

9 Maximum Peak Output Power

- Test Requirement : FCC CFR47 Part 15 Section 15.247, RSS-247 § 5.4 (d)
- Test Method : ANSI C63.10:2013
- Test Limit : Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.
- RSS-247 § 5.4 (d)
- For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

9.1 Test Procedure

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

9.2 Test Result

Mode	Test Channel	Peak Output Power (dBm)	LIMIT (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit(dBm)	Result
802.11b	Low	15.13	30.00	2.15	17.28	36.02	PASS
	Moddle	15.66	30.00	2.15	17.81	36.02	PASS
	High	16.10	30.00	2.15	18.25	36.02	PASS
802.11g	Low	20.62	30.00	2.15	22.77	36.02	PASS
	Moddle	20.79	30.00	2.15	22.94	36.02	PASS
	High	21.62	30.00	2.15	23.77	36.02	PASS
802.11n HT20	Low	20.00	30.00	2.15	22.15	36.02	PASS
	Moddle	20.27	30.00	2.15	22.42	36.02	PASS
	High	20.55	30.00	2.15	22.7	36.02	PASS

10 Power Spectral density

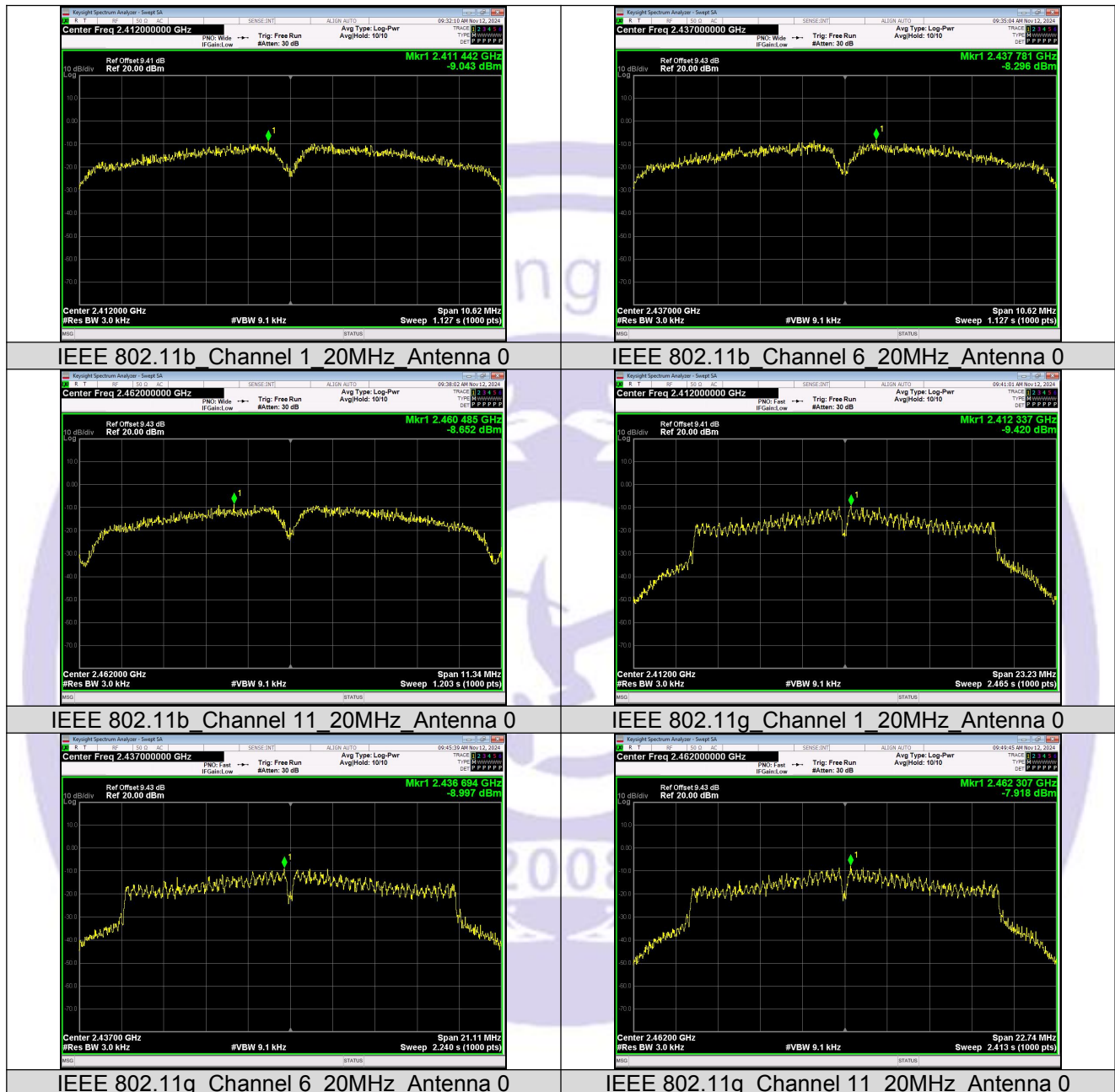
Test Requirement	: FCC CFR47 Part 15 Section 15.247, RSS-247 §5.2
Test Method	: ANSI C63.10:2013
Test Limit	: Regulation 15.247(f) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

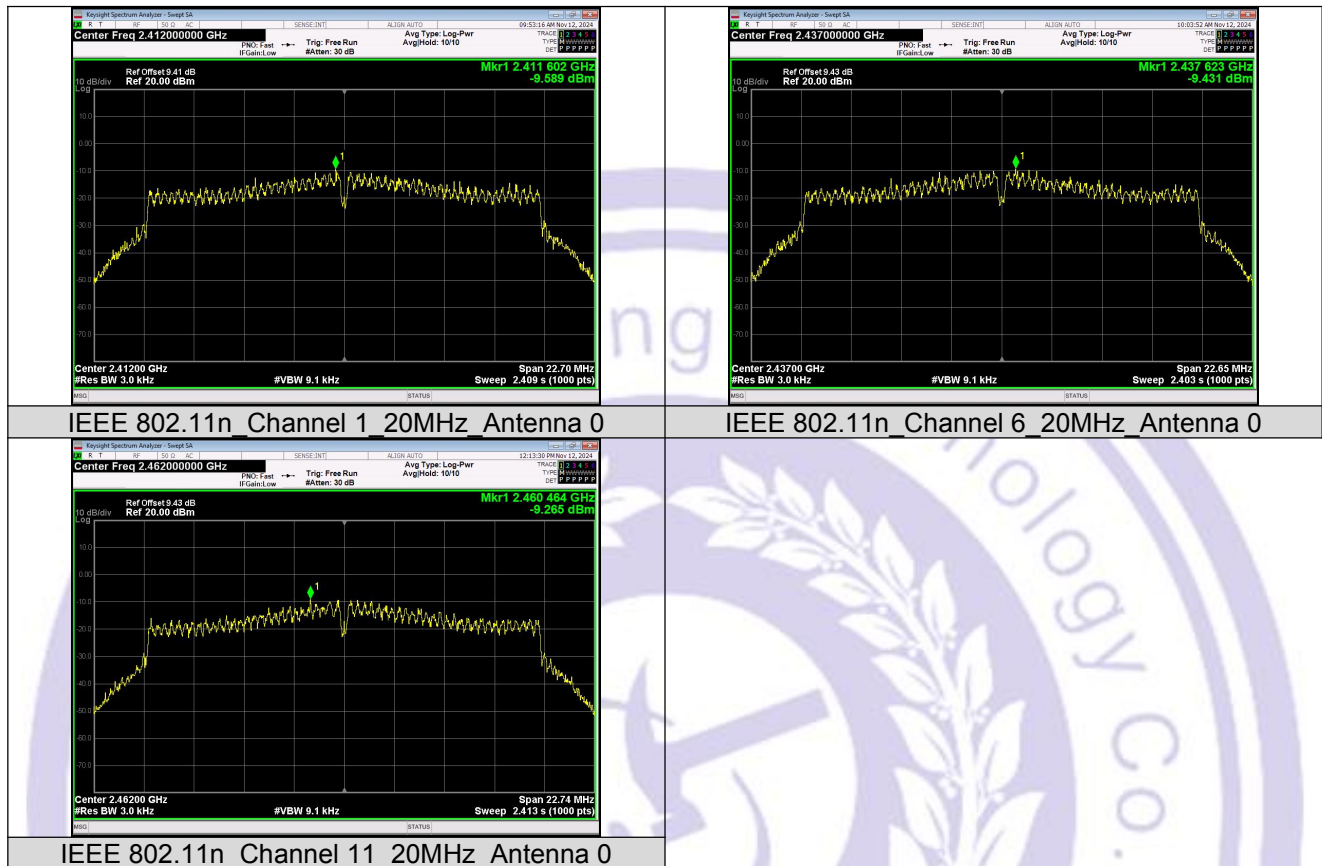
10.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz, Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

10.2 Test Result

Mode	Channel	PSD (dBm/3kHz) Ant. 0	Limit (dBm/3kHz)	Result
IEEE 802.11b	1	-9.043	≤8	PASS
	6	-8.296		PASS
	11	-8.652		PASS
IEEE 802.11g	1	-9.420		PASS
	6	-8.997		PASS
	11	-7.918		PASS
IEEE 802.11n_20	1	-9.589		PASS
	6	-9.431		PASS
	11	-9.265		PASS





11 On Time and Duty Cycle

11.1 Standard Applicable

None: for reporting purpose only.

11.2 Measuring Instruments and Setting

Please refer to equipment's list in this report. The following table is the setting of the spectrum analyzer.

11.3 Test Procedures

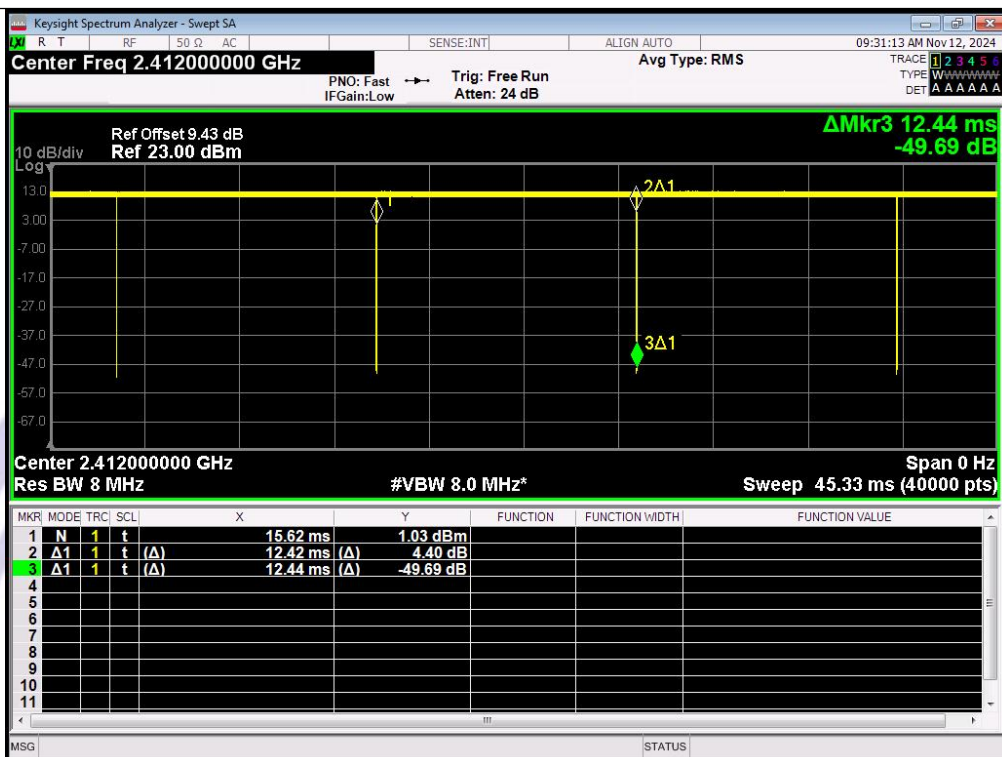
1. Set the centre frequency of the spectrum analyzer to the transmitting frequency;
2. Set the span=0MHz, RBW=8MHz, VBW=8MHz, Sweep time=40000pts;
3. Detector = RMS;
4. Trace mode = Single hold.

11.4 EUT Operation during Test

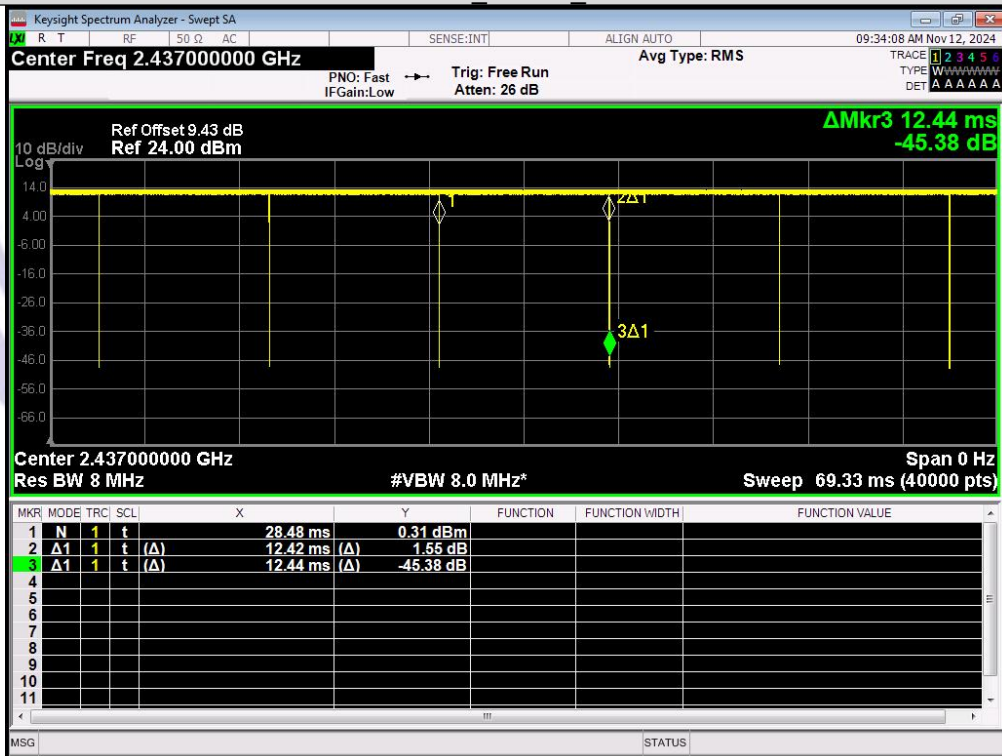
The EUT was programmed to be in continuously transmitting mode.

11.5 Test result

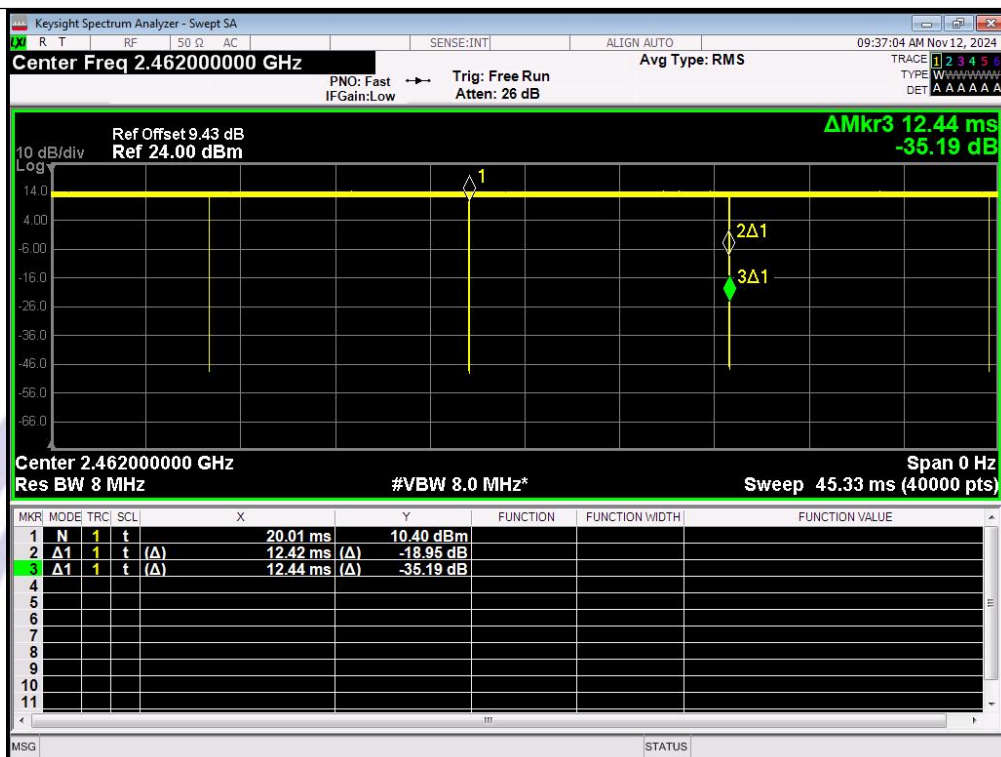
Mode	Data rates	Channel	Antenna	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	
IEEE 802.11b	1	1	1	12.417	12.441	99.81	0.9981	0.0083	
		6		12.418	12.440	99.82	0.9982	0.0078	
		11		12.417	12.441	99.81	0.9981	0.0083	
1		2.069		2.098	98.62	0.9862	0.0604		
6		2.068		2.098	98.57	0.9857	0.0626		
11		2.068		2.098	98.57	0.9857	0.0626		
IEEE 802.11n_20		MCS 0		1	1.924	1.954	98.46	0.9846	0.0674
				6	1.924	1.954	98.46	0.9846	0.0674
				11	1.924	1.954	98.46	0.9846	0.0674



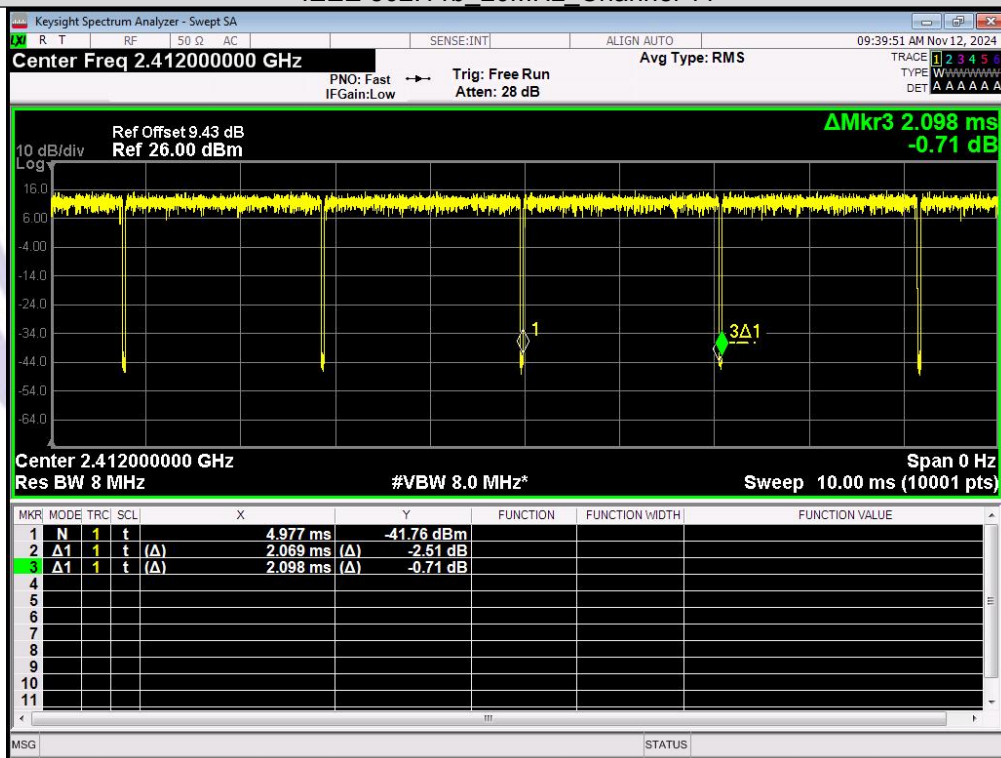
IEEE 802.11b_20MHz_Channel 1



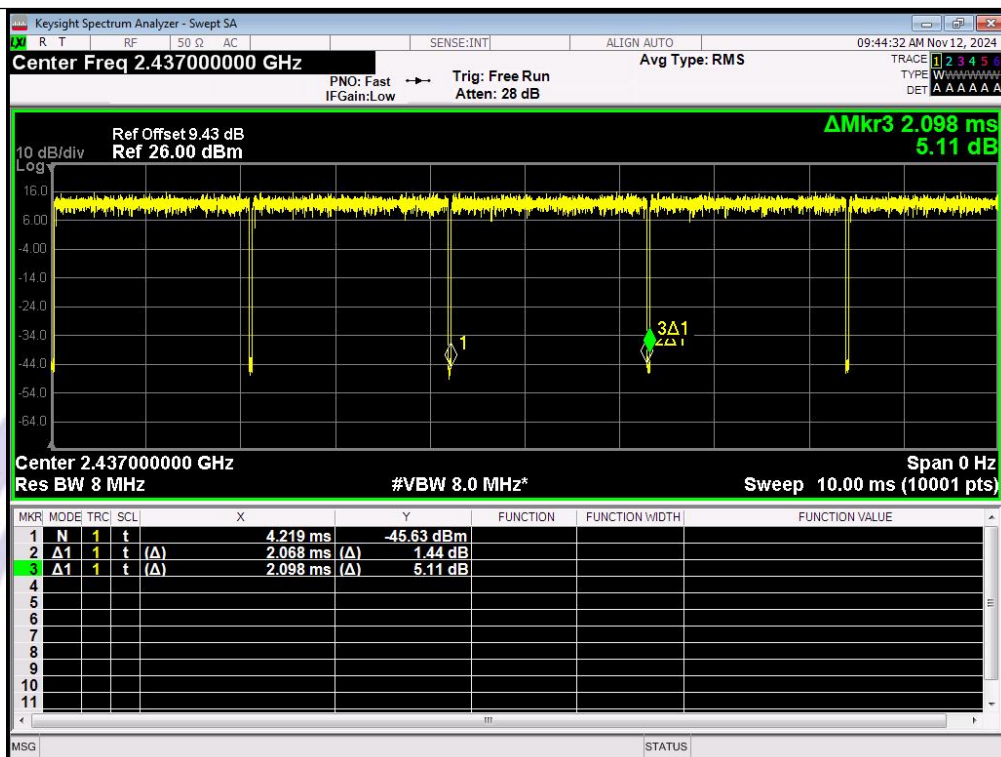
IEEE 802.11b_20MHz_Channel 6



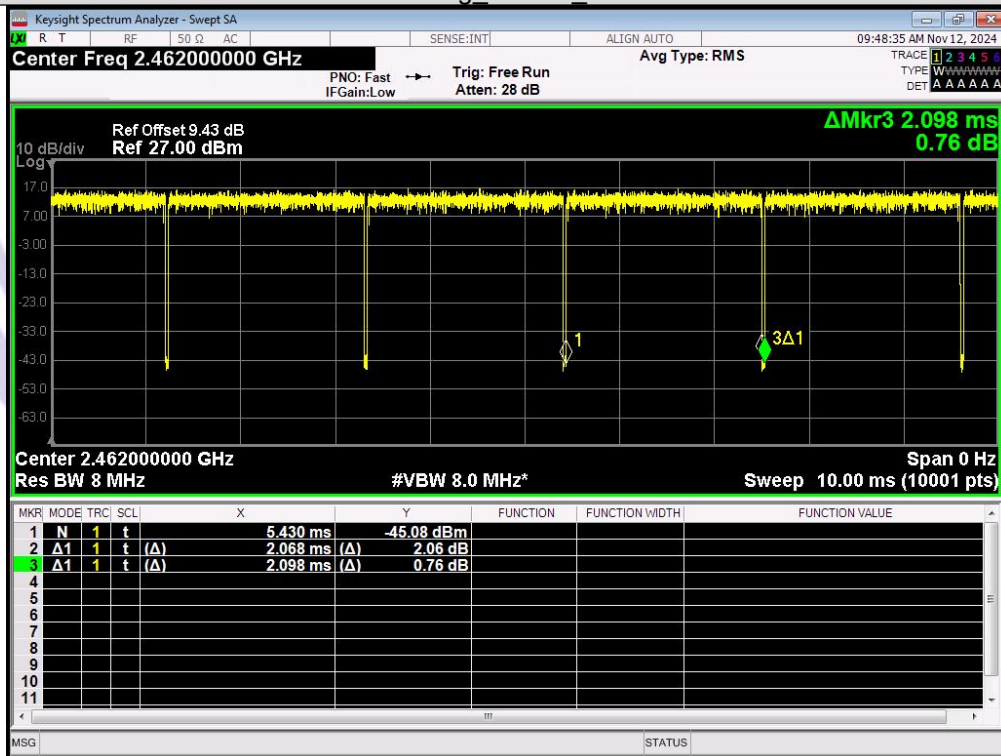
IEEE 802.11b 20MHz Channel 11



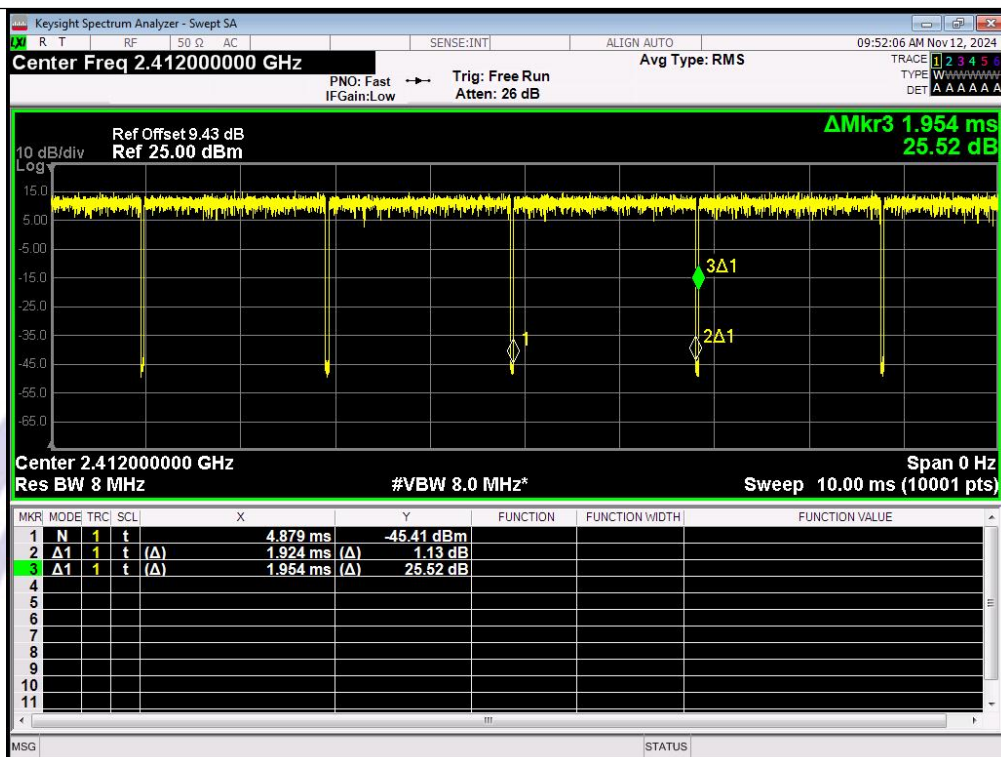
IEEE 802.11g 20MHz Channel 1



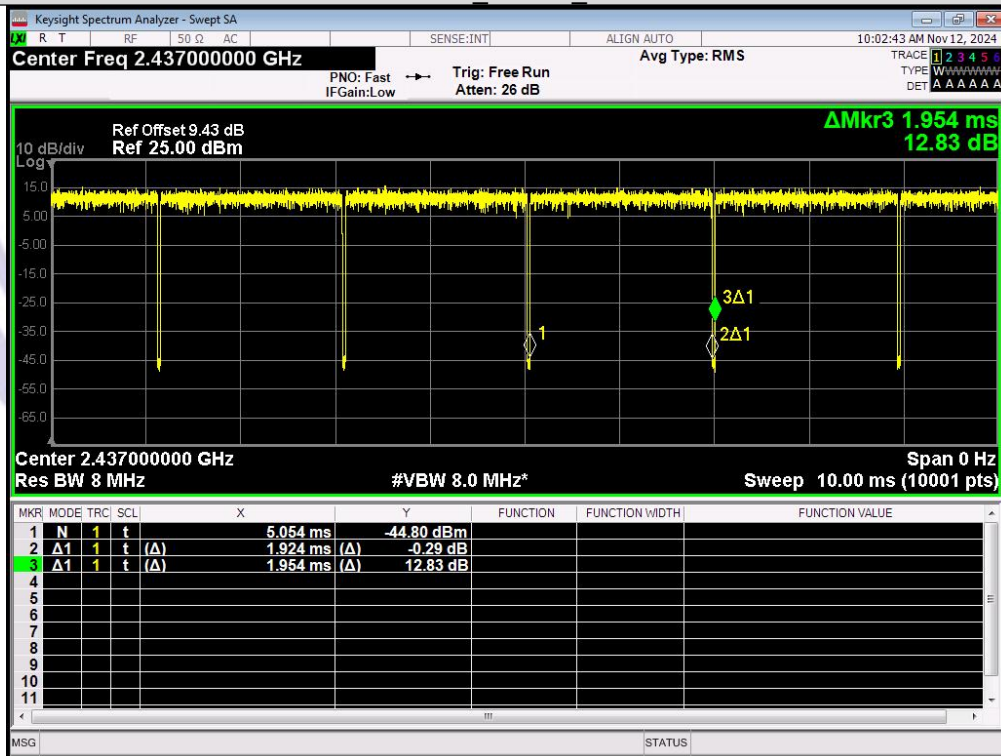
IEEE 802.11g_20MHz_Channel 6



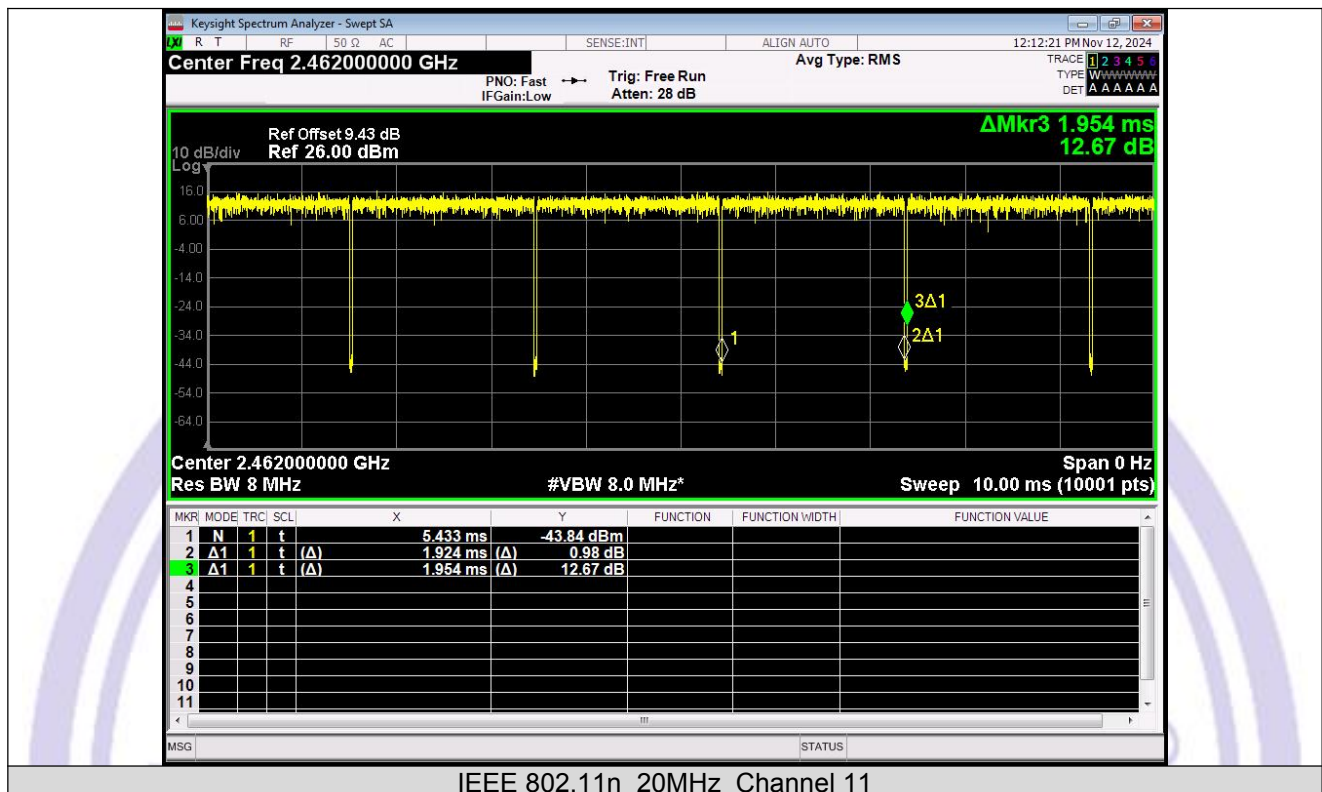
IEEE 802.11g_20MHz_Channel 11



IEEE 802.11n_20MHz_Channel 1



IEEE 802.11n_20MHz_Channel 6



12 Antenna Application

12.1 Antenna Requirement

Test Standard	FCC Part15 Section 15.203 /247(c) & RSS-Gen 6.8
Requirement	<p>1) 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>2) 15.247(c) (1)(i) requirement: Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.</p> <p>3) RSS-Gen 6.8 The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.</p> <p>For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).</p> <p>When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.</p> <p>The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.</p>

12.2 Result

The antenna is External Antenna which detachable antenna, and the best case gain of the antenna is 2.15dBi. It complies with the standard requirement.

13 Test Setup and EUT Photos

Reference to the attachment for details.

*****THE END REPORT*****

