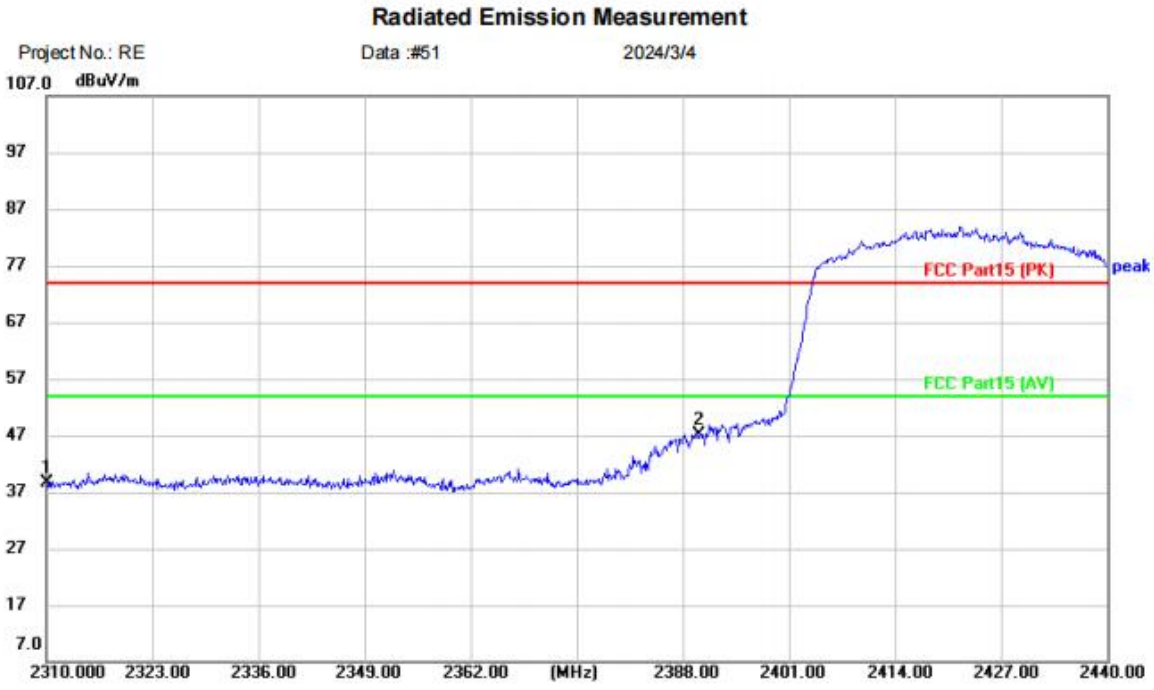
[TestMode: TX N40 low channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT:
M/N:
Mode: 2.4GWIFI-11N40-2422
Note:

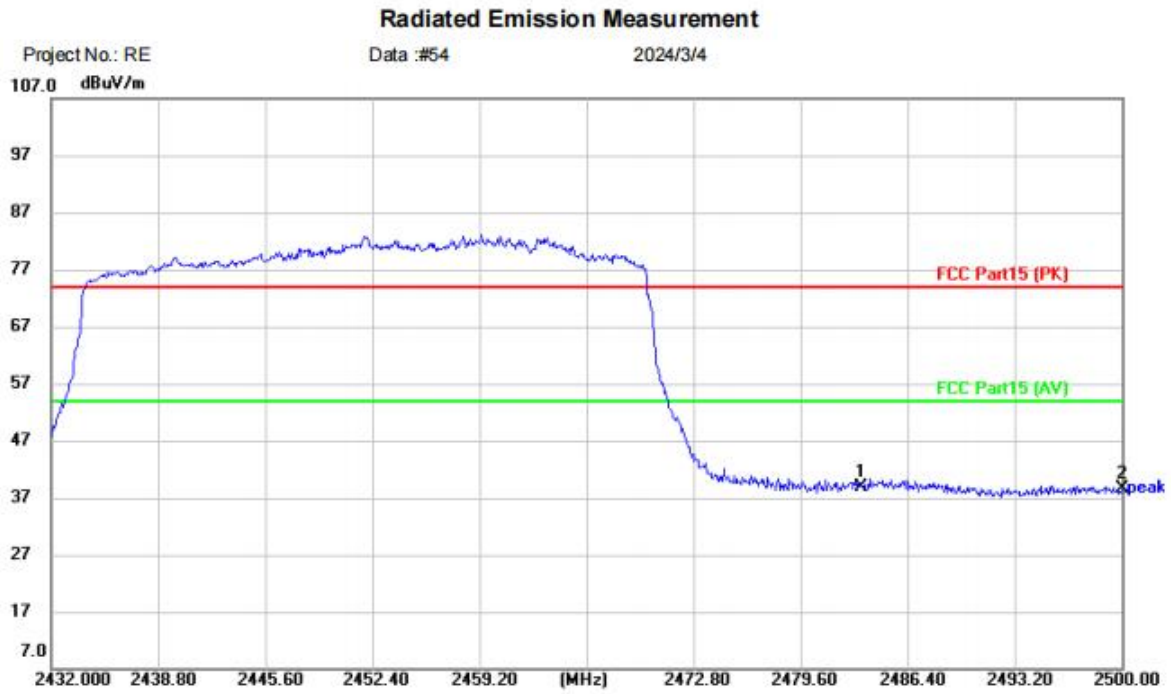
Polarization: *Horizontal*
Power:

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	41.57	-2.89	38.68	74.00	-35.32	peak	
2	*	2390.000	49.73	-2.70	47.03	74.00	-26.97	peak	

Test Result: Pass

[TestMode: TX N40 high channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT:
M/N:
Mode: 2.4GWIFI-11N40-2452
Note:

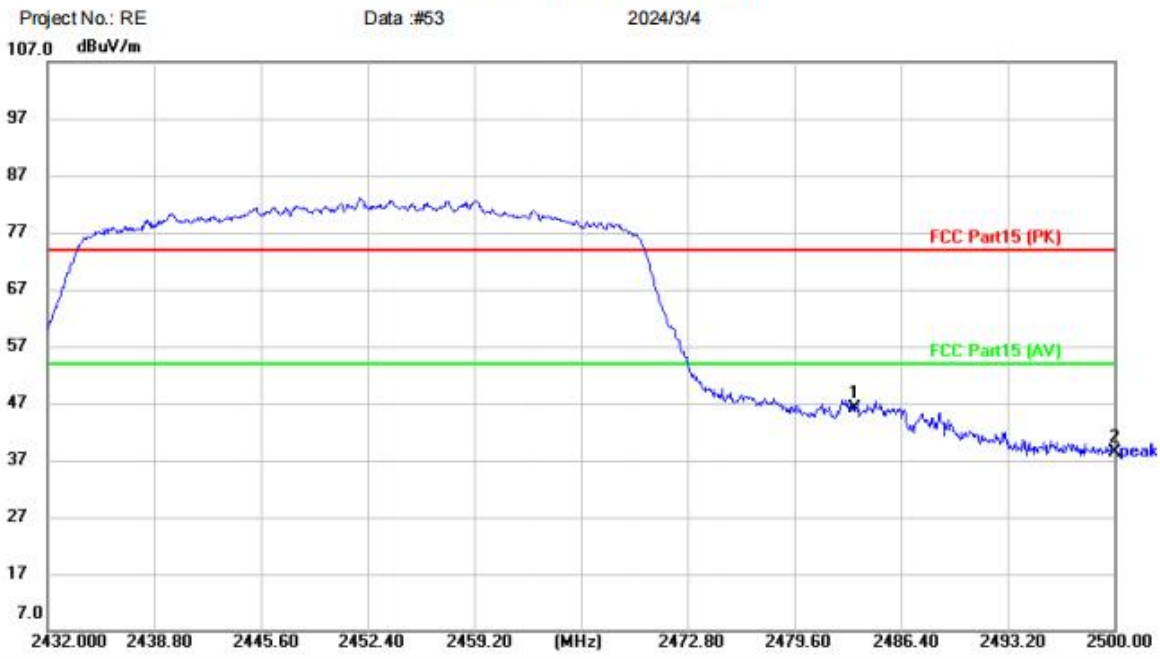
Polarization: *Vertical*
Power:

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	41.69	-2.91	38.78	74.00	-35.22	peak	
2		2500.000	41.63	-3.00	38.63	74.00	-35.37	peak	

Test Result: Pass

[TestMode: TX N40 high channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT:
M/N:
Mode: 2.4GWIFI-11N40-2452
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	48.97	-2.91	46.06	74.00	-27.94	peak	
2		2500.000	41.36	-3.00	38.36	74.00	-35.64	peak	

Test Result: Pass

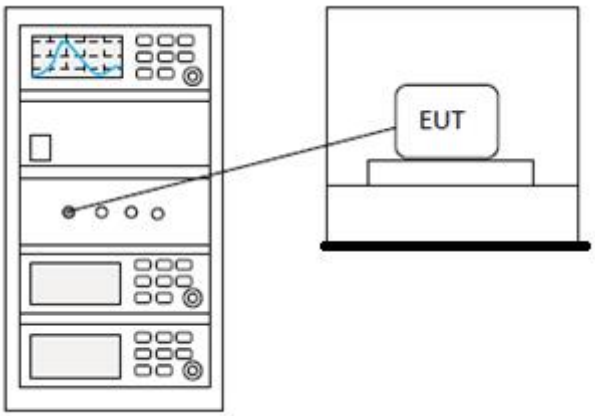
14 CONDUCTED SPURIOUS EMISSIONS

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	Charlie
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

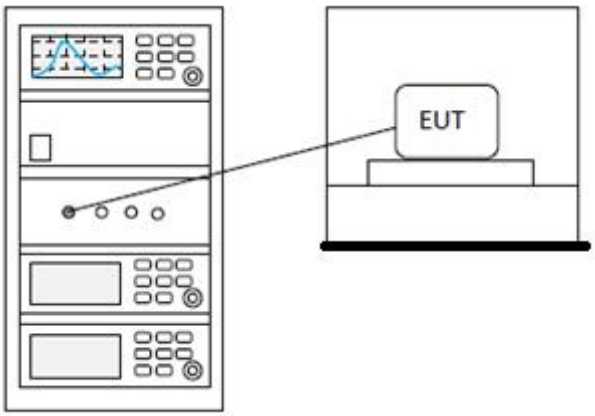
15 CONDUCTED BAND EDGES MEASUREMENT

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	Charlie
Temperature	25℃
Humidity	60%

15.1 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)).

15.2 BLOCK DIAGRAM OF TEST SETUP



15.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

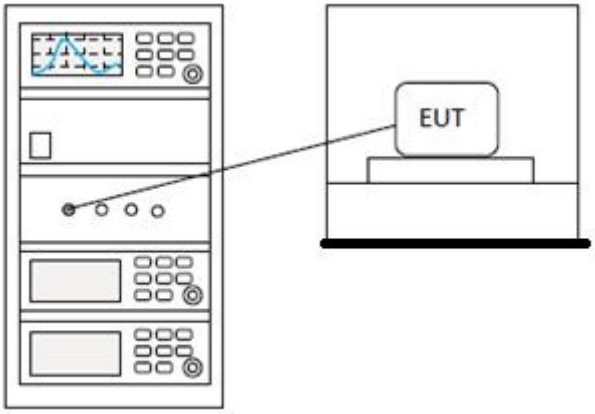
16 MINIMUM 6DB BANDWIDTH

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	Charlie
Temperature	25℃
Humidity	60%

16.1 LIMITS

Limit:	≥500 kHz

16.2 BLOCK DIAGRAM OF TEST SETUP



16.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

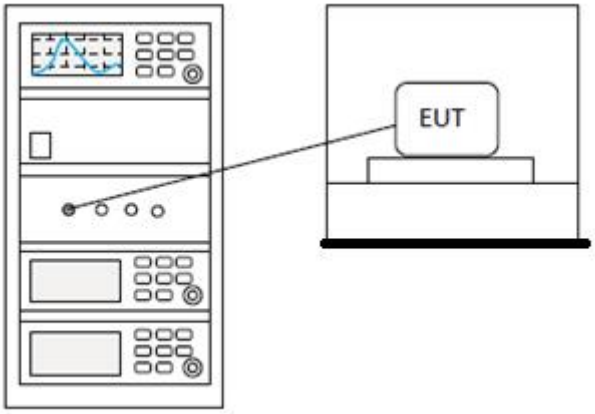
17 POWER SPECTRUM DENSITY

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	Charlie
Temperature	25℃
Humidity	60%

17.1 LIMITS

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

17.2 BLOCK DIAGRAM OF TEST SETUP



17.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

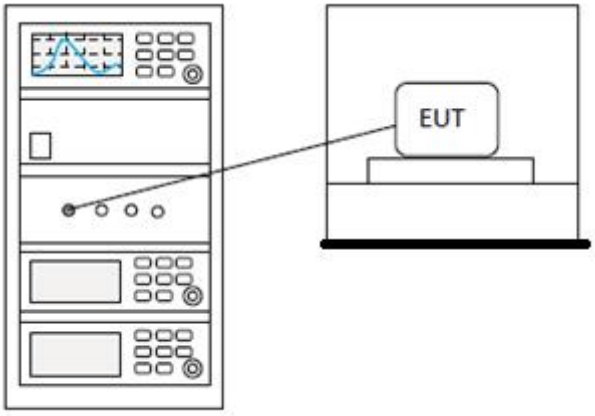
18 CONDUCTED PEAK OUTPUT POWER

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	Charlie
Temperature	25℃
Humidity	60%

18.1 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

18.2 BLOCK DIAGRAM OF TEST SETUP



18.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

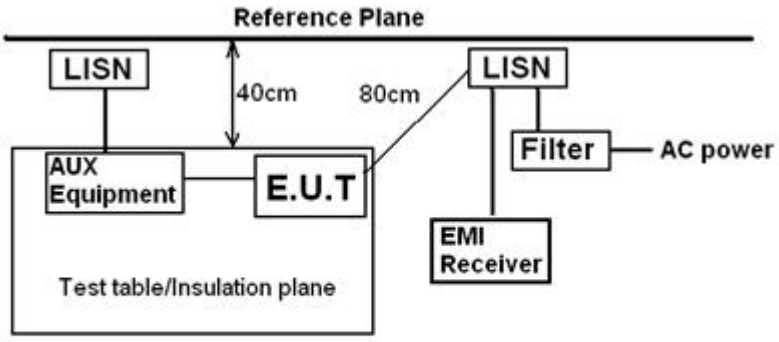
19 CONDUCTED EMISSIONS AT AC POWER LINE (150KHZ-30MHZ)

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	Charlie
Temperature	25℃
Humidity	60%

19.1 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.		

19.2 BLOCK DIAGRAM OF TEST SETUP



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

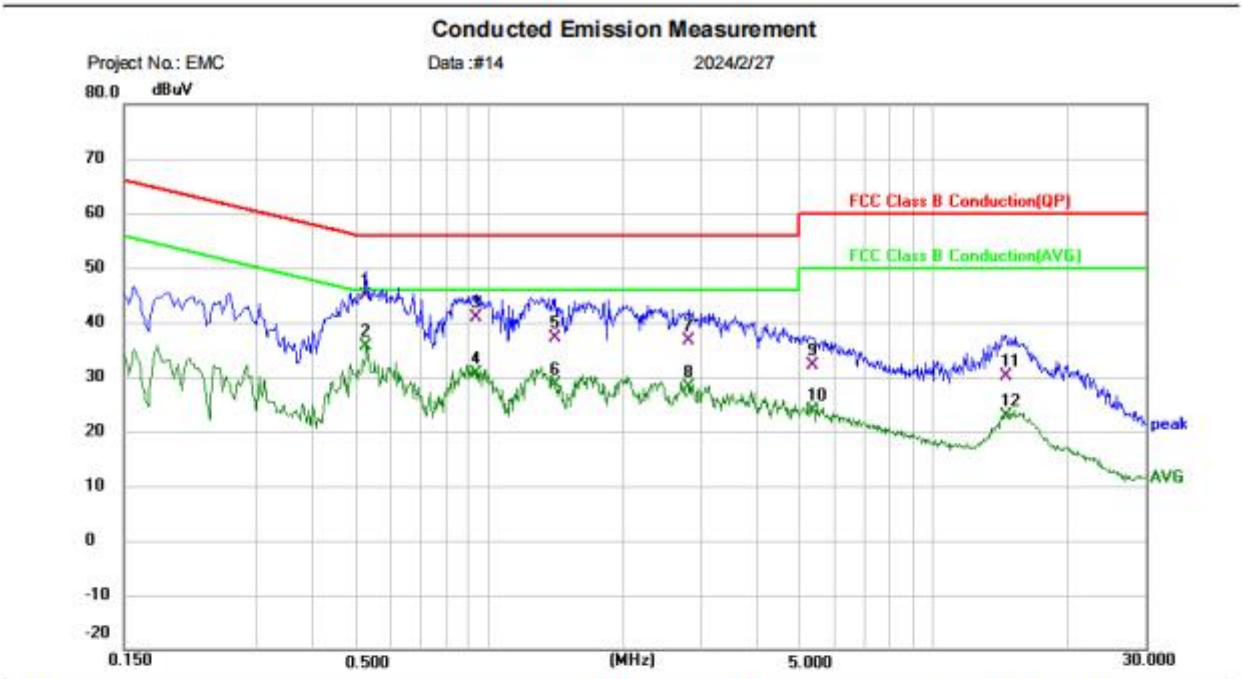
19.3 PROCEDURE

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

19.4 TEST DATA

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



Site
Limit: FCC Class B Conduction(QP)
EUT:
M/N:
Mode: 2.4GWIFI TX Mode
Note:

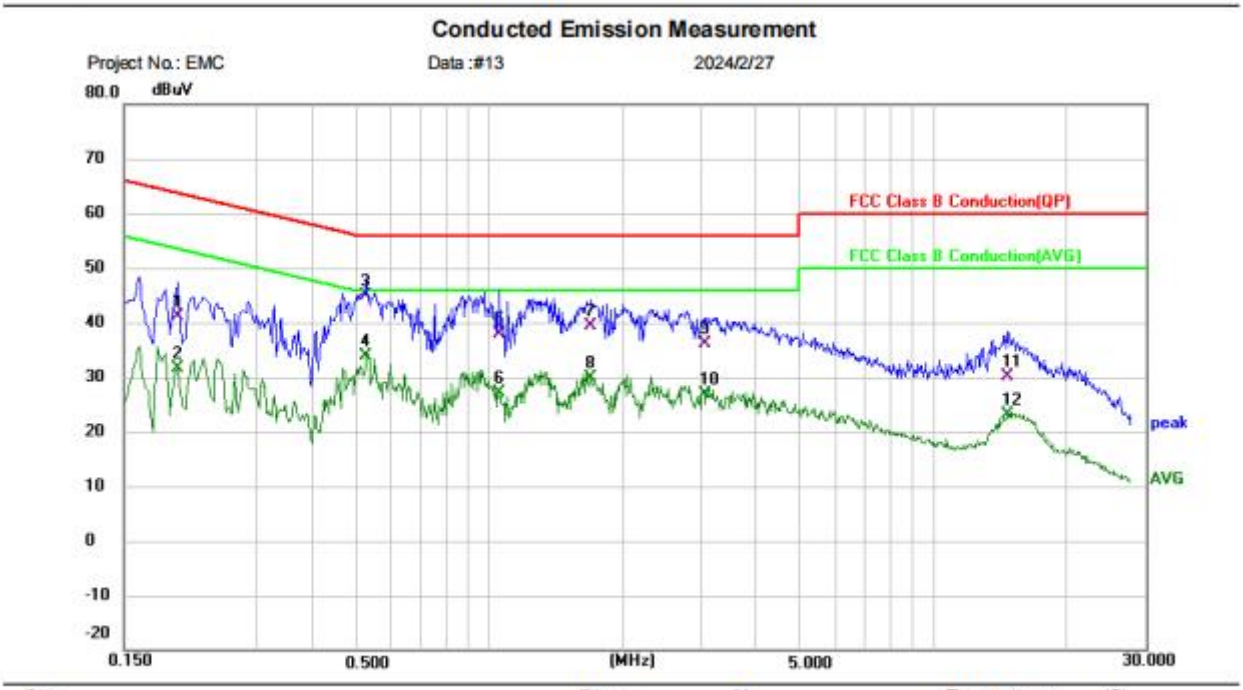
Phase: L1
Power:
Distance:
RBW: 9 KHz
VBW: 30 KHz

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		0.5260	35.27	9.70	44.97	56.00	-11.03	QP			
2	*	0.5260	25.82	9.70	35.52	46.00	-10.48	AVG			
3		0.9340	30.80	9.96	40.76	56.00	-15.24	QP			
4		0.9340	20.65	9.96	30.61	46.00	-15.39	AVG			
5		1.4060	27.28	9.94	37.22	56.00	-18.78	QP			
6		1.4060	18.68	9.94	28.62	46.00	-17.38	AVG			
7		2.8220	26.34	10.27	36.61	56.00	-19.39	QP			
8		2.8220	17.78	10.27	28.05	46.00	-17.95	AVG			
9		5.3859	21.76	10.31	32.07	60.00	-27.93	QP			
10		5.3859	13.46	10.31	23.77	50.00	-26.23	AVG			
11		14.5820	20.03	10.14	30.17	60.00	-29.83	QP			
12		14.5820	12.86	10.14	23.00	50.00	-27.00	AVG			

Test Result: Pass

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



Site
Limit: FCC Class B Conduction(QP)
EUT:
M/N:
Mode: 2.4GWIFI TX Mode
Note:

Phase: N
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		0.1980	30.93	10.31	41.24	63.69	-22.45	QP			
2		0.1980	21.41	10.31	31.72	53.69	-21.97	AVG			
3	*	0.5260	35.30	9.69	44.99	56.00	-11.01	QP			
4		0.5260	24.21	9.69	33.90	46.00	-12.10	AVG			
5		1.0540	27.94	9.92	37.86	56.00	-18.14	QP			
6		1.0540	17.27	9.92	27.19	46.00	-18.81	AVG			
7		1.6980	29.46	10.01	39.47	56.00	-16.53	QP			
8		1.6980	19.85	10.01	29.86	46.00	-16.14	AVG			
9		3.0420	25.83	10.18	36.01	56.00	-19.99	QP			
10		3.0420	16.75	10.18	26.93	46.00	-19.07	AVG			
11		14.6460	19.98	10.10	30.08	60.00	-29.92	QP			
12		14.6460	13.08	10.10	23.18	50.00	-26.82	AVG			

Test Result: Pass

20 APPENDIX

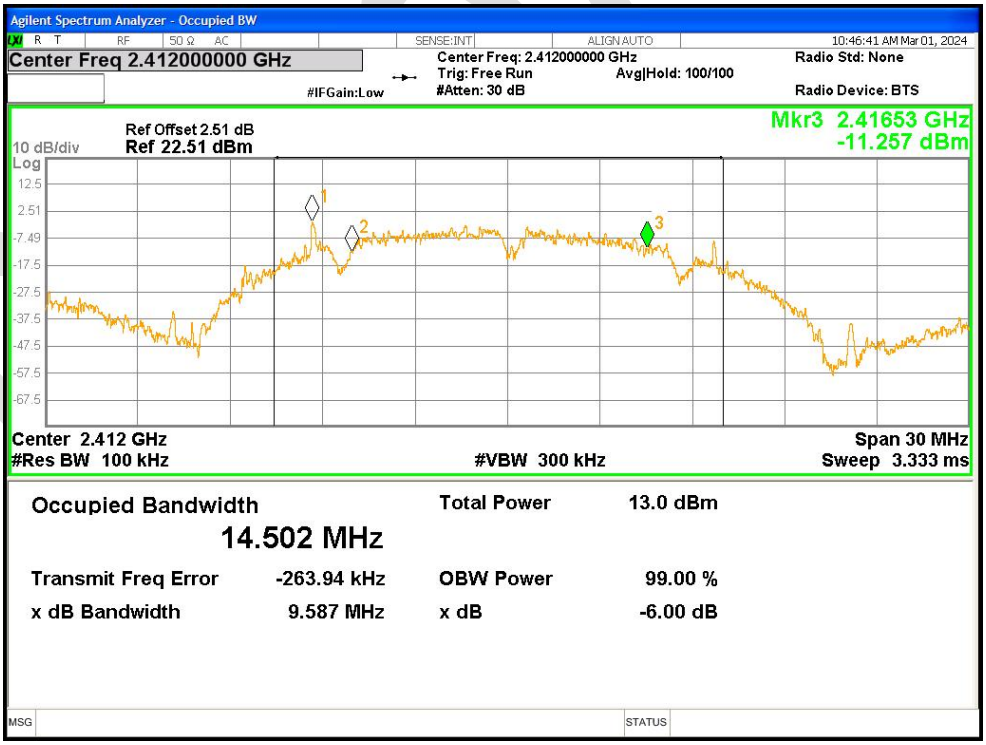
20.1 MAXIMUM CONDUCTED OUTPUT POWER

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	9.432	30	Pass
NVNT	b	2437	Ant1	8.444	30	Pass
NVNT	b	2462	Ant1	9.302	30	Pass
NVNT	g	2412	Ant1	8.972	30	Pass
NVNT	g	2437	Ant1	7.554	30	Pass
NVNT	g	2462	Ant1	9.191	30	Pass
NVNT	n20	2412	Ant1	7.363	30	Pass
NVNT	n20	2437	Ant1	7.388	30	Pass
NVNT	n20	2462	Ant1	8.374	30	Pass
NVNT	n40	2422	Ant1	8.067	30	Pass
NVNT	n40	2437	Ant1	6.437	30	Pass
NVNT	n40	2452	Ant1	7.185	30	Pass

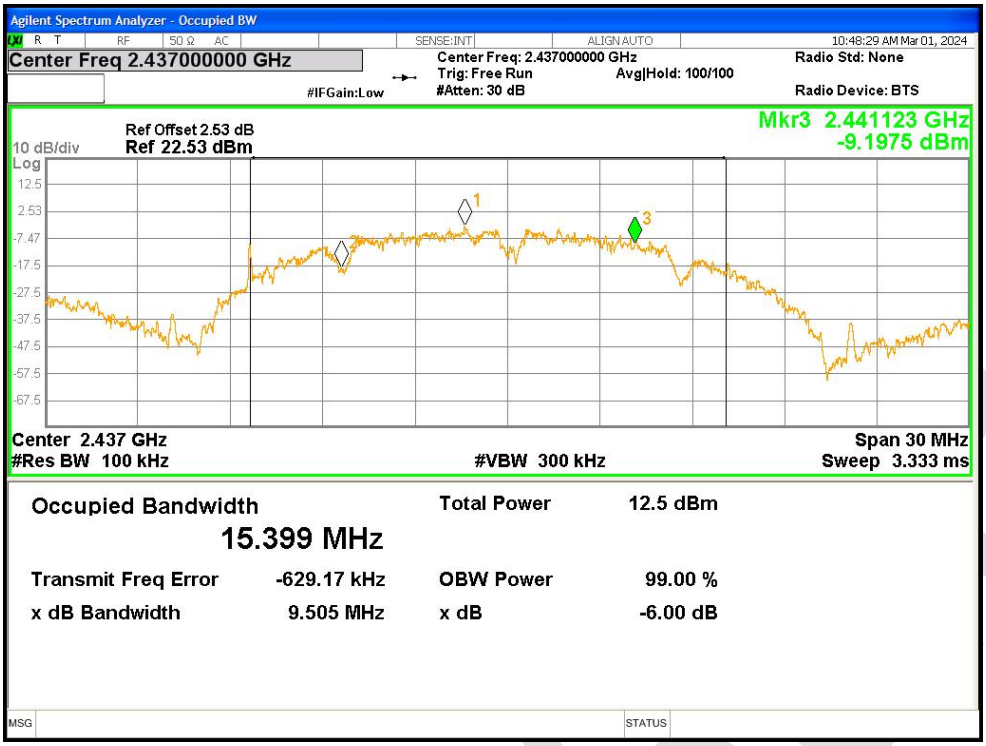
20.2 -6DB BANDWIDTH

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	9.587	0.5	Pass
NVNT	b	2437	Ant1	9.505	0.5	Pass
NVNT	b	2462	Ant1	9.605	0.5	Pass
NVNT	g	2412	Ant1	15.408	0.5	Pass
NVNT	g	2437	Ant1	13.921	0.5	Pass
NVNT	g	2462	Ant1	10.04	0.5	Pass
NVNT	n20	2412	Ant1	6.376	0.5	Pass
NVNT	n20	2437	Ant1	11.421	0.5	Pass
NVNT	n20	2462	Ant1	14.456	0.5	Pass
NVNT	n40	2422	Ant1	30.125	0.5	Pass
NVNT	n40	2437	Ant1	23.916	0.5	Pass
NVNT	n40	2452	Ant1	33.827	0.5	Pass

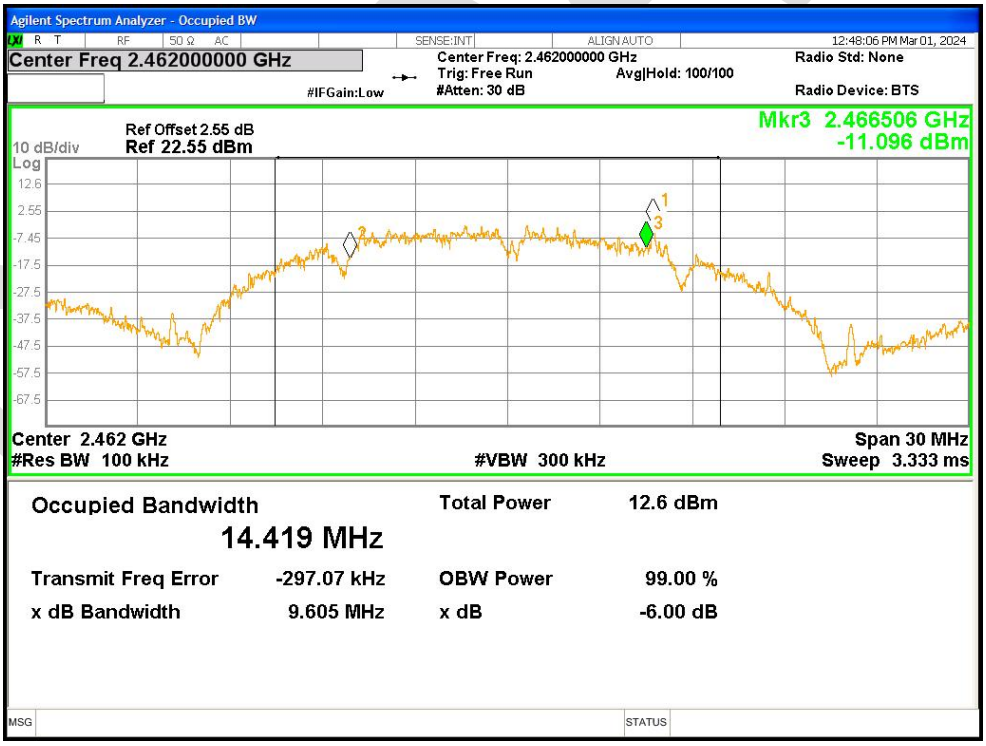
-6dB Bandwidth NVNT b 2412MHz Ant1



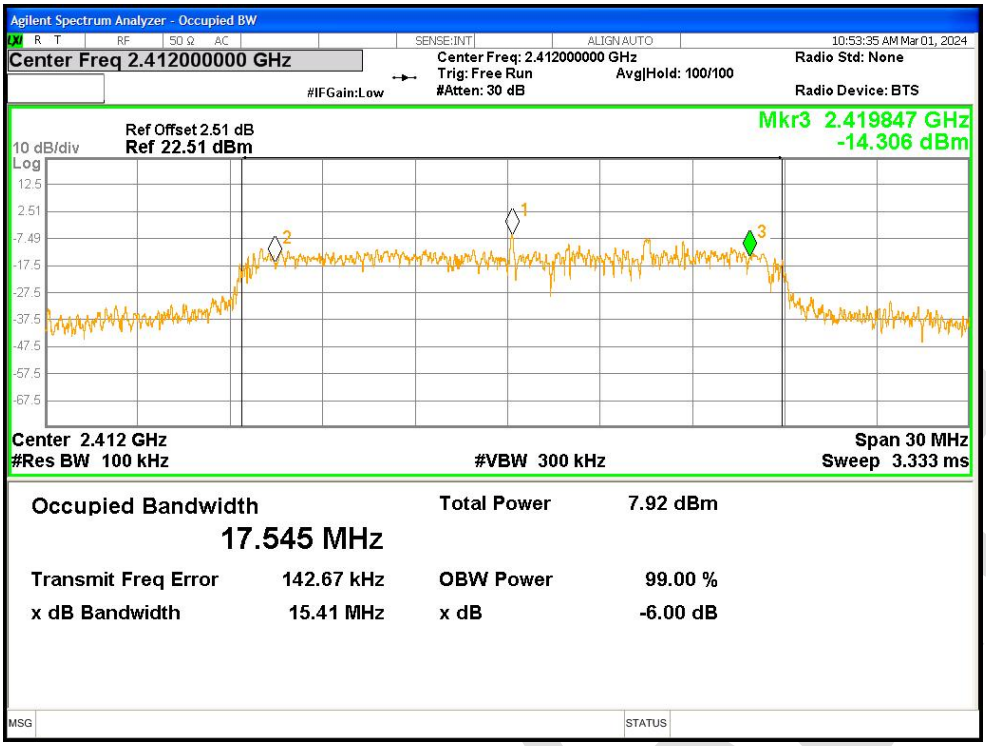
-6dB Bandwidth NVNT b 2437MHz Ant1



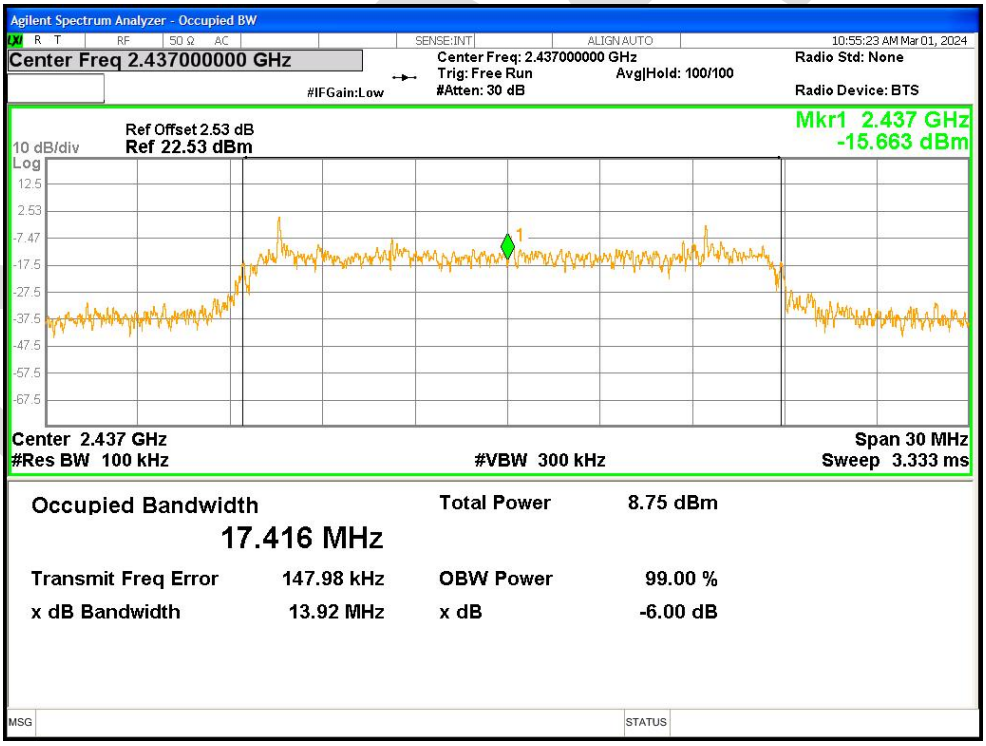
-6dB Bandwidth NVNT b 2462MHz Ant1



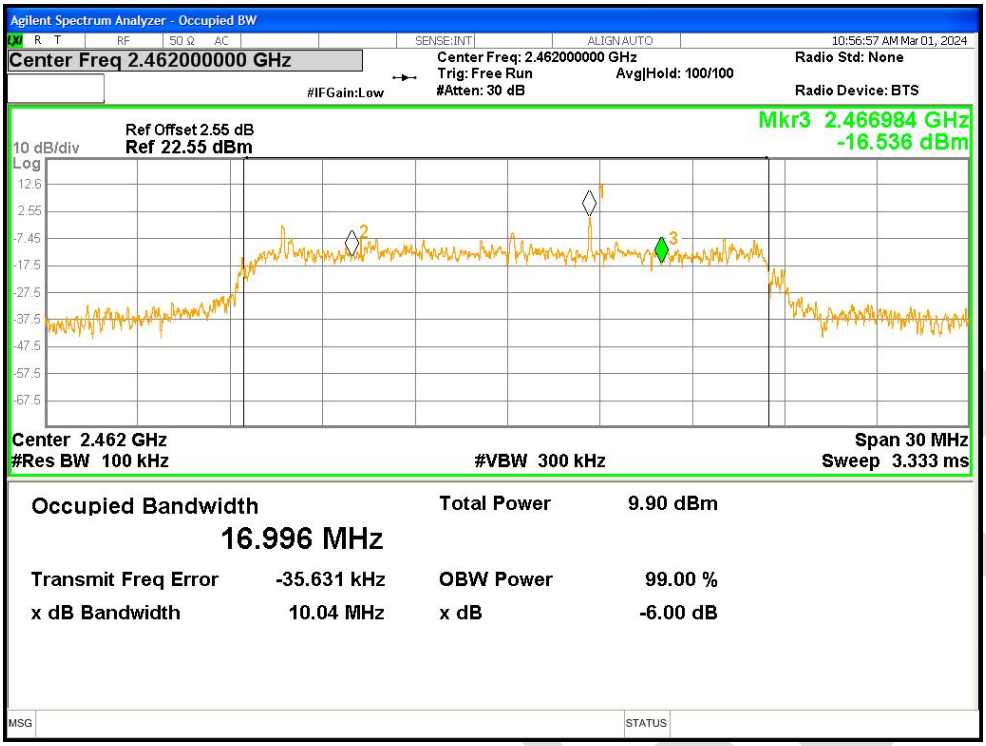
-6dB Bandwidth NVNT g 2412MHz Ant1



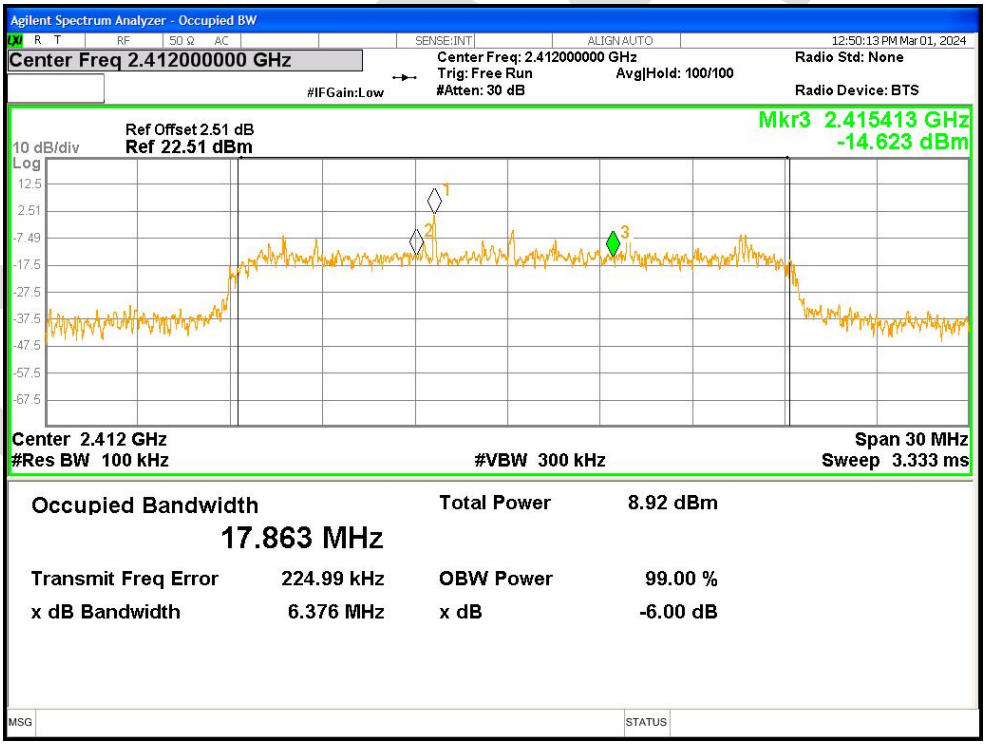
-6dB Bandwidth NVNT g 2437MHz Ant1



-6dB Bandwidth NVNT g 2462MHz Ant1



-6dB Bandwidth NVNT n20 2412MHz Ant1



-6dB Bandwidth NVNT n20 2437MHz Ant1