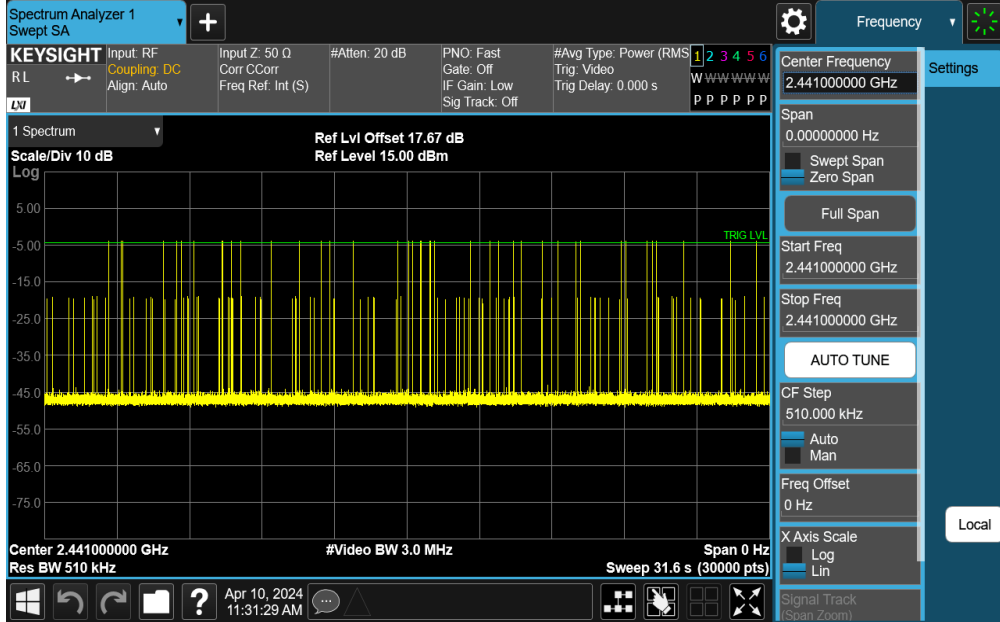
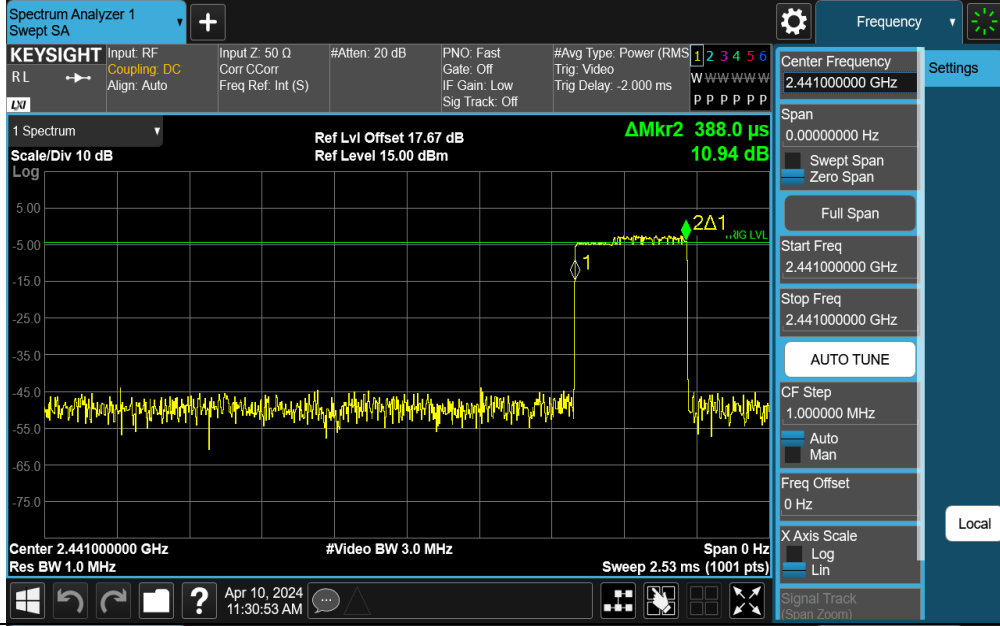
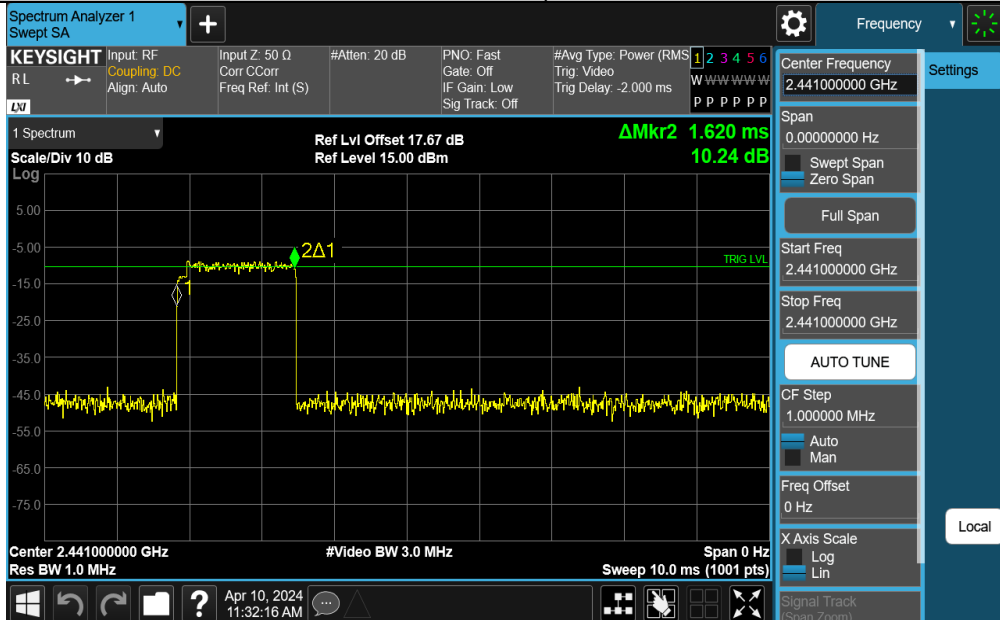
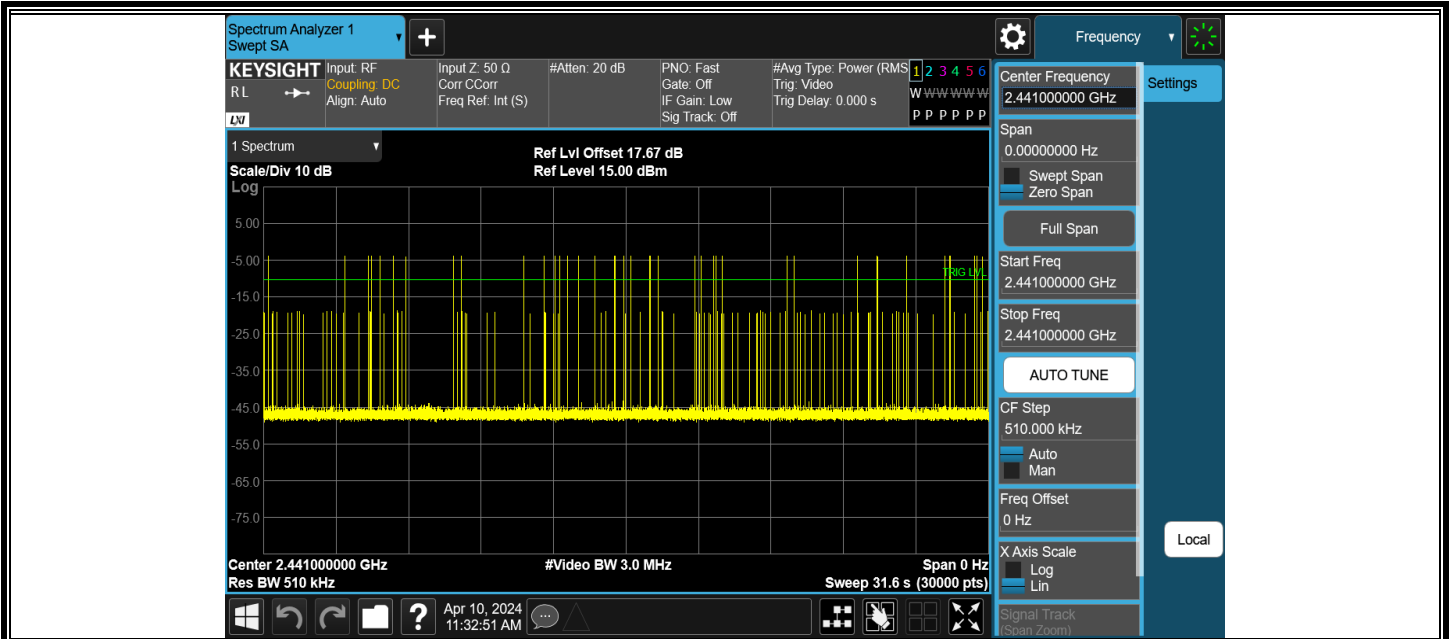


### 2DH1-Ant1-Hop-PASS

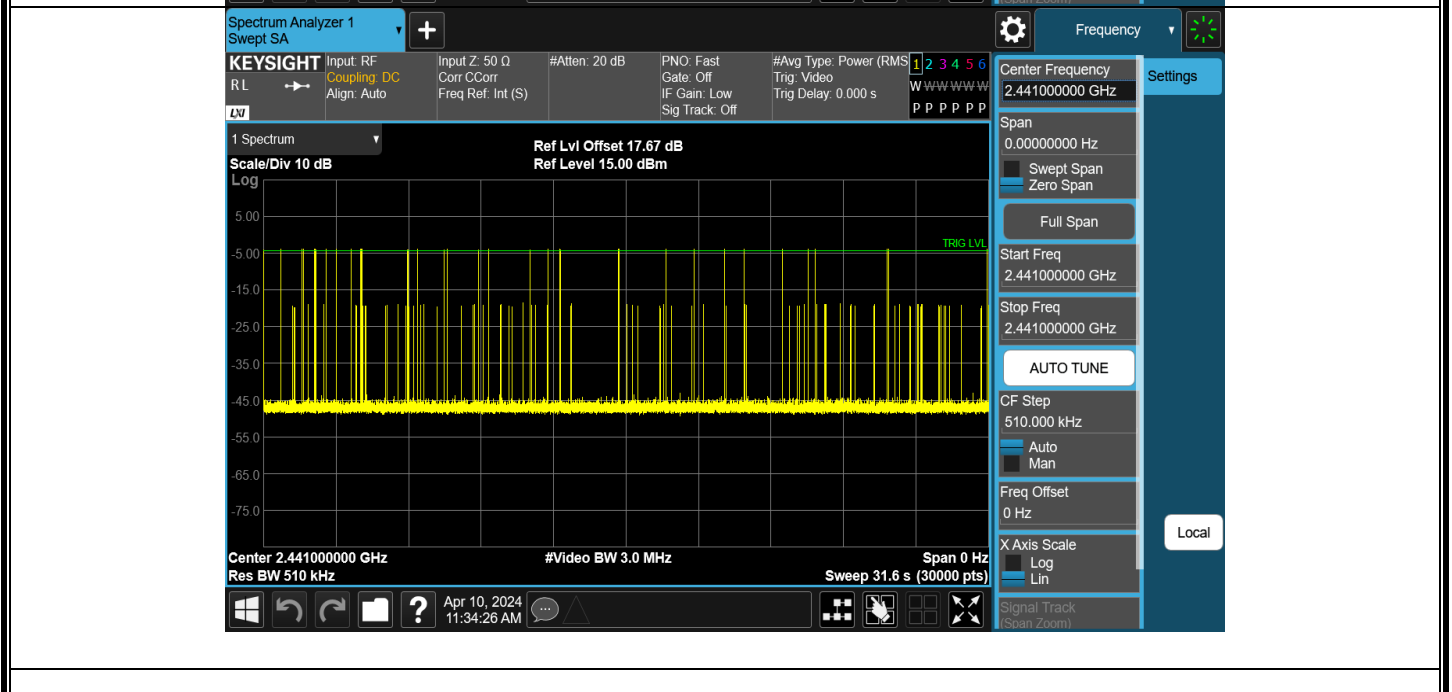
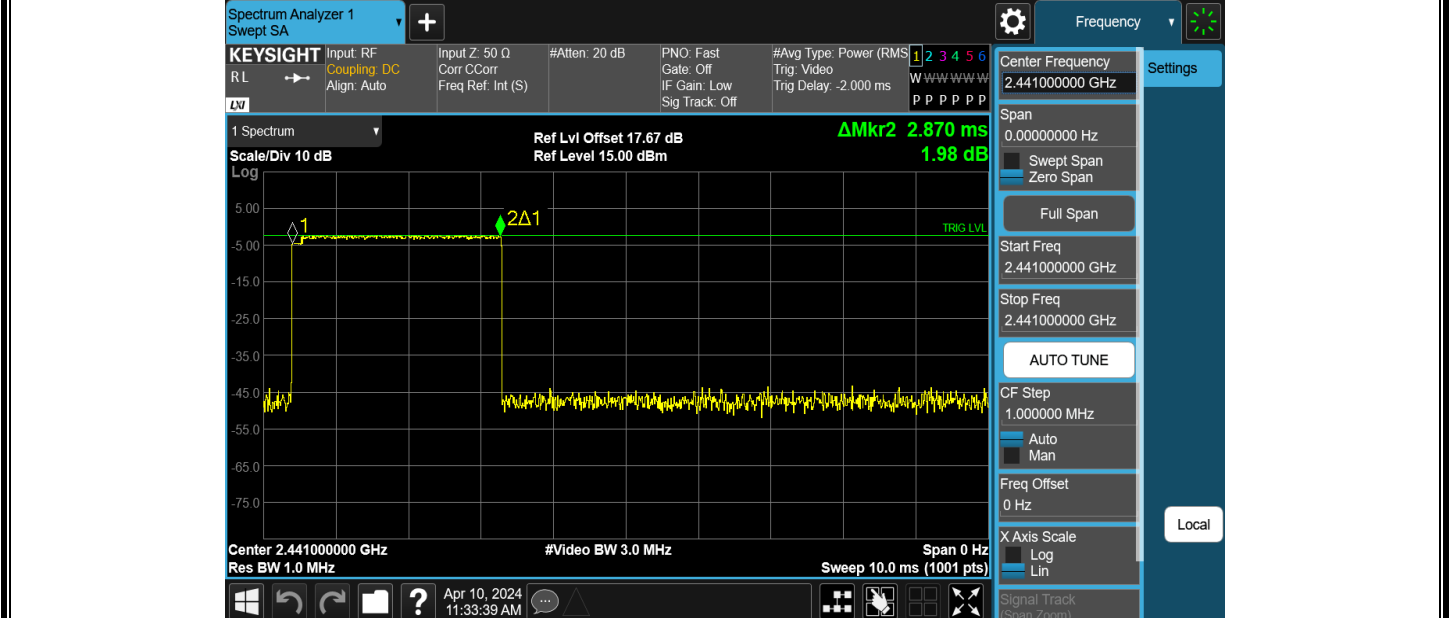


### 2DH3-Ant1-Hop-PASS

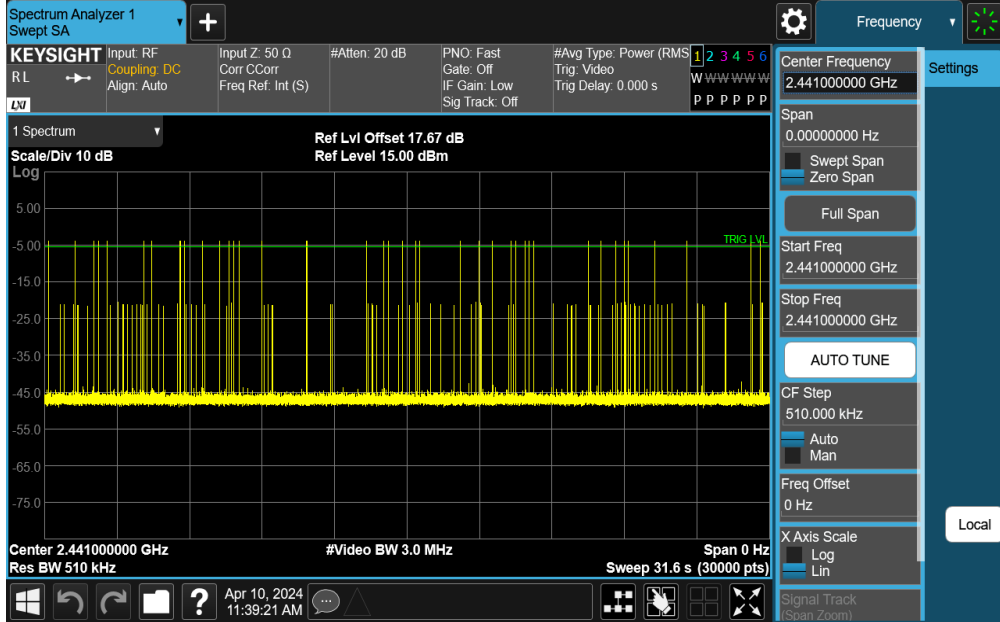
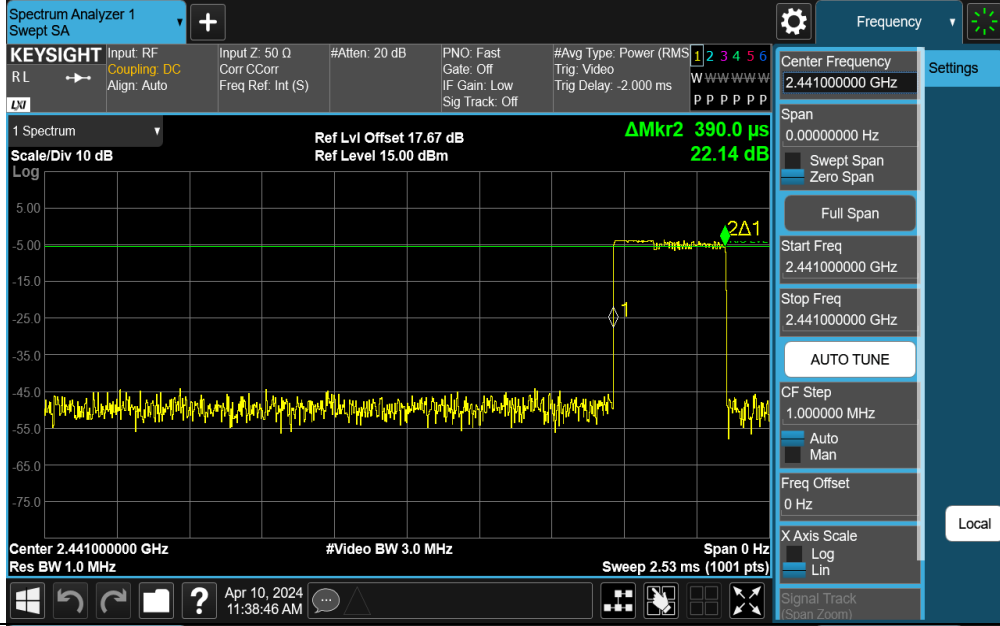




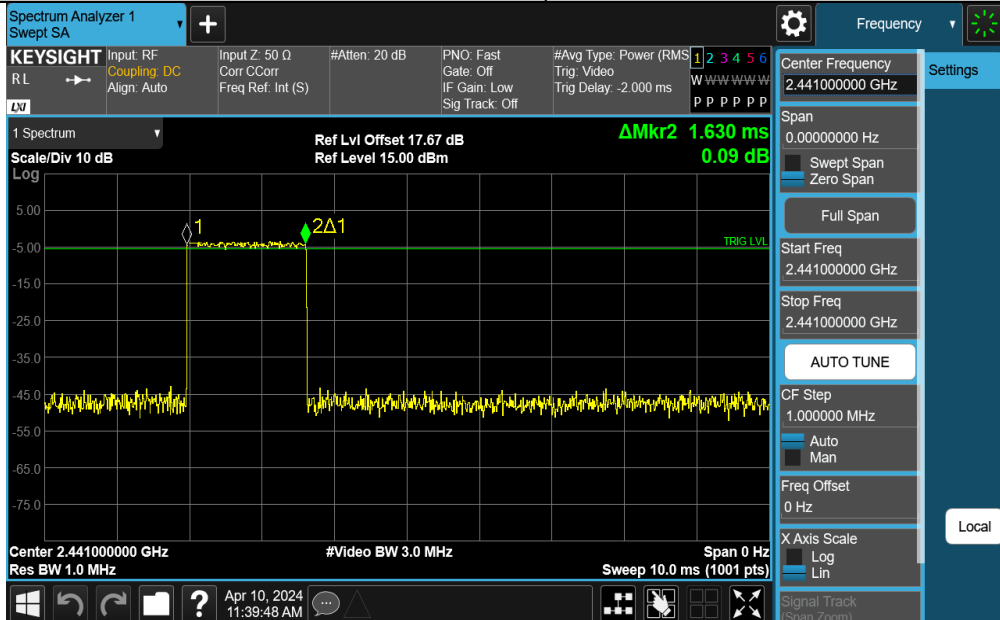
2DH5-Ant1-Hop-PASS



### 3DH1-Ant1-Hop-PASS

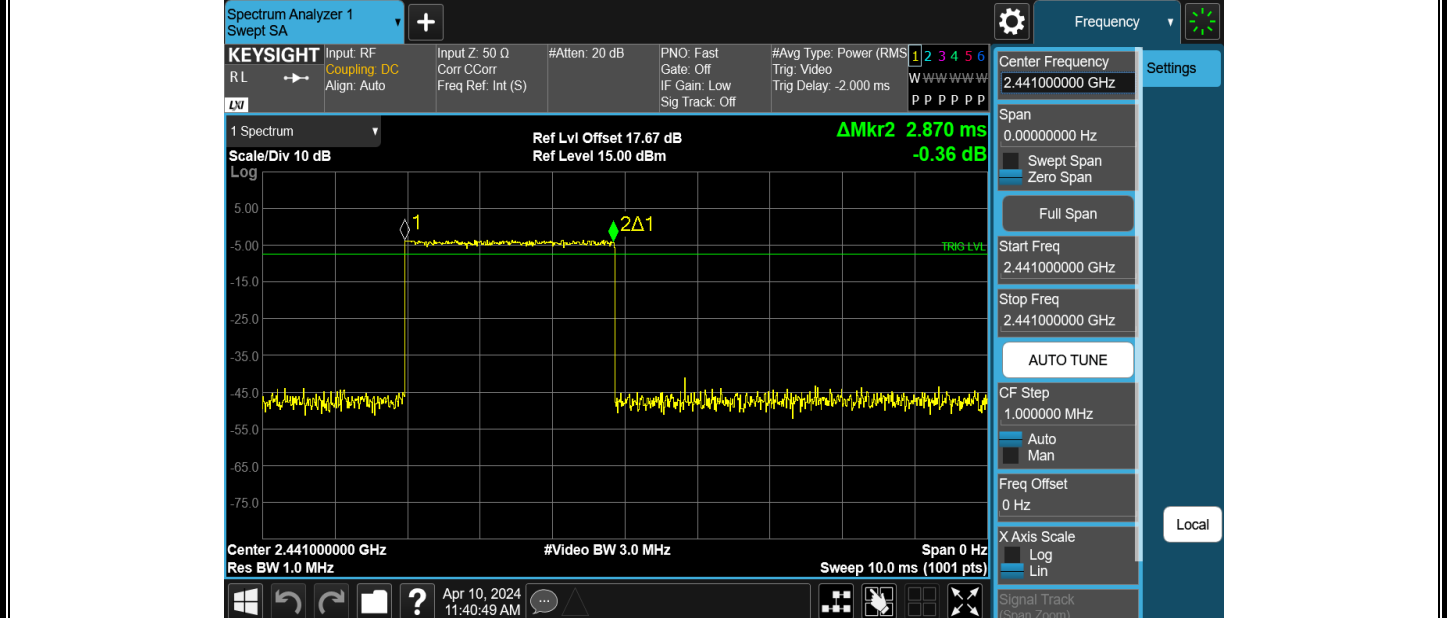


### 3DH3-Ant1-Hop-PASS





3DH5-Ant1-Hop-PASS



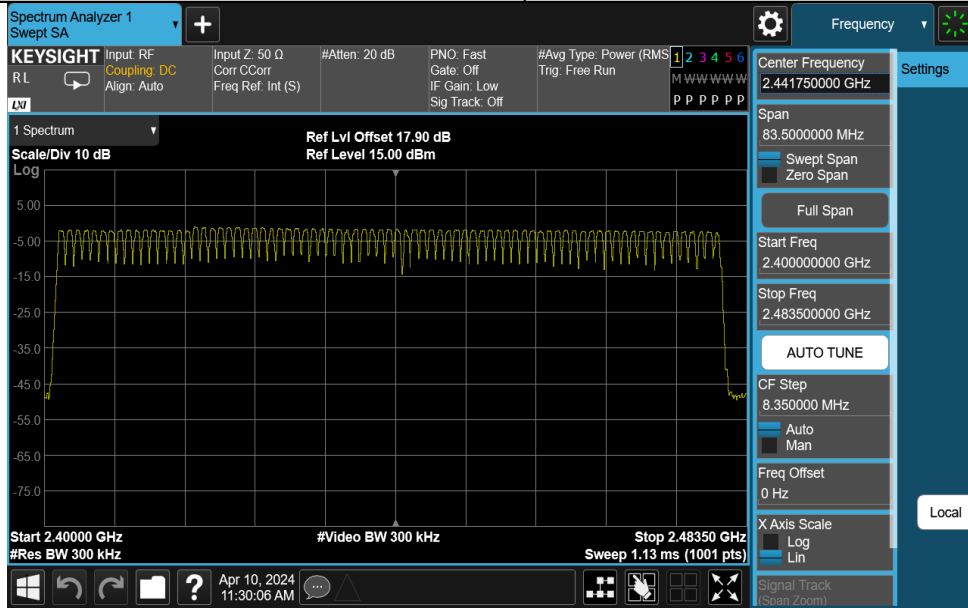
## Appendix E: Number of hopping channels

## Test Result

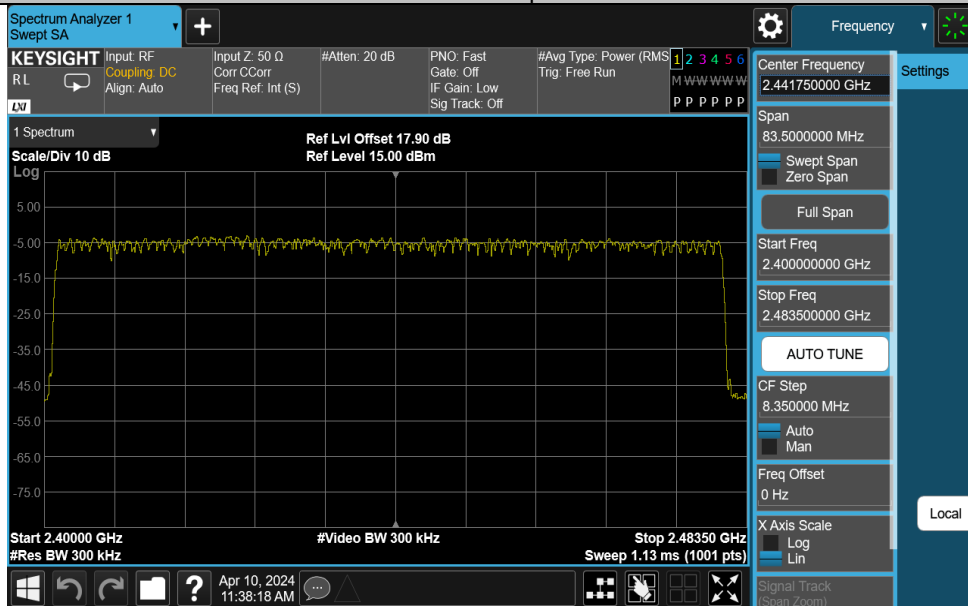
Test Mode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	$\geq 15$	PASS
2DH5	Ant1	Hop	79	$\geq 15$	PASS
3DH5	Ant1	Hop	79	$\geq 15$	PASS

### Test Graphs

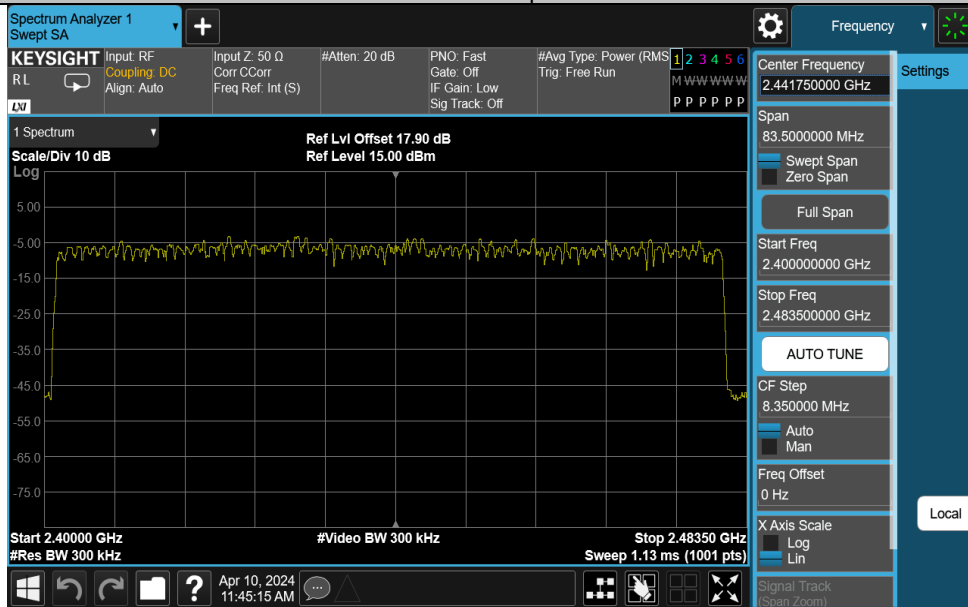
#### DH5-Ant1-Hop-PASS



#### 2DH5-Ant1-Hop-PASS



#### 3DH5-Ant1-Hop-PASS



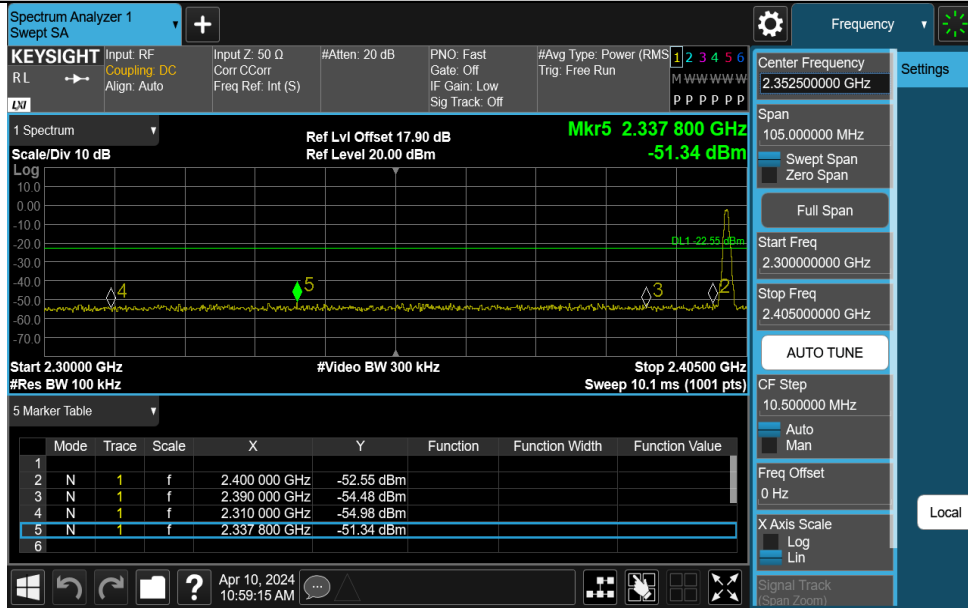
## Appendix F: Band edge measurements

## Test Result

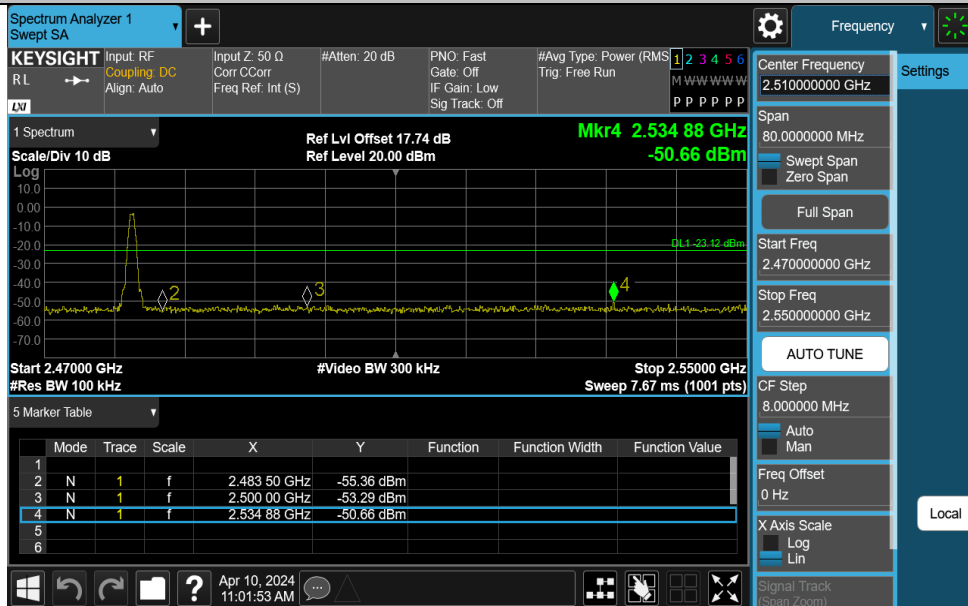
Test Mode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-2.55	-51.34	≤-22.55	PASS
DH5	Ant1	High	2480	-3.12	-50.66	≤-23.12	PASS
DH5	Ant1	Low	Hop_2402	-2.86	-51.02	≤-22.86	PASS
DH5	Ant1	High	Hop_2480	-2.94	-50.69	≤-22.94	PASS
2DH5	Ant1	Low	2402	-5.80	-50.96	≤-25.8	PASS
2DH5	Ant1	High	2480	-5.89	-51.66	≤-25.89	PASS
2DH5	Ant1	Low	Hop_2402	-5.97	-50.67	≤-25.97	PASS
2DH5	Ant1	High	Hop_2480	-5.12	-50.97	≤-25.12	PASS
3DH5	Ant1	Low	2402	-4.98	-51.3	≤-24.98	PASS
3DH5	Ant1	High	2480	-4.88	-50.98	≤-24.88	PASS
3DH5	Ant1	Low	Hop_2402	-7.08	-50.91	≤-27.08	PASS
3DH5	Ant1	High	Hop_2480	-7.25	-50.31	≤-27.25	PASS

### Test Graphs

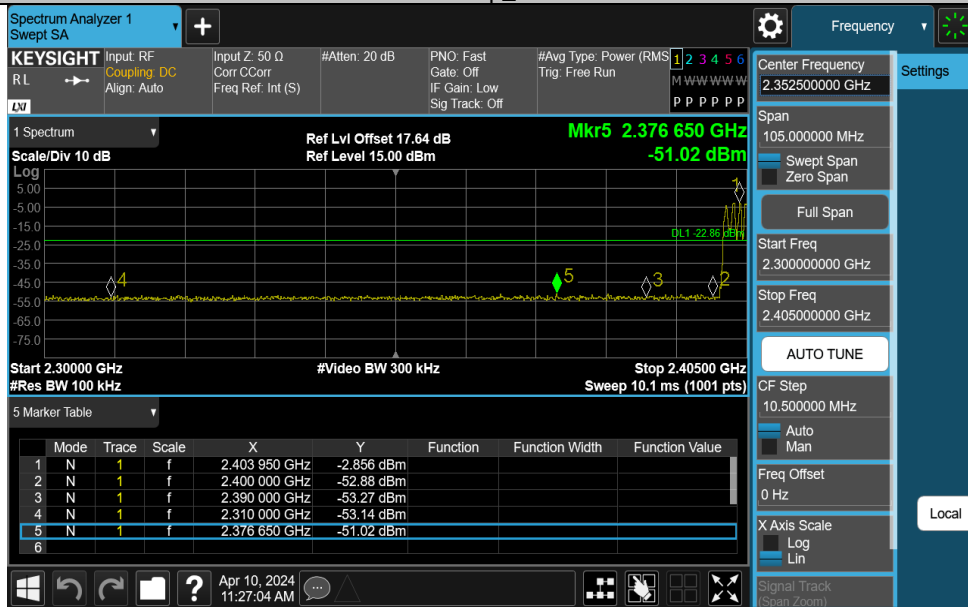
#### DH5-Ant1-2402-PASS



#### DH5-Ant1-2480-PASS

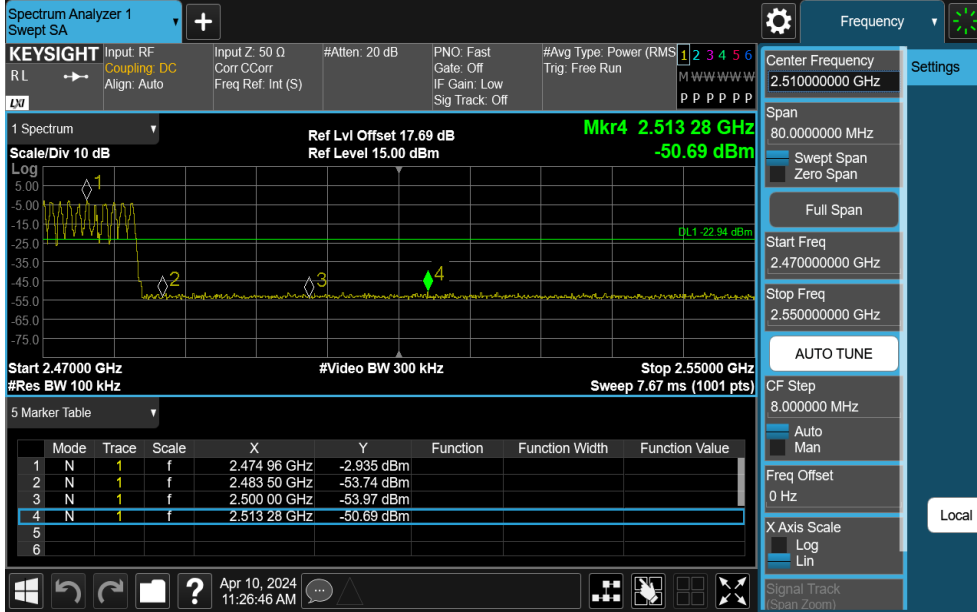


#### DH5-Ant1-Hop\_2402-PASS

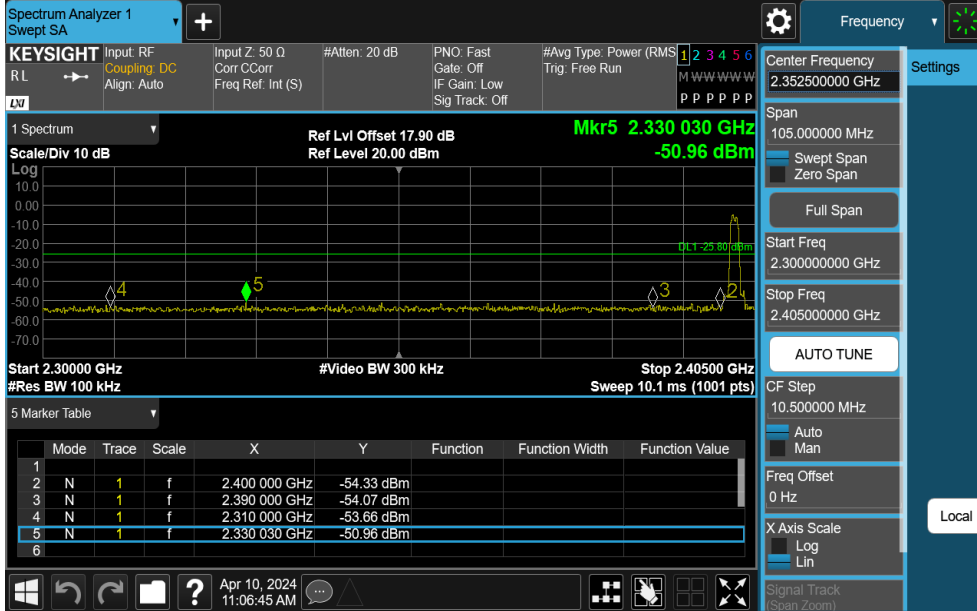




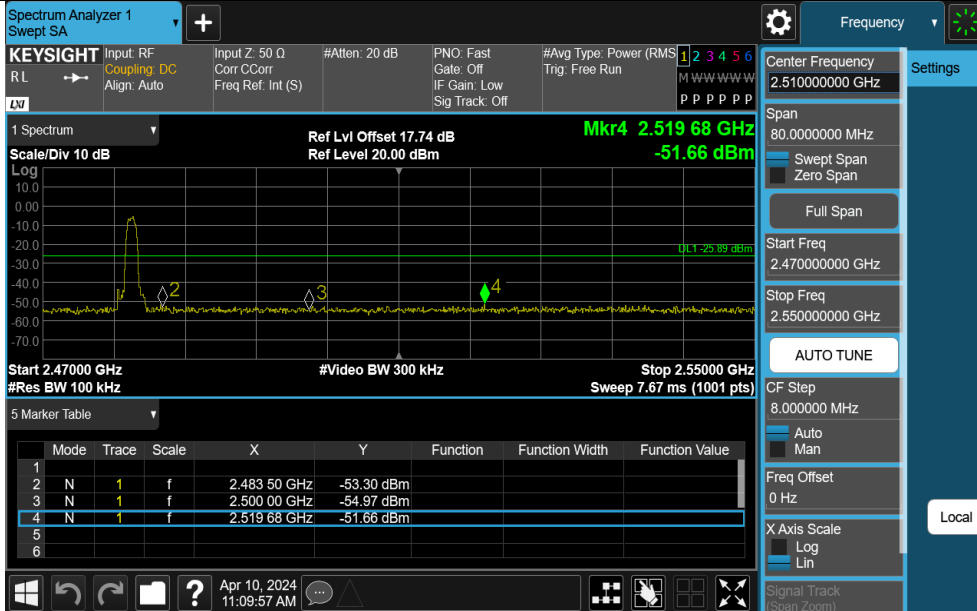
### DH5-Ant1-Hop\_2480-PASS



### 2DH5-Ant1-2402-PASS



### 2DH5-Ant1-2480-PASS



### 2DH5-Ant1-Hop\_2402-PASS

**Spectrum Analyzer 1**  
Swept SA

**KEYSIGHT** Input: RF Coupling: DC Align: Auto Input Z: 50 Ω Corr: CC Corr Freq Ref: Int (S) #Atten: 20 dB PNO: Fast Gate: Off IF Gain: Low Sig Track: Off #Avg Type: Power (RMS) Trig: Free Run

Center Frequency: 2.352500000 GHz

Span: 105.0000000 MHz

Scale/Div: 10 dB

Ref Lvl Offset: 17.64 dB

Ref Level: 15.00 dBm

Mkr5: 2.384 315 GHz

-50.67 dBm

Start: 2.30000 GHz

Stop: 2.40500 GHz

#Res BW: 100 kHz

#Video BW: 300 kHz

Sweep: 10.1 ms (1001 pts)

Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.404 895 GHz	-5.973 dBm		
2	N	1	f	2.400 000 GHz	-53.92 dBm		
3	N	1	f	2.390 000 GHz	-53.40 dBm		
4	N	1	f	2.310 000 GHz	-52.75 dBm		
5	N	1	f	2.384 315 GHz	-50.67 dBm		
6							

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### 2DH5-Ant1-Hop\_2480-PASS

**Spectrum Analyzer 1**  
Swept SA

**KEYSIGHT** Input: RF Coupling: DC Align: Auto Input Z: 50 Ω Corr: CC Corr Freq Ref: Int (S) #Atten: 20 dB PNO: Fast Gate: Off IF Gain: Low Sig Track: Off #Avg Type: Power (RMS) Trig: Free Run

Center Frequency: 2.510000000 GHz

Span: 80.0000000 MHz

Scale/Div: 10 dB

Ref Lvl Offset: 17.69 dB

Ref Level: 15.00 dBm

Mkr4: 2.502 40 GHz

-50.97 dBm

Start: 2.47000 GHz

Stop: 2.55000 GHz

#Res BW: 100 kHz

#Video BW: 300 kHz

Sweep: 7.67 ms (1001 pts)

Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.470 80 GHz	-5.123 dBm		
2	N	1	f	2.483 50 GHz	-53.87 dBm		
3	N	1	f	2.500 00 GHz	-54.28 dBm		
4	N	1	f	2.502 40 GHz	-50.97 dBm		
5							
6							

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### 3DH5-Ant1-2402-PASS

**Spectrum Analyzer 1**  
Swept SA

**KEYSIGHT** Input: RF Coupling: DC Align: Auto Input Z: 50 Ω Corr: CC Corr Freq Ref: Int (S) #Atten: 20 dB PNO: Fast Gate: Off IF Gain: Low Sig Track: Off #Avg Type: Power (RMS) Trig: Free Run

Center Frequency: 2.352500000 GHz

Span: 105.0000000 MHz

Scale/Div: 10 dB

Ref Lvl Offset: 17.90 dB

Ref Level: 20.00 dBm

Mkr5: 2.385 890 GHz

-51.30 dBm

Start: 2.30000 GHz

Stop: 2.40500 GHz

#Res BW: 100 kHz

#Video BW: 300 kHz

Sweep: 10.1 ms (1001 pts)

Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1							
2	N	1	f	2.400 000 GHz	-53.83 dBm		
3	N	1	f	2.390 000 GHz	-53.67 dBm		
4	N	1	f	2.310 000 GHz	-55.60 dBm		
5	N	1	f	2.385 890 GHz	-51.30 dBm		
6							

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### 3DH5-Ant1-2480-PASS

**Spectrum Analyzer 1**  
Swept SA

**KEYSIGHT** Input: RF Input Z: 50 Ω #Atten: 20 dB PNO: Fast #Avg Type: Power (RMS) 1 2 3 4 5 6  
 RL → Coupling: DC Corr CCorr Freq Ref: Int (S) Gate: Off IF Gain: Low Trig: Free Run  
 Align: Auto Freq Ref: Int (S) Sig Track: Off

Center Frequency: 2.510000000 GHz  
 Span: 80.00000000 MHz  
 Start Freq: 2.470000000 GHz  
 Stop Freq: 2.550000000 GHz  
 AUTO TUNE  
 CF Step: 8.0000000 MHz  
 Freq Offset: 0 Hz  
 X Axis Scale: Log  
 Signal Track (Span Zoom)

1 Spectrum  
 Scale/Div 10 dB  
 Ref Lvl Offset 17.74 dB  
 Ref Level 20.00 dBm  
 Mkr4 2.512 16 GHz  
 -50.98 dBm

Start 2.47000 GHz #Res BW 100 kHz #Video BW 300 kHz Stop 2.55000 GHz Sweep 7.67 ms (1001 pts)

Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.483 50 GHz	-53.80 dBm		
2	N	1	f	2.500 00 GHz	-55.88 dBm		
3	N	1	f	2.512 16 GHz	-50.98 dBm		
4	N	1	f	2.512 16 GHz	-50.98 dBm		
5							
6							

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### 3DH5-Ant1-Hop\_2402-PASS

**Spectrum Analyzer 1**  
Swept SA

**KEYSIGHT** Input: RF Input Z: 50 Ω #Atten: 20 dB PNO: Fast #Avg Type: Power (RMS) 1 2 3 4 5 6  
 RL → Coupling: DC Corr CCorr Freq Ref: Int (S) Gate: Off IF Gain: Low Trig: Free Run  
 Align: Auto Freq Ref: Int (S) Sig Track: Off

Center Frequency: 2.352500000 GHz  
 Span: 105.0000000 MHz  
 Start Freq: 2.300000000 GHz  
 Stop Freq: 2.405000000 GHz  
 AUTO TUNE  
 CF Step: 10.5000000 MHz  
 Freq Offset: 0 Hz  
 X Axis Scale: Log  
 Signal Track (Span Zoom)

1 Spectrum  
 Scale/Div 10 dB  
 Ref Lvl Offset 17.64 dB  
 Ref Level 15.00 dBm  
 Mkr5 2.371 505 GHz  
 -50.91 dBm

Start 2.30000 GHz #Res BW 100 kHz #Video BW 300 kHz Stop 2.40500 GHz Sweep 10.1 ms (1001 pts)

Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.402 060 GHz	-7.081 dBm		
2	N	1	f	2.400 000 GHz	-52.16 dBm		
3	N	1	f	2.380 000 GHz	-52.42 dBm		
4	N	1	f	2.310 000 GHz	-53.91 dBm		
5	N	1	f	2.371 505 GHz	-50.91 dBm		
6							

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### 3DH5-Ant1-Hop\_2480-PASS

**Spectrum Analyzer 1**  
Swept SA

**KEYSIGHT** Input: RF Input Z: 50 Ω #Atten: 20 dB PNO: Fast #Avg Type: Power (RMS) 1 2 3 4 5 6  
 RL → Coupling: DC Corr CCorr Freq Ref: Int (S) Gate: Off IF Gain: Low Trig: Free Run  
 Align: Auto Freq Ref: Int (S) Sig Track: Off

Center Frequency: 2.510000000 GHz  
 Span: 80.00000000 MHz  
 Start Freq: 2.470000000 GHz  
 Stop Freq: 2.550000000 GHz  
 AUTO TUNE  
 CF Step: 8.0000000 MHz  
 Freq Offset: 0 Hz  
 X Axis Scale: Log  
 Signal Track (Span Zoom)

1 Spectrum  
 Scale/Div 10 dB  
 Ref Lvl Offset 17.69 dB  
 Ref Level 15.00 dBm  
 Mkr4 2.494 16 GHz  
 -50.31 dBm

Start 2.47000 GHz #Res BW 100 kHz #Video BW 300 kHz Stop 2.55000 GHz Sweep 7.67 ms (1001 pts)

Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.472 08 GHz	-7.253 dBm		
2	N	1	f	2.483 50 GHz	-53.45 dBm		
3	N	1	f	2.500 00 GHz	-54.14 dBm		
4	N	1	f	2.494 16 GHz	-50.31 dBm		
5							
6							

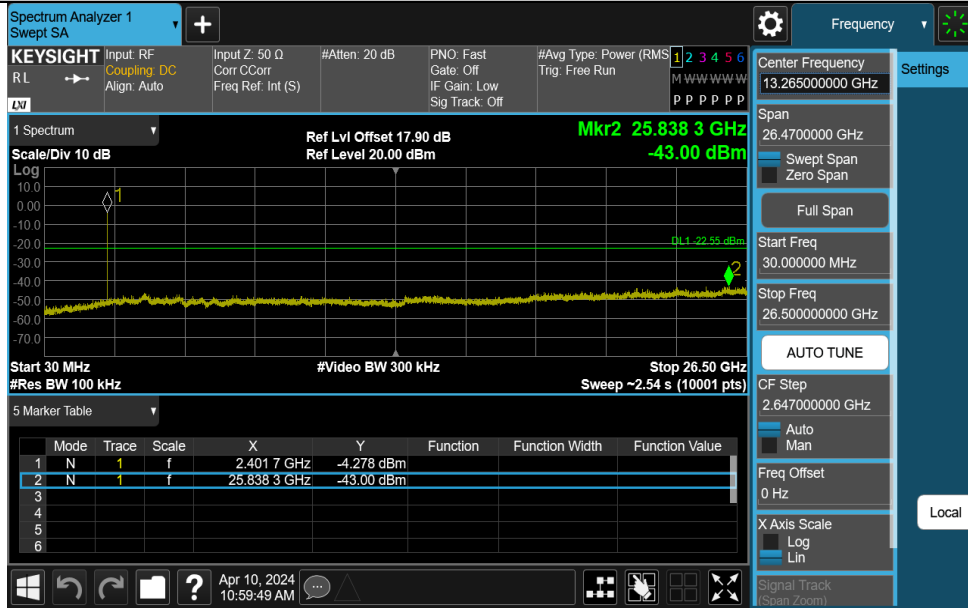
Apr 10, 2024 11:41:49 AM

## Appendix G: Conducted Spurious Emission Test Result

Test Mode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	30~26500	-2.55	-43	≤-22.55	PASS
DH5	Ant1	2441	30~26500	-2.71	-41.78	≤-22.71	PASS
DH5	Ant1	2480	30~26500	-3.12	-43.47	≤-23.12	PASS
2DH5	Ant1	2402	30~26500	-5.80	-43.45	≤-25.8	PASS
2DH5	Ant1	2441	30~26500	-4.48	-43.55	≤-24.48	PASS
2DH5	Ant1	2480	30~26500	-5.89	-43.62	≤-25.89	PASS
3DH5	Ant1	2402	30~26500	-4.98	-43.18	≤-24.98	PASS
3DH5	Ant1	2441	30~26500	-5.02	-42.9	≤-25.02	PASS
3DH5	Ant1	2480	30~26500	-4.88	-42.49	≤-24.88	PASS

### Test Graphs

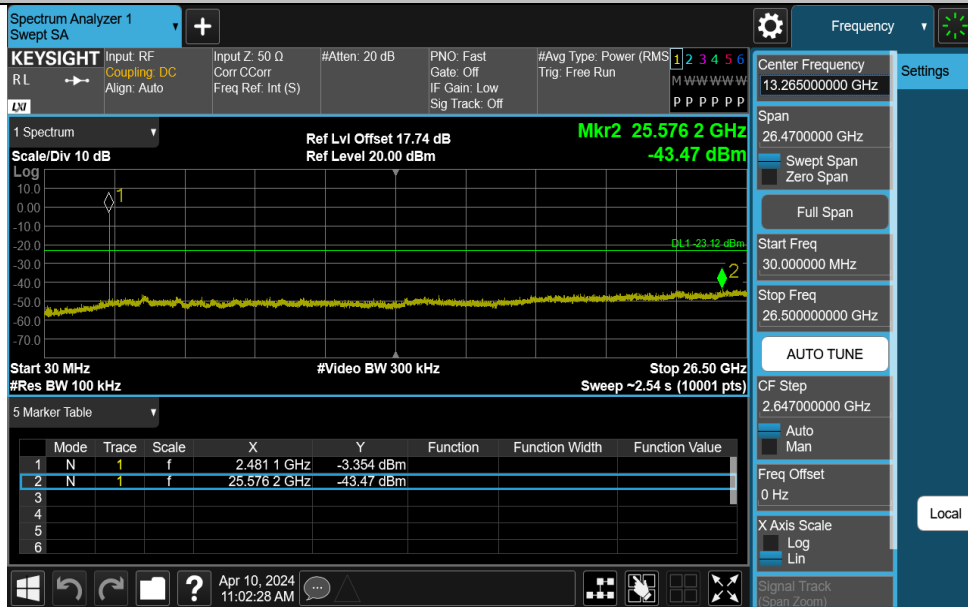
#### DH5-Ant1-2402-30~26500-PASS

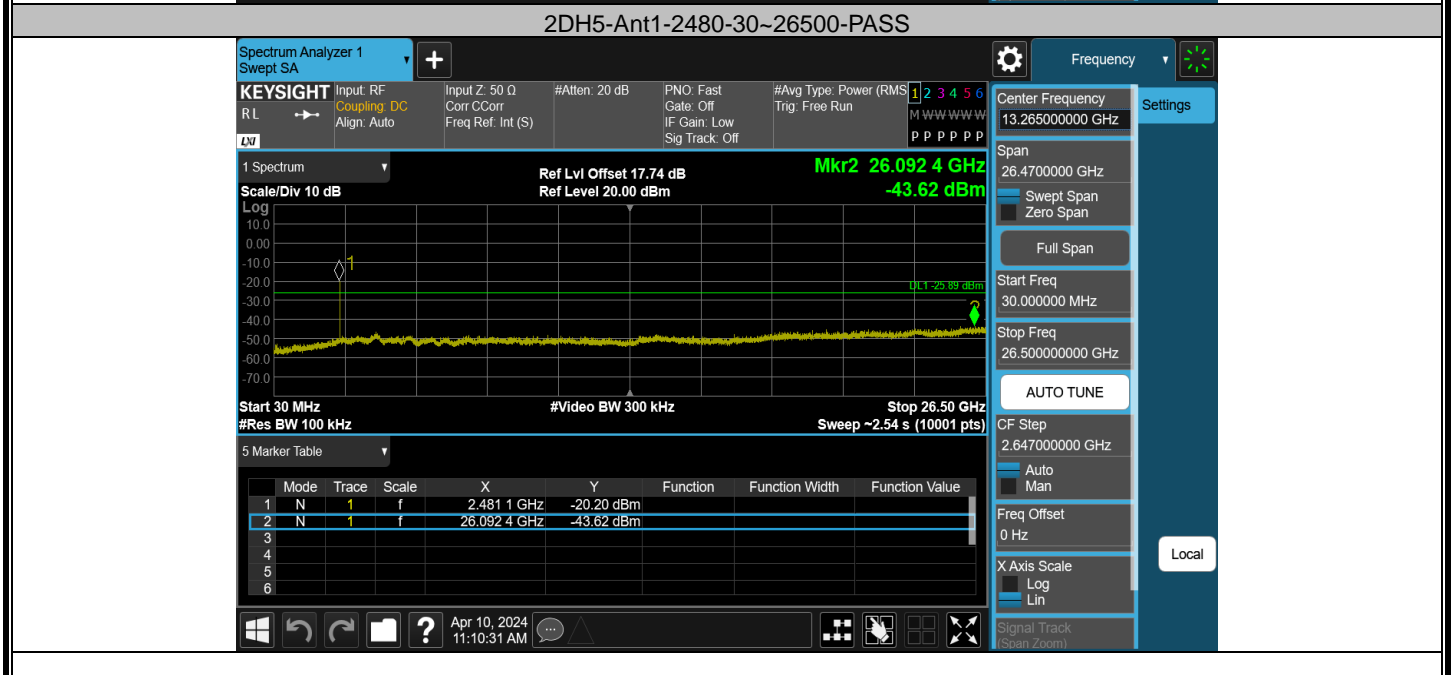
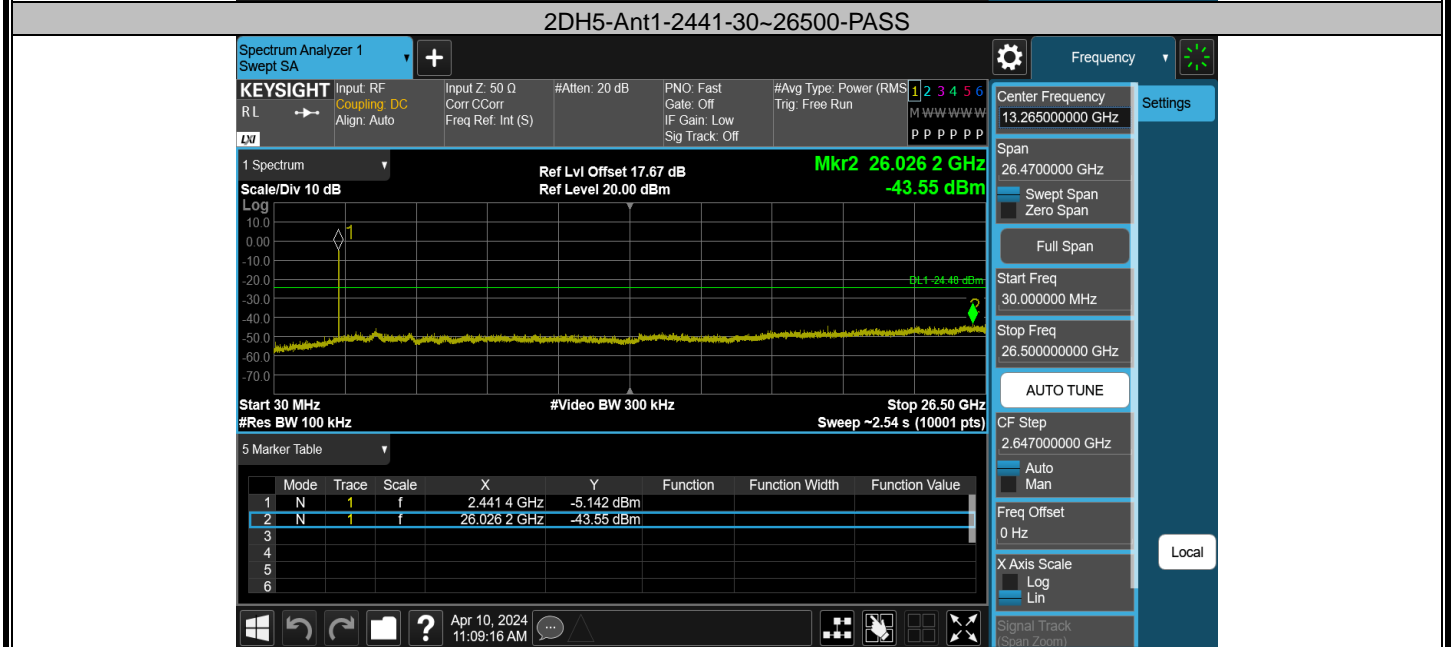
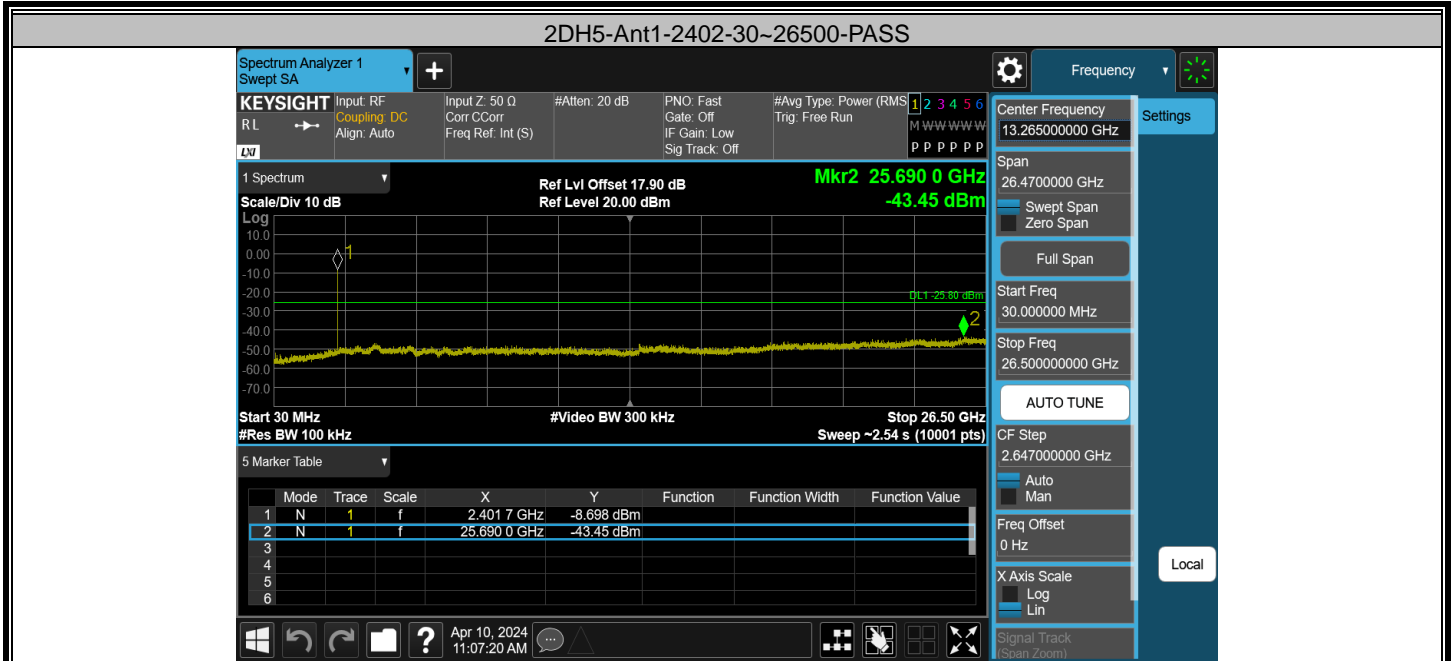


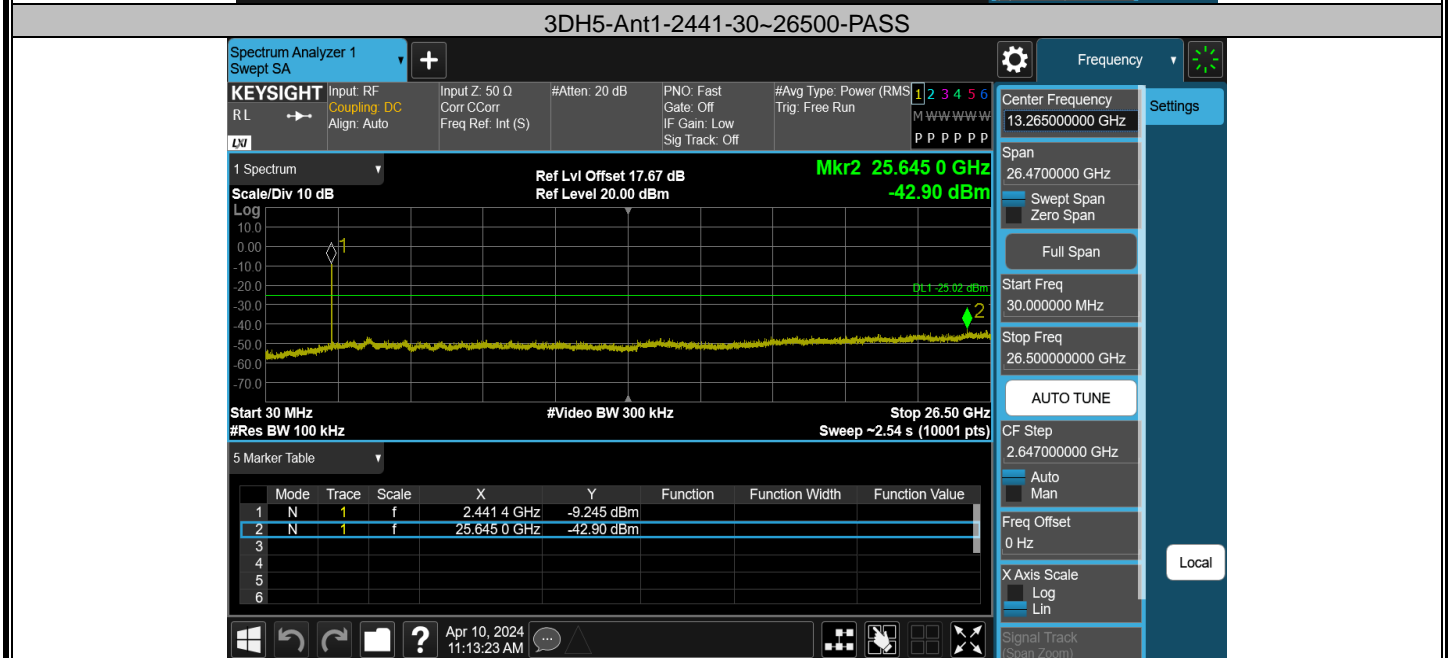
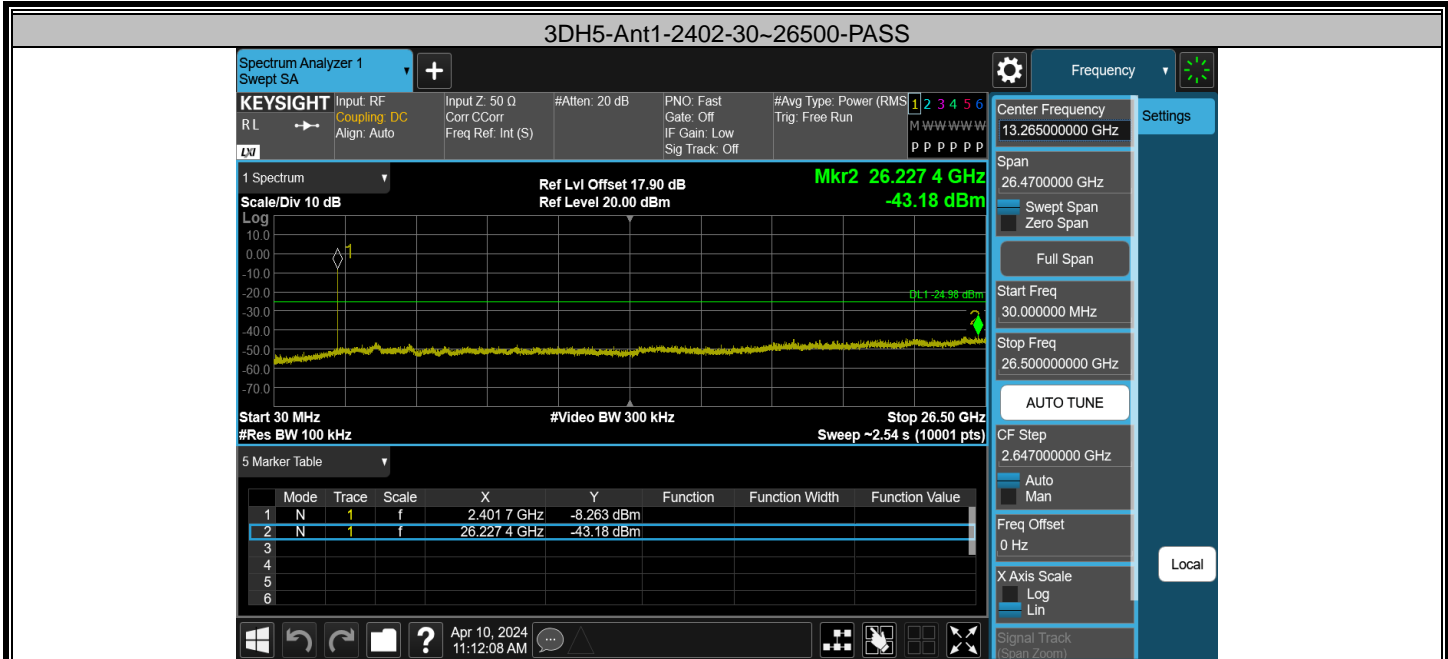
#### DH5-Ant1-2441-30~26500-PASS



#### DH5-Ant1-2480-30~26500-PASS







## Appendix H: Reference level measurement Test Result

Test Mode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
DH5	Ant1	2402	2402.15	-2.55
DH5	Ant1	2441	2441.02	-2.71
DH5	Ant1	2480	2480.00	-3.12
2DH5	Ant1	2402	2402.29	-5.80
2DH5	Ant1	2441	2441.11	-4.48
2DH5	Ant1	2480	2480.09	-5.89
3DH5	Ant1	2402	2401.80	-4.98
3DH5	Ant1	2441	2440.80	-5.02
3DH5	Ant1	2480	2479.83	-4.88



### Test Graphs

#### DH5-Ant1-2402-PASS



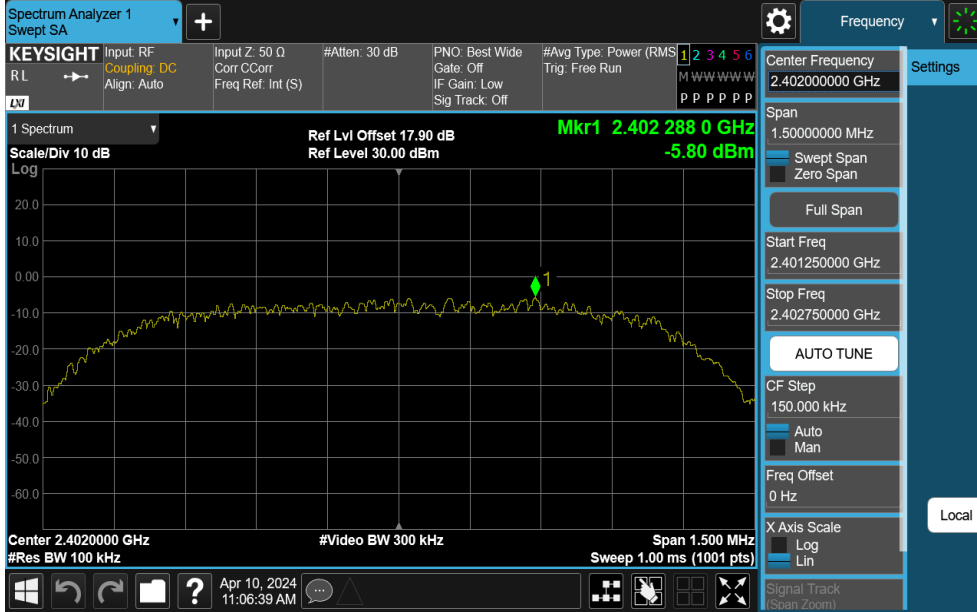
#### DH5-Ant1-2441-PASS



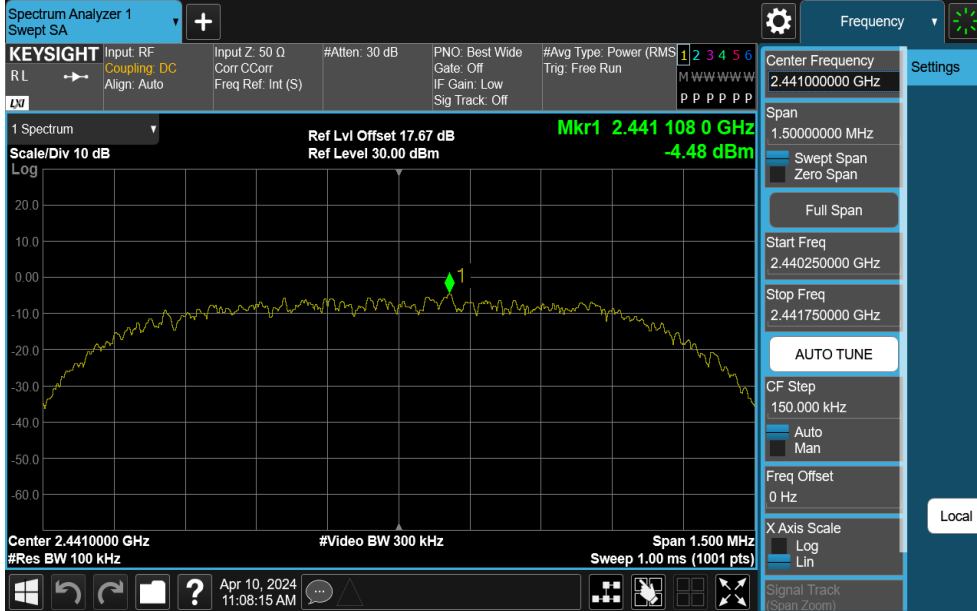
#### DH5-Ant1-2480-PASS



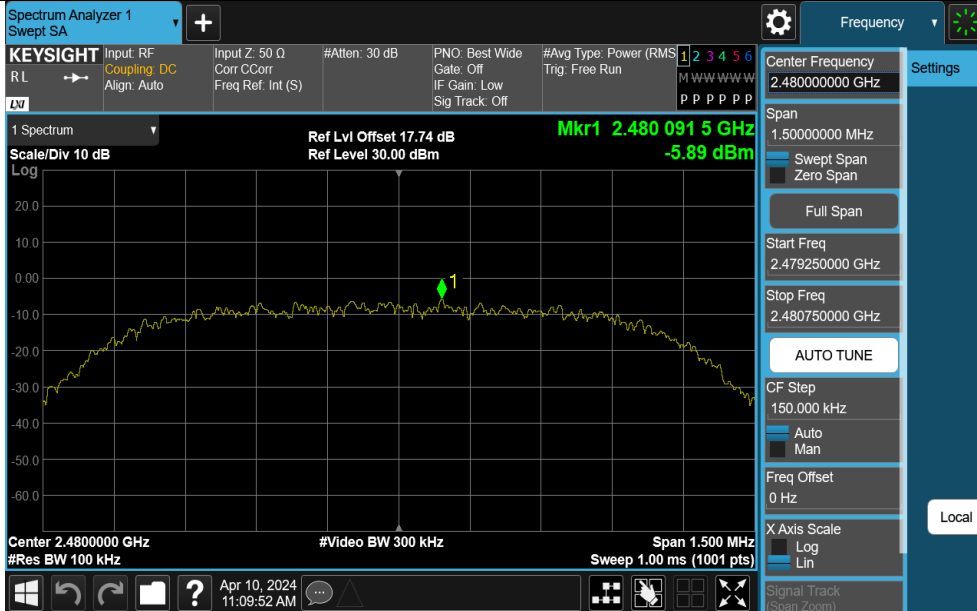
### 2DH5-Ant1-2402-PASS



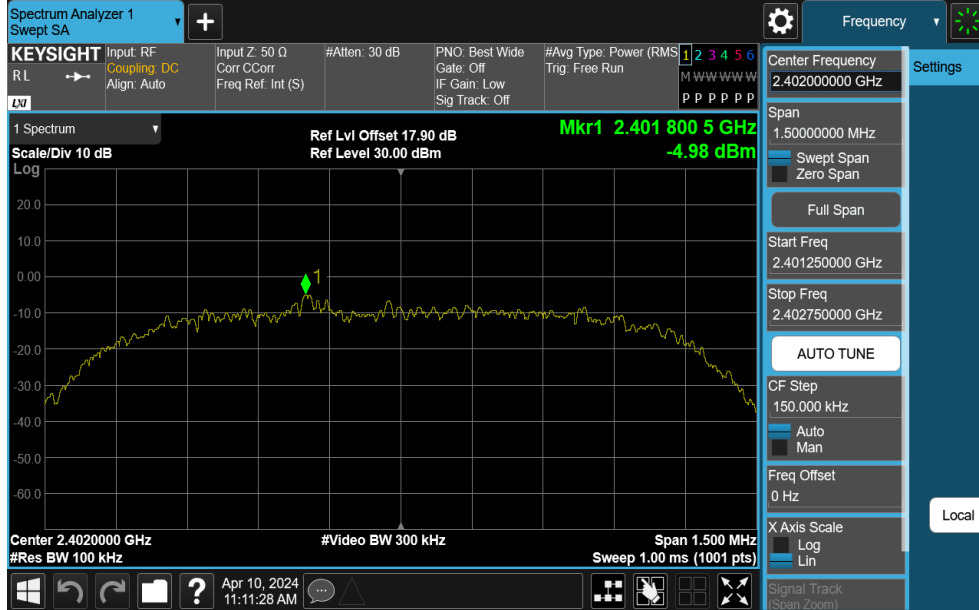
### 2DH5-Ant1-2441-PASS



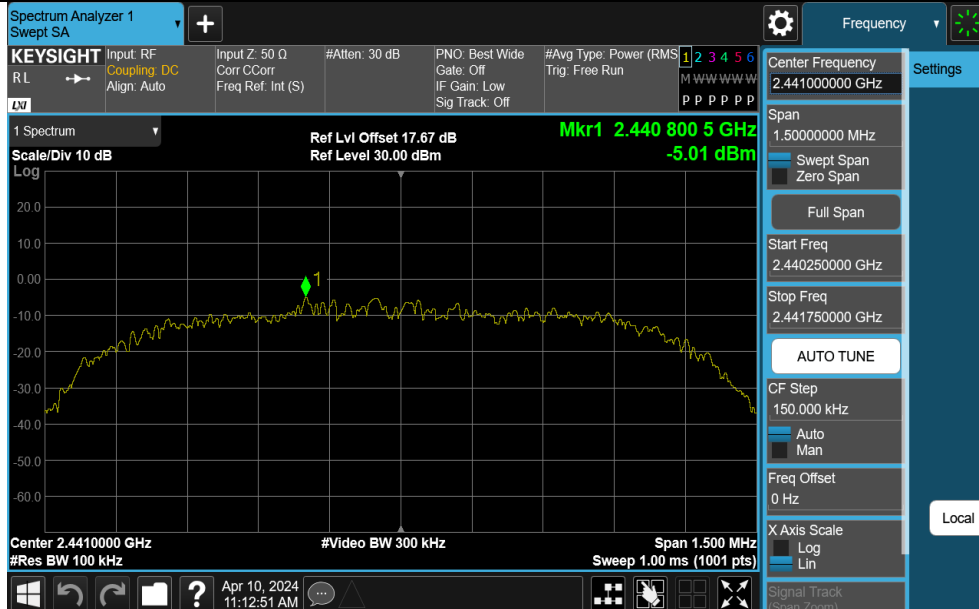
### 2DH5-Ant1-2480-PASS



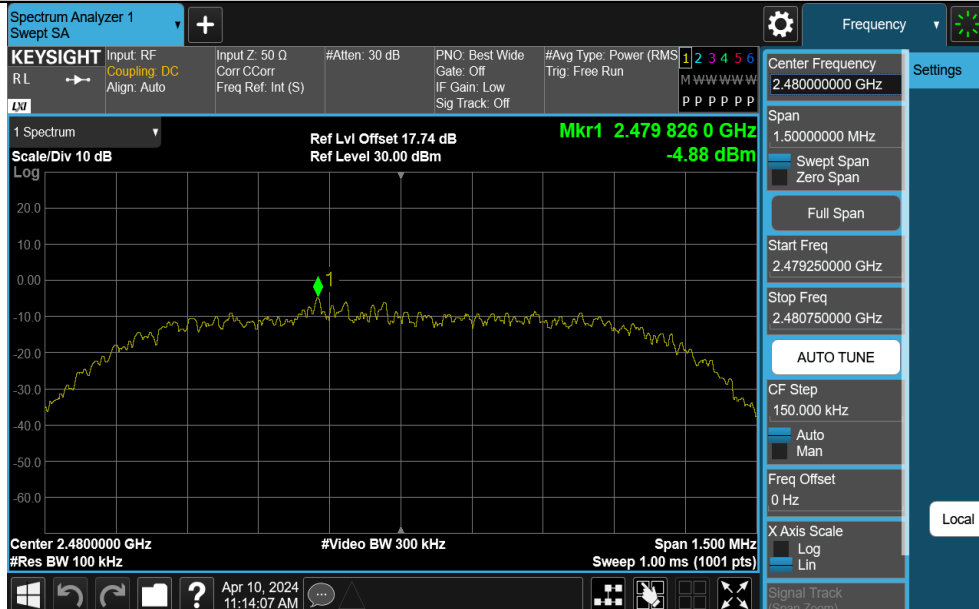
### 3DH5-Ant1-2402-PASS



### 3DH5-Ant1-2441-PASS

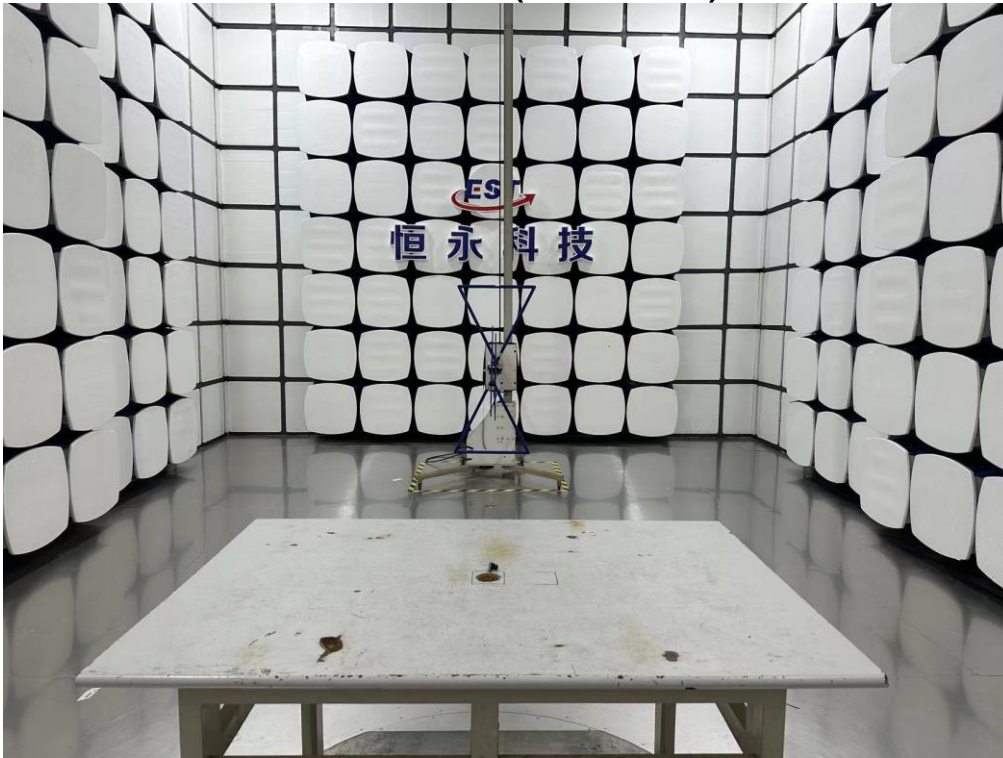


### 3DH5-Ant1-2480-PASS

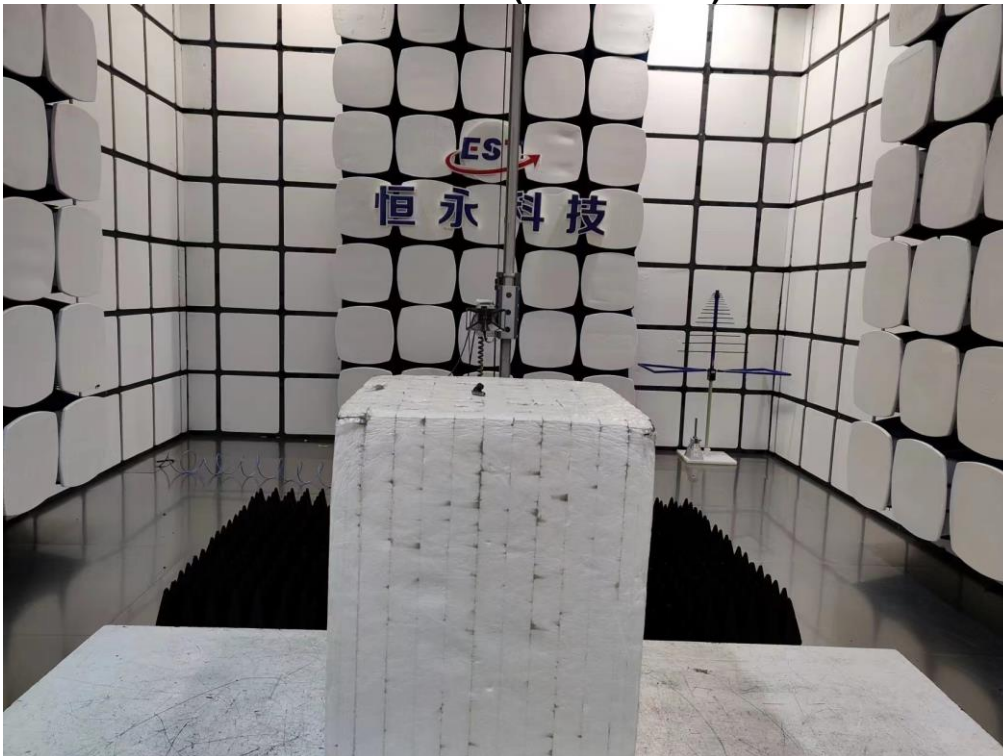


### 13. TEST SETUP PHOTO

Radiated Test (Below 1GHz)



Radiated Test (Above 1GHz)





# 14. EUT PHOTO

External Photos  
M/N: TW220



**External Photos**  
M/N: TW220





**External Photos**  
M/N: TW220



**External Photos**  
M/N: TW220



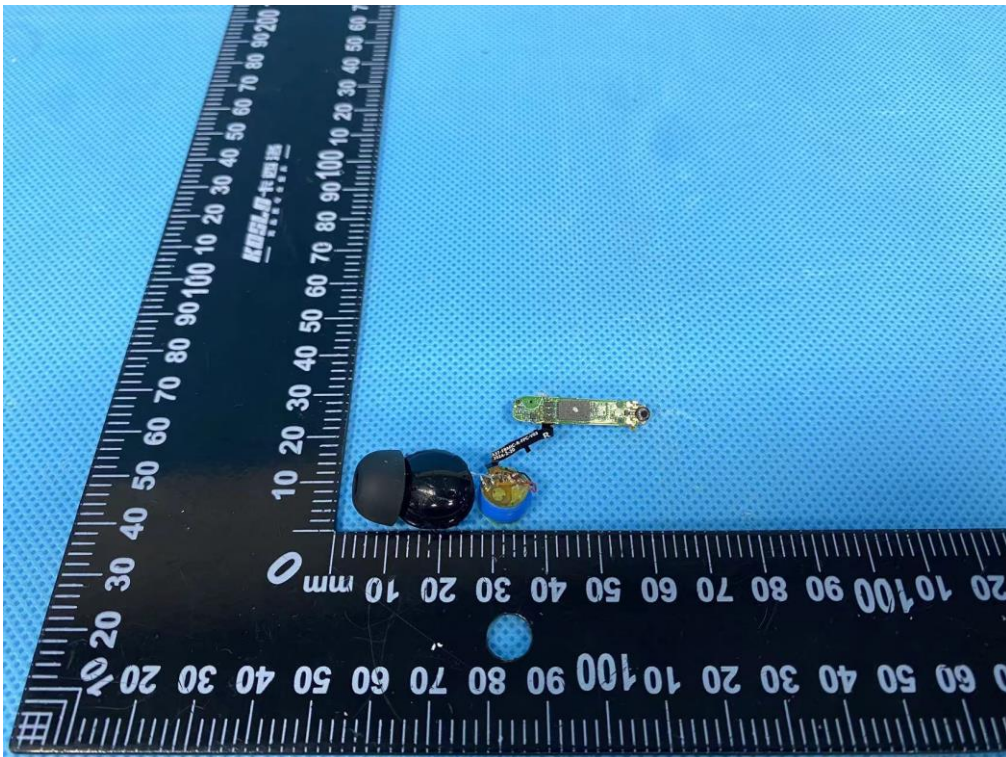
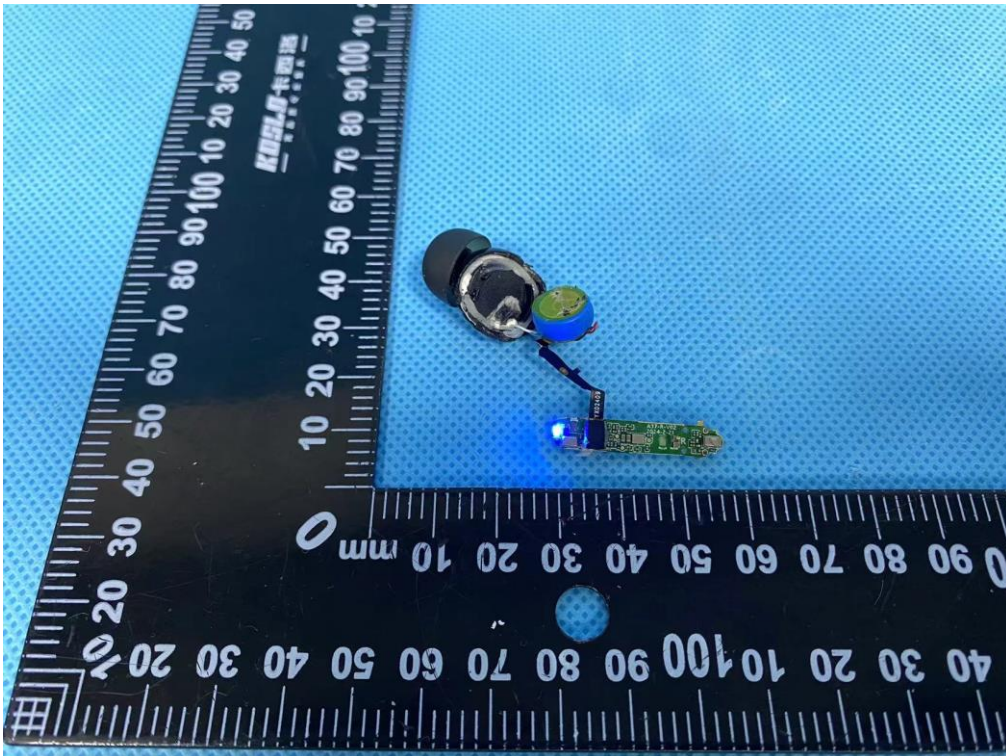


**Internal Photos**  
M/N: TW220



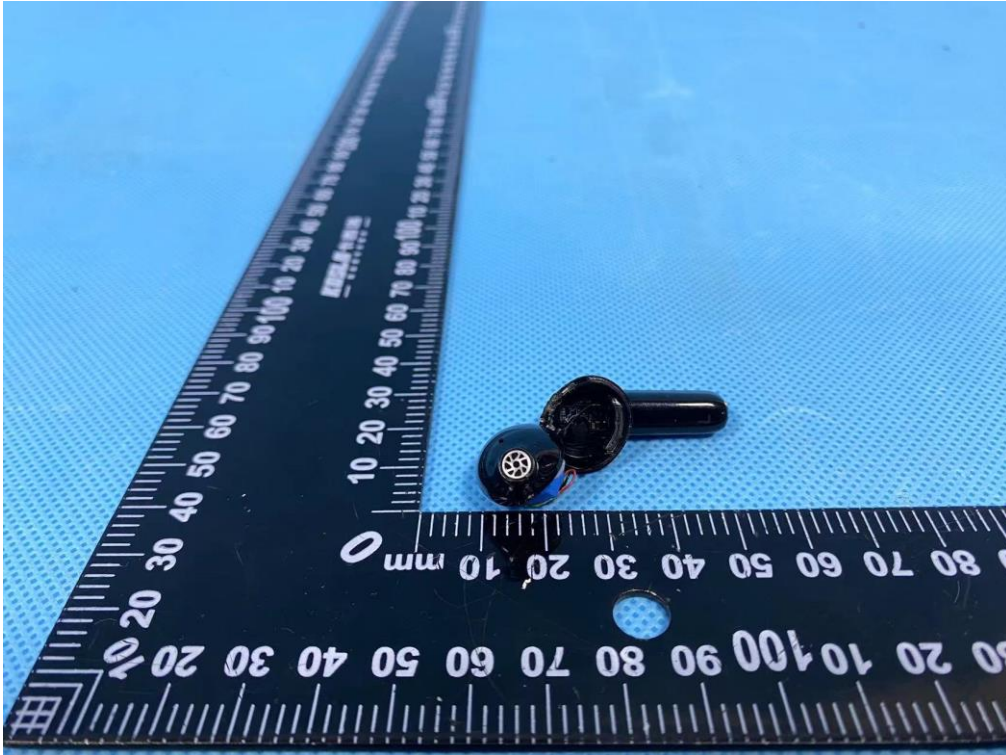


**Internal Photos**  
M/N: TW220





**Internal Photos**  
M/N: TW220

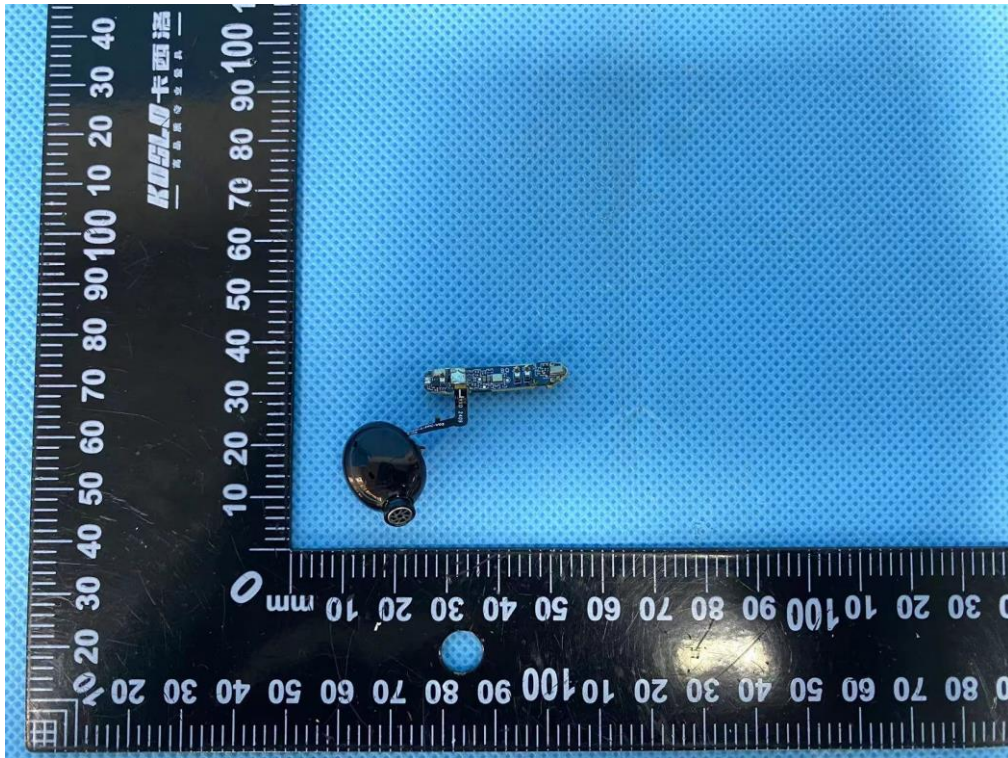


Bluetooth  
Antenna



### Internal Photos

M/N: TW220



End of Test Report