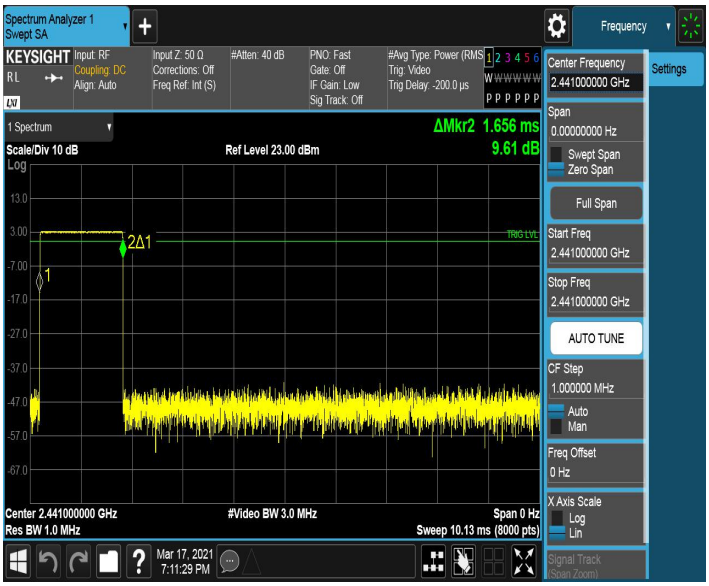
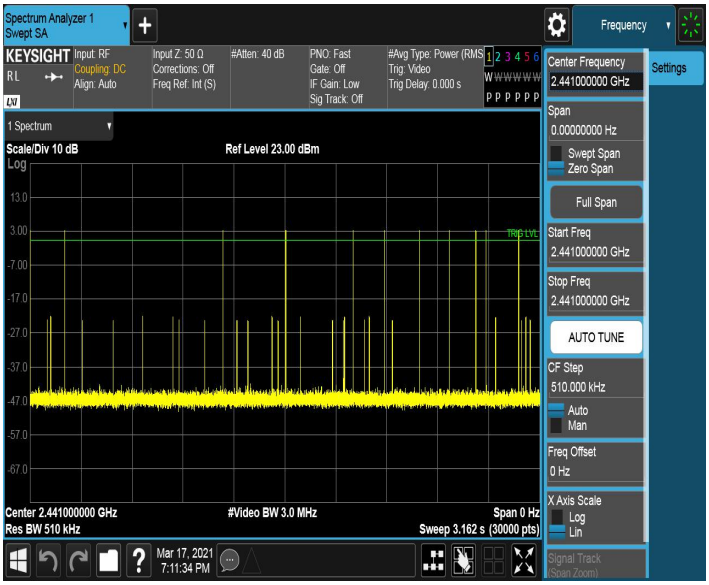
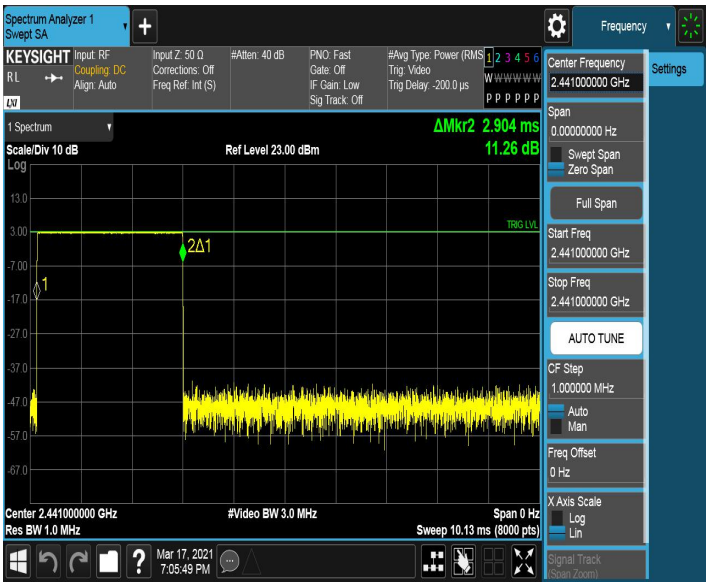
Spectrum Analyzer 1
Swept SA
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
#Atten: 40 dB
PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off
#Avg Type: Power (RMS)
Trig: Video
Trig Delay: 0.000 s
Frequency
Center Frequency
2.441000000 GHz
Settings
Span
0.00000000 Hz
Swept Span
Zero Span
Full Span
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
AUTO TUNE
CF Step
510.000 kHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
1 Spectrum
Scale/Div 10 dB
Ref Level 23.00 dBm
Center 2.441000000 GHz
Res BW 510 kHz
#Video BW 3.0 MHz
Span 0 Hz
Sweep 3.162 s (30000 pts)
Mar 17, 2021
7:09:11 PM

DH3_Ant1_Hop

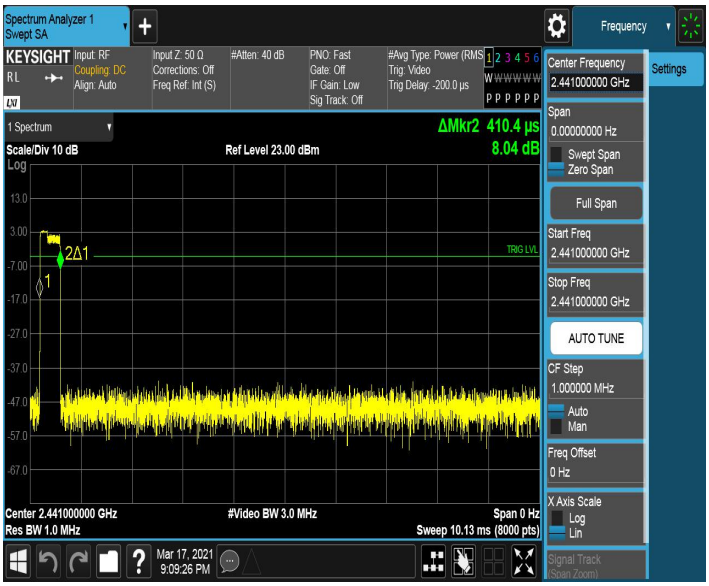

Spectrum Analyzer 1
Swept SA
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
#Atten: 40 dB
PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off
#Avg Type: Power (RMS)
Trig: Video
Trig Delay: -200.0 µs
Frequency
Center Frequency
2.441000000 GHz
Settings
Span
0.00000000 Hz
Swept Span
Zero Span
Full Span
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
AUTO TUNE
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
1 Spectrum
ΔMkr2 1.656 ms
9.61 dB
Scale/Div 10 dB
Ref Level 23.00 dBm
2Δ1
1
Center 2.441000000 GHz
Res BW 1.0 MHz
#Video BW 3.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
Mar 17, 2021
7:11:29 PM


Spectrum Analyzer 1
Swept SA
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
#Atten: 40 dB
PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off
#Avg Type: Power (RMS)
Trig: Video
Trig Delay: 0.000 s
Frequency
Center Frequency
2.441000000 GHz
Settings
Span
0.00000000 Hz
Swept Span
Zero Span
Full Span
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
AUTO TUNE
CF Step
510.000 kHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
Signal Track
(Span Zoom)
1 Spectrum
Scale/Div 10 dB
Ref Level 23.00 dBm
Log
13.0
3.00
-7.00
-17.0
-27.0
-37.0
-47.0
-57.0
-67.0
TRIG LVL
Center 2.441000000 GHz
Res BW 510 kHz
#Video BW 3.0 MHz
Span 0 Hz
Sweep 3.162 s (30000 pts)
Mar 17, 2021
7:11:34 PM

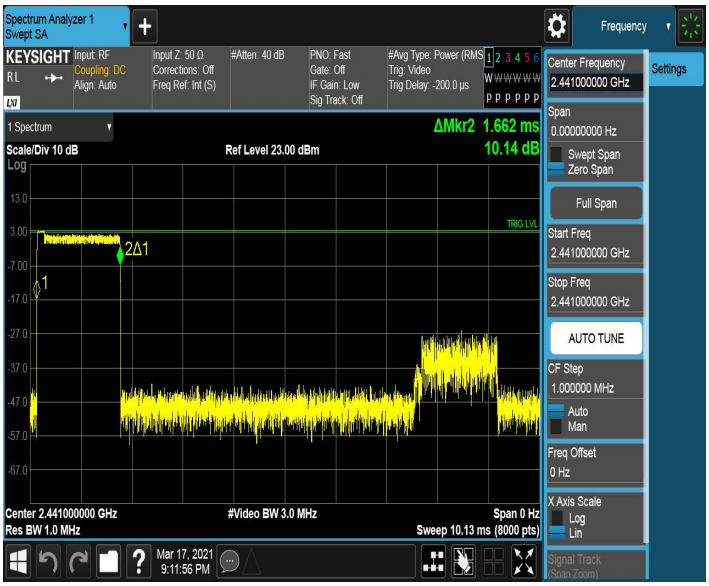
DH5_Ant1_Hop


Spectrum Analyzer 1
Swept SA
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
#Atten: 40 dB
PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off
#Avg Type: Power (RMS)
Trig: Video
Trig Delay: -200.0 µs
Frequency
Center Frequency
2.441000000 GHz
Settings
Span
0.00000000 Hz
Swept Span
Zero Span
Full Span
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
AUTO TUNE
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
Signal Track
(Span Zoom)
1 Spectrum
ΔMkr2 2.904 ms
11.26 dB
Scale/Div 10 dB
Ref Level 23.00 dBm
Log
13.0
3.00
-7.00
-17.0
-27.0
-37.0
-47.0
-57.0
-67.0
TRIG LVL
2Δ1
1
Center 2.441000000 GHz
Res BW 1.0 MHz
#Video BW 3.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
Mar 17, 2021
7:05:49 PM

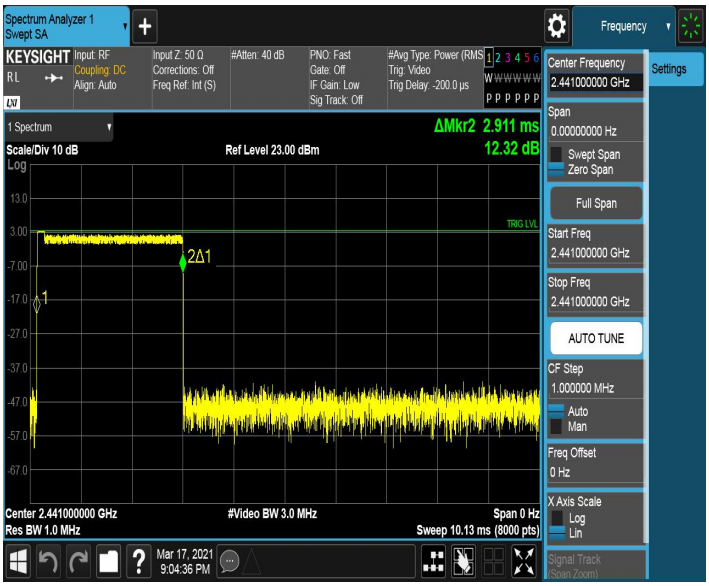
2DH1_Ant1_Hop



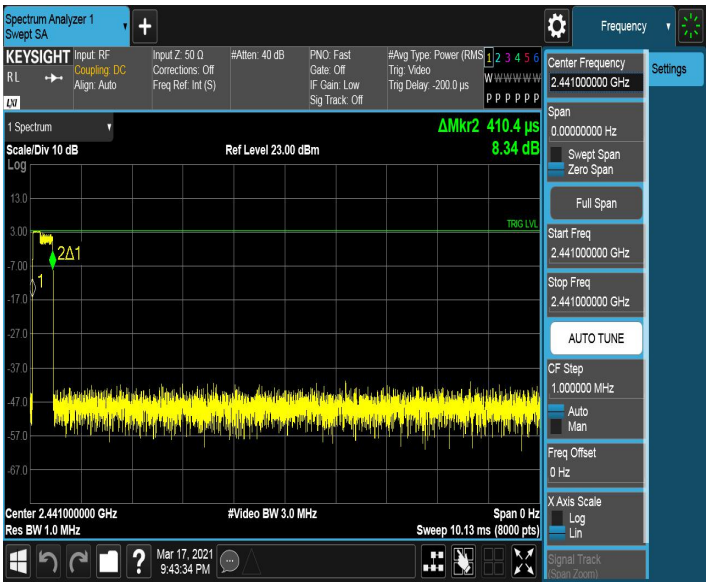
2DH3_Ant1_Hop



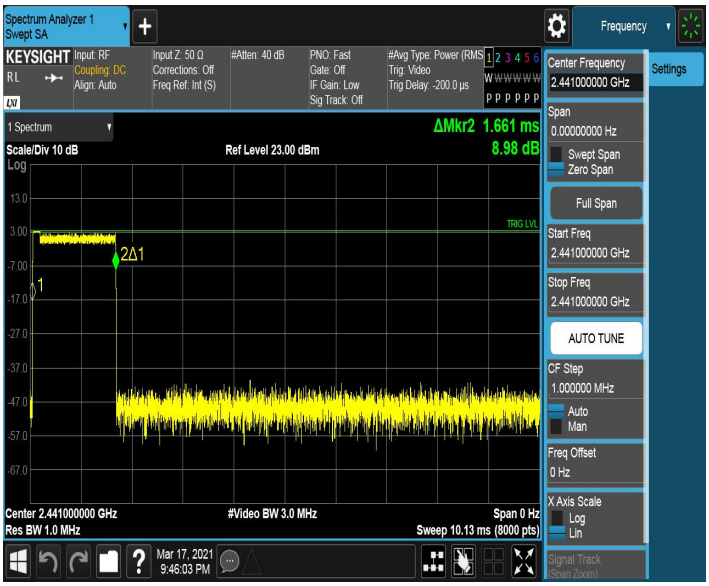
2DH5_Ant1_Hop



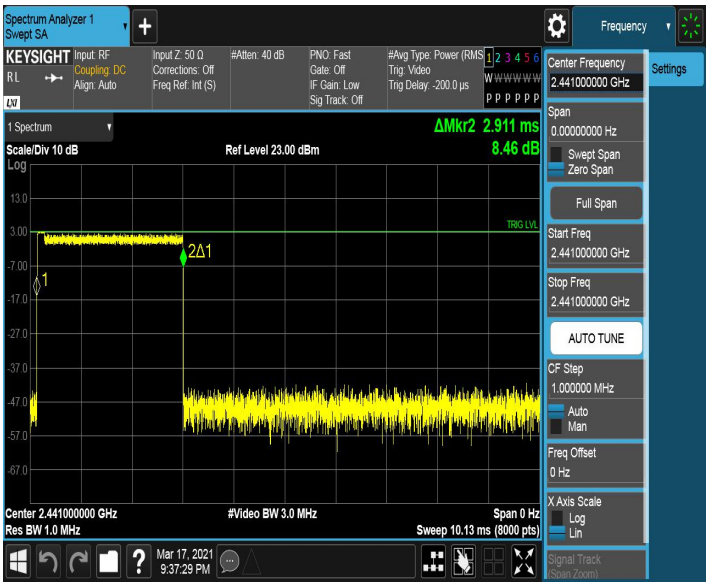
3DH1_Ant1_Hop



3DH3_Ant1_Hop



3DH5_Ant1_Hop



Spectrum Analyzer 1
Swept SA
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
#Atten: 40 dB
PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off
#Avg Type: Power (RMS)
Trig: Video
Trig Delay: 0.000 s
1 Spectrum
Scale/Div 10 dB
Ref Level 23.00 dBm
Log
13.0
3.00
-7.00
-17.0
-27.0
-37.0
-47.0
-57.0
-67.0
Center 2.441000000 GHz
Res BW 510 kHz
#Video BW 3.0 MHz
Span 0 Hz
Sweep 3.162 s (30000 pts)
Mar 17, 2021
9:37:37 PM
Frequency
Center Frequency
2.441000000 GHz
Settings
Span
0.00000000 Hz
Swept Span
Zero Span
Full Span
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
AUTO TUNE
CF Step
510.000 kHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
Signal Track
(Span Zoom)

## 8.7. Band-edge Compliance Measurement

### 8.7.1. Test Limit

The maximum permissible emission level is 20dBc. Any emissions were lying outside of the emission bandwidth and in authorized band edges to a field strength limit specified in Section 15.209 of the Title 47 CFR.

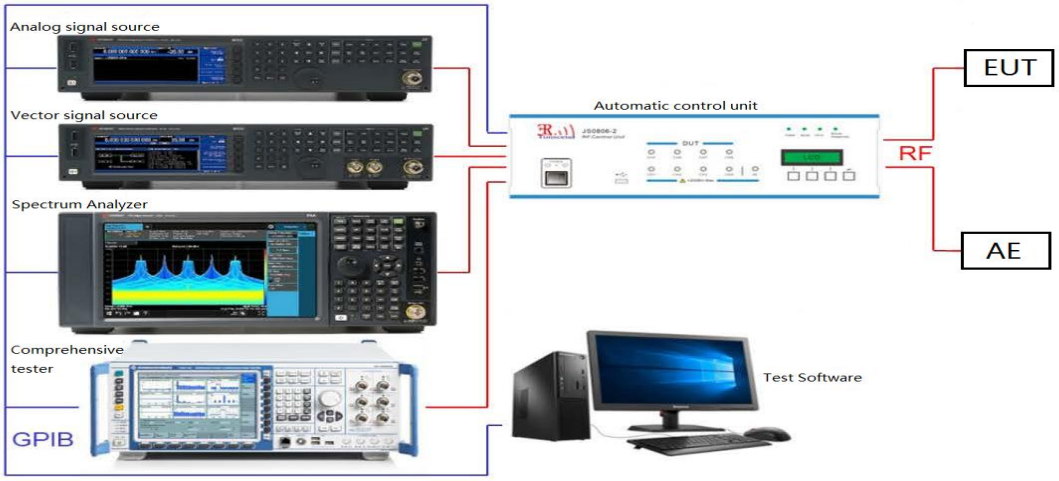
### 8.7.2. Test Procedure Used

ANSI C63.10-2013 - Section 6.10.4

### 8.7.3. Test Setting

1. Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize
8. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, than use the marker-to-peak function to move the marker to the peak of the in-band emission.

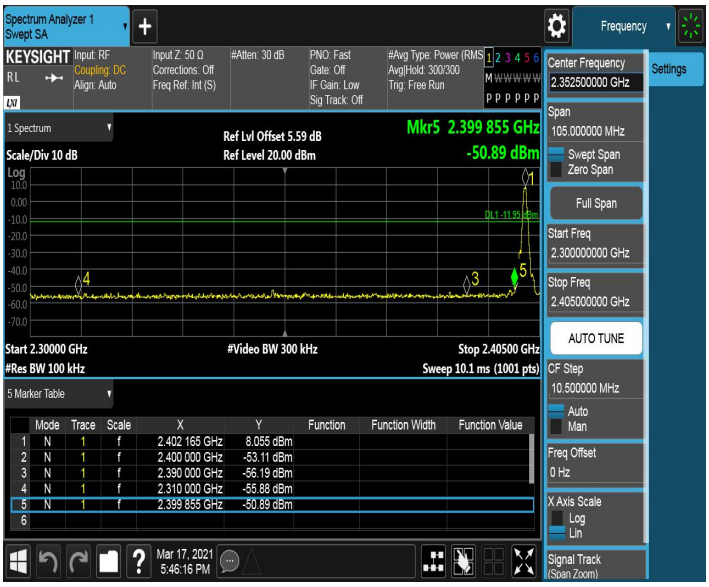
### 8.7.4. Test Setup



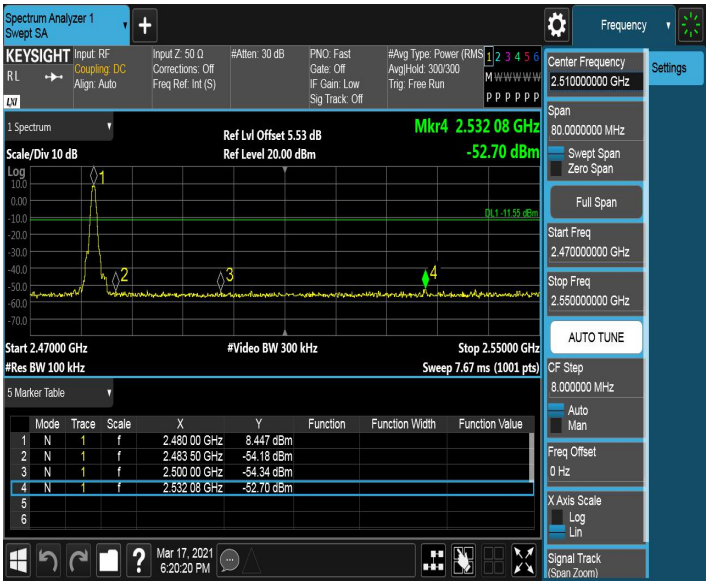
### 8.7.5. Test Result

| Test Mode | Antenna | Ch Name | Channel | Ref Level [dBm] | Result [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| DH5 | Ant1 | Low | 2402 | 8.05 | -50.89 | <=-11.95 | PASS |
| | | High | 2480 | 8.45 | -52.70 | <=-11.55 | PASS |
| | | Low | Hop_2402 | 6.94 | -52.54 | <=-13.06 | PASS |
| | | High | Hop_2480 | 8.69 | -52.94 | <=-11.31 | PASS |
| 2DH5 | Ant1 | Low | 2402 | 8.11 | -40.89 | <=-11.89 | PASS |
| | | High | 2480 | 7.42 | -53.19 | <=-12.58 | PASS |
| | | Low | Hop_2402 | 4.50 | -53.31 | <=-15.50 | PASS |
| | | High | Hop_2480 | 8.12 | -53.12 | <=-11.88 | PASS |
| 3DH5 | Ant1 | Low | 2402 | 7.86 | -41.78 | <=-12.14 | PASS |
| | | High | 2480 | 8.44 | -53.34 | <=-11.56 | PASS |
| | | Low | Hop_2402 | 2.99 | -53.90 | <=-17.01 | PASS |
| | | High | Hop_2480 | 6.37 | -52.22 | <=-13.63 | PASS |

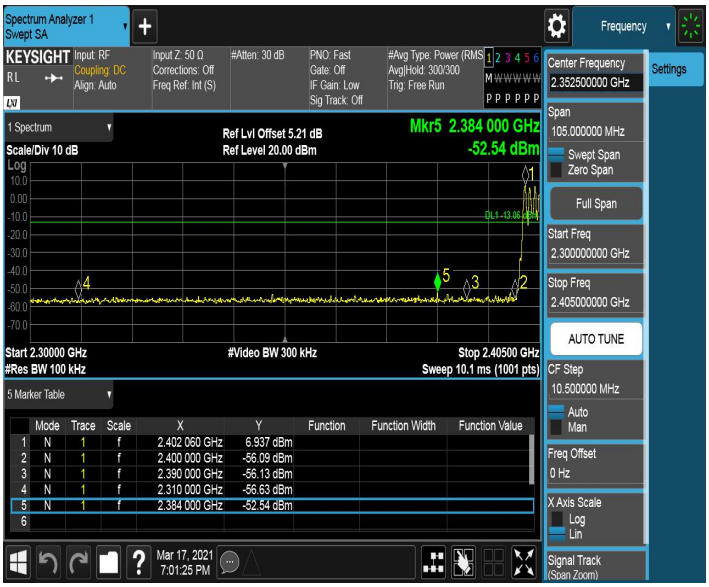
DH5_Ant1_Low_2402



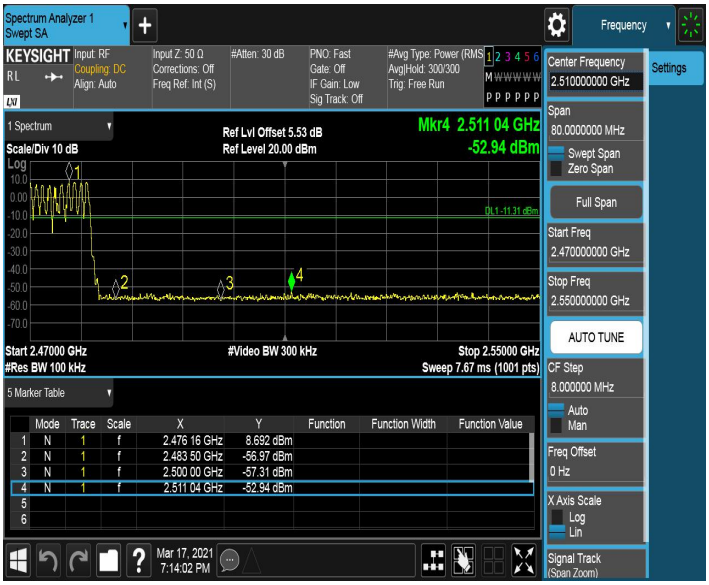
DH5_Ant1_High_2480



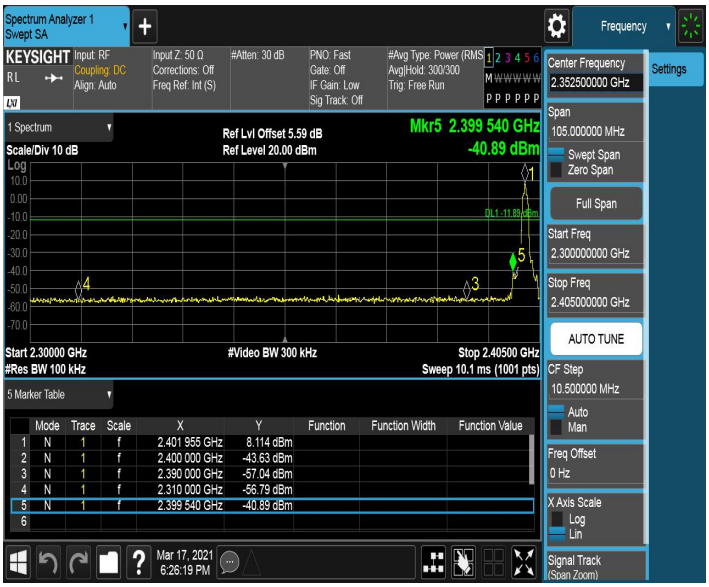

DH5_Ant1_Low_Hop_2402

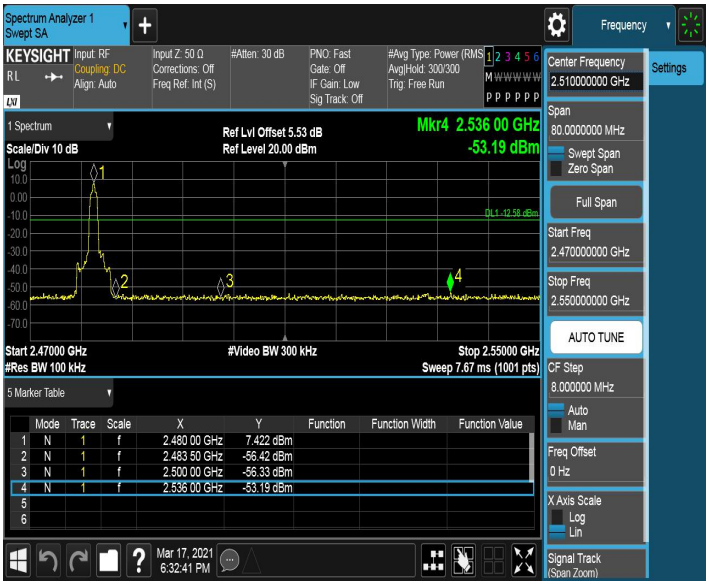
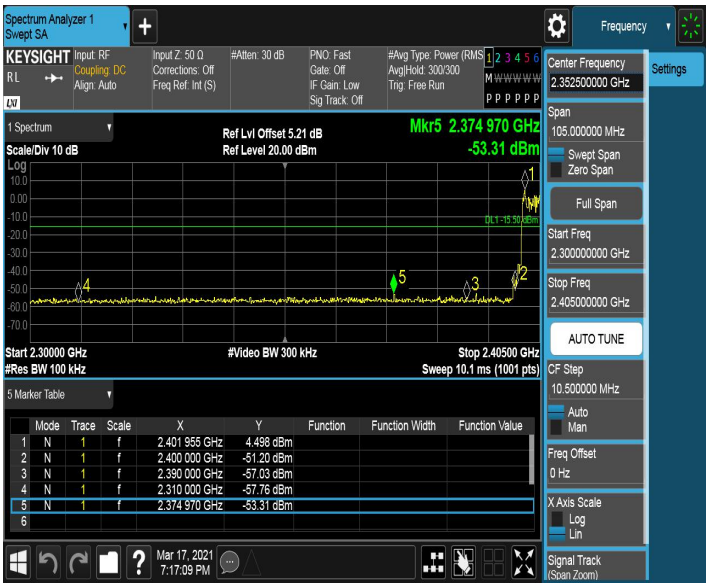


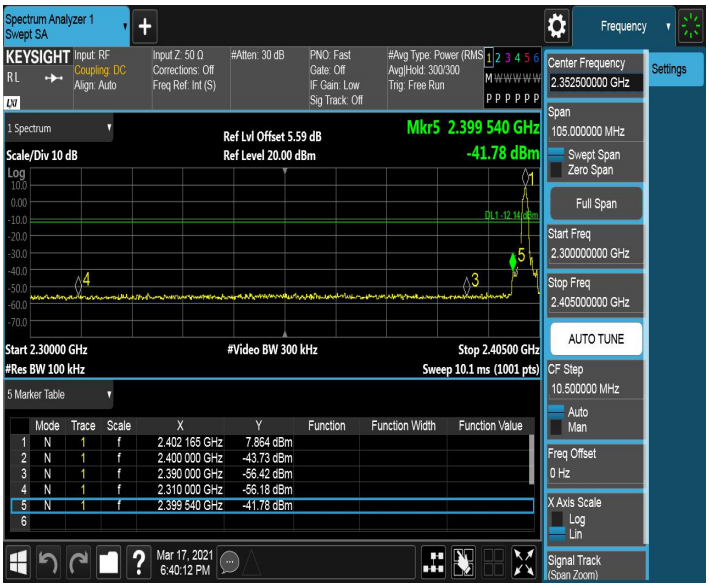
DH5_Ant1_High_Hop_2480

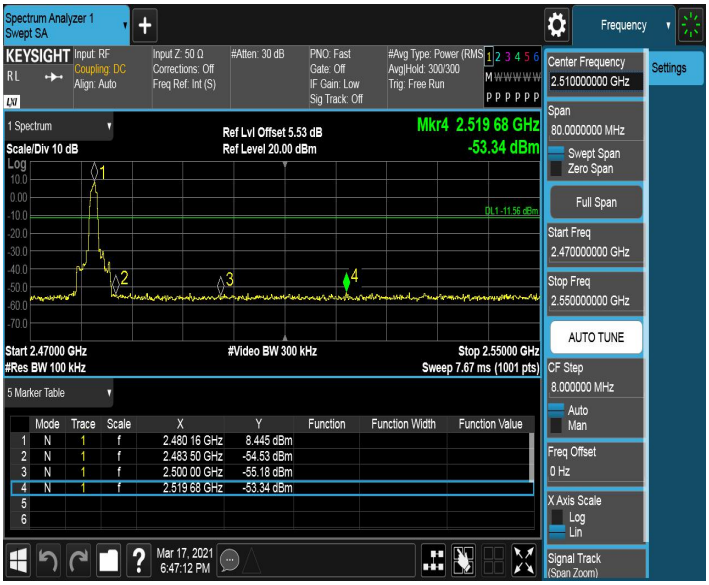
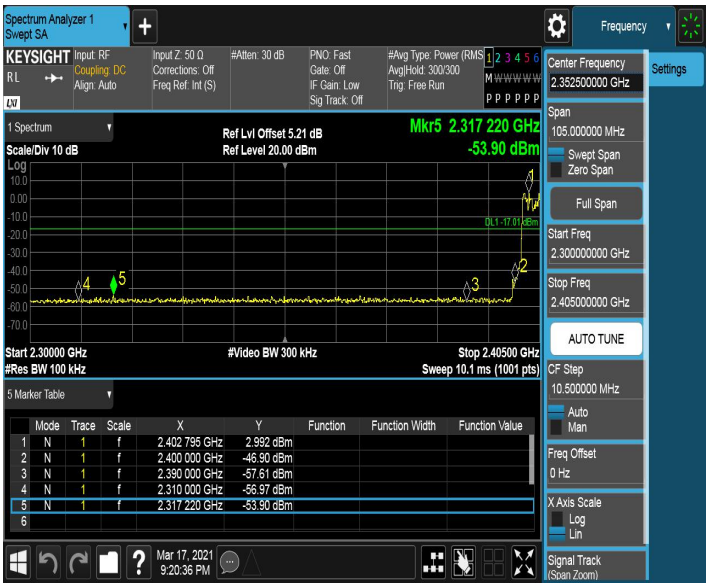



2DH5_Ant1_Low_2402

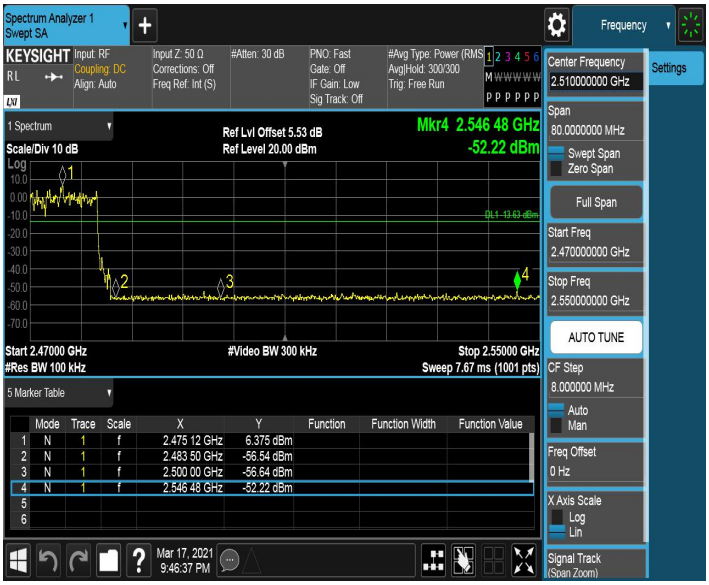


| 2DH5_Ant1_High_2480 |
| --- |
|  |
| 2DH5_Ant1_Low_Hop_2402 |
|  |

| 2DH5_Ant1_High_Hop_2480 |
| --- |
| |
| 3DH5_Ant1_Low_2402 |
|  |

| 3DH5_Ant1_High_2480 |
| --- |
|  |
| 3DH5_Ant1_Low_Hop_2402 |
|  |

3DH5_Ant1_High_Hop_2480



## 8.8. Conducted Spurious Emissions Measurement

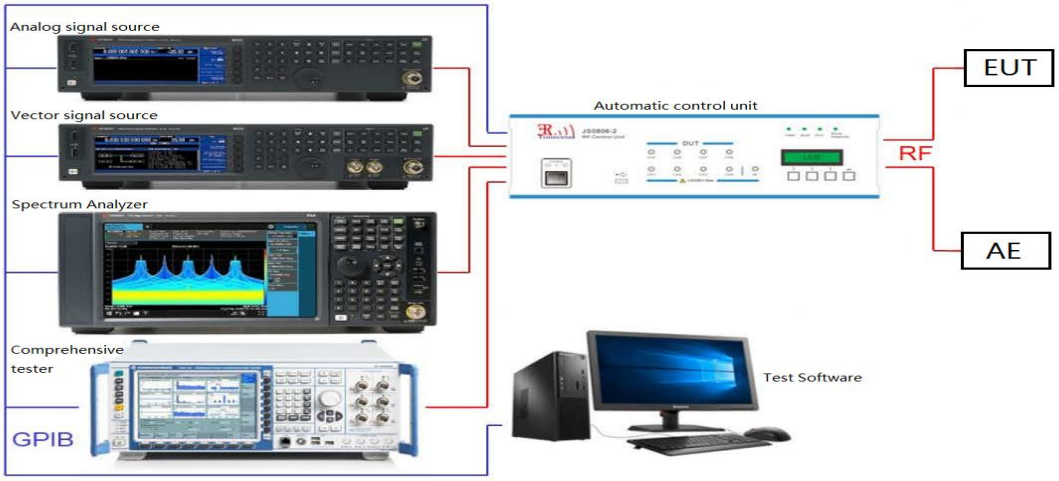
### 8.8.1. Test Limit

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 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, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

### 8.8.2. Test Procedure Used

ANSI C63.10-2013 - Section 7.8.8

### 8.8.3. Test Setting

1. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
2. RBW = 100 KHz
3. VBW ≥ RBW
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize
8. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this section.

### 8.8.4. Test Setup