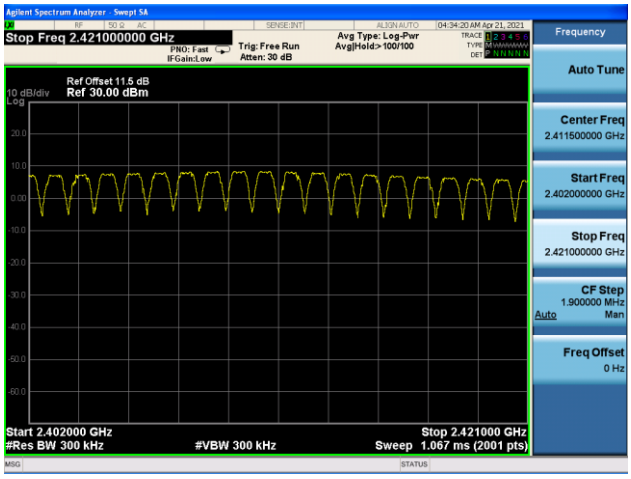
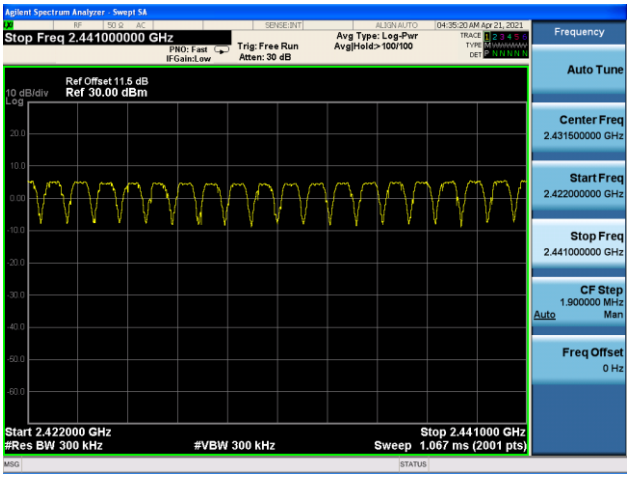
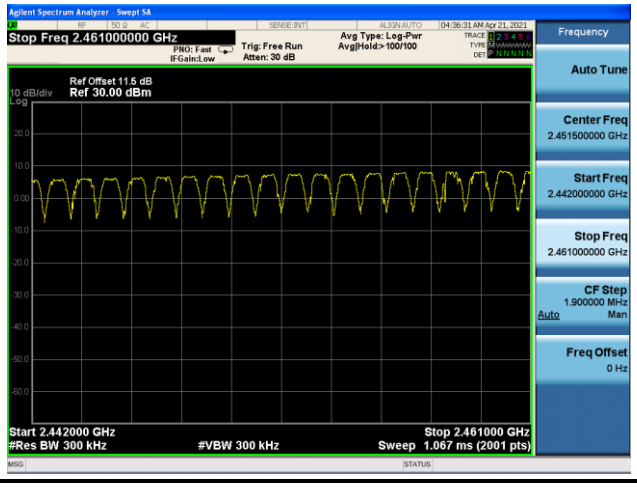
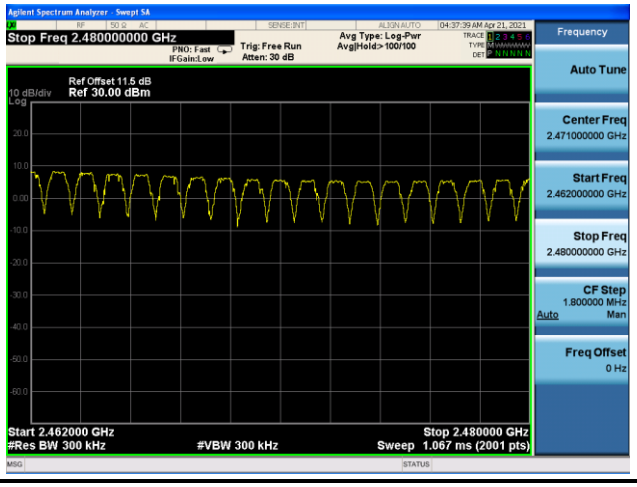
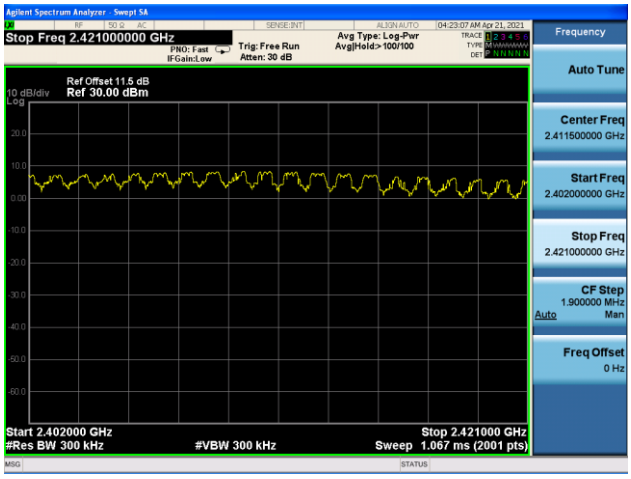
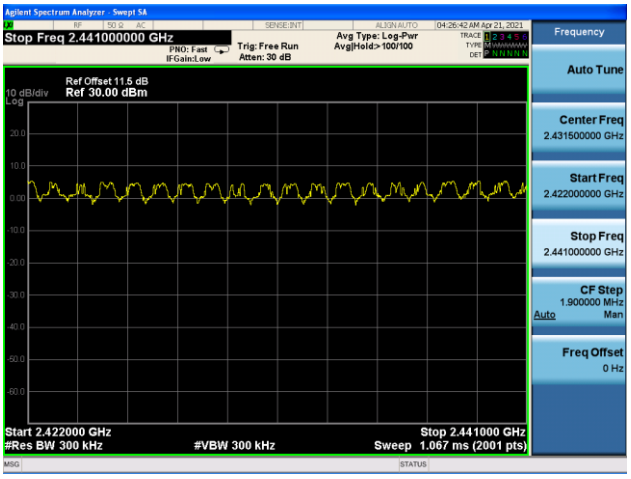
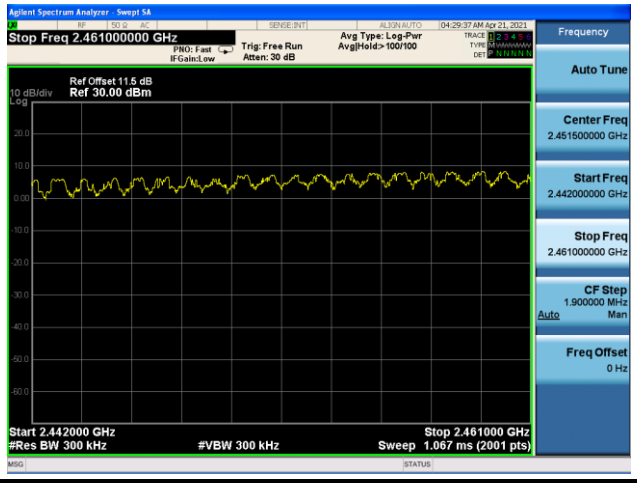
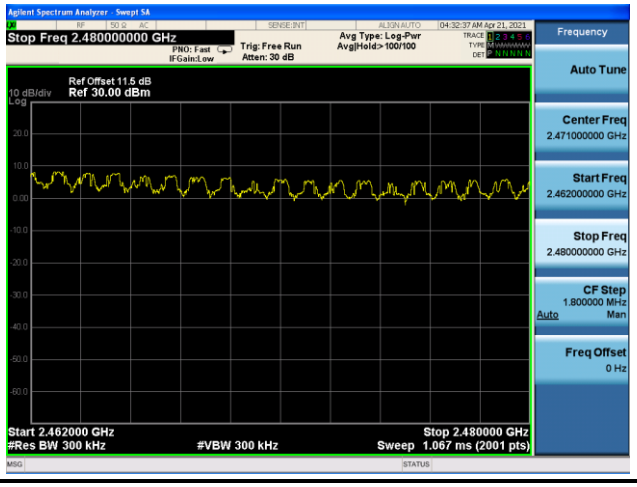
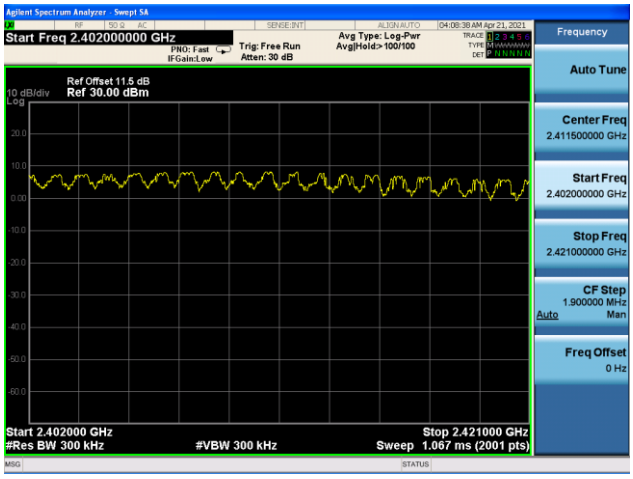
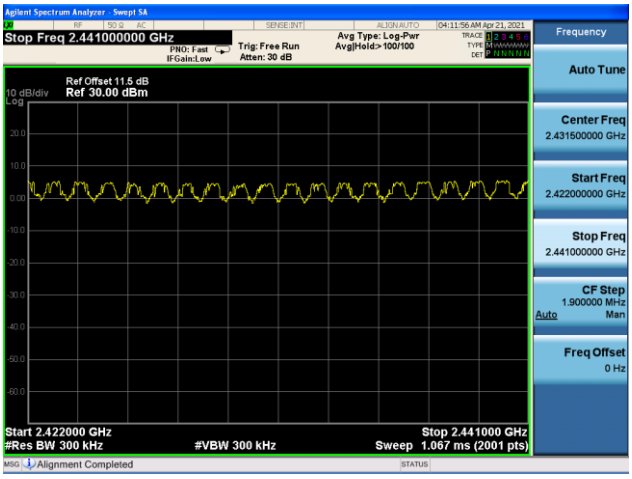
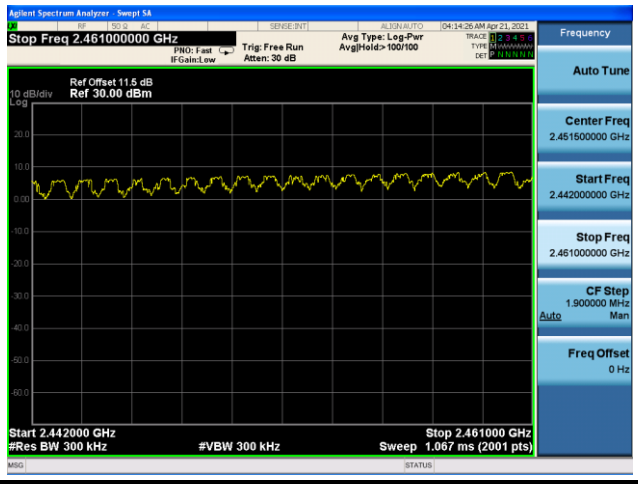
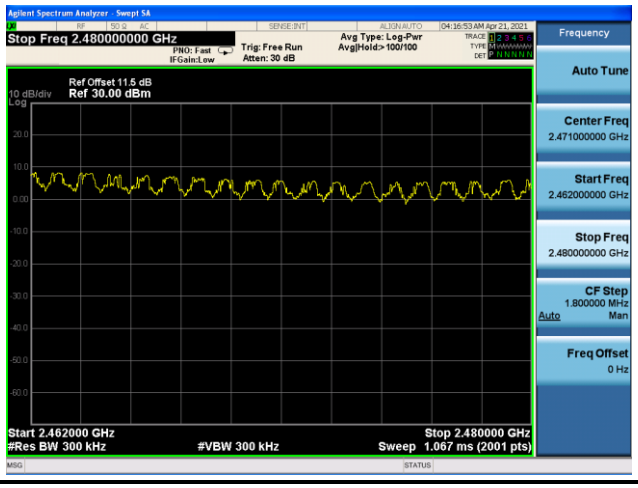
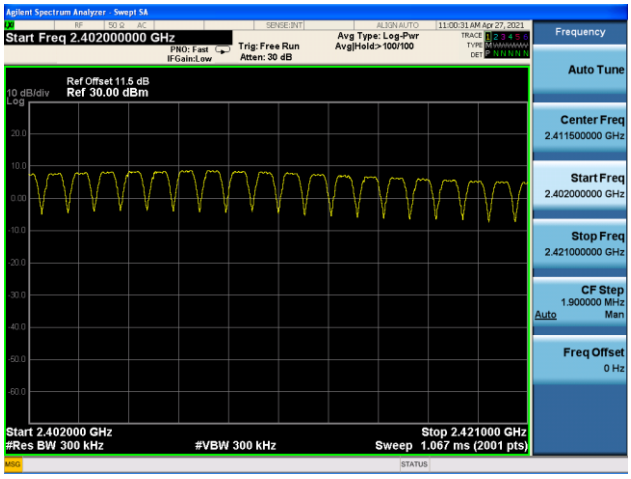
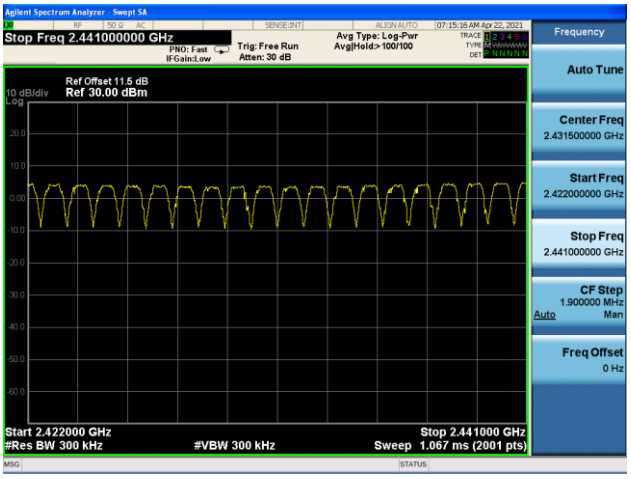
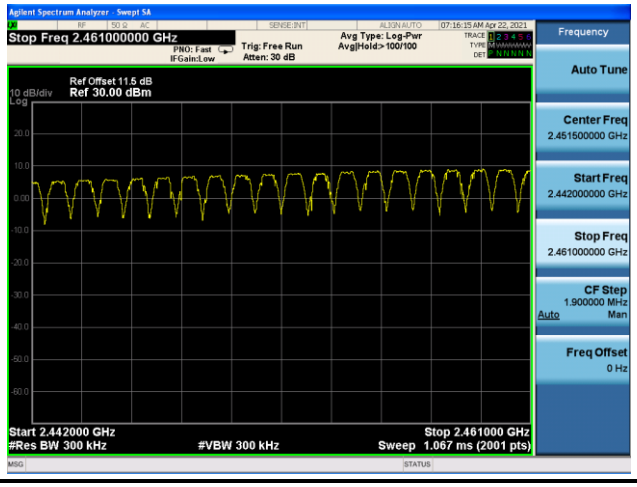
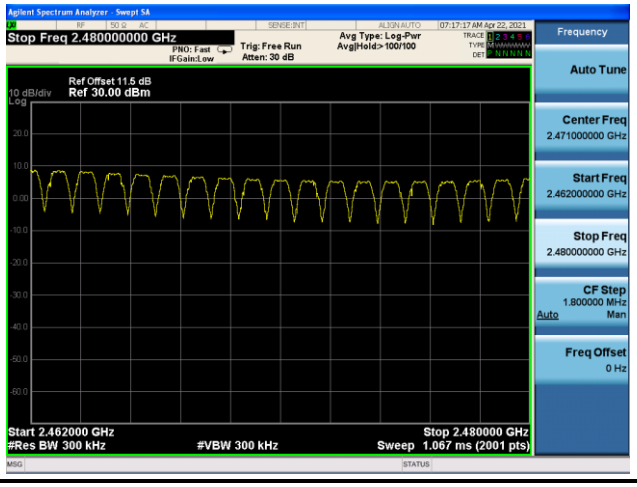
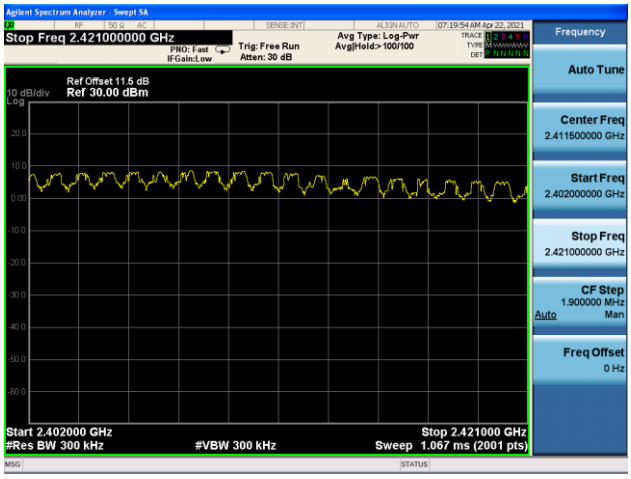
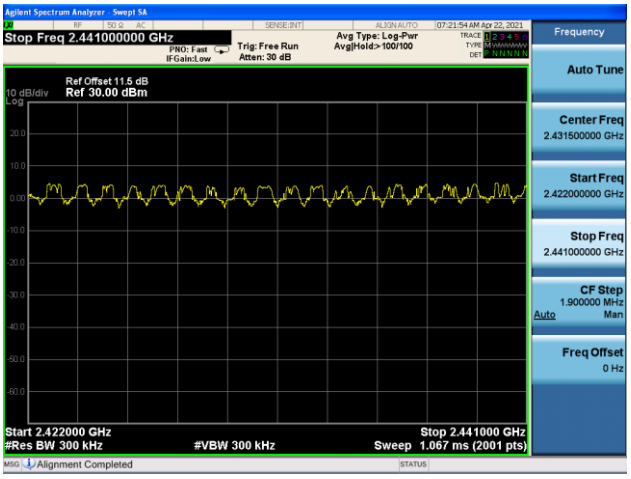
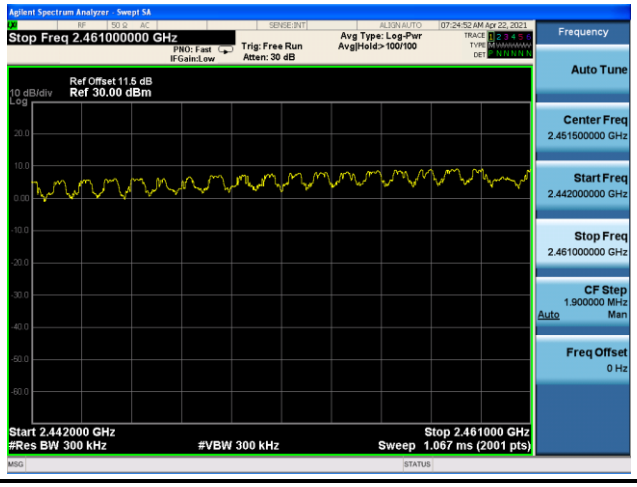
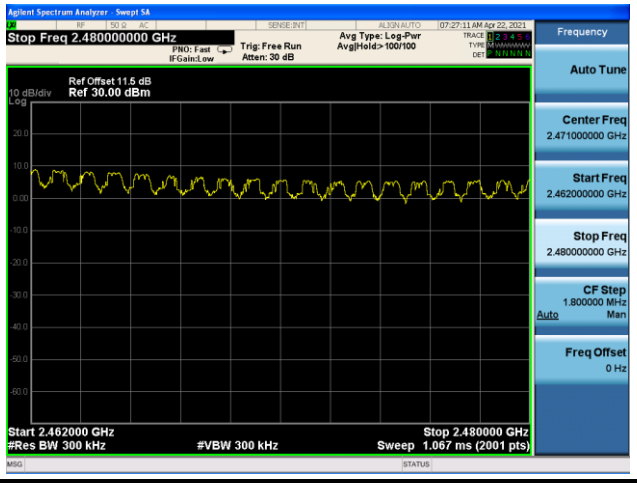
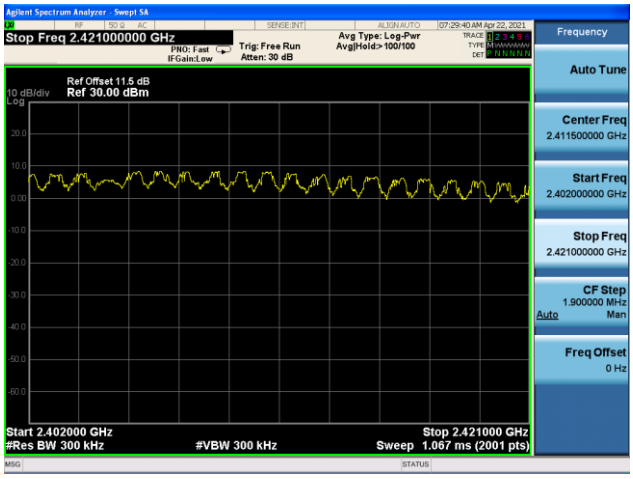
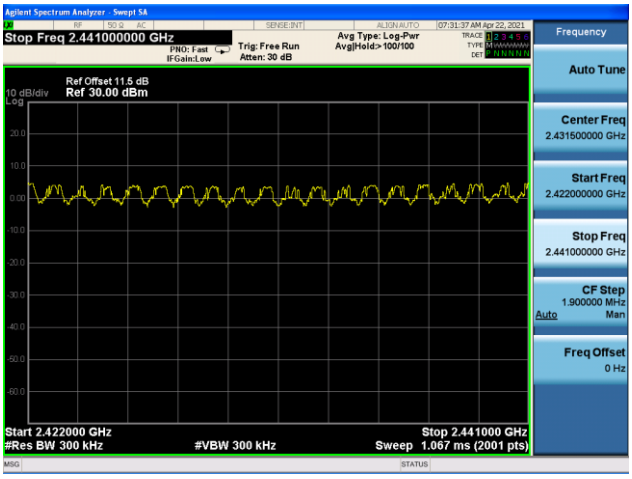
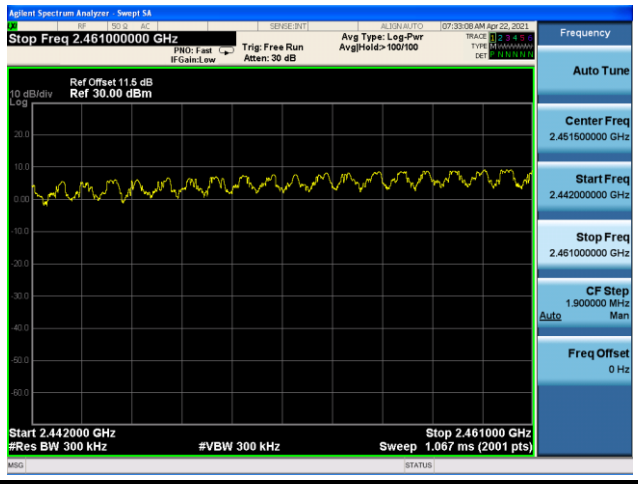
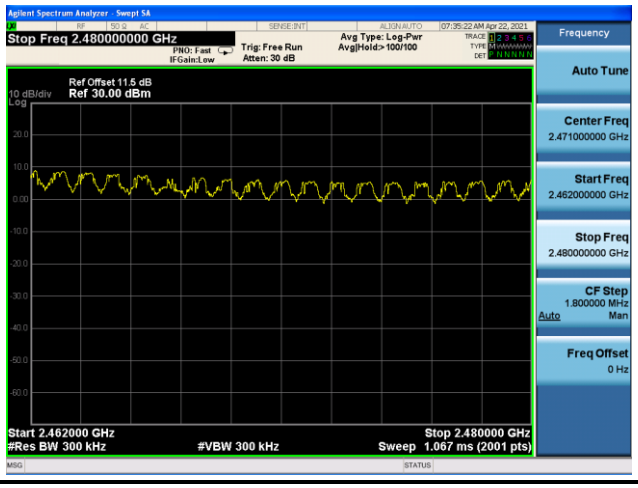
DH5 Number of Hopping Channels - Left Earbud	
2402 ~ 2421MHz	2422 ~ 2441MHz
	
2442 ~ 2461MHz	2462 ~ 2480MHz
	

2DH5 Number of Hopping Channels - Left Earbud	
2402 ~ 2421MHz	2422 ~ 2441MHz
	
2442 ~ 2461MHz	2462 ~ 2480MHz
	

3DH5 Number of Hopping Channels - Left Earbud	
2402 ~ 2421MHz	2422 ~ 2441MHz
	
2442 ~ 2461MHz	2462 ~ 2480MHz
	

DH5 Number of Hopping Channels - Right Earbud	
2402 ~ 2421MHz	2422 ~ 2441MHz
	
2442 ~ 2461MHz	2462 ~ 2480MHz
	

2DH5 Number of Hopping Channels - Right Earbud	
2402 ~ 2421MHz	2422 ~ 2441MHz
	
2442 ~ 2461MHz	2462 ~ 2480MHz
	

3DH5 Number of Hopping Channels - Right Earbud	
2402 ~ 2421MHz	2422 ~ 2441MHz
	
2442 ~ 2461MHz	2462 ~ 2480MHz
	

6.6. Time of Occupancy Measurement

6.6.1.Test Limit

The maximum permissible time of occupancy is 400ms within a period of 400ms multiplied by the number of hopping channels employed.

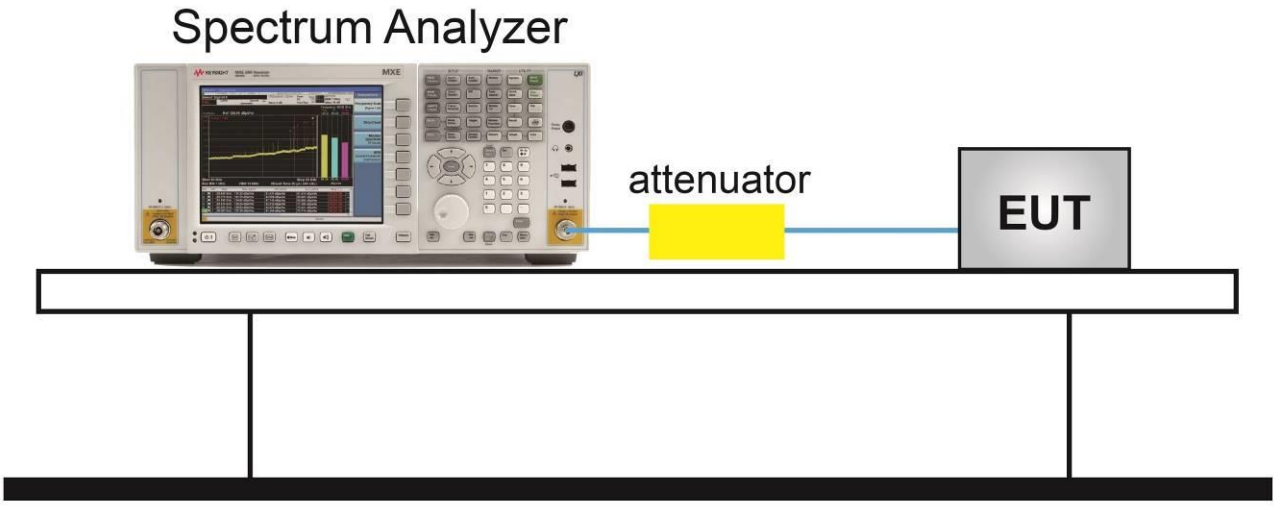
6.6.2.Test Procedure Used

ANSI C63.10-2013 - Section 7.8.4

6.6.3.Test Setting

1. Span = Zero span, centered on a hopping channel.
2. RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel.
3. VBW ≥ RBW
4. Sweep time = As necessary to capture the entire dwell time per hopping channel
5. Detector = Peak
6. Trace mode = Free run
7. Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time. An oscilloscope may be used instead of a spectrum analyzer. The EUT shall show compliance with the appropriate regulatory limit for the number of hopping channels. A plot of the data shall be included in the test report.

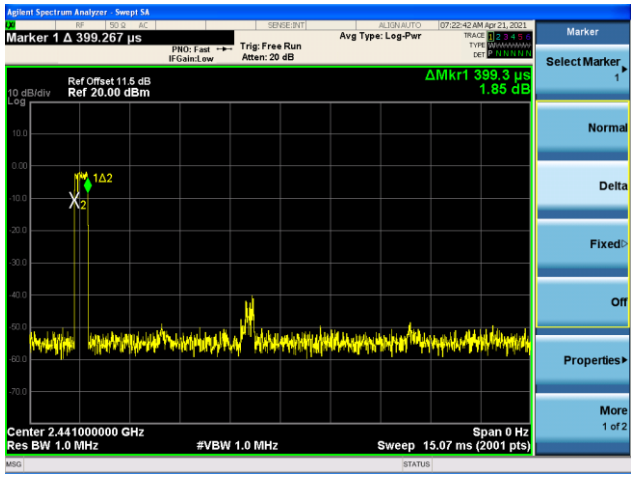
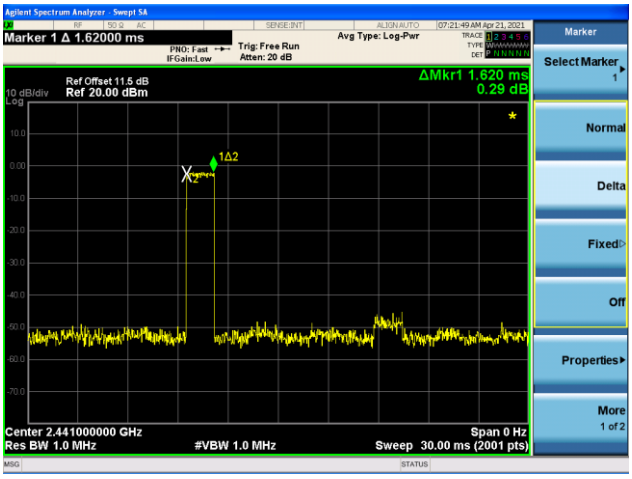
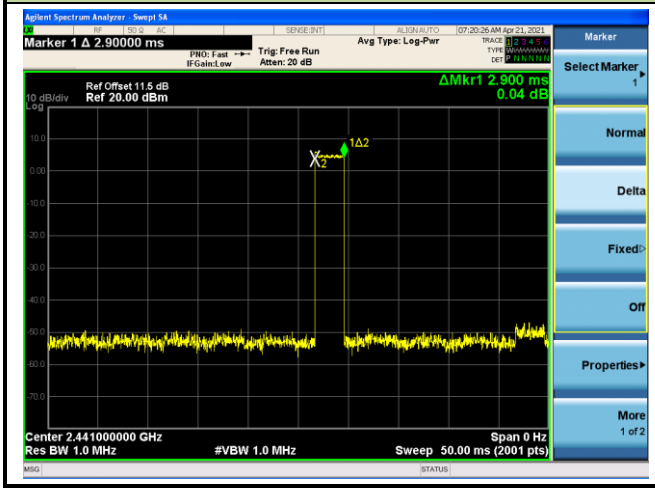
6.6.4.Test Setup

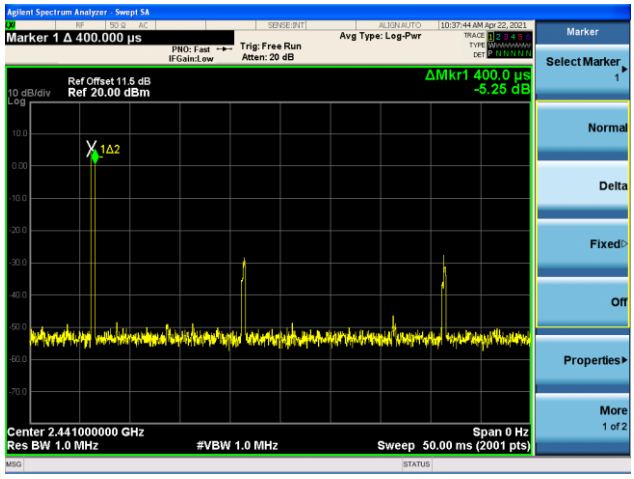
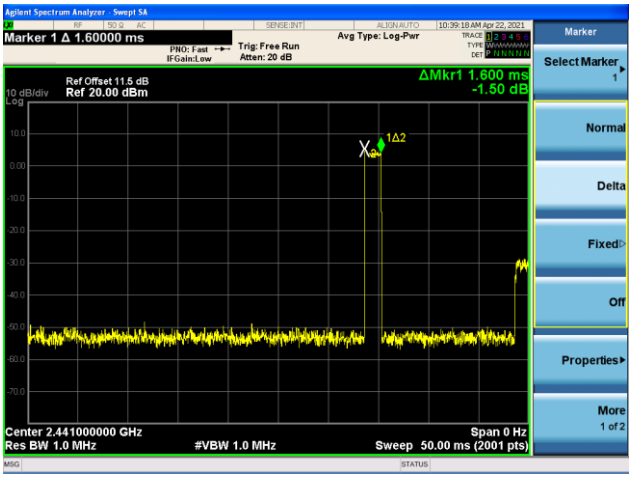
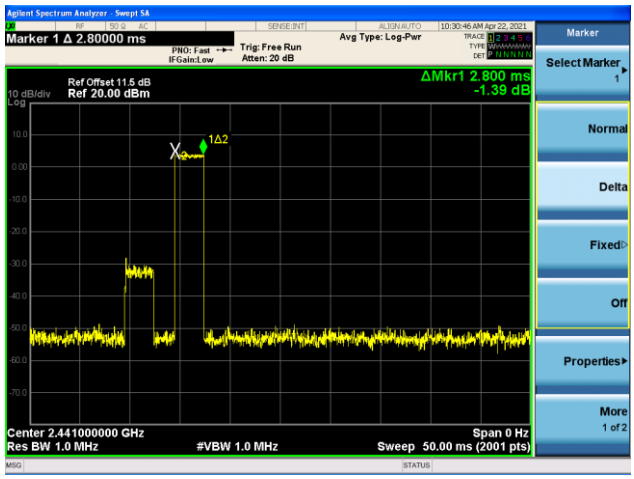


6.6.5.Test Result

Test Site	NS-TR2	Test Engineer	Flay Yang
Test Date	2021/04/21~2021/04/22		

Test Mode	Channel No.	Frequency (MHz)	Hops Over Occupancy Time (Hops)	Packet Transfer Time (ms)	Time of Occupancy (ms)	Limit (ms)	Result
Left Earbud							
Non-AFH							
3DH1	39	2441	320	0.399	127.680	≤ 400	Pass
3DH3	39	2441	160	1.620	259.200	≤ 400	Pass
3DH5	39	2441	107	2.900	310.300	≤ 400	Pass
AFH							
3DH1	39	2441	160	0.399	63.840	≤ 400	Pass
3DH3	39	2441	80	1.620	129.600	≤ 400	Pass
3DH5	39	2441	53.5	2.900	155.150	≤ 400	Pass
Right Earbud							
Non-AFH							
3DH1	39	2441	320	0.400	128.000	≤ 400	Pass
3DH3	39	2441	160	1.600	256.000	≤ 400	Pass
3DH5	39	2441	107	2.800	299.600	≤ 400	Pass
AFH							
3DH1	39	2441	160	0.400	64.000	≤ 400	Pass
3DH3	39	2441	80	1.600	128.000	≤ 400	Pass
3DH5	39	2441	53.5	2.800	149.800	≤ 400	Pass

Packet Transfer Time - Left Earbud	
3DH1 - Channel 39 (2441MHz)	3DH3 - Channel 39 (2441MHz)
	
3DH5 - Channel 39 (2441MHz)	
	

Packet Transfer Time - Right Earbud	
3DH1 - Channel 39 (2441MHz)	3DH3 - Channel 39 (2441MHz)
	
3DH5 - Channel 39 (2441MHz)	
	

Note 1: According the Bluetooth Standard Specification, the nominal hop rate is 1600 hops/s. All Bluetooth unit participating in the piconet are time and hop synchronized to the channel.

Non-AFH

Hops Over Occupancy Time in 31.6s for 3DH1 = 1600 / 2 / 79 * 31.6 = 320.

Hops Over Occupancy Time in 31.6s for 3DH3 = 1600 / 4 / 79 * 31.6 = 160.

Hops Over Occupancy Time in 31.6s for 3DH5 = 1600 / 6 / 79 * 31.6 = 107.

AFH

Hops Over Occupancy Time in 31.6s for 3DH1 = 800 / 2 / 20 * 8.0 = 160.

Hops Over Occupancy Time in 31.6s for 3DH3 = 800 / 4 / 20 * 8.0 = 80.

Hops Over Occupancy Time in 31.6s for 3DH5 = 800 / 6 / 20 * 8.0 = 53.5.

Note 2: Time of Occupancy = Packet Transfer Time * Hops Over Occupancy Time in 31.6s.

6.7. Band-edge Compliance Measurement

6.7.1.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.

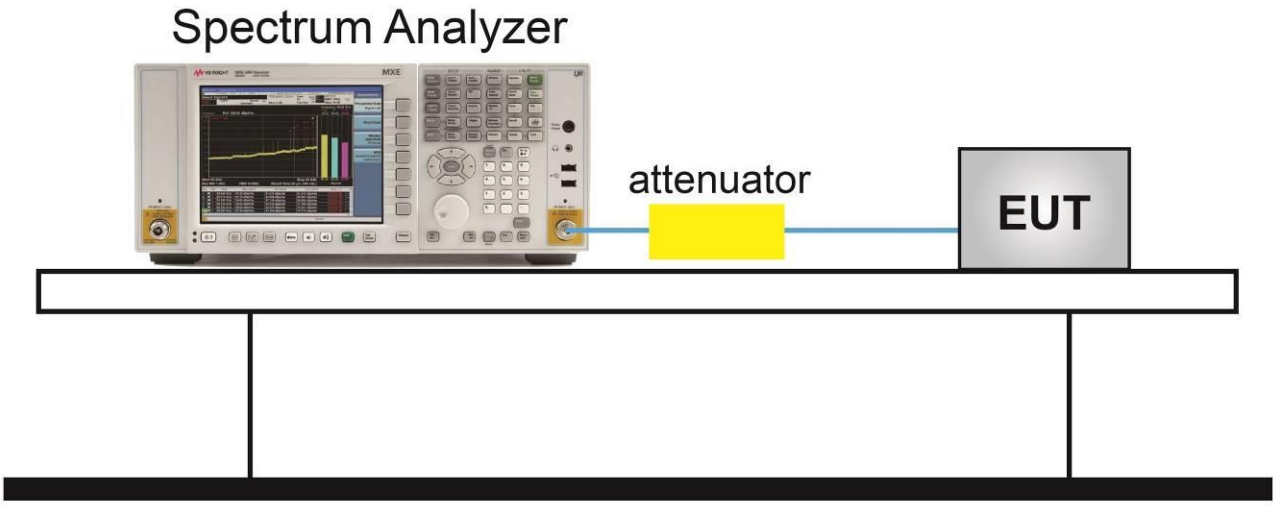
6.7.2.Test Procedure Used

ANSI C63.10-2013 - Section 6.10.4

6.7.3.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. 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.

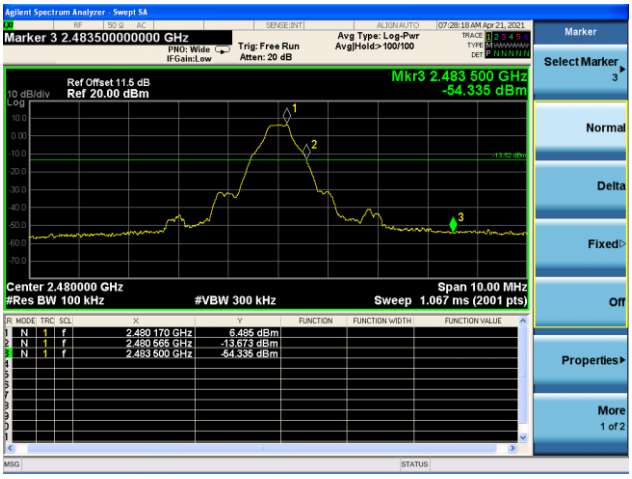
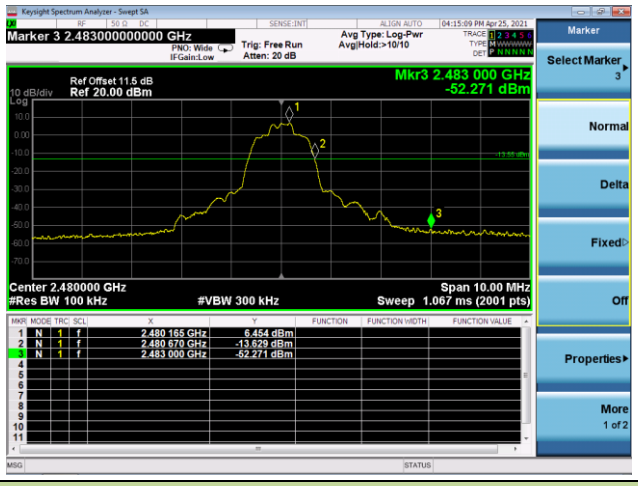
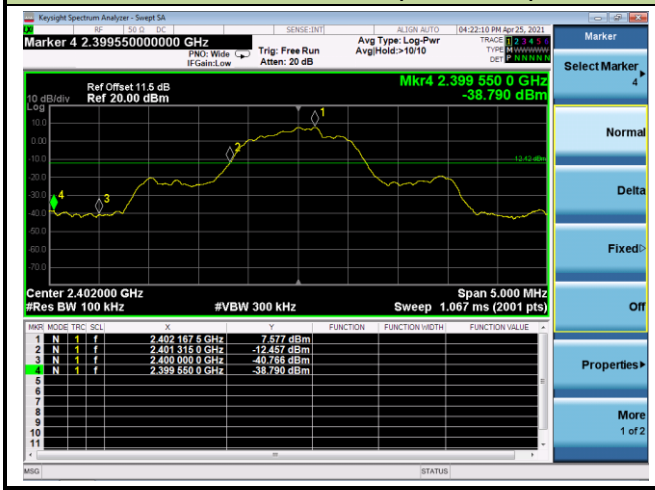
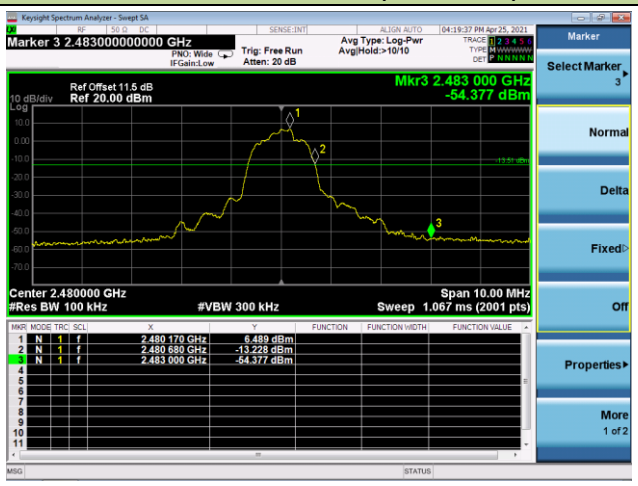
6.7.4.Test Setup

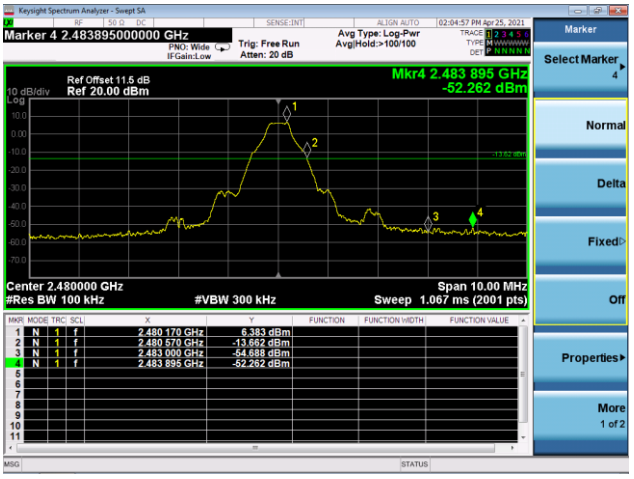
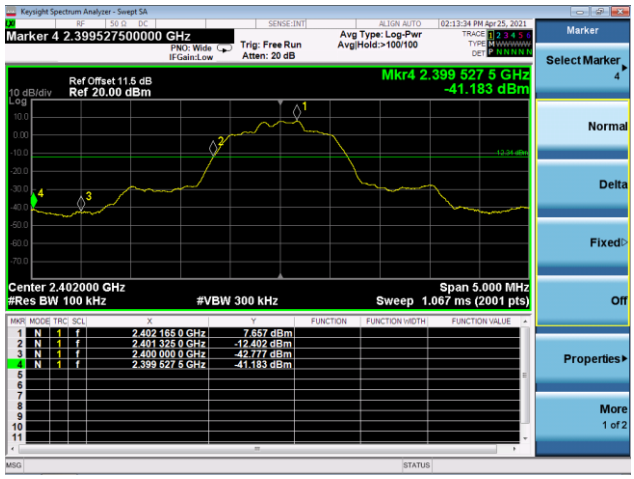
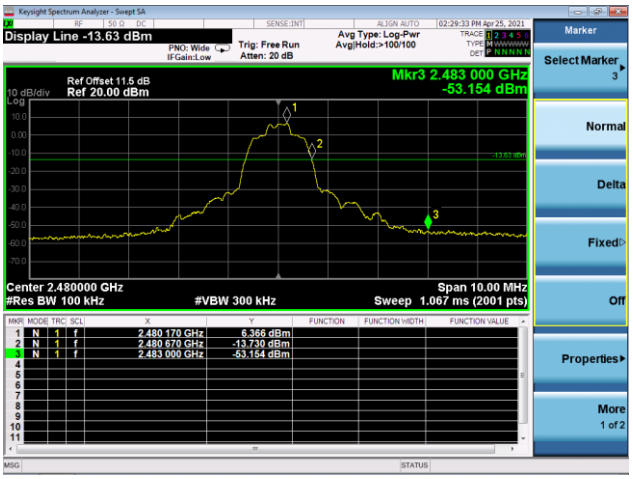
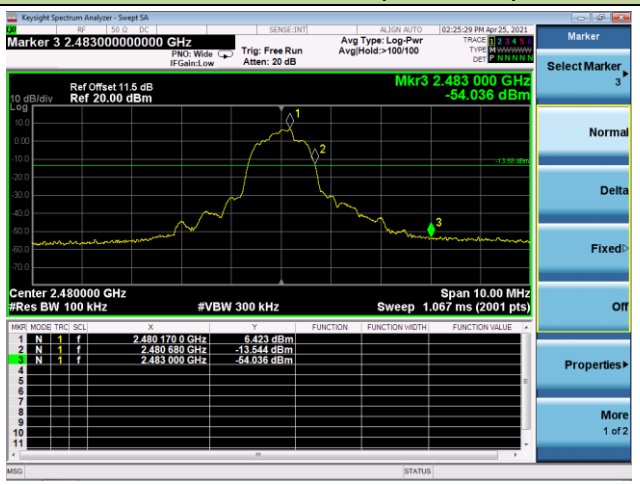


6.7.5.Test Result

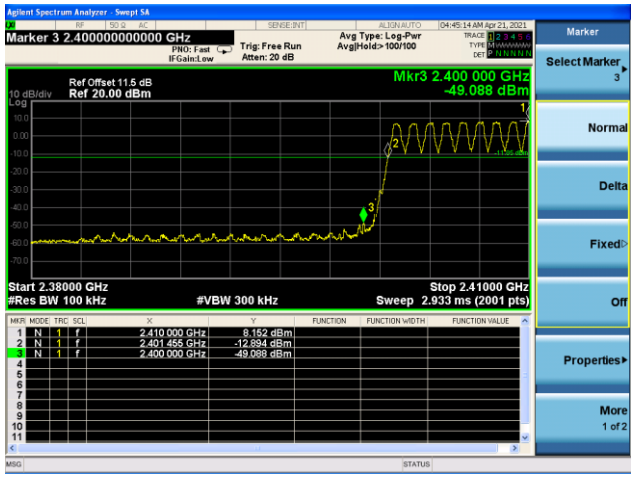
Test Site	NS-TR2	Test Engineer	Flay Yang
Test Date	2021/04/21~2021/04/25		

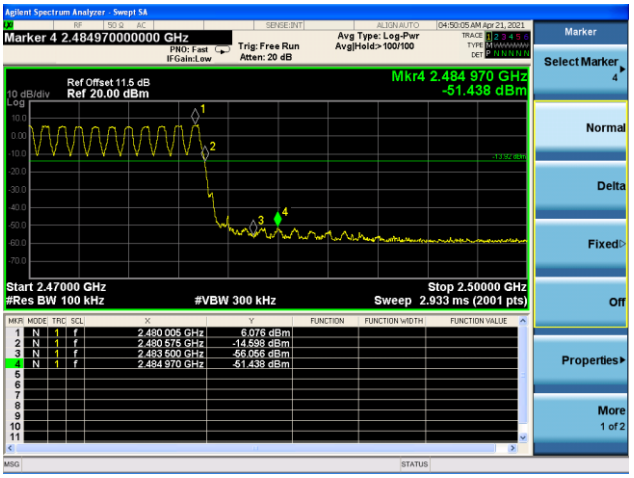
Test Mode	Channel No.	Frequency (MHz)	Limit	Result
Left Earbud				
DH5	00	2402	20dBc	Pass
DH5	78	2480	20dBc	Pass
DH5	00 ~ 78	2402 ~ 2480	20dBc	Pass
2DH5	00	2402	20dBc	Pass
2DH5	78	2480	20dBc	Pass
2DH5	00 ~ 78	2402 ~ 2480	20dBc	Pass
3DH5	00	2402	20dBc	Pass
3DH5	78	2480	20dBc	Pass
3DH5	00 ~ 78	2402 ~ 2480	20dBc	Pass
Right Earbud				
DH5	00	2402	20dBc	Pass
DH5	78	2480	20dBc	Pass
DH5	00 ~ 78	2402 ~ 2480	20dBc	Pass
2DH5	00	2402	20dBc	Pass
2DH5	78	2480	20dBc	Pass
2DH5	00 ~ 78	2402 ~ 2480	20dBc	Pass
3DH5	00	2402	20dBc	Pass
3DH5	78	2480	20dBc	Pass
3DH5	00 ~ 78	2402 ~ 2480	20dBc	Pass

Band-edge Compliance - Left Earbud	
DH5 - Channel 00 (2402MHz)	DH5 - Channel 78 (2480MHz)
	
2DH5 - Channel 00 (2402MHz)	2DH5 - Channel 78 (2480MHz)
	
3DH5 - Channel 00 (2402MHz)	3DH5 - Channel 78 (2480MHz)
	

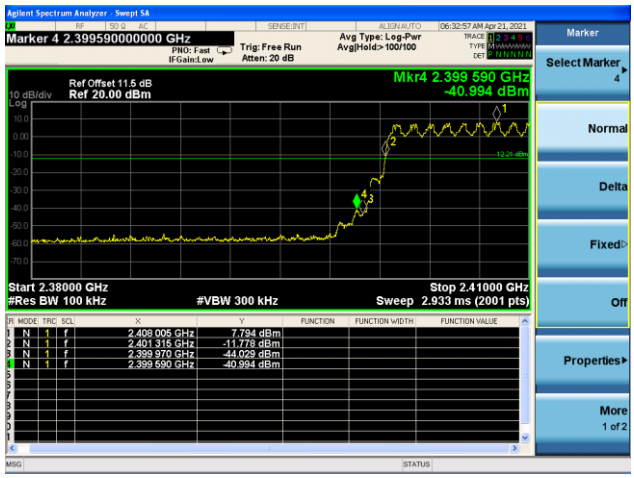
Band-edge Compliance - Right Earbud	
DH5 - Channel 00 (2402MHz)	DH5 - Channel 78 (2480MHz)
	
2DH5 - Channel 00 (2402MHz)	2DH5 - Channel 78 (2480MHz)
	
3DH5 - Channel 00 (2402MHz)	3DH5 - Channel 78 (2480MHz)
	

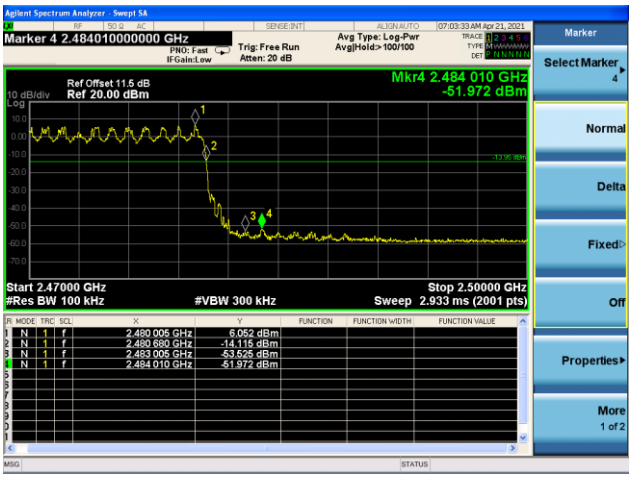
DH5 - Operation Frequency Range of 20dB Bandwidth within Hopping Mode - Left Earbud



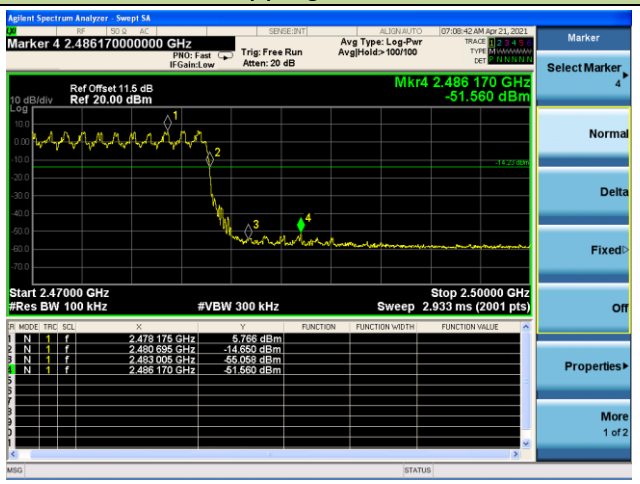


2DH5 - Operation Frequency Range of 20dB Bandwidth within Hopping Mode - Left Earbud

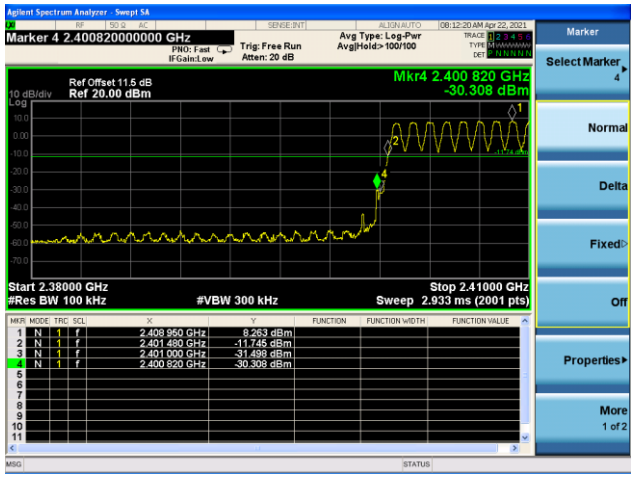


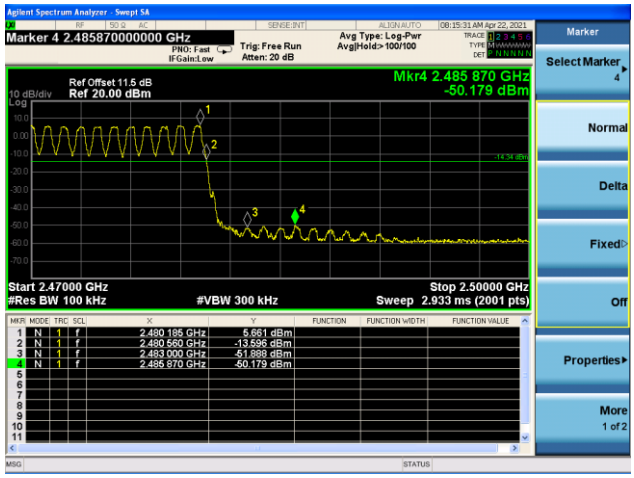


3DH5 - Operation Frequency Range of 20dB Bandwidth within Hopping Mode - Left Earbud

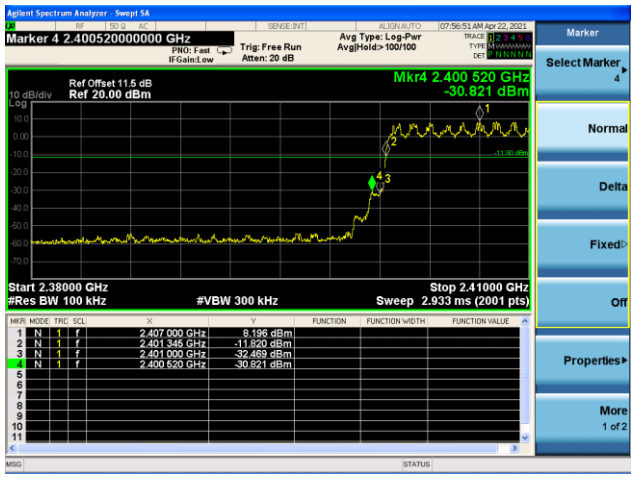


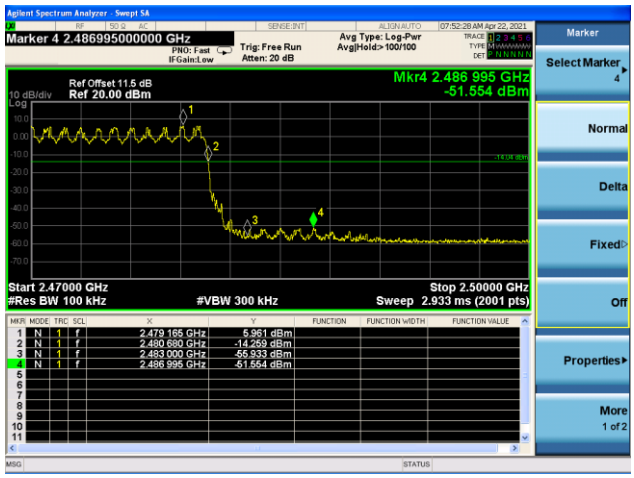
DH5 - Operation Frequency Range of 20dB Bandwidth within Hopping Mode - Right Earbud



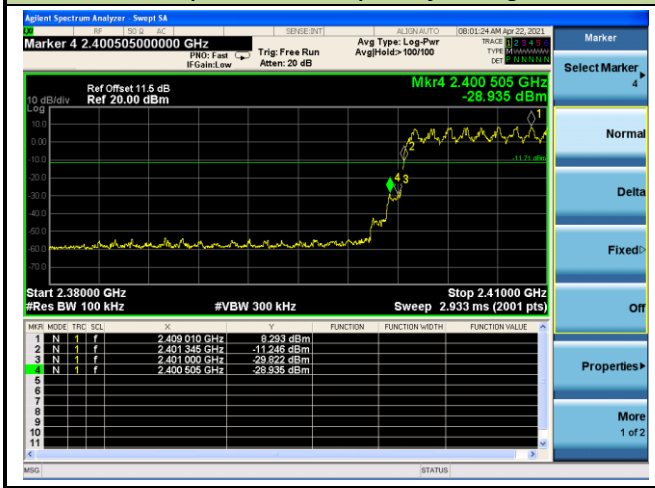


2DH5 - Operation Frequency Range of 20dB Bandwidth within Hopping Mode - Right Earbud





3DH5 - Operation Frequency Range of 20dB Bandwidth within Hopping Mode - Right Earbud



6.8. Conducted Spurious Emissions Measurement

6.8.1.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.

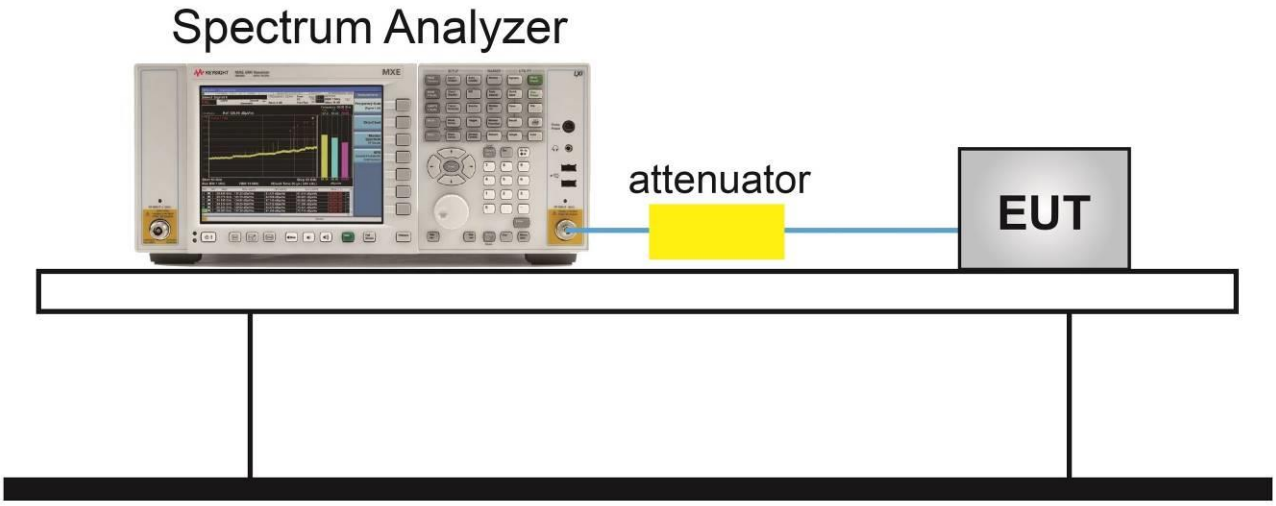
6.8.2.Test Procedure Used

ANSI C63.10-2013 - Section 7.8.8

6.8.3.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 = 100kHz
3. VBW = 300kHz
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.

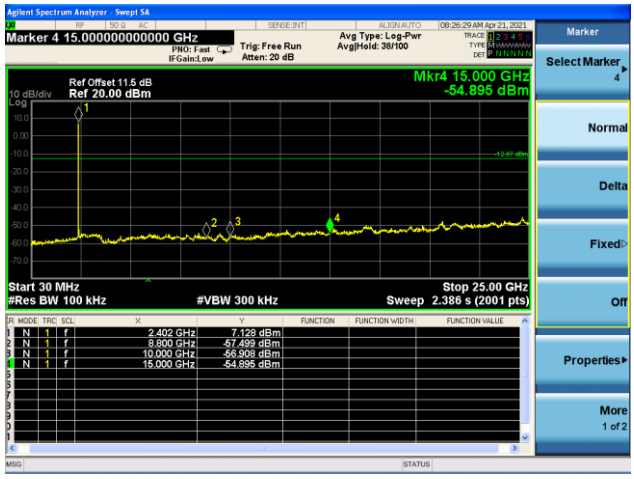
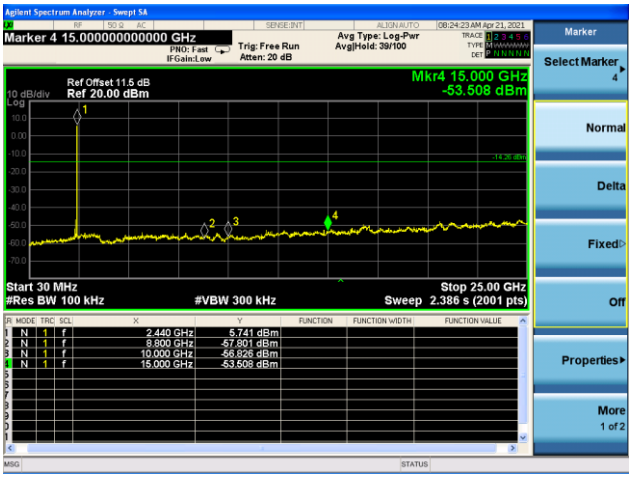
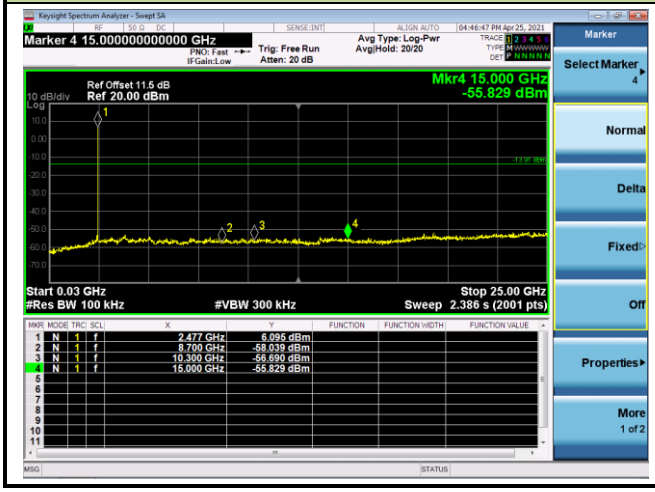
6.8.4.Test Setup

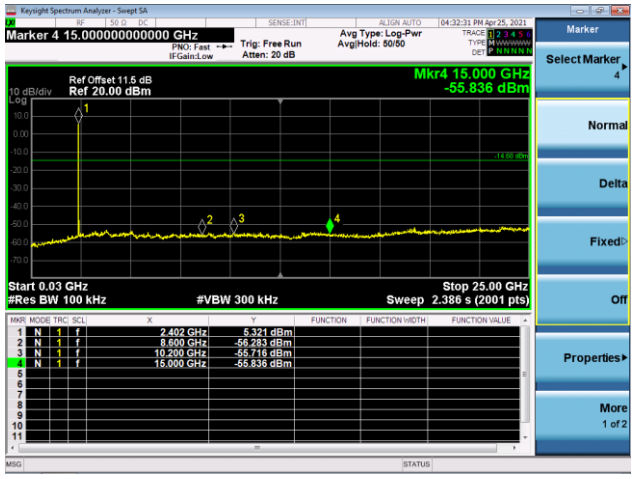
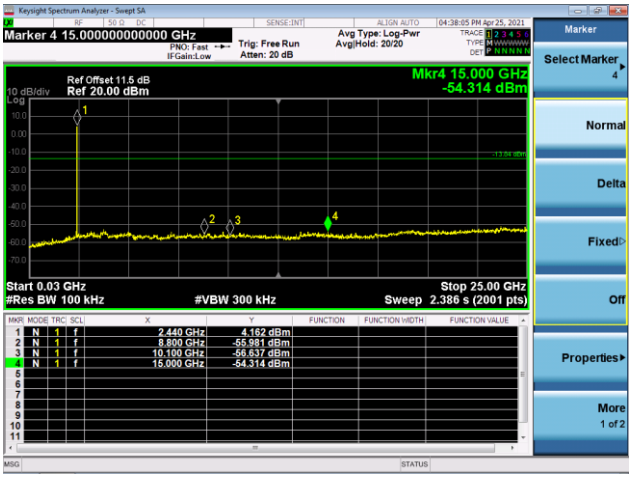


6.8.5.Test Result

Test Site	NS-TR2	Test Engineer	Flay Yang
Test Date	2021/04/21~2021/04/27		

Test Mode	Channel No.	Frequency (MHz)	Limit (MHz)	Result
Left Earbud				
DH5	00	2402	20dBc	Pass
DH5	39	2441	20dBc	Pass
DH5	78	2480	20dBc	Pass
2DH5	00	2402	20dBc	Pass
2DH5	39	2441	20dBc	Pass
2DH5	78	2480	20dBc	Pass
3DH5	00	2402	20dBc	Pass
3DH5	39	2441	20dBc	Pass
3DH5	78	2480	20dBc	Pass
Right Earbud				
DH5	00	2402	20dBc	Pass
DH5	39	2441	20dBc	Pass
DH5	78	2480	20dBc	Pass
2DH5	00	2402	20dBc	Pass
2DH5	39	2441	20dBc	Pass
2DH5	78	2480	20dBc	Pass
3DH5	00	2402	20dBc	Pass
3DH5	39	2441	20dBc	Pass
3DH5	78	2480	20dBc	Pass

DH5 Conducted Spurious Emissions - Left Earbud	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)	
	

2DH5 Conducted Spurious Emissions - Left Earbud	
Channel 00 (2402MHz)	Channel 39 (2441MHz)
	
Channel 78 (2480MHz)