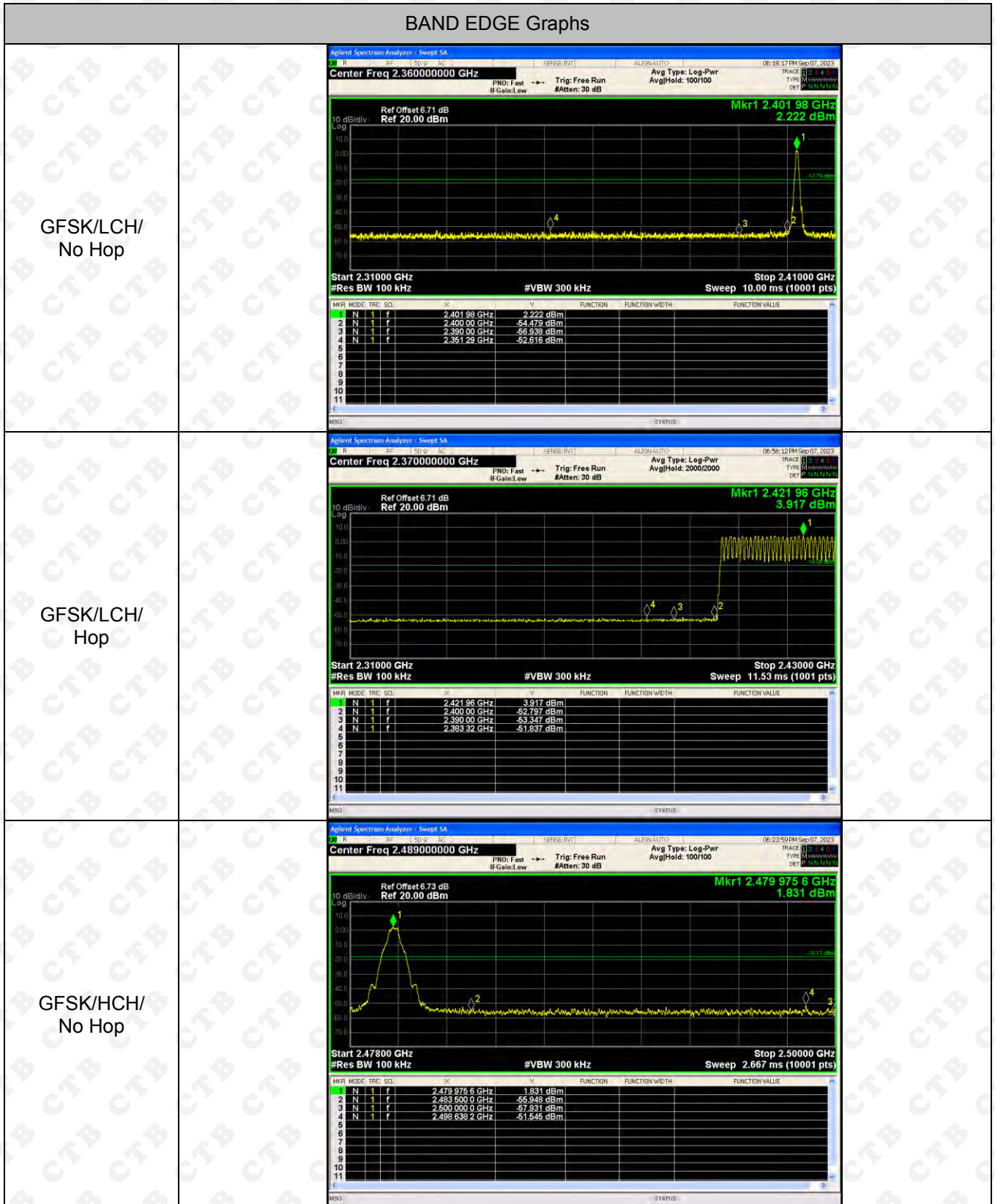
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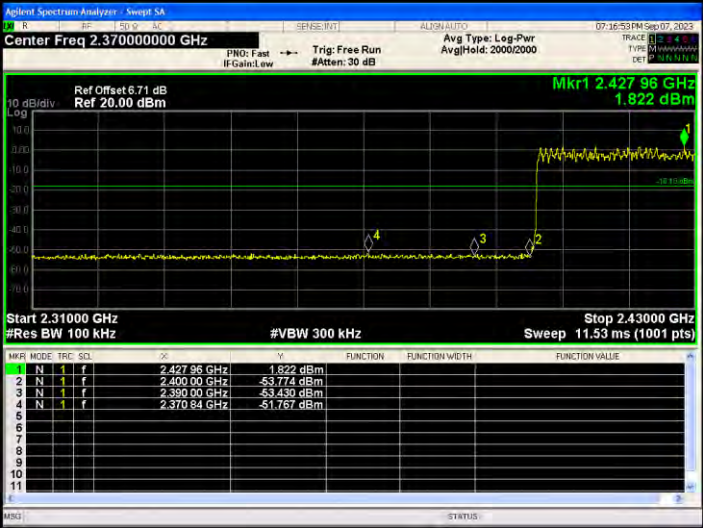
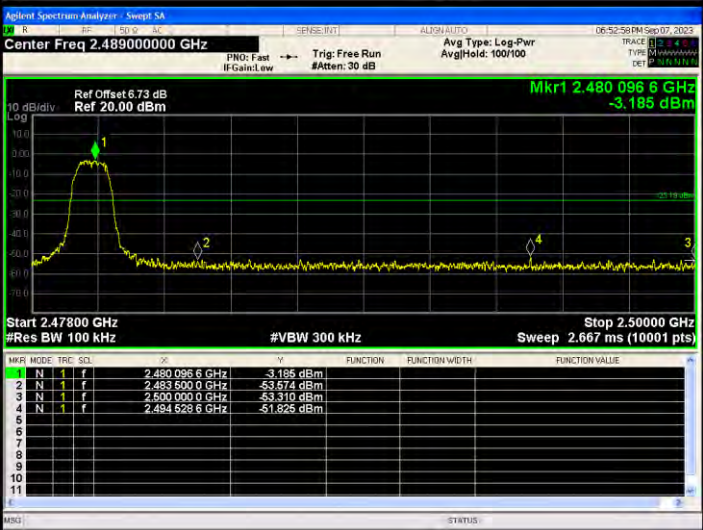
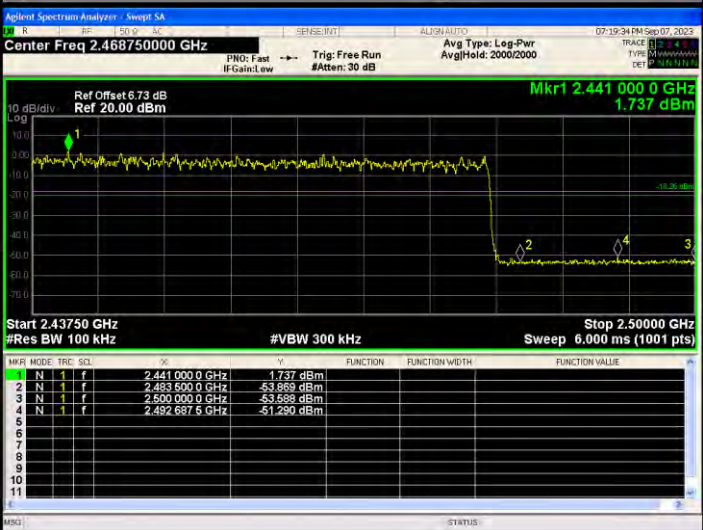
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| 3 | N | 1 | f | 4.8920 GHz | -48.487 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 7.1804 GHz | -51.283 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | N | 1 | f | 9.7639 GHz | -51.204 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>8DPSK /HCH</p> |  <table border="1"> <thead> <tr> <th>MkR</th> <th>MODE</th> <th>TRIG</th> <th>SOL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.4802 GHz</td> <td>1.479 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>24.6603 GHz</td> <td>-37.697 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>4.8956 GHz</td> <td>-46.647 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>7.5389 GHz</td> <td>-50.897 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>N</td> <td>1</td> <td>f</td> <td>9.9421 GHz</td> <td>-51.507 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MkR | MODE | TRIG | SOL | X | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.4802 GHz | 1.479 dBm | | | | 2 | N | 1 | f | 24.6603 GHz | -37.697 dBm | | | | 3 | N | 1 | f | 4.8956 GHz | -46.647 dBm | | | | 4 | N | 1 | f | 7.5389 GHz | -50.897 dBm | | | | 5 | N | 1 | f | 9.9421 GHz | -51.507 dBm | | | |
| MkR | MODE | TRIG | SOL | X | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | N | 1 | f | 24.6603 GHz | -37.697 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Left ear:



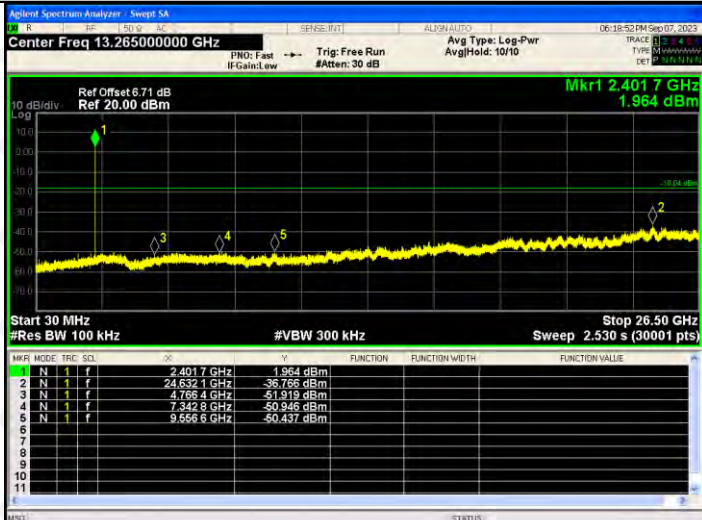
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| <p>$\pi/4$DQPSK/HCH/ No Hop</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.489000000 GHz Ref Offset 6.73 dB Ref 20.00 dBm Mkr1 2.480 041 6 GHz -3.019 dBm Start 2.47800 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.50000 GHz Sweep 2.667 ms (10001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.480 041 6 GHz</td> <td>-3.019 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.483 500 0 GHz</td> <td>-56.381 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.500 000 0 GHz</td> <td>-55.869 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.497 069 6 GHz</td> <td>-51.686 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.480 041 6 GHz | -3.019 dBm | | | | 2 | N | 1 | f | 2.483 500 0 GHz | -56.381 dBm | | | | 3 | N | 1 | f | 2.500 000 0 GHz | -55.869 dBm | | | | 4 | N | 1 | f | 2.497 069 6 GHz | -51.686 dBm | | | |
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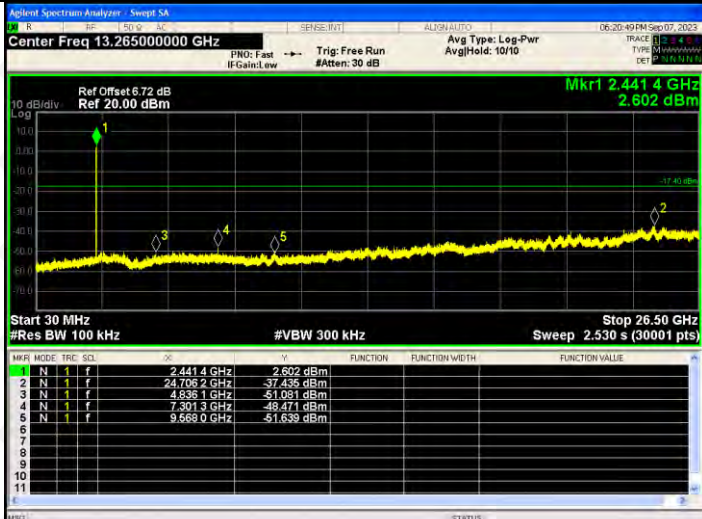
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| 1 | N | 1 | f | 2.42796 GHz | 1.822 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 2.40000 GHz | -53.774 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 2.39000 GHz | -53.430 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 2.37084 GHz | -51.767 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>8DPSK /HCH/No Hop</p> |  <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>V</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.480096 GHz</td> <td>-3.185 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.483500 GHz</td> <td>-53.674 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>2.500000 GHz</td> <td>-53.210 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.484528 GHz</td> <td>-51.825 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SOL | F | V | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.480096 GHz | -3.185 dBm | | | | 2 | N | 1 | f | 2.483500 GHz | -53.674 dBm | | | | 3 | N | 1 | f | 2.500000 GHz | -53.210 dBm | | | | 4 | N | 1 | f | 2.484528 GHz | -51.825 dBm | | | | |
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| 1 | N | 1 | f | 2.480096 GHz | -3.185 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | N | 1 | f | 2.484528 GHz | -51.825 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | N | 1 | f | 2.483500 GHz | -53.869 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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RF Conducted Spurious Emissions Graphs

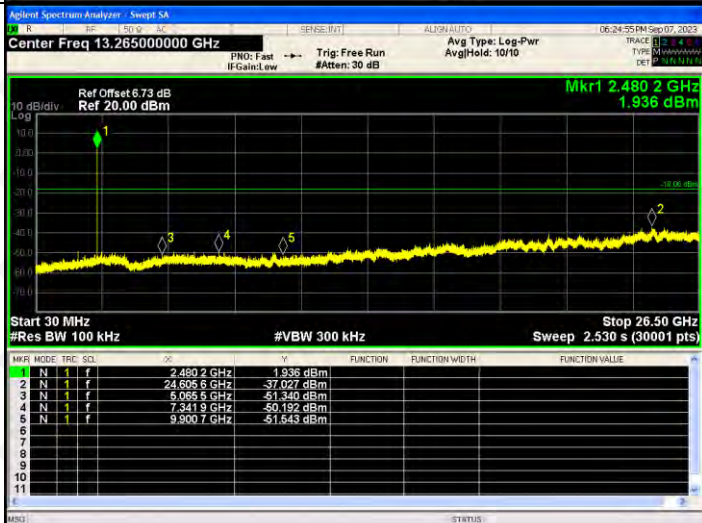
GFSK/LCH

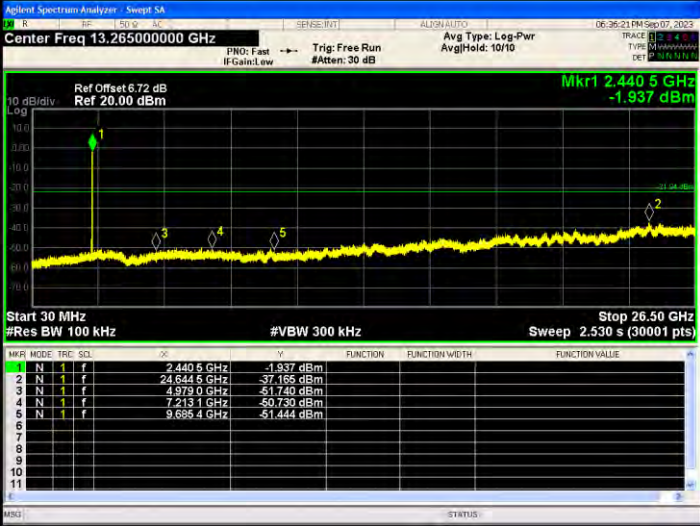


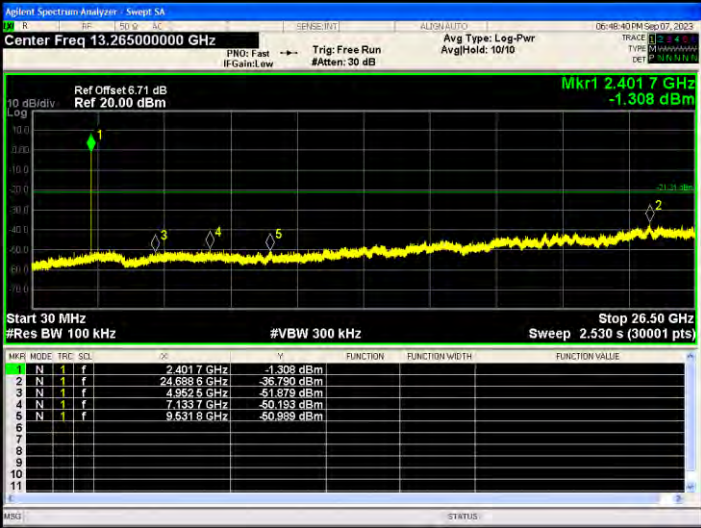
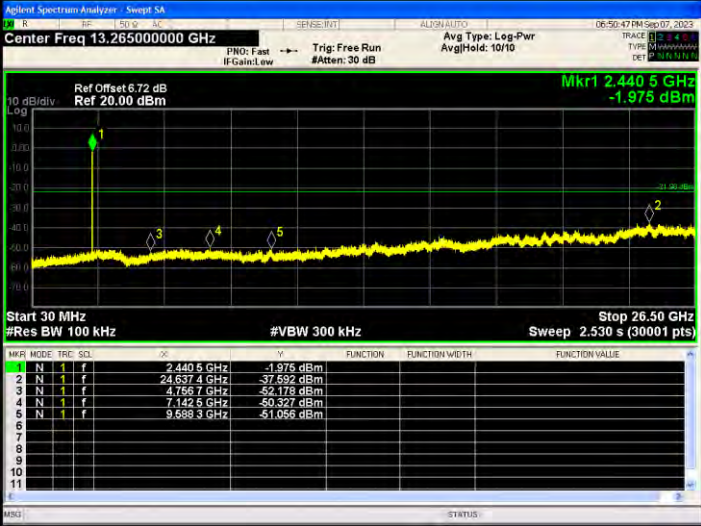
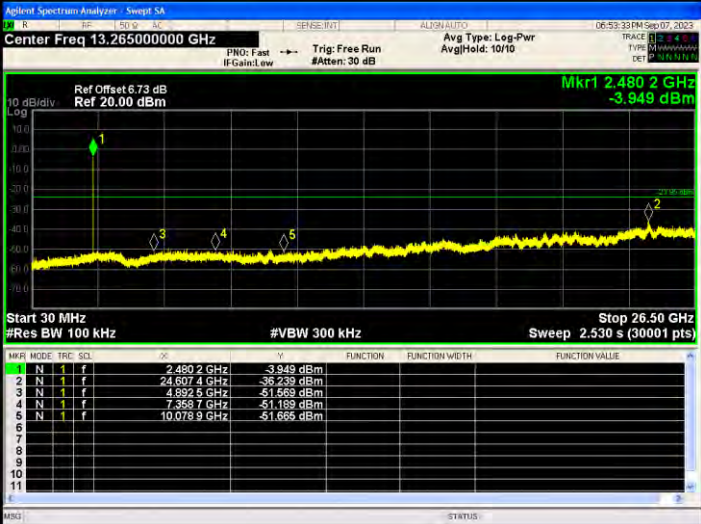
GFSK/MCH



GFSK/HCH

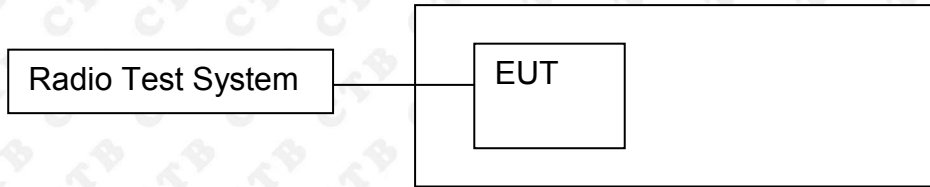


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| 2 | N | 1 | f | 24.670 GHz | -37.443 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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|-------------------|--|------|------|-------------|-------------|----------|----------------|----------------|----------------|----------------|---|---|---|---|------------|------------|--|--|--|---|---|---|---|-------------|-------------|--|--|--|---|---|---|---|------------|-------------|--|--|--|---|---|---|---|------------|-------------|--|--|--|---|---|---|---|-------------|-------------|--|--|--|
| MkR | MODE | TRIG | SOL | X | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | N | 1 | f | 2.4017 GHz | -1.308 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 24.6886 GHz | -36.750 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | N | 1 | f | 2.4405 GHz | -1.975 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 24.6374 GHz | -37.592 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 4.7657 GHz | -52.178 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 7.1425 GHz | -50.327 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | N | 1 | f | 9.6883 GHz | -51.056 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>8DPSK /HCH</p> |  <table border="1"> <thead> <tr> <th>MkR</th> <th>MODE</th> <th>TRIG</th> <th>SOL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.4802 GHz</td> <td>-3.949 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>24.6074 GHz</td> <td>-36.239 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>N</td> <td>1</td> <td>f</td> <td>4.8925 GHz</td> <td>-51.689 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>7.3657 GHz</td> <td>-51.189 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>N</td> <td>1</td> <td>f</td> <td>10.0789 GHz</td> <td>-51.685 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MkR | MODE | TRIG | SOL | X | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | N | 1 | f | 2.4802 GHz | -3.949 dBm | | | | 2 | N | 1 | f | 24.6074 GHz | -36.239 dBm | | | | 3 | N | 1 | f | 4.8925 GHz | -51.689 dBm | | | | 4 | N | 1 | f | 7.3657 GHz | -51.189 dBm | | | | 5 | N | 1 | f | 10.0789 GHz | -51.685 dBm | | | |
| MkR | MODE | TRIG | SOL | X | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | N | 1 | f | 2.4802 GHz | -3.949 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | N | 1 | f | 24.6074 GHz | -36.239 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | N | 1 | f | 4.8925 GHz | -51.689 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | N | 1 | f | 7.3657 GHz | -51.189 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | N | 1 | f | 10.0789 GHz | -51.685 dBm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

9. COUDUCTED PEAK OUTPUT POWER

9.1 Block Diagram Of Test Setup



9.2 Limit

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.

9.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 2MHz. VBW = 6MHz. Sweep = auto; Detector Function = Peak.
3. Keep the EUT in transmitting at lowest, middle and highest channel individually. Record the max value.

9.4 Test Result

Right ear:

| Mode | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------------------|----------|---------------------------------|-------------|---------|
| EDR mode (GFSK) | LCH | 2.317 | 20.97 | PASS |
| | MCH | 2.137 | 20.97 | PASS |
| | HCH | 2.396 | 20.97 | PASS |
| EDR mode ($\pi/4$ DQPSK) | LCH | 2.867 | 20.97 | PASS |
| | MCH | 2.651 | 20.97 | PASS |
| | HCH | 2.942 | 20.97 | PASS |
| EDR mode (8DPSK) | LCH | 3.167 | 20.97 | PASS |
| | MCH | 2.973 | 20.97 | PASS |
| | HCH | 3.179 | 20.97 | PASS |

Left ear:

| Mode | Channel. | Maximum Peak Output Power [dBm] | Limit [dBm] | Verdict |
|---------------------------|----------|---------------------------------|-------------|---------|
| EDR mode (GFSK) | LCH | 2.672 | 20.97 | PASS |
| | MCH | 2.729 | 20.97 | PASS |
| | HCH | 2.485 | 20.97 | PASS |
| EDR mode ($\pi/4$ DQPSK) | LCH | 2.682 | 20.97 | PASS |
| | MCH | 2.802 | 20.97 | PASS |
| | HCH | 1.459 | 20.97 | PASS |
| EDR mode (8DPSK) | LCH | 3.238 | 20.97 | PASS |
| | MCH | 3.713 | 20.97 | PASS |
| | HCH | 1.991 | 20.97 | PASS |




Right ear:
Test Graph:

| Graphs | |
|----------|--|
| GFSK/LCH | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.40200000 GHz Ref Offset 6.71 dB Ref 20.00 dBm Mkr1 2.40206 GHz 2.317 dBm Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> |
| GFSK/MCH | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.441000000 GHz Ref Offset 6.72 dB Ref 20.00 dBm Mkr1 2.44105 GHz 2.137 dBm Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> |
| GFSK/HCH | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.480000000 GHz Ref Offset 6.73 dB Ref 20.00 dBm Mkr1 2.47984 GHz 2.396 dBm Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> |

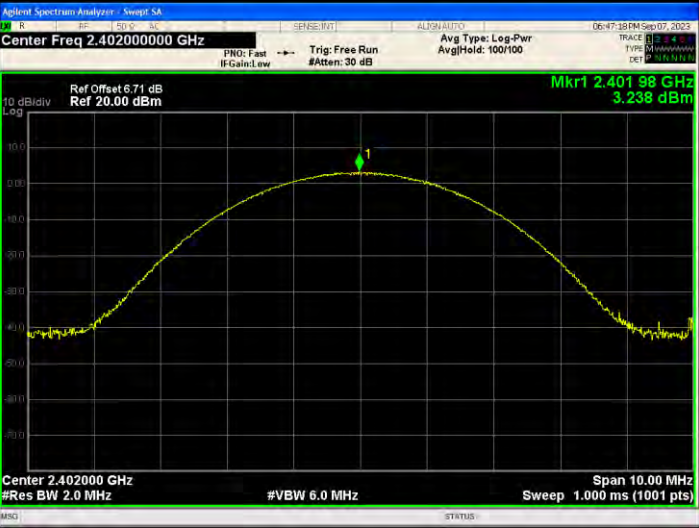


| | | |
|------------------------------------|--|--|
| <p>$\pi/4$DQPSK/LCH</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.40200000 GHz Ref Offset 6.71 dB Ref 20.00 dBm Mkr1 2.40185 GHz 2.967 dBm Center 2.402000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> | |
| <p>$\pi/4$DQPSK/MCH</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.44100000 GHz Ref Offset 6.72 dB Ref 20.00 dBm Mkr1 2.44092 GHz 2.651 dBm Center 2.441000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> | |
| <p>$\pi/4$DQPSK/HCH</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.48000000 GHz Ref Offset 6.73 dB Ref 20.00 dBm Mkr1 2.48004 GHz 2.942 dBm Center 2.480000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> | |

| | |
|-------------------|---|
| <p>8DPSK/LCH</p> | <p>Agilent Spectrum Analyzer - Sweep SA Center Freq: 2.40200000 GHz Ref Offset: 6.71 dB, Ref: 20.00 dBm Mkr1: 2.40199 GHz, 3.167 dBm #Res BW: 6.0 MHz, #VBW: 6.0 MHz, Span: 10.00 MHz, Sweep: 1.000 ms (1001 pts)</p> |
| <p>8DPSK /MCH</p> | <p>Agilent Spectrum Analyzer - Sweep SA Center Freq: 2.44100000 GHz Ref Offset: 6.72 dB, Ref: 20.00 dBm Mkr1: 2.44098 GHz, 2.973 dBm #Res BW: 2.0 MHz, #VBW: 6.0 MHz, Span: 10.00 MHz, Sweep: 1.000 ms (1001 pts)</p> |
| <p>8DPSK /HCH</p> | <p>Agilent Spectrum Analyzer - Sweep SA Center Freq: 2.48000000 GHz Ref Offset: 6.73 dB, Ref: 20.00 dBm Mkr1: 2.48000 GHz, 3.179 dBm #Res BW: 2.0 MHz, #VBW: 6.0 MHz, Span: 10.00 MHz, Sweep: 1.000 ms (1001 pts)</p> |

Left ear:
Test Graph:

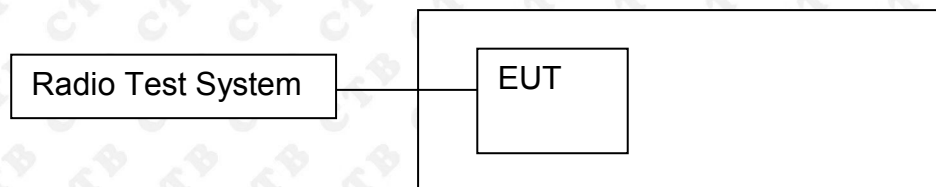
| Graphs | |
|----------|--|
| GFSK/LCH |  <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.40200000 GHz Ref Offset 6.71 dB Ref 20.00 dBm Mkr1 2.40197 GHz 2.672 dBm Center 2.402000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> |
| GFSK/MCH |  <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.441000000 GHz Ref Offset 6.72 dB Ref 20.00 dBm Mkr1 2.44096 GHz 2.729 dBm Center 2.441000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> |
| GFSK/HCH |  <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.480000000 GHz Ref Offset 6.73 dB Ref 20.00 dBm Mkr1 2.47995 GHz 2.485 dBm Center 2.480000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> |

| | |
|------------------------------------|--|
| <p>$\pi/4$DQPSK/LCH</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.40200000 GHz Ref Offset 6.71 dB Ref 20.00 dBm Mkr1 2.40213 GHz 2.682 dBm Center 2.402000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> |
| <p>$\pi/4$DQPSK/MCH</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.44100000 GHz Ref Offset 6.72 dB Ref 20.00 dBm Mkr1 2.44103 GHz 2.902 dBm Center 2.441000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> |
| <p>$\pi/4$DQPSK/HCH</p> | <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.48000000 GHz Ref Offset 6.73 dB Ref 20.00 dBm Mkr1 2.47981 GHz 1.459 dBm Center 2.480000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts)</p> |

| | |
|-------------------|--|
| <p>8DPSK/LCH</p> |  |
| <p>8DPSK /MCH</p> |  |
| <p>8DPSK /HCH</p> |  |

10. 20DB OCCUPIED BANDWIDTH

10.1 Block Diagram Of Test Setup



10.2 Limit

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mw.

10.3 Test procedure

1. Rem1. Set RBW = 30 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

10.4 Test Result

Right ear:



| Test Mode | Frequency | 20dB Bandwidth (MHz) | Result |
|-----------|--------------|----------------------|-------------|
| GFSK | Low channel | 0.903 | PASS |
| | Mid channel | 0.939 | PASS |
| | High channel | 1.011 | PASS |
| π/4DQPSK | Low channel | 1.273 | PASS |
| | Mid channel | 1.357 | PASS |
| | High channel | 1.287 | PASS |
| 8DPSK | Low channel | 1.292 | PASS |
| | Mid channel | 1.362 | PASS |
| | High channel | 1.297 | PASS |

Left ear:

| Test Mode | Frequency | 20dB Bandwidth (MHz) | Result |
|-----------|--------------|----------------------|-------------|
| GFSK | Low channel | 0.96 | PASS |
| | Mid channel | 0.961 | PASS |
| | High channel | 0.961 | PASS |
| π/4DQPSK | Low channel | 1.367 | PASS |
| | Mid channel | 1.369 | PASS |
| | High channel | 1.367 | PASS |
| 8DPSK | Low channel | 1.352 | PASS |
| | Mid channel | 1.349 | PASS |
| | High channel | 1.352 | PASS |

Note: All modes of operation were Pre-scan and the worst-case emissions are reported.

Right ear:
Test Graph:

| | |
|------------------------------|---|
| <p>GFSK Low channel</p> |  <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.40200000 GHz Center Freq: 2.40200000 GHz Trig: Free Run #Atten: 30 dB Avg/Hold: 100/100 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 6.71 dB Ref 26.71 dBm Mkr3 2.402436 GHz -21.491 dBm</p> <p>Center 2.402 GHz #Res BW 30 kHz #VBW 100 kHz Span 3 MHz Sweep 3.2 ms</p> <p>Occupied Bandwidth 833.95 kHz Total Power 8.86 dBm</p> <p>Transmit Freq Error -15.470 kHz OBW Power 99.00 % x dB Bandwidth 902.8 kHz x dB -20.00 dB</p> |
| <p>GFSK Mid channel</p> |  <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.44100000 GHz Center Freq: 2.44100000 GHz Trig: Free Run #Atten: 30 dB Avg/Hold: 100/100 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 6.72 dB Ref 26.72 dBm Mkr3 2.441452 GHz -22.018 dBm</p> <p>Center 2.441 GHz #Res BW 30 kHz #VBW 100 kHz Span 3 MHz Sweep 3.2 ms</p> <p>Occupied Bandwidth 874.11 kHz Total Power 8.38 dBm</p> <p>Transmit Freq Error -17.675 kHz OBW Power 99.00 % x dB Bandwidth 938.6 kHz x dB -20.00 dB</p> |
| <p>GFSK High channel</p> |  <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.48000000 GHz Center Freq: 2.48000000 GHz Trig: Free Run #Atten: 30 dB Avg/Hold: 100/100 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 6.73 dB Ref 26.73 dBm Mkr3 2.480497 GHz -19.657 dBm</p> <p>Center 2.48 GHz #Res BW 30 kHz #VBW 100 kHz Span 3 MHz Sweep 3.2 ms</p> <p>Occupied Bandwidth 883.76 kHz Total Power 8.92 dBm</p> <p>Transmit Freq Error -8.317 kHz OBW Power 99.00 % x dB Bandwidth 1.011 MHz x dB -20.00 dB</p> |

| | | | | | | | | | | | | | | | | | |
|--|---|--------------------|-------------|----------|------------|--|--|---------------------|-----------|---------|-----------|------|-----------|----------------|-----------|--|--|
| <p>$\pi/4$-DQPSK Low channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.402000000 GHz</p> <p>Ref Offset: 6.71 dB Ref: 26.71 dBm</p> <p>Mkr3: 2.402644 GHz -18.934 dBm</p> <p>Center: 2.402 GHz #Res BW: 30 kHz #VBW: 100 kHz Span: 3 MHz Sweep: 3.2 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>8.26 dBm</td> </tr> <tr> <td>1.2031 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>7.625 kHz</td> <td>x dB</td> <td>-20.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td>1.273 MHz</td> <td></td> </tr> </table> | Occupied Bandwidth | Total Power | 8.26 dBm | 1.2031 MHz | | | Transmit Freq Error | OBW Power | 99.00 % | 7.625 kHz | x dB | -20.00 dB | x dB Bandwidth | 1.273 MHz | | |
| Occupied Bandwidth | Total Power | 8.26 dBm | | | | | | | | | | | | | | | |
| 1.2031 MHz | | | | | | | | | | | | | | | | | |
| Transmit Freq Error | OBW Power | 99.00 % | | | | | | | | | | | | | | | |
| 7.625 kHz | x dB | -20.00 dB | | | | | | | | | | | | | | | |
| x dB Bandwidth | 1.273 MHz | | | | | | | | | | | | | | | | |
| <p>$\pi/4$-DQPSK Mid channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.441000000 GHz</p> <p>Ref Offset: 6.72 dB Ref: 26.72 dBm</p> <p>Mkr3: 2.441686 GHz -23.582 dBm</p> <p>Center: 2.441 GHz #Res BW: 30 kHz #VBW: 100 kHz Span: 3 MHz Sweep: 3.2 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>7.87 dBm</td> </tr> <tr> <td>1.2175 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>6.888 kHz</td> <td>x dB</td> <td>-20.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td>1.357 MHz</td> <td></td> </tr> </table> | Occupied Bandwidth | Total Power | 7.87 dBm | 1.2175 MHz | | | Transmit Freq Error | OBW Power | 99.00 % | 6.888 kHz | x dB | -20.00 dB | x dB Bandwidth | 1.357 MHz | | |
| Occupied Bandwidth | Total Power | 7.87 dBm | | | | | | | | | | | | | | | |
| 1.2175 MHz | | | | | | | | | | | | | | | | | |
| Transmit Freq Error | OBW Power | 99.00 % | | | | | | | | | | | | | | | |
| 6.888 kHz | x dB | -20.00 dB | | | | | | | | | | | | | | | |
| x dB Bandwidth | 1.357 MHz | | | | | | | | | | | | | | | | |
| <p>$\pi/4$-DQPSK High channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.480000000 GHz</p> <p>Ref Offset: 6.73 dB Ref: 26.73 dBm</p> <p>Mkr3: 2.480647 GHz -18.447 dBm</p> <p>Center: 2.48 GHz #Res BW: 30 kHz #VBW: 100 kHz Span: 3 MHz Sweep: 3.2 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>8.67 dBm</td> </tr> <tr> <td>1.2037 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>3.836 kHz</td> <td>x dB</td> <td>-20.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td>1.287 MHz</td> <td></td> </tr> </table> | Occupied Bandwidth | Total Power | 8.67 dBm | 1.2037 MHz | | | Transmit Freq Error | OBW Power | 99.00 % | 3.836 kHz | x dB | -20.00 dB | x dB Bandwidth | 1.287 MHz | | |
| Occupied Bandwidth | Total Power | 8.67 dBm | | | | | | | | | | | | | | | |
| 1.2037 MHz | | | | | | | | | | | | | | | | | |
| Transmit Freq Error | OBW Power | 99.00 % | | | | | | | | | | | | | | | |
| 3.836 kHz | x dB | -20.00 dB | | | | | | | | | | | | | | | |
| x dB Bandwidth | 1.287 MHz | | | | | | | | | | | | | | | | |

| | |
|-------------------------------|---|
| <p>8DPSK Low channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.402000000 GHz</p> <p>Center Freq: 2.402000000 GHz</p> <p>Trig: Free Run</p> <p>#Atten: 30 dB</p> <p>Avg/Hold: 100/100</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset: 6.71 dB</p> <p>Ref: 26.71 dBm</p> <p>Mkr3: 2.402641 GHz</p> <p>-20.920 dBm</p> <p>Center: 2.402 GHz</p> <p>#Res BW: 30 kHz</p> <p>#VBW: 100 kHz</p> <p>Span: 3 MHz</p> <p>Sweep: 3.2 ms</p> <p>Occupied Bandwidth: 1.2132 MHz</p> <p>Total Power: 8.49 dBm</p> <p>Transmit Freq Error: -5.171 kHz</p> <p>OBW Power: 99.00 %</p> <p>x dB Bandwidth: 1.292 MHz</p> <p>x dB: -20.00 dB</p> |
| <p>8DPSK Mid channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.441000000 GHz</p> <p>Center Freq: 2.441000000 GHz</p> <p>Trig: Free Run</p> <p>#Atten: 30 dB</p> <p>Avg/Hold: 100/100</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset: 6.72 dB</p> <p>Ref: 26.72 dBm</p> <p>Mkr3: 2.441675 GHz</p> <p>-23.806 dBm</p> <p>Center: 2.441 GHz</p> <p>#Res BW: 30 kHz</p> <p>#VBW: 100 kHz</p> <p>Span: 3 MHz</p> <p>Sweep: 3.2 ms</p> <p>Occupied Bandwidth: 1.2295 MHz</p> <p>Total Power: 7.46 dBm</p> <p>Transmit Freq Error: -6.196 kHz</p> <p>OBW Power: 99.00 %</p> <p>x dB Bandwidth: 1.362 MHz</p> <p>x dB: -20.00 dB</p> |
| <p>8DPSK High channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.480000000 GHz</p> <p>Center Freq: 2.480000000 GHz</p> <p>Trig: Free Run</p> <p>#Atten: 30 dB</p> <p>Avg/Hold: 100/100</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset: 6.73 dB</p> <p>Ref: 26.73 dBm</p> <p>Mkr3: 2.480645 GHz</p> <p>-20.871 dBm</p> <p>Center: 2.48 GHz</p> <p>#Res BW: 30 kHz</p> <p>#VBW: 100 kHz</p> <p>Span: 3 MHz</p> <p>Sweep: 3.2 ms</p> <p>Occupied Bandwidth: 1.2113 MHz</p> <p>Total Power: 8.60 dBm</p> <p>Transmit Freq Error: -3.403 kHz</p> <p>OBW Power: 99.00 %</p> <p>x dB Bandwidth: 1.297 MHz</p> <p>x dB: -20.00 dB</p> |

Left ear:
Test Graph:

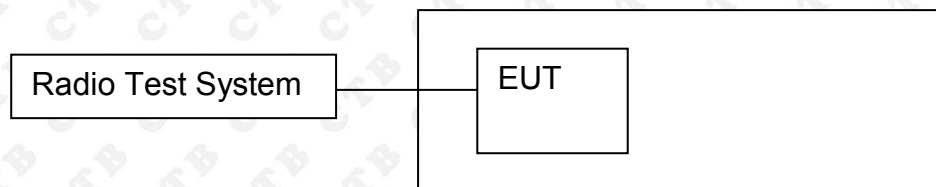
| | | | |
|------------------------------|--|--|--|
| <p>GFSK Low channel</p> | | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.40200000 GHz Center Freq: 2.40200000 GHz Trig: Free Run #Atten: 30 dB Avg/Hold: 100/100 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 6.71 dB Ref 26.71 dBm Mkr3 2.402463 GHz -18.684 dBm</p> <p>Center 2.402 GHz #Res BW 30 kHz #VBW 91 kHz Span 3 MHz Sweep 3.2 ms</p> <p>Occupied Bandwidth 898.08 kHz Total Power 9.05 dBm</p> <p>Transmit Freq Error -15.411 kHz OBW Power 99.00 % x dB Bandwidth 960.3 kHz x dB -20.00 dB</p> | |
| <p>GFSK Mid channel</p> | | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.44100000 GHz Center Freq: 2.44100000 GHz Trig: Free Run #Atten: 30 dB Avg/Hold: 100/100 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 6.72 dB Ref 26.72 dBm Mkr3 2.441463 GHz -18.143 dBm</p> <p>Center 2.441 GHz #Res BW 30 kHz #VBW 91 kHz Span 3 MHz Sweep 3.2 ms</p> <p>Occupied Bandwidth 893.62 kHz Total Power 9.21 dBm</p> <p>Transmit Freq Error -17.111 kHz OBW Power 99.00 % x dB Bandwidth 960.5 kHz x dB -20.00 dB</p> | |
| <p>GFSK High channel</p> | | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.48000000 GHz Center Freq: 2.48000000 GHz Trig: Free Run #Atten: 30 dB Avg/Hold: 100/100 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 6.73 dB Ref 26.73 dBm Mkr3 2.480459 GHz -18.430 dBm</p> <p>Center 2.48 GHz #Res BW 30 kHz #VBW 91 kHz Span 3 MHz Sweep 3.2 ms</p> <p>Occupied Bandwidth 884.69 kHz Total Power 9.06 dBm</p> <p>Transmit Freq Error -21.481 kHz OBW Power 99.00 % x dB Bandwidth 960.6 kHz x dB -20.00 dB</p> | |

| | | |
|--|--|--|
| <p>$\pi/4$-DQPSK Low channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Trig: Free Run #Atten: 30 dB Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 6.71 dB Ref 26.71 dBm Mkr3 2.402664 GHz -25.728 dBm Center 2.402 GHz #Res BW 30 kHz #VBW 91 kHz Span 3 MHz Sweep 3.2 ms Occupied Bandwidth 1.1947 MHz Total Power 6.65 dBm Transmit Freq Error -19.232 kHz OBW Power 99.00 % x dB Bandwidth 1.367 MHz x dB -20.00 dB</p> | |
| <p>$\pi/4$-DQPSK Mid channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Trig: Free Run #Atten: 30 dB Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 6.72 dB Ref 26.72 dBm Mkr3 2.441664 GHz -25.354 dBm Center 2.441 GHz #Res BW 30 kHz #VBW 91 kHz Span 3 MHz Sweep 3.2 ms Occupied Bandwidth 1.1938 MHz Total Power 7.24 dBm Transmit Freq Error -20.836 kHz OBW Power 99.00 % x dB Bandwidth 1.369 MHz x dB -20.00 dB</p> | |
| <p>$\pi/4$-DQPSK High channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Trig: Free Run #Atten: 30 dB Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 6.73 dB Ref 26.73 dBm Mkr3 2.480662 GHz -27.478 dBm Center 2.48 GHz #Res BW 30 kHz #VBW 100 kHz Span 2 MHz Sweep 2.133 ms Occupied Bandwidth 1.1930 MHz Total Power 5.33 dBm Transmit Freq Error -21.961 kHz OBW Power 99.00 % x dB Bandwidth 1.367 MHz x dB -20.00 dB</p> | |

| | |
|-------------------------------|--|
| <p>8DPSK Low channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.402000000 GHz</p> <p>Center Freq: 2.402000000 GHz</p> <p>Trig: Free Run</p> <p>#Atten: 30 dB</p> <p>Avg/Hold: 100/100</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 6.71 dB</p> <p>Ref 26.71 dBm</p> <p>Mkr3 2.402655 GHz</p> <p>-25.175 dBm</p> <p>Center 2.402 GHz</p> <p>#Res BW 30 kHz</p> <p>#VBW 91 kHz</p> <p>Span 3 MHz</p> <p>Sweep 3.2 ms</p> <p>Occupied Bandwidth 1.2037 MHz</p> <p>Total Power 7.29 dBm</p> <p>Transmit Freq Error -21.285 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.352 MHz</p> <p>x dB -20.00 dB</p> |
| <p>8DPSK Mid channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.441000000 GHz</p> <p>Center Freq: 2.441000000 GHz</p> <p>Trig: Free Run</p> <p>#Atten: 30 dB</p> <p>Avg/Hold: 100/100</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 6.72 dB</p> <p>Ref 26.72 dBm</p> <p>Mkr3 2.441652 GHz</p> <p>-25.187 dBm</p> <p>Center 2.441 GHz</p> <p>#Res BW 30 kHz</p> <p>#VBW 91 kHz</p> <p>Span 3 MHz</p> <p>Sweep 3.2 ms</p> <p>Occupied Bandwidth 1.1996 MHz</p> <p>Total Power 7.36 dBm</p> <p>Transmit Freq Error -21.913 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.349 MHz</p> <p>x dB -20.00 dB</p> |
| <p>8DPSK High channel</p> | <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.480000000 GHz</p> <p>Center Freq: 2.480000000 GHz</p> <p>Trig: Free Run</p> <p>#Atten: 30 dB</p> <p>Avg/Hold: 100/100</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 6.73 dB</p> <p>Ref 26.73 dBm</p> <p>Mkr3 2.480653 GHz</p> <p>-27.462 dBm</p> <p>Center 2.48 GHz</p> <p>#Res BW 30 kHz</p> <p>#VBW 91 kHz</p> <p>Span 3 MHz</p> <p>Sweep 3.2 ms</p> <p>Occupied Bandwidth 1.2044 MHz</p> <p>Total Power 5.59 dBm</p> <p>Transmit Freq Error -23.336 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.352 MHz</p> <p>x dB -20.00 dB</p> |

11. CARRIER FREQUENCIES SEPARATION

11.1 Block Diagram Of Test Setup



11.2 Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. 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 0.125W.

11.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz , Span = 2MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

11.4 Test Result

Right ear:

| Mode | Channel. | Carrier Frequency Separation [MHz] | Limit(2/3 of the 20dB bandwidth MHz) | Verdict |
|---------------|----------|------------------------------------|--------------------------------------|---------|
| GFSK | LCH | 1.000 | 0.602 | PASS |
| GFSK | MCH | 1.004 | 0.626 | PASS |
| GFSK | HCH | 1.000 | 0.674 | PASS |
| $\pi/4$ DQPSK | LCH | 0.996 | 0.849 | PASS |
| $\pi/4$ DQPSK | MCH | 1.008 | 0.905 | PASS |
| $\pi/4$ DQPSK | HCH | 1.002 | 0.858 | PASS |
| 8DPSK | LCH | 1.004 | 0.861 | PASS |
| 8DPSK | MCH | 0.992 | 0.908 | PASS |
| 8DPSK | HCH | 1.002 | 0.865 | PASS |

Left ear:

| Mode | Channel. | Carrier Frequency Separation [MHz] | Limit(2/3 of the 20dB bandwidth MHz) | Verdict |
|---------------|----------|------------------------------------|--------------------------------------|---------|
| GFSK | LCH | 1.000 | 0.640 | PASS |
| GFSK | MCH | 1.004 | 0.641 | PASS |
| GFSK | HCH | 0.996 | 0.641 | PASS |
| $\pi/4$ DQPSK | LCH | 0.992 | 0.911 | PASS |
| $\pi/4$ DQPSK | MCH | 0.994 | 0.913 | PASS |
| $\pi/4$ DQPSK | HCH | 1.004 | 0.911 | PASS |
| 8DPSK | LCH | 0.996 | 0.901 | PASS |
| 8DPSK | MCH | 1.002 | 0.899 | PASS |
| 8DPSK | HCH | 1.004 | 0.901 | PASS |

Right ear:
Test Graph

Graphs

GFSK/LCH

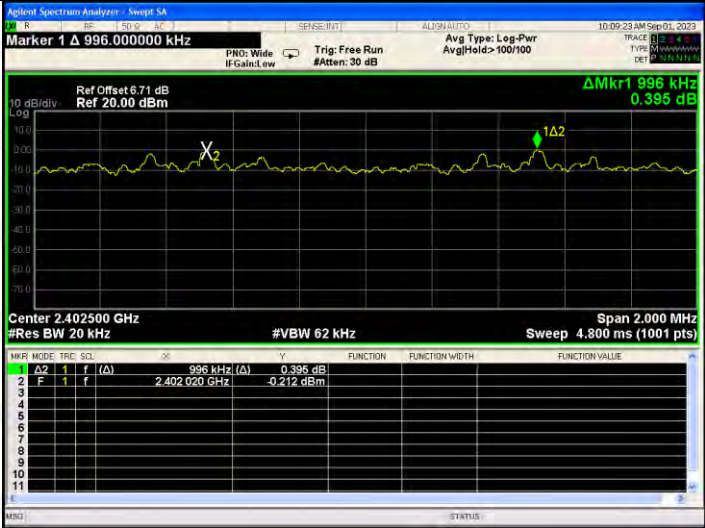
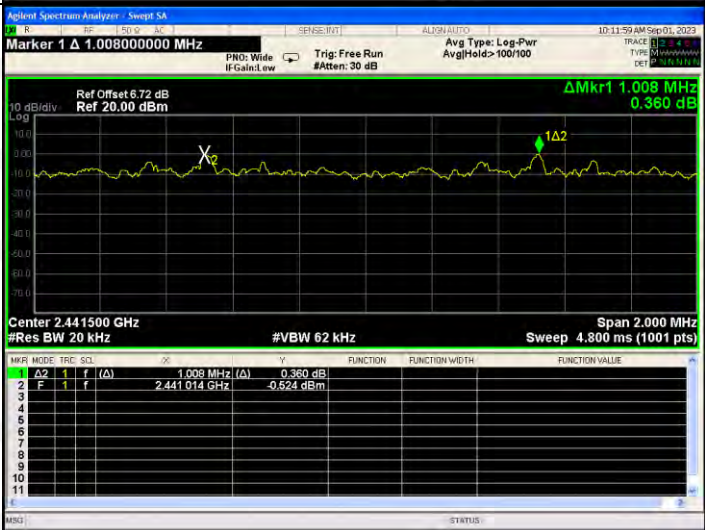



GFSK/MCH



GFSK/HCH



| <p>$\pi/4$DQPSK/LCH</p> |  <table border="1" data-bbox="592 607 1299 763"> <thead> <tr> <th>MNR</th> <th>MODE</th> <th>TRC</th> <th>SCN</th> <th>ΔX</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ΔZ</td> <td>1</td> <td>f (Δ)</td> <td>996 kHz (Δ)</td> <td>0.395 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>f</td> <td>2.402 020 GHz</td> <td>-0.212 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MNR | MODE | TRC | SCN | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | ΔZ | 1 | f (Δ) | 996 kHz (Δ) | 0.395 dBm | | | | 2 | F | 1 | f | 2.402 020 GHz | -0.212 dBm | | | | |
|------------------------------------|---|-----|-------|---------------|------------|----------|----------------|----------------|----------------|----------------|---|----|---|-------|---------------|------------|--|--|--|---|---|---|---|---------------|------------|--|--|--|--|
| MNR | MODE | TRC | SCN | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | |
| 1 | ΔZ | 1 | f (Δ) | 996 kHz (Δ) | 0.395 dBm | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | 2.402 020 GHz | -0.212 dBm | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>$\pi/4$DQPSK/MCH</p> |  <table border="1" data-bbox="592 1133 1299 1290"> <thead> <tr> <th>MNR</th> <th>MODE</th> <th>TRC</th> <th>SCN</th> <th>ΔX</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ΔZ</td> <td>1</td> <td>f (Δ)</td> <td>1.008 MHz (Δ)</td> <td>0.360 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>f</td> <td>2.441 014 GHz</td> <td>-0.624 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MNR | MODE | TRC | SCN | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | ΔZ | 1 | f (Δ) | 1.008 MHz (Δ) | 0.360 dBm | | | | 2 | F | 1 | f | 2.441 014 GHz | -0.624 dBm | | | | |
| MNR | MODE | TRC | SCN | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | |
| 1 | ΔZ | 1 | f (Δ) | 1.008 MHz (Δ) | 0.360 dBm | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | 2.441 014 GHz | -0.624 dBm | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>$\pi/4$DQPSK/HCH</p> |  <table border="1" data-bbox="592 1659 1299 1816"> <thead> <tr> <th>MNR</th> <th>MODE</th> <th>TRC</th> <th>SCN</th> <th>ΔX</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ΔZ</td> <td>1</td> <td>f (Δ)</td> <td>1.002 MHz (Δ)</td> <td>-0.098 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>f</td> <td>2.479 020 GHz</td> <td>-0.467 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | MNR | MODE | TRC | SCN | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | ΔZ | 1 | f (Δ) | 1.002 MHz (Δ) | -0.098 dBm | | | | 2 | F | 1 | f | 2.479 020 GHz | -0.467 dBm | | | | |
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| 2 | F | 1 | f | 2.479 020 GHz | -0.467 dBm | | | | | | | | | | | | | | | | | | | | | | | | |

| <p>8DPSK/LCH</p> |  <table border="1"> <thead> <tr> <th>MNR</th> <th>MODE</th> <th>TRC</th> <th>SCN</th> <th>OK</th> <th>F</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Δ2</td> <td>1</td> <td>f</td> <td>(Δ)</td> <td>1.004 MHz</td> <td>(Δ)</td> <td></td> <td>-1.311 dB</td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>f</td> <td></td> <td>2.401856 GHz</td> <td></td> <td></td> <td>-1.694 dBm</td> </tr> </tbody> </table> | MNR | MODE | TRC | SCN | OK | F | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | Δ2 | 1 | f | (Δ) | 1.004 MHz | (Δ) | | -1.311 dB | 2 | F | 1 | f | | 2.401856 GHz | | | -1.694 dBm | |
|-------------------|--|-----|------|-----|--------------|----------|----------------|----------------|----------------|----------------|---|----|---|---|-----|-----------|-----|--|-----------|---|---|---|---|--|--------------|--|--|------------|--|
| MNR | MODE | TRC | SCN | OK | F | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | |
| 1 | Δ2 | 1 | f | (Δ) | 1.004 MHz | (Δ) | | -1.311 dB | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | | 2.401856 GHz | | | -1.694 dBm | | | | | | | | | | | | | | | | | | | | | |
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| MNR | MODE | TRC | SCN | OK | F | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | |
| 1 | Δ2 | 1 | f | (Δ) | 992 kHz | (Δ) | | -1.594 dB | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | | 2.441018 GHz | | | -0.157 dBm | | | | | | | | | | | | | | | | | | | | | |
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| MNR | MODE | TRC | SCN | OK | F | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | |
| 1 | Δ2 | 1 | f | (Δ) | 1.002 MHz | (Δ) | | -0.753 dB | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | | 2.479018 GHz | | | -0.460 dBm | | | | | | | | | | | | | | | | | | | | | |

Left ear:
Test Graph

Graphs

GFSK/LCH



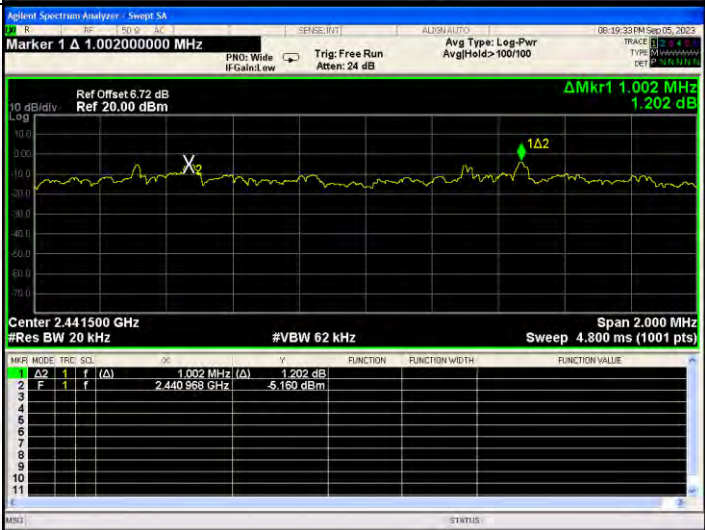
GFSK/MCH



GFSK/HCH

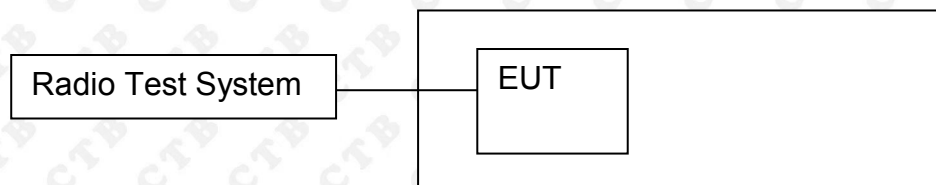


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|------------------------------------|--|-----|-------|---------------|------------|----------|----------------|----------------|----------------|----------------|---|----|---|-------|---------------|-----------|--|--|--|---|---|---|---|--------------|------------|--|--|--|
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| MNR | MODE | TRC | SCN | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | |
| 1 | Δ2 | 1 | f (Δ) | 994 kHz (Δ) | 1.118 dB | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | 2.440814 GHz | -4.337 dBm | | | | | | | | | | | | | | | | | | | | | | | |
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| MNR | MODE | TRC | SCN | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | |
| 1 | Δ2 | 1 | f (Δ) | 1.004 MHz (Δ) | -0.584 dB | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | 2.478808 GHz | -2.568 dBm | | | | | | | | | | | | | | | | | | | | | | | |

| <p>8DPSK/LCH</p> |  <table border="1"> <thead> <tr> <th>MNR</th> <th>MODE</th> <th>TRC</th> <th>SC1</th> <th>SC2</th> <th>ΔX</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ΔZ</td> <td>1</td> <td>f</td> <td>(Δ)</td> <td>996 kHz</td> <td>(Δ)</td> <td>-0.612 dB</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>f</td> <td></td> <td>2.401 896 GHz</td> <td></td> <td>-4.336 dBm</td> <td></td> <td></td> </tr> </tbody> </table> | MNR | MODE | TRC | SC1 | SC2 | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | ΔZ | 1 | f | (Δ) | 996 kHz | (Δ) | -0.612 dB | | | 2 | F | 1 | f | | 2.401 896 GHz | | -4.336 dBm | | | |
|-------------------|--|-----|------|-----|---------------|-----|------------|----------------|----------------|----------------|----------------|---|----|---|---|-----|-----------|-----|-----------|--|--|---|---|---|---|--|---------------|--|------------|--|--|--|
| MNR | MODE | TRC | SC1 | SC2 | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ΔZ | 1 | f | (Δ) | 996 kHz | (Δ) | -0.612 dB | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | | 2.401 896 GHz | | -4.336 dBm | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>8DPSK /MCH</p> |  <table border="1"> <thead> <tr> <th>MNR</th> <th>MODE</th> <th>TRC</th> <th>SC1</th> <th>SC2</th> <th>ΔX</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ΔZ</td> <td>1</td> <td>f</td> <td>(Δ)</td> <td>1.002 MHz</td> <td>(Δ)</td> <td>1.202 dB</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>f</td> <td></td> <td>2.440 968 GHz</td> <td></td> <td>-5.160 dBm</td> <td></td> <td></td> </tr> </tbody> </table> | MNR | MODE | TRC | SC1 | SC2 | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | ΔZ | 1 | f | (Δ) | 1.002 MHz | (Δ) | 1.202 dB | | | 2 | F | 1 | f | | 2.440 968 GHz | | -5.160 dBm | | | |
| MNR | MODE | TRC | SC1 | SC2 | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ΔZ | 1 | f | (Δ) | 1.002 MHz | (Δ) | 1.202 dB | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | | 2.440 968 GHz | | -5.160 dBm | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>8DPSK /HCH</p> |  <table border="1"> <thead> <tr> <th>MNR</th> <th>MODE</th> <th>TRC</th> <th>SC1</th> <th>SC2</th> <th>ΔX</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ΔZ</td> <td>1</td> <td>f</td> <td>(Δ)</td> <td>1.004 MHz</td> <td>(Δ)</td> <td>-0.605 dB</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>f</td> <td></td> <td>2.478 968 GHz</td> <td></td> <td>-3.423 dBm</td> <td></td> <td></td> </tr> </tbody> </table> | MNR | MODE | TRC | SC1 | SC2 | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | ΔZ | 1 | f | (Δ) | 1.004 MHz | (Δ) | -0.605 dB | | | 2 | F | 1 | f | | 2.478 968 GHz | | -3.423 dBm | | | |
| MNR | MODE | TRC | SC1 | SC2 | ΔX | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ΔZ | 1 | f | (Δ) | 1.004 MHz | (Δ) | -0.605 dB | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | f | | 2.478 968 GHz | | -3.423 dBm | | | | | | | | | | | | | | | | | | | | | | | | | |

12. HOPPING CHANNEL NUMBER

12.1 Block Diagram Of Test Setup



12.2 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

12.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.4835GHz. Sweep=auto;

12.4 Test Result

Right ear:

| Mode | Channel. | Number of Hopping Channel | Limit | Verdict |
|---------------|----------|---------------------------|-----------|---------|
| GFSK | Hop | 79 | ≥ 15 | PASS |
| $\pi/4$ DQPSK | Hop | 79 | ≥ 15 | PASS |
| 8DPSK | Hop | 79 | ≥ 15 | PASS |

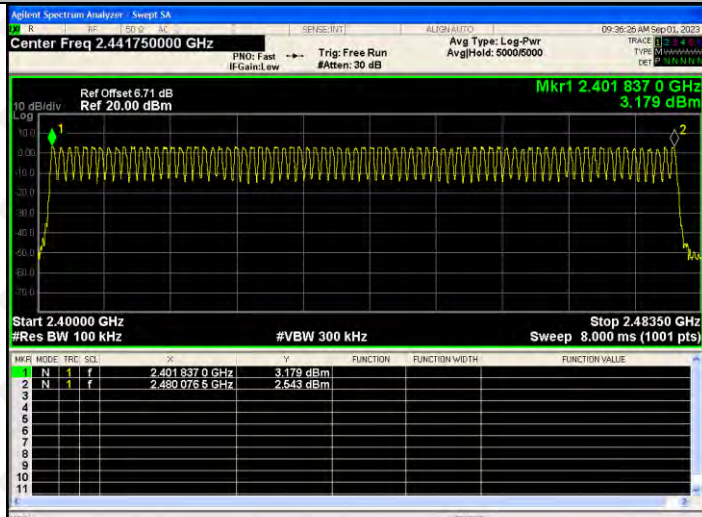
Left ear:

| Mode | Channel. | Number of Hopping Channel | Limit | Verdict |
|---------------|----------|---------------------------|-----------|---------|
| GFSK | Hop | 79 | ≥ 15 | PASS |
| $\pi/4$ DQPSK | Hop | 79 | ≥ 15 | PASS |
| 8DPSK | Hop | 79 | ≥ 15 | PASS |

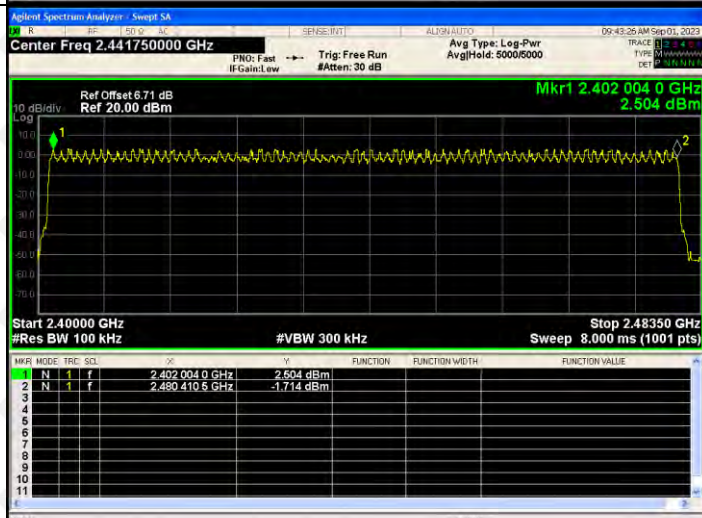
Right ear:
Test Graph

Graphs

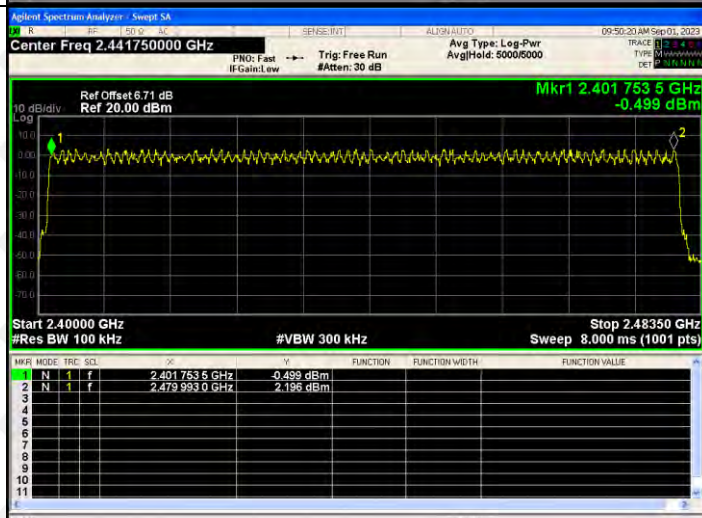
GFSK/Hop



$\pi/4$ DQPSK/Hop



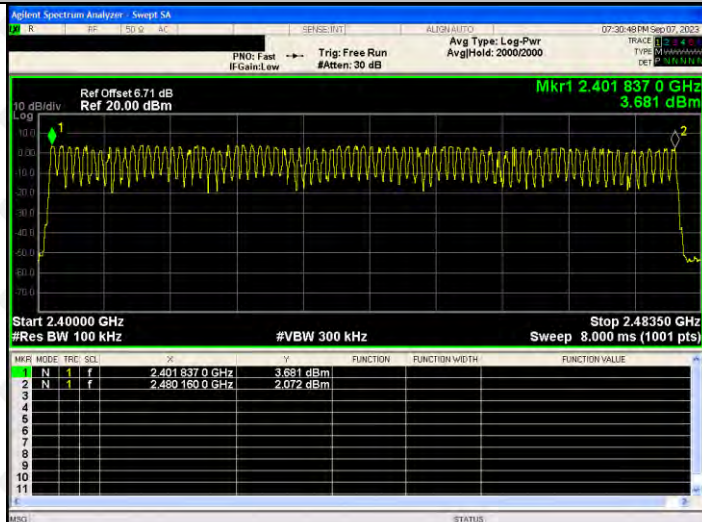
8DPSK/Hop



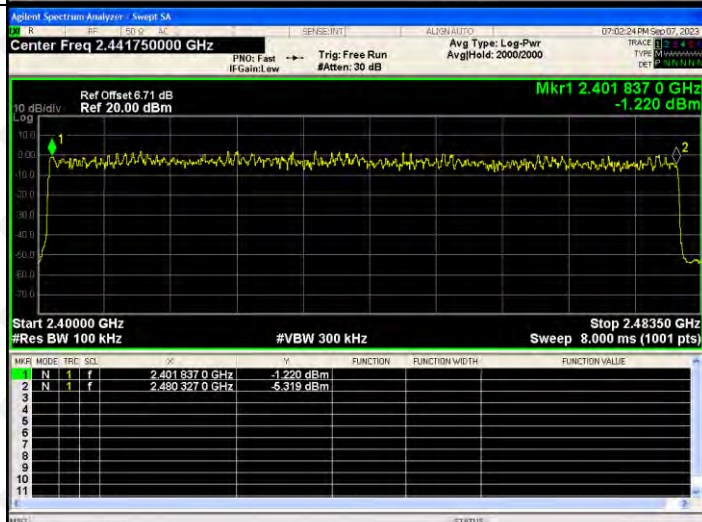
Left ear:
Test Graph

Graphs

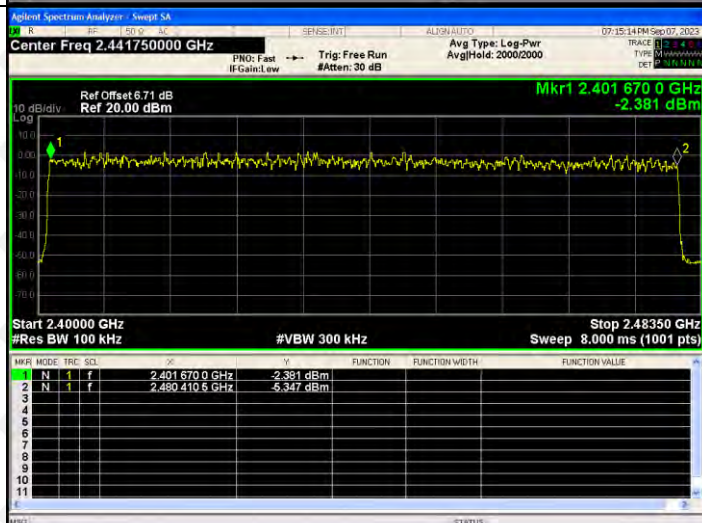
GFSK/Hop



$\pi/4$ DQPSK/Hop

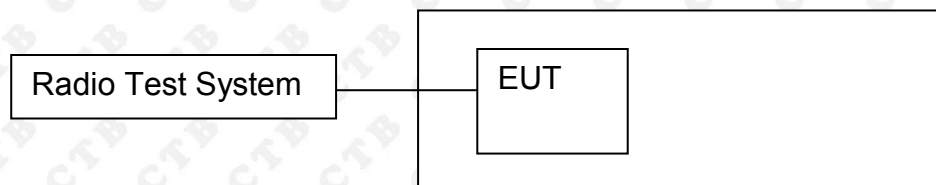


8DPSK/Hop



13. DWELL TIME

13.1 Block Diagram Of Test Setup



13.2 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

13.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set spectrum analyzer span = 0. Centred on a hopping channel;
3. Set RBW = 1MHz and VBW = 3MHz. Sweep = as necessary to capture the entire dwell time per hopping channel. Set the EUT for DH5, DH3 and DH1 packet transmitting.
4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g.. data rate. modulation format. etc.). repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

13.4 Test Result

Right ear:

Worst case-GFSK:

| Mode | Packet | Channel | Pulse Time (ms) | Total Dwell Time (ms) | Limit (ms) | Verdict |
|------|--------|---------|-----------------|-----------------------|------------|---------|
| GFSK | DH1 | LCH | 0.376 | 120.32 | 400 | PASS |
| | DH1 | MCH | 0.376 | 120.32 | 400 | PASS |
| | DH1 | HCH | 0.376 | 120.32 | 400 | PASS |
| | DH3 | LCH | 1.638 | 262.08 | 400 | PASS |
| | DH3 | MCH | 1.638 | 262.08 | 400 | PASS |
| | DH3 | HCH | 1.638 | 262.08 | 400 | PASS |
| | DH5 | LCH | 2.887 | 307.947 | 400 | PASS |
| | DH5 | MCH | 2.888 | 308.053 | 400 | PASS |
| | DH5 | HCH | 2.888 | 308.053 | 400 | PASS |

Left ear:

Worst case-GFSK:

| Mode | Packet | Channel | Pulse Time (ms) | Total Dwell Time (ms) | Limit (ms) | Verdict |
|------|--------|---------|-----------------|-----------------------|------------|---------|
| GFSK | DH1 | LCH | 0.383 | 122.56 | 400 | PASS |
| | DH1 | MCH | 0.383 | 122.56 | 400 | PASS |
| | DH1 | HCH | 0.383 | 122.56 | 400 | PASS |
| | DH3 | LCH | 1.643 | 262.88 | 400 | PASS |
| | DH3 | MCH | 1.644 | 263.04 | 400 | PASS |
| | DH3 | HCH | 1.643 | 262.88 | 400 | PASS |
| | DH5 | LCH | 2.894 | 308.693 | 400 | PASS |
| | DH5 | MCH | 2.894 | 308.693 | 400 | PASS |
| | DH5 | HCH | 2.894 | 308.693 | 400 | PASS |

Remark: DH5 Packet permit maximum 1600 / 79 / 6 hops per second in each channel (5 time slots RX, 1 time slot TX).

DH3 Packet permit maximum 1600 / 79 / 4 hops per second in each channel (3 time slots RX, 1 time slot TX).

DH1 Packet permit maximum 1600 / 79 / 2 hops per second in each channel (1 time slot RX, 1 time slot TX). So, the Dwell Time can be calculated as follows:

DH5: $1600/79/6*0.4*79*(MkrDelta)/1000$

DH3: $1600/79/4*0.4*79*(MkrDelta)/1000$

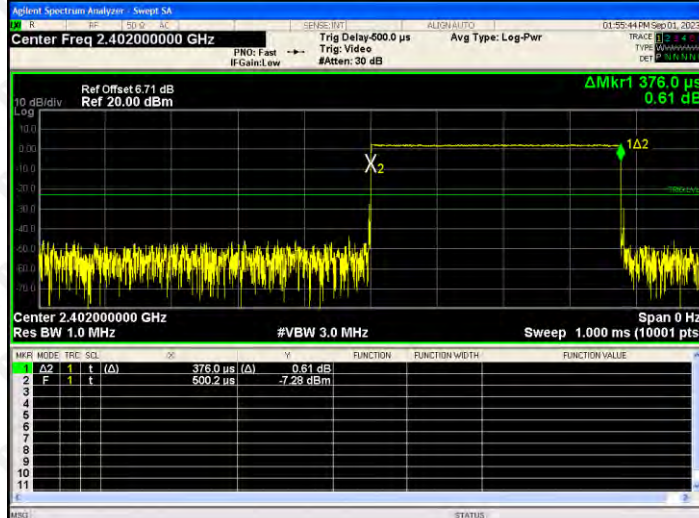
DH1: $1600/79/2*0.4*79*(MkrDelta)/1000$

Remark: Mkr Delta is once pulse time.

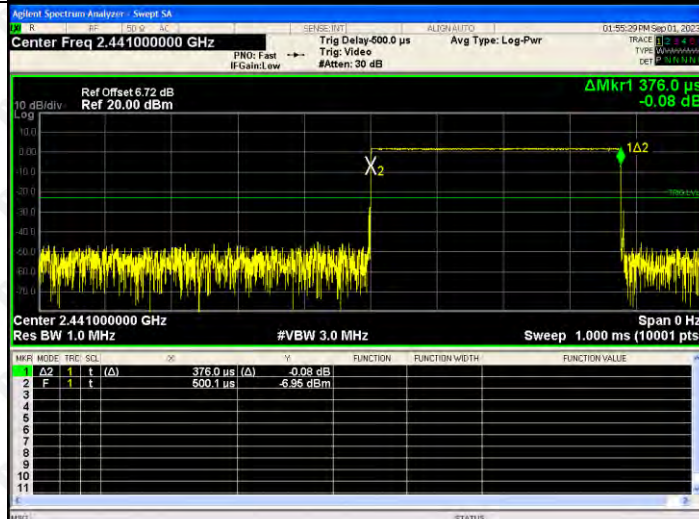
Right ear:
Test Graph

Graphs

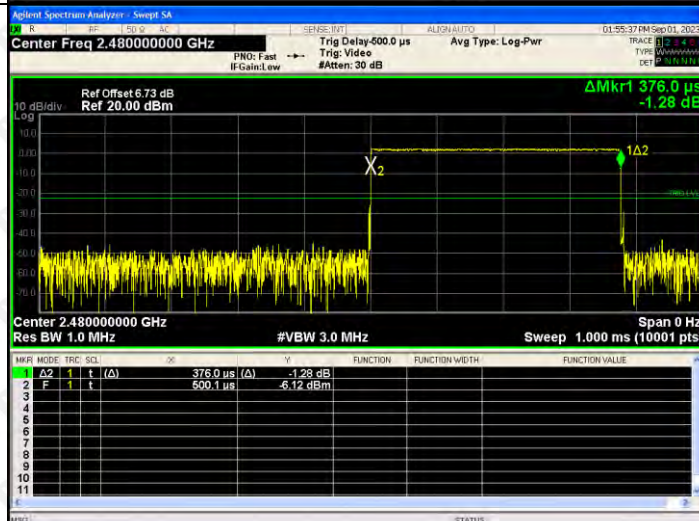
GFSK_DH1/LCH



GFSK_DH1/MCH

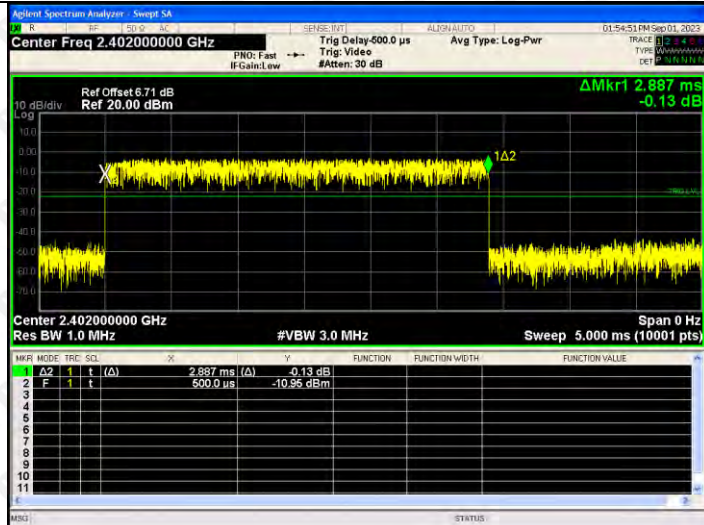


GFSK_DH1/HCH

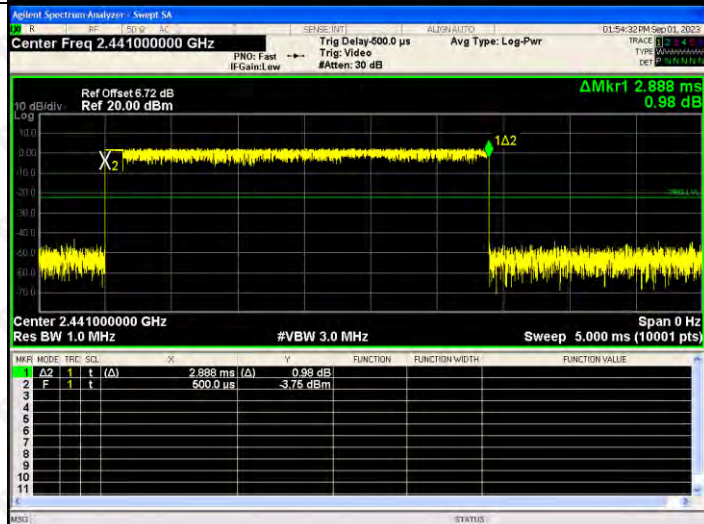


| <p>GFSK_DH3/LCH</p> |  <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq: 2.40200000 GHz</p> <p>Ref Offset: 6.71 dB Ref: 20.00 dBm</p> <p>Trig Delay: 500.0 μs Trig: Video #Atten: 30 dB</p> <p>ΔMkr1: 1.638 ms 2.57 dB</p> <p>Center: 2.40200000 GHz Res BW: 1.0 MHz #VBW: 3.0 MHz Sweep: 3.000 ms (10001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>DB</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>A2</td> <td>1</td> <td>t</td> <td>(A)</td> <td>1.638 ms</td> <td>(A)</td> <td>2.67 dB</td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>t</td> <td></td> <td>500.1 μs</td> <td></td> <td>-6.34 dBm</td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SCL | DB | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | A2 | 1 | t | (A) | 1.638 ms | (A) | 2.67 dB | | 2 | F | 1 | t | | 500.1 μ s | | -6.34 dBm | |
|---------------------|--|-----|------|-----|---------------|----------|----------------|----------------|----------------|----------------|---|----|---|---|-----|----------|-----|----------|--|---|---|---|---|--|---------------|--|-----------|--|
| MKR | MODE | TRC | SCL | DB | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | |
| 1 | A2 | 1 | t | (A) | 1.638 ms | (A) | 2.67 dB | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | t | | 500.1 μ s | | -6.34 dBm | | | | | | | | | | | | | | | | | | | | | |
| <p>GFSK_DH3/MCH</p> |  <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq: 2.44100000 GHz</p> <p>Ref Offset: 6.72 dB Ref: 20.00 dBm</p> <p>Trig Delay: 500.0 μs Trig: Video #Atten: 30 dB</p> <p>ΔMkr1: 1.638 ms 1.96 dB</p> <p>Center: 2.44100000 GHz Res BW: 1.0 MHz #VBW: 3.0 MHz Sweep: 3.000 ms (10001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>DB</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>A2</td> <td>1</td> <td>t</td> <td>(A)</td> <td>1.638 ms</td> <td>(A)</td> <td>1.96 dB</td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>t</td> <td></td> <td>499.8 μs</td> <td></td> <td>-6.99 dBm</td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SCL | DB | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | A2 | 1 | t | (A) | 1.638 ms | (A) | 1.96 dB | | 2 | F | 1 | t | | 499.8 μ s | | -6.99 dBm | |
| MKR | MODE | TRC | SCL | DB | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | |
| 1 | A2 | 1 | t | (A) | 1.638 ms | (A) | 1.96 dB | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | t | | 499.8 μ s | | -6.99 dBm | | | | | | | | | | | | | | | | | | | | | |
| <p>GFSK_DH3/HCH</p> |  <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq: 2.48000000 GHz</p> <p>Ref Offset: 6.73 dB Ref: 20.00 dBm</p> <p>Trig Delay: 500.0 μs Trig: Video #Atten: 30 dB</p> <p>ΔMkr1: 1.638 ms -5.07 dB</p> <p>Center: 2.48000000 GHz Res BW: 1.0 MHz #VBW: 3.0 MHz Sweep: 3.000 ms (10001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>DB</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>A2</td> <td>1</td> <td>t</td> <td>(A)</td> <td>1.638 ms</td> <td>(A)</td> <td>-5.07 dB</td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>1</td> <td>t</td> <td></td> <td>500.1 μs</td> <td></td> <td>-3.17 dBm</td> <td></td> </tr> </tbody> </table> | MKR | MODE | TRC | SCL | DB | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | 1 | A2 | 1 | t | (A) | 1.638 ms | (A) | -5.07 dB | | 2 | F | 1 | t | | 500.1 μ s | | -3.17 dBm | |
| MKR | MODE | TRC | SCL | DB | Y | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE | | | | | | | | | | | | | | | | | | | | |
| 1 | A2 | 1 | t | (A) | 1.638 ms | (A) | -5.07 dB | | | | | | | | | | | | | | | | | | | | | |
| 2 | F | 1 | t | | 500.1 μ s | | -3.17 dBm | | | | | | | | | | | | | | | | | | | | | |

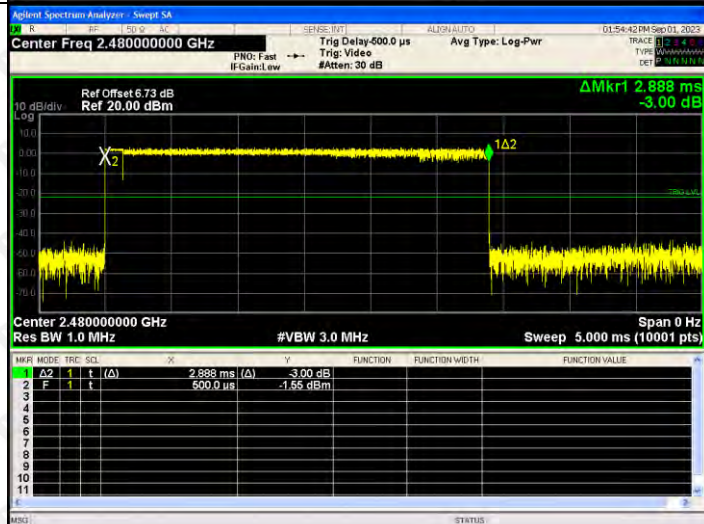
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GFSK_DH5/MCH



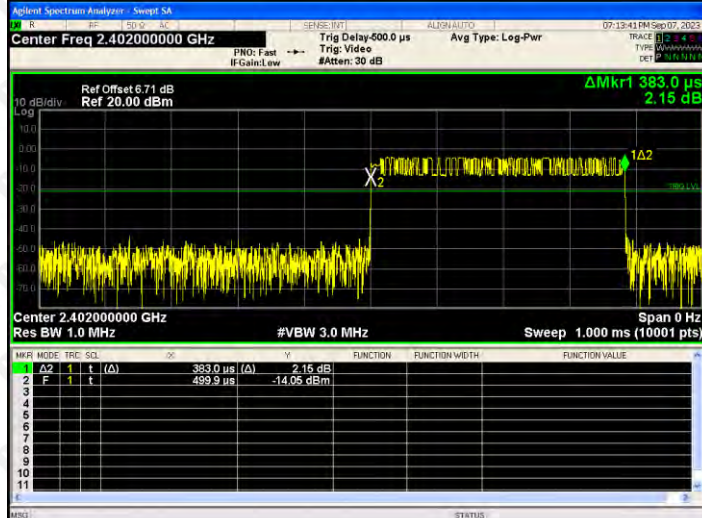
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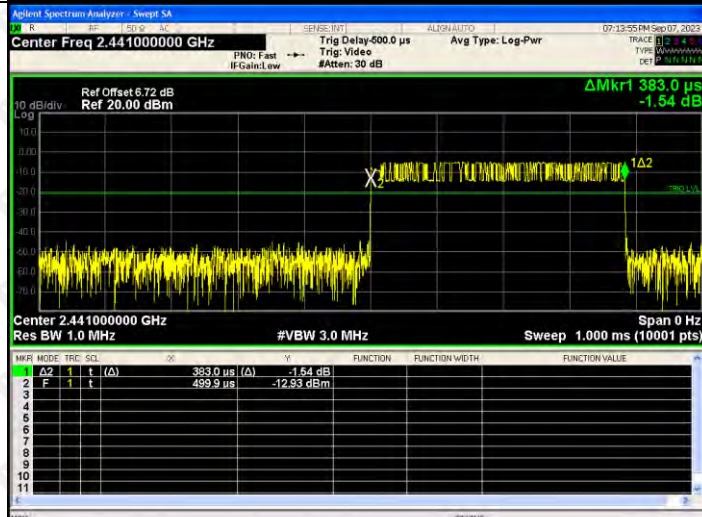
Left ear:
Test Graph

Graphs

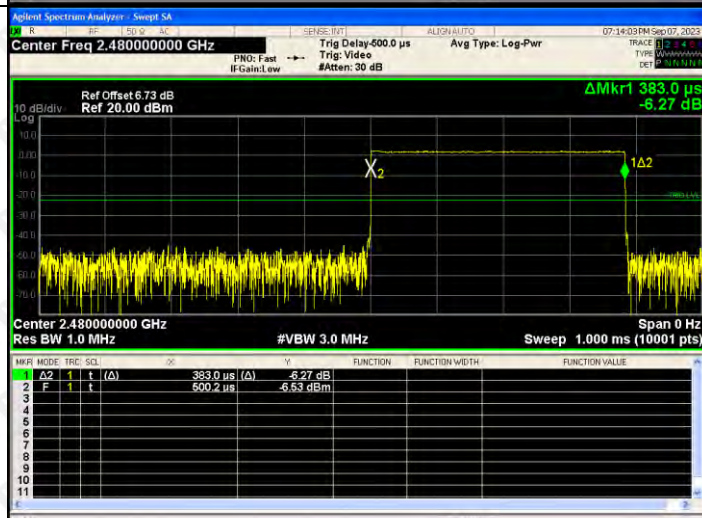
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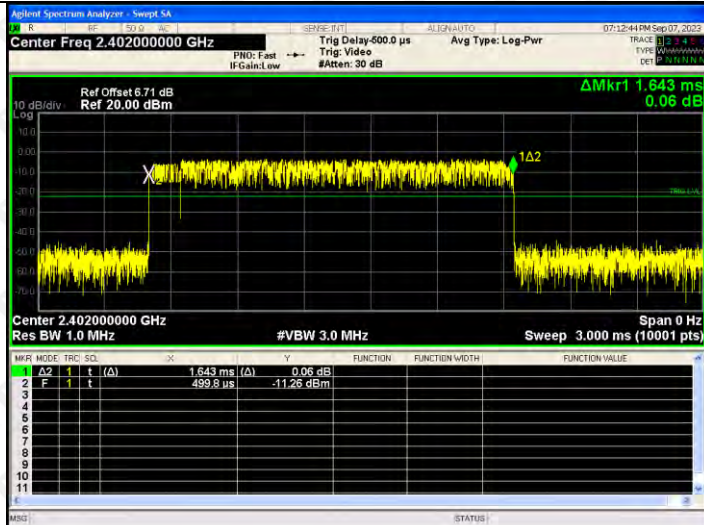
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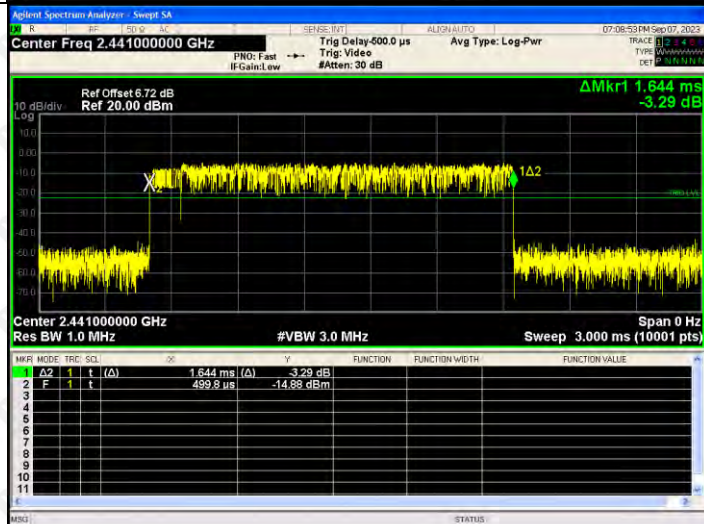
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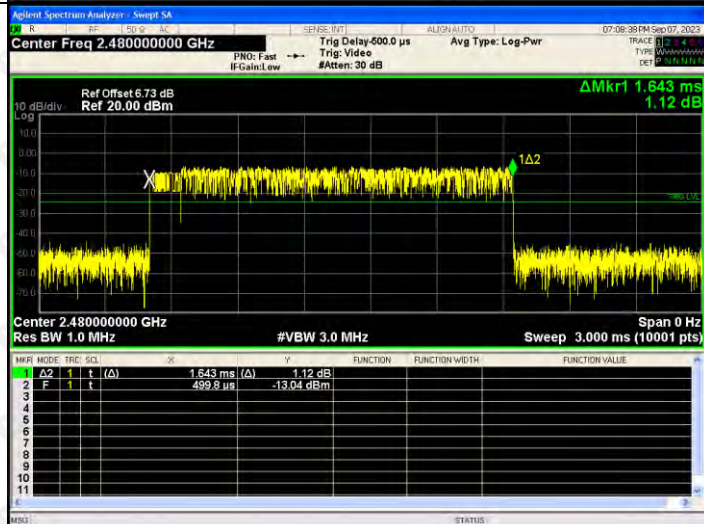
GFSK_DH3/LCH



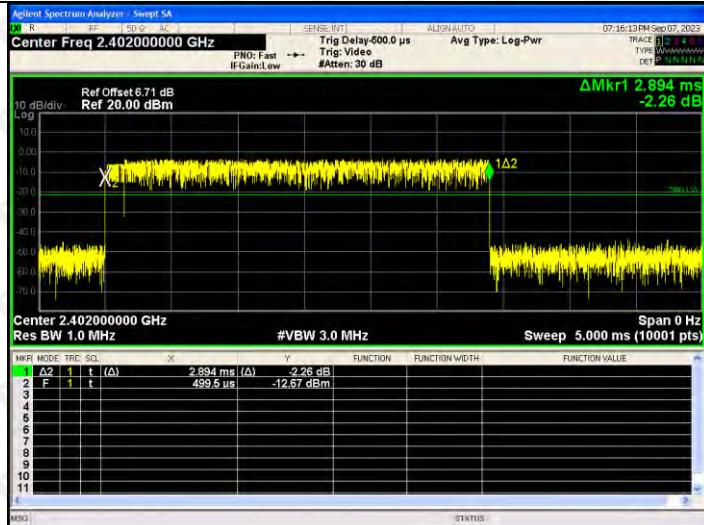
GFSK_DH3/MCH



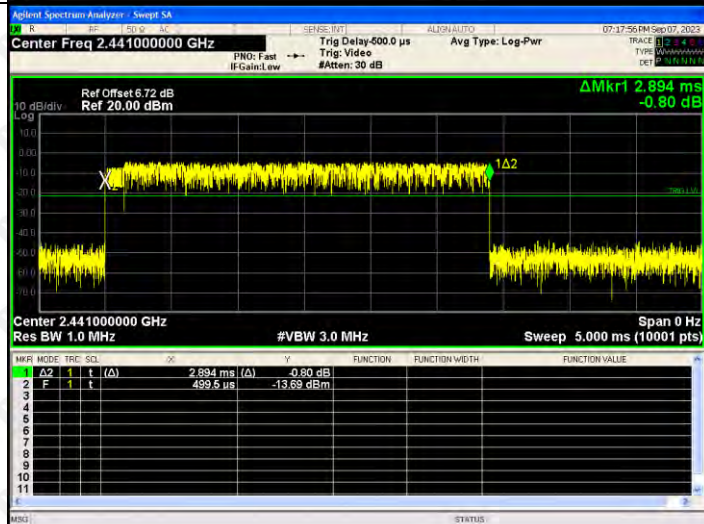
GFSK_DH3/HCH



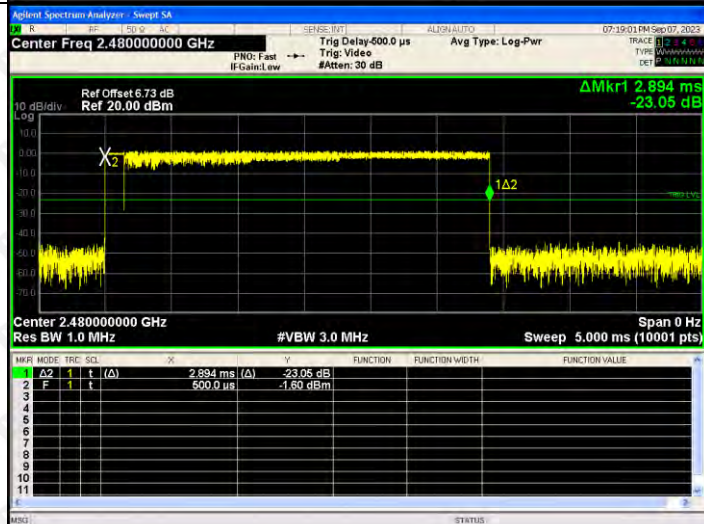
GFSK_DH5/LCH



GFSK_DH5/MCH



GFSK_DH5/HCH



14. PSEUDORANDOM FREQUENCY

14.1 Limit

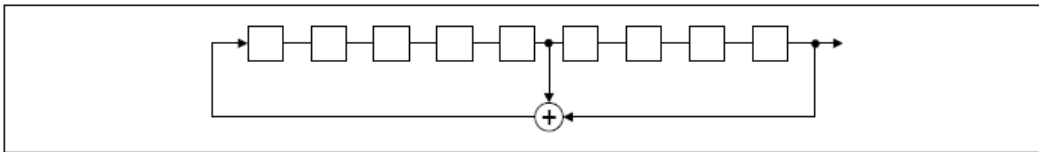
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

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. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

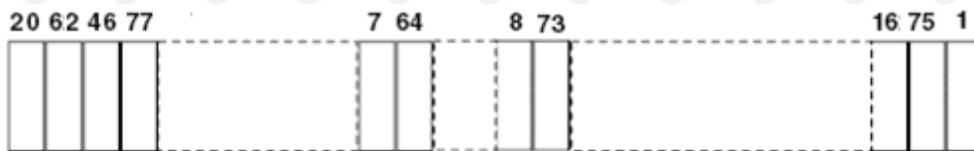
14.2 Test procedure

The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONES; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: $2^9 - 1 = 511$ bits
- Longest sequence of zeros: 8 (non-inverted signal)



An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their Corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

14.3 Test Result

The device does not have the ability to be coordinated with other FHSS systems in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

15. ANTENNA REQUIREMENT

15.203 requirement:

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

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

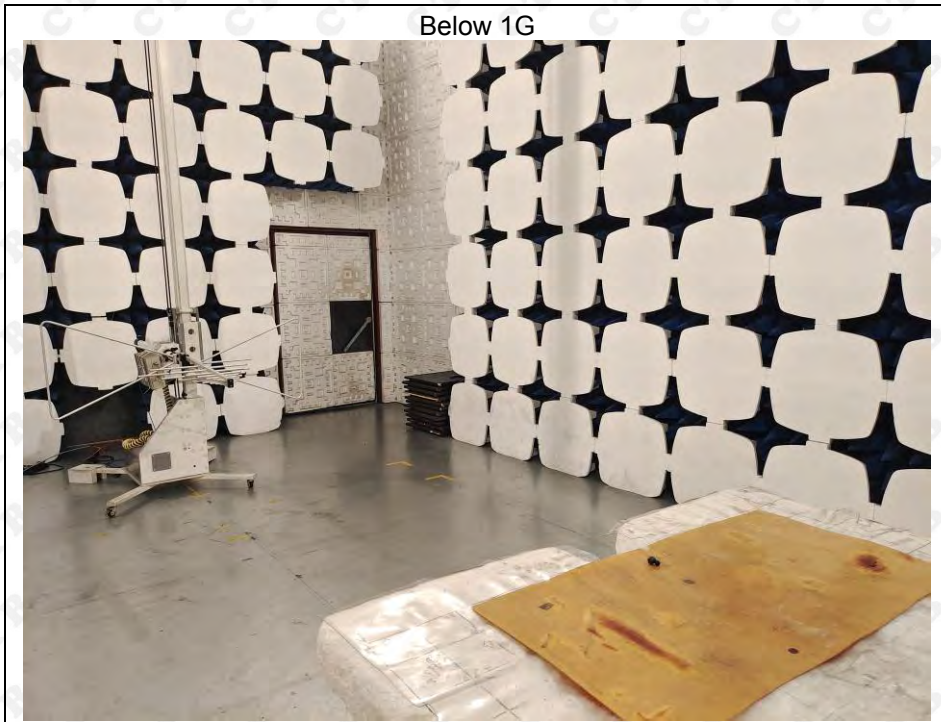
EUT Antenna:

The antenna is Chip Antenna. The best case gain of the antenna is 3.35dBi.

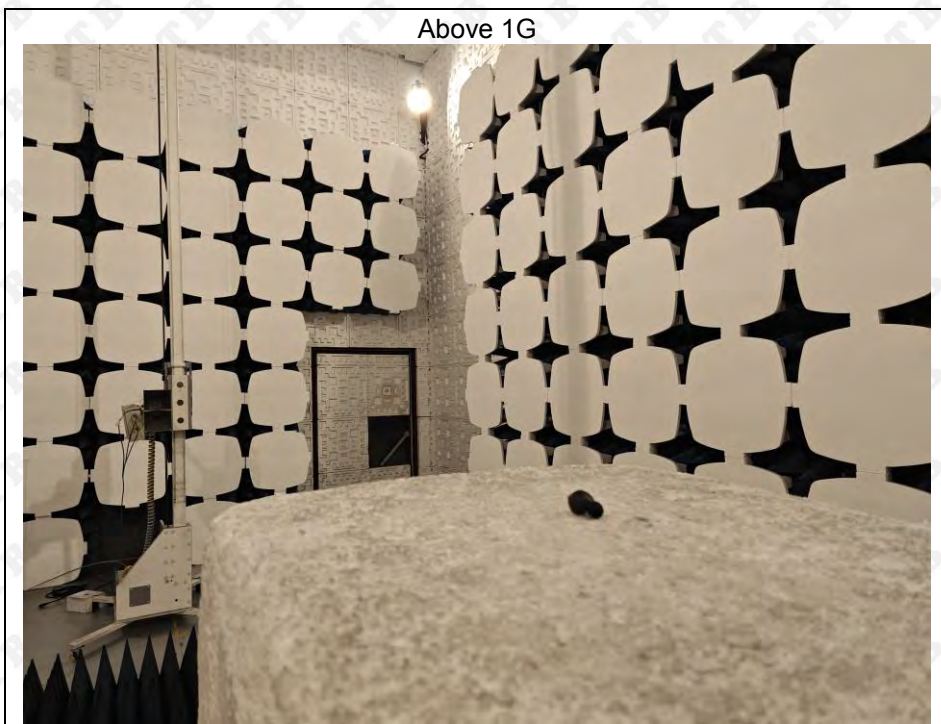
16. EUT TEST SETUP PHOTOGRAPHS

Radiated Emission

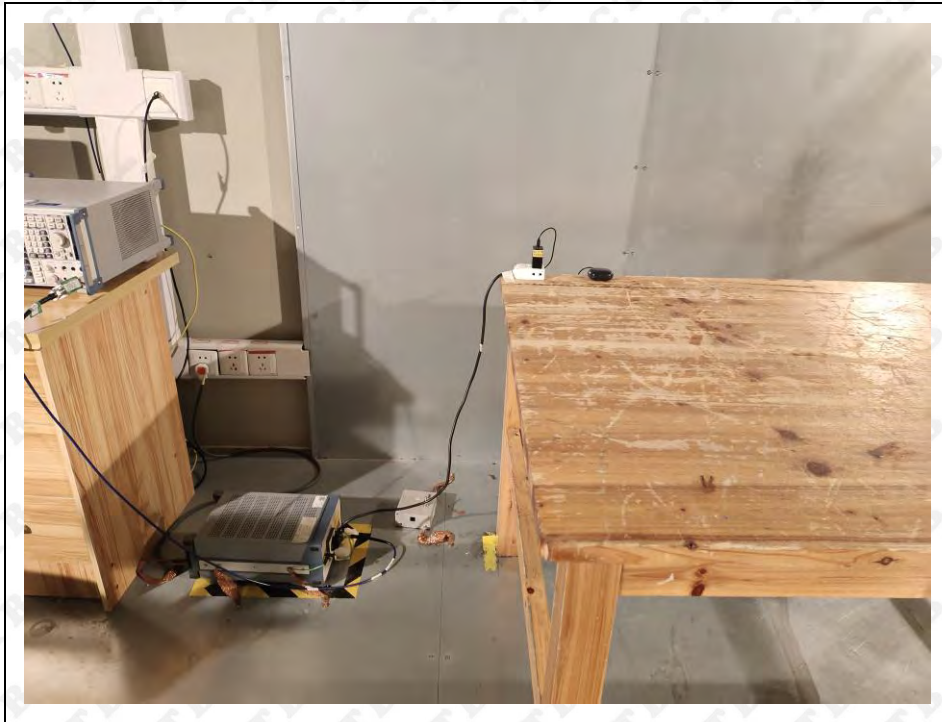
Below 1G



Above 1G



Conducted emissions



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