

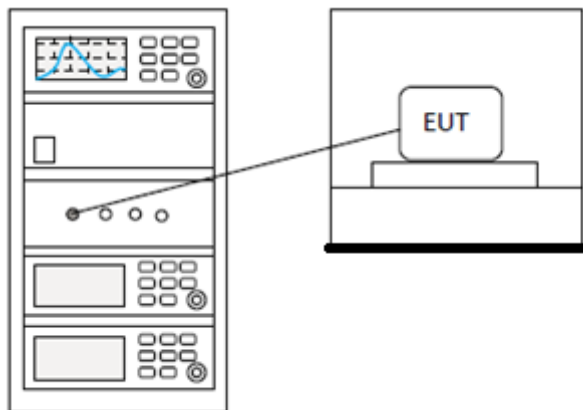
CONDUCTED SPURIOUS EMISSIONS

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25°C
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)).
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BLOCK DIAGRAM OF TEST SETUP



TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

BlueAsia

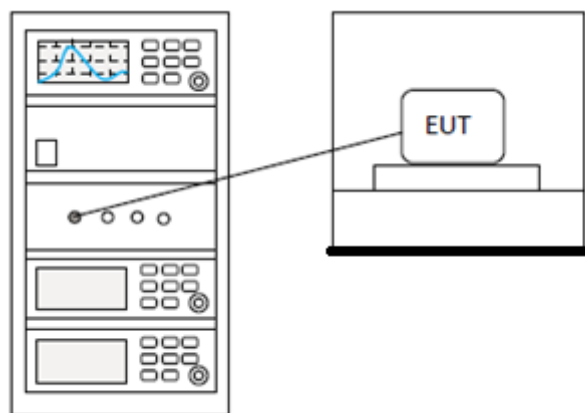
CONDUCTED BAND EDGES MEASUREMENT

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	Jozu
Temperature	25°C
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)).
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BLOCK DIAGRAM OF TEST SETUP



TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

BlueAsia

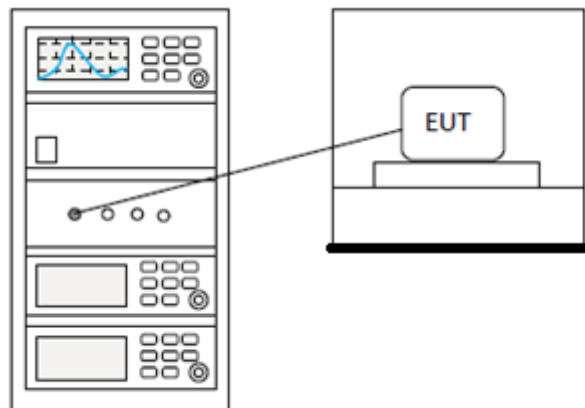
DWELL TIME

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
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25°C
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



TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

BlueAsia

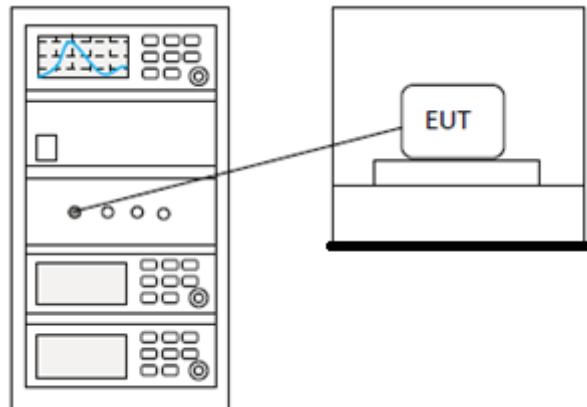
HOPPING CHANNEL NUMBER

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
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25°C
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

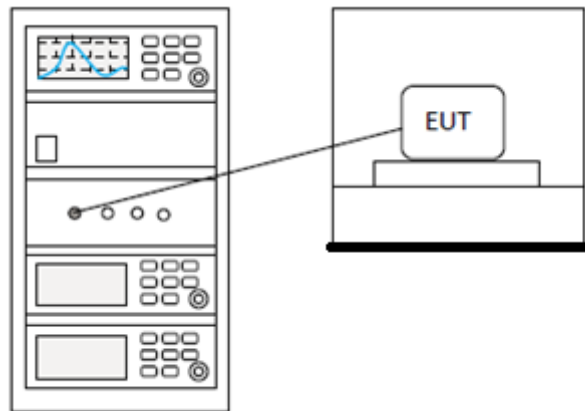
CARRIER FREQUENCIES SEPARATION

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
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25°C
Humidity	60%

LIMITS

Limit:	2/3 of the 20dB bandwidth base on the transmission power is less than 0.125W
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BLOCK DIAGRAM OF TEST SETUP



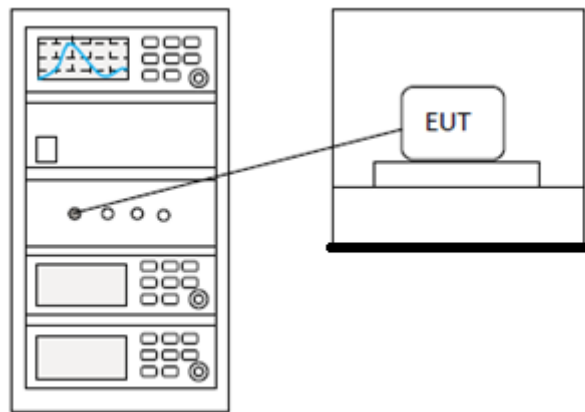
TEST DATA

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	Jozu
Temperature	25°C
Humidity	60%

BLOCK DIAGRAM OF TEST SETUP



TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

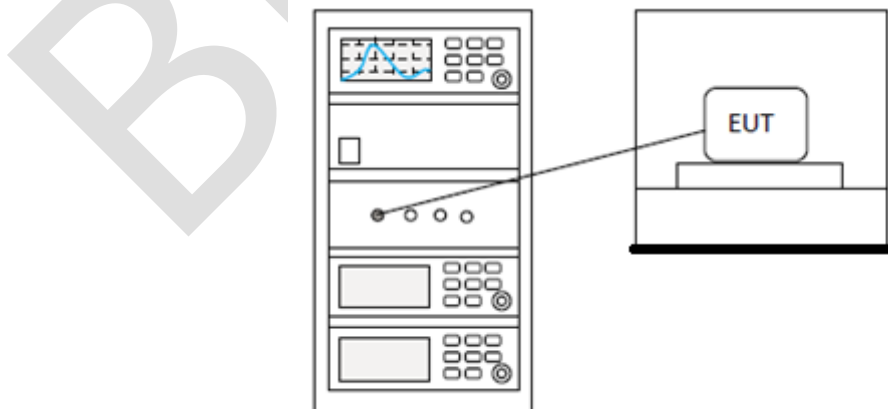
CONDUCTED PEAK OUTPUT POWER

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	Jozu
Temperature	25°C
Humidity	60%

LIMITS

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ 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

CONDUCTED EMISSIONS AT AC POWER LINE (150KHZ-30MHZ)

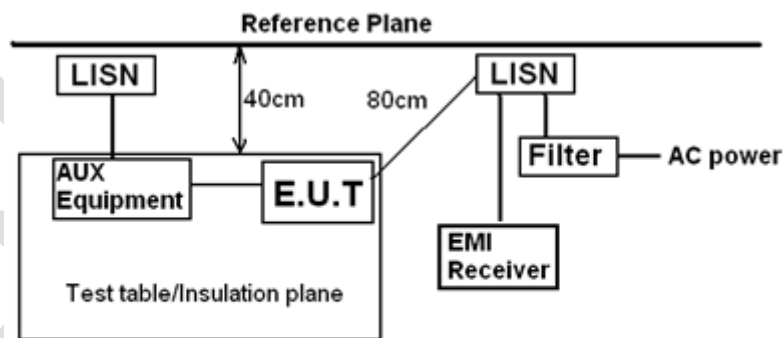
Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25°C
Humidity	60%

LIMITS

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

BLOCK DIAGRAM OF TEST SETUP



Remark
 E.U.T: Equipment Under Test
 LISN: Line Impedance Stabilization Network
 Test table height=0.8m

PROCEDURE

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50?H + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

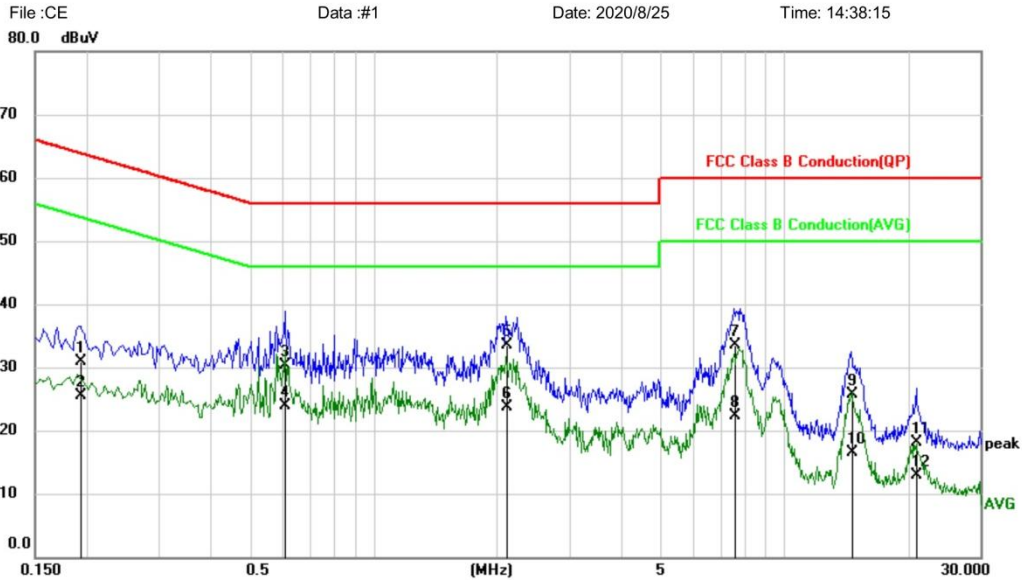
Remark: LISN=Read Level+ Cable Loss+ LISN Factor

BlueAsia

TEST DATA

[TestMode: TX]; [Line: Neutral]
Power:AC120V/60Hz

Conducted Emission Measurement



File :CE Data :#1 Date: 2020/8/25 Time: 14:38:15
 Site Phase: **N** Temperature: 26
 Limit: FCC Class B Conduction(QP) Power: Humidity: 60 %
 EUT: TWS Bluetooth Earphone
 M/N: TWS-T04S
 Mode: BT mode
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1940	20.92	9.89	30.81	63.86	-33.05	QP	
2		0.1940	15.59	9.89	25.48	53.86	-28.38	AVG	
3		0.6100	20.54	9.74	30.28	56.00	-25.72	QP	
4	*	0.6100	14.14	9.74	23.88	46.00	-22.12	AVG	
5		2.1060	23.64	9.86	33.50	56.00	-22.50	QP	
6		2.1060	13.86	9.86	23.72	46.00	-22.28	AVG	
7		7.5460	23.60	9.85	33.45	60.00	-26.55	QP	
8		7.5460	12.51	9.85	22.36	50.00	-27.64	AVG	
9		14.5940	15.66	10.01	25.67	60.00	-34.33	QP	
10		14.5940	6.53	10.01	16.54	50.00	-33.46	AVG	
11		20.9500	8.11	10.05	18.16	60.00	-41.84	QP	
12		20.9500	2.85	10.05	12.90	50.00	-37.10	AVG	

*:Maximum data x:Over limit !:over margin

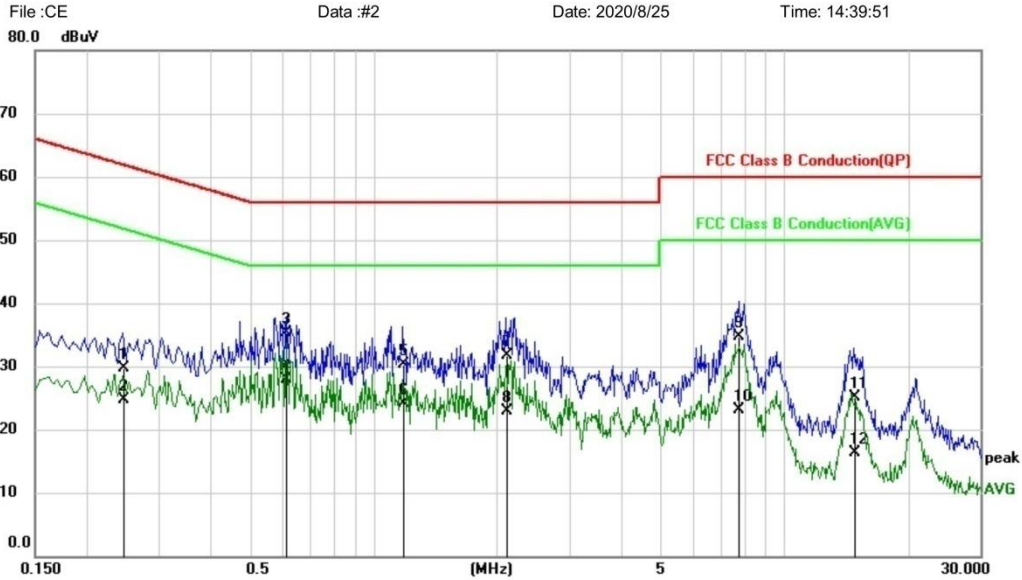
<Reference Only

Test Result: Pass

[TestMode: TX]; [Line: Line]

Power:AC120V/60Hz

Conducted Emission Measurement



Site: Phase: **L1** Temperature: 26
 Limit: FCC Class B Conduction(QP) Power: Humidity: 60 %
 EUT: TWS Bluetooth Earphone
 M/N: TWS-T04S
 Mode: BT mode
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2460	19.72	9.94	29.66	61.89	-32.23	QP	
2		0.2460	14.85	9.94	24.79	51.89	-27.10	AVG	
3		0.6140	25.58	9.73	35.31	56.00	-20.69	QP	
4	*	0.6140	18.19	9.73	27.92	46.00	-18.08	AVG	
5		1.1820	20.49	9.82	30.31	56.00	-25.69	QP	
6		1.1820	14.24	9.82	24.06	46.00	-21.94	AVG	
7		2.1020	21.80	9.82	31.62	56.00	-24.38	QP	
8		2.1020	13.14	9.82	22.96	46.00	-23.04	AVG	
9		7.7380	24.76	9.87	34.63	60.00	-25.37	QP	
10		7.7380	13.22	9.87	23.09	50.00	-26.91	AVG	
11		14.7780	15.18	9.98	25.16	60.00	-34.84	QP	
12		14.7780	6.42	9.98	16.40	50.00	-33.60	AVG	

*:Maximum data x:Over limit !:over margin

<Reference Only

Test Result: Pass

10 APPENDIX

Appendix1

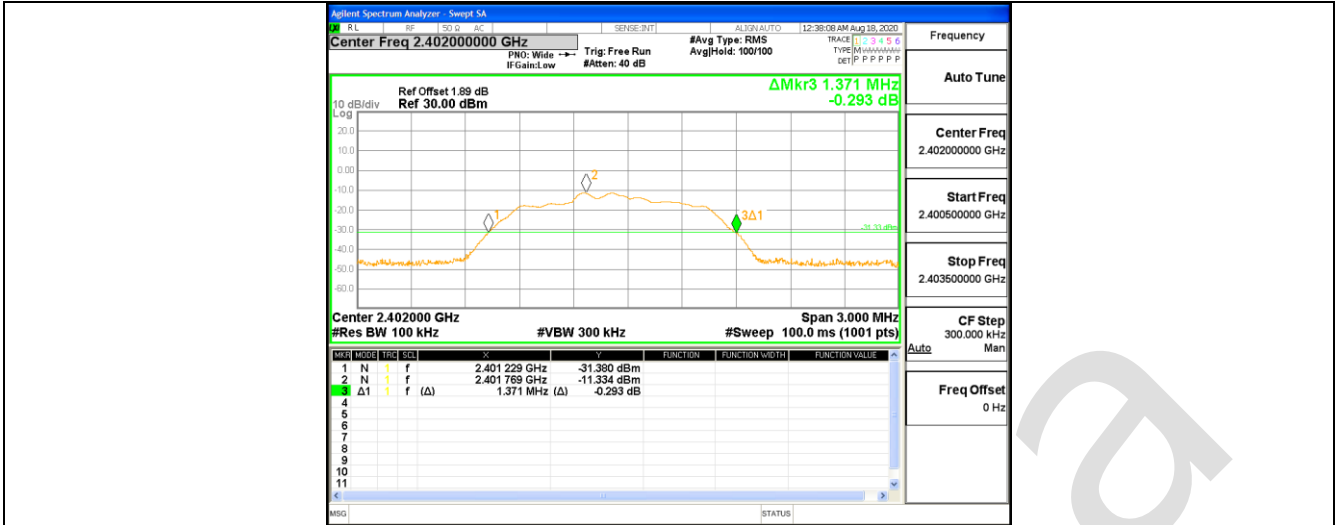
10.1 APPENDIXA: 20DBEMISSION BANDWIDTH

Test Result

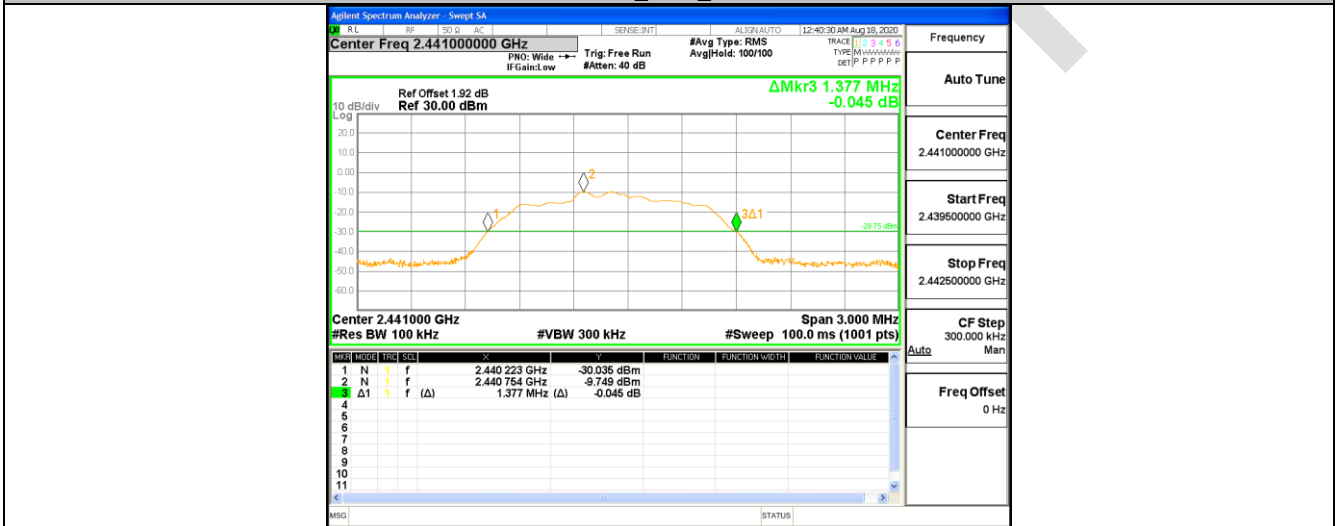
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	1.083	2401.376	2402.459	---	PASS
		2441	1.086	2440.373	2441.459	---	PASS
		2480	1.086	2479.370	2480.456	---	PASS
2DH1	Ant1	2402	1.371	2401.229	2402.600	---	PASS
		2441	1.377	2440.223	2441.600	---	PASS
		2480	1.371	2479.223	2480.594	---	PASS

Test Graphs

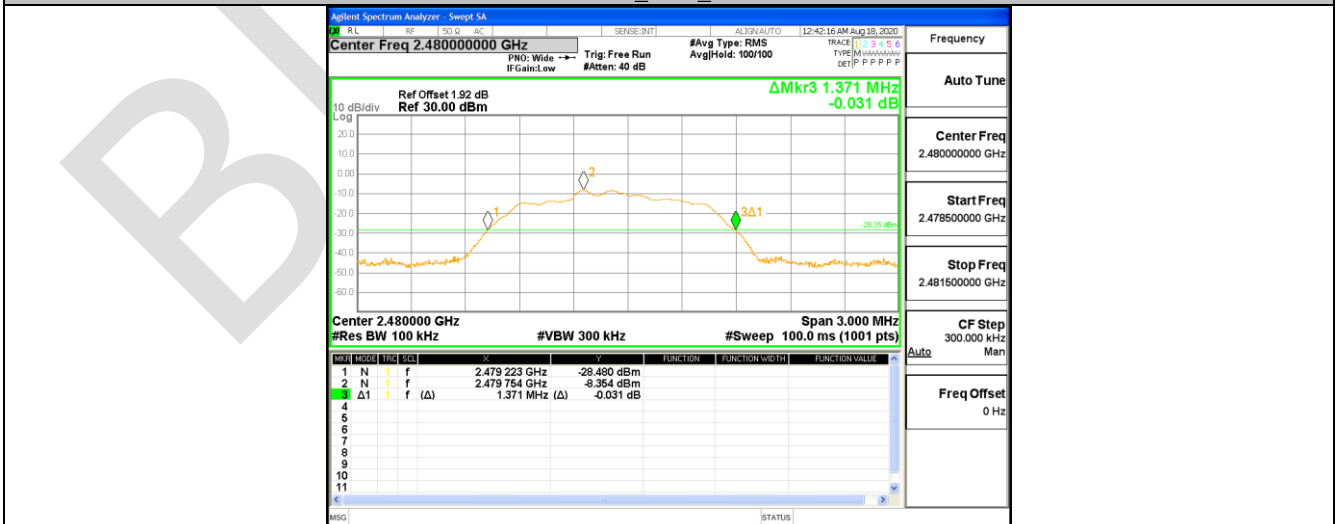




2DH1_Ant1_2441



2DH1_Ant1_2480



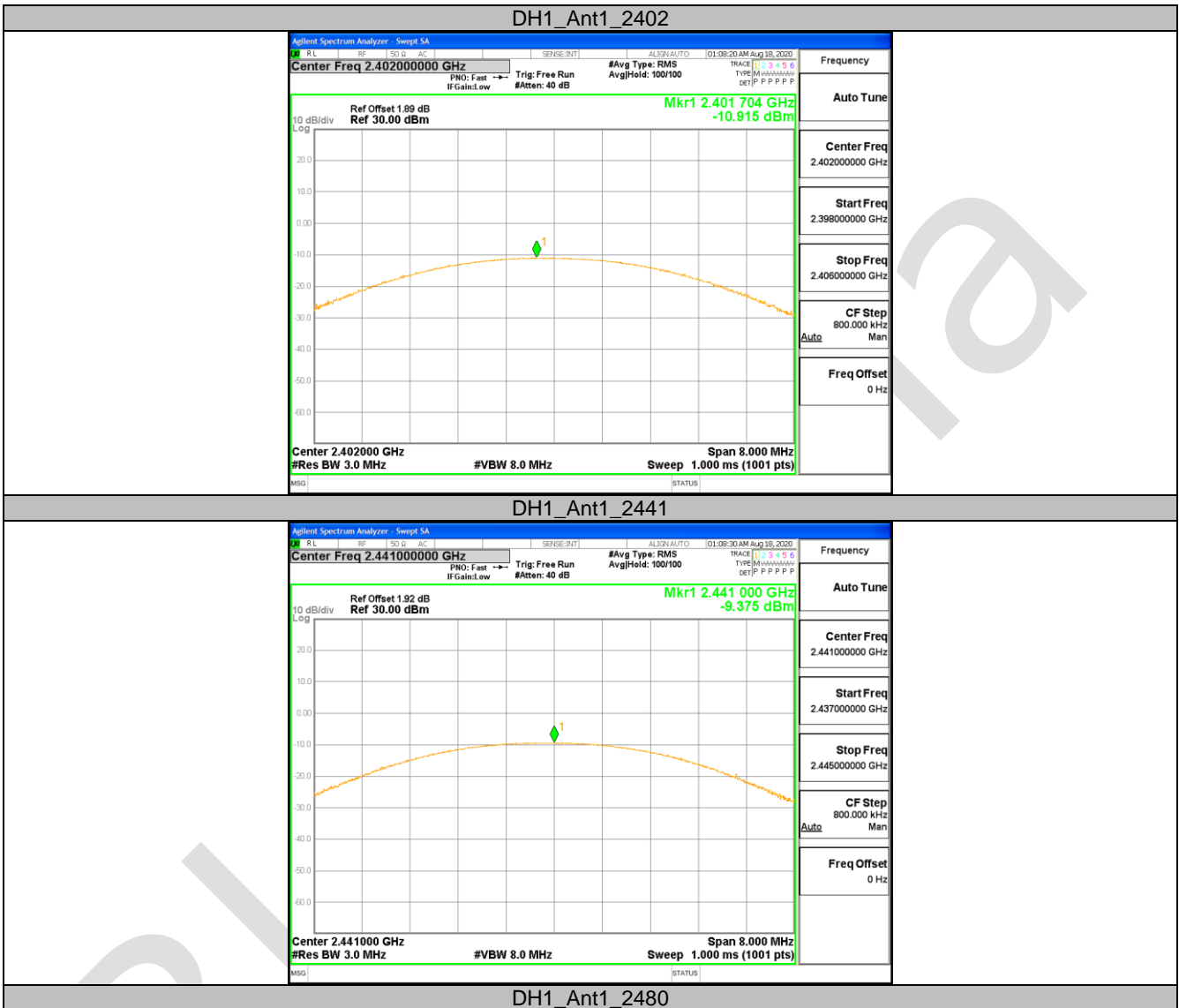
10.2 APPENDIX C: MAXIMUM CONDUCTED OUTPUT POWER

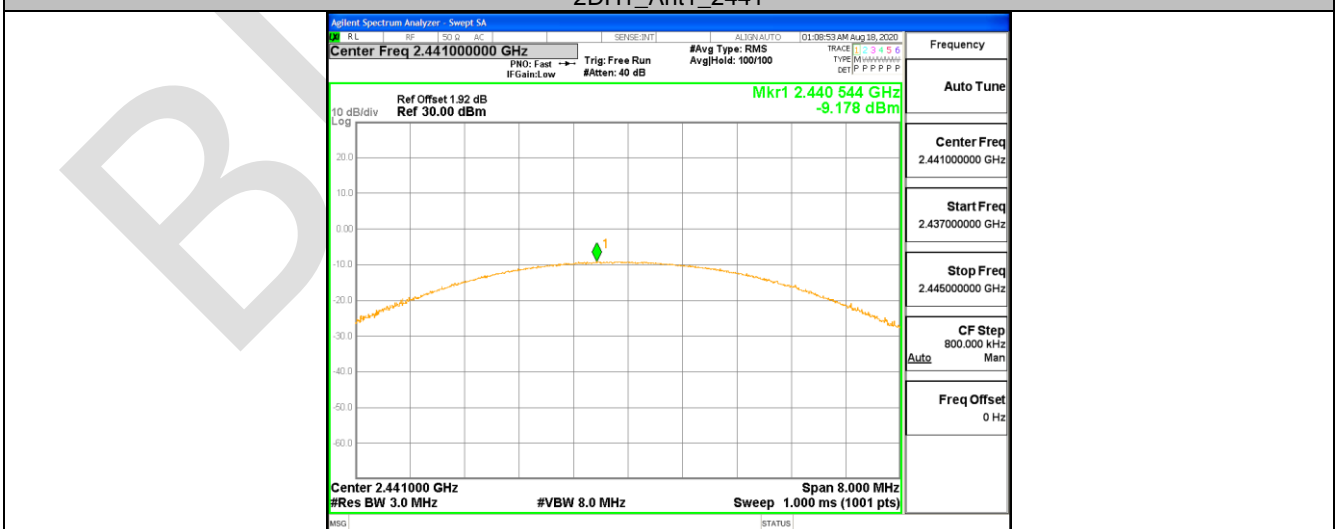
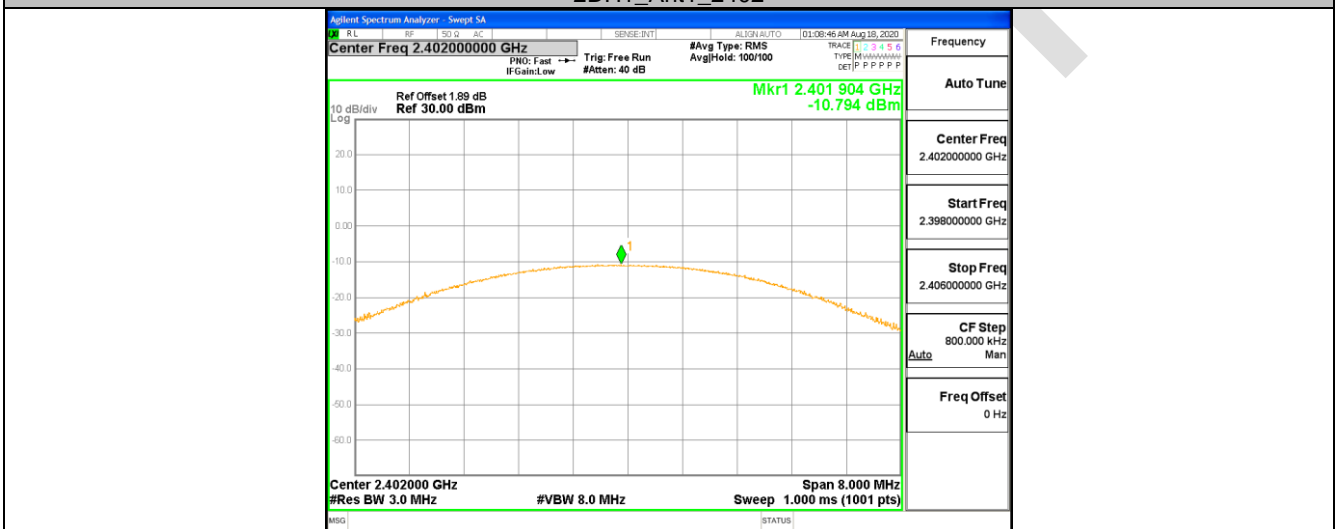
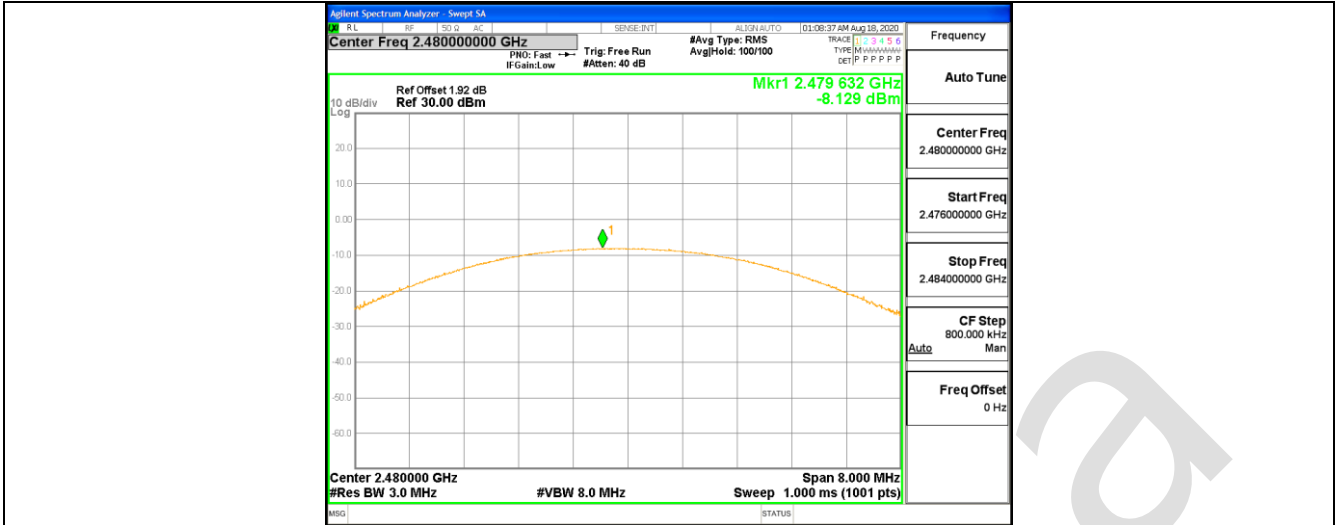
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH1	Ant1	2402	-10.92	<=20.97	PASS
		2441	-9.38	<=20.97	PASS
		2480	-8.13	<=20.97	PASS
2DH1	Ant1	2402	-10.79	<=20.97	PASS
		2441	-9.18	<=20.97	PASS
		2480	-7.81	<=20.97	PASS

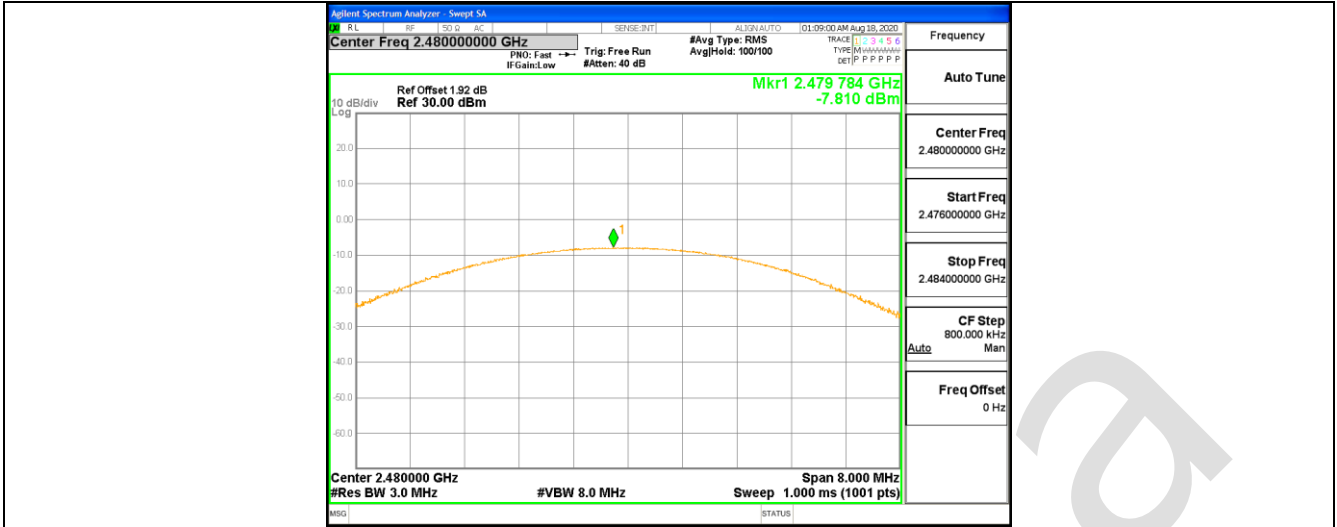
BlueAsia

Test Graphs





2DH1_Ant1_2480

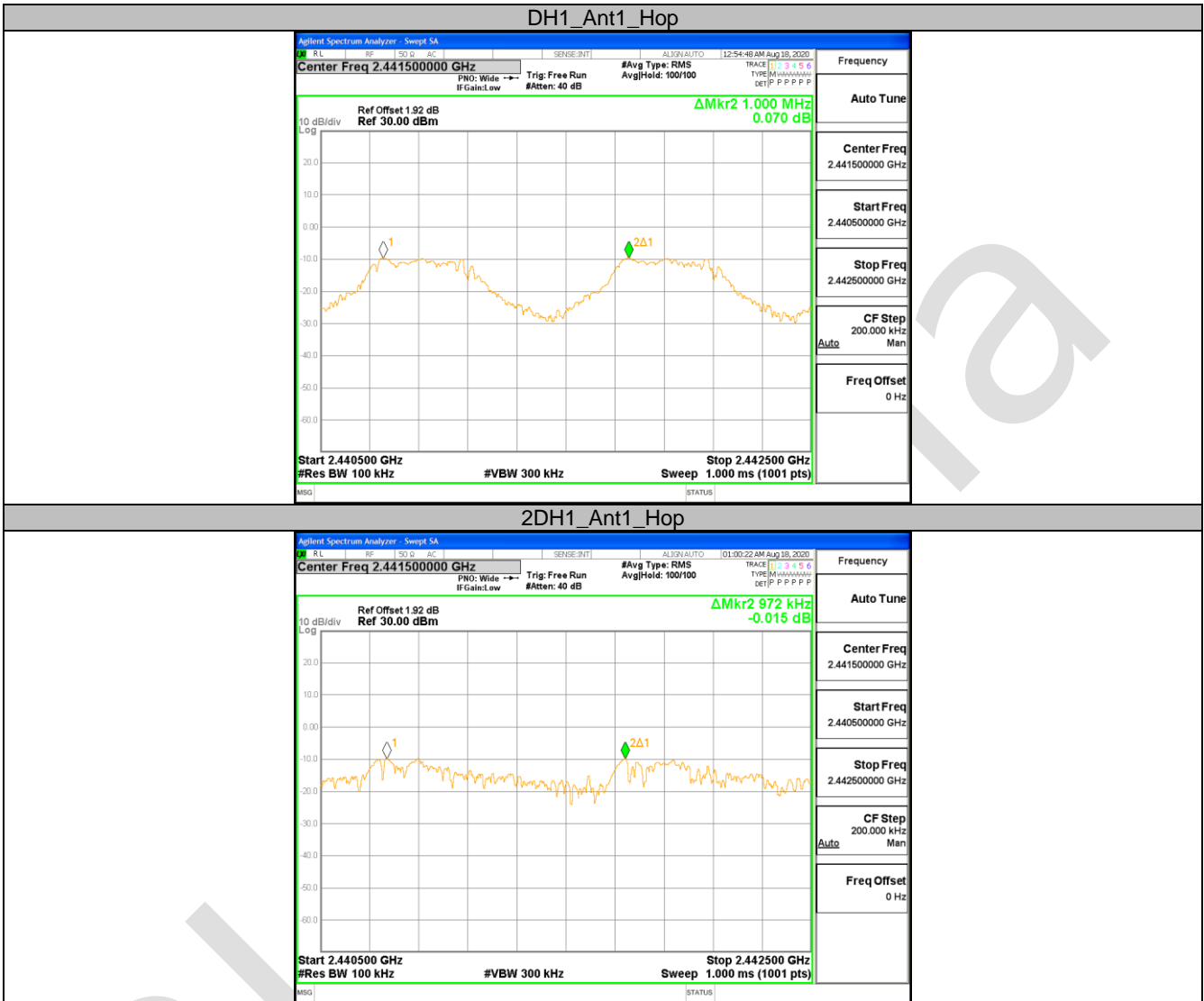


10.3 APPENDIXD: CARRIER FREQUENCY SEPARATION**Test Result**

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop	1.000	≥ 0.724	PASS
2DH1	Ant1	Hop	0.972	≥ 0.918	PASS

BlueAsia

Test Graphs



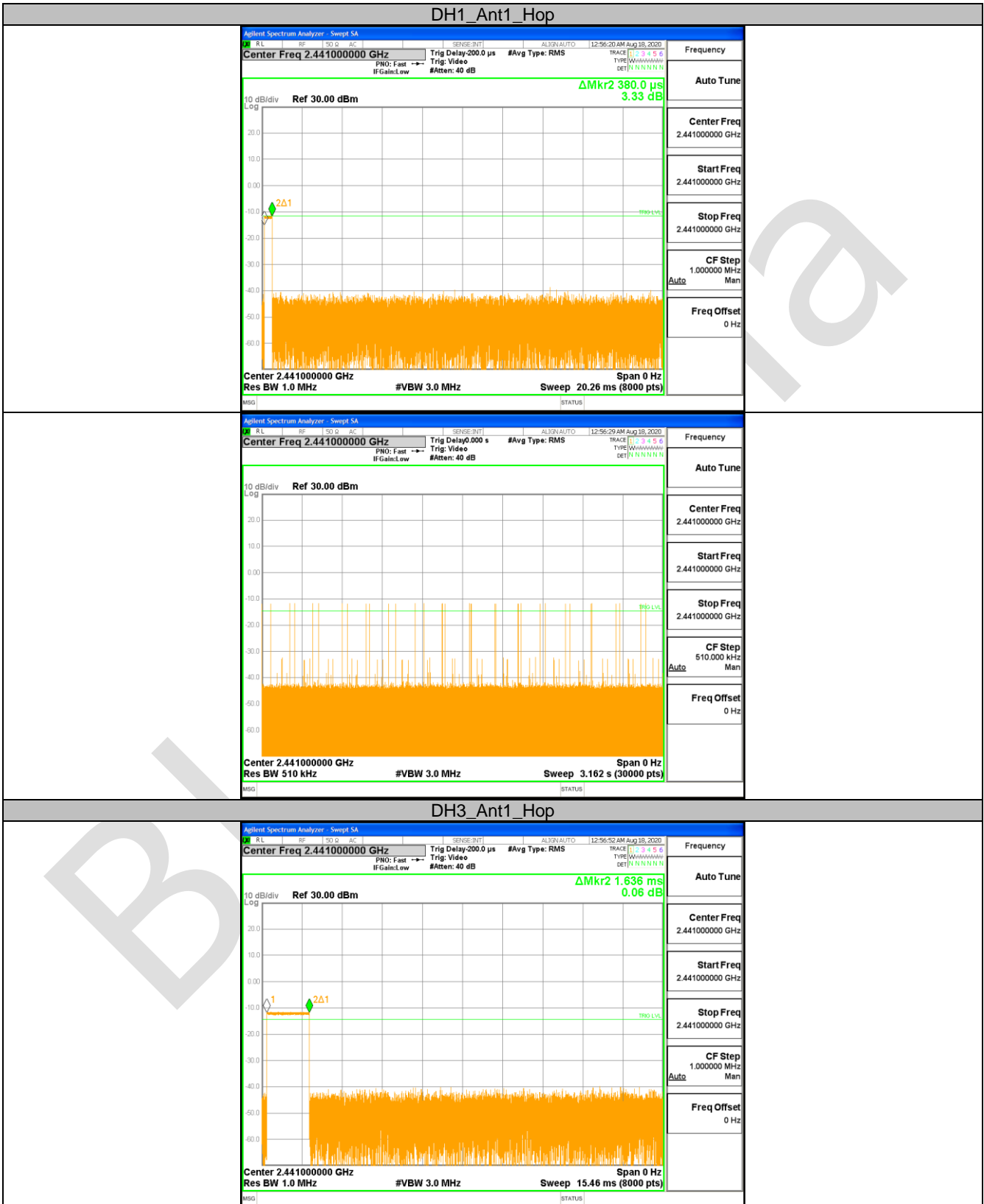
10.4 APPENDIXE: TIME OF OCCUPANCY

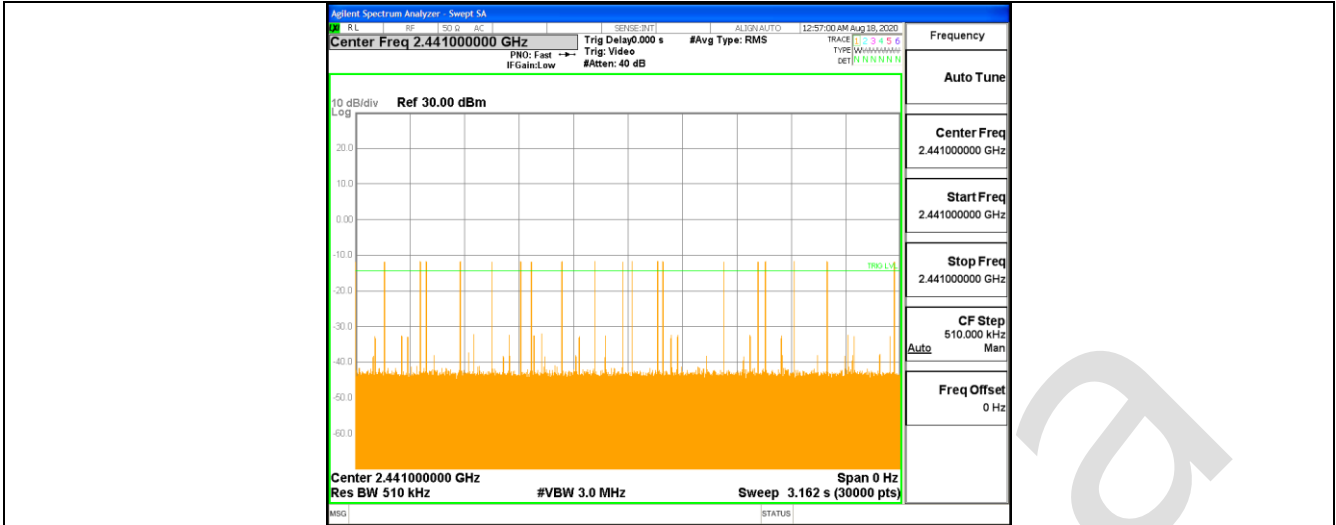
Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.38	320	0.122	<=0.4	PASS
DH3	Ant1	Hop	1.64	200	0.327	<=0.4	PASS
DH5	Ant1	Hop	2.89	80	0.231	<=0.4	PASS

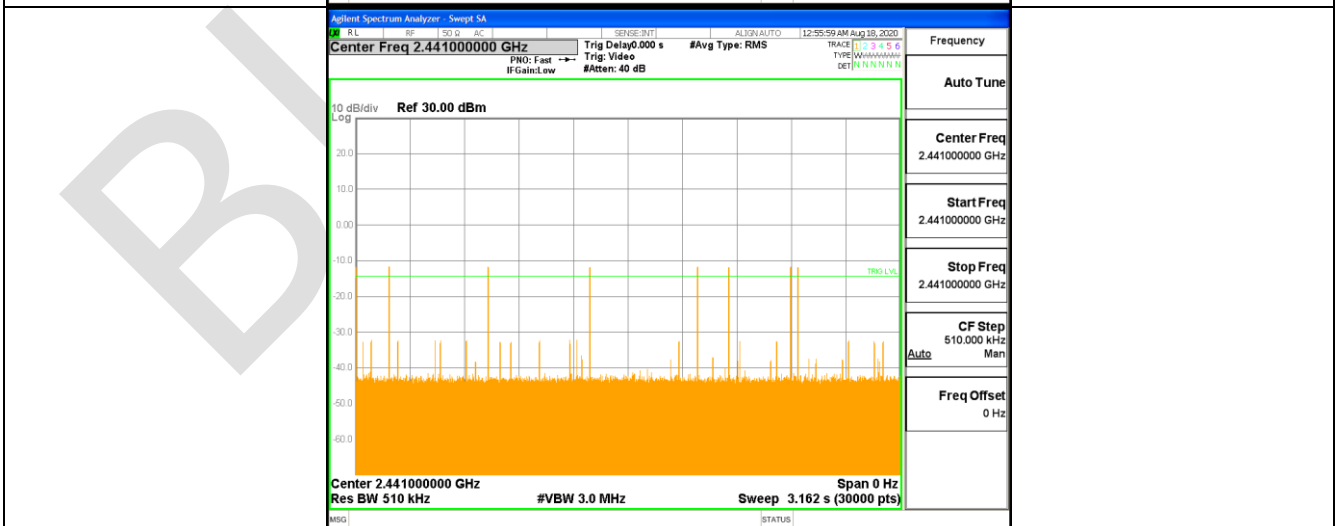
BlueAsia

Test Graphs





DH5_Ant1_Hop



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

BlueAsia

Test Graphs



10.6 APPENDIX G: BAND EDGE MEASUREMENTS

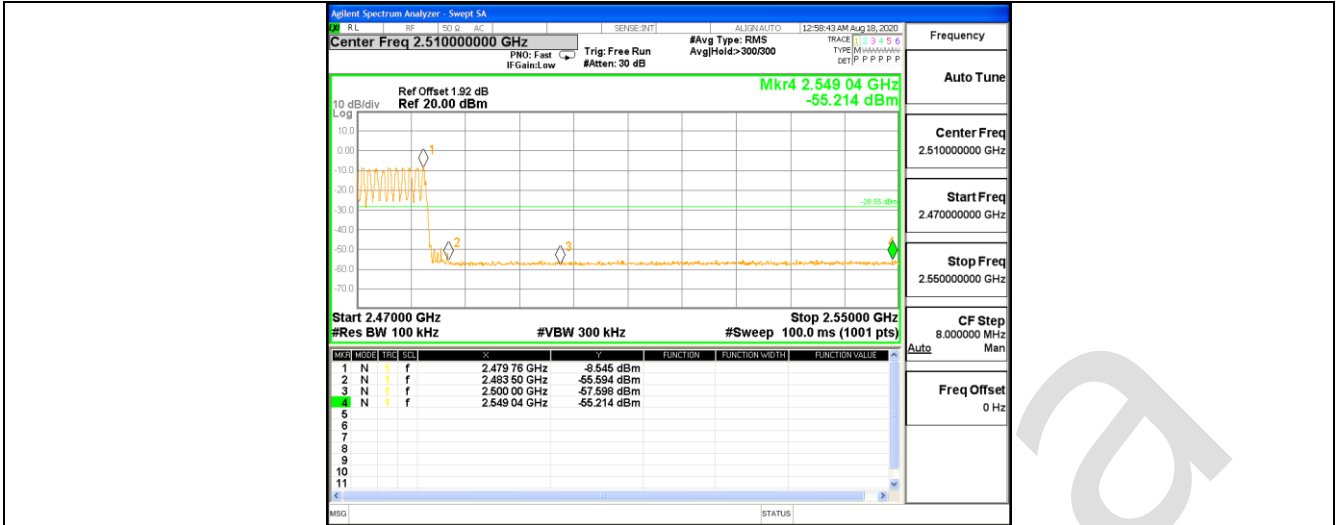
Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	-11.51	-55.57	<=-31.51	PASS
		High	2480	-8.41	-55.14	<=-28.41	PASS
		Low	Hop_2402	-11.58	-55.44	-31.58	PASS
		High	Hop_2480	-8.55	-55.21	-28.55	PASS
2DH1	Ant1	Low	2402	-11.48	-55.98	<=-31.48	PASS
		High	2480	-8.39	-55.33	<=-28.39	PASS
		Low	Hop_2402	-11.52	-55.84	-31.52	PASS
		High	Hop_2480	-8.66	-55	-28.66	PASS

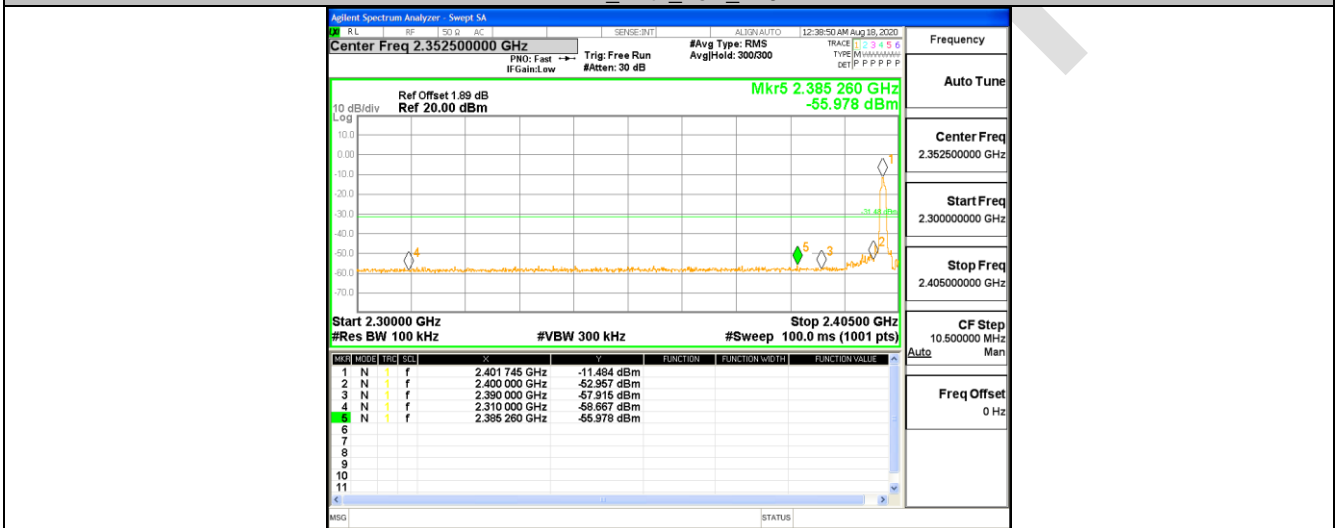
BlueAsia

Test Graphs

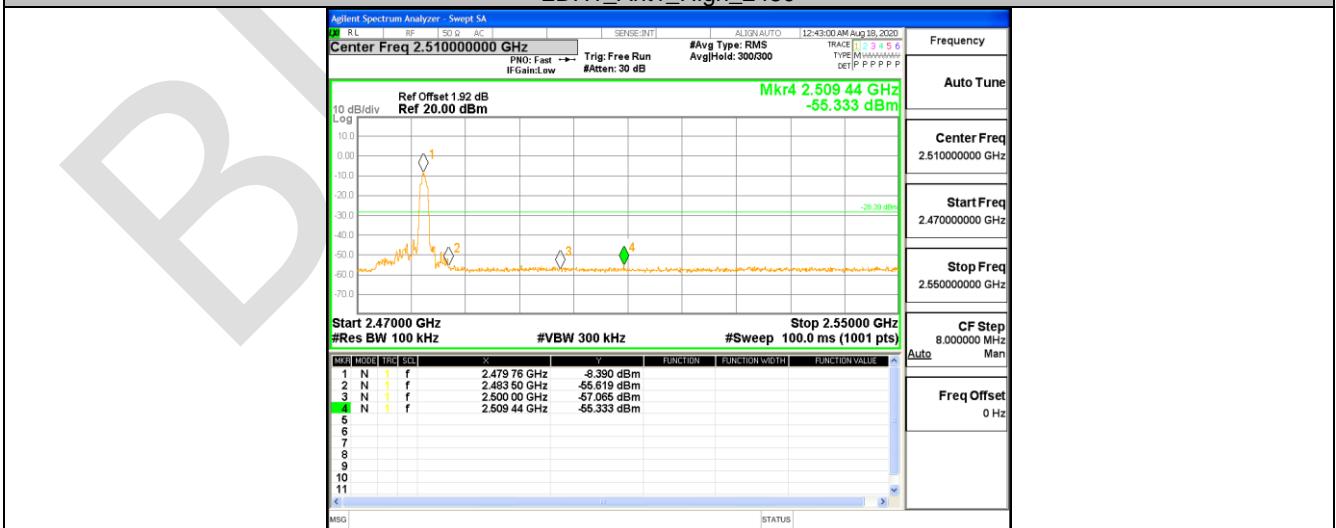




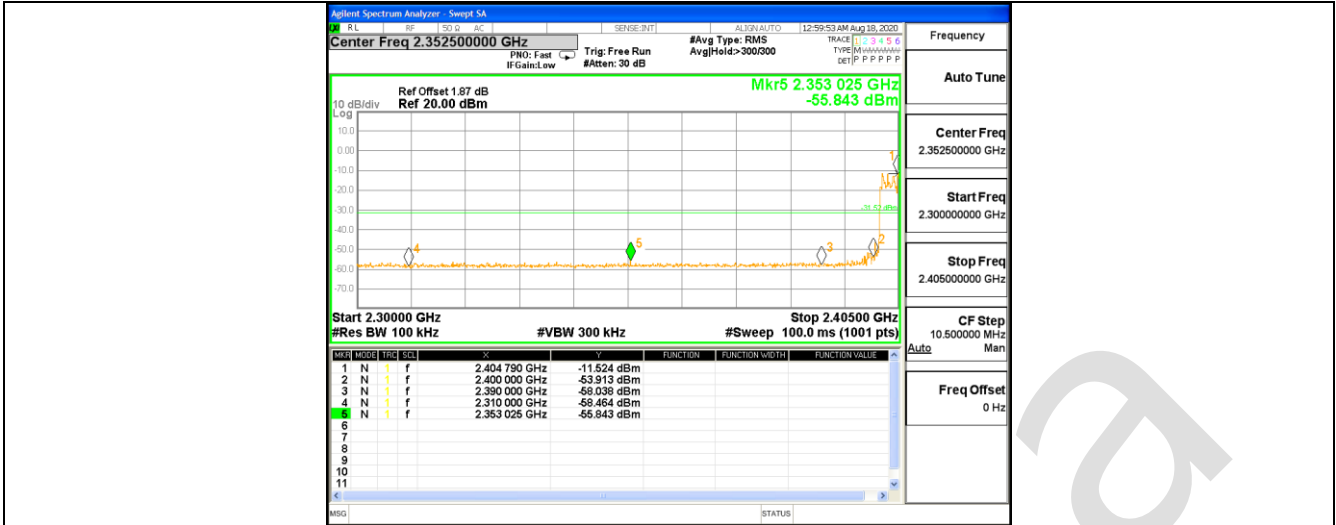
2DH1_Ant1_Low_2402



2DH1_Ant1_High_2402



2DH1_Ant1_Low_Hop_2402



2DH1_Ant1_High_Hop_2480

