

Radio Test Report

Silicon Laboratories Finland Oy

Main Model: SiW917Y1GA

Series Model: SiW917Y1GN



In accordance with ETSI EN 300 328
(2.4 GHz WLAN)

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COMMERCIAL-IN-CONFIDENCE

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SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Steve Marshall	Senior Engineer	Authorised Signatory	04 September 2024

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with ETSI EN 300 328: V2.2.2 (2019-07) for the tests detailed in section 1.3.



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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	02-September-2024
2	Changed MAC address in chapters 2.9.2 and 2.10.2	04-September-2024

Table 1

1.2 Introduction

Applicant	Silicon Laboratories Finland Oy
Manufacturer	Silicon Laboratories Finland Oy
Model Number(s)	Main Model SiW917Y1GA Series Model: SiW917Y1GN
Serial Number(s)	WLAN MAC address: ec:f6:4c:a0:f:4 WLAN MAC address: ec:f6:4c:a0:0:d4 WLAN MAC address: ec:f6:4c:a0:ac:c
Hardware Version(s)	1.0
Software Version(s)	Stack's "Connectivity Firmware" version 2.10.1.2.0.4
Number of Samples Tested	3
Test Specification/Issue/Date	ETSI EN 300 328: V2.2.2 (2019-07)
Order Number	PTP ~ 6000530772
Date	08-March-2024
Date of Receipt of EUT	21-February-2024 and 04-March-2024
Start of Test	07-March-2024
Finish of Test	23-April-2024
Name of Engineer(s)	Thomas Biddlecombe, Ahmad Javid and Stefan Gilfedder



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with ETSI EN 300 328 is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: 2.4 GHz WLAN Conducted Tests (SiW917Y1GN)				
2.1	4.3.2.2	RF Output Power	Pass	
2.2	4.3.2.3	Power Spectral Density	Pass	
2.3	4.3.2.6	Adaptivity (non-FHSS)	Pass	
2.4	4.3.2.7	Occupied Channel Bandwidth	Pass	
2.5	4.3.2.8	Transmitter Unwanted Emissions in the Out-of-Band Domain	Pass	
2.6	4.3.2.11	Receiver Blocking	Pass	
Configuration and Mode: 2.4 GHz WLAN - PCB Trace Antenna (SiW917Y1GA)				
2.7	4.3.2.9	Transmitter Unwanted Emissions in the Spurious Domain	Pass	
2.8	4.3.2.10	Receiver Spurious Emissions	Pass	
Configuration and Mode: 2.4 GHz WLAN - ANT-2.4-CW-CT-SMA/RPS Antenna (SiW917Y1GN)				
2.9	4.3.2.9	Transmitter Unwanted Emissions in the Spurious Domain	Pass	
2.10	4.3.2.10	Receiver Spurious Emissions	Pass	

Table 2

Note: For conducted testing, antenna gain was taken as 2.80 dBi as per the ANT-2.4-CW-CT-SMA/RPS Antenna as this is the highest gain antenna.



1.4 Application Form

Equipment Description

Technical Description: <i>(Please provide a brief description of the intended use of the equipment)</i>	Bluetooth Low Energy (LE), and Wi-Fi 802.11b/g/n/ax wireless radio module
Legal Manufacturer:	Silicon Laboratories Finland Oy
Model:	Main Model: SiW917Y1GA (with integral antenna) Series Model: SiW917Y1GN (with no integral antenna but RF pin)
Part Number:	Not Applicable
Hardware Version:	1.0
Software Version:	Stack's "Connectivity Firmware" version 2.10.1.2.0.4

Table 3

The type of Wideband Data Transmission Equipment

FHSS ☐	non-FHSS ☒
-------------------------------	--

Table 4

In case of FHSS

In case of non-Adaptive FHSS equipment:	
The number of Hopping Frequencies:	
In case of Adaptive FHSS equipment:	
The maximum number of Hopping Frequencies:	
The minimum number of Hopping Frequencies:	
The (average) dwell Time:	

Table 5

Adaptive/non-adaptive Equipment

Non-adaptive Equipment	☐
Adaptive Equipment without the possibility to switch to a non-adaptive mode	☒
Adaptive Equipment which can also operate in a non-adaptive mode	☐

Table 6



In case of Adaptive Equipment

The maximum Channel Occupancy Time implemented by the equipment:	12.5	ms
The equipment has implemented an LBT mechanism		☒
In case of non-FHSS equipment:		
The equipment is Frame Based equipment		☐
The equipment is Load Based equipment		☒
The equipment can switch dynamically between Frame Based and Load Based equipment		☐
The CCA time implemented by the equipment:		μs
The equipment has implemented a DAA mechanism		☐
The equipment can operate in more than one adaptive mode		☐

Table 7

In case of Non-adaptive Equipment

The maximum RF Output Power (e.i.r.p.)		dBm
The maximum (corresponding) Duty Cycle		%
Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared)		

Table 8

The worst case operational mode for each of the following tests

RF Output Power	802.11b 1 Mbps
Power Spectral Density	802.11g 6 Mbps 802.11n HT20 MCS0 802.11ax HE20 MCS0
Duty cycle, Tx-Sequence, Tx-gap	N/A
Accumulated Transmit Time, Frequency Occupation & Hopping Sequence (only for FHSS equipment)	N/A
Hopping Frequency Separation (only for FHSS equipment)	N/A
Medium Utilisation:	N/A
Adaptivity & Receiver Blocking:	802.11b 1 Mbps
Nominal Channel Bandwidth	802.11b 1 Mbps
Transmitter unwanted emissions in the OOB domain	802.11g 6 Mbps 802.11n HT20 MCS0 802.11ax HE20 MCS0
Transmitter unwanted emissions in the spurious domain	802.11b 1 Mbps 802.11g 6 Mbps 802.11g HT20 MCS0 802.11ax HE20 MCS0
Receiver spurious emissions	Rx Mode

Table 9



The different transmit operating modes (tick all that apply)

Operating mode 1: Single Antenna Equipment	☒
Equipment with only one antenna	☒
Equipment with two diversity antennas but only one antenna active at any moment in time	☐
Smart Antenna Systems with two or more antennas but operating in a (legacy) mode where only one antenna is used. (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)	☐
Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming	☐
Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)	☐
High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1	☐
High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2	☐
Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming	☐
Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)	☐
High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1	☐
High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2	☐
NOTE: Add more lines if more channel bandwidths are supported.	

Table 10

In case of Smart Antenna Systems

The number of Receive chains:		
The number of Transmit chains:		
symmetrical power distribution	☐	
asymmetrical power distribution	☐	
In case of beam forming, the maximum (additional) beam forming gain:		dB
NOTE: The additional beam forming gain does not include the basic gain of a single antenna.		

Table 11

Operating Frequency Range(s) of the Equipment

Operating Frequency Range 1:	2412	MHz to	2472	MHz
Operating Frequency Range 2:		MHz to		MHz
NOTE: Add more lines if more Frequency Ranges are supported.				

Table 12

Nominal Channel Bandwidth

Nominal Channel Bandwidth 1:	20	MHz
Nominal Channel Bandwidth 2:		MHz
NOTE: Add more lines if more channel bandwidths are supported.		

Table 13



Type of Equipment (stand-alone, combined, plug-in radio device, etc.)

Stand-alone:		☐
Combined Equipment:		☐
Plug-in radio device:		☐
Other:	☒	Please specify: Radio module meant for integration in host systems

Table 14

The normal and extreme operating conditions that apply to the equipment

Normal operating conditions (if applicable):						
Operating temperature:			23	°C		
Other (please specify if applicable):				°C		
Extreme operating conditions:						
Operating temperature:		Minimum	-40	°C to Maximum	+85	°C
Other (please specify if applicable):		Minimum		°C to Maximum		°C
Details provided are for the:						
stand-alone equipment					☒	
combined equipment					☐	
test jig / validation, characterization, and certification host board					☒	

Table 15



The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p levels

Antenna Type:			
Integral Antenna (information to be provided in case of conducted measurements)			☒
Antenna Gain:	2.26	dBi	
If applicable, additional beamforming gain (excluding basic antenna gain):		dB	
Temporary RF connector provided			☐
No temporary RF connector provided			☐
Dedicated Antennas (equipment with antenna connector or radio module with RF pin)			☒
Single power level with corresponding antenna(s)			☒
Multiple power settings and corresponding antenna(s)			☐
Number of different Power Levels:			
Power Level 1			dBm
Power Level 2			dBm
NOTES: Add more lines in case the equipment has more power levels. These power levels are conducted power levels (at antenna connector).			
For each of the power levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable			
Power Level 1 (or single power level) of Dedicated Antennas			dBm
Number of antenna assemblies provided for this power level:			1
Assembly #	Gain (dBi)	e.i.r.p (dBm)	Part number or model number
1	2.80	Max:19.70	Reference external antenna (not sold with radio module under scope) is manufactured by TE Connectivity Ltd. (previously Linx Technologies Inc.), and has model name of ANT-2.4-CW-CT-RPS
2			
3			
NOTE: Add more rows in case more antenna assemblies are supported for this power level.			
Power Level 2 of Dedicated Antennas			dBm
Number of antenna assemblies provided for this power level:			
Assembly #	Gain (dBi)	e.i.r.p (dBm)	Part number or model number
1			
2			
3			
NOTE: Add more rows in case more antenna assemblies are supported for this power level.			

Table 16



The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined equipment or test jig in case of plug-in devices

Details provided are for the:				
stand-alone equipment				☒
combined equipment				☐
test jig				☐
Supply Voltage				
AC mains	☐	AC voltage:		V
DC	☒	DC voltage:	Nominal 3.3, Min 3.0, Max: 3.63	V
In case of DC, indicate the type of power source				
Internal Power Supply				☐
External Power Supply or AC/DC adapter				☐
Battery				☐
Other:	☒	Please specify:	Module under scope is partially internally regulated. Regulated DC supply is provided to the module by the host board (or by an external power source during compliance testing in the lab, when applicable)	

Table 17

Describe the test modes available which can facilitate testing

--

Table 18

The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3] IEEE 802.15.4™, proprietary, etc.)

IEEE 802.11b/g/n/ax (Wi-Fi)

Table 19

If applicable, the statistical analysis referred in clause 5.4.1 g)

N/A

Table 20

If applicable, the statistical analysis referred in clause 5.4.1 r)

N/A

Table 21



Geo-location capability supported by the equipment

Yes	☒
The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user.	☒
No	☐
Notes: The simple geo-location capability is based on the country ID element in incoming beacons from Access Points in range. In the absence of these, module's operations will default to the most restrictive of the regulatory requirements, taking into account all the regions it is certified for.	

Table 22

Configuration for testing (see clause 5.3.2.3 of ETSI EN 300 328 V2.2.2)

From all combinations of conducted power settings and intended antenna assembly(ies) specified in clause 5.4.1 m), specify the combination resulting in the highest e.i.r.p. for the radio equipment.				
Unless otherwise specified in ETSI EN 300 328, this power setting is to be used for testing against the requirements of ETSI EN 300 328. In case there is more than one such conducted power setting resulting in the same (highest) e.i.r.p. level, the highest power setting is to be used for testing. See also ETSI EN 300 328, clause 5.3.2.3.				
Highest overall e.i.r.p. value:			19.50	dBm
Corresponding Antenna assembly gain:	2.80	dB	Antenna Assembly #:	1
Corresponding conducted power setting: (also the power level to be used for testing)	Nominal: 15	dBm	Listed as Power Setting #:	Index: 15

Table 23

Modulation

ITU Class(es) of emission:	20M0 G1D/D1D/D2D			
Can the transmitter operate unmodulated?	Yes	☒	No	☐
Notes:	Module can transmit an unmodulated Carrier Wave (CW, Constant Tone Signal) only in Test Mode, for compliance testing in the lab			

Table 24

Duty Cycle

The transmitter is intended for:	
Continuous duty	☒
Intermittent duty	☐
Continuous operation possible for testing purposes	☐

Table 25



About the UUT

The equipment submitted are representative production models	☐
If not, the equipment submitted are pre-production models?	☒
If pre-production equipment are submitted, the final production equipment will be identical in all respects with the equipment tested	☒
If not, supply full details:	

Table 26

Additional items and/or supporting equipment provided

Spare batteries (e.g. for portable equipment)	☐
Battery charging device	☐
External Power Supply or AC/DC adapter	☐
Test Jig or interface box	☐
RF test fixture (for equipment with integrated antennas)	☐
Combined equipment	☐
Manufacturer:	☐
Model:	☐
Model Name:	☐
User Manual	☒
Technical documentation (Handbook and circuit diagrams)	☒

Table 27

Cable Loss

Adapter Cable Loss (Conducted sample)	0.5	dB
--	-----	----

Table 28

Data in the tables above is provided by the Manufacturer.



1.5 Product Information

1.5.1 Technical Description

Bluetooth Low Energy (LE), and Wi-Fi 802.11b/g/n/ax wireless radio module.

1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.

The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Model: SiW917Y1GN, Serial Number: WLAN MAC address: ec:f6:4c:a0:f:4			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: SiW917Y1GN, Serial Number: WLAN MAC address: ec:f6:4c:a0:0:d4			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: SiW917Y1GA, Serial Number: WLAN MAC address: ec:f6:4c:a0:ac:c			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 29

Note: The serial numbers used throughout this report are the MAC address of the equipment under test.



1.8 Test Location

TÜV SÜD conducted the following tests at our Octagon House Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: 2.4 GHz WLAN Conducted Tests		
RF Output Power	Thomas Biddlecombe	UKAS
Power Spectral Density	Thomas Biddlecombe	UKAS
Occupied Channel Bandwidth	Thomas Biddlecombe	UKAS
Transmitter Unwanted Emissions in the Out-of-Band Domain	Thomas Biddlecombe	UKAS
Configuration and Mode: 2.4 GHz WLAN - PCB Trace Antenna		
Transmitter Unwanted Emissions in the Spurious Domain	Ahmad Javid	UKAS
Receiver Spurious Emissions	Ahmad Javid	UKAS
Configuration and Mode: 2.4 GHz WLAN - ANT-2.4-CW-CT-SMA/RPS Antenna		
Transmitter Unwanted Emissions in the Spurious Domain	Ahmad Javid	UKAS
Receiver Spurious Emissions	Ahmad Javid	UKAS

Table 30

Office Address:

TÜV SÜD
Octagon House
Concorde Way
Fareham
Hampshire
PO15 5RL
United Kingdom

TÜV SÜD conducted the following tests at our Concorde Park Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: 2.4 GHz WLAN Conducted Tests		
Adaptivity (non-FHSS)	Stefan Gilfedder	UKAS
Receiver Blocking	Stefan Gilfedder	UKAS

Table 31

Office Address:

TÜV SÜD
Concorde Park
Concorde Way
Fareham
Hampshire
PO15 5FG
United Kingdom



2 Test Details

2.1 RF Output Power

2.1.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.2

2.1.2 Equipment Under Test and Modification State

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

2.1.3 Date of Test

07-March-2024

2.1.4 Test Method

This test was performed in accordance with ETSI EN 300 328, clause 5.4.2.2.1.2.

The EUT was supplied with 3.3 VDC directly with a DC PSU.

2.1.5 Environmental Conditions

Ambient Temperature 21.7 °C

Relative Humidity 34.2 %

2.1.6 Test Results

2.4 GHz WLAN Conducted Tests

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.2.3	Test Method(s):	5.4.2.2.1.2
Specification Limit:	20 dBm EIRP		

DUT Configuration			
Mode:	802.11b	Duty Cycle (%):	100.0
Data Rate:	1 Mbps	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Antenna Gain (dBi)	EIRP Output Power (dBm)		
			+23 °C	-40 °C	+85 °C
2412 (CH1)	13.00	2.80	17.52	17.89	15.69
2442 (CH7)	13.00	2.80	16.88	17.55	15.09
2472 (CH13)	13.00	2.80	17.20	18.18	15.17

Table 32 - RF Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.2.3	Test Method(s):	5.4.2.2.1.2
Specification Limit:	20 dBm EIRP		

DUT Configuration			
Mode:	802.11g	Duty Cycle (%):	100.0
Data Rate:	6 Mbps	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Antenna Gain (dBi)	EIRP Output Power (dBm)		
			+23 °C	-40 °C	+85 °C
2412 (CH1)	15.00	2.80	19.30	19.21	18.63
2442 (CH7)	15.00	2.80	19.41	19.24	18.03
2472 (CH13)	15.00	2.80	19.28	19.48	18.05

Table 33 - RF Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.2.3	Test Method(s):	5.4.2.2.1.2
Specification Limit:	20 dBm EIRP		

DUT Configuration			
Mode:	802.11n HT20	Duty Cycle (%):	100.0
Modulation Coding Scheme:	MCS0	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Antenna Gain (dBi)	EIRP Output Power (dBm)		
			+23 °C	-40 °C	+85 °C
2412 (CH1)	15.00	2.80	18.96	19.37	18.11
2442 (CH7)	15.00	2.80	18.26	19.44	17.47
2472 (CH13)	15.00	2.80	18.56	19.70	17.50

Table 34 - RF Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.2.3	Test Method(s):	5.4.2.2.1.2
Specification Limit:	20 dBm EIRP		

DUT Configuration			
Mode:	802.11ax HE20 SU	Duty Cycle (%):	100.0
Modulation Coding Scheme:	MCS0x1	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Antenna Gain (dBi)	EIRP Output Power (dBm)		
			+23 °C	-40 °C	+85 °C
2412 (CH1)	7.00	2.80	12.85	11.87	11.55
2442 (CH7)	7.00	2.80	11.67	11.57	10.64
2472 (CH13)	7.00	2.80	11.68	11.68	10.53

Table 35 - RF Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.2.3	Test Method(s):	5.4.2.2.1.2
Specification Limit:	20 dBm EIRP		

DUT Configuration			
Mode:	802.11ax HE20 RU26	Duty Cycle (%):	99.8
Modulation Coding Scheme:	MCS0x1	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Antenna Gain (dBi)	EIRP Output Power (dBm)		
			+23 °C	-40 °C	+85 °C
2412 (CH1 RU26.0)	7.00	2.80	11.94	11.21	11.37
2442 (CH7 RU26.0)	7.00	2.80	11.17	11.03	10.09
2472 (CH13 RU26.8)	7.00	2.80	11.21	11.26	10.41

Table 36 - RF Output Power Results

ETSI EN 300 328, Limit Clause 4.3.2.2.3

The RF output power for non-FHSS equipment shall be equal to or less than 20 dBm.

NOTE: For Non-adaptive FHSS equipment, the manufacturer may have declared a reduced RF Output Power (see clause 5.4.1 m)) and associated Duty Cycle (see clause 5.4.1 e)) that will ensure that the equipment meets the requirement for the Medium Utilization (MU) factor further described in clause 4.3.2.5. This is verified by the conformance test referred to in clause 4.3.2.5.4. For non-adaptive non-FHSS equipment, where the manufacturer has declared an RF output power of less than 20 dBm e.i.r.p., the RF output power shall be equal to or less than that declared value. This limit shall apply for any combination of power level and intended antenna assembly.



2.1.7 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	79 Series III	411	12	12-Jan-2025
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
USB Power Sensor	Boonton	RTP5008	5833	12	12-Jul-2024
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module	Keysight Technologies	N6754A	5836	-	O/P Mon
Climatic Chamber	Weiss Technik	TempEvent T/180/40/3	5894	12	07-Jul-2024
GPSDR Frequency standard	Orolia	SecureSync 2402-053	6339	6	12-Mar-2024
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 37

TU – Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.2 Power Spectral Density

2.2.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.3

2.2.2 Equipment Under Test and Modification State

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

2.2.3 Date of Test

07-March-2024

2.2.4 Test Method

This test was performed in accordance with ETSI EN 300 328, clause 5.4.3.2.1 (Option 2).

The EUT was supplied with 3.3 VDC directly with a DC PSU.

2.2.5 Environmental Conditions

Ambient Temperature 21.7 °C
Relative Humidity 34.2 %

2.2.6 Test Results

2.4 GHz WLAN Conducted Tests

Rated Output Power: 19.70

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.3.3	Test Method(s):	5.4.3.2.1 Option 2
Specification Limit:	10 dBm/MHz EIRP		

DUT Configuration			
Mode:	802.11b	Duty Cycle (%):	-
Data Rate:	1 Mbps	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Power Spectral Density (dBm/MHz EIRP)
2412 (CH1)	13.00	9.10
2442 (CH7)	13.00	9.16
2472 (CH13)	13.00	9.54

Table 38 - Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.3.3	Test Method(s):	5.4.3.2.1 Option 2
Specification Limit:	10 dBm/MHz EIRP		

DUT Configuration			
Mode:	802.11g	Duty Cycle (%):	-
Data Rate:	6 Mbps	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Power Spectral Density (dBm/MHz EIRP)
2412 (CH1)	15.00	8.39
2442 (CH7)	15.00	8.12
2472 (CH13)	15.00	8.48

Table 39 - Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.3.3	Test Method(s):	5.4.3.2.1 Option 2
Specification Limit:	10 dBm/MHz EIRP		

DUT Configuration			
Mode:	802.11n HT20	Duty Cycle (%):	-
Modulation Coding Scheme:	MCS0	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Power Spectral Density (dBm/MHz EIRP)
2412 (CH1)	15.00	7.32
2442 (CH7)	15.00	7.10
2472 (CH13)	15.00	7.47

Table 40 - Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.3.3	Test Method(s):	5.4.3.2.1 Option 2
Specification Limit:	10 dBm/MHz EIRP		

DUT Configuration			
Mode:	802.11ax HE20 SU	Duty Cycle (%):	-
Modulation Coding Scheme:	MCS0x1	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Power Spectral Density (dBm/MHz EIRP)
2412 (CH1)	7.00	1.04
2442 (CH7)	7.00	-0.26
2472 (CH13)	7.00	0.17

Table 41 - Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.3.3	Test Method(s):	5.4.3.2.1 Option 2
Specification Limit:	10 dBm/MHz EIRP		

DUT Configuration			
Mode:	802.11ax HE20 RU26	Duty Cycle (%):	-
Modulation Coding Scheme:	MCS0x1	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Test Frequency (MHz)	Power Index	Power Spectral Density (dBm/MHz EIRP)
2412 (CH1)	7.00	9.12
2442 (CH7)	7.00	8.32
2472 (CH13)	7.00	8.38

Table 42 - Power Spectral Density Results

ETSI EN 300 328, Limit Clause 4.3.2.3.3

The maximum Power Spectral Density for non-FHSS equipment is 10 dBm per MHz.

2.2.7 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	79 Series III	411	12	12-Jan-2025
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module	Keysight Technologies	N6754A	5836	-	O/P Mon
GPSDR Frequency standard	Orolia	SecureSync 2402-053	6339	6	12-Mar-2024
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 43

TU – Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.3 Adaptivity (non-FHSS)

2.3.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.6

2.3.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: WLAN MAC address: ec:f6:4c:a0:0:d4 - Modification State 0

2.3.3 Date of Test

02-April-2024

2.3.4 Test Method

This test was performed in accordance with ETSI EN 300 328, clause 5.4.6.2.1.4 (Non-FHSS equipment using LBT).

The data rate was set to 802.11b 1 Mbps as this resulted in the longest channel occupancy time. The channel occupancy time, minimum and maximum idle times were calculated by analysing at least 1000 transmission sequences.

During Adaptivity testing, the module was configured to operate with a regular fast UDP connection session.

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.

2.3.5 Environmental Conditions

Ambient Temperature 20.9 °C

Relative Humidity 51.5 %

2.3.6 Test Results

2.4 GHz WLAN Conducted Tests

Test Item	2412 MHz	2472 MHz
Maximum Rated EIRP (dBm)	17.89	18.18
Interferer Occupied Bandwidth (MHz)	19.593	19.577
Interferer Signal Level (dBm/MHz)	-70.0	-70.0
Data Rate (Mbps)	1	1
Measured Maximum Channel Occupancy Time (ms)	12.609	12.609
Transmissions observed after Injection of Interferer	Yes	Yes
Short Control Signalling Transmissions Duty Cycle (%)	0.61	0.61
Time For EUT to Cease Transmissions after Injection of Interferer (ms)	12.25	12.51
Minimum Idle Time (µs)	18.6	18.6
Maximum Idle Time (µs)	6971.9	6971.9
After the introduction of the blocking signal, do the transmissions continue to be inhibited from the EUT (excluding short signalling	Yes	Yes



transmissions)?		
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Table 44

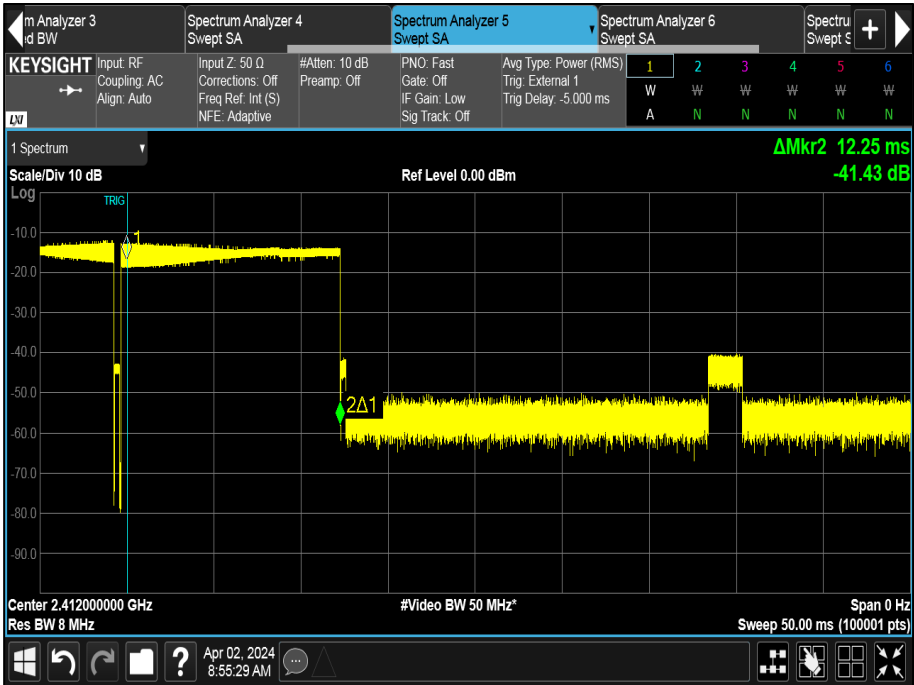


Figure 1 - 2412 MHz - Channel Shutdown Time - 50 ms

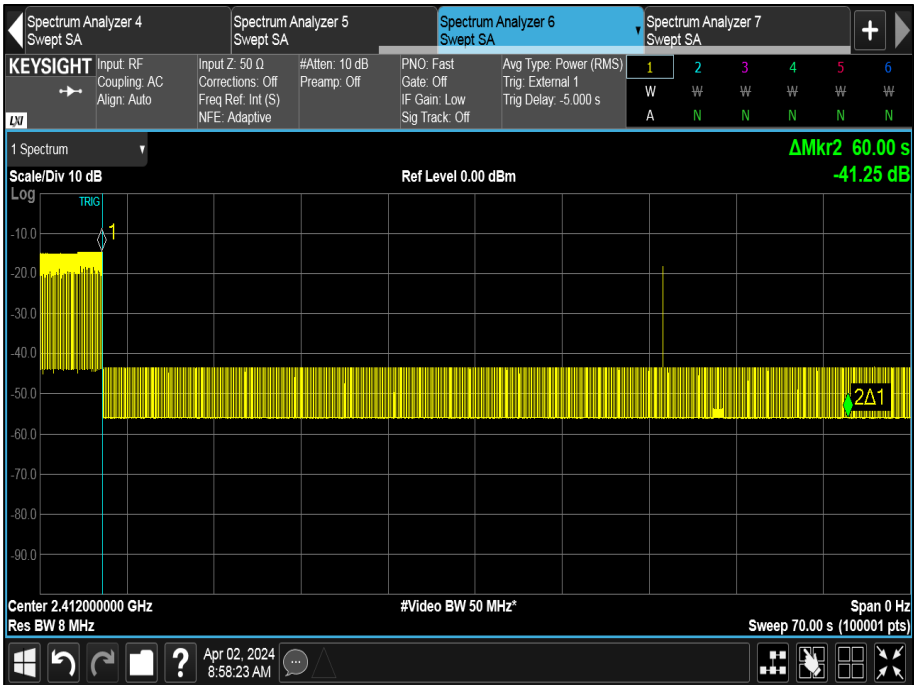


Figure 2 - 2412 MHz - Channel Shutdown Time - 70 seconds

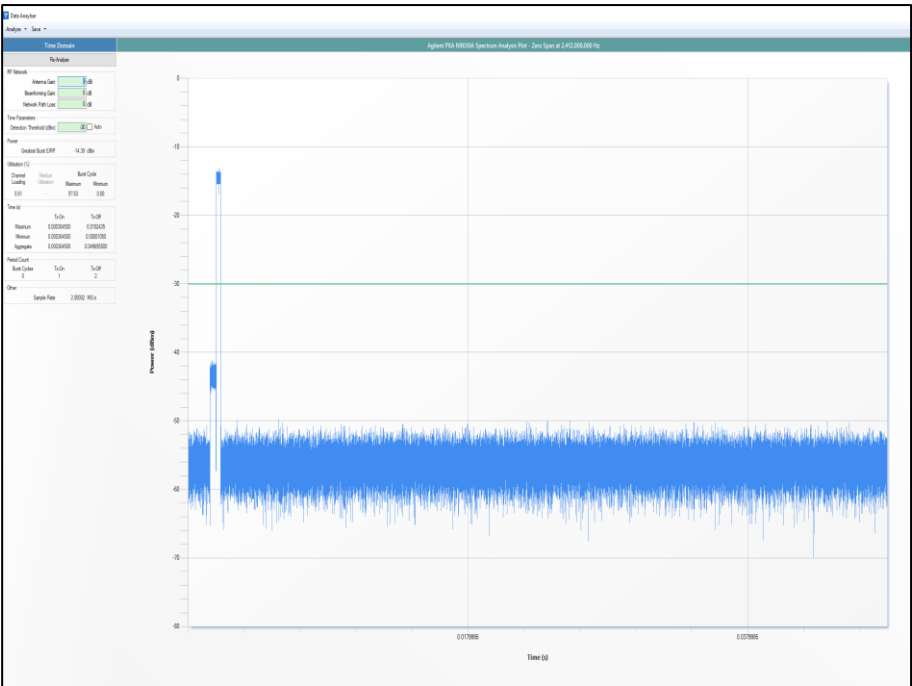


Figure 3 - 2412 MHz - Short Control Signalling Transmissions



Figure 4 - 2472 MHz - Channel Shutdown Time - 50 ms

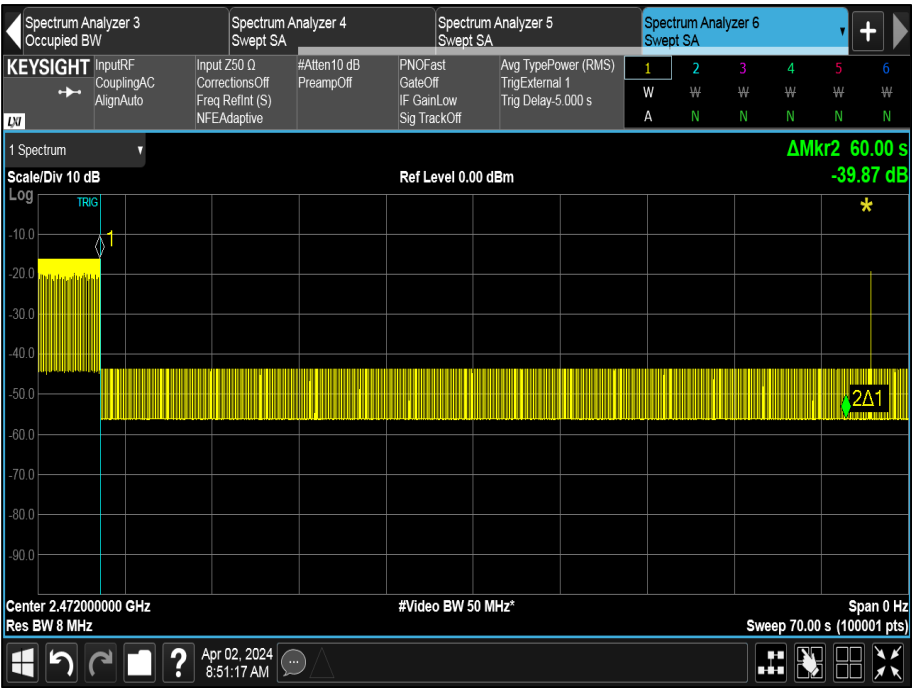


Figure 5 - 2472 MHz - Channel Shutdown Time - 70 seconds

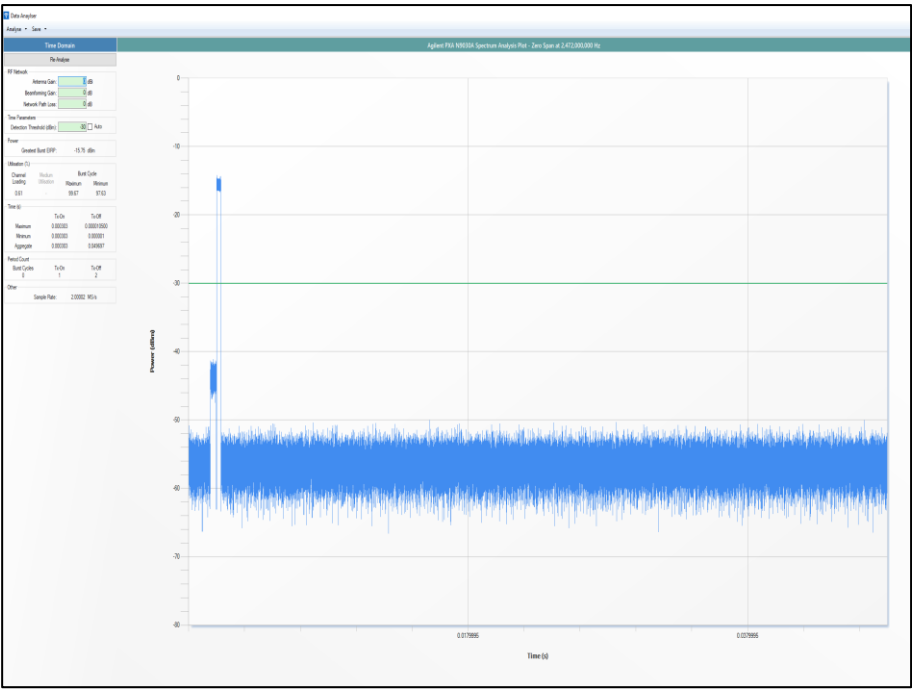


Figure 6 - 2472 MHz - Short Control Signalling Transmissions



Remarks

The maximum time for the EUT to cease transmissions after injection of the interferer was verified a number of times. In no case was the time measured greater than the maximum time allowed as specified in clause 4.3.2.6.3.2.3. One of these plots have been included in the test report to demonstrate the procedure used.

ETSI EN 300 328, Limit Clause 4.3.2.6.3.2.3 and 4.3.2.6.4.2

CCA Time	Range between 18 us and at least 160 µs.
Maximum Channel Occupancy Time	< 13 ms
Short Control Signaling Transmissions Duty Cycle	< 10% within any 50 ms observation period.

Table 45 - Adaptivity Limits

The equipment shall comply with the requirements defined in clause 4.3.2.6.3.2.3 steps 1 to 4 of the specification in the presence of an unwanted CW signal as defined in the table below.

Wanted signal mean power from companion device	Unwanted signal frequency (MHz)	Unwanted signal power (dBm)
Sufficient to maintain the link (see note 2)	2395.0 or 2488.5 (see note 1)	-35 (see note 3)
NOTE 1: The highest frequency shall be used for testing operating channels within the range 2 400 MHz to 2 442 MHz, while the lowest frequency shall be used for testing operating channels within the range 2 442 MHz to 2 483,5 MHz. See clause 5.4.6.1. NOTE 2: A typical conducted value which can be used in most cases is -50 dBm/MHz. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density in front of the UUT antenna.		

Table 46 - Blocking Signal Requirements



2.3.7 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
Signal Generator: 10MHz to 20GHz	Rohde & Schwarz	SMR20	3475	12	29-Jun-2024
Wireless Cable & Fibre Router - AC 1900, Dual-band	Asus	RT-AC68U	4881	-	TU
Cable 2.92m	Junkosha	MWX241-01000KMS	5413	12	21-May-2024
3.5mm Cable (1m)	Junkosha	MWX221/B	5837	12	27-Jul-2024
3.5mm Cable (1m)	Junkosha	MWX221/B	5838	12	27-Jul-2024
Cable (K Type 2m)	Junkosha	MWX241-02000KMSKMS/B	5936	12	21-May-2024
Humidity & Temperature meter	R.S Components	1364	6148	12	21-Jul-2024
Cable (SMA to SMA 1m)	Junkosha	MWX221/B	6305	12	04-Feb-2025
Test Coupling Network	TUV SUD	TUV_RxTest_001	6387	12	04-Sep-2024
MXA Signal Analyzer	Keysight Technologies	N9020B	6415	24	22-Mar-2025
Vector Signal Generator (7.5GHz)	Rohde & Schwarz	SMM100A	6532	36	11-Apr-2026

Table 47

TU - Traceability Unscheduled



2.4 Occupied Channel Bandwidth

2.4.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.7

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

07-March-2024

2.4.4 Test Method

This test was performed in accordance with ETSI EN 300 328, clause 5.4.7.2.1.

The EUT was supplied with 3.3 VDC directly with a DC PSU.

2.4.5 Environmental Conditions

Ambient Temperature 21.7 °C
Relative Humidity 34.2 %

2.4.6 Test Results

2.4 GHz WLAN Conducted Tests

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.7.3	Test Method(s):	5.4.7.2.1
Specification Limit:	2400.0 MHz < f _L & f _H < 2483.5 MHz		

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

Test Frequency (MHz)	Power Index	99% Occupied Bandwidth (MHz)	99% OBW Markers (MHz)	
			f _L	f _H
2412 (CH1)	13.00	13.680	2405.200	2418.880
2472 (CH13)	13.00	13.560	2465.200	2478.760

Table 48 - 99% Occupied Bandwidth Results

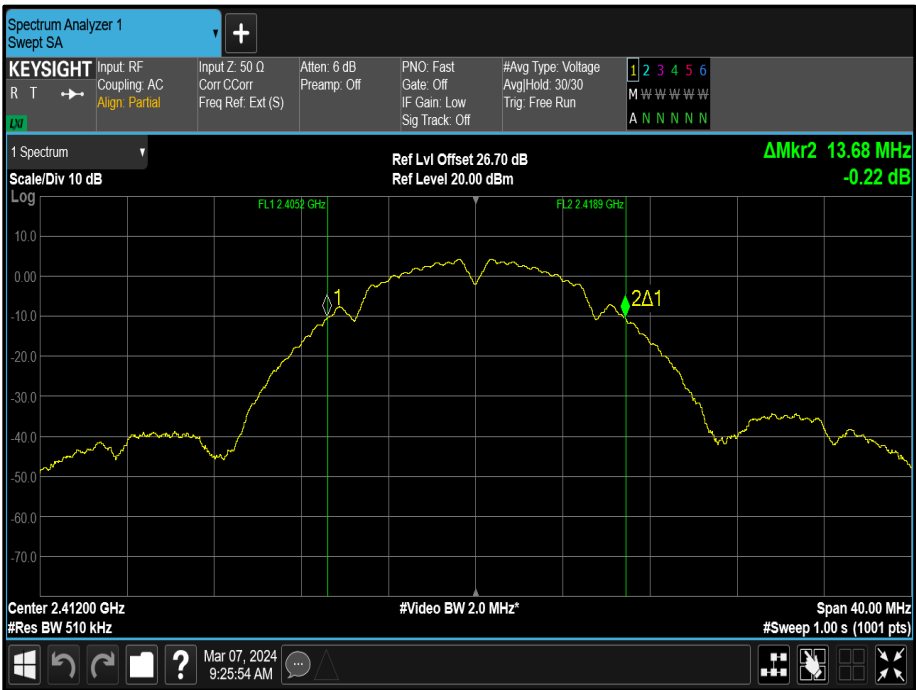


Figure 7 - 2412 MHz (CH1)

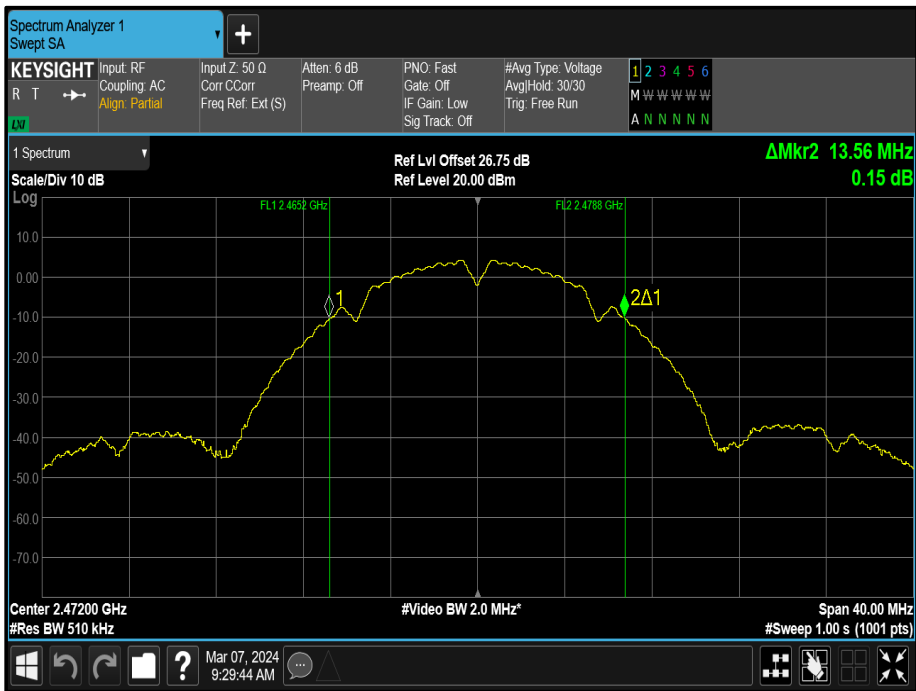


Figure 8 - 2472 MHz (CH13)

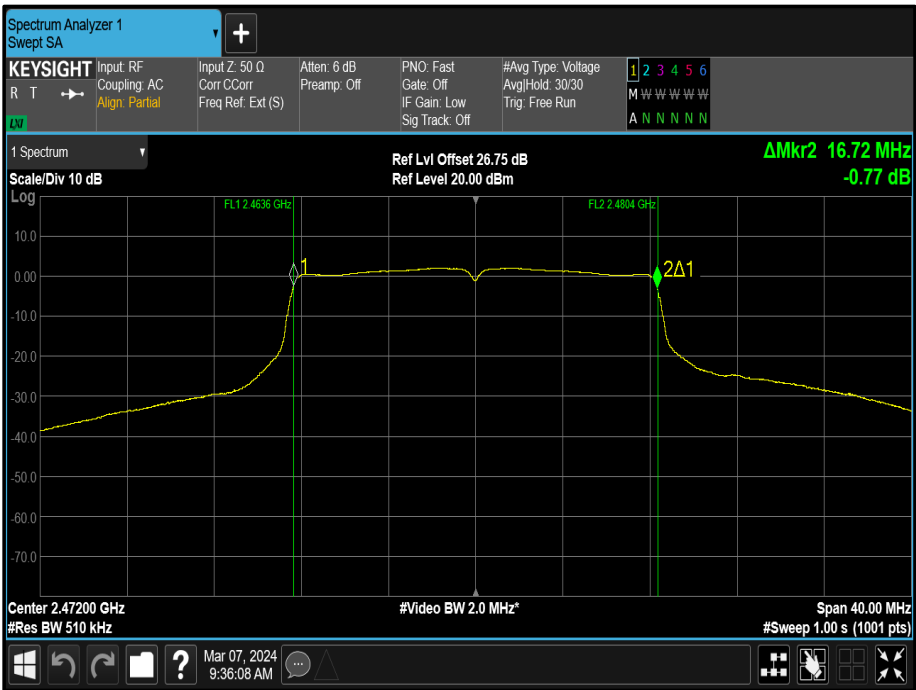


Figure 10 - 2472 MHz (CH13)

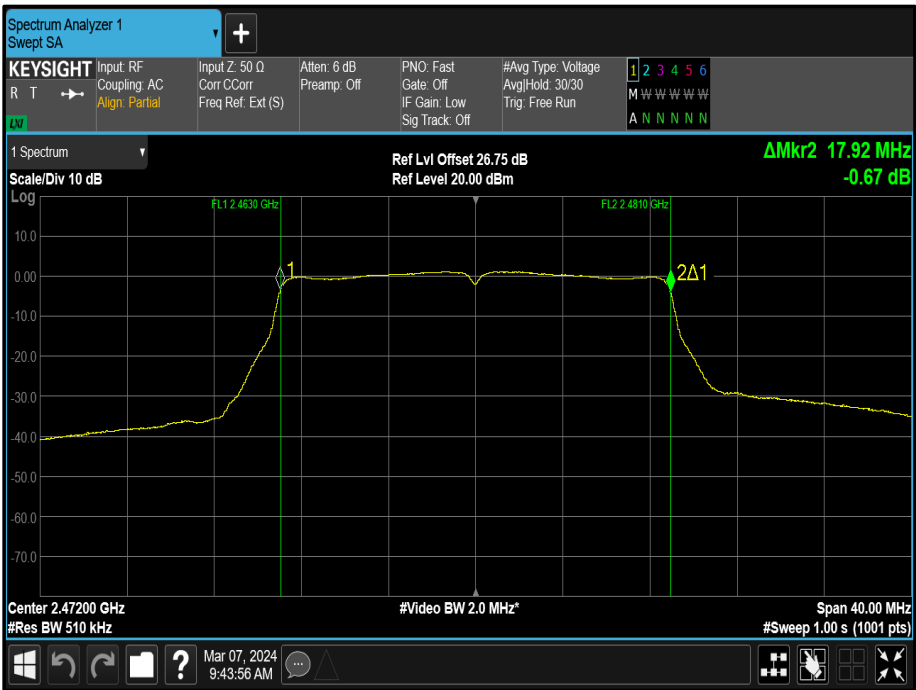


Figure 12 - 2472 MHz (CH13)



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.7.3	Test Method(s):	5.4.7.2.1
Specification Limit:	2400.0 MHz < f _L & f _H < 2483.5 MHz		

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

Test Frequency (MHz)	Power Index	99% Occupied Bandwidth (MHz)	99% OBW Markers (MHz)	
			f _L	f _H
2412 (CH1)	7.00	19.040	2402.480	2421.520
2472 (CH13)	7.00	19.000	2462.480	2481.480

Table 51 - 99% Occupied Bandwidth Results

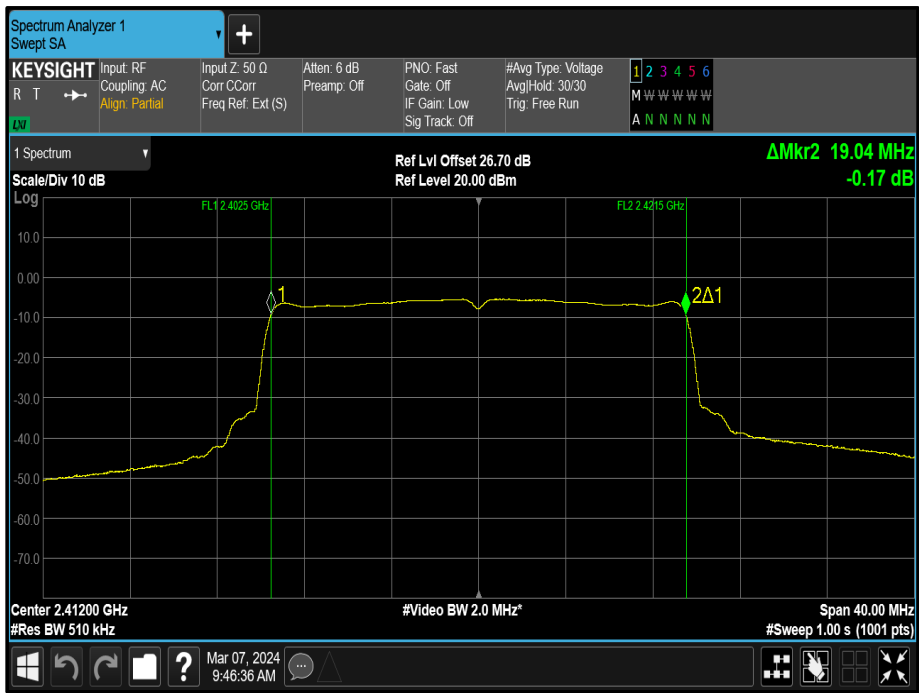


Figure 13 - 2412 MHz (CH1)

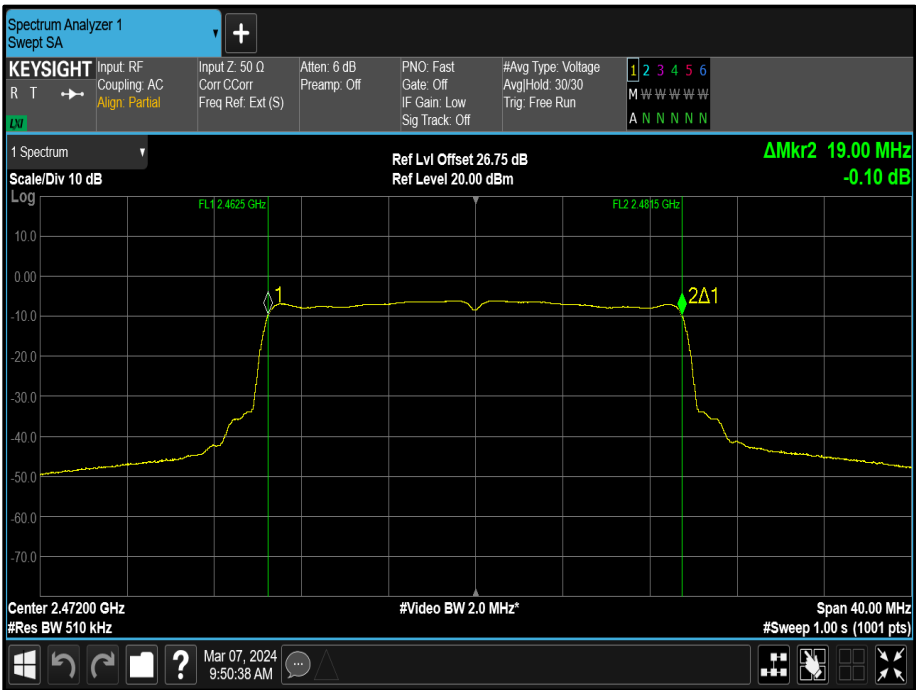


Figure 14 - 2472 MHz (CH13)

ETSI EN 300 328, Limit Clause 4.3.2.7.3

The Occupied Channel Bandwidth shall be within the band 2400 MHz to 2483.5 MHz.

In addition, for non-adaptive non-FHSS equipment with e.i.r.p. greater than 10 dBm, the Occupied Channel Bandwidth shall be equal to or less than 20 MHz.



2.4.7 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	79 Series III	411	12	12-Jan-2025
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module	Keysight Technologies	N6754A	5836	-	O/P Mon
GPSDR Frequency standard	Orolia	SecureSync 2402-053	6339	6	12-Mar-2024
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 52

TU – Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.5 Transmitter Unwanted Emissions in the Out-of-Band Domain

2.5.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.8

2.5.2 Equipment Under Test and Modification State

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

2.5.3 Date of Test

07-March-2024

2.5.4 Test Method

This test was performed in accordance with ETSI EN 300 328, clause 5.4.8.2.1.

The EUT was supplied with 3.3 VDC directly with a DC PSU.

2.5.5 Environmental Conditions

Ambient Temperature	21.7 °C
Relative Humidity	34.2 %



2.5.6 Test Results

2.4 GHz WLAN Conducted Tests

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.8.3	Test Method(s):	5.4.8.2.1

DUT Configuration			
Mode:	802.11b	Duty Cycle (%):	100.0
Data Rate:	1 Mbps	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Maximum Measured Segment EIRP							
Mask		2412 MHz (CH1) Power Index: 13.00			2472 MHz (CH13) Power Index: 13.00		
Segment	Limit (dBm/MHz)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)
(2400 MHz - 2BW) to (2400 MHz - BW)	-20.0	2385.820	-47.6	-27.6	2382.940	-54.1	-34.1
(2400 MHz - BW) to 2400 MHz	-10.0	2397.500	-34.0	-24.0	2399.500	-53.4	-43.4
2483.5 MHz to (2483.5 MHz + BW)	-10.0	2485.000	-52.7	-42.7	2486.000	-32.7	-22.7
(2483.5 MHz + BW) to (2483.5 MHz + 2BW)	-20.0	2498.680	-53.0	-33.0	2498.560	-45.7	-25.7

Table 53 - Transmitter unwanted emissions in the out-of-band domain



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.8.3	Test Method(s):	5.4.8.2.1

DUT Configuration			
Mode:	802.11g	Duty Cycle (%):	100.0
Data Rate:	6 Mbps	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Maximum Measured Segment EIRP							
Mask		2412 MHz (CH1) Power Index: 15.00			2472 MHz (CH13) Power Index: 15.00		
Segment	Limit (dBm/MHz)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)
(2400 MHz - 2BW) to (2400 MHz - BW)	-20.0	2382.740	-45.0	-25.0	2379.780	-50.8	-30.8
(2400 MHz - BW) to 2400 MHz	-10.0	2399.500	-23.8	-13.8	2399.500	-49.6	-39.6
2483.5 MHz to (2483.5 MHz + BW)	-10.0	2484.000	-48.5	-38.5	2484.000	-19.5	-9.5
(2483.5 MHz + BW) to (2483.5 MHz + 2BW)	-20.0	2500.760	-49.3	-29.3	2500.720	-40.8	-20.8

Table 54 - Transmitter unwanted emissions in the out-of-band domain



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.8.3	Test Method(s):	5.4.8.2.1

DUT Configuration			
Mode:	802.11n HT20	Duty Cycle (%):	100.0
Modulation Coding Scheme:	MCS0	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Maximum Measured Segment EIRP							
Mask		2412 MHz (CH1) Power Index: 15.00			2472 MHz (CH13) Power Index: 15.00		
Segment	Limit (dBm/MHz)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)
(2400 MHz - 2BW) to (2400 MHz - BW)	-20.0	2380.580	-45.9	-25.9	2380.580	-50.8	-30.8
(2400 MHz - BW) to 2400 MHz	-10.0	2399.500	-29.2	-19.2	2398.500	-49.8	-39.8
2483.5 MHz to (2483.5 MHz + BW)	-10.0	2485.000	-48.6	-38.6	2484.000	-23.8	-13.8
(2483.5 MHz + BW) to (2483.5 MHz + 2BW)	-20.0	2502.920	-49.2	-29.2	2502.920	-43.4	-23.4

Table 55 - Transmitter unwanted emissions in the out-of-band domain



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.8.3	Test Method(s):	5.4.8.2.1

DUT Configuration			
Mode:	802.11ax HE20 SU	Duty Cycle (%):	100.0
Modulation Coding Scheme:	MCS0x1	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Maximum Measured Segment EIRP							
Mask		2412 MHz (CH1) Power Index: 7.00			2472 MHz (CH13) Power Index: 7.00		
Segment	Limit (dBm/MHz)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)
(2400 MHz - 2BW) to (2400 MHz - BW)	-20.0	2380.460	-50.5	-30.5	2377.500	-54.2	-34.2
(2400 MHz - BW) to 2400 MHz	-10.0	2399.500	-38.6	-28.6	2399.500	-53.6	-43.6
2483.5 MHz to (2483.5 MHz + BW)	-10.0	2487.000	-51.7	-41.7	2484.000	-36.2	-26.2
(2483.5 MHz + BW) to (2483.5 MHz + 2BW)	-20.0	2509.040	-52.3	-32.3	2503.000	-50.2	-30.2

Table 56 - Transmitter unwanted emissions in the out-of-band domain



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	4.3.2.8.3	Test Method(s):	5.4.8.2.1

DUT Configuration			
Mode:	802.11ax HE20 RU26	Duty Cycle (%):	100.0
Modulation Coding Scheme:	MCS0x1	DCCF (dB):	-
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Stream

Maximum Measured Segment EIRP							
Mask		2412 MHz (CH1) Power Index: 7.00			2472 MHz (CH13) Power Index: 7.00		
Segment	Limit (dBm/MHz)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)	Frequency (MHz)	EIRP (dBm/MHz)	Margin (dB)
(2400 MHz - 2BW) to (2400 MHz - BW)	-20.0	2395.220	-47.1	-27.1	2395.860	-53.7	-33.7
(2400 MHz - BW) to 2400 MHz	-10.0	2398.500	-39.5	-29.5	2399.500	-53.6	-43.6
2483.5 MHz to (2483.5 MHz + BW)	-10.0	2484.000	-51.6	-41.6	2484.000	-42.5	-32.5
(2483.5 MHz + BW) to (2483.5 MHz + 2BW)	-20.0	2487.640	-51.8	-31.8	2487.640	-48.6	-28.6

Table 57 - Transmitter unwanted emissions in the out-of-band domain

ETSI EN 300 328, Limit Clause 4.3.2.8.3

The transmitter unwanted emissions in the out-of-band domain shall not exceed the values provided by the emission mask as shown below.

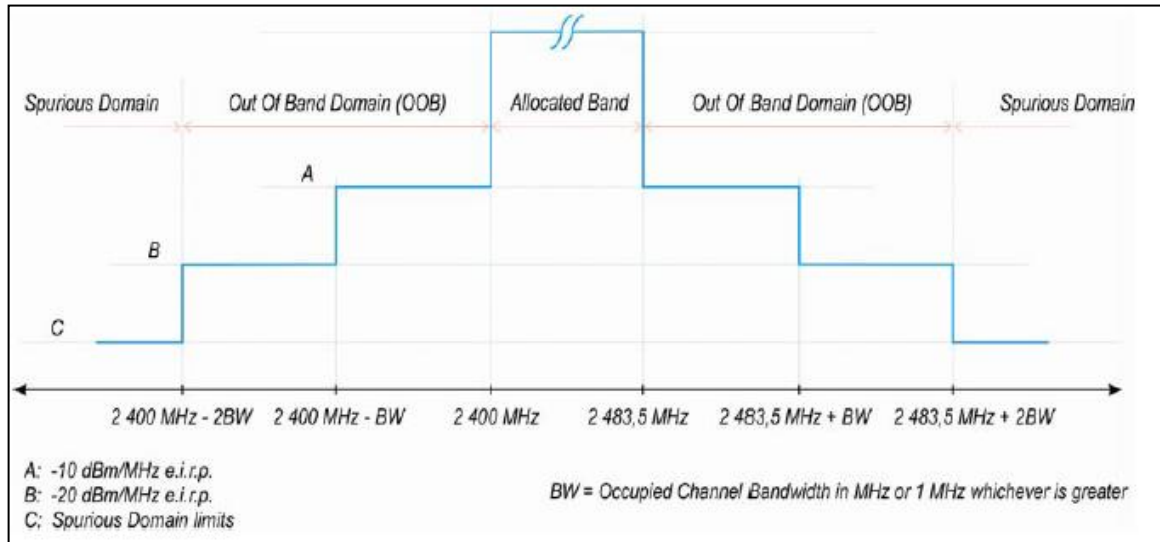


Figure 15 - OOB Emissions Limit

2.5.7 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	79 Series III	411	12	12-Jan-2025
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module	Keysight Technologies	N6754A	5836	-	O/P Mon
GPSDR Frequency standard	Orolia	SecureSync 2402-053	6339	6	12-Mar-2024
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 58

TU – Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.6 Receiver Blocking

2.6.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.11

2.6.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: WLAN MAC address: ec:f6:4c:a0:0:d4 - Modification State 0

2.6.3 Date of Test

23-April-2024

2.6.4 Test Method

This test was performed in accordance with ETSI EN 300 328, Clause 5.4.11.2.1

After verifying that the device passed the Minimum Performance Criteria with the required blocker level, we increased the blocking signal until the packet error rate was just below 10% and recorded the level. The maximum blocking signal level we presented to the EUT that still produced a PER of less than 10% is our Blocking Signal Power (dBm) recorded.

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.

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

Receiver Category: 1

Data Rate: 1 Mbps

Blocking Signal Frequency (MHz)	2412 MHz			2472 MHz		
	Wanted Signal Mean Power (dBm)*	Blocking Signal Power (dBm)*	Minimum Performance Criteria Met (Yes/No)	Wanted Signal Mean Power (dBm)*	Blocking Signal Power (dBm)*	Minimum Performance Criteria Met (Yes/No)
2380	-65.20	-19.9	Yes	-	-	-
2504	-	-	-	-65.20	-20.7	Yes
2300	-71.20	-11.2	Yes	-	-	-
2330	-71.20	-12.3	Yes	-	-	-
2360	-71.20	-15.4	Yes	-	-	-
2524	-	-	-	-71.20	-16.0	Yes
2584	-	-	-	-71.20	-12.7	Yes
2674	-	-	-	-71.20	-8.6	Yes

Table 59 - Blocking Results at Specification Level

*Corrected by the highest antenna gain in case of conducted measurements.

Remarks

The minimum performance criterion shall be a PER less than or equal to 10%.

ETSI EN 300 328, Limit Clause 4.3.2.11.4.2

Wanted Signal Mean Power from Companion Device (dBm) (see notes 1 and 4)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm) (see note 4)	Type of Blocking Signal
(-133 dBm + 10 × log ₁₀ (OCBW)) or -68 dBm whichever is less (see note 2)	2380	-34	CW
	2504		
(-139 dBm + 10 × log ₁₀ (OCBW)) or -74 dBm whichever is less (see note 3)	2300		
	2330		
	2360		
	2524		
	2584		
	2674		
NOTE 1: OCBW is in Hz.			
NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 26 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.			
NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 20 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.			
NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

Table 60 - Blocking Level for Receiver Category 1 Equipment

*Corrected by the highest antenna gain in case of conducted measurements.

Remarks

Minimum performance criteria: The minimum performance criterion shall be a PER less than or equal to 10%.

ETSI EN 300 328, Limit Clause 4.3.2.11.4.3

Wanted Signal Mean Power from Companion Device (dBm) (see notes 1 and 3)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm) (see note 3)	Type of Blocking Signal
(-139 dBm + 10 × Log ¹⁰ (OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less (see note 2)	2380	-34	CW
	2504		
	2300		
	2584		
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

Table 61 - Blocking Level for Receiver Category 2 Equipment

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
Signal Generator: 10MHz to 20GHz	Rohde & Schwarz	SMR20	3475	12	29-Jun-2024
EXA Signal Analyser	Keysight Technologies	N9010B	4968	24	29-Jan-2026
Cable (K Type 2m)	Junkosha	MWX241-02000KMS	5421	12	07-Mar-2025
Cable (K Type 2m)	Junkosha	MWX241-02000KMSKMS/B	5936	12	21-May-2024
Cable (K Type 2m)	Junkosha	MWX241-02000KMSKMS/B	5938	12	21-May-2024
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 62



2.7 Transmitter Unwanted Emissions in the Spurious Domain (PCB Trace Antenna)

2.7.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.9

2.7.2 Equipment Under Test and Modification State

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

2.7.3 Date of Test

28-March-2024 to 30-March-2024

2.7.4 Test Method

This test was performed in accordance with ETSI EN 300 328, clause 5.4.9.2.2.

The plots show the characterisation of the EUT using a peak detector. Where emissions were detected, final measurements were taken using the method specified in ETSI EN 300 328, clause 5.4.9.2.1.3. Where these emissions are within 6 dB of the limit the final value is reported in the tables below.

The Power Settings used for testing are as follows:

802.11b, 13

802.11g, 15 (Not required as per EN 300 328 Annex D. Only the worst-case non-HT mode shall be tested.)

802.11n, 15

802.11ax, 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.

2.7.5 Environmental Conditions

Ambient Temperature	21.6 - 22.1 °C
Relative Humidity	45.8 - 49.8 %



2.7.6 Test Results

2.4 GHz WLAN - PCB Trace Antenna

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

Table 63 - Bot Channel - 802.11b_1Mbps_Tx, 2412 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

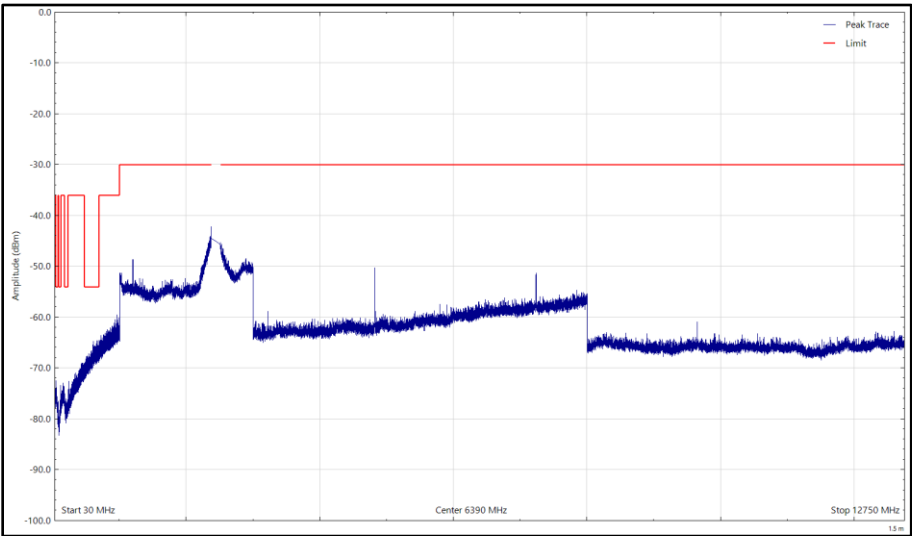


Figure 16 - Bot Channel - 802.11b_1Mbps_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

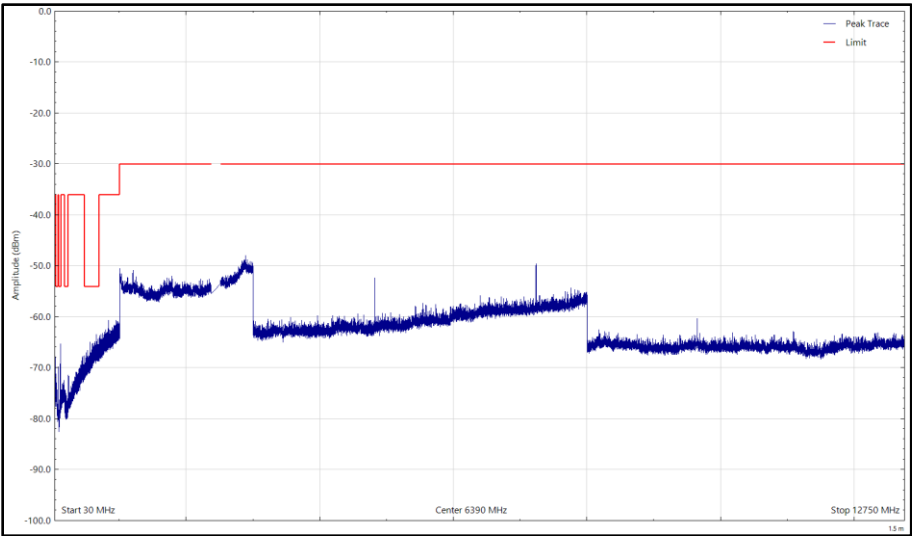


Figure 17 - Bot Channel - 802.11b_1Mbps_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 64 - Top Channel - 802.11b_1Mbps_Tx, 2472 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

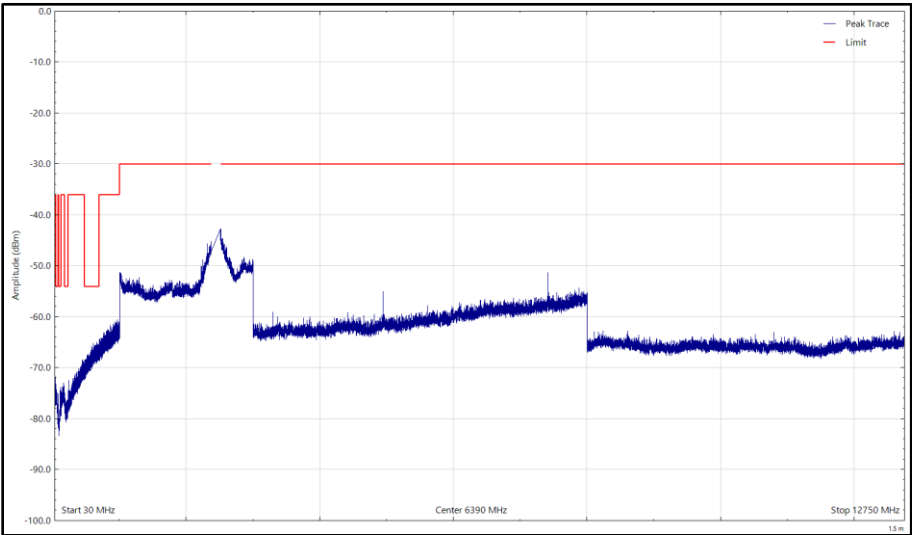


Figure 18 - Top Channel - 802.11b_1Mbps_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

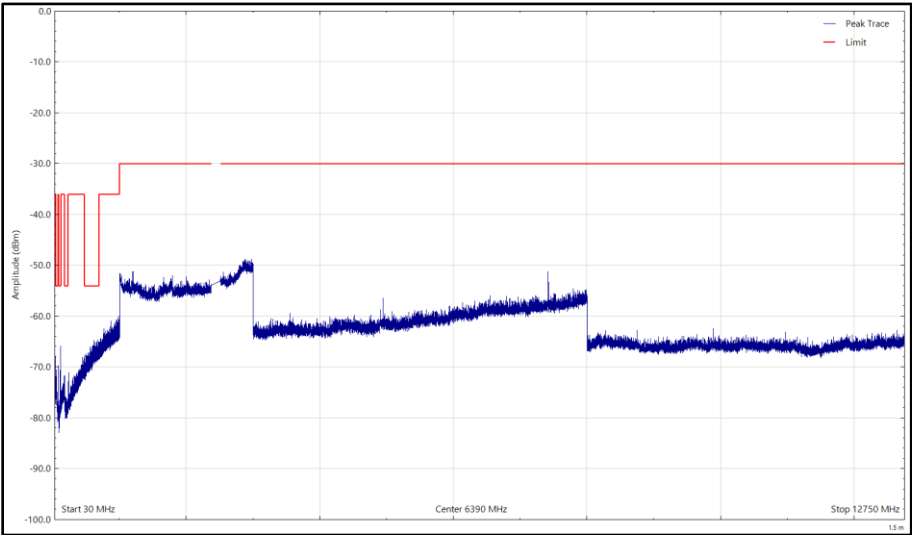


Figure 19 - Top Channel - 802.11b_1Mbps_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 65 - Bot Channel - 802.11n_HT20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

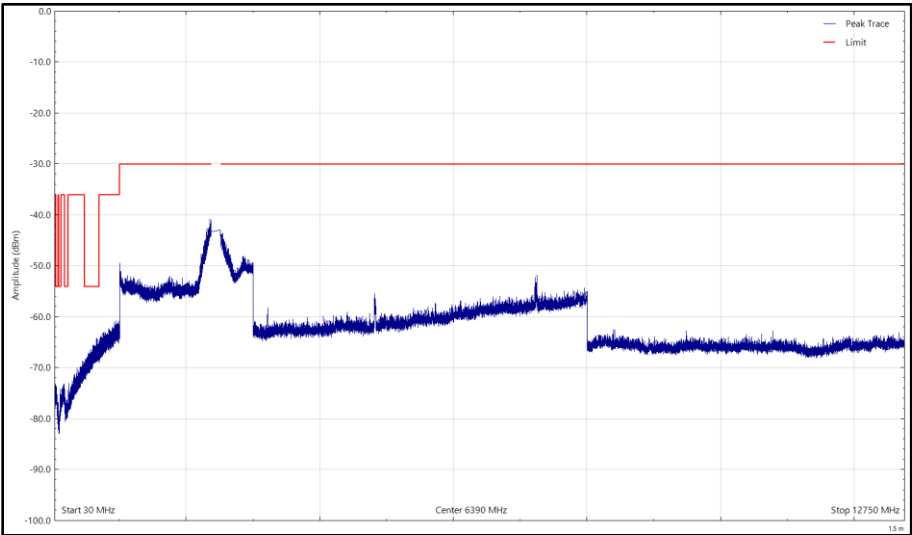


Figure 20 - Bot Channel - 802.11n_HT20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

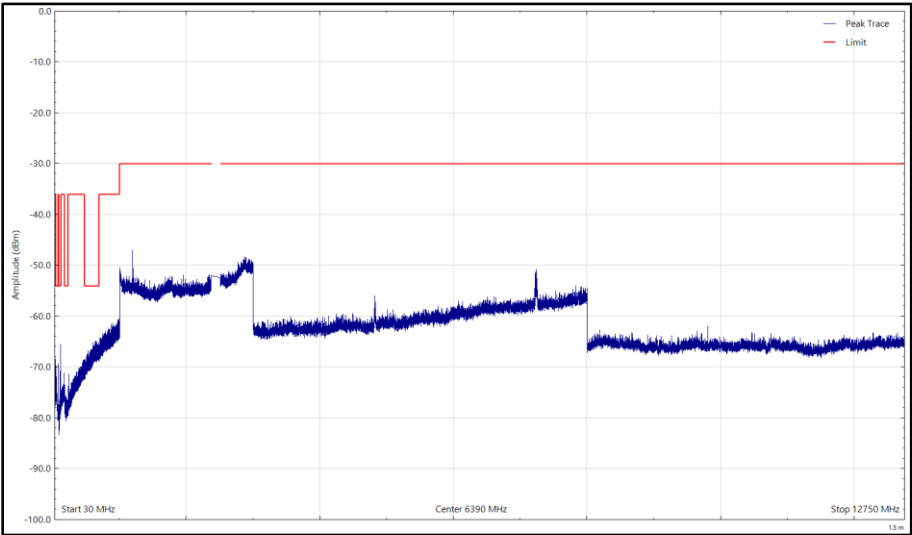


Figure 21 - Bot Channel - 802.11n_HT20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 66 - Top Channel - 802.11n_HT20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

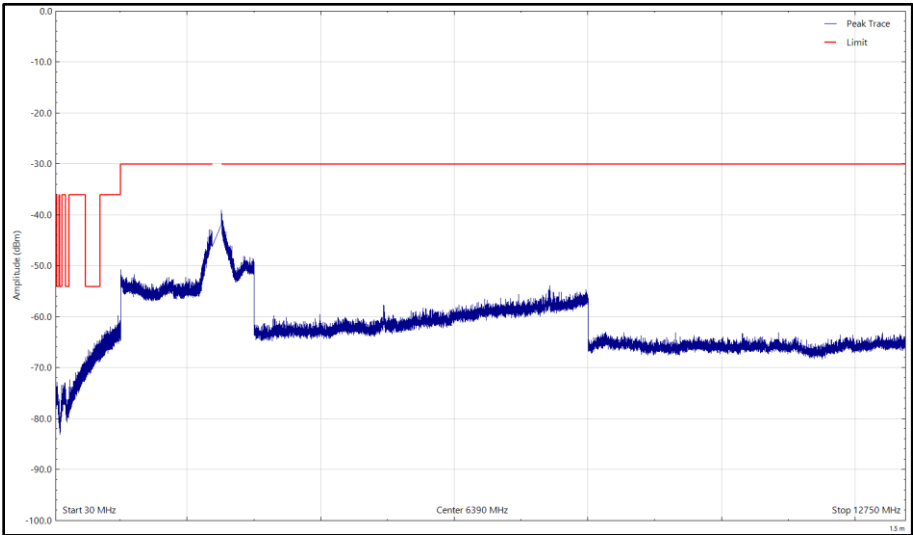


Figure 22 - Top Channel - 802.11n_HT20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

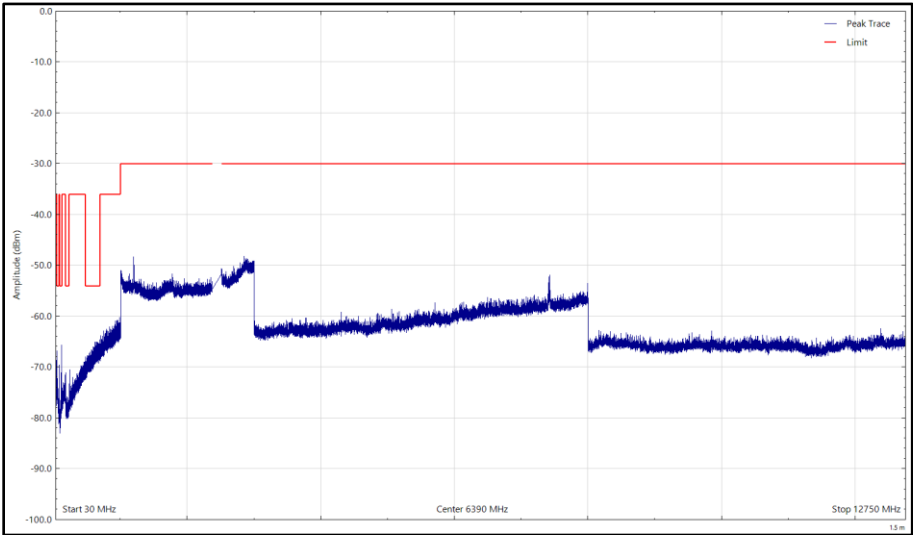


Figure 23 - Top Channel - 802.11n_HT20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 67 - Bot Channel - 802.11ax_HE20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

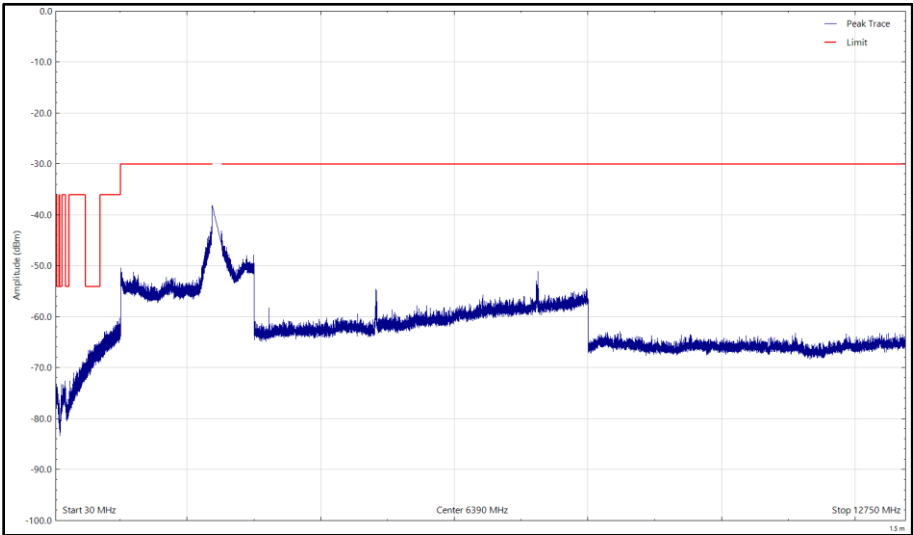


Figure 24 - Bot Channel - 802.11ax_HE20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

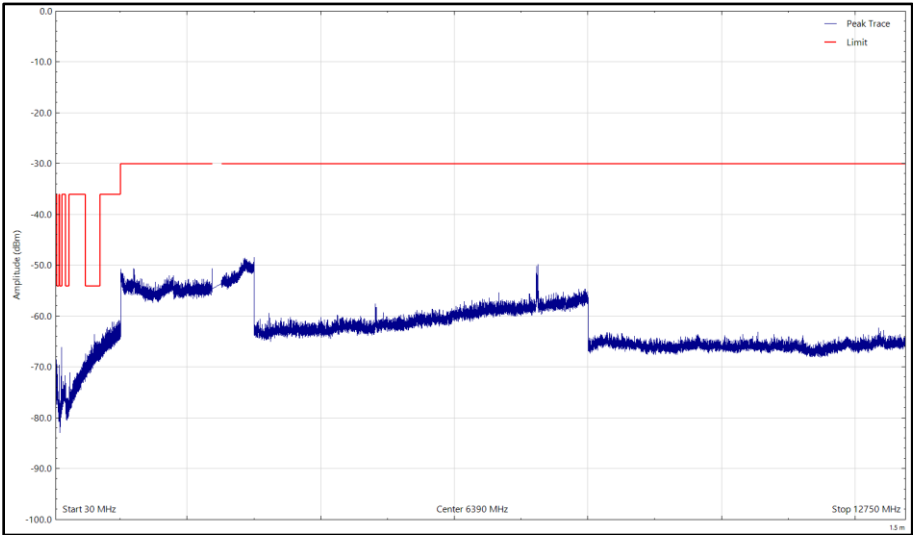


Figure 25 - Bot Channel - 802.11ax_HE20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 68 - Top Channel - 802.11ax_HE20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

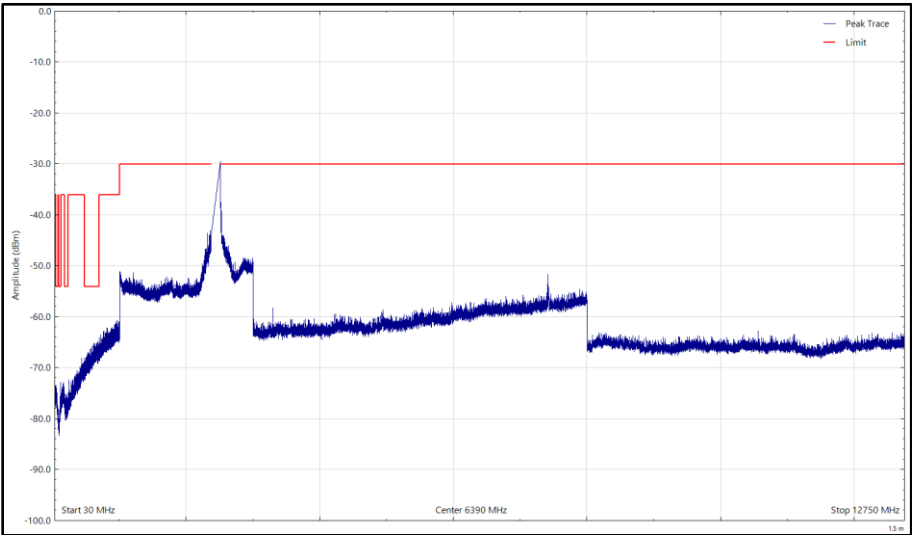


Figure 26 - Top Channel - 802.11ax_HE20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

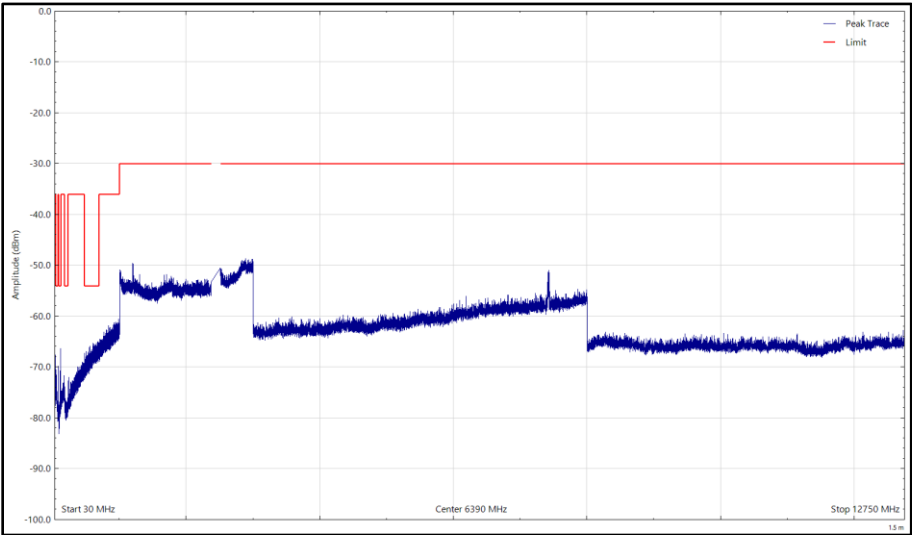


Figure 27 - Top Channel - 802.11ax_HE20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



ETSI EN 300 328, Limit Clause 4.3.2.9.3

The transmitter unwanted emissions in the spurious domain shall not exceed the values given in the table below.

In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

Frequency Range	Maximum power e.r.p (≤ 1 GHz) e.i.r.p (> 1 GHz)	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87.5 MHz	-36 dBm	100 kHz
87.5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 694 MHz	-54 dBm	100 kHz
694 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12.75 GHz	-30 dBm	1 MHz

Table 69



2.7.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
4dB Attenuator	Pasternack	PE7047-4	4935	12	20-Jul-2024
Test Receiver	Rohde & Schwarz	ESW44	5084	12	31-Aug-2024
Emissions Software	TUV SUD	EmX V3.2.0	5125	-	Software
3m Semi-Anechoic Chamber	Rainford	RF Chamber 11	5136	36	24-Nov-2024
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
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
Thermo-Hygro-Barometer	PCE Instruments	OCE-THB-40	5470	12	20-Apr-2024
Cable (K-Type to K-Type, 1 m)	Junkosha	MWX241-01000KMSKMS/A	5512	12	21-May-2024
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5518	12	14-Apr-2024
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	5522	12	14-Apr-2024
3 GHz High pass Filter	Wainwright	WHKX12-2580-3000-18000-80SS	5547	12	30-May-2024
7 GHz High pass Filter	Wainwright	WHKX12-5850-6800-18000-80SS	5550	12	30-May-2024
Pre-Amplifier (8 GHz to 18 GHz)	Wright Technologies	APS06-0061	5595	12	26-Oct-2024
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	6635	24	13-Jun-2025

Table 70

TU - Traceability Unscheduled



2.8 Receiver Spurious Emissions (PCB Trace Antenna)

2.8.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.10

2.8.2 Equipment Under Test and Modification State

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

2.8.3 Date of Test

28-March-2024 to 30-March-2024

2.8.4 Test Method

This test was performed in accordance with ETSI EN 300 328, clause 5.4.10.2.2.

The plots show the characterisation of the EUT using a peak detector. Where emissions were detected, final measurements were taken using the method specified in ETSI EN 300 328, clause 5.4.10.2.1.3. Where these emissions are within 6 dB of the limit the final value is reported in the tables below.

All pre-scans are performed with a peak detector and max hold trace. Where emissions are within 6 dB of the limit, a formal measurement is made. Due to the maximization procedure including a height search, this can, in some cases lead to a value which is higher than shown in the pre-scan.

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.

2.8.5 Environmental Conditions

Ambient Temperature	21.6 - 22.1 °C
Relative Humidity	45.6 - 49.8 %



2.8.6 Test Results

2.4 GHz WLAN - PCB Trace Antenna

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
1201.020	-48.50	-47.00	-1.50	RMS	0	100	Vertical

Table 71 - Bot Channel - WLAN - 20 MHz Bandwidth_Rx, 2412 MHz, 30 MHz to 12.75 GHz

No other emissions found within 6 dB of the limit.

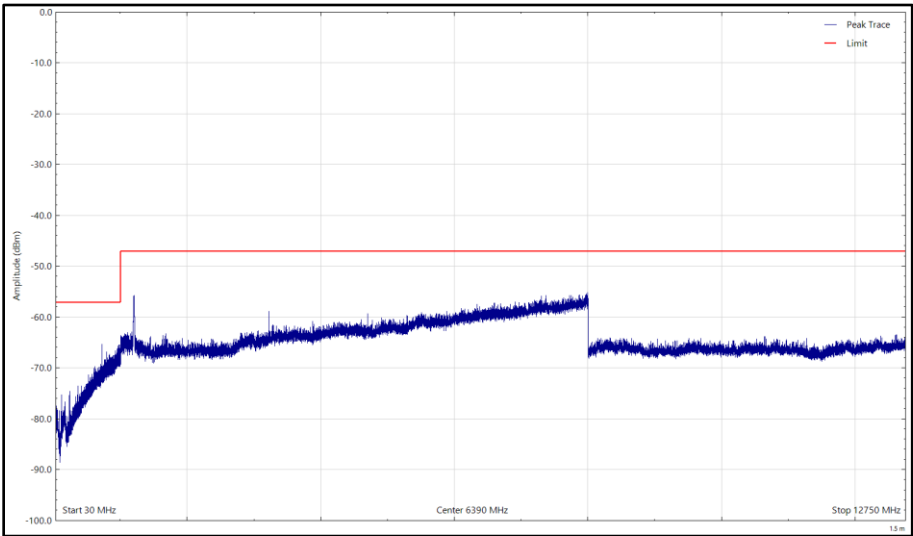


Figure 28 - Bot Channel - WLAN - 20 MHz Bandwidth_Rx, 2412 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

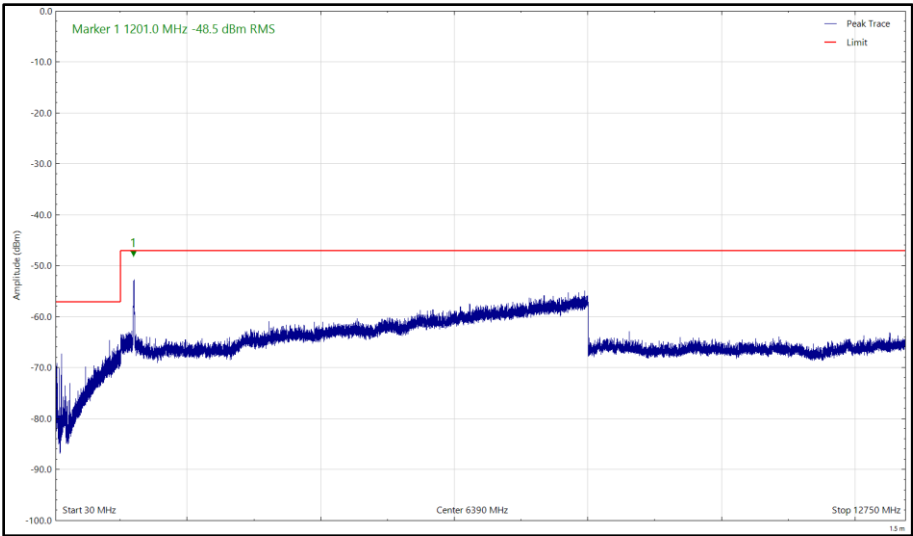


Figure 29 - Bot Channel - WLAN - 20 MHz Bandwidth_Rx, 2412 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
1199.310	-48.20	-47.00	-1.20	RMS	0	100	Vertical

Table 72 - Top Channel - WLAN - 20 MHz Bandwidth_Rx, 2472 MHz, 30 MHz to 12.75 GHz

No other emissions found within 6 dB of the limit.

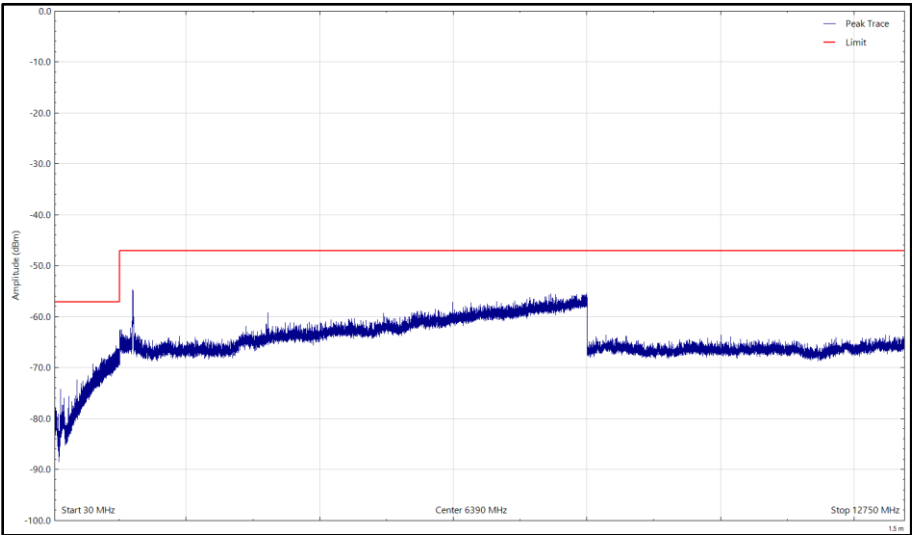


Figure 30 - Top Channel - WLAN - 20 MHz Bandwidth_Rx, 2472 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

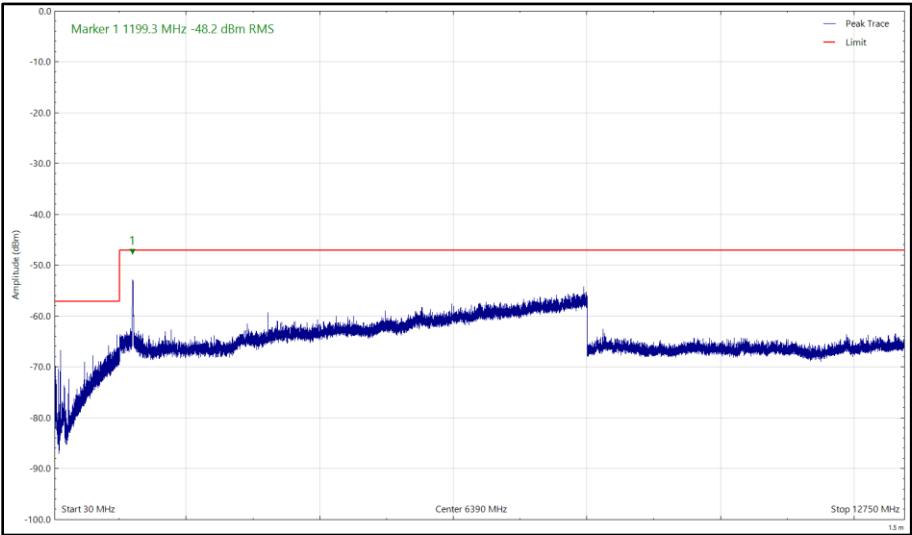


Figure 31 - Top Channel - WLAN - 20 MHz Bandwidth_Rx, 2472 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



ETSI EN 300 328, Limit Clause 4.3.2.10.3

In case of non-FHSS equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and e.i.r.p. for emissions above 1 GHz.

Frequency Range	Maximum power e.r.p (≤ 1 GHz) e.i.r.p (> 1 GHz)	Measurement Bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12.75 GHz	-47 dBm	1 MHz

Table 73



2.8.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
4dB Attenuator	Pasternack	PE7047-4	4935	12	20-Jul-2024
Test Receiver	Rohde & Schwarz	ESW44	5084	12	31-Aug-2024
Emissions Software	TUV SUD	EmX V3.2.0	5125	-	Software
3m Semi-Anechoic Chamber	Rainford	RF Chamber 11	5136	36	24-Nov-2024
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
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
Thermo-Hygro-Barometer	PCE Instruments	OCE-THB-40	5470	12	20-Apr-2024
Cable (K-Type to K-Type, 1 m)	Junkosha	MWX241-01000KMSKMS/A	5512	12	21-May-2024
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5518	12	14-Apr-2024
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	5522	12	14-Apr-2024
3 GHz High pass Filter	Wainwright	WHKX12-2580-3000-18000-80SS	5547	12	30-May-2024
7 GHz High pass Filter	Wainwright	WHKX12-5850-6800-18000-80SS	5550	12	30-May-2024
Pre-Amplifier (8 GHz to 18 GHz)	Wright Technologies	APS06-0061	5595	12	26-Oct-2024
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	6635	24	13-Jun-2025

Table 74

TU - Traceability Unscheduled



2.9 Transmitter Unwanted Emissions in the Spurious Domain (ANT-2.4-CW-CT-SMA/RPS Antenna)

2.9.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.9

2.9.2 Equipment Under Test and Modification State

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

2.9.3 Date of Test

30-March-2024

2.9.4 Test Method

This test was performed in accordance with ETSI EN 300 328, clause 5.4.9.2.2.

The plots show the characterisation of the EUT using a peak detector. Where emissions were detected, final measurements were taken using the method specified in ETSI EN 300 328, clause 5.4.9.2.1.3. Where these emissions are within 6 dB of the limit the final value is reported in the tables below.

The Power Settings used for testing are as follows:

802.11b, 13

802.11g, 15

802.11n, 15

802.11ax, 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.

2.9.5 Environmental Conditions

Ambient Temperature	21.6 °C
Relative Humidity	45.8 %



2.9.6 Test Results

2.4 GHz WLAN - ANT-2.4-CW-CT-SMA/RPS Antenna

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

Table 75 - Bot Channel - 802.11b_1Mbps_Tx, 2412 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

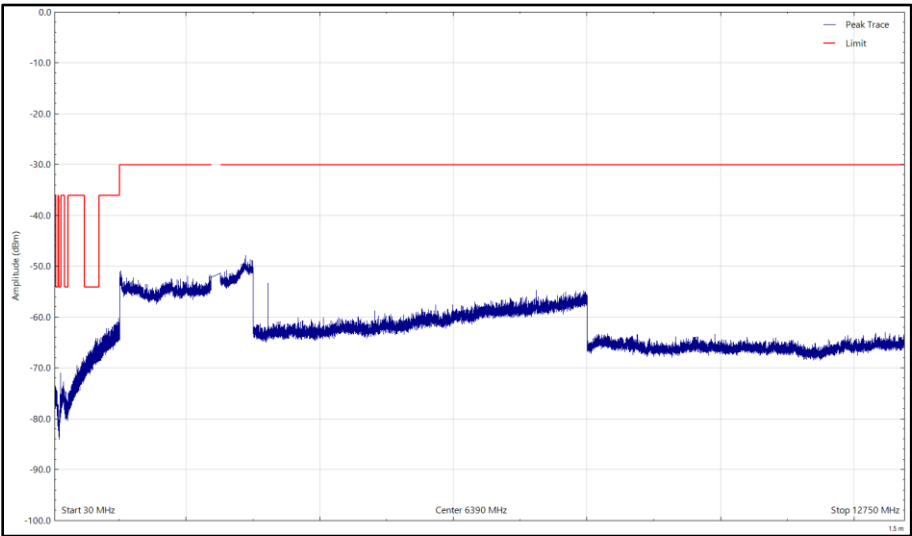


Figure 32 - Bot Channel - 802.11b_1Mbps_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

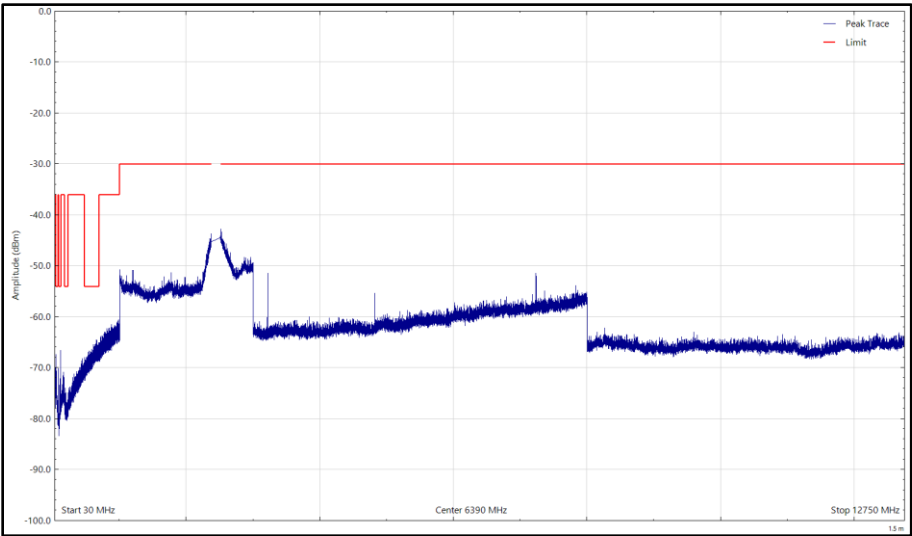


Figure 33 - Bot Channel - 802.11b_1Mbps_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 76 - Top Channel - 802.11b_1Mbps_Tx, 2472 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

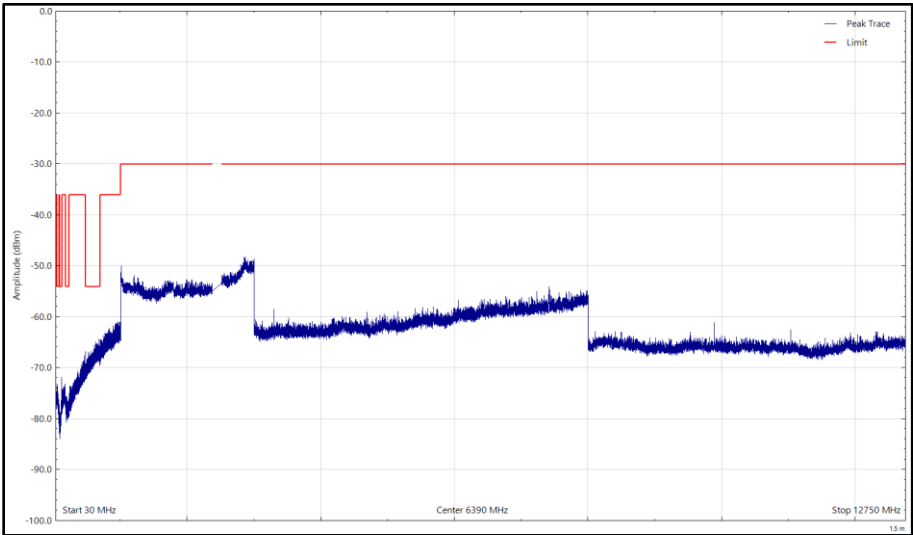


Figure 34 - Top Channel - 802.11b_1Mbps_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

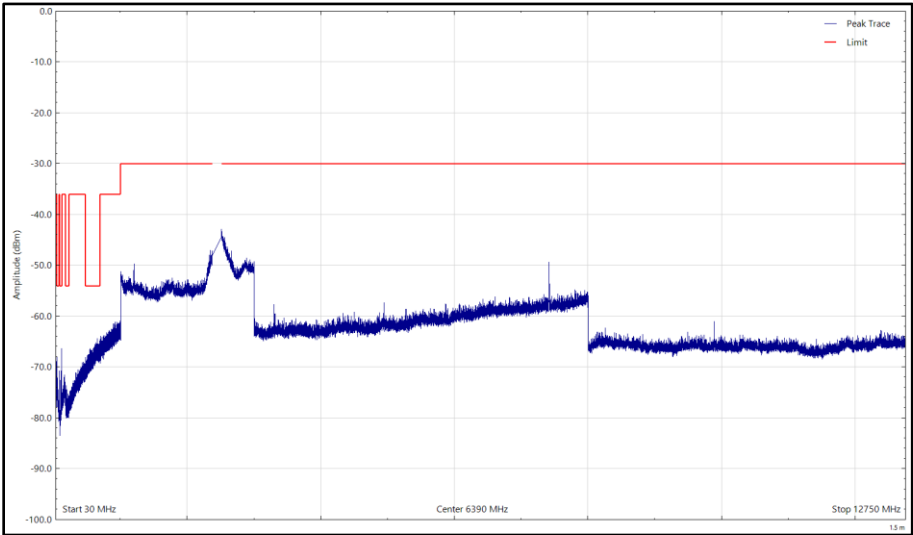


Figure 35 - Top Channel - 802.11b_1Mbps_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 77 - Bot Channel - 802.11n_HT20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

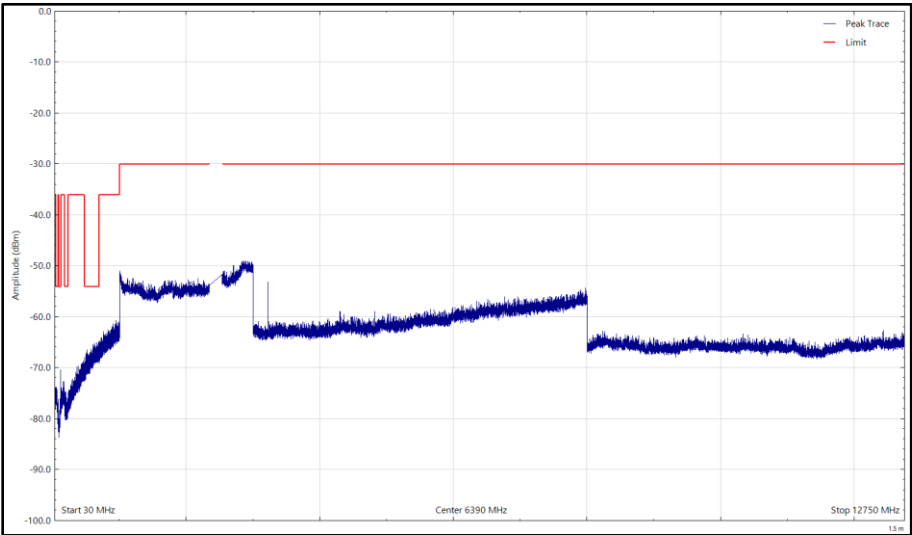


Figure 36 - Bot Channel - 802.11n_HT20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

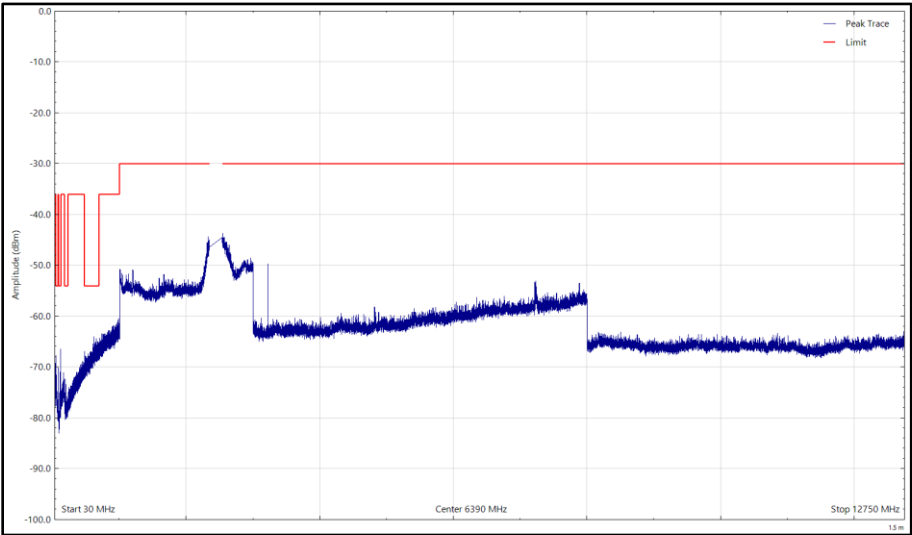


Figure 37 - Bot Channel - 802.11n_HT20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 78 - Top Channel - 802.11n_HT20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

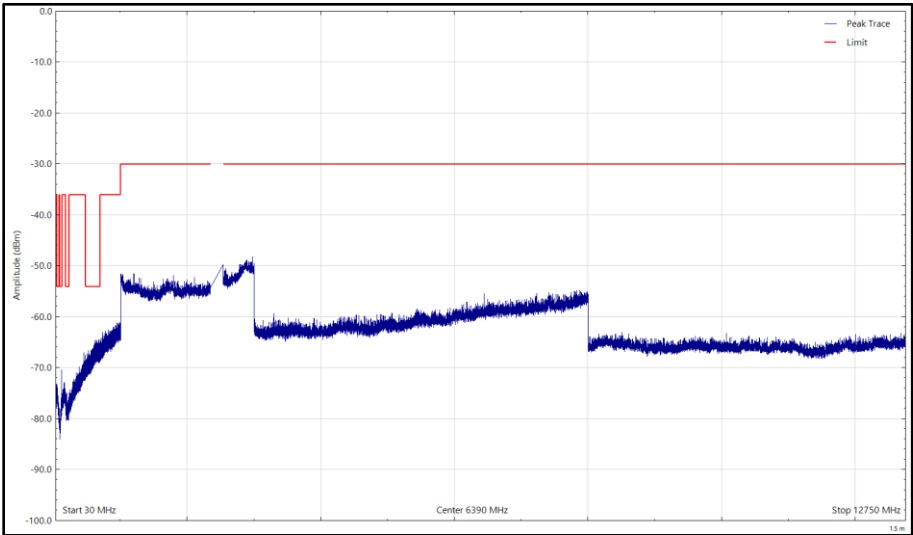


Figure 38 - Top Channel - 802.11n_HT20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

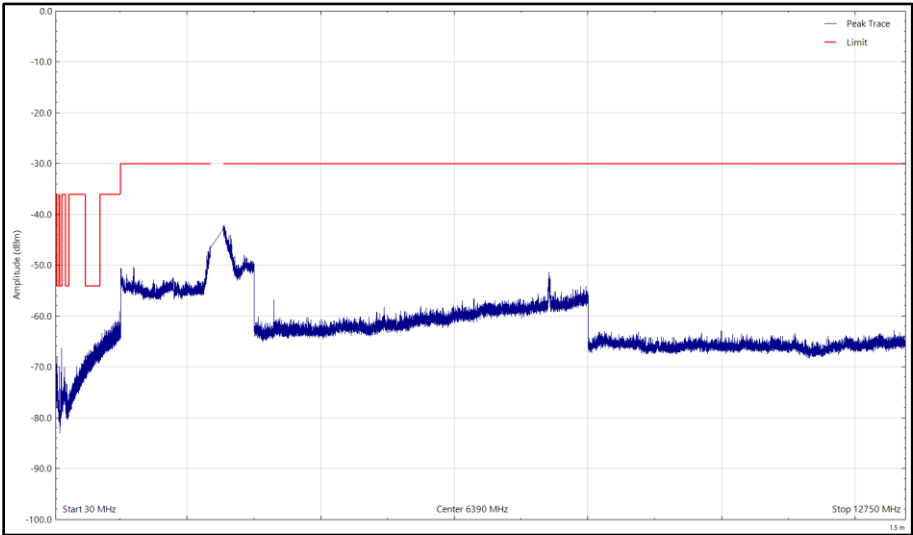


Figure 39 - Top Channel - 802.11n_HT20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 79 - Bot Channel - 802.11ax_HE20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

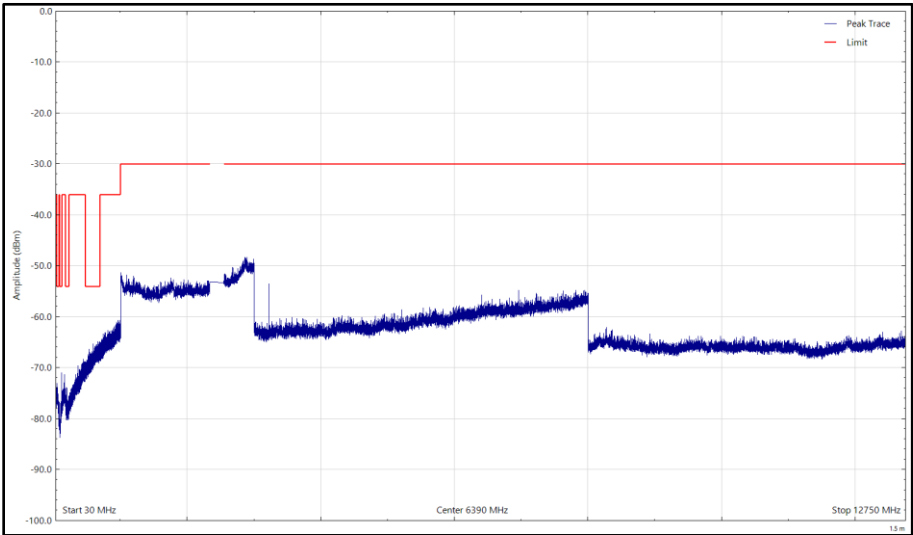


Figure 40 - Bot Channel - 802.11ax_HE20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

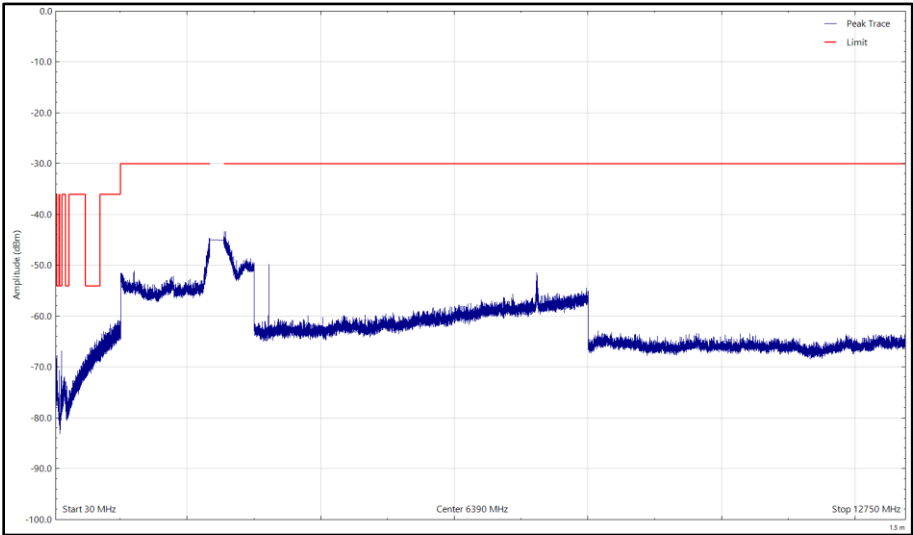


Figure 41 - Bot Channel - 802.11ax_HE20_MCS0_Tx, 2412 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 80 - Top Channel - 802.11ax_HE20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

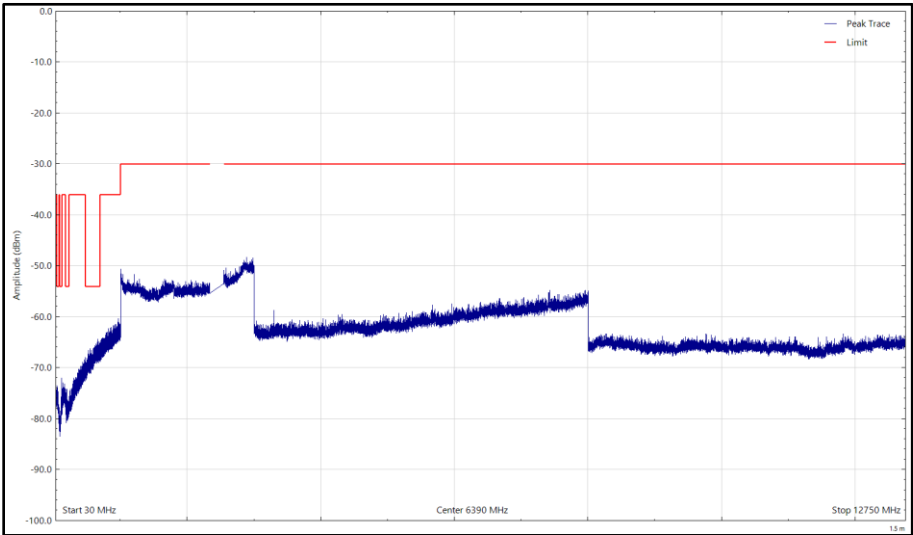


Figure 42 - Top Channel - 802.11ax_HE20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

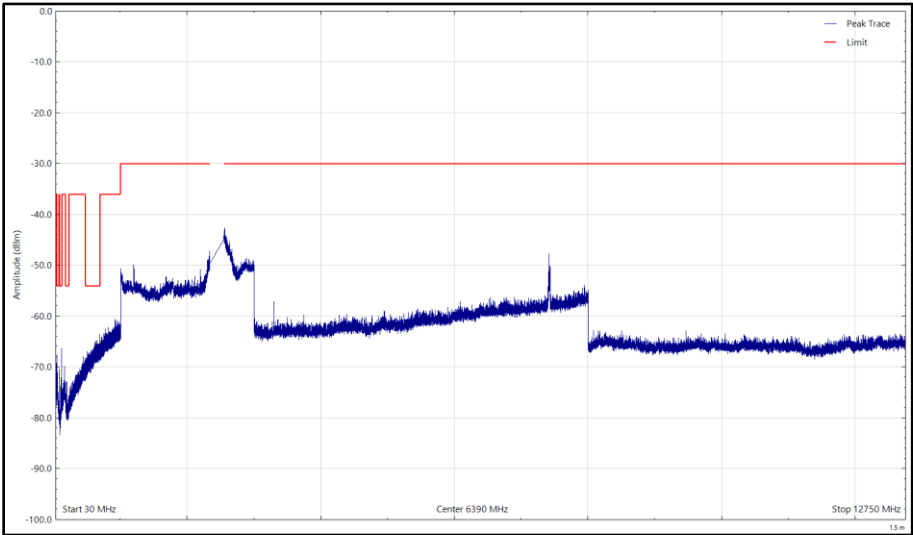


Figure 43 - Top Channel - 802.11ax_HE20_MCS0_Tx, 2472 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



ETSI EN 300 328, Limit Clause 4.3.2.9.3

The transmitter unwanted emissions in the spurious domain shall not exceed the values given in the table below.

In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

Frequency Range	Maximum power e.r.p (≤ 1 GHz) e.i.r.p (> 1 GHz)	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87.5 MHz	-36 dBm	100 kHz
87.5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 694 MHz	-54 dBm	100 kHz
694 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12.75 GHz	-30 dBm	1 MHz

Table 81



2.9.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
4dB Attenuator	Pasternack	PE7047-4	4935	12	20-Jul-2024
Test Receiver	Rohde & Schwarz	ESW44	5084	12	31-Aug-2024
Emissions Software	TUV SUD	EmX V3.2.0	5125	-	Software
3m Semi-Anechoic Chamber	Rainford	RF Chamber 11	5136	36	24-Nov-2024
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
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
Thermo-Hygro-Barometer	PCE Instruments	OCE-THB-40	5470	12	20-Apr-2024
Cable (K-Type to K-Type, 1 m)	Junkosha	MWX241-01000KMSKMS/A	5512	12	21-May-2024
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5518	12	14-Apr-2024
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	5522	12	14-Apr-2024
3 GHz High pass Filter	Wainwright	WHKX12-2580-3000-18000-80SS	5547	12	30-May-2024
7 GHz High pass Filter	Wainwright	WHKX12-5850-6800-18000-80SS	5550	12	30-May-2024
Pre-Amplifier (8 GHz to 18 GHz)	Wright Technologies	APS06-0061	5595	12	26-Oct-2024
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	6635	24	13-Jun-2025

Table 82

TU - Traceability Unscheduled



2.10 Receiver Spurious Emissions (ANT-2.4-CW-CT-SMA/RPS Antenna)

2.10.1 Specification Reference

ETSI EN 300 328, Clause 4.3.2.10

2.10.2 Equipment Under Test and Modification State

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

2.10.3 Date of Test

30-March-2024

2.10.4 Test Method

This test was performed in accordance with ETSI EN 300 328, clause 5.4.10.2.2.

The plots show the characterisation of the EUT using a peak detector. Where emissions were detected, final measurements were taken using the method specified in ETSI EN 300 328, clause 5.4.10.2.1.3. Where these emissions are within 6 dB of the limit the final value is reported in the tables below.

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.

2.10.5 Environmental Conditions

Ambient Temperature	21.6 °C
Relative Humidity	45.8 %



2.10.6 Test Results

2.4 GHz WLAN - ANT-2.4-CW-CT-SMA/RPS Antenna

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
1199.7	-64.7	-57.0	-17.7	RMS	1	100	Vertical

Table 83 - Bot Channel - WLAN - 20 MHz Bandwidth_Rx, 2412 MHz, 30 MHz to 12.75 GHz

No other emissions found within 6 dB of the limit.

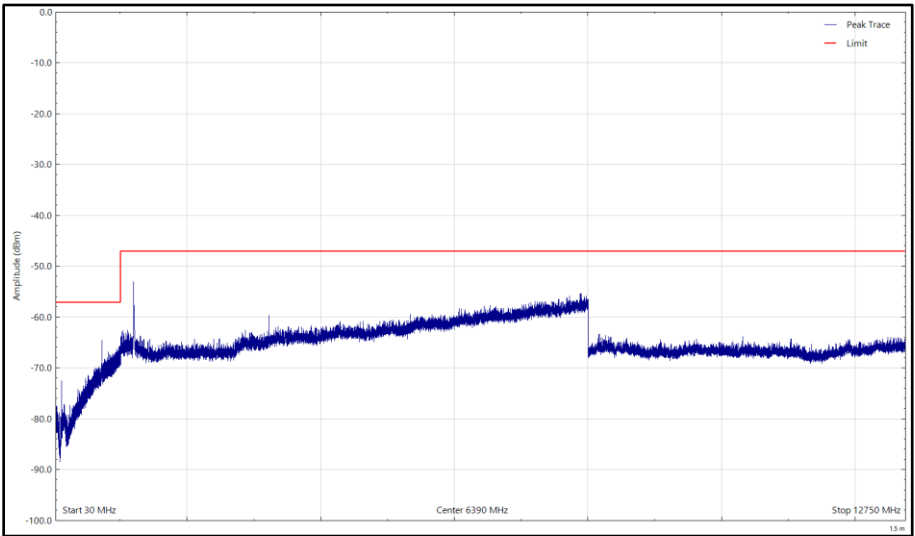


Figure 44 - Bot Channel - WLAN - 20 MHz Bandwidth_Rx, 2412 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

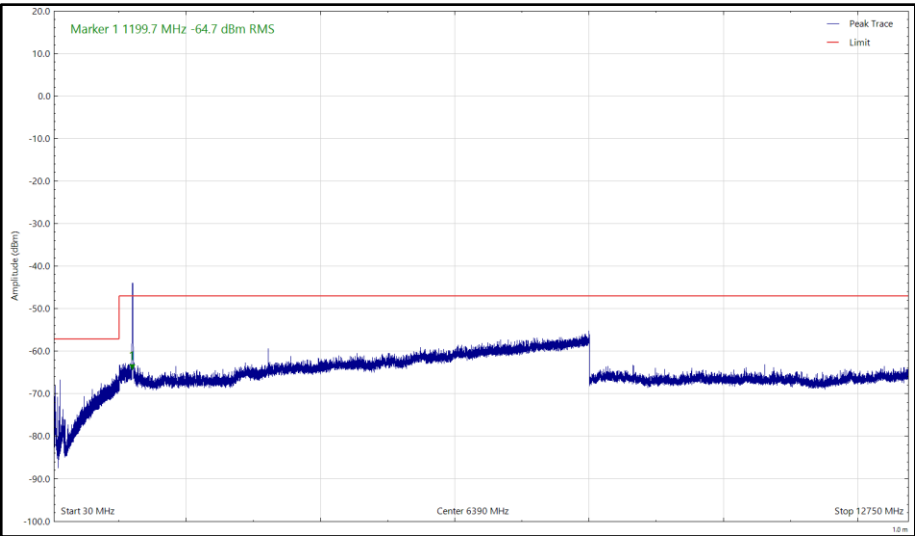


Figure 45 - Bot Channel - WLAN - 20 MHz Bandwidth_Rx, 2412 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



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

Table 84 - Top Channel - WLAN - 20 MHz Bandwidth_Rx, 2472 MHz, 30 MHz to 12.75 GHz

*No emissions found within 6 dB of the limit.

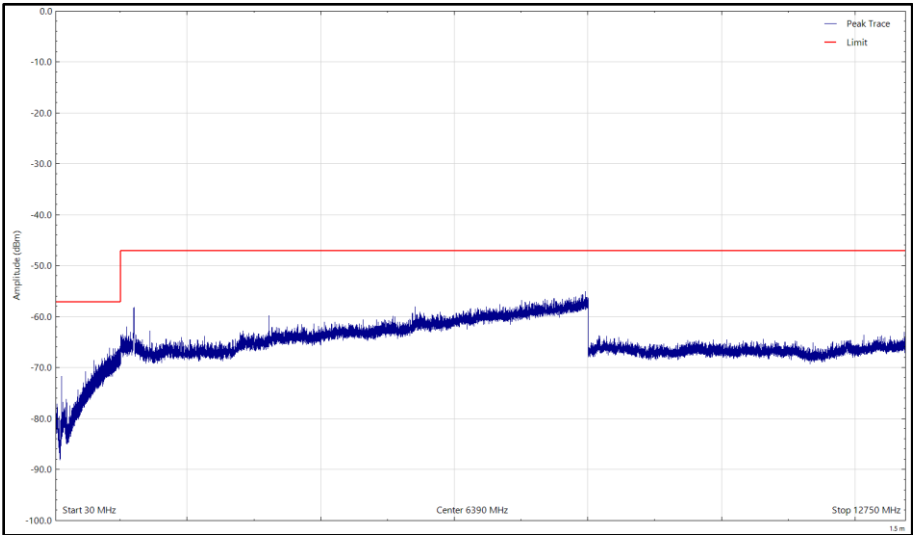


Figure 46 - Top Channel - WLAN - 20 MHz Bandwidth_Rx, 2472 MHz, 30 MHz to 12.75 GHz, Horizontal (Peak)

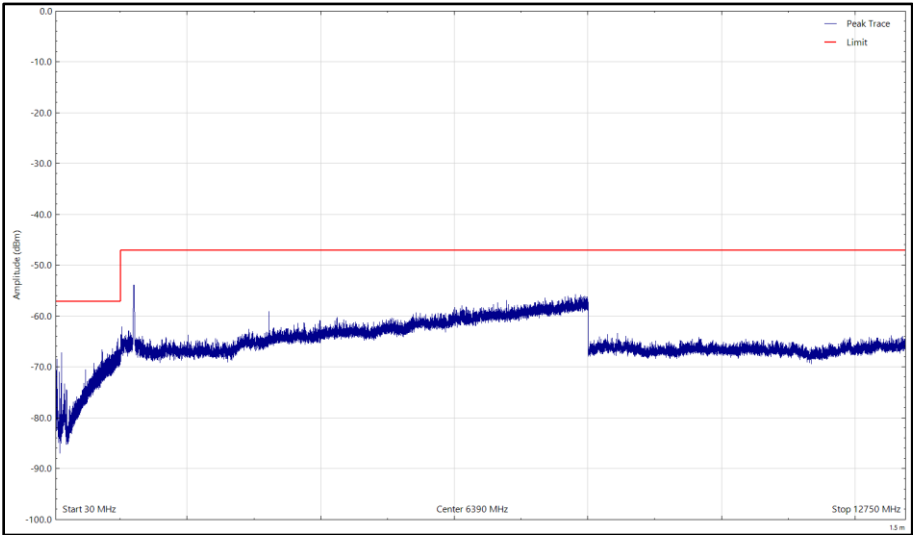


Figure 47 - Top Channel - WLAN - 20 MHz Bandwidth_Rx, 2472 MHz, 30 MHz to 12.75 GHz, Vertical (Peak)



ETSI EN 300 328, Limit Clause 4.3.2.10.3

In case of non-FHSS equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and e.i.r.p. for emissions above 1 GHz.

Frequency Range	Maximum Power	Measurement Bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12.75 GHz	-47 dBm	1 MHz

Table 85



2.10.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
4dB Attenuator	Pasternack	PE7047-4	4935	12	20-Jul-2024
Test Receiver	Rohde & Schwarz	ESW44	5084	12	31-Aug-2024
Emissions Software	TUV SUD	EmX V3.2.0	5125	-	Software
3m Semi-Anechoic Chamber	Rainford	RF Chamber 11	5136	36	24-Nov-2024
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
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
Thermo-Hygro-Barometer	PCE Instruments	OCE-THB-40	5470	12	20-Apr-2024
Cable (K-Type to K-Type, 1 m)	Junkosha	MWX241-01000KMSKMS/A	5512	12	21-May-2024
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5518	12	14-Apr-2024
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	5522	12	14-Apr-2024
3 GHz High pass Filter	Wainwright	WHKX12-2580-3000-18000-80SS	5547	12	30-May-2024
7 GHz High pass Filter	Wainwright	WHKX12-5850-6800-18000-80SS	5550	12	30-May-2024
Pre-Amplifier (8 GHz to 18 GHz)	Wright Technologies	APS06-0061	5595	12	26-Oct-2024
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	6635	24	13-Jun-2025

Table 86

TU - Traceability Unscheduled

3 Photographs

3.1 Equipment Under Test (EUT)

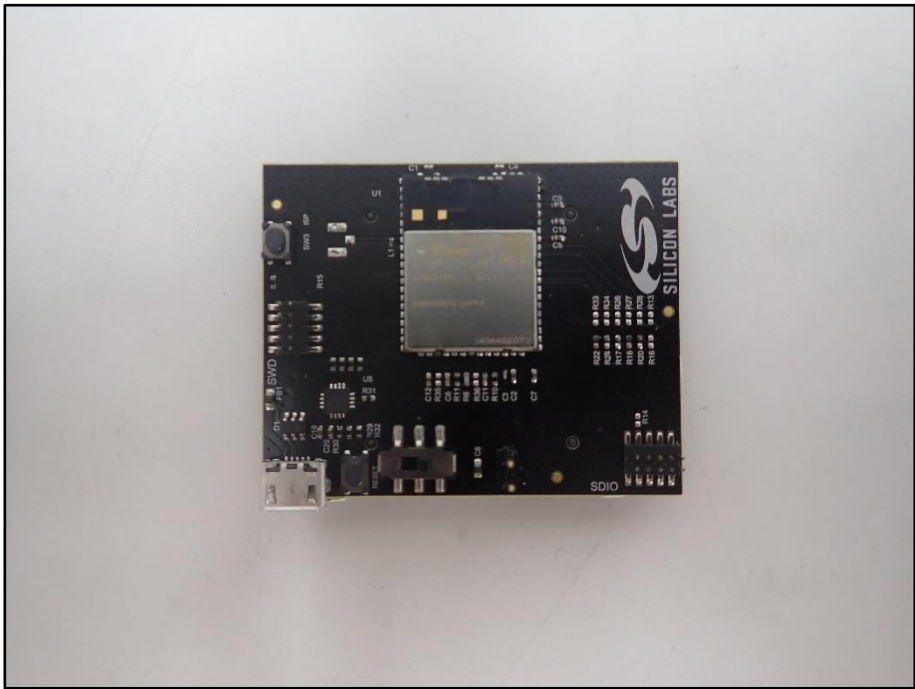


Figure 48 – EUT mounted on host certification board with integral antenna (SiW917Y1GA)

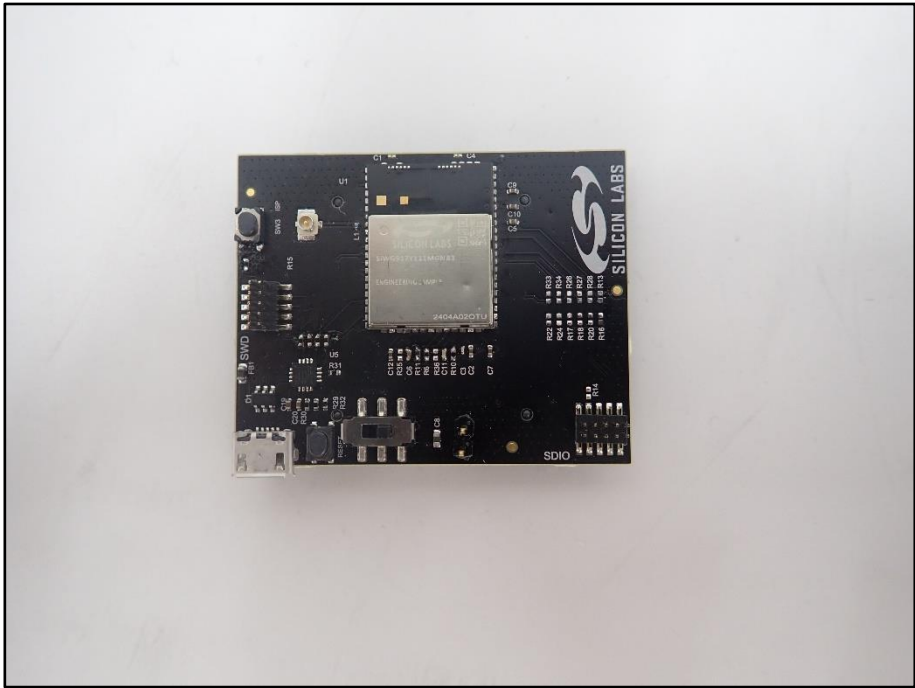


Figure 49 – EUT mounted on host certification board without integral antenna (SiW917Y1GN)



4 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
RF Output Power	± 1.38 dB
Power Spectral Density	± 1.49 dB
Adaptivity (non-FHSS)	Time: $\pm 0.30\%$ Interferer Bandwidth: ± 267.98 kHz Interferer Level: ± 0.80 dB
Occupied Channel Bandwidth	± 215.10 kHz
Transmitter Unwanted Emissions in the Out-of-Band Domain	± 2.5 dB
Receiver Blocking	± 1.96 dB
Transmitter Unwanted Emissions in the Spurious Domain	Conducted: ± 2.5 dB Radiated: ± 3.08 dB
Receiver Spurious Emissions	Conducted: ± 2.5 dB Radiated: ± 3.08 dB
Transmitter Unwanted Emissions in the Spurious Domain	Conducted: ± 2.5 dB Radiated: ± 3.08 dB
Receiver Spurious Emissions	Conducted: ± 2.5 dB Radiated: ± 3.08 dB

Table 87

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.