2.9 Contention Based Protocol

2.9.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.407 (d)(6)

2.9.2 Equipment Under Test and Modification State

A3186, S/N: M6L2V7JQ91 - Modification State 0

2.9.3 Date of Test

06-August-2024

2.9.4 Test Method

This test was performed in accordance with KDB 987594 D02, clause I.

The AWGN signal level was initially set at a level much less than the required threshold level (<< -62 dBm) it was verified at this point that transmissions from the device under test (DUT) were present. The signal level was gradually increased until it was observed that the DUT continuously ceased transmissions with the AWGN signal present, i.e. no partial transmissions other than short control signalling transmissions.

The AWGN Signal level recorded is the level into the DUT's receiver, corrected for all cable losses. The minimum antenna gain value was then used to correct the level as described in KDB 987594 D04.

Timing plots showing verification that transmissions from the DUT responded to the interferer have been included in the test results below.

2.9.5 Test Setup Diagram

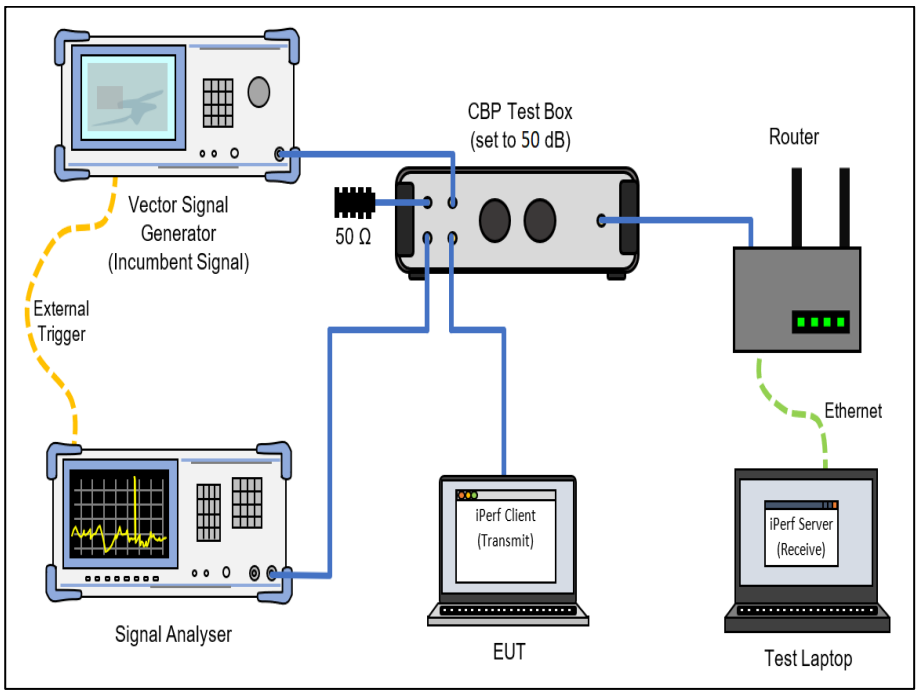

Figure 355 - Test Equipment Setup Diagram

2.9.6 Environmental Conditions

Ambient Temperature	22.8 °C
Relative Humidity	37.3 %

2.9.7 Test Results

6 GHz WLAN

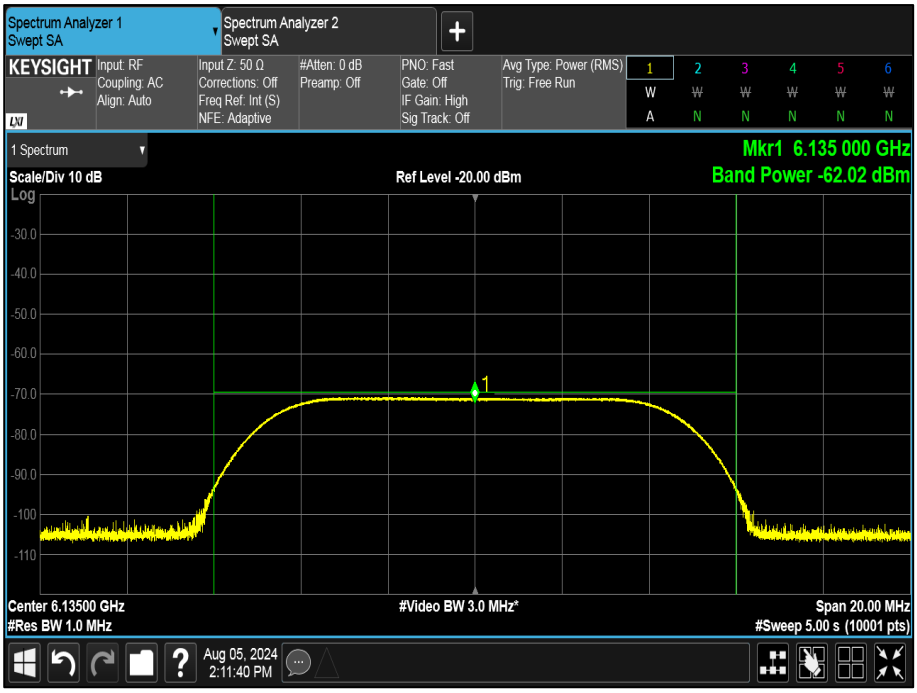

Figure 356 - Example of AWGN Signal

Parameter	Results		
U-NII Band	5	5	5
Channel Number	37	37	37
Bandwidth (MHz)	20	20	20
DUT Centre Frequency (MHz)	6135	6135	6135
AWGN Centre Frequency (MHz)	6135	6135	6135
AWGN Signal Power (dBm)	-69.68	-68.39	-64.66
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-71.78	-70.49	-66.76
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 341 - U-NII-5, Minimum Bandwidth

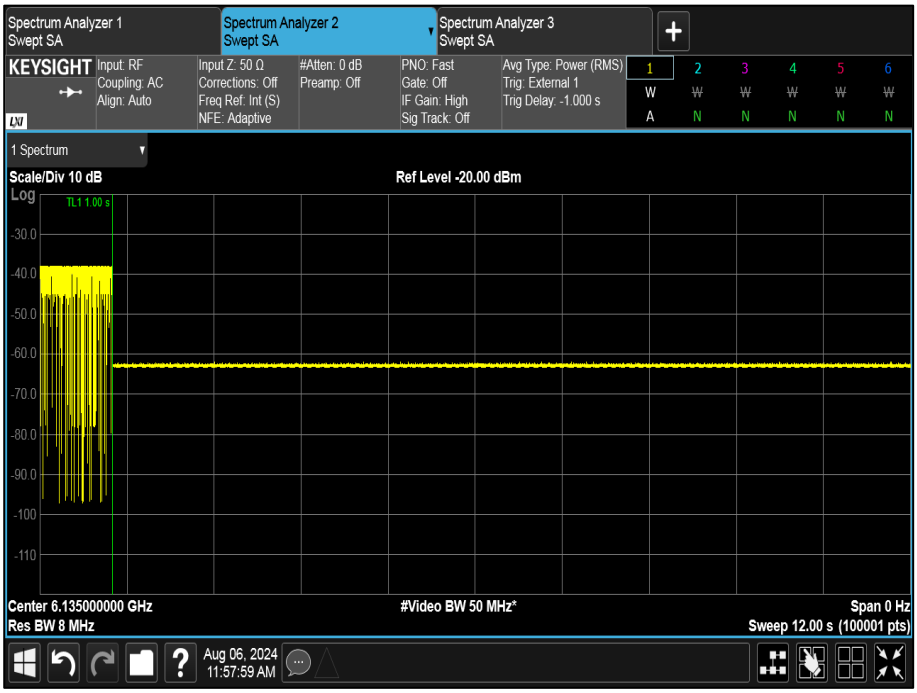

Figure 357 - U-NII-5, Minimum Bandwidth

Parameter	Results		
U-NII Band	5	5	5
Channel Number	47	47	47
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6185	6185	6185
AWGN Centre Frequency (MHz)	6110	6110	6110
AWGN Signal Power (dBm)	-68.48	-66.80	-66.38
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-70.58	-68.90	-68.48
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 342 - U-NII-5, Maximum Bandwidth (AWGN Low)

Figure 358 - U-NII-5, Maximum Bandwidth (AWGN Low)

Parameter	Results		
U-NII Band	5	5	5
Channel Number	47	47	47
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6185	6185	6185
AWGN Centre Frequency (MHz)	6185	6185	6185
AWGN Signal Power (dBm)	-69.46	-66.97	-62.11
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-71.56	-69.07	-64.21
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 343 - U-NII-5, Maximum Bandwidth (AWGN Mid)

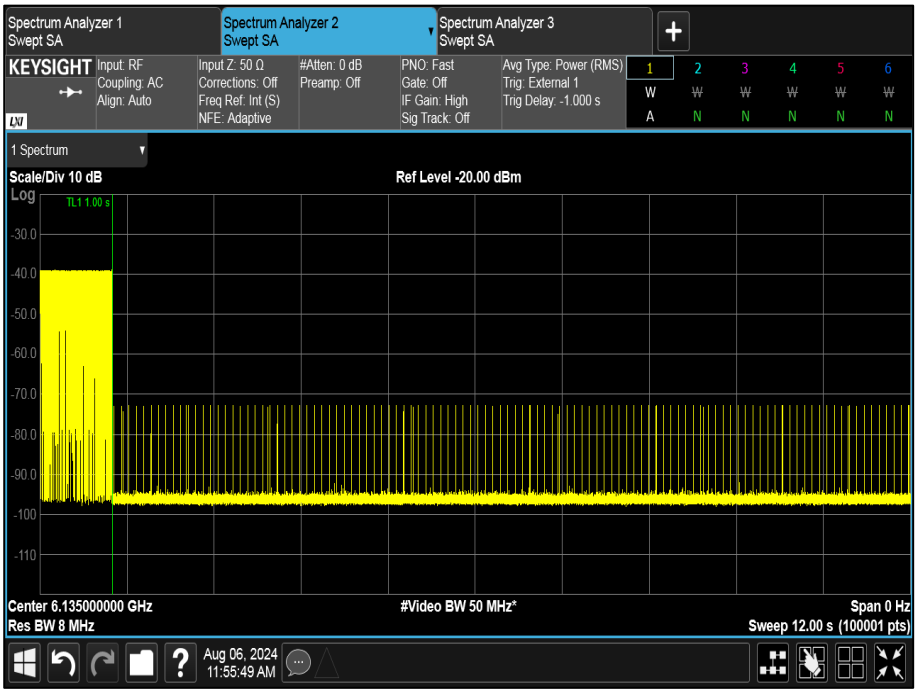

Figure 359 - U-NII-5, Maximum Bandwidth (AWGN Mid)

Parameter	Results		
U-NII Band	5	5	5
Channel Number	47	47	47
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6185	6185	6185
AWGN Centre Frequency (MHz)	6260	6260	6260
AWGN Signal Power (dBm)	-65.93	-64.31	-62.92
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-68.03	-66.41	-65.02
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 344 - U-NII-5, Maximum Bandwidth (AWGN High)

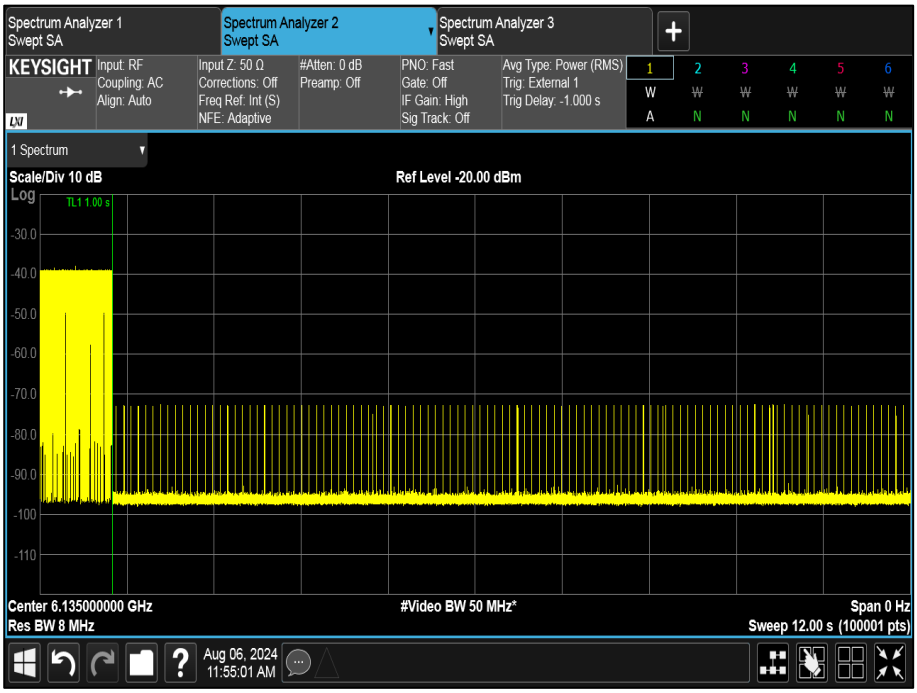

Figure 360 - U-NII-5, Maximum Bandwidth (AWGN High)

Parameter	Results		
U-NII Band	6	6	6
Channel Number	101	101	101
Bandwidth (MHz)	20	20	20
DUT Centre Frequency (MHz)	6455	6455	6455
AWGN Centre Frequency (MHz)	6455	6455	6455
AWGN Signal Power (dBm)	-71.81	-68.73	-66.19
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-73.91	-70.83	-68.29
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 345 - U-NII-6, Minimum Bandwidth

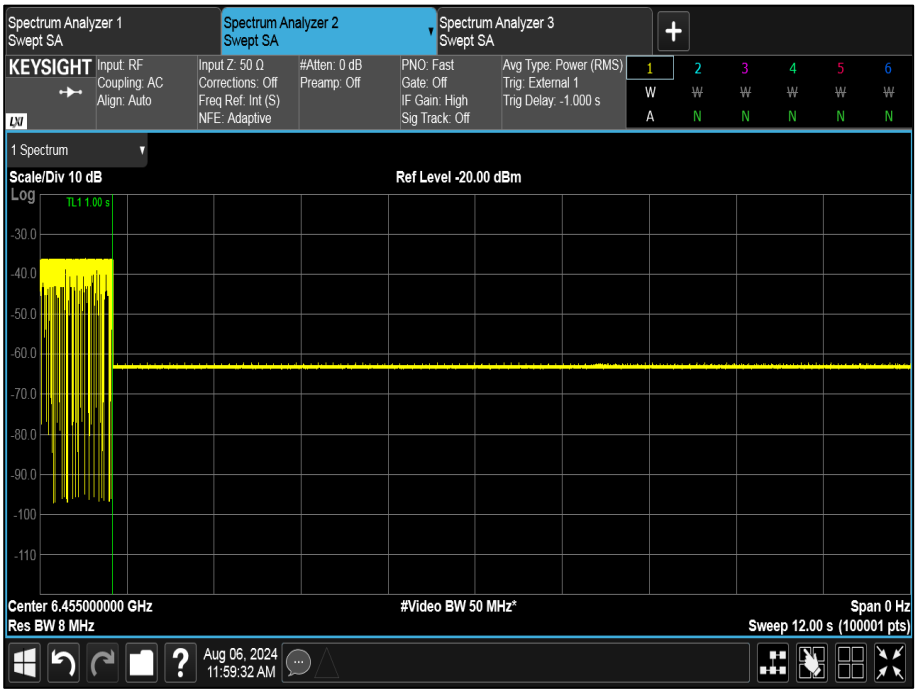

Figure 361 - U-NII-6, Minimum Bandwidth

Parameter	Results		
U-NII Band	6	6	6
Channel Number	111	111	111
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6505	6505	6505
AWGN Centre Frequency (MHz)	6430	6430	6430
AWGN Signal Power (dBm)	-68.69	-65.52	-63.73
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-70.79	-67.62	-65.83
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 346 - U-NII-6, Maximum Bandwidth (AWGN Low)

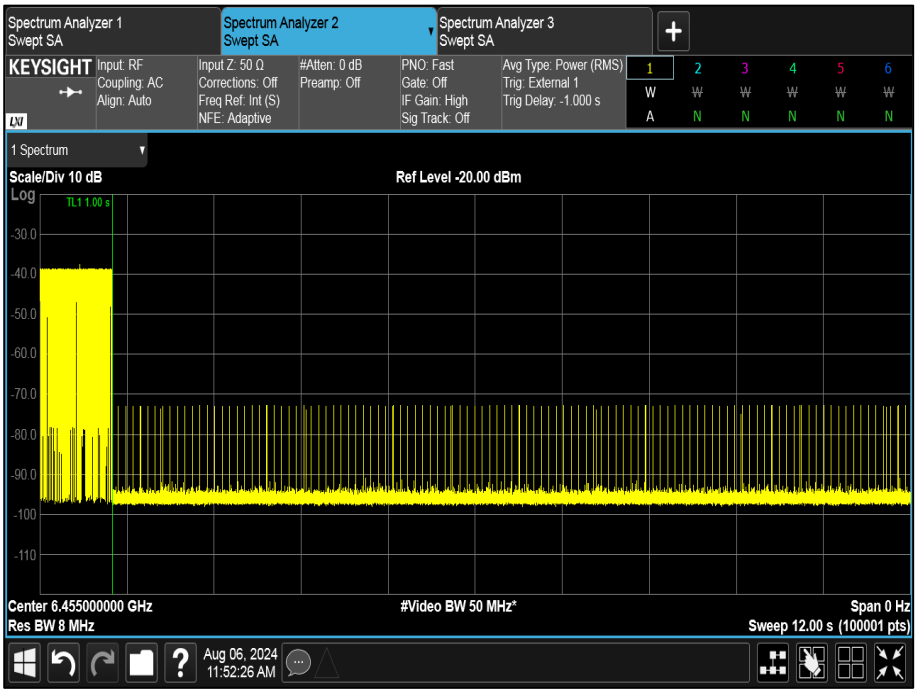

Figure 362 - U-NII-6, Maximum Bandwidth (AWGN Low)

Parameter	Results		
U-NII Band	6	6	6
Channel Number	111	111	111
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6505	6505	6505
AWGN Centre Frequency (MHz)	6505	6505	6505
AWGN Signal Power (dBm)	-69.87	-69.27	-66.97
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-71.97	-71.37	-69.07
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 347 - U-NII-6, Maximum Bandwidth (AWGN Mid)

Figure 363 - U-NII-6, Maximum Bandwidth (AWGN Mid)

Parameter	Results		
U-NII Band	6	6	6
Channel Number	111	111	111
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6505	6505	6505
AWGN Centre Frequency (MHz)	6580	6580	6580
AWGN Signal Power (dBm)	-65.67	-63.04	-61.75
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-67.77	-65.14	-63.85
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 348 - U-NII-6, Maximum Bandwidth (AWGN High)

Figure 364 - U-NII-6, Maximum Bandwidth (AWGN High)

Parameter	Results		
U-NII Band	7	7	7
Channel Number	133	133	133
Bandwidth (MHz)	20	20	20
DUT Centre Frequency (MHz)	6615	6615	6615
AWGN Centre Frequency (MHz)	6615	6615	6615
AWGN Signal Power (dBm)	-70.73	-69.57	-68.07
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-72.83	-71.67	-70.17
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 349 - U-NII-7, Minimum Bandwidth

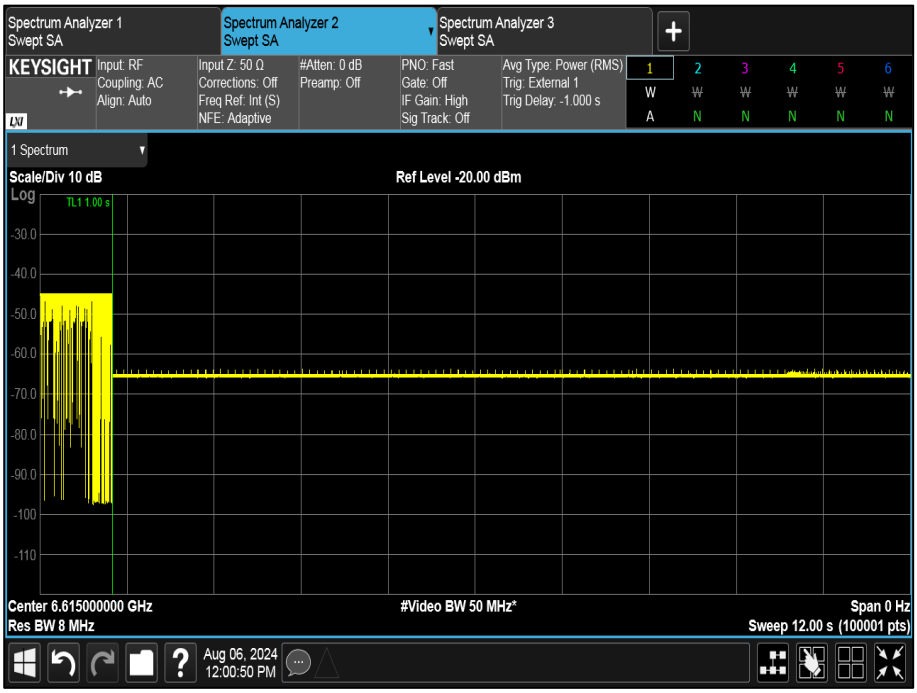

Figure 365 - U-NII-7, Minimum Bandwidth

Parameter	Results		
U-NII Band	7	7	7
Channel Number	143	143	143
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6665	6665	6665
AWGN Centre Frequency (MHz)	6590	6590	6590
AWGN Signal Power (dBm)	-69.16	-67.77	-65.37
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-71.26	-69.87	-67.47
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 350 - U-NII-7, Maximum Bandwidth (AWGN Low)

Figure 366 - U-NII-7, Maximum Bandwidth (AWGN Low)

Parameter	Results		
U-NII Band	7	7	7
Channel Number	143	143	143
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6665	6665	6665
AWGN Centre Frequency (MHz)	6665	6665	6665
AWGN Signal Power (dBm)	-68.83	-66.84	-63.62
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-70.93	-68.94	-65.72
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 351 - U-NII-7, Maximum Bandwidth (AWGN Mid)

Figure 367 - U-NII-7, Maximum Bandwidth (AWGN Mid)

Parameter	Results		
U-NII Band	7	7	7
Channel Number	143	143	143
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6665	6665	6665
AWGN Centre Frequency (MHz)	6740	6740	6740
AWGN Signal Power (dBm)	-66.02	-65.32	-62.37
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-68.12	-67.42	-64.47
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 352 - U-NII-7, Maximum Bandwidth (AWGN High)

Figure 368 - U-NII-7, Maximum Bandwidth (AWGN High)

Parameter	Results		
U-NII Band	8	8	8
Channel Number	197	197	197
Bandwidth (MHz)	20	20	20
DUT Centre Frequency (MHz)	6935	6935	6935
AWGN Centre Frequency (MHz)	6935	6935	6935
AWGN Signal Power (dBm)	-69.75	-68.35	-67.65
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-71.85	-70.45	-69.75
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 353 - U-NII-8, Minimum Bandwidth

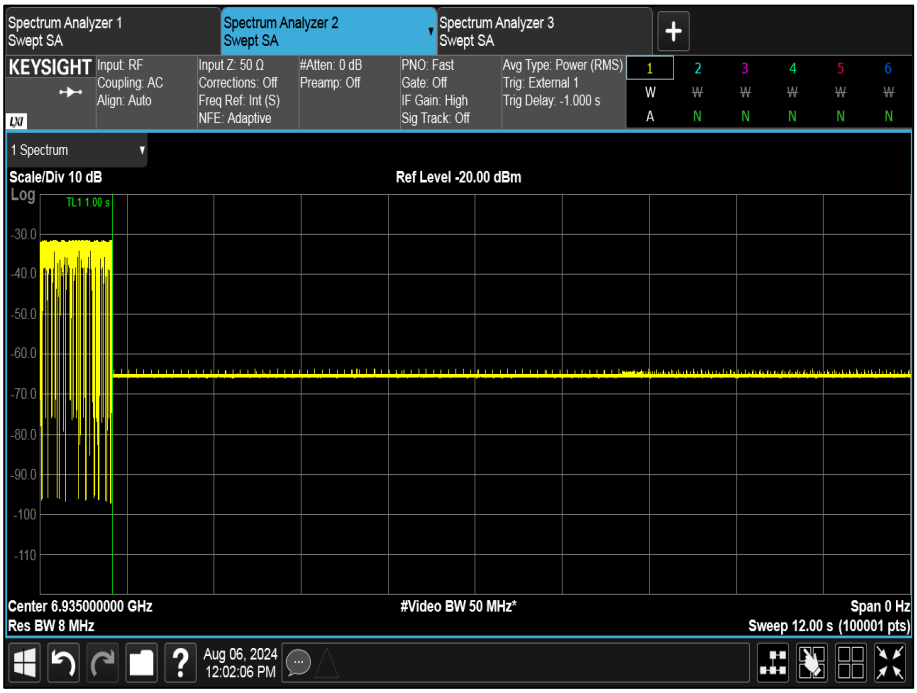

Figure 369 - U-NII-8, Minimum Bandwidth

Parameter	Results		
U-NII Band	8	8	8
Channel Number	207	207	207
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6985	6985	6985
AWGN Centre Frequency (MHz)	6910	6910	6910
AWGN Signal Power (dBm)	-63.41	-62.44	-61.14
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-65.51	-64.54	-63.24
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 354 - U-NII-8, Maximum Bandwidth (AWGN Low)

Figure 370 - U-NII-8, Maximum Bandwidth (AWGN Low)

Parameter	Results		
U-NII Band	8	8	8
Channel Number	207	207	207
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6985	6985	6985
AWGN Centre Frequency (MHz)	6985	6985	6985
AWGN Signal Power (dBm)	-69.42	-67.92	-64.80
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-71.52	-70.02	-66.90
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 355 - U-NII-8, Maximum Bandwidth (AWGN Mid)

Figure 371 - U-NII-8, Maximum Bandwidth (AWGN Mid)

Parameter	Results		
U-NII Band	8	8	8
Channel Number	207	207	207
Bandwidth (MHz)	160	160	160
DUT Centre Frequency (MHz)	6985	6985	6985
AWGN Centre Frequency (MHz)	7060	7060	7060
AWGN Signal Power (dBm)	-65.20	-64.80	-61.71
Antenna Gain (dBi)	2.10	2.10	2.10
Adjusted Power (dBm)	-67.30	-66.90	-63.81
Detection Limit (dBm)	-62.0	-62.0	-62.0
EUT Tx Status (OFF/Minimal/ON)	ON	Minimal	OFF

Table 356 - U-NII-8, Maximum Bandwidth (AWGN High)

Figure 372 - U-NII-8, Maximum Bandwidth (AWGN High)

FCC 47 CFR Part 15.407 (d)(6)

Indoor access points, subordinate devices and client devices operating in the 5.925-7.125 GHz band must employ a contention-based protocol.

KDB 987594, Limit Clause I

Indoor access points, subordinate devices and client devices operating in the 5.925-7.125 GHz band (herein referred to as unlicensed devices) are required to use technologies that include a contention-based protocol to avoid co-channel interference with incumbent devices sharing the band. To ensure incumbent co-channel operations are detected in a technology-agnostic manner, unlicensed devices are required to detect co-channel radio frequency energy (energy detect) and avoid simultaneous transmission.

Unlicensed low-power indoor devices must detect co-channel radio frequency power that is at least -62 dBm or lower. Upon detection of energy in the band, unlicensed low power indoor devices must vacate the channel (in which incumbent signal is transmitted) and stay off the incumbent channel as long as detected radio frequency power is equal to or greater than the threshold (-62 dBm). The -62 dBm (or lower) threshold is referenced to a 0 dBi antenna gain.

To ensure incumbent operations are reliably detected in the band, low power indoor devices must detect RF energy throughout their intended operating channel. For example, an 802.11 device that plans to transmit a 40 MHz- wide signal (on a primary 20 MHz channel and a secondary 20 MHz channel) must detect energy throughout the entire 40 MHz channel. Additionally, low-power indoor devices must detect co-channel energy with 90% or greater certainty.

2.9.8 Test Location and Test Equipment Used

This test was carried out in Shielded Laboratory 1.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
EXA Signal Analyser	Keysight Technologies	N9010B	4968	24	29-Jan-2026
Cable (K Type 2m)	Junkosha	MWX241-02000KMS	5421	12	07-Mar-2025
3.5 mm 2m Cable	Junkosha	MWX221-02000DMS	5429	12	16-May-2025
Cable (K Type 2m)	Junkosha	MWX241-02000KMSKMS/B	5936	12	23-May-2025
Cable (K Type 2m)	Junkosha	MWX241-02000KMSKMS/B	5938	12	23-May-2025
WiFi 6E Tri-Band Gaming Router	Asus	GT-AXE110000	6251	-	TU
Thermohygrometer	R.S Components	1364	6352	12	13-Jun-2025
Test Coupling Network	TUV SUD	TUV_RxTest_001	6387	12	04-Sep-2024
Vector Signal Generator (7.5GHz)	Rohde & Schwarz	SMM100A	6532	36	11-Apr-2026

Table 357

TU - Traceability Unscheduled

3 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Emission Bandwidth	± 3.91 MHz
Dual Client Test	± 1.38 dB
Transmit Power Control	± 1.49 dB
Maximum Conducted Output Power	± 1.38 dB
Maximum Conducted Power Spectral Density	± 1.49 dB
Authorised Band Edges	± 6.3 dB
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Unwanted Emissions within the 5925-7125 MHz band	± 3.45 dB
Contention Based Protocol	Time: 0.30% Interferer BW: 267.98 kHz Interferer Level: 0.80 dB

Table 358

Measurement Uncertainty Decision Rule – Accuracy Method

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2021, Clause 4.4.3 (Procedure 2). The measurement results are directly compared with the test limit to determine conformance with the requirements of the standard.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8.