TEST REPORT

Client Name	:	Woan Technology (Shenzhen) Co., Ltd.
Address	:	Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Product Name	:	SwitchBot Pan/Tilt Cam 3K
Report No.	:	8131EU011502W
Date	:	Sep. 08, 2023

SHENZHEN EU TESTING LABORATORY LIMITED

APPROVED

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

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TEST REPORT

Applicant	:	Woan Technology (Shenzhen) Co., Ltd.
Manufacturer	:	Woan Technology (Shenzhen) Co., Ltd.
Product Name	:	SwitchBot Pan/Tilt Cam 3K
Model No.	:	W4001100, W4001101, W4001102, W4001103, W4001104, W4001105
Trade Mark	:	SwitchBot
Rating(s)	:	Input: 5V⎓, 2A
Test Standard(s)	:	**ETSI EN 300 328 V2.2.2 (2019-07)**

The device described above is tested by SHENZHEN EU TESTING LABORATORY LIMITED, to determine the maximum emission levels emanating from the device and the severe levels that the device can endure and its performance criterion. This report shows the EUT to be technically compliant with the EN 300 328 requirements. The test results are contained in this report and Shenzhen EU Compliance Laboratory Limited, and the report is assumed full responsibility for the accuracy and completeness of these tests.

This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN EU TESTING LABORATORY LIMITED.

Date of Receipt: Aug. 15, 2023

Date of Test: Aug. 15, 2023 – Sep. 06, 2023

Prepared By: Mikey zhu

(Engineer / Mikey Zhu)

Approved & Authorized Signer: Sally zhang

(Manager / Sally Zhang)

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Revision History

Report Version	Issued Date	Description	Status
V0	Sep. 08, 2023	Original	Valid

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1. General Information

1.1. Client Information

Applicant	:	Woan Technology (Shenzhen) Co., Ltd.
Address	:	Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Manufacturer	:	Woan Technology (Shenzhen) Co., Ltd.
Address	:	Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Factory	:	Woan Technology (Shenzhen) Co., Ltd.
Address	:	Building A2, Zhengfeng Industrial Area, No.610 Fengtang Boulevard, Fuhai Sub-district, Bao'an District, Shenzhen

1.2. Description of Device (EUT)

Product Name	:	SwitchBot Pan/Tilt Cam 3K
Test Model No.	:	W4001100
Series Model No.	:	W4001101, W4001102, W4001103, W4001104, W4001105
Description of Model name differentiation	:	All models are same with electrical parameters and internal circuit structure, but only differ in model name. (this information provided by the customer)
Test Power Supply	:	230VAC, 50Hz for Adapter
Test Sample No.	:	-1/2(Normal Sample), -2/2(Engineering Sample)

Remark:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.3. Specification of Device (EUT)

Technology	:	**Wi-Fi**
Operation Band	:	☒ 2.4G Band
Operation Mode	:	☒ b ☒ g ☒ n(HT20) ☐ n(HT40) ☐ ac(VHT20) ☐ ac(VHT40) ☐ ax(HEW20) ☐ ax(HEW40)
Modulation Type	:	☒ 802.11b: DSSS (CCK, DQPSK, DBPSK) ☒ 802.11g: OFDM (BPSK, QPSK, 16QAM, 64QAM) ☒ 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) ☐ 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) ☐ 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Operating Frequency	:	2412-2472MHz
Max. Transmitting Power	:	17.60 dBm
Antenna Type	:	Monopole Antenna
Antenna Gain(Peak)	:	2.34 dBi

1.4. Auxiliary Equipment Used During Test

Description	Rating(s)
Adapter	Manufacturer: SHENZHEN KEYU POWERSUPPLY TECHNOLOGY CO., LTD. M/N: KA12C-0502000EU Input: 100-240V~50-60Hz 0.35A Max. Output: 5.0V⎓ 2.0A 10.0W
Mobile phone	Manufacturer: XIAOMI M/N: MI 11

1.5. List of Channels

For Wi-Fi 2.4G, 13 channels are provided to testing as below table:

Channel	Frequency	Channel	Frequency
01	**2412 MHz**	08	2447 MHz
02	2417 MHz	09	2452 MHz
03	2422 MHz	10	2457 MHz
04	2427 MHz	11	2462 MHz
05	2432 MHz	12	2467 MHz
06	2437 MHz	**13**	**2472 MHz**
07	**2442 MHz**		

For 802.11b modes were test with channel 01, 07, 13.

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1.6. Test Conditions

	Normal Test Conditions	Extreme Test Conditions
Temperature	15°C - 35°C	-10°C ~ 50°C Note: (1)
Relative Humidity	20% - 75%	N/A
Supply Voltage	230VAC, 50Hz for Adapter	N/A
Note: (1) The HT 50°C and LT -10°C was declared by manufacturer.		

1.7. Test Equipment List

No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	Rohde & Schwarz	ESPI	EE-006	2023/01/10	1 Year
2	Bilog Broadband Antenna	SCHWARZBECK	VULB 9163	EE-007	2023/01/14	3 Year
3	Double Ridged Horn Antenna	A-INFOMW	LB-10180-NF	EE-008	2023/01/14	3 Year
4	Pre-amplifier	Agilent	8447D	EE-009	2023/01/10	1 Year
5	Pre-amplifier	Agilent	8449B	EE-010	2023/01/10	1 Year
6	MAX Spectrum Analysis	Agilent	N9020A	EE-011	2023/01/10	1 Year
7	MXG RF Vector Signal Generator	Agilent	N5182A	EE-012	2023/01/10	1 Year
8	Test Software	Ferrari Technology	EZ-EMC	EE-015	N.C.R	N.C.R
9	MIMO Power Measurement	TSTPASS	TSPS 2023R	EE-016	2023/05/17	1 Year
10	RF Test Software	TSTPASS	TS32893 V2.0	EE-017	N.C.R	N.C.R
11	Wideband Radio Communication Tester	ROHDE & SCHWARZ	CMW500	EE-402	2023/2/16	1 Year
12	MXG RF Analog Signal Generator	Agilent	N5181A	EE-406	2023/2/16	1 Year
13	Constant Temperature Humidity Chamber	Guangxin	GXP-401	ES-002	2023/08/07	1 Year

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1.8. Description of Test Facility

Test Location

SHENZHEN EU TESTING LABORATORY LIMITED
101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China

1.9. Measurement Uncertainty

For the test methods, according to ETSI EN 300 328 standard, the measurement uncertainty figures shall be calculated in accordance with ETR 100 028-1 [4] and shall correspond to an expansion factor (coverage factor) k = 1,96 or k = 2 (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Maximum measurement uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1,5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±1 °C
Humidity	±5 %
DC and low frequency voltages	±3 %
Time	±5 %
Duty Cycle	±5 %

2. Summary of Test Results

List of Measurements			
No.	**Test Items**	**Clause No.**	**Results**
Transmitter Items			
1	RF Output Power	4.3.2.2	Complies
2	Power Spectral Density	4.3.2.3	Complies
3	Duty Cycle, TX-Sequence, TX-gap	4.3.2.4	N/A Note (2)(3)
4	Medium Utilization (MU) factor	4.3.2.5	N/A Note (2)(3)
5	Adaptivity	4.3.2.6	Complies
6	Occupied Channel Bandwidth	4.3.2.7	Complies
7	Transmitter Unwanted Emissions in the Out-Of-Band Domain	4.3.2.8	Complies
8	Transmitter Unwanted Emissions in the Spurious Domain	4.3.2.9	Complies
Receiver Items			
9	Receiver spurious emissions	4.3.2.10	Complies
10	Receiver Blocking	4.3.2.11	Complies
11	Geo-location capability	4.3.2.12	N/A

Note:

1. “N/A”: indicates test is not applicable in this Test Report.
2. Note(2) These requirements apply to non-adaptive equipment or to adaptive equipment when operating in a non-adaptive mode. The equipment is non-FHSS equipment.
3. Note(3) This requirement applies to non-adaptive equipment or to adaptive equipment when operating in a non-adaptive mode.
4. This requirement does not apply to adaptive equipment unless operating in non-adaptive mode.

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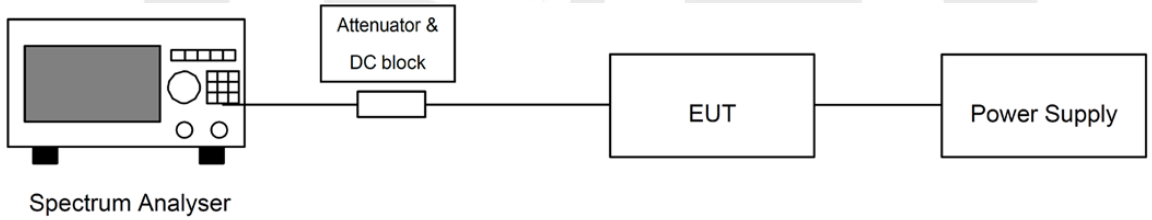
3. RF Output Power

3.1. Test Standard and Limit

Test Standard	ETSI EN 300 328 Clause 4.3.2.2

Condition	Limit
☐ Non-adaptive frequency hopping systems	Equal to or less than the value declared by the manufacturer. This declared value shall be equal to or less than 20 dBm.
☒ Adaptive frequency hopping systems	20dBm

3.2. Test Setup



3.3. Test Procedure

Refer to chapter 5.4.2.2.1 of ETSI EN 300 328 V2.2.2.

1. Run a test program to control EUT transmitting at specific channel
2. Connect the power sensor to the transmit port
3. Power Meter was setting as
below: Sample speed: 1 MS/s
Number of bursts: at least 10bursts
Detector: RMS
4. A power meter was used to read the response of the power sensor
5. Define Start time and Stop time of a burst by 30dB below the highest value of the stores samples.
6. Find the highest burst value
7. Record the power level
8. EIRP = antenna gain + power level of step 7.

3.4. Test Data

Temperature:	See below	Relative Humidity:	53%
Pressure:	1012 hPa	Test Voltage:	230VAC, 50Hz for Adapter

ENV	Mode	TX Type	Frequency (MHz)	ANT	Gain (dBi)	Power (dBm)	EIRP (dBm)	Limit (dBm)	Verdict
NTNV	802.11b	SISO	2412	1	2.34	14.58	16.92	<=20	Pass
			2442	1	2.34	14.04	16.38	<=20	Pass
			2472	1	2.34	14.68	17.02	<=20	Pass
	802.11g	SISO	2412	1	2.34	13.25	15.59	<=20	Pass
			2442	1	2.34	12.96	15.30	<=20	Pass
			2472	1	2.34	13.45	15.79	<=20	Pass
	802.11n (HT20)	SISO	2412	1	2.34	14.91	17.25	<=20	Pass
			2442	1	2.34	15.26	17.60	<=20	Pass
			2472	1	2.34	13.38	15.72	<=20	Pass
HTNV	802.11b	SISO	2412	1	2.34	14.54	16.88	<=20	Pass
			2442	1	2.34	14.01	16.35	<=20	Pass
			2472	1	2.34	14.61	16.95	<=20	Pass
	802.11g	SISO	2412	1	2.34	13.41	15.75	<=20	Pass
			2442	1	2.34	12.87	15.21	<=20	Pass
			2472	1	2.34	13.42	15.76	<=20	Pass
	802.11n (HT20)	SISO	2412	1	2.34	13.23	15.57	<=20	Pass
			2442	1	2.34	12.83	15.17	<=20	Pass
			2472	1	2.34	13.35	15.69	<=20	Pass
LTNV	802.11b	SISO	2412	1	2.34	14.27	16.61	<=20	Pass
			2442	1	2.34	14.01	16.35	<=20	Pass
			2472	1	2.34	14.58	16.92	<=20	Pass
	802.11g	SISO	2412	1	2.34	13.38	15.72	<=20	Pass
			2442	1	2.34	12.86	15.20	<=20	Pass
			2472	1	2.34	13.38	15.72	<=20	Pass
	802.11n (HT20)	SISO	2412	1	2.34	13.24	15.58	<=20	Pass
			2442	1	2.34	12.83	15.17	<=20	Pass
			2472	1	2.34	13.32	15.66	<=20	Pass
Note1: E.I.R.P = Measured Power + Antenna Gain									

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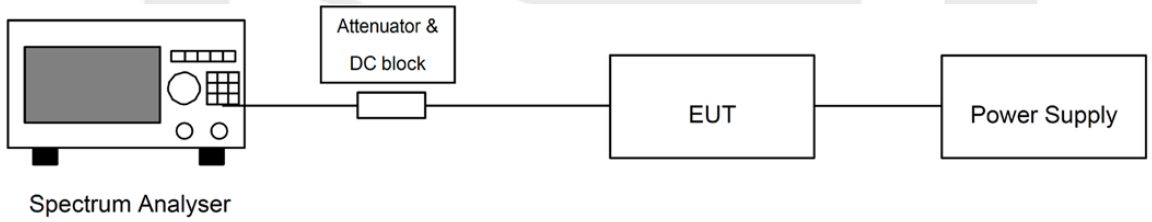
4. Power Spectral Density

4.1. Test Standard and Limit

Test Standard	ETSI EN 300 328 Clause 4.3.2.3

Condition	Frequency Band	Limit (e.i.r.p.)
Under normal conditions	2400 ~ 2483.5 MHz	10dBm / 1MHz

4.2. Test Setup



4.3. Test Procedure

Refer to ETSI EN 300 328 V2.2.2, clause 5.4.3 for the test conditions and the measurement method.

Step 1:

Connect the UUT to the spectrum analyzer and use the following settings:

Resolution BW: .....10 kHz
Video BW: .....30 kHz
Sweep points: .....>8350
Detector:.....RMS
Trace: ..... Max hold
Sweep time: ..... Auto

For non-continuous signals, wait for the trace to stabilize. Save the data (trace data) set to a file.

Step 2:

For each frequency point, add up the amplitude (power) values for the different transmit chains and use this as the new data set.

Step 3:

Add up the values for amplitude (power) for all the samples in the file.

Step 4:

Normalize the individual values for amplitude so that the sum is equal to the RF Output Power (e.i.r.p.).

Step 5:

Starting from the first sample in the file (lowest frequency), add up the power of the following samples

representing a 1 MHz segment and record the results for power and position (i.e. sample #1 to #100). This is the Power Spectral Density (e.i.r.p.) for the first 1 MHz segment which shall be recorded.

Step 6:
Shift the start point of the samples added up in step 5 by 1 sample and repeat the procedure in step 5 (i.e. sample #2 to #101).

Step 7:
Repeat step 6 until the end of the data set and record the radiated Power Spectral Density values for each of the 1 MHz segments. From all the recorded results, the highest value is the maximum Power Spectral Density for the UUT.

4.4. Test Data

Temperature:	23.2℃	Relative Humidity:	53%
Pressure:	1012 hPa	Test Voltage:	230VAC, 50Hz for Adapter

Test Mode	Channel	Frequency [MHz]	EIRP PSD [dBm/MHz]	Limit [dBm/MHz]	Verdict
802.11b	01	2412	8.85	10	PASS
	07	2442	8.29	10	PASS
	13	2472	8.92	10	PASS
802.11g	01	2412	4.86	10	PASS
	07	2442	4.57	10	PASS
	13	2472	4.87	10	PASS
802.11n(HT20)	01	2412	6.17	10	PASS
	07	2442	6.53	10	PASS
	13	2472	4.64	10	PASS

5. Adaptivity

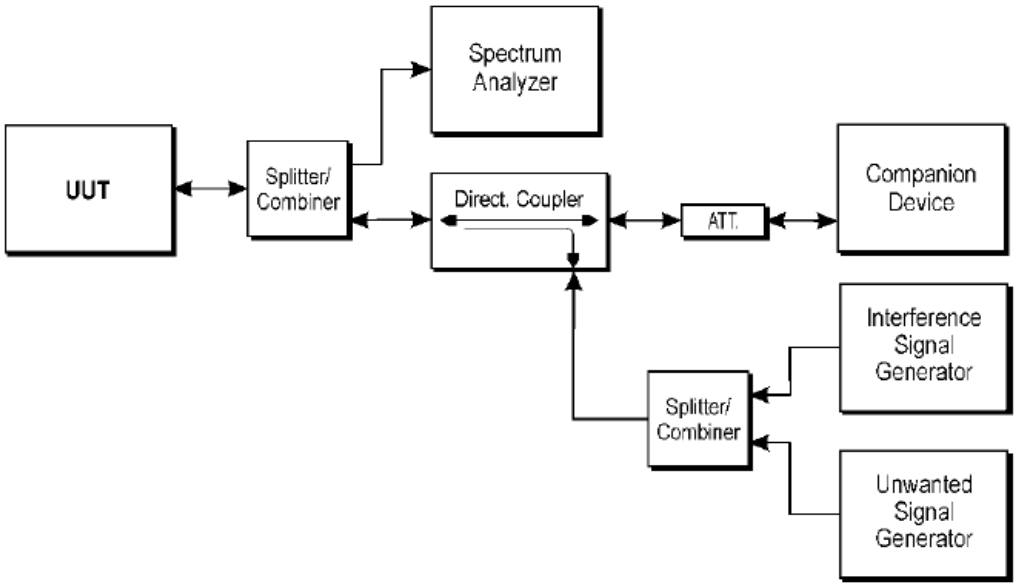
5.1. Test Standard and Limit

Test Standard	ETSI EN 300 328 Clause 4.3.2.6

See clause 5.1 of ETSI EN 300 328 V2.2.2 for the test conditions. These measurements shall only be performed at normal test conditions.
When supported by the operating frequency range of the equipment, this test shall be performed on two operating (hopping) frequencies randomly selected from the operating frequencies used by the equipment. The first (lower) frequency shall be randomly selected within the range 2 400 MHz to 2 442 MHz while the second (higher) frequency shall be randomly selected within the range 2 442 MHz to 2 483,5 MHz. The equipment shall be in a normal operating (hopping) mode.
For equipment which can operate in an adaptive and a non-adaptive mode, it shall be verified that prior to the test, the equipment is operating in the adaptive mode.
The equipment shall be configured in a mode that results in the longest Channel Occupancy Time.

☐ Non-LBT based Detect and Avoid: 1 The channel shall remain unavailable for a minimum time equal to 1 s after which the channel may be considered again as an 'available' channel; 2 COT ≤ 40 ms; 3 Idle Period shall be minimum 5% of COT with a minimum of 100us; 4 Detection threshold level = -70dBm/MHz +10*log(100mW/Pout)(Pout in mW E.I.R.P)
☐ LBT based Detect and Avoid (Frame Based Equipment): 1 The CCA observation time shall be not less than 18 us; 2 CCA observation time declared by the supplier; 3 COT = 1~10 ms; 4 Idle Period ≥ 5% of COT; 5 Detection threshold level = -70dBm/MHz +10*log(100mW/Pout)(Pout in mW E.I.R.P)
☒ LBT based Detect and Avoid (Load Based Equipment): 1 The CCA observation time shall be not less than 18 us; 2 CCA declared by the manufacturer; 3 COT ≤ 13 ms; 4 Detection threshold level =-70dBm/MHz +10*log(100mW/Pout)(Pout in mW E.I.R.P)
☐ Short Control Signalling Transmissions: Short Control Signalling Transmissions shall have a maximum TxOn / (TxOn + TxOff) ratio of 10 % within any observation period of 50 ms or within an observation period equal to the dwell time, whichever is less.

5.2. Test Setup



5.3. Test Procedure

Refer to ETSI EN 300 328 V2.2.2 Clause 5.4.6.

5.4. Test Data

Temperature:	23.2℃	Relative Humidity:	53%
Pressure:	1012 hPa	Test Voltage:	230VAC, 50Hz for Adapter

Only the worst case was attached below:

Test Mode	Test Channel	Interference Signal Level(dBm)	Unwanted Signal Level(dBm)	Max. COT (ms)	Idle Time (ms)	Verdict
802.11b	01	-65.68	-35	1.324	0	Pass
	13	-65.68	-35	1.324	0	Pass
802.11g	01	-64.46	-35	0.252	0	Pass
	13	-64.46	-35	0.252	0	Pass
802.11n(HT20)	01	-64.12	-35	1.420	0	Pass
	13	-64.12	-35	1.765	0	Pass

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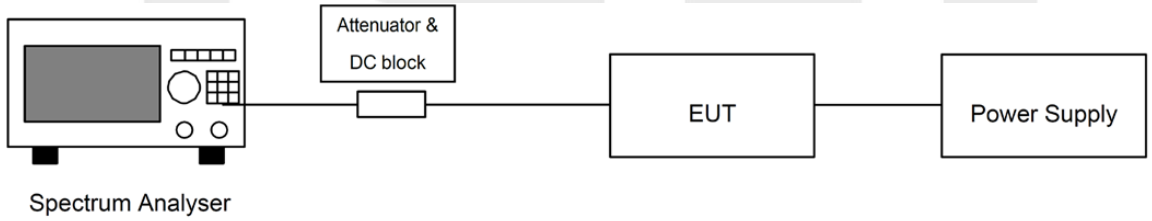
6. Occupied Channel Bandwidth

6.1. Test Standard and Limit

Test Standard	ETSI EN 300 328 Clause 4.3.2.7

Condition		Limit
All types of equipment		Shall fall completely within the band 2400 to 2483.5 MHz.
Additional requirement	For non-adaptive using wide band modulations other than FHSS system and e.i.r.p >10dBm.	Less than 20MHz
	For non-adaptive Frequency Hopping system and e.i.r.p >10dBm.	Less than 5MHz

6.2. Test Setup



6.3. Test Procedure

Refer to ETSI EN 300 328 V2.2.2, clause 5.4.7for the test conditions and the measurement method. The settings of the Spectrum Analyzer are as below:

Center Frequency	The centre frequency of the channel under test
Frequency Span	2 × Nominal Channel Bandwidth (e.g. 2MHz for BT)
Detector	RMS
RBW	~ 1 % of the span without going below 1 %
VBW	3 × RBW
Trace	Max hold
Sweep time	1S

6.4. Test Data

Temperature:	23.2℃	Relative Humidity:	53%
Pressure:	1012 hPa	Test Voltage:	230VAC, 50Hz for Adapter

ENV	Mode	TX Type	Frequency (MHz)	OBW (MHz)	Frequency Range (MHz)			Verdict
				Result	FL	FH	Limit	
NTNV	802.11b	SISO	2412	14.886	2404.582	/	>=2400	Pass
			2472	14.915	/	2479.451	<=2483.5	Pass
	802.11g	SISO	2412	16.579	2403.691	/	>=2400	Pass
			2472	16.582	/	2480.268	<=2483.5	Pass
	802.11n (HT20)	SISO	2412	17.645	2403.159	/	>=2400	Pass
			2472	17.646	/	2480.800	<=2483.5	Pass

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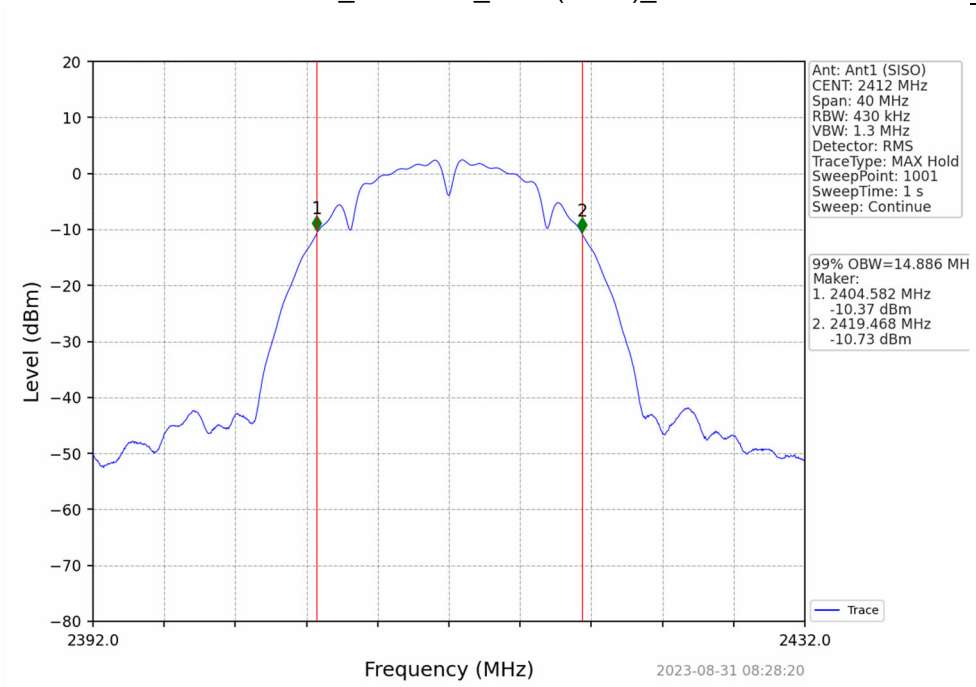
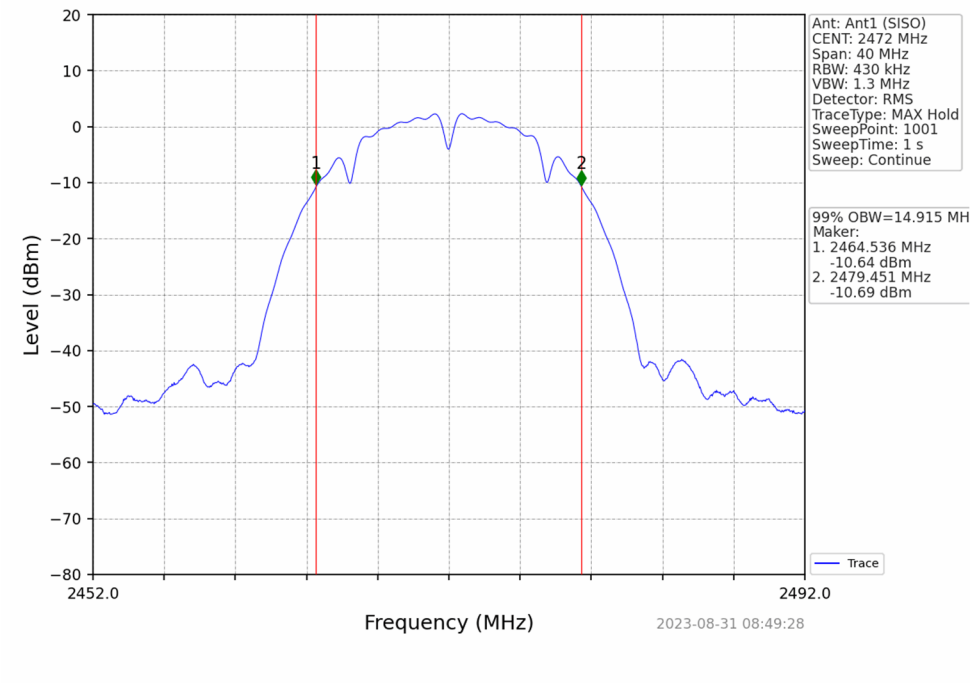
Test Graph

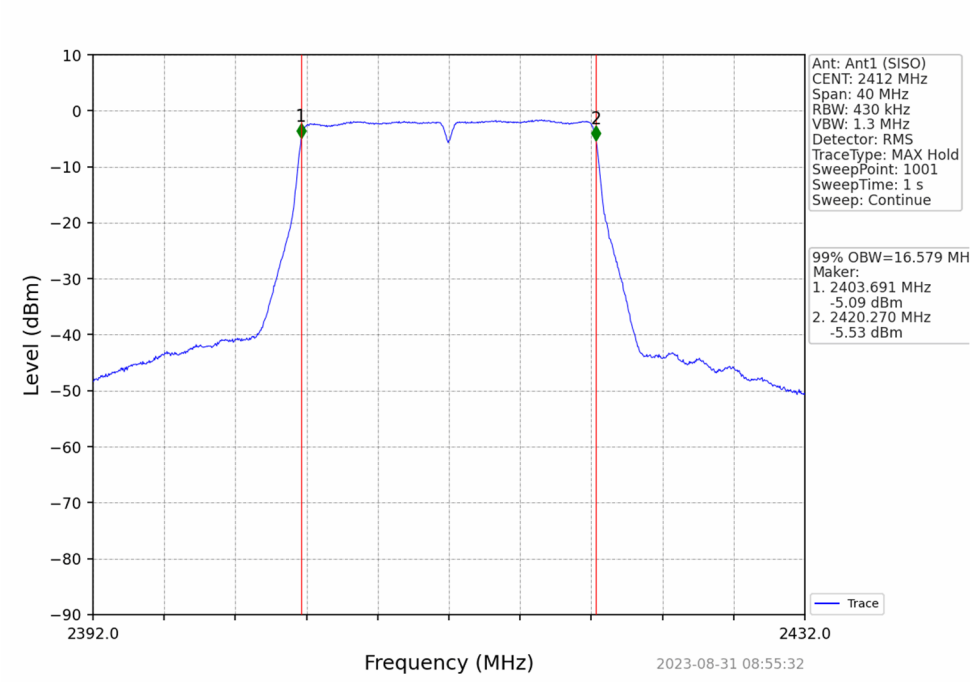
802.11b_2412MHz_Ant1 (SISO)_NTNV



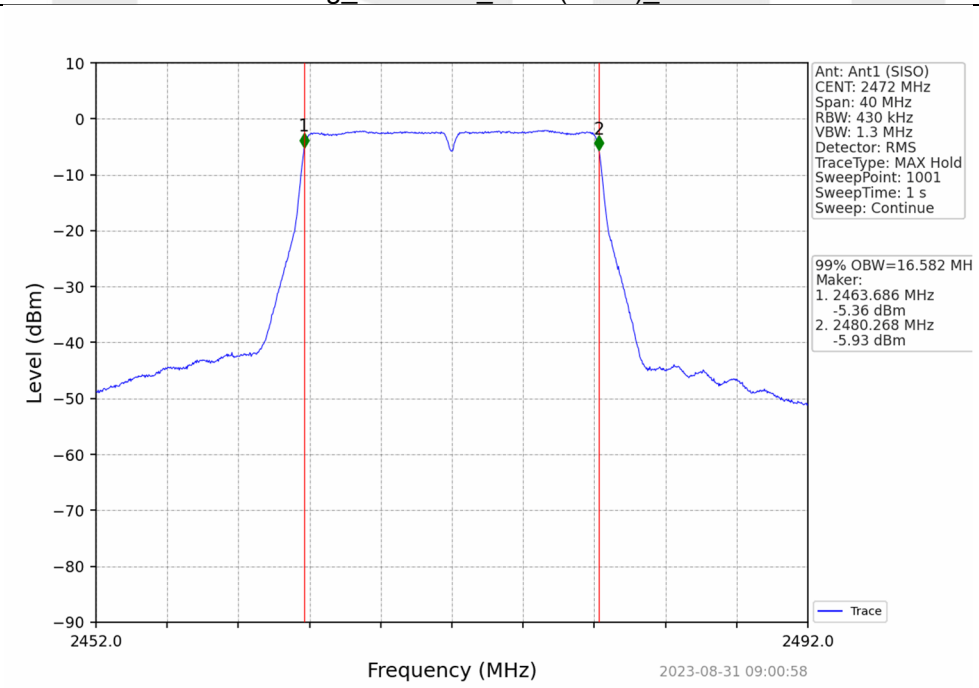
802.11b_2472MHz_Ant1 (SISO)_NTNV



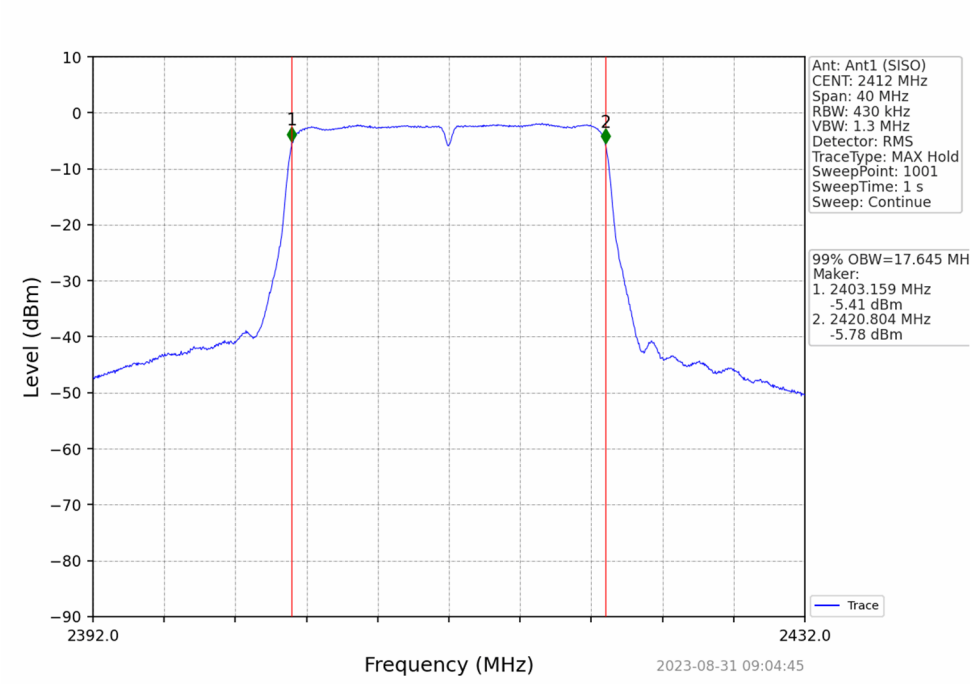
802.11g_2412MHz_Ant1 (SISO)_NTNV



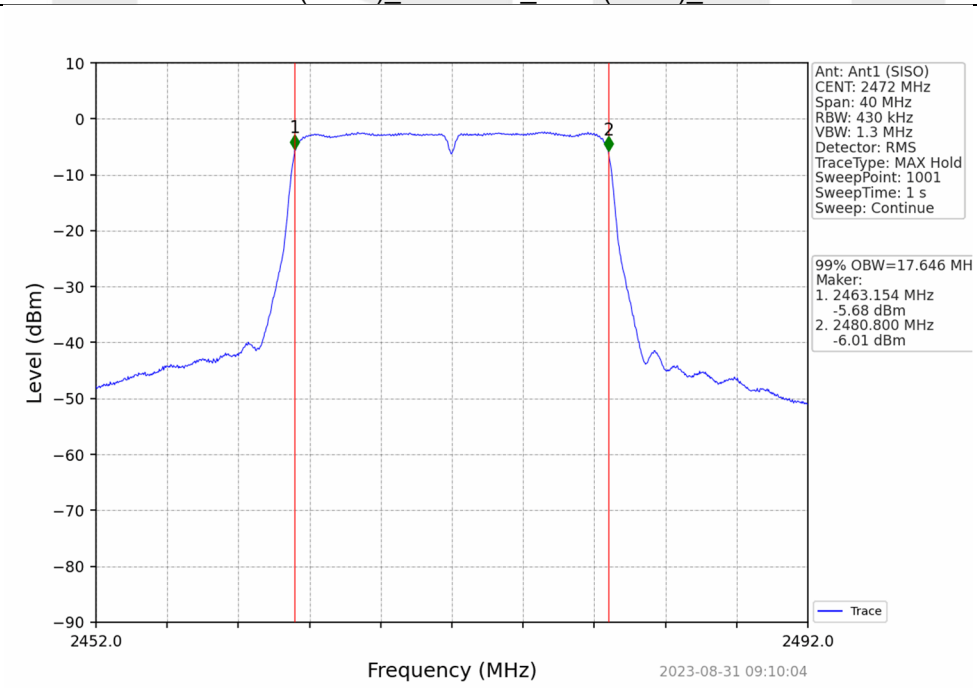
802.11g_2472MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_2412MHz_Ant1 (SISO)_NTNV



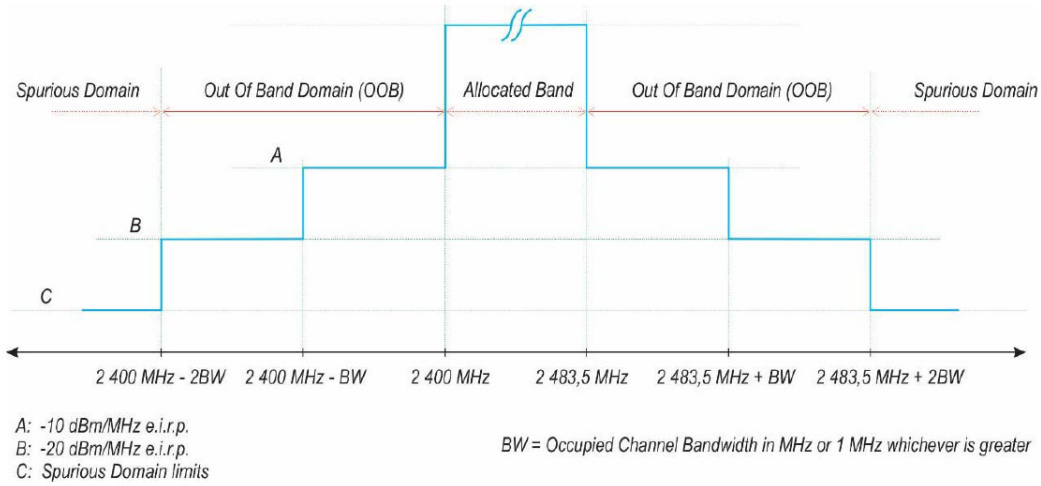
802.11n(HT20)_2472MHz_Ant1 (SISO)_NTNV



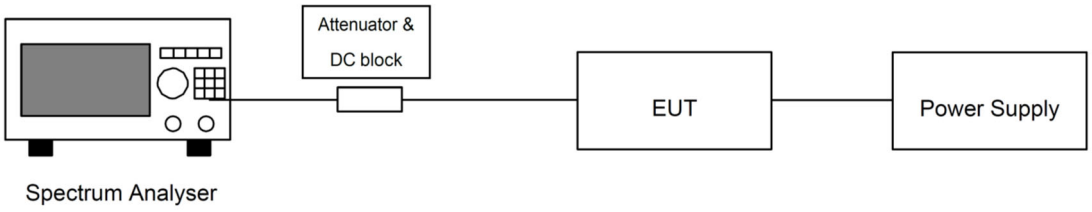
7. Transmitter Unwanted Emissions in the out-of-band Domain

7.1. Test Standard and Limit

Test Standard	ETSI EN 300 328 Clause 4.3.2.8
Test Limit	The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure as below. Note: Within the 2400MHz to 2483.5MHz band, the Out-of band emissions are fulfilled by compliance with the Occupied Channel Bandwidth requirement in clause 4.3.2.7.



7.2. Test Setup



7.3. Test Procedure

Refer as ETSI EN 300 328 V2.2.2, clause 5.4.8 for the test conditions and the measurement method.

Step 1:

• Connect the UUT to the spectrum analyser and use the following settings:

- Measurement Mode: Time Domain Power
- Centre Frequency: 2 484 MHz
- Span: Zero Span
- Resolution BW: 1 MHz
- Filter mode: Channel filter
- Video BW: 3 MHz

- Detector Mode: RMS
- Trace Mode: Max Hold
- Sweep Mode: Single Sweep
- Sweep Points: Sweep time [µs] / (1 µs) with a maximum of 30 000
- Trigger Mode: Video
- Sweep Time: > 120 % of the duration of the longest burst detected during the measurement of the RF Output Power.

Step 2 (segment 2 483,5 MHz to 2 483,5 MHz + BW):

• The measurement shall be performed and repeated while the trigger level is increased until no triggering takes place.

• For FHSS equipment operating in a normal hopping mode, the different hops will result in signal bursts with different power levels. In this case the burst with the highest power level shall be selected.

• Set a window (start and stop lines) to match with the start and end of the burst and in which the RMS power shall be measured using the Time Domain Power function.

• Select RMS power to be measured within the selected window and note the result which is the RMS power within this 1 MHz segment (2 483,5 MHz to 2 484,5 MHz). Compare this value with the applicable limit provided by the mask.

• Increase the centre frequency in steps of 1 MHz and repeat this measurement for every 1 MHz segment within the range 2 483,5 MHz to 2 483,5 MHz + BW. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + BW - 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 3 (segment 2 483,5 MHz + BW to 2 483,5 MHz + 2 BW):

• Change the centre frequency of the analyser to 2 484 MHz + BW and perform the measurement for the first 1 MHz segment within range 2 483,5 MHz + BW to 2 483,5 MHz + 2 BW. Increase the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + 2 BW - 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 4 (segment 2 400 MHz - BW to 2 400 MHz):

• Change the centre frequency of the analyser to 2 399,5 MHz and perform the measurement for the first 1 MHz segment within range 2 400 MHz - BW to 2 400 MHz Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 400 MHz - BW + 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 5 (segment 2 400 MHz - 2 BW to 2 400 MHz - BW):

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Step 6:

• In case of conducted measurements on equipment with a single transmit chain, the declared antenna assembly gain G in dBi shall be added to the results for each of the 1 MHz segments and compared with the limits provided by the mask given in figure 1 or figure 3. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered.

• In case of conducted measurements on smart antenna systems (equipment with multiple transmit chains), the measurements need to be repeated for each of the active transmit chains. The declared antenna assembly gain G in dBi for a single antenna shall be added to these results. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered. Comparison with the applicable limits shall be done using any of the options given below:

- Option 1: the results for each of the transmit chains for the corresponding 1 MHz segments shall be added. The additional beamforming gain Y in dB shall be added as well and the resulting values compared with the limits provided by the mask given in figure 1 or figure 3.
- Option 2: the limits provided by the mask given in figure 1 or figure 3 shall be reduced by $10 \times \log_{10}(A_{ch})$ and the additional beamforming gain Y in dB. The results for each of the transmit chains shall be individually compared with these reduced limits.

NOTE: A_{ch} refers to the number of active transmit chains.

It shall be recorded whether the equipment complies with the mask provided in figure 1 or figure 3.

7.4. Test Data

Please refer to the following pages.

Temperature:	23.2℃	Relative Humidity:	53%
Pressure:	1012 hPa	Test Voltage:	230VAC, 50Hz for Adapter

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Mode	TX Type	Frequency (MHz)	ANT	Test Freq (MHz)	Result (dBm/MHz)	Limit (dBm/MHz)	Verdict
802.11b	SISO	2412	1	2370.728	-51.17	<=-20	Pass
				2371.614	-51.14	<=-20	Pass
				2372.614	-51.02	<=-20	Pass
				2373.614	-50.75	<=-20	Pass
				2374.614	-50.70	<=-20	Pass
				2375.614	-50.72	<=-20	Pass
				2376.614	-50.46	<=-20	Pass
				2377.614	-50.38	<=-20	Pass
				2378.614	-50.17	<=-20	Pass
				2379.614	-50.01	<=-20	Pass
				2380.614	-49.58	<=-20	Pass
				2381.614	-49.17	<=-20	Pass
				2382.614	-48.73	<=-20	Pass
				2383.614	-47.36	<=-20	Pass
				2384.614	-47.22	<=-20	Pass
				2385.614	-47.03	<=-10	Pass
				2386.500	-46.51	<=-10	Pass
				2387.500	-46.59	<=-10	Pass
				2388.500	-46.18	<=-10	Pass
				2389.500	-45.99	<=-10	Pass
				2390.500	-45.74	<=-10	Pass
				2391.500	-44.02	<=-10	Pass
				2392.500	-44.66	<=-10	Pass
				2393.500	-43.84	<=-10	Pass
				2394.500	-41.83	<=-10	Pass
				2395.500	-41.99	<=-10	Pass
				2396.500	-39.17	<=-10	Pass
				2397.500	-36.74	<=-10	Pass
				2398.500	-38.08	<=-10	Pass
				2399.500	-37.60	<=-10	Pass
		2472	1	2484.000	-36.87	<=-10	Pass
				2485.000	-35.39	<=-10	Pass
				2486.000	-38.54	<=-10	Pass
				2487.000	-40.77	<=-10	Pass
				2488.000	-41.52	<=-10	Pass
				2489.000	-42.24	<=-10	Pass
				2490.000	-42.77	<=-10	Pass
				2491.000	-43.99	<=-10	Pass
				2492.000	-44.39	<=-10	Pass
				2493.000	-44.65	<=-10	Pass
				2494.000	-44.59	<=-10	Pass
				2495.000	-45.29	<=-10	Pass
				2496.000	-46.05	<=-10	Pass
				2497.000	-45.75	<=-10	Pass
				2497.915	-44.90	<=-10	Pass
				2498.915	-46.43	<=-20	Pass
				2499.915	-47.03	<=-20	Pass
				2500.915	-47.33	<=-20	Pass
				2501.915	-47.71	<=-20	Pass

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				2502.915	-48.21	<=-20	Pass
				2503.915	-48.56	<=-20	Pass
				2504.915	-48.81	<=-20	Pass
				2505.915	-48.96	<=-20	Pass
				2506.915	-49.17	<=-20	Pass
				2507.915	-49.22	<=-20	Pass
				2508.915	-49.40	<=-20	Pass
				2509.915	-49.59	<=-20	Pass
				2510.915	-49.73	<=-20	Pass
				2511.915	-49.74	<=-20	Pass
				2512.830	-49.84	<=-20	Pass
802.11g	SISO	2412	1	2367.342	-52.13	<=-20	Pass
				2367.921	-52.07	<=-20	Pass
				2368.921	-51.96	<=-20	Pass
				2369.921	-52.00	<=-20	Pass
				2370.921	-51.84	<=-20	Pass
				2371.921	-51.76	<=-20	Pass
				2372.921	-51.88	<=-20	Pass
				2373.921	-51.67	<=-20	Pass
				2374.921	-51.65	<=-20	Pass
				2375.921	-51.44	<=-20	Pass
				2376.921	-51.28	<=-20	Pass
				2377.921	-51.14	<=-20	Pass
				2378.921	-50.91	<=-20	Pass
				2379.921	-49.71	<=-20	Pass
				2380.921	-49.15	<=-20	Pass
				2381.921	-48.78	<=-20	Pass
				2382.921	-48.63	<=-20	Pass
				2383.921	-48.34	<=-10	Pass
				2384.500	-48.17	<=-10	Pass
				2385.500	-47.92	<=-10	Pass
				2386.500	-47.47	<=-10	Pass
				2387.500	-47.06	<=-10	Pass
				2388.500	-46.14	<=-10	Pass
				2389.500	-44.73	<=-10	Pass
				2390.500	-43.52	<=-10	Pass
				2391.500	-42.27	<=-10	Pass
				2392.500	-40.99	<=-10	Pass
				2393.500	-39.87	<=-10	Pass
				2394.500	-38.75	<=-10	Pass
				2395.500	-37.66	<=-10	Pass
				2396.500	-36.86	<=-10	Pass
				2397.500	-36.10	<=-10	Pass
				2398.500	-35.43	<=-10	Pass
				2399.500	-34.64	<=-10	Pass
		2472	1	2484.000	-38.09	<=-10	Pass
				2485.000	-38.52	<=-10	Pass
				2486.000	-39.06	<=-10	Pass
				2487.000	-40.26	<=-10	Pass
				2488.000	-40.38	<=-10	Pass
				2489.000	-42.05	<=-10	Pass
				2490.000	-42.58	<=-10	Pass

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				2491.000	-43.80	<=-10	Pass
				2492.000	-44.49	<=-10	Pass
				2493.000	-45.08	<=-10	Pass
				2494.000	-45.56	<=-10	Pass
				2495.000	-46.12	<=-10	Pass
				2496.000	-46.72	<=-10	Pass
				2497.000	-46.95	<=-10	Pass
				2498.000	-47.33	<=-10	Pass
				2499.000	-47.66	<=-10	Pass
				2499.582	-47.76	<=-10	Pass
				2500.582	-47.93	<=-20	Pass
				2501.582	-48.11	<=-20	Pass
				2502.582	-48.30	<=-20	Pass
				2503.582	-48.53	<=-20	Pass
				2504.582	-49.56	<=-20	Pass
				2505.582	-50.14	<=-20	Pass
				2506.582	-50.26	<=-20	Pass
				2507.582	-50.38	<=-20	Pass
				2508.582	-50.55	<=-20	Pass
				2509.582	-50.59	<=-20	Pass
				2510.582	-50.70	<=-20	Pass
				2511.582	-50.81	<=-20	Pass
				2512.582	-50.98	<=-20	Pass
				2513.582	-50.95	<=-20	Pass
				2514.582	-51.01	<=-20	Pass
				2515.582	-51.11	<=-20	Pass
				2516.164	-51.11	<=-20	Pass
802.11n (HT20)	SISO	2412	1	2365.210	-52.35	<=-20	Pass
				2365.855	-52.08	<=-20	Pass
				2366.855	-52.13	<=-20	Pass
				2367.855	-52.10	<=-20	Pass
				2368.855	-52.07	<=-20	Pass
				2369.855	-51.97	<=-20	Pass
				2370.855	-51.93	<=-20	Pass
				2371.855	-51.81	<=-20	Pass
				2372.855	-51.80	<=-20	Pass
				2373.855	-51.59	<=-20	Pass
				2374.855	-51.56	<=-20	Pass
				2375.855	-51.26	<=-20	Pass
				2376.855	-51.34	<=-20	Pass
				2377.855	-50.99	<=-20	Pass
				2378.855	-50.45	<=-20	Pass
				2379.855	-49.51	<=-20	Pass
				2380.855	-49.09	<=-20	Pass
				2381.855	-48.84	<=-20	Pass
				2382.855	-48.28	<=-10	Pass
				2383.500	-48.53	<=-10	Pass
				2384.500	-48.03	<=-10	Pass
				2385.500	-47.71	<=-10	Pass
				2386.500	-47.30	<=-10	Pass
				2387.500	-46.16	<=-10	Pass
				2388.500	-44.78	<=-10	Pass

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				2389.500	-43.60	<=-10	Pass
				2390.500	-42.28	<=-10	Pass
				2391.500	-41.24	<=-10	Pass
				2392.500	-40.32	<=-10	Pass
				2393.500	-39.18	<=-10	Pass
				2394.500	-38.13	<=-10	Pass
				2395.500	-37.27	<=-10	Pass
				2396.500	-36.86	<=-10	Pass
				2397.500	-35.84	<=-10	Pass
				2398.500	-35.48	<=-10	Pass
				2399.500	-34.52	<=-10	Pass
		2472	1	2484.000	-37.21	<=-10	Pass
				2485.000	-38.56	<=-10	Pass
				2486.000	-39.00	<=-10	Pass
				2487.000	-40.10	<=-10	Pass
				2488.000	-40.37	<=-10	Pass
				2489.000	-41.74	<=-10	Pass
				2490.000	-42.49	<=-10	Pass
				2491.000	-43.53	<=-10	Pass
				2492.000	-44.23	<=-10	Pass
				2493.000	-44.91	<=-10	Pass
				2494.000	-45.49	<=-10	Pass
				2495.000	-45.96	<=-10	Pass
				2496.000	-46.54	<=-10	Pass
				2497.000	-46.93	<=-10	Pass
				2498.000	-47.23	<=-10	Pass
				2499.000	-47.53	<=-10	Pass
				2500.000	-47.85	<=-10	Pass
				2500.646	-47.93	<=-10	Pass
				2501.646	-48.11	<=-20	Pass
				2502.646	-48.30	<=-20	Pass
				2503.646	-48.61	<=-20	Pass
				2504.646	-49.21	<=-20	Pass
				2505.646	-49.99	<=-20	Pass
				2506.646	-50.22	<=-20	Pass
				2507.646	-50.28	<=-20	Pass
				2508.646	-50.39	<=-20	Pass
				2509.646	-50.62	<=-20	Pass
				2510.646	-50.77	<=-20	Pass
				2511.646	-50.74	<=-20	Pass
				2512.646	-50.91	<=-20	Pass
				2513.646	-50.88	<=-20	Pass
				2514.646	-50.99	<=-20	Pass
				2515.646	-51.16	<=-20	Pass
				2516.646	-51.15	<=-20	Pass
				2517.646	-51.25	<=-20	Pass
				2518.292	-51.26	<=-20	Pass

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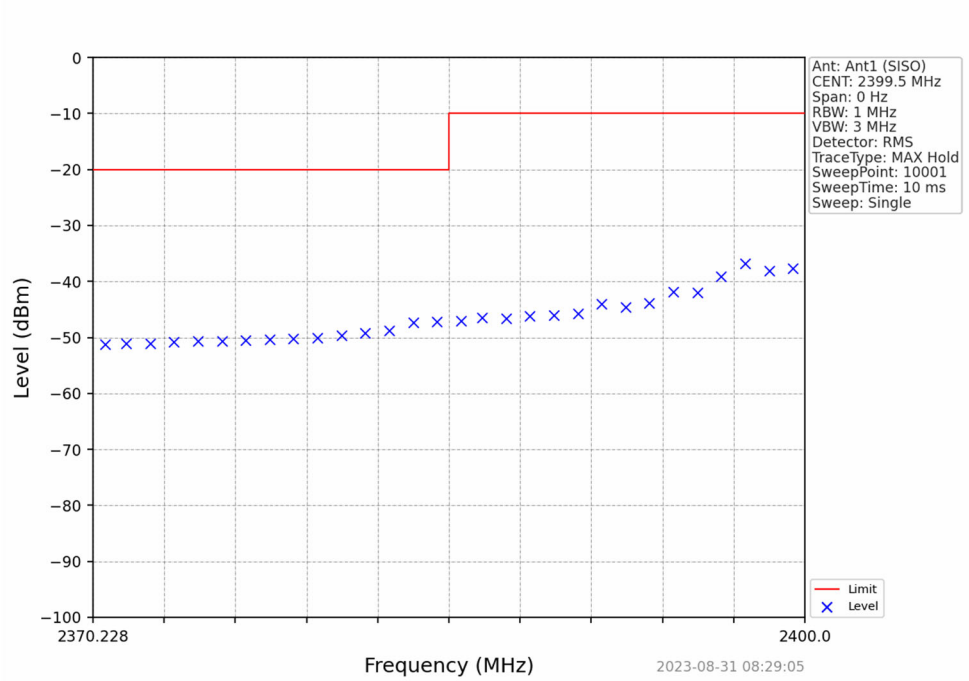
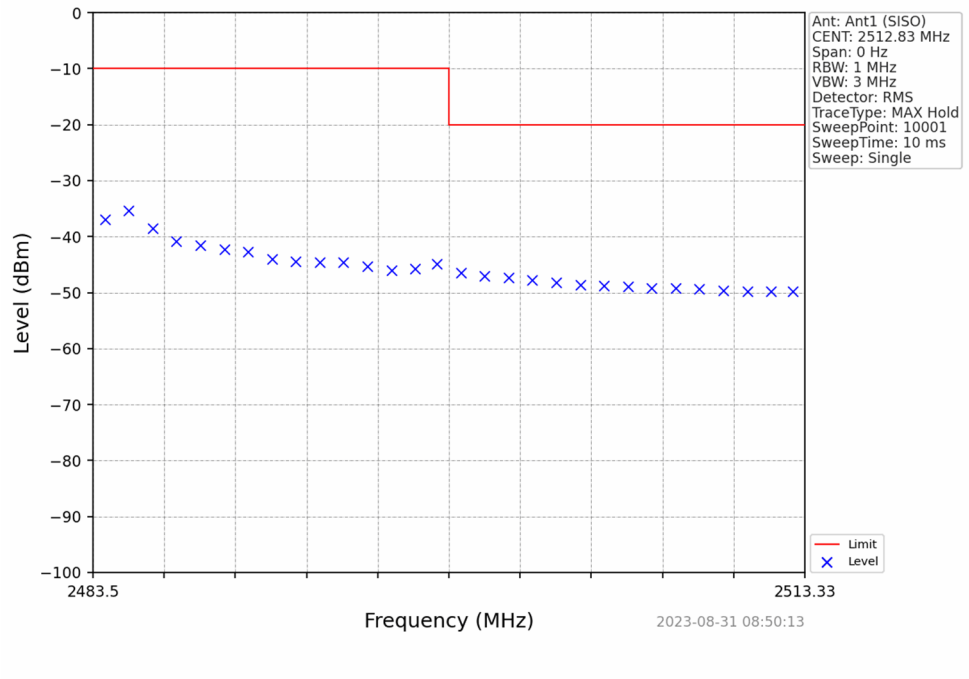
Test Graph

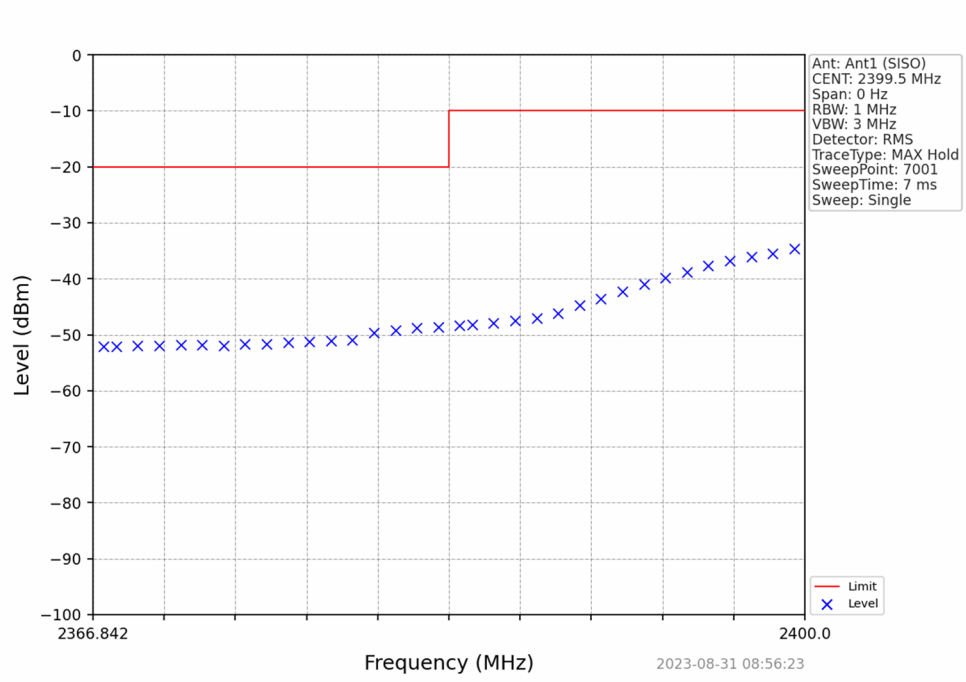
802.11b_2412MHz_Ant1 (SISO)_NTNV



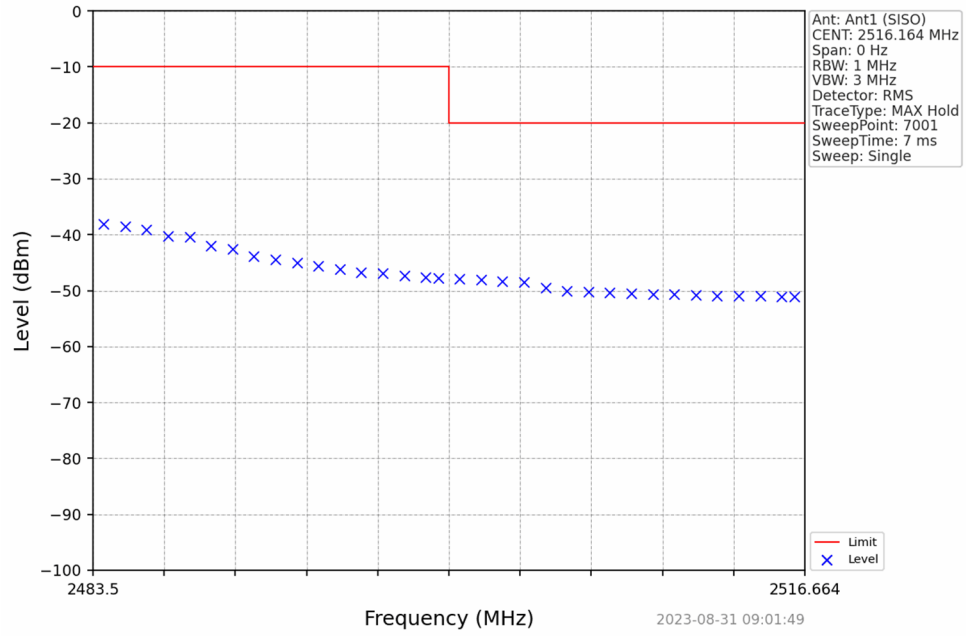
802.11b_2472MHz_Ant1 (SISO)_NTNV



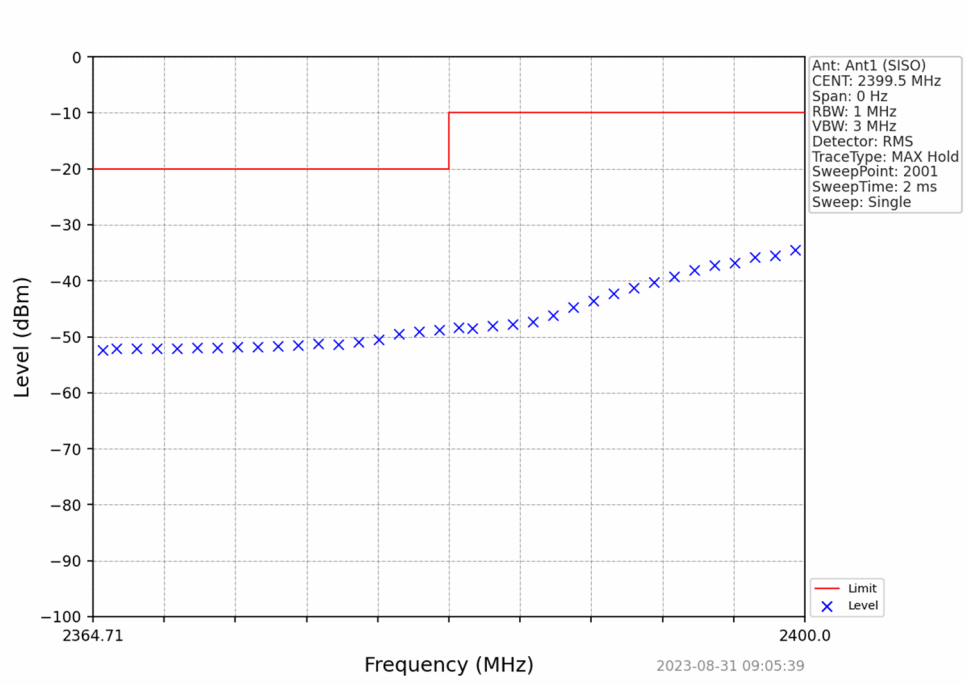
802.11g_2412MHz_Ant1 (SISO)_NTNV



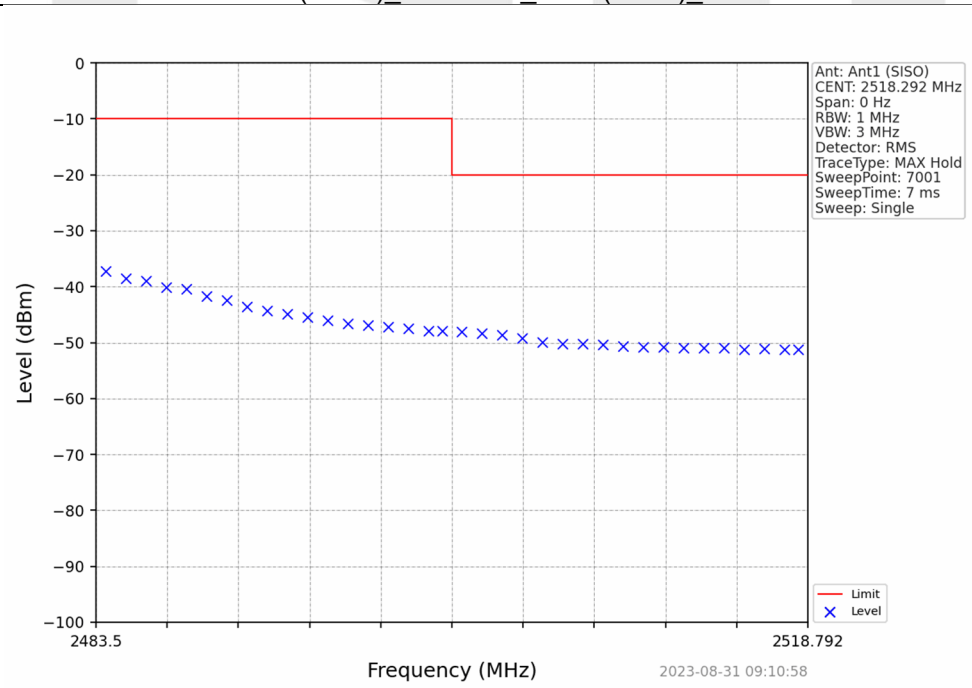
802.11g_2472MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_2472MHz_Ant1 (SISO)_NTNV



8. Transmitter Unwanted Emissions in the Spurious Domain

8.1. Test Standard and Limit

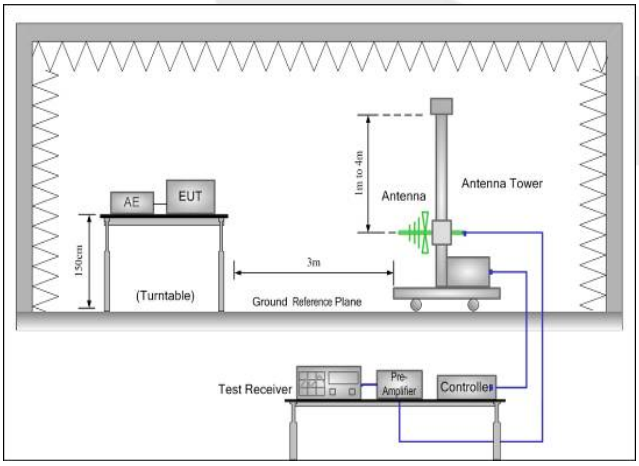
Test Standard	ETSI EN 300 328 Clause 4.3.2.9

Frequency Range	Maximum power E.R.P. (≤ 1GHz) E.I.R.P. (> 1GHz)	Bandwidth
30 MHz to 47 MHz	-36dBm	100kHz
47 MHz to 74 MHz	-54dBm	100kHz
74 MHz to 87,5 MHz	-36dBm	100kHz
87,5 MHz to 118 MHz	-54dBm	100kHz
118 MHz to 174 MHz	-36dBm	100kHz
174 MHz to 230 MHz	-54dBm	100kHz
230 MHz to 470 MHz	-36dBm	100kHz
470 MHz to 694 MHz	-54dBm	100kHz
694 MHz to 1 GHz	-36dBm	100kHz
1 GHz to 12,75 GHz	-30dBm	1MHz

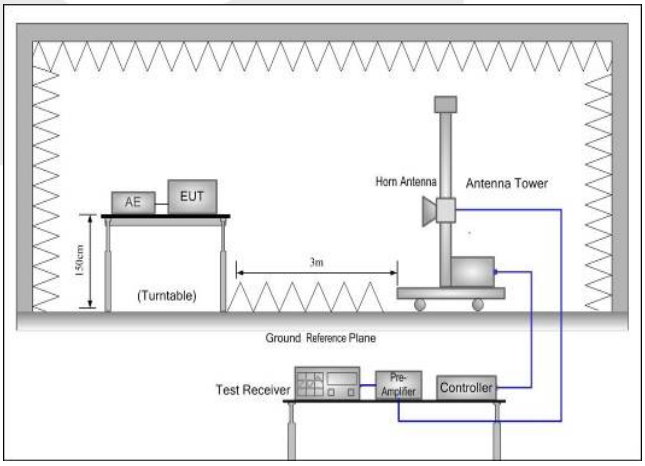
8.2. Test Setup

For Radiated Measurement:

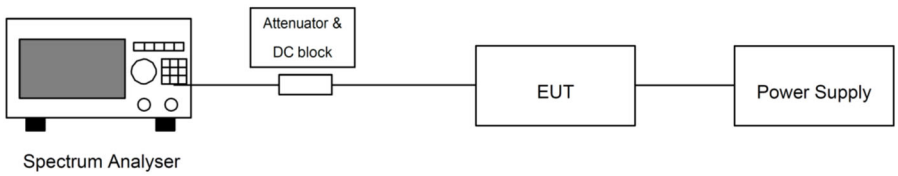
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz.



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



For Conducted Measurement:



8.3. Test Procedure

Refer to ETSI EN 300 328 V2.2.2, clause 5.4.9 for the test conditions and the measurement method.

Step 1:

The sensitivity of the measurement set-up should be such that the noise floor is at least 12 dB below the limits given in table 4 or table 12.

Step 2:

The emissions over the range 30 MHz to 1 000 MHz shall be identified.

Spectrum analyser settings:

• Resolution bandwidth: 100 kHz
• Video bandwidth: 300 kHz
• Filter type: 3 dB (Gaussian)
• Detector mode: Peak
• Trace Mode: Max Hold
• Sweep Points: ≥ 19 400; for spectrum analysers not supporting this high number of sweep points, the frequency band may be segmented.
• Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 100 kHz frequency step, the measurement time is greater than two transmissions of the UUT, on any channel.

For FHSS equipment operating in a normal operating (hopping not disabled) mode, the sweep time shall be further increased to capture multiple transmissions on any of the hopping frequencies.

The above sweep time setting may result in long measuring times in case of FHSS equipment. To avoid such long measuring times, an FFT analyser may be used.

Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.4.9.2.1.3 and compared to the limits given in table 4 or table 12.

Step 3:

The emissions over the range 1 GHz to 12,75 GHz shall be identified.

Spectrum analyser settings:

• Resolution bandwidth: 1 MHz
• Video bandwidth: 3 MHz
• Filter type: 3 dB (Gaussian)
• Detector mode: Peak
• Trace Mode: Max Hold
• Sweep Points: ≥ 23 500; for spectrum analysers not supporting this high number of sweep points, the frequency band may be segmented.
• Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 1 MHz frequency step, the measurement time is greater than two transmissions of the UUT.

Step 4:

• In case of conducted measurements on smart antenna systems (equipment with multiple transmit chains), step 2 and step 3 need to be repeated for each of the active transmit chains (Ach).The limits used to identify emissions during this pre-scan need to be reduced by $10 \times \log_{10}(A_{ch})$.

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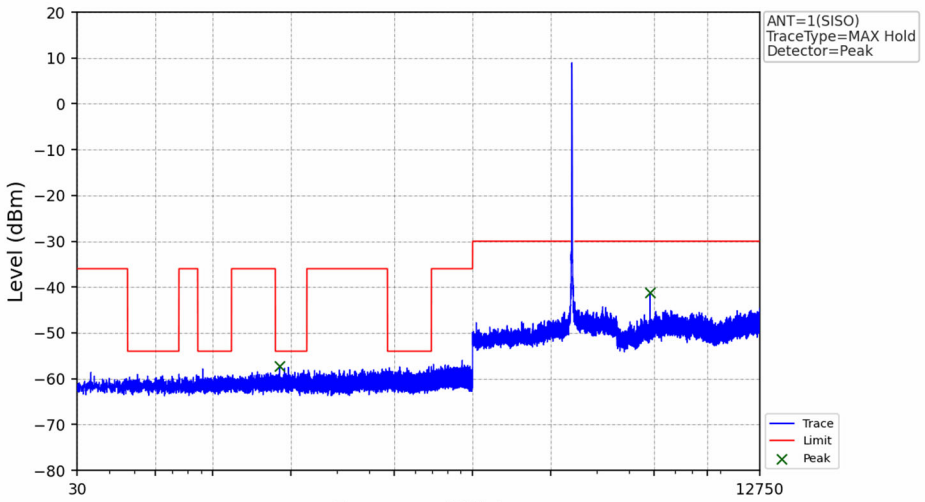
8.4. Test Data

Temperature:	23.2℃	Relative Humidity:	53%
Pressure:	1012 hPa	Test Voltage:	230VAC, 50Hz for Adapter

ENV	Mode	TX Type	Frequency (MHz)	ANT	Test Result	Limit	Verdict
NTNV	802.11b	SISO	2412	1	Refer To Test Graph		Pass
			2472	1	Refer To Test Graph		Pass
	802.11g	SISO	2412	1	Refer To Test Graph		Pass
			2472	1	Refer To Test Graph		Pass
	802.11n (HT20)	SISO	2412	1	Refer To Test Graph		Pass
			2472	1	Refer To Test Graph		Pass

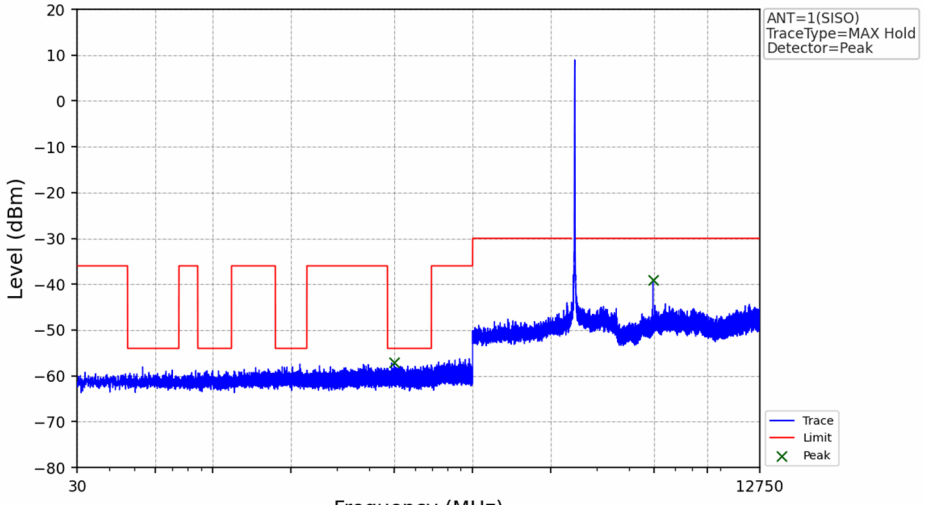
Test Graph

802.11b_2412MHz_Ant1 (SISO)_NTNV



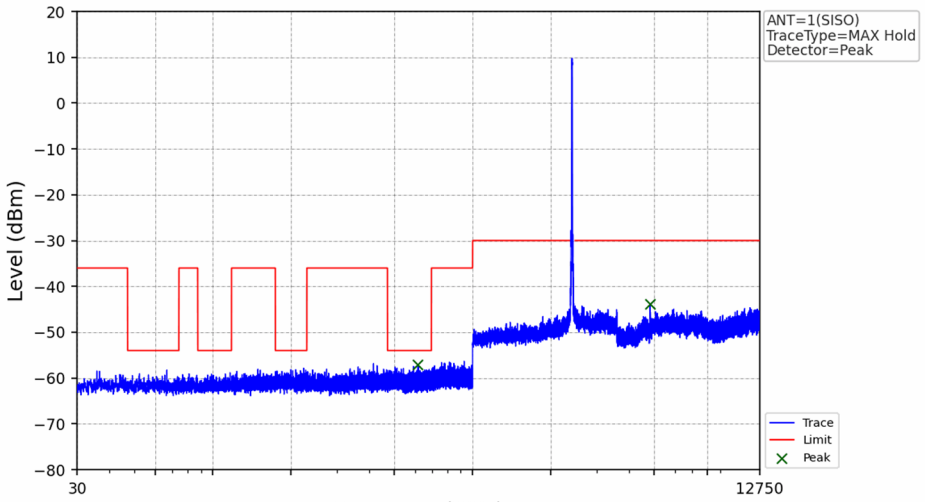
Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	180.950	-57.21	/	-54	Pass
1000	12750	1	3	4824.500	-41.23	/	-30	Pass

802.11b_2472MHz_Ant1 (SISO)_NTNV



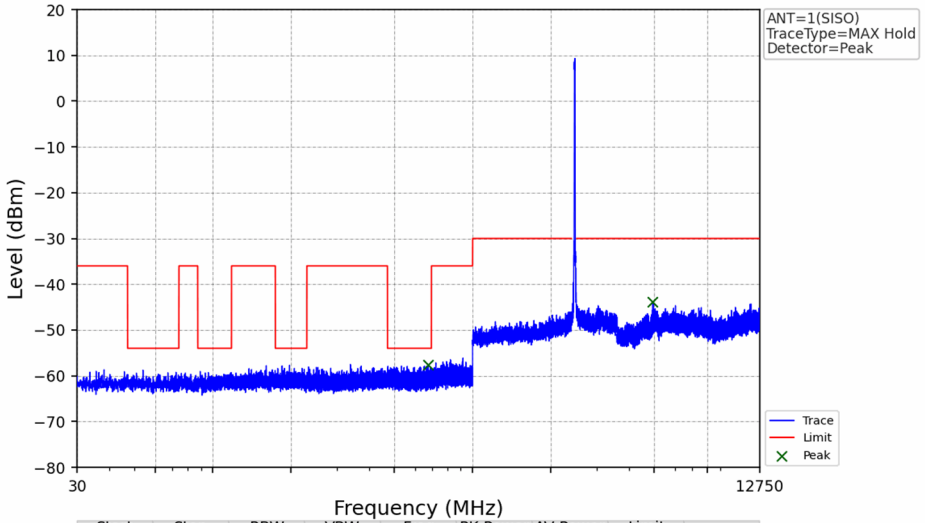
Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	497.900	-57.01	/	-54	Pass
1000	12750	1	3	4944.500	-39.01	/	-30	Pass

802.11g_2412MHz_Ant1 (SISO)_NTNV



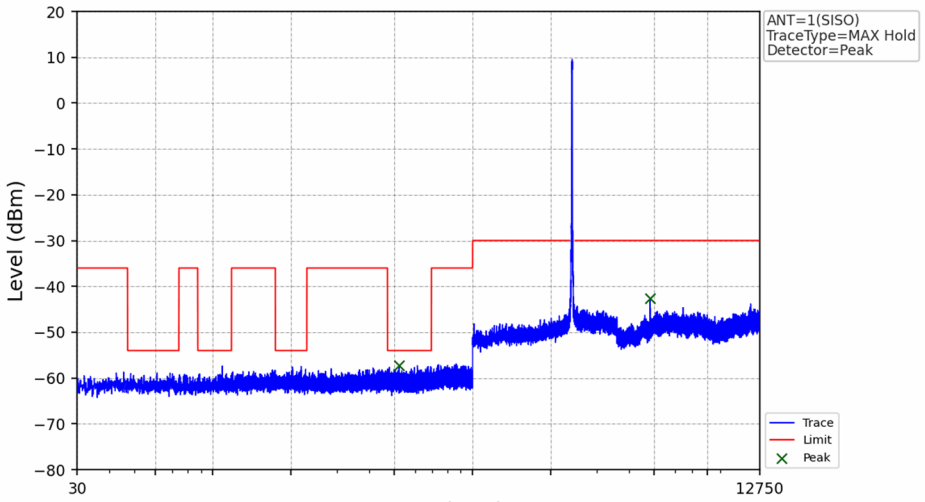
Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	615.900	-57.06	/	-54	Pass
1000	12750	1	3	4824.500	-43.91	/	-30	Pass

802.11g_2472MHz_Ant1 (SISO)_NTNV



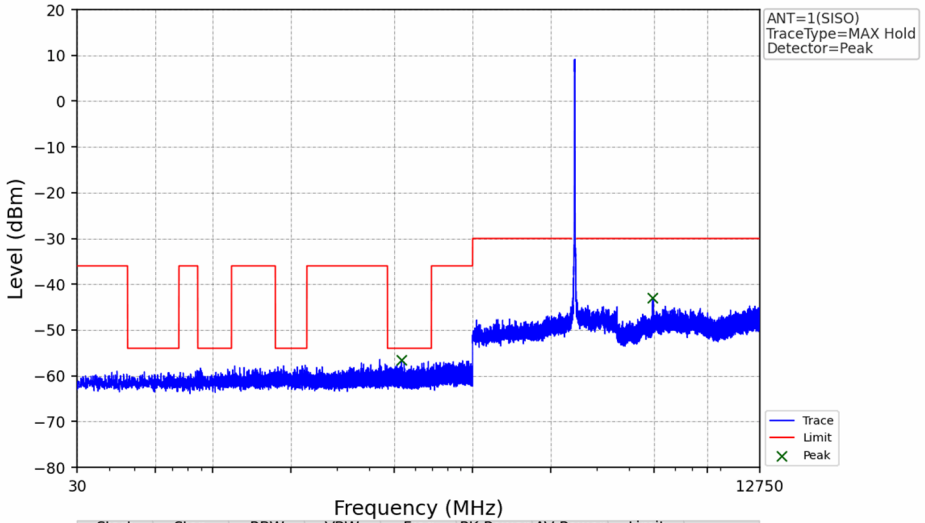
Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	673.450	-57.54	/	-54	Pass
1000	12750	1	3	4940.000	-43.89	/	-30	Pass

802.11n(HT20)_2412MHz_Ant1 (SISO)_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	521.800	-57.17	/	-54	Pass
1000	12750	1	3	4825.500	-42.59	/	-30	Pass

802.11n(HT20)_2472MHz_Ant1 (SISO)_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	532.500	-56.61	/	-54	Pass
1000	12750	1	3	4937.500	-42.90	/	-30	Pass

9. Receiver Spurious Emissions

9.1. Test Standard and Limit

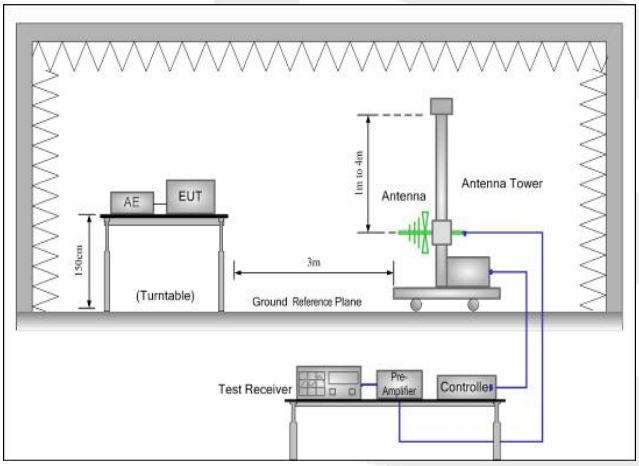
Test Standard	ETSI EN 300 328 Clause 4.3.2.10

Frequency Range	Maximum power E.R.P. (≤ 1GHz) E.I.R.P. (> 1GHz)	Bandwidth
30MHz ~ 1GHz	-57dBm	100 kHz
1GHz ~ 12.75GHz	-47dBm	1 MHz

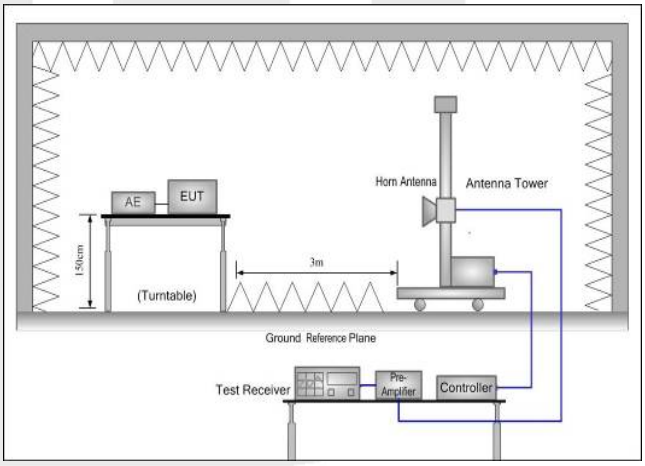
9.2. Test Setup

For Radiated Measurement:

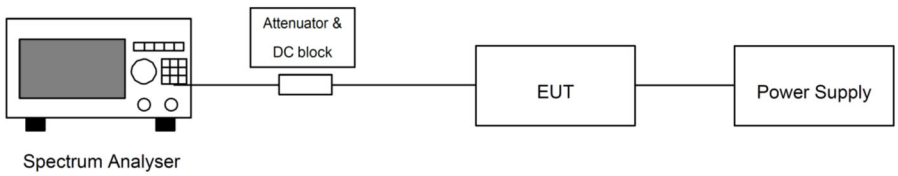
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz.



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



For Conducted Measurement:



9.3. Test Procedure

Refer to ETSI EN 300 328 V2.2.2, clause 5.4.9 for the test conditions and the measurement method.

Step 1:

The sensitivity of the measurement set-up should be such that the noise floor is at least 12 dB below the limits given in table 4 or table 12.

Step 2:

The emissions over the range 30 MHz to 1 000 MHz shall be identified.

Spectrum analyser settings:

• Resolution bandwidth: 100 kHz
• Video bandwidth: 300 kHz
• Filter type: 3 dB (Gaussian)
• Detector mode: Peak
• Trace Mode: Max Hold
• Sweep Points: ≥ 19 400; for spectrum analysers not supporting this high number of sweep points, the frequency band may be segmented.
• Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 100 kHz frequency step, the measurement time is greater than two transmissions of the UUT, on any channel.

For FHSS equipment operating in a normal operating (hopping not disabled) mode, the sweep time shall be further increased to capture multiple transmissions on any of the hopping frequencies.

The above sweep time setting may result in long measuring times in case of FHSS equipment. To avoid such long measuring times, an FFT analyser may be used.

Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.4.9.2.1.3 and compared to the limits given in table 4 or table 12.

Step 3:

The emissions over the range 1 GHz to 12,75 GHz shall be identified.

Spectrum analyser settings:

• Resolution bandwidth: 1 MHz
• Video bandwidth: 3 MHz
• Filter type: 3 dB (Gaussian)
• Detector mode: Peak
• Trace Mode: Max Hold
• Sweep Points: ≥ 23 500; for spectrum analysers not supporting this high number of sweep points, the frequency band may be segmented.
• Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 1 MHz frequency step, the measurement time is greater than two transmissions of the UUT.

Step 4:

• In case of conducted measurements on smart antenna systems (equipment with multiple transmit chains), step 2 and step 3 need to be repeated for each of the active transmit chains (Ach).The limits used to identify emissions during this pre-scan need to be reduced by $10 \times \log_{10} (A_{ch})$.

9.4. Test Data

Temperature:	23.2℃	Relative Humidity:	53%
Pressure:	1012 hPa	Test Voltage:	230VAC, 50Hz for Adapter

ENV	Mode	TX Type	Frequency (MHz)	ANT	Test Result	Limit	Verdict
NTNV	802.11b	SISO	2412	1	Refer To Test Graph		Pass
			2472	1	Refer To Test Graph		Pass
	802.11g	SISO	2412	1	Refer To Test Graph		Pass
			2472	1	Refer To Test Graph		Pass
	802.11n (HT20)	SISO	2412	1	Refer To Test Graph		Pass
			2472	1	Refer To Test Graph		Pass

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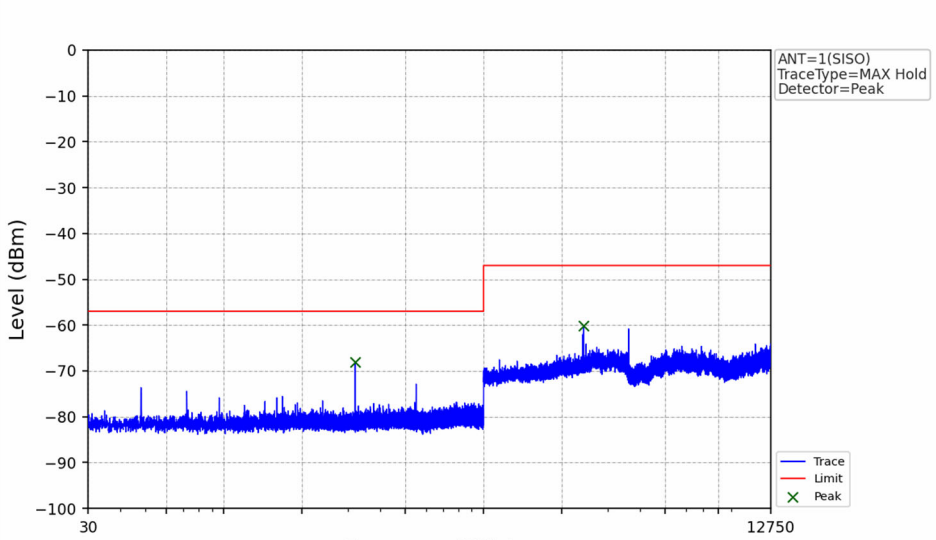
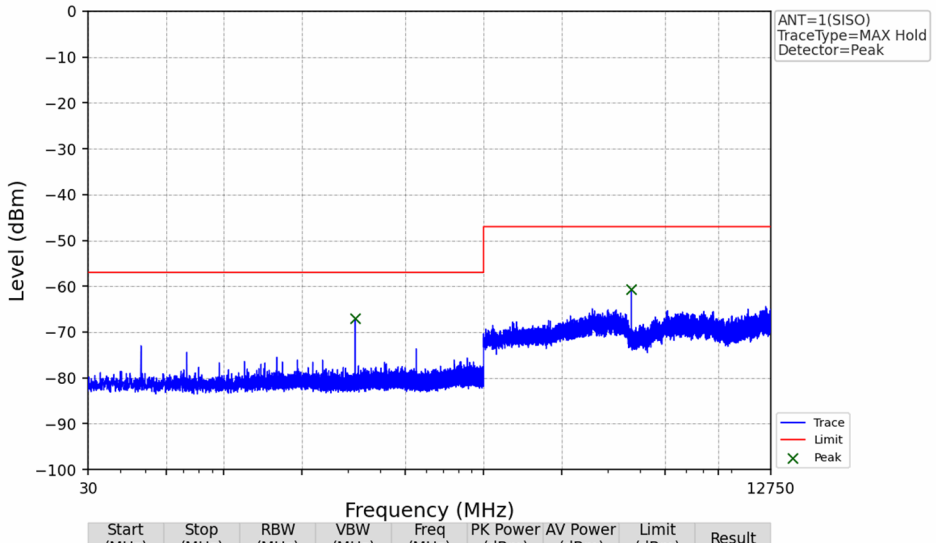
Test Graph

802.11b_2412MHz_Ant1 (SISO)_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	320.000	-68.02	/	-57	Pass
1000	12750	1	3	2430.000	-60.14	/	-47	Pass

802.11b_2472MHz_Ant1 (SISO)_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	320.000	-66.99	/	-57	Pass
1000	12750	1	3	3708.500	-60.69	/	-47	Pass

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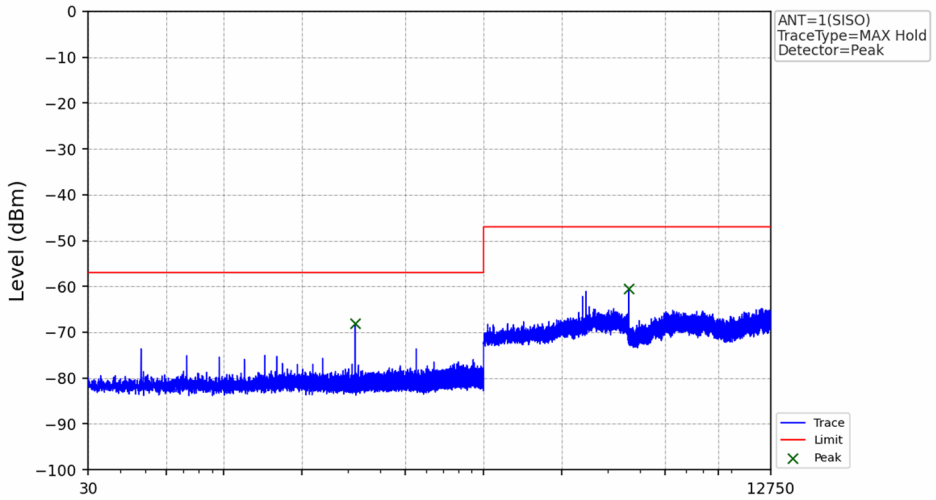
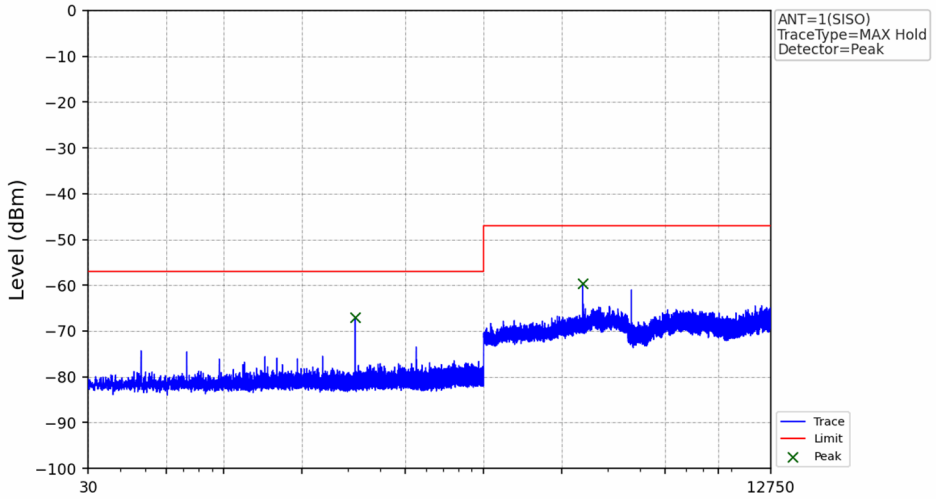
802.11g_2412MHz_Ant1 (SISO)_NTNV



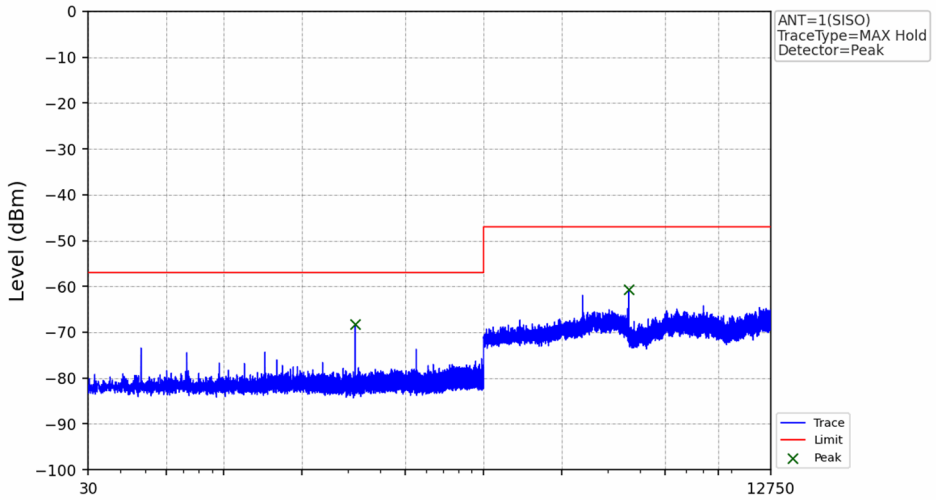
Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	320.000	-68.11	/	-57	Pass
1000	12750	1	3	3618.500	-60.46	/	-47	Pass

802.11g_2472MHz_Ant1 (SISO)_NTNV



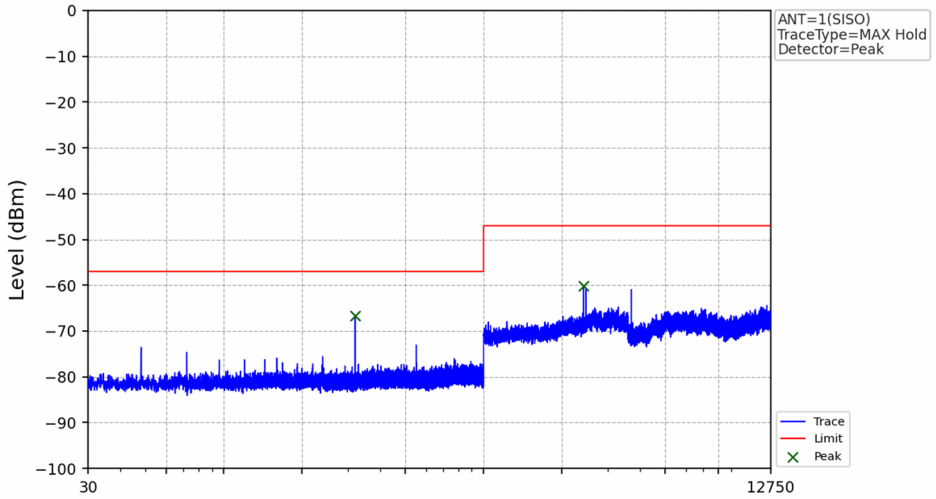
Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	320.000	-66.95	/	-57	Pass
1000	12750	1	3	2402.500	-59.56	/	-47	Pass

802.11n(HT20)_2412MHz_Ant1 (SISO)_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	320.000	-68.31	/	-57	Pass
1000	12750	1	3	3619.000	-60.68	/	-47	Pass

802.11n(HT20)_2472MHz_Ant1 (SISO)_NTNV



Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.3	320.000	-66.74	/	-57	Pass
1000	12750	1	3	2427.000	-60.22	/	-47	Pass

10. Receiver Blocking

10.1. Test Standard and Limit

Test Standard	ETSI EN 300 328 Clause 4.3.2.11

This requirement applies to all receiver categories.

RECEIVER CATEGORY		
☒ Category 1	☐ Category 2	☐ Category 3
Minimum performance criterion	☒ PER ≦10 %	
	☐ Alternative performance criteria	

Table 6: Receiver Blocking parameters for Receiver Category 1 equipment

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)	2 380 2 504	-34	CW
(-139 dBm + 10 × $\log_{10}$(OCBW)) or -74 dBm whichever is less (see note 3)	2 300 2 330 2 360 2 524 2 584 2 674		

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: 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} + 20 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 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.

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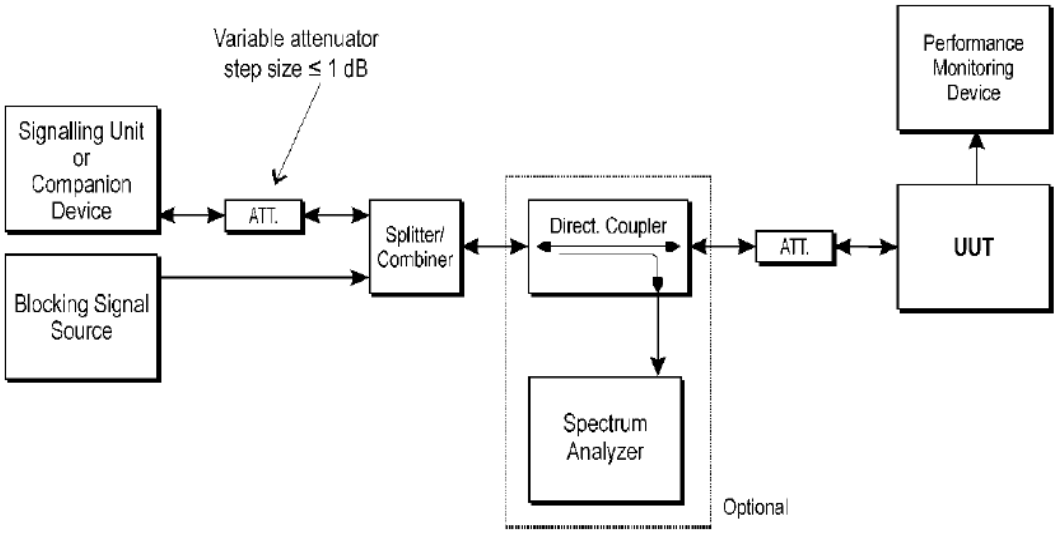
Table 7: Receiver Blocking parameters receiver Category 2 equipment

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)	2 380 2 504 2 300 2 584	-34	CW
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 8: Receiver Blocking parameters receiver Category 3 equipment

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) + 20 dB) or (-74 dBm + 20 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
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 the test may be performed using a wanted signal up to P_{min} + 30 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.			

10.2. Test Setup



10.3. Test Procedure

Refer to ETSI EN 300 328 V2.2.2, clause 5.4.11 for the test conditions and the measurement method.

Step 1:

• For non-FHSS equipment, the UUT shall be set to the lowest operating channel on which the blocking test has to be performed.

Step 2:

• The blocking signal generator is set to the first frequency as defined in the appropriate table corresponding to the receiver category and type of equipment.

Step 3:

• With the blocking signal generator switched off, a communication link is established between the UUT and the associated companion device using the test setup shown in figure 6.

• Unless the option provided in note 2 of the applicable table referred to in clause 5.4.11.2.1 is used, the level of the wanted signal shall be set to the value provided in the table corresponding to the receiver category and type of equipment. The test procedure defined in clause 5.4.2, and more in particular clause 5.4.2.2.1.2, can be used to measure the (conducted) level of the wanted signal however no correction shall be made for antenna gain of the companion device (step 6 in clause 5.4.2.2.1.2 shall be ignored). This level may be measured directly at the output of the companion device and a correction is made for the coupling loss into the UUT. The actual level for the wanted signal shall be recorded in the test report.

• When the option provided in note 2 of the applicable table referred to in clause 5.4.11.2.1 is used, the attenuation of the variable attenuator shall be increased in 1 dB steps to a value at which the minimum performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is still met. The resulting level for the wanted signal at the input of the UUT is Pmin. This signal level (Pmin) is increased by the value provided in note 2 of the applicable table corresponding to the receiver category and type of equipment.

Step 4:
• The blocking signal at the UUT is set to the level provided in the table corresponding to the receiver category and type of equipment.
• If the performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 are met then proceed to step 6.

Step 5:
• If the performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is not met, step 3 and step 4 shall be repeated after that the frequency of the blocking signal set in step 2 has been increased with a value equal to the Occupied Channel Bandwidth except:
- For the blocking frequency 2 380 MHz, where this frequency offset shall be less than or equal to 10 MHz. If this frequency offset is more than 7 MHz, the level of the wanted signal shall be increased by 3 dB.
- For the blocking frequency 2 503,5 MHz, where this frequency offset shall be less than or equal to 10 MHz. If this frequency offset is more than 7 MHz, the level of the wanted signal shall be decreased by 3 dB.
• If the performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is still not met, step 3 and step 4 shall be repeated after that the frequency of the blocking signal set in step 2 has been decreased with a value equal to the Occupied Channel Bandwidth except:
- For the blocking frequency 2 380 MHz, where this frequency offset shall be less than or equal to 10 MHz. If this frequency offset is more than 7 MHz, the level of the wanted signal shall be decreased by 3 dB.
- For the blocking frequency 2 503,5 MHz, where this frequency offset shall be less than or equal to 10 MHz. If this frequency offset is more than 7 MHz, the level of the wanted signal shall be increased by 3 dB.
• If the performance criteria as specified in clause 4.3.1.12.3 or clause 4.3.2.11.3 is still not met, the UUT fails to comply with the Receiver Blocking requirement and step 6 and step 7 are no longer required.
• It shall be recorded in the test report whether the shift of blocking frequencies as described in the present step was used.

Step 6:
• Repeat step 4 and step 5 for each remaining combination of frequency and level for the blocking signal as provided in the table corresponding to the receiver category and type of equipment.

Step 7:
• For non-FHSS equipment, repeat step 2 to step 6 with the UUT operating at the highest operating channel on which the blocking test has to be performed.

Step 8:
• It shall be assessed and recorded in the test report whether the UUT complies with the Receiver Blocking requirement.

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10.4. Minimum Performance Declaration

Modulation Type	CH	Pmin (dBm)	PER (≦10%)
802.11b	01	-91	Pass
	13	-91	Pass
802.11g	01	-91	Pass
	13	-91	Pass
802.11n(HT20)	01	-91	Pass
	13	-91	Pass

Note: Pmin is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria.

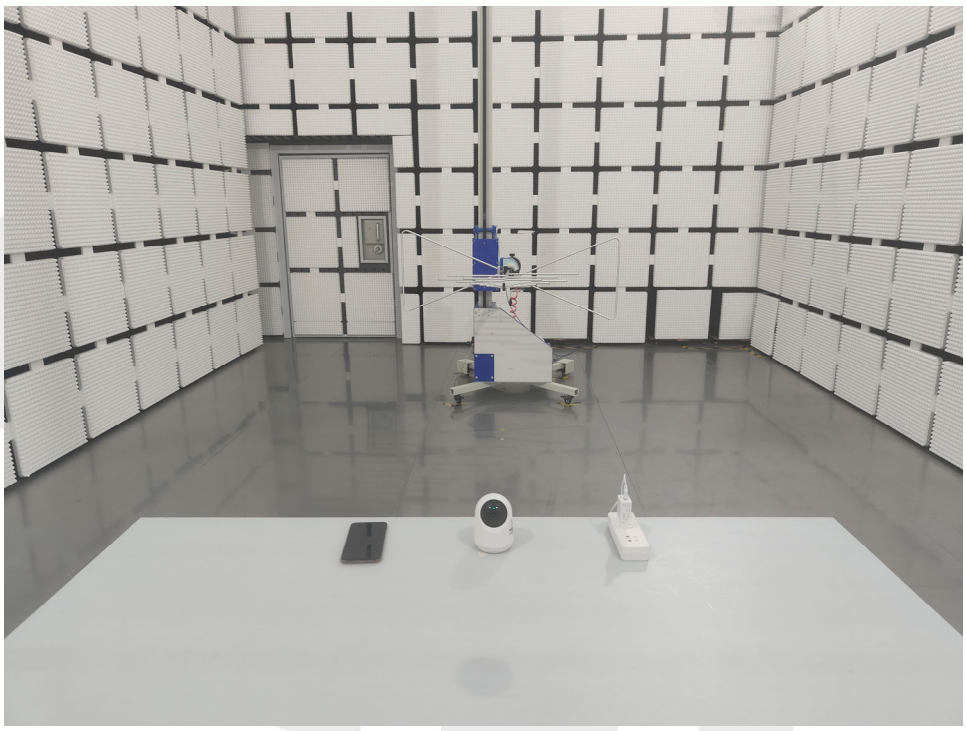
10.5. Test Data

Only the worst case was attached below:

Test Mode	Test Channel	Wanted Signal Mean Power from Companion Device (dBm/MHz)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm)	Type of Blocking Signal	PER (%)	Test Result
802.11b	CH01	-68	2380	-30	CW	2.14	PASS
			2504			1.20	PASS
		-74	2300	-30	CW	1.68	PASS
			2330			1.88	PASS
			2360			1.87	PASS
			2524			2.79	PASS
			2584			2.20	PASS
			2627			1.61	PASS
	CH13	-68	2380	-30	CW	0.95	PASS
			2504			2.47	PASS
		-74	2300	-30	CW	2.22	PASS
			2330			1.72	PASS
			2360			1.75	PASS
			2524			2.39	PASS
			2584			1.86	PASS
			2627			1.70	PASS

Note:
Antenna Gain(Peak) is 2.34 dBi, so the above table is given with the calculated levels.

APPENDIX I -- TEST SETUP PHOTOGRAPH

PHOTO 1	

****** End of Report ******