
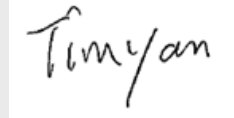


Test report No: 4390416.53

## TEST REPORT

### Radio Spectrum Matters (RF)

Identification of item tested	Split-Type Air-Conditioner	
Trademark	<b>TCL</b>	
Model and /or type reference	TAC-09CHSD/*I3A, TAC-12CHSD/*I3A, TAC-18CHSD/*I3A, TAC-24CHSD/*I3A  (* = TP11, TP21, TP31, TP41, TP51, TP61, TP71, TP72, TP81, TP91, TPA1, TPB1, TPC1, TPC2, TPD1, TPD2, TPE1, TPE2, TPG11, TPG21, TPG31)	
Features	220-240 V~, 50 Hz, Class I	
Applicant's name / address	TCL Air Conditioner (Zhong Shan) Co., Ltd. No.59 Nantou Road West, Nantou Town, Zhongshan City, Guangdong, China	
Test method requested, standard	ETSI EN 300 328 V2.2.2 (2019-07)	
Verdict Summary	COMPLIANCE	
Tested by (name / signature)	Kenny Liang	
Approved by (name / signature)	Tim Yan	
Date of issue	2022-10-17	
Report template No	TRF_EMG 2017-06-328	

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## GENERAL CONDITIONS

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
5. This report will not be used for social proof function in China market.

## UNCERTAINTY

For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in EN 55016-4-2 (CISPR 16-4-2), EN/IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

## ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	-10 - +40 °C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

## POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

## DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

<input checked="" type="checkbox"/> Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.
<input type="checkbox"/> Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.

Decimal separator used in this report	<input checked="checked" type="checkbox"/>	Comma (,)	<input type="checkbox"/>	Point (.)
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## ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	: Equipment Under Test
QP	: Quasi-Peak
CAV	: CISPR Average
AV	: Average
CDN	: Coupling Decoupling Network
SAC	: Semi-Anechoic Chamber
OATS	: Open Area Test Site
BW	: Bandwidth
AM	: Amplitude Modulation
PM	: Pulse Modulation
HCP	: Horizontal Coupling Plane
VCP	: Vertical Coupling Plane
$U_N$	: Nominal voltage
Tx	: Transmitter
Rx	: Receiver
N/A	: Not Applicable
N/M	: Not Measured

## DOCUMENT HISTORY

Report nr.	Date	Description
4390416.53	2022-10-17	First release.

## REMARKS AND COMMENTS

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The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).

This report for WIFI wireless characteristics.

## 1 GENERAL INFORMATION

### 1.1 General Description of the Item(s)

Description of the item .....	Split-Type Air-Conditioner
Trademark .....	<b>TCL</b>
Model / Type number .....	TAC-09CHSD/*I3A, TAC-12CHSD/*I3A, TAC-18CHSD/*I3A, TAC-24CHSD/*I3A  (* = TP11, TP21, TP31, TP41, TP51, TP61, TP71, TP72, TP81, TP91, TPA1, TPB1, TPC1, TPC2, TPD1, TPD2, TPE1, TPE2, TPG11, TPG21, TPG31)
Ratings .....	220-240 V~, 50 Hz, Class I
Manufacturer.....	Same as applicant
Factory .....	TCL Air conditioner (Zhong Shan) Co., Ltd. No. 59, Nantou Road West, Nantou, Zhongshan, Guangdong, China

Rated power supply .....	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	<input checked="" type="checkbox"/>	AC: 220-240 V, 50 Hz	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	DC:					
	<input type="checkbox"/>	Battery:					
Clock frequencies .....	Less than 15MHz						
Mounting position.....	<input type="checkbox"/>	Table top equipment					
	<input type="checkbox"/>	Wall/Ceiling mounted equipment					
	<input checked="" type="checkbox"/>	Floor standing equipment					
	<input type="checkbox"/>	Hand-held equipment					
	<input type="checkbox"/>	Other:					

According to customer's declaration, the products contain RF wireless module(WIFI+BLE) and the characteristics are:

For BLE characteristics:

Operating frequency range(s) – Tx :	2402-2480 MHz
Operating frequency range(s) – Rx :	2402-2480 MHz
Type of Modulation .....	GFSK
Maximum RF output power .....	6 dBm
Antenna type.....	Integral Antenna
Antenna gain.....	2,5 dBi
Adaptivity	Adaptive
Geo-location Capability .....	Not Support
Number of channel.....	40
Operating Temperature Range.....	-10 - +40 °C

For WIFI characteristics:

Operating frequency range(s) – Tx :	2412-2472 MHz
Operating frequency range(s) – Rx :	2412-2472 MHz
Type of Modulation .....	IEEE 802.11b: DSSS(CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM(64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT20: OFDM(64-QAM, 16-QAM, QPSK, BPSK)
Data Rate .....	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS7
Geo-location Capability .....	Not Support
Adaptivity .....	Adaptive
Maximum RF output power(EIRP) . :	20 dBm
Antenna type.....	Integral Antenna
Antenna gain.....	2,5 dBi
Number of channel.....	IEEE 802.11b: 13 IEEE 802.11g: 13 IEEE 802.11n-HT20: 13
Operating Temperature Range.....	-10 – +40 °C

Intended use of the Equipment Under Test (EUT)
<p>The apparatus as supplied for the test are split type air conditioners which have cooling and heating functions and intended for residential use. The products contain electronic control circuitry and earth connection.</p> <p>Models TAC-09CHSD/*I3A, TAC-12CHSD/*I3A, TAC-18CHSD/*I3A, TAC-24CHSD/*I3A have similar construction except for the size and components.  In the model name, * = TP11, TP21, TP31, TP41, TP51, TP61, TP71, TP72, TP81, TP91, TPA1, TPB1, TPC1, TPC2, TPD1, TPD2, TPE1, TPE2, TPG11, TPG21, TPG31 which indicates different panel of indoor unit.</p> <p>Hence, models TAC-09CHSD/ TP11I3A was chosen for full test, models TAC-12CHSD/ TP11I3A, TAC-18CHSD/ TP11I3A, TAC-24CHSD/ TP11I3A were chosen for radiated spurious emission test and the corresponding data are also representative for other models as well.</p>

Copy of marking plate:
<p>The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.</p> <p>Not provided.</p>

## 1.2 Test data

Test Location	DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
Date of receipt of test item	2022-05-26
Date (s) of performance of	2022-05-26 to 2022-07-27



tests	
-------	--

### 1.3 The environment(s) in which the EUT is intended to be used

The equipment under test (EUT) is intended to be used in the following environment(s):

<input checked="" type="checkbox"/>	Residential (domestic) environment.
<input checked="" type="checkbox"/>	Commercial and light-industrial environment.
<input type="checkbox"/>	Industrial environment.

### 1.4 Classification of Receivers according to EN 300328

The receivers were subdivided into 3 categories according to EN 300 328. For each category, the specific immunity requirements are formulated.

	Receiver category	Definition
√	1	Adaptive equipment with a maximum RF output power greater than 10 dBm e.i.r.p. NOTE: Non-adaptive equipment is categorized as receiver category 2 or receiver category 3.
	2	<ul style="list-style-type: none"> <li>non-adaptive equipment with a Medium Utilization (MU) factor greater than 1 % and less than or equal to 10 % (irrespective of the maximum RF output power); or</li> <li>equipment (adaptive or non-adaptive) with a maximum RF output power greater than 0 dBm e.i.r.p. and less than or equal to 10 dBm e.i.r.p.</li> </ul>
	3	<ul style="list-style-type: none"> <li>non-adaptive equipment with a maximum Medium Utilization (MU) factor of 1 % (irrespective of the maximum RF output power); or</li> <li>equipment (adaptive or non-adaptive) with a maximum RF output power of 0 dBm e.i.r.p.</li> </ul>

## 2 DESCRIPTION OF TEST SETUP

### 2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Operating mode	Operating mode description	Used for methos	
		Conducted	Radiated
1	Transmitting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Receiving	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3		<input type="checkbox"/>	<input type="checkbox"/>
Supplemental information: ---			

### 2.2 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment / unit / software	Type / Version	Manufacturer	Supplied by
Laptop	Latitude 5488	DELL	DEKRA
Supplemental information: ---			

### 2.3 Test Configuration / Block diagram used for tests

Refer to Annex 3.

### 3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

#### 3.1 Standards

Standard	Year	Description
ETSI EN 300 328 V2.2.2	2019-07	Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum

#### 3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

#### 3.3 Overview of results

TRANSMITTER TESTS		
Requirement – Test case for Wide band modulation other than FHSS	Verdict	Remark
RF output power	PASS	---
Power Spectral Density	PASS	---
Duty Cycle, Tx-sequence, Tx-gap	N/A	See 1)
Accumulated Transmit time, Frequency Occupation & Hopping Sequence	N/A	See 2)
Hopping Frequency Separation	N/A	See 2)
Medium Utilization (MU) factor	N/A	See 3)
Adaptivity	PASS	
Occupied Channel Bandwidth (BW)	PASS	---
Transmitter unwanted emissions in the out-of-band domain	PASS	---
Transmitter unwanted emissions in the spurious domain	PASS	---
<u>Supplementary information:</u> 1) These requirements apply to non-adaptive equipment or to adaptive equipment when operating in a non-adaptive mode. 2) These requirements apply to all types of FHSS equipment 3) This requirement does not apply to adaptive equipment.		

RECEIVER TESTS		
Requirement	Verdict	Remark
Receiver spurious emission	PASS	--
Receiver Blocking	PASS	---
Geo-location capability	N/A	See 1)
<u>Supplementary information:</u> 1) This requirement only applies to equipment with geo-location capability		

### 3.4 Measurement procedure

The EUT was controlled by a serial PCB which provided by manufacturer which connected to laptop through the com port. After connected, run the software supplied by manufacturer to control the EUT work in required test mode as below table.

Mode	Frequency (MHz)
IEEE 802.11 b/g/n-HT20	2412
	2442
	2472

## 4 TRANSMITTER TEST RESULTS

4.1	RF output power	VERDICT: PASS
-----	-----------------	---------------

Standard	ETSI EN 300 328 V2.2.2
Clause	4.3.2.2
Limits: 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.	

### Performed measurements

Port under test	Antenna port	
Test method applied	<input checked="" type="checkbox"/>	Conducted measurement
	<input type="checkbox"/>	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

See next page.

## Results

Temperature	Mode	Channel (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	RF output power (dBm)	Limit (dBm)
25 °C	IEEE 802.11b	2412	15,49	2,5	17,99	20
		2442	15,51	2,5	18,01	20
		2472	15,46	2,5	17,96	20
-10 °C	IEEE 802.11b	2412	15,17	2,5	17,67	20
		2442	15,32	2,5	17,82	20
		2472	15,38	2,5	17,88	20
40 °C	IEEE 802.11b	2412	15,37	2,5	17,87	20
		2442	15,41	2,5	17,91	20
		2472	15,32	2,5	17,82	20

Temperature	Mode	Channel (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	RF output power (dBm)	Limit (dBm)
25 °C	IEEE 802.11g	2412	17,4	2,5	19,90	20
		2442	17,11	2,5	19,61	20
		2472	17,09	2,5	19,59	20
-10 °C	IEEE 802.11g	2412	17,29	2,5	19,79	20
		2442	16,92	2,5	19,42	20
		2472	16,84	2,5	19,34	20
40 °C	IEEE 802.11g	2412	17,36	2,5	19,86	20
		2442	17,07	2,5	19,57	20
		2472	17,02	2,5	19,52	20

Temperature	Mode	Channel (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	RF output power (dBm)	Limit (dBm)
25 °C	IEEE 802.11n-HT20	2412	16,81	2,5	19,31	20
		2442	17,03	2,5	19,53	20
		2472	16,86	2,5	19,36	20
-10 °C	IEEE 802.11n-HT20	2412	16,73	2,5	19,23	20
		2442	16,96	2,5	19,46	20
		2472	16,78	2,5	19,28	20
40 °C	IEEE 802.11n-HT20	2412	16,76	2,5	19,26	20
		2442	16,92	2,5	19,42	20
		2472	16,73	2,5	19,23	20

4.2	<b>Power Spectral Density</b>	<b>VERDICT: PASS</b>
-----	-------------------------------	----------------------

Standard	ETSI EN 300 328 V2.2.2
Clause	4.3.2.3
Limits: The maximum Power Spectral Density for non-FHSS equipment is 10 dBm per MHz.	

#### Performed measurements

Port under test	Antenna port	
Test method applied	<input checked="" type="checkbox"/>	Conducted measurement
	<input type="checkbox"/>	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

#### Results

Mode	Channel (MHz)	Power Spectral Density (dBm)	Limit (dBm/ MHz)
IEEE 802.11b	2412	9,74	10
	2442	9,74	
	2472	9,70	
IEEE 802.11g	2412	8,27	
	2442	7,97	
	2472	7,96	
IEEE 802.11n-HT20	2412	7,41	
	2442	7,59	
	2472	7,45	

<b>4.3</b>	<b>Occupied Channel Bandwidth</b>	<b>VERDICT: PASS</b>
------------	-----------------------------------	----------------------

Standard	ETSI EN 300 328 V2.2.2
Clause	4.3.2.7
Limits: The Occupied Channel Bandwidth shall be within the band given in table 1 (2,4 GHz to 2,4835 GHz).	
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.	

#### Performed measurements

Port under test	Antenna port	
Test method applied	<input checked="" type="checkbox"/>	Conducted measurement
	<input type="checkbox"/>	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

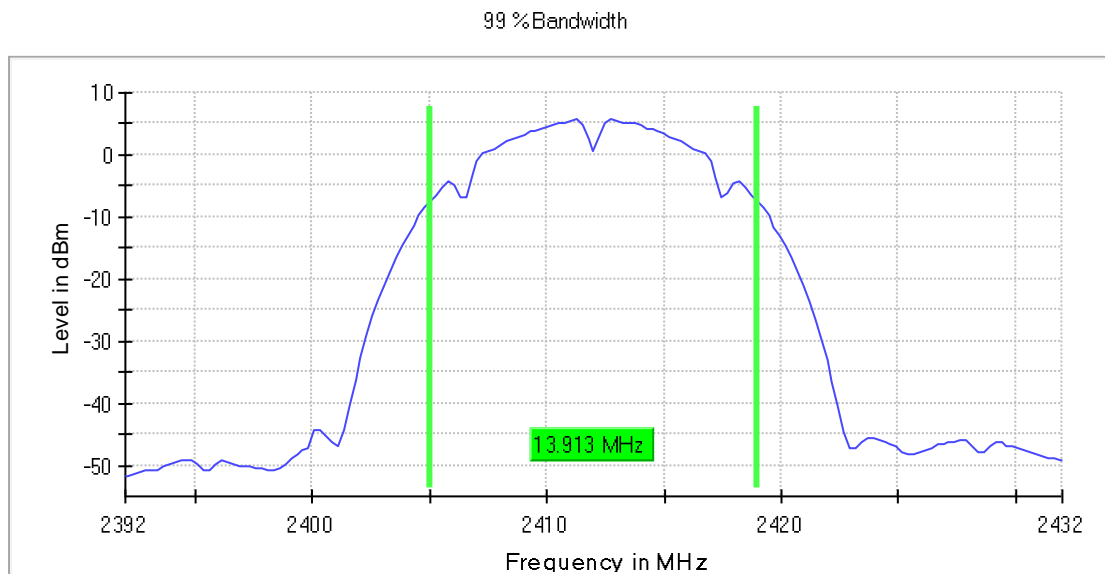
#### Results

Mode	Channel (MHz)	Bandwidth 99%(MHz)	FL (MHz) or FH (MHz)	Lower Limit (MHz)	Higher Limit
IEEE 802.11b	2412	13,913	FL: 2405,043	> 2400,0	N/A
	2472	13,913	FH: 2478,956	N/A	< 2483,5
IEEE 802.11g	2412	16,894	FL: 2403,552	> 2400,0	N/A
	2472	16,894	FH: 2480,447	N/A	< 2483,5
IEEE 802.11n-HT20	2412	17,888	FL: 2403,055	> 2400,0	N/A
	2472	17,888	FH: 2480,944	N/A	< 2483,5

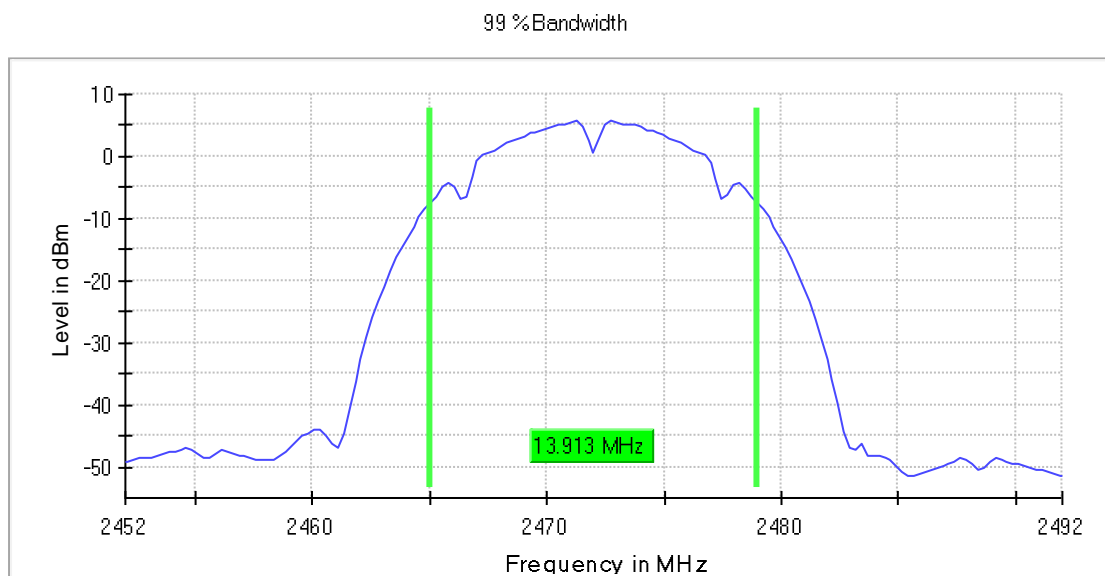


Test data for IEEE 802.11b :

2412MHz:

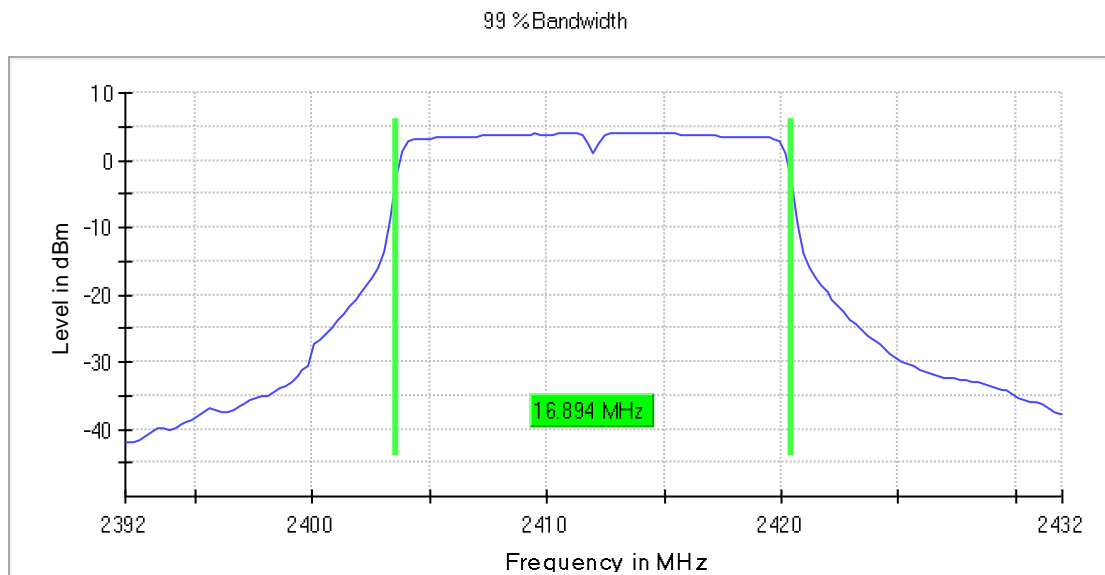


2472MHz:

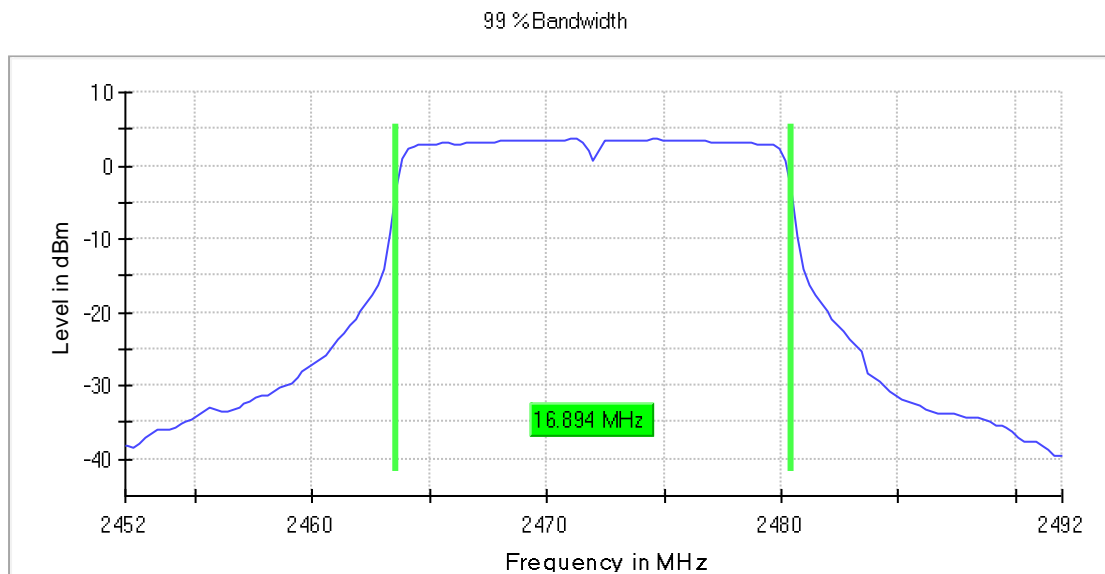


Test data for IEEE 802.11g :

2412MHz:

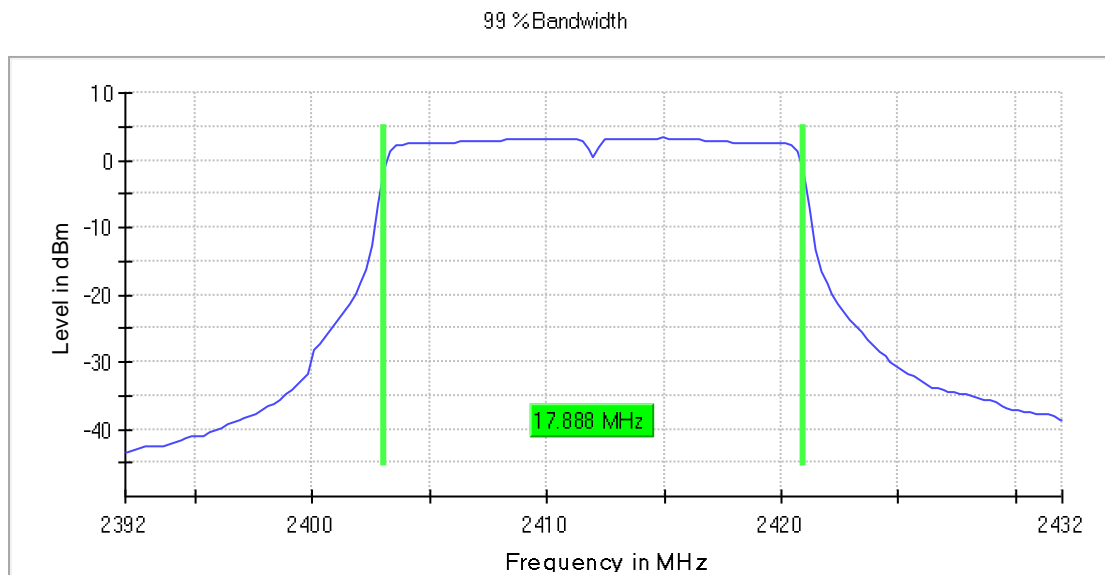


2472MHz:

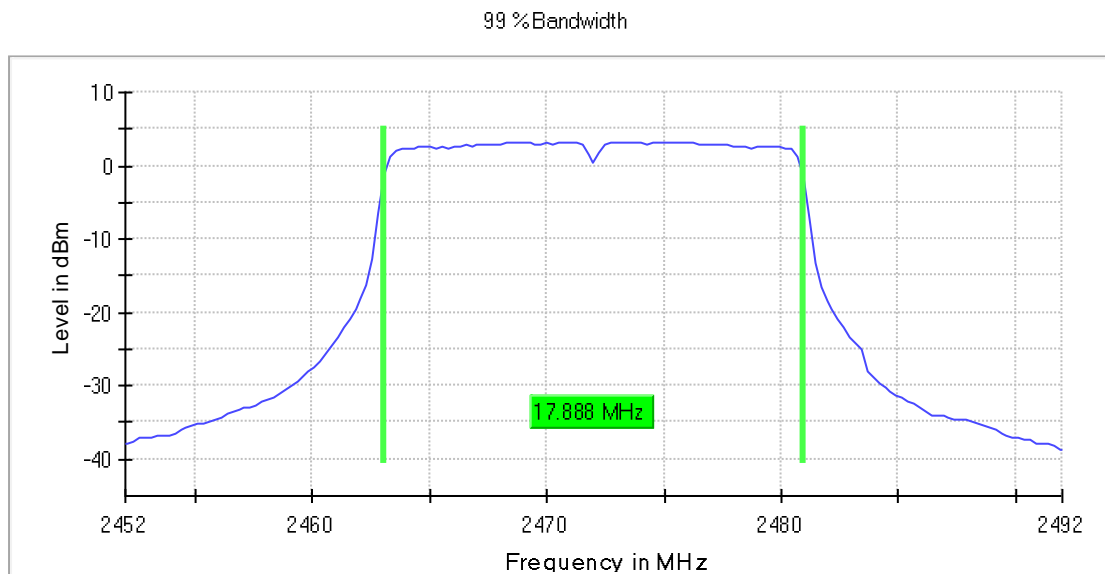


Test data for IEEE 802.11n-HT20 :

2412MHz:



2472MHz:



4.4	Adaptivity	VERDICT: PASS
-----	------------	---------------

Standard	ETSI EN 300 328 V2.2.2						
Clause	4.3.2.6						
Adaptive equipment using modulation other than FHSS							
Load Based Equipment shall comply with the following requirements:							
<div>1) Before a transmission or a burst of transmissions, the equipment shall perform a Clear Channel Assessment (CCA) check using energy detect. The equipment shall observe the operating channel for the duration of the CCA observation time which shall be not less than 18 μs. The channel shall be considered occupied if the energy level in the channel exceeds the threshold given in step 5 below. If the equipment finds the channel to be clear, it may transmit immediately.</div> <div>2) If the equipment finds the channel occupied, it shall not transmit on this channel (see also the next paragraph). The equipment shall perform an Extended CCA check in which the channel is observed for a random duration in the range between 18 μs and at least 160 μs. If the extended CCA check has determined the channel to be no longer occupied, the equipment may resume transmissions on this channel. If the Extended CCA time has determined the channel still to be occupied, it shall perform new Extended CCA checks until the channel is no longer occupied.</div> <div>3) The total time that an equipment makes use of a RF channel is defined as the Channel Occupancy Time. This Channel Occupancy Time shall be less than 13 ms, after which the device shall perform a new CCA as described in step 1 above.</div> <div>4) The equipment, upon correct reception of a transmission which was intended for this equipment can skip CCA and immediately (see also next paragraph) proceed with the transmission of management and control frames. A consecutive sequence of transmissions by the equipment without a new CCA shall not exceed the maximum channel occupancy time as defined in step 3 above For the purpose of multi-cast, the ACK transmissions (associated with the same data packet) of the individual devices are allowed to take place in a sequence.</div> <div>5) The energy detection threshold for the CCA shall be proportional to the transmit power of the transmitter: for a 20 dBm e.i.r.p. transmitter the CCA threshold level (TL) shall be equal to or less than -70 dBm/MHz at the input to the receiver assuming a 0 dBi (receive) antenna assembly. This threshold level (TL) may be corrected for the (receive) antenna assembly gain (G); however, beamforming gain (Y) shall not be taken into account. For power levels less than 20 dBm e.i.r.p., the CCA threshold level may be relaxed to: <div><div>TL = -70 dBm/MHz + 10 × log<sub>10</sub> (100 mW / P<sub>out</sub>)</div><div>(P<sub>out</sub> in mW e.i.r.p.)</div></div></div> <div>6) The equipment shall comply with the requirements defined in step 1 to step 4 of the present clause in the presence of an unwanted CW signal as defined in table 11.</div>							
Table 11: Unwanted Signal parameters							
<table><tr><td>Wanted signal mean power from companion device</td><td>Unwanted signal frequency (MHz)</td><td>Unwanted signal power (dBm)</td></tr><tr><td>sufficient to maintain the link (see note 2)</td><td>2 395 or 2 488,5 (see note 1)</td><td>-35 (see note 3)</td></tr></table> <div><div>NOTE 1:</div><div>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.</div></div> <div><div>NOTE 2:</div><div>A typical conducted value which can be used in most cases is -50 dBm/MHz.</div></div> <div><div>NOTE 3:</div><div>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.</div></div>		Wanted signal mean power from companion device	Unwanted signal frequency (MHz)	Unwanted signal power (dBm)	sufficient to maintain the link (see note 2)	2 395 or 2 488,5 (see note 1)	-35 (see note 3)
Wanted signal mean power from companion device	Unwanted signal frequency (MHz)	Unwanted signal power (dBm)					
sufficient to maintain the link (see note 2)	2 395 or 2 488,5 (see note 1)	-35 (see note 3)					

## Performed measurements

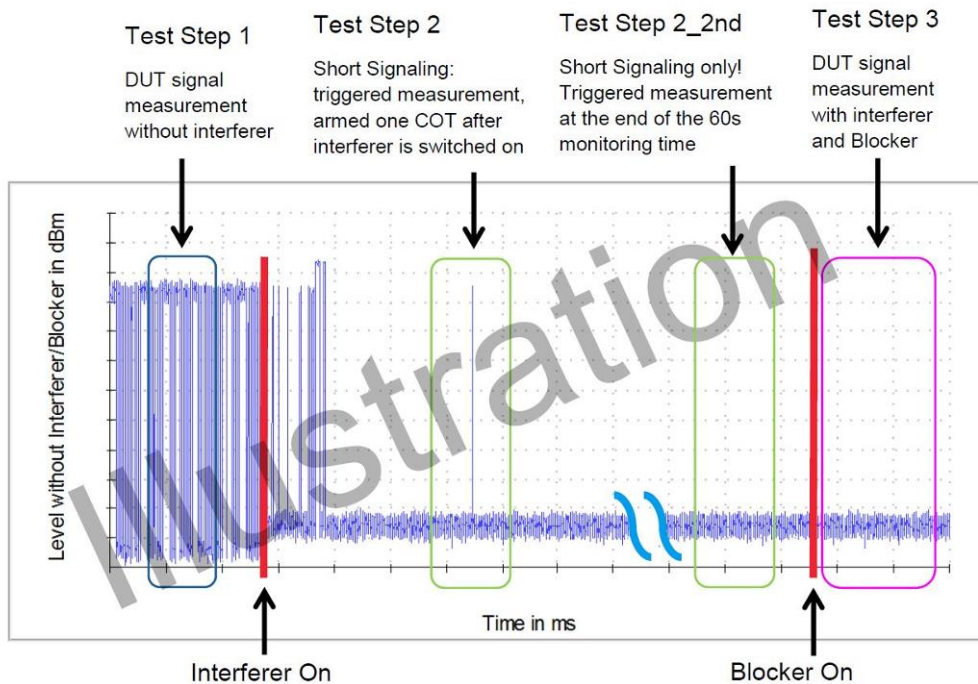
Port under test	Antenna port	
Test method applied	<input checked="" type="checkbox"/>	Conducted measurement
	<input type="checkbox"/>	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

## Results

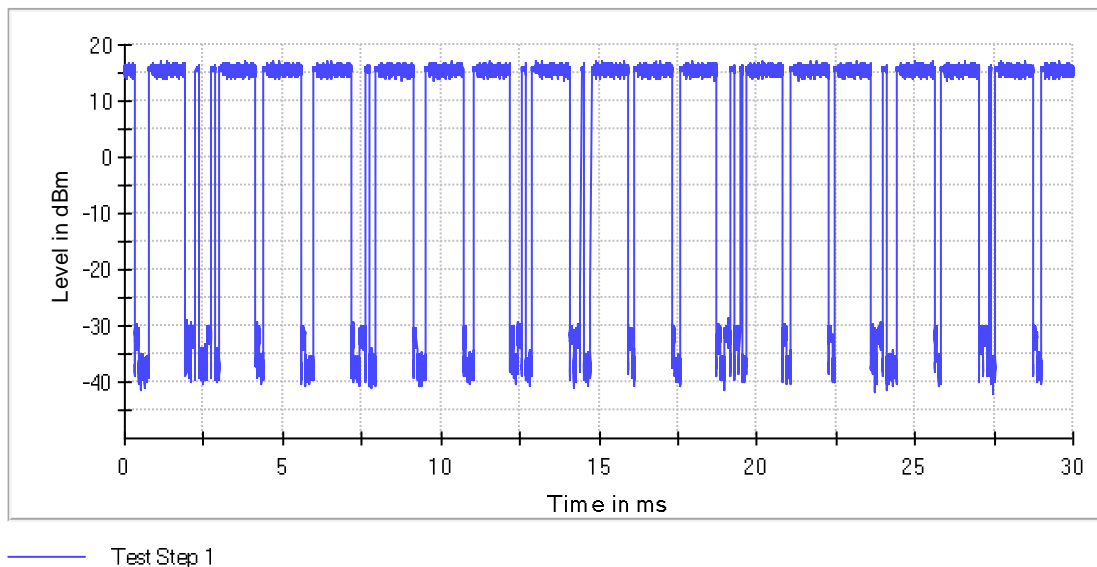
Mode	Data Rate	Frequency (MHz)	CCA observation time (us)	Limit (us)	Channel Occupancy Time (COT) (ms)	Limit (ms)
802.11b	11 Mbps	2412	1,017	≥0,018	0,35	≤13
	11 Mbps	2472	14,056		0,35	
802.11g	54 Mbps	2412	1,505		0,35	
	54 Mbps	2472	1,946		0,35	
802.11n20	72.2 Mbps	2412	5,259		0,35	
	72.2 Mbps	2472	0,019		2,59	

Mode	Data Rate	Frequency (MHz)	Short Signaling (%)	Limit (%)
802.11b	11 Mbps	2412	0,61	≤10
	11 Mbps	2472	0,61	
802.11g	54 Mbps	2412	1,22	
	54 Mbps	2472	0,61	
802.11n20	72.2 Mbps	2412	1,22	
	72.2 Mbps	2472	0,61	

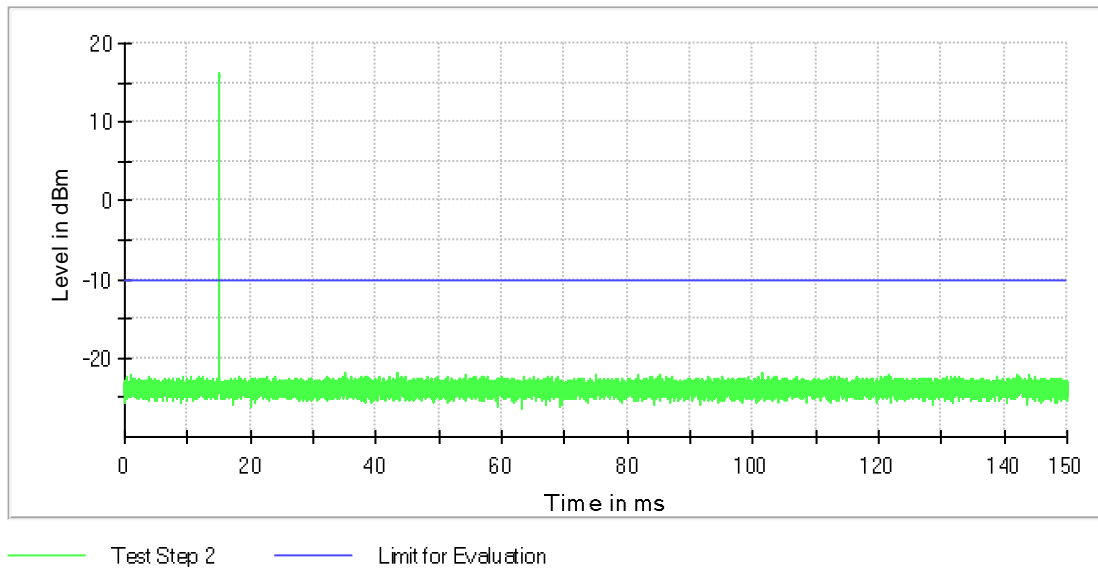
## Test process (representative of all modes)



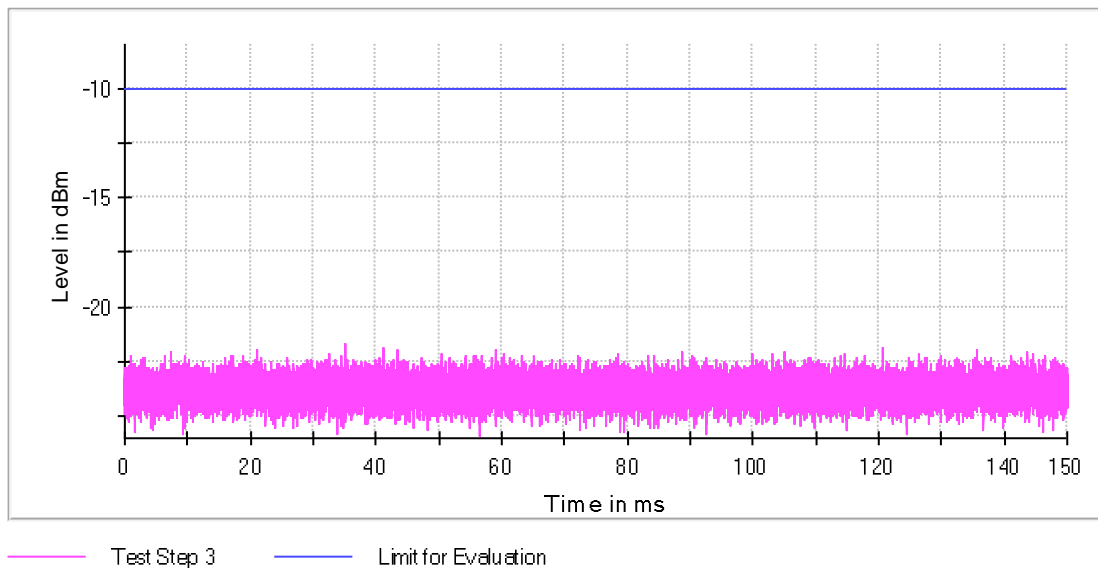
## Payload



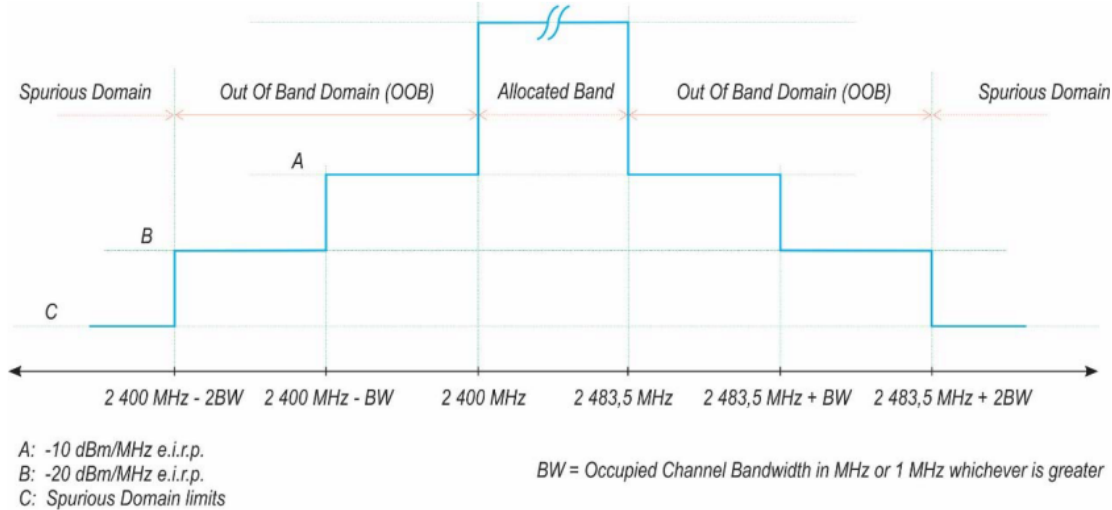
Added interferer signal (the observation time is 60s)



Added interferer and blocker signal (the observation time is 60s)



4.5	<b>Transmitter unwanted emissions in the out-of-band domain</b>	<b>VERDICT: PASS</b>
-----	---	----------------------

Standard	ETSI EN 300 328 V2.2.2
Clause	4.3.2.8
<b>Limits:</b> The transmitter unwanted emissions in the out-of-band domain shall not exceed the values provided by the mask in figure 3.	
 <p>The diagram illustrates the transmit mask for a transmitter. The horizontal axis represents frequency in MHz, with key points at 2 400 MHz - 2BW, 2 400 MHz - BW, 2 400 MHz, 2 483,5 MHz, 2 483,5 MHz + BW, and 2 483,5 MHz + 2BW. The vertical axis represents power level. Three horizontal lines are labeled A, B, and C from top to bottom. Line A represents the limit in the Out Of Band Domain (OOB) and the Allocated Band. Line B represents the limit in the Spurious Domain. Line C represents the limit in the Spurious Domain. The mask shows a high power level in the Allocated Band (between 2 400 MHz and 2 483,5 MHz) and lower power levels in the OOB and Spurious Domains. A break symbol (//) is shown in the Allocated Band. The legend specifies: A: -10 dBm/MHz e.i.r.p., B: -20 dBm/MHz e.i.r.p., C: Spurious Domain limits. BW = Occupied Channel Bandwidth in MHz or 1 MHz whichever is greater.</p>	
<b>Figure 3: Transmit mask</b>	

#### Performed measurements

Port under test	Antenna port	
Test method applied	<input checked="" type="checkbox"/>	Conducted measurement
	<input type="checkbox"/>	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

See next page.



## Results

IEEE 802.11b, 2412 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2372.673912	-50.5	-20.0	PASS
2373.586956	-50.4	-20.0	PASS
2374.586956	-50.5	-20.0	PASS
2375.586956	-50.4	-20.0	PASS
2376.586956	-50.5	-20.0	PASS
2377.586956	-50.5	-20.0	PASS
2378.586956	-50.5	-20.0	PASS
2379.586956	-50.5	-20.0	PASS
2380.586956	-50.5	-20.0	PASS
2381.586956	-50.4	-20.0	PASS
2382.586956	-50.3	-20.0	PASS
2383.586956	-50.2	-20.0	PASS
2384.586956	-50.3	-20.0	PASS
2385.586956	-50.0	-20.0	PASS
2386.586956	-49.9	-10.0	PASS
2387.500000	-50.0	-10.0	PASS
2388.500000	-50.1	-10.0	PASS
2389.500000	-50.2	-10.0	PASS
2390.500000	-50.1	-10.0	PASS
2391.500000	-49.7	-10.0	PASS
2392.500000	-48.9	-10.0	PASS
2393.500000	-48.1	-10.0	PASS
2394.500000	-46.7	-10.0	PASS
2395.500000	-48.1	-10.0	PASS
2396.500000	-47.2	-10.0	PASS
2397.500000	-47.9	-10.0	PASS
2398.500000	-48.0	-10.0	PASS
2399.500000	-45.3	-10.0	PASS
2484.000000	-50.5	-10.0	PASS
2485.000000	-50.5	-10.0	PASS
2486.000000	-50.6	-10.0	PASS
2487.000000	-50.5	-10.0	PASS
2488.000000	-50.4	-10.0	PASS
2489.000000	-50.3	-10.0	PASS
2490.000000	-50.3	-10.0	PASS
2491.000000	-50.3	-10.0	PASS
2492.000000	-50.4	-10.0	PASS
2493.000000	-50.4	-10.0	PASS
2494.000000	-50.3	-10.0	PASS
2495.000000	-50.4	-10.0	PASS
2496.000000	-50.5	-10.0	PASS
2496.913044	-50.5	-10.0	PASS

2497.913044	-50.5	-20.0	PASS
2498.913044	-50.6	-20.0	PASS
2499.913044	-50.5	-20.0	PASS
2500.913044	-50.5	-20.0	PASS
2501.913044	-50.6	-20.0	PASS
2502.913044	-50.6	-20.0	PASS
2503.913044	-50.6	-20.0	PASS
2504.913044	-50.5	-20.0	PASS
2505.913044	-50.5	-20.0	PASS
2506.913044	-50.5	-20.0	PASS
2507.913044	-49.0	-20.0	PASS
2508.913044	-50.0	-20.0	PASS
2509.913044	-48.7	-20.0	PASS
2510.826088	-49.8	-20.0	PASS

IEEE 802.11b, 2472 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2372.673912	-50.2	-20.0	PASS
2373.586956	-50.3	-20.0	PASS
2374.586956	-50.3	-20.0	PASS
2375.586956	-50.4	-20.0	PASS
2376.586956	-50.5	-20.0	PASS
2377.586956	-50.7	-20.0	PASS
2378.586956	-50.7	-20.0	PASS
2379.586956	-50.7	-20.0	PASS
2380.586956	-50.6	-20.0	PASS
2381.586956	-50.7	-20.0	PASS
2382.586956	-50.7	-20.0	PASS
2383.586956	-50.7	-20.0	PASS
2384.586956	-50.6	-20.0	PASS
2385.586956	-50.7	-20.0	PASS
2386.586956	-50.6	-10.0	PASS
2387.500000	-50.6	-10.0	PASS
2388.500000	-50.6	-10.0	PASS
2389.500000	-50.6	-10.0	PASS
2390.500000	-50.6	-10.0	PASS
2391.500000	-50.6	-10.0	PASS
2392.500000	-50.6	-10.0	PASS
2393.500000	-50.6	-10.0	PASS
2394.500000	-50.7	-10.0	PASS
2395.500000	-50.6	-10.0	PASS
2396.500000	-50.6	-10.0	PASS
2397.500000	-50.6	-10.0	PASS
2398.500000	-50.6	-10.0	PASS
2399.500000	-50.5	-10.0	PASS
2484.000000	-45.6	-10.0	PASS
2485.000000	-47.6	-10.0	PASS
2486.000000	-48.8	-10.0	PASS
2487.000000	-47.3	-10.0	PASS
2488.000000	-46.8	-10.0	PASS
2489.000000	-46.7	-10.0	PASS
2490.000000	-47.1	-10.0	PASS
2491.000000	-48.3	-10.0	PASS
2492.000000	-49.2	-10.0	PASS
2493.000000	-49.9	-10.0	PASS
2494.000000	-50.1	-10.0	PASS
2495.000000	-50.1	-10.0	PASS
2496.000000	-49.9	-10.0	PASS
2496.913044	-49.6	-10.0	PASS
2497.913044	-49.6	-20.0	PASS
2498.913044	-49.9	-20.0	PASS

2499.913044	-50.0	-20.0	PASS
2500.913044	-50.1	-20.0	PASS
2501.913044	-50.2	-20.0	PASS
2502.913044	-50.3	-20.0	PASS
2503.913044	-50.3	-20.0	PASS
2504.913044	-50.4	-20.0	PASS
2505.913044	-50.4	-20.0	PASS
2506.913044	-50.4	-20.0	PASS
2507.913044	-49.1	-20.0	PASS
2508.913044	-50.4	-20.0	PASS
2509.913044	-49.1	-20.0	PASS
2510.826088	-50.2	-20.0	PASS

IEEE 802.11g, 2412 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2366.711180	-50.0	-20.0	PASS
2367.605590	-49.9	-20.0	PASS
2368.605590	-49.8	-20.0	PASS
2369.605590	-49.8	-20.0	PASS
2370.605590	-49.7	-20.0	PASS
2371.605590	-49.8	-20.0	PASS
2372.605590	-49.6	-20.0	PASS
2373.605590	-49.5	-20.0	PASS
2374.605590	-49.3	-20.0	PASS
2375.605590	-49.4	-20.0	PASS
2376.605590	-49.2	-20.0	PASS
2377.605590	-49.2	-20.0	PASS
2378.605590	-48.8	-20.0	PASS
2379.605590	-48.5	-20.0	PASS
2380.605590	-48.3	-20.0	PASS
2381.605590	-48.0	-20.0	PASS
2382.605590	-47.2	-20.0	PASS
2383.605590	-46.6	-10.0	PASS
2384.500000	-46.0	-10.0	PASS
2385.500000	-45.5	-10.0	PASS
2386.500000	-44.6	-10.0	PASS
2387.500000	-43.8	-10.0	PASS
2388.500000	-43.0	-10.0	PASS
2389.500000	-41.7	-10.0	PASS
2390.500000	-41.0	-10.0	PASS
2391.500000	-39.1	-10.0	PASS
2392.500000	-38.6	-10.0	PASS
2393.500000	-35.7	-10.0	PASS
2394.500000	-36.5	-10.0	PASS
2395.500000	-34.5	-10.0	PASS
2396.500000	-34.3	-10.0	PASS
2397.500000	-32.6	-10.0	PASS
2398.500000	-31.4	-10.0	PASS
2399.500000	-28.7	-10.0	PASS
2484.000000	-50.0	-10.0	PASS
2485.000000	-49.9	-10.0	PASS
2486.000000	-49.9	-10.0	PASS
2487.000000	-49.9	-10.0	PASS
2488.000000	-49.9	-10.0	PASS
2489.000000	-49.9	-10.0	PASS
2490.000000	-49.9	-10.0	PASS
2491.000000	-49.9	-10.0	PASS
2492.000000	-50.0	-10.0	PASS

2493.000000	-49.9	-10.0	PASS
2494.000000	-49.9	-10.0	PASS
2495.000000	-49.9	-10.0	PASS
2496.000000	-49.9	-10.0	PASS
2497.000000	-49.9	-10.0	PASS
2498.000000	-50.0	-10.0	PASS
2499.000000	-49.9	-10.0	PASS
2499.894410	-50.0	-10.0	PASS
2500.894410	-50.4	-20.0	PASS
2501.894410	-50.5	-20.0	PASS
2502.894410	-50.4	-20.0	PASS
2503.894410	-50.2	-20.0	PASS
2504.894410	-50.1	-20.0	PASS
2505.894410	-50.1	-20.0	PASS
2506.894410	-50.0	-20.0	PASS
2507.894410	-50.1	-20.0	PASS
2508.894410	-50.0	-20.0	PASS
2509.894410	-48.8	-20.0	PASS
2510.894410	-50.0	-20.0	PASS
2511.894410	-50.1	-20.0	PASS
2512.894410	-50.0	-20.0	PASS
2513.894410	-50.1	-20.0	PASS
2514.894410	-50.0	-20.0	PASS
2515.894410	-50.1	-20.0	PASS
2516.788820	-50.1	-20.0	PASS

IEEE 802.11g, 2472 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2366.711180	-50.4	-20.0	PASS
2367.605590	-50.4	-20.0	PASS
2368.605590	-50.4	-20.0	PASS
2369.605590	-50.4	-20.0	PASS
2370.605590	-50.4	-20.0	PASS
2371.605590	-50.4	-20.0	PASS
2372.605590	-50.4	-20.0	PASS
2373.605590	-50.3	-20.0	PASS
2374.605590	-50.4	-20.0	PASS
2375.605590	-50.3	-20.0	PASS
2376.605590	-50.4	-20.0	PASS
2377.605590	-50.3	-20.0	PASS
2378.605590	-50.4	-20.0	PASS
2379.605590	-50.3	-20.0	PASS
2380.605590	-50.6	-20.0	PASS
2381.605590	-50.6	-20.0	PASS
2382.605590	-50.6	-20.0	PASS
2383.605590	-50.6	-10.0	PASS
2384.500000	-50.5	-10.0	PASS
2385.500000	-50.5	-10.0	PASS
2386.500000	-50.5	-10.0	PASS
2387.500000	-50.4	-10.0	PASS
2388.500000	-50.4	-10.0	PASS
2389.500000	-50.5	-10.0	PASS
2390.500000	-50.4	-10.0	PASS
2391.500000	-50.4	-10.0	PASS
2392.500000	-50.4	-10.0	PASS
2393.500000	-50.4	-10.0	PASS
2394.500000	-50.4	-10.0	PASS
2395.500000	-50.4	-10.0	PASS
2396.500000	-50.4	-10.0	PASS
2397.500000	-50.4	-10.0	PASS
2398.500000	-50.4	-10.0	PASS
2399.500000	-50.3	-10.0	PASS
2484.000000	-26.5	-10.0	PASS
2485.000000	-29.0	-10.0	PASS
2486.000000	-30.4	-10.0	PASS
2487.000000	-31.7	-10.0	PASS
2488.000000	-31.9	-10.0	PASS
2489.000000	-32.7	-10.0	PASS
2490.000000	-34.1	-10.0	PASS
2491.000000	-35.5	-10.0	PASS
2492.000000	-37.3	-10.0	PASS
2493.000000	-38.0	-10.0	PASS

2494.000000	-39.6	-10.0	PASS
2495.000000	-40.8	-10.0	PASS
2496.000000	-42.4	-10.0	PASS
2497.000000	-43.1	-10.0	PASS
2498.000000	-43.8	-10.0	PASS
2499.000000	-44.9	-10.0	PASS
2499.894410	-45.4	-10.0	PASS
2500.894410	-45.9	-20.0	PASS
2501.894410	-46.6	-20.0	PASS
2502.894410	-47.3	-20.0	PASS
2503.894410	-47.8	-20.0	PASS
2504.894410	-48.2	-20.0	PASS
2505.894410	-48.6	-20.0	PASS
2506.894410	-49.0	-20.0	PASS
2507.894410	-49.3	-20.0	PASS
2508.894410	-49.4	-20.0	PASS
2509.894410	-48.5	-20.0	PASS
2510.894410	-49.7	-20.0	PASS
2511.894410	-49.9	-20.0	PASS
2512.894410	-50.0	-20.0	PASS
2513.894410	-50.1	-20.0	PASS
2514.894410	-50.1	-20.0	PASS
2515.894410	-50.2	-20.0	PASS
2516.788820	-50.2	-20.0	PASS



IEEE 802.11n, 2412 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2364.723604	-50.1	-20.0	PASS
2365.611802	-50.1	-20.0	PASS
2366.611802	-50.0	-20.0	PASS
2367.611802	-50.0	-20.0	PASS
2368.611802	-50.0	-20.0	PASS
2369.611802	-49.9	-20.0	PASS
2370.611802	-49.9	-20.0	PASS
2371.611802	-49.9	-20.0	PASS
2372.611802	-49.8	-20.0	PASS
2373.611802	-49.6	-20.0	PASS
2374.611802	-49.5	-20.0	PASS
2375.611802	-49.5	-20.0	PASS
2376.611802	-49.3	-20.0	PASS
2377.611802	-49.2	-20.0	PASS
2378.611802	-48.9	-20.0	PASS
2379.611802	-48.7	-20.0	PASS
2380.611802	-48.5	-20.0	PASS
2381.611802	-48.3	-20.0	PASS
2382.611802	-47.7	-10.0	PASS
2383.500000	-47.1	-10.0	PASS
2384.500000	-46.8	-10.0	PASS
2385.500000	-46.4	-10.0	PASS
2386.500000	-46.0	-10.0	PASS
2387.500000	-45.2	-10.0	PASS
2388.500000	-44.5	-10.0	PASS
2389.500000	-43.7	-10.0	PASS
2390.500000	-42.5	-10.0	PASS
2391.500000	-41.5	-10.0	PASS
2392.500000	-40.5	-10.0	PASS
2393.500000	-40.1	-10.0	PASS
2394.500000	-39.0	-10.0	PASS
2395.500000	-38.1	-10.0	PASS
2396.500000	-36.5	-10.0	PASS
2397.500000	-35.1	-10.0	PASS
2398.500000	-33.1	-10.0	PASS
2399.500000	-30.2	-10.0	PASS
2484.000000	-50.0	-10.0	PASS
2485.000000	-50.0	-10.0	PASS
2486.000000	-50.0	-10.0	PASS
2487.000000	-50.0	-10.0	PASS
2488.000000	-50.0	-10.0	PASS
2489.000000	-49.9	-10.0	PASS
2490.000000	-49.9	-10.0	PASS
2491.000000	-50.0	-10.0	PASS

2492.000000	-50.1	-10.0	PASS
2493.000000	-50.0	-10.0	PASS
2494.000000	-50.0	-10.0	PASS
2495.000000	-49.9	-10.0	PASS
2496.000000	-50.0	-10.0	PASS
2497.000000	-50.0	-10.0	PASS
2498.000000	-50.0	-10.0	PASS
2499.000000	-50.1	-10.0	PASS
2500.000000	-50.1	-10.0	PASS
2500.888198	-50.3	-10.0	PASS
2501.888198	-50.5	-20.0	PASS
2502.888198	-50.4	-20.0	PASS
2503.888198	-50.1	-20.0	PASS
2504.888198	-50.2	-20.0	PASS
2505.888198	-50.1	-20.0	PASS
2506.888198	-50.1	-20.0	PASS
2507.888198	-50.2	-20.0	PASS
2508.888198	-50.1	-20.0	PASS
2509.888198	-48.9	-20.0	PASS
2510.888198	-50.1	-20.0	PASS
2511.888198	-50.2	-20.0	PASS
2512.888198	-50.1	-20.0	PASS
2513.888198	-50.2	-20.0	PASS
2514.888198	-50.1	-20.0	PASS
2515.888198	-50.1	-20.0	PASS
2516.888198	-50.1	-20.0	PASS
2517.888198	-50.2	-20.0	PASS
2518.776396	-50.2	-20.0	PASS

IEEE 802.11n, 2472 MHz

Frequency (MHz)	Level (dBm)	Limit (dBm)	Result
2364.723604	-50.4	-20.0	PASS
2365.611802	-50.5	-20.0	PASS
2366.611802	-50.4	-20.0	PASS
2367.611802	-50.5	-20.0	PASS
2368.611802	-50.4	-20.0	PASS
2369.611802	-50.4	-20.0	PASS
2370.611802	-50.4	-20.0	PASS
2371.611802	-50.5	-20.0	PASS
2372.611802	-50.4	-20.0	PASS
2373.611802	-50.4	-20.0	PASS
2374.611802	-50.4	-20.0	PASS
2375.611802	-50.4	-20.0	PASS
2376.611802	-50.4	-20.0	PASS
2377.611802	-50.4	-20.0	PASS
2378.611802	-50.4	-20.0	PASS
2379.611802	-50.4	-20.0	PASS
2380.611802	-50.4	-20.0	PASS
2381.611802	-50.5	-20.0	PASS
2382.611802	-50.6	-10.0	PASS
2383.500000	-50.5	-10.0	PASS
2384.500000	-50.5	-10.0	PASS
2385.500000	-50.5	-10.0	PASS
2386.500000	-50.5	-10.0	PASS
2387.500000	-50.5	-10.0	PASS
2388.500000	-50.5	-10.0	PASS
2389.500000	-50.5	-10.0	PASS
2390.500000	-50.4	-10.0	PASS
2391.500000	-50.5	-10.0	PASS
2392.500000	-50.4	-10.0	PASS
2393.500000	-50.4	-10.0	PASS
2394.500000	-50.4	-10.0	PASS
2395.500000	-50.4	-10.0	PASS
2396.500000	-50.4	-10.0	PASS
2397.500000	-50.4	-10.0	PASS
2398.500000	-50.4	-10.0	PASS
2399.500000	-50.3	-10.0	PASS
2484.000000	-26.4	-10.0	PASS
2485.000000	-28.8	-10.0	PASS
2486.000000	-30.7	-10.0	PASS
2487.000000	-31.8	-10.0	PASS
2488.000000	-32.4	-10.0	PASS
2489.000000	-33.3	-10.0	PASS
2490.000000	-34.4	-10.0	PASS
2491.000000	-35.2	-10.0	PASS

2492.000000	-29.8	-10.0	PASS
2493.000000	-37.3	-10.0	PASS
2494.000000	-38.4	-10.0	PASS
2495.000000	-39.8	-10.0	PASS
2496.000000	-41.0	-10.0	PASS
2497.000000	-42.4	-10.0	PASS
2498.000000	-43.7	-10.0	PASS
2499.000000	-44.3	-10.0	PASS
2500.000000	-44.9	-10.0	PASS
2500.888198	-45.4	-10.0	PASS
2501.888198	-46.1	-20.0	PASS
2502.888198	-46.7	-20.0	PASS
2503.888198	-47.3	-20.0	PASS
2504.888198	-47.7	-20.0	PASS
2505.888198	-48.2	-20.0	PASS
2506.888198	-48.6	-20.0	PASS
2507.888198	-49.0	-20.0	PASS
2508.888198	-49.3	-20.0	PASS
2509.888198	-48.4	-20.0	PASS
2510.888198	-49.6	-20.0	PASS
2511.888198	-49.7	-20.0	PASS
2512.888198	-49.9	-20.0	PASS
2513.888198	-50.0	-20.0	PASS
2514.888198	-50.0	-20.0	PASS
2515.888198	-50.0	-20.0	PASS
2516.888198	-50.1	-20.0	PASS
2517.888198	-50.2	-20.0	PASS
2518.776396	-50.2	-20.0	PASS

4.6	<b>Transmitter unwanted emissions in the spurious domain</b>	<b>VERDICT: PASS</b>
-----	--	----------------------

Standard	ETSI EN 300 328 V2.2.2
Clause	4.3.2.9

Limits:

The transmitter unwanted emissions in the spurious domain shall not exceed the values given in table 12. 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.

**Table 12: Transmitter limits for spurious emissions**

Frequency range	Maximum power	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

#### Performed measurements

Port under test	Enclosure port
Test method applied	<input type="checkbox"/> Conducted measurement
	<input checked="" type="checkbox"/> Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).
Operating mode(s) used	Mode 1, IEEE 802.11 b (the worst case)
Remark	---

#### Results for TAC-09CHSD/ TP11I3A

Channel (MHz)	Polarity	Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Result (dBm)	Limit (dBm)	Verdict
2412	H	4824,40	-63,04	7,54	-55,5	-30,00	PASS
		7237,23	-63,96	11,20	-52,76	-30,00	PASS
	V	4824,40	-64,48	7,83	-56,65	-30,00	PASS
		7237,23	-64,76	11,66	-53,1	-30,00	PASS
2472	H	4944,40	-64,27	8,05	-56,22	-30,00	PASS
		7416,23	-64,43	11,32	-53,11	-30,00	PASS
	V	4944,40	-64,37	8,19	-56,18	-30,00	PASS
		7416,23	-64,95	11,56	-53,39	-30,00	PASS

### Results for TAC-12CHSD/ TP11I3A

Channel (MHz)	Polarity	Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Result (dBm)	Limit (dBm)	Verdict
2412	H	4824,49	-63,09	7,54	-55,55	-30,00	PASS
		7237,58	-63,23	11,20	-52,03	-30,00	PASS
	V	4824,49	-64,77	7,83	-56,94	-30,00	PASS
		7237,89	-64,79	11,66	-53,13	-30,00	PASS
2472	H	4944,98	-64,60	8,05	-56,55	-30,00	PASS
		7416,23	-64,45	11,32	-53,13	-30,00	PASS
	V	4944,66	-64,74	8,19	-56,55	-30,00	PASS
		7416,22	-64,91	11,56	-53,35	-30,00	PASS

### Results for TAC-18CHSD/ TP11I3A

Channel (MHz)	Polarity	Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Result (dBm)	Limit (dBm)	Verdict
2412	H	4824,49	-63,09	7,54	-55,55	-30,00	PASS
		7237,58	-63,23	11,20	-52,03	-30,00	PASS
	V	4824,49	-64,77	7,83	-56,94	-30,00	PASS
		7237,89	-64,79	11,66	-53,13	-30,00	PASS
2472	H	4944,98	-64,60	8,05	-56,55	-30,00	PASS
		7416,23	-64,45	11,32	-53,13	-30,00	PASS
	V	4944,66	-64,74	8,19	-56,55	-30,00	PASS
		7416,22	-64,91	11,56	-53,35	-30,00	PASS

### Results for TAC-24CHSD/ TP11I3A

Channel (MHz)	Polarity	Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Result (dBm)	Limit (dBm)	Verdict
2412	H	4824,55	-64,21	7,54	-56,67	-30,00	PASS
		7237,31	-63,22	11,20	-52,02	-30,00	PASS
	V	4824,67	-64,71	7,83	-56,88	-30,00	PASS
		7237,81	-64,70	11,66	-53,04	-30,00	PASS
2472	H	4944,91	-64,65	8,05	-56,60	-30,00	PASS
		7416,26	-64,47	11,32	-53,15	-30,00	PASS
	V	4944,62	-64,71	8,19	-56,52	-30,00	PASS
		7416,29	-64,93	11,56	-53,37	-30,00	PASS

## 5 RECEIVER TEST RESULTS

5.1	Receiver spurious emissions	VERDICT: PASS
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Standard	ETSI EN 300 328 V2.2.2	
Clause	4.3.2.10	
Limits:		
Frequency range	Maximum power e.r.p. ( $\leq 1$ 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

### Performed measurements

Port under test	Enclosure port	
Test method applied	<input type="checkbox"/>	Conducted measurement
	<input checked="" type="checkbox"/>	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 2	
Remark	---	

### Results

Channel (MHz)	Polarity	Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Result (dBm)	Limit (dBm)	Verdict
2412	H	No significant emissions were measured at the frequency range of interest employing the PK detectors (more than 20 dB below limits).					PASS
	V						PASS
2472	H	No significant emissions were measured at the frequency range of interest employing the PK detectors (more than 20 dB below limits).					PASS
	V						PASS

5.2	Receiver Blocking	VERDICT: PASS
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Standard	ETSI EN 300 328 V2.2.2				
Clause	4.3.2.11				
Limits:					
Table 14: 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 <sub>10</sub> (OCBW)) or -68 dBm whichever is less (see note 2)	2 380	-34	CW		
	2 504				
(-139 dBm + 10 × log <sub>10</sub> (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 <sub>min</sub> + 26 dB where P <sub>min</sub> 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 <sub>min</sub> + 20 dB where P <sub>min</sub> 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.					
Performance Criteria:					
For equipment that supports a PER or FER test to be performed, the minimum performance criterion shall be a PER or FER less than or equal to 10 %.					
For equipment that does not support a PER or a FER test to be performed, the minimum performance criterion shall be no loss of the wireless transmission function needed for the intended use of the equipment.					

#### Performed measurements

Port under test	Antenna port	
Test method applied	<input checked="" type="checkbox"/>	Conducted measurement
	<input type="checkbox"/>	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 2	
Remark	---	

See next page.



## Results

For IEEE 802.11 b (the worst case):

Test Channel	Wanted Signal Level [dBm]	Freq [MHz]	CW Level [dBm]	PER [%]	Limit [%]	Verdict
2412	-74.0	2300.000000	-34.0	0.0	<=10	PASS
2412	-74.0	2330.000000	-34.0	0.0	<=10	PASS
2412	-74.0	2360.000000	-34.0	0.0	<=10	PASS
2412	-68.0	2380.000000	-34.0	0.0	<=10	PASS
2412	-68.0	2504.000000	-34.0	0.0	<=10	PASS
2412	-74.0	2524.000000	-34.0	0.0	<=10	PASS
2412	-74.0	2584.000000	-34.0	0.0	<=10	PASS
2412	-74.0	2674.000000	-34.0	0.0	<=10	PASS
2472	-74.0	2300.000000	-34.0	0.0	<=10	PASS
2472	-74.0	2330.000000	-34.0	0.0	<=10	PASS
2472	-74.0	2360.000000	-34.0	0.0	<=10	PASS
2472	-68.0	2380.000000	-34.0	0.0	<=10	PASS
2472	-68.0	2504.000000	-34.0	0.0	<=10	PASS
2472	-74.0	2524.000000	-34.0	0.0	<=10	PASS
2472	-74.0	2584.000000	-34.0	0.0	<=10	PASS
2472	-74.0	2674.000000	-34.0	0.0	<=10	PASS

## 6 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photographs show the tested device.



Indoor unit view of TAC-09CHSD/ TP11I3A



Outdoor unit view of TAC-09CHSD/ TP11I3A



Indoor unit view of TAC-12CHSD/ TP11I3A



Outdoor unit view of TAC-12CHSD/ TP11I3A



Indoor unit view of TAC-18CHSD/ TP11I3A



Outdoor unit view of TAC-18CHSD/ TP11I3A





Indoor unit view of TAC-24CHSD/ TP11I3A



Outdoor unit view of TAC-24CHSD/ TP11I3A

## ANNEX 1 – MEASUREMENT UNCERTAINTY

Test Item	Uncertainty
Occupied Channel Bandwidth	$\pm 0,7\%$
RF Output power, conducted	$\pm 0,6\text{dB}$
Power Spectral Density, Conducted	$\pm 0,6\text{dB}$
Unwanted Emissions, Conducted	$\pm 0.7\text{dB}$
Spurious (30-1000MHz)	$\pm 4,4\text{dB}$
Spurious (1-12,75GHz)	$\pm 4,4\text{dB}$

## ANNEX 2 – USED EQUIPMENT

DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch					
Instrumentation	Manufacturer	Model No.	Serial No.	DEKRA No.	Cal. Due date
Shielding Room	Changzhou Feite	/	/	G/L861	2024/05/31
EMI Receiver	R&S	ESCI	101206	G/L857	2023/07/07
LISN	R&S	ENV216	101336	G/L859	2023/07/07
Multi-Channel Discontinuous Interference Analyzer	TESEQ	DIA1512D	28300	G/L871	2023/07/07
LISN	R&S	ENV216	101336	G/L860	2023/07/07
Clamp	TESEQ	MDS21	4085	G/L863	2022/08/11
POWER SOURCE	California Instruments	500LiX-CTS- 400	1132A00193	G/L862	2023/07/07
Analyzer	California Instruments	PACS-A	1132A00193	G/L862	2023/07/07
ESD Generator	TESEQ	NSG435	6513	G/L867	2022/08/10
Signal Generator	TESEQ	NSG3040	1821	G/L868	2023/05/08
STEPTRANSFORME R	TESEQ	INA6501	/	G/L868	2023/05/08
Clamp	TESEQ	CDN 8014	/	G/L868	2023/05/08
33nF capacitor	-	-	-	G/L2248	2023/07/19
Signal Generator	TESEQ	NSG4070	31446	G/L870	2022/12/26
CDN	TESEQ	M016	31564	G/L870	2022/12/26
EM-Clamp	TESEQ	KEMZ801	31493	G/L870	2022/12/26
6dB	TESEQ	ATN6075	30789	G/L870	2022/12/26

## ANNEX 3 - TEST PHOTOS

### Conducted measurements



Normal condition test setup



Exetrmne condition test setup

--- END ---