TUV SUD
Digitally signed by TUV SUD
Date: 2026.05.11 09:43:04 +01'00'

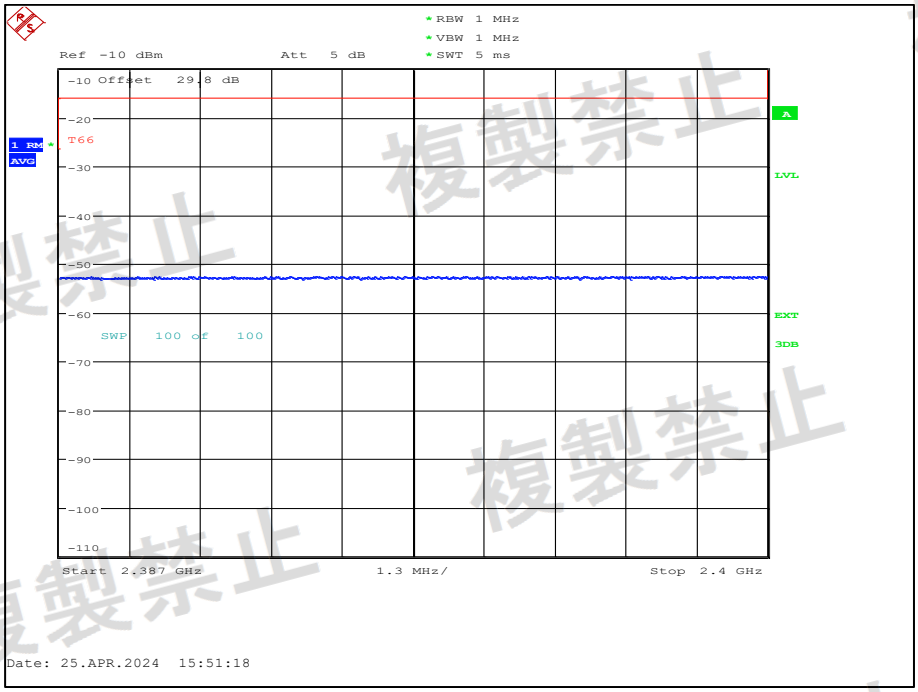

Figure 104 – 2472 MHz, 2387 MHz to 2400 MHz, WLAN 802.11ax20 Mode, Ch13

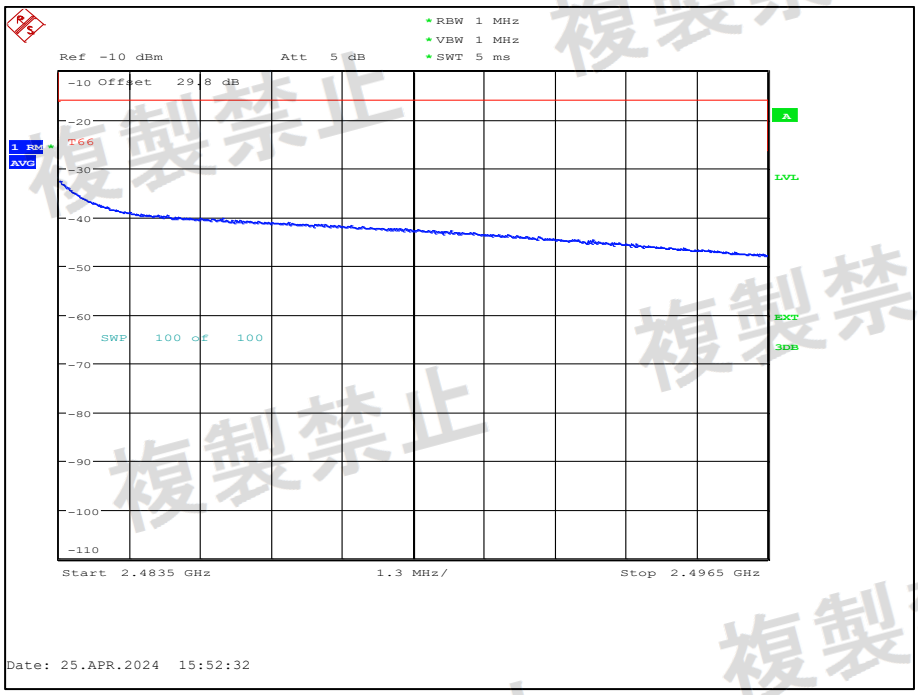

Figure 105 – 2472 MHz, 2483.5 MHz to 2496.5 MHz, WLAN 802.11ax20 Mode, Ch13

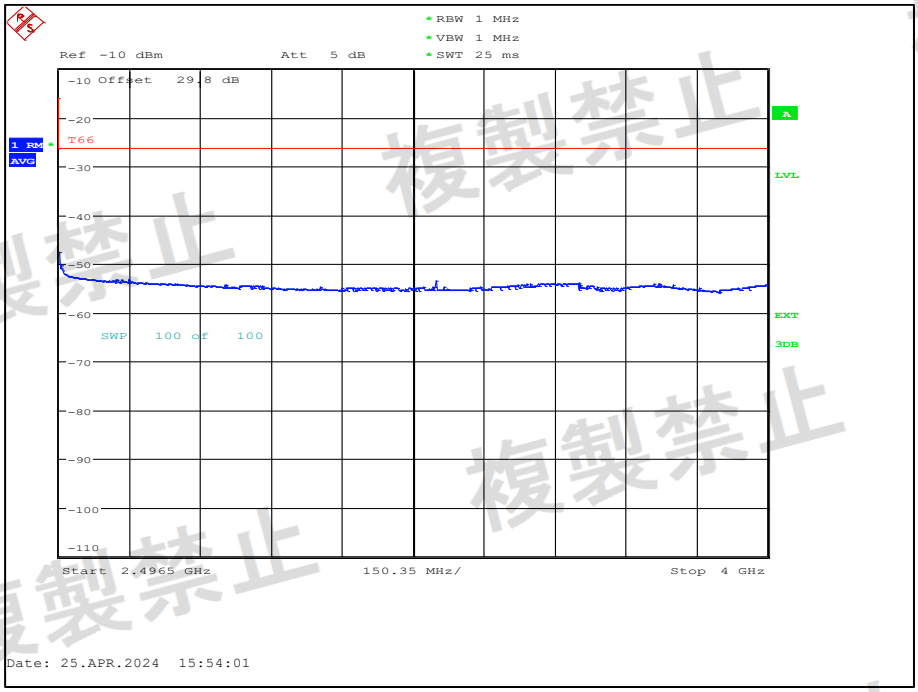

Figure 106 – 2472 MHz, 2496.5 MHz to 4000 MHz, WLAN 802.11ax20 Mode, Ch13

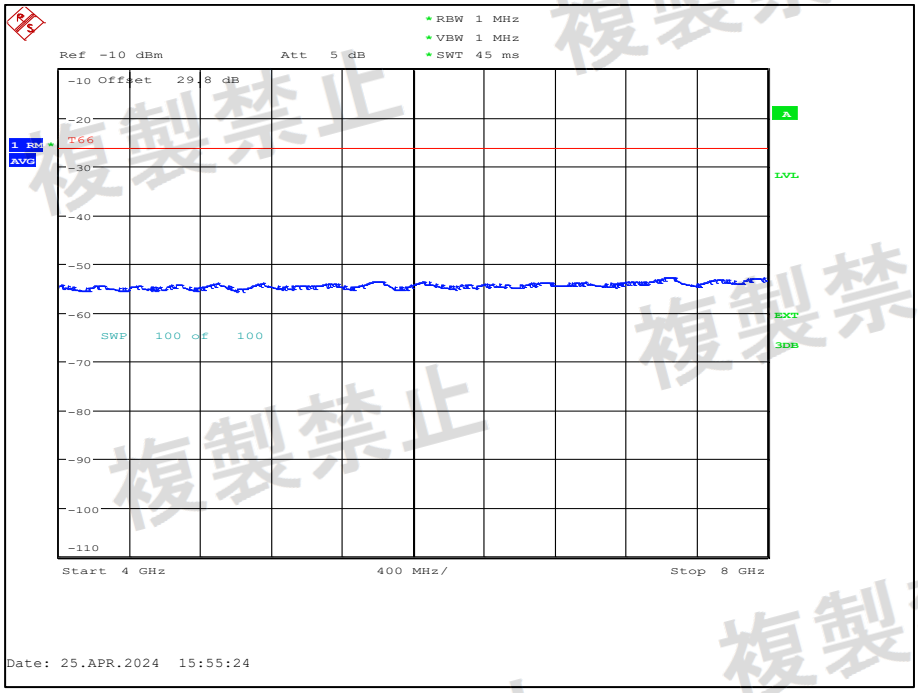

Figure 107 – 2472 MHz, 4000 MHz to 8000 MHz, WLAN 802.11ax20 Mode, Ch13

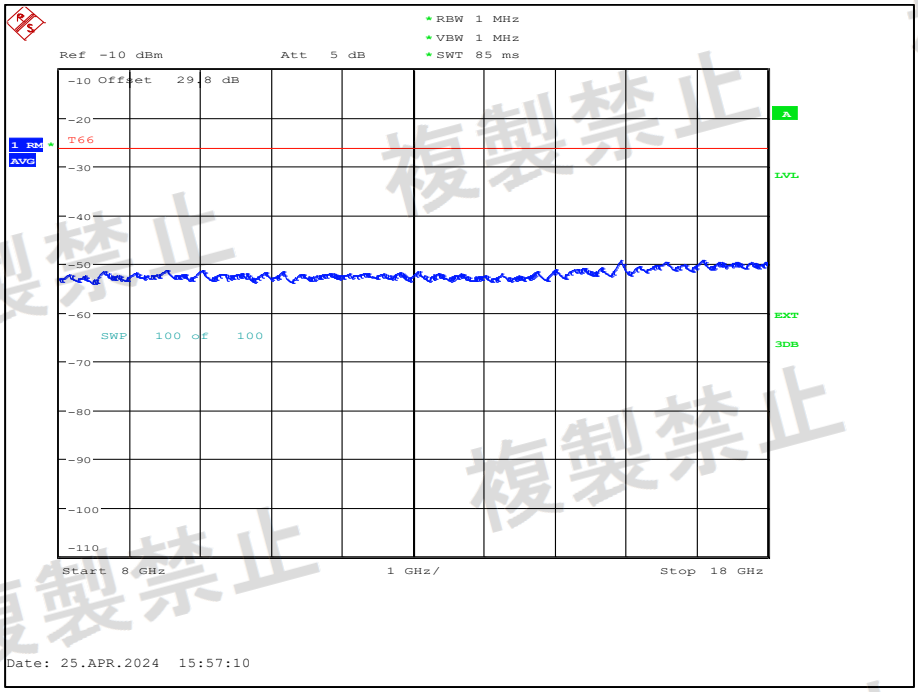

Figure 108 – 2472 MHz, 8000 MHz to 18000 MHz, WLAN 802.11ax20 Mode, Ch13

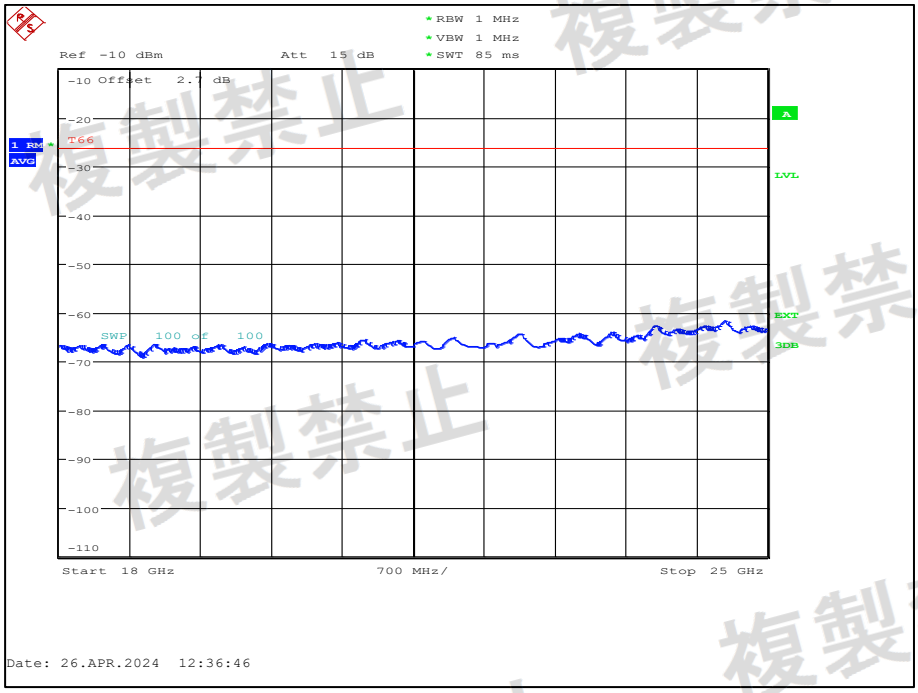

Figure 109 – 2472 MHz, 18000 MHz to 25000 MHz, WLAN 802.11ax20 Mode, Ch13

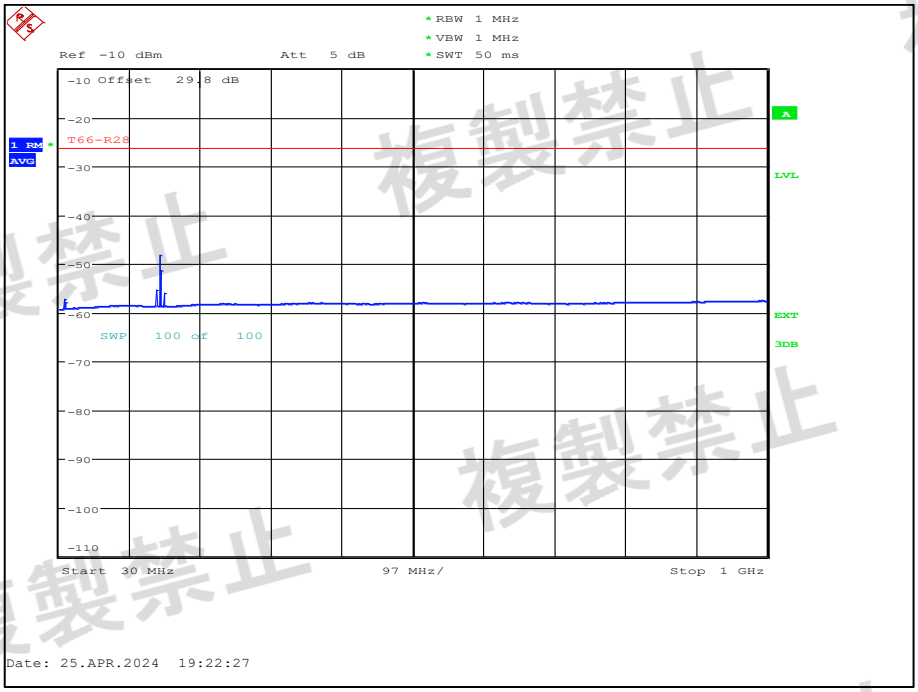

Figure 110 - 2484 MHz, 30 MHz to 1000 MHz, WLAN 802.11b Mode, Ch14

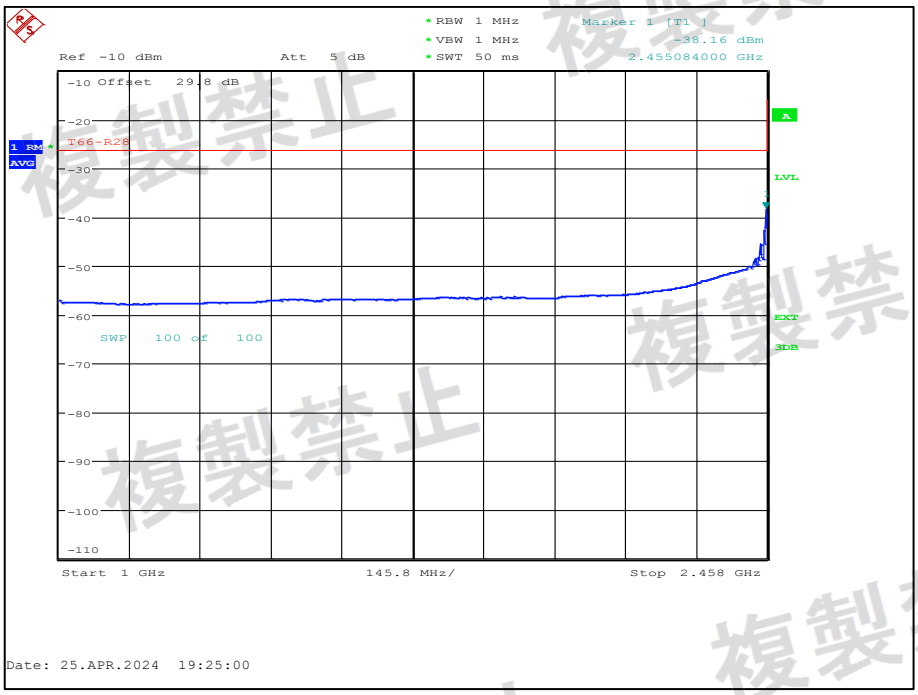

Figure 111 – 2484MHz, 1000 MHz to 2458 MHz, WLAN 802.11b Mode, Ch14

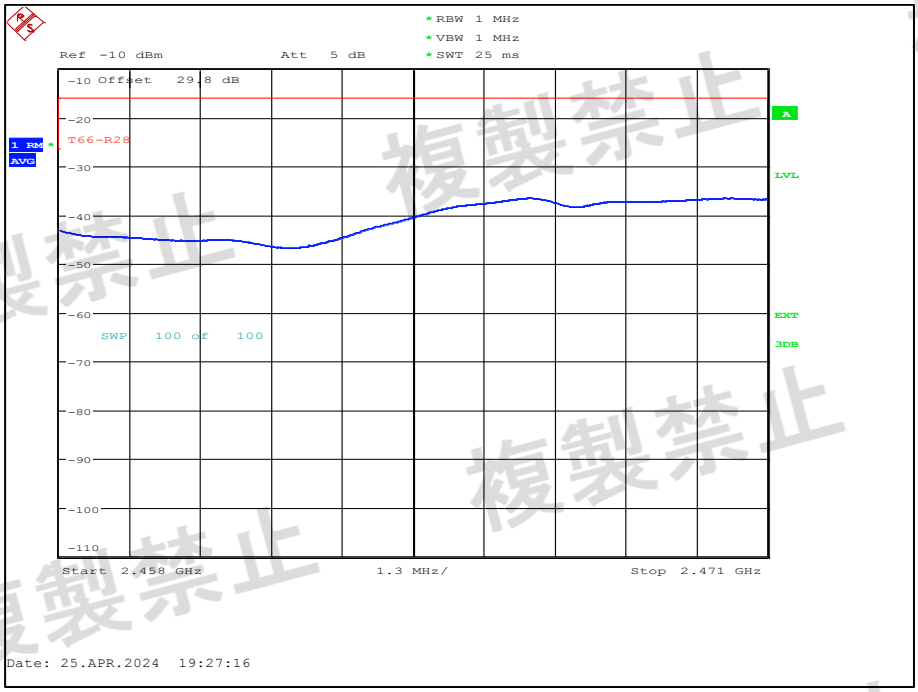

Figure 112 – 2484 MHz, 2458 MHz to 2471 MHz, WLAN 802.11b Mode, Ch14

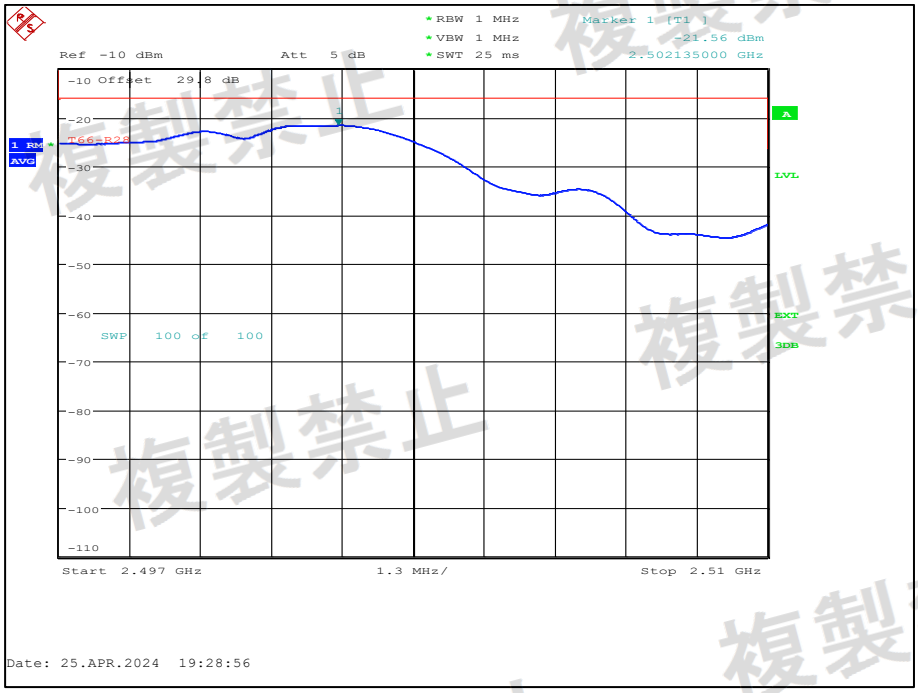

Figure 113 – 2484 MHz, 2497 MHz to 2510 MHz, WLAN 802.11b Mode, Ch14

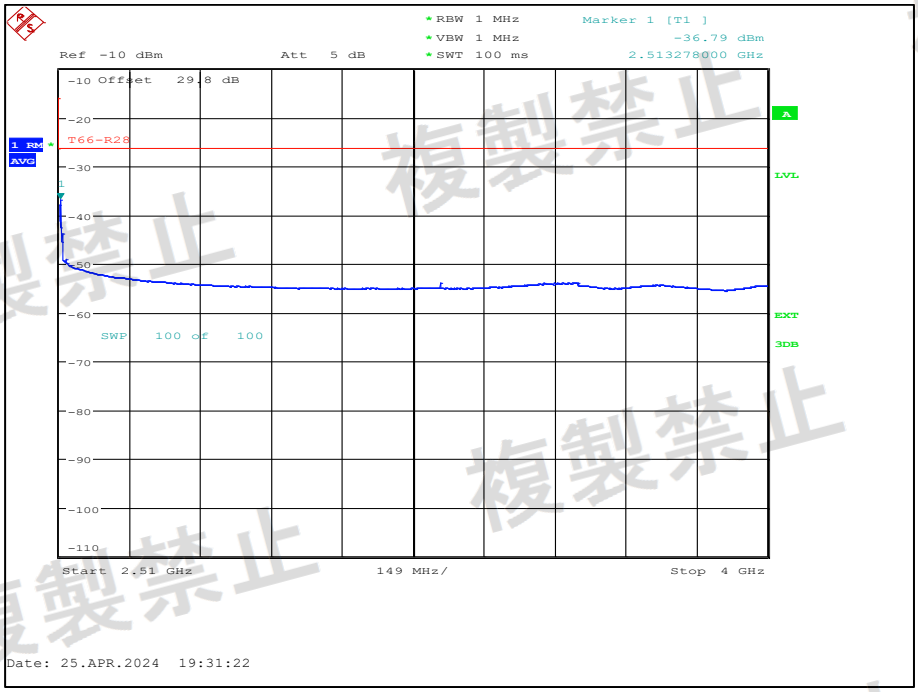

Figure 114 – 2484 MHz, 2510 MHz to 4000 MHz, WLAN 802.11b Mode, Ch14

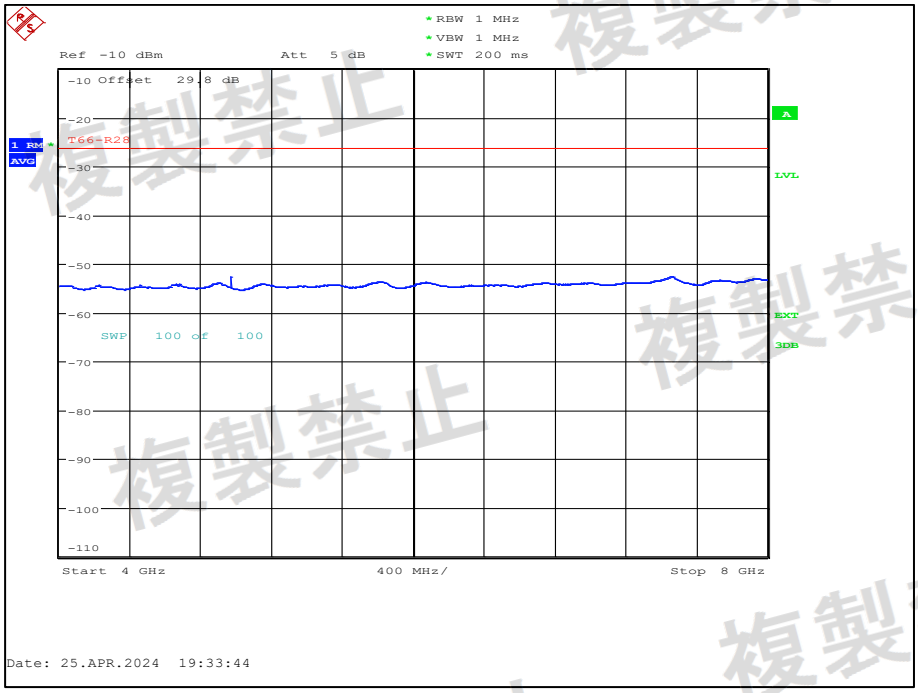

Figure 115 – 2484MHz, 4000 MHz to 8000 MHz, WLAN 802.11b Mode, Ch14

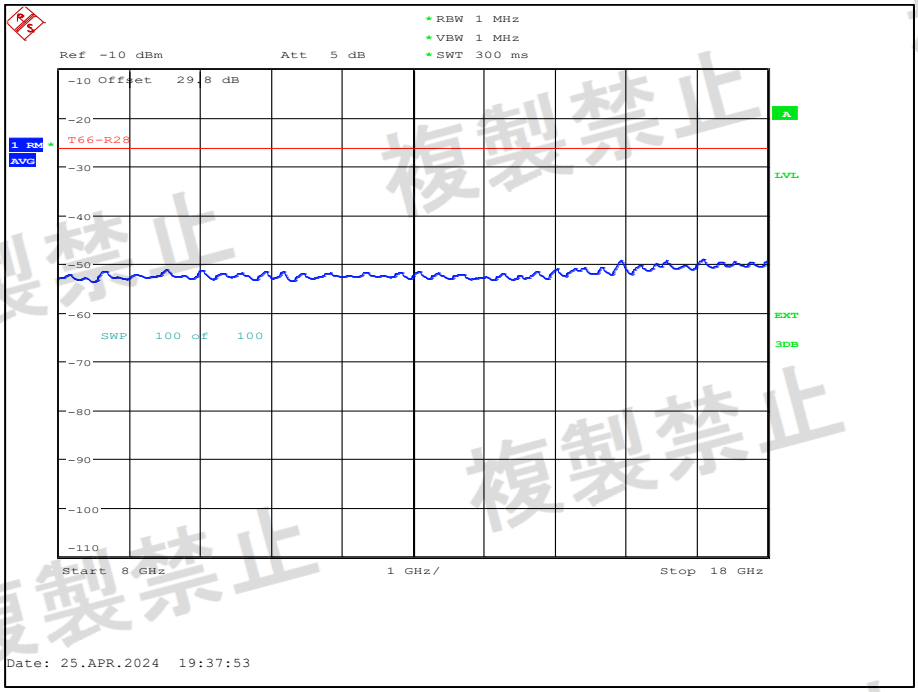

Figure 116 – 2484MHz, 8000 MHz to 18000 MHz, WLAN 802.11b Mode, Ch14

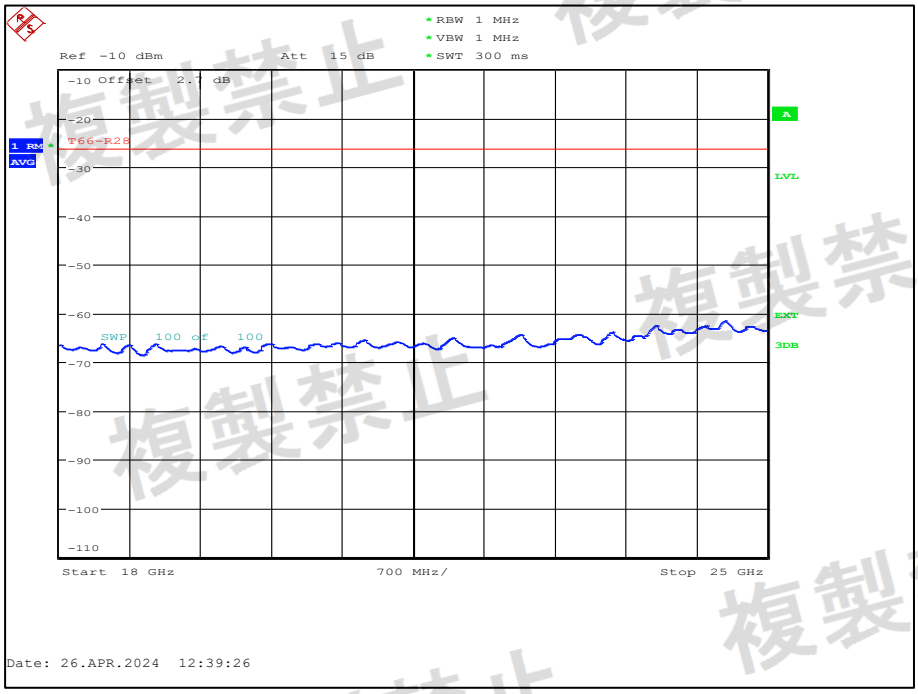

Figure 117 – 2484 MHz, 18000 MHz to 25000 MHz, WLAN 802.11b Mode, Ch14

ARIB STD-T66, Limit Clause 3.2 (6)

Frequency Range	Limit
2387 MHz to 2400 MHz and 2483.5 MHz to 2496.5 MHz	25 µW or -16 dBm
9 kHz to <2387 MHz and >2496.5 MHz to 25 GHz	2.5 µW or -26 dBm

Regulation No. 18 of the Radio Supervisory Commission of Showa 25, Limit Clause

Frequency Range	Limit
2458 MHz ≥ f > 2471 MHz and 2497 MHz ≥ f > 2510 MHz	25 µW or -16 dBm
<2458 MHz and >2510 MHz to 25 GHz	2.5 µW or -26 dBm

2.3.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 2.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Multimeter	Iso-tech	IDM101	2424	12	23-Feb-2025
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	09-May-2024
Attenuator 5W 10dB DC-18GHz	Aaren	AT40A-4041-D18-10	5494	12	05-Apr-2025
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB 40	5605	12	07-Nov-2024
WG20 Coaxial Adapter (1 of 2)	Quasar	QWC20SB-UBR-K-F	5785	12	30-May-2024
WG20 Coaxial Adapter (2 of 2)	Quasar	QWC20SB-UBR-K-F	5786	12	30-May-2024
WG20 Straight (50mm)	Quasar	QWS20SB-UBR-UBR-50	5789	12	30-May-2024
GPSDR Frequency Standard	Spectracom	SecureSync 1200-0408-0601	6339	6	14-Sep-2024
Attenuator 5W 20dB DC-18GHz	Aaren	AT40A-4041-D18-20	6557	12	18-Jun-2024

Table 38

2.4 Allowable Value for Occupied Bandwidth

2.4.1 Specification Reference

ARIB STD-T66, Clause 3.2 (7)

2.4.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: WLAN MAC address: ec:f6:4c:a0:f:4 - Modification State 0

2.4.3 Date of Test

10-April-2024

2.4.4 Test Method

ARIB STD-T66 Version 3.7 E1, Limit clause 3.2(7).

The EUT was supplied with 3.3 VDC by means of a regulator residing in the host certification board, which was in turn being powered over the host certification board's USB connector..

For 3.2(7), the spectrum analyser was tuned to the test frequency with a span to incorporate the entire bandwidth of the modulated signal. Allowing for the trace to stabilize, the bandwidth whereby 99% power of the power resides was recorded.

For 3.2(8), using the same trace, the bandwidth whereby 90% power of the power resides was recorded.

For 3.2(9), the following calculation was used:
Process Gain = 90% occupied bandwidth (MHz) / the data transmission rate (Mb/s).

The spread factor is not applicable to low power devices using DSSS or OFDM in the frequency range 2400-2483.5 MHz under category WW. However, for low power devices in the frequency range 2471 to 2497 MHz under the category GZ, there is a spreading factor requirement with a limit of 10, therefore this measurement has only been performed for 802.11b on CH14.

2.4.5 Environmental Conditions

Ambient Temperature	22.4 °C
Relative Humidity	47.5 %

2.4.6 Test Results

2.4 GHz WLAN Conducted Tests

Test Configuration			
Frequency Range:	2400-2484 MHz	Band:	2.4 GHz (WW)
Limit Clause(s):	3.2(7)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11b	Duty Cycle (%):	-
Data Rate:	1 Mbps	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.30 V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	99% Bandwidth (MHz)					Limit (MHz)
		A	B	C	D	Maximum	
2412	15.00	13.680	-	-	-	13.680	≤26.0
2442	15.00	13.600	-	-	-	13.600	≤26.0
2472	15.00	13.480	-	-	-	13.480	≤26.0
2484	16.00	16.800	-	-	-	16.800	≤26.0

Table 39 - 99% Bandwidth Results

Test Frequency (MHz)	Power Index	90% Spread Bandwidth (MHz)						Spread Factor	
		A	B	C	D	Minimum	Limit	Minimum	Limit
2412	15.00	8.680	-	-	-	8.680	≥0.5	-	≥5.0
2442	15.00	8.640	-	-	-	8.640	≥0.5	-	≥5.0
2472	15.00	8.560	-	-	-	8.560	≥0.5	-	≥5.0
2484	16.00	13.280	-	-	-	13.280	≥0.5	13.280	≥10.0

Table 40 - 90% Spread Bandwidth Results

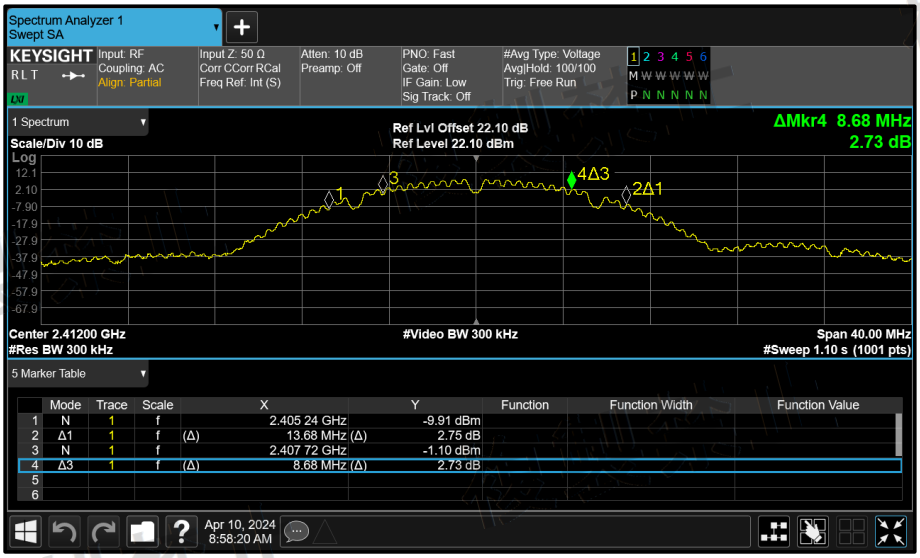

Figure 118 - A (A) 2412 MHz (CH1)

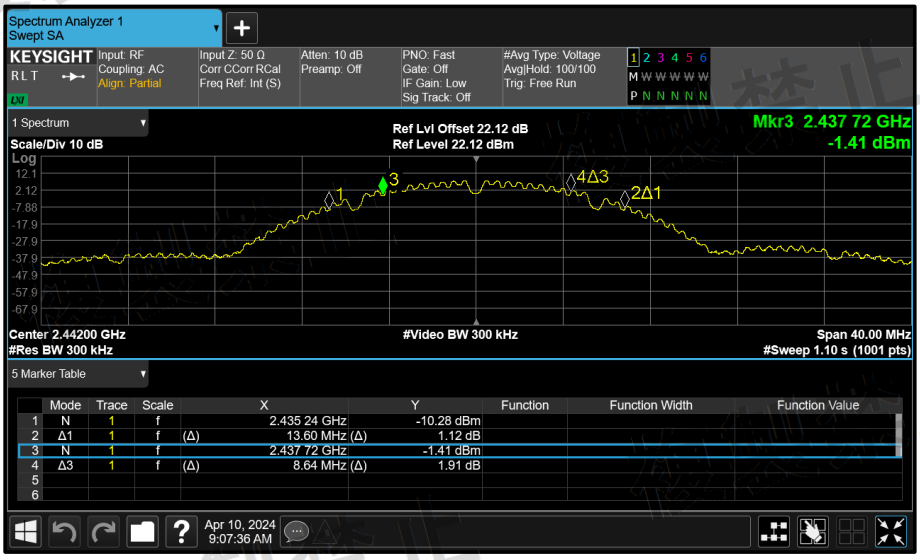

Figure 119 - A (A) 2442 MHz (CH7)

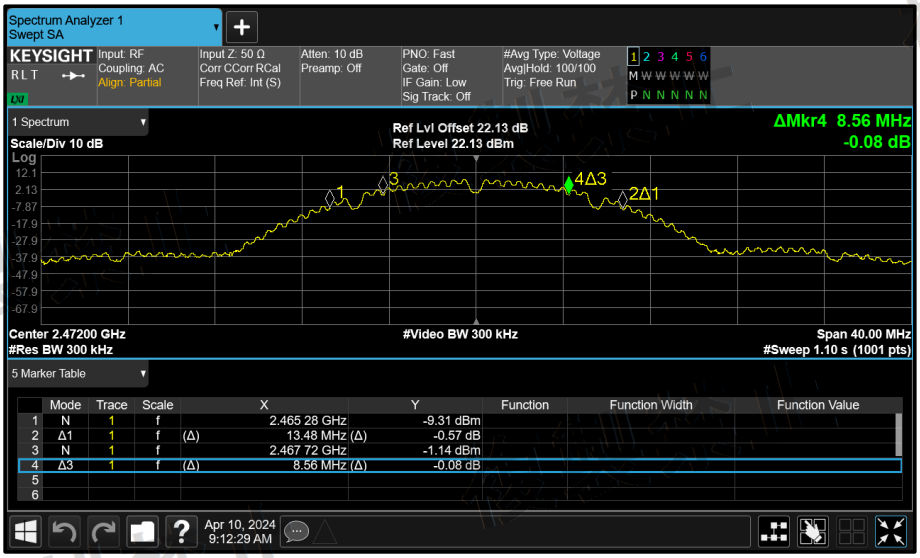

Figure 120 - A (A) 2472 MHz (CH13)

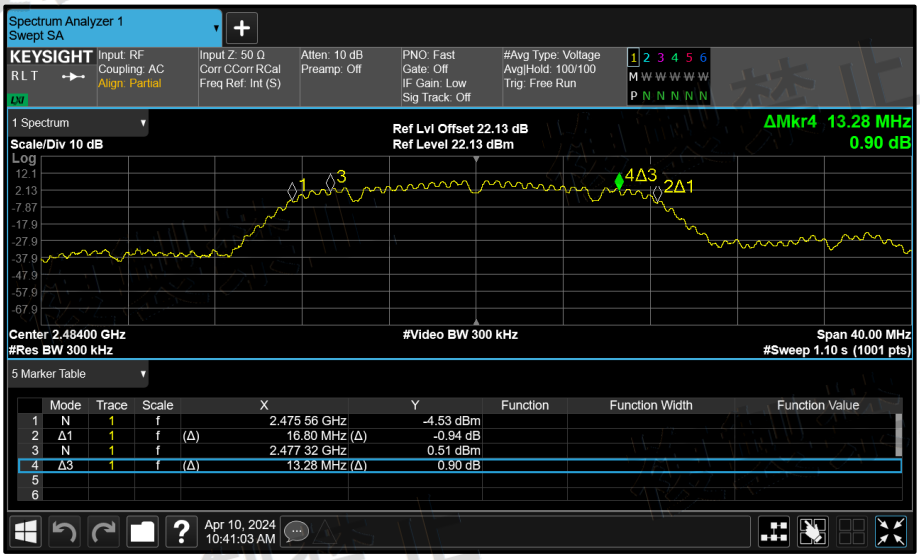

Figure 121 - A (A) 2484 MHz (CH14)

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz (WW)
Limit Clause(s):	3.2(7)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11g	Duty Cycle (%):	-
Data Rate:	6 Mbps	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.30 V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	99% Bandwidth (MHz)					Limit (MHz)
		A	B	C	D	Maximum	
2412	16.00	18.640	-	-	-	18.640	≤26.0
2442	18.00	20.240	-	-	-	20.240	≤26.0
2472	14.00	17.240	-	-	-	17.240	≤26.0

Table 41 - 99% Bandwidth Results

Test Frequency (MHz)	Power Index	90% Spread Bandwidth (MHz)						Spread Factor	
		A	B	C	D	Minimum	Limit	Minimum	Limit
2412	16.00	14.760	-	-	-	14.760	≥0.5	-	≥5.0
2442	18.00	14.840	-	-	-	14.840	≥0.5	-	≥5.0
2472	14.00	14.640	-	-	-	14.640	≥0.5	-	≥5.0

Table 42 - 90% Spread Bandwidth Results

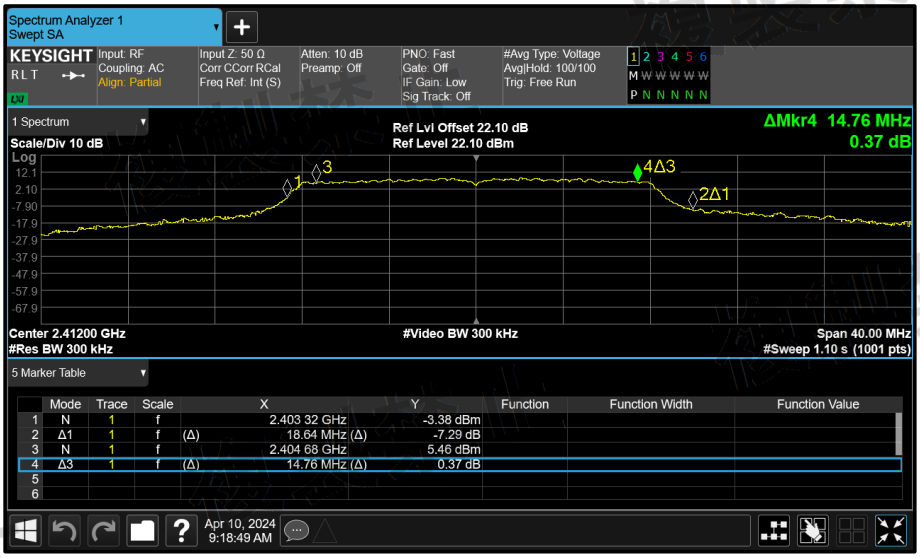

Figure 122 - A (A) 2412 MHz (CH1)

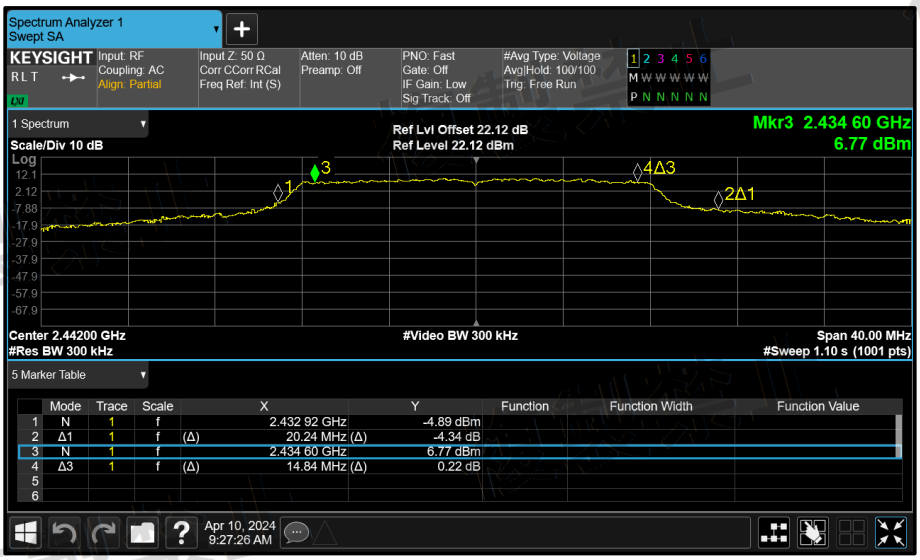

Figure 123 - A (A) 2442 MHz (CH7)

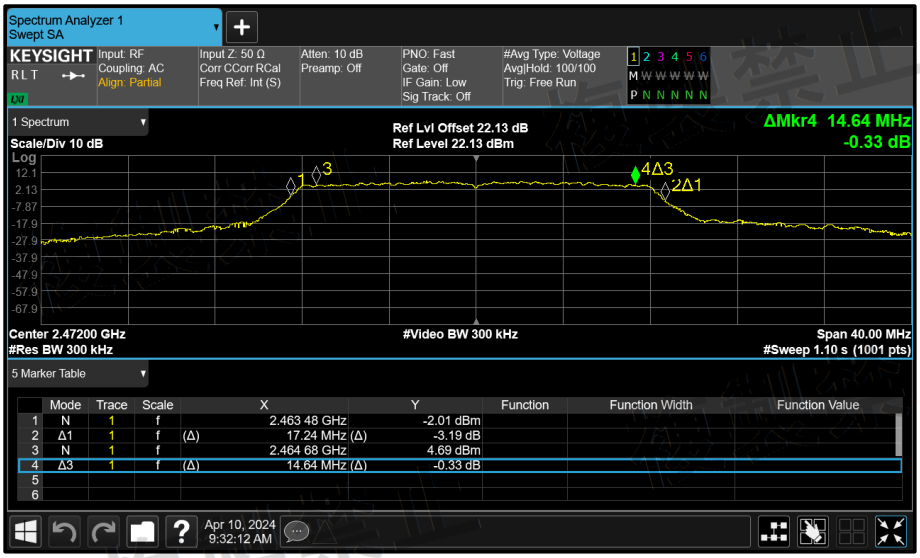

Figure 124 - A (A) 2472 MHz (CH13)

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz (WW)
Limit Clause(s):	3.2(7)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11n HT20	Duty Cycle (%):	-
Modulation Coding Scheme:	MCS0	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.30 V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	99% Bandwidth (MHz)					Limit (MHz)
		A	B	C	D	Maximum	
2412	14.00	18.120	-	-	-	18.120	≤26.0
2442	18.00	18.600	-	-	-	18.600	≤26.0
2472	14.00	18.080	-	-	-	18.080	≤26.0

Table 43 - 99% Bandwidth Results

Test Frequency (MHz)	Power Index	90% Spread Bandwidth (MHz)						Spread Factor	
		A	B	C	D	Minimum	Limit	Minimum	Limit
2412	14.00	15.800	-	-	-	15.800	≥0.5	-	≥5.0
2442	18.00	15.880	-	-	-	15.880	≥0.5	-	≥5.0
2472	14.00	15.840	-	-	-	15.840	≥0.5	-	≥5.0

Table 44 - 90% Spread Bandwidth Results

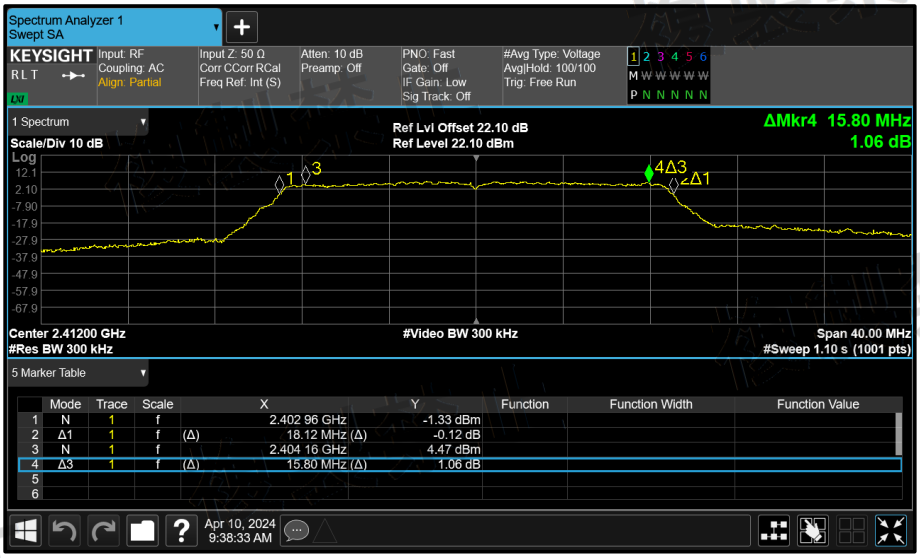

Figure 125 - A (A) 2412 MHz (CH1)

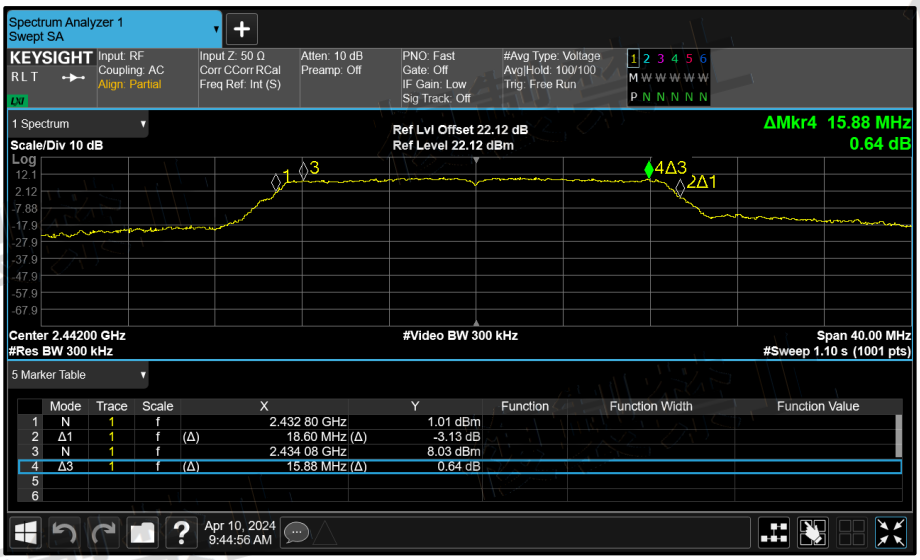

Figure 126 - A (A) 2442 MHz (CH7)

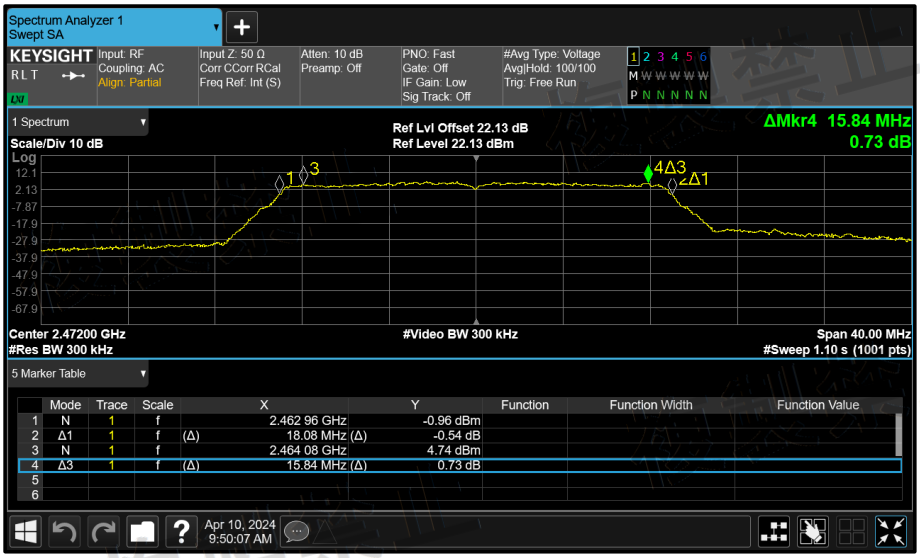

Figure 127 - A (A) 2472 MHz (CH13)

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz (WW)
Limit Clause(s):	3.2(7)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	802.11ax HE20 SU	Duty Cycle (%):	-
Modulation Coding Scheme:	MCS0x1	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.30 V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	99% Bandwidth (MHz)					Limit (MHz)
		A	B	C	D	Maximum	
2412	8.00	19.040	-	-	-	19.040	≤26.0
2442	9.00	19.000	-	-	-	19.000	≤26.0
2472	9.00	19.040	-	-	-	19.040	≤26.0

Table 45 - 99% Bandwidth Results

Test Frequency (MHz)	Power Index	90% Spread Bandwidth (MHz)						Spread Factor	
		A	B	C	D	Minimum	Limit	Minimum	Limit
2412	8.00	17.120	-	-	-	17.120	≥0.5	-	≥5.0
2442	9.00	17.160	-	-	-	17.160	≥0.5	-	≥5.0
2472	9.00	17.240	-	-	-	17.240	≥0.5	-	≥5.0

Table 46 - 90% Spread Bandwidth Results

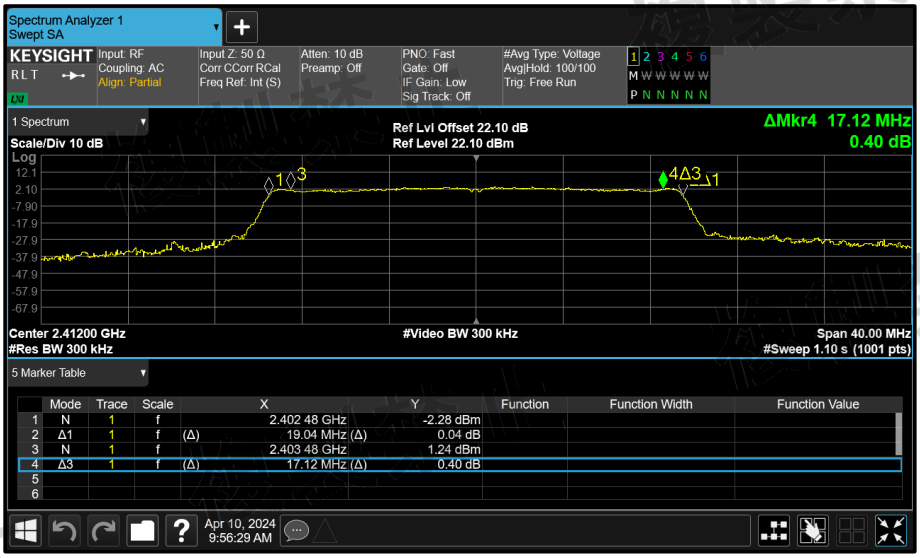

Figure 128 - A (A) 2412 MHz (CH1)

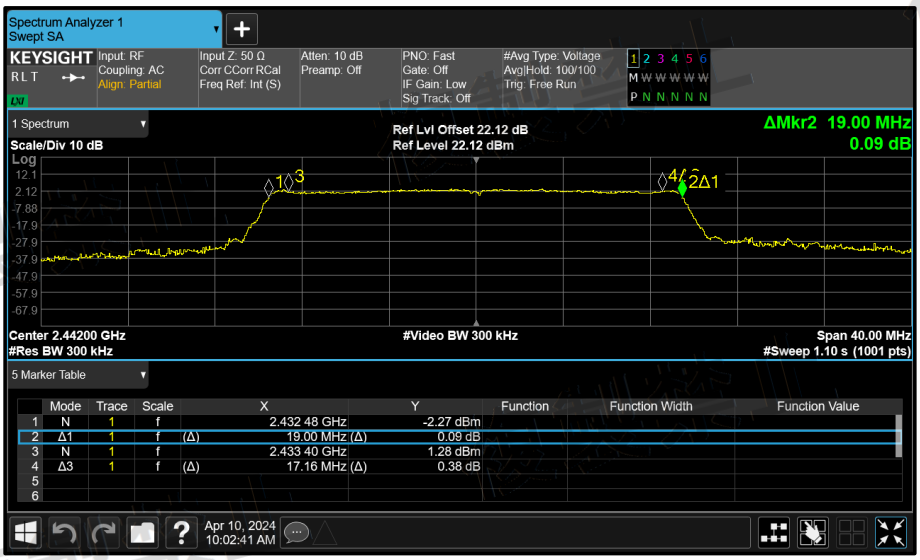

Figure 129 - A (A) 2442 MHz (CH7)

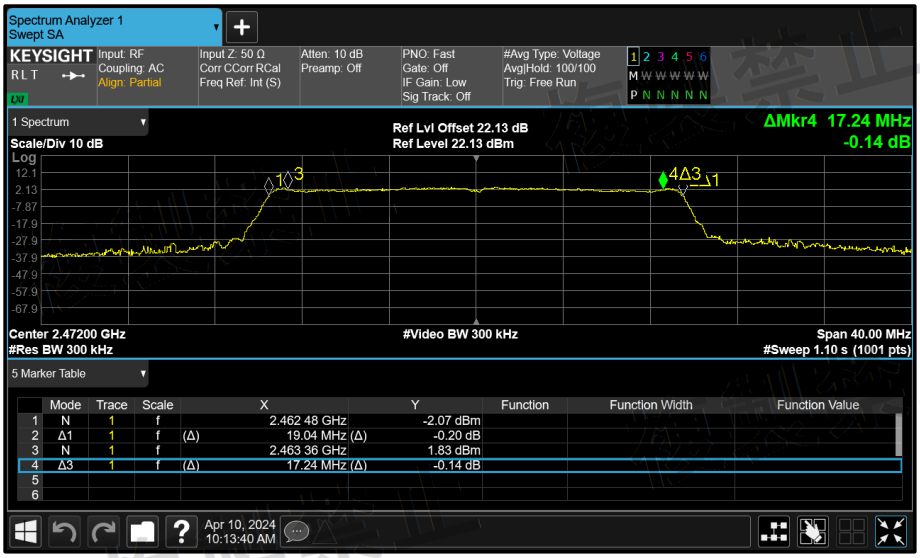

Figure 130 - A (A) 2472 MHz (CH13)

ARIB STD T-66, Limit Clause 3.2 (7)

Permissible value of occupied frequency bandwidth for transmission devices using a FH system, a DS-FH hybrid system, or a FH-OFDM hybrid system is at most 83.5MHz; for transmission devices using an OFDM system is at most 38MHz; and for transmission devices using any other system the necessary frequency bandwidth is at most 26MHz.

2.4.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 14.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Hygrometer	Rotronic	I-1000	3068	12	07-Nov-2024
MXA Signal Analyser	Keysight Technologies	N9020B	6417	24	26-Feb-2025
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6518	12	16-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6529	12	16-Feb-2025

Table 47

2.5 Limit on Secondary Radiation

2.5.1 Specification Reference

ARIB STD-T66, Clause 3.3 (1)

2.5.2 Equipment Under Test and Modification State

SiW917Y1GA, S/N: WLAN MAC address: ec:f6:4c:a0:ac:c - Modification State 0

2.5.3 Date of Test

24-April-2024 to 02-May-2024

2.5.4 Test Method

The test was carried out according to ARIB STD-T66, clause 3.3 (1) Radiated Emissions method in receive mode.

The EUT was powered by a DC Power Supply Unit at a nominal voltage of 3.3 VDC.

Radiated Spurious Emissions were performed in a Semi anechoic chamber and made from 30 MHz up to 25GHz (10th Harmonic). A Peak detector and max-hold trace were used.

Tests were carried out with the DUT set to receive on each of the Bottom, Middle and Top Channels.

For measurements below 1 GHz, a 100 kHz resolution bandwidth was used.

For measurements above 1 GHz, a 1 MHz resolution bandwidth was used.

2.5.5 Environmental Conditions

Ambient Temperature	20.3 - 21.3 °C
Relative Humidity	39.4 - 40.8 %

2.5.6 Test Results

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 48- CH1_802.11b_Rx_2412, 30 MHz to 25 GHz

*No emissions found within 6 dB of the limit.

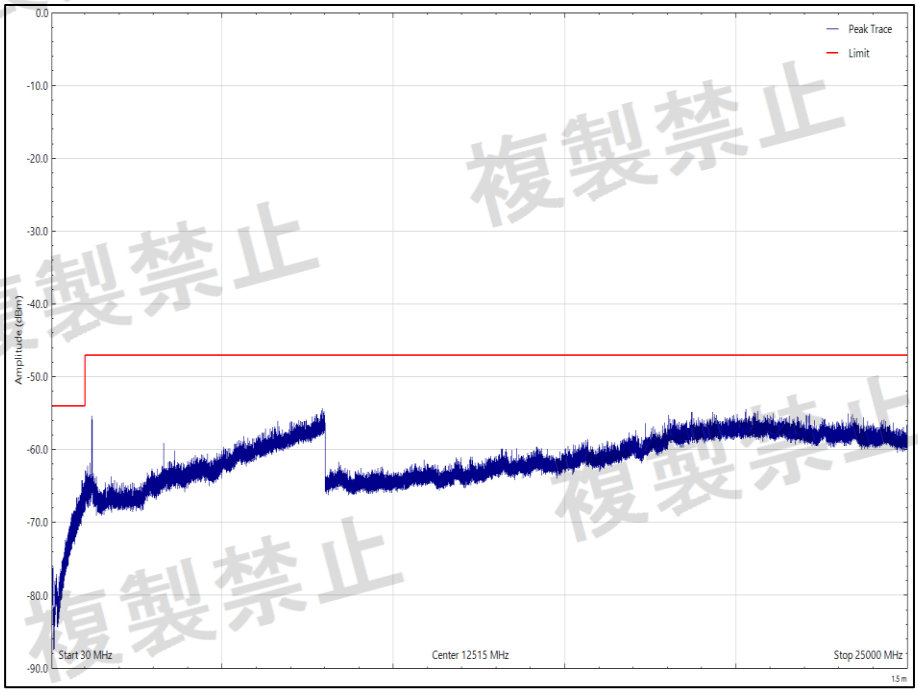

Figure 131 - CH1_802.11b_Rx_2412, 30 MHz to 25 GHz, Horizontal (Peak)

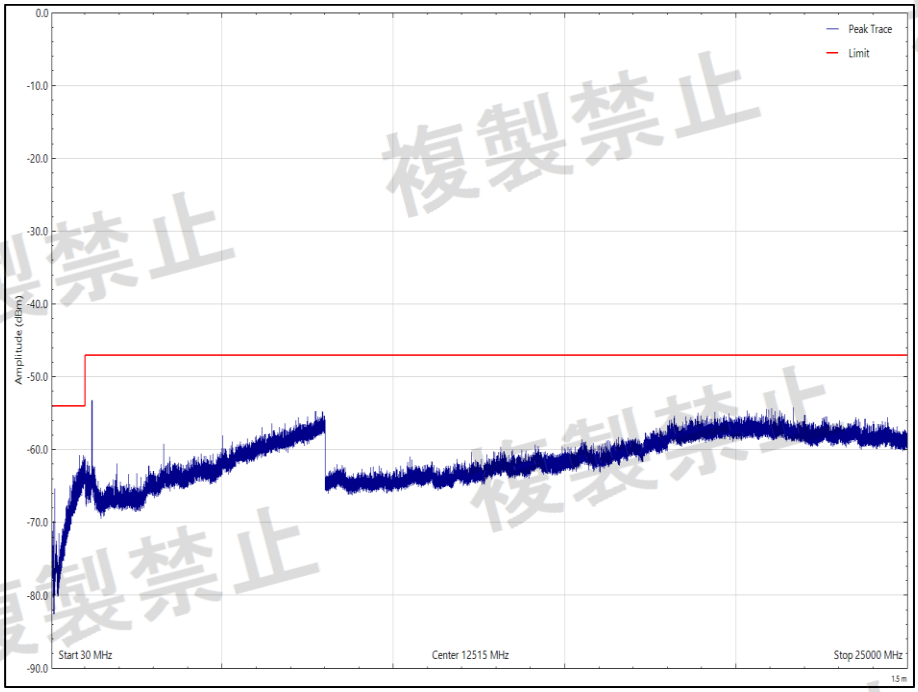

Figure 132 - CH1_802.11b_Rx_2412, 30 MHz to 25 GHz, Vertical (Peak)

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 49- CH7_802.11b_Rx_2442, 30 MHz to 25 GHz

*No emissions found within 6 dB of the limit.

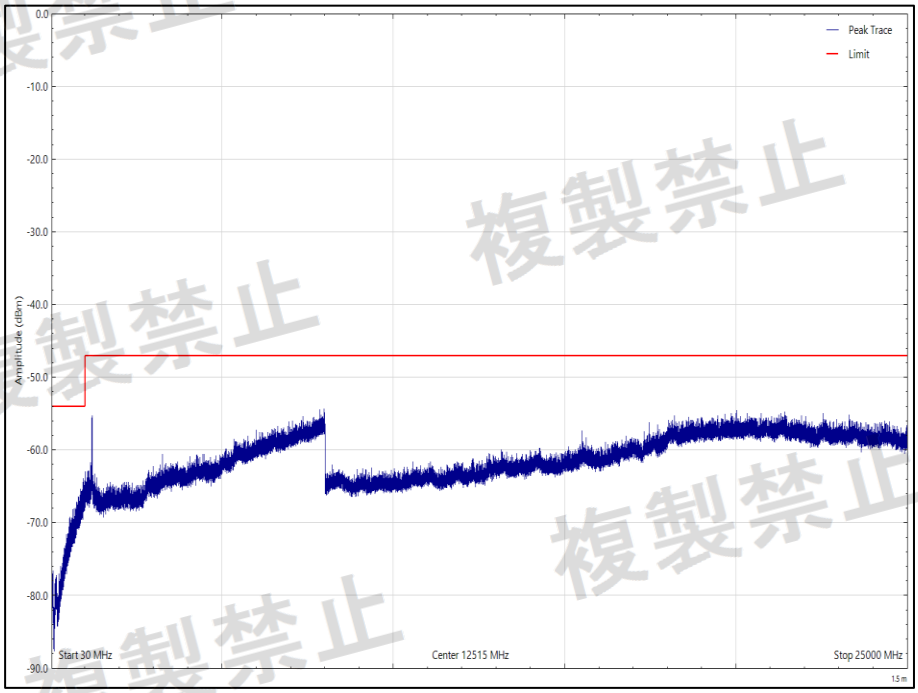

Figure 133 – CH7_802.11b_Rx_2442, 30 MHz to 25 GHz, Horizontal (Peak)

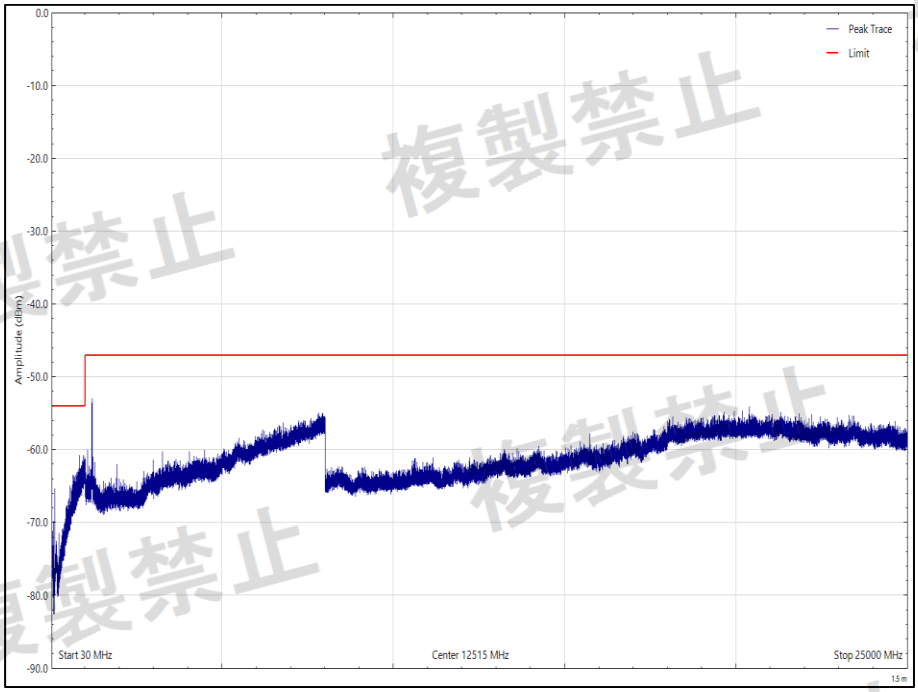

Figure 134 – CH7_802.11b_Rx_2442, 30 MHz to 25 GHz, Vertical (Peak)

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 50- CH13_802.11b_Rx_2472, 30 MHz to 25 GHz

*No emissions found within 6 dB of the limit.

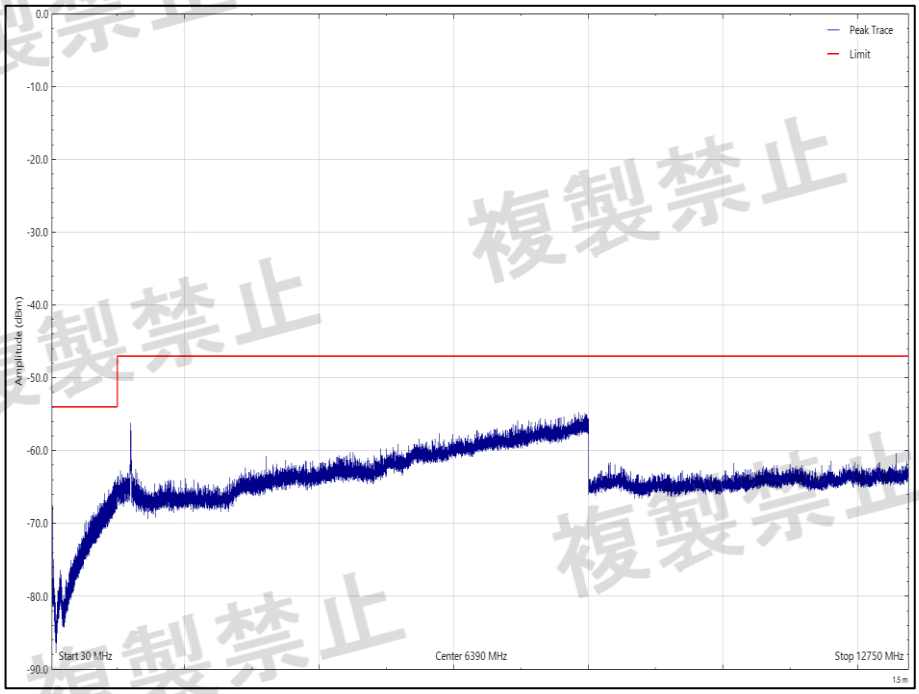

Figure 135 - CH13_802.11b_Rx_2472, 30 MHz to 25 GHz, Horizontal (Peak)

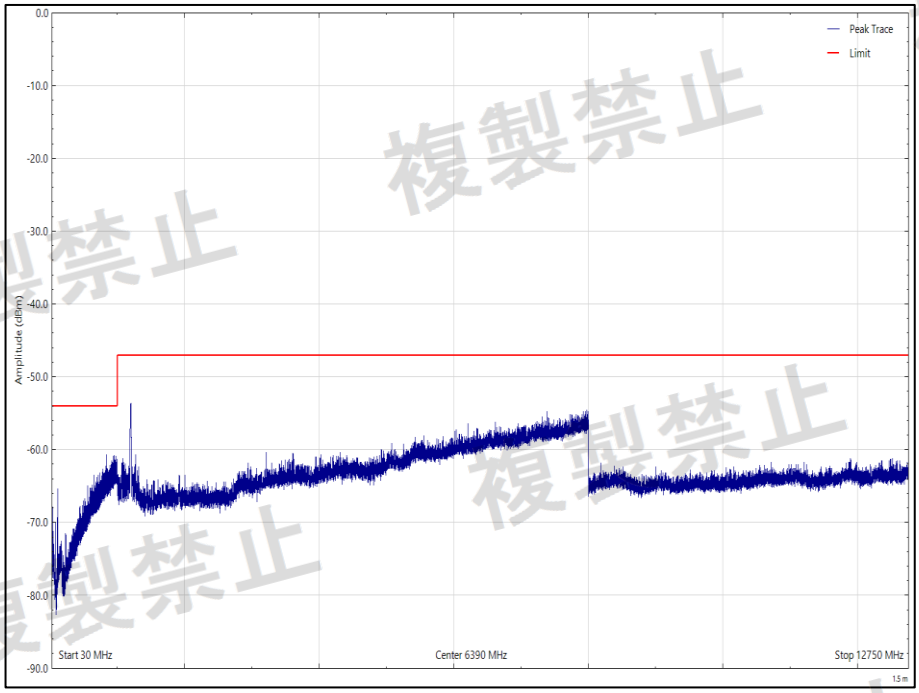

Figure 136 - CH13_802.11b_Rx_2472, 30 MHz to 25 GHz, Vertical (Peak)

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
1198.821	-48.72	-47.00	-1.72	RMS	322	100	Vertical

Table 51- CH14_802.11b_Rx_2484, 30 MHz to 25 GHz

No other emissions found within 6 dB of the limit.

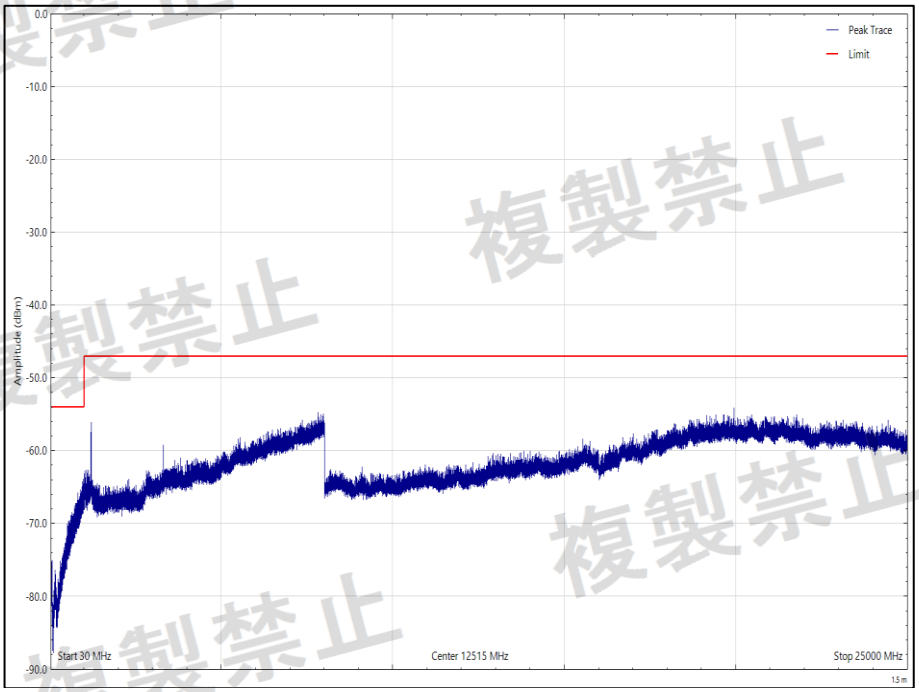

Figure 137 - CH14_802.11b_Rx_2484, 30 MHz to 25 GHz, Horizontal (Peak)

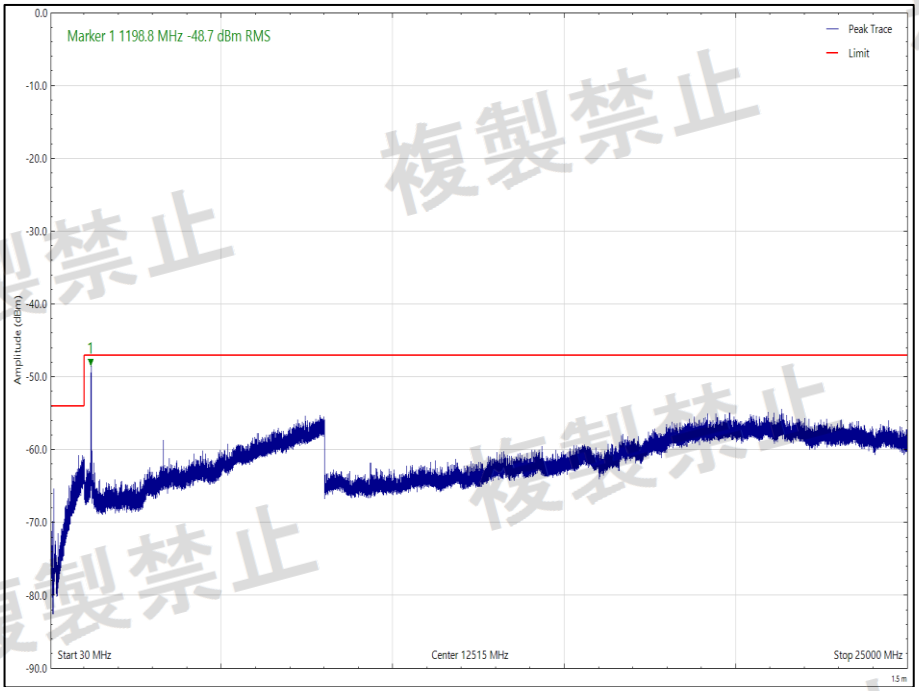

Figure 138 - CH14_802.11b_Rx_2484, 30 MHz to 25 GHz, Vertical (Peak)

ARIB STD-T66, Limit Clause 3.3 (1)

The limit at which secondary radiation will not hinder the function of other radio equipment is, if a fictional antenna circuit with the same electrical constant as the receiving antenna were to be used in calculations, at most 4nW if using a frequency below 1GHz and at most 20nW if using a frequency above or equal to 1GHz.

2.5.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Dual Power Supply Unit	Hewlett Packard	6253A	292	-	O/P Mon
3m Semi-Anechoic Chamber	Rainford	RF Chamber 5	1545	36	23-Apr-2027
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Multimeter	Iso-tech	IDM101	2421	12	08-Nov-2024
Mast Controller	Maturo Gmbh	NCD	4810	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	4811	-	TU
4dB Attenuator	Pasternack	PE7047-4	4935	12	20-Jul-2024
Emissions Software	TUV SUD	EmX V3.2.0	5125	-	Software
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5215	12	09-Jul-2024
Antenna (DRG, 7.5 GHz to 18 GHz)	Schwarzbeck	HWRD750	5216	12	09-Jul-2024
Pre-Amplifier (1 GHz to 26.5 GHz)	Agilent Technologies	8449B	5445	12	25-May-2024
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5517	12	21-May-2024
EMI Test Receiver	Rohde & Schwarz	ESW44	5527	12	15-Jun-2024
Pre-Amplifier (8 GHz to 18 GHz)	Wright Technologies	APS06-0061	5596	12	27-Oct-2024
Cable (K-Type to K-Type, 2 m)	Junkosha	MWX241-02000KMSKMS/B	5934	12	18-Jun-2024
Double Ridge Active Horn Antenna (18-40 GHz)	Com-Power	AHA-840	6189	24	02-Jun-2024
Cable (N to N 8m)	Junkosha	MWX221-08000NMSNMS/B	6331	12	17-Feb-2025
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	6635	24	13-Jun-2025

Table 52

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment

2.6 Interference Protection Function

2.6.1 Specification Reference

ARIB STD-T66, Clause 3.4 (1)

2.6.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: WLAN MAC address: ec:f6:4c:a0:f:4 - Modification State 0

2.6.3 Date of Test

23-April-2024

2.6.4 Test Method

This test was performed in accordance with Notification 88, Annex 45, clause 9.

The EUT was powered by a DC Power Supply Unit at a nominal voltage of 3.3 VDC.

Evidence of the device transmitting a MAC address was captured by the Anritsu MT8862A control software.

2.6.5 Environmental Conditions

Ambient Temperature	24.6 °C
Relative Humidity	42.8 %

2.6.6 Test Results

2.4 GHz WLAN Conducted Tests

Result: The client device under test transmitted an identification code to the master device to identify itself as a valid/authorised client.

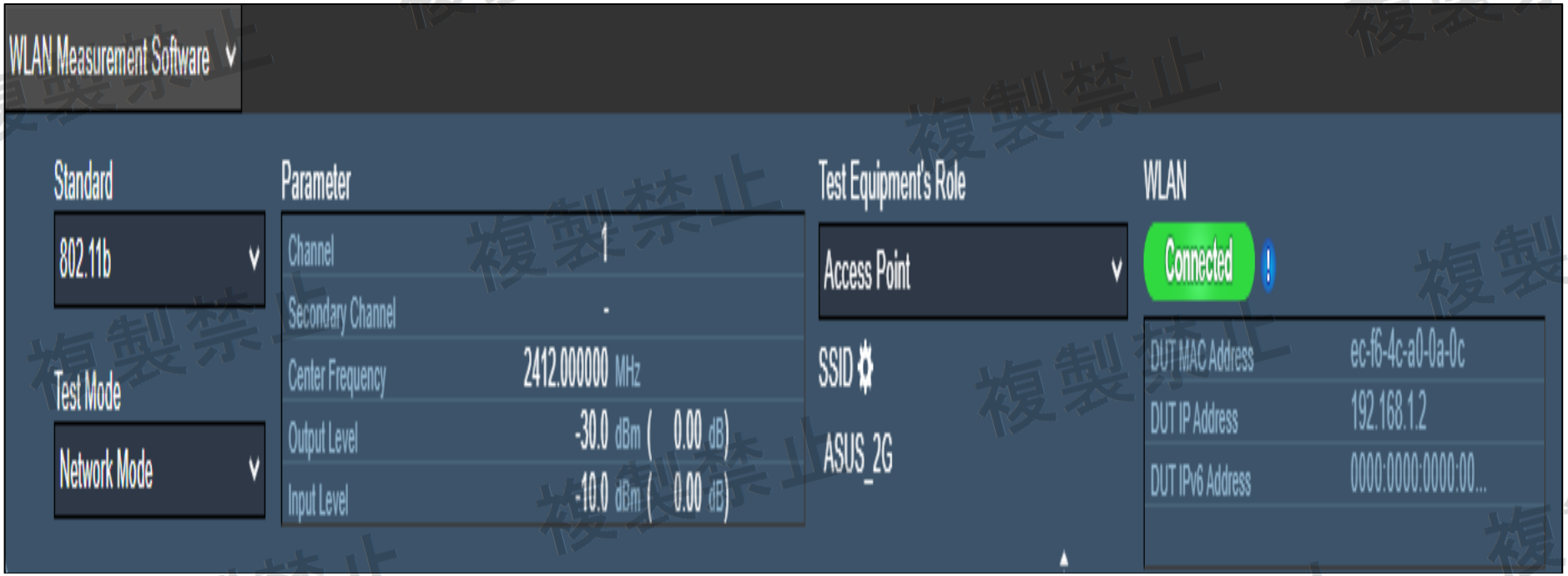

Figure 139 - Evidence

Radio Equipment Regulations Article 9-4, paragraph 1, item 8

Client devices should send an identification code to the master device to identify itself as a valid/authorized client.

2.6.7 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 Expires
Cable 2.92m	Junkosha	MWX241-01000KMS	5413	12	21-May-2024
Cable (K Type 2m)	Junkosha	MWX241-02000KMS	5421	12	07-Mar-2025
Humidity & Temperature meter	R.S Components	1364	6148	12	21-Jul-2024
Test Coupling Network	TUV SUD	TUV_RxTest_001	6387	12	04-Sep-2024
Wireless Connectivity Test Set	Anritsu	MT8862A-002	6524	12	21-Jul-2024

Table 53

2.7 Antenna Gain

2.7.1 Specification Reference

ARIB STD-T66, Clause 3.6 (2)

2.7.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: WLAN MAC address: ec:f6:4c:a0:f:4 - Modification State 0

2.7.3 Date of Test

17-April-2024

2.7.4 Test Method

ARIB STD-T66 Version 3.7 (See 3.6 (2)).

The maximum half power beamwidth was calculated by determining the EIRP relative to an antenna with a transmitting power of 12.14 dBm/MHz (16.37 mW/MHz).

A = EIRP (mW/MHz) / 16.37

Maximum Half-Power Beamwidth = 360 degrees / A.

2.7.5 Environmental Conditions

Ambient Temperature	22.4 °C
Relative Humidity	47.5 %

2.7.6 Test Results

2.4 GHz WLAN Conducted Tests

Parameter	Results
Frequency Range (MHz)	2400 MHz -2484 MHz
Antenna Gain (dBi)	4.28 dBi #
Half-Power Beamwidth	360 degrees
EIRP (mW/MHz)	12.14 dBm/MHz EIRP (16.37 mW/MHz)
A	1
Calculated Maximum Half-Power Beamwidth	360 degrees

Table 54

ARIB STD-T66, Limit Clause 3.6 (2)

The absolute gain of transmitting antennas must be at most 12.14 dB.

Any antenna with a peak gain less than or equal to 4.28 dBi may be used based on the measured max power of 6.11 mW/MHz. Antennas with a higher gain may be permitted so long as the half-power beamwidth passes the criteria laid out in ARIB STD-T66 Limit Clause 3.2 (2) b, for example: An antenna with a max gain of 12.14 dBi must have a max half-power beamwidth of 58.93 degrees.

The integral antenna in the main model (SiW917Y1GA) is compliant with this requirement as it uses a gain of 2.26 dBi which is less than the maximum gain of 4.28 dBi to be compliant with a 360 degree half power beamwidth.

2.7.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 14.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Hygrometer	Rotronic	I-1000	3068	12	07-Nov-2024
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU0 01	6518	12	16-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_ CA	6529	12	16-Feb-2025
USB Wideband Power Sensor	Boonton	RTP5008	6587	12	13-Feb-2025

Table 55

3 Photographs

3.1 Equipment Under Test (EUT)

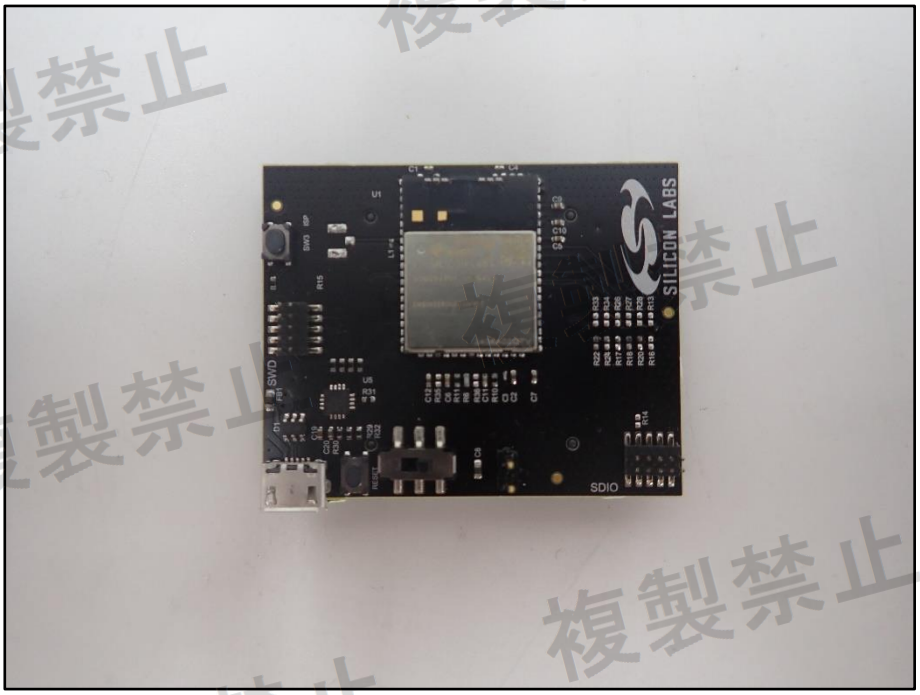

Figure 140 – EUT mounted on host certification board with integral antenna (SiW917Y1GA)

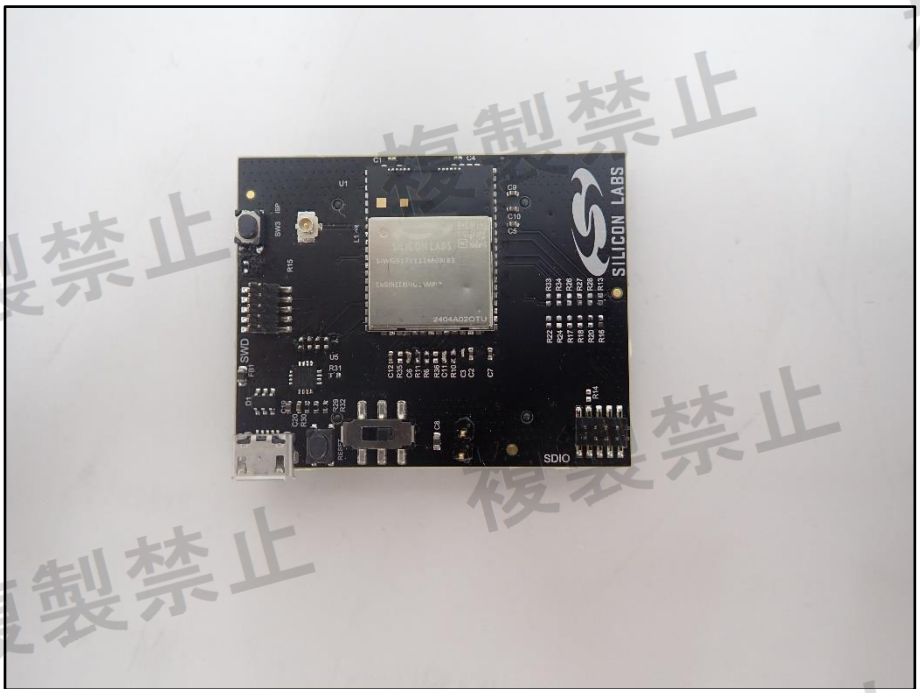

Figure 141 – EUT mounted on host certification board without integral antenna (SiW917Y1GN)

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4 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Antenna Power	± 0.64 dB
Frequency Deviation	± 358.56 kHz
Permissible Value of Spurious or Unnecessary Radiation Intensity	± 3.454 dB
Allowable Value for Occupied Bandwidth	±389.91 kHz
Limit on Secondary Radiation	±3.45 dB
Interference Protection Function	-
Antenna Gain	-

Table 56

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.

ANNEX A

Antenna Power at Extreme Voltages

Measurements in this section were performed at the request of the manufacturer to show that the RF Output power remained compliant when subjected to the extreme voltage conditions stated by the manufacturer for the requirements of Japan MIC Radio Law.

Antenna Power

Specification Reference

ARIB STD-T66, Clause 3.2 (2)

Equipment Under Test and Modification State

SiW917Y1GN, S/N: WLAN MAC address: ec:f6:4c:a0:f:4 - Modification State 0

Date of Test

29-April-2024

Test Method

This test has been performed using Power meter and spectrum analyser. A spectrum analyser was tuned to the test frequency with the relevant RBW to match the EIRP limit. The max hold function on the analyser was used to obtain EIRP output power.

A power meter was used to obtain the conducted output power that was compared against the customers declared power.

The EUT was supplied directly with a DC PSU.

Environmental Conditions

Ambient Temperature	20.2 °C
Relative Humidity	41.3 %

Test Results

2.4 GHz WLAN - Extreme Voltages

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz (WW)
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	3.6		

DUT Configuration			
Mode:	802.11b	Duty Cycle (%):	100.0
Data Rate:	1 Mbps	DCCF (dB):	0.00
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	4.28#
Supply Voltage:	See Table	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Supply Voltage	Power Index	Conducted Output Power (mW/MHz)	Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
2412	3.63 V DC	15	6.11	6.2	-1.46	10.00	-80 ≤ n ≤ +20
2412	3.0 V DC	15	5.57	6.2	-10.13	10.00	-80 ≤ n ≤ +20
2442	3.63 V DC	15	5.92	6.2	-4.59	10.00	-80 ≤ n ≤ +20
2442	3.0 V DC	15	5.35	6.2	-13.78	10.00	-80 ≤ n ≤ +20
2472	3.63 V DC	15	4.98	6.2	-19.72	10.00	-80 ≤ n ≤ +20
2472	3.0 V DC	15	4.79	6.2	-22.80	10.00	-80 ≤ n ≤ +20
2484	3.63 V DC	16	5.81	6.6	-12.01	10.00	-80 ≤ n ≤ +20
2484	3.0 V DC	16	5.51	6.6	-16.54	10.00	-80 ≤ n ≤ +20

Table 57 - PSD Results

Test Frequency (MHz)	Supply Voltage (VDC)	Power Index	Conducted Output Power (dBm)			
			A	B	C	D
2412	3.63	15	16.01	-	-	-
2412	3.00	15	15.54	-	-	-
2442	3.63	15	15.69	-	-	-
2442	3.00	15	15.40	-	-	-
2472	3.63	15	15.10	-	-	-
2472	3.00	15	14.93	-	-	-
2484	3.63	16	16.45	-	-	-
2484	3.00	16	15.65	-	-	-

Table 58 - Output Power Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz (WW)
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	3.6		

DUT Configuration			
Mode:	802.11g	Duty Cycle (%):	100.0
Data Rate:	6 Mbps	DCCF (dB):	0.00
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	4.28#
Supply Voltage:	See Table	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Supply Voltage	Power Index	Conducted Output Power (mW/MHz)	Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
2412	3.63 V DC	16	4.13	4.8	-13.95	10.00	-80 ≤ n ≤ +20
2412	3.0 V DC	16	3.47	4.8	-27.76	10.00	-80 ≤ n ≤ +20
2442	3.63 V DC	18	5.62	6	-6.28	10.00	-80 ≤ n ≤ +20
2442	3.0 V DC	18	4.63	6	-22.76	10.00	-80 ≤ n ≤ +20
2472	3.63 V DC	14	2.59	3	-13.53	10.00	-80 ≤ n ≤ +20
2472	3.0 V DC	14	2.29	3	-23.64	10.00	-80 ≤ n ≤ +20

Table 59 – PSD Results

Test Frequency (MHz)	Supply Voltage (VDC)	Power Index	Conducted Output Power (dBm)			
			A	B	C	D
2412	3.63	16	17.41	-	-	-
2412	3.00	16	16.64	-	-	-
2442	3.63	18	18.73	-	-	-
2442	3.00	18	17.88	-	-	-
2472	3.63	14	15.37	-	-	-
2472	3.00	14	14.73	-	-	-

Table 60 - Output Power Tolerance Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz (WW)
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	3.6		

DUT Configuration			
Mode:	802.11n HT20	Duty Cycle (%):	100.0
Modulation Coding Scheme:	MCS0	DCCF (dB):	0.00
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	4.28#
Supply Voltage:	See Table	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Supply Voltage	Power Index	Conducted Output Power (mW/MHz)	Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
2412	3.63 V DC	14	2.38	2.22	7.06	10.00	-80 ≤ n ≤ +20
2412	3.0 V DC	14	2.14	2.2	-2.82	10.00	-80 ≤ n ≤ +20
2442	3.63 V DC	18	5.00	5.7	-12.27	10.00	-80 ≤ n ≤ +20
2442	3.0 V DC	18	4.18	5.7	-26.70	10.00	-80 ≤ n ≤ +20
2472	3.63 V DC	14	2.01	2.3	-12.65	10.00	-80 ≤ n ≤ +20
2472	3.0 V DC	14	1.77	2.3	-23.22	10.00	-80 ≤ n ≤ +20

Table 61 - PSD Results

Test Frequency (MHz)	Supply Voltage (VDC)	Power Index	Conducted Output Power (dBm)			
			A	B	C	D
2412	3.63	14	15.29	-	-	-
2412	3.00	14	14.72	-	-	-
2442	3.63	18	18.43	-	-	-
2442	3.00	18	17.68	-	-	-
2472	3.63	14	14.51	-	-	-
2472	3.00	14	13.97	-	-	-

Table 62 - Output Power Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz (WW)
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	3.6		

DUT Configuration			
Mode:	802.11ax HE20 SU	Duty Cycle (%):	100.0
Modulation Coding Scheme:	MCS0x1	DCCF (dB):	0.00
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	4.28#
Supply Voltage:	See Table	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Supply Voltage	Power Index	Conducted Output Power (mW/MHz)	Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
2412	3.63 V DC	8	0.72	0.8	-10.07	10.00	-80 ≤ n ≤ +20
2412	3.0 V DC	8	0.64	0.8	-19.85	10.00	-80 ≤ n ≤ +20
2442	3.63 V DC	9	0.73	0.8	-8.82	10.00	-80 ≤ n ≤ +20
2442	3.0 V DC	9	0.64	0.8	-19.48	10.00	-80 ≤ n ≤ +20
2472	3.63 V DC	9	0.63	0.8	-21.31	10.00	-80 ≤ n ≤ +20
2472	3.0 V DC	9	0.61	0.8	-23.63	10.00	-80 ≤ n ≤ +20

Table 63 - PSD Results

Test Frequency (MHz)	Supply Voltage (VDC)	Power Index	Conducted Output Power (dBm)			
			A	B	C	D
2412	3.63	8	10.44	-	-	-
2412	3.00	8	9.91	-	-	-
2442	3.63	9	10.52	-	-	-
2442	3.00	9	9.97	-	-	-
2472	3.63	9	9.83	-	-	-
2472	3.00	9	9.69	-	-	-

Table 64 - Output Power Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz (WW)
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	3.6		

DUT Configuration			
Mode:	802.11ax HE20 RU26	Duty Cycle (%):	100.0
Modulation Coding Scheme:	MCS0x1	DCCF (dB):	0.00
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	4.28#
Supply Voltage:	See Table	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Supply Voltage	Power Index	Conducted Output Power (mW/MHz)	Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
2412	3.63 V DC	8	4.81	6.74	-29.29	10.00	-80 ≤ n ≤ +20
2412	3.0 V DC	8	4.23	6.75	-37.84	10.00	-80 ≤ n ≤ +20
2442	3.63 V DC	9	5.55	6.78	-18.44	10.00	-80 ≤ n ≤ +20
2442	3.0 V DC	9	5.43	6.76	-20.11	10.00	-80 ≤ n ≤ +20
2472	3.63 V DC	9	4.40	6.62	-35.36	10.00	-80 ≤ n ≤ +20
2472	3.0 V DC	9	4.38	6.79	-35.66	10.00	-80 ≤ n ≤ +20

Table 65 - PSD Results

Test Frequency (MHz)	Supply Voltage (VDC)	Power Index	Conducted Output Power (dBm)			
			A	B	C	D
2412 (RU26.0)	3.63	8	9.53	-	-	-
2412 (RU26.0)	3.00	8	8.97	-	-	-
2442 (RU26.0)	3.63	9	10.13	-	-	-
2442 (RU26.0)	3.00	9	10.05	-	-	-
2472 (RU26.8)	3.63	9	9.22	-	-	-
2472 (RU26.8)	3.00	9	9.09	-	-	-

Table 66 - Output Power Results

ARIB STD T-66, Limit Clause 3.2 (3)

PSD:
≤ 10 mW/1MHz

Total Power:
The upper and lower allowable deviations in antenna power are 20% and 80%, respectively. However, these limits are for maximum rate antenna power. If the antenna power is reduced for communication reasons, there are no regulated upper or lower allowable deviations.

* Only the upper antenna tolerance of +20% applies to the Radio Equipment Regulations Article 14(8)(3) for radio stations of low-power data communications systems using radio waves with frequencies exceeding 2400 MHz and up to 2483.5 MHz.

The maximum antenna gain for this unit to pass the requirements has been found to be 4.28 dBi for antennas with a maximum half power beamwidth of 360 degrees. This is due to the max measurement of 6.11 mW/MHz (See Annex A). Higher gain antennas may be used so long as the half power beamwidth passes the requirements in ARIB STD-T66 3.6(2).

Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Multimeter	Fluke	75 Mk3	455	12	15-Dec-2024
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
USB Power Sensor	Boonton	RTP5008	5833	12	12-Jul-2024
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module 60V 20A 300W	Keysight Technologies	N6754A	5836	-	O/P Mon
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	-	26-Jul-2024
SCU Cable Assembly SCU	TUV SUD	SPECTRUM_SCU_CA	6638	12	26-Jul-2024

Table 67

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment

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ANNEX B – Integral Antenna (SiW917YGA)

Antenna Data

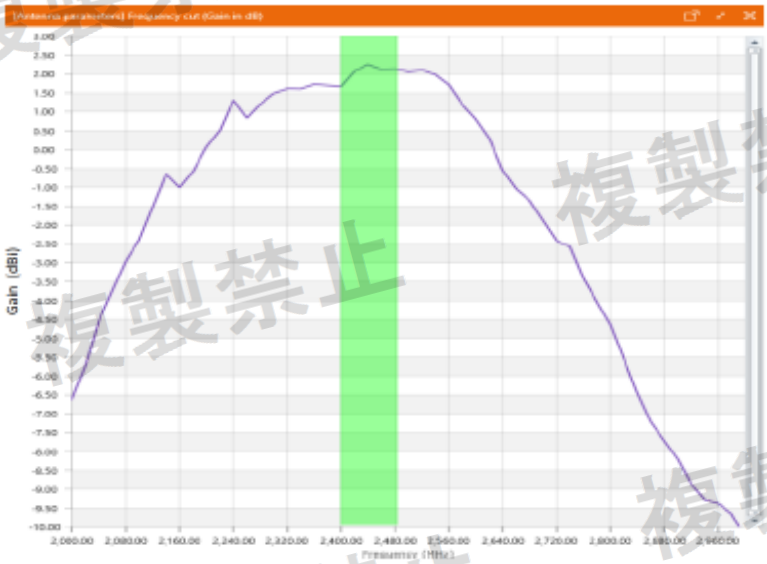
2. Antenna specification

Parameter	Min	Typ	Max	Unit
Frequency Range of Operation	2400	-	2484	MHz
Peak Gain (Relative to Isotropic)	-	-	+2.26	dBi
Efficiency	-1.06	-	-0.73	dB
VSWR	-	-	2:1	-
Reference Impedance	-	50	-	Ω
Half-power Beamwidth	73.4	-	274.0	Deg
Trace Thickness	-	35	-	µm
Trace Length	-	14	-	mm
Trace Width	-	0.5	-	mm

Table 1: Antenna Specification

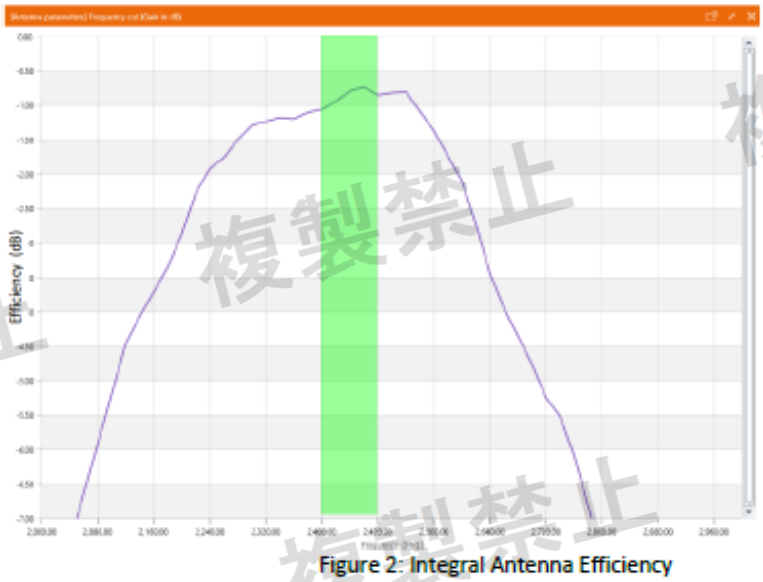
Note: This integral antenna meets the specifications in the table above if the host board is designed so that it takes into account the design guidelines and the integration constraints stipulated in the module's user manual / datasheet.

3. Gain, Efficiency and Radiation patterns



Frequency (MHz)	Gain (dBi)	
2300	1.49	
2320	1.62	
2340	1.61	
2360	1.73	
2380	1.72	
2400	1.67	
2420	2.08	
2440	2.26	PEAK
2460	2.12	
2480	2.15	
2500	2.06	
2520	2.1	
2540	1.99	
2560	1.72	
2580	1.19	
2600	0.8	
2620	0.29	
2640	-0.54	
2660	-1.04	
2680	-1.34	
2700	-1.92	

Figure 1: Integral Antenna Gain



Frequency (MHz)	Efficiency (dB)	
2300	-1.29	
2320	-1.23	
2340	-1.18	
2360	-1.2	
2380	-1.1	
2400	-1.06	MIN
2420	-0.94	
2440	-0.79	
2460	-0.73	MAX
2480	-0.85	
2500	-0.82	
2520	-0.8	
2540	-1.07	
2560	-1.37	
2580	-1.72	
2600	-2.1	
2620	-2.72	
2640	-3.44	
2660	-3.94	
2680	-4.35	
2700	-4.76	

Figure 2: Integral Antenna Efficiency

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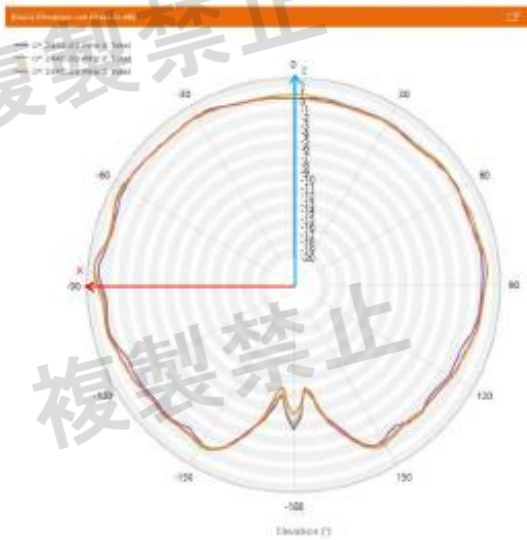
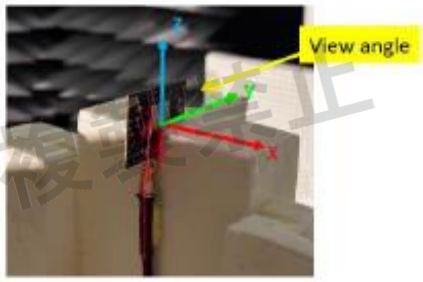
Phi0 Gain cut (dBi)

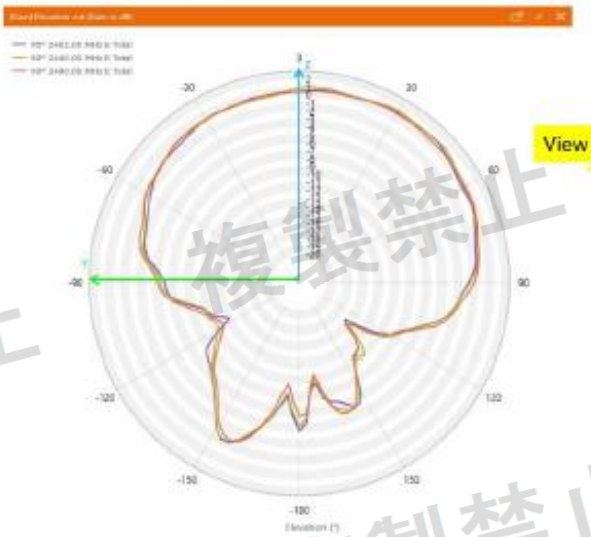


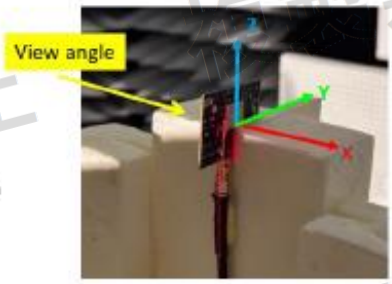


Frequency	3dB beam width
2402MHz	269.6 deg
2440MHz	227.4 deg
2480MHz	274.0 deg

Figure 3: Integral Antenna Radiation Pattern Phi 0°

Phi90 Gain cut





Frequency	3dB beam width
2402MHz	140.9 deg
2440MHz	133.7 deg
2480MHz	150.0 deg

Figure 4: Integral Antenna Radiation Pattern Phi 90°

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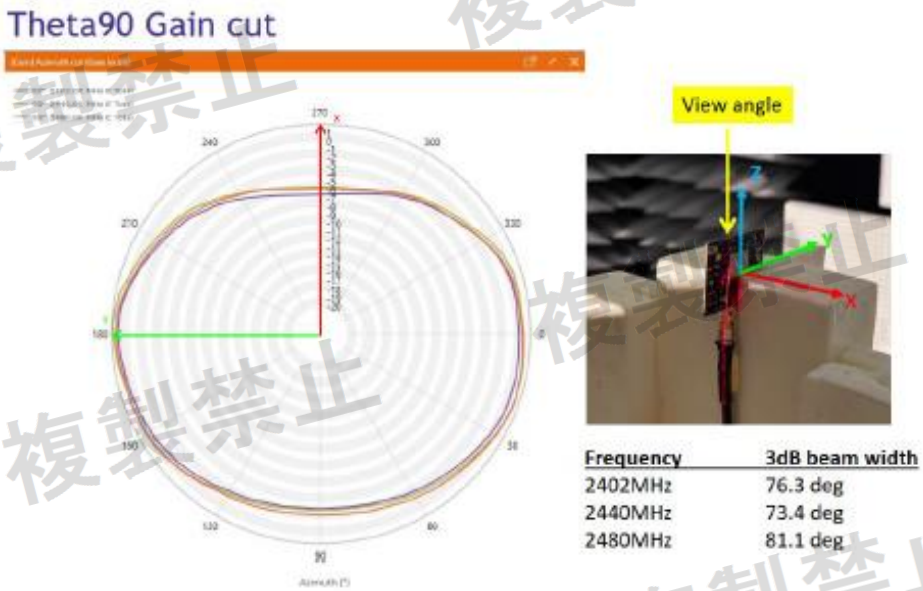

Frequency	3dB beam width
2402MHz	76.3 deg
2440MHz	73.4 deg
2480MHz	81.1 deg

Figure 5: Integral Antenna Radiation Pattern Theta 90°