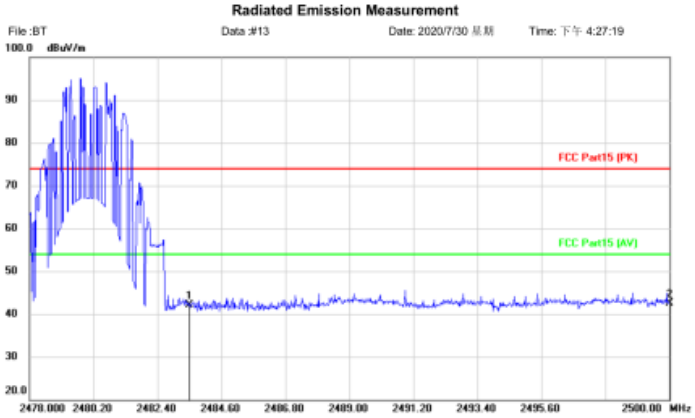
Highest channel

Peak Value

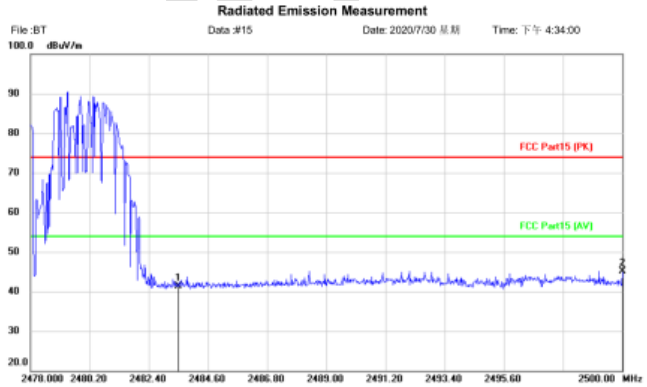


Site
Limit: FCC Part15 (PK)
EUT: Haylou Wireless Earbuds
M/N: Haylou -GT5
Mode: TX-H mode
Note:

Polarization: *Vertical*
Power:
Distance: 3m

Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	55.54	-13.50	42.04	74.00	-31.96	peak			
2	*	2500.000	55.90	-13.42	42.48	74.00	-31.52	peak			



Site
Limit: FCC Part15 (PK)
EUT: Haylou Wireless Earbuds
M/N: Haylou -GT5
Mode: TX-H mode
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	54.44	-13.11	41.33	74.00	-32.67	peak			
2	*	2500.000	58.11	-13.02	45.09	74.00	-28.91	peak			

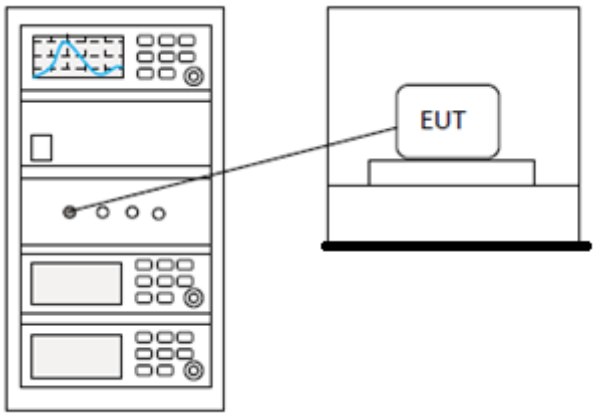
CONDUCTED BAND EDGES MEASUREMENT

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Eason
Temperature	25℃
Humidity	60%

LIMITS

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 power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

BLOCK DIAGRAM OF TEST SETUP



TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

BlueAsia

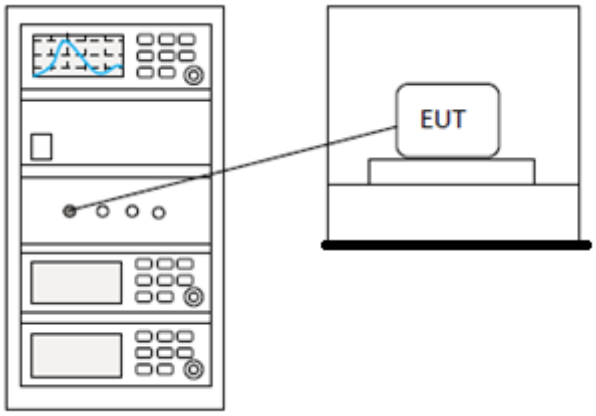
DWELL TIME

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.4
Test Mode (Pre-Scan)	TX_non-Hop mode
Test Mode (Final Test)	TX_non-Hop mode
Tester	Eason
Temperature	25℃
Humidity	60%

LIMITS

Frequency(MHz)	Limit
902-928	0.4S within a 20S period(20dB bandwidth<250kHz)
	0.4S within a 10S period(20dB bandwidth≥250kHz)
2400-2483.5	0.4S within a period of 0.4S multiplied by the number of hopping channels
5725-5850	0.4S within a 30S period

BLOCK DIAGRAM OF TEST SETUP



BlueAsia

TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

BlueAsia

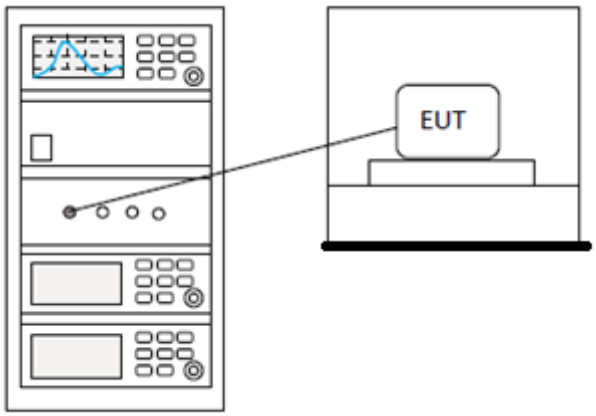
HOPPING CHANNEL NUMBER

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.3
Test Mode (Pre-Scan)	TX_non-Hop mode
Test Mode (Final Test)	TX_non-Hop mode
Tester	Eason
Temperature	25℃
Humidity	60%

LIMITS

Frequency range(MHz)	Number of hopping channels (minimum)
902-928	50 for 20dB bandwidth <250kHz
	25 for 20dB bandwidth ≥250kHz
2400-2483.5	15
5725-5850	75

BLOCK DIAGRAM OF TEST SETUP



TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

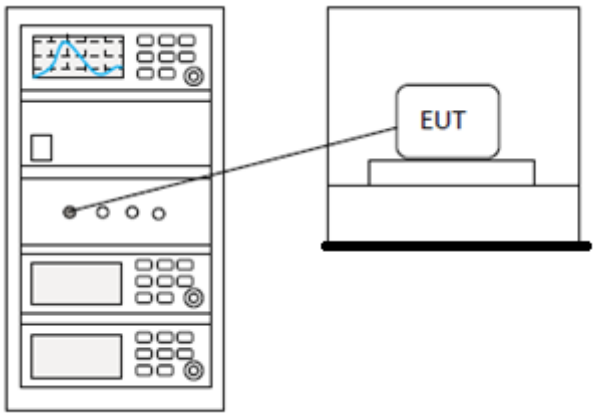
CARRIER FREQUENCIES SEPARATION

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.2
Test Mode (Pre-Scan)	TX_non-Hop mode
Test Mode (Final Test)	TX_non-Hop mode
Tester	Eason
Temperature	25℃
Humidity	60%

LIMITS

Limit:	2/3 of the 20dB bandwidth base on the transmission power is less than 0.125W

BLOCK DIAGRAM OF TEST SETUP



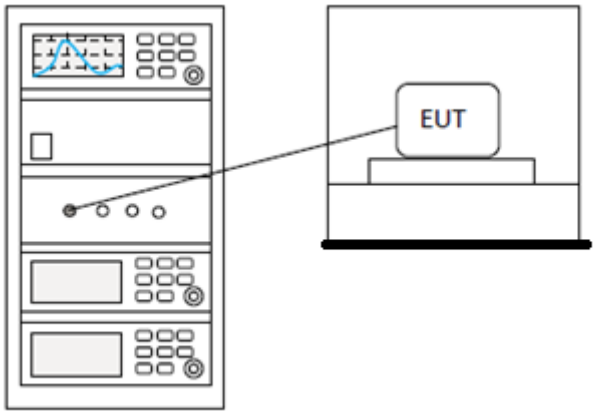
TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

20DB BANDWIDTH

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.7
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Eason
Temperature	25℃
Humidity	60%

BLOCK DIAGRAM OF TEST SETUP



TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

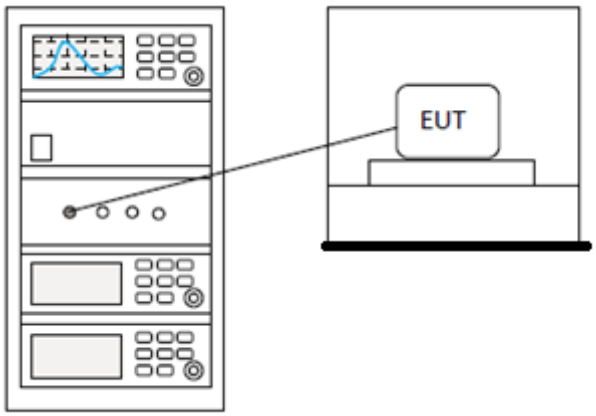
CONDUCTED PEAK OUTPUT POWER

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.5
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Eason
Temperature	25℃
Humidity	60%

LIMITS

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥50 hopping channels
	0.25 for 25≤ hopping channels <50
	1 for digital modulation
2400-2483.5	1 for ≥75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

BLOCK DIAGRAM OF TEST SETUP



TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

BlueAsia

10 APPENDIX

Appendix1

10.1 APPENDIX: 20DBEMISSION BANDWIDTH

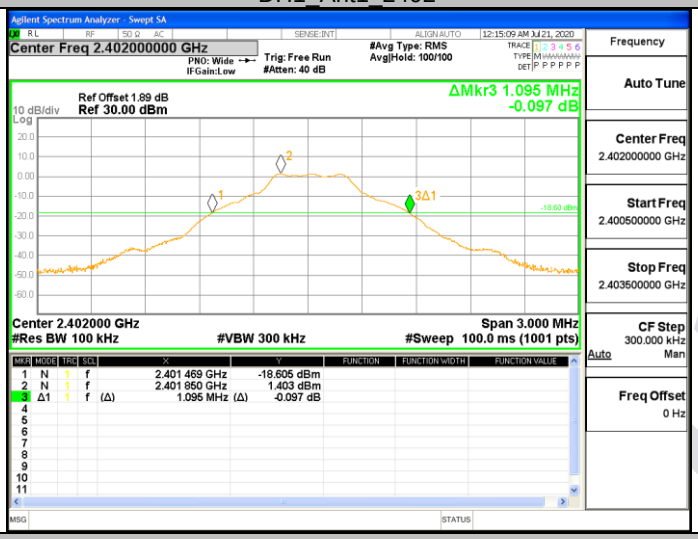
Test Result

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	1.095	2401.469	2402.564	---	PASS
		2441	1.098	2440.466	2441.564	---	PASS
		2480	1.098	2479.466	2480.564	---	PASS
2DH1	Ant1	2402	1.359	2401.328	2402.687	---	PASS
		2441	1.359	2440.328	2441.687	---	PASS
		2480	1.356	2479.328	2480.684	---	PASS
3DH1	Ant1	2402	1.329	2401.355	2402.684	---	PASS
		2441	1.332	2440.352	2441.684	---	PASS
		2480	1.332	2479.352	2480.684	---	PASS

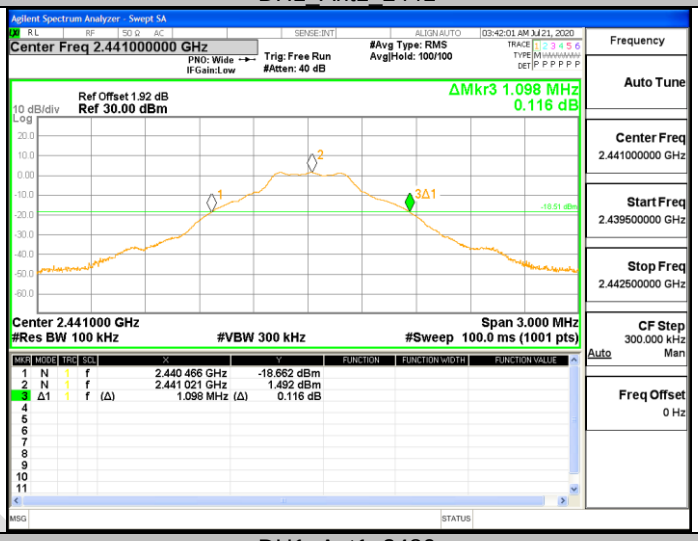
BlueAsia

Test Graphs

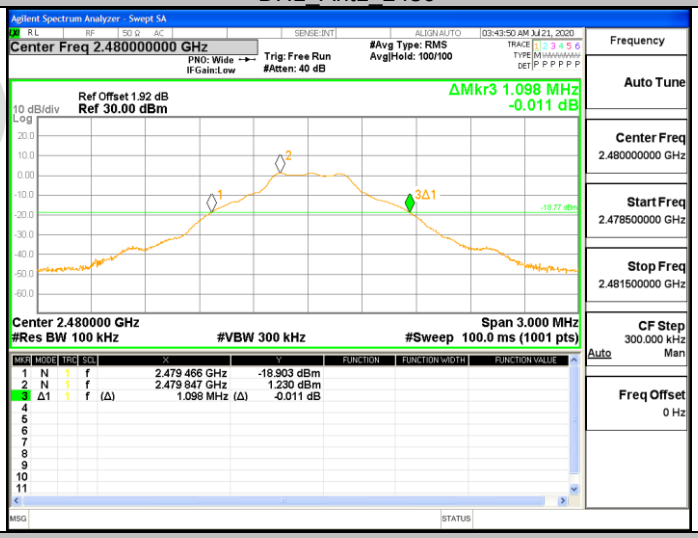
DH1_Ant1_2402



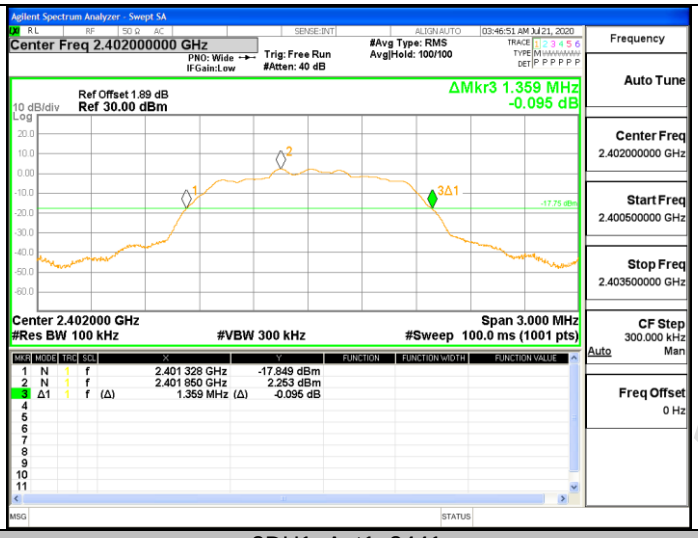
DH1_Ant1_2441



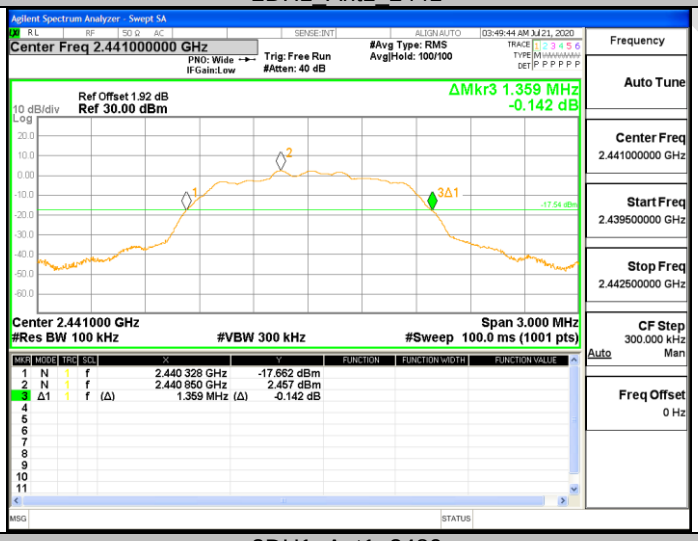
DH1_Ant1_2480



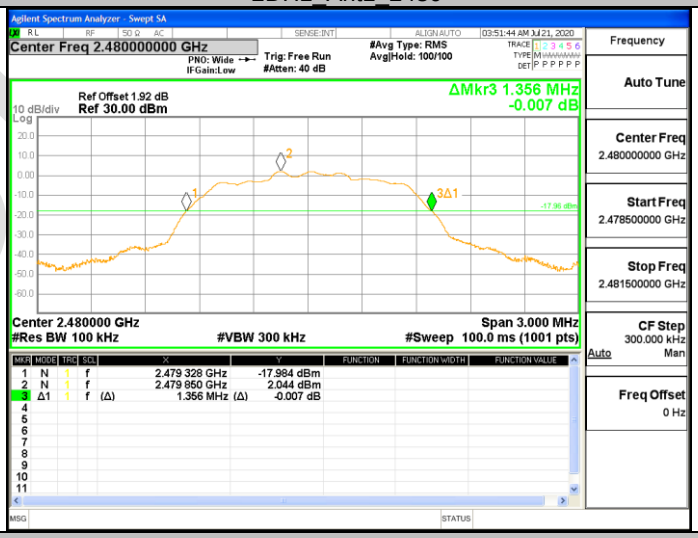
2DH1_Ant1_2402



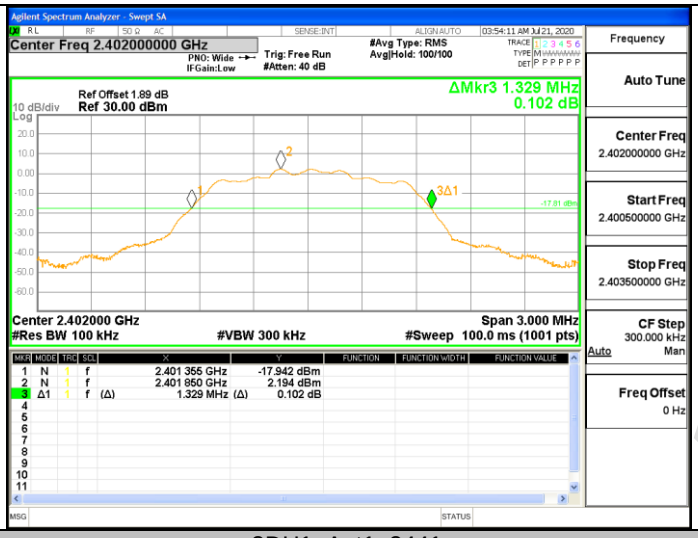
2DH1_Ant1_2441



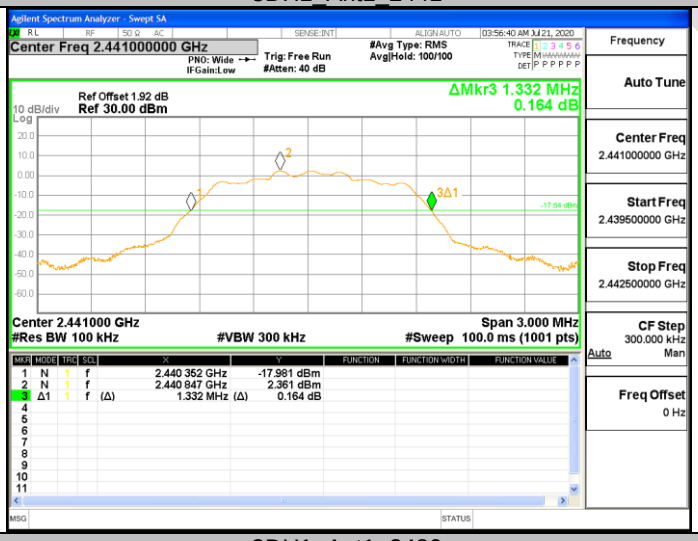
2DH1_Ant1_2480



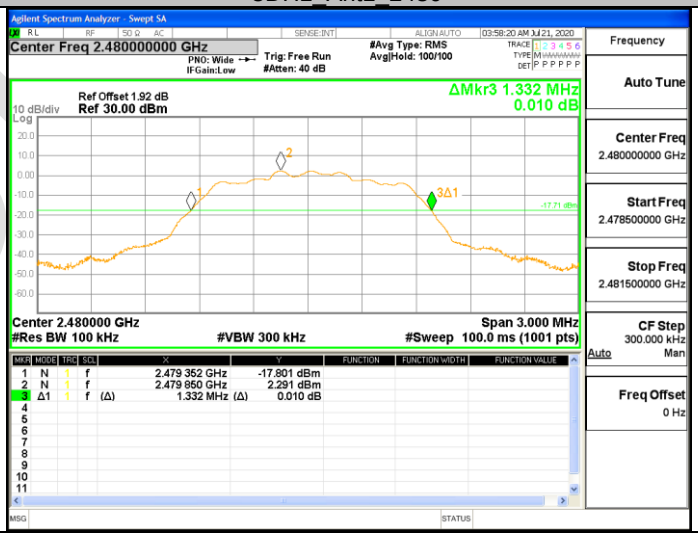
3DH1_Ant1_2402



3DH1_Ant1_2441



3DH1_Ant1_2480



10.2 APPENDIX: MAXIMUM CONDUCTED OUTPUT POWER

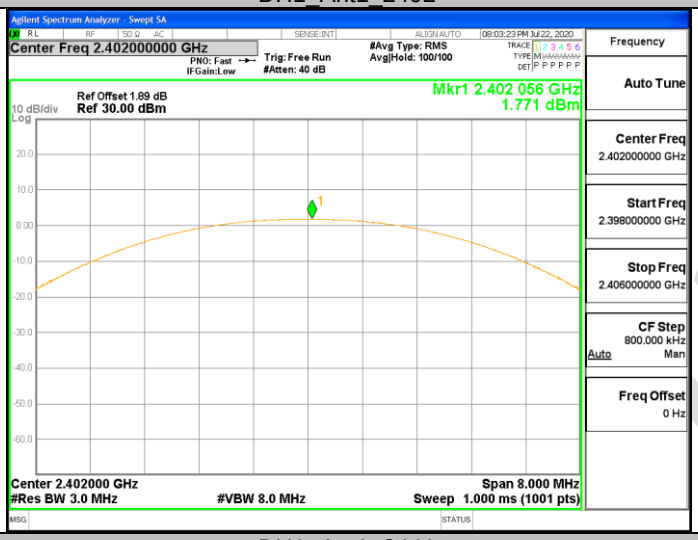
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH1	Ant1	2402	1.77	<=20.97	PASS
		2441	1.89	<=20.97	PASS
		2480	1.57	<=20.97	PASS
2DH1	Ant1	2402	4.03	<=20.97	PASS
		2441	4.15	<=20.97	PASS
		2480	3.73	<=20.97	PASS
3DH1	Ant1	2402	4.65	<=20.97	PASS
		2441	4.73	<=20.97	PASS
		2480	4.33	<=20.97	PASS

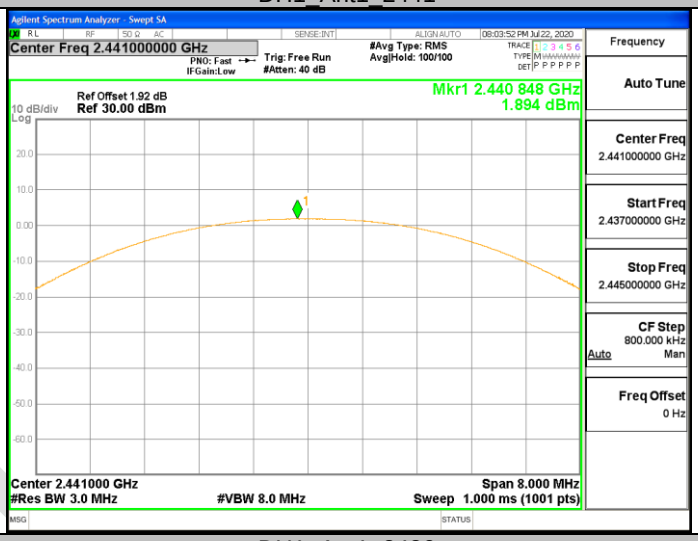
BlueAsia

Test Graphs

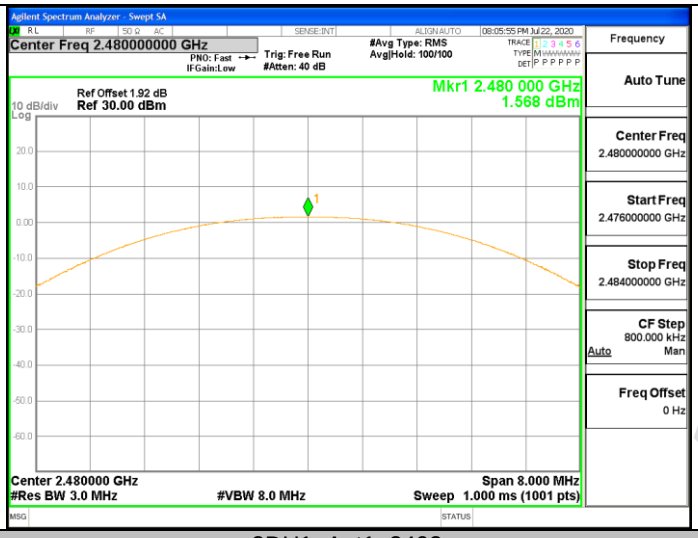
DH1_Ant1_2402



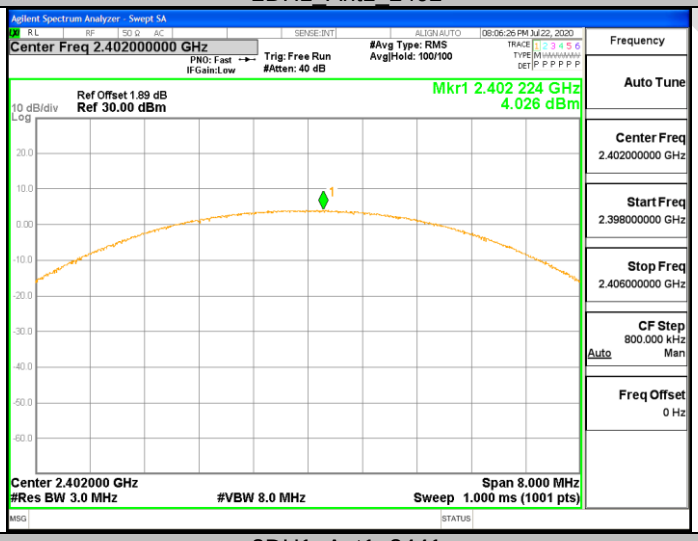
DH1_Ant1_2441



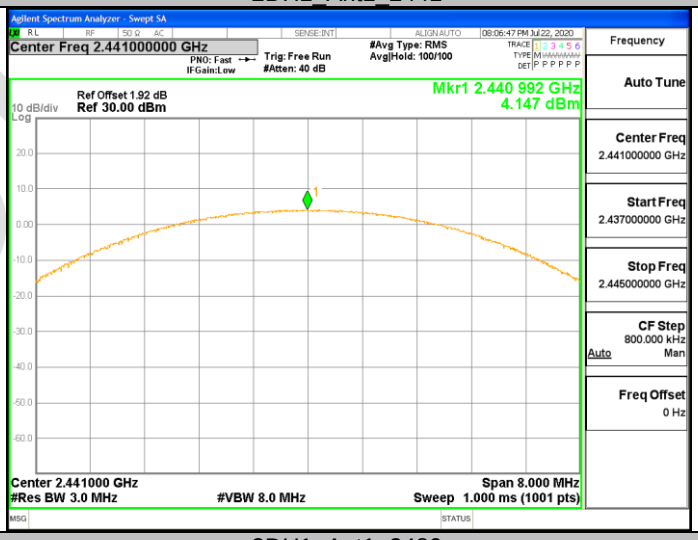
DH1_Ant1_2480



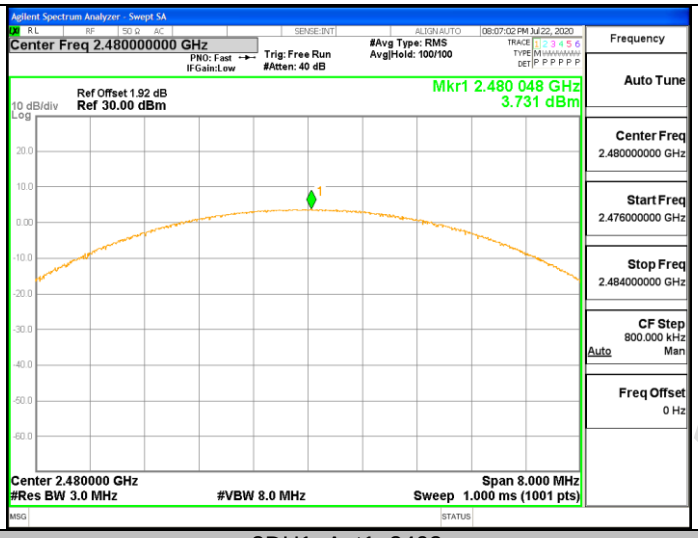
2DH1_Ant1_2402



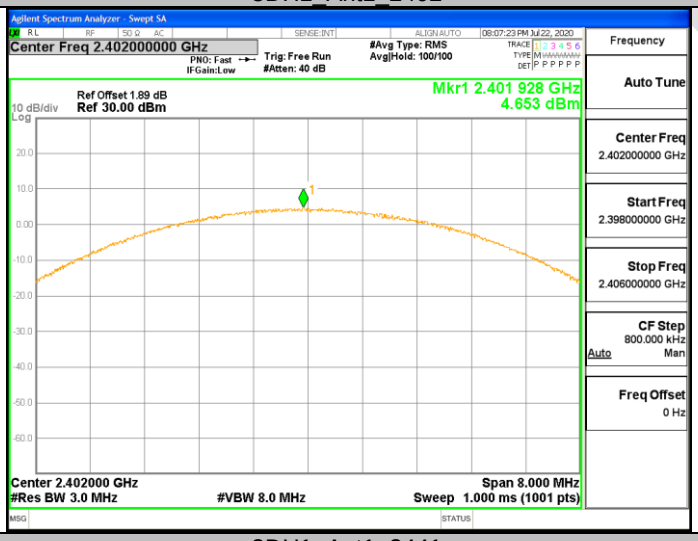
2DH1_Ant1_2441



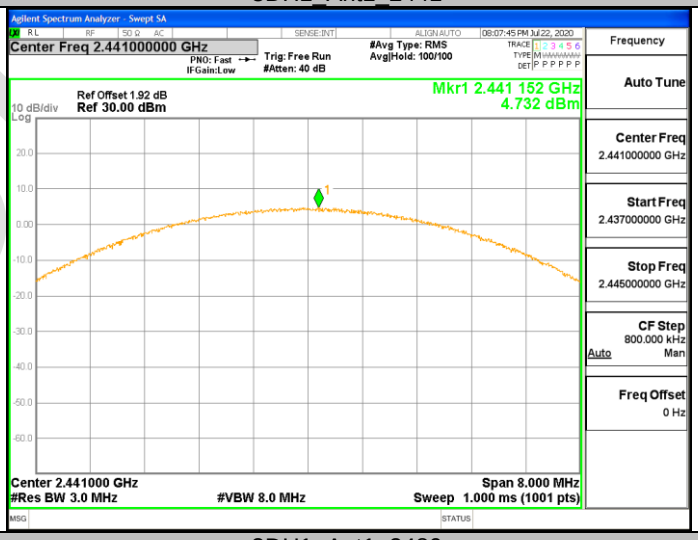
2DH1_Ant1_2480



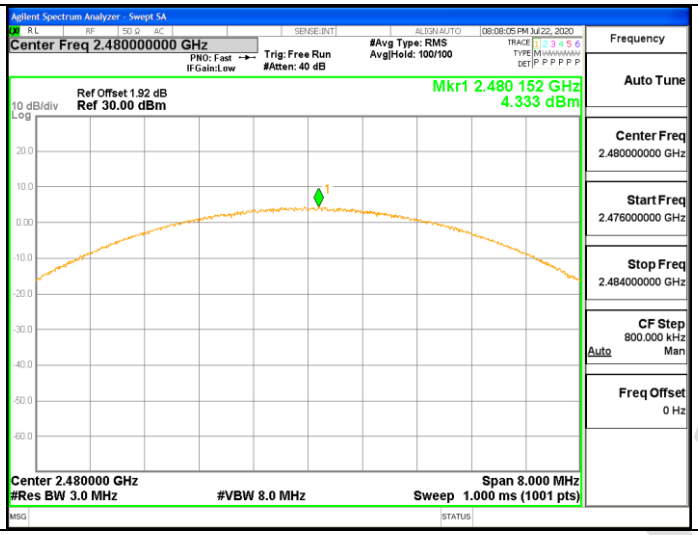
3DH1_Ant1_2402



3DH1_Ant1_2441



3DH1_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
08:08:05 PM Jul 22, 2020
Ref Offset 1.92 dB
10 dB/div
Log
Ref 30.00 dBm
Mkr1 2.480 152 GHz
4.333 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 8.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.476000000 GHz
Stop Freq
2.484000000 GHz
CF Step
800.000 kHz
Auto
Man
Freq Offset
0 Hz

BlueAsia

10.3 APPENDIX: CARRIER FREQUENCY SEPARATION

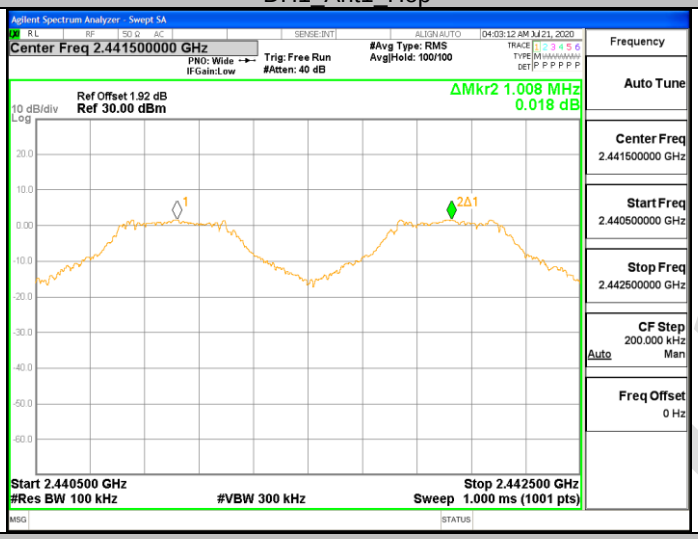
Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop	1.008	>=0.732	PASS
2DH1	Ant1	Hop	1	>=0.906	PASS
3DH1	Ant1	Hop	1.33	>=0.888	PASS

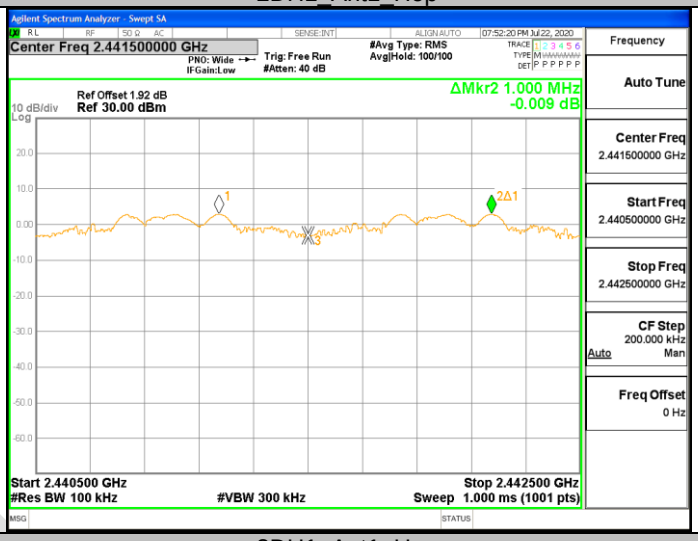
BlueAsia

Test Graphs

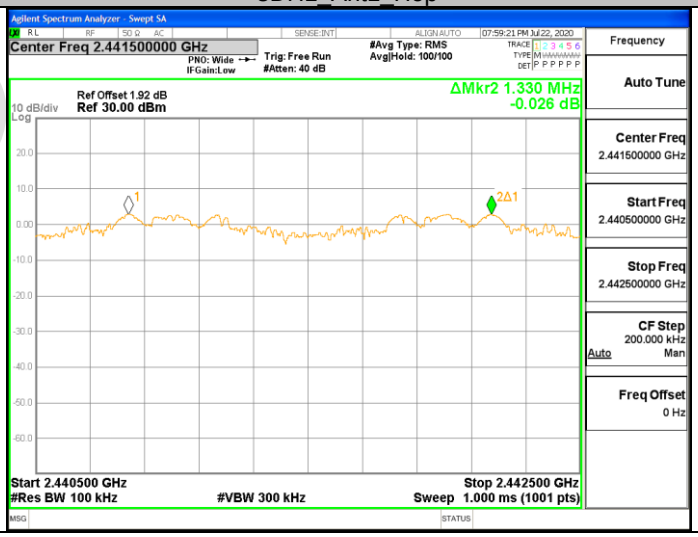
DH1_Ant1_Hop



2DH1_Ant1_Hop



3DH1_Ant1_Hop



10.4 APPENDIX: TIME OF OCCUPANCY

Test Result

Frequency	Packet	Dwell time(ms)	Limit(ms)	Result
2441MHz	DH1/2-DH1/3-DH1	124.80	400	Pass
2441MHz	DH3/2-DH3/3-DH3	265.92	400	Pass
2441MHz	DH5/2-DH5/3-DH5	310.61	400	Pass

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

Test channel: 2441MHz as blow

DH1/2-DH1/3-DH1 time slot=0.390(ms)*(1600/ (2*79))*31.6=124.80ms

DH3/2-DH3/3-DH3 time slot=1.662(ms)*(1600/ (4*79))*31.6=265.92ms

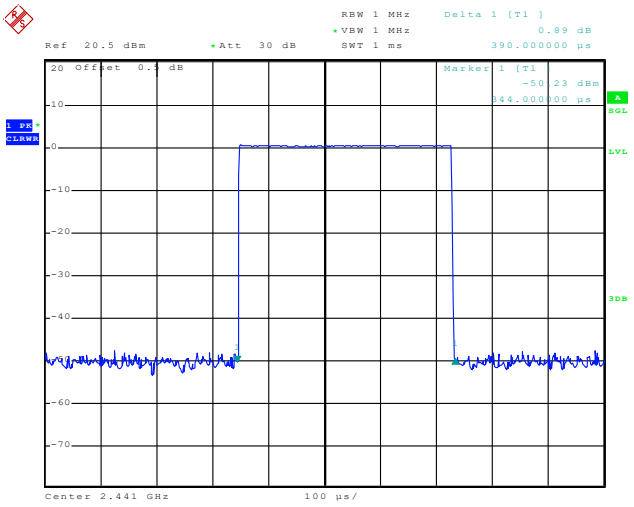
DH5/2-DH5/3-DH5 time slot=2.912(ms)*(1600/ (6*79))*31.6=310.61ms

Test plot as follows:

BlueAsia

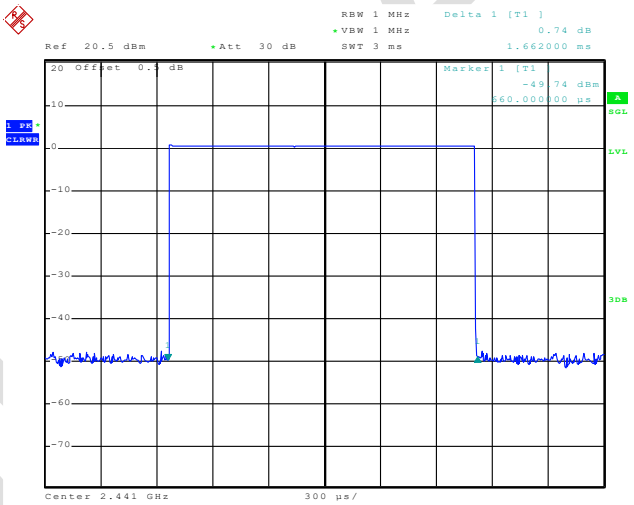
Test Graphs

DH1_Ant1



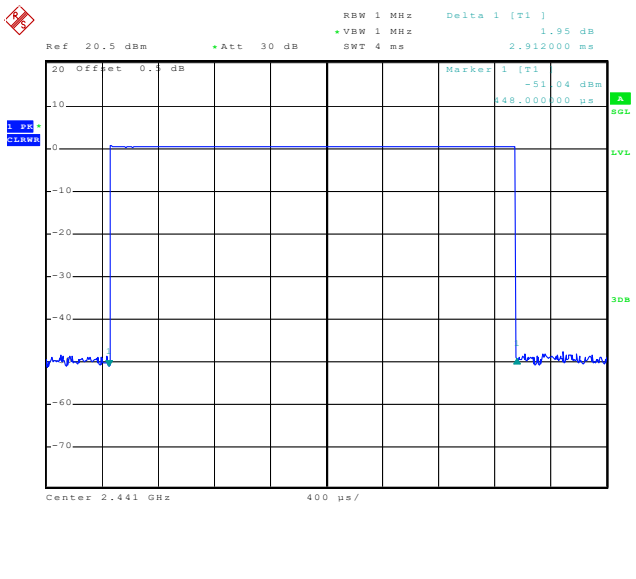
Date: 6.JUL.2020 19:19:02

DH3_Ant1_Hop



Date: 6.JUL.2020 19:19:57

DH5_Ant1_Hop


RBW 1 MHz
VBW 1 MHz
SWT 4 ms
Delta 1 [T1]
1.95 dB
2.912000 ms
Ref 20.5 dBm
Att 30 dB
20 Offset 0.5 dB
Marker 1 [T1
-51.04 dBm
448.000000 µs
1 PK
CLRWR
A
SGL
LVL
3DB
10
0
-10
-20
-30
-40
-60
-70
Center 2.441 GHz
400 µs/
Date: 6.JUL.2020 19:20:57

10.5 APPENDIXF: NUMBER OF HOPPING CHANNELS

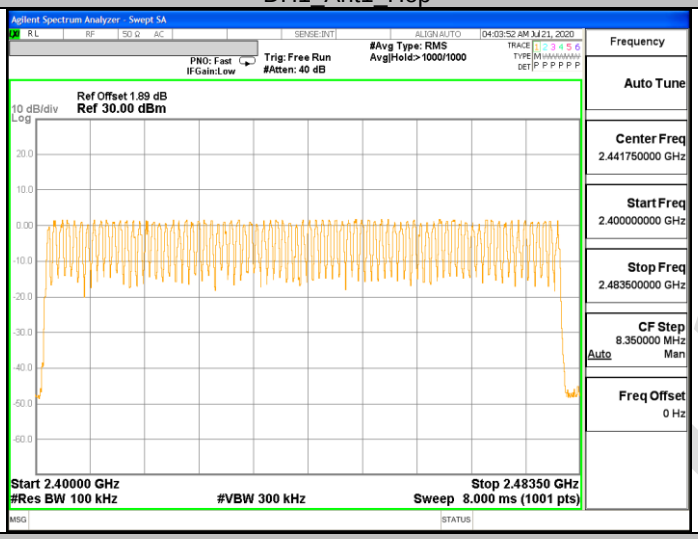
Test Result

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH1	Ant1	Hop	79	>=15	PASS
2DH1	Ant1	Hop	79	>=15	PASS
3DH1	Ant1	Hop	79	>=15	PASS

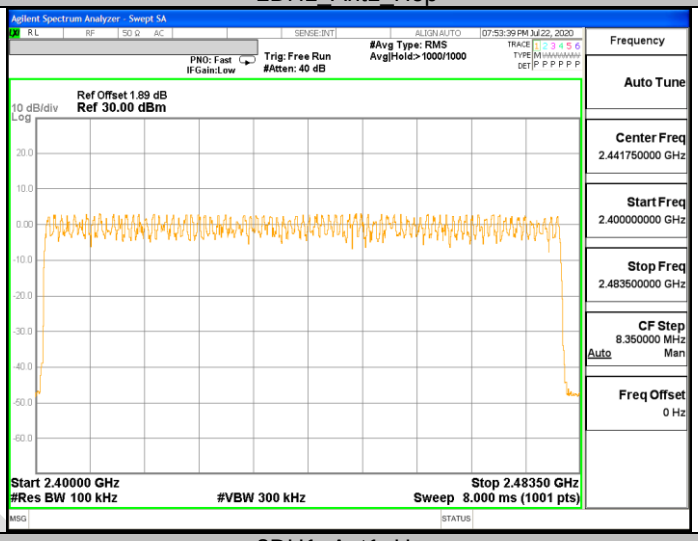
BlueAsia

Test Graphs

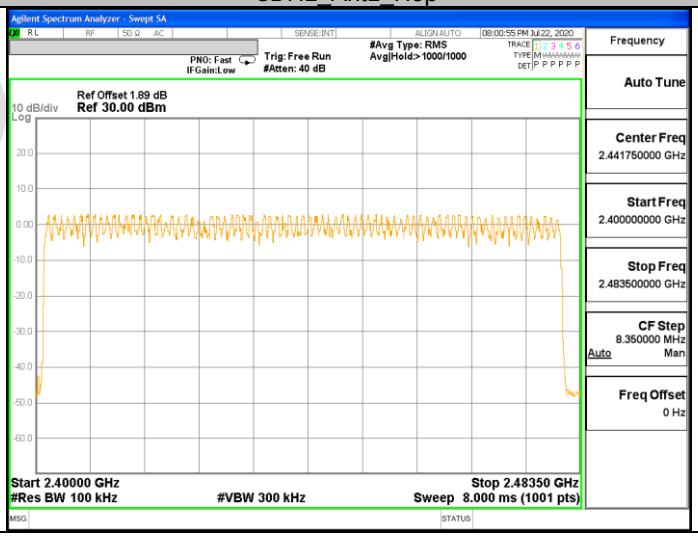
DH1_Ant1_Hop



2DH1_Ant1_Hop



3DH1_Ant1_Hop



10.6 APPENDIX:BAND EDGE MEASUREMENTS

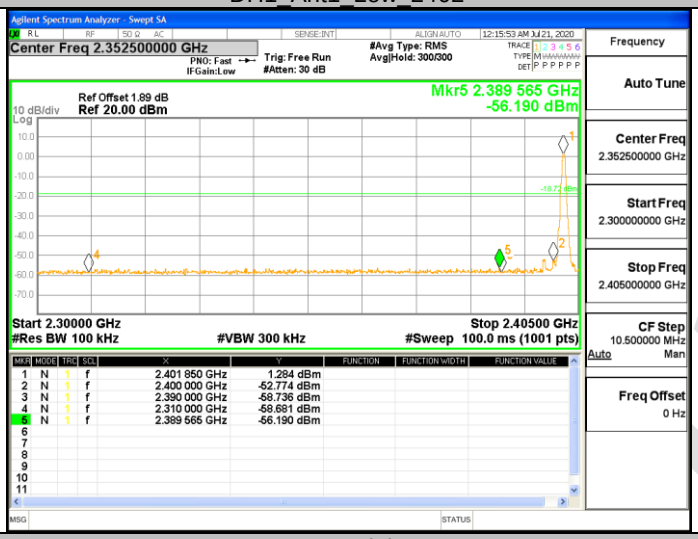
Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	1.28	-56.19	<=-18.72	PASS
		High	2480	1.18	-55.41	<=-18.82	PASS
		Low	Hop_2402	1.29	-56.25	-18.71	PASS
		High	Hop_2480	1.35	-56.09	-18.65	PASS
2DH1	Ant1	Low	2402	2.44	-55.79	<=-17.56	PASS
		High	2480	2.21	-55.5	<=-17.79	PASS
		Low	Hop_2402	2.53	-56.09	-17.47	PASS
		High	Hop_2480	2.44	-54.94	-17.56	PASS
3DH1	Ant1	Low	2402	2.44	-56.26	<=-17.56	PASS
		High	2480	2.23	-55.11	<=-17.77	PASS
		Low	Hop_2402	2.68	-56.46	-17.32	PASS
		High	Hop_2480	2.00	-55.85	-18	PASS

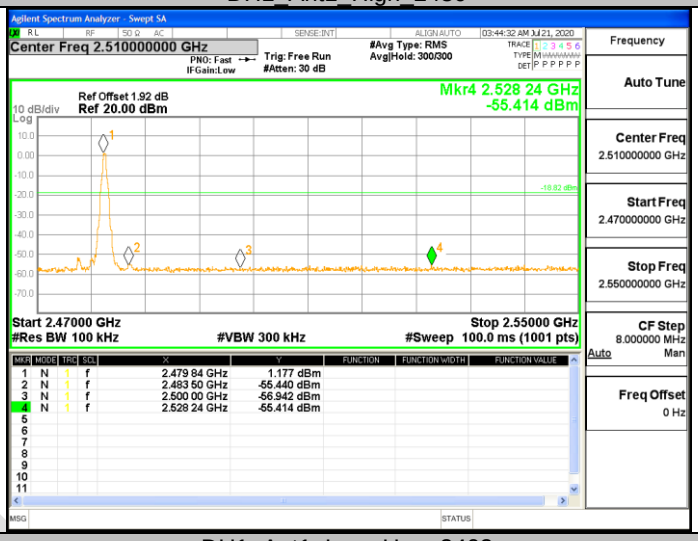
BlueAsia

Test Graphs

DH1_Ant1_Low_2402

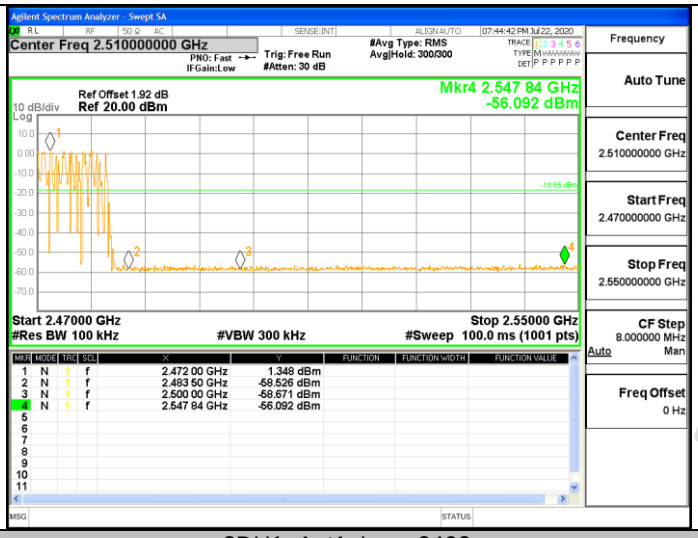


DH1_Ant1_High_2480

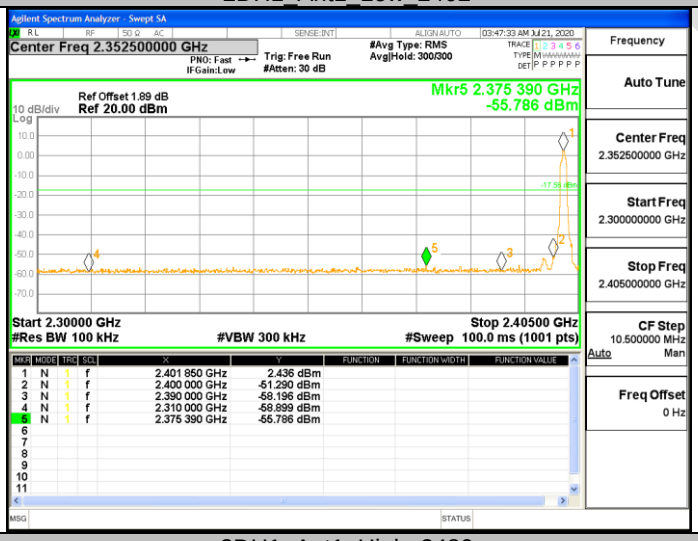


DH1_Ant1_Low_Hop_2402

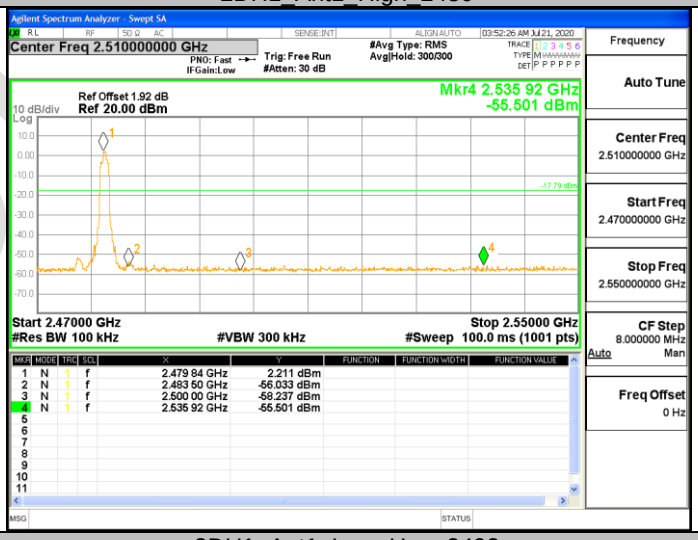
DH1_Ant1_High_Hop_2480



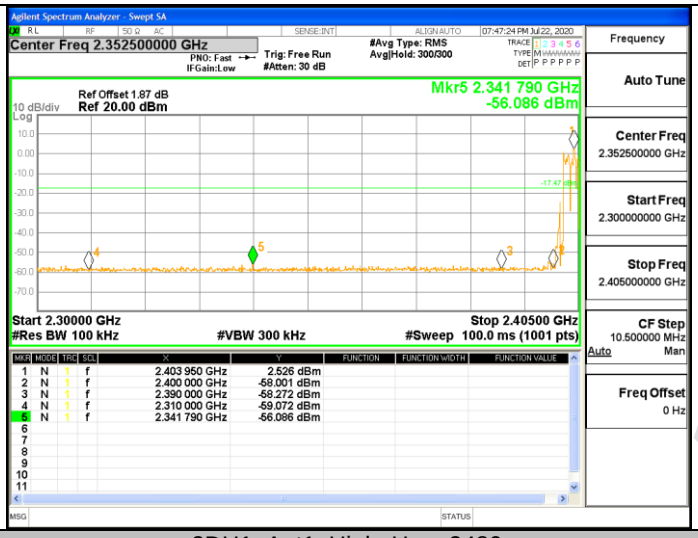
2DH1_Ant1_Low_2402



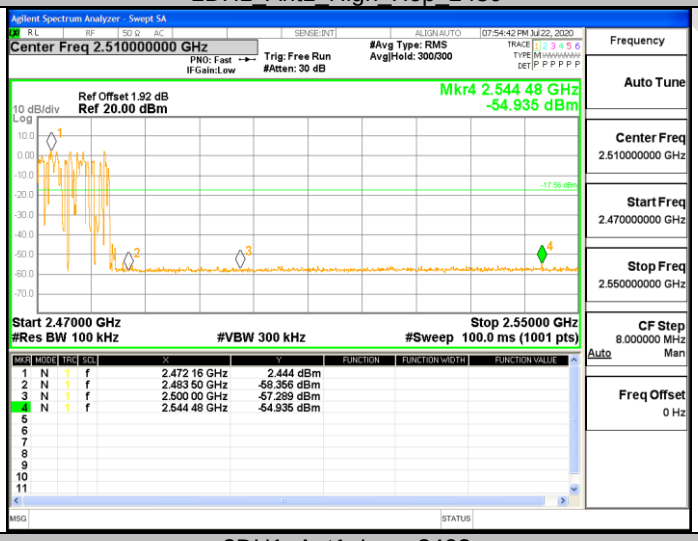
2DH1_Ant1_High_2480



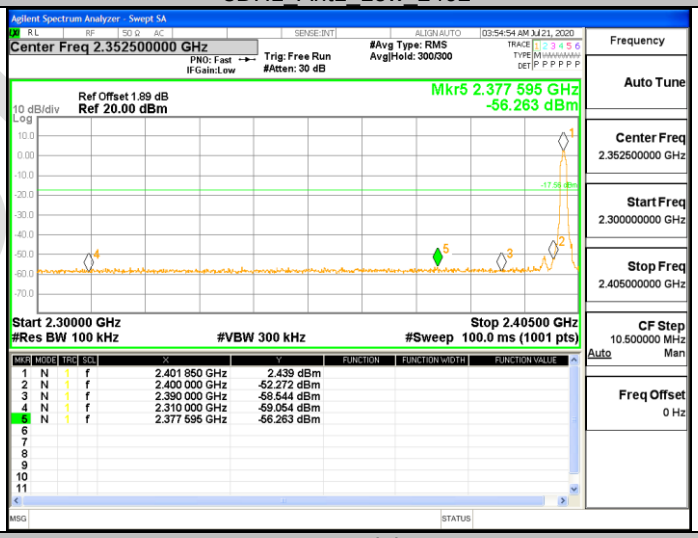
2DH1_Ant1_Low_Hop_2402



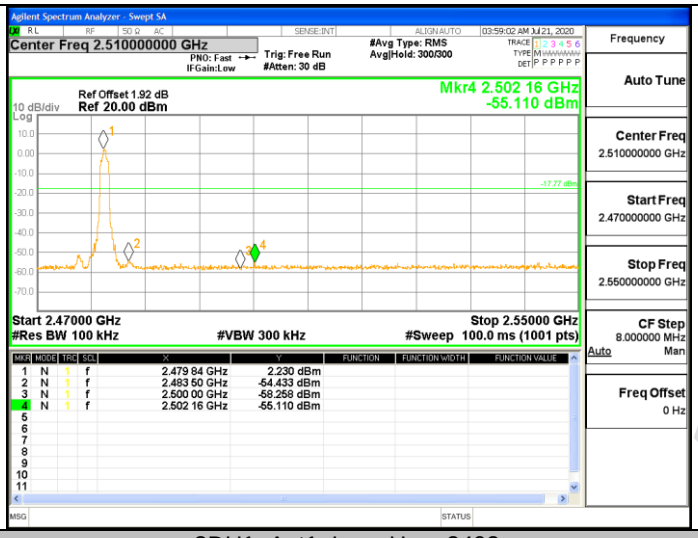
2DH1_Ant1_High_Hop_2480



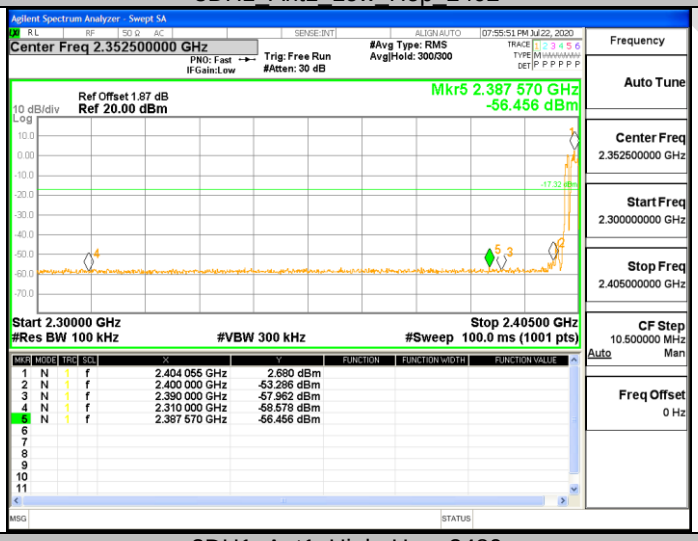
3DH1_Ant1_Low_2402



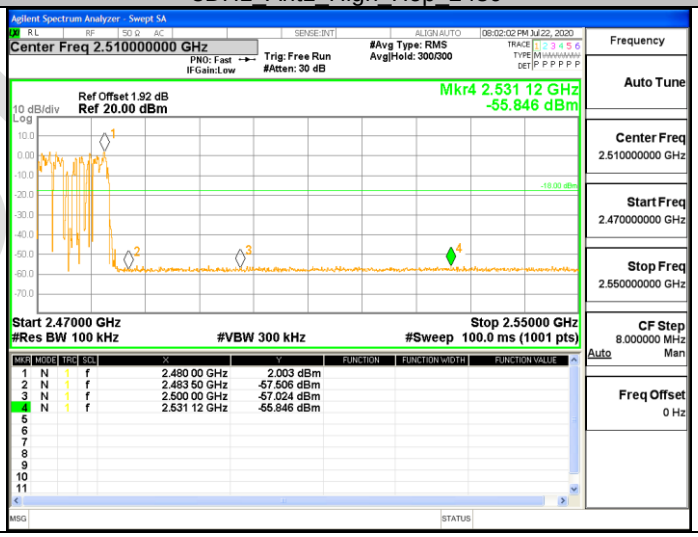
3DH1_Ant1_High_2480



3DH1_Ant1_Low_Hop_2402



3DH1_Ant1_High_Hop_2480



10.7 APPENDIX:CONDUCTED SPURIOUSEMISSION

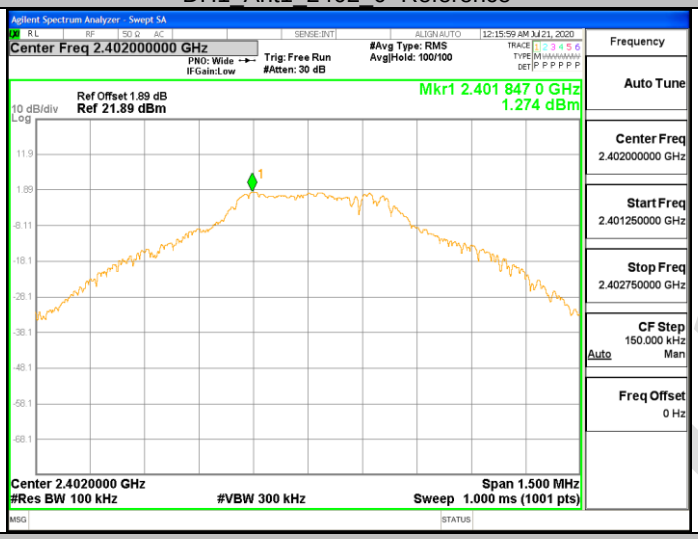
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	2402	Reference	1.27	1.27	---	PASS
			30~1000	30~1000	-68.239	<=-18.726	PASS
			1000~26500	1000~26500	-51.858	<=-18.726	PASS
		2441	Reference	1.31	1.31	---	PASS
			30~1000	30~1000	-66.97	<=-18.688	PASS
			1000~26500	1000~26500	-53.745	<=-18.688	PASS
		2480	Reference	1.10	1.10	---	PASS
			30~1000	30~1000	-67.646	<=-18.901	PASS
			1000~26500	1000~26500	-53.587	<=-18.901	PASS
2DH1	Ant1	2402	Reference	2.43	2.43	---	PASS
			30~1000	30~1000	-66.855	<=-17.566	PASS
			1000~26500	1000~26500	-53.491	<=-17.566	PASS
		2441	Reference	2.27	2.27	---	PASS
			30~1000	30~1000	-67.175	<=-17.727	PASS
			1000~26500	1000~26500	-53.161	<=-17.727	PASS
		2480	Reference	2.16	2.16	---	PASS
			30~1000	30~1000	-67.021	<=-17.839	PASS
			1000~26500	1000~26500	-53.27	<=-17.839	PASS
3DH1	Ant1	2402	Reference	2.05	2.05	---	PASS
			30~1000	30~1000	-67.498	<=-17.954	PASS
			1000~26500	1000~26500	-53.227	<=-17.954	PASS
		2441	Reference	2.24	2.24	---	PASS
			30~1000	30~1000	-67.575	<=-17.761	PASS
			1000~26500	1000~26500	-53.429	<=-17.761	PASS
		2480	Reference	2.11	2.11	---	PASS
			30~1000	30~1000	-67.599	<=-17.891	PASS
			1000~26500	1000~26500	-52.974	<=-17.891	PASS

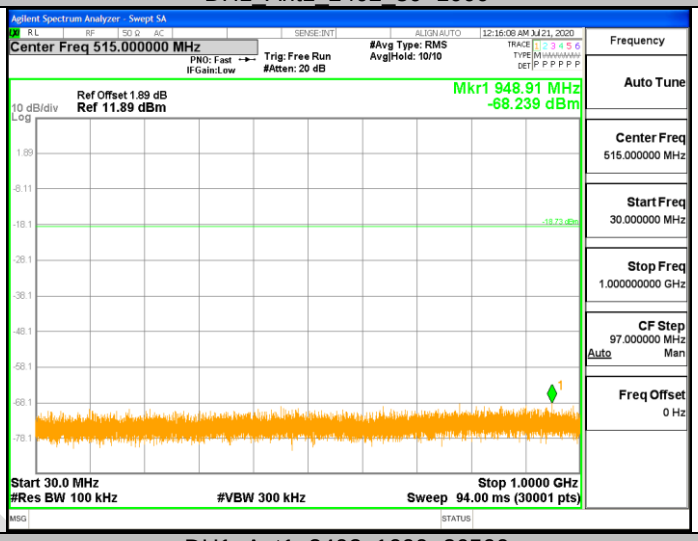
BlueAsia

Test Graphs

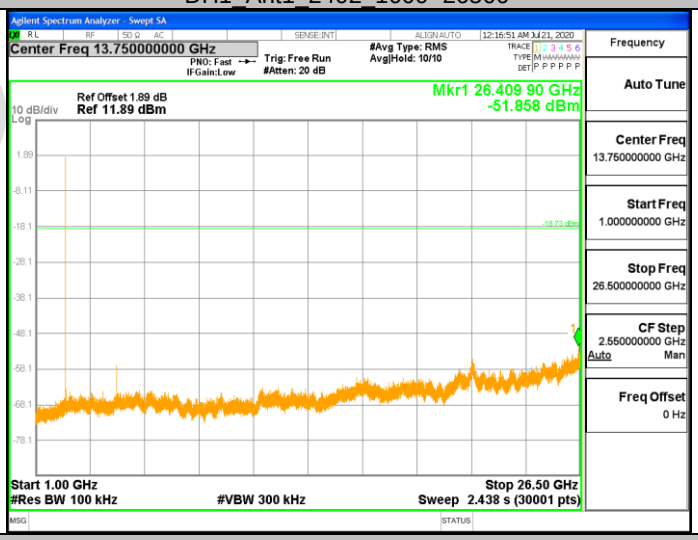
DH1_Ant1_2402_0~Reference



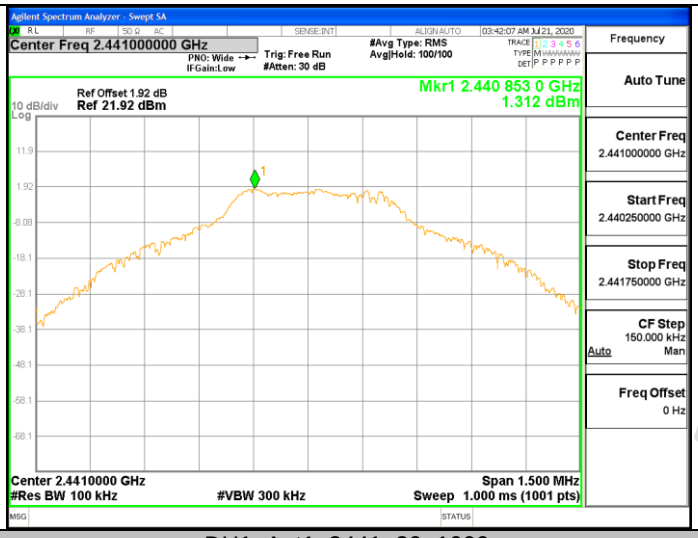
DH1_Ant1_2402_30~1000



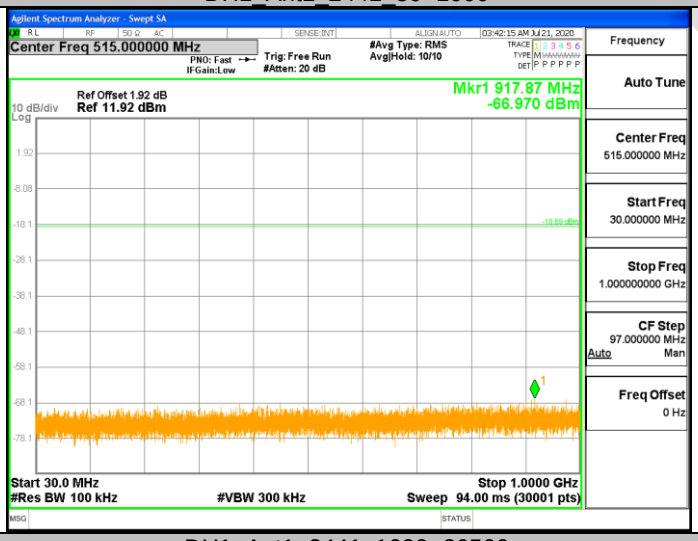
DH1_Ant1_2402_1000~26500



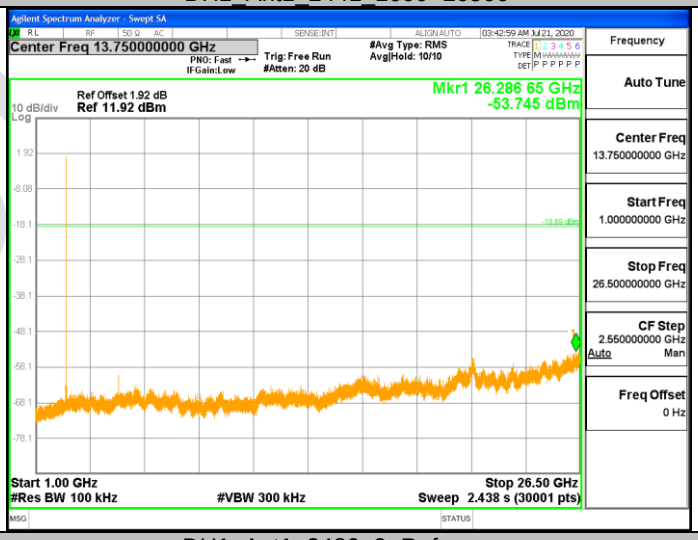
DH1_Ant1_2441_0~Reference



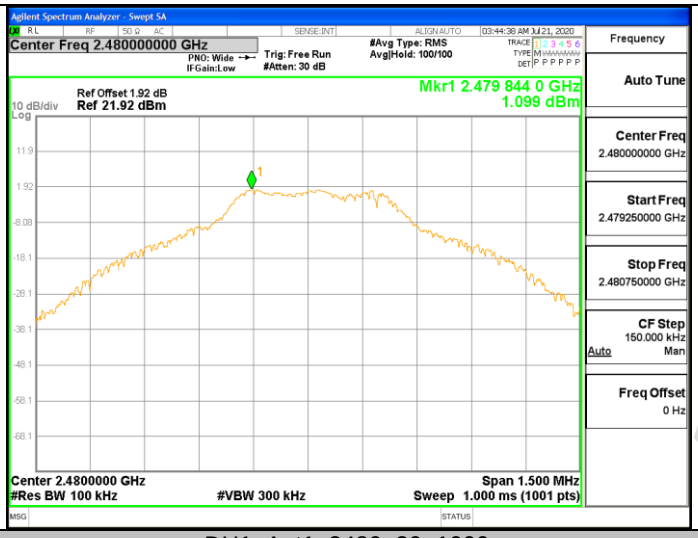
DH1_Ant1_2441_30~1000



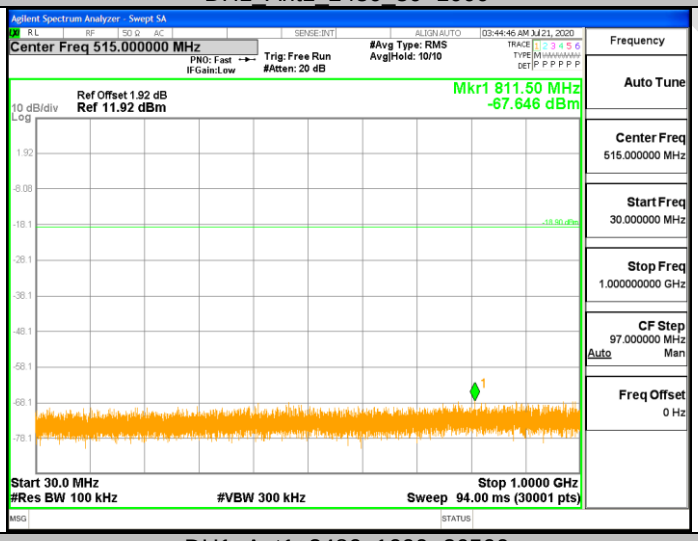
DH1_Ant1_2441_1000~26500



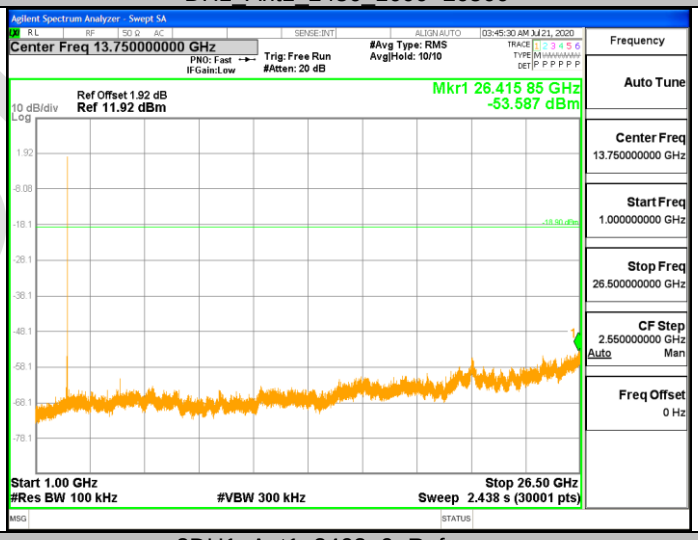
DH1_Ant1_2480_0~Reference



DH1_Ant1_2480_30~1000



DH1_Ant1_2480_1000~26500



2DH1_Ant1_2402_0~Reference