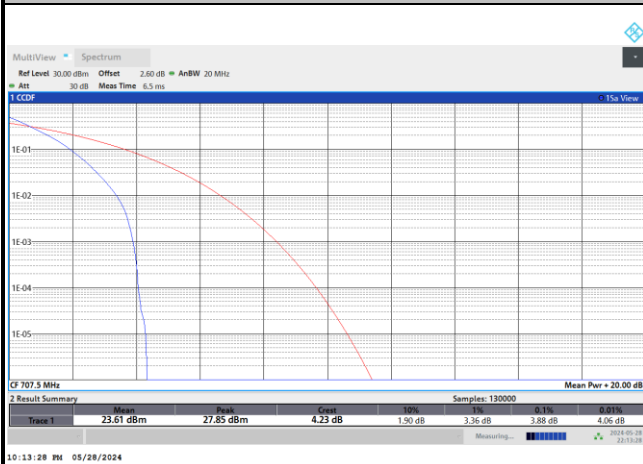


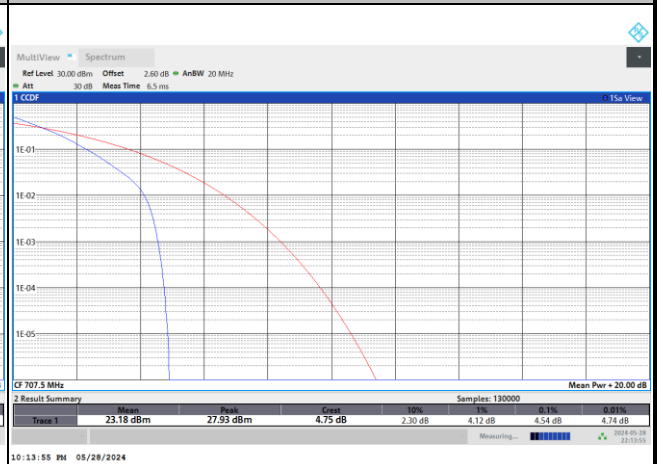


## FR1 n12 / 15MHz / DFT-S OFDM / Middle Channel / Full RB

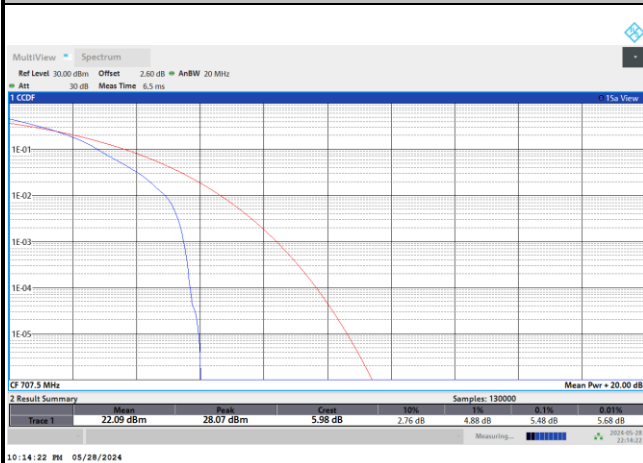
## PI/2 BPSK



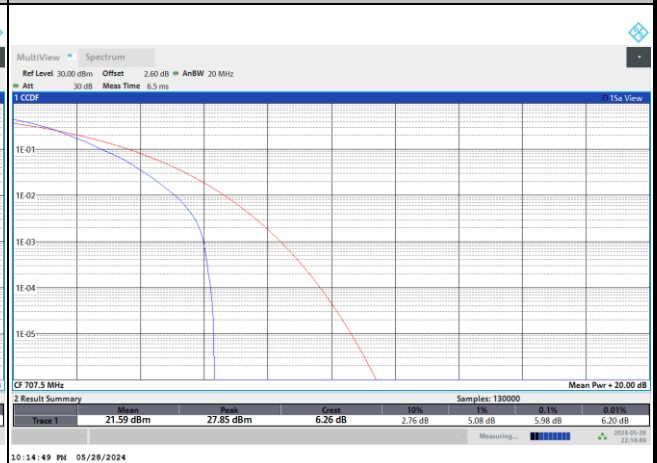
## QPSK



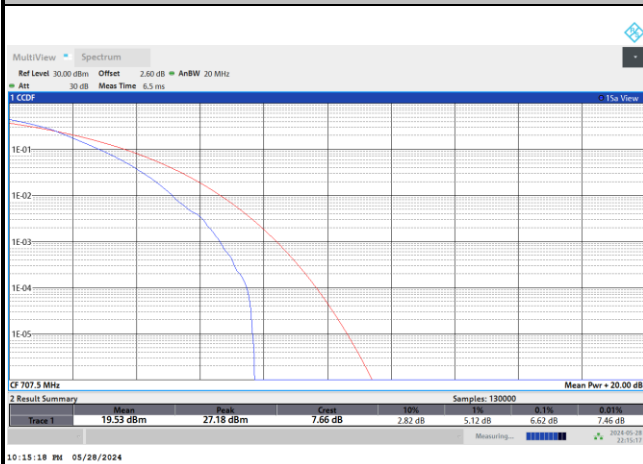
## 16QAM



## 64QAM



## 256QAM



**26dB Bandwidth**

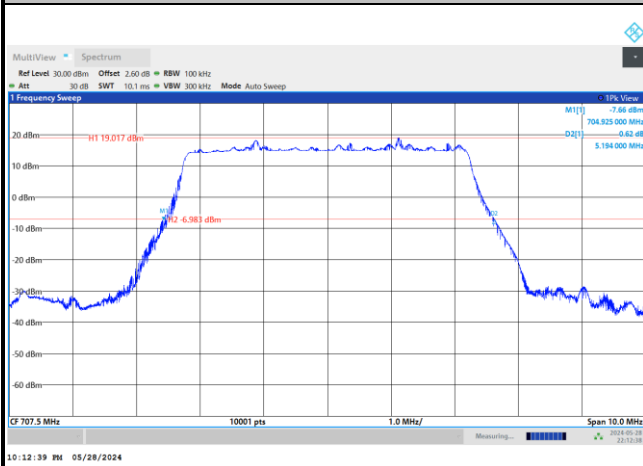
| Mode      | FR1 n12 : 26dB BW(MHz) / DFT-S OFDM |  |           |  |           |  |  |  |
|-----------|-------------------------------------|--|-----------|--|-----------|--|--|--|
| BW        | 5MHz                                |  | 10MHz     |  | 15MHz     |  |  |  |
| Mod.      | PI/2 BPSK                           |  | PI/2 BPSK |  | PI/2 BPSK |  |  |  |
| Middle CH | 5.19                                |  | 9.82      |  | 14.54     |  |  |  |

| Mode      | FR1 n12 : 26dB BW(MHz) / CP OFDM |        |       |        |       |        |  |  |
|-----------|----------------------------------|--------|-------|--------|-------|--------|--|--|
| BW        | 5MHz                             |        | 10MHz |        | 15MHz |        |  |  |
| Mod.      | QPSK                             | 16QAM  | QPSK  | 16QAM  | QPSK  | 16QAM  |  |  |
| Middle CH | 5.29                             | 5.29   | 10.39 | 10.28  | 15.34 | 15.27  |  |  |
| Mod.      | 64QAM                            | 256QAM | 64QAM | 256QAM | 64QAM | 256QAM |  |  |
| Middle CH | 5.25                             | 5.26   | 10.30 | 10.28  | 15.31 | 15.36  |  |  |



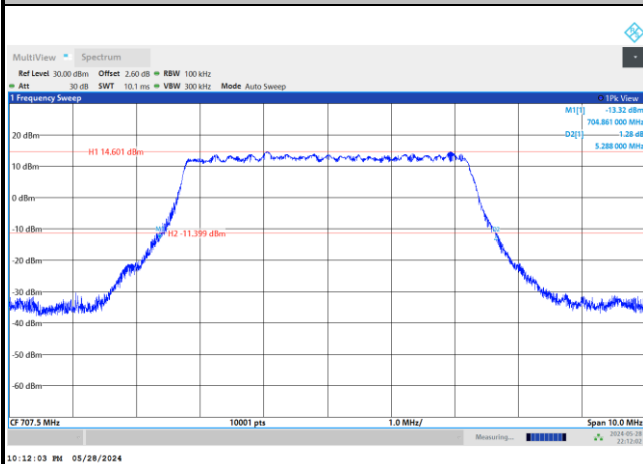
## FR1 n12 / 5MHz / DFT-S OFDM / Middle Channel / Full RB

## PI/2 BPSK

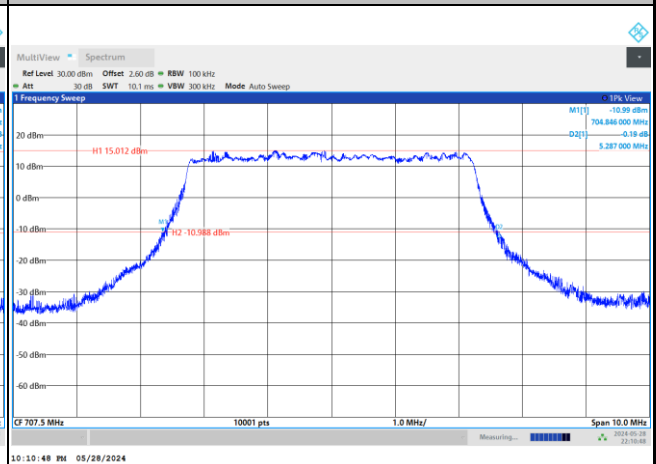


## FR1 n12 / 5MHz / CP OFDM / Middle Channel / Full RB

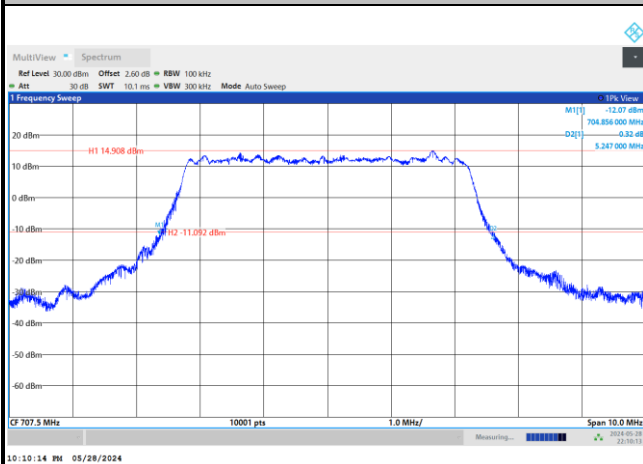
## QPSK



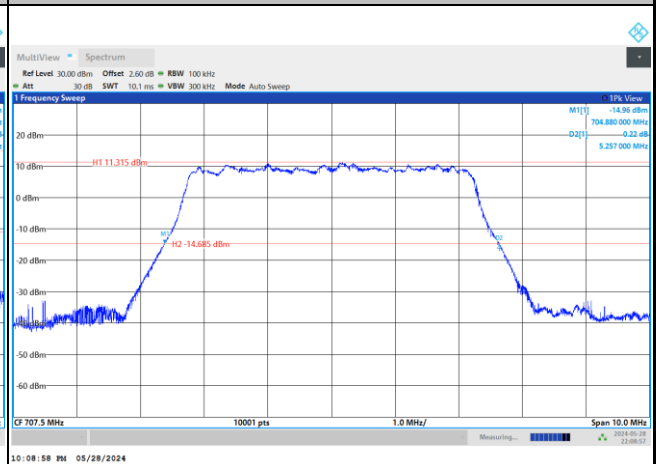
## 16QAM

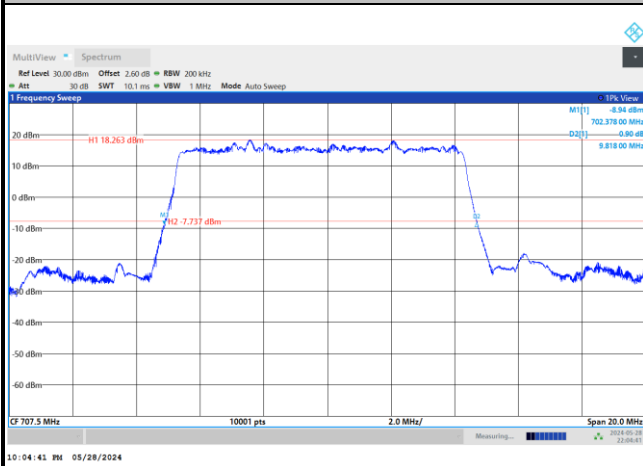
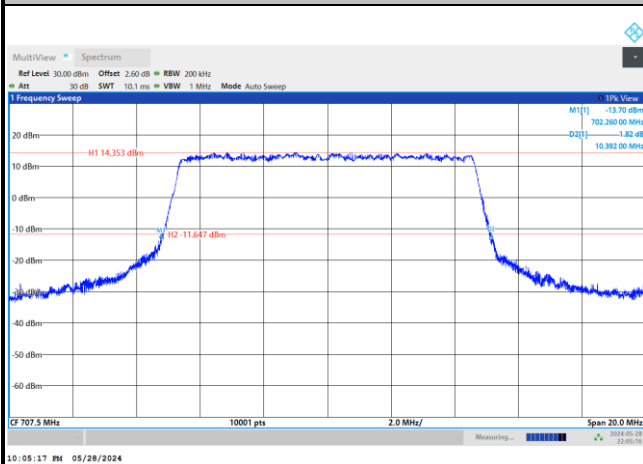
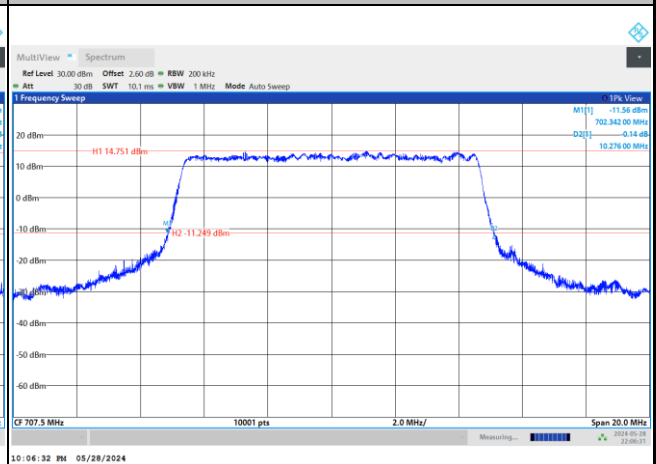
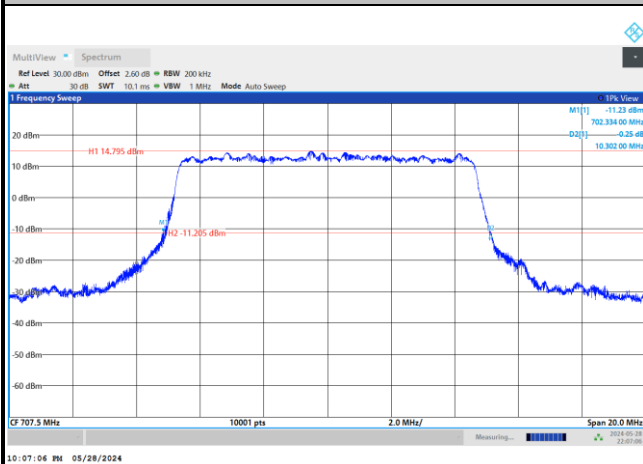
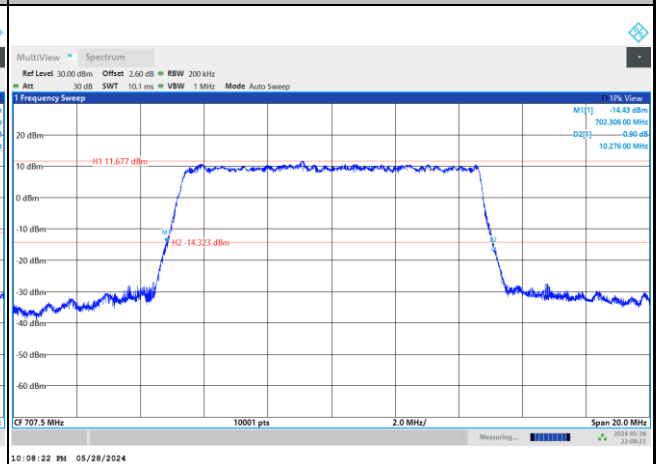


## 64QAM



## 256QAM

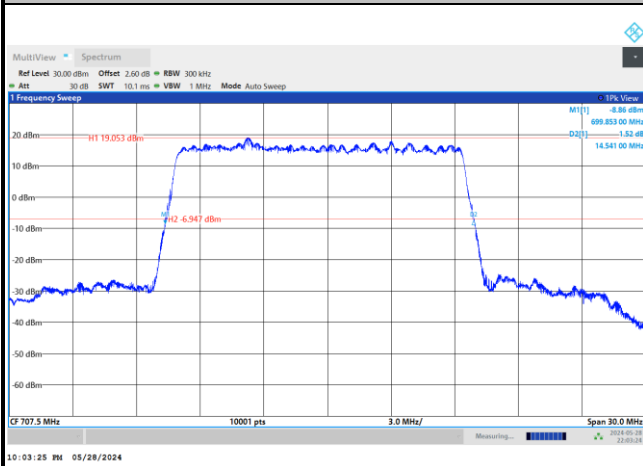


**FR1 n12 / 10MHz / DFT-S OFDM / Middle Channel / Full RB**
**PI/2 BPSK**

**FR1 n12 / 10MHz / CP OFDM / Middle Channel / Full RB**
**QPSK**

**16QAM**

**64QAM**

**256QAM**




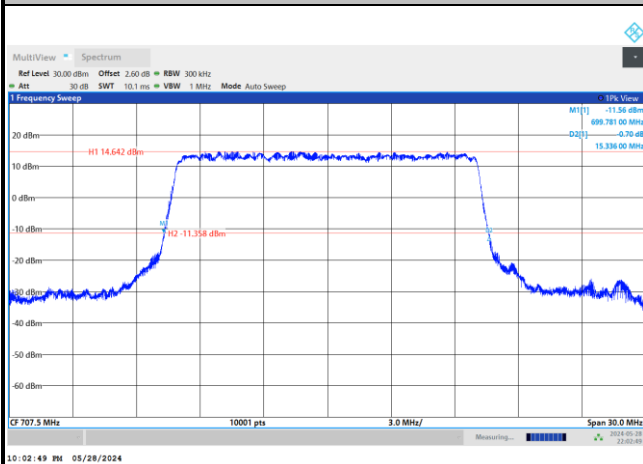
## FR1 n12 / 15MHz / DFT-S OFDM / Middle Channel / Full RB

## PI/2 BPSK

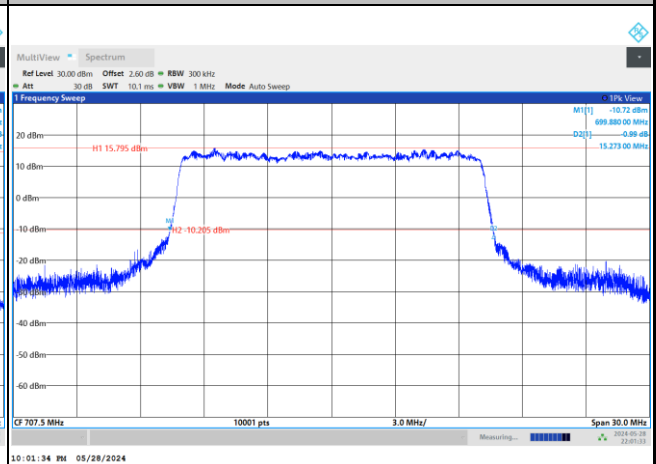


## FR1 n12 / 15MHz / CP OFDM / Middle Channel / Full RB

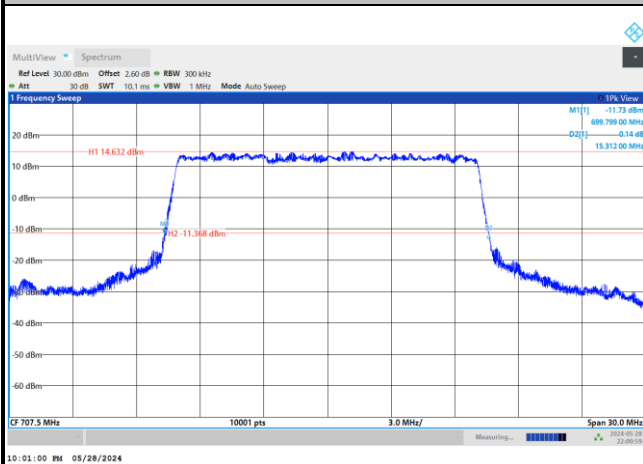
## QPSK



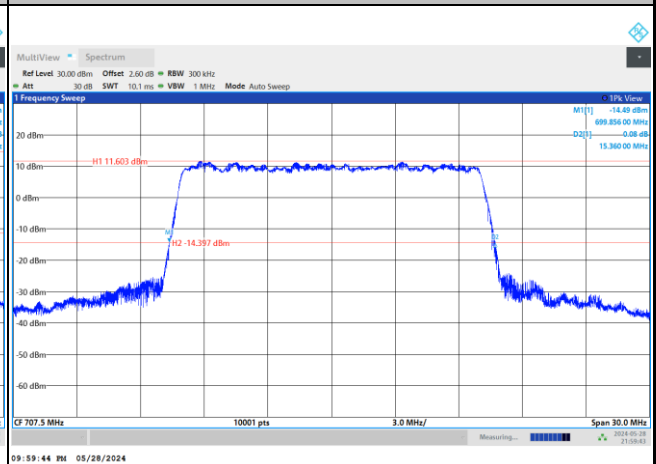
## 16QAM



## 64QAM



## 256QAM



**Occupied Bandwidth**

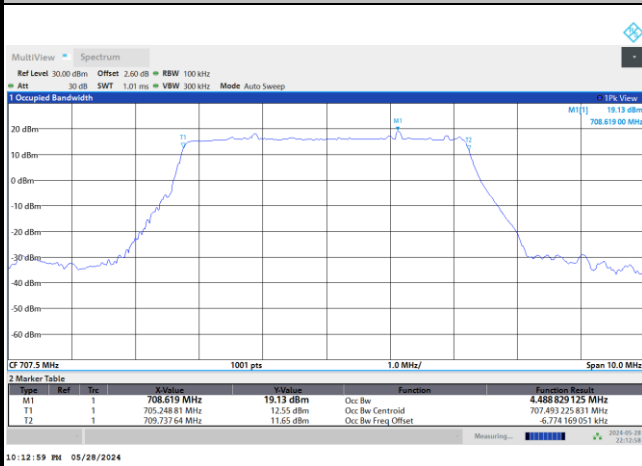
| Mode      | FR1 n12 : 99%OBW(MHz) / DFT-S OFDM |  |           |  |           |  |  |  |
|-----------|------------------------------------|--|-----------|--|-----------|--|--|--|
| BW        | 5MHz                               |  | 10MHz     |  | 15MHz     |  |  |  |
| Mod.      | PI/2 BPSK                          |  | PI/2 BPSK |  | PI/2 BPSK |  |  |  |
| Middle CH | 4.48                               |  | 8.96      |  | 13.45     |  |  |  |

| Mode      | FR1 n12 : 99%OBW (MHz) / CP OFDM |        |       |        |       |        |  |  |
|-----------|----------------------------------|--------|-------|--------|-------|--------|--|--|
| BW        | 5MHz                             |        | 10MHz |        | 15MHz |        |  |  |
| Mod.      | QPSK                             | 16QAM  | QPSK  | 16QAM  | QPSK  | 16QAM  |  |  |
| Middle CH | 4.52                             | 4.51   | 9.31  | 9.31   | 14.13 | 14.16  |  |  |
| Mod.      | 64QAM                            | 256QAM | 64QAM | 256QAM | 64QAM | 256QAM |  |  |
| Middle CH | 4.51                             | 4.51   | 9.30  | 9.34   | 14.18 | 14.15  |  |  |



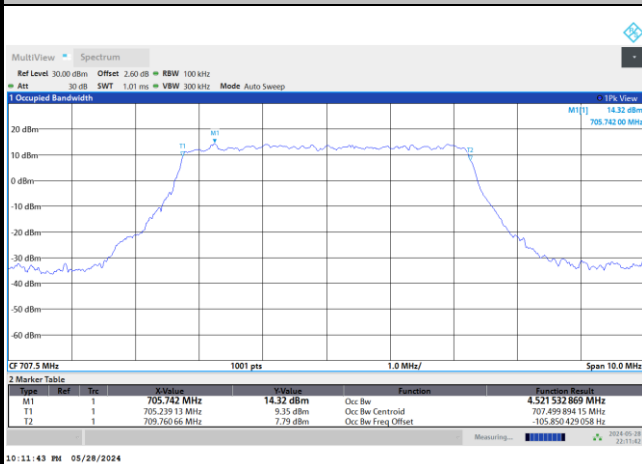
## FR1 n12 / 5MHz / DFT-S OFDM / Middle Channel / Full RB

## PI/2 BPSK

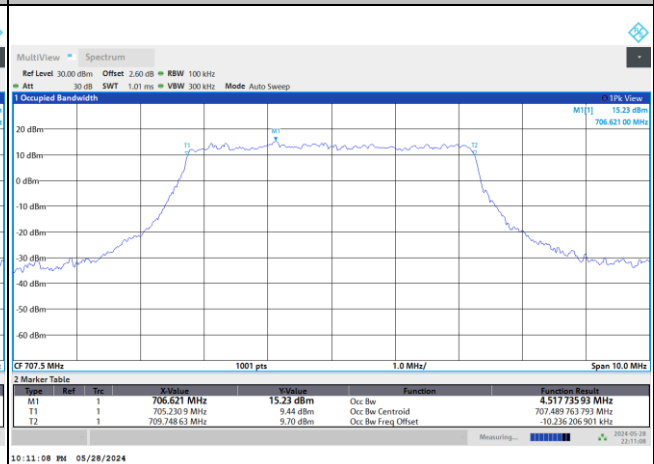


## FR1 n12 / 5MHz / CP OFDM / Middle Channel / Full RB

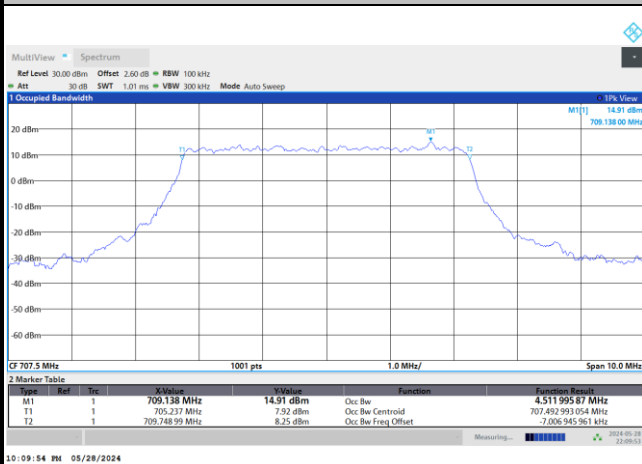
## QPSK



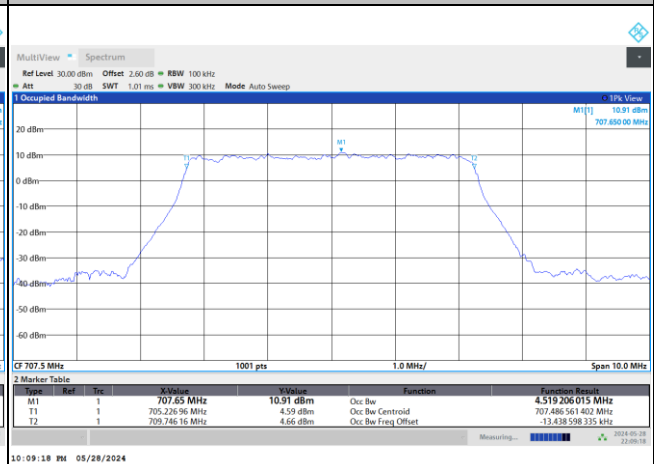
## 16QAM



## 64QAM

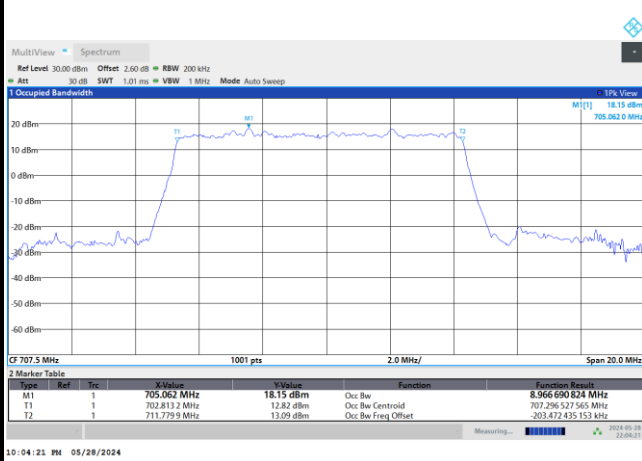


## 256QAM



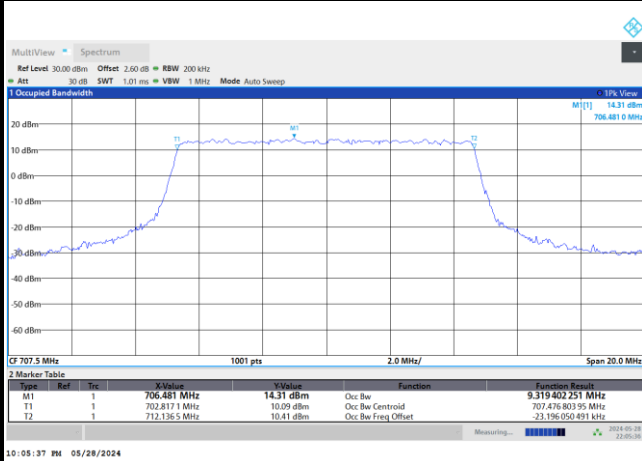
### FR1 n12 / 10MHz / DFT-S OFDM / Middle Channel / Full RB

#### PI/2 BPSK

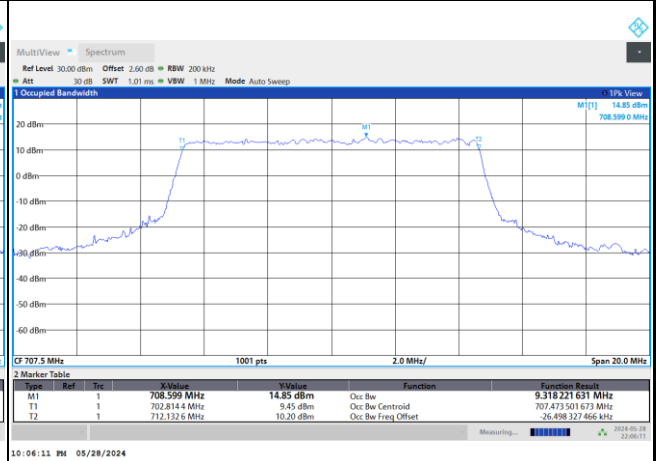


### FR1 n12 / 10MHz / CP OFDM / Middle Channel / Full RB

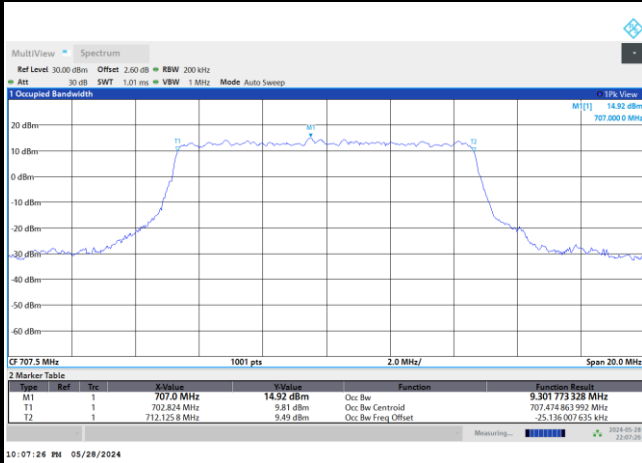
#### QPSK



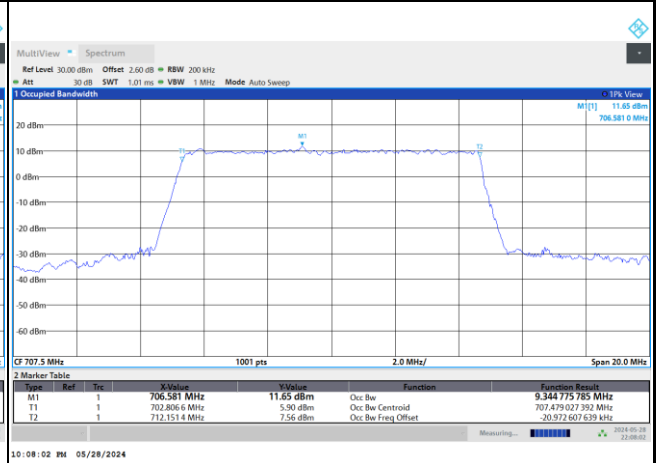
#### 16QAM



#### 64QAM



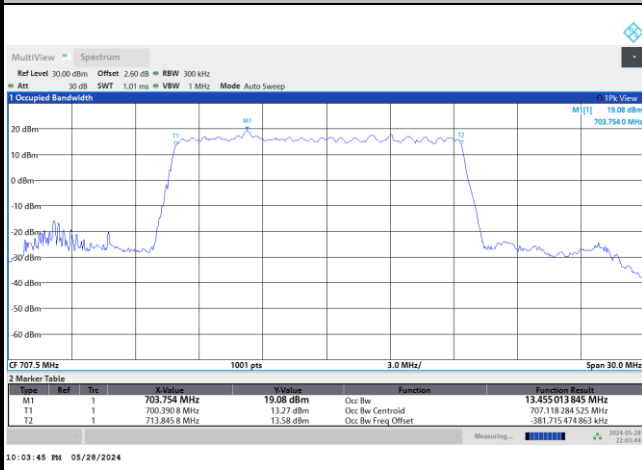
#### 256QAM





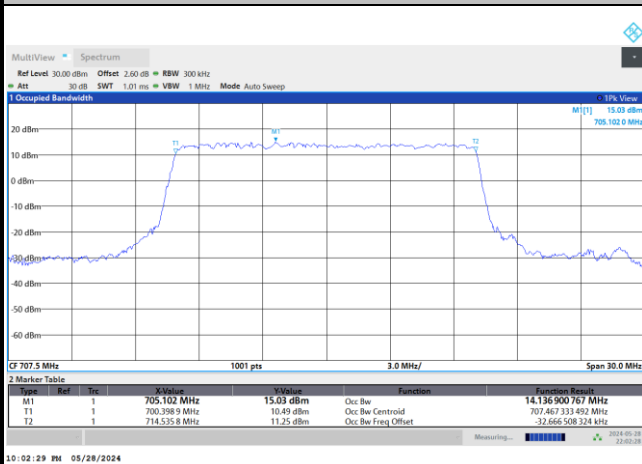
## FR1 n12 / 15MHz / DFT-S OFDM / Middle Channel / Full RB

## PI/2 BPSK

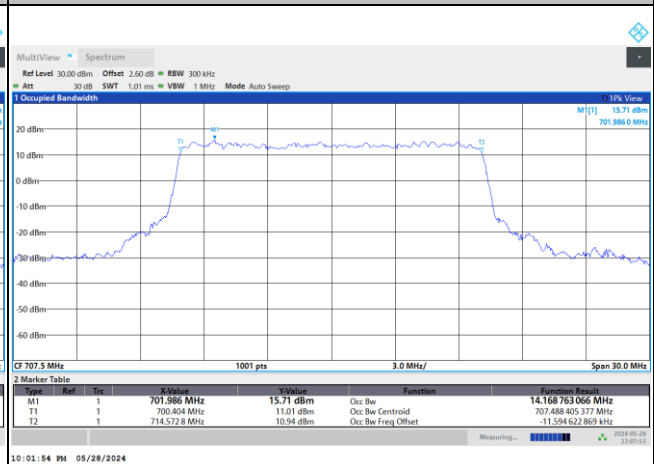


## FR1 n12 / 15MHz / CP OFDM / Middle Channel / Full RB

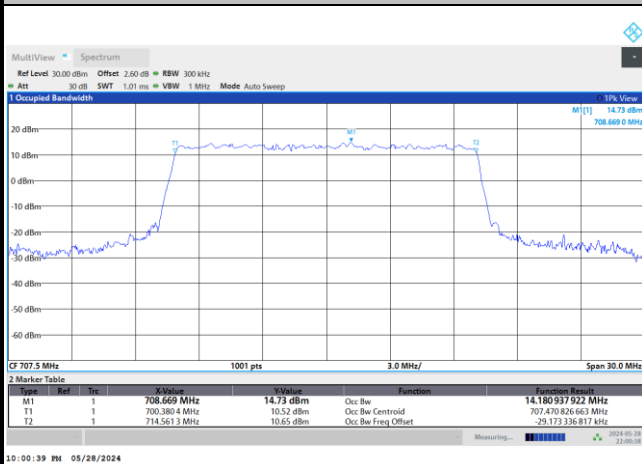
## QPSK



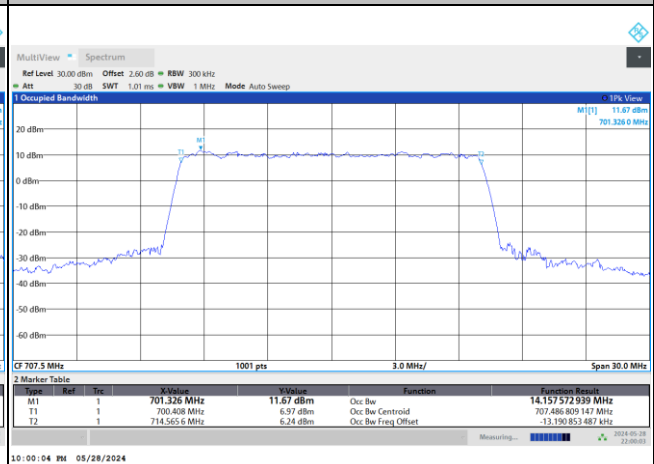
## 16QAM



## 64QAM



## 256QAM



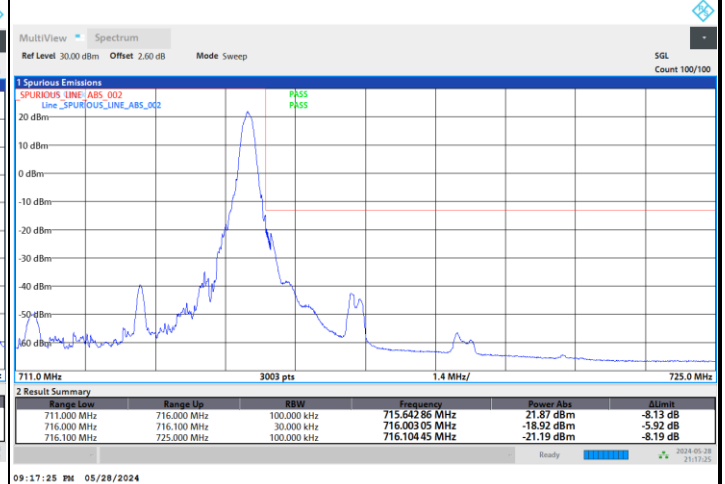
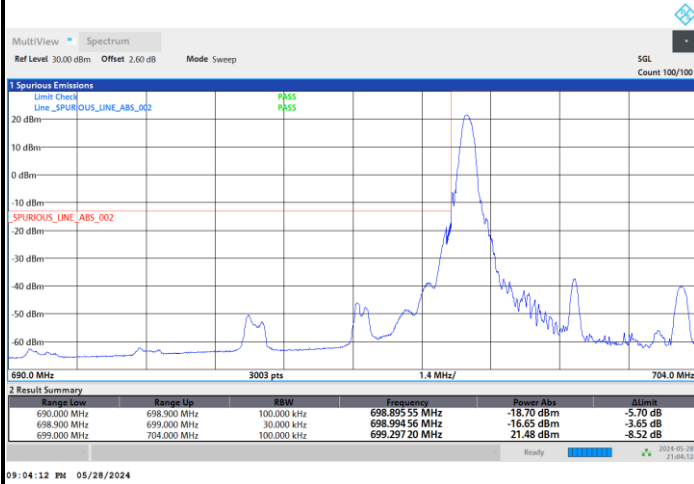


## Conducted Band Edge

FR1 n12 / 5MHz / DFT-S OFDM / PI/2 BPSK

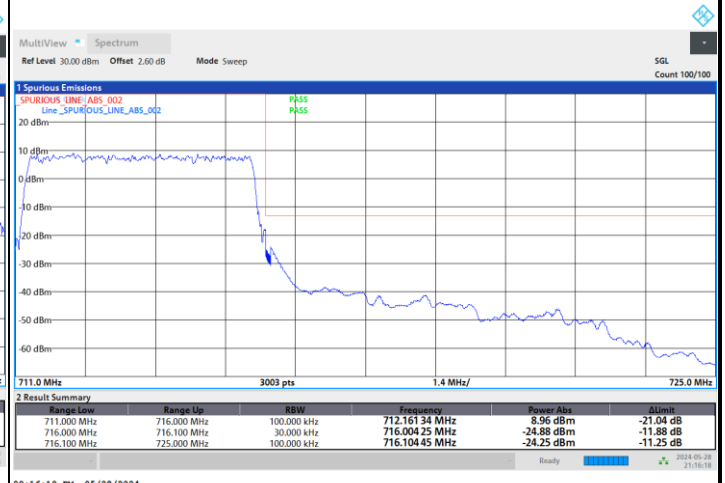
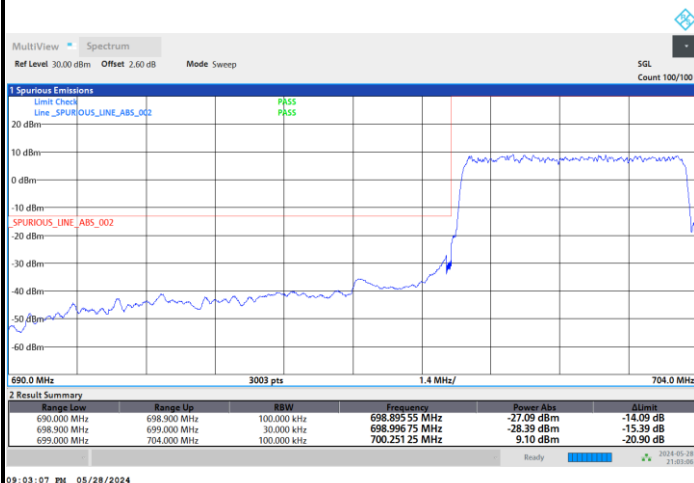
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBmax



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

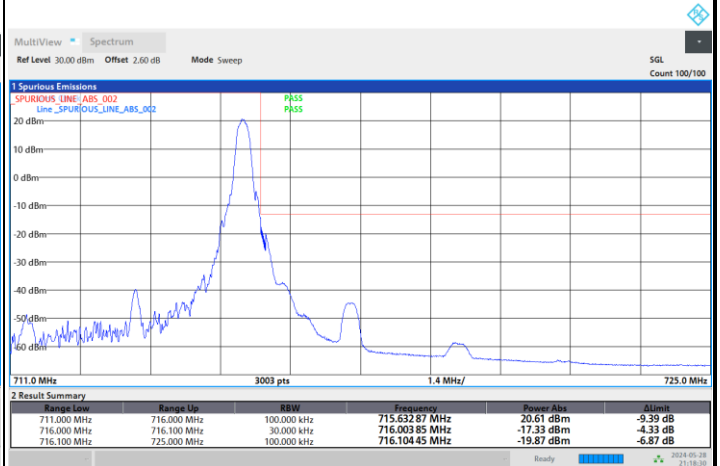
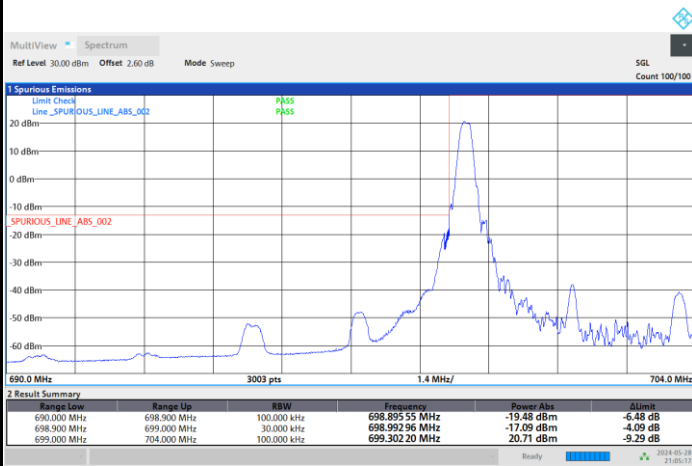




## FR1 n12 / 5MHz / DFT-S OFDM / QPSK

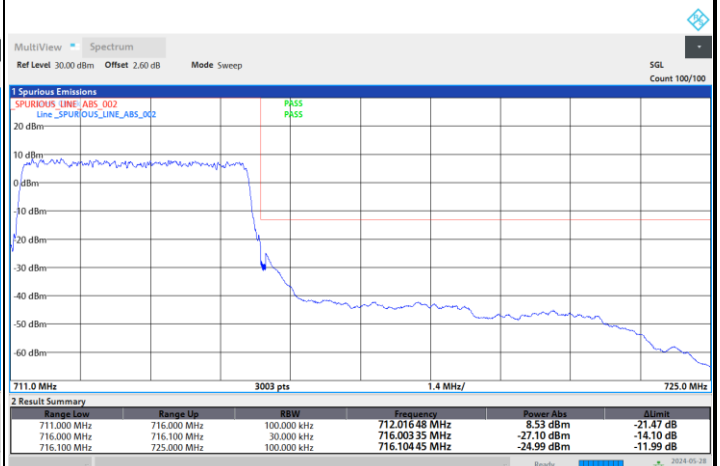
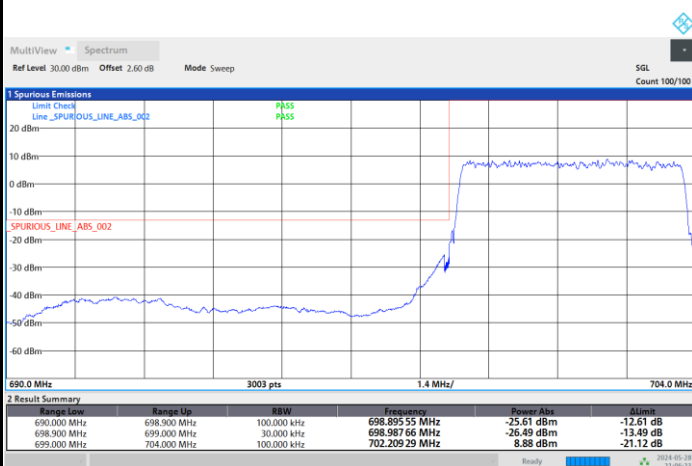
## Lowest Band Edge / 1RB0

## Highest Band Edge / 1RBmax



## Lowest Band Edge / Full RB

## Highest Band Edge / Full RB

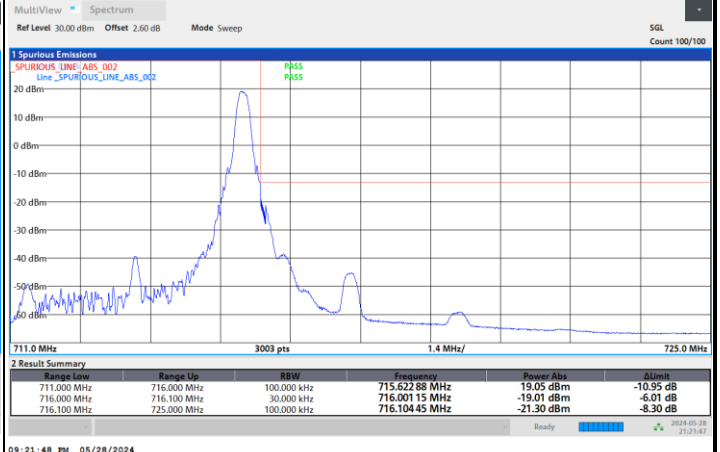
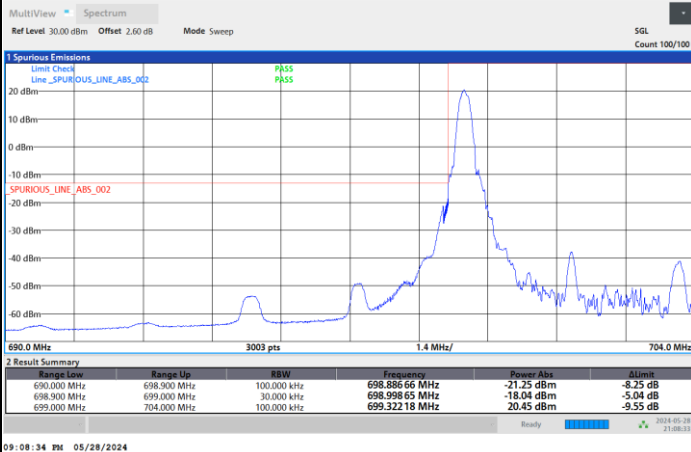




## FR1 n12 / 5MHz / DFT-S OFDM / 16QAM

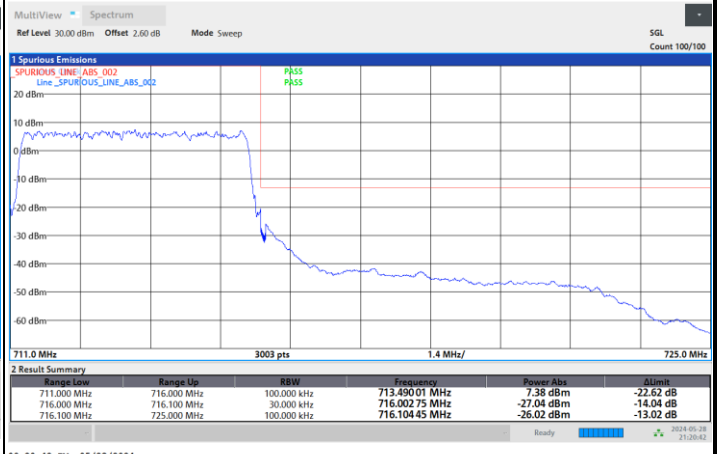
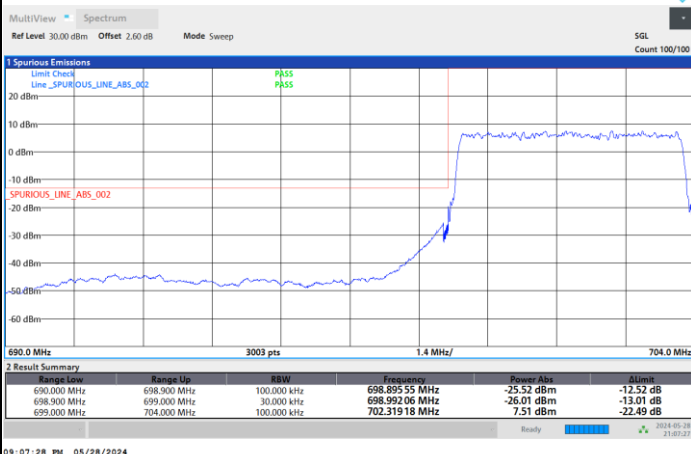
## Lowest Band Edge / 1RB0

## Highest Band Edge / 1RBmax



## Lowest Band Edge / Full RB

## Highest Band Edge / Full RB

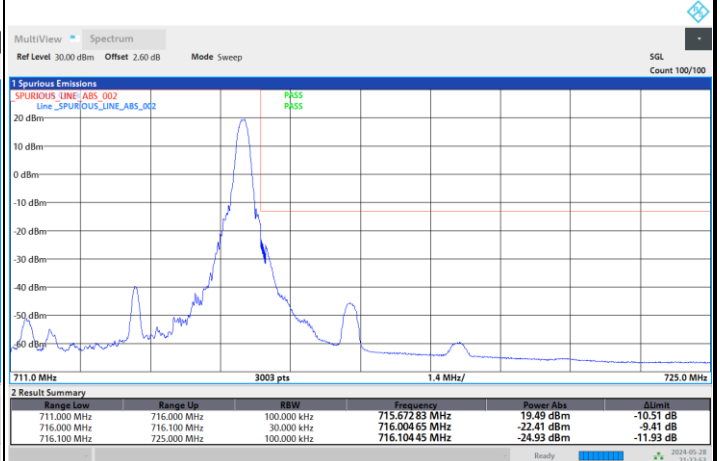
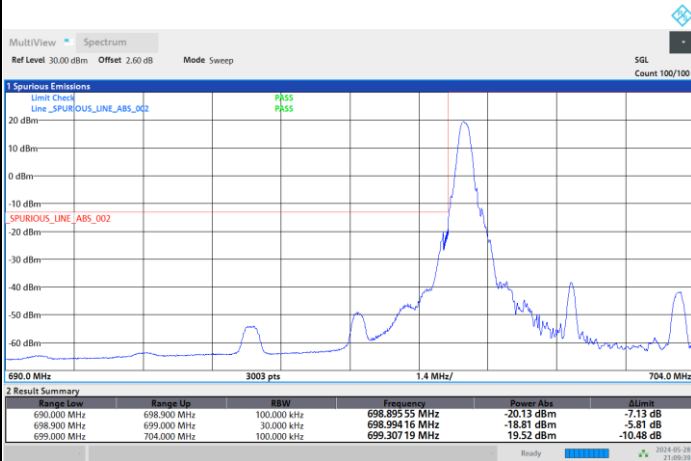




## FR1 n12 / 5MHz / DFT-S OFDM / 64QAM

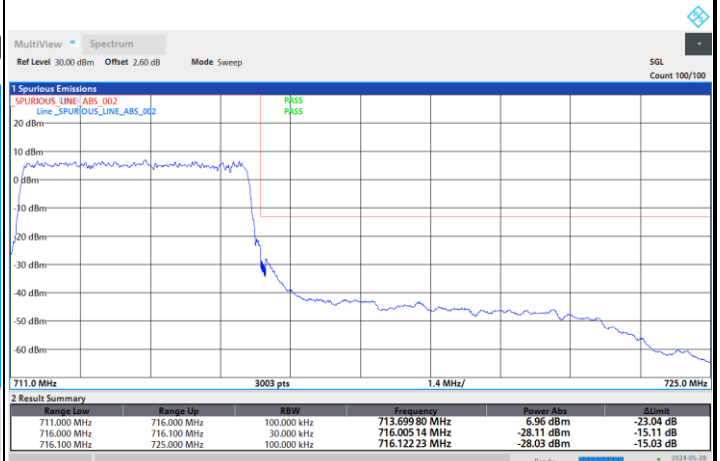
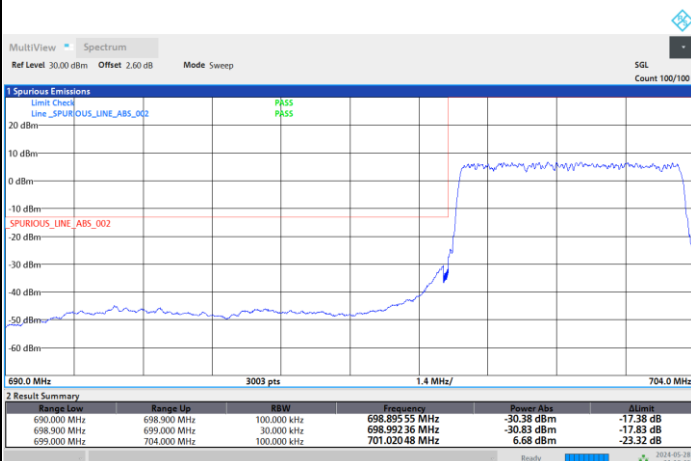
## Lowest Band Edge / 1RB0

## Highest Band Edge / 1RBmax



## Lowest Band Edge / Full RB

## Highest Band Edge / Full RB

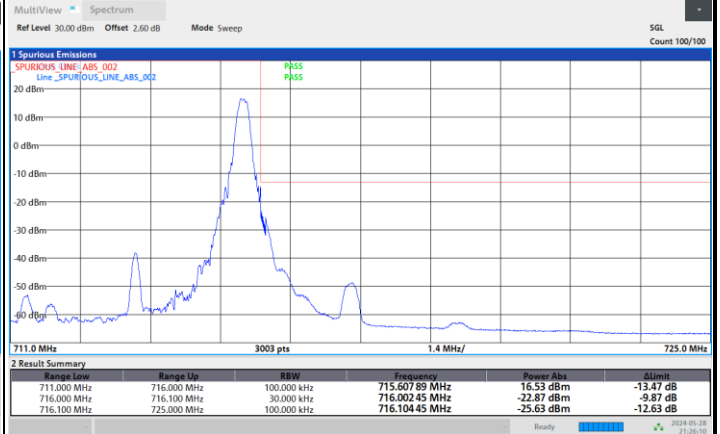
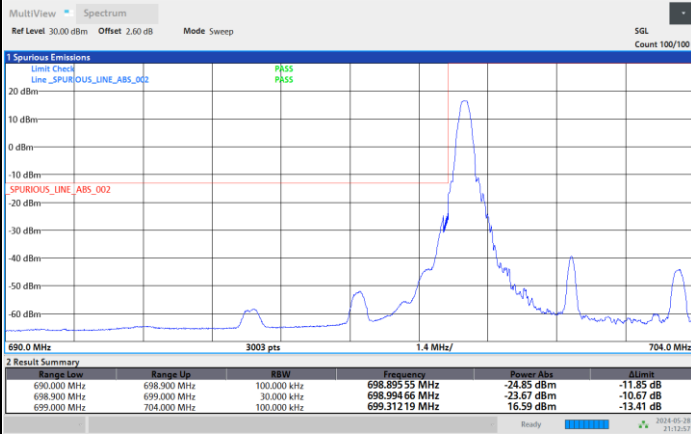




## FR1 n12 / 5MHz / DFT-S OFDM / 256QAM

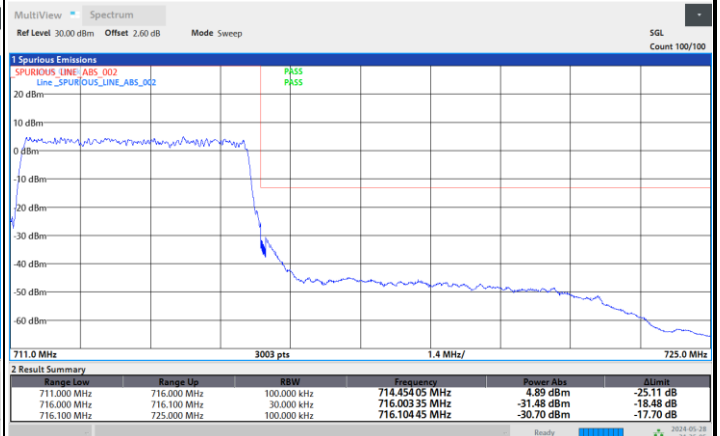
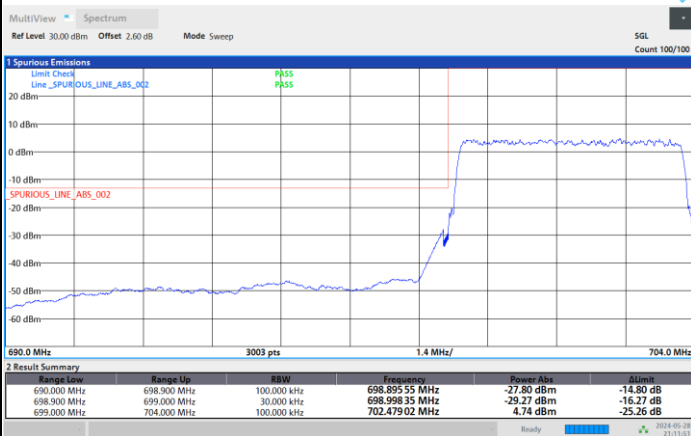
## Lowest Band Edge / 1RB0

## Highest Band Edge / 1RBmax



## Lowest Band Edge / Full RB

## Highest Band Edge / Full RB

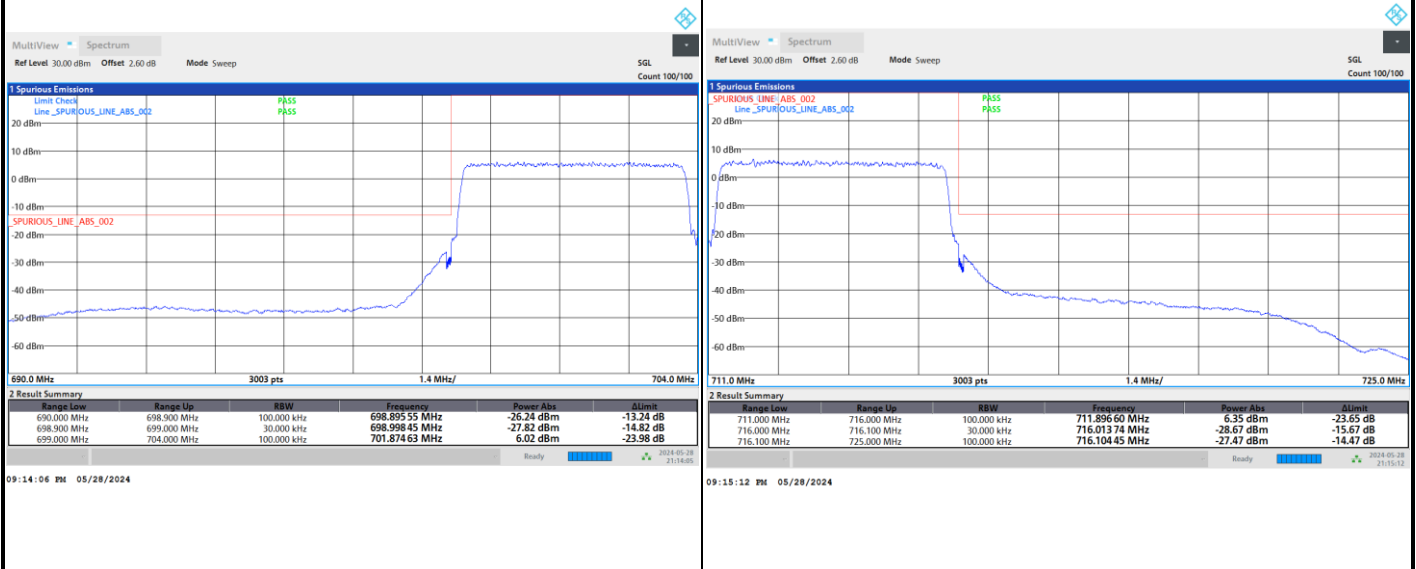




## FR1 n12 / 5MHz / CP OFDM / QPSK / Full RB

## Lowest Band Edge

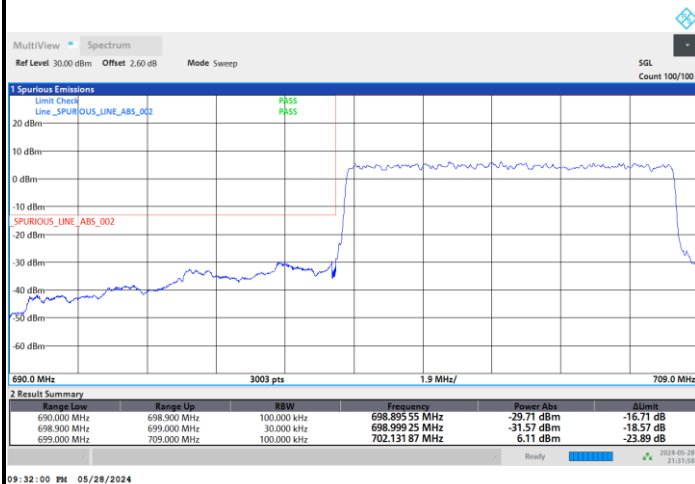
## Highest Band Edge



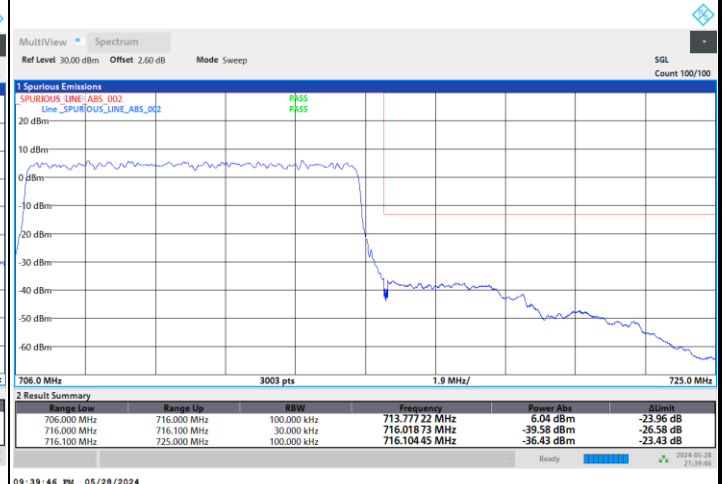


## FR1 n12 / 10MHz / DFT-s-OFDM / PI/2 BPSK / Full RB

## Lowest Band Edge

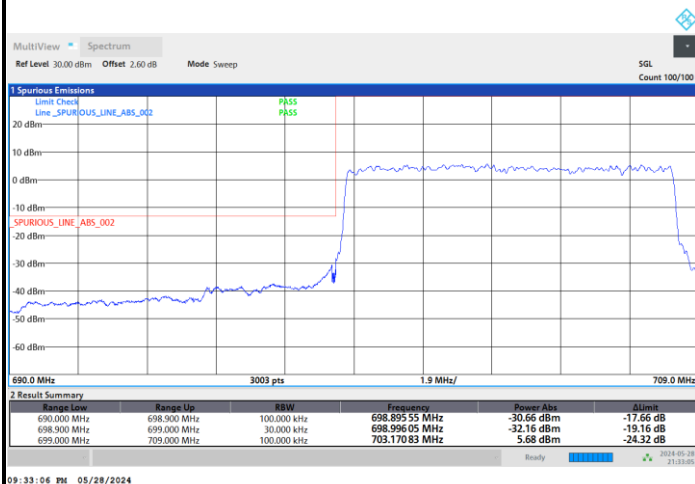


## Highest Band Edge

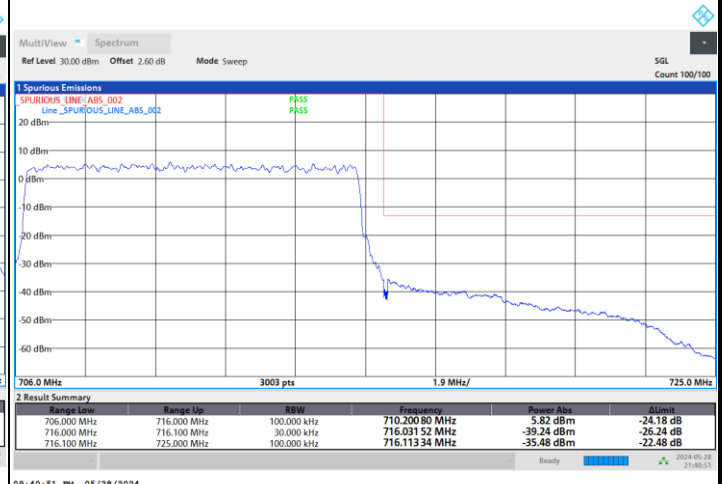


## FR1 n12 / 10MHz / DFT-s-OFDM / QPSK / Full RB

## Lowest Band Edge



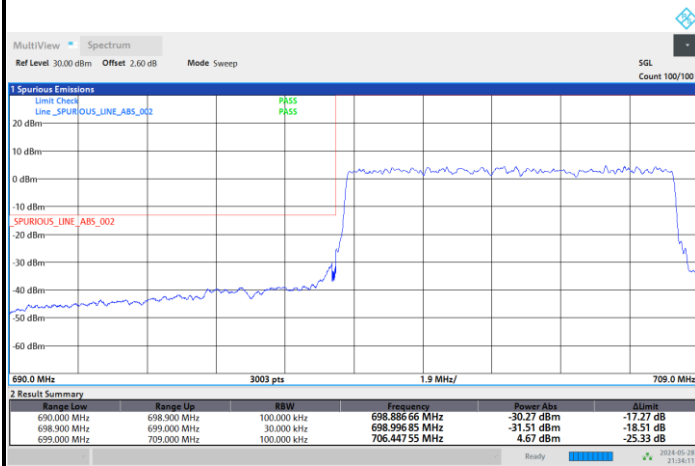
## Highest Band Edge



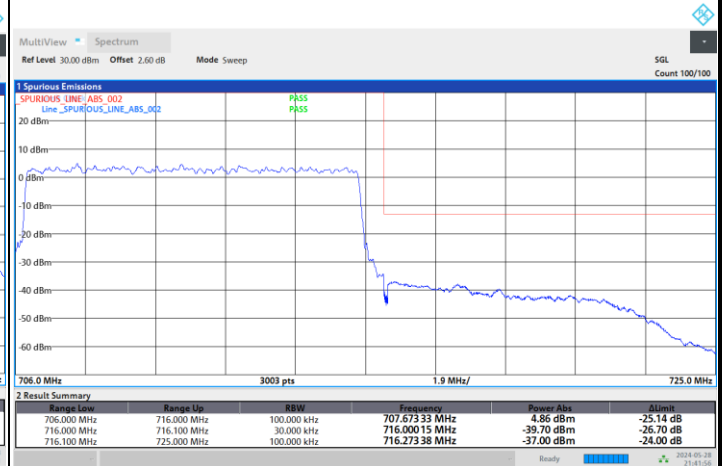


## FR1 n12 / 10MHz / DFT-s-OFDM / 16QAM / Full RB

## Lowest Band Edge

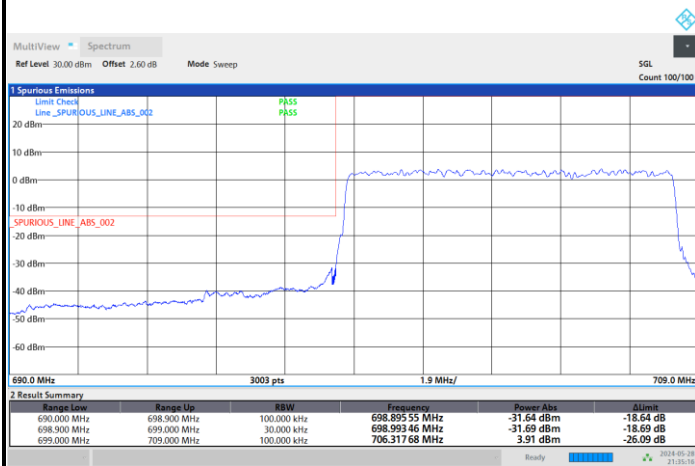


## Highest Band Edge

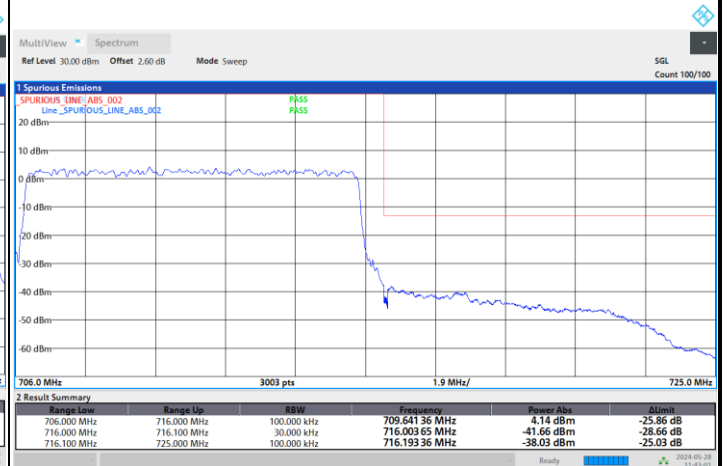


## FR1 n12 / 10MHz / DFT-s-OFDM / 64QAM / Full RB

## Lowest Band Edge



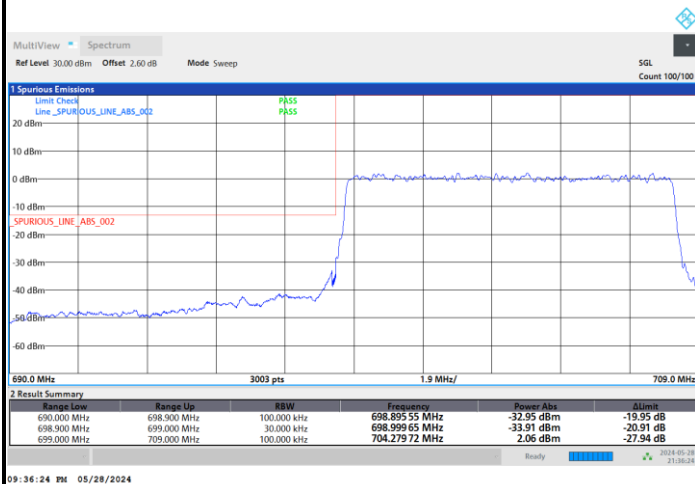
## Highest Band Edge



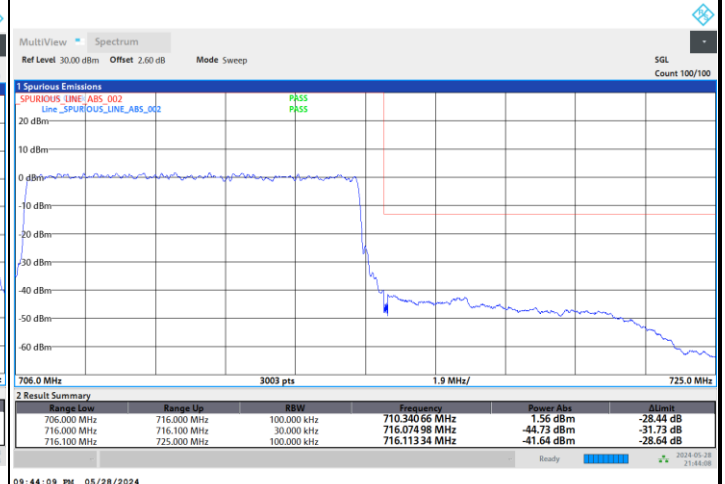


## FR1 n12 / 10MHz / DFT-s-OFDM / 256QAM / Full RB

## Lowest Band Edge

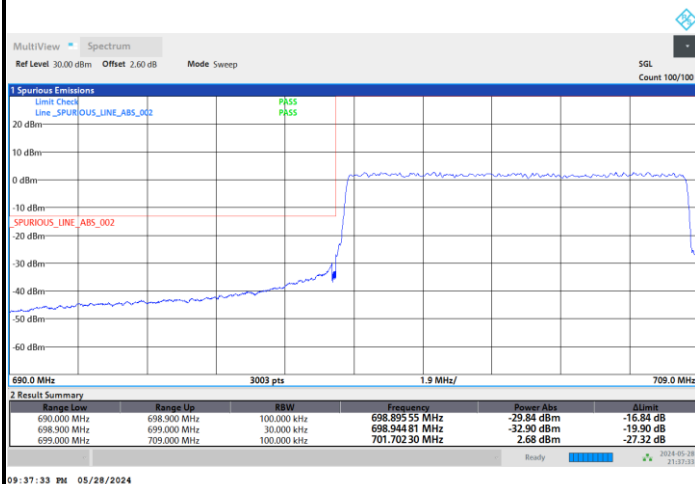


## Highest Band Edge

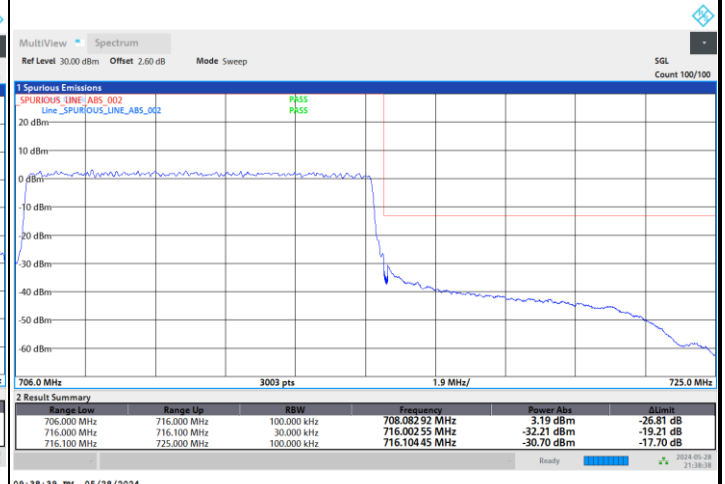


## FR1 n12 / 10MHz / CP OFDM / QPSK / Full RB

## Lowest Band Edge



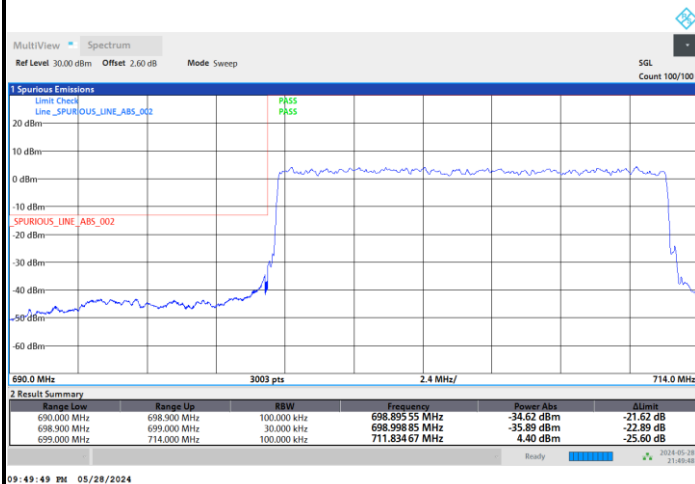
## Highest Band Edge



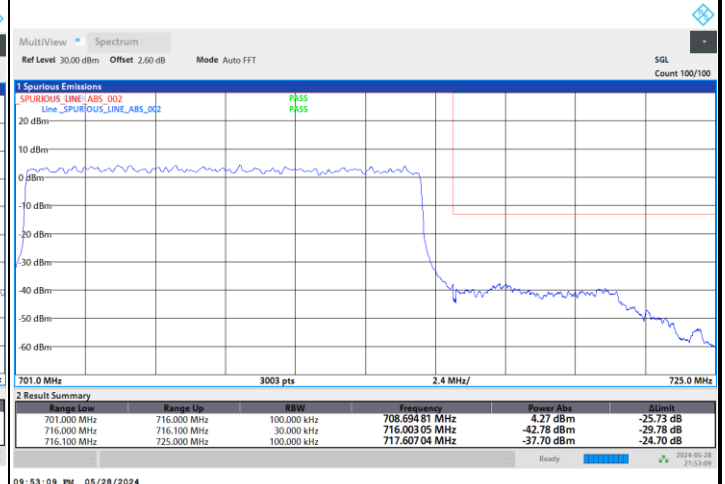


## FR1 n12 / 15MHz / DFT-s-OFDM / PI/2 BPSK / Full RB

## Lowest Band Edge

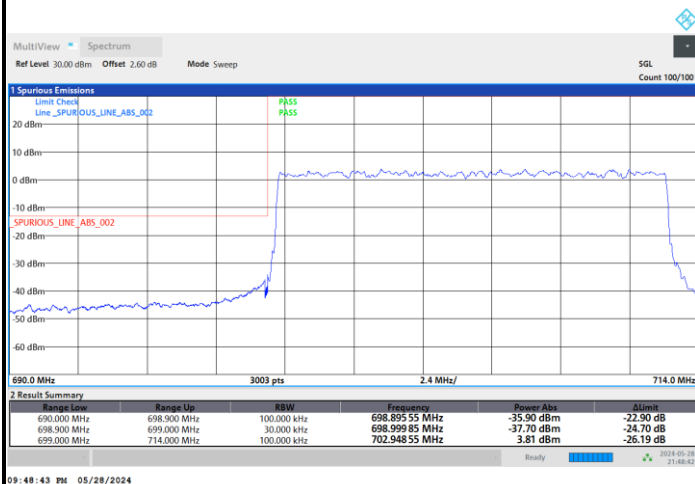


## Highest Band Edge

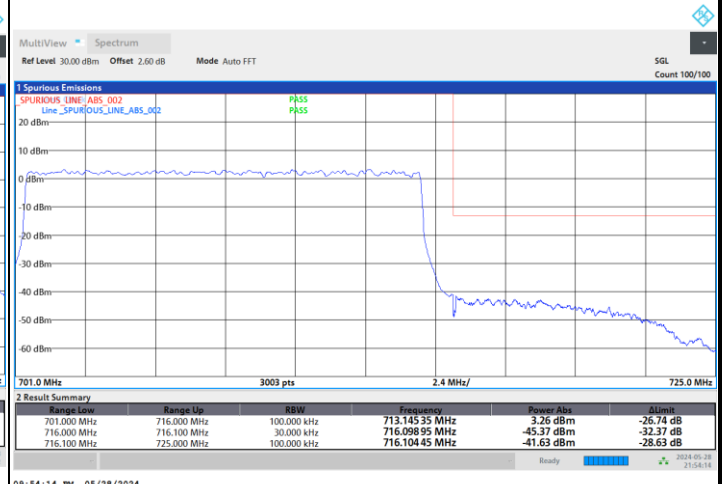


## FR1 n12 / 15MHz / DFT-s-OFDM / QPSK / Full RB

## Lowest Band Edge



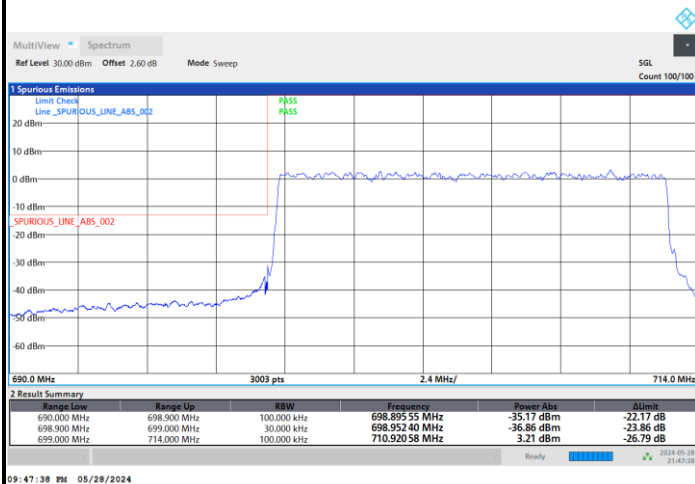
## Highest Band Edge



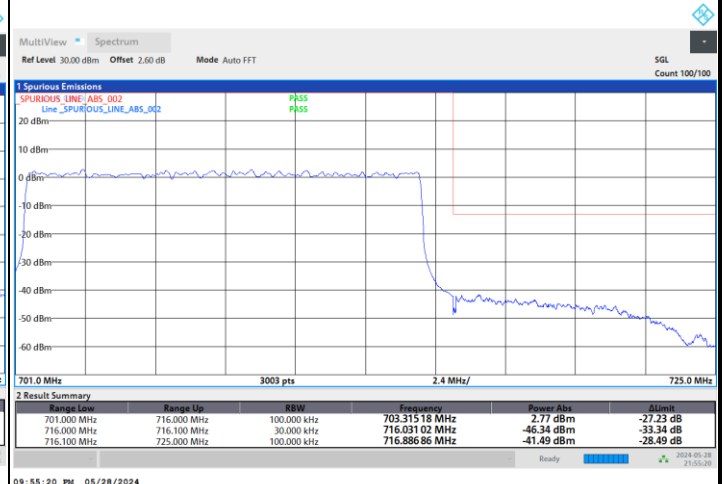


## FR1 n12 / 15MHz / DFT-s-OFDM / 16QAM / Full RB

## Lowest Band Edge

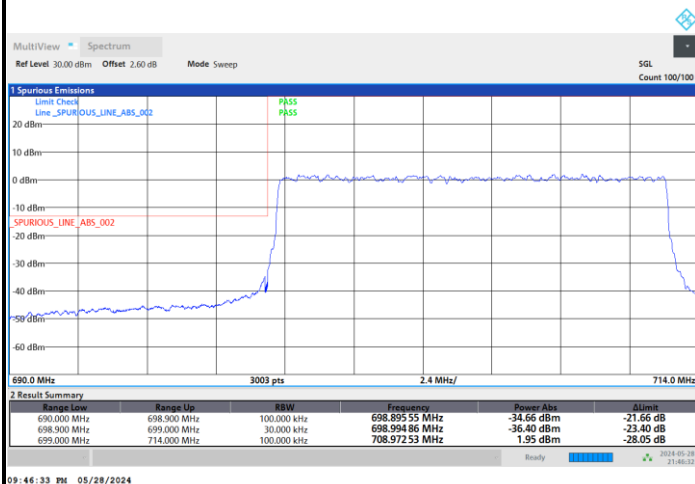


## Highest Band Edge

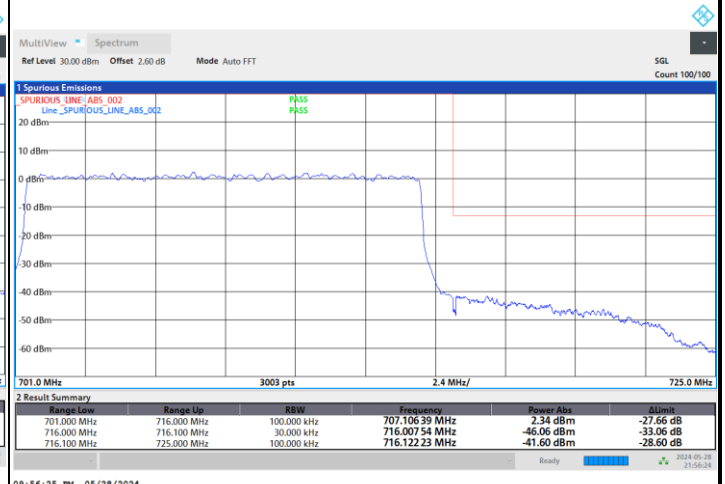


## FR1 n12 / 15MHz / DFT-s-OFDM / 64QAM / Full RB

## Lowest Band Edge



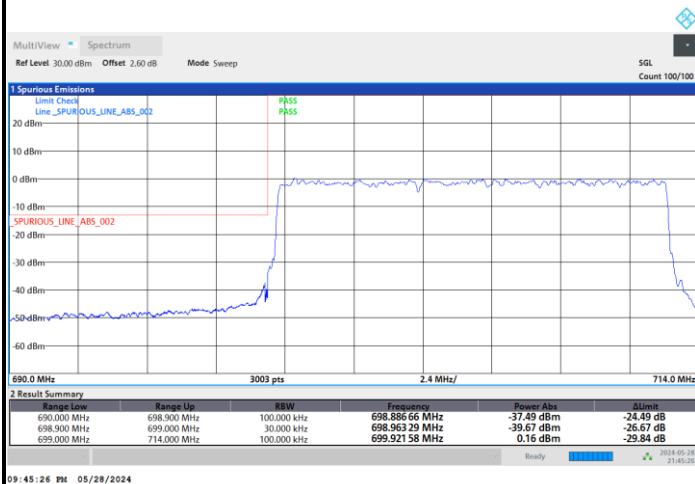
## Highest Band Edge



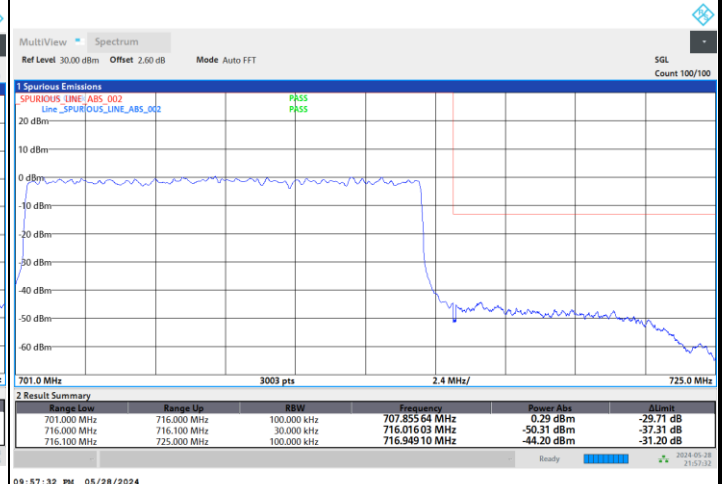


## FR1 n12 / 15MHz / DFT-s-OFDM / 256QAM / Full RB

## Lowest Band Edge

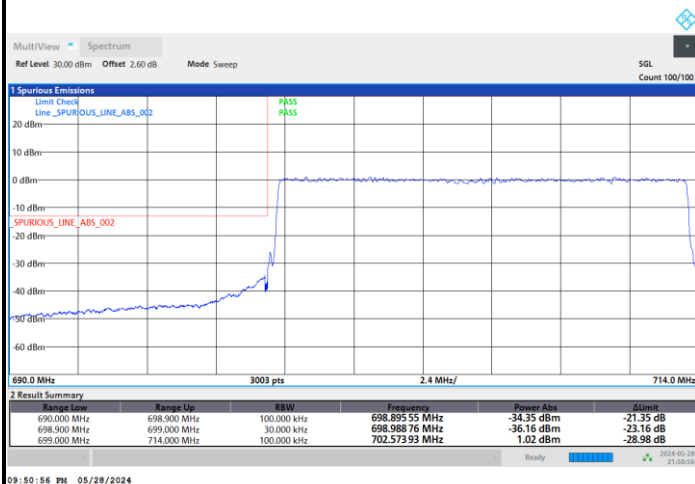


## Highest Band Edge

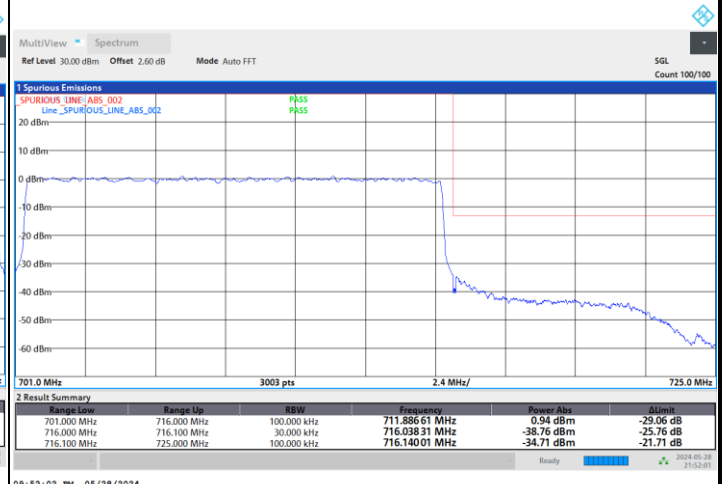


## FR1 n12 / 15MHz / CP OFDM / QPSK / Full RB

## Lowest Band Edge



## Highest Band Edge

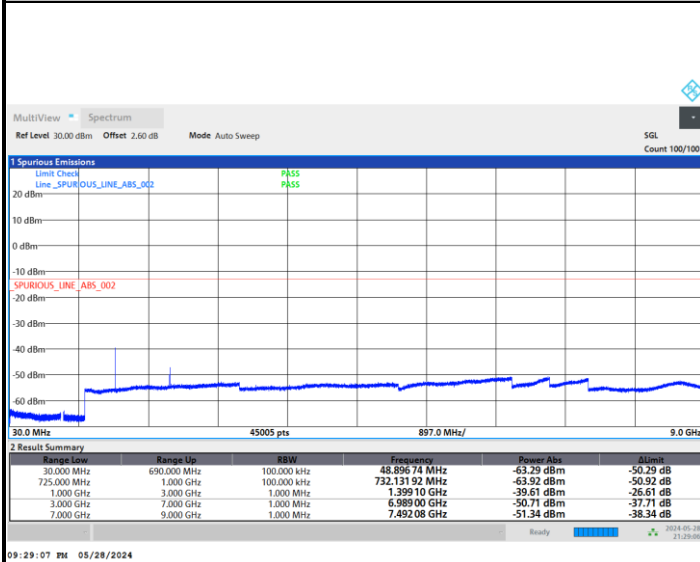




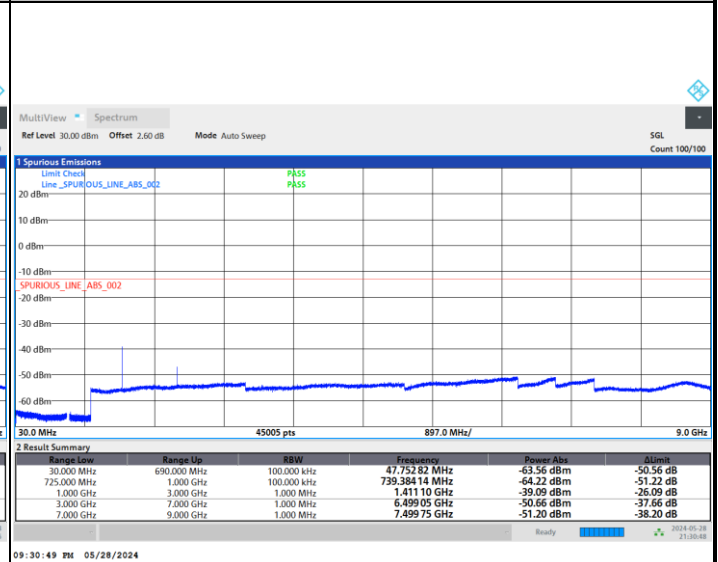
# Conducted Spurious Emission

FR1 n12 / 5MHz / DFT-S OFDM / QPSK / 1RB1

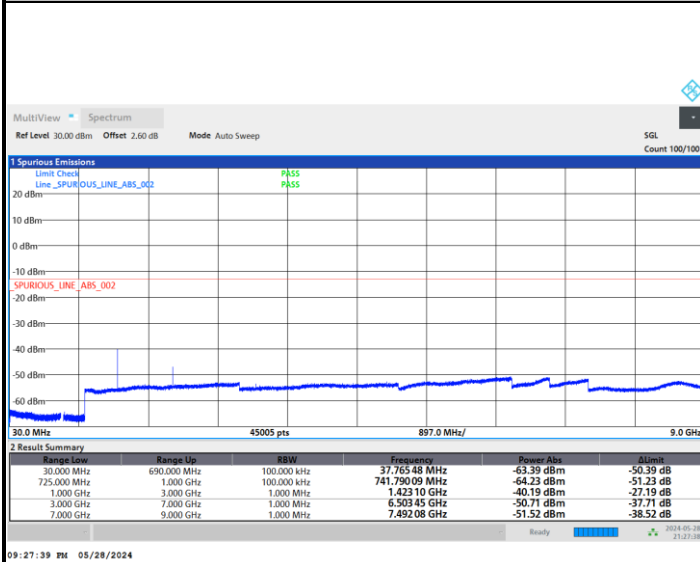
## Lowest Channel



## Middle Channel



## Highest Channel



## Frequency Stability

| Test Conditions     |                   | FR1 n12 (BPSK) / Middle Channel | Limit   |
|---------------------|-------------------|---------------------------------|---------|
| Temperature<br>(°C) | Voltage<br>(Volt) | BW 15MHz                        | Note 2. |
|                     |                   | Deviation (ppm)                 | Result  |
| 50                  | Normal Voltage    | 0.0035                          | PASS    |
| 40                  | Normal Voltage    | 0.0018                          |         |
| 30                  | Normal Voltage    | 0.0017                          |         |
| 20(Ref.)            | Normal Voltage    | 0.0000                          |         |
| 10                  | Normal Voltage    | 0.0003                          |         |
| 0                   | Normal Voltage    | 0.0013                          |         |
| -10                 | Normal Voltage    | 0.0033                          |         |
| -20                 | Normal Voltage    | 0.0010                          |         |
| -30                 | Normal Voltage    | 0.0049                          |         |
| 20                  | Maximum Voltage   | 0.0071                          |         |
| 20                  | Normal Voltage    | 0.0000                          |         |
| 20                  | Battery End Point | 0.0014                          |         |

**Note:**

1. Normal Voltage = 3.3 V. ; Battery End Point (BEP) = 3.135 V. ; Maximum Voltage = 3.465 V.
2. The frequency fundamental emissions stay within the authorized frequency block.

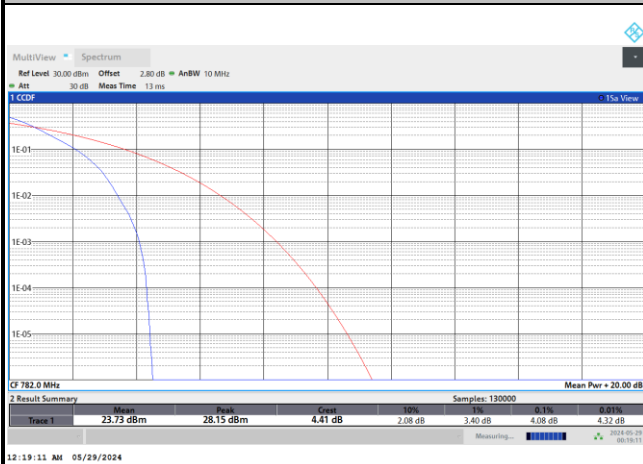
**FR1 n13****Peak-to-Average Ratio**

| Mode      | FR1 n13 / 10MHz / DFT-S OFDM |         |         |         |             |
|-----------|------------------------------|---------|---------|---------|-------------|
| Mod.      | PI/2 BPSK                    | QPSK    | 16QAM   | 64QAM   | Limit: 13dB |
| RB Size   | Full RB                      | Full RB | Full RB | Full RB | Result      |
| Middle CH | 4.08                         | 4.66    | 5.60    | 5.86    | <b>PASS</b> |
| Mode      | FR1 n13 / 20MHz / DFT-S OFDM |         |         |         |             |
| Mod.      | 256QAM                       |         |         |         | Limit: 13dB |
| RB Size   | Full RB                      |         |         |         | Result      |
| Middle CH | 6.58                         |         |         |         | <b>PASS</b> |

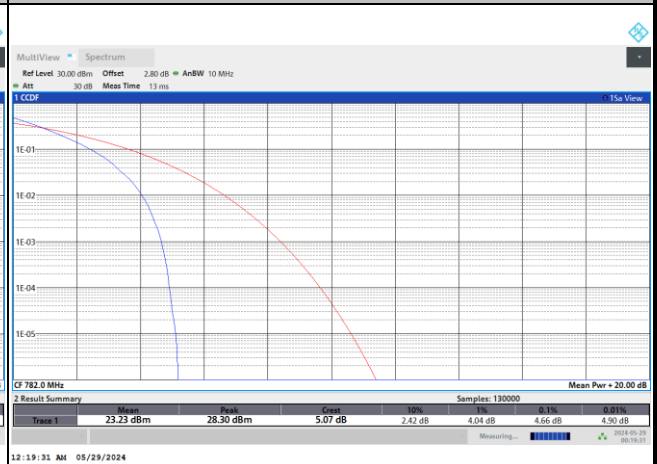


## FR1 n13 / 10MHz / DFT-S OFDM / Middle Channel / Full RB

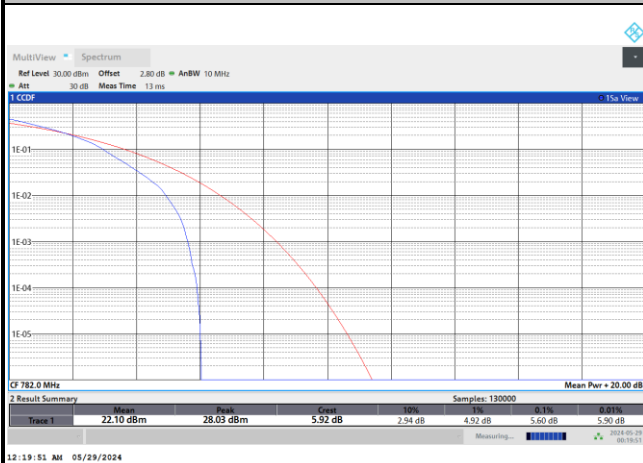
## PI/2 BPSK



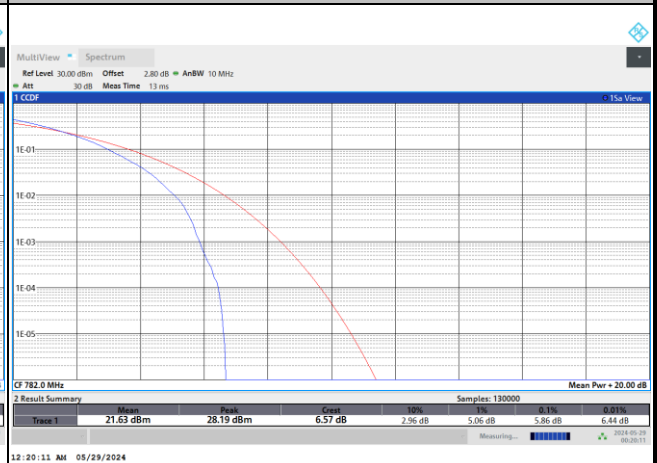
## QPSK



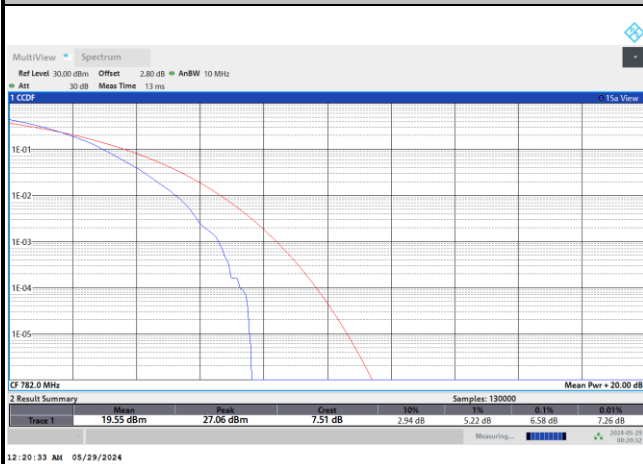
## 16QAM



## 64QAM



## 256QAM



**26dB Bandwidth**

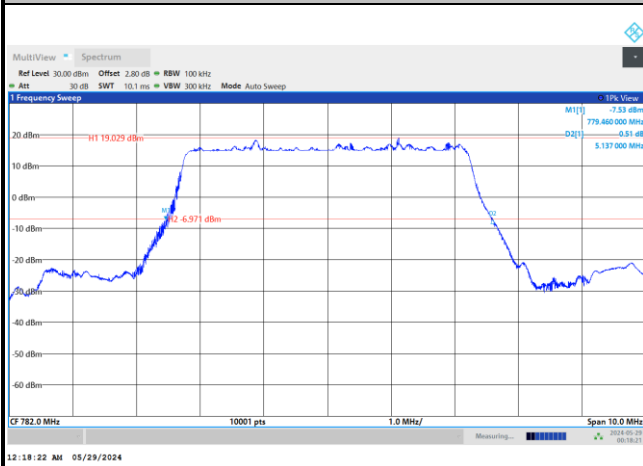
| Mode      | FR1 n13 : 26dB BW(MHz) / DFT-S OFDM |  |           |  |  |  |  |  |
|-----------|-------------------------------------|--|-----------|--|--|--|--|--|
| BW        | 5MHz                                |  | 10MHz     |  |  |  |  |  |
| Mod.      | PI/2 BPSK                           |  | PI/2 BPSK |  |  |  |  |  |
| Middle CH | 5.14                                |  | 9.82      |  |  |  |  |  |

| Mode      | FR1 n13 : 26dB BW(MHz) / CP OFDM |        |       |        |  |  |  |  |
|-----------|----------------------------------|--------|-------|--------|--|--|--|--|
| BW        | 5MHz                             |        | 10MHz |        |  |  |  |  |
| Mod.      | QPSK                             | 16QAM  | QPSK  | 16QAM  |  |  |  |  |
| Middle CH | 5.33                             | 5.27   | 10.29 | 10.25  |  |  |  |  |
| Mod.      | 64QAM                            | 256QAM | 64QAM | 256QAM |  |  |  |  |
| Middle CH | 5.22                             | 5.29   | 10.20 | 10.28  |  |  |  |  |



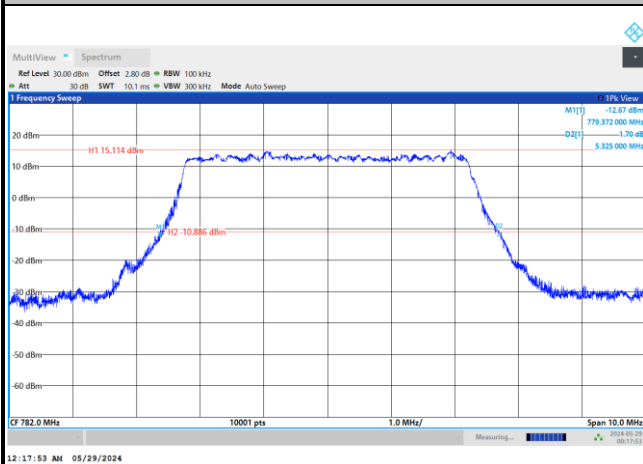
## FR1 n13 / 5MHz / DFT-S OFDM / Middle Channel / Full RB

## PI/2 BPSK

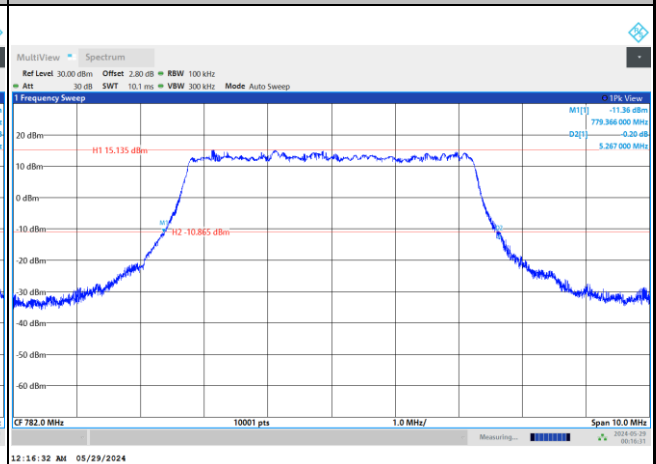


## FR1 n13 / 5MHz / CP OFDM / Middle Channel / Full RB

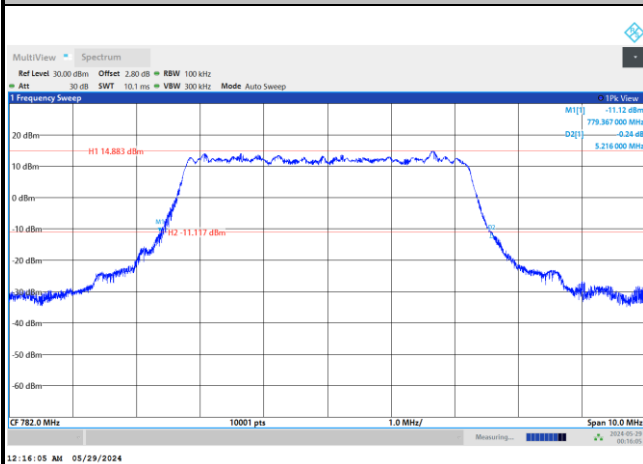
## QPSK



## 16QAM



## 64QAM



## 256QAM

