# FCC TEST REPORT

| | |
|---|---|
| **Name of Sample:** | **Mobile Cellular Phone** |
| **Model of Sample:** | **XT2529-2** |
| **Applicant:** | **Motorola Mobility LLC** |
| **Issue Date:** | **2025-05-09** |

## ADR TEST AND CERTIFICATION CENTER

## Motorola Mobility LLC, a Lenovo Company

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| | | | |
|---|---|---|---|
| **Name of Client** | Motorola Mobility LLC | | |
| **Address of Client** | 222 W, Merchandise Mart Plaza, Chicago IL 60654 USA | | |
| **Trademark** | Motorola | **Type Name or ID** | FCC ID: IHDT56AV2 |
| **Applicant No.** | RF192237 | **Sample No.** | 1#: N4BE240104 ($1_{st}$ Source)<br>2#: N4BE240117 ($1_{st}$ Source)<br>3#: N4BE410153 ($1_{st}$ Source)<br>4#: N4BE4Y0102 ($2_{nd}$ Source)<br>5#: N4BE240116 ($3_{rd}$ Source) |
| **Delivering Date** | 2025-02-18 | **Test Date** | 2025-02-18 to 2025-05-09 |
| **Sample Illustration** | None | | |
| **Standard** | 47 CFR Part 2;<br>47 CFR Part 27; | | |
| **Conclusion** | Pass | | |
| **Remarks** | N/A | | |

**Editor:** Wangzhenyu **Reviewer:** Hexiaolin **Signatory:** HuangshengLin

Wangzhenyu Hexiaolin Eric Lin

# Matters Needing Attention

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e) If there is any dissidence for the test report, please file objection to the lab within 15 days from the date of receiving the test report.

f) The test report is only responsible for the tested model/sample. The sample(s) presented in this report are provided by client.

g) Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the lab.

# Revision History

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| TR-25ADRTCC7011 | Rev.01 | Initial issue of report | 2025-05-08 |
| TR-25ADRTCC7011 | Rev.02 | 1, Add n38 5MHz data<br>2, Updated description information on page 5 | 2025-05-09 |
| | | | |
| | | | |
| | | | |
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# 1. Test Summary

## 1.1. 5G NR Band n38

| Test Item | Rule No. | Requirements | Test Result | Verdict |
|---|---|---|---|---|
| Conducted Power | §2.1046 | Report Only | Section 1 of Appendix B | Pass |
| Effective Isotropic Radiated Power | §27.50(h) (2) | EIRP < 2W | | |
| Peak-Average Ratio | §27.50(a) | <13 dB | Section 2 of Appendix B | Pass |
| Modulation Characteristics | §2.1047 | Digital modulation | Section 3 of Appendix B | Pass |
| Occupied Bandwidth | §2.1049 | No limit | Section 4 of Appendix B | Pass |
| 26dB Emission Bandwidth | | No limit | | |
| Conducted Band Edges | §2.1051 §27.53(m) (4) | For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section | Section 5 of Appendix B | Pass |
| Conducted Spurious Emission | §2.1051 §27.53(m) (4) | < -25 dBm/MHz for outside Band Edge Range | Section 6 of Appendix B | Pass |
| Frequency Stability | §27.54 | Within authorized bands | Section 7 of Appendix B | Pass |

Note:

This is a variant report for XT2529-1. The difference between current and previous is as below:

- Add 5G NR n38 bandwidth 5MHz (SCS 15KHz only) .

Since the conducted power is less than the original report. Only the n38 bandwidth 5MHz was tested for conducted, all the other test results refer to the original report 25ADRTCC7005.

# 2. General Information

## 2.1. General Description of EUT

| | |
|---|---|
| EUT Description: | Mobile Cellular Phone |
| Brand Name: | Motorola |
| Model Name: | XT2529-2 |
| FCC ID: | IHDT56AV2 |
| IMEI Code: | 1#: 351971360022013/351971360022021 (Conducted);<br>2#: 351971360022138/351971360022146 (Conducted);<br>3#: 351971360015678/351971360015686 (Conducted);<br>4#: 351971360039256/351971360039264 (Conducted);<br>5#: 351971360024993/351971360025008 (Conducted); |
| Hardware Version: | DVT2 |
| Software Version: | V2VO35.42 |
| NR Modulation: | DFT-s-OFDM: ☒Pi/2BPSK; ☒ QPSK; ☒ 16QAM; ☒ 64QAM; ☒ 256QAM;<br>CP-OFDM: ☒ QPSK; ☒ 16QAM; ☒ 64QAM; ☒ 256QAM; |
| Sample Type: | ☒ Portable Device, ☐Module |
| Antenna Type: | ☐External, ☒ Integrated |
| Antenna Gain: | n38 (2570-2620): -3.90dBi (Ant1); -4.10dBi (Ant4); |

Remark

1, The information above was declared by manufacture. Please refer to the specifications or user manual for more

detailed description.

# 3. Maximum Effective Radiated (Isotropic) Power and Emission Designator

## 3.1. NR System

### 3.1.1. NR Band n38 (2570-2620)

| 5G NR SA (n38) | | Pi/2 BPSK / QPSK | | 16QAM/64QAM/256QAM | |
|---|---|---|---|---|---|
| Bandwidth | Frequency Range (MHz) | Maximum EIRP (W) | Emission Designator (99% OBW) | Maximum EIRP (W) | Emission Designator (99% OBW) |
| 5MHz | 2572.5-2617.5 | 0.088308 | 4M48G7D | 0.071450 | 4M47W7D |

# 4. Test Configuration of Equipment Under Test

## 4.1. Test Mode for NR Configuration

| Test Case | 5G NR | SCS | | Bandwidth | Modulation | | | | | Channel | | | RB | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15KHz | 30KHz | | Pi/2BPSK | QPSK | 16QAM | 64QAM | 256QAM | LCH | MCH | HCH | 1 | Full |
| Effective Isotropic Radiated Power | N38 (2570-2620) | ● | ○ | 5MHz | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Peak-Average Ratio | N38 (2570-2620) | ● | ○ | 5MHz | ● | ● | ○ | ○ | ○ | ● | ● | ● | ○ | ● |
| Modulation Characteristics | N38 (2570-2620) | ● | ○ | 5MHz | ● | ● | ● | ● | ● | ○ | ● | ○ | ○ | ● |
| Occupied Bandwidth & 26dB Emission Bandwidth | N38 (2570-2620) | ● | ○ | 5MHz | ● | ● | ● | ● | ● | ○ | ● | ○ | ○ | ● |
| Conducted Band Edges | N38 (2570-2620) | ● | ○ | 5MHz | ● | ● | ○ | ○ | ○ | ● | ○ | ● | ● | ● |
| Conducted Spurious Emission | N38 (2570-2620) | ● | ○ | 5MHz | ● | ● | ○ | ○ | ○ | ● | ● | ● | ● | ○ |
| Frequency Stability | N38 (2570-2620) | ● | ○ | 5MHz | ○ | ● | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● |

Remark:

1, the mark "●" means this configuration was chosen for testing, mark "○" means not selected, and the mark "✘" means not applicable.

2, All Supported BW means all supported bandwidth for selected SCS configuration.

### 4.2. Test Frequencies

### 5.2.1 5G NR System

### 4.2.1.1. NR Band n38 (2570-2620)

### 4.2.1.1.1. SCS=15KHz

| Bandwidth | LCH | | MCH | | HCH | |
|---|---|---|---|---|---|---|
| | Arfcn | Freq | Arfcn | Freq | Arfcn | Freq |
| 5MHz | 514500 | 2572.5 | 519000 | 2595.0 | 523500 | 2617.5 |

# 5. Description of Tests

## 5.1. Conducted Output Power Measurement

### 5.1.1. Description of Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT, Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

### 5.1.2. Test Procedures

1， The testing follows ANSI C63.26 Section 5.2.
2， The transmitter output port was connected to the system simulator.
3， Set EUT at maximum power through the system simulator.
4， Select lowest, Middle, Highest channels for each band and each modulation.
5， Record the reading power from the system simulator.

## 5.2. Effective (Isotropic) Radiated Power

Measurement Procedure: ANSI C63.26

Calculate power in dBm by the following formula:

ERP (dBm) = Conducted Power (dBm) + antenna gain (dBd)

EIRP (dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB

# 6. List of Measuring Equipment

| Equipment | Model | Manufacture | Device No. | Cal Date | Cal Due |
|---|---|---|---|---|---|
| Radio Communication Analyzer | MT8000A | Anritsu | 6272427164 | 2024-11-15 | 2025-11-14 |
| | MT8000A | Anritsu | 6272478367 | 2024-07-03 | 2025-07-02 |
| | MT8821C | Anritsu | 6272374630 | 2024-11-15 | 2025-11-14 |
| Spectrum Analyzer (50Hz-40GHz) | FSV | R&S | 101046 | 2024-11-15 | 2025-11-14 |
| Spectrum Analyzer (50Hz-40GHz) | FSV | R&S | 101334 | 2024-11-15 | 2025-11-14 |
| Power Supply | 2036 | Keithley | 4058748 | 2024-11-15 | 2025-11-14 |
| Temperature Chamber | C/64/40/3 | Weiss | 56246017780020 | 2025-03-24 | 2026-03-25 |
| Power Divider | - | WOKEN | 0120A04051801O | NCR | |
| Power Divider | - | WOKEN | 0120A02051801M | NCR | |

Remark:

1， For equipment listed above that has a calibration date or calibration due date that falls within the test date range, and the equipment was used after calibrate date and before calibrate due date.
2， “NCR” means no calibration required.

# 7. Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26. All the measurement uncertainties value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be directly to specified limit to determine compliance.

## 7.1. Uncertainty of Conducted Measurement

| Contribution | Expanded Uncertainty |
|---|---|
| Conducted Power | ± 1.09 dB |
| Peak-to-Average Ratio | ± 2.28 dB |
| Channel Bandwidth | ± 0.15% MHz |
| Conducted Emission (f <1GHz) | ± 2.23 dB |
| Conducted Emission (1GHz < f <18GHz) | ± 2.24 dB |
| Conducted Emission (18GHz < f <40GHz) | ± 2.11 dB |
| Frequency | ± 0.02 KHz |

The End

# Appendix
# for
# n38A
# (2570-2620)

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# 1. Effective Isotropic Radiated Power

## 1.1. Test Results @ Ant1 (Antenna Gain=-3.90dBi)

| SCS | Bandwidth | Channel | Modulation | Conducted Result (dBm) | | | Max EIRP (dBm) | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Inner_1RB_Left | Inner_1RB_Right | Inner_Full | | | |
| 15KHz | 5MHz | LCH | DFT-Pi2BPSK | 23.22 | 23.09 | 23.21 | 19.32 | 33.00 | Pass |
| 15KHz | 5MHz | LCH | DFT-QPSK | 23.28 | 23.19 | 23.30 | 19.40 | 33.00 | Pass |
| 15KHz | 5MHz | LCH | DFT-16QAM | 22.10 | 22.06 | 22.27 | 18.37 | 33.00 | Pass |
| 15KHz | 5MHz | LCH | DFT-64QAM | 20.71 | 20.68 | 20.88 | 16.98 | 33.00 | Pass |
| 15KHz | 5MHz | LCH | DFT-256QAM | 19.12 | 19.04 | 18.81 | 15.22 | 33.00 | Pass |
| 15KHz | 5MHz | LCH | CP-QPSK | 21.94 | 21.84 | 21.93 | 18.04 | 33.00 | Pass |
| 15KHz | 5MHz | MCH | DFT-Pi2BPSK | 23.05 | 23.13 | 23.36 | 19.46 | 33.00 | Pass |
| 15KHz | 5MHz | MCH | DFT-QPSK | 23.35 | 23.34 | 23.34 | 19.45 | 33.00 | Pass |
| 15KHz | 5MHz | MCH | DFT-16QAM | 22.20 | 22.23 | 22.44 | 18.54 | 33.00 | Pass |
| 15KHz | 5MHz | MCH | DFT-64QAM | 21.07 | 21.07 | 21.08 | 17.18 | 33.00 | Pass |
| 15KHz | 5MHz | MCH | DFT-256QAM | 19.13 | 19.16 | 18.95 | 15.26 | 33.00 | Pass |
| 15KHz | 5MHz | MCH | CP-QPSK | 21.98 | 22.01 | 22.02 | 18.12 | 33.00 | Pass |
| 15KHz | 5MHz | HCH | DFT-Pi2BPSK | 23.02 | 23.17 | 23.17 | 19.27 | 33.00 | Pass |
| 15KHz | 5MHz | HCH | DFT-QPSK | 23.06 | 23.13 | 23.19 | 19.29 | 33.00 | Pass |
| 15KHz | 5MHz | HCH | DFT-16QAM | 22.06 | 22.12 | 22.13 | 18.23 | 33.00 | Pass |
| 15KHz | 5MHz | HCH | DFT-64QAM | 20.93 | 20.98 | 20.92 | 17.08 | 33.00 | Pass |
| 15KHz | 5MHz | HCH | DFT-256QAM | 18.84 | 18.95 | 18.83 | 15.05 | 33.00 | Pass |
| 15KHz | 5MHz | HCH | CP-QPSK | 21.87 | 21.89 | 21.87 | 17.99 | 33.00 | Pass |

# 2. Peak-to-Average Ratio

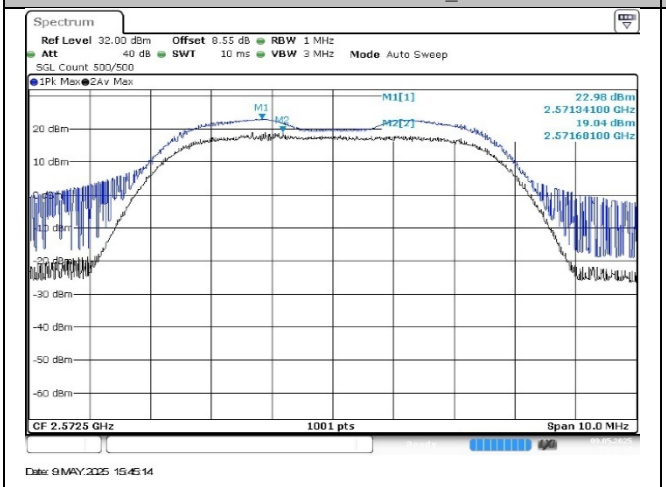
## 2.1. Test Results

| SCS | Bandwidth | Channel | RB | Result (dB) | | Limit (dB) | Verdict |
|---|---|---|---|---|---|---|---|
| | | | | DFT-Pi2BPSK | DFT-QPSK | | |
| 15KHz | 5MHz | LCH | Outer_Full | 3.94 | 5.09 | 13.00 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | 3.25 | 5.11 | 13.00 | Pass |
| 15KHz | 5MHz | HCH | Outer_Full | 3.33 | 5.15 | 13.00 | Pass |

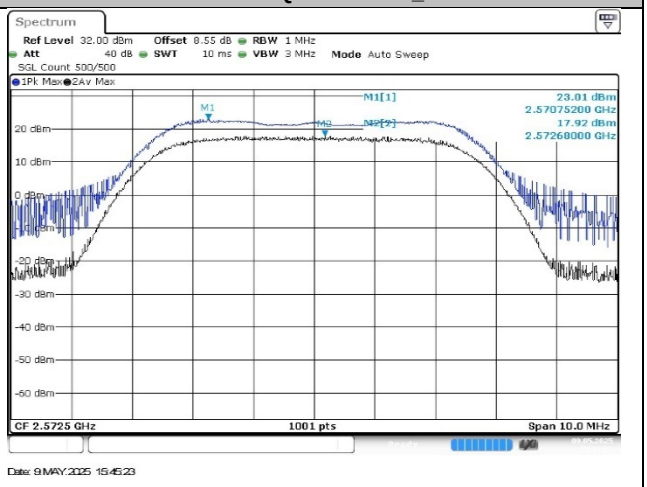
## 2.2. Test Plots for SCS=15KHz

**n38A / 15KHz / 5MHz**

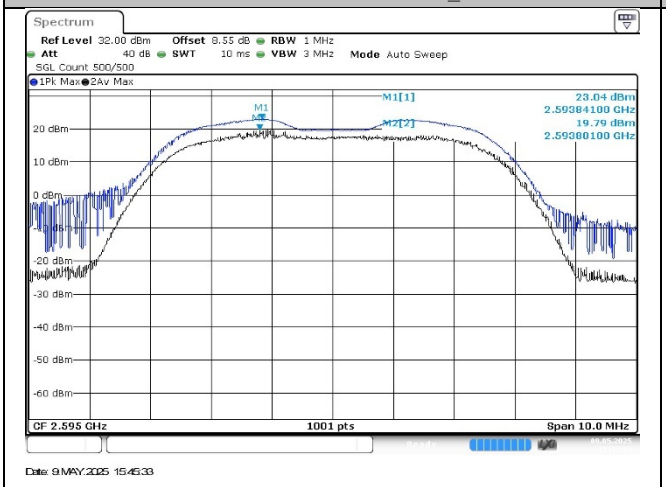
**LCH / DFT-Pi2BPSK / Outer_Full**



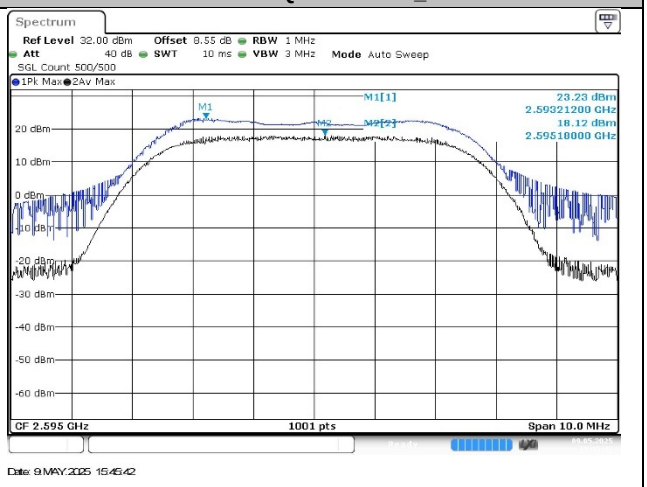

**LCH / DFT-QPSK / Outer_Full**



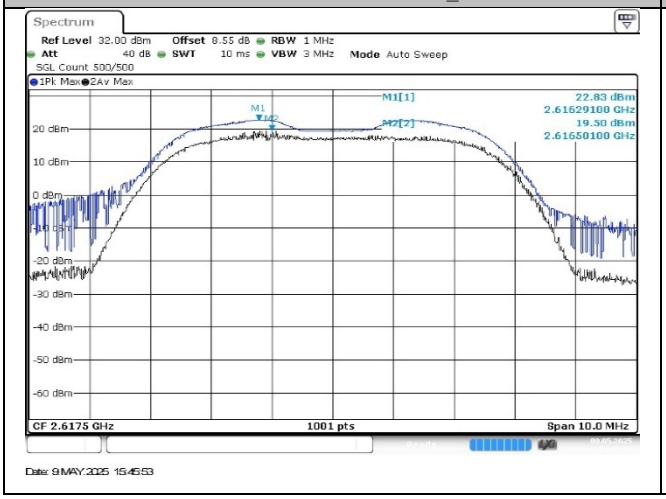

**MCH / DFT-Pi2BPSK / Outer_Full**




**MCH / DFT-QPSK / Outer_Full**




**HCH / DFT-Pi2BPSK / Outer_Full**

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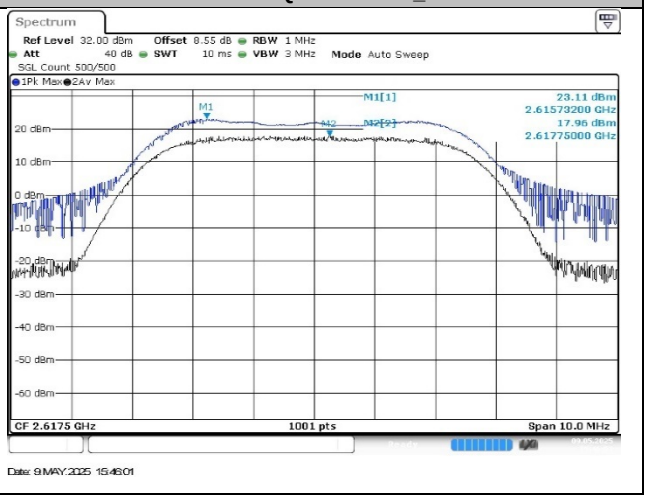
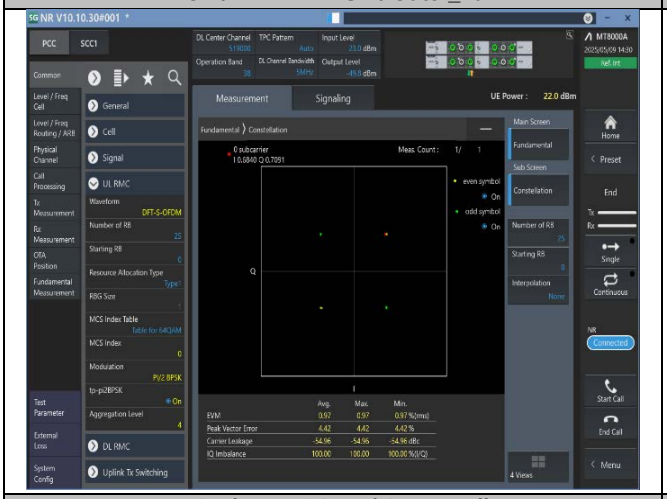


# 3. Modulation Characteristics

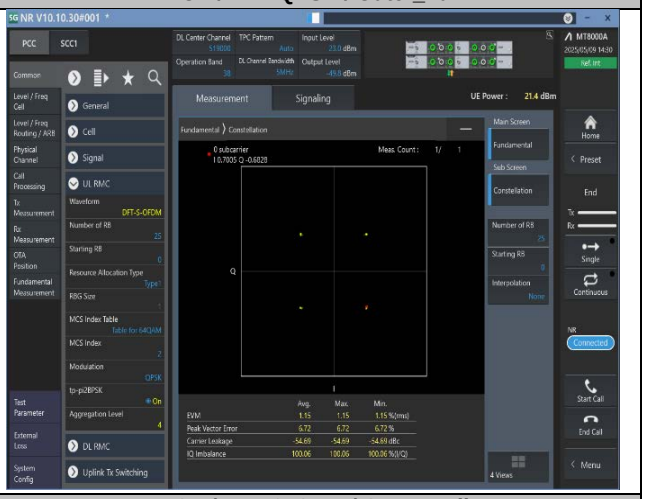
## 3.1. Test Plots for SCS=15KHz

**n38A / 15KHz / 5MHz**

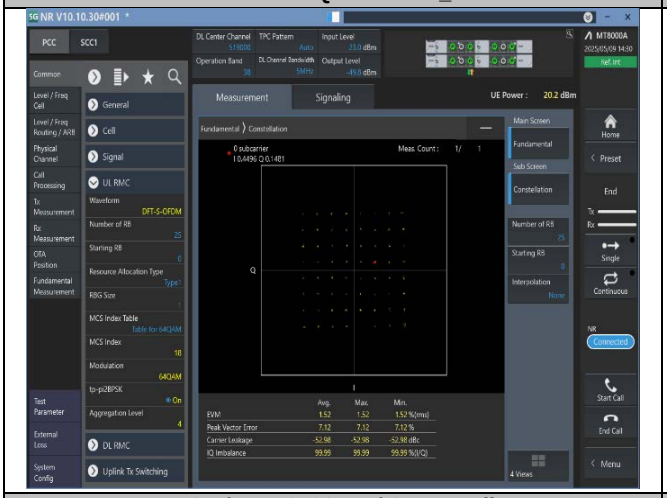
**MCH / DFT-Pi2BPSK / Outer_Full**



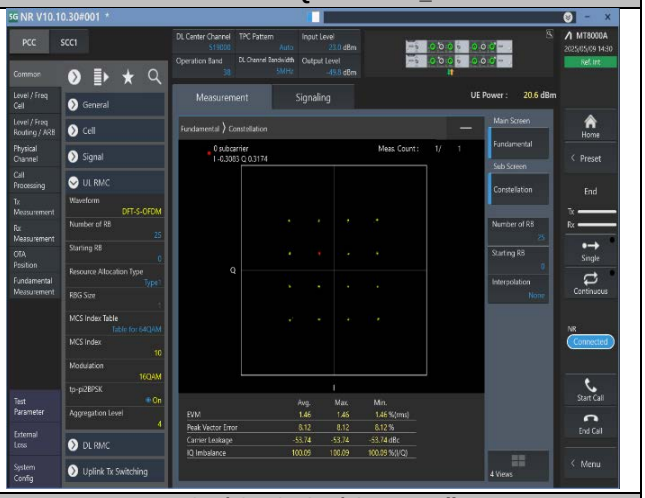

**MCH / DFT-QPSK / Outer_Full**



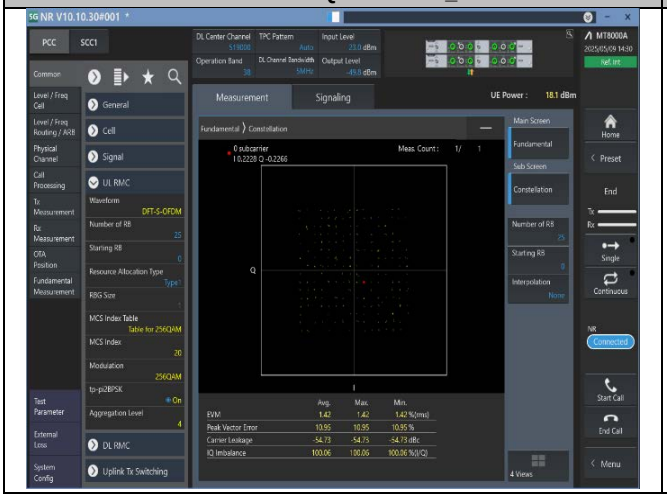

**MCH / DFT-16QAM / Outer_Full**



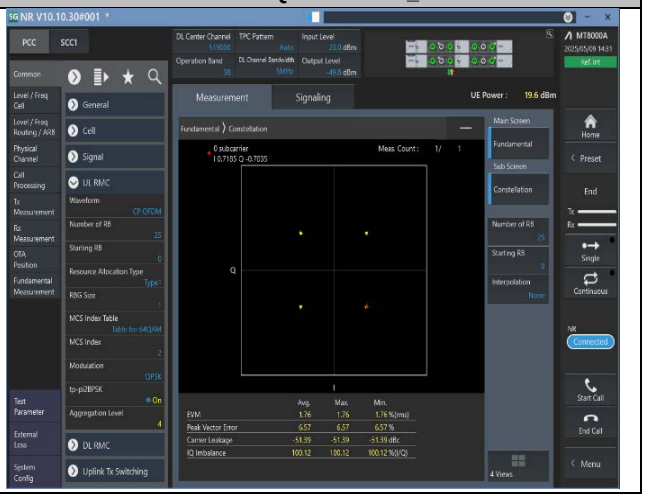

**MCH / DFT-64QAM / Outer_Full**



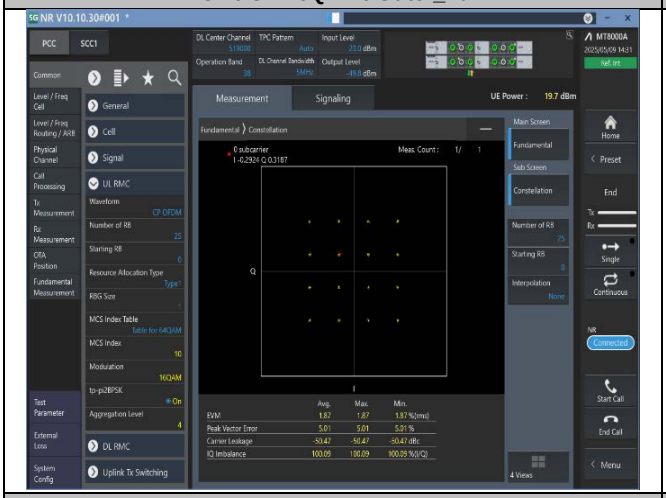

**MCH / DFT-256QAM / Outer_Full**



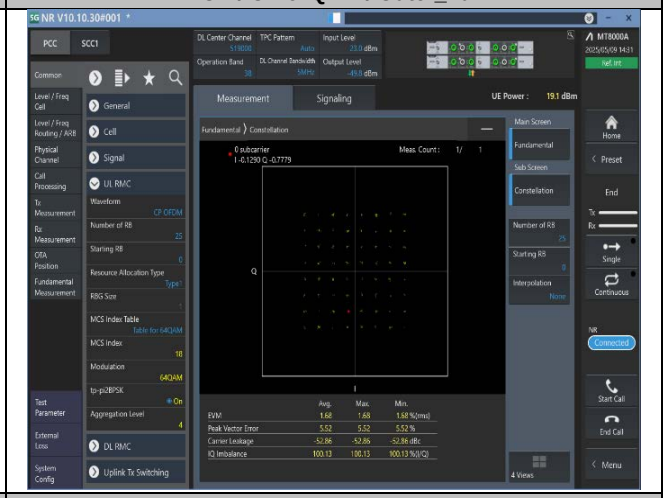

**MCH / CP-QPSK / Outer_Full**



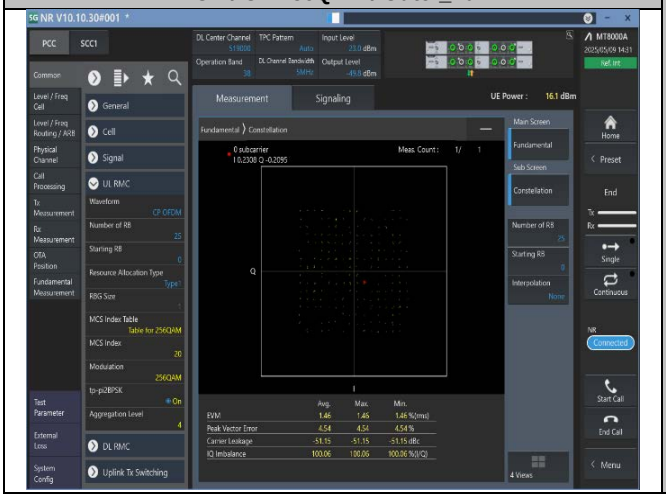
MCH / CP-16QAM / Outer_Full



MCH / CP-64QAM / Outer_Full



MCH / CP-256QAM / Outer_Full



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# 4. 99% Occupied Bandwidth & 26dB Emission Bandwidth

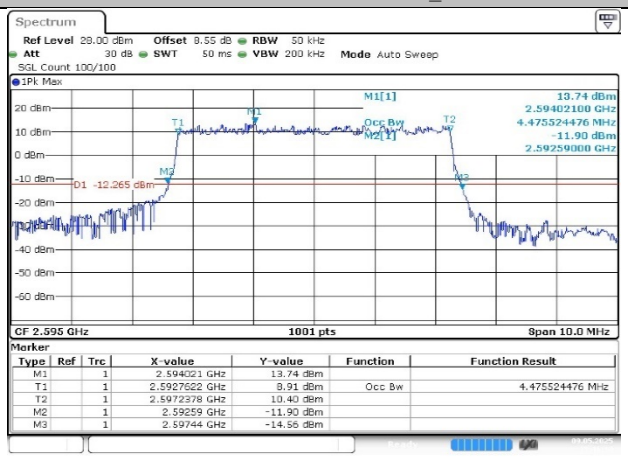
## 4.1. Test Results

| SCS | Bandwidth | Modulation | RB | 99% Occupied Bandwidth (MHz) | 26dB Emission Bandwidth (MHz) | Verdict |
|---|---|---|---|---|---|---|
| 15KHz | 5MHz | DFT-Pi2BPSK | Outer_Full | 4.48 | 4.85 | Pass |
| 15KHz | 5MHz | DFT-QPSK | Outer_Full | 4.47 | 4.79 | Pass |
| 15KHz | 5MHz | CP-QPSK | Outer_Full | 4.47 | 4.86 | Pass |
| 15KHz | 5MHz | CP-16QAM | Outer_Full | 4.46 | 4.83 | Pass |
| 15KHz | 5MHz | CP-64QAM | Outer_Full | 4.47 | 4.82 | Pass |
| 15KHz | 5MHz | CP-256QAM | Outer_Full | 4.47 | 4.91 | Pass |

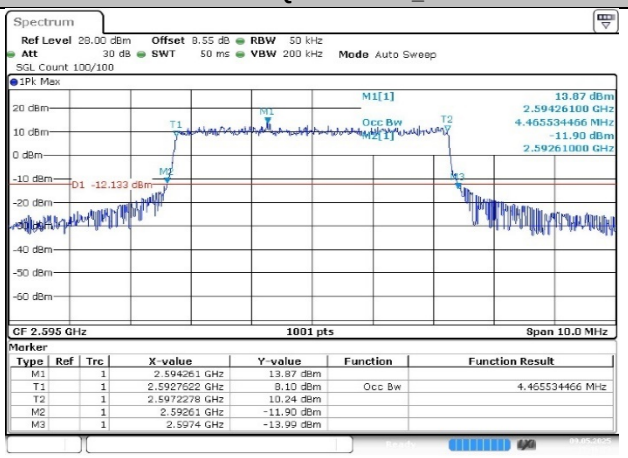
## 4.2. Test Plots for SCS=15KHz

**n38A / 15KHz / 5MHz**

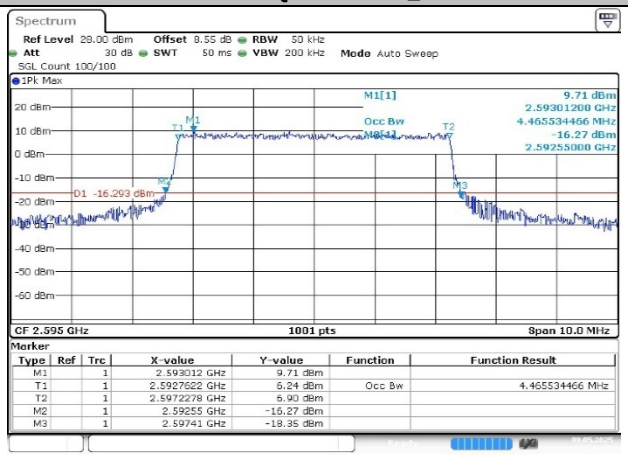
**MCH / DFT-Pi2BPSK / Outer_Full**



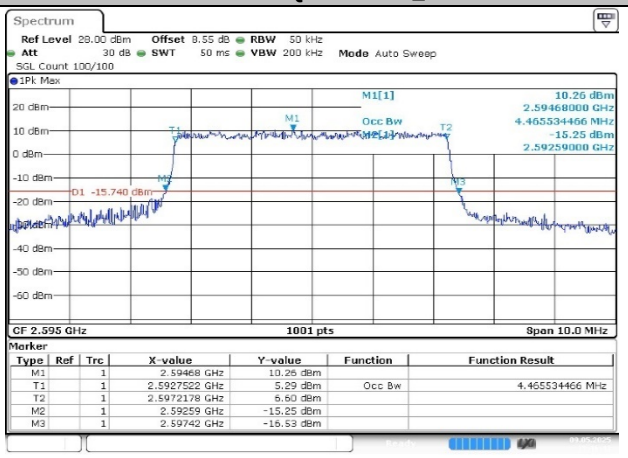

**MCH / DFT-QPSK / Outer_Full**



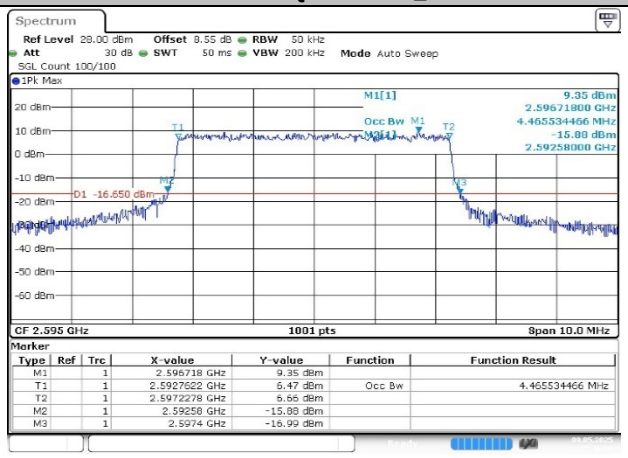

**MCH / CP-QPSK / Outer_Full**



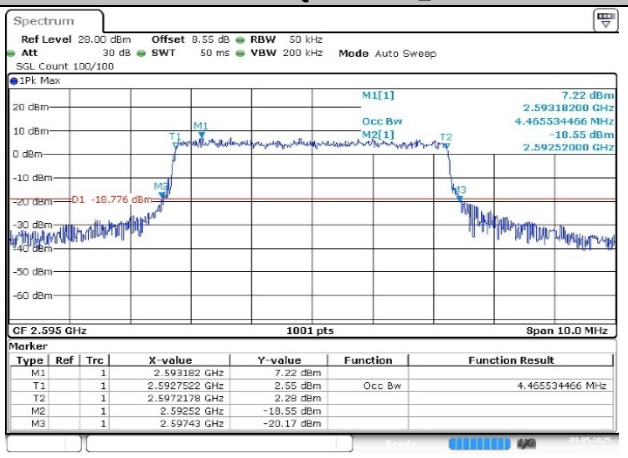

**MCH / CP-16QAM / Outer_Full**




**MCH / CP-64QAM / Outer_Full**




**MCH / CP-256QAM / Outer_Full**

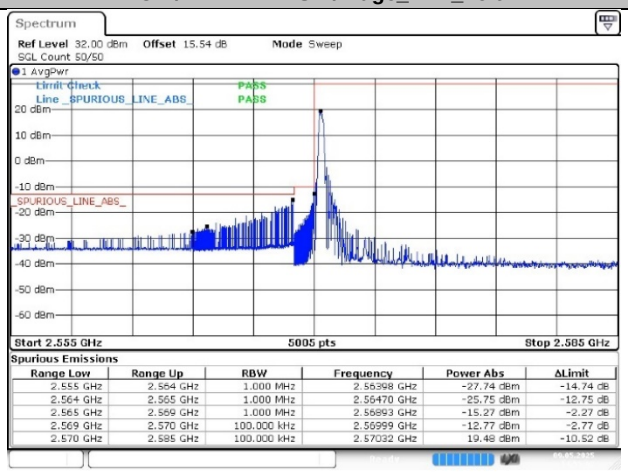


# 5. Conducted Band Edges

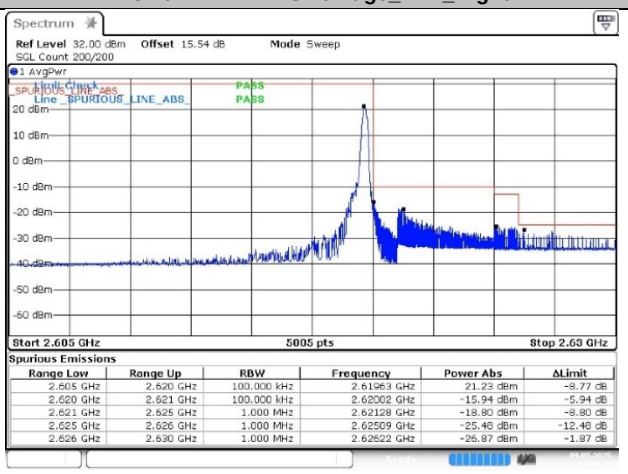
## 5.1. Test Plots for SCS=15KHz

### n38A / 15KHz / 5MHz

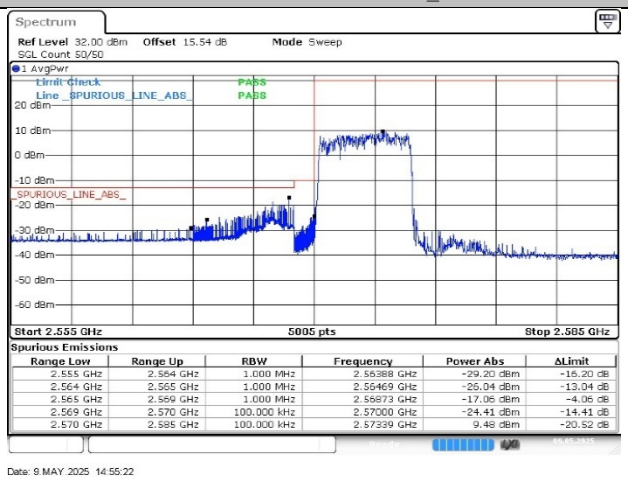
#### LCH / DFT-Pi2BPSK / Edge_1RB_Left



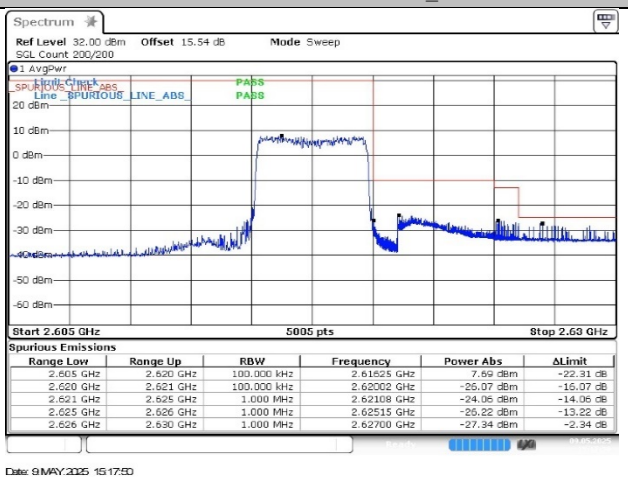

#### HCH / DFT-Pi2BPSK / Edge_1RB_Right



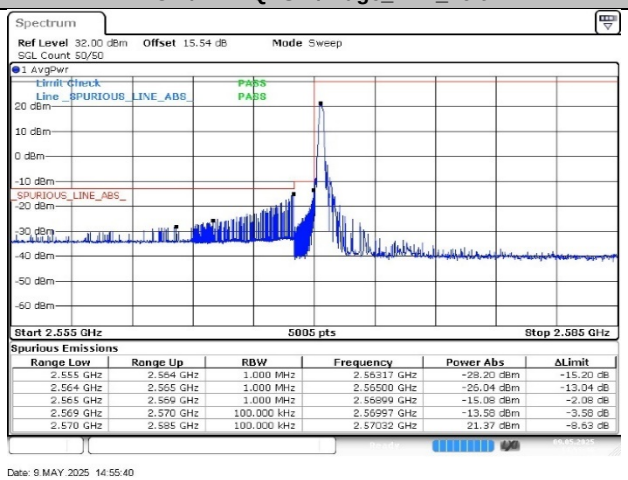

#### LCH / DFT-Pi2BPSK / Outer_Full



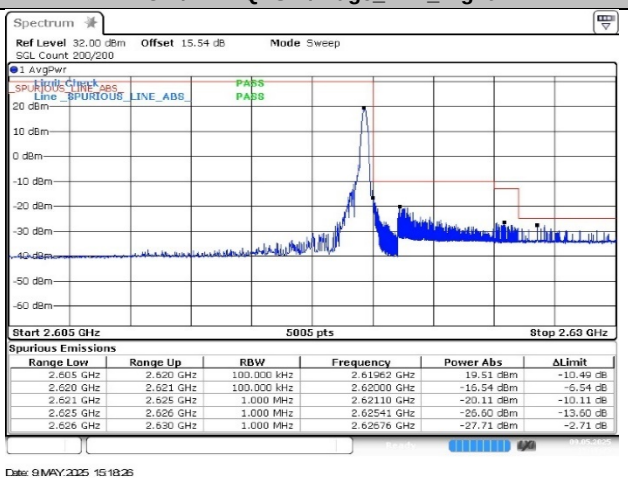

#### HCH / DFT-Pi2BPSK / Outer_Full



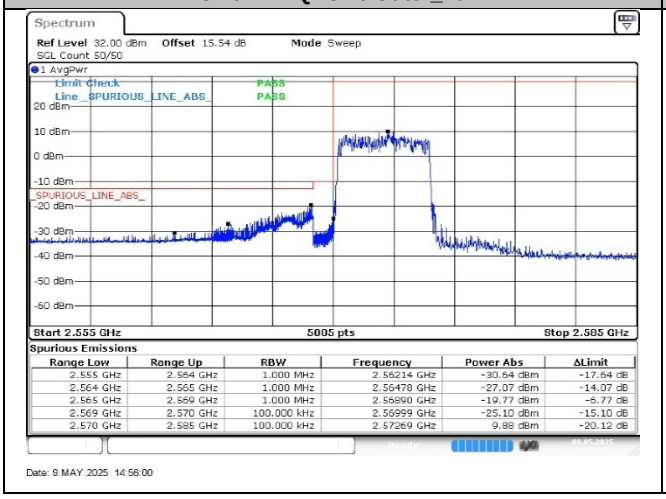

#### LCH / DFT-QPSK / Edge_1RB_Left



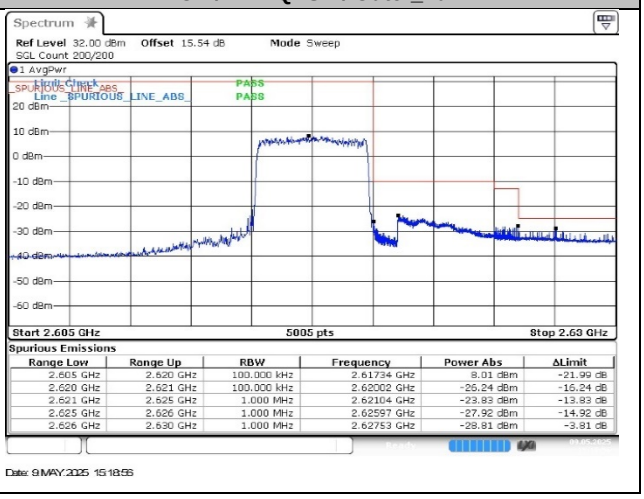

#### HCH / DFT-QPSK / Edge_1RB_Right



**LCH / DFT-QPSK / Outer_Full**




**HCH / DFT-QPSK / Outer_Full**

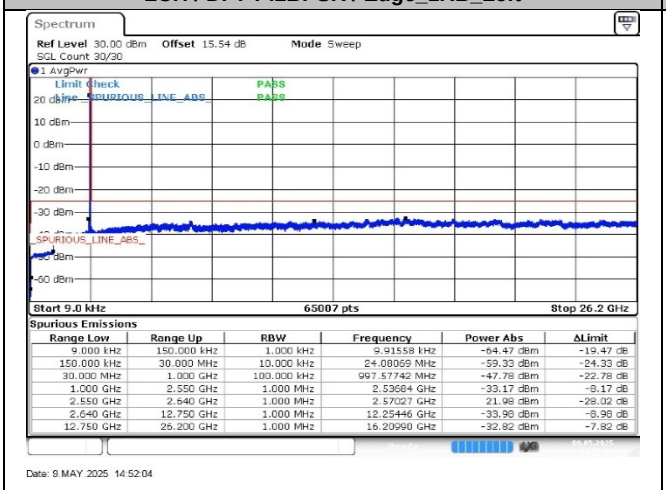



# 6. Conducted Spurious Emission

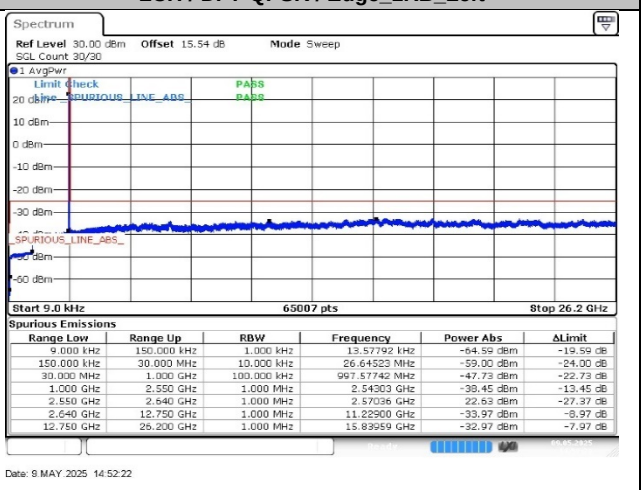
## 6.1. Test Plots for SCS=15KHz

**n38A / 15KHz / 5MHz**

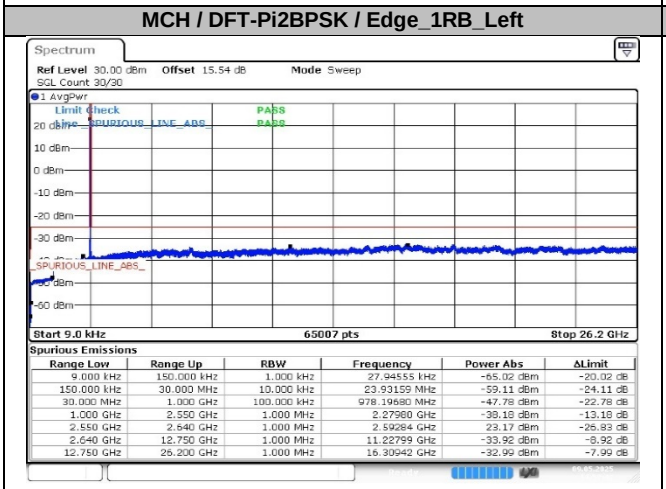
**LCH / DFT-Pi2BPSK / Edge_1RB_Left**



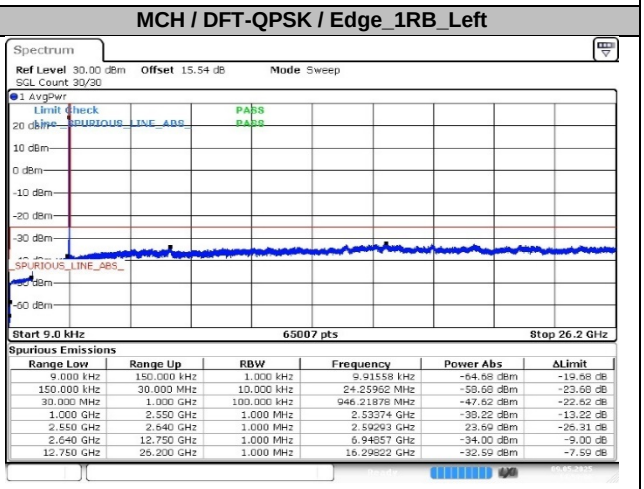

**LCH / DFT-QPSK / Edge_1RB_Left**



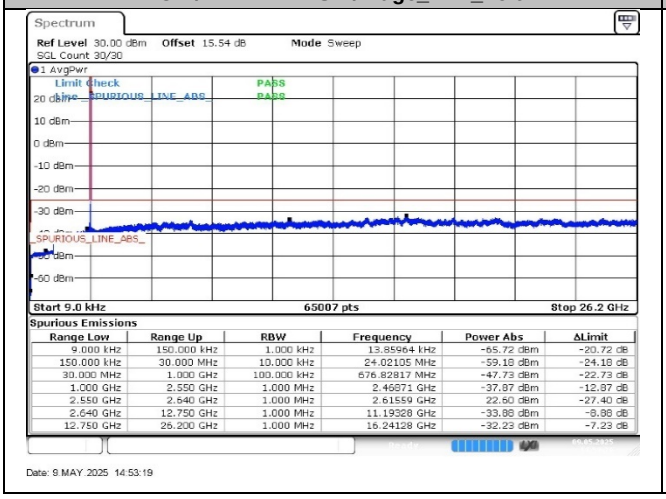

**MCH / DFT-Pi2BPSK / Edge_1RB_Left**



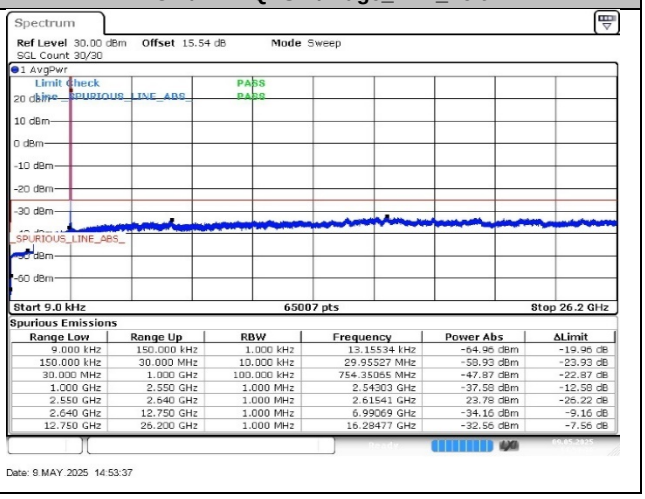

**MCH / DFT-QPSK / Edge_1RB_Left**



**HCH / DFT-Pi2BPSK / Edge_1RB_Left**




**HCH / DFT-QPSK / Edge_1RB_Left**




# 7. Frequency Stability

## 7.1. Test Results

### 7.1.1. Frequency Error Vs Voltage

| SCS | Bandwidth | Channel | RB Config | Modulation | Temperature | Voltage | Deviation Result | | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (Hz) | (ppm) | |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | NT | LV | -5.40 | -0.002081 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | NT | NV | -7.90 | -0.003044 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | NT | HV | -7.30 | -0.002813 | Pass |

### 7.1.2. Frequency Error Vs Temperature

| SCS | Bandwidth | Channel | RB Config | Modulation | Temperature | Voltage | Deviation Result | | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (Hz) | (ppm) | |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | -30℃ | NV | -7.00 | -0.002697 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | -20℃ | NV | -8.50 | -0.003276 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | -10℃ | NV | -5.40 | -0.002081 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | 0℃ | NV | -8.00 | -0.003083 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | 10℃ | NV | -6.60 | -0.002543 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | 20℃ | NV | -8.60 | -0.003314 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | 30℃ | NV | -7.90 | -0.003044 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | 40℃ | NV | -7.50 | -0.002890 | Pass |
| 15KHz | 5MHz | MCH | Outer_Full | DFT-QPSK | 50℃ | NV | -8.40 | -0.003237 | Pass |

The End