

RF MEASUREMENT REPORT

FCC ID : 2BH7FBE77
Applicant : TP-Link Systems Inc.
Product : BE17000 Whole Home Mesh Wi-Fi 7 System
Model No. : Deco BE77
Brand Name : tp-link
FCC Classification : 15E 6GHz Low Power Indoor Access Point (6ID)
FCC Rule Part(s) : Part 15 Subpart E (Section 15.407(d)(6))
Received Date : March 26, 2025
Test Date : April 22, 2025~April 29, 2025

Tested By : Owen Tsai
(Owen Tsai)
Reviewed By : Paddy Chen
(Paddy Chen)
Approved By : Chenz Ker
(Chenz Ker)



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB789033. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2503TW0111-U6	1.0	Original Report	2025-08-04	

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General Information

Applicant	TP-Link Systems Inc.
Applicant Address	10 Mauchly, Irvine, CA 92618
Manufacturer	TP-Link Systems Inc.
Manufacturer Address	10 Mauchly, Irvine, CA 92618
Test Site	MRT Technology (Taiwan) Co., Ltd
Test Site Address	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
MRT FCC Registration No.	291082
FCC Rule Part(s)	Part 15.407
Test Device Serial No.	#1-1 ☐ Production ☒ Pre-Production ☐ Engineering

Test Facility / Accreditations

1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
2. MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada.
3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Canada, EU and TELEC Rules.

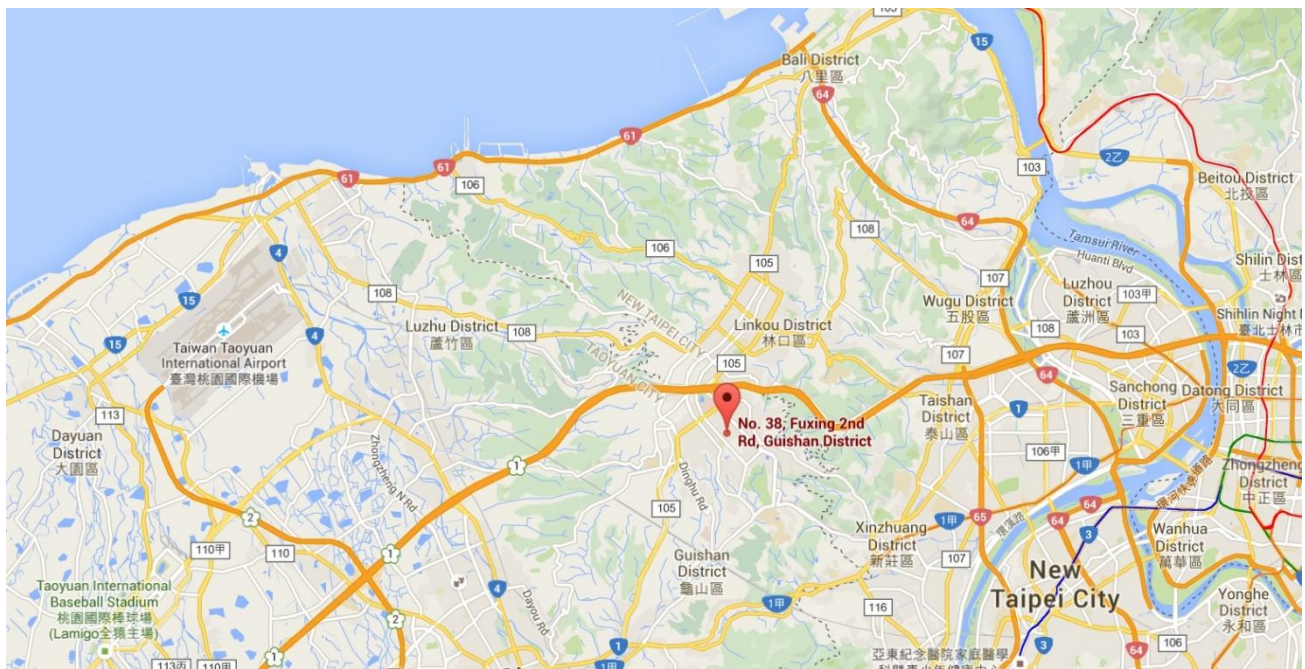
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada and Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



2. Product Information

2.1. Equipment Description

Product Name	BE17000 Whole Home Mesh Wi-Fi 7 System
Model No.	Deco BE77
Specification:	WLAN: 802.11a/b/g/n/ac/ax/be WPAN: Bluetooth Single Mode
Accessory	
Adapter	Brand: tp-link Model No: T120330-2B4 Input: AC 100-240V~1.0A, 50-60Hz Output: 12.0V=3.3A DC Cable Out: Non-Shielded, 1.5m

2.2. Radio Specification

Frequency Range	For 802.11ax-HE20/be-EHT20: 6115 ~ 7095MHz For 802.11ax-HE40/be-EHT40: 6125 ~ 7085MHz For 802.11ax-HE80/be-EHT80: 6145 ~ 7025MHz For 802.11ax-HE160/be-EHT160: 6185 ~ 6985MHz For 802.11be-EHT320: 6265 ~ 6905MHz
Type of Modulation	802.11ax/be: OFDMA
Data Rate	802.11ax: up to 4804Mbps 802.11be: up to 11528Mbps

Note: For other features of this EUT, test report will be issued separately.

2.3. Working Frequencies

802.11ax-HE20/be-EHT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
33	6115 MHz	37	6135 MHz	41	6155 MHz
45	6175 MHz	49	6195 MHz	53	6215 MHz
57	6235 MHz	61	6255 MHz	65	6275 MHz
69	6295 MHz	73	6315 MHz	77	6335 MHz
81	6355 MHz	85	6375 MHz	89	6395 MHz
93	6415 MHz	97	6435 MHz	101	6455 MHz
105	6475 MHz	109	5495 MHz	113	6515 MHz
117	6535 MHz	121	6555 MHz	125	6575 MHz
129	6595 MHz	133	6615 MHz	137	6635 MHz
141	6655 MHz	145	6675 MHz	149	6695 MHz
153	6715 MHz	157	6735 MHz	161	6755 MHz
165	6775 MHz	169	6795 MHz	173	6815 MHz
177	6835 MHz	181	6855 MHz	185	6875 MHz
189	6895 MHz	193	6915 MHz	197	6935 MHz
201	6955 MHz	205	6975 MHz	209	6995 MHz
213	7015 MHz	217	7035 MHz	221	7055 MHz
225	7075 MHz	229	7095 MHz	--	--

802.11ax-HE40/be-EHT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
35	6125 MHz	43	6165 MHz	51	6205 MHz
59	6245 MHz	67	6285 MHz	75	6325 MHz
83	6365 MHz	91	6405 MHz	99	6445 MHz
107	6485 MHz	115	6525 MHz	123	6565 MHz
131	6605 MHz	139	6645 MHz	147	6685 MHz
155	6725 MHz	163	6765 MHz	171	6805 MHz
179	6845 MHz	187	6885 MHz	195	6925 MHz
203	6965 MHz	211	7005 MHz	219	7045 MHz
227	7085 MHz	--	--	--	--

802.11ax-HE80/be-EHT80

Channel	Frequency	Channel	Frequency	Channel	Frequency
39	6145 MHz	55	6225 MHz	71	6305 MHz
87	6385 MHz	103	6465 MHz	119	6545 MHz
135	6625 MHz	151	6705 MHz	167	6785 MHz
183	6865 MHz	199	6945 MHz	215	7025 MHz

802.11ax-HE160/be-EHT160

Channel	Frequency	Channel	Frequency	Channel	Frequency
47	6185 MHz	79	6345 MHz	111	6505 MHz
143	6665 MHz	175	6825 MHz	207	6985 MHz

802.11be-EHT320

Channel	Frequency	Channel	Frequency	Channel	Frequency
63	6265 MHz	95	6425 MHz	127	6585 MHz
159	6745 MHz	191	6905 MHz	--	--

2.4. Antenna Details

Antenna Type	Frequency Band (MHz)	T _x Paths	Number of spatial streams	Antenna Gain (dBi)				Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
				Ant 0	Ant 1	Ant 2	Ant 3		For Power	For PSD
Wi-Fi 6G Mode 1 (4T4R)										
Dipole	5925 ~ 6425	4	1	8.72	8.44	7.44	6.26	6.50	2.50	6.50
		4	4	8.72	8.44	7.44	6.26	--	2.50	2.50
	6425 ~ 6525	4	1	7.83	6.76	5.91	5.75	6.45	2.41	6.45
		4	4	7.83	6.76	5.91	5.75	--	2.41	2.41
	6525 ~ 6875	4	1	8.01	7.82	6.24	5.93	6.48	2.49	6.48
		4	4	8.01	7.82	6.24	5.93	--	2.49	2.49
	6875 ~ 7125	4	1	7.78	7.79	7.44	5.33	6.38	2.46	6.38
		4	4	7.78	7.79	7.44	5.33	--	2.46	2.46
Wi-Fi 6G Mode 2 (4T4R)										
				Ant 1	Ant 2	Ant 4	Ant 5			
Dipole	5925 ~ 6425	4	1	8.44	7.44	4.62	4.98	6.49	1.75	6.49
		4	4	8.44	7.44	4.62	4.98	--	1.75	1.75
	6425 ~ 6525	4	1	6.76	5.91	4.36	4.53	6.48	2.04	6.48
		4	4	6.76	5.91	4.36	4.53	--	2.04	2.04
	6525 ~ 6875	4	1	7.82	6.24	5.06	4.67	6.50	1.53	6.50
		4	4	7.82	6.24	5.06	4.67	--	1.53	1.53
	6875 ~ 7125	4	1	7.79	7.44	5.32	5.01	6.42	1.93	6.42
		4	4	7.79	7.44	5.32	5.01	--	1.93	1.93
1. The device supports CDD Mode and Beamforming mode, details refer to the table as below. 2. CDD signals are correlated, the directional gain as follows, When N_{SS}=1, for power measurements: the max directional gain (each angle) = 10 log[(10^{G¹/10} + 10^{G²/10} + ... + 10^{G^N/10}) /N_{ANT}] For power spectral density (PSD) measurements: the max directional gain (each angle) = 10 log[(10^{G¹/20} + 10^{G²/20} + ... + 10^{G^N/20})² /N_{ANT}] When N_{ss} is the maximum, the max directional gain (each angle) = 10 log[(10^{G¹/10} + 10^{G²/10} + ... + 10^{G^N/10}) /N_{ANT}] 3. Beamforming signals are correlated, the directional gain as follows, the max directional gain (each angle) = 10 log[(10^{G¹/20} + 10^{G²/20} + ... + 10^{G^N/20})² /N_{ANT}] 4. The information as above is from the antenna report.										

Test Mode	Tx Paths	CDD Mode	Beamforming Mode
802.11ax/be (6ID)	4	√	√

2.5. Test Mode

Mode 1: Operating under AP mode

2.6. Test Software

The test utility software used during testing was “Tera Term v4.98”, and the commands were provided by the manufacturer.

2.7. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC KDB 987594 D02v03
- FCC KDB 987594 D04v03

2.8. Test Environment Condition

Ambient Temperature	15°C~35°C
Relative Humidity	20%RH ~75%RH

3. Antenna Requirements

Excerpt from §15.407(a)(9) of the FCC Rules/Regulations:

Access points operating under the provisions of paragraphs (a)(5) and (a)(6) of this section must employ a permanently attached integrated antenna.

- The antenna of the device is built in and locked inside the enclosure.

Conclusion:

The device complies with the requirement of §15.407(a)(9).

4. Measuring Instrument

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2026/4/15
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2025/9/24
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2025/8/12
Attenuator	WTI	218FS-20	MRTTWE00026	1 year	2025/10/31
Attenuator	WTI	218FS-10	MRTTWE00027	1 year	2025/6/13
Temperature & Humidity Chamber	TEN BILLION	TTH-B3UP	MRTTWA00036	1 year	2025/6/6
DIVA PLUS Funk-Wetterstation	TFA	35.1083	MRTTWA00050	1 year	2025/6/2

5. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

Conducted Power (Carrier Power / Power Density)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 0.84\text{dB}$
Conducted Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 2.65\text{ dB}$
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 3.3\%$

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.407(d)(6)	Contention-Based Protocol	Conducted	Pass

Remark:

1. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

6.2. Contention Based Protocol

6.2.1. Test Limit

Unlicensed indoor low power device must detect co-channel radio frequency power that is at least -62dBm (The threshold is referenced to a 0dBi antenna gain.) or low.

Indoor low power device must detect an AWGN signal with 90% (or better) level of certainty.

6.2.2. Test Procedure Used

KDB 987594 D02v03- Section II)

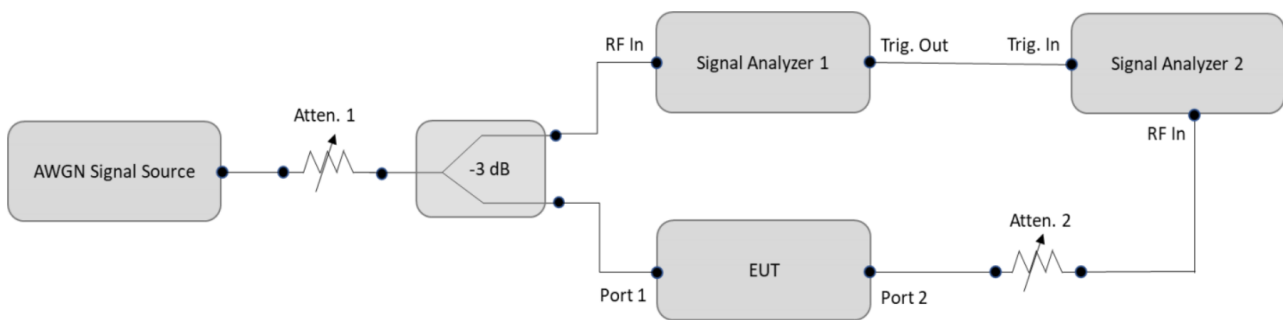
6.2.3. Test Setting

1. Configure the EUT to transmit with a constant duty cycle.
2. Set the operating parameters of the EUT including power level, operating frequency, modulation and bandwidth.
3. Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT.
Connect the output port of the EUT to the signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.
4. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters set at step two.
5. Using an AWGN signal source, generate a 10 MHz-wide AWGN signal. Use Table 1 of KDB 987594 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
6. Set the AWGN signal power to an extremely low level. Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT as shown in below figure.
7. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
8. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.

9. Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.

10. Refer to Table 1 to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step 5, choose a different center frequency for the AWGN signal and repeat the process.

6.2.4. Test Setup



6.2.5. Test Result

Product	BE17000 Whole Home Mesh Wi-Fi 7 System	Temperature	25°C
Test Engineer	Parker	Relative Humidity	55%
Test Site	SR5	Test Date	2025/4/22
Test Mode	CBP_6ID (Low-Power indoor AP)		

Test Channel	Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	AWGN Power (dBm)	Ant. Gain (dBi)	Adjust Power (dBm)	Detection Limit (dBm)	Detected Number	Detection Probability (%)	Limit (%)	Test Result
Operation Band: U-NII 5											
33	20	6115	6115	-67	4.62	-71.62	≤ -62.0	10	100	90	Pass
63	320	6110	6110	-62	4.62	-66.62	≤ -62.0	10	100	90	Pass
63	320	6265	6265	-62	4.62	-66.62	≤ -62.0	10	100	90	Pass
63	320	6420	6420	-62	4.62	-66.62	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 6											
97	20	6435	6435	-68	4.36	-72.36	≤ -62.0	10	100	90	Pass
95	320	6425	6270	-62	4.36	-66.36	≤ -62.0	10	100	90	Pass
95	320	6425	6425	-62	4.36	-66.36	≤ -62.0	10	100	90	Pass
95	320	6425	6580	-62	4.36	-66.36	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 7											
129	20	6595	6595	-68	4.67	-72.67	≤ -62.0	10	100	90	Pass
127	320	6430	6430	-67	4.67	-71.67	≤ -62.0	10	100	90	Pass
127	320	6585	6585	-68	4.67	-72.67	≤ -62.0	10	90	90	Pass
127	320	6740	6740	-67	4.67	-71.67	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 8											
193	20	6915	6915	-68	5.01	-73.01	≤ -62.0	10	100	90	Pass
191	320	6905	6750	-67	5.01	-72.01	≤ -62.0	10	100	90	Pass
191	320	6905	6905	-67	5.01	-72.01	≤ -62.0	10	100	90	Pass
191	320	6905	7060	-68	5.01	-73.01	≤ -62.0	10	100	90	Pass

Note 1: Adjust Power (dBm) = AWGN Power (dBm) – Antenna Gain (dBi).

Note 2: Conducted measurements are used.

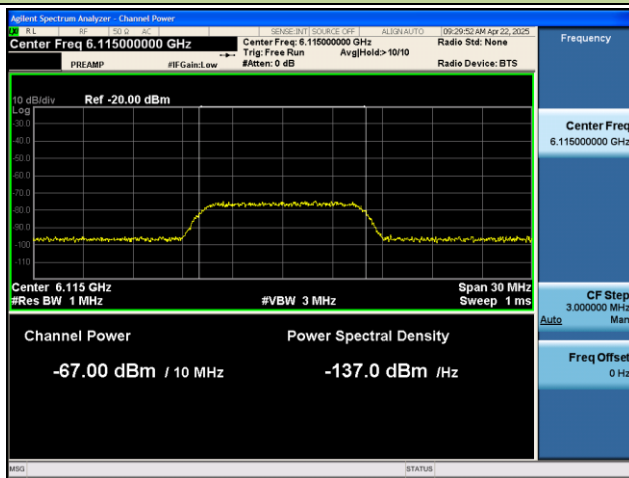
Note 3: As the Grantee's declaration, this device supports one configuration only in 802.11ax/be full RU mode and doesn't support BW reduction mechanism, channel puncturing and multi-link operation.

Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	Adjust Power (dBm)	EUT Tx Status
Operation Band: U-NII 5				
20	6115	6115	-75	ON
			-72.62	Minimal
			-71.62	OFF
320	6110	6110	-75	ON
			-67.62	Minimal
			-66.62	OFF
320	6265	6265	-75	ON
			-67.62	Minimal
			-66.62	OFF
320	6420	6420	-75	ON
			-67.62	Minimal
			-66.62	OFF
Operation Band: U-NII 6				
20	6435	6435	-75	ON
			-73.36	Minimal
			-72.36	OFF
320	6270	6270	-75	ON
			-67.36	Minimal
			-66.36	OFF
320	6425	6425	-75	ON
			-67.36	Minimal
			-66.36	OFF
320	6580	6580	-75	ON
			-67.36	Minimal
			-66.36	OFF

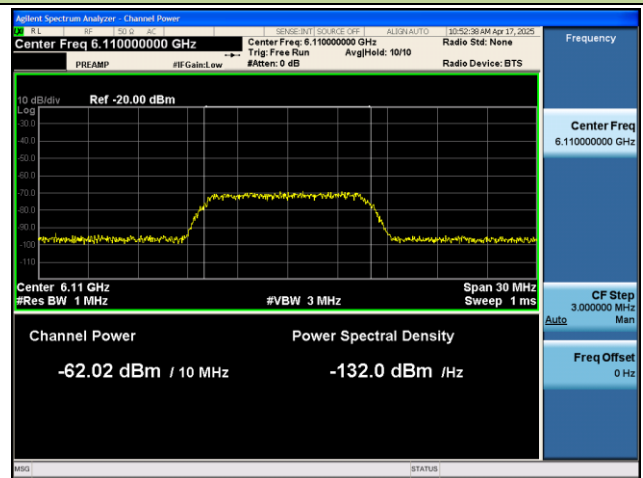
Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	Adjust Power (dBm)	EUT Status
Operation Band: U-NII 7				
20	6595	6595	-75	ON
			-73.67	Minimal
			-72.67	OFF
320	6430	6430	-75	ON
			-72.67	Minimal
			-71.67	OFF
320	6585	6585	-75	ON
			-73.67	Minimal
			-72.67	OFF
320	6740	6740	-75	ON
			-72.67	Minimal
			-71.67	OFF
Operation Band: U-NII 8				
20	6915	6915	-80	ON
			-74.01	Minimal
			-73.01	OFF
320	6750	6750	-80	ON
			-73.01	Minimal
			-72.01	OFF
320	6905	6905	-80	ON
			-73.01	Minimal
			-72.01	OFF
320	7060	7060	-80	ON
			-74.01	Minimal
			-73.01	OFF
Note: OFF: AWGN level at which no transmission is detected, consistently for a minimum period of 10 seconds Minimal: AWGN level at which the system begins to trigger the transmission switch-off, albeit not being kept off consistently ON: AWGN level at which no impact on the transmission is detected, consistently for a minimum period of 10 seconds				

AWGN Signal Level (at Antenna Port) Calibration Plots (NII-5 Band) _ Low-Power indoor AP

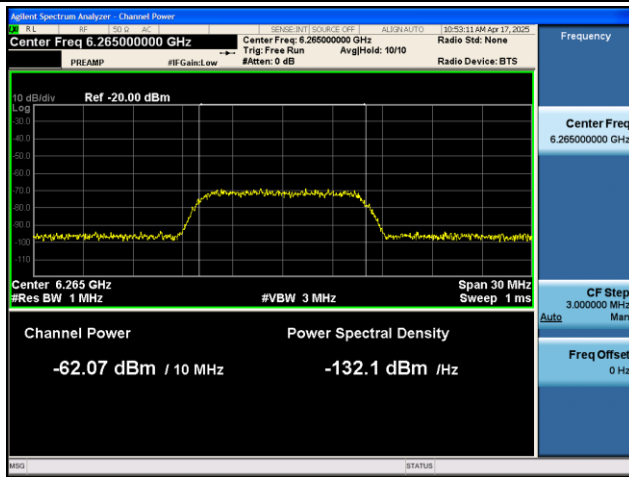
802.11be-HET20 / CH33



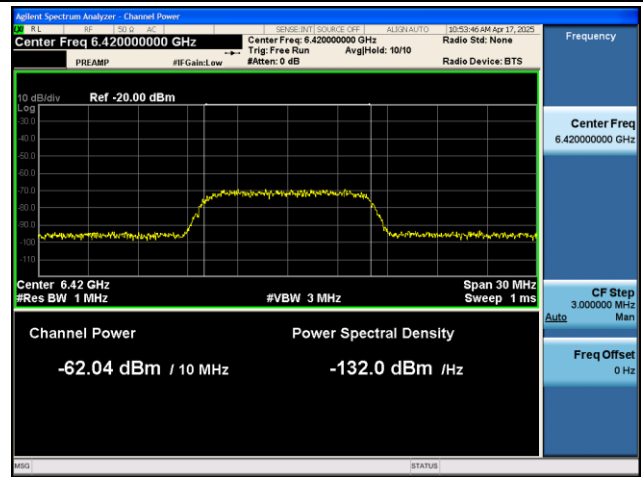
802.11 be-HET320 / CH63 (Low Edge)



802.11 be-HET320 / CH63 (Middle)

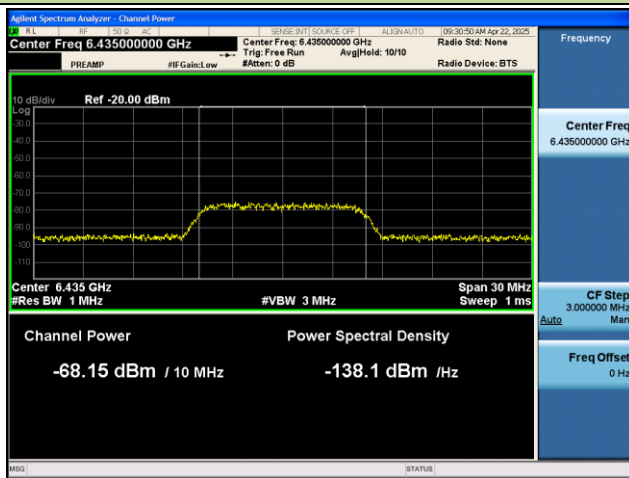


802.11 be-HET320 / CH63 (High Edge)

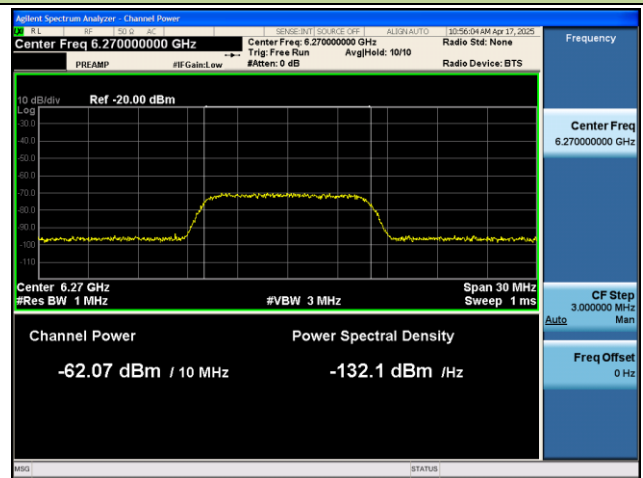


AWGN Signal Level (at Antenna Port) Calibration Plots (NII-6 Band) _ Low-Power indoor AP

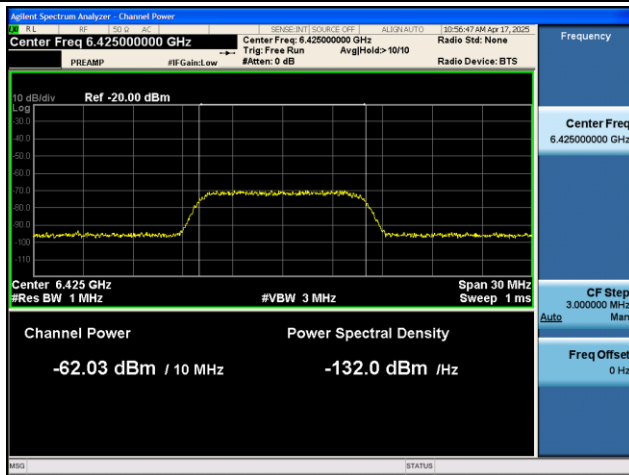
802.11 be-HET20 / CH97



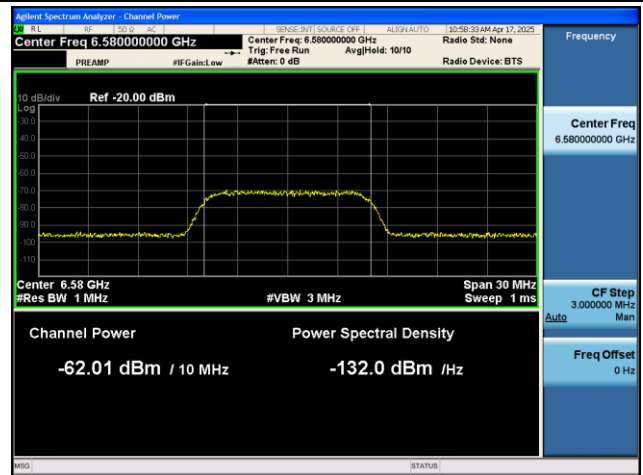
802.11 be-HET320 / CH95 (Low Edge)



802.11 be-HET320 / CH95 (Middle)

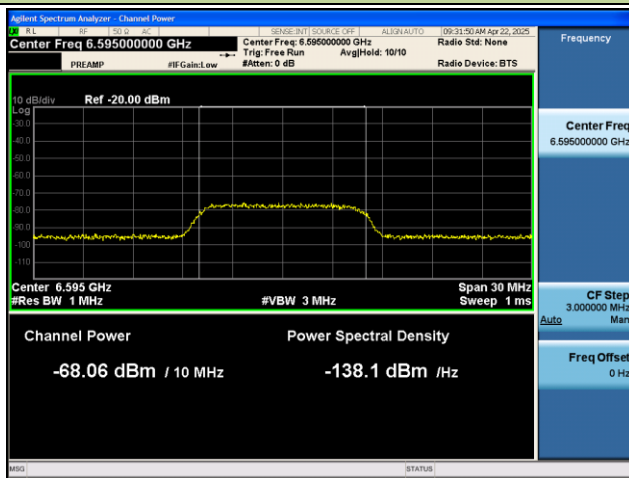


802.11 be-HET320 / CH95 (High Edge)

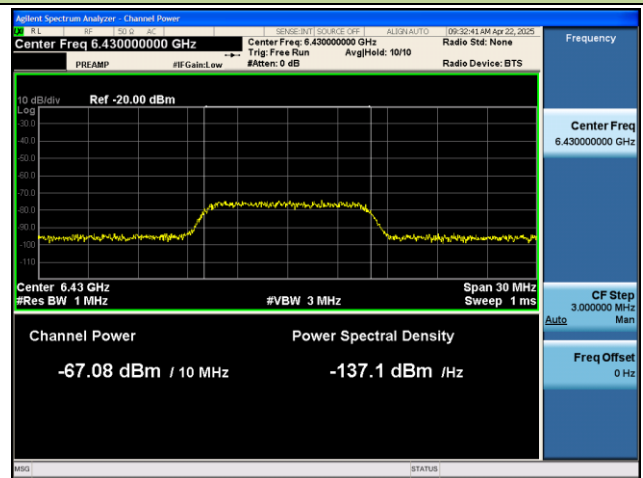


AWGN Signal Level (at Antenna Port) Calibration Plots (NII-7 Band) _ Low-Power indoor AP

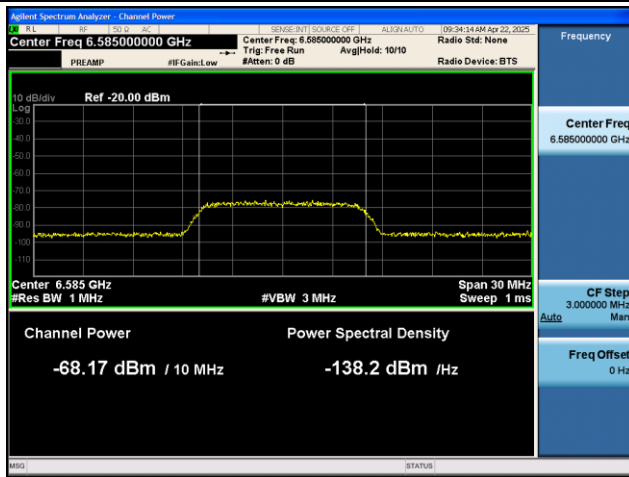
802.11 be-HET20 / CH129



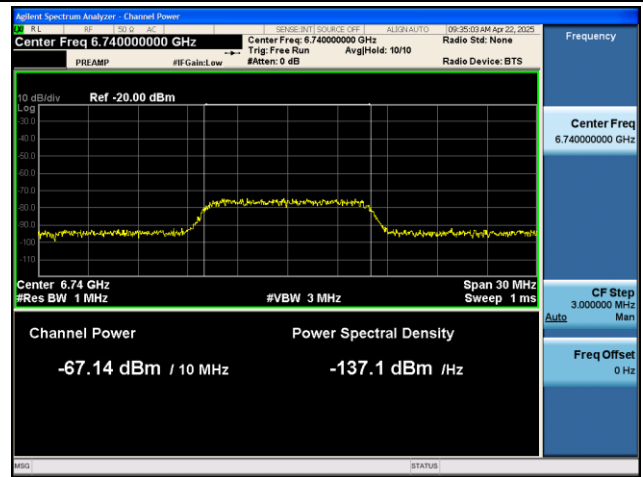
802.11 be-HET320 / CH127 (Low Edge)



802.11 be-HET320 / CH127 (Middle)

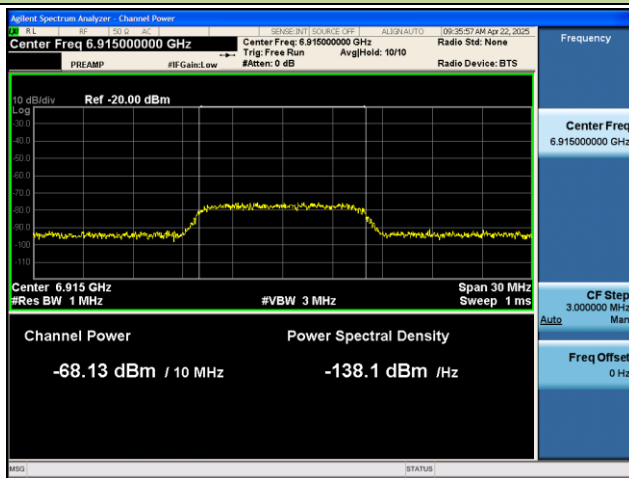


802.11 be-HET320 / CH127 (High Edge)

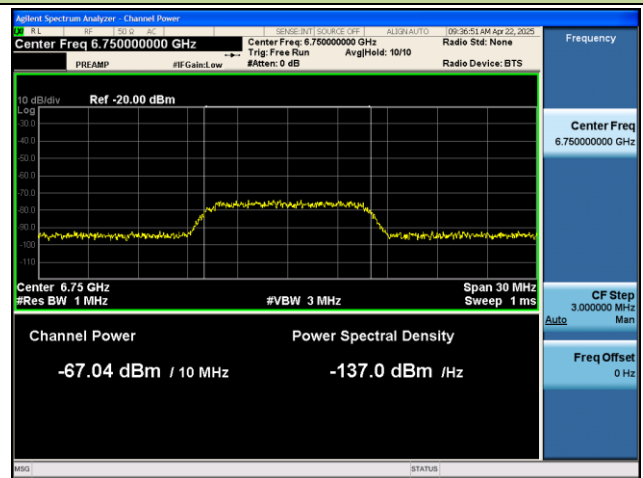


AWGN Signal Level (at Antenna Port) Calibration Plots (NII-8 Band) _ Low-Power indoor AP

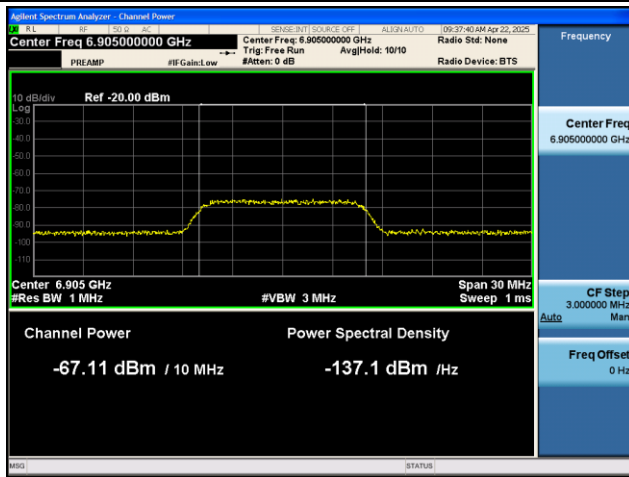
802.11 be-HET20 / CH193



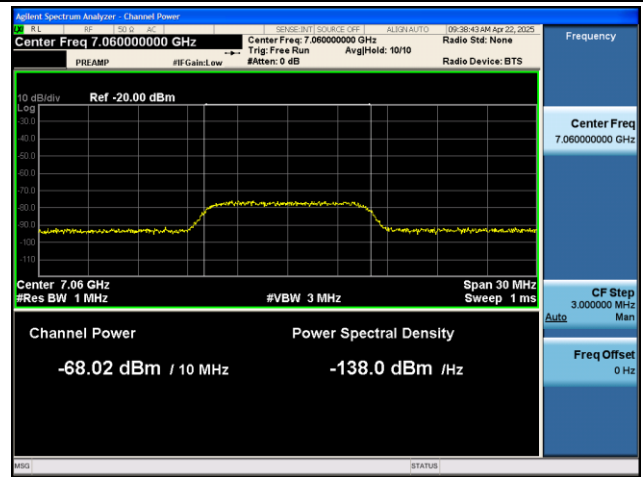
802.11 be-HET320 / CH191 (Low Edge)



802.11 be-HET320 / CH191 (Middle)

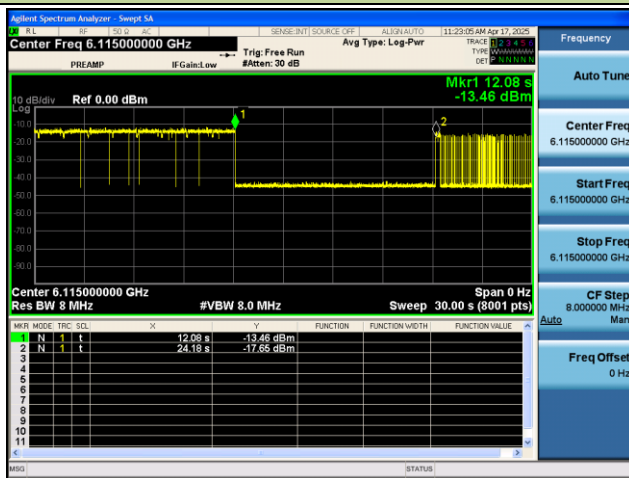


802.11 be-HET320 / CH191 (High Edge)

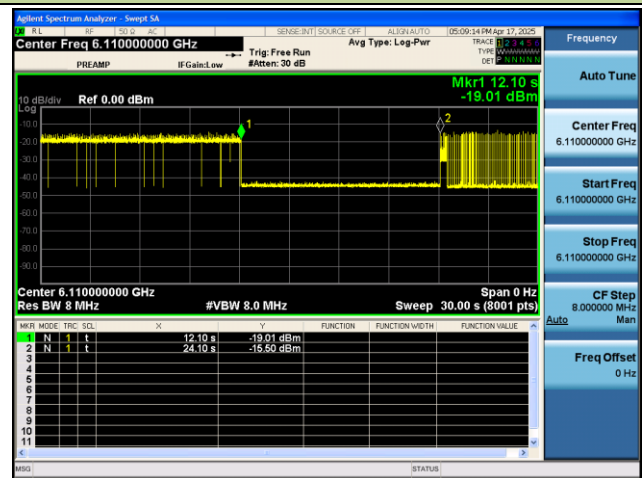


Test Result of EUT ceased transmission (NII-5 Band) _ Low-Power indoor AP

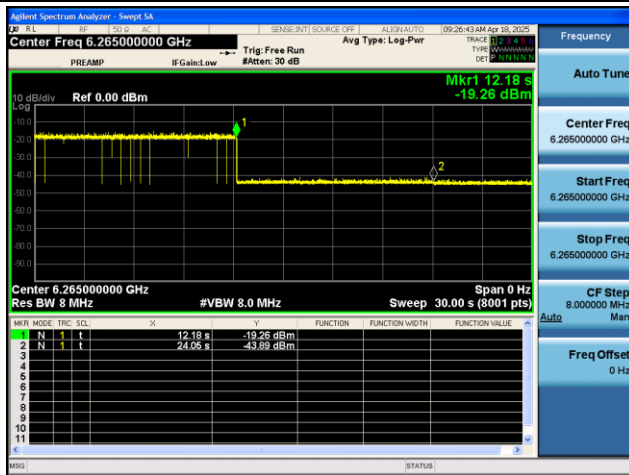
802.11 be-HET20 / CH33



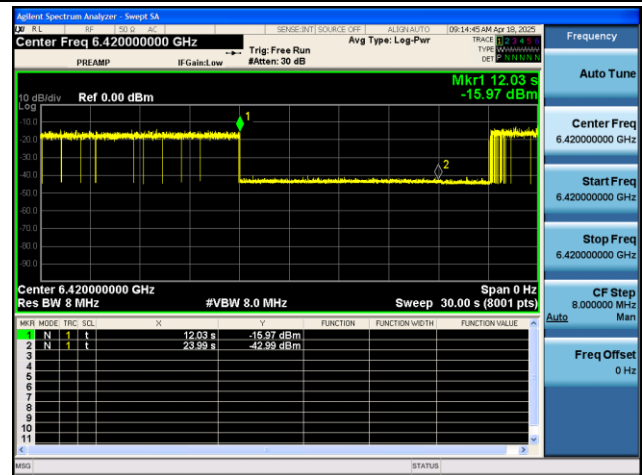
802.11be-HET 320 / CH63 (Low Edge)



802.11be-HET320 / CH63 (Middle)



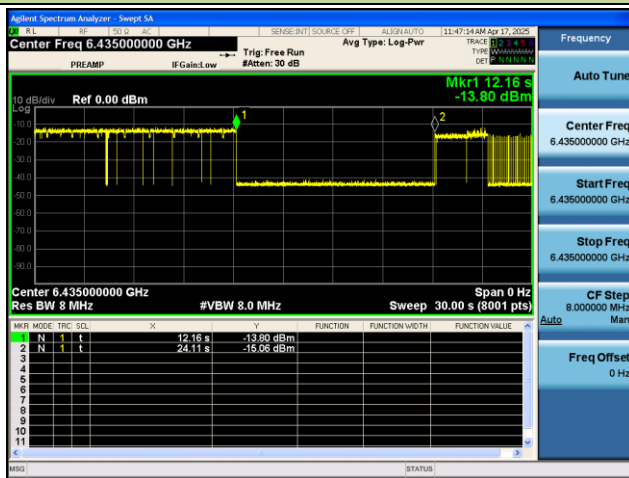
802.11be-HET320 / CH63 (High Edge)



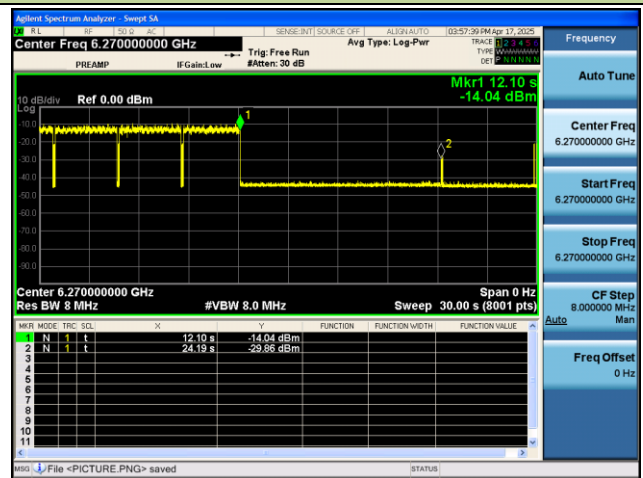
Note – M1: Injection of AWGN Signal, M2: Removal of AWGN Signal

Test Result of EUT ceased transmission (NII-6 Band) _ Low-Power indoor AP

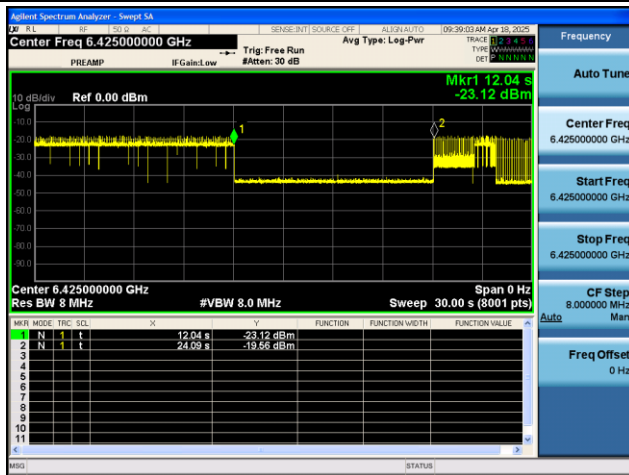
802.11be-HET20 / CH97



802.11be-HET320 / CH95 (Low Edge)



802.11be-HET320 / CH95 (Middle)



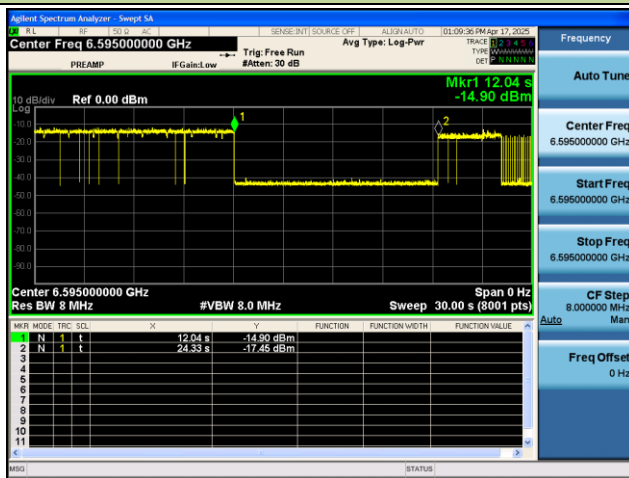
802.11be-HET320 / CH95 (High Edge)



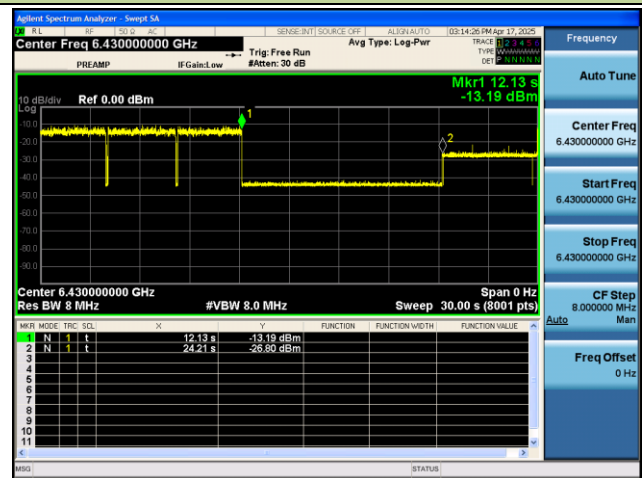
Note – M1: Injection of AWGN Signal, M2: Removal of AWGN Signal

Test Result of EUT ceased transmission (NII-7 Band) _ Low-Power indoor AP

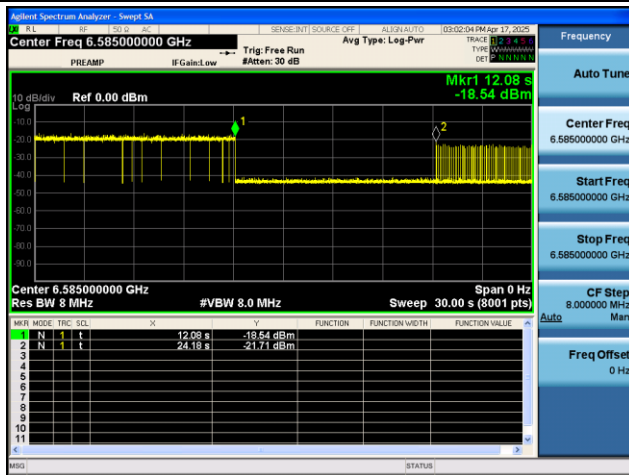
802.11be-HET20 / CH129



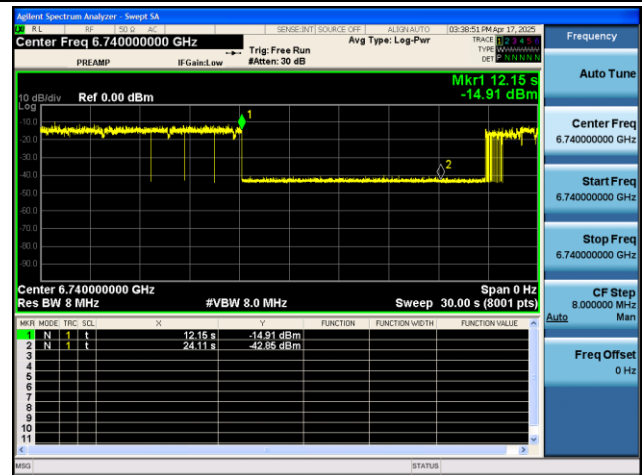
802.11be-HET320 / CH127 (Low Edge)



802.11be-HET320 / CH127 (Middle)



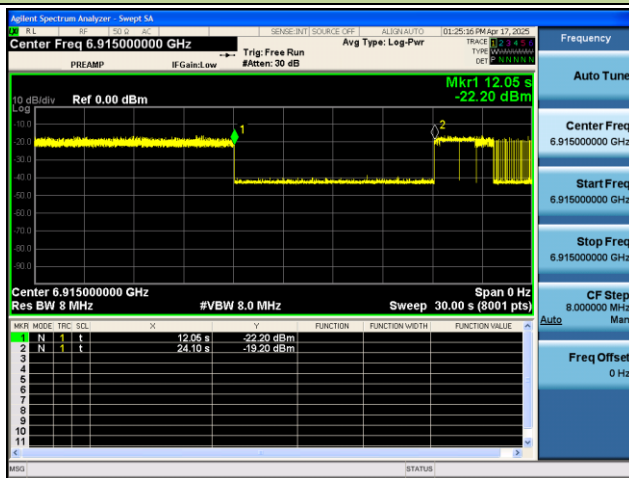
802.11be-HET320 / CH127 (High Edge)



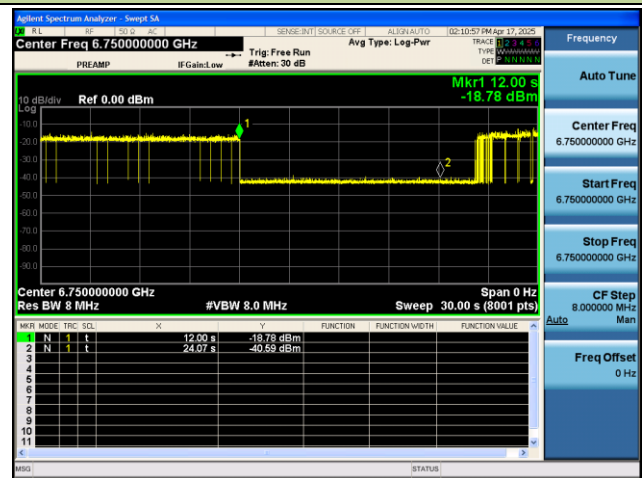
Note – M1: Injection of AWGN Signal, M2: Removal of AWGN Signal

Test Result of EUT ceased transmission (NII-8 Band) _ Low-Power indoor AP

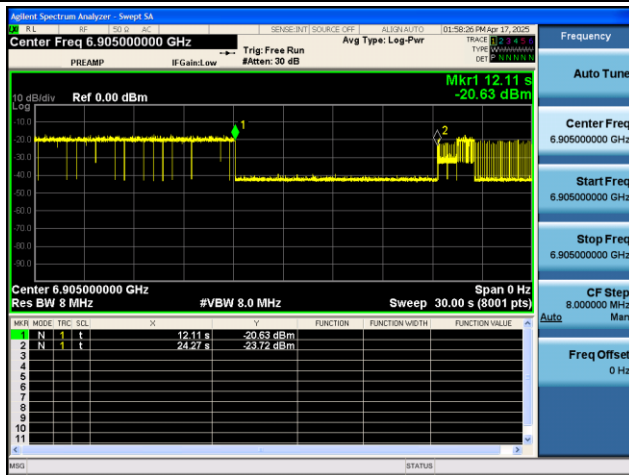
802.11be-HET20 / CH193



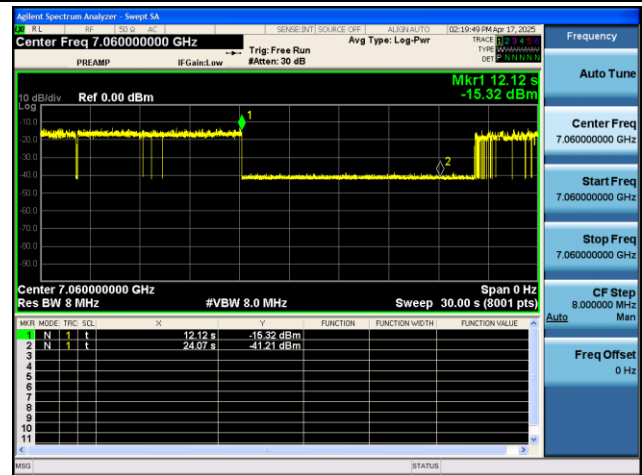
802.11be-HET320 / CH191 (Low Edge)



802.11be-HET320 / CH191 (Middle)



802.11be-HET320 / CH191 (High Edge)



Note – M1: Injection of AWGN Signal, M2: Removal of AWGN Signal

Appendix A : Test Setup Photograph

Refer to "2503TW0111-UT" file.

Appendix B : External Photograph

Refer to "2503TW0111-UE" file.

Appendix C : Internal Photograph

Refer to "2503TW0111-UI" file.

The End
