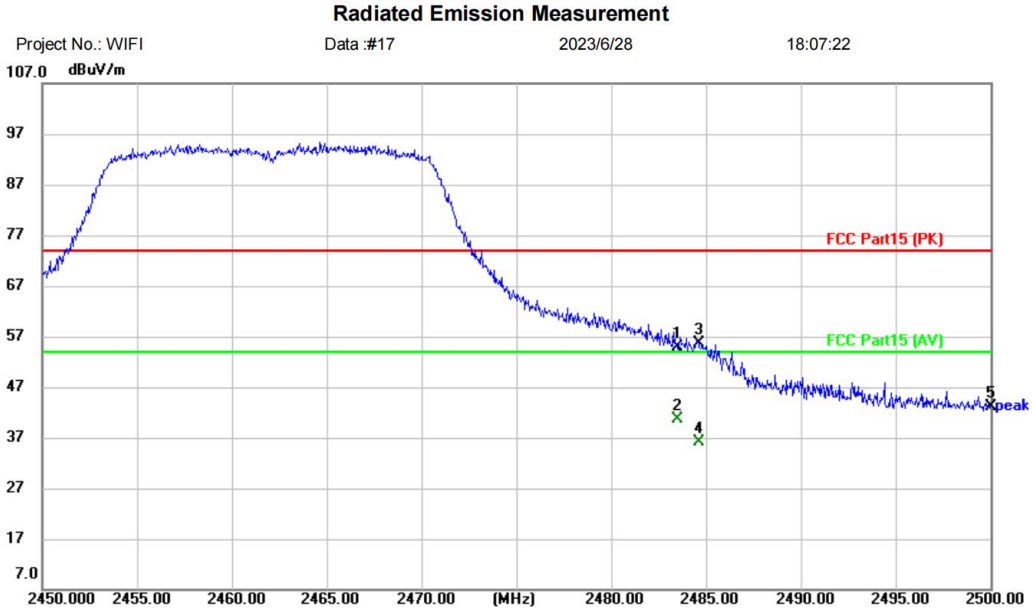
[TestMode: TX n20 high channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: WIFI&BT Module
M/N: AW65S1-50B1
Mode: 2.4Gwifi-11N20-TX-H
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

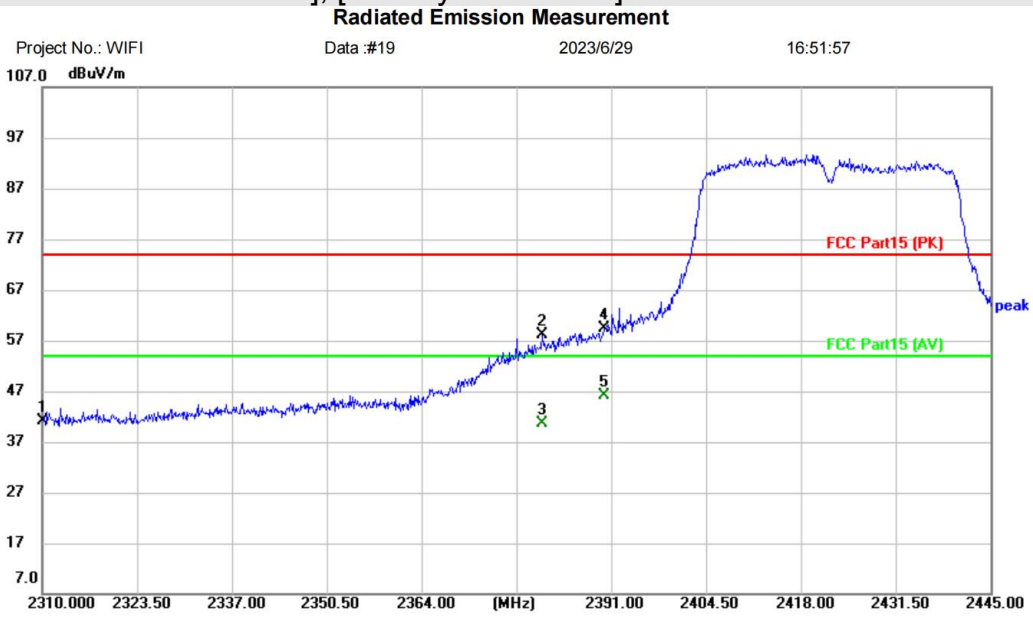
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2483.500	59.50	-4.64	54.86	74.00	-19.14	peak	
2	*	2483.500	45.19	-4.64	40.55	54.00	-13.45	AVG	
3		2484.600	60.22	-4.65	55.57	74.00	-18.43	peak	
4		2484.600	40.84	-4.65	36.19	54.00	-17.81	AVG	
5		2500.000	47.84	-4.75	43.09	74.00	-30.91	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESPI_1 Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX n40 low channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: WIFI&BT Module
M/N: AW65S1-50B1
Mode: 2.4Gwifi-11N40-TX-L
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

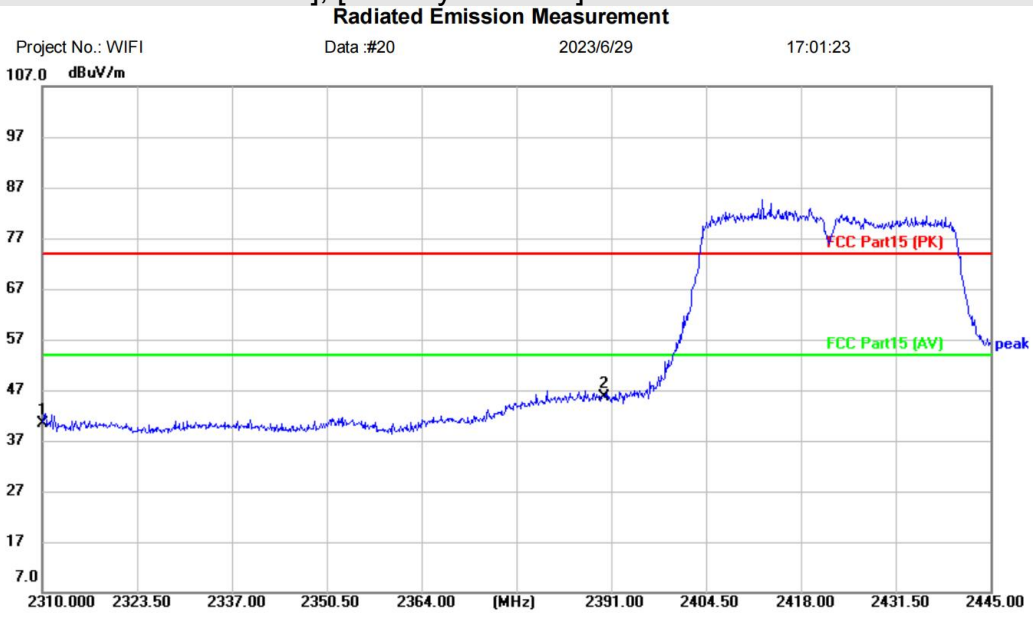
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2310.000	45.43	-4.40	41.03	74.00	-32.97	peak	
2		2381.145	62.53	-4.31	58.22	74.00	-15.78	peak	
3		2381.145	45.03	-4.31	40.72	54.00	-13.28	AVG	
4		2390.000	63.79	-4.31	59.48	74.00	-14.52	peak	
5	*	2390.000	50.34	-4.31	46.03	54.00	-7.97	AVG	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESPI_1 Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX n40 low channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: WIFI&BT Module
M/N: AW65S1-50B1
Mode: 2.4Gwifi-11N40-TX-L
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

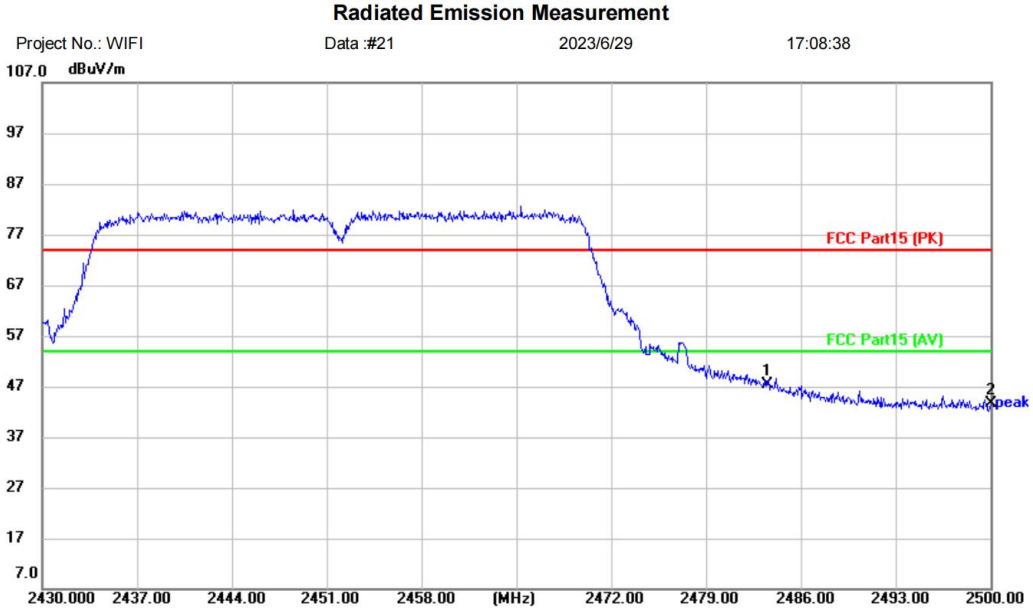
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2310.000	44.88	-4.40	40.48	74.00	-33.52	peak	
2	*	2390.000	49.98	-4.31	45.67	74.00	-28.33	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESPI_1 Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX n40 high channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: WIFI&BT Module
M/N: AW65S1-50B1
Mode: 2.4Gwifi-11N40-TX-H
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

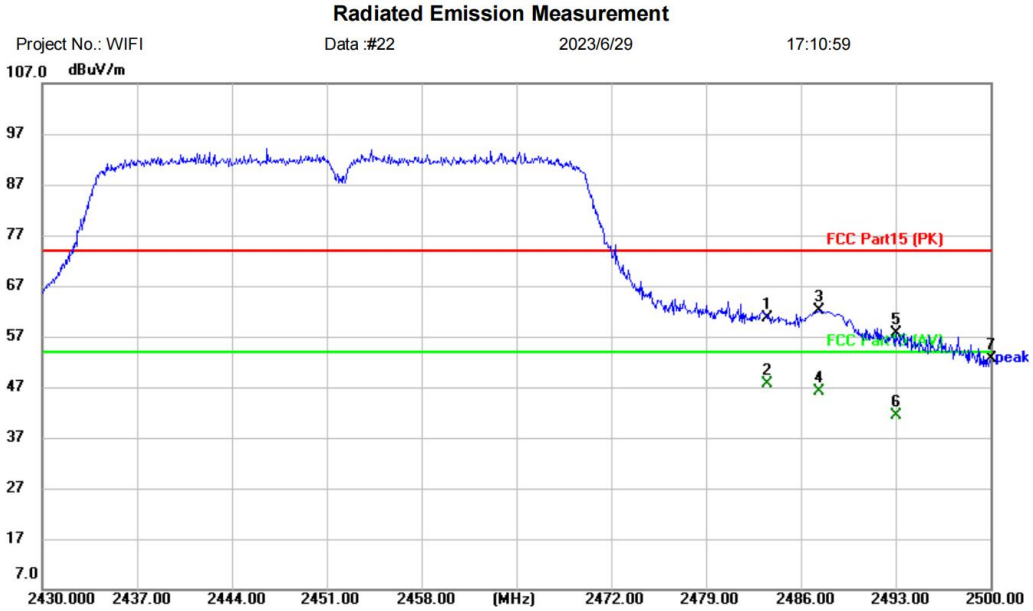
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	52.04	-4.64	47.40	74.00	-26.60	peak	
2		2500.000	48.45	-4.75	43.70	74.00	-30.30	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESPI_1 Spectrum Analyzer: FSP40

Test Result: Pass

[TestMode: TX n40 high channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: WIFI&BT Module
M/N: AW65S1-50B1
Mode: 2.4Gwifi-11N40-TX-H
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2483.500	65.36	-4.64	60.72	74.00	-13.28	peak	
2	*	2483.500	52.26	-4.64	47.62	54.00	-6.38	AVG	
3		2487.330	66.71	-4.66	62.05	74.00	-11.95	peak	
4		2487.330	50.86	-4.66	46.20	54.00	-7.80	AVG	
5		2493.000	62.34	-4.71	57.63	74.00	-16.37	peak	
6		2493.000	46.05	-4.71	41.34	54.00	-12.66	AVG	
7		2500.000	57.30	-4.75	52.55	74.00	-21.45	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESPI_1 Spectrum Analyzer: FSP40

Test Result: Pass

Remark:

1. Final Level =Receiver Read level + Correct factor
2. Correct factor = Antenna Factor + Cable Loss – Preamplifier Factor
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

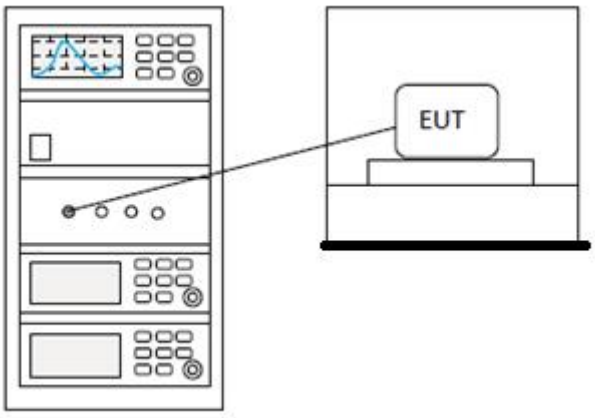
13 CONDUCTED SPURIOUS EMISSIONS

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℃
Humidity	60%

13.1 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)).

13.2 BLOCK DIAGRAM OF TEST SETUP



13.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

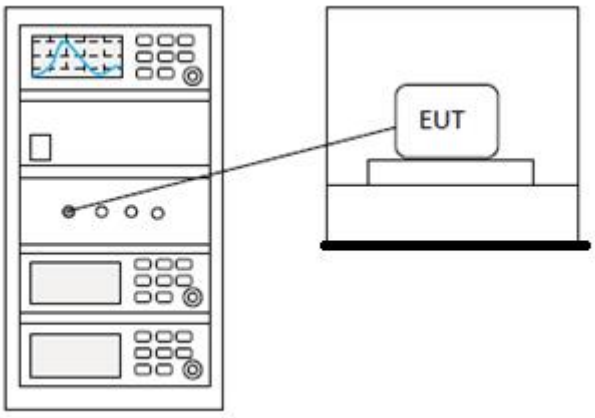
14 CONDUCTED BAND EDGES MEASUREMENT

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℃
Humidity	60%

14.1 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)).

14.2 BLOCK DIAGRAM OF TEST SETUP



14.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

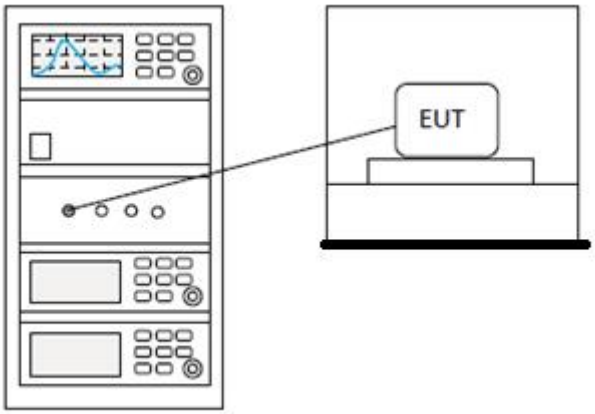
15 MINIMUM 6DB BANDWIDTH

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 11.8.1
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

15.1 LIMITS

Limit:	≥500 kHz

15.2 BLOCK DIAGRAM OF TEST SETUP



15.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

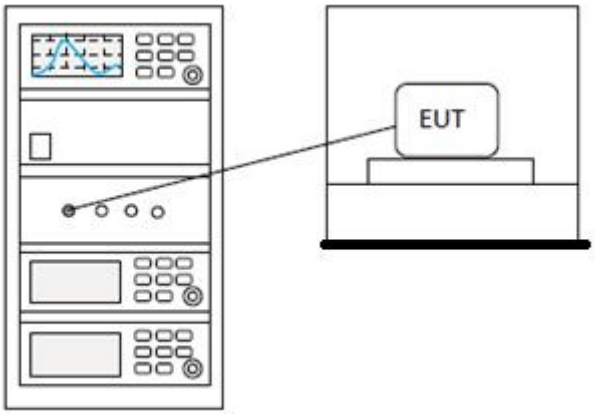
16 POWER SPECTRUM DENSITY

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 11.10.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

16.1 LIMITS

Limit:	≤8dBm in any 3 kHz band during any time interval of continuous transmission

16.2 BLOCK DIAGRAM OF TEST SETUP



16.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

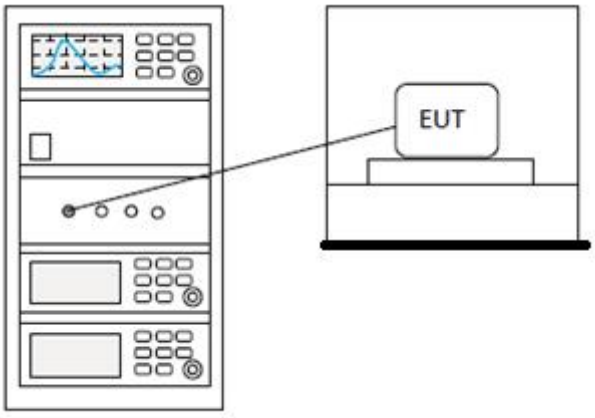
17 CONDUCTED PEAK OUTPUT POWER

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.5 & Section 11.9.1
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

17.1 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

17.2 BLOCK DIAGRAM OF TEST SETUP



17.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

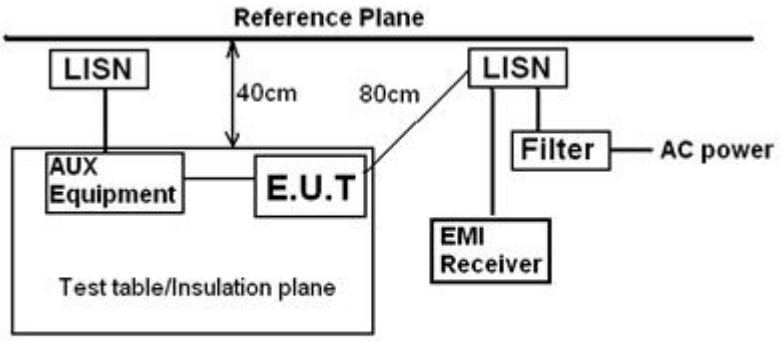
18 CONDUCTED EMISSIONS AT AC POWER LINE (150KHZ-30MHZ)

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℃
Humidity	60%

18.1 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.		

18.2 BLOCK DIAGRAM OF TEST SETUP



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

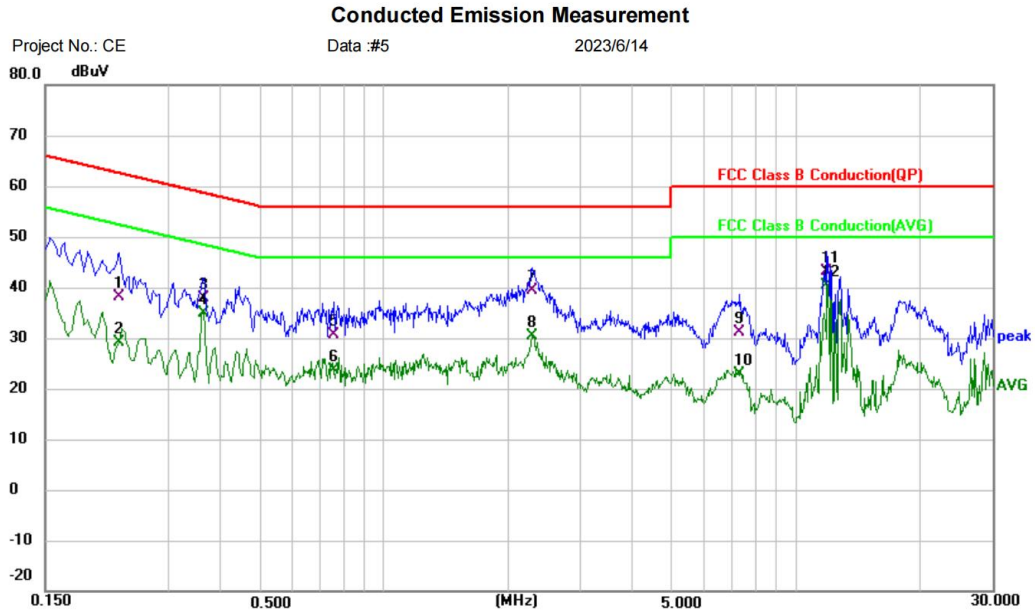
18.3 PROCEDURE

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/50H + 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

18.4 TEST DATA

[TestMode: Transmitting mode]; [Line: Line] ;[Power:AC120V/60Hz]



Site
Limit: FCC Class B Conduction(QP)
EUT: WIFI&BT Module
M/N: AW65S1-50B1
Mode: 2.4GWIFI TX mode
Note:

Phase: L1
Power:
Distance:
RBW: 9 KHz
VBW: 30 KHz

Temperature: (C)
Humidity: %RH
Sweep Time: 10 ms

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		0.2260	27.53	10.58	38.11	62.60	-24.49	QP			
2		0.2260	18.58	10.58	29.16	52.60	-23.44	AVG			
3		0.3620	27.79	10.07	37.86	58.68	-20.82	QP			
4		0.3620	24.79	10.07	34.86	48.68	-13.82	AVG			
5		0.7580	20.58	10.09	30.67	56.00	-25.33	QP			
6		0.7580	13.48	10.09	23.57	46.00	-22.43	AVG			
7		2.2860	29.09	10.28	39.37	56.00	-16.63	QP			
8		2.2860	20.00	10.28	30.28	46.00	-15.72	AVG			
9		7.2980	20.96	10.08	31.04	60.00	-28.96	QP			
10		7.2980	12.78	10.08	22.86	50.00	-27.14	AVG			
11		11.8940	33.13	10.08	43.21	60.00	-16.79	QP			
12	*	11.8940	30.25	10.08	40.33	50.00	-9.67	AVG			

*:Maximum data x:Over limit !:over margin 〈Reference Only

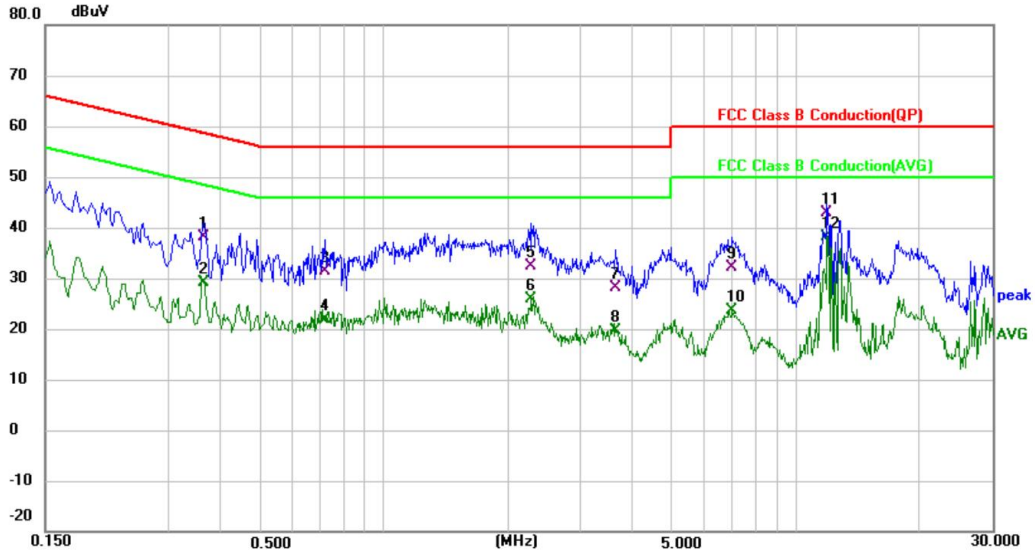
Receiver: ESPI_1
Spectrum Analyzer: ESPI
L.I.S.N:
Engineer Signature:

Test Result: Pass

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

Conducted Emission Measurement

Project No.: CE Data :#6 2023/6/14



Site	Phase:	*N*	Temperature: (C)
Limit: FCC Class B Conduction(QP)	Power:		Humidity: %RH
EUT: WIFI&BT Module	Distance:	RBW: 9 KHz	
M/N: AW65S1-50B1		VBW: 30 KHz	Sweep Time: 10 ms
Mode: 2.4GWIFI TX mode			
Note:			

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		0.3620	28.16	10.06	38.22	58.68	-20.46	QP			
2		0.3620	19.06	10.06	29.12	48.68	-19.56	AVG			
3		0.7180	21.34	10.03	31.37	56.00	-24.63	QP			
4		0.7180	11.79	10.03	21.82	46.00	-24.18	AVG			
5		2.2820	22.34	10.08	32.42	56.00	-23.58	QP			
6		2.2820	15.89	10.08	25.97	46.00	-20.03	AVG			
7		3.6460	18.11	9.95	28.06	56.00	-27.94	QP			
8		3.6460	9.79	9.95	19.74	46.00	-26.26	AVG			
9		7.0100	22.28	9.87	32.15	60.00	-27.85	QP			
10		7.0100	13.80	9.87	23.67	50.00	-26.33	AVG			
11		11.8940	32.95	10.00	42.95	60.00	-17.05	QP			
12	*	11.8940	28.11	10.00	38.11	50.00	-11.89	AVG			

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESPI_1 Spectrum Analyzer: ESPI

L.I.S.N: Engineer Signature:

Test Result: Pass

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.

2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

3. Final Level =Receiver Read level + LISN Factor + Cable Loss.

19 APPENDIX

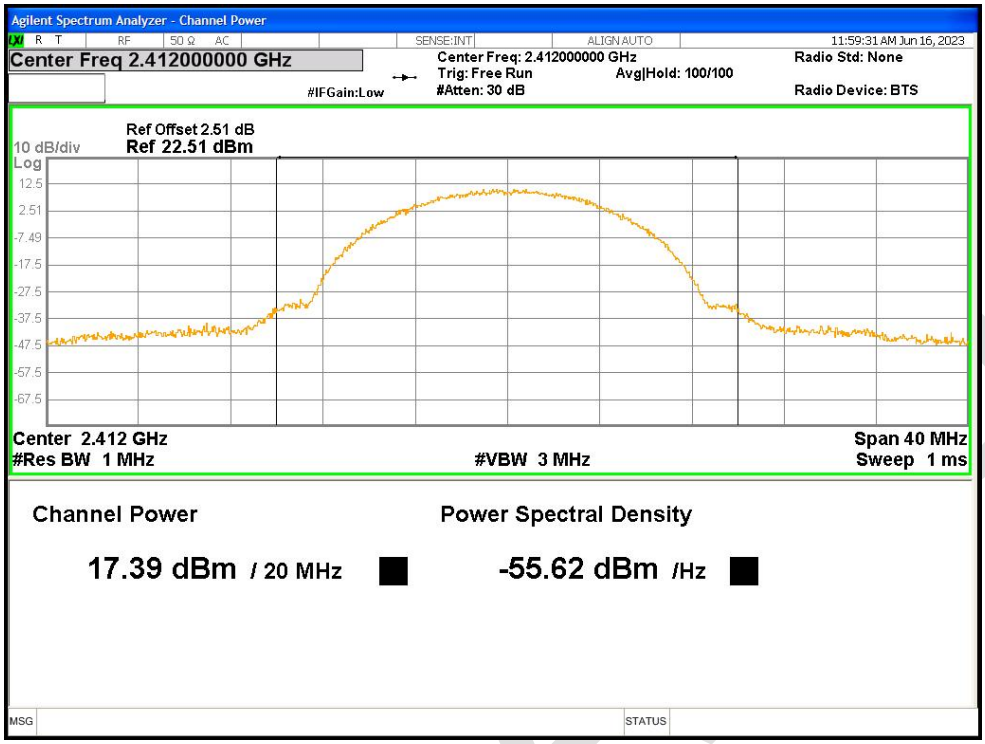
Appendix1

19.1 802.11B, 802.11G, 802.11N:

Maximum Conducted Output Power

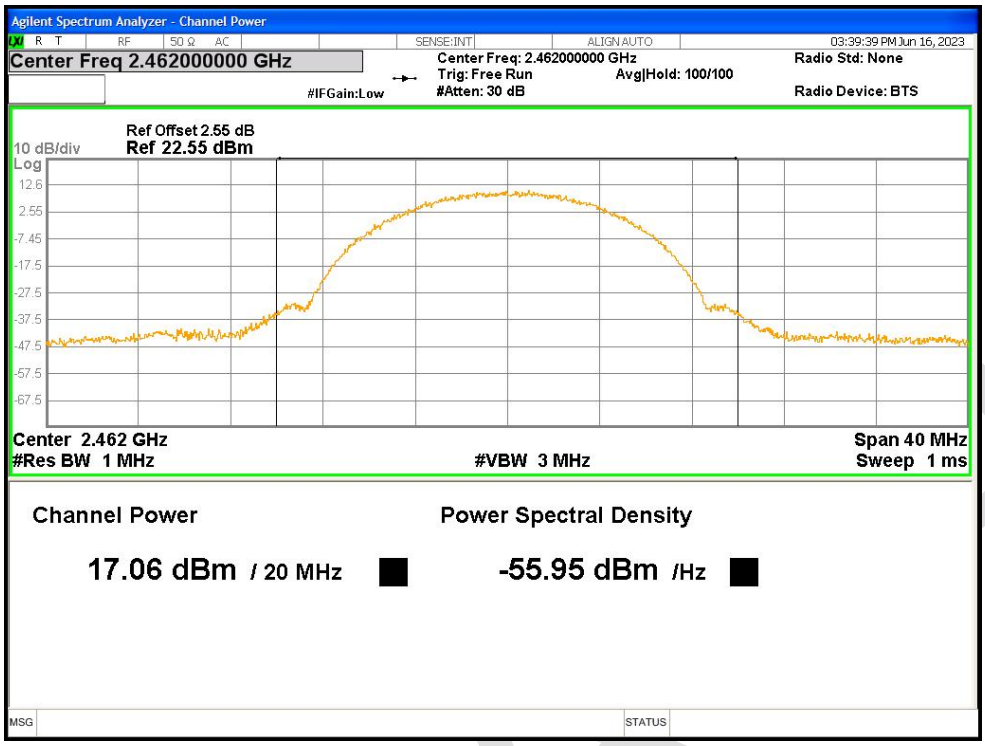
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	17.39	30	Pass
NVNT	b	2437	Ant1	17.872	30	Pass
NVNT	b	2462	Ant1	17.057	30	Pass
NVNT	b	2412	Ant2	17.329	30	Pass
NVNT	b	2437	Ant2	17.753	30	Pass
NVNT	b	2462	Ant2	17.345	30	Pass
NVNT	g	2412	Ant1	16.015	30	Pass
NVNT	g	2437	Ant1	16.382	30	Pass
NVNT	g	2462	Ant1	16.665	30	Pass
NVNT	g	2412	Ant2	16.442	30	Pass
NVNT	g	2437	Ant2	16.613	30	Pass
NVNT	g	2462	Ant2	16.35	30	Pass
NVNT	n20	2412	Ant1	15.574	29.99	Pass
NVNT	n20	2412	Ant2	15.133	29.99	Pass
NVNT	n20	2412	Sum	18.369	29.99	Pass
NVNT	n20	2437	Ant1	14.752	29.99	Pass
NVNT	n20	2437	Ant2	16.05	29.99	Pass
NVNT	n20	2437	Sum	18.46	29.99	Pass
NVNT	n20	2462	Ant1	14.919	29.99	Pass
NVNT	n20	2462	Ant2	15.996	29.99	Pass
NVNT	n20	2462	Sum	18.501	29.99	Pass
NVNT	n40	2422	Ant1	15.624	29.99	Pass
NVNT	n40	2422	Ant2	16.663	29.99	Pass
NVNT	n40	2422	Sum	19.185	29.99	Pass
NVNT	n40	2437	Ant1	15.134	29.99	Pass
NVNT	n40	2437	Ant2	16.567	29.99	Pass
NVNT	n40	2437	Sum	18.92	29.99	Pass
NVNT	n40	2452	Ant1	14.97	29.99	Pass
NVNT	n40	2452	Ant2	16.51	29.99	Pass
NVNT	n40	2452	Sum	18.818	29.99	Pass

Power NVNT b 2412MHz Ant1

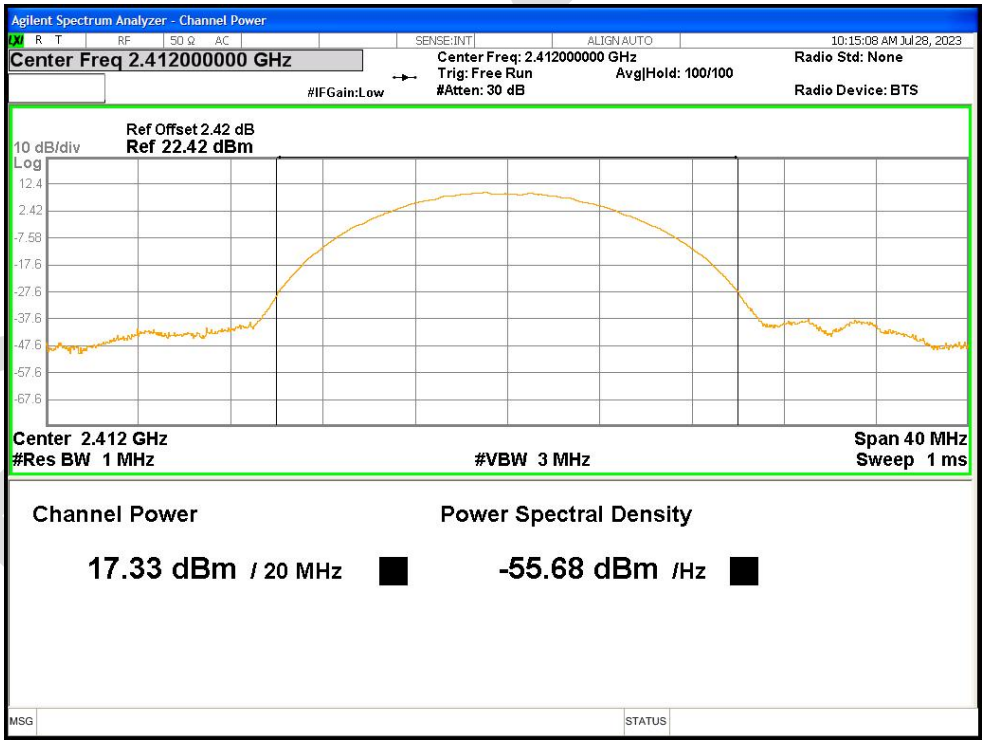


Power NVNT b 2437MHz Ant1

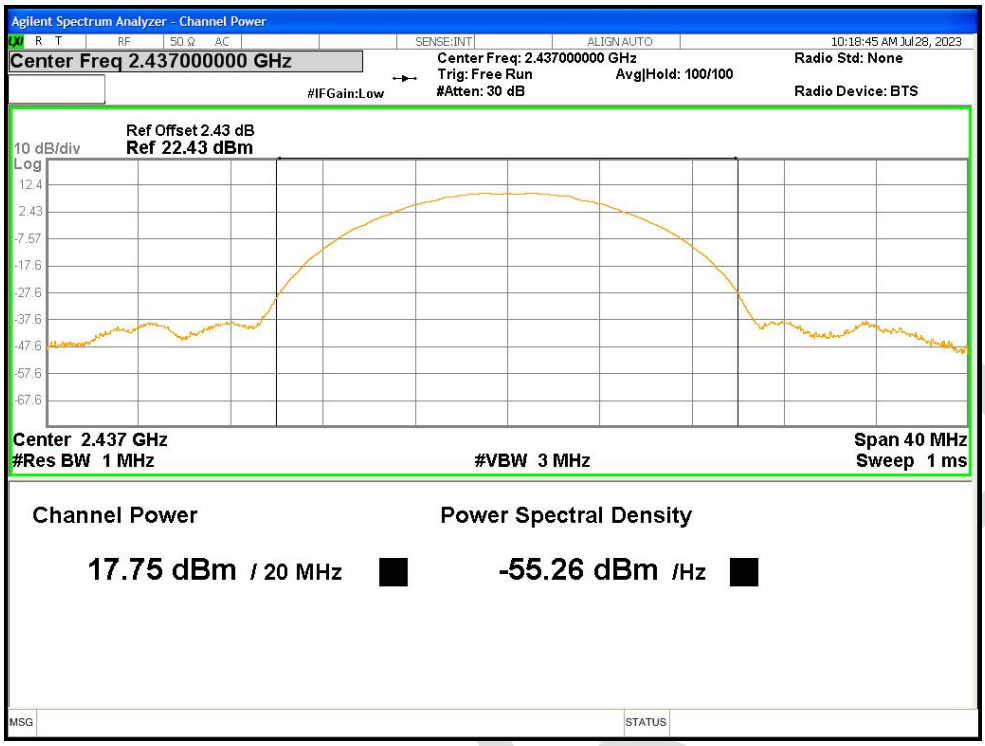
Power NVNT b 2462MHz Ant1



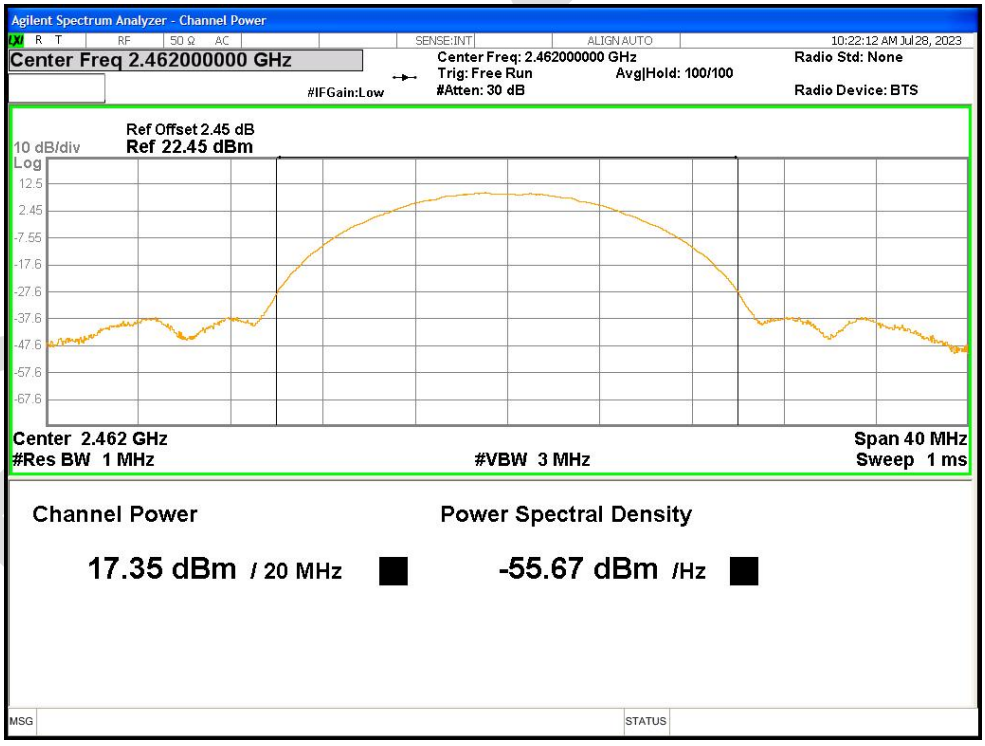
Power NVNT b 2412MHz Ant2



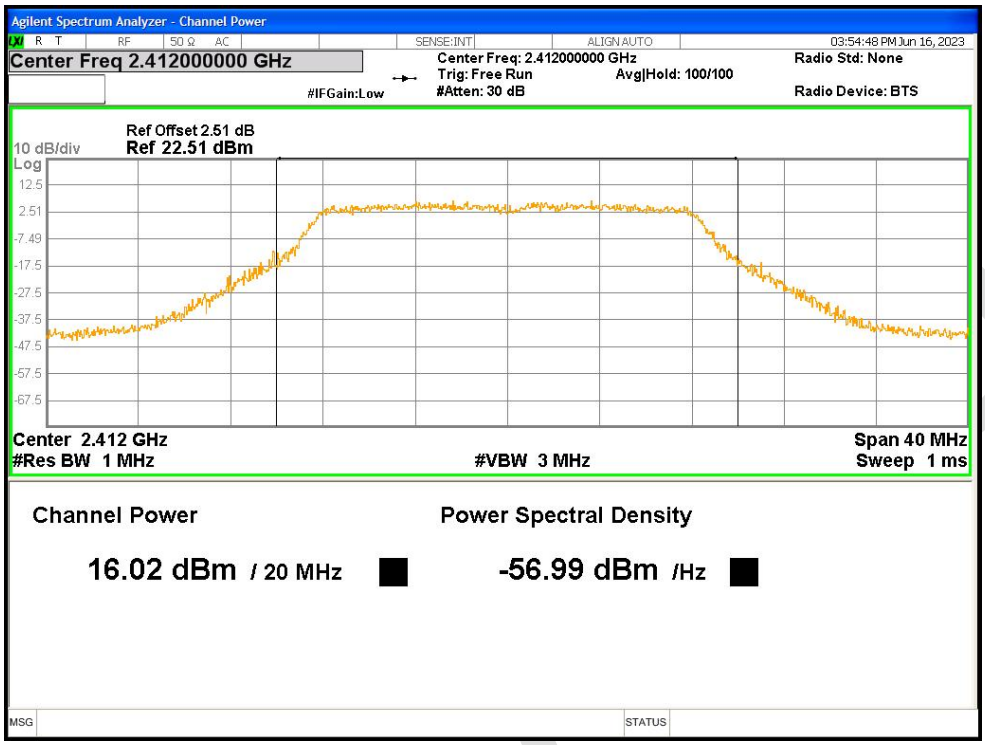
Power NVNT b 2437MHz Ant2



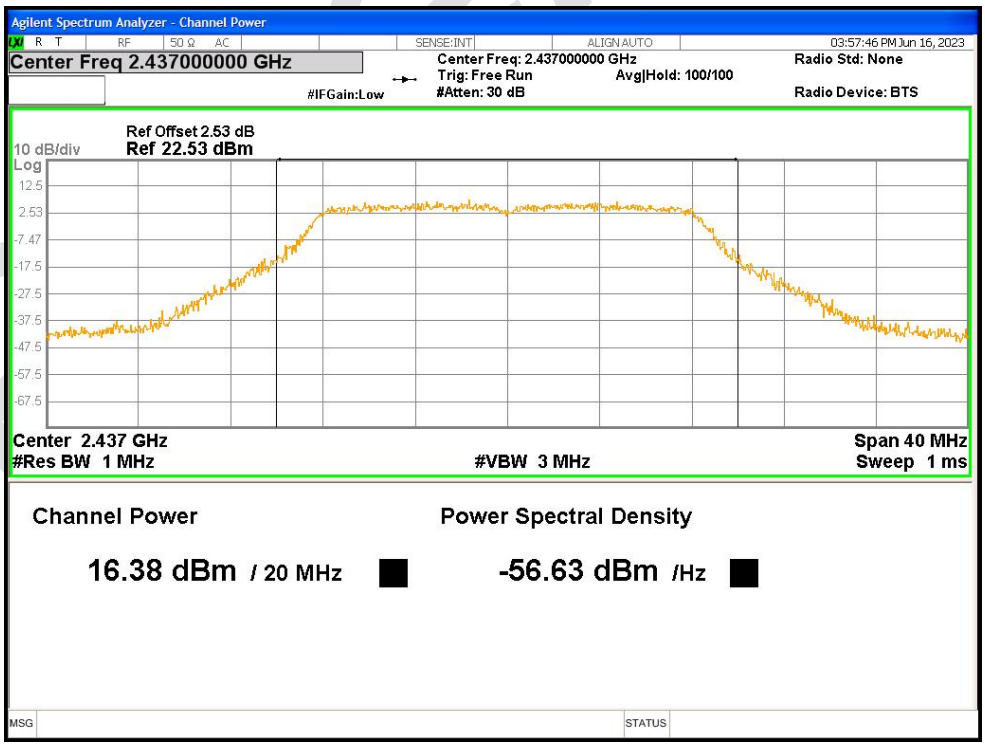
Power NVNT b 2462MHz Ant2



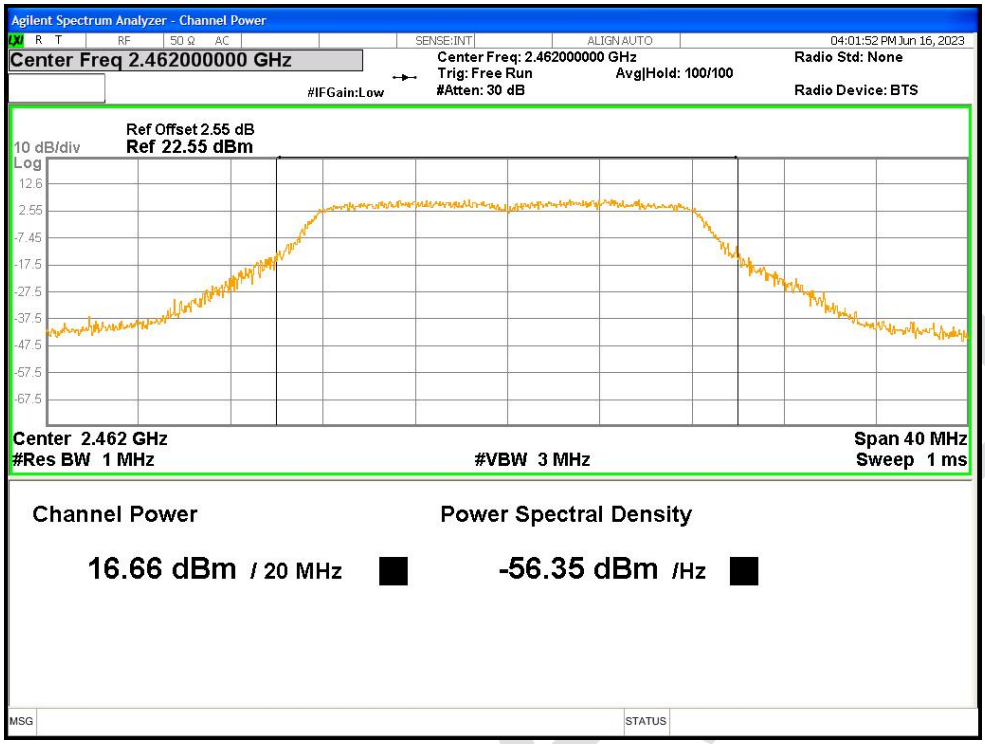
Power NVNT g 2412MHz Ant1



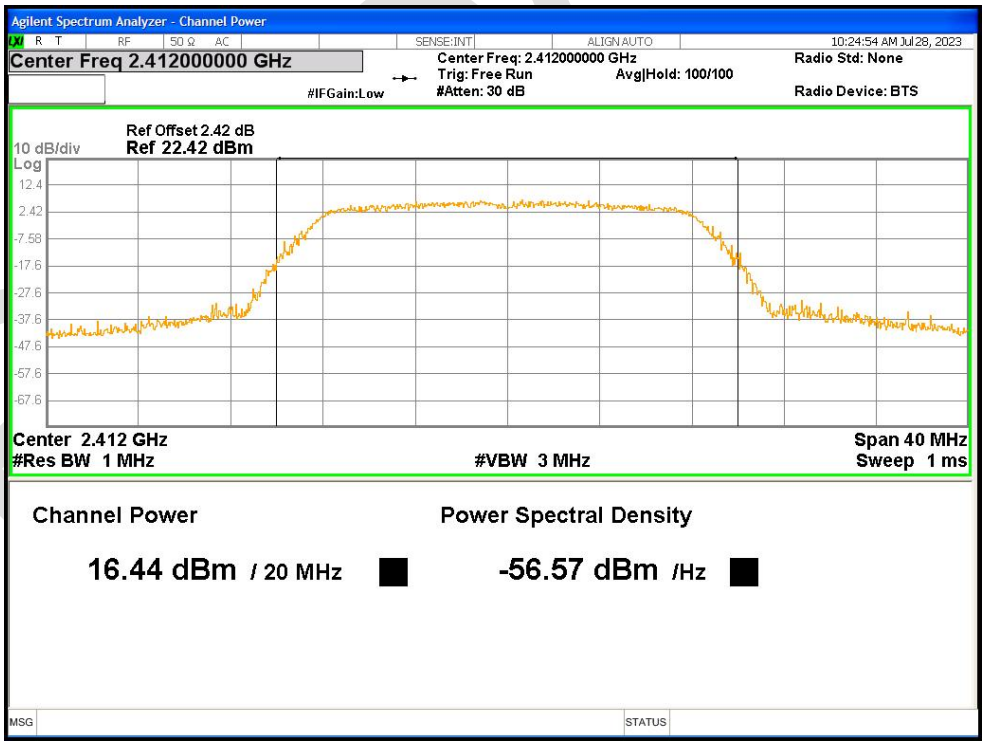
Power NVNT g 2437MHz Ant1



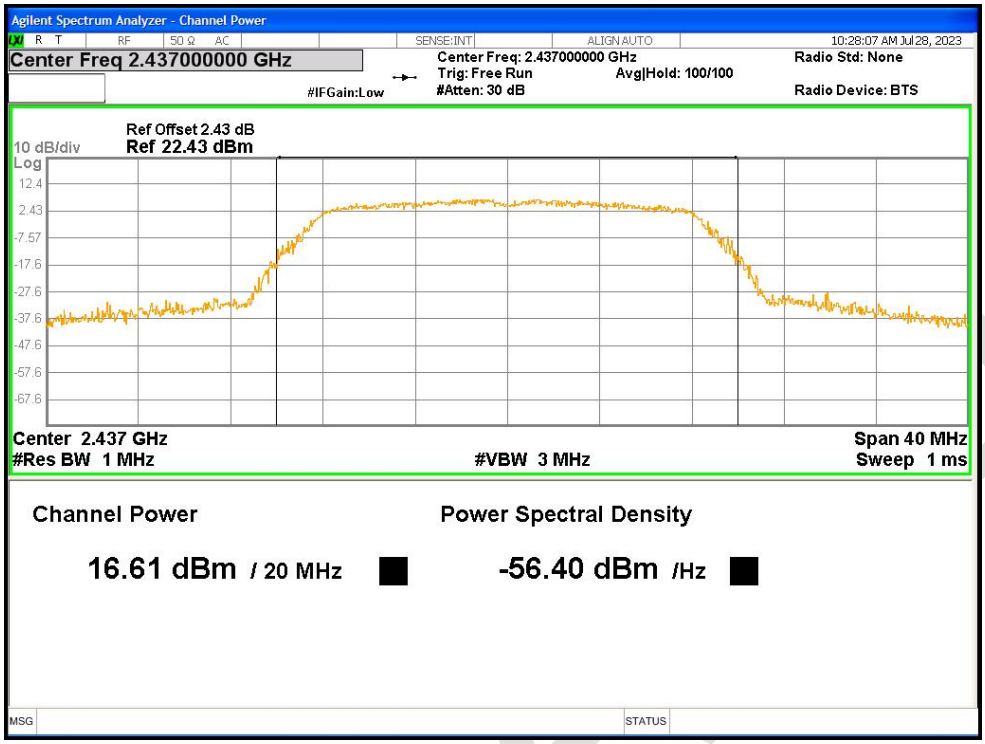
Power NVNT g 2462MHz Ant1



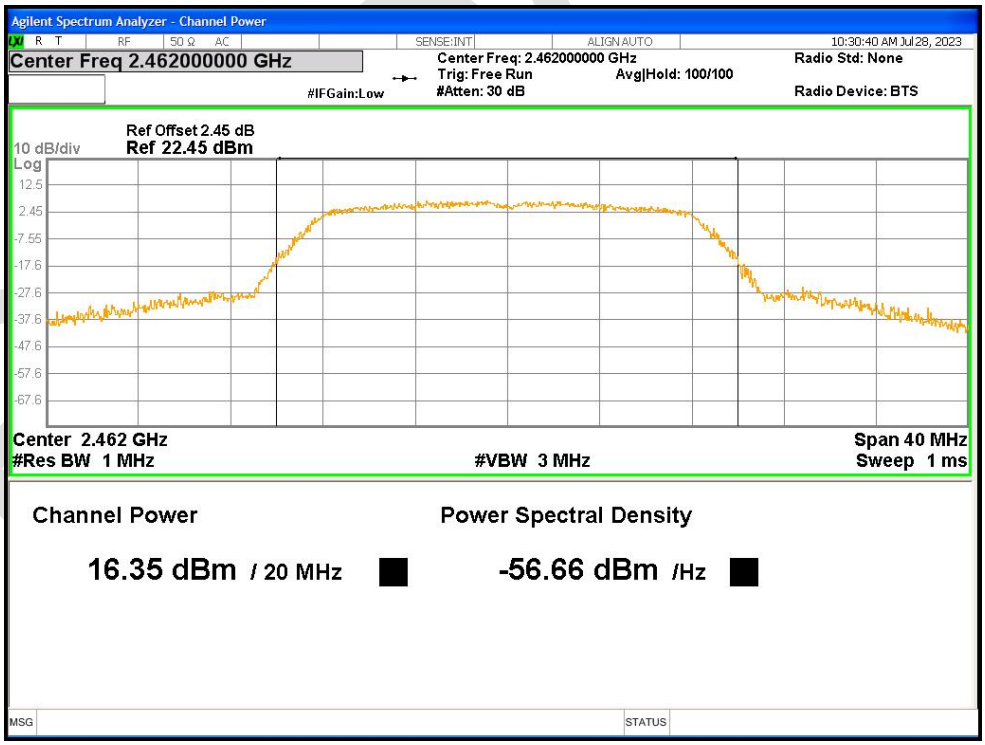
Power NVNT g 2412MHz Ant2



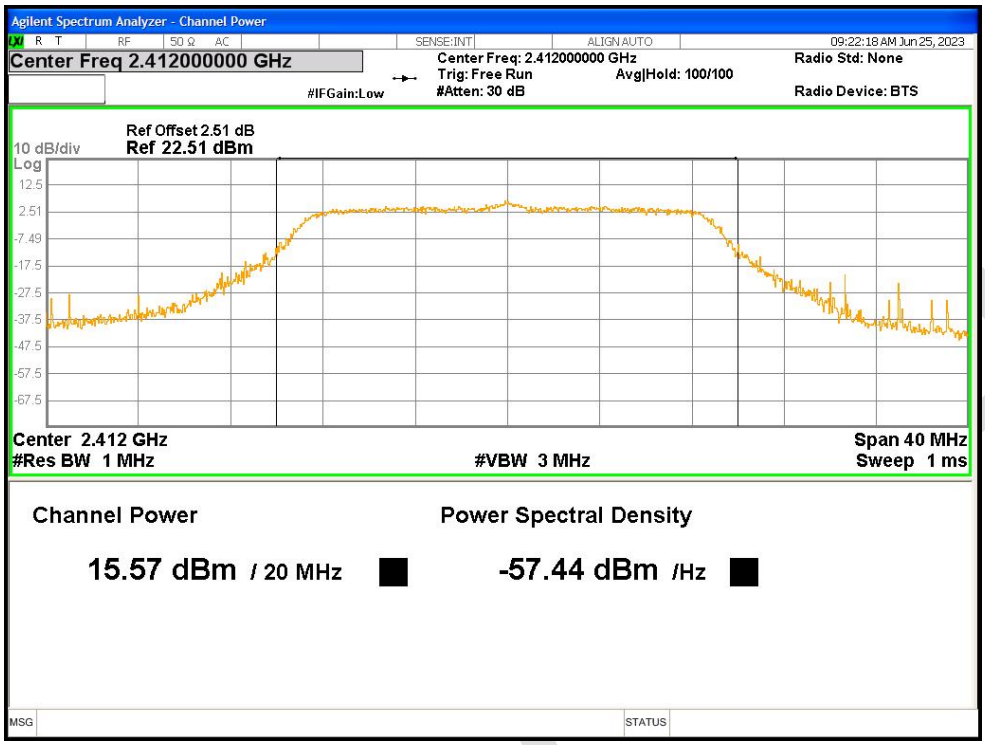
Power NVNT g 2437MHz Ant2



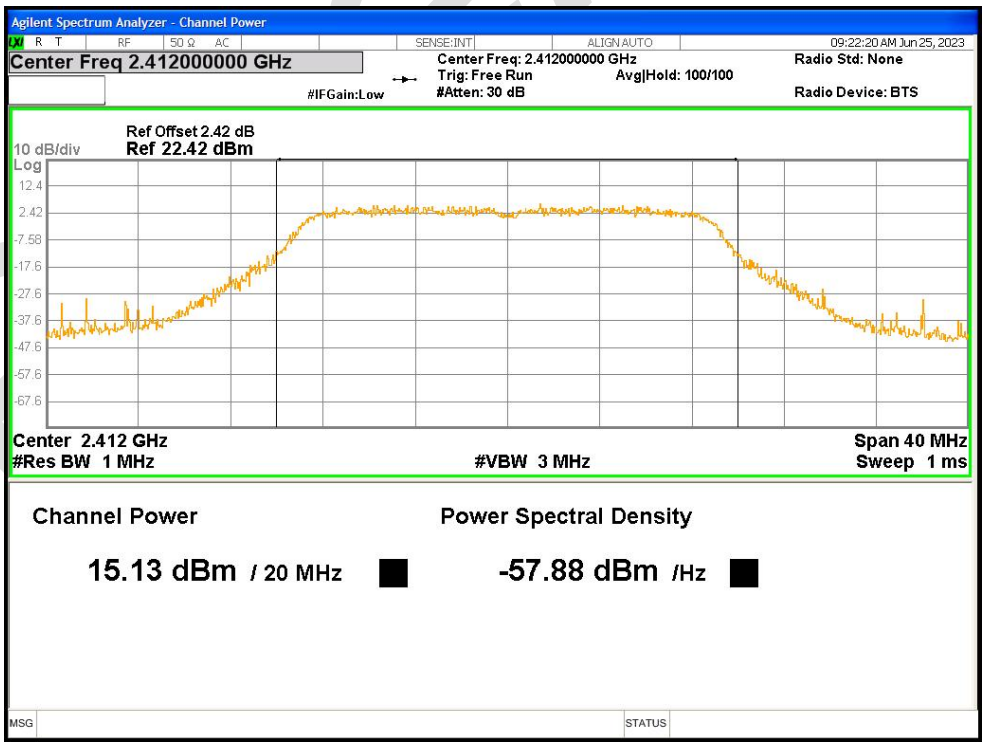
Power NVNT g 2462MHz Ant2



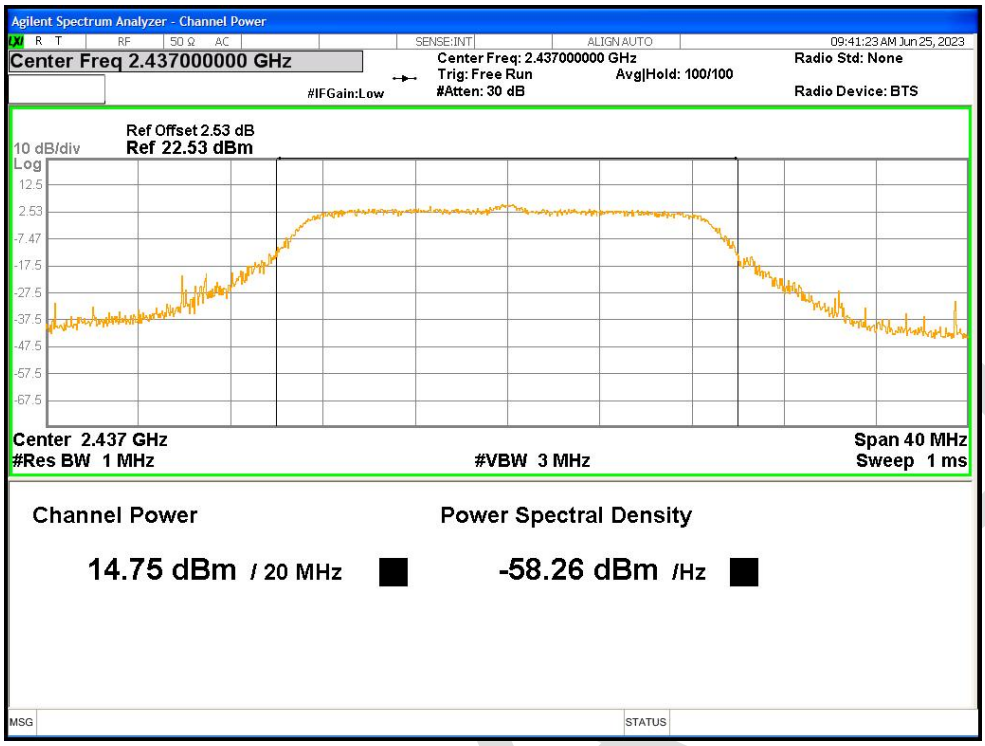
Power NVNT n20 2412MHz Ant1



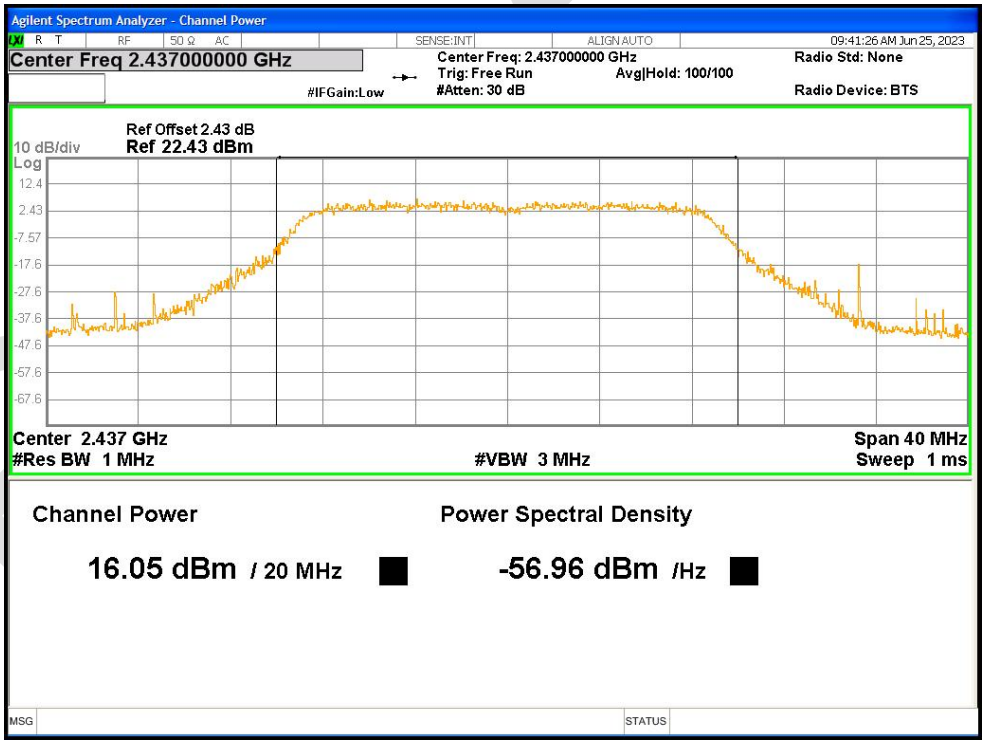
Power NVNT n20 2412MHz Ant2



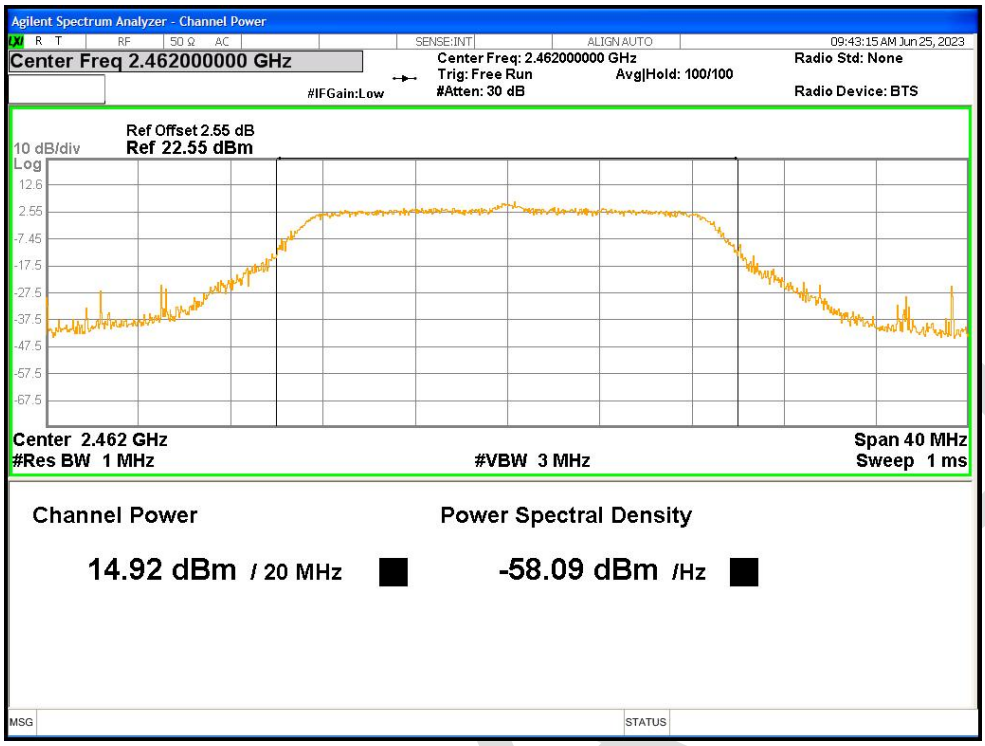
Power NVNT n20 2437MHz Ant1



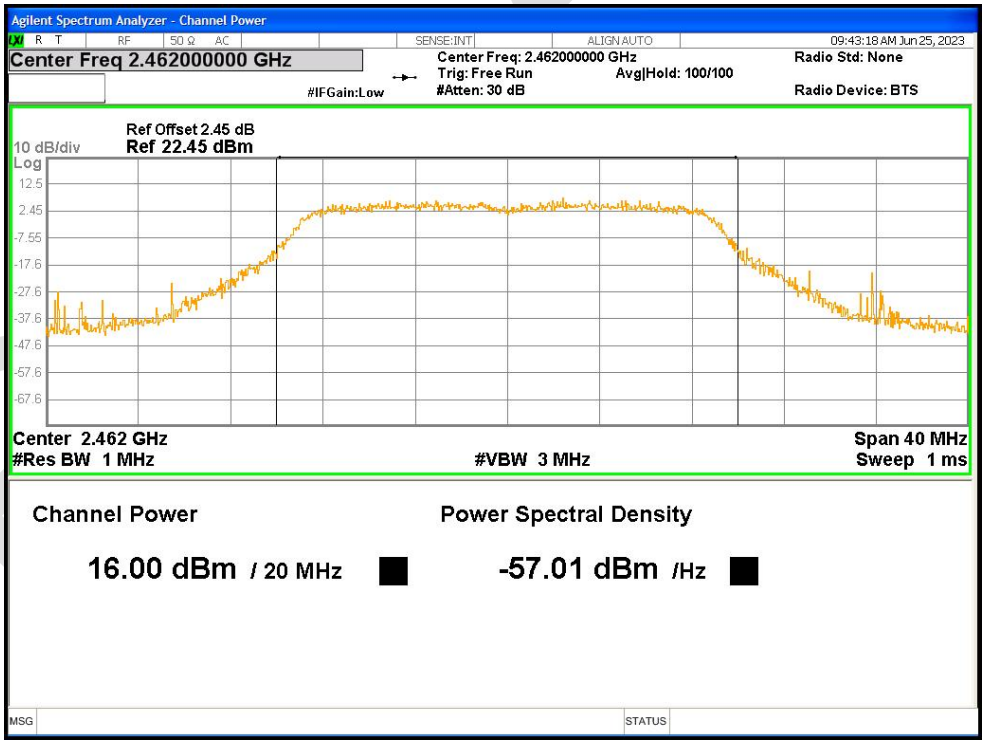
Power NVNT n20 2437MHz Ant2



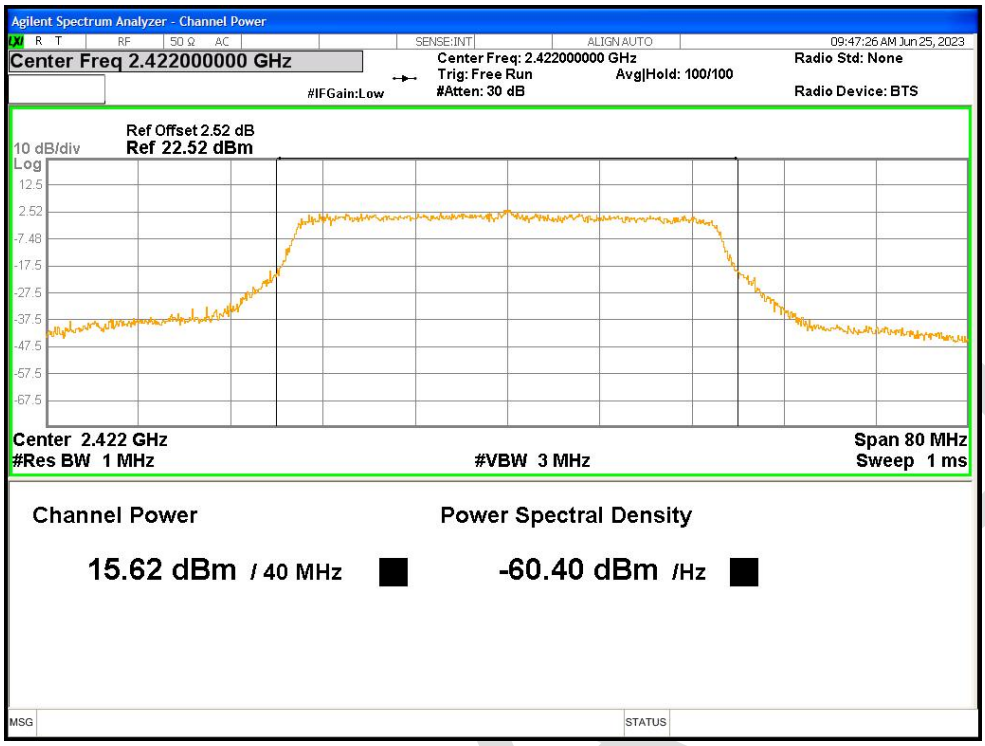
Power NVNT n20 2462MHz Ant1



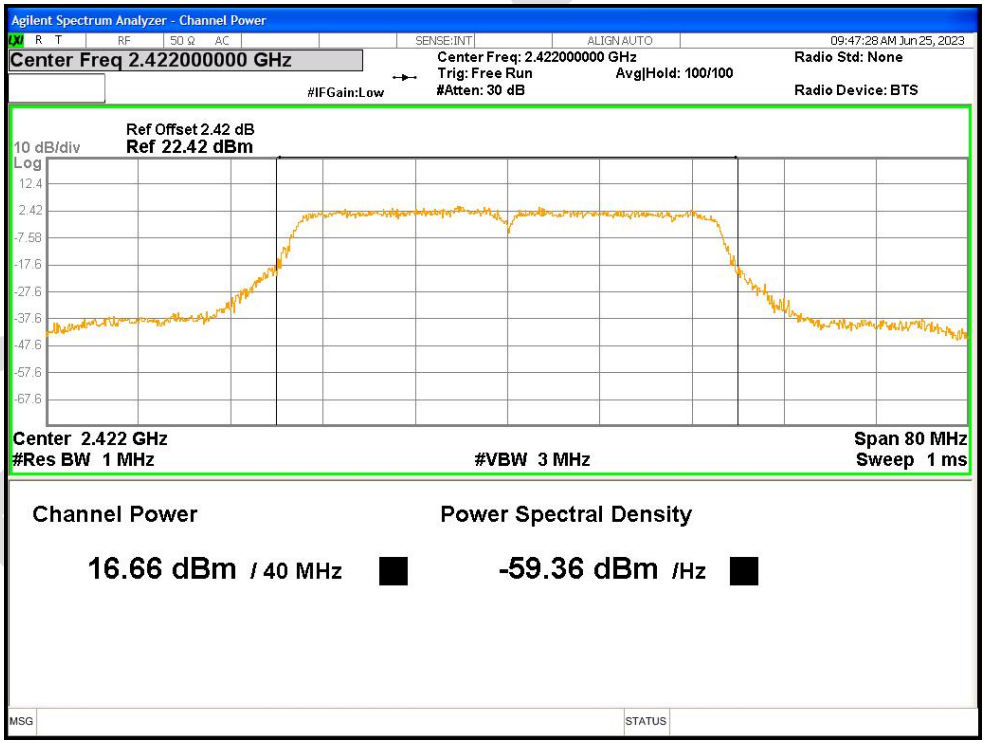
Power NVNT n20 2462MHz Ant2



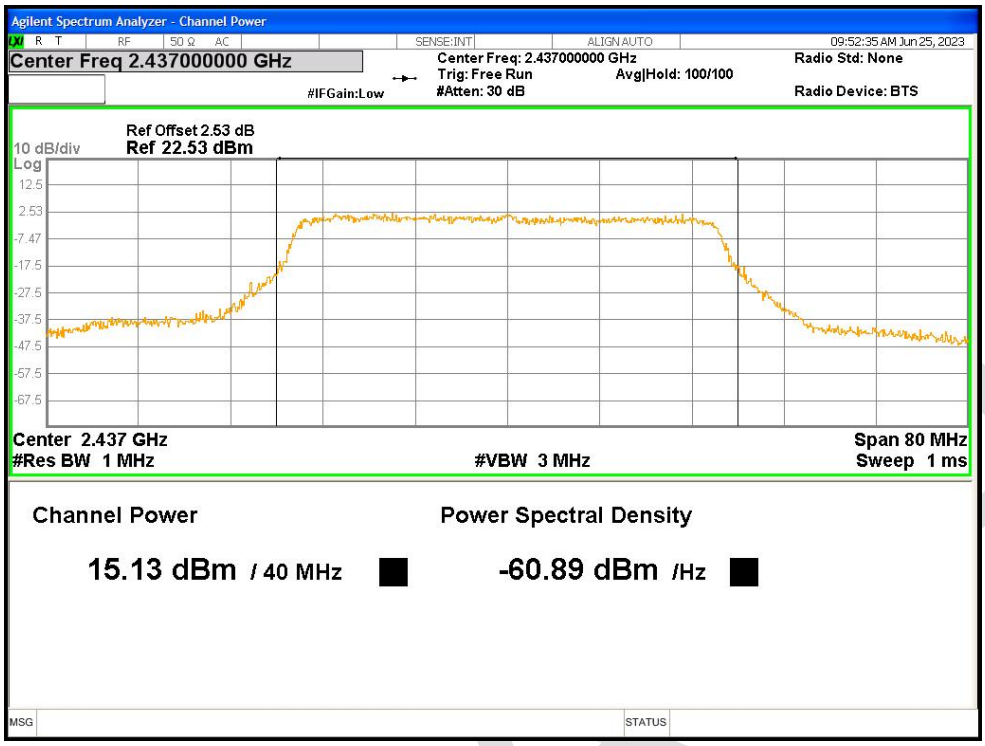
Power NVNT n40 2422MHz Ant1



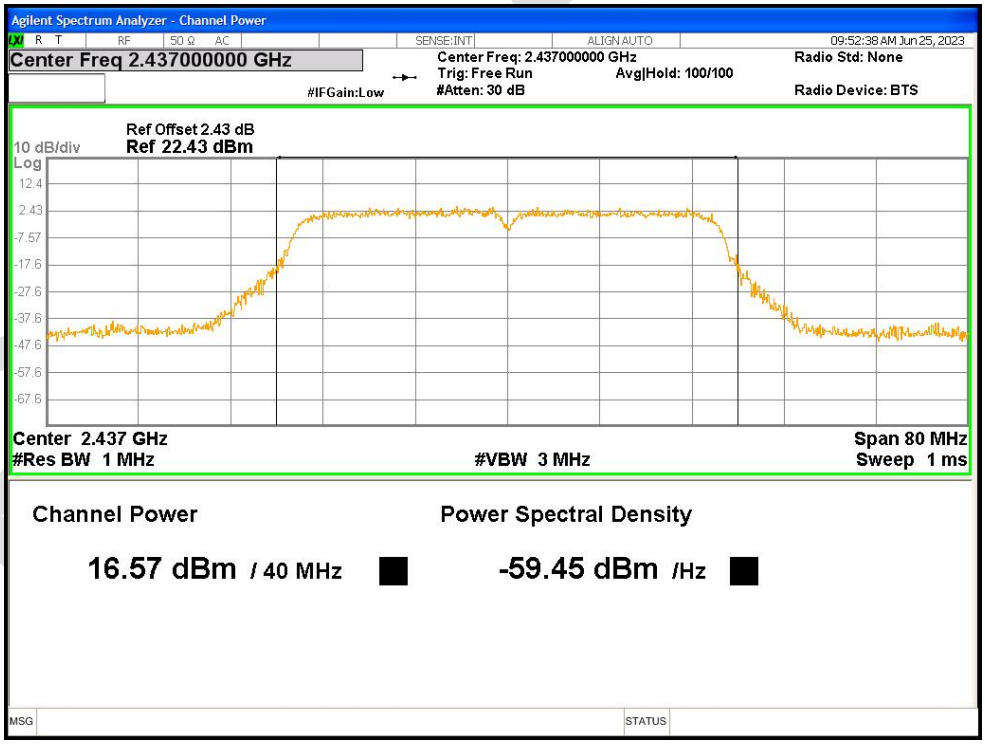
Power NVNT n40 2422MHz Ant2



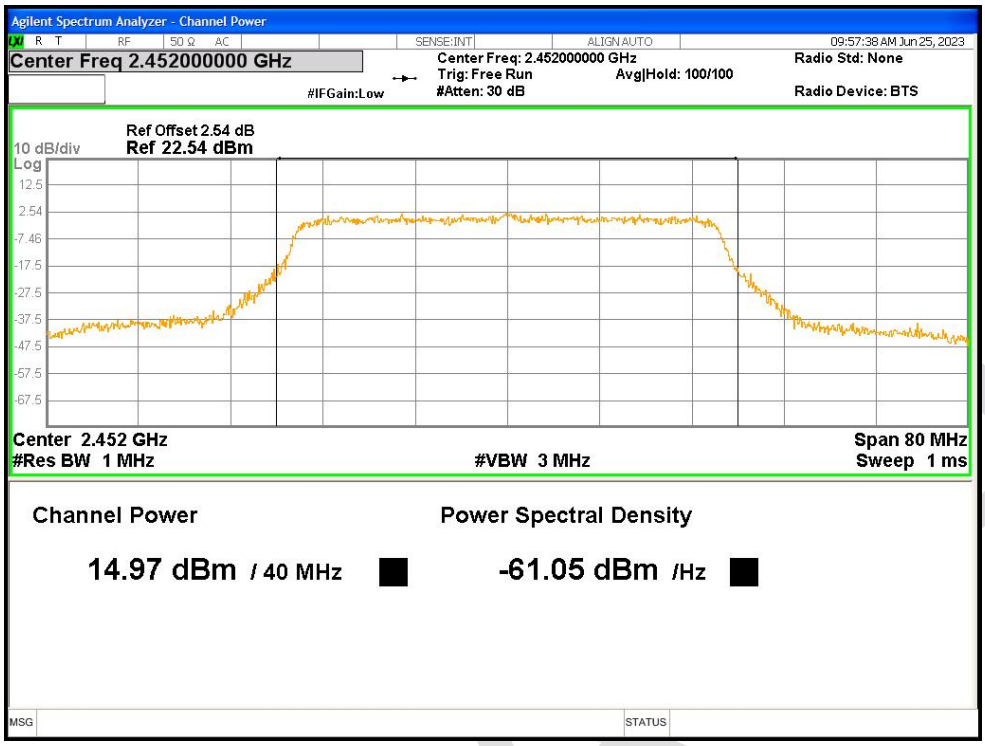
Power NVNT n40 2437MHz Ant1



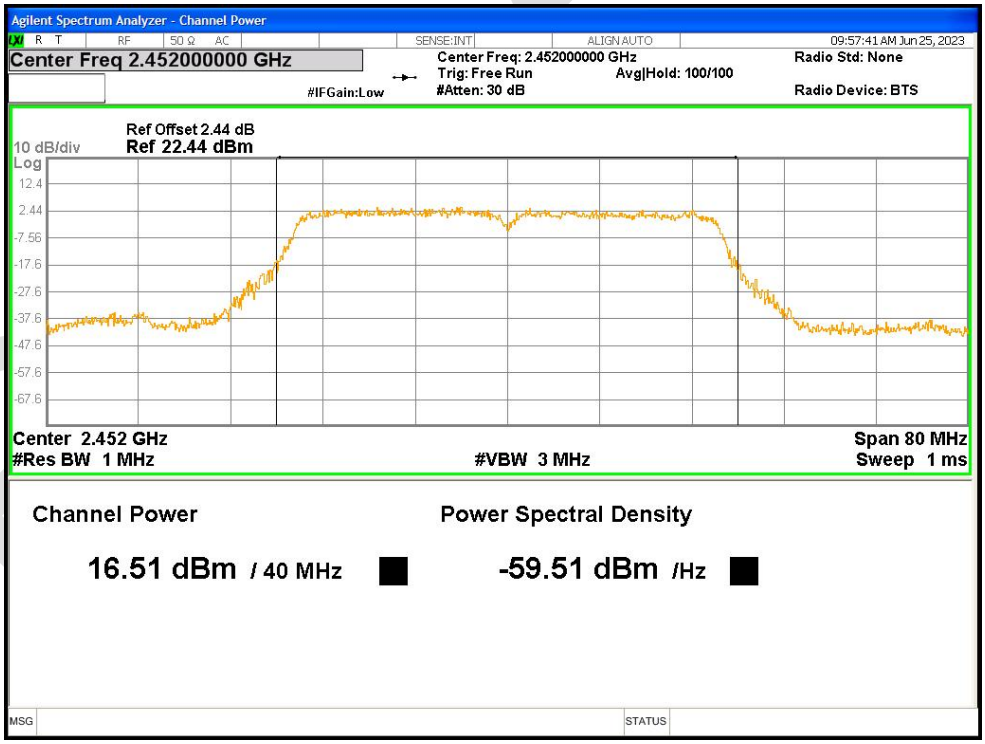
Power NVNT n40 2437MHz Ant2



Power NVNT n40 2452MHz Ant1



Power NVNT n40 2452MHz Ant2



-6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	7.547	0.5	Pass
NVNT	b	2437	Ant1	6.318	0.5	Pass
NVNT	b	2462	Ant1	6.45	0.5	Pass
NVNT	b	2412	Ant2	8.528	0.5	Pass
NVNT	b	2437	Ant2	8.556	0.5	Pass
NVNT	b	2462	Ant2	8.042	0.5	Pass
NVNT	g	2412	Ant1	16.413	0.5	Pass
NVNT	g	2437	Ant1	16.395	0.5	Pass
NVNT	g	2462	Ant1	16.384	0.5	Pass
NVNT	g	2412	Ant2	15.046	0.5	Pass
NVNT	g	2437	Ant2	15.073	0.5	Pass
NVNT	g	2462	Ant2	15.826	0.5	Pass
NVNT	n20	2412	Ant1	15.056	0.5	Pass
NVNT	n20	2412	Ant2	17.517	0.5	Pass
NVNT	n20	2437	Ant1	15.604	0.5	Pass
NVNT	n20	2437	Ant2	17.53	0.5	Pass
NVNT	n20	2462	Ant1	15.099	0.5	Pass
NVNT	n20	2462	Ant2	17.546	0.5	Pass
NVNT	n40	2422	Ant1	32.537	0.5	Pass
NVNT	n40	2422	Ant2	35.675	0.5	Pass
NVNT	n40	2437	Ant1	35.059	0.5	Pass
NVNT	n40	2437	Ant2	35.751	0.5	Pass
NVNT	n40	2452	Ant1	35.053	0.5	Pass
NVNT	n40	2452	Ant2	36.07	0.5	Pass

-6dB Bandwidth NVNT b 2412MHz Ant1