



## Appendix A

### RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Smart Card

Test Model: BS-3514AA

#### Environmental Conditions

|                    |            |
|--------------------|------------|
| Temperature:       | 23.1° C    |
| Relative Humidity: | 52.3%      |
| ATM Pressure:      | 100.0 kPa  |
| Test Engineer:     | Paddi Chen |
| Supervised by:     | Nick Peng  |





## A.1 -6dB Bandwidth

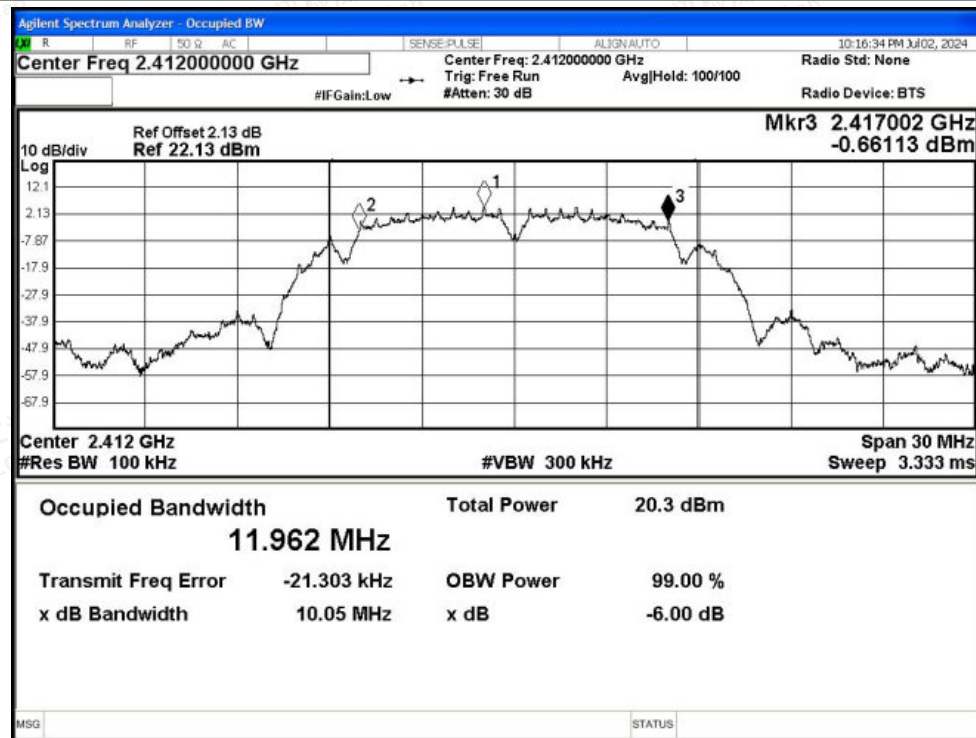
| Condition | Mode | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|------|-----------------|---------|-----------------------|-----------------------------|---------|
| HVHT      | b    | 2412            | Ant1    | 10.046                | $\geq 0.5$                  | Pass    |
| HVHT      | b    | 2437            | Ant1    | 10.063                | $\geq 0.5$                  | Pass    |
| HVHT      | b    | 2462            | Ant1    | 10.068                | $\geq 0.5$                  | Pass    |
| HVHT      | g    | 2412            | Ant1    | 16.311                | $\geq 0.5$                  | Pass    |
| HVHT      | g    | 2437            | Ant1    | 16.306                | $\geq 0.5$                  | Pass    |
| HVHT      | g    | 2462            | Ant1    | 16.01                 | $\geq 0.5$                  | Pass    |
| HVHT      | n20  | 2412            | Ant1    | 16.575                | $\geq 0.5$                  | Pass    |
| HVHT      | n20  | 2437            | Ant1    | 16.86                 | $\geq 0.5$                  | Pass    |
| HVHT      | n20  | 2462            | Ant1    | 16.816                | $\geq 0.5$                  | Pass    |
| HVHT      | n40  | 2422            | Ant1    | 35.583                | $\geq 0.5$                  | Pass    |
| HVHT      | n40  | 2437            | Ant1    | 35.364                | $\geq 0.5$                  | Pass    |
| HVHT      | n40  | 2452            | Ant1    | 35.724                | $\geq 0.5$                  | Pass    |





Test Graphs

-6dB Bandwidth HVHT b 2412MHz Ant1

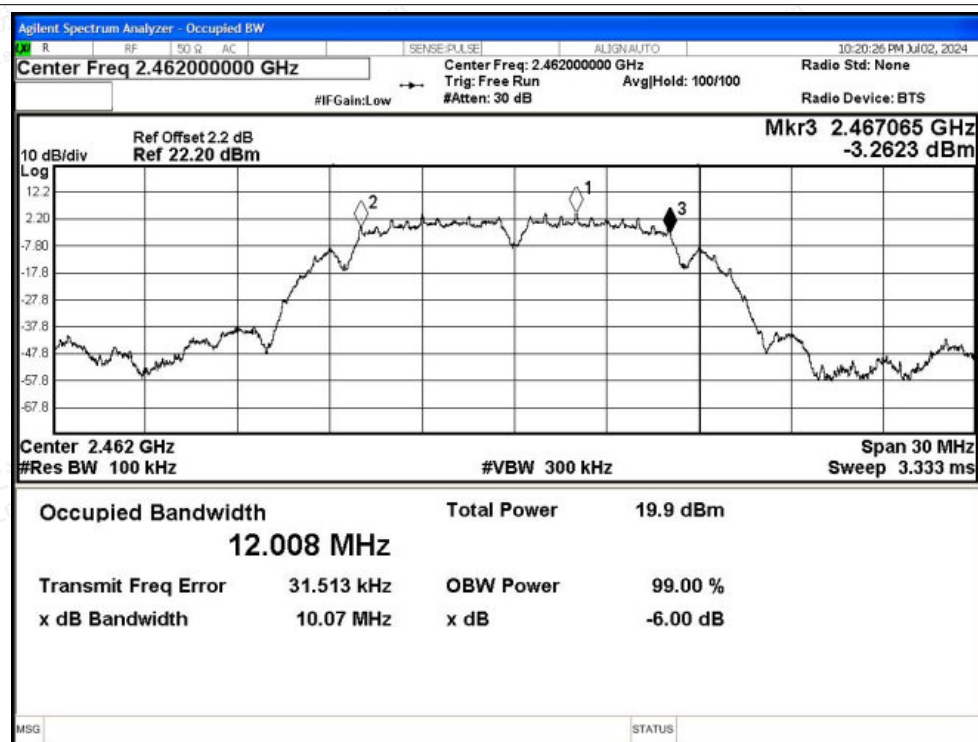


-6dB Bandwidth HVHT b 2437MHz Ant1

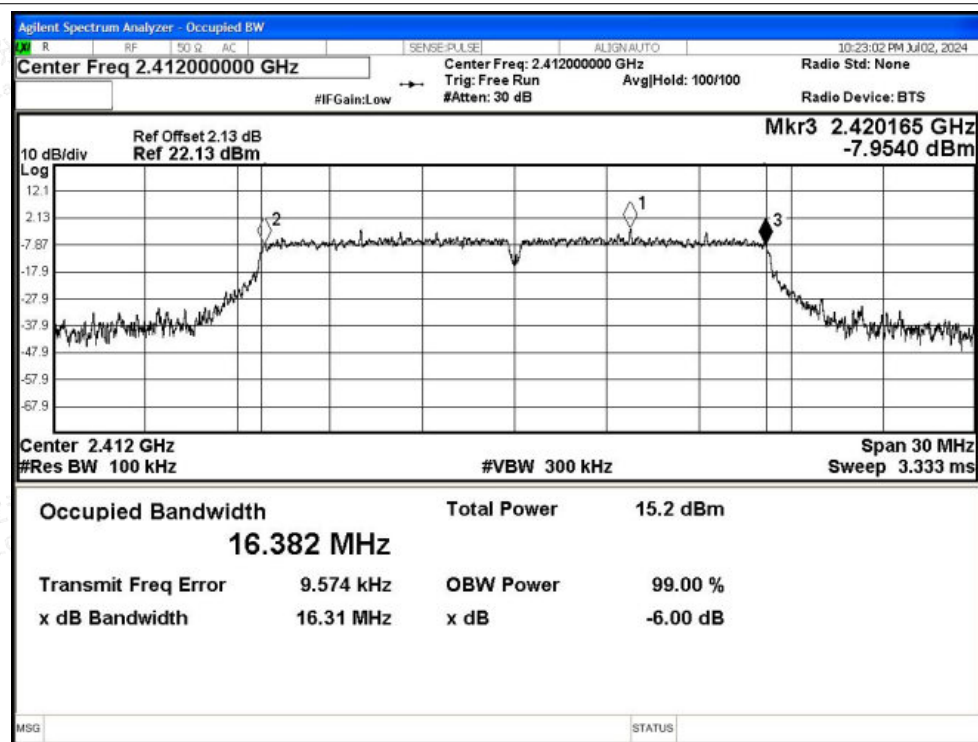




-6dB Bandwidth HVHT b 2462MHz Ant1

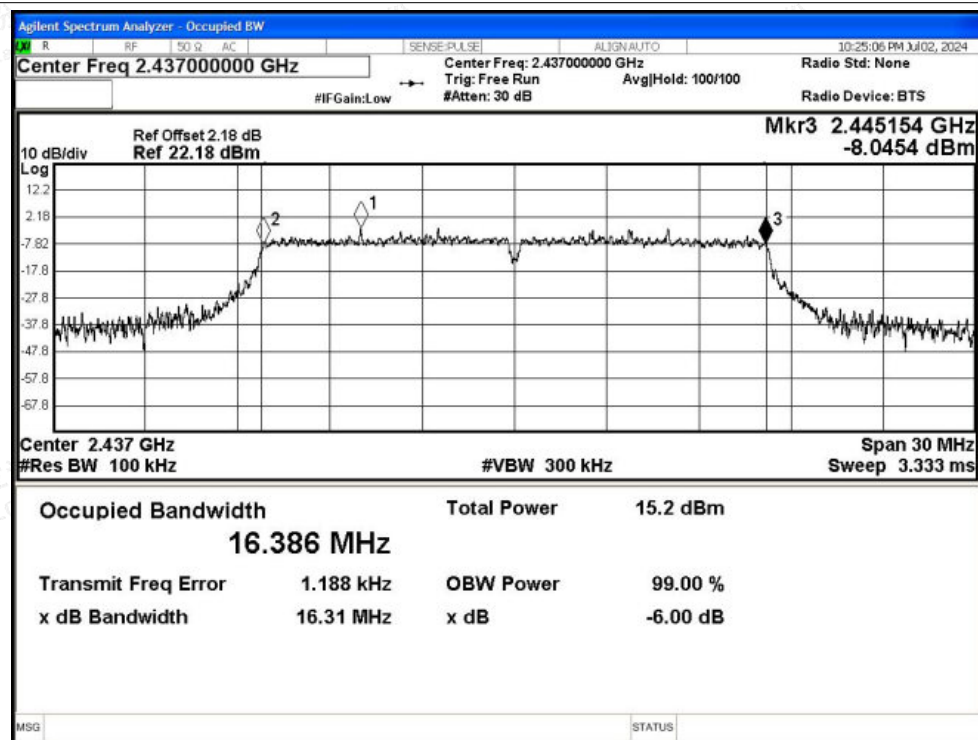


-6dB Bandwidth HVHT g 2412MHz Ant1

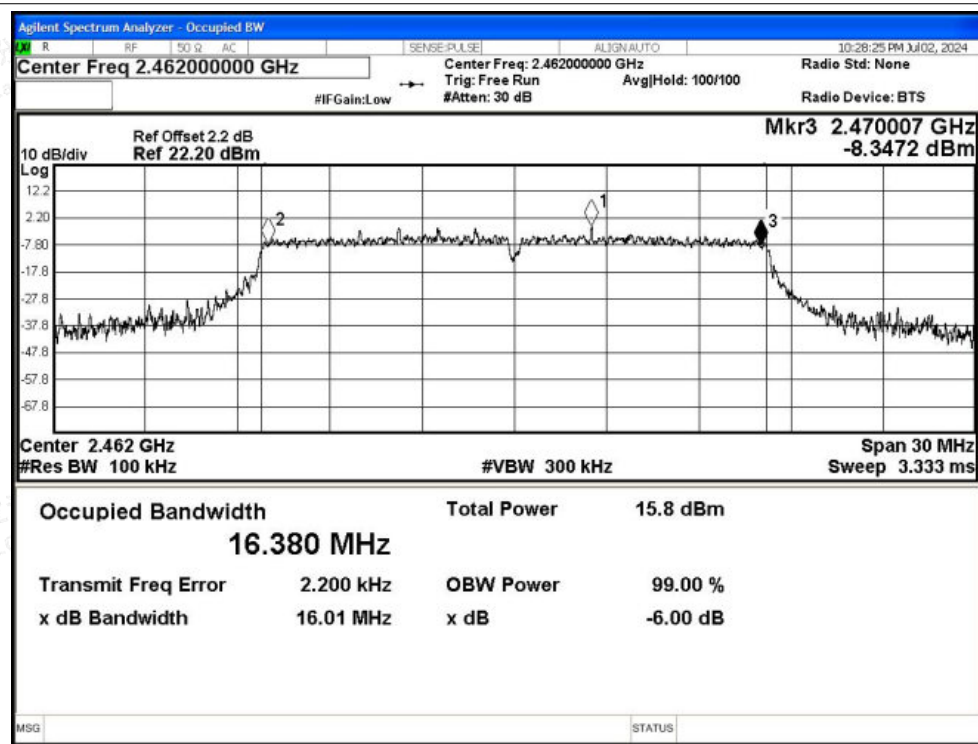




-6dB Bandwidth HVHT g 2437MHz Ant1



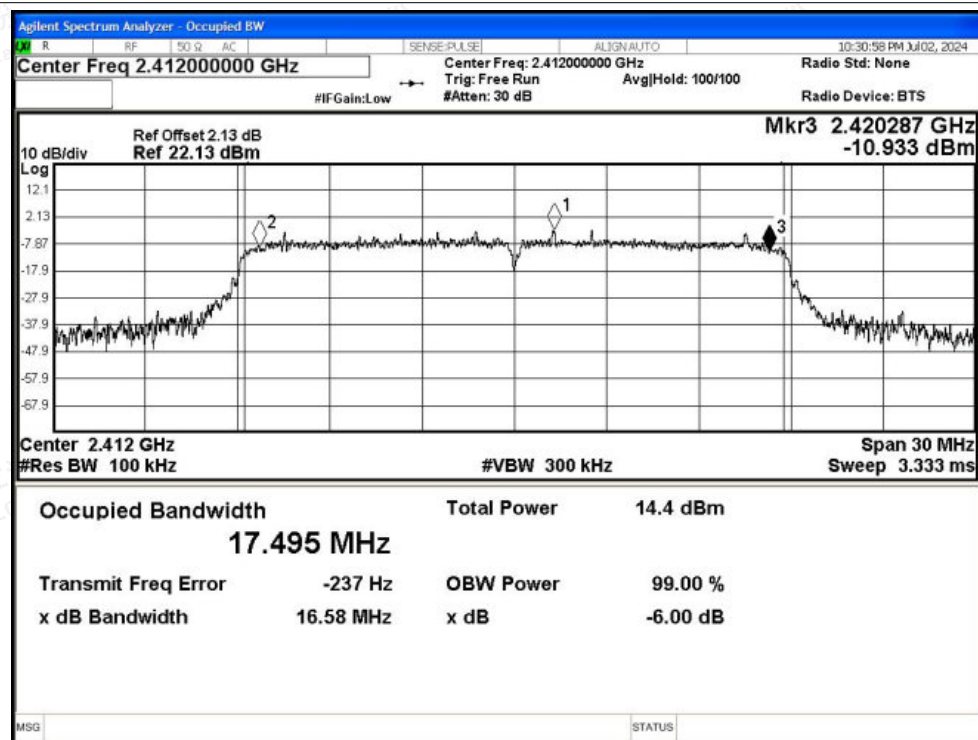
-6dB Bandwidth HVHT g 2462MHz Ant1



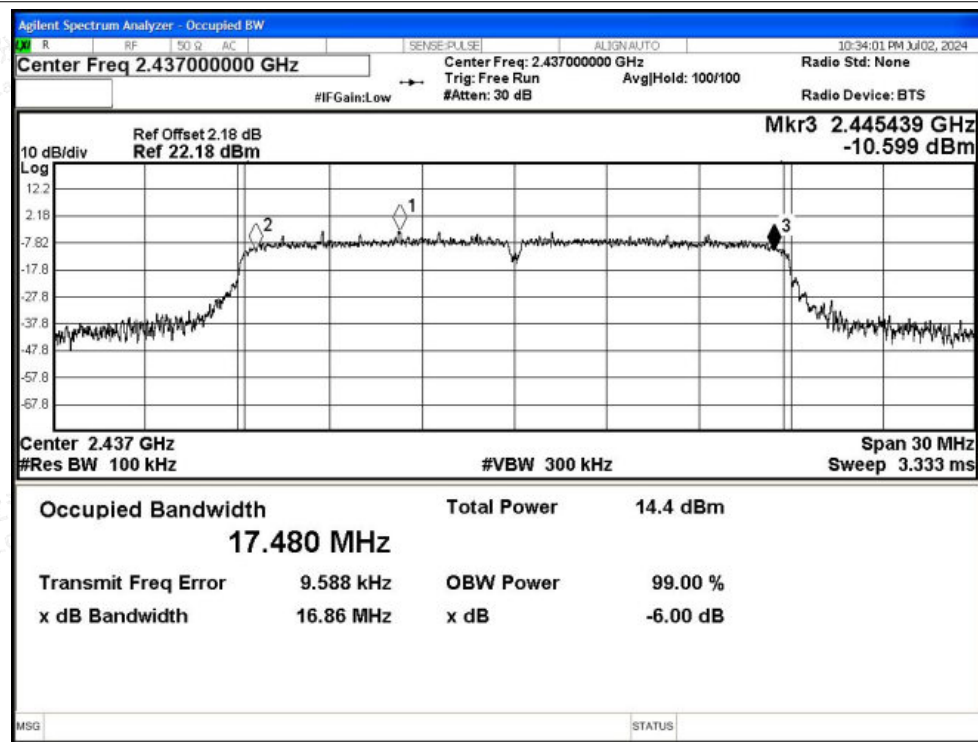




-6dB Bandwidth HVHT n20 2412MHz Ant1

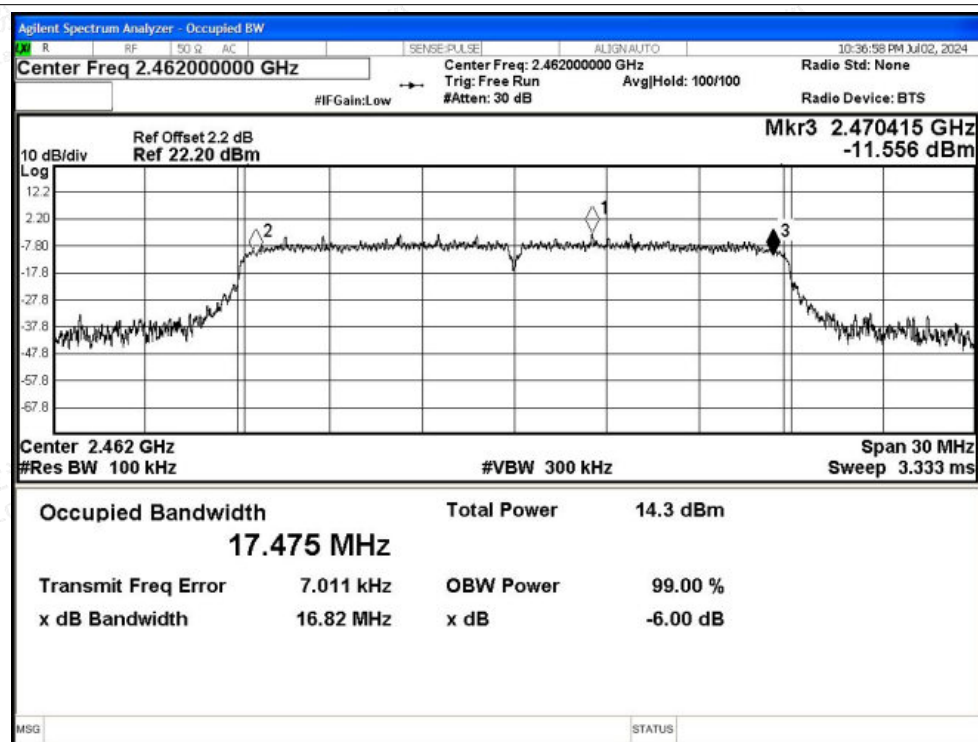


-6dB Bandwidth HVHT n20 2437MHz Ant1

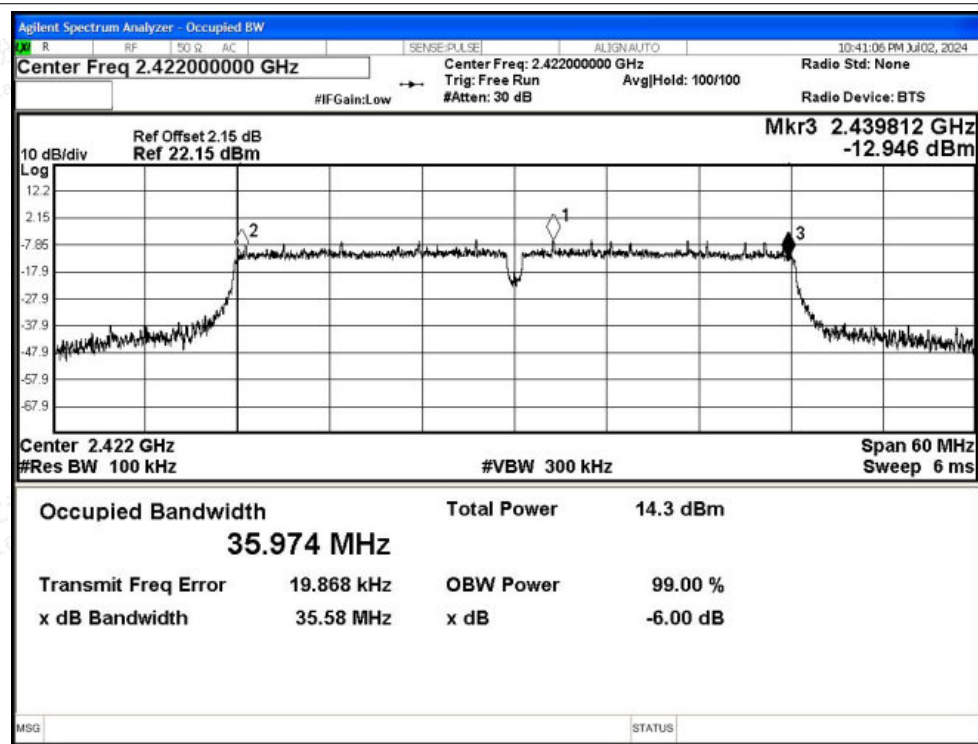




-6dB Bandwidth HVHT n20 2462MHz Ant1

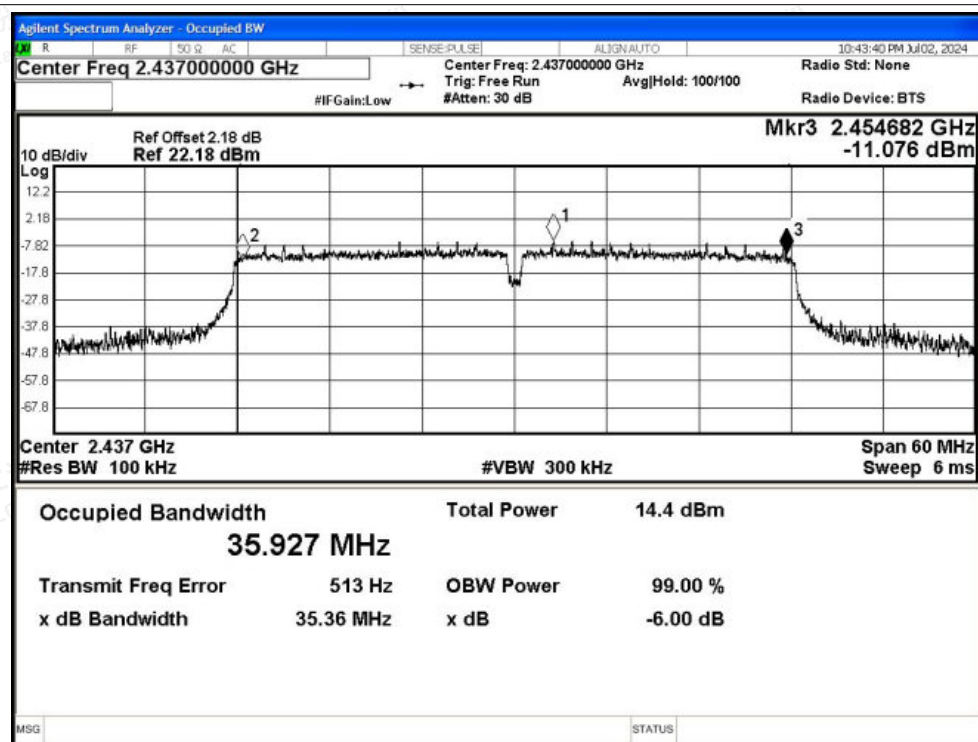


-6dB Bandwidth HVHT n40 2422MHz Ant1

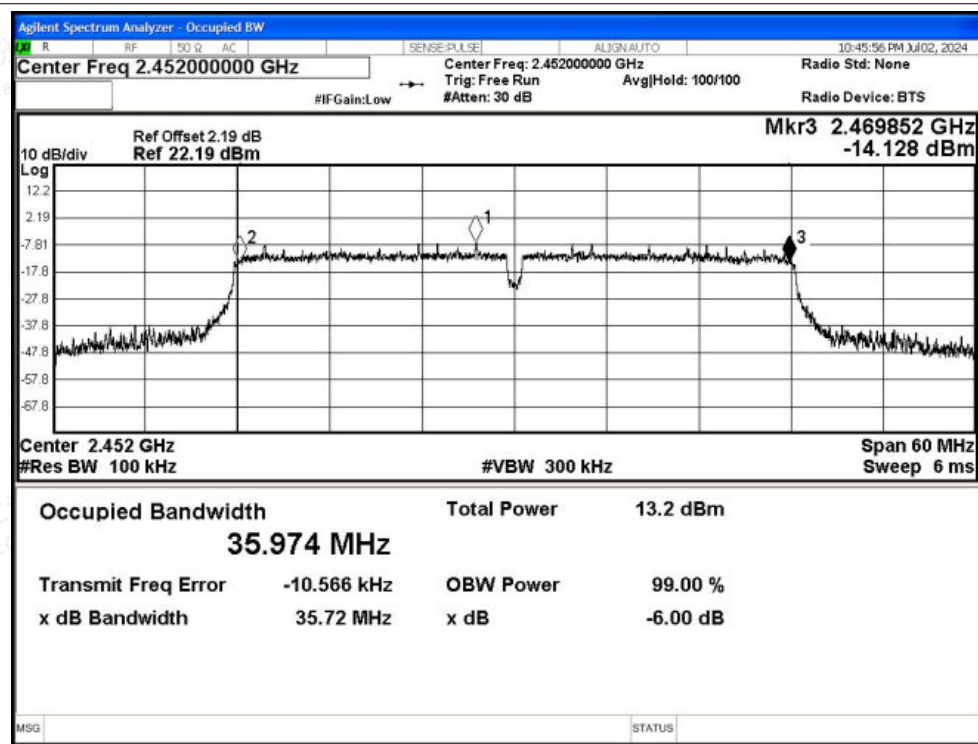




-6dB Bandwidth HVHT n40 2437MHz Ant1



-6dB Bandwidth HVHT n40 2452MHz Ant1







## A.2 Maximum Conducted Output Power

| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Limit (dBm) | Verdict |
|-----------|------|-----------------|---------|-----------------------|-------------|---------|
| HVHT      | b    | 2412            | Ant1    | 8.2                   | 30          | Pass    |
| HVHT      | b    | 2437            | Ant1    | 8.14                  | 30          | Pass    |
| HVHT      | b    | 2462            | Ant1    | 8.83                  | 30          | Pass    |
| HVHT      | g    | 2412            | Ant1    | 8.01                  | 30          | Pass    |
| HVHT      | g    | 2437            | Ant1    | 8.77                  | 30          | Pass    |
| HVHT      | g    | 2462            | Ant1    | 8.43                  | 30          | Pass    |
| HVHT      | n20  | 2412            | Ant1    | 7.86                  | 30          | Pass    |
| HVHT      | n20  | 2437            | Ant1    | 7.03                  | 30          | Pass    |
| HVHT      | n20  | 2462            | Ant1    | 6.83                  | 30          | Pass    |
| HVHT      | n40  | 2422            | Ant1    | 7.67                  | 30          | Pass    |
| HVHT      | n40  | 2437            | Ant1    | 7.82                  | 30          | Pass    |
| HVHT      | n40  | 2452            | Ant1    | 6.63                  | 30          | Pass    |





### A.3 Maximum Power Spectral Density Level

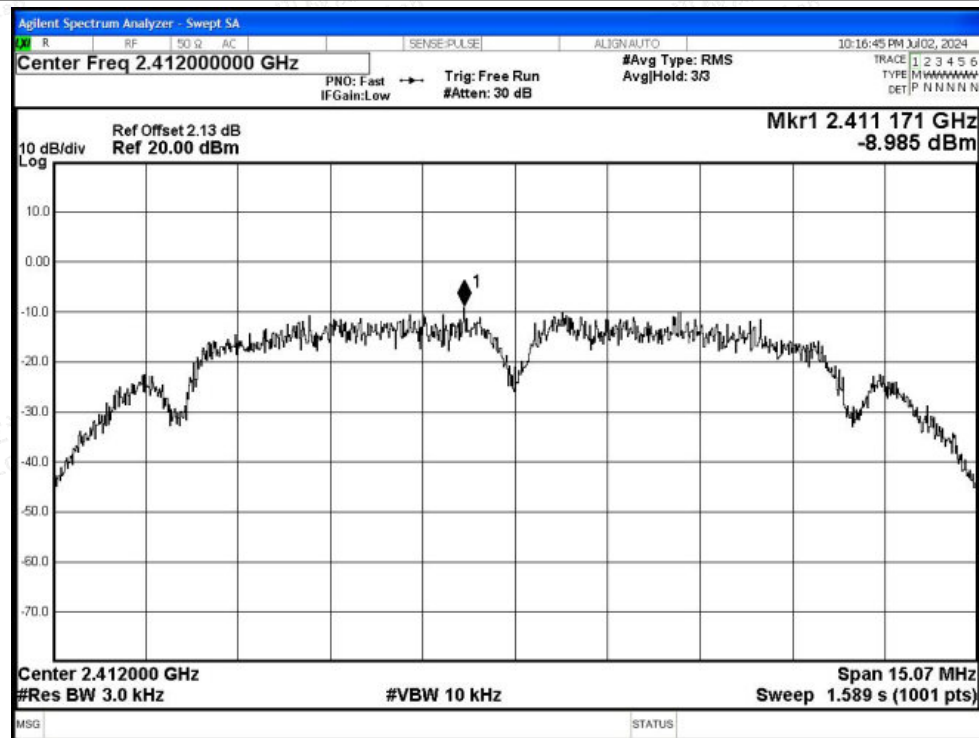
| Condition | Mode | Frequency (MHz) | Antenna | Conducted PSD (dBm/3kHz) | Limit (dBm/3kHz) | Verdict |
|-----------|------|-----------------|---------|--------------------------|------------------|---------|
| HVHT      | b    | 2412            | Ant1    | -8.99                    | 8                | Pass    |
| HVHT      | b    | 2437            | Ant1    | -9.61                    | 8                | Pass    |
| HVHT      | b    | 2462            | Ant1    | -9.94                    | 8                | Pass    |
| HVHT      | g    | 2412            | Ant1    | -16.41                   | 8                | Pass    |
| HVHT      | g    | 2437            | Ant1    | -16.8                    | 8                | Pass    |
| HVHT      | g    | 2462            | Ant1    | -16.08                   | 8                | Pass    |
| HVHT      | n20  | 2412            | Ant1    | -16.87                   | 8                | Pass    |
| HVHT      | n20  | 2437            | Ant1    | -17.81                   | 8                | Pass    |
| HVHT      | n20  | 2462            | Ant1    | -18.14                   | 8                | Pass    |
| HVHT      | n40  | 2422            | Ant1    | -20.77                   | 8                | Pass    |
| HVHT      | n40  | 2437            | Ant1    | -21.11                   | 8                | Pass    |
| HVHT      | n40  | 2452            | Ant1    | -21.97                   | 8                | Pass    |



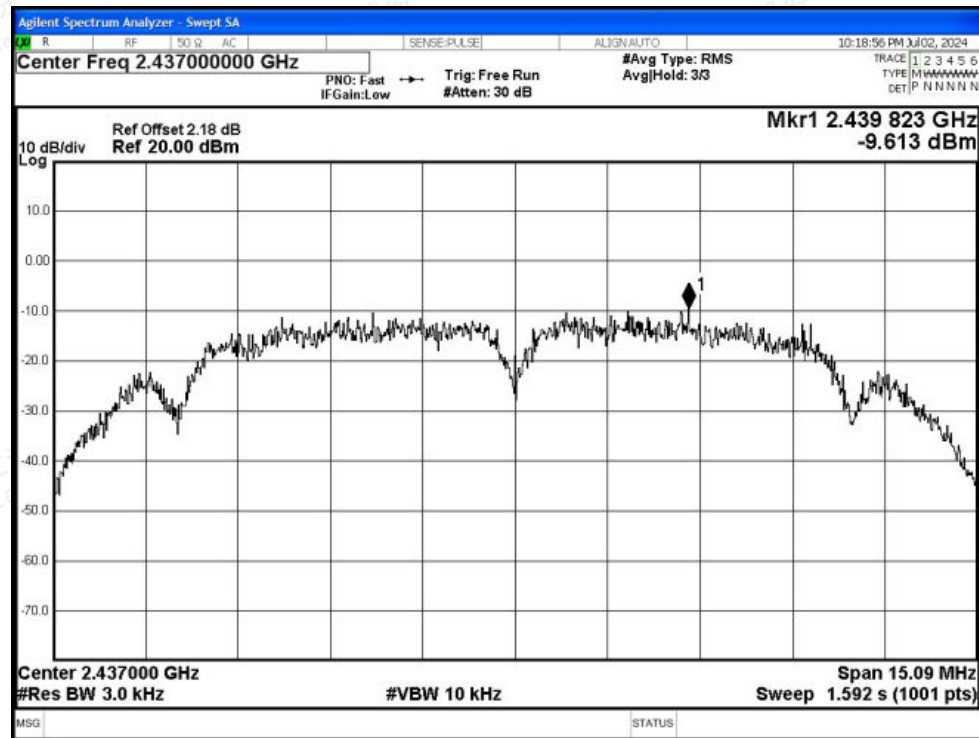


Test Graphs

PSD HVHT b 2412MHz Ant1

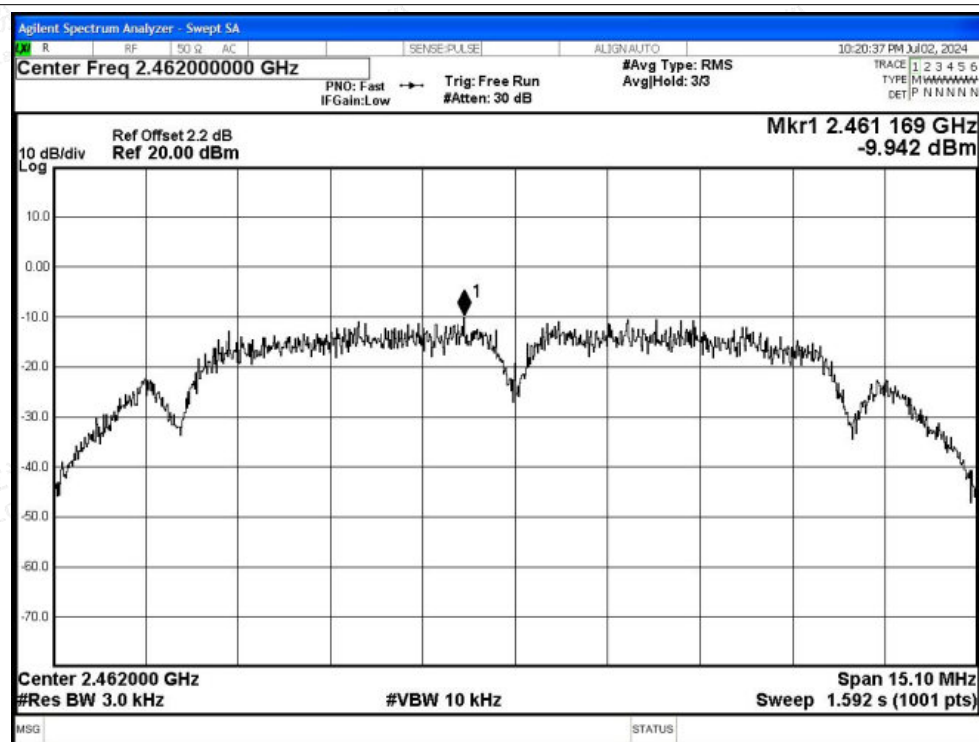


PSD HVHT b 2437MHz Ant1

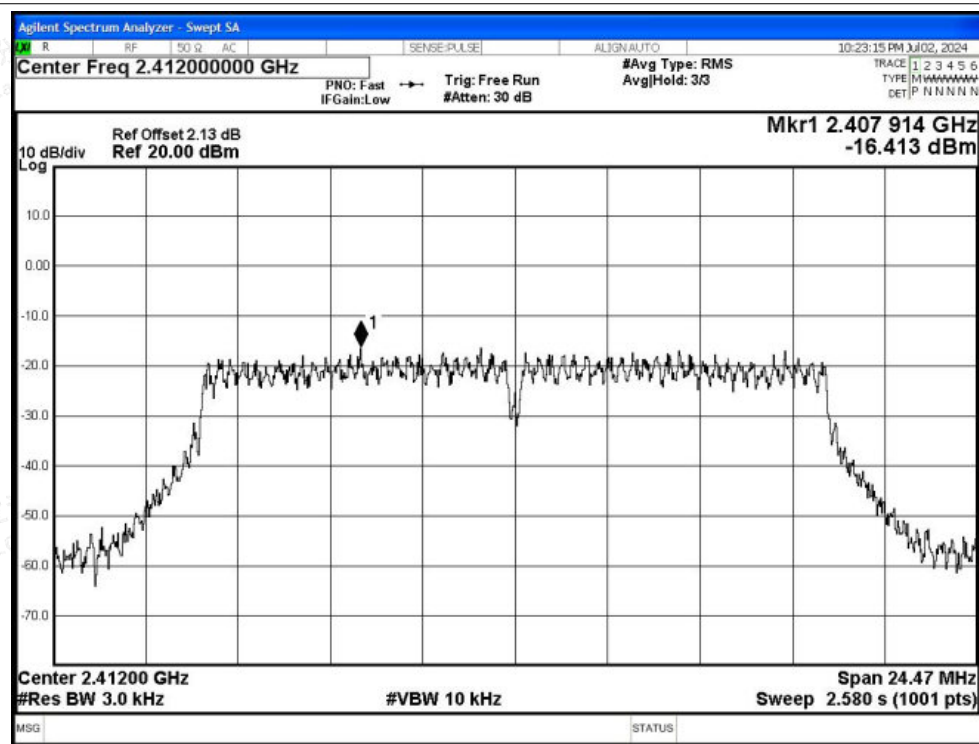




PSD HVHT b 2462MHz Ant1

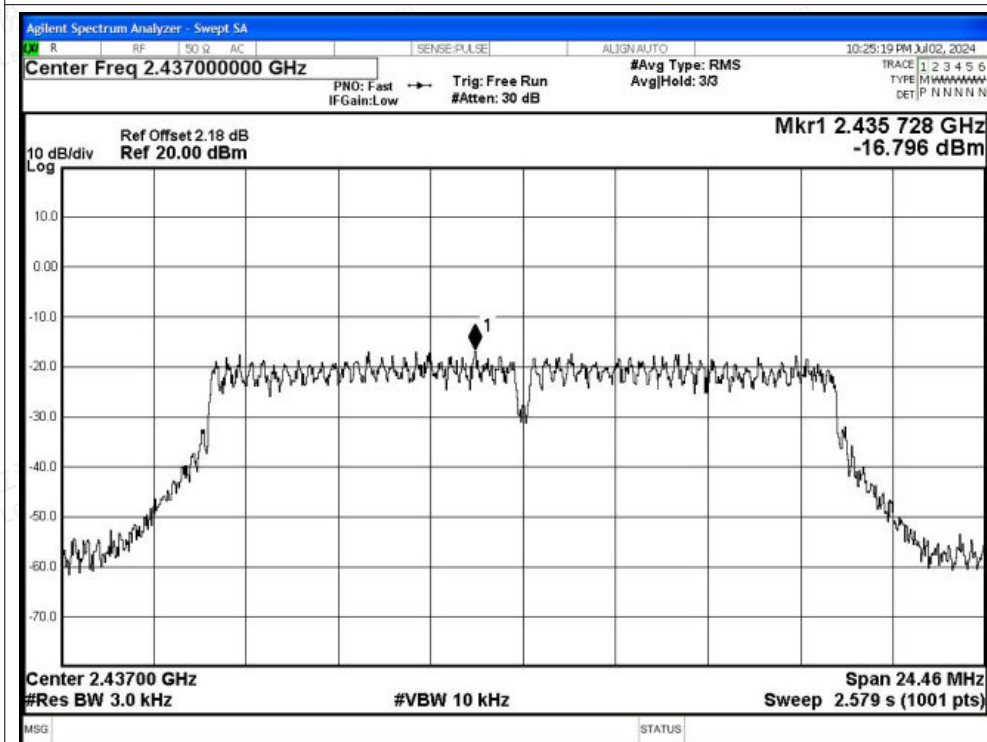


PSD HVHT g 2412MHz Ant1

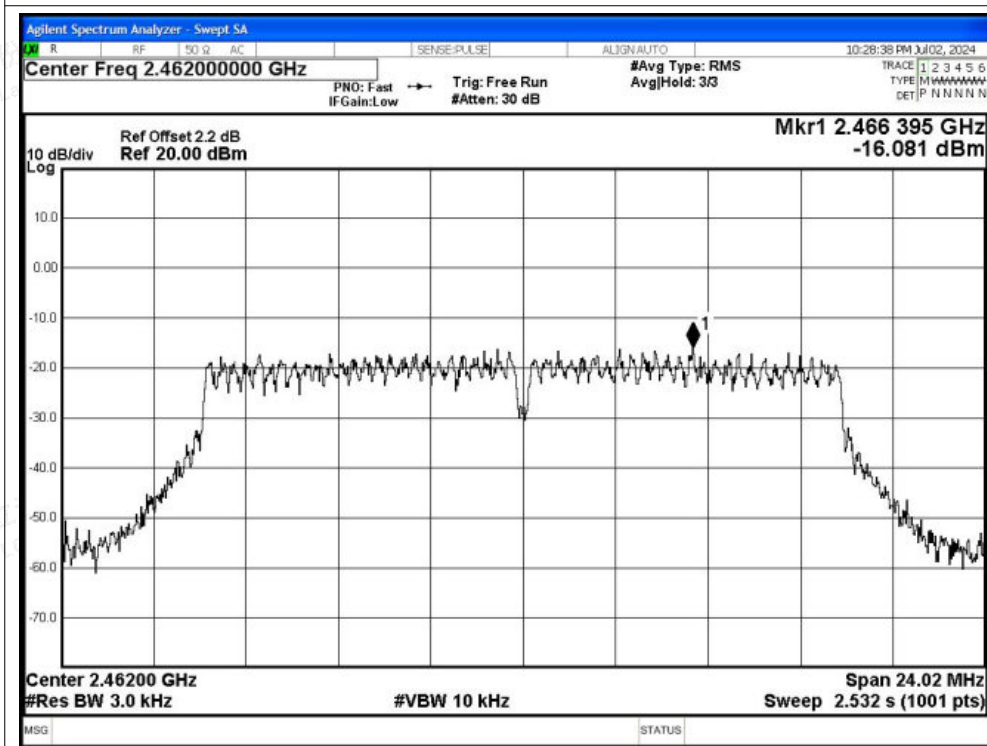




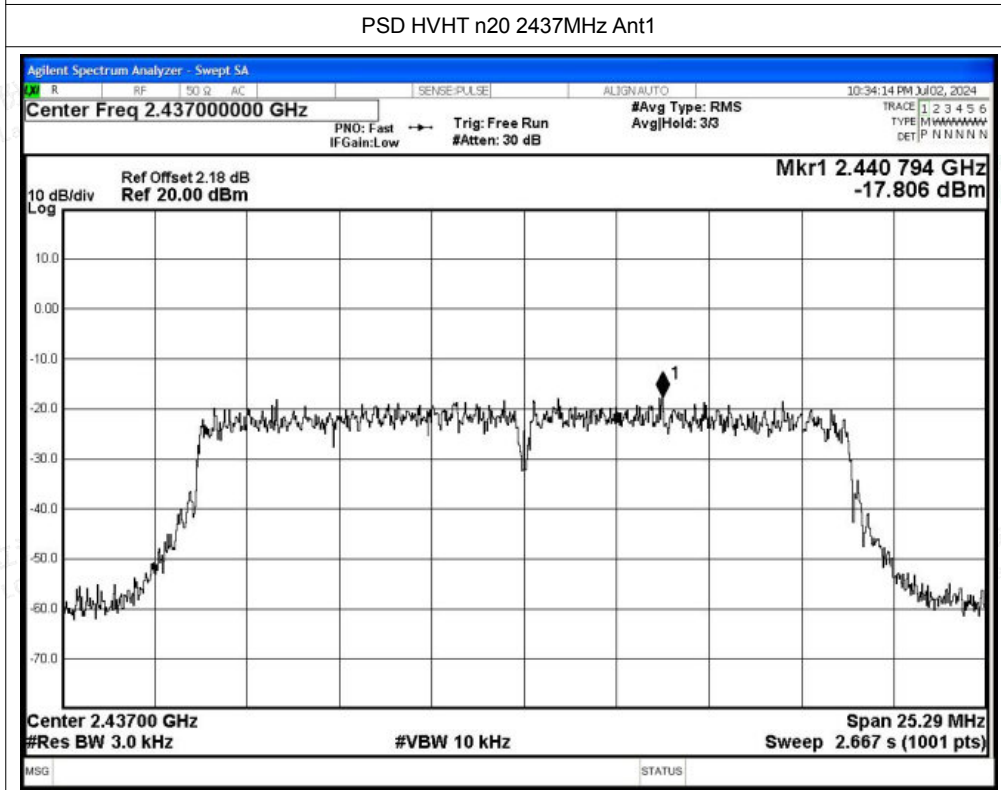
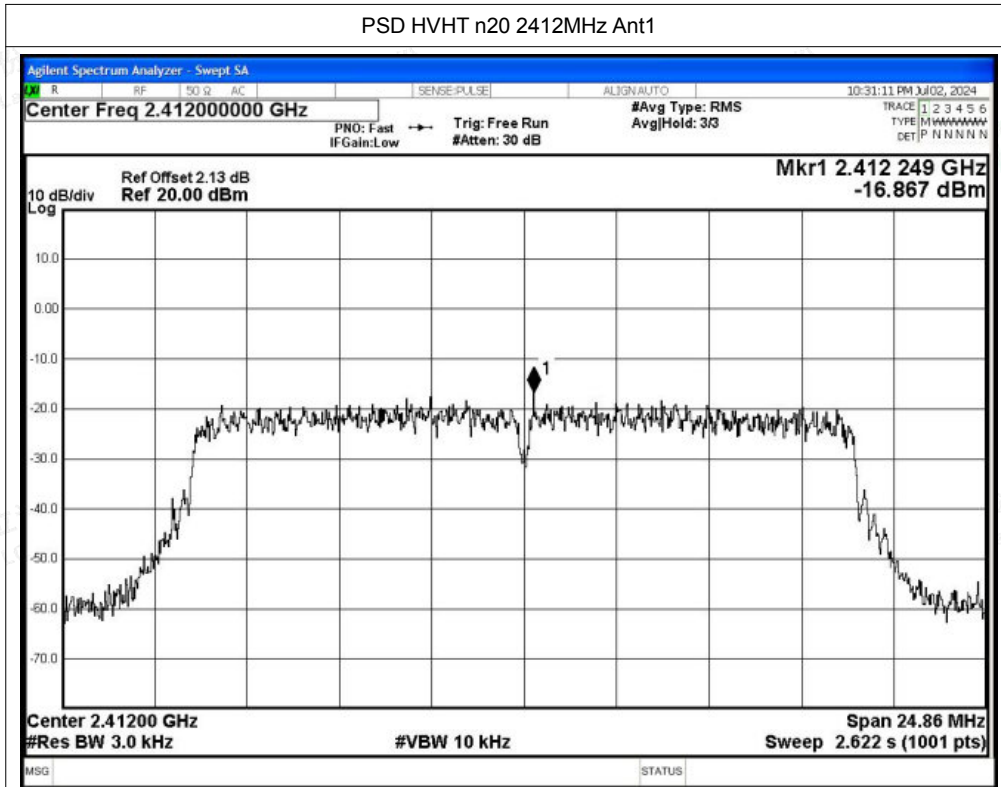
PSD HVHT g 2437MHz Ant1

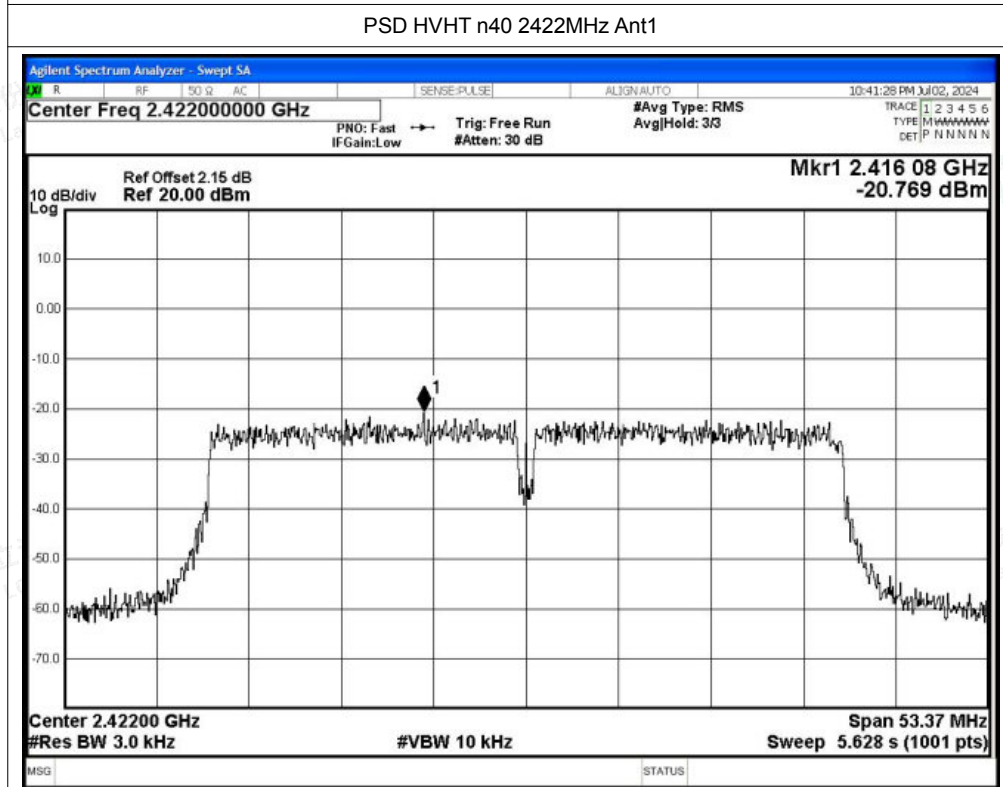
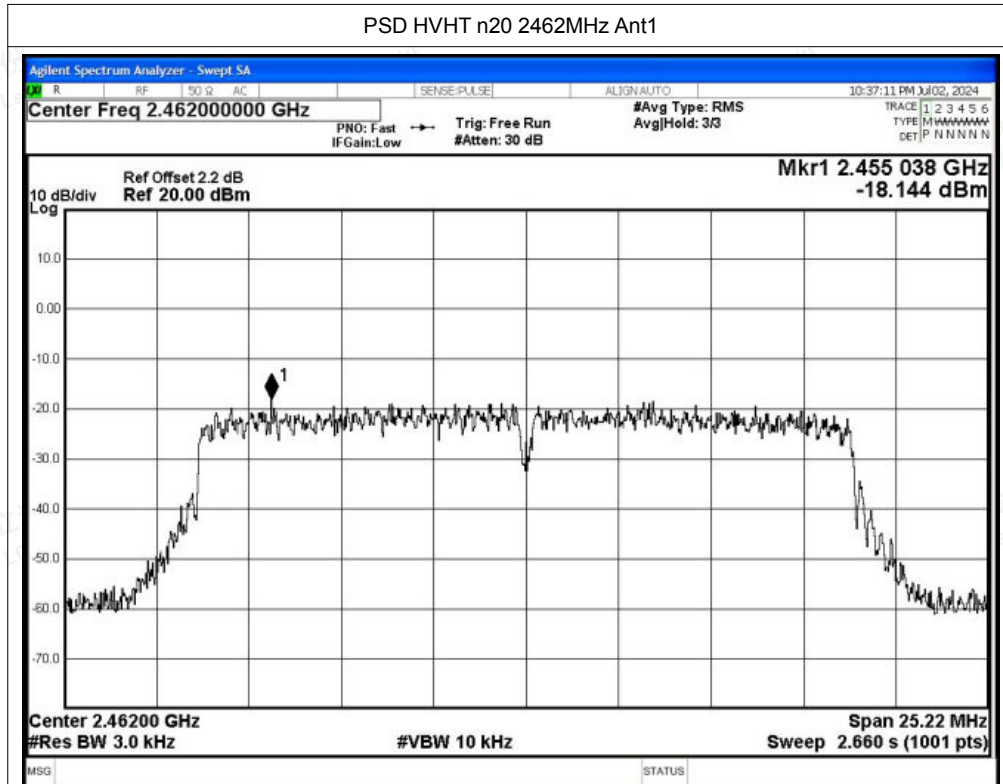


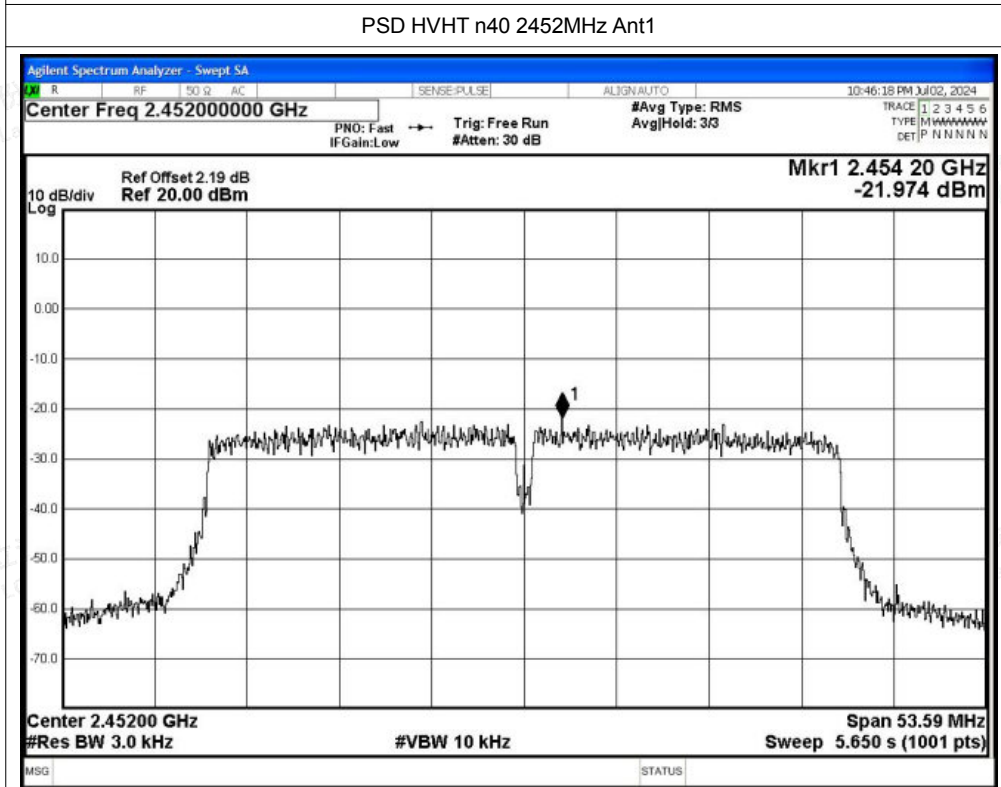
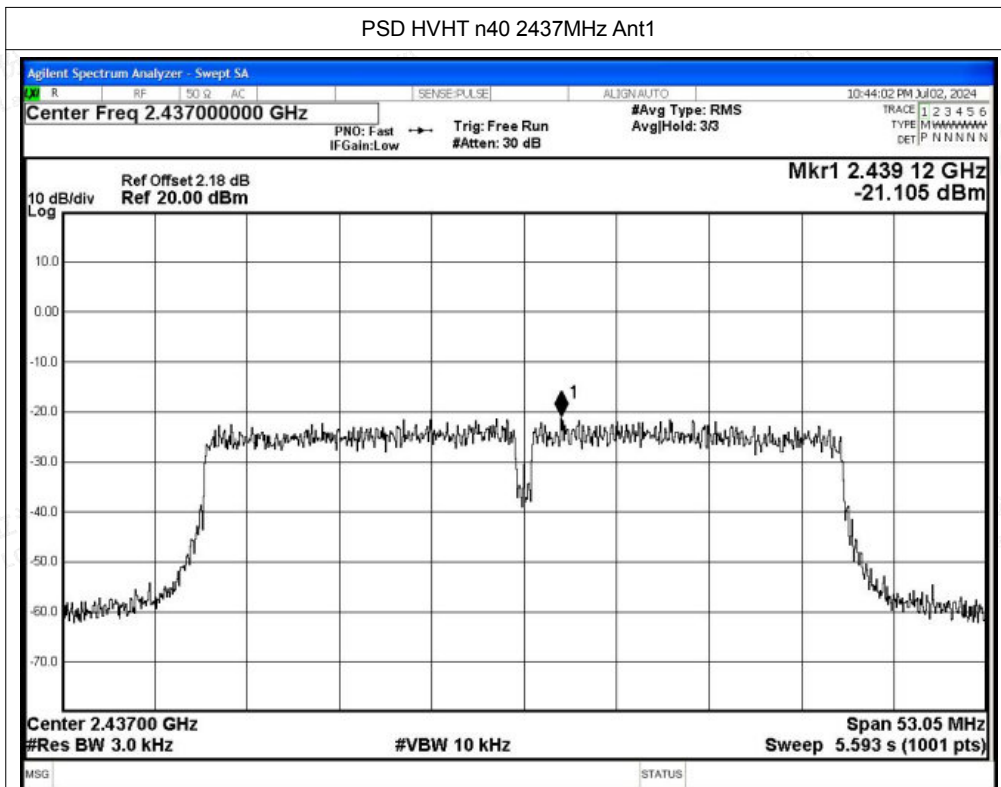
PSD HVHT g 2462MHz Ant1













## A.4 Band Edge

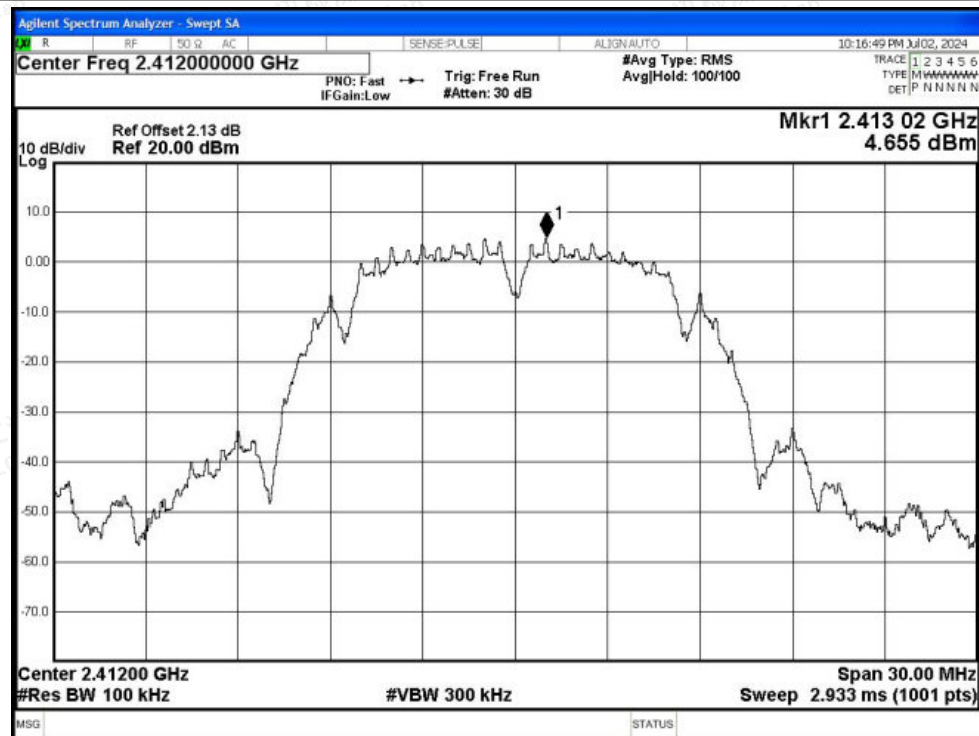
| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|------|-----------------|---------|-----------------|-------------|---------|
| HVHT      | b    | 2412            | Ant1    | -48.74          | -20         | Pass    |
| HVHT      | b    | 2462            | Ant1    | -54.87          | -20         | Pass    |
| HVHT      | g    | 2412            | Ant1    | -29.27          | -20         | Pass    |
| HVHT      | g    | 2462            | Ant1    | -44.04          | -20         | Pass    |
| HVHT      | n20  | 2412            | Ant1    | -29.9           | -20         | Pass    |
| HVHT      | n20  | 2462            | Ant1    | -43.62          | -20         | Pass    |
| HVHT      | n40  | 2422            | Ant1    | -32.33          | -20         | Pass    |
| HVHT      | n40  | 2452            | Ant1    | -39.02          | -20         | Pass    |



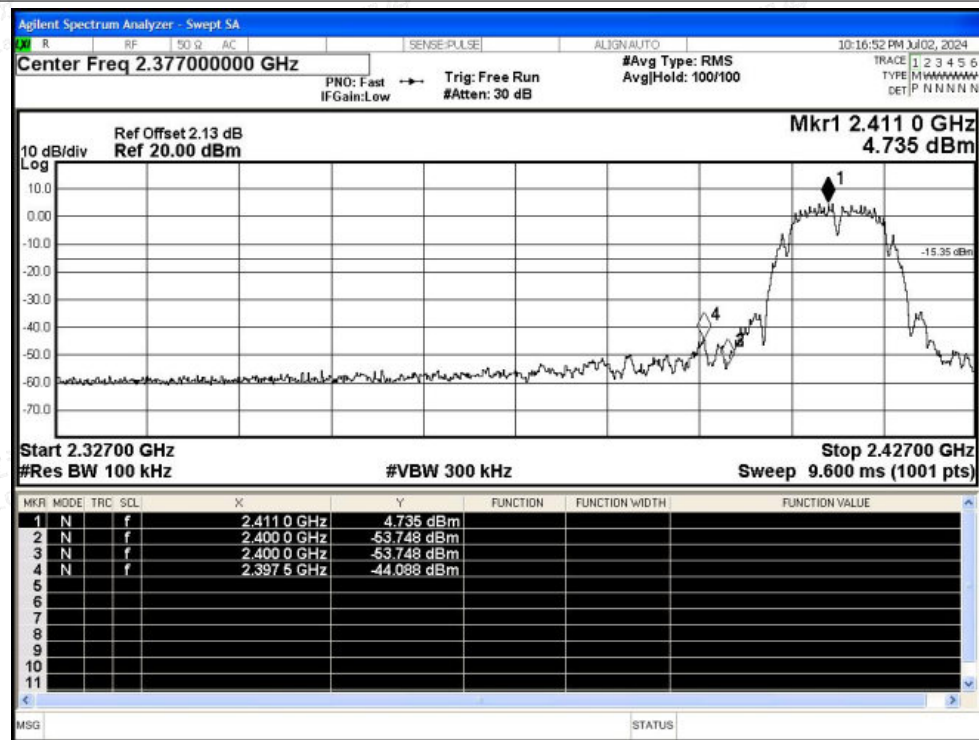


Test Graphs

Band Edge HVHT b 2412MHz Ant1 Ref



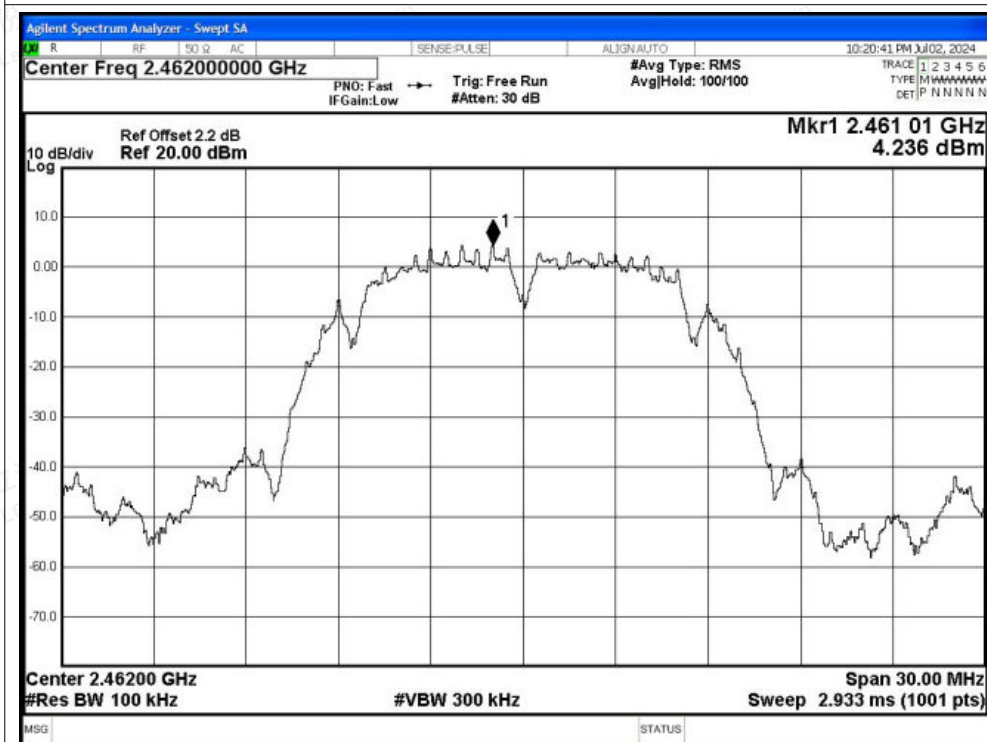
Band Edge HVHT b 2412MHz Ant1 Emission



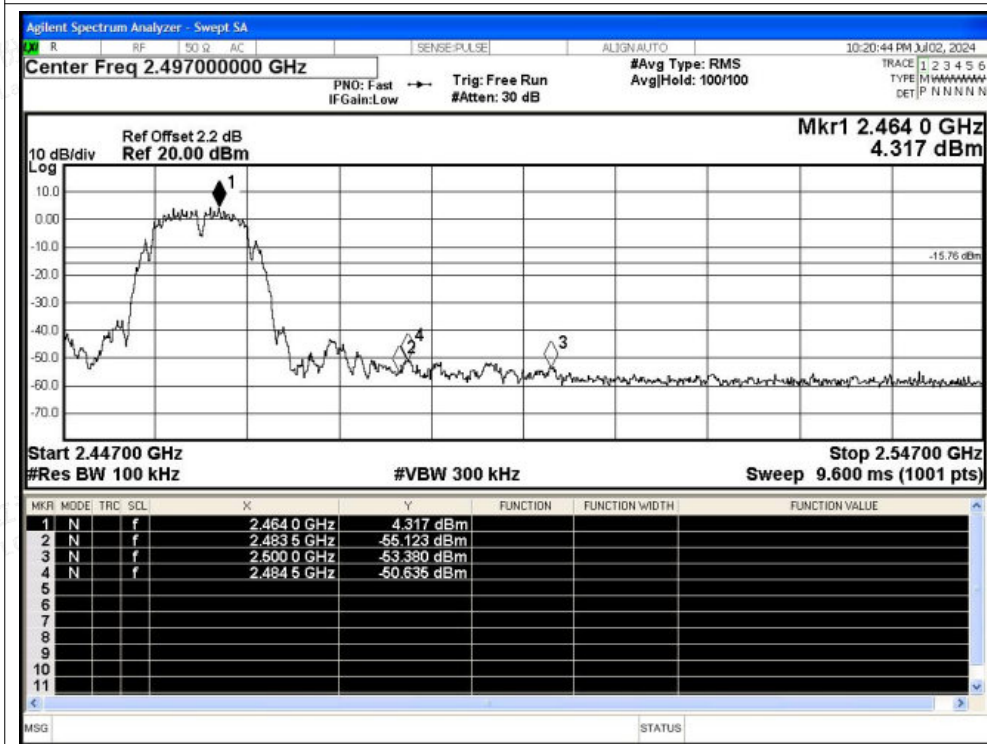




Band Edge HVHT b 2462MHz Ant1 Ref

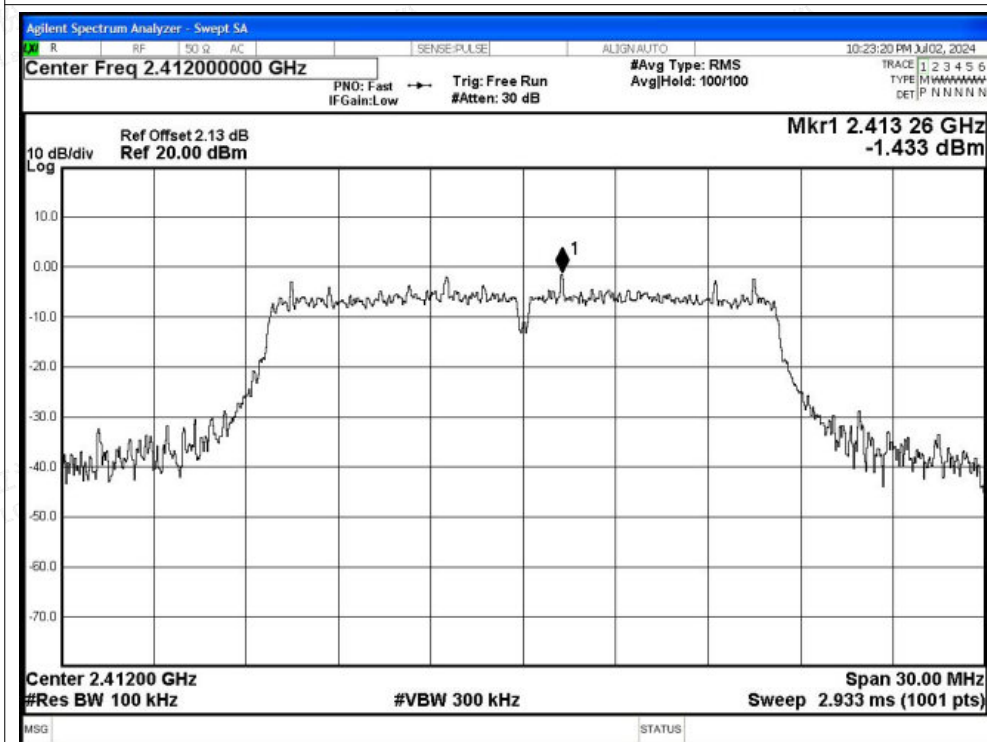


Band Edge HVHT b 2462MHz Ant1 Emission

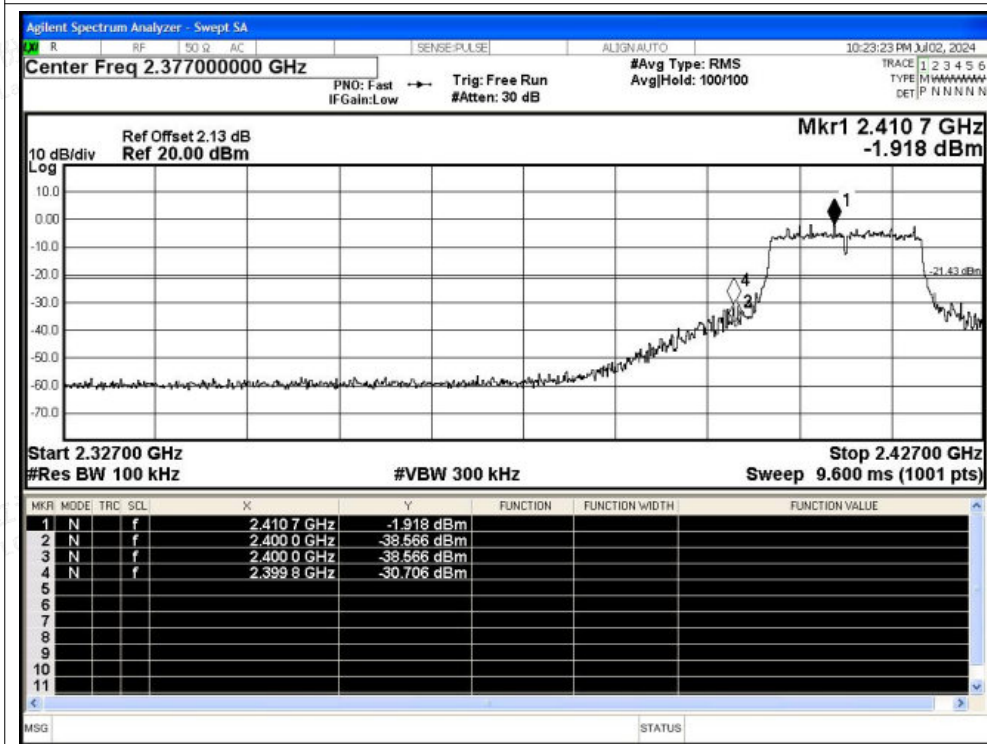




Band Edge HVHT g 2412MHz Ant1 Ref

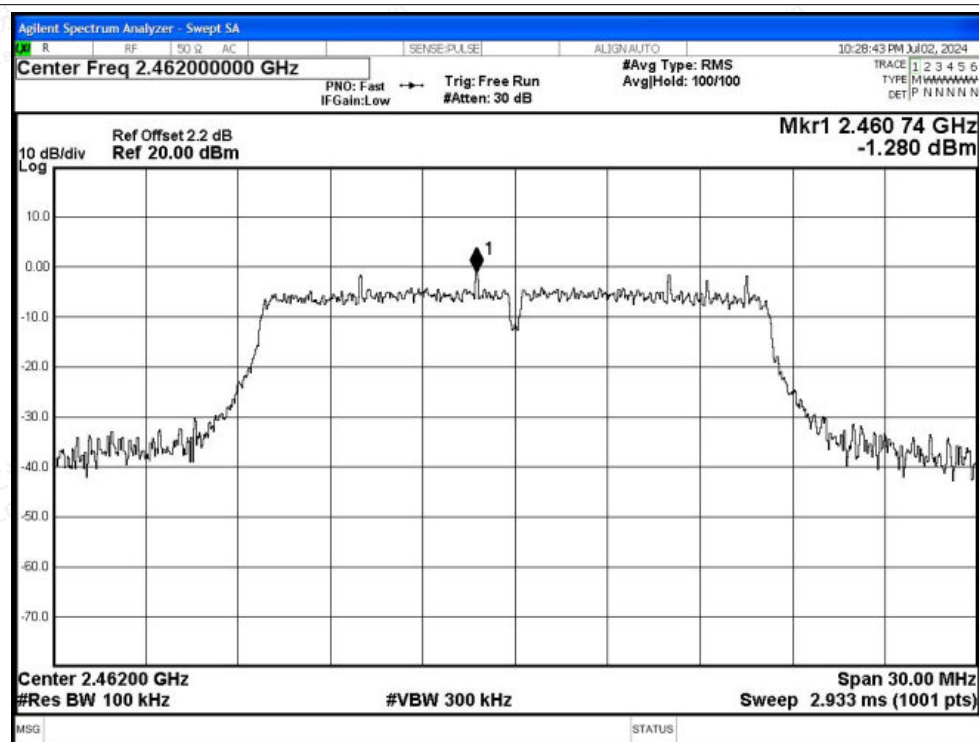


Band Edge HVHT g 2412MHz Ant1 Emission

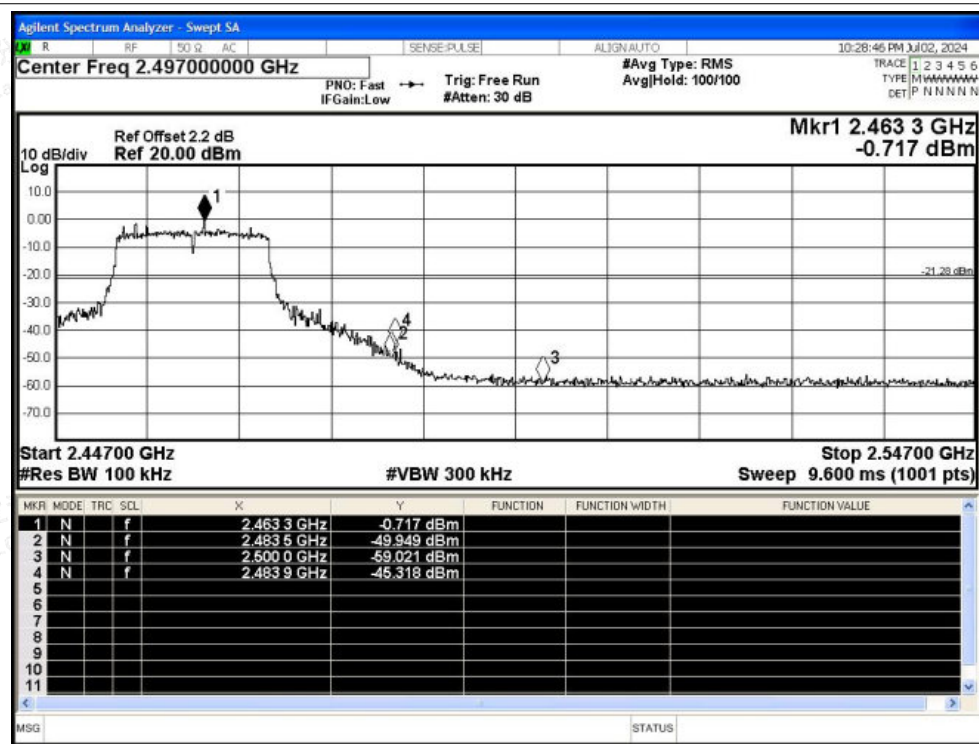




Band Edge HVHT g 2462MHz Ant1 Ref

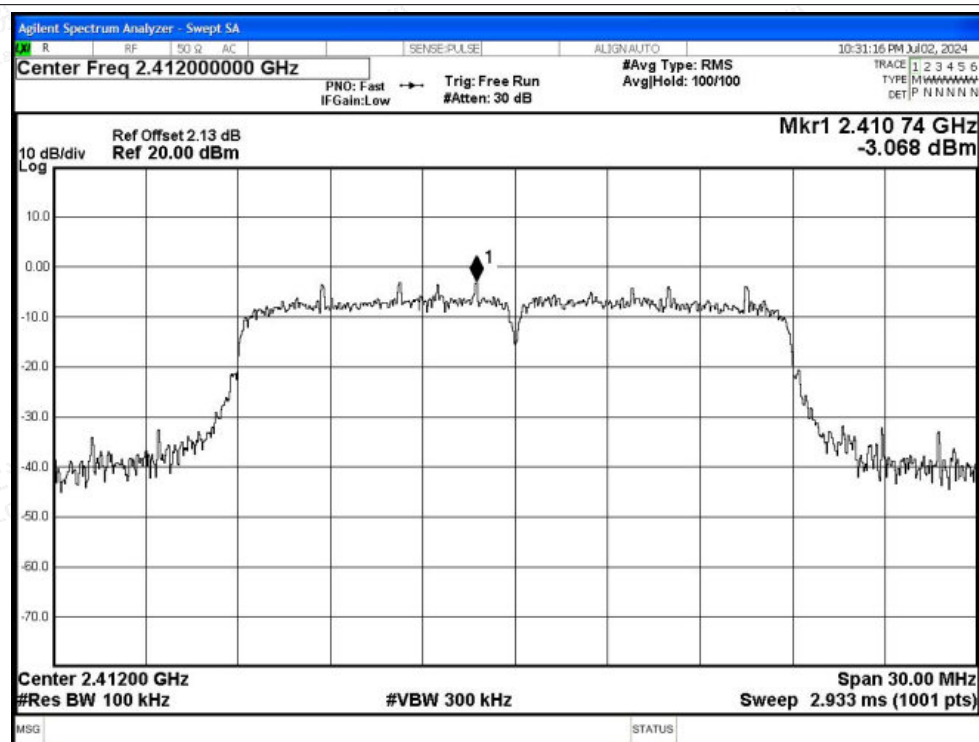


Band Edge HVHT g 2462MHz Ant1 Emission

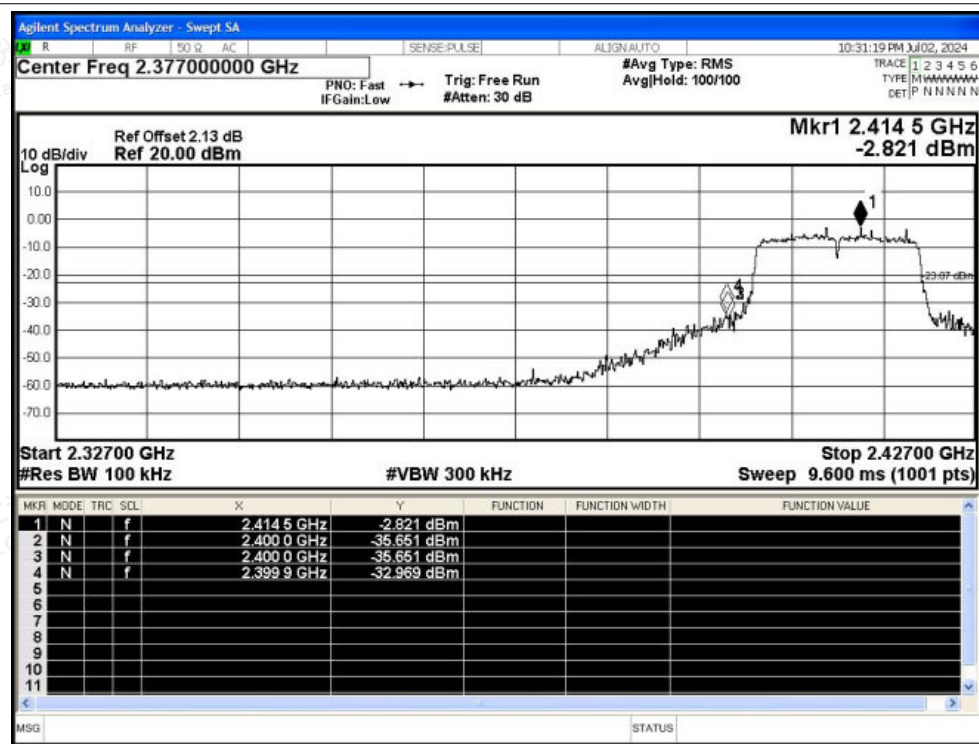




Band Edge HVHT n20 2412MHz Ant1 Ref



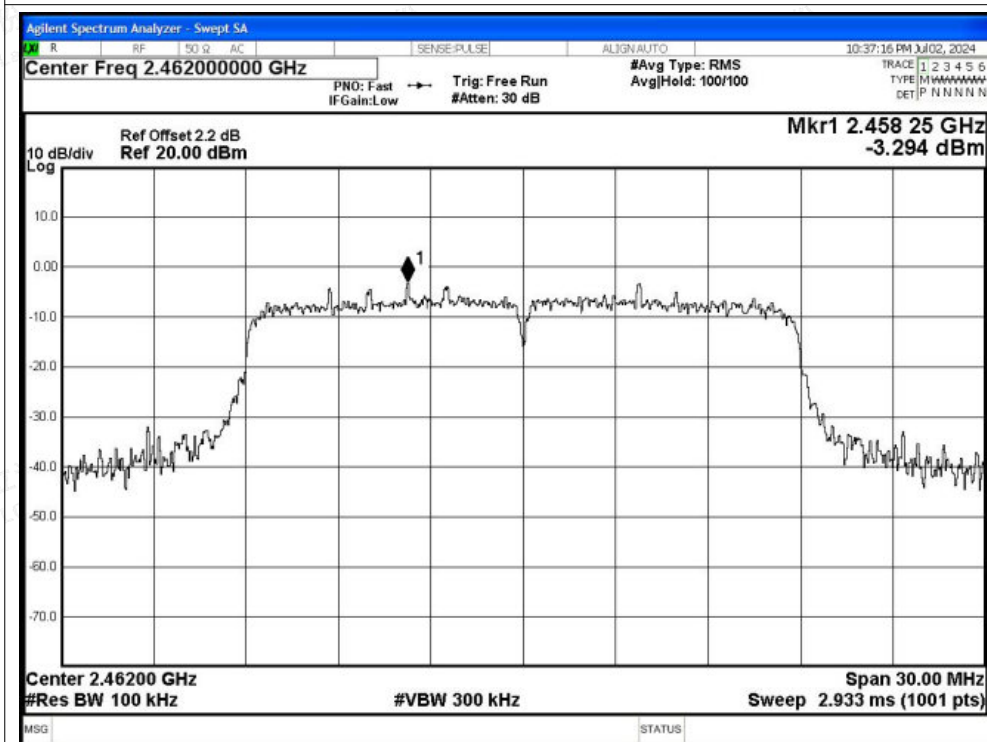
Band Edge HVHT n20 2412MHz Ant1 Emission



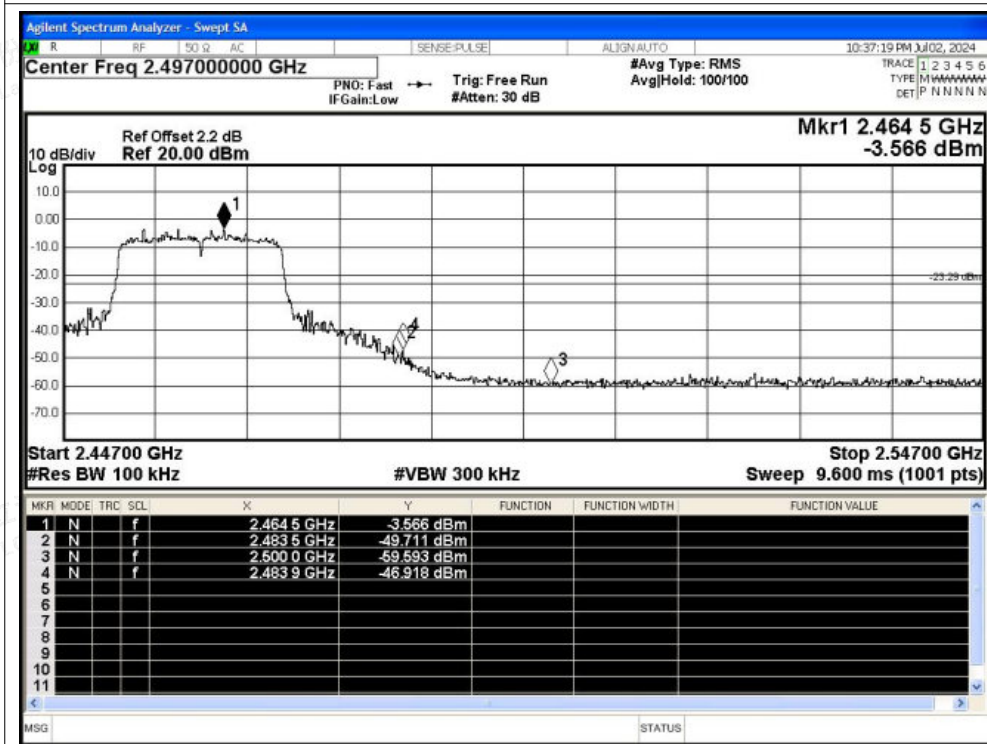




Band Edge HVHT n20 2462MHz Ant1 Ref



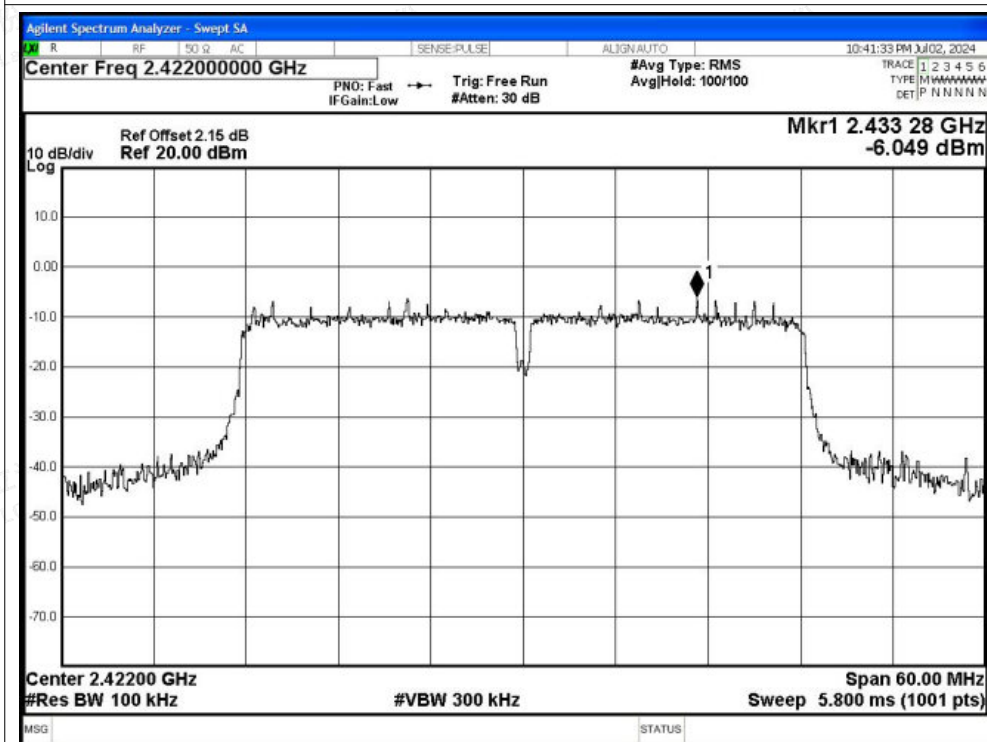
Band Edge HVHT n20 2462MHz Ant1 Emission



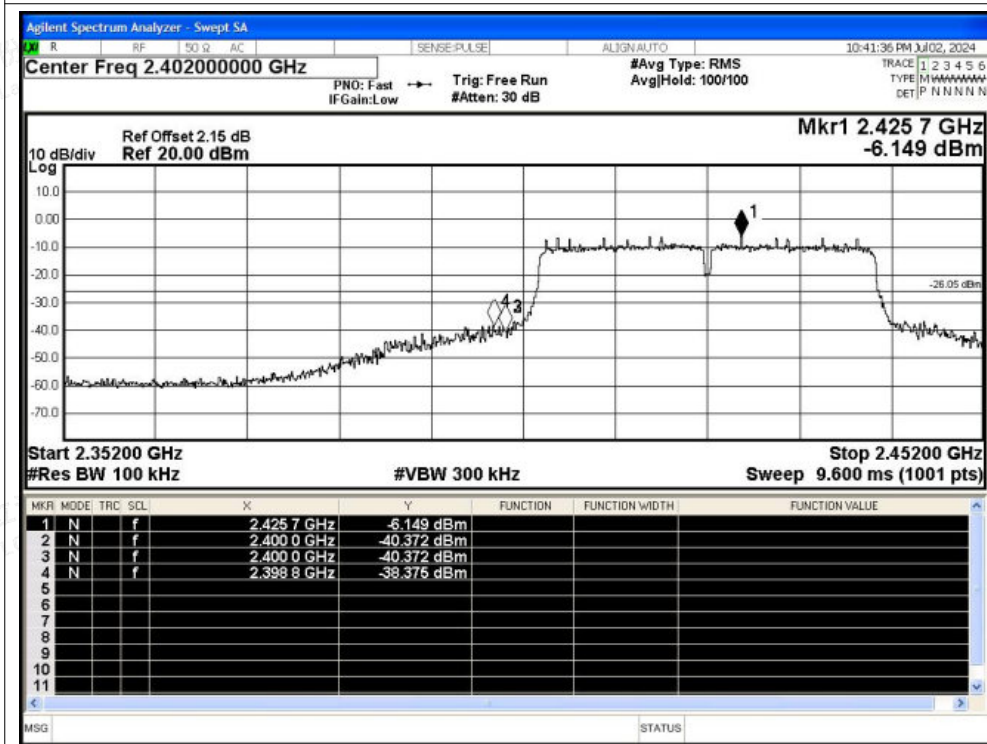




Band Edge HVHT n40 2422MHz Ant1 Ref

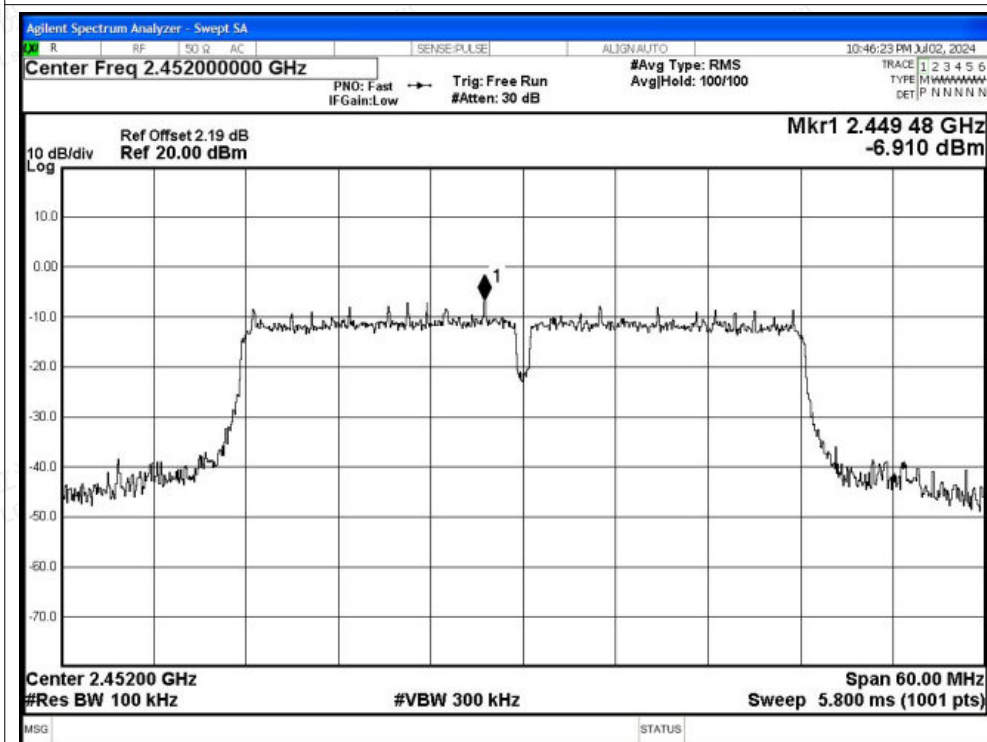


Band Edge HVHT n40 2422MHz Ant1 Emission

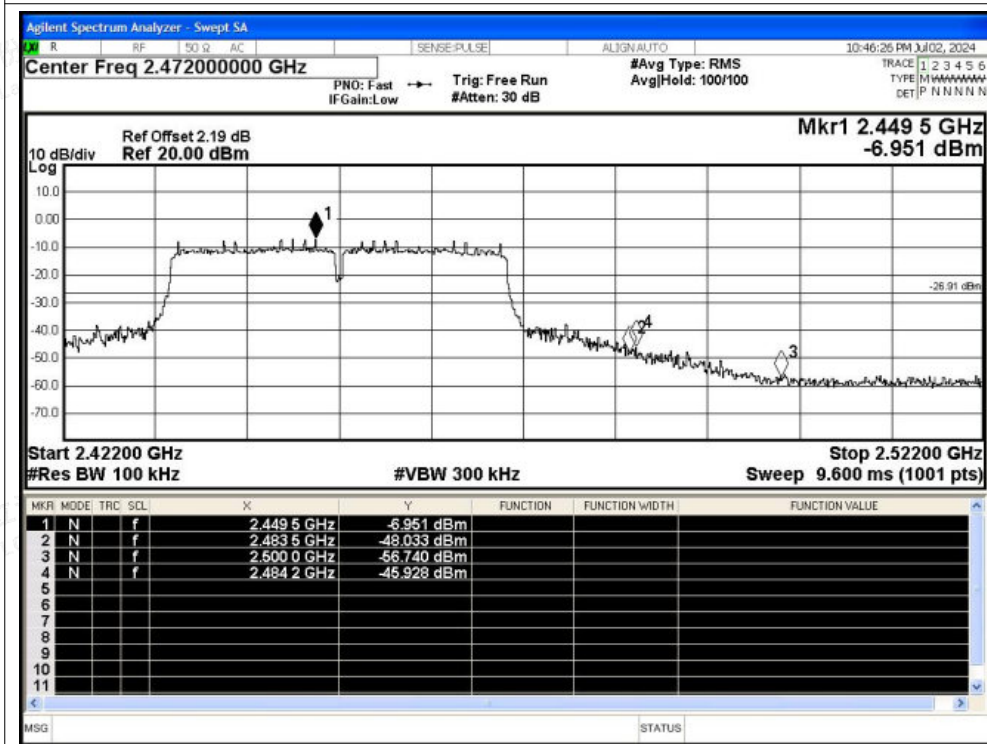




Band Edge HVHT n40 2452MHz Ant1 Ref



Band Edge HVHT n40 2452MHz Ant1 Emission





## A.5 Conducted RF Spurious Emission

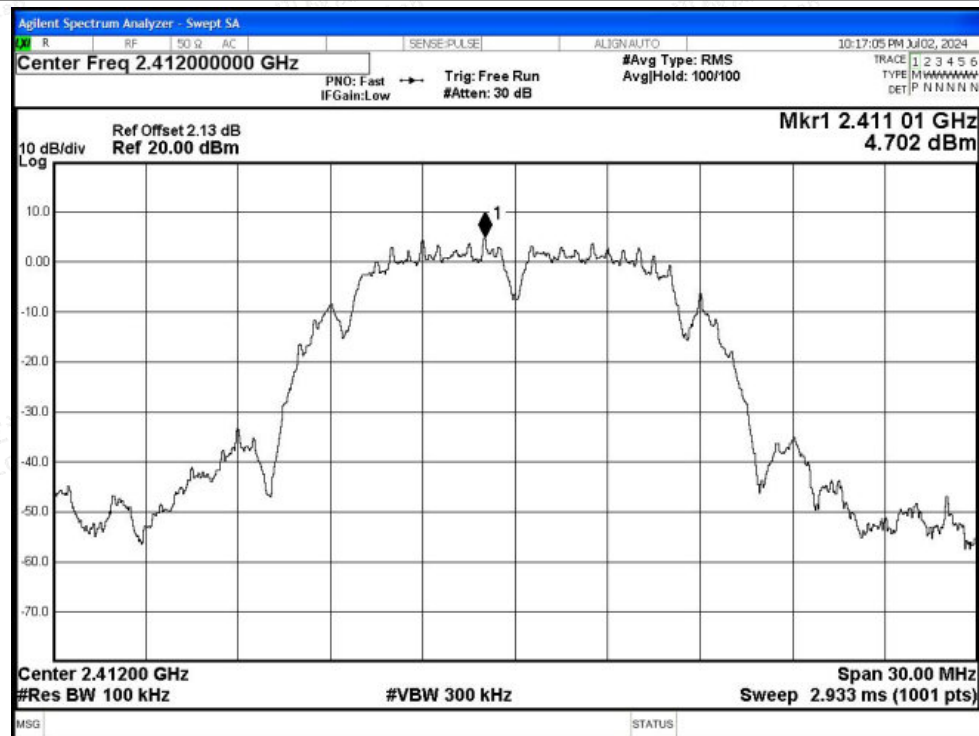
| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|------|-----------------|---------|-----------------|-------------|---------|
| HVHT      | b    | 2412            | Ant1    | -50.38          | -20         | Pass    |
| HVHT      | b    | 2437            | Ant1    | -50.73          | -20         | Pass    |
| HVHT      | b    | 2462            | Ant1    | -49.89          | -20         | Pass    |
| HVHT      | g    | 2412            | Ant1    | -44.9           | -20         | Pass    |
| HVHT      | g    | 2437            | Ant1    | -44.49          | -20         | Pass    |
| HVHT      | g    | 2462            | Ant1    | -45.39          | -20         | Pass    |
| HVHT      | n20  | 2412            | Ant1    | -42.51          | -20         | Pass    |
| HVHT      | n20  | 2437            | Ant1    | -42.96          | -20         | Pass    |
| HVHT      | n20  | 2462            | Ant1    | -43.17          | -20         | Pass    |
| HVHT      | n40  | 2422            | Ant1    | -39.89          | -20         | Pass    |
| HVHT      | n40  | 2437            | Ant1    | -40.57          | -20         | Pass    |
| HVHT      | n40  | 2452            | Ant1    | -38.8           | -20         | Pass    |



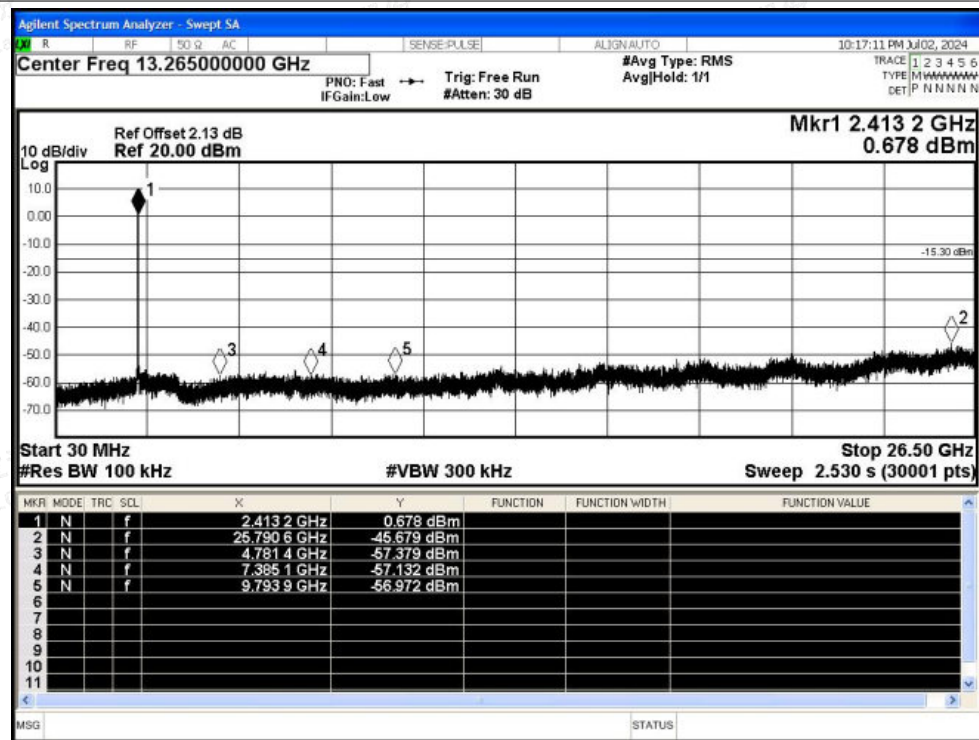


## Test Graphs

Tx. Spurious HVHT b 2412MHz Ant1 Ref

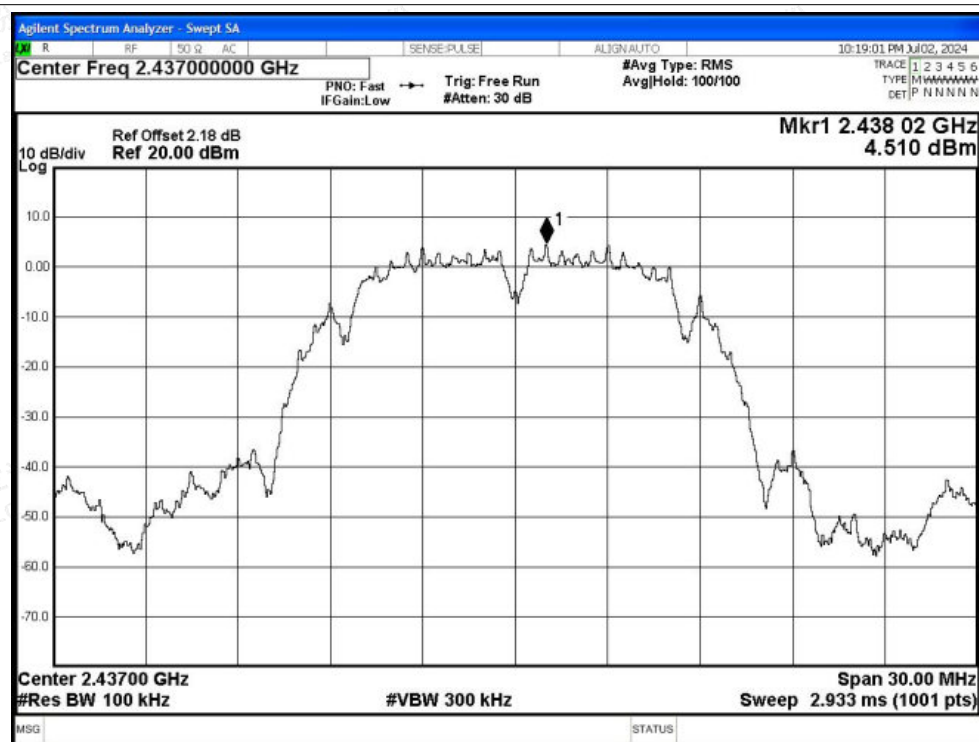


Tx. Spurious HVHT b 2412MHz Ant1 Emission

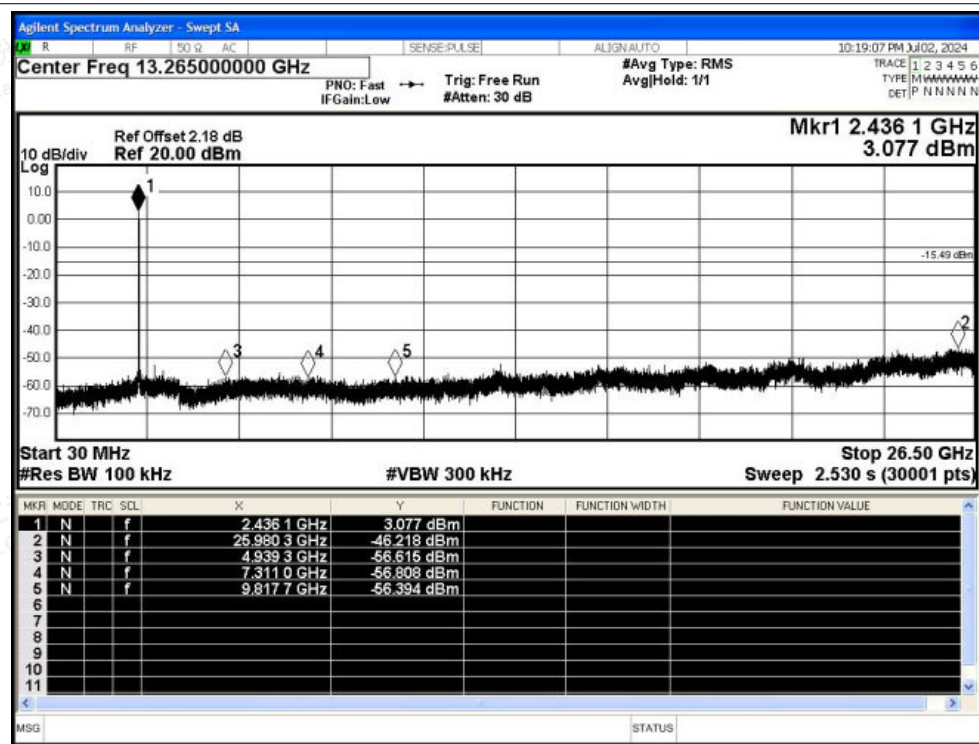




Tx. Spurious HVHT b 2437MHz Ant1 Ref



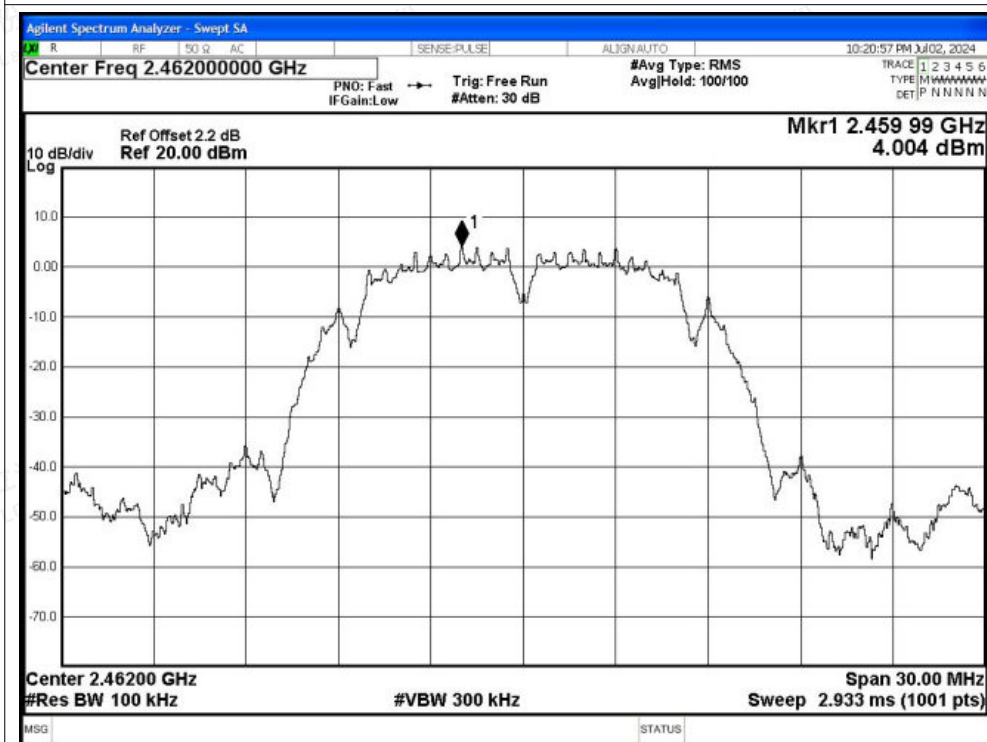
Tx. Spurious HVHT b 2437MHz Ant1 Emission



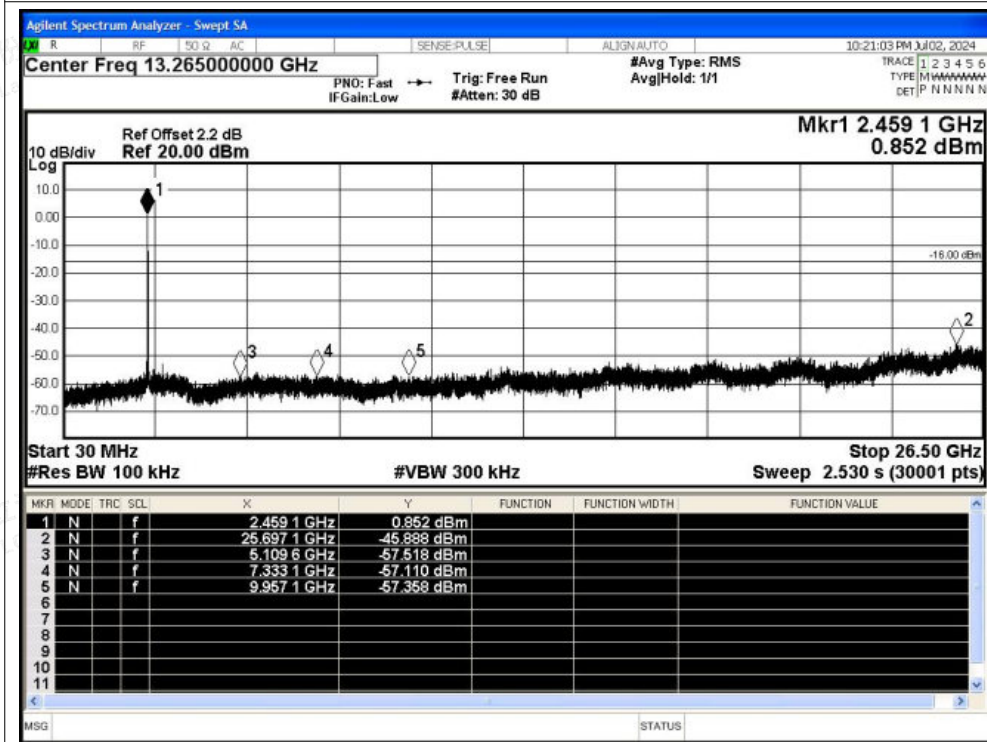




Tx. Spurious HVHT b 2462MHz Ant1 Ref

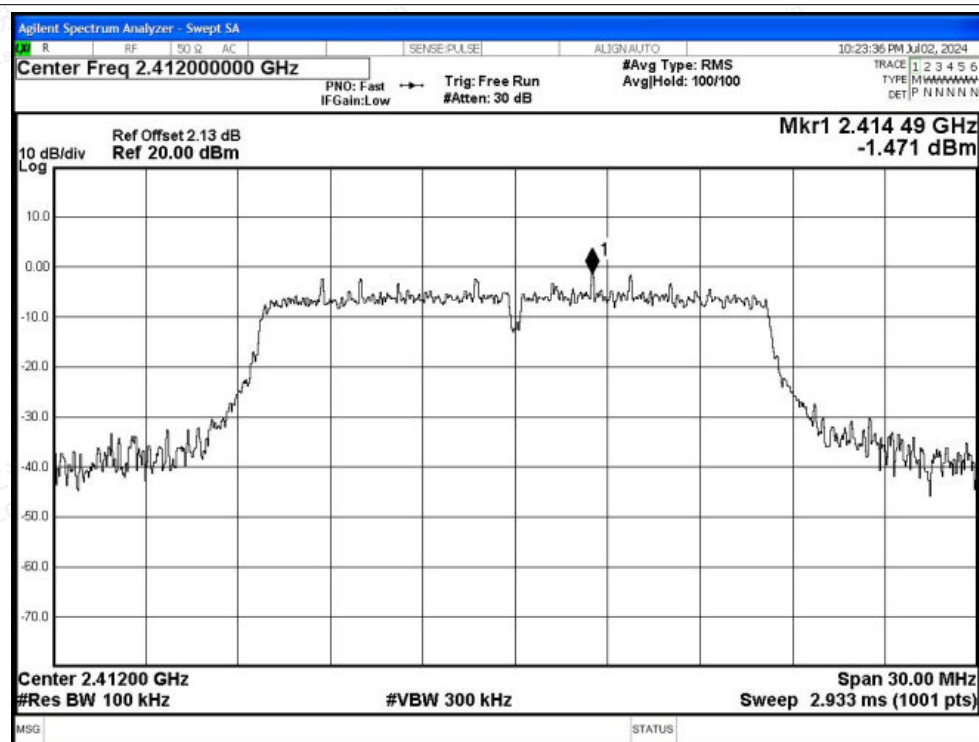


Tx. Spurious HVHT b 2462MHz Ant1 Emission





## Tx. Spurious HVHT g 2412MHz Ant1 Ref



## Tx. Spurious HVHT g 2412MHz Ant1 Emission

